

The living conditions and health status of international immigrants in Chile:

**Comparisons among international immigrants,
and between them and the Chilean-born**

Volume 1 of 2

Main document

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Abstract

The Republic of Chile is a middle-income South American country. In recent decades, Chile has faced a “new immigration” pattern, described as young immigrants, coming mostly from Latin American countries to work.

This thesis is the first quantitative population-based study exploring the living conditions and health status of international immigrants in Chile. Secondary data analysis of a cross-sectional population-based survey carried out in 2006 is used (the CASEN survey 2006; 268,873 participants from 73,720 households). This study encompasses a large set of Social Determinants of Health (SDH) and analyses their relationship to several health outcomes among immigrants and the Chilean-born population. Those sets of SDH are the following: demographic, socioeconomic, material living standards, access to health care and migration related determinants. A wide range of statistical methods are used throughout this thesis in order to account for the great variability found in this dataset, as well as the complexity and co-linearity involved in most of its variables.

Results show 1% of the sample report as international immigrants, coming mainly from Peru (28%), Argentina (26%), Bolivia (6%) and Ecuador (5%). An additional 0.7% chose not to report their migration-status (migration status missing values) and this group is more likely to live in socioeconomic derivation than immigrants.

International immigrants are a heterogeneous group, with wide variation in socioeconomic status (SES). The "healthy migrant" effect appears within the total international immigrant population: this group has a lower prevalence of all health problems compared to the Chilean-born. However, when analyzing prevalence by SES, significant differences are found. Immigrants show clear gradients of health by SES, with different patterns according to the nature of the problem considered. Immigrants with low-SES show no "healthy migrant" effect and they have similar disease prevalence to the average Chilean-born, despite being younger. The “healthy migrant” effect also disappears among those living longer than 20 years in Chile. These key findings have direct policy implications for Chile and suggest relevant future research in this topic in the Latin American region.

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Author's Declaration

I hereby declare that the work of this thesis is the result of my own investigation and that none of the material contained in this thesis has previously been submitted for a degree in this, or any other awarding institution.

Baltica Cabieses

2011

This thesis is dedicated to my parents,
Báltica and Jorge

Our social common sense

*We fear what we perceive as different
We reject what we fear
We isolate what we reject*

*And then, far from us,
those isolated become something
that we should fear,
for common sense...*

CHAPTER 1

INTRODUCTION

Summary Box 1

What is this thesis about?

This thesis presents the first population-based study exploring the living conditions and health of international immigrants in Chile and how they compare to the Chilean-born population. It uses a national survey conducted in Chile in 2006, the CASEN survey.

What are the aims of this study?

1. to identify what is known about the migration process and its association with health, in particular with the Social Determinants of Health (SDH);
2. to describe the demographic characteristics of international immigrants in Chile and how they compare to the Chilean-born;
3. to describe the socioeconomic conditions of this group and how they compare to the Chilean-born;
4. to determine access to health care and use of health care services by immigrants in Chile and how they compare to the Chilean-born;
5. to identify the health status (recent poor health and chronic conditions) of international immigrants in Chile and compare them to the Chilean-born population;
6. to describe the living conditions and health status of those that preferred not to report their migration status in the CASEN survey of 2006, and compare them to the international immigrant population;
7. to discuss how the key findings from this research contribute to the current knowledge of immigrants in Chile and their potential policy implications for the country and Latin America.

Overview

International migration has a significant place on the international agenda and affects every country in the world. Efforts have been made to strengthen positive and reduce negative consequences of international migration; however, they do not fully address issues of human rights and equality. The purpose of this introductory chapter is to describe the underlying concepts and the context in which this research is developed in Chile, in order to explain the relevance and pertinence of the study. Additionally, this introduction guides the reader through the following eleven chapters.

Introduction

This thesis aims to explore the living conditions and health status of international immigrants in Chile and to compare them to the Chilean-born, using the Social Determinants of Health Model as a conceptual framework. This research is the first quantitative population-based study conducted in this country with international immigrants. It uses an anonymous, population-based survey conducted in 2006 in Chile, the CASEN survey (acronym for Caracterización Socio-Económica Nacional). Since 1987, this survey has been conducted every three years. In 2006, for the first time, it included a question on migration status. This thesis is the first study to explore the demographic, socioeconomic, material living standards, and migration-related factors affecting the health of international immigrants in Chile. It is also the first study to explore the association between immigration to Chile, access to and use of health care, and a range of health events. This first chapter is divided into five sections: the first describes the reasons for studying the situation of immigrants in Chile; the second displays six key concepts involved in this research; the third discusses the current context in Chile; the fourth briefly presents the personal motivations for conducting this study; and the fifth and final section describes the purpose of each of the following eleven chapters.

1.1 WHY STUDY THE INTERNATIONAL IMMIGRANT POPULATION IN CHILE? INTERNATIONAL MIGRATION AND THE GLOBAL AGENDA

Movement of people within and between countries has become a central and necessary part of contemporary society. Migration may be an important determinant of global health and social development (Carballo, 1998), having implications for those who move, those who are left behind and those countries who receive migrants. Social and spatial movements are always inextricably linked (Shaw, Dorling and Mitchell, 2002). The implications for the health care systems of the communities and countries involved can be far-reaching (Carballo, 1998), and at the same time, health might affect migration through a range of possible pathways. A large-scale movement of people might affect the geography of health, changing patterns of morbidity and mortality (Shaw, Dorling and Mitchell, 2002; Boyle, 2004). Propensities to move might also vary in relation to different demographic and socioeconomic variables, including health (Boyle, 2004; Boyle, Norman and Rees, 2002).

International migration has a place on the international agenda because it affects every country in the world (EESC, 2007). In a time of global economic recession, migration emerges, once again, as a cause, a pathway and a result of a wide range of complex international and national socioeconomic and demographic mechanisms. It ensures economic development for some, while it deepens social and economic conflicts for others. Significant efforts have been made to strengthen the positive and reduce the negative consequences of migration (Comunidad Andina, 2008). However, they do not necessarily fully address human rights or equality considerations (MacPherson, Gushulak and MacDonald, 2007; Mladovsky, 2007).

In terms of public health it has been stated, “policy-makers have failed to address migration with respect to health and the boundaries of disparity through which migration occurs” (MacPherson, Gushulak and MacDonald, 2007). As an example, very few governmental programmes focus on pre-arrival health promotion or non-infectious disease strategies in mobile populations (MacPherson, Gushulak and MacDonald, 2007). In addition, there is an equity concern about how to maximise benefits of migration for every country and community around the world. Some authors have argued, for example, that profits obtained from economic development caused by migration should return to the issuing country and not only benefit the host (Martine, Hakkert and Guzman, 2000). The loss of healthy working age people in the issuing country, usually low to middle income countries, to wealthier nations contributes to the growing health disparities between countries. In addition, the relationship between migration and global socioeconomic disparities needs further understanding. Social class and other social determinants of health might have a significant

interaction effect upon the probability of geographical movement and its future consequences in the issuing country, the host and other countries.

In Chile, though some general characteristics of both migration and health inequalities have been described in the past decade, and some migration policies have been developed, major efforts are still needed. There was no national representative survey in the country to assess the living conditions and the health status of international immigrants in Chile before this research was conducted. There is limited qualitative data on these topics in certain subgroups, mostly in the north border area and in the capital of Santiago (Amador 2008; IOM and MINSAL, 2008a; IOM and MINSAL, 2008b; Nuñez-Carrasco, 2008). In 2006, for the first time, a national survey in Chile collected information on migration status in the country. The CASEN survey is focused on the socioeconomic status of the population living in Chile and has been conducted every three years since the early 1980s. This quantitative dataset is the only existing national representative survey in Chile to describe the living conditions and health status of international immigrants. The research also represents the first step towards a broad understanding of this topic in Latin America.

1.2 KEY CONCEPTS INCLUDED IN THIS THESIS

1.2.1 Migration and international immigrants

Migration is the process of moving from one place to another (Tunstall, Shaw and Dorling, 2004; Urquía & Cagnon, 2011). It has a rather obvious beginning, but the ending is not necessarily clear (Stefoni, 2001). The United Nations (UN) defines an international migrant as a person who stays outside their usual country of residence for at least one year (UN, 2003). Attempts to define migration have been complex and diverse, involving a wide range of contexts, reasons and types of immigrant, from healthy migrants in search of better opportunities, to political refugees escaping civil wars in their countries of origin.

The migration experience does not only imply the experience of *crossing frontiers*. Geographic boundaries are one part of the migration process. There are also symbolic frontiers between one community and another, which are separated by cultural differences. Experiences of crossing each frontier –the geographical and the cultural- may occur at different times and may involve different meanings (Stefoni, 2001). This thesis is particularly interested in the international migration process, and primarily in the living conditions and health of those who have arrived in the host country, Chile. In this study, an

international immigrant is defined as a person who resided in Chile in 2006 and who reported being born in a different country.

1.2.2 Health and the “social” dimension of its definition

As is widely known, health has been defined by the World Health Organisation (WHO) as complete physical, psychological, and social wellbeing and not only the absence of disease (Alma Ata Declaration, WHO, 1978). This research takes a special interest in the social dimension of this definition. Over time, the creation and development of the scientific concept of health has evolved to consider the differences in health between social groups. The idea that the distribution of health and disease are not random but affected by other dimensions of life has existed since the time of Hippocrates. He acknowledged that health (or the possibility of getting sick) differed in different subgroups of the population and indicated the relevance of being exposed to certain risks in life for the chance of acquiring a particular disease (Lancaster, 1990). Despite this knowledge, sciences dedicated to studying societies' behaviours only emerged with strength in the nineteenth century.

Countries have evolved at different times and rhythms in the understanding of health and its social dimension. The UK and Europe have led in the acquisition of international evidence and knowledge in this issue, followed by the US. Therefore, most of the international literature on social medicine and social epidemiology comes from developed, high-income countries and less is known in this field from developing, low-income and middle-income countries, such as those in Latin America. However, some policy-level recommendations have been proposed in certain countries in this region and researchers have conducted significant studies, in order to progressively improve the health status of the populations living in this varied and unequal region. Those studies will be progressively described throughout this thesis, in particular in their relation to the migration process in Latin America. They provide an overall view of the strong interest in the social dimension of health in this region, but also highlight the beginning of an evidence-based understanding of the migration phenomenon and its effect on the living conditions and health in Chile and Latin America.

1.2.3 The Social Determinants of Health (SDH)

Social Determinants of Health (SDH) have been defined as the social conditions in which people live and work and that affect their health; in other words, the social characteristics within which life takes place (Marmot & Wilkinson 1999; Tarlov, 1996; McGinnis, Williams-Russo and Knickman, 2002). This concept has been widely used in research and

public health policies over the past 20 years. It stresses that the human condition is an intimate reflection of how we live in society and health is considered a constant expression of social justice, as it is an essential and indispensable motor for the progress of nations and societies (Gomez, 2001). Throughout the world, people who are vulnerable and socially disadvantaged have less access to health resources, become more unwell, and die earlier than people in more privileged social positions. Health inequality gaps are growing today, despite unprecedented global wealth and technological progress (Irwin et al., 2006).

The concept of the SDH originated in the 1970s, from a series of publications highlighting the limitations of interventions aimed at reducing health risks for sick and dying individuals. Several authors argued that in order to understand and improve health, it was necessary to focus on policies that moved from an individual perspective to social models of the structures that determine a person's possibilities to be healthy (Krieger, 2001a; Krieger, 2003). This meant accepting the critical fact that medical care is not the main determinant of health, but that health is determined largely by the social conditions in which people live and work. These factors allow individuals to remain healthy. Determinants of individual differences of health are, therefore, different from the determinants of differences between populations. When speaking of the SDH, the underlying mechanism of interest is how causes of individual cases are related to causes of disease incidence in the population, such as international immigrants. This thesis is the first study to explore how demographic, socioeconomic, material living standards and migration-related SDH affect the health of international immigrants in Chile. It is also the first study to explore the association between immigration to Chile, access to and use of health care, and a range of health events. Due to data limitations, the cross-sectional study design does not allow causal inference between the different sets of SDH and health outcomes, but it is a first step towards a better understanding of them in the context of migration in a middle-income country, Chile.

1.2.4 Health inequalities

The term "health inequality" is closely linked to the SDH and has been defined as the systematic, structural difference in health status between and within social groups. It refers to the multiple influences upon health status, including socioeconomic status, diet, education, employment, housing, income, and others (Marmot & Wilkinson, 1999; Marmot 1999; Marmot, 2010). Definitions of health inequality, health disparity and variations in health have all evolved over time in the UK, the US and other countries (Hansard, 1994; Frist, 2005; NIH, 1999; Braveman and Gruskin, 2003a, Braveman and Gruskin, 2003b). Currently, these definitions recognise the relevance of the SDH and its effect on differences in health

between groups. They particularly recognise social position as a key explanatory variable for health inequality.

Despite its conceptual complexity, inequality in health is a crucial concept for empirical research. There are different challenges, including the multiple indicators of health that exist in international literature, the many SDH affecting health and the wide range of indicators used to measure them, different population groups to compare, different parameters related to health and a variety of viewpoints to evaluating health. Moreover, different measures can be used as dependent or explanatory variables, depending on the research questions that are raised. Despite these well-recognised issues, research all over the world continues to consistently show the strong association between social conditions and health (Dachs, 1999; PAHO, 1998a). In this study, different measures of social position are included in the analysis and a comparison of the living conditions and health status within the international immigrant population and between them and the Chilean-born is also conducted.

Comparisons of the proportion of people with the lowest educational level or living in the poorest income quintile between immigrants and the Chilean-born are explored. In addition, 20/20 and top/bottom ratios are described, comparing within each population the gap between those in the most deprived and least deprived socioeconomic conditions in Chile (e.g. mean household income of immigrants in the wealthiest quintile divided by the mean household income of immigrants in the bottom, poorest quintile). The same is explored in relation to their health outcomes.

1.2.5 Health equity

The concept of equity in health has an enormous breadth (Gilson, 1998) and the conceptual discussion can be approached from several dimensions (Mooney, 1983). Equity in health is rooted in the particular set of ideas and visions of philosophical, ethical, political and practical features of the contemporary debate on social equity. Social equity is, by many, a factor that increases social stability and economic productivity. By contrast, inequities in a society and between different societies favour tension and conflict, which undermine the constructive efforts and resources organized worldwide concerning this issue (Alleyne, Casas and Castillo-Delgado, 2000). This is of significant value to Chile, a country that has explicitly taken into account the concept of health equity in its recent health reform efforts (MINSAL, 2000).

Equity in health has been defined by the WHO as the absence of unfair and avoidable differences in the health status of individuals, populations or groups that have different socioeconomic, demographic or geographical characteristics (CSDH, 2005). The concept of

health inequity is different from inequality in health. Inequalities in health are not necessarily inequities, and the concept of inequity implies that the inequalities found are unfair or avoidable, so can be prevented and remedied. Inequities in health have their roots in processes of social stratification of a society (Graham, 2004) and have been linked with the political reality and power relations within a society (Evans et al., 2001). In this study, health equity is a key underlying concept, as it considers that no international immigrant in the country, especially immigrant women, children and minority ethnic groups, should live in socioeconomic and material disadvantage or with ill health related to absolute or relative socioeconomic deprivation. Moreover, those living in such conditions should be clearly identified by the government as recipients of their protection and support. Results from this study should contribute to achieving this goal.

1.2.5 Social epidemiology

During the 1990s, research related to the distribution of health and disease in societies as well as their determinants was significant, encompassing the term "Social Epidemiology" as a sub discipline of Epidemiology and devoted to studying these issues (Krieger, 2001b; Tajer, 2003). Under the definition developed by Reeder in 1969, Social Epidemiology was defined as the "study of the role of social factors in the aetiology of the disease" (Krieger, 2001b). The research questions of this thesis are aligned with the social epidemiology discipline. Their particular focus is to understand the living conditions and health of immigrants in Chile, and the practical approaches that could contribute to improving the health of the Latin American population, especially that of the migrant population.

1.3 THE CONTEXT FOR INCLUDING INEQUALITIES AMONG IMMIGRANTS AS A RELEVANT RESEARCH TOPIC IN CHILE

1.3.1 The context in Latin America: the development of Social Medicine

Immediately after the end of the Second World War and during the creation of the World Health Organization (WHO) in 1948, it was explicitly recognized that political and social conditions impact the health of the population (Jadad & O'Grady, 2008). The spirit of reconciliation, stability, reconstruction and the sense of modernity and power during the post-war period, promoted the creation of national health systems in various European countries. The initial focus of these national systems was placed on universal access to health care and efforts were focused on providing services to individuals based on the progressive development of medical technology (CDSH, 2007; WHO, 2000). This approach, labelled by some as "vertical", gradually focused investment and spending on secondary/ tertiary health care levels (CDSH, 2007; Sanchez, 1998). During this period, many of the major public health interventions, especially in developing countries, were led by organizations from non-health sectors in different countries (World Bank and Rockefeller Foundation, for example). These interventions were aimed at improving the health conditions of the "neediest". Interestingly, wellbeing and health acquired gradually -and in conjunction with the Universal Declaration of Human Rights- the nature of law.

More recently, the declaration of Alma-Ata in 1978 with its slogan "health for all" has strengthened policy intentions to improve Primary Health Care, to readdress efforts to multidisciplinary programs, and to position the issue of equity in health as a paradigm (CDSH, 2007; Mejia-Ortega and Franco-Giraldo, 2007). However, the neoliberal economic trends of the 1980s and 1990s became stumbling blocks to implementing these policies, redirecting the efforts of governments from both developed and developing countries to the containment of social expenditure, and increasing the efficiency of health care over equity. In this complex international scenario, Latin American countries faced enormous challenges following the privatization of health care and the increasing focus on secondary care.

In opposition to this international movement, the "Commission for Social Determinants of Health" was created by the WHO in 2003. The mission of this committee was to comprehensively promote greater equity in global health, in a spirit of social justice. The commission recently presented its latest findings (CSDH, 2008a), through a report with the theme of "Health in a generation." The creation of this commission represented a symbol to health policy development around the world.

In the 1970s, following the international recommendations and the latest epidemiological evidence, Latin America developed some important preventive initiatives. It began to generate significant criticism of the hegemonic theoretical models that policymakers and health carers had addressed in the region in the past. Latin American countries continued the international recognition of the key social and historical dimension of the SDH. The international movement against the “positivist reductionist” perspective conceived populations not as an aggregation of individuals but as a set of communities, values and positions of subjectivity. Some Latin American authors proposed the creation of new research methodology to overcome the existing techniques, emphasizing the relationship between theory, research evidence and political practice. This movement of Social Medicine in Latin America has been important in theoretical and policy terms, as scholars and practitioners have applied it over the past 40 years (Tajer, 2003). Over the past 15 years, numerous studies have explored this area and created a rich background of knowledge and theoretical models. These studies, together with the previously mentioned special reports, and reflections on the results obtained under the policy model followed so far, have repositioned the interest in social factors related to health in the Latin American region in the political agenda (CSDH, 2008b).

1.3.2 The national context for studying SDH in Chile

1.3.2.a) A general description of the country

Chile is a middle-income country with an intermediate level of development and is currently facing an epidemiological transition (Arteaga et al., 2002a). Gross domestic product per capita reached \$ 15 866 (USD) in 2010 (International Monetary Fund, 2010). It has a population of just over 16 million inhabitants, of whom 85% live in urban areas and most of them in the Metropolitan Region of Santiago (40%). The populations of different communities are very variable, from little more than a hundred people to over 400 000 inhabitants. From a political-administrative view, the country is divided into 15 regions and 351 communes or boroughs (see Figure 1.1), with a total of 178 cities of more than 5 000 inhabitants, 215 cities of 2000 to 5000 inhabitants and 768 villages under 2 000. The municipality represents the government at the local community level and is in charge of primary health care (MINSAL, 1999).

Chile has experienced deep economic, demographic and geographical changes, including a progressive improvement of the health status of the population, a decline in the infant and general mortality rates, and an increase in life expectancy. Nowadays, the health status of the Chilean population is very similar to some high-income countries and better than many other

Latin American nations. These significant improvements in the health status of the general population in Chile have been, to a large extent, a consequence of systematic public health policies developed during the last century (Albala and Vio, 1995; Infante, de la Matta and Lopez-Acuna, 2000).

Reasons for the relatively good health status of the Chilean population are multiple and intimately connected with economic and social stability in the past century. Since the early 20th century, Chile has been developing major public health improvements, firstly in maternal-infant mortality and epidemics and more recently in chronic diseases and cancer (Cerdeira, Romer and Weitstruck, 2008). Moreover, the country has made progress in improving the factors that influence living conditions, as illustrated by changes in education. The last census has shown, for example, that between 1992 and 2002 the proportion of people who studied in higher education increased from 9% to 16.4% and that instruction in the pre-level almost doubled, increasing from 289 680 to 571 096 people. Consequently, the average schooling of the Chilean population rose from 7.5 years to 8.5 years of study in 10 years (Mardones, 2004).

The Chilean health care system has also experienced significant changes over time. It used to be a public integrated system from its creation in 1952 until the dictatorship period. Later, during the 1980s, the military government undertook a series of measures to stimulate growth in membership of the private health system (called ISAPREs). Nowadays, the Chilean health system is a mixed system characterized by segmentation. With regards to both supply and insurance, public (FONASA) and private (ISAPREs) sectors coexist with little interaction or dialogue between them. The private system covers about 25% of the population and receives 69% of resources from contributions. The public sector, on the other hand, receives only 31% of the total tax contributions to the system, but must supply coverage to around 60% of the population. The rest of the population is part of the Army health system (around 4%) or has no health coverage at all (around 10%) (Oyarzo, 2000; Arteaga et al., 2002b).

Additionally, not all socioeconomic groups have benefited from the described developments to the same extent and over the same time period. There are significant differences in the health status of the Chilean populations when comparing the type of health system, the subtypes of care delivery of each health system (either public or private), geographical location, gender, and age, among others (Arteaga et al, 2002b). As with most international findings, Chilean studies that have used the duration of formal education as a rough indicator of socioeconomic level have indicated that there are higher risks of death in the most undereducated socioeconomic groups (Vega et al., 2001; MINSAL, 2004).

Education and income are usually highly correlated and have been associated with good nutrition, housing, employment and secure and better access to health care. In Chile, only better-off groups can meet the cost of the private insurance system and these are the ones who have less likelihood of disease and better access to health care than other groups in the society (Mardones, 2004). In contrast, poverty remains a relevant issue in the country, as 20.1% of the population lives below the poverty line (defined in US \$ 91 per capita per month for urban areas and US \$ 62 per capita per month in rural areas in 2004) (Mardones, 2004; MIDEPLAN, 2004).

It is interesting to observe that the social and political transformations experienced in Chile have been a concrete answer to global and local developments in the understanding of health and disease. On the other hand, it is relevant to consider the various difficulties faced by Chile when trying to achieve a reduction in health inequalities in the context of a growing, developing country. As a reflection of this, waiting lists and difficulties in accessing the health care system remain unsolved in Chile (Mardones, 2004). Consequently, public opinion polls in Chile have revealed that the populations entitled to the subsystems of public and private health care feel insecure and unhappy with their health care, especially because of access difficulties and costs not covered by health insurance in certain circumstances (UN, 1998). Moreover, the Chilean 2002 census reported that over the last decade the population of Chile grew at an annual average of 1.2%, while in the decade 1982-1992, it did so at an average annual rate of 1.6%, which has meant Chile is getting closer to a discrete or non-population growth experienced by developed countries, with the consequent aging of the population. The population of those 60 years and older increased from 9.8% in the 1992 census to 11.4% in the 2002 census, and the population under 15 years decreased from 29.4% to 25.7% in the same period (Mardones, 2004; INE, 2003; INE, 2006).

Recognizing the importance of the growing group of older adults in Chile, it has been reported that the elderly are mostly receiving care from the public health sector, which in Chile faces large budget constraints that affect the access and treatment of those in need. This is even more severe among socioeconomically disadvantaged elderly. That is, the elderly with higher education levels have half the death rate of those with up to primary school education (Mardones, 2004). To add more complexity to the picture, Chile has been receiving a growing number of international immigrants in recent years. A significant proportion of them does not have any health insurance and lives in poor conditions. Social determinants of health are presumably affecting them, but as yet little is known. The following section will describe the recent Chilean health reform, which explicitly includes

the goal of reducing health inequalities in the country, but still needs to address the immigrant population as a relevant vulnerable group.

Figure 1.1 The Chilean territory (INE, 2009)



Image retrieved from [<http://tierra.free-people.net/paises/mapa-de-chile.php>]

1.3.2.b) The recent Chilean health care reform

The recent Chilean health reform has emerged in response to the Chilean sanitary aims for the decade 2000-2010 and the development of a group dedicated to reducing health inequity in the nation. This reform has explicitly included the goal of reducing the gap of inequities between poor and rich in the future. As stated by Sandoval, Executive Secretary of the Inter Ministry Commission for Health in Chile in 2001, "the main problem in modern society is to maintain the healthy population and not just how to receive medical attention when a disease appears". The reason for this is that the types of disease that have been threatening the Chilean population in the past years, and will certainly do so in the future, have been linked with not only individual behaviours but also behaviours that are socially determined. Health reform in Chile has recognized as a fundamental principle that health is a social good and, consequently, access to the actions of health promotion and disease prevention, as well as care services, are an essential right of the Chilean people (MINSAL, 2004; Biblioteca del Congreso Nacional de Chile, 2002).

In Chile the reform of health care was implemented in 2003 and it was expected to have a significant impact on population health (Arrau, 2002). Table 1.1 summarises the five objectives of the Chilean Health Reform and Table 1.2 describes the main amendments in the Chilean Law, which are based on three fundamental values:

- (1) equity in access to health care;
- (2) effectiveness in interventions designed to promote, preserve and restore health;
- (3) efficient use of available resources.

Table 1.1 The five objectives of the Chilean Health Reform (Observatorio Equidad -Chile, 2005)

<i>Five Objectives of the Chilean Health care Reform</i>	
(1)	To promote the integration of public and private subsystems under a common logic, as a central component that uses the real needs and expectations of its users.
(2)	To improve the access to health care for disadvantaged groups of the population, and also end the discrimination that affects women, the elderly and children (and that means more expensive plans and / or less protection in the private health system, ISAPREs).
(3)	To adapt the model of care and health services offered to the current biological and demographical profile of the population (aging and affects chronic and degenerative diseases), available technologies and scientific evidence.
(4)	To increase safety and confidence of the people with the health system, explaining their rights and duties, opening channels of participation and incorporating them actively in their self-care.
(5)	To modernize the organization and management of the public sector, in light of the new challenges of a Health Authority in their powers of strong political leadership and regulation; and a Public National Health Fund (FONASA), responsible for ensuring all recipients an effective protection against the risk of illness and a health care network of high quality, technical and human.

Table 1.2 Main amendments in the Chilean Law from the Chilean health care reform

<i>Law name</i>	<i>Law amendments</i>
Funding Law	Considered hikes in VAT and excise to fund two major social initiatives in the Health Plan: (a) the Explicit Guarantees (called AUGE) for all beneficiaries from the Public National Health Fund (FONASA) and Isapres later; and (b) the Social Agenda "Chile Solidario" which seeks to provide new development opportunities in Chile (Jadue & Marin, 2005).
Health Authority and Management Law	Strengthened the powers of the Ministry of Health to conduct health as well as regulation and control, which delivers to specialized agencies. Create new tools to better manage the care network, including greater powers for the management of the facilities and financial incentives for staff.
Regime Law of Guarantees in Health	This law provides a health plan for the Public (FONASA) and private (ISAPREs) health systems, called the AUGE Plan, consisting of standardized diagnostic confirmation and treatment for a group of diseases prioritized by their high social and health impact. Any associated benefit is defined, moreover, by explicit and enforceable guarantees of access, timeliness, quality and coverage. Besides, priority health problems have been compromised, with waiting times defined, with reasonable co-pays and caps that protect the family income.
Amendments to the Law of ISAPREs (private health insurances)	These amendments were part of the AUGE Plan and introduced several changes aimed at giving greater benefits to members of private health insurance and made an effort to eliminate discrimination by gender and age.
Rights and Duties of People in Health	It enshrined the rights of persons as dignified individuals for any treatment provider, the company and spiritual assistance, information, subject to the medical records and informed decision.

1.2.3.c) The Chilean Initiatives for Equity in Health

Chile is one of the twelve countries participating in the WHO "Global Alliance for Equity in Health", along with Peru and Ecuador from Latin America, whose main objective is to ensure that by 2015 each country has a system for monitoring health inequities that can evaluate and inform health policies and the Social Determinants of Health. To achieve this, the initiative is meant to analyze the information available in the country, in partnership with institutions, organizations and members of society, government and NGOs, which have links to this particular area. To be successful, and thus optimize the levels of equity in health, the Global Initiative has since its formal creation in 2004, been based on four cornerstones: (1) Monitoring Inequities; (2) Formation of Public Opinion; (3) Community Involvement; and (4) Human Resources Training (Observatorio Equidad-Chile, 2005). Two major achievements in reducing health inequalities have been recognised in Chile. The first was the Presidential and Ministry of Health's Council on Equity, with special interest in labour and health. The second was the creation of the Chilean Initiative for Equity in Health, with its first handbook on health inequalities in the country, called "The Social Determinants of Health in Chile. In the perspective of Equity" and published in 2005 (Jadue & Marin).

1.4 A PERSONAL STATEMENT ABOUT THIS RESEARCH

According to Audi (2003) the nature of the inferential processes in which one belief is formed on the basis of other beliefs, is a major issue in research, along with the way those processes can extend justification and knowledge. Usually, what is concluded from inferential processes is in some sense derived from something else that is believed. However, through making inferences and through forming beliefs that are reason-based, we acquire not only new beliefs, but also new justified beliefs and new knowledge (Audi, 2003).

This research project has been conceived, conducted and written by a Latin American researcher. I am a health worker, a researcher, and a client of the health care system in Chile. I have delivered and received health care in both the public and the private sector. All these aspects have been relevant dimensions of my experience of and approach to health. I have also discussed the meaning of health with many very different groups. All of them observe health as a great social and individual value that is achieved and maintained through a wide range of mechanisms, with different levels of success. What determines and shapes those differences remains a key question to be answered in the Chilean local context.

Immigrants, in particular, have become a more significant population in Chile over the years. Hope of a better life to come seems to be the cardinal motivation mobilizing people all over the world and has, for the first time in over 30 years, made Chile a destination chosen over other Latin American countries. It is my belief that research on this topic will contribute to a broader perspective of migration that has not been considered in previous research in the country. Potential benefits are related to the future development of policy strategies to improve social determinants of health among both the migration population and – secondarily- the Chilean population in the country.

1.5 HOW IS THIS THESIS STRUCTURED?

This research utilises the quantitative approach, through a cross-sectional analysis. The *overarching research question* for this study is what are the living conditions and health status of the international immigrant population in Chile and how do they compare to the Chilean-born population. This question encompasses to 7 specific research questions: (1) what is it known about the migration process and its association to health and to the model on the Social Determinants of Health (SDH)? [Chapters 1 to 4]; (2) what are the demographic characteristics of international immigrants in Chile and how do they compare to the Chilean-born? [Chapter 6]; (3) what are the socioeconomic conditions of this group and how do they compare to the Chilean-born? [Chapter 7]; (4) Do immigrants report having access to the Chilean health care system and how does this compare to the Chilean-born? [Chapter 8]; (5) what is the health status (recent and chronic conditions) of international immigrants in Chile and how does it compare to the Chilean-born population? [Chapters 9 and 10]; (6) what are the living conditions and health status of those who preferred not to report their migration status in the CASEN survey 2006, and how do they compare to the international immigrant population? [Chapter 11]; (7) how do the key findings from this research contribute to the current knowledge of immigrants in Chile and what are their potential policy implications in this country and Latin America? [Chapter 12]. These research questions are also mentioned in Chapter 5 in the methodological approach.

The positivist perspective that rests at the base of this study (Crotty, 1998) will complement the qualitative research that has been recently conducted among the immigrant population in Chile that will be described later in this thesis (Amador, 2010; Nunez-Carrasco, 2008; IOM and MINSAL 2008a, IOM and MINSAL, 2008b). In addition, theoretical models and current evidence presented in the literature review (Chapters 1 to 4) will provide a context for the research questions and data analysis that will be developed later. The theory and evidence collected in this thesis will support the final discussion and implications for local strategies to improve the health status and SDH of the growing immigrant population in Chile. This thesis is organized in two major sections. The first introduces the background and methodological approach, which includes narrative reviews of the international literature (first four chapters, including this introduction) and a fifth chapter on the general methodological approach. The second part of the thesis contains specific methods, findings, discussion and final implications (seven separate chapters).

The first *general background section*, encompasses five chapters. The introduction corresponds to Chapter 1. Chapter 2 is a literature review of general aspects of migration in the world and in Chile in particular. Chapter 3 describes current knowledge on the

relationship between migration and health. Chapter 4 completes the background section by describing the relationship between migration, health and the model of the SDH. Chapter 5 provides a broad methodological approach to this thesis. It describes the research questions and the materials and methods that are used to analyse the living conditions and health status of the international immigrant population in Chile. It should be noted that most of the literature review included in this first part of the thesis provides a *general overview* and does not tackle in detail the literature that is required to adequately cover the specific research questions of this thesis. Instead, the second half of this thesis provides a succinct literature review for each of the results chapters. This structure was chosen to create more coherent chapters in the second part of the thesis, as they cover a wide range of SDH. Nonetheless, the first part of the thesis describes the general issues related to migration, health and the SDH of international immigrants, and it also clarifies what I was unable to explore in this particular study, mainly due to data limitations.

The *second part* of the thesis is related to *specific research questions, results of analysis and their discussion*. Chapter 6 describes the demographic characteristics of the immigrants and compares them with the Chilean-born. Chapter 7 addresses the socioeconomic circumstances of the international immigrants in Chile. Chapter 8 describes the access to, need and use of the Chilean health care system by immigrants and compares them to the Chilean-born. Chapters 9 and 10 describe the health status of immigrants, the differences within subgroups in the international immigrant population and the differences with the Chilean-born population. Chapter 11 briefly describes the characteristics of those that preferred not to respond to the question on migration status in this survey and finally, Chapter 12 provides a broad discussion of the key results of this thesis and their implications in Chile and the Latin American region.

In addition to the main document (Volume 1), this thesis is complemented with a second volume, the *Appendix Book*, Volume 2, divided into 12 sections, most of which match the chapters from Volume 1. The main purpose of the *Appendix Book* is to further develop specific methodological techniques used throughout this thesis, that due to their extension and detail were removed from the main document. All additional information in the main document that has been moved to the *Appendix Book* is mentioned whenever relevant throughout this volume. Briefly, section A1 corresponds to the CASEN 2006 questionnaire (available in Spanish only), section A2 refers to PhD related abstracts presented at international conferences with peer review committees while conducting this programme, section A3 displays PhD related publications and other documents that have been produced from this research, and section A4 presents the four main models described in the literature on the relationship between the Social Determinants of Health (SDH) and health.

Sections A5 onwards are closely related to each chapter from the main document. Section A5 presents a detailed description of the variables included in this thesis (related to chapter 5 on the methodological approach), section A6 includes the tables from chapter 6, section A7 displays tables and additional methodological information from chapter 7 related to cluster analysis and principal component analysis (PCA), section A8 presents tables and figures from chapter 8, section A9 includes tables and Goodness of Fit tests (GOF) from chapter 9, section A10 displays tables and additional methodological information from chapter 10 related to factor analysis and generalised linear models (GLMs), section A11 includes tables from chapter 11 and the final section A12 presents an overview of key results from this study from a brief PowerPoint presentation and additional methodological discussion from chapter 12.

CHAPTER 2

MIGRATION IN THE WORLD AND IN CHILE

The case of Peruvian Immigration in Chile

“The busy Cathedral Street near downtown Santiago’s “Plaza de Armas” is a popular meeting point for Peruvian immigrants in Chile. The sector also boasts the on and off presence of cops shutting down the area’s most prominent illegal activity: cooking...”

Padre Hurtado Radio, Chile, 2009

Summary Box 2

What research question is included in this chapter?

What is it known about **the migration process** and its association with health and the model of the Social Determinants of Health (SDH)?

This chapter particularly refers to the first part of this research question: what is it known about the migration process.

What is already known?

Migration is a complex phenomenon that affects the entire world and represents one of the major opportunities for economic, social and cultural integration.

What does Chapter 2 add?

- There are several definitions, representations and theories of migration in the international literature. They highlight different dimensions of this complex phenomenon. Of particular relevance to this study is the one that describes the migration process in the context of globalisation and its effects on health.
- Migration to Chile is not as large as in high-income countries, but it has been significant to economic growth and services’ innovation. Governmental reports indicate that immigrants are mostly young, educated and in search of job opportunities. Information about undocumented immigrants is mostly not known.

Overview

This chapter is a narrative literature review of general aspects of migration in the world and in Chile. It introduces the reader to the following chapters, related to the health consequences of migration and their relationship to the SDH. It is intended to give a broad, narrative description of the main issues concerning international migration, not only in relation to empirical research and theories that explain the different reasons and consequences of migration.

Introduction

Migration affects the entire world and represents one of the major opportunities for economic, social and cultural integration. This chapter is a broad narrative review of the main issues concerning migration as reported by the international literature, and is organized in seven sections. The first describes the complex concept of migration and how it should be understood as a process rather than as a simple static phenomenon. The second section describes the existing classification of migration according to different authors' views. The third and fourth sections give major reasons for and characteristics of migration around the world. These two points strengthen the idea that each continent, each country and even each area inside a country might have different migration patterns, mediated by cultural, social and political variations from one geographical location to another. In particular, it highlights the mixture of immigrants that can be found worldwide in terms of their demographic characteristics and socioeconomic conditions.

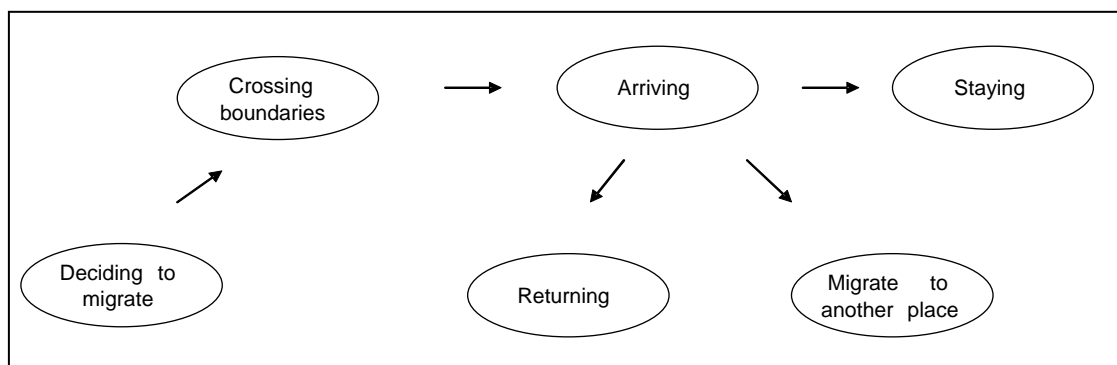
The fifth section describes the most relevant theories of migration discussed in the international literature. Four theories are described, which complement one another in order to give a broader perspective of the migration process. In the sixth section, the history of recent international migration in Chile is described. Migration policies are an emerging issue in Chile; they have been recently created but require further discussion and development. The seventh section discusses several well-recognised limitations and challenges in the study of international migration.

2.1 THE COMPLEX CONCEPT OF MIGRATION

The United Nations (UN) defines an international migrant as a person who lives outside their usual country of residence for at least one year (UN, 2003; MacPherson, Gushulak and MacDonald, 2007). The UN estimated there were 200 million international migrants in 2005, not including those who migrated over different regions or provinces inside the same country. This estimation of the number of international migrants is equivalent to the fifth most populated country in the world, Brazil. In other words, one in every 35 people in the world is an international immigrant (UN, 2003).

Definitions of migration are complex and diverse, including different possible stages: deciding to migrate and leaving; crossing boundaries (also defined as *trespassing* boundaries); arriving; staying; returning or moving to another place (Stefoni, 2001; Koser, 2007). Figure 2.1 summarizes these stages of the migration process. *Leaving* is usually driven by the hope of better opportunities and development (e.g. economics, politics or war). The decision making process of migration usually takes into account multiple reasons for staying and for leaving, such as individual interests, family and friends' opinions, and knowing others who have already done it (Stefoni, 2001).

As briefly mentioned in Chapter 1, the migration process implies the experience of *crossing frontiers*. Geographic boundaries are one aspect of migration. The other is the symbolic frontier between one community and another, which are separated by cultural differences. Experiences of crossing each frontier –the geographical and the cultural- may occur at different times and may involve different meanings (Stefoni, 2001). *Arriving* in a foreign country is not always a lonely experience, as family members and friends may receive the migrant in the host country. Moreover, economic shortcomings might motivate an immediate effort towards social and labour integration. Finally, there are different opinions about when migration actually ends, whether when *returning* to the home country or when *staying* in the receiving country, by obtaining local citizenship (Stefoni, 2001). As illustrated by the UN definition of migration, this concept has had a traditional emphasis on its international and individual dimensions, but movements of groups and communities have occurred in the past and continue to happen. Moreover, migration consequences affect other groups of people than the ones who migrate (Stefoni, 2001). The understanding of migration might also vary through different theories that have emerged to explain its causes and consequences.

Figure 2.1 Stages of the migration process

2.2 CLASSIFICATION OF MIGRATION

There are different types of migration connected to the reasons why migration occurs. These categories are complex and varied, and might overlap, depending on the perspective of the author. In addition, people might change their type of migration category several times, so there is not always a clear pattern to describe and analyse. Classifications of migration, including different authors' perspectives, are:

1. Voluntary versus forced migration: voluntary migration is mostly related to economic factors, while forced migration, also referred to as “asylum seeking” (Buchan and Perfilieva, 2006), is mostly related to political conflict and war (EESC, 2007; Mladovsky et al., 2007). Stilwell et al. (2003) have added the classification of “externally displaced persons”: those who are not recognized as refugees but who have a valid reason for leaving their country of origin (such as famine or war).
2. Legal versus irregular migration: legal migration occurs in most cases, at least for a specific period of time, and is associated with work opportunities, study, refuge and tourism. Expiring visas and formal undocumented migration rates (with individuals usually termed “irregular immigrants”) are not well counted, but have been estimated at 30 to 40 million people every year (EESC, 2007; Mladovsky et al., 2007; UN, 2003; Chappel, Vickers and Evans, 2000).
3. Temporary versus permanent migration: the most frequent reasons for temporary migration are short-term work, tourism, and study. Permanent migration is mostly related to individual economic development and work opportunities. However, a person might consider temporary migration, yet finally settle in the host country (EESC, 2007). Stilwell et al. (2003) also introduced the distinction between “temporary migrant workers” (semi or untrained temporary workers) and “temporary professional transients”

(skilled workers who move often with international firms). Overall, there is complexity in the dimension of “time” when considering the migration process.

4. International versus internal migration: in both cases economic reasons are predominant. International migration, however, means crossing a country’s frontiers and the final destination is a different nation in the same region or a very distant location. Internal migration indicates movement inside the country, which can be rural/urban, rural/rural, and urban/urban (EESC, 2007).
5. “Circular migration”: defined as the permanent movement of migrants to and from homelands and foreign places of work, with the expectation of benefits of economic growth to both countries and the reduction of some negative consequences of migration through the loss of workforce and capital (EESC, 2007). In a way, temporary migration could also be considered as circular migration, if it recurs over time, without a clear ending.

2.3 REASONS FOR MIGRATION

Reasons for migration are, in almost every case, related to the need to improve a particular situation. Individual, family or community reasons are intimately linked with broader local and international issues, such as the economic, political or social context. In every case, expectations emerge as a significant dimension of the decisional making process of migrating. Expectations, the act of looking forward in anticipation of the future, are understood as the process of evaluating the chances for future attainment of valued goals in the home and community (*stay* decision) versus the alternative locations (*move* decision) (De Jong, 2000). They also suggest that social norms, traditions and opportunities from the local and the foreign location, are taken into account when deciding to migrate (De Jong, 2000; Ritsila and Ovaskainen, 2001).

In the 1970s and 1980s, two particular determinants of migration were discussed in the international literature- the emphasis on family and life-cycle aspects and the application of equilibrium versus disequilibrium migration theories (more detail later in point 2.5) (Greenwood, 1985). Other reasons for migration reported in the literature are:

1. Economic and work reasons: by far the most commonly mentioned reasons for migrating in the literature, and strongly connected with work opportunities and income improvements in the foreign country (Buchan and Perfilieva, 2006; Rodriguez and

Gonzales, 2006). Interactions between employment and migration have been reported since the early 70s (Greenwood, 1985) and have become the central aspect of debate about migration.

2. Educational reasons: less frequently reported than economic reasons, but indirectly linked, educational motives usually relate to a hope of labour and income improvement over time (Greenwood, 1985; De Jong and Gordon, 1999). Moreover, as reported by Ritsila and Ovaskainen (2001), highly educated people are more prone to move than the rest of the population. A gradient of migration has been observed through levels of education in some countries, the highest being among the most educated quintile.
3. Family reasons: women and children have historically been affected by men's migration, as men have represented and still represent the head of the family in several countries (Pedraza, 1991). Previous findings support the idea that family concerns are a very important aspect to be considered in the migration decision-making process (Greenwood, 1985; Polachek and Horvath, 1977; Del Rey, 2007). According to Grasmuck & Pessar (1991), the household is the social unit that makes decisions about whether migration will take place, who in the family will migrate, what resources will be allocated, whether migration will be temporary or permanent, and others.
4. Life-cycle reasons: a number of life-cycle considerations have been reported as relevant when deciding to migrate, for example, marriage, divorce, birth and raising of children, and retirement (Greenwood, 1985; Del Rey, 2007). Being married and having an employed wife in the family, for instance, have been reported as negatively associated with the probability of moving (Graves, 1979; Sandell, 1977).
5. Social services' reasons: expected improvements in the health services and other social services in a foreign country have been described as relevant when deciding on which country to migrate to, especially from poor countries or poor areas to developed ones (Martine, Hakkert and Guzman, 2000). The current cases of Canada and Spain, with their health care systems, are good examples of this phenomenon.
6. Gender reasons: some authors have proposed that men and women have different reasons for migrating, as a consequence of separated gender roles and the underlying hierarchy (Grieco and Boid, 1998). In several cultures, women would have had less opportunity of participating in the decision to migrate, which would depend more on other family issues. Other authors and recent data, however, have shown that women

have been increasing their migration rate in recent years, as a consequence of the globalization process (Hugo, 1993; UN 2002).

7. Political/war-related reasons: political refugees are historically supposed to be protected and supported all over the world. This reason for migration usually implies the movement of groups of people, often complete families that need to leave their country of origin to protect their lives (UNHCR, 1995; UNHCR, 1997). Repercussions of political refugees' acceptance in a foreign country might be positive or negative, but certainly produce a significant effect in both the issuer and the receiver country (UNHCR, 1995; UNHCR, 1997). A remarkable and recent example of this is the large number of refugees during the 1990s in Europe moving because of war, and estimated to be 10.7 million people in 1995 (UNHCR, 1995; UNHCR, 1997).

8. Geographical reasons: described as topological, climate, and environmental amenities, such as mountains, seashore, sunshine and pollution (Greenwood, 1985). Some previous literature has suggested, for example, the relevance of climate variables when taking into account aggregated variables (such as income levels and unemployment rates) (Greenwood, 1985). In that sense, the regional and climate characteristics of both the origin area and the destination area would have a significant effect on migration behaviour (Ritsila and Ovaskainen, 2001). Others, like geographical proximity and shared language, customs and educational curricula may also affect the choice of the country of destination (Buchan and Peflieva, 2006; Sriskandarajah and Drew, 2006).

2.4 CHARACTERISTICS OF MIGRATION

2.4.1 General approach: the most frequent characteristics of people who migrate

Migration affects the entire world (EESC, 2007) but occurs at a different rhythm in each continent and in each country around the world (Martine, Hakkert and Guzman, 2000) and is deeply connected to the globalization process. Most of the consequences of migration depend on particular characteristics of the individuals who migrate. According to the literature, in recent years migrants have tended to be highly educated; women and young people in some regions and countries (see Table 2.1). This is of particular importance to Chile, since previous statistics in the country have highlighted the mixed patterns of international immigrants, especially in relation to their demographic and socioeconomic conditions, including their employment status and type of occupation. Further description of this issue is presented later in section 2.6.

Table 2.1 Main characteristics of people on the move around the world

Characteristic	Description
Highly-Educated	It is often suggested that those who migrate are not the poorest individuals in the issuer country, but those with higher education (Ritsila and Ovaskainen, 2001; Buchan, 2007) and economic and social capacity to develop the movement to another place. However, the rate of highly qualified immigrant professionals and technicians has tended to decrease in some countries, such as the US (Brimelow, 1996; Pizarro and Villa, 2005). In addition, being “highly educated” in a poor country is not the same as being “highly educated” in a developed one. Income and social class differences between countries need further attention for a better understanding of migration processes all over the world.
Women	It is estimated that the proportion of migrant women worldwide has been stable over time, around 49% (EESC, 2007; Martine, Hakkert and Guzman, 2000; UN, 2002). However, there is a clear feminization of migration in certain continents and countries, including women who migrate alone (autonomization of women migration) (Koser, 2007). During the 1970s and 1980s in Latin America, women migrated in a higher proportion than men, but more recently there appears to be a growing balance between genders, as more men have migrated to the US. Nevertheless, excluding the US, there is a clear feminization of migration in the South American region (UN, 2002; Pizarro and Villa, 2005). A complex gender issue related to migration has received especial consideration in the past, which is the migration of women for sexual exploitation. Numerous publications and international organizations have discussed this issue, and have developed a particular framework for its understanding.
Young active labour force and students	People who migrate tend to be young (Greenwood, 1985) and healthy (Lu, 2008), for both temporary and long-term time periods (Buchan, 2007). Those unemployed tend to migrate more than the employed (Greenwood, 1985). Age emerged early on as a relevant variable associated with migration in cross-sectional research (Sandell, 1977). However, some recent longitudinal data reports that the relationship between age and migration disappears when economic and family reasons are included in the analysis in some populations (Sandefour and Wilbur, 1981).
Other characteristics	Other reported dimensions of people who migrate are that they tend to be connected to others who have also migrated to the foreign country, because of job opportunities, family, friendship or refuge. Da Vanzo (1978) adds another four general characteristics of migration: (1) the more distant the move, the higher the probability of repeated movement;(2) when unemployment motivates migration, return moves are more likely; (3) households heads who are young tend to return soon after their initial move; and (4) the best educated are likely to move on quickly.

2.4.2 The issuer society: brain drain and remittances between more developed and less developed countries

There are several consequences of migration in the issuer (sending) and the receiver (host or receptor) country. Even though these consequences are well described in some of the countries that are directly affected, it is also known that their repercussions might involve other countries in a broader “global” dimension. Therefore, this division is possibly inexistent, as these factors affect both countries simultaneously. Moreover, a single nation is often to some extent both an issuer and a receiver country.

With regards to the *Issuer Society* in particular, there are two main consequences described in the literature, the “Brain drain” and “remittances and hometown associations”. It should be noted that the issue of remittances will not be explored in this study, because questions related to it were not included in the CASEN survey.

2.4.2.a) Brain drain

Brain drain is one of the most well described phenomena of the migration of professionals since the late 1970s (Martine, Hakkert and Guzman, 2000; Mejia, Pizurki and Royston, 1979). It has been defined as the international recruitment and migration of high skilled workers (especially health workers) as a consequence of globalization. Medical doctors, nurses and other health workers have taken the opportunity of moving across national borders “in pursuit of new opportunities and better career prospects” (Buchan and Perfilieva, 2006). In particular, there may be greater opportunities for high skilled women from poor countries, where women still face unequal access to tertiary education (Dumont, Martin and Spilevogel, 2007). In the UK in 2006, about one in three physicians in the NHS were from another country (Buchan and Perfilieva, 2006), and as Sveinsson stated in 2009 “in fact there are more nurses from Malawi working in Manchester alone than there are in Malawi.”

The brain drain rate rose between 1990 and 2000, as the worldwide average emigration rate of skilled workers increased by 0.75 percentage points over that period (Docquier and Marfouk, 2004). Since this time, a large amount of research has been developed in relation to this phenomenon, and especially how it impacts upon less developed countries, such as the Philippines and others from the Caribbean and sub-Saharan Africa (Buchan and Perfilieva, 2006; Editorial, 2007; Pritchard, 1999).

Countries that lose scarce skilled staff suffer a severe negative impact on their health care system (Buchan and Perfilieva, 2006; Buchan, 2007). As a consequence, several

international debates have developed in order to analyse the question of whether recruiting health professionals from developing countries is ethically justifiable. However, as mentioned before, being “highly educated” in a poor country might not be the same as being “highly educated” in a developed one. Income and social class differences between countries need further attention for a better understanding of migration and the brain drain process all over the world. A reverse effect has also been described (“reverse brain-drain” or “brain gain”), but on a smaller scale. The brain drain has been reported as a notable positive contribution to the transition to a democratic society and market economy in Europe in the 90s (Brimelow, 1996) and as a “quick fix” solution to the health-professional skill shortages in some countries (Buchan, 2007). However, it has not been clearly stated that positive aspects of brain drain overcome its severe negative consequences (Dumont, Martin and Spilevogel, 2007), as “monetary remittances from diaspora communities cannot counteract the double burden of regional disparities in health-care resources and in health needs” (MacPherson, Gushulak and MacDonald, 2007). Moreover, there is a need to improve the available data so that the monitoring of trends in flows of health workers can be more effective, along with monitoring the effectiveness of various policy interventions that are trying to regulate international recruitment.

With relation to the brain-drain of health workers phenomenon to Chile, some insight into its magnitude can be explored by analysing the educational level of immigrants in Chile, but will not be the focus of attention. Nonetheless, I recently conducted a specific analysis to explore this phenomenon in Chile and it can be found elsewhere (Cabieses and Tunstall, 2011 in press). This study did not identify a significant brain drain of health workers to Chile, but suggested distinctive patterns of international immigration within Latin America.

2.4.2.b) Remittances and hometown associations

The second relevant consequence of migration in the issuer society is remittances and hometown-associations. They have been defined as private “non market” person-to-person income transfers, often within families and usually of a small amount of money – a few hundred dollars on average (Fellahi and De Lima, 2005; Schramm, 2006). They might appear as a positive consequence of chain migration and as an expression of solidarity between immigrants and their families and societies in the countries of origin (Orozco, 2002; Sinisterra, 2005). Remittances can be a significant part of economic stability in developing countries. For example, it has been estimated that 18-36% of the gross domestic product (GDP) of Nicaragua is from remittances (Orozco, 2002; Martine, Hakkert and Guzman, 2000; Pritchard, 1999). Of Mexico’s GDP, 7.6% is produced by remittances, and over 2 million people live on money received from the US (Martine, Hakkert and Guzman, 2000;

Consejo Nacional de Poblacion, 1999). Studies in Mexico and El Salvador have reported that remittances improved national savings and indirect productive benefits, like the survival of small companies (Durand, Parrado and Massey, 1996; Chami and JahJahm 2006).

There are disagreements, however, over whether remittances really benefit vulnerable groups or contribute to reducing poverty. According to some authors, it has not been clearly defined what the family income would be if remittances did not exist, as it has been reported that most remittances are spent on basic needs and not in productive investment (Martine, Hakkert and Guzman, 2000; Consejo Nacional de Poblacion, 1999). Moreover, it has been stated that families who receive remittances in the issuer countries tend to reduce or abandon their work, which creates dependence on remittances (Joskish, 2002; Taylor, 1999; Conway and Cohen, 1998; Rubenstein 1983). This discussion continues to be a controversial debate, but beyond positive and negative consequences of remittances and hometown associations, these phenomena are clear examples of the great complexity involved in the migration process and its numerous implications.

2.4.3 The receiver society: selective policies and discrimination in the context of economic liberalism and globalisation

Similar to the main issues in issuer countries, the aspects included in this section are not analysed in this research. However, they are significant dimensions to discuss, as they give a valuable context to migration patterns in Latin America.

In relation to the *Receiver Society*, there are two main consequences described in the literature - “Emerging selectivity policies” and “Discrimination”. These two issues are accepted by some and rejected by others. Moreover, there seems to be no clear division between them, as selectivity policies might be caused by and produce discriminatory attitudes. International policies in developed countries are becoming more selective about the type, competence and length of stay of immigrants (see for example recent changes made during Prime Minister David Cameron’s leadership to immigration policies in the UK). Even though all over the world immigration is required for the workforce, boundaries are often open to highly qualified professionals and some political refugees, but closed to others (Martine, Hakkert and Guzman, 2000).

International immigrants, despite often being of economic value, are not welcome in several receiver countries. This feeling tends to increase when immigrants belong to a different ethnicity and have a different language, religion, appearance or habits (Martine, Hakkert and Guzman, 2000). Immigrants in Chile are also frequently perceived as competitors for

employment and use of health care services by the local population (Mahroum, 2000; Massey, 1999). Many of these perceptions are, however, not a fair expression of reality. In terms of employment, for example, immigrants tend to take places that are low-social status, poorly paid or require manual and physical effort, and that are already vacant. In many cases, immigrants are over-qualified for the job they obtain and the brain drain of high skilled immigrants do not necessarily match with their occupational opportunities in the receiving country. Higher costs associated with immigrants' use of social services need to be seen relative to their productivity (Martine, Hakkert and Guzman, 2000; Finney & Simpson, 2009). Finally, it must be highlighted that migration itself should not necessarily imply only a negative effect. It also represents a significant contribution to cultural integration and respect for human rights principles all over the world (Simon, Moore and Ungar, 1994).

2.5 THEORIES OF MIGRATION

“Migration theory, once a stepchild of demography, has emerged as an important focus of scholarship in recent years, perhaps because of the increasing policy salience of internal and international population movement...”

(De Jong, 2000, p.34)

This fifth section describes the most relevant theories of migration discussed in the international literature during recent decades, in chronological order of appearance. Four theories are described: push and pull theory; cumulative causation theory; global theory; and behavioural theory. Each of them adds a further understanding of the complexity involved in the migration process.

2.5.1 Push-and-pull Theory

This individual micro-level approach to migration is one of the first theories developed to explain causes and consequences of migration. It is related to the idea that migration is affected by demographic characteristics and growth, occurring in two different countries (Martine, Hakkert and Guzman, 2000). It was proposed by Lee in 1966, who suggested that high demographic growth rates were associated with migration to another country, while reduced growth rates were related to immigration (Martine, Hakkert and Guzman, 2000). One example of this is migration from Europe to the US during 19th century, as some authors proposed that the demographic explosion in Europe generated waves of migration 15 to 20 years later to America (Martine, Hakkert and Guzman, 2000; Easterlin, 1961; Faist, 2000). According to Lee's theory, focused on the individual migrant's decision to migrate, there are “push” and “pull” factors that hold and attract or repel people, as well as intervening obstacles (distance, physical barriers, immigration laws, cost), the influence of personal traits

(cycle-life stage, contact with earlier migrants) and the effect of transitions (marriage or retirement) (Pedraza, 1991; Easterlin, 1961). Table 2.2 describes some push and pull factors in migration and international recruitment of health workers, as described from Buchan and Perfilieva (2006).

Of particular interest is the underlying demographic and economic balance suggested by this theory, mediated by growing gradients or differences in demographic density (named during the 70s and 80s as “equilibrium” and “disequilibrium” adjustments) (Greenwood, 1985). Countries need each other and support their demography in balance, and consequently, their economic and social conditions. Economic growth depends, along with other factors, on having a significant working age population. The US for example, currently receives immigrants from Asia and Latin America, and would require 7% annual growth to support and provide work for this large number of immigrants. However, foreigners actively contribute to US economic growth (Mexican Ministry of Foreign Affairs and US, 1998). The same has been stated for the UK and the Caribbean (Martine, Hakkert & Guzman, 2000; Espenshade, 1995a; Espenshade, 1995b). According to the United Nations (2000), European countries need at least 3.23 million immigrants every year between 2000 and 2050 to maintain the size of workforce age groups (15 to 64 years old) similar to the year 1995.

The history of migration tends to support push-and-pull theory (Martine, Hakkert and Guzman, 2000), but some limitations are recognized. Individuals do not normally migrate because of demographic density differences between their country and another, but for other reasons (Martine, Hakkert and Guzman, 2000; Zlotnik, 1995; UNFPA, 2005). In addition, there is no clear or unique connection between demographic differences and global development as a reasonable major cause of migration worldwide. Apparently, work opportunities matter more than demographic considerations (Massey et al., 1987).

Table 2.2 Push and pull factors on migration for health workers (Buchan & Perfilieva, 2006)

<i>Push factors</i>	<i>Pull factors</i>
Low pay	Higher pay and opportunity for remittances
Poor working conditions	Better working conditions
Lack of resources	Better resourced health systems
Limited career opportunities	More career opportunities
Limited educational opportunities	Provision of post-basic education
Economic instability	Economic and political instability Others: aid work, travel opportunity

2.5.2 Cumulative Causation Theory

This dynamic theory is based on the “chain migration” phenomenon (Martine, Hakkert and Guzman, 2000; Greenwood, 1985). This theory states that every migration act alters the social context of societies involved, which will mediate future decisions related to migration. These social context alterations would tend to facilitate migration movements over time (Martine, Hakkert and Guzman, 2000). According to this theory, every new migration reduces the cost of future migrations and also reduces the probability of a second migration from the same community or individual who has already migrated. At the same time, every new migration creates a change of values and cultural perspectives that continue to facilitate future migrations from other communities or individuals (Martine, Hakkert and Guzman, 2000). The tension between the factors favouring and those reducing the chance of a new migration is at the base of this theory.

As a consequence, immigrants develop complex social networks used to support the initial adaptation period and later migrations. Old immigrants become experts on the foreign country, and share their knowledge with recent migrants. This phenomenon generates common values and social cohesion among immigrants. Immigrants’ informal supportive social networks are based on family and friendship relationships, and develop communitarian ethics to help each other (Martine, Hakkert and Guzman, 2000). The solidarity culture that emerges through chain migrations could also positively affect the issuer societies, as they might promote the development of their countries of origin, such as the already mentioned “hometown associations” (UN, 2000).

This theory emerges as a relevant alternative dynamic migration versus a static perspective. One criticism that could be raised by this theory is that it undervalues circular migration and the consequences of returning to the issuer country. In addition, it does not discuss the effects of migration in the receptor society, and their relation to the immigrants’ process of adapting and integrating in the new country (Martine, Hakkert and Guzman, 2000).

2.5.3 Migration through Globalisation

Globalisation has been described as the major cause of migration worldwide (Martine, Hakkert and Guzman, 2000). Although it is mostly an economic process, contemporary globalisation is multidimensional and a more complex phenomenon than an earlier historical period of globalisation (1870-1914), in which trade and colonisation were the main channels of influence (Schrecker, Labonte and De Vogli, 2008; Labonte and Schrecker, 2007a; Labonte and Schrecker, 2007b; Labonte and Schrecker, 2007c). Globalisation has been defined as the intensification of social relations, which link distant localities in such a way that local happenings are shaped by events occurring many miles away and vice versa (Giddens, 1990). In this sense, some authors have stated that migration does not occur between unconnected countries, but between those that experience rapid economic change and the growth of global commercial relationships (Martine, Hakkert and Guzman, 2000; Massey, 1990). One of the first authors to describe this approach to migration was Massey in 1987, in an analysis of Mexican migration in the United States that showed that international migration was originated historically by transformations in social and economic structures in the issuer and receiver societies (Massey, Alarcon, Durand and Gonzalez, 1987).

Figure 2.2 summarizes migration processes from the global perspective, adapted from Stefoni's explanation (2001). This figure stresses that the major underlying issue of global migration is the unsolved tension between *social isolation* and the efforts towards *cultural integration* in a multicultural society, which creates several difficulties for both the migrant population and the receiver society. The capitalist economy and international division of work are the main cause of this tension, as economic disparities drive population movement (Meyer, 2000). In this sense, movements in location produce the need for tolerance and integration of what the receiver country perceives as different. In addition to this viewpoint, powerful countries develop policies to recruit workers from developing or weaker countries, but do not necessarily develop simultaneous policies concerning fair dealing with those less developed countries that lose their workforce. Migrants tend to move to developed countries all over the world, but not to return to their countries of origin in the same proportion.

Globalisation itself is not the single cause of the existing negative effects of migration. Underlying cultural differences between societies –and the lack of acceptance of what is not considered the normal pattern of being or living- could also be determining those negative effects. Despite current theoretical and empirical support for this global explanation of migration (Hugler, 2008; Wimmer and Schiller, 2002), I have observed some minor limitations in Stefoni's particular approach. Her viewpoint does not include the complexity of crossing geographic and political boundaries, it does not consider circular migration, and it does not discuss consequences of migration on the political international implications for

relationships between the two nations involved and other countries that might also be implicated during the global process.

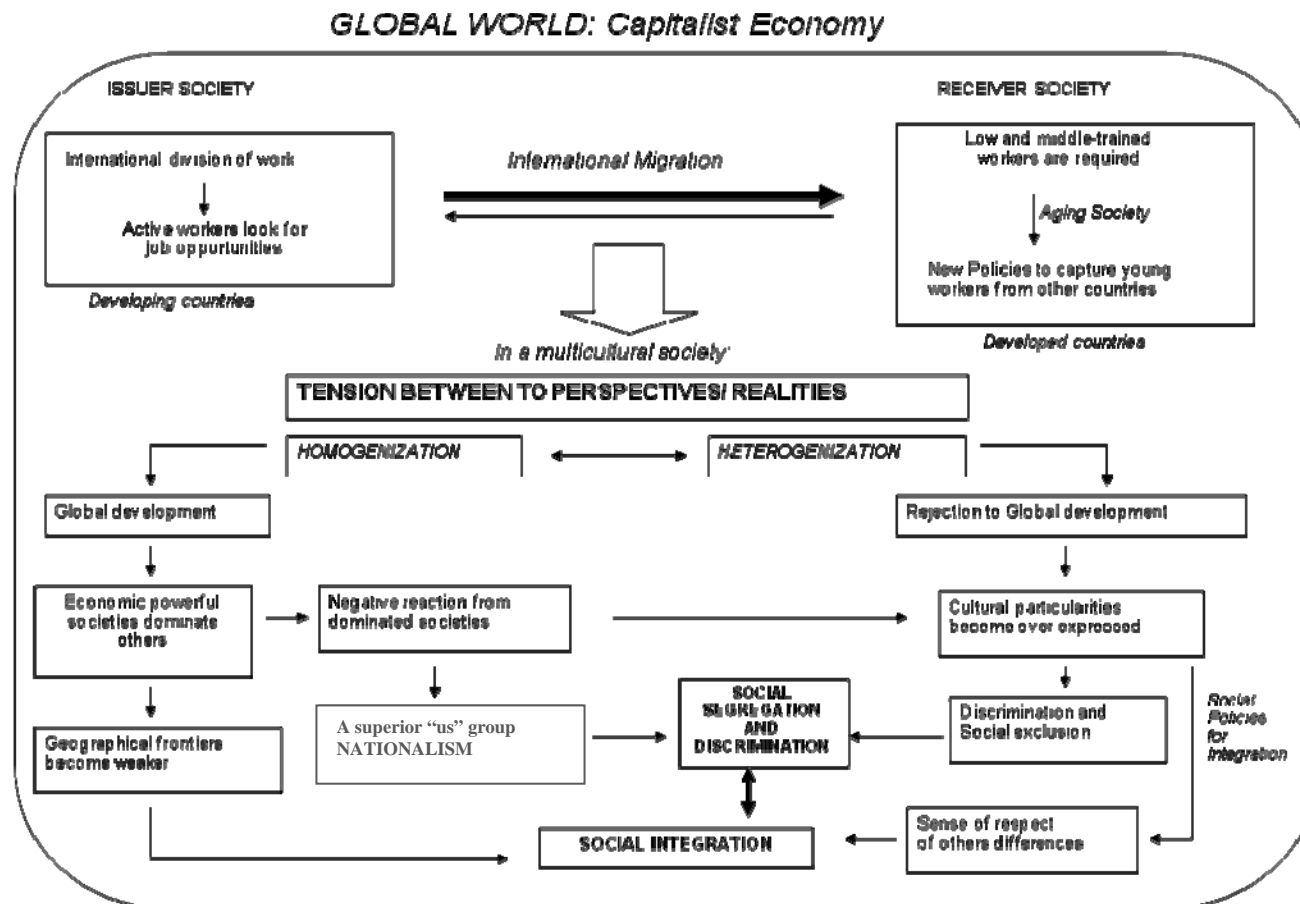
Greater complexity needs to be added to this global approach. The theory considers some assumptions from previous network migration theories, such as the earlier push-and-pull perspective. In this sense, Greenwood (1985) has proposed three particularly important dimensions of the globalisation approach to migration including spatial balance: (1) the emphasis on individual decision making at a microeconomic level; (2) the consideration of economic equilibrium perspective that assumes reasonably perfect information and mobility; and (3) the emphasis on the importance of location-specific amenities, which follows from the equilibrium notions. These ideas by Greenwood (1985) append two further aspects of global migration. One, the assumption that migration is caused by a change in demand for *non-traded goods* (as relevant to individual utility functions), and that the probability of migrating is a function not only of the level of certain movement costs, but also *changes* in the absolute values of exogenous variables that caused change demand for non-trade goods. Fisher, Reiner & Straubhaar (in Hammar, 1997) criticized this microeconomic perspective, supported in part by migrant network theoretical frameworks (cumulative causation theory). They argued that it has limitations in capturing the dynamics of migration decision making, because the most classical economic model explains the details and dynamics of migration flows. As they stated, the classical economic model is distant from reality, since it bases its explanation of migration on wage differences and assumes that a homogeneous economic person makes decisions under conditions of perfect certainty, no costs, perfect information and the absence of risk. In addition, this classical model fails to explain why most of world's population remain in their country of origin (De Jong, 2000). In other words, the economic Globalisation perspective is perceived by some as a static view of migration, instead of a dynamic one like push-and-pull theory, cumulative causation theory and behavioural theory.

Despite theoretical limitations, the globalisation perspective is considered a strong theory of major reasons and consequences of international and even internal migration inside a country. Several facts all over the world support the idea that globalisation, as a whole, should mean equal and fair growth, but has rather strengthened certain disparities around the world. As an example, most Latin American countries remain non-developed countries. Their local economies have not been able to grow and connect to other powerful countries as equals, and therefore commerce in this region remains small and weak compared to others (CEPAL, 2006; Villa and Martinez, 2001). At the same time, multinational agencies contact them for human resources for manual work, which is poorly paid, while workers from these poor countries move to developed countries in the hope of improving basic economic conditions (Martine, Hakkert and Guzman, 2000). Differences between strong and weak

economies continue and capital flowing to several undeveloped countries, even though significant, does not reduce disparities. On the other hand, despite the fact that globalisation ideology is based on freedom to choose and competitive markets, the only resource that does not move freely through demographic and political boundaries is the human being. In many cases, the migration process is mostly determined by the force of laws and policies that come from powerful developed countries (Martine, Hakkert and Guzman, 2000) (as explained previously in point 2.4.3). Migration issues could act as a barrier for globalisation, in spite of their political rationale. Therefore, it has been proposed that globalisation might never reach the most vulnerable and weak countries in the world and disparities will continue to grow (Martine, Hakkert and Guzman, 2000; Massey, 1999; Borjas, Freeman and Katz, 1996). It is certainly *not* being suggested that globalisation is a flawed ideology, but the way it has developed so far needs some reflection. Countries must urgently attend to and solve the international and national inequalities related to the globalisation process that appear to increase over time (more description later in Chapter 4).

Significant debate has been found in the international literature on the consequences of globalisation on health. While some authors have supported the benefits of globalisation on populations' health through economic growth and, supposedly, direct reduction of poverty (Feachem, 2001; Dollar and Kraay, 2004), it is accepted that globalisation (with its flexible free-market neoliberalism, privatisation of state-owned assets and financial deregulation) has had a detrimental effect on health in most countries (De Vogli and Gimeno, 2010; De Vogli, Gimeno and Mistry, 2009). In this sense, Schrecker, Labonte and De Vogli (2008) describe four "disequalising dynamics" by which contemporary globalisation causes divergence in health outcomes by socioeconomic groups within and between countries: (1) the global reorganisation of production and emergence of a global labour-market; (2) the increasing importance of binding trade agreements and processes to resolve disputes; (3) the rapidly increasing mobility of financial capital; and (4) the persistence of debt crises in developing countries. The linkage between global neoliberalism and health could be both direct (maintenance or increase of absolute material deprivation in a country) and indirect (relative income inequalities and their stress-related psychosocial factors, poor social policy investment, and a "democratic deficit") (see De Vogli et al. 2009). Further details of these mechanisms appear in Chapter 4, section 4.1.

Figure 2.2 Diagram of Migration Theory according to the Global Perspective, adapted from Stefoni (2001)*



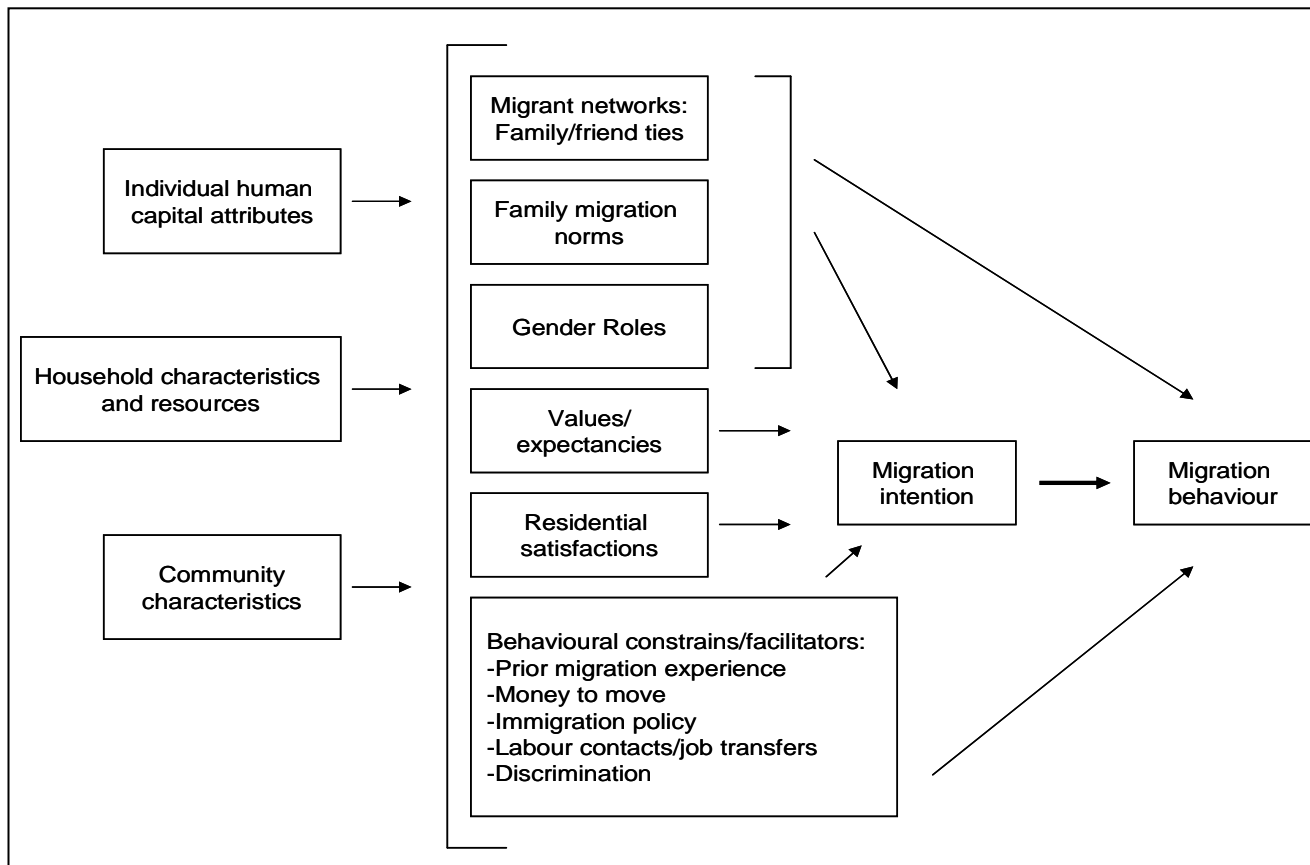
*Figure elaborated by the author

2.5.4 Behavioural decision-making theory of migration

The most dynamic decision-making framework proposed in the literature is the theory of Planned Behaviour, which includes *expectations* as its major component (Ajzen, 1988). This theory states that intentions are a product of social norms –perceptions of what significant others think about the behaviour- and the expectations that one will attain valued goals as a consequence of the behaviour. It also identifies constraints and facilitators that can directly affect the outcome behaviour. After recently adapting this theory to the migration decision-making process, the most relevant proposition is that intentions to move are the primary determinant of migration behaviour, along with direct behavioural constraint and facilitator factors (De Jong and Gordon, 1999). Figure 2.3 shows the diagram developed by De Jong of the migration process according to Planned Behaviour theory (2000).

An additional proposition is that much of the impact of individual human capital, household, and community characteristics on behavioural outcomes might be mediated by subjective expectations about those outcomes. Moreover, De Jong states that “most of the explanatory factors in the less developed countries’ migration literature, such as age, education, marital status, number of dependents, networks, household income, community characteristics, etc., do not have a direct effect on migration when controlling for intentions, migration-related expectations, values, and residential satisfactions” (De Jong, 2000). Despite the consistency of this proposition with some empirical data (De Jong, 2000; Massey, 1999), the author recognizes that it must be restricted to the determinants of migration intentions (De Jong, 2000). This behavioural view of migration adds a strong, dynamic and subjective understanding of *why* people decide to migrate. However, it does not introduce relevant explanations of *how* migration finally takes place nor its consequences over time. Another more recent and less developed behavioural theory of migration is related to the transactional stress model of migration, which includes occupational pressures, social isolation, and family-related problems and their impact on psychological and physical health (Kirkcaldy et al., 2006). This new approach of the behavioural decision making theory of migration, however, needs further analysis for better understanding and possible generalization.

Figure 2.3 Migration's Theory according to Behavioural Perspective. Diagram from De Jong (2000)



2.6 DESCRIPTION OF MIGRATION IN CHILE

2.6.1 A general description of international migration in Latin America

According to estimates from the Latin American and Caribbean Center of Demography (CELADE), the number of international migrants in the countries of the region amounts to about 25 million, representing 4% of the population of the Americas. Of these, about 18 million reside in the USA, four in Latin America and the other three million in the remaining regions. The largest contingent is made up of Mexicans (10 million) followed by Colombia and the Caribbean community. Latin America and the Caribbean provide the largest number of immigrants to the USA and Spain (CELADE, 2008). The Economic Commission for Latin America and the Caribbean (CEPAL) has identified three major migration patterns in Latin America and the Caribbean: (1) Historical immigration into Latin America from overseas between the mid-nineteenth and mid-twentieth centuries, with a strong European component; (2) Intra-regional migration, favoured by socioeconomic developments and structural factors, particularly during the period 1970-1990, which saw the highest rates of migration within Latin America; and (3) South-North migration flows, resulting in the loss of qualified workers in Latin America and the Caribbean, the emergence of immigrant communities, and the development of an economic potential associated with the remittances sent by migrants to their countries of origin (Alvarado and Sanchez, 2002).

The United Nations Educational, Scientific and Cultural Organization (UNESCO) on the other hand, adds that historically, political determinants have been important in influencing migration flows in this region, “with dictatorships and political violence generating flows of refugees”. Most of these flows have recently subsided, as political conditions are more stable, and there have been several mass return movements. Economic factors, such as the liberalisation of trade, the strengthening of international economic agreements, and the persistence of economic inequalities between countries in the region, are now attracting more attention (UNESCO, 1999).

2.6.2 International migration in Chile

Chile has distinctive international migration patterns. In the last two decades Chile has moved from being a migrant issuer country to a receiver country. Despite this, Chile still has a low rate of immigrants compared to other countries (Departamento de Extranjeria y Migracion, 2007).

Statistics show that immigration to Chile is not large in numbers (1.6% approximately of the total population, equal to 258-350 thousand persons), but it has been relevant for services' innovation and economic growth (Departamento de Extranjeria y Migracion, 2007). Until 1982, immigration to Chile was mainly from European, Arab and East Asian countries (Stefoni, 2001). During the last two decades, however, South American and other Asian countries have increased the immigration rate, because of Chile's economic growth and stability (Departamento de Extranjeria y Migracion, 2007). European migrants to Chile have reduced in number since 1960 (Stefoni, 2001). In the last Census, 67.8% of immigrants were from South America (Departamento de Extranjeria y Migracion, 2007), a fact that gained attention from the South American Andean Community (Bolivia, Colombia, Ecuador and Peru) in recent years (Comunidad Andina, 2008).

As mentioned above, Chile has mostly been an issuer country, as 857 781 Chileans live out of the country, representing a ratio of 3:1 Chileans out of the country: immigrants in Chile (Departamento de Extranjeria y Migracion, 2007). During the 1970s and 1980s, this emigrant group was composed of political refugees and highly educated people seeking to improve their living conditions. Nowadays, Chilean emigrants are still mostly high-educated, young and in active in the labour force, similar to that described for international migration (see section 2.4). An interesting aspect of migration in Chile is that is facing "new immigration" patterns described as follows (Departamento de Extranjería y Migración, 2007):

1. Marked Latin American regional immigration in Chile: corresponding to 67.8% of all cases, mostly from Peru (26%), Argentina (22%), Bolivia (6%) and Ecuador (5%).
2. *Andean* immigration since 1996: over 50% of total Latin American immigrants that live in Chile arrived after 1996, especially from Perú, Argentina, Colombia and Ecuador.
3. Labour force immigration in Chile: demonstrated by the small proportion of immigrants less than 15 years old, equivalent to just 18%, and a growing economically active immigration, from 31% in 1992 to 48% in 2002. Reasons for workforce international migration are economical and political, as described previously.
4. Growing non-professional immigration: with a reported reduction of professional and technical immigrants from 64% in 1992 to 45% in 2002, similar to the emerging world trend mentioned previously in point 2.4.
5. Concentration in the capital: 63% of immigrants are resident in the capital of Santiago, 7.8% in the city of Valparaiso (V region) and 7.1% in the city of Tarapacá (I region).
6. Urban migration: mainly for work opportunity reasons.

7. Female migration: coming to work in unskilled/semiskilled manual occupations and domestic services.

As mentioned before in this chapter, international policies are becoming more selective over time about the type, competence and length of stay for immigrants crossing their frontiers. Latin America and Chile in particular have developed important international migration policies since the late 70s (Pizarro, 2002). Efforts have been made to support international migration, earlier because of economic globalisation and later because of human rights considerations. Table 2.3 describes migration policies in Chile from 1973 until the present (Departamento de Extranjería y Migración, 2007). An important aspect to stress is that migration policies related to health have been included only in the recent government of President Ricardo Lagos (2000-2006) and since then by President Michelle Bachelet (2006-2009). Health migration policies are related to three specific aspects, pregnancy, child, and emergency care, all of them within the public health system. Other health issues, concerning prevention and promotion, diagnosis, treatment and rehabilitation are not clearly tackled in any health policy for immigrants in Chile at present.

Table 2.3 Description of Migration Policies in Chile (Depto. de Extranjería y Migración, 2007)

<i>President Period</i>	<i>Characteristics</i>
Augusto Pinochet (1973-1989)	Creation of Migration law, focused on economic growth and international relationships.
Patricio Alwin (1990-1994)	First update of Migration law, focused on refugees support.
Eduardo Frei (1994-2000)	“New immigration” process described above. First and only “migration regularization” in the country, and modernization of the foreigners’ department in Chile.
Ricardo Lagos (2000-2006)	Migration Policy Committee was created with a first draft on migration policies, which considered care for immigrant children, respect of human rights, and support for refugees and attention to pregnant women. The latter is the first health-aspect specifically considered for immigrants in Chile.
Michelle Bachelet (2006-2009)	Formal recognition of Chilean refugees that have been supported by foreign countries (Chile’s international “debt”), re-evaluation of Migration Law in aspects of education, regional integration, Chile’s commitments with other countries, and health (add to public free health system international refugees in Chile).

The Republic of Chile defines an immigrant as a person who resides in Chile and was born in a different country. International immigrants can enter Chile through 3 main paths: (1) as a tourist, (2) as a temporary resident, or (3) as a permanent resident. A tourist is defined as a person entering the country for recreation, sports, health, studies, business management, family, religious or similar aims, without the purpose of immigration, residence or development of remunerated activities. The maximum time is 3 months, but this could be extended with permission if required. A temporary resident is a foreigner with temporary authorization to reside in the country and develop activities expressly allowed by law. A temporary resident can stay for as long as the activity requires, including years (e.g. an immigrant with a long term contract), as long as there is documentation to support it (i.e. contract or some legal document of that nature). A person with permanent resident is an immigrant with permission to settle in the country indefinitely and develop any kind of activity, without other limitations than those established by legislation (Departamento de Extranjeria y Migracion, 2010).

There is an interesting distinction between legal and undocumented immigrants in this particular country, especially when considering the boundaries of the temporary resident category. This particular category is divided into 4 additional subgroups, those being: (1) subject to contract, (2) temporary, (3) student, and (4) refugee or asylum seeker. The “subject to contract” permission is granted to a foreign person, which entitles the holder to work exclusively with the employer who signed the contract that led to his visa. This permit has a duration of up to two years and may be extended indefinitely. Nevertheless, an immigrant who had spent two years with this type of residence may apply for Permanent Residence. It should be noted that the termination of the contract results in the immediate expiration of the visa. Immigrants with a residency visa based on a contractual relationship in Chile that has expired fall into the category of undocumented or illegal immigrants. The second category “temporary” is granted to a foreign person, that proves to have family ties, interests in the country or whose residence is considered useful or advantageous. The duration of this visa is up to one year and is renewable for one year only, the period after which the alien must apply for Permanent Residence or to leave the country. The studentship visa is granted by the immigration authorities to a foreign person, and that enables you to study at educational institutions duly recognized by the state. The duration of this visa is up to one year and is awarded a scholarship to the duration of their scholarship and in all cases be extended until the end of the studies. When the immigrant proves the completion of their studies may apply for Permanent Residency. Finally, immigration authorities may grant refugee visa to foreigners, to protect their personal safety and because of

the political circumstances prevailing in the country of his residence, forced to resort to a Chilean embassy seeking asylum (Departamento de Extranjeria y Migracion, 2010).

As briefly mentioned in section 2.2, legal migration occurs in most cases, at least for a specific period of time, and is associated with work opportunities, study, refuge and tourism. Expiring temporary visas and formal undocumented migration rates are not well counted in Chile and elsewhere, but have been estimated at 30 to 40 million people globally every year (EESC, 2007; Mladovsky et al., 2007; UN, 2003; Chappel, Vickers and Evans, 2000). Briefly, it should be mentioned here that the relationship between contractual status and legal status among international immigrants is strong in Chile. The temporary residency visa does not automatically allow to work, unless this is explicitly requested. In this sense, the residence visa enables to work, but once it is stamped on the passport only. In the case of temporary residence permits and subject to contract, if immigrants want to work with a pending application for residency, they must apply for a special work permit for residency applicant. In the case of the student residence, there is the no possibility of working, except for Professional Practice studies, which might require them to work to cover the fees. In addition, the importance of terminating an employment relationship for legal stay in the country will depend on the type of residence you are beneficiary. In case you own a residence permit subject to contract, it automatically expires with the fact to terminate the contract which established his residence permit. Immigrants have a period of 30 days to rectify the situation, asking for a new residence or leave the country. If the person has a temporary residence permit (category number 2 in the paragraph above), the fact of settling a labor contract does not affect your current residence. In case you have work authorization for foreign student residence, the fact of being finalized, will not affect your residence, or timeliness of the work permit (Departamento de Extranjeria y Migracion, 2010). All these elements provide some understanding on the complexity and great variability of international immigrants that might be found in Chile in a particular point of time, and the potential difficulty on identifying immigrants with an undocumented status. Further discussion on the living conditions and health status of potentially undocumented immigrants in Chile will be presented in Chapter 11.

2.7 LIMITATIONS AND CHALLENGES OF RESEARCH ON MIGRATION

This narrative review has described the most salient characteristics and theories on the migration process worldwide and in Chile. Despite the consistency observed in the international literature regarding the complexity of migration and its most frequent consequences, there are still significant methodological limitations and challenges, such as the following in Table 2.4.

Table 2.4 Description of methodological limitations and challenges of research on migration

<i>Limitation and Challenge</i>	<i>Description</i>
1. Lack of updated data in most countries	Lack of accurate data resources and, therefore, a lack of up-to-date description of migration patterns in several countries (Mladovsky, 2007; Comunidad Andina, 2008; Schenk and Neuhaser, 2005).
2. Differences between developed and developing countries	Much of the literature comes from developed countries, with a severe lack of basic descriptions of migration processes in developing countries (Comunidad Andina, 2008; Schenk and Neuhaser, 2005).
3. Differences in definitions	Definitions for “migrant”, “resident”, and “citizen”, among others, tend to vary from one country to another (Comunidad Andina, 2008). Therefore, available data from one country is not always easily comparable to another (Buchan and Perfilieva, 2006).
4. Undocumented migrants remain ignored	Description of undocumented migrants remains a major problem, as much political, as a technical research problem (Mladovsky, 2007; Villa and Martinez, 2001).
5. Myths about migration	Rogerson and Han (2002) have stated four myths about migration in the US, which could be applied to other settings: (1) The country is an increasingly mobile society, but the proportion of population migrating all over the world tends to stay stable at around 3%; (2) A lot of migration takes place over long distances, but international evidence indicates that most moves are short; (3) There is a negative relationship between in-and-out migration (suggested by push and pull theories), but accumulated evidence supports the idea of a positive relation between in and out migration; (4) Societies are relatively homogenous so mobility rates do not vary much from region to region. However, evidence shows that there is a considerable geographic variability in the degree of mobility between regions.
6. Poor understanding of the underlying mechanisms that affect the migration process	Lack of understanding of the complexity of the relationship between countries, caused and mediated by international migration, which at the same time produces several interdependent consequences (Comunidad Andina, 2008). In addition, there is a persistent gap in behavioural studies that might provide a dynamic versus static comparison of migration move-stay decision alternatives (De Jong, 2000).
7. Type of studies	Most of the literature focuses on cross-sectional designs, underestimating the relevance of time over migration process and related consequences (Greenwood, 1985).
8. Selection bias	There is a selection bias associated with remigration phenomenon, with the risk of not using the most relevant variables in the migration analysis (Greenwood, 1985).
9. New measures needed	More complex analyses have been conducted when studying migration (such as simultaneous-equations models), but still some key variables like job opportunities, contractual status, and legal status, have not been entirely addressed (De Jong, 2000).
10. Broader cultural frameworks are needed	The absence of inclusion and analysis of the cultural framework to explain and modify the decision of migration and how it finally takes place (Stefoni, 2001).

CHAPTER 3

THE COMPLEX RELATIONSHIP BETWEEN MIGRATION AND HEALTH

Summary Box 3

What research question is included in this chapter?

What is it known about **the migration process and its association with health** and the model of the Social Determinants of Health (SDH)?

This chapter particularly refers to the middle part of this research question: what is it known about the migration process and its association with health.

What is already known?

Migration and health are inextricably linked. A 'healthy migrant' effect has been reported in the past, with immigrants often demonstrating better health than the local population. However, some researchers argue that might be due to a misrepresentation of the immigrant population.

What does Chapter 3 add?

- A large amount of evidence on the health of the migrant population is synthesised in this chapter. It suggests the importance of studying the interactions between demographic, socioeconomic and migration-related factors in the health of immigrants.
- This chapter highlights the dearth of scientific publications dedicated to exploring the health of international immigrants in Latin America.
- Additionally, it is suggested that Chile is a significant example of the relationship between migration and health, as it is receiving a growing proportion of immigrant population whilst dealing with the frequent challenges that exist in a middle-income country.

Overview

Migration and health are inextricably linked. This chapter describes current knowledge of the relationship between migration and health, according to different health problems that are relevant to this thesis. Several hypotheses suggested in the past to explain striking findings regarding health among migrant populations are presented and discussed. Diagrams are developed to summarise these complex interactions. An overview of the Latin American literature is also included and a brief discussion on the current situation in Chile is developed. This country is a significant example of the relationship between migration and health, as it receives a growing proportion of immigrant population whilst dealing with frequent challenges that exist in a middle-income country.

Introduction

The chapter builds upon the evidence presented in Chapters 1 and 2 and is divided into five sections. The first section briefly describes the methods used for the literature search. The second section displays the definitions of the most frequent concepts related to migration and health in the international literature. The third section of this chapter describes the most recent evidence on the relationship between migration and health according to two broad groups of disease: recent health events and chronic conditions. Since the second part of this thesis will present a detailed literature review of the health events that were available in the CASEN survey and, therefore, included in the specific research questions of this study, Chapter 3 will focus on recent and chronic health events that are not included in the analysis of this research (i.e. not available in the CASEN survey). The decision to present this general overview of different health outcomes among immigrants in this chapter was based on the aim of representing the type and amount of knowledge currently available in this field. Even though the literature review from this chapter is not directly analysed in the second part, it is relevant for a broad understanding of what it is known about the health of migrants in the world. The fourth section develops a summary of the existing mechanisms that explain the association between health and the migration process. The fifth part develops a discussion of the most relevant limitations and challenges reported on research concerning health and migration, and the sixth and final part of this section is related to the knowledge on migration, health and related policies in Chile.

3.1 A BRIEF DESCRIPTION OF THE SEARCH STRATEGY CONSIDERED IN THIS LITERATURE REVIEW CHAPTER

There is a vast amount of international literature on migration and health, including original research articles, review papers and systematic reviews. Most of them have considered data from North America, Europe and Asia. However, inclusion of Latin American data has been rare (Zaman et al., 2010). This literature review has tried to fill the gap by the inclusion of Latin America's research on migration and health. The search was conducted between April and July 2009 and included several international databases (Medline [FirstSearch and Ovid], Cinhal, Embase [BIDS] and Cochrane) and Latin American databases (SciELO, Dialnet, Alerta al Conocimiento and Lilacs). The key words are presented in Table 3.1. The search included scientific articles written in English, Spanish, French and Portuguese and there was no filter for year, type of article (review or original research) journal or population under study. Sixty-five key papers were selected after title and abstract revision. In addition, some relevant articles have been taken from international, Latin American and Chilean organizations, such as the International Organization for Migration (IOM) and the Chilean Ministry of Health (MINSAL) (grey literature, 15 papers selected). An update of this literature review was conducted in May 2011 and 38 new papers were subsequently included in this chapter.

Table 3.1 Key words used in the literature search strategy for scientific publications on migration and health

Basic Concept	Search Words included [MeSH and string Terms]
Migration	Migration, Migrants, Immigrants, Emigrants, Mobile population, Spatial mobility, Social mobility
Health	Health, Health outcomes, Health effects, Health consequences, Healthy, Disease, Sickness, Illness
Specific Concept*	Search words included [MeSH and string Terms]
<i>Recent-not chronic health problems</i>	
Sexually transmitted diseases	Sexually transmitted diseases, STDs, Syphilis, Gonorrhoea, Sexual behaviours, HIV and AIDS
Non STDs Infections	Tuberculosis, Parasites and Hepatitis, Risk, Latent Infection, Infections, Infestations
<i>Chronic conditions</i>	
Mental Health	Mental Health, Mental Diseases, Mental Disorders, Psychiatric Disorders, Mood Disorders, Stress, Anxiety, Trauma
Chronic diseases, Cancer and mortality	Chronic diseases, Chronic Illness, Chronic Conditions, Cancer, Mortality, Smoking, Diet, Exercise, Self-perception of health status, Self-perceived status

*Used in addition to the basic concepts and based on the results from the first scoping general search

3.2 KEY CONCEPTS IN THE RELATIONSHIP BETWEEN MIGRATION AND HEALTH

3.2.1 Selective Migration

Most types of migration have been described as highly selective and, for a variety of reasons previously discussed in Chapter 2, people who move often have been those who are most able to do so from a health status point of view (Carballo, Divino and Zeric, 1998). *Selective migration* refers to the evidence that international migrants might not be a random sample from their home countries (Feliciano, 2005; Palloni and Arias, 2004; Marmot and Adelstein, 1984). Research has suggested that most prime-aged migrants moved in search of better labour market opportunities and, because they had the motivation and resources to undertake a move, they were "positively selected". This positive selection has meant that migrants might have been more educated and in better psychological and physical health than non-migrants (Rubalcava et al. 2008; Razum, Zeeb and Rorhman, 2000).

In Latin America, little research in this field has been conducted and most is over 20 years old (Cotlear, 1984; Draper, 1985; Torrealba, 1991; Gurak, 1996). The few studies tended to support the idea of selective international migration, with the need for migrants to improve their current economic situation the most relevant reason for mobility. Permanent and temporary/ seasonal migration was selective, in that healthy adults were more able to move to another region for work. This may also be the case nowadays in Chile, as a growing proportion of young adults have immigrated in the last few years (see Chapter 2).

3.2.2 The Healthy Migrant Effect

As argued by Fennelly (2005), there has been a growing body of literature describing the *healthy migrant* phenomenon in different countries around the world, especially in Europe and the US. This phenomenon has been related to the fact that on many measures, first generation immigrants are often healthier than the host-born residents who share similar ethnic or racial backgrounds (Neria, 2002; Fuentes-Afflick, Hessol and Eperz-Stable, 1999; Singh and Siapush, 2001; Muening and Fahs, 2002). Several studies have tested the healthy migrant effect in in different geographical and social migratory contexts, and findings tend to support the real existence of selective migration and the healthy migrant effect in some immigrant groups.

The healthy migrant effect has been observed in the USA, in Canada (Hyman, 2001), Australia (Australasian Institute of Health, 2000) and countries in Western Europe (Razum, Zeeb and Rorhman, 2000; Toma, 2001; Swerdlow, 1991). For example, foreign-born residents had lower levels of obesity, hypertension, diabetes, cardiovascular diseases and serious psychological distress than US-born residents (Dey and Lucas 2004; Fennelly, 2005). Immigrants also showed a significantly lower risk of adult and infant mortality (Singh and Siahpush, 2001; Fennelly, 2005) with longer life expectancies than their native born counterparts, and lower rates of breast and cervical cancer, sexually transmitted infections, heart disease, diabetes, teenage pregnancy, suicide, and tobacco and alcohol consumption (Fennelly, 2005). Despite these findings, some authors have questioned the existence of selective migration, as conflicting results have been found in some studies (Rubalcava et al., 2008). Four main arguments have been made in this matter and are presented in Table 3.2.

Table 3.2 Four arguments against the healthy migrant effect

<i>Argument</i>	<i>Explanation</i>
Inappropriate comparison group	The appropriate comparison group to test the hypothesis should be non migrants from the home country rather than natives in the receiver country.
Inadequate timing	Studies have typically examined the health of migrants after they moved to the host country rather than prior to migrating.
Self-report bias in multicultural settings	Most of the existing research has relied on self-reported health, information that has been shown to depend upon other broader variables like cultural factors, ethnicity, and access to health care (Crimmins, 2005; Ren and Amick, 1996).
Denominator bias	The lower mortality among immigrants compared to the host population in registered studies could largely be explained by inaccurate denominator figures (Weitof et al., 1999, Abraido-Lanza, 1999). Mortality and morbidity rates would be underestimated since a relevant proportion of migrants might have already moved despite being counted as registered in the host health care system or not being reached and counted due to their undocumented status (Gee, Kibayashi and Prus, 2003; Razum, Zeeb and Rorhman, 2000; Swerdlow 1991; Kliwer, 1992; Razum 1999). Large denominators lead to an underestimation of morbidity and mortality estimates among immigrants in a country.

3.2.3 The paradox of assimilation

It has been observed that over time the migrant health advantage diminishes dramatically in some countries. In what Rumbaut (1997) called the “paradox of assimilation,” the length of time that an immigrant spent in the US has been correlated with increases in adolescent risk behaviours (Fennelly, 2005), low birth weight infants (Fuentes-Afflick, 1999; Peak and Weeks, 2002), anxiety and depression (Finch and Vega, 2003), cancer (Fennelly, 2005), general mortality (Singh and Siapush, 2001; Muening, 2002), life expectancy, risk of illness, patterns of deteriorating health, cardiovascular disease, body mass index, and hypertension (Lassetter and Callister, 2009).

Lassetter and Callister (2009) stated in a recent review of the literature on the health of voluntary migrants to Western societies, that multiple factors could explain variability found in health outcomes in this population. These included length of residence and acculturation, disease exposure, life style and living conditions, risky behaviours, healthy habits, social support networks, cultural and linguistic barriers, experiences with racism, and levels of awareness of cultural health practices among health care providers. Overall, migration is a dynamic, extended process, with effects extending years beyond physical relocation. Systemic change has been required, including health policies that ensure equity for migrants, culturally appropriate health promotion, and routine assessment of migration history, cultural health practices, and disease exposure (Lassetter and Callister, 2009).

3.2.4 The Latino paradox

Many studies have shown that lower socioeconomic status (SES) is related to poor health, in terms of both morbidity and mortality (Adler, 1994; Abraido-Lanza, 1999). In the USA, compared with non-Latino Whites, Latinos have had higher poverty rates, less education, and less health insurance, but despite this they have a lower all-cause mortality rate (Markides, 1986). Latinos have lower income-adjusted mortality rates for cancer, cardiovascular disease, and all-cause mortality relative to non-Latino Whites (Sorlie et al., 1993; Kaufman et al., 1998). Other studies have shown that Latinos exhibit better health than Whites, for outcomes that include birth weight and infant mortality, even after adjusting for socioeconomic status (Dubowitz et al., 2007; Abrams and Guendelman, 1995; Norman, Boyle and Rees, 2005; Norman et al., 2004; Marmot, 1981; Sorlie et al., 1993). In the US, Latino mortality has stood in sharp contrast to that of African Americans, who, like Latinos, have had a lower SES profile

than Whites but a higher mortality rate (Abraido-Lanza, 1999). Thus, Latino mortality has presented an *epidemiologic paradox*, defined by several authors as the mortality advantage of Hispanic adults relative to non-Hispanic Whites, despite the lower socioeconomic status of Hispanics (Rubalcava et al., 2008; Hummer et al., 2000; Sorlie et al., 1993). Similar findings have been recently reported in the UK (Shaw & Pickett, 2011).

3.2.3 The salmon bias

A relevant hypothesis on migration and health is *salmon bias*, which proposes that reflecting the desire to die in one's birthplace, many immigrants return to their country of birth after temporary employment, retirement, or becoming seriously ill (Adler, 1994; Pablos-Mendez, 1994). As declared by Abraido-Lanza (1999), because foreign deaths have not been tabulated in US mortality statistics, some individuals were rendered statistically immortal, resulting in an artificially low Latino mortality rate (see Table 3.2 on the denominator bias). Evidence has suggested that the salmon bias hypothesis could be plausible. Sorlie and colleagues (1993) estimated return migration rates of various foreign-born groups based on data from a program requiring immigrants to submit yearly address reports to the Immigration and Naturalization Service in the US. Lower- and upper-bound return migration estimations (assuming a 50% and 100% response rate for filing address reports) ranged from 15.6% to 56.2% for Mexicans, 52.4% to 72.5% for South Americans, and 49.6% to 69.5% for Central Americans and Caribbean persons (excluding Cubans).

3.3 HEALTH-RELATED PROBLEMS AMONG IMMIGRANTS

This section will present the main health problems in migrant populations worldwide that could not be covered in the analytical section of this study. It will not be extensive, but will give a succinct description of the current international literature and will be organised into two groups: (1) recent health problems and infectious diseases; and (2) chronic conditions (non-infectious diseases) and mortality rate. The rationale used to structure the literature review in this chapter was to start with a description of global patterns, continue with features in Latin America and end with the literature available in Chile. This sequence is repeated for each health outcome displayed in this section. Additionally, a summary table of the available publications on each of these topics in relation to immigrants in *Latin America* is presented in Table 3.5 at the end of this chapter, and highlights the limited amount of research available in these particular topics in Chile and the Latin American region.

As mentioned in the introduction chapter, health outcomes presented in this chapter are not available in the CASEN survey 2006, but are included as a narrative description of the “state of the art” knowledge regarding the health of a migrant population and might still allow some broad comparison with the immigrant population in Chile (see Chapter 12). A detailed description of the different health outcomes included in Chapters 3, 9 and 10 are presented in Table 3.3. In addition, four variables closely related to health are presented in Chapter 8 on access to and use of health care among immigrants in Chile, use of the universal Pap smear programme and the use of any mental, dental and other specialty health care service in the country. A description of the specific literature related to these health care variables is presented later in the second part of this thesis (Chapter 8) and supports the relevance of including access to and use of health care among immigrants as a relevant dimension to explore in this study.

Table 3.3 Description of the wide range of health problems mentioned in this thesis, in the general overview (Chapter 3) and the specific research questions chapters (Chapters 9 and 10)

<i>Health problem</i>	<i>Available in CASEN survey?</i>	<i>Included in...</i>
RECENT HEALTH PROBLEMS AND INFECTIOUS DISEASES		
Sexually transmitted diseases (STDs)	No	Chapter 3
Non STDs infections or infestations	No	Chapter 3
<i>Any health problem or accident in the past month</i>	<i>Yes</i>	<i>Chapter 9</i>
<i>Number of medical attentions in the past month</i>	<i>Yes</i>	<i>Chapter 9</i>
<i>Number of emergency attentions in the past month</i>	<i>Yes</i>	<i>Chapter 9</i>
CHRONIC HEALTH PROBLEMS (NON INFECTIOUS DISEASES) AND MORTALITY RATE		
Mental illness:		
Schizophrenia	No	Chapter 3
Depression	No	Chapter 3
Suicide	No	Chapter 3
Anxiety disorder	No	Chapter 3
Drug consumption	No	Chapter 3
Mortality rate	No	Chapter 3
<i>Any disability</i>	<i>Yes</i>	<i>Chapter 10</i>
<i>Any attention received from a chronic condition or cancer (undetermined) in the past year</i>	<i>Yes</i>	<i>Chapter 10</i>

3.3.1 Recent health problems and infectious diseases

3.3.1.a) Sexually transmitted diseases (STDs)

Sexually transmitted diseases (STDs) have a significant impact in society, and migration and STDs have been strongly associated in the past (Fairchild and Tynan, 1994; Hoffman et al., 2011; Bisailon, 2010; Field et al., 2008). The social vulnerability of some groups of individuals might increase their risk of acquiring STDs (Bronfman et al., 2002; Deane, Parkhurst and Johnston, 2010). For example, unprotected transactional sex, rape and commercial sex have been reported among migrants in the USA and Mexico (Bronfman et al., 2002; Wong, Yim and Lynn, 2011). Migrant men increase their number of sexual partners, both heterosexual and homosexual, as a consequence of loneliness and social exclusion (Bronfman et al., 2002; Xiridou et al., 2010; Diez et al., 2010). Sexually-transmitted diseases, including HIV and AIDS, have been more prevalent among some groups of immigrants than the native population, especially among men, those living in rural areas and those who are also involved in other risky behaviours, like alcohol consumption (Hernandez-Rosete et al., 2008; Shedlin et al., 2006; Egan et al., 2011; Izambert, 2010).

In Latin America, an HIV and AIDS epidemic continues to devastate Latino communities. In 2007 there were an estimated 14,000 new HIV infections in Latin America, bringing the total number of people living with HIV to 1.7 million for this region (UNAIDS and WHO, 2008; Cohen, 2006). Several factors put immigrants from Latin America at high risk for HIV infection (Fauci, 2008). Migration occurs on a large scale between countries in Latin America, due to civil conflicts, political and socioeconomic conditions, and the high pace of urbanization. A recent study in Mexico concluded that the vast majority of migrants do not protect themselves while engaging in sexual intercourse (Cohen, 2006; Garland, Andrade and Page, 2010; Folch et al., 2009; Shedlin and Deren, 2002). Latin American migrants sometimes take major risks in order to survive day-to-day in a new environment, such as engaging in sex work (Bronfman et al., 2002). Regarding ethnic Aymara, Mapuche and Rapa Nui populations in Chile in particular, poverty, gender inequalities, population movements, the way they perceive and represent the virus, low risk perception and the idea of it is a disease of "others", are recognised risk factors to HIV and AIDS (Obach, 2008; Leonardini, 2008; Cianelli et al., 2005; Cianelli et al., 2007; Cabieses et al., 2008). None of these studies or any other, however, explores STDs among international immigrants living in Chile.

3.3.1.b) Non STDs infections/infestations: Tuberculosis, Parasites and Hepatitis

Tuberculosis (TB) is one of the leading causes of mortality from infectious diseases along with HIV and AIDS and diarrhoeal diseases (WHO, 2004; Cain et al., 2008; McEwen, 2005; Wang et al., 2011; Alvarez et al., 2011; Rees et al., 2010). As reported by DeRiemer et al. (1998) and Zuber et al. (1997), around 7% of newly arrived refugees from low income countries have active tuberculosis, and the risk of developing tuberculosis remains high years after immigration. Tuberculosis has been a cause of rejection in some countries, like the USA (by the so-called "inadmissible conditions") (Adams, Gardiner and Assefi, 2004; Zuber et al., 1997; McKenna, McKay and Onorato, 1995; Cantwell et al., 1995; DeRiemer et al., 1998). Communities of foreign-born individuals may have limited access to health care services if there are cultural and linguistic barriers. Regulations, legislation, and other attempts to limit access to care for undocumented and illegal aliens will limit the effectiveness of follow-up screening and health care for foreign-born individuals, such as immigrants and refugees, if such restrictions are implemented, misconstrued, misinterpreted, or incorrectly applied (DeRiemer et al., 1998). No study in Latin America or Chile was found on the prevalence or risk of acquiring tuberculosis among international immigrants.

With regards to *parasites*, despite mass treatment before embarkation, persistent parasitaemia is relatively common (Adams, Gardiner and Assefi, 2004). The most common parasites detected include hookworm (*Necator americanus* and *Ancylostoma duodenale*), whipworm (*Trichuris trichiura*), roundworm (*Ascaris lumbricoides*), and *Giardia lamblia* (Stauffer, 2002). Malaria is reported as uncommon (Adams, Gardiner and Assefi, 2004). No study in Latin America or Chile reported the prevalence or risk of developing these infections and infestations among the international migrant population. In terms of *hepatitis B*, this disease is endemic in Africa and South East Asia, with rates of current or past infection as high as 50-80% (Debonne et al., 1999). Death from cirrhosis or hepatoma occurs in up to one third of carriers who acquired hepatitis B perinatally (Adams, Gardiner and Assefi, 2004; Cai et al, 2011). Some studies were found in Latin America on the transmission of hepatitis B virus in this region and one of them among the migrant population, particularly exploring genotypes (HBV) among Japanese immigrants and natives in Bolivia (Khan et al., 2008). It was reported that Japanese immigrants might have introduced HBV/B and HBV/C to natives in Bolivia, or conversely, were exposed to the indigenous HBV/F.

3.3.2 Chronic conditions (non-infectious diseases) and mortality rate

3.3.2.a) Mental health

There is a large amount of literature regarding mental health among migrants worldwide (Odegaard, 1932; Faris and Dunham, 1939; Krupinsky, 1975; Krupinsky, 1967; Murphy and Vega, 1982; Muhlin, 1979; Malzberg, 1964; Alegria, 2007; IOM, 2008, Breslau et al., 2011a; Breslau et al., 2011b; Adhikari, Jampaklay and Chamrathirong, 2011). Migration can have consequences for the mental health both of immigrants and the local population (Kirmayer et al., 2010). *Schizophrenia* has been one of the most serious mental health problems reported. It has been described as highly disruptive to family life, affecting not only the patients but also the social environment and that of caregivers (Carballo, Divino and Zeric, 1998). This psychiatric disease has been reported among immigrants all over the world for several decades, especially among Caribbean (Cochrane and Bal, 1988), Indian and Pakistani immigrants (Cochrane and Bal, 1988). Among young populations (16 to 29 years old) and women this disease has been up to 12 times more frequently diagnosed among Caribbean immigrants than non-Caribbean people (Stuart, Klimidis and Minas, 1998). Issues with detection bias and overdiagnosis of mental illness among stigmatised groups such as immigrants have been also largely discussed. With regards to *depression and suicide*, it has appeared to be one of the most frequent mental health

consequences of migration, especially among women (Carta et al., 2005a; Carta et al., 2005b). Most research has shown that immigrant populations have had higher rates of mood disorders than the sending and receiving populations, and also higher rates of suicide (Carballo, Divino and Zeric, 1998; Merrill and Owens, 1986; Bhugra et al., 1999a, Bhugra et al., 1999b). Nonetheless, some authors have reported the opposite findings (Bhugra and Jones, 2001; Bhugra, 2004) with a lower rate of depression in recent immigrants that tends to increase to the level of the native-born population only after several years in the host country. Similar findings have been described in the past by other authors (Sayil, 1984; Henderson, 2005; Huismann, Weilandt and Greiger, 1997; Carballo, Divino and Zeric, 1998; De Jong, 1994, Norredam et al., 2010; Morgan et al., 2010; Hwang, Cao and Sing, 2010).

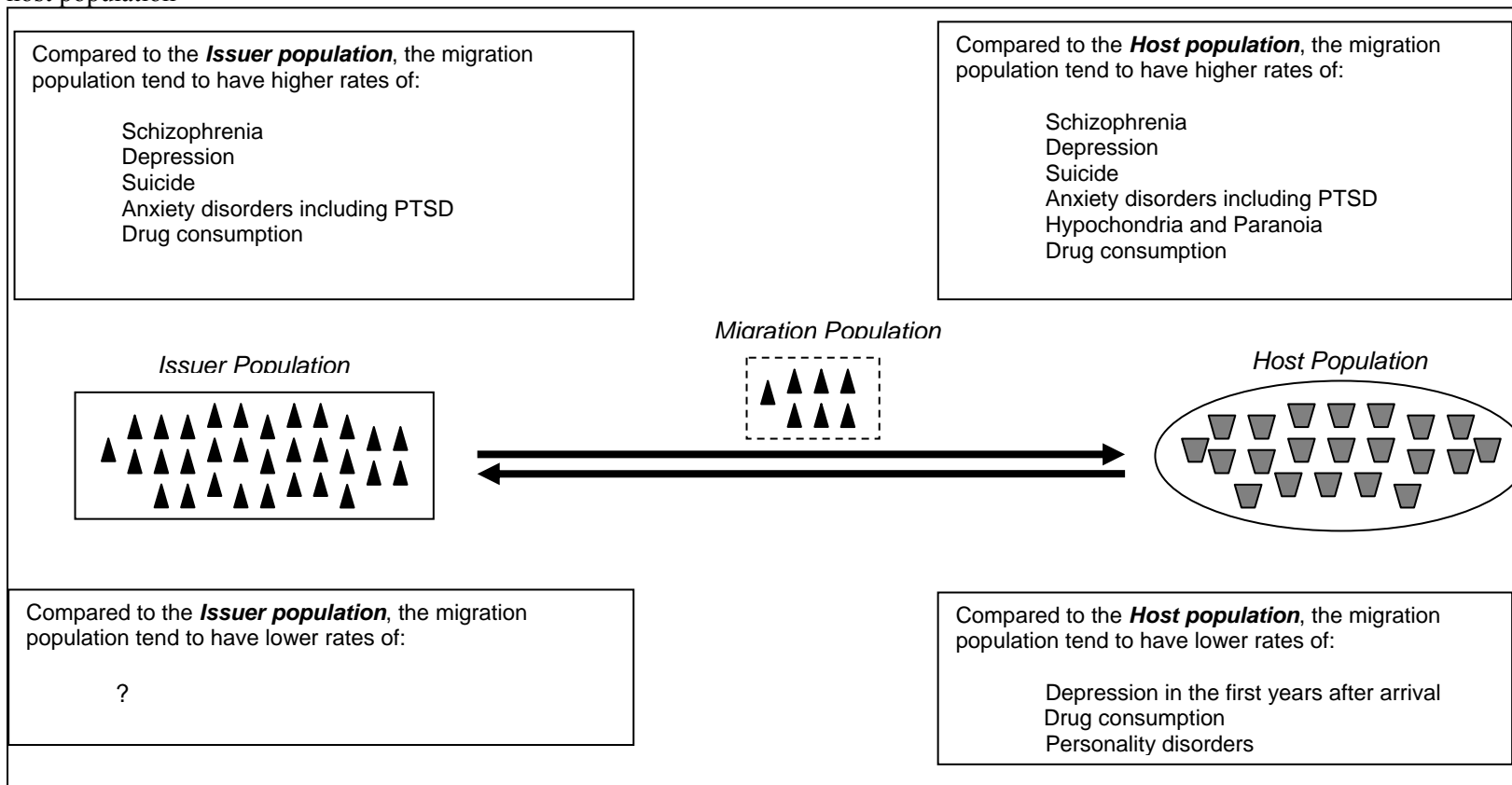
Anxiety Disorder (including Stress and Post Traumatic Stress Disorder, PTSD) rates of immigrants have been reported as higher than that of local populations (IOM, 2008). Psychosomatic disorders have also been reported among immigrants in the initial period of settlement, with the expression of “tightness” as a regular manifestation (Carta et al., 2005a; Carta et al., 2005b). Peptic ulcers and other stress-related ulcers have also been described (Huismann et al., 1997; WHO, 2006; Buchan, 2004; Mirdal, 1985; Carballo, Divino and Zeric, 1998; Sayil, 1984). In terms of *illicit drug consumption*, it has been reported as a growing problem in the context of migration (Ojeda et al., 2011). Evidence from the 1990s has suggested immigrants are not more likely to abuse alcohol than native groups, but that those who do drink more heavily (Greenslade, Pearson and Madden, 1995; Mullen, Williams and Hunt, 1996). Drug consumption has been associated with criminal detentions and accidents (Lipsedge, Dianin and Duckworth, 1993), schizophrenia (Selten and Sijben, 1994) and personality disorders (Bhugra, 2004; Wang et al., 2010; Sousa et al., 2010).

Some studies on migration and mental health were found during the literature search in Latin American scientific electronic databases. Of these, only three related to Chile. Most focused on immigrants from Latin America living in developed countries like the USA (Livingston, 2007; Snyder et al., 1990), Japan (Shirakawa, Nakagawa and Miyasaka, 2003), Spain (Trad and Bomfin, 2003), and Sweden (Sundquist, Iglesias and Isaacson, 1995; Sundquist, 1995). A few of them referred to international immigrants moving to other Latin American countries like Brazil (Kang, 2006), and the movement between Latin American countries and Chile (Sundquist, 1995, IOM and MINSAL, 2008a; IOM and MINSAL, 2008b; Sabin et al., 2006). Findings have shown the relevance of the acculturation process to mental health diseases in Latin America (Livingston, 2007) and the high rate of psychiatric disorders among immigrants (Kang, 2006).

Moreover, Mayan refugees from Guatemala have reported high levels of anxiety, depression and PTSD and have reported, on average, a mean number of five traumatic experiences while they lived in Mexican camps, including severe wounds and mutilation (Snyder et al., 1990). Studies among populations moving between Brazil and Japan have shown a higher prevalence of schizophrenia and paranoid disorders (Miyasaka, 2000). Authors claimed different factors mediating these results: trans-cultural differences (Shirakawa, Nakagawa and Miyasaka, 2003), bereavement and grief (Quiroga, 1997), the rupture of daily life experiences (Trad and Bomfin, 2003), globalisation and social inequalities (Medina et al., 2001), and the lack of access to health care (Nubia, 2000).

In Chile, two recent studies have been found. One of them was an analysis of the migrant population resident in the north of Santiago (IOM and MINSAL, 2008a). The other was an exploratory study on mental health in the migrant population of the urban community of Independencia (Metropolitan region) (IOM and MINSAL, 2008b). These studies show that immigrants face difficulties related to access to health care (15% uninsured), the lack of adequate information on the rights and duties of migrants, the overloaded primary care centres and the strong demand for attention by the migrant population, and discrimination and prejudice because of their socioeconomic conditions (IOM and MINSAL, 2008a; IOM and MINSAL, 2008b). Figure 3.1 summarises the key findings from this section on mental health and migration. I have developed this diagram inspired by the figures from the book by Shaw et al. (2002), where mental health disorders among immigrants were described by comparing them with the host population and also with the country of origin. It also highlights mixed evidence in some particular cases, like depression and drug consumption.

Figure 3.1 Principal findings about **mental health and migration**, when comparing the migrant population with both the issuer and the host population*



*Figure elaborated by the author

3.3.2.b) Mortality rates

Most studies on mortality rate and its association with different SDH come from developed countries. As an example, Kindig, Seplaki and Libby (2002) conducted a study to account for variations in death rates in population subgroups in the US. Factors associated with age-adjusted death rates in 366 metropolitan and non-metropolitan areas of the United States were examined for 1990–92. The rates ranged from 690 to 1108 per 100 000 population (mean = 885 ± 78 per 100 000) and factors with the strongest independent positive association were ethnicity (African-American), less than a high school education, high Medicare expenditures, and location in western or southern regions. Associations between mortality and migration status in the country were not explored in this particular study. Later, Sittig and collaborators (2007) explored how place has shaped mortality by examining 35 consecutive years of US mortality data. Mapping age-adjusted county mortality rates showed that counties with high mortality rates experienced younger population out-migration, had economic decline, and were predominantly rural.

Some studies have been also found on mortality rate and migration from the UK. Analyses of mortality of migrants to England and Wales have been performed around three previous censuses in 1971, 1981 and 1991 and have shown that mortality varied widely by country of birth (Wild and McKeigue, 1997; Wild et al., 2007). Data have also been analysed recently for Scotland around the 2001 census (Wild 2007) indicating that the proportion of elderly migrants among established groups in England and Wales has been increasing, and migration patterns have changed overtime. Wild et al. (2007) explored all-cause and circulatory disease mortality for people aged 20 years and over in England and Wales by country of birth, using population data from the 2001 Census and mortality data for 2001–2003. Indirect standardization was used to estimate sex-specific standardized mortality ratios (SMRs) in comparison to mortality for England and Wales as a whole. Results showed that SMRs for all-cause mortality were statistically significantly higher than the national average for people born in Ireland, Scotland, East Africa and West Africa and lower for people born in China and Hong Kong. Sex-specific standardized mortality ratios for circulatory disease were highest among people born in Bangladesh and lowest among people born in China and Hong Kong. Patterns of ischemic heart disease and cerebrovascular disease mortality differed by country of birth. Mortality, particularly due to ischemic heart disease and stroke, differs markedly by country of birth in all age groups. However, a relevant limitation of this study was that ethnicity was not recorded on death certificates in England and Wales and it was not possible to investigate mortality of second and subsequent generations of migrants using representative routine data.

Research in other developed countries has also explored the relationship between mortality and migration status, such as Germany, the Netherlands (Kyobutungi et al., 2006; Bos et al., 2004). These studies highlight the complexity of investigating these phenomena and how strong are the links to socioeconomic conditions and ethnicity. As stated by Weitoft et al. (1999), it has been difficult to carry out fair comparisons of the mortality of different migrant and ethnic groups in a population in register-based studies, because sizeable numbers of immigrants who subsequently left their new homeland have failed to register this fact with the national registration authorities. Overall, the international literature suggests that death rates differ by migration status and geographical location (Morrill, 1993). However, the reasons for such differences have remained unclear. Current concepts in population health have regarded mortality as the product of multiple determinants, such as medical care, the environment and its interaction with genes, the socioeconomic context, and behaviour (Evans, Barer and Marmot, 1994). It is not known if a range of combinations of determinants can produce optimal health in any geographical location, or if a smaller number of basic patterns dominate. Attempts to unravel these relationships have been developed to guide financial incentives aimed at improving population health outcomes (Kindig 1998).

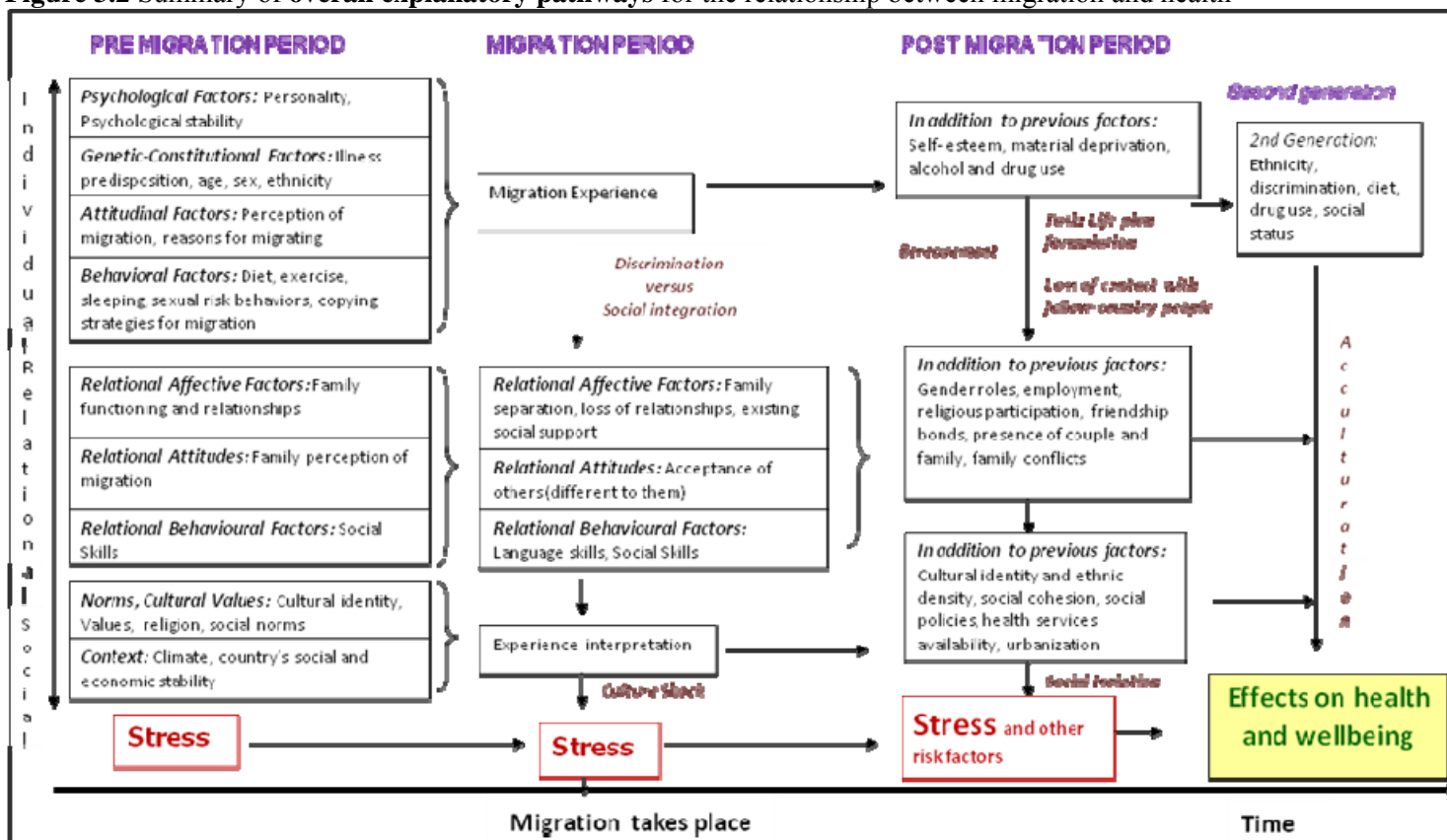
Four studies including mortality rates among Latin American immigrants were found in the literature, three based in the US and one in Finland, and they show contrasting results (Malin and Gissler, 2009; Eschbach et al., 1999; Rosenwaike and Hempstead, 1990; Rosenwaike, 1984). Most of them indicate a higher rate of mortality among immigrants compared to the local population, mostly due to violence. However, some of them also show a healthy migrant effect and lower mortality rates in the immigrant group compared to the local population. These studies can be found in Table 3.5 at the end of this chapter. No study exploring death rates among immigrants was found in Chile at the time the literature review was conducted.

3.4 SUMMARY OF EXPLANATORY PATHWAYS IN THE RELATIONSHIP BETWEEN MIGRATION AND HEALTH

I have developed two broad explanatory diagrams that summarise my understanding of the current knowledge of migratory patterns of health and their underlying factors after the general literature review included in this section. **Figure 3.2** shows a summary of overall explanatory pathways for the health issues of migrants. The most relevant proposition I have highlighted is that each one of the three basic stages of the migration process contributes to accumulation of risk in the migrant population. Furthermore, health-related outcomes have also been related to the complex interaction between these factors over time. Even though this diagram might seem an oversimplification of the true complexity involved in the dynamic interaction between the different components (i.e. too linear), it does highlight the key aspect of time and accumulation of stress over the life span, which provides rich insight of the lifecourse perspective of health and ill health of immigrants. During the post migration period there could be numerous repercussions with mobility in the migrant population, including second generations. I have organized different associated factors reported in the literature in three broad levels: individual; relational (close family and friends); and social. Some particular variables have appeared to moderate the relationship between migration and health outcomes at different stages (e.g. discrimination during migration, differing conceptualization and interpretation of the migration experience depending on the cultural background, loss of contact with fellow-country people, and process of acculturation over time and by generation). Stress and the later exposure to conditions, contexts or behaviours have placed the migrant population at a higher risk of developing diseases than the local population in the foreign country.

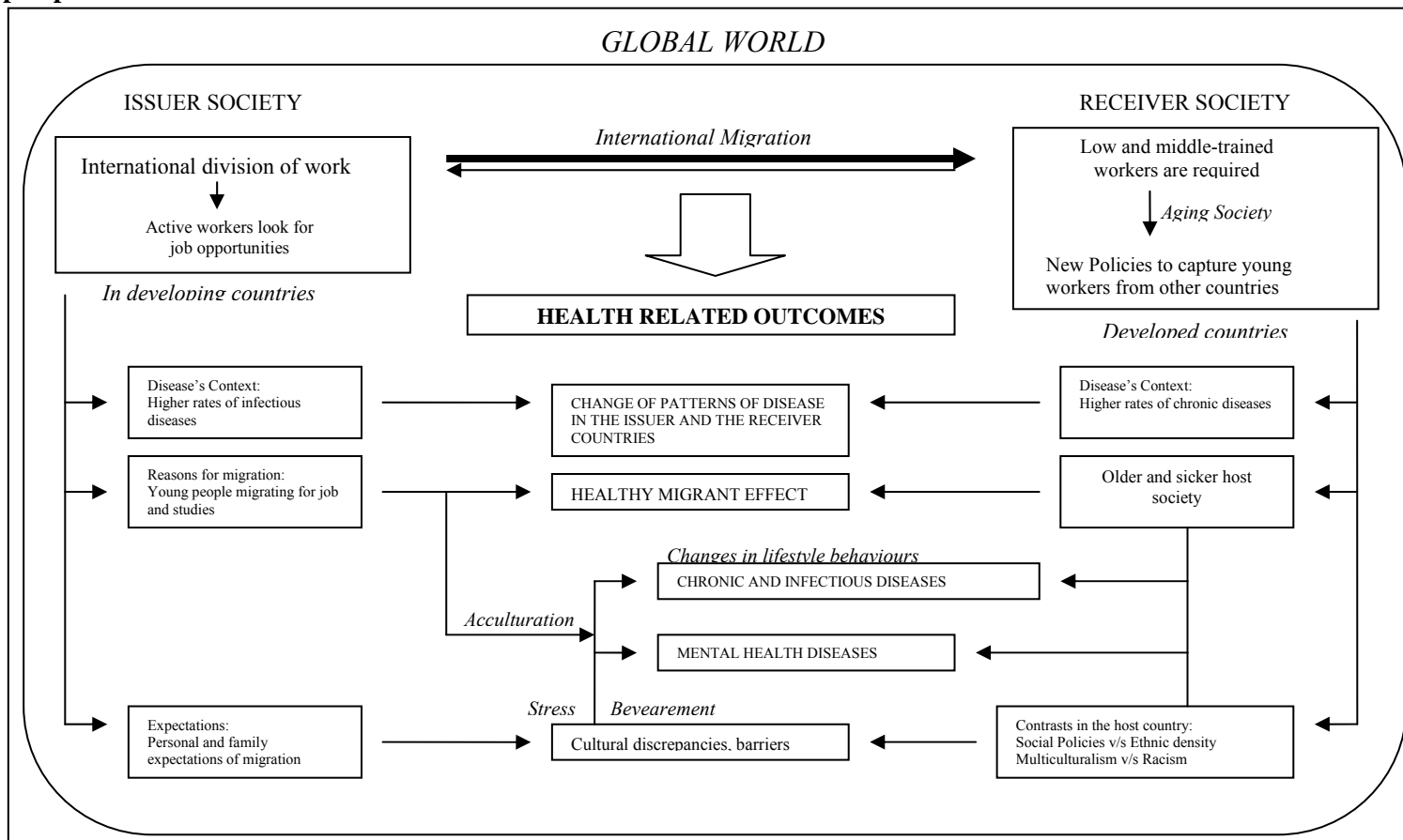
Figure 3.3 shows a summary of overall explanatory pathways for migrants' health issues, according to the global perspective. As stated earlier in Chapter 2, "globalisation" itself would not necessarily be a cause of the existing negative effects of migration. However, the underlying cultural differences between societies –and the lack of acceptance of what is not considered the common pattern of being or daily living- could be determining those negative effects, especially in terms of some health-related outcomes. The central proposition in this diagram is that differences between the issuer and the receiver or host countries have determined the vulnerability of the migrant population. The unavoidable tension between multiculturalism and social isolation/ exclusion existing in globalised societies have determined health effects among migrants over time, in a broad social, political and economical dimension.

Figure 3.2 Summary of overall explanatory pathways for the relationship between migration and health*



*Figure elaborated by the author

Figure 3.3 Summary of overall explanatory pathways for the relationship between migration and health, according to the **global perspective**



*Figure elaborated by the author

3.5 LIMITATIONS AND CHALLENGES OF HEALTH AND MIGRATION RESEARCH IN THE WORLD

This literature review supports the idea that social and spatial migration affects health. It affects the distribution of poor health and wellbeing, and people's experience of these conditions. However, migration research faces several difficulties and studies tend to show a range of results depending on the group observed and the comparison made. Moreover, moving can be beneficial or detrimental to health, depending on the nature of the move, the individual or group moving, and the origin and destination (Shaw, Dorling and Mitchel, 2002). The literature on migration and health often compares the patterns of migrant groups to the patterns of the host population and, in addition, to their non-migrant counterparts in the country of origin. The health status of migrants usually differs from that of the non-migrants and these differences provide an opportunity to separate the influences of genetic and environmental factors on human health (McKay, Macintyre and Ellaway, 2003). The mortality and morbidity patterns of immigrants can be influenced by both their country of origin and their destination, and by the process of migration itself (McKay, Macintyre and Ellaway, 2003). However, a positive and useful characteristic of migration is that it involves a concrete and particular change (spatial and or social mobility) that allows the observation of the effects of this change over time upon a large number of possible health outcomes (Shaw, Dorling and Mitchel, 2002). Describing these patterns can shed light on why the migration process, its causes and consequences, are so complex and difficult to analyse and interpret.

The main methodological limitations of research concerning **migration and health** are displayed in Table 3.4. Some of these limitations are common to broader issues of research on migration and have been presented in Chapter 2 (section 2.7). In addition, they are linked to the challenges of studying migration and health in the world and in Chile. Those are, at least, the following four:

1. Health is not considered a major issue for migrants in the world: Limited human and economic effort is addressed to this matter compared to other health problems or vulnerable groups. This can be observed, for example, in the limited number of publications related to migration and health (compared to biomedical publications, for instance). However, it should be a major issue as it involves human rights, a large proportion of migrants suffer the burden of several diseases, health problems move from one country to the other, there is lack of

access to health care for immigrants, receiver populations also suffer, and issuer countries are losing health workers (EESC, 2007).

2. Very few countries collect information about migration and health: Many of the coding systems do not ask for the migrant status and some undocumented migrants would hide this information out of fear. There is a lack of differentiation between first generation immigrants and their descendants and how this is related to health. More information has appeared during recent years, but can be collected as or confused with ethnicity (EESC, 2007).

3. Migration affecting geographic differences in disease risk: Human migration can make it more difficult to detect geographic differences in disease risk because of the spatial diffusion of people originally exposed in a given geographic area (Rogerson and Han, 2002). As mentioned previously, health might affect migration through a range of possible processes and large-scale movement of people can also affect the geography of health, changing patterns of morbidity and mortality (Shaw, Dorling and Mitchel, 2002; Boyle, 2004). Geographical studies of disease tend to focus on particular locations and contrast “long-term, native non-migrants with in-migrants” (Rogerson and Han, 2002), but data constraints often limit the alternative to develop better analysis.

4. Poor policy development from available data: Some European Union countries have adopted resettlement policies that stress geographical dispersal of minorities and migrants in order to achieve faster integration into mainstream society. There is little evidence as to whether this has been effective and the “isolation that follows can instead be highly detrimental to the mental health and social integration potential of newcomers” (Carballo, Divino and Zeric, 1998). Some authors discuss how many countries and employers still restrict migration to those who will be employed full-time and do not include close family members (Carballo, Divino and Zeric, 1998). Despite arguments for this from the receiving country, physical and mental implications of these policies deserve consideration. Moreover, even when family is accepted in the host country, families may continue to struggle. Work conditions and social isolation can lead to high risk for mental illness and other diseases for parents and children. Programs to help social integration need urgent consideration (Carballo, Divino and Zeric, 1998).

Table 3.4 Main methodological limitations of research concerning **migration and health**

Methodological limitation	Explanation
Most literature is descriptive and the best comparison group for immigrants is difficult to define (i.e. what is the best counterfactual)	Migrants can have better health status than the average for people in their country of origin, but might have worse health status than the population of the country they arrive in and their health may decrease over time. There is a possible bias when comparing different groups, as immigrants are different from the population of origin and the receiver society.
Most studies are cross-sectional	No causal inference can be explored in cross-sectional studies. As reported by Niclas et al. (2007) some studies have found increased wellbeing among movers who had moved into areas with improved environmental housing quality. On the other hand, some people may have difficulties in adapting to a new area, such as creating connections with neighbours, which may be detrimental to health. In addition, cross-sectional studies do not reflect the different latent periods that might be responsible for some of the associations (Barker, 1987). Besides, a specific migration effect must be separated from cohort effects (Holland, 2000; Kindig, 2002). The common denominator in dealing with these types of bias is the requirement for longitudinal health data to reduce the risk of bias associated to cross-sectional studies.
Access to health care as a selection bias	Several barriers to access to health care among immigrants have been reported: language, costs, being undocumented, fear of discrimination, lack of accurate information (health system complexity), cultural differences about the conceptions of health and disease, and others (EESC, 2007). These might confound the prevalence of health indicators measured in the health care system between immigrants and the local population.
Confounding effect of short stays	Around 14 million people make a brief trip from developed countries to developing countries and a proportion of them return with a foreign disease. Controlling these risks and potential confounding effects in research is very complicated as tourism, short term and circular migration continues to grow (EESC, 2007).
Underestimation effect because of the presence of undocumented people	There is a lack of information of health status of undocumented people who do not access the health systems because of their irregular situations (EESC, 2007). This might create an underestimation of the real severity of health problems among migrants, as they don't appear in any system and are not willing to complete surveys.
"Place of birth" versus "place of residence" as a predictor of health outcomes	Much variation exists between migrant groups and that the disease patterns of immigrants are influenced by the country of origin and by the migration process (McKay et al., 2003). For example, Elford and colleagues (1990) found that place of residence is a more important determinant than place of birth, Osmond et al. (1990) found the opposite results, and Strachan and collaborators (1995) found that both were relevant (Rogerson and Han, 2002).
Migration as a cause of mental health outcomes or vice-versa?	The causal direction of the association between migration and mental illness is not straightforward. People tend not to move at random and their chance to travel is highly influenced by their social and health circumstances. Simultaneously, health can be modified over time, caused by the migration process (Shaw et al., 2002).
Choice and size of area borders	Administrative areas may not be ecologically meaningful or natural (Pickett and Pearl, 2001). The use of smaller areas may lead to an increase in measurement error, but small areas will, at the same time, be more homogeneous in terms of their socioeconomic and other important characteristics (Niclas et al., 2007).

3.5 EVIDENCE, CHALLENGES AND LIMITATIONS OF HEALTH AND MIGRATION RESEARCH IN LATIN AMERICA AND CHILE

This chapter highlights the limited number of scientific publications dedicated to exploring the health of international immigrants in Latin America. Nonetheless, some recent attention has been given to migration and health in the region. During the 8th South American Conference on Migration in 2008, the current director of the Pan American Health Organization (PAHO) stated that migration has been part of the history of Latin America and the Caribbean and has established itself as a persistent and growing phenomenon (Roses, 2008). In both developed and developing countries, there is a need to improve the structure and strategies used to attend and treat migrant populations, with multicultural and transcultural perspectives. Health professionals need a better understanding of the complexity of the migratory experience and should be trained in the most frequent syndromes developed by this group, to promote their prevention, diagnosis and better rehabilitation. They also need to have cultural sensitivity to what might be perceived as different from the local culture (Snyder et al., 1990).

Chile faces the same general limitations and challenges previously illustrated. In addition, it faces a lack of information about migration and its relationship with health and there are very few studies available. Those that do exist are mostly based on mental health consequences of international migration. As a reflection of this, only recently has there been explicit consideration of migrants' health in this country (Departamento Extranjería y Migración, 2007). In 2008, the Chilean Ministry of Health (MINSAL) along with the International Organization of Migration (IOM) held a seminar on migration and health in Chile. They presented the findings of the first studies on mental and physical health on the immigrant population in Chile (already presented in section 3.3.2.a). As observed by Agar, the head of the Research Department of the Ministry of Health at that time, one of the main problems faced by migrants in relation to access to health care has been the lack of coordination between government agencies in charge of immigration policies and the impact this has on people's health. Immigrants have reported a number of difficulties, such as lack of adequate information on the rights and duties of migrants; the overload on primary care centres, and the great need for health care. In terms of the quality of health care, immigrants have perceived a set of socio-cultural elements that produced discrimination and prejudice. Furthermore, around 15% of migrants reported not having any health insurance (IOM and MINSAL, 2008a).

In addition to these limitations and challenges, there have been no studies of selective migration in Chile. This country could experience a “healthy migrants” effect, as a growing proportion of young adults has arrived in recent years (see Chapter 2). Additionally, Chile has not discussed the possible implications of international mortality and morbidity paradoxes and it has not developed studies to identify these. Further research should, therefore, be conducted in this matter, to allow a better understanding of the health among Chilean immigrants in foreign-countries. It has not been explored whether international migrants could create the healthy migrant effect and which policy implications could be enhanced in order to protect healthy behaviours that may exist in the immigrant population in Chile.

There are a large number of research and policy challenges on migration and health in Chile and Latin America, all developing countries. The research limitations and challenges described in Chapter 2 and in this chapter could be replicated in the Chilean context. Additionally, the study of the relationship between migration and health is so recent in this country that local causes and consequences of both migration and health need further research. Chile needs to know more about its migrant population, their living conditions and health status. A clear reflection of that understanding should then be seen in concrete health policy strategies in the future.

Table 3.5 Summary table of available publications and reports on recent and chronic health problems data which are not available in the CASEN survey 2006, with special focus on Latin America (search conducted in July 2009 and updated in May 2011)

<i>Health problem group</i>	<i>Health outcome</i>	<i>Authors</i>	<i>Year</i>	<i>Study / report design or aim</i>	<i>Immigrant population</i>	<i>Host country</i>	<i>Results</i>
Recent health events/ infectious diseases	STDs (mostly HIV/AIDS)	Garland et al	2010	Discussing the paper on the Unique aspects of the care of HIV-positive Latino patients living in the United States	Latinos	US	Authors argue that an understanding of the HIV epidemic among Latinos requires an appreciation of the diversity and heterogeneity of the Latino population in the US. They review unique clinical aspects of HIV care among Latinos, including manifestation of co-infections with pathogens endemic in Latin America but rare in the US.
		Folch et al	2009	Cross-sectional study in female sex workers (FSW) in Spain in 2005, a third of them Latino immigrants	Latino women	Spain	The majority of the FSW included in this study (n=400) always used condoms during vaginal intercourse with clients, but only 12.4% with steady partners. Spanish-born FSW reported higher rates of drug injection and lower use of condoms compared to overall immigrant FSW.
		Fauci et al	2008	Statement of AS. Fauci, Director National Institute of Allergy and Infectious Diseases, NIH US, on National Latino AIDS Awareness Day, October 15, 2008	Latinos	US	This national report reflects on the disproportionate toll of HIV/AIDS among Latinos in the United States and intensifies the commitment of the NIH to fighting the virus and the disease in this minority community.
		Hall et al	2008	Cross-sectional study to estimate HIV incidence in the United States in 2006	Latinos	US	Study conducted with data from the CDC in 22 states of the US. Latinos are diagnosed with HIV/AIDS at a higher rate than every other racial or ethnic group in the United States except African-Americans. The HIV infection rate for Latinos in this country — 29.3 new cases per 100,000 people in 2006 — is nearly three times higher than for whites.
		Cohen et al	2006	Report on the links between migration and HIV/AIDS in Latin America	Mexican and central Americans, especially	US	Authors discuss that no solid figures exist on how many Mexicans and Central Americans migrate to the United States each year, but experts estimate that they number more than 1 million. A long list of factors puts migrants at

					from Guatemala		higher risk of HIV infection: poverty, violence, few available health services, increased risk-taking, rape, loneliness, and large numbers of sex workers.
		Gonzalez et al	2006	Cross-sectional study to examine the prevalence and determinants of high risk (HR) human papillomavirus (HPV) by country of origin in women in Spain	Latinas: Colombian, Ecuadorian, and other Latin American countries	Spain	Prevalence of HR HPV is more than three times higher in Latin Americans than in Spaniards. Latin American women's HPV prevalence resembles more that of their countries of origin. It is essential that health service providers identify these women as a priority group in current cervical screening programmes.
		Deren et al	2005	Discussing paper	Hispanics	US	The authors discuss four main research challenges to the study of HIV/AIDS among migrant and immigrant Hispanic populations in the US: (1) the need to use multilevel theoretical frameworks; (2) the need to differentiate between Hispanic subgroups; (3) challenges to recruitment and data collection; and (4) ethical issues.
		Bronfman et al	2002	Mixed-methods multi-centre study that analyses the socioeconomic, cultural and political contexts that give rise to population mobility, and its relationship to vulnerability to HIV/AIDS	Mexican and central Americans	US	The transit stations in Mexico and Central America share low educational levels among the local population, few public services, repeated human rights violations, violence, poverty and corrupt authorities. Within this social context, transactional sex, sex for survival, rape and non-professional commercial sex happen in conditions that increase the risk of the transmission of STI/HIV, such as infrequent condom use. Migrant women and sex workers are particularly vulnerable in this context.

		Organista et al	1998	AIDS-related knowledge, attitudes, and behaviours were assessed in female Mexican migrant labourers	Mexican women	US	Although the women surveyed (n=32) were knowledgeable about the major modes of HIV transmission, 33-50% believed that they could contract AIDS from unlikely casual sources.
		Organista et al	1997	Survey of condom-related beliefs, behaviours, and perceived social norms in Mexican migrant labourers (similar paper published by the author in 2006)	Mexican women	US	Subjects (n=501) reported few negative beliefs about condom use and high efficacy to use condoms in challenging sexual situations but social norms sanctioning condoms were limited. Results revealed mixed knowledge of HIV transmission, poor knowledge of condom use, and higher condom use with occasional versus regular sex partners.
		Salgado de Snyder et al	1996	AIDS risk behaviours among rural Mexican women married to migrant workers in the US	Partner of Mexican temporary immigrant workers	Migrant workers travelling to the US	The women (n=100) had active sex lives with their spouses. Most of the women interviewed had at least some knowledge about AIDS. Although the women held some misconceptions, they had mostly accurate AIDS-related information. A third of the women felt at risk for AIDS, mostly because they doubted their husbands' fidelity.
		Khan et al	2008	Cross-sectional molecular study of Hepatitis B genotypes	Japanese	Bolivia	HBV genotypes other than Genotype F (HBV/F) are considered a reflection of human migration into South America. Japanese immigrants (n = 287) and natives (n = 200), were screened for HBV serological markers. Results suggest that Japanese immigrants might have introduced HBV/B and HBV/C to natives in Bolivia, conversely, exposed to the indigenous HBV/F.
Chronic conditions/ non-infectious diseases and mortality rates	Mental health	OIM & MINSAL	2008a	Diagnostic study of the living conditions of immigrants in the northern boroughs of the capital of Santiago	Immigrants	Chile	Migrants undergo a series of difficulties such as lack of adequate information on the rights and duties of migrants and overload in primary care. A set of socio-cultural elements is perceived to exist in relation to the quality of health care, which would act unfavourably for the migrant and that relates to discrimination and prejudice. Around 15% of migrants declare they have no health insurance system.
		OIM & MINSAL	2008b	Qualitative study of the mental health of immigrants living in the	Immigrants	Chile	This study characterized the social and cultural factors of risk, vulnerability, more protective factors associated with mental health problems as well as. The perception and

				deprived borough of Independencia in Santiago			access to mental health care in the community.
		Eisenman et al	2008	Qualitative study to explore the illness beliefs and treatment preferences of Latino immigrants with PTSD	Latinos	US	Participants identified their primary feelings as sadness, anxiety, nervousness, and fear. Participants viewed their PTSD as impairing health and functioning.
		Simich et l	2007	Qualitative study on experiences of living without regular immigration status and implications for health security among irregular migrants in Toronto Canada	Mostly Latinos	Canada	The majority of study participants came to Canada to escape violence as well as lack of economic opportunity in home countries in Latin America, and most have tried to follow correct immigration procedures. Most are parents working in low-paying, exploitative jobs. They showed signs of suffering from trauma, depression, chronic stress, family separation and stress-related physical illnesses.
		Livingston et al	2007	Cross-sectional exploratory study that assess the relationship between acculturative stress and negative health and gender	Caribbean immigrants	US	Both males and females (n=401) reported a positive relationship between personal problems and depression. Female immigrants, with increasing personal problems, reported more physical health problems. Male immigrants who had more group affiliations and who reported more loneliness had less symptoms of depression.

		Shirakawa et al	2007	Cross-sectional study to compare sociodemographics and diagnoses of Japanese Brazilian psychiatric outpatients in Japan (remaining group) and in Brazil (returning group)	Brazilian immigrants in Japan and Japanese immigrants in Brazil	Brazil and Japan	The individuals who returned to Brazil were mostly male and unmarried, had lived alone in Japan, had stayed there for short periods and were classified in the schizophrenia group. The individuals who remained in Japan were mostly female and married, were living with family or friends, had stayed there for long periods and were classified in the anxiety group. Living with a family and having a network of friends is important for mental health in the context evaluated.
		Sabin	2006	Cross-sectional survey of mental health status of Mayan refugees after repatriation to Guatemala	Mayan migrants returning to Guatemala	Guatemala	The respondents (n=179 households) had personally experienced a mean of 5.5 trauma events and had witnessed a mean of 7.3 other trauma events. Of the respondents, 8.9% met the symptom criteria for PTSD, 17.3% for anxiety, and 47.8% for depression.
		Trad	2003	Ethnographic study of Brazilian immigrants in Spain	Brazilian immigrants	Spain	In their new community, immigrants (n=29) are exposed to environmental and social transformations, especially in daily life, which they gradually attempt to understand and incorporate. We can distinguish various stages in this process: moments characterized by breaks and the construction of a new social reality.
		Nubia	2000	Discussing paper on the psychosocial and cultural effects of the displacement	Internal migrants	Colombia	Author proposes that armed war has forced communities to take shelter on the outskirts of urban areas to protect life, in conditions of hardship and indignity. Internal migration processes collectively or individually, have been a characteristic of the conduct of war at their current development levels.
		Miyasaka	2000	Cross-sectional study of the mental health of two communities of Japanese Brazilians: a comparative study in Brazil and in Japan	Brazilian immigrants in Japan and Japanese immigrants in Brazil	Brazil and Japan	Comparative community-based mental health survey conducted in 1997-1999 (n=213 second generation Japanese in Brazil and 153 Brazilian immigrants in Japan). The mental health status of the Japanese-Brazilians living in Kiyoharadai, Japan, is significantly worse than that of the community living in Brazil, particularly among women, smokers and students.
		Snyder	2000	Cross-sectional study of the levels of mental problems immigrants from Central America and Mexico	Central American and Mexican immigrants	US	Compared with subjects born in the US, immigrants had high levels of generalized stress. 52% of the American war refugees filled the criteria of the DSM-III to be diagnosed with PTSD.

		Quiroga	1997	Cross-sectional qualitative analysis on internal migrants in Argentina	Female university students & internal migrants	Argentina (rural to capital)	This study supports the hypothesis that migration is a process of separation of context, which results in a grieving process. When this coincides with the separation of parents, typical of late adolescence, both the context and the loss of parental figures generate a special mourning process.
		Sundquist	1995	Cross-sectional analysis using the survey of the Swedish National Statistics Institute	Latinos from Chile (political refugees)	Sweden	Refugees living in Lund and repatriated to Chile (n=51) considered their health as bad in a higher proportion than their Swedish counterparts (n=1132).
		Sundquist	1994	Population-based cross-sectional study, with Latin-American refugees and other migrants	Latinos and others	Sweden	338 Latinos, 396 Finnish, 161 South European labour migrants and 996 Swedish. The strongest independent risk indicator for self-reported psychological distress was being a non-European refugee, i.e. a Latin-American refugee, with an estimated odds ratio of 4.39 (2.49-7.31).
		Molesky	1986	Cross sectional study of Pathology of Central American refugees	Central American refugees	US	The refugee is angry, frustrated, and depressed. Mental health specialists in San Francisco observe how similar the refugees' symptoms seem to post-traumatic stress disorder.
Mortality rates	Birth outcomes	Mallin & Gissler	2009	Cross-sectional study of access to and use of maternity services, and their outcomes among ethnic minority women	Wide range immigrants including Latino women	Finland	Primiparous women from Africa, Somalia and Latin America and Caribbean had most caesarean sections while newborns of Latin American origin had more interventions after birth.

		Eschbach et al	1999	Analysis that estimates the number, causes and location of migrant deaths at the southwest border of the US between 1993 and 1997	Migrants including Latinos	US	Deaths from hyperthermia, hypothermia and dehydration increased sharply from 1993 to 1997 as intensified border enforcement redirected undocumented migration flows from urban crossing points to more remote crossing areas where the migrants are exposed to a greater risk of death.
		Rosenwaike & Hempstead	1990	Cross-sectional study to explain mortality of three population groups: Puerto Ricans on the island commonwealth, Puerto Rican born persons in New York City and Puerto Rican born persons in the rest of US	Puerto Rican	US	Mortality is much higher among Puerto Ricans in New York City than among those residing elsewhere. Much of the difference is due to excess mortality caused by cirrhosis of the liver and homicide. Puerto Rican born persons living on the mainland but outside New York City generally have low mortality, even when compared with U.S. whites
		Rosenwaike	1984	Cross-sectional study to analyse the mortality in 1979-81 of three first generation Hispanic populations in the US	Hispanics	US	Mortality is relatively high among Cuban-born, Mexican-born and Puerto Rican-born adolescents and young adults, particularly males, largely due to violent deaths. Aged migrants, despite their disadvantaged socioeconomic status, exhibit relatively low death rates from heart disease and cancer.

CHAPTER 4

UNDERSTANDING MIGRATION IN THE CONTEXT OF THE SOCIAL DETERMINANTS OF HEALTH (SDH)

Not only a gap, but also a gradient

Empirical evidence shows that there is not only a gap, but also a “gradient” in health outcomes between different levels of socioeconomic position. The gradient explains how every person in an unequal society has a worse health status, even the rich ones, than those living in a more equal society. It also shows how the difference between the most poor and the most rich is widening throughout time, not because the poorer ones are necessarily getting worse, but because the relative richer ones are improving their health very fast while the others stay in the same detrimental condition.

Graham, H.2004

Summary Box 4

What research question is included in this chapter?

What is it known about **the migration process** and its association with health **and the model of the Social Determinants of Health (SDH)**?

This chapter refers particularly to the final part of this research question: what is it known about the migrations process and its association to the SDH model.

What is already known?

International evidence highlights the fact that medical care is not the main determinant of health, but it is determined largely by the social conditions in which people live and work (their Social Determinants of Health, SDH). The most recent model of the SDH describes what is known in terms of the relationship between different SDH and wellbeing and health of populations.

What does Chapter 4 add?

- All theoretical models on SDH and health inequalities have been developed from research conducted in high-income countries, mostly the UK and the US.
- Theoretical frameworks on this topic need to be tested and adapted for middle and low-income countries, such as those in the Latin American region.
- This study cannot capture all the mechanisms and pathways that could explain the existence of social and health inequalities in the international immigrant population in Chile, but it is a first attempt towards a better understanding of them in the Latin American region.

Overview

This chapter contains a brief description of the models developed to explain the relationship between the Social Determinants of Health (SDH) and health. It also provides a narrative review of the SDH with a focus on migration in the world, Latin America and Chile. This chapter aims to present specific knowledge regarding migration and health, building on the previous three chapters and focusing on the model of the SDH.

Introduction

The Social Determinants of Health (SDH) have been defined as the social conditions in which people live and work and that affect their health; in other words, the social characteristics within which life has placed them (see definitions in Chapter 1). This concept has been widely used in the literature and in the field of public health policies, particularly over the past 20 years. It highlights the critical fact that medical care is not the main determinant of health, but suggests that instead it is determined largely by the social conditions in which people live and work. The chapter is divided into three main sections. The first section contains a brief description of the models developed to explain the existence of health inequalities worldwide and their relationship with the SDH. The second section aims to explain the relationship between migration and the SDH, following the structure of the latest model of the SDH. This part briefly lists specific knowledge of migration to international comprehensiveness of the SDH that will be expanded in the second part of this thesis (chapters 6 to 12). Finally, the third section of this chapter discusses the pending challenges and limitations of current research on SDH and on their relationship with migration and health in the world and in Chile.

4.1 MODELS DESCRIBING THE SOCIAL DETERMINANTS OF HEALTH (SDH) AND MODELS EXPLAINING THEIR CONNECTION WITH HEALTH

4.1.1 Models explaining the relationship between the SDH and health

Four main models have been developed in order to explain the relationship between the SDH and health. Those models are: (1) material/neo material models; (2) behavioural/cultural models; (3) psychosocial models; and (4) the life-course approach (Bartley, 2007) (see Table 4.1). The following paragraphs will describe each of them in a brief narrative fashion. It should be noted that these models have been developed outside of Latin America and are based on research into health primarily in the UK, the US and other developed countries. However, some key variables of these models are available in the CASEN survey 2006, and will be explored as a first step towards an understanding of the transferability of these theoretical models into middle-income countries such as those in Latin America, especially Chile.

The CASEN survey includes measures of *material household conditions*. These are directly related to the effects of absolute poverty included in the materialist model and indirectly related to the effects of relative social position included in the psychosocial model. The CASEN survey also contains measures of *socioeconomic status*, including income, education and type of occupation, again related to the psychosocial model. Unfortunately, no data on individual health-risk behaviours are captured by the CASEN survey and will need to be explored in the future. This thesis also includes measures of access to health care and use of health care services by international immigrants in Chile, which are not clearly displayed in these theoretical models and only partially tackled by the neo-materialist model, but might be a significant dimension to include in future adapted versions of these frameworks in Chile. The complexity of the Chilean health care system and the lack of universal coverage for every person living in the country will be described in detail in Chapter 8.

Table 4.1 Main models developed to explain the relationship between SDH and health outcomes

	MAIN EXPLANATORY MODELS (Bartley, 2007)		
	Material	Cultural/ behavioural	Psycho-social
Influences	Individual income determines diet, housing quality, polluted environment, dangerous work	Differences in beliefs, norms and values mean that individual members of less advantaged social groups are less likely to drink alcohol moderately, abstain from smoking and take exercise in leisure time, etc.	Status, control, social support at work or at home, balance between effort and reward influence health through their impact in body functions

4.1.1.a) Material/Neo material models

Much of the evidence for the existence of material causes of health inequalities has come from different studies that showed that health is worse in people who live in poverty (e.g. Marmot et al., 1991; Mustard et al., 1997; Wolfson et al., 1993; Kaufman et al., 1998; Pappas et al., 1993; Bartley, 2007). An impressive feature from several studies is that illness and mortality are not just high in the poor and average in the rest. Rather, illness and mortality show a gradient, that is to say a stepwise increase, with each step down the income ladder (Davey Smith et al., 1996a; Davey Smith et al., 1996b). A large number of studies have tested the materialist model, most of them in developed countries. Both individual and household incomes have been found to be associated with mortality (Mustard et al., 1997; Kaufman et al., 1998) and life expectancy (Wolfson et al., 1993). Moreover, levels of analysis used in the past include the individual, neighbourhoods, regions, nations, amongst others, and have all shown a consistent income gradient with poorest health rates in those living in poverty compared to those who are wealthy.

As proposed by Bartley (2007), the materialist model can be easily understood, but is more complex than is observed on the surface. It is commonly accepted that the environment is the place where the body comes into contact with health hazards like damp, mould, fumes and dust, low temperatures, or hazardous places engendering disease and injury, and that those are partially determined by household income (i.e. the ability to obtain adequate housing and keep it warm and clean, materialist model) or the existence of social policies providing minimum adequate housing to those who unable to afford it (i.e. public sources such as social benefits to those in poverty and to a lesser extent universal coverage for health care, neo materialist model) (Blane, Bartley and Davey Smith, 1998; Blane, Mitchel and Bartley, 2000; Doniach et al., 1975). However, when trying to estimate the size of the effect of these types of material factors on health, they are not responsible for more than 25% of deaths (Bartley, 2007). On the one hand, methodological limitations, such as the recognition of the real causes of death among workers exposed to hazards, are a relevant issue. In addition, psycho-social and life-course perspectives need major consideration to complement the material or neo-material factors (developed to explain why countries with public subsidies have better health outcomes than those that don't have social public support) (Bartley, 2007, Deaton and Lubotsky, 2003; Duncan, 1961; Fiscella and Franks, 1997; Mitchell, Blane and Bartley, 2002; Morris et al., 2002; Platt et al., 1989).

An extensive debate regarding the importance of the materialist/neo materialist model has been held in the past two decades, particularly in developed countries like the UK and the USA. Currently, it is agreed that the materialist/neo materialist model is not as important as other

explanatory models of health inequalities among developed countries, where absolute material poverty does not exist to a large extent (Lynch et al., 2001; Mackenbach, Looman and Kunst, 1993; Blane, Bartley and Davey Smith, 1998; Blane, Mitchel and Bartley, 2000; Martin, Platt and Hunt, 1987; Coburn, 2000; Davey Smith et al., 1996a; Davey Smith et al., 1996b). Within developed countries, it is the effect of relative poverty (as established when comparing different socioeconomic groups in a country or across similarly developed countries) that has the largest effect upon health inequalities (Wilkinson & Pickett, 2009; Wilkinson, 1996; Kawachi et al., 1997; Kennedy, Kawachi and Prothorwstith, 1996). In contrast, developing countries like Chile and others in the Latin American region have not tested the relative importance of a materialist model versus other models. Nonetheless, because of the early stage of their economic development, they do face the existence of absolute poverty in a large proportion of their population (Roberts, 2002; Ortiz-Hernandez, Lopez-Moreno and Borges, 2007; De Almeida et al., 2003). For that reason, it is unclear the extent to which material factors might explain inequalities in health between socioeconomic groups. No study in Chile has yet analysed this hypothesis and I will explore the possible effect in the immigrant population and the Chilean-born in this thesis.

4.1.1.b) Behavioural/cultural models

Since the publication of the Black Report in the UK in 1986, “both individual research reports and official surveys have repeatedly documented persistent differences between social groups in various types of consumption and leisure activities that are related to health” (Bartley, 2007). Major risk behaviours, like smoking, have displayed a clear socioeconomic gradient in different countries, meaning that the less advantaged the social class position, the more likely it is that a person will smoke. Similar findings have been reported by other authors (Bunton and Burrows, 1995; Cable, 1999; Cameron and Jones, 1985; Lantz et al., 2001; Lynch et al., 1997b; Stronks et al., 1997). Bartley (2007) has described two types of behavioural/ cultural model, the direct model and the indirect model.

The *direct behavioural model* rests on the assumption that people with less control over their employment circumstances, and with a lower socioeconomic position and income, are less capable of developing certain types of personal abilities and characteristics like IQ, coping skills or personal resilience. The direct behavioural model could be seen as a sub-type of the behavioural/ cultural explanation, where the link between social position and behaviour is due to adverse personal characteristics (or the lack of good ones) that are independent of social status.

However, people with favourable attributes, such as internal locus of control, may move up the social scale into more advantaged positions as a result of their mental capacities. The *indirect model* observes behaviour as a result of culture, defined as a complex whole that includes knowledge, beliefs, art, morals, laws, customs, and other capabilities and habits (Bartley, 2007). Shared rules govern behaviours that are shaped by exposure to a certain social environment over the life course. Very few studies have appeared which acknowledge cultural differences between social classes causing social differences in health. However, what has been developed so far tends to support the relevance of cultural circumstances affecting social differences in health (Bartley, 2007; Shewry et al., 1992; Chandola, 1998; Sacker et al., 2000).

In the context of migration, research has suggested that some protective individual behaviours disappear after immigrants arrive in the foreign country, and that individual health-risk behaviours that are prevalent in the host society tend to be acquired by first and second generation immigrants over time, through a process of acculturation. *Acculturation* has been defined as an individual's process of learning about and adoption of the receiving society's cultural norms, as well as the degree to which the person maintains his or her cultural heritage (Kohatsu, 2005; Phinney, 2003; Schwartz et al., 2010; Schwartz et al., 2011). The concept of *assimilation* is particularly defined as immigrants becoming more similar to the host society, and the concept of *enculturation* is defined as immigrants maintaining their social norms and cultural traditions in the foreign country (Warner, Fischbein and Krebs, 2010). Acculturation issues are salient not only for first-generation immigrants but also for those of the second generation. Indeed, the heritage culture often predominates in the home (and the local community) for individuals from immigrant families. As a result, second generation immigrants are still likely to be socialized toward the practices, values, and identifications typical of their heritage cultures (enculturation process) (Schwartz et al., 2010b; Portes & Rumbaut, 2001). These changes, and the interaction between acculturation/assimilation and enculturation processes among immigrants over time, could go a long way to explaining the gradual deterioration of their health (i.e. the disappearance of the healthy migrant effect mentioned in Chapter 3).

International evidence regarding different migrant groups in different settings supports the phenomenon described above (e.g. Acevedo-Garcia et al., 2005; Jeltova, Fish and Revenson, 2005; Warner, Fischbein and Krebs, 2010; Toppelberg & Collins, 2010; Chun, Chelsa and Kwan, 2011; Arcia, Skinner and Bailey, 2001; Gordon-Larsen et al., 2003; Stoddard, 2009). No research in this topic has been conducted among immigrants in Chile, but recent evidence reports an increased prevalence of individual health-risk behaviours in the Chilean population,

especially among those of low socioeconomic status (with the exception of tobacco) (Encuesta Nacional de Salud, National Health Survey, ENS, 2010). Moreover, an urgent need to incorporate a broader understanding of the social inequalities that underlie this phenomenon, due to its direct policy implications in Chile, has been also identified (Cabieses, Zitko and Espinoza, 2011).

4.1.1.c) Psycho-social models

An interesting finding in several studies in the past few decades has been that risky individual behaviours cannot fully explain health inequalities. In other words, it has been necessary to look beyond lifestyle for explanations of the existence of differences in health between more and less advantaged groups. One of the most widely researched alternatives is the psycho-social model, which argues for the inclusion of key “psycho-social factors” in the explanation of social inequalities in health, those being social support, control and autonomy at work, over-commitment, and balance between efforts and rewards (Bartley, 2007). One of the best findings supporting this model –mentioned by several authors nowadays- is the fact that instead of a very poor group at the bottom of the income distribution having poor health while everyone else is well, what has been found is a gradient from the very top to the very bottom (Wilkinson, 1996; Wilkinson & Pickett, 2009; Lynch et al., 1996; Bartley, 2007; Marmot & Wilkinson, 2001). Data worldwide, analysed by researchers over past decades, support the fact that psycho-social variables need to be included in addition to lifestyle variables in order to achieve the total explanation of health inequalities among societies (Carroll et al., 1997; Greenwood et al., 1996; Vrijkotte et al., 1999; Johnson et al., 1996; Jonsson et al., 1999; Kivimaki et al., 2002; Lynch et al., 1997a; Vahtera et al., 2000; McEwen, 1998; Peter et al., 1998; Steptoe, 2000; Steptoe et al., 1995).

The basic underlying process explaining the relevance of psycho-social factors is the organic response to stress, or the so-called “fight or flight” response. Two circuits are involved in the reaction to stress: the sympathetic-adrenomedullary and the hypothalamic-pituitary-adrenocortical. This physiological response to stress, maintained over time, could explain the severity of health outcomes amongst those who have experienced chronic exposure to stress (Siegrist, Klein and Voigt, 1997). A striking finding appeared in the international research on health inequalities: adverse experiences, like having a low social status in a hierarchical society, could be strongly related to poor health outcomes. Social health inequalities would, therefore, be a consequence of unequal societies. In addition, it was proposed that the mentioned response to stress was intimately related to socioeconomic position of individuals in a hierarchical society. Richard

Wilkinson (1996, 2000, 2004, and 2006) and Michael Marmot (2004, 2008, and 2009) have developed a robust explanation of how low social status produces a chronic stress response that over time increases the risk of developing disease.

4.1.1.d) Life-course

The life course approach to inequalities in health has emerged as a significant framework from which to understand the complexity involved in health problems arising from prolonged exposure to poor socioeconomic status across the life span. It is not considered an additional model, but a broad framework that might encompass all the other explanatory models for social health inequalities (e.g. Davey Smith et al., 1996b; Davey Smith, Blane and Bartley, 1994). The key idea of this perspective is that health in later adult life may be a result of complex combinations of circumstances taking place over time (Bartley, 2007; Davey Smith and Hart, 2002; Davey Smith and Ebrahim, 2003). As a common example, if people from less privileged social backgrounds do less well in education, and are less equipped for later social success, should this be regarded purely as a result of the personal characteristics with which they were born? Or is it an accumulation of circumstances, experiences and characteristics that have taken place over time?

Some of the most recognised researchers in the field of life course epidemiology are Forsdahl in the 1970s, Barker and Osmond in the 1980s, Kuh and Ben-Shlomo in the 1990s and Davey Smith in the last decade. Currently, several theories exist under the broad umbrella of the life-course approach. The interest in this model has grown in the last decade as a reflection of the lack of an absolute explanation of health inequalities by the material, psycho-social and especially the behavioural models. Additionally, the availability of large cohorts has allowed relevant longitudinal studies to test the life course hypothesis (Bartley, 2007). But most importantly, the life course approach is not a wholly new theoretical construction, but an interdisciplinary method that incorporates many different approaches and continues to grow over time (Davey Smith et al., 1997; Graham, 2002; Gunnell et al., 1996; Hart, 1998a; Hart, 1996b; Holland et al., 2000; Kuh and Ben Schlomo, 1997; van de Mheen et al., 1998a; van de Mheen et al., 1998b; Wadsworth, 1986; Wadsworth, 1997). Three prominent models have been described under the life course approach: the pathway model (poor childhood circumstances as the first stage on the pathway to poor adult circumstances and health); the critical period model (critical periods of biological and social development where if something goes wrong permanent damage will result); and the accumulation model (which focuses upon how hazards and advantages

accumulate over the life course to determine the risk of chronic disease and mortality) (Bartley, 2007; Davey Smith and Ebrahim, 2003).

4.1.2 The Models describing the SDH

Different models have been proposed in order to describe the social determinants of health (SDH) of populations. Their significance lies in the explicit formulation of mechanisms developed in order to understand the different proposed SDH and for the later creation of effective policies to improve community health. The models on the SDH are meant to synthesise from significant international evidence the pathways or mechanisms for health inequalities presented in the previous section. Four of these theoretical models have been highlighted by one of the latest reports of the Commission on Social Determinants of Health of the WHO (CSDH, 2008a, details of each of them in Appendix-4). The following paragraphs will address these models in chronological order of appearance. Appendix 4 displays the explanatory diagram for each of them. The latest model developed by the CHSD will be described in greater detail (CSDH, 2005; CSDH, 2008a; CSDH, 2008b).

The classic model on SDH was developed by *Dahlgren & Whitehead* and presented in 1991. It is one of the most cited in the literature in this field and considers at least five levels where the different determinants of health could be located. The first level is related to those specific to the individual, the next level or layer corresponds to the personal attitudes and lifestyles, the third layer considers all the factors of the community networks and the social life of the individual, the next level refers to the living and working conditions and the final level comprises the environmental, cultural and economic institutions of the society as a whole. The major contribution of this model is that it has allowed a dynamic interaction between different factors, both within and between levels (Appendix-4.1).

A second model proposed by *Mackenbach et al.* (1997), distinguished between two mechanisms through which inequalities were the results of health. The first one is termed "selection" and acts through the identification of the adult social position of individuals, from direct and indirect health at an early age. The indirect consequences are a part of late effects expressed in adult incidence of health problems, and also by the likes of cultural and psychosocial factors and factors related to the environment of individuals as children. The second is the "causation" mechanism, where social position determines the presence of other factors that influence the incidence of new health problems, such as lifestyle, environmental and structural factors related

to psychosocial stress. Overall, this model was one of the first to mention the effect of childhood on health life events to the current understanding of SDH, with significant implications for later research questions posed and models developed for health inequalities and health related outcomes worldwide (see Appendix-4.2).

A third model was introduced in 1998 by *Diederichsen, Evans & Whitehead* and was amended in 2001. The model was based on the fact that certain so-called social contexts and circumstances would be conducive to the generation of different positions or social strata, through the distribution of power, wealth and risk. Examples of these contexts and circumstances are, among others, the educational system and labour policies (see Appendix-4.3).

A fourth model was developed at almost the same time in an attempt to integrate the clinical and preventive- public health perspectives. It was developed by *Brunner, Marmot & Wilkinson* (1997) and referred to the multiple influences throughout life. It connected the physiopathology mechanisms of individuals (with particular emphasis on the neuro-endocrine-immunologic response) in the production of disease and also linked this organic dimension with material, psychosocial and behavioural factors, which were in turn determined by the social structure of a community. The model also indicated the action of culture, genetics and early life events, particularly at a population level. Of particular importance was that this model put into perspective the cumulative effects through the course of life (the so called life course and early life course approach) (see Appendix-4.4).

Finally, the *Commission on Social Determinants of Health* (CSDH, WHO) developed its own scheme in an attempt to synthesise the different theoretical models. This new model meets more or less the following aims: to clarify the mechanisms through which social determinants generate inequalities in health; to establish the ways in which different determinants are related; to establish a framework to assess the significance of each of these; and to generate a map clearly identifying the locations and levels of action and intervention (CSDH, 2005). Its broad structure is very similar to Lisa Berkman's classic model of Epidemiology, with its macro, meso and micro components (Berkman & Kawachi, 2000).

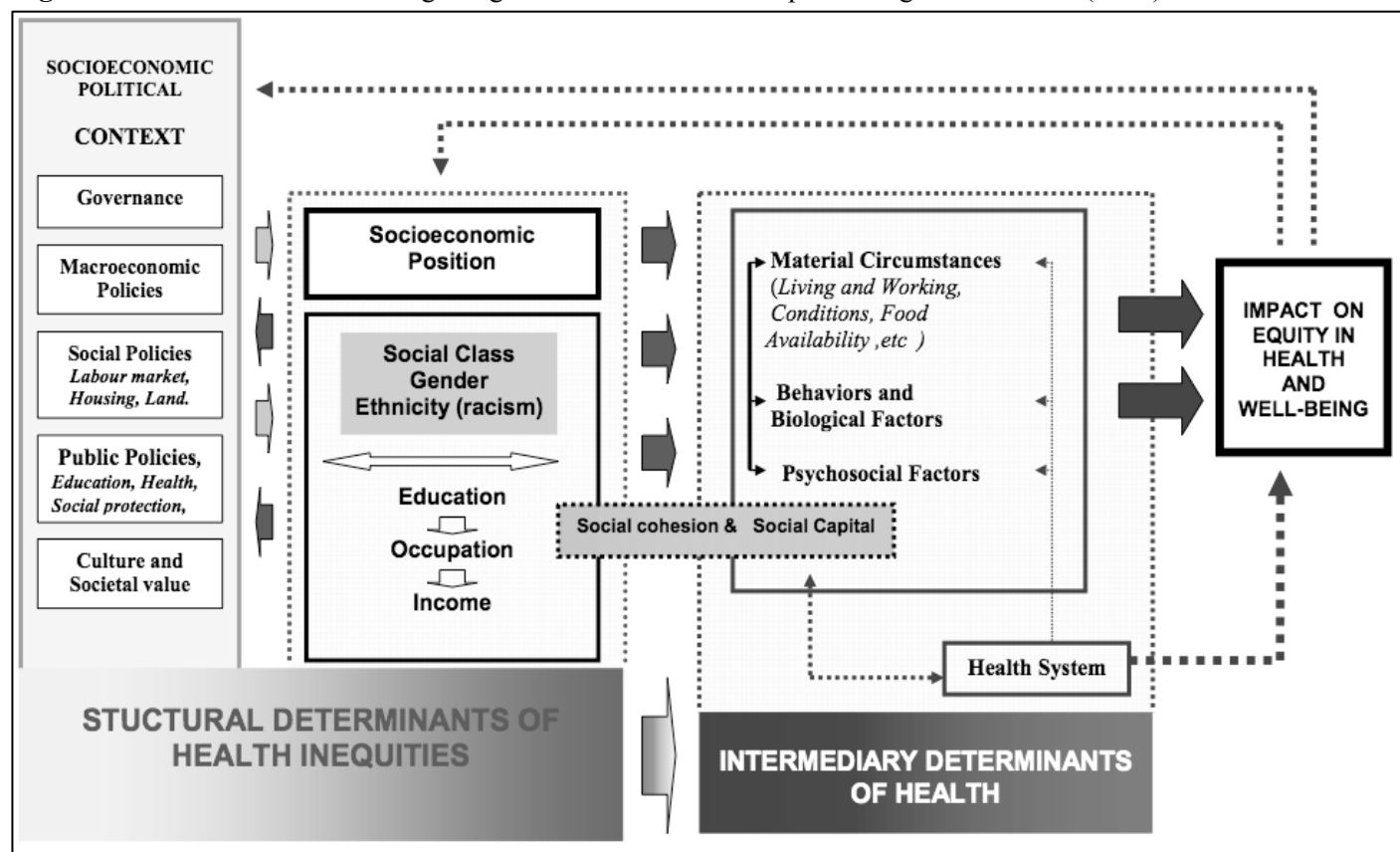
The proposed model provides a macro level related to the social and political context that includes social policies (housing, employment), macroeconomic policies, public policies (health, education, social protection), and also culture and social values. This first level determines the unequal and inequitable socioeconomic position of individuals. The constituent elements of a

socioeconomic position would correspond to the known structural determinants of health or determinants of health inequalities. These are level of education, occupation, income, and certain aspects of social cohesion, among others. This second level sets the opportunities for health among social groups, based on the hierarchical position of power, prestige and access to resources.

The opportunity-vulnerability of health is positioned at a third level, where intermediate factors can be found, for example working conditions and housing, psychosocial circumstances (e.g. stress) and behavioural factors. This specific group of factors determining the position of an individual inside a group are called "social determinants of health." Interestingly, this level also includes the health care systems. Finally, after the social and political level, the structural level and the intermediate level, there is also a health status level, related to the distribution of health and disease in a population. It is thought that a population might improve its health status through feedback systems that are able to modify the social and political contextual factors in the very first level (see Figure 4.1).

I have used this model to describe my personal view of the various SDH that exist among the immigrant population, according to evidence presented in Chapters 2 and 3. This model will be presented in the following pages and discussed later in this thesis (Chapter 12 on discussion and implications of the findings) for a better understanding of the living conditions and health of international immigrants in Chile.

Figure 4.1 The CSDH Model: Integrating different models developed throughout evidence (2008)



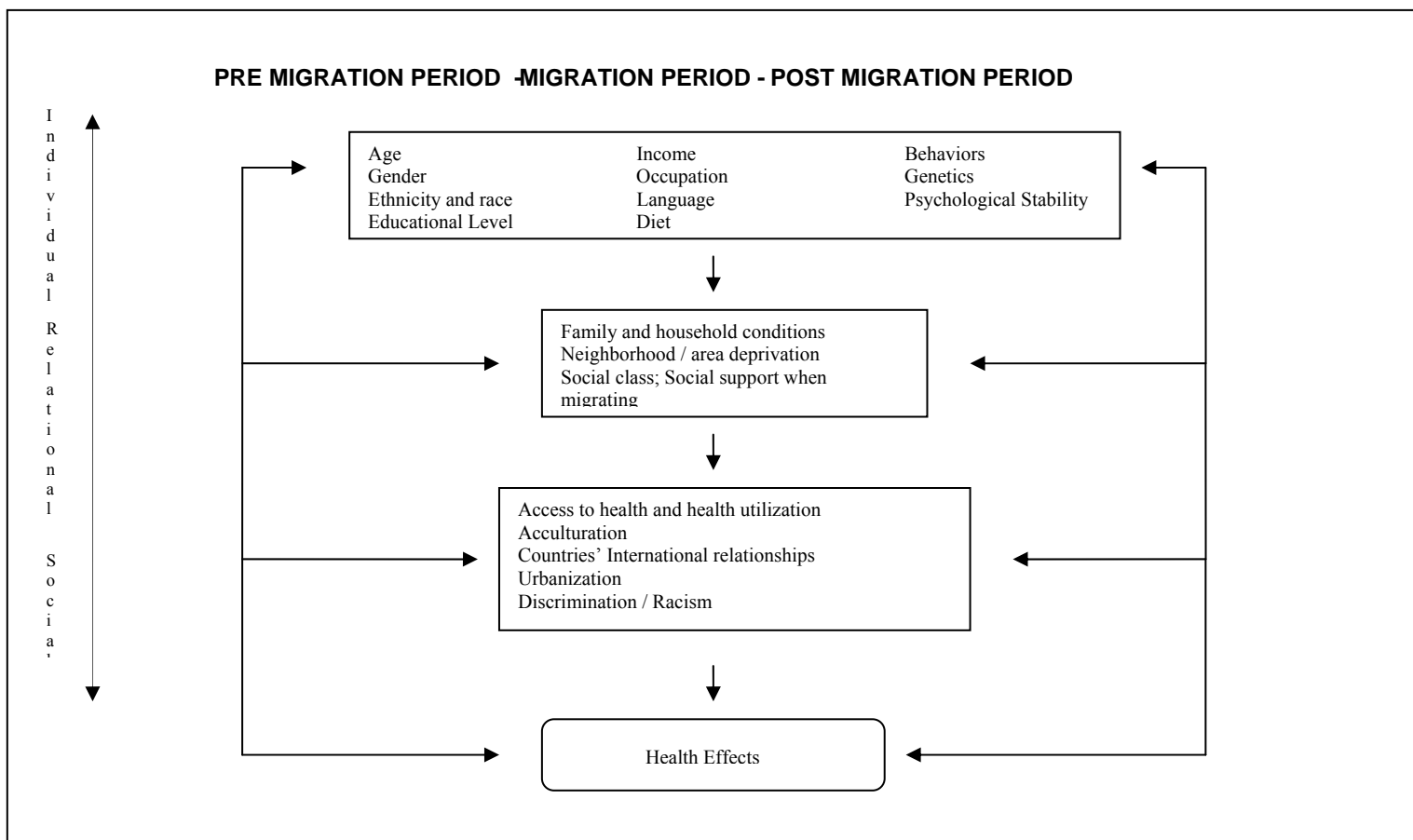
4.2 UNDERSTANDING MIGRATION IN THE CONTEXT OF THE SDH

Throughout this background to my thesis, I have described the migration process and the main characteristics of the migrant populations. I have also described the health-related issues that are most relevant at each stage of the migratory process. This section aims to explain the relationship between migration and health from the perspective of the SDH. It is my intention to consider each social determinant as a major component, mediating health-related outcomes among immigrants worldwide, and especially in Latin America and Chile. There is little data concerning the SDH and how these affect immigrants in particular (Dunn & Dick, 2000; Portes and Sensenbrenner, 1993). Consequently, this section will be a personal attempt to briefly list specific knowledge on migration to the worldwide understanding of SDH that will be later explained in the second part of this thesis.

“Classic” SDH are those already defined by the latest model on the SDH (see Figure 4.1). Those include age, gender, ethnicity and race, level of education, income, occupation, psychological factors (psychological stability), behaviours, biological factors (gene-environment interactions in particular), household conditions, area deprivation (neighbourhood), social status, and access to health care. Even though there is a considerable amount of literature supporting the relevance of each of these components, the following second part of this thesis will describe each of them especially for the migration process and its effects on health in Latin America and Chile.

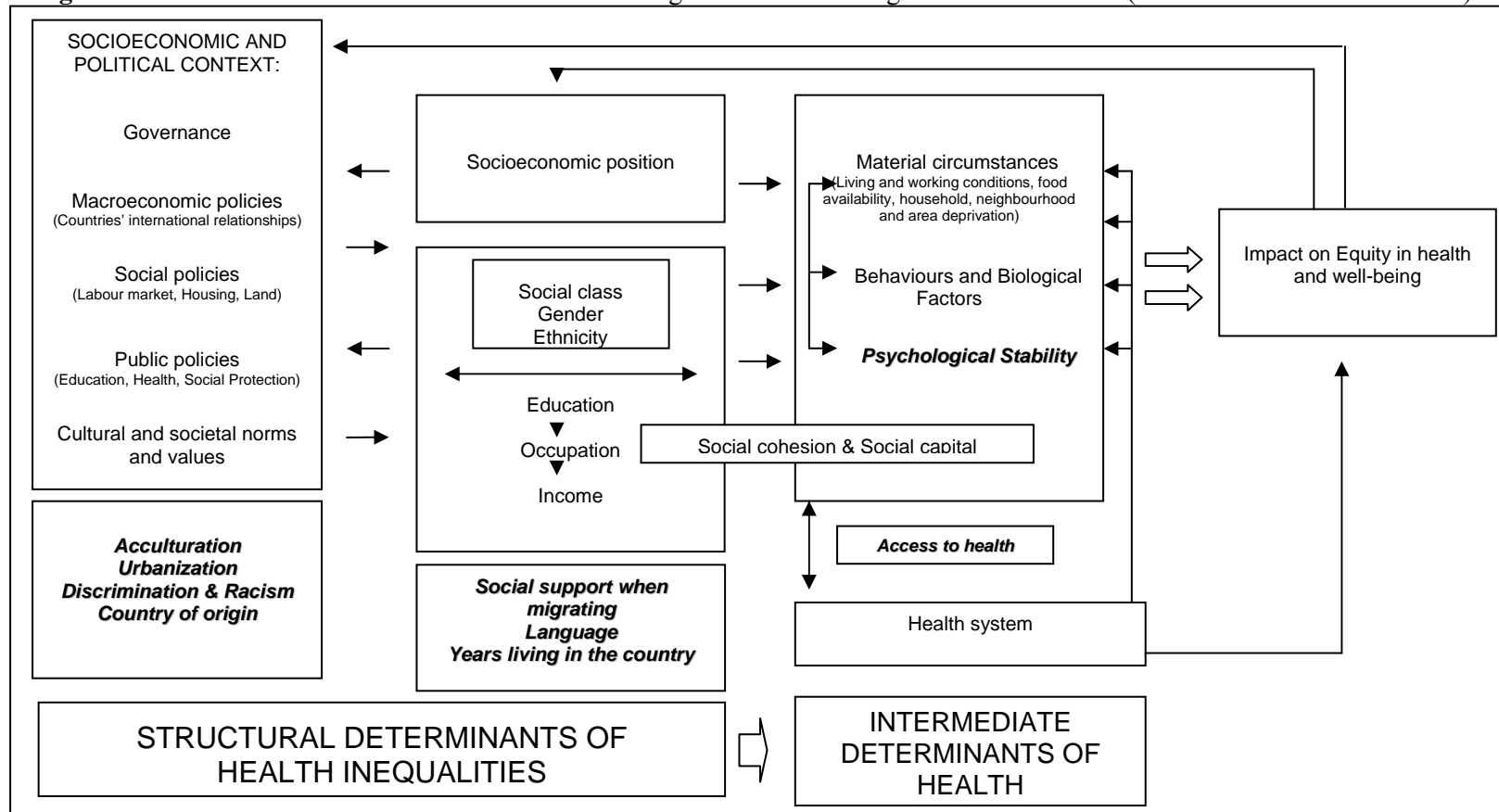
In addition, some new “migration-related” SDH are included, since they have been reported as key elements mediating health outcomes among immigrants (see Chapter 3). These are: country of origin; years living in the country; language; acculturation; urbanization; discrimination of racism (that affects at several levels); and social support when migrating. Figure 4.2 summarises these SDH. As utilised in previous diagrams in this thesis, the figure describes the SDH at different levels: individual; relational (family, friends, and neighbourhood); and social (cultural, socioeconomic and political context). Moreover, I have added to the last model of SDH developed by the WHO CSDH (2008a), the specific components relevant for migration, which appear in *italic bold* in the diagram. I have presented this model in Figure 4.3. Most of these SDH are not available to explore in the CASEN survey 2006 or any other dataset, with the exception of country of origin and years living in Chile, which will be analysed and discussed later in this document.

Figure 4.2 Description of Social Determinants of Health (SDH) included in this section, by extending a diagram presented in Chapter 3*



*Figure elaborated by the author

Figure 4.3 Model on Social Determinants of Health adding variables new “migration-related” SDH (those in *italic bold characters*)



4.3 RESEARCH LIMITATIONS AND CHALLENGES WHEN RESEARCHING MIGRATION AND THE SDH IN CHILE

4.3.1 Limitations when conducting research on migration and SDH in Chile

The previous chapters have illustrated limitations related to research on migration (Chapter 2, section 2.7) and research on migration and health (Chapter 3, section 3.5). This chapter will describe particular research limitations on the SDH that have been reported in the past in Latin America and Chile (Arteaga et al., 2002a; Martiny, 2000).

1. The current information available from datasets to conduct studies on inequalities in health has been limited in terms of accessibility, and in some instances, quality. Because the transparency of budgeting has been considered a key element in promoting fair public services, it is vital that this information is complete, accurate and readily available to the public. This is not the case in Chile.
2. There has been a lack of household-level information to combine the analysis of demographic, socioeconomic and environmental information on the quality behaviours and health service utilization of the health system at the level of households or individuals.
3. Much of the publicly available governmental information has been published in printed versions. There has been a lack of information on the variability of the summary figures and estimates given in the literature. In addition, printed publications did not always include the denominators, or references to them, that have been needed for later statistical analysis.
4. Any study that requires the analysis of information from various sectors of the public health organization in Chile has had to face the difficulty that the boundaries of administrative units of the different public health sectors did not always coincide in territorial units below the regional level. This has been an obstacle to combining information from the records of one type of unit (e.g. health services) with data from another field (e.g. the Provincial Department of Education). This issue has been controlled in the CASEN survey since 2003 by the creation of geographical “sections” by the National Institute of Statistics in 2002 that stay the same over time (more detail in chapter 5).

5. Official records have not always complied with regulations to standardize names of the databases involved in the various public departments. Not infrequently, some municipalities, especially those with combined names, have had several alternatives in the records, causing difficulty and delay in data analysis.
6. The difficulties of comparing public and private health care have also placed a limitation on the study of important aspects of health equity in Chile. When public and private sectors have been compared, which together constitute the health sector in Chile; there have been even greater variations than those observed in this study for the public sector.
7. Additionally, although ultimately both sectors have been subject to public policies that affect them, it has been much more difficult to obtain information about the private than the public sector.

Despite all the existing limitations mentioned above, there are some strategies in Chile to promote better use of information to support and advance public policy through research. For example, the Ministry of Health has been reviewing and strengthening its information systems. The government has been implementing a National System of Municipal Indicators with the purpose of systematizing a set of indicators reflecting the performance of the local authorities in key areas (health, education, social development, spatial development, administration and finance). This would provide useful information to support research, management and decision making for all those involved in the municipality in the future. Moreover, in the past few years, several government agencies have made information available on their websites. Nevertheless, no study on Social Determinants of Health (SDH) in Chile has focused on the immigrant population. Efforts to improve research on SDH in the country remain at a basic level and are focused on the general population. Systematic studies on SDH among the immigrant population would allow the development of future policy strategies to reduce the health inequalities that might exist in this group when compared to the local Chilean population.

4.3.2 Challenges in research on migration and SDH in Chile: what has been already recognised?

The social determinants of the average level of health in a population are not necessarily the same as those that influence the health of specific vulnerable groups (Rose, 1985; Graham, 2004b). This distinction is important from the health policy viewpoint, as it might be possible to promote initiatives related to the SDH of those who are vulnerable and not only for the average. As clearly stated by Marmot et al. (2008, p. 1661):

“The poor health of poor people, the social gradient in health within countries, and the substantial health inequities between countries are caused by the unequal distribution of power, income, goods, and services, globally and nationally, the consequent unfairness in the immediate, visible circumstances of people's lives—their access to health care and education, their conditions of work and leisure, their homes, communities, towns, or cities—and their chances of leading a flourishing life. This unequal distribution of health-damaging experiences is not in any sense a natural phenomenon but is the result of a combination of poor social policies and programmes, unfair economic arrangements, and bad politics. Together, the structural determinants and conditions of daily life constitute the social determinants of health and cause much of the health inequity between and within countries.”

The growing health and socioeconomic inequalities in the world make evident the need for greater support for policies aimed at reducing their causes, and redistribution of resources to the vulnerable population, thus improving the health status of these groups (Marmot and Bell, 2009). Health can be influenced by other variables modifying the relationship between socioeconomic status and health outcomes. Among them, the role of public health policies should be stressed. Countries with similar living standards may differ markedly in the state of health of their populations, according to the quality of their interventions in public health and other social policies. Three specific challenges for health inequalities in Chile have been especially discussed in the past and are posed in the next paragraphs. They build up from the detailed previous discussion on explanatory pathways and models on the SDH and how they affect health, in combination with current debates in Chile on how to improve the health of the population in this country. These are **income, occupation and access to health care**, and they will be explored in detail in the immigrant population in Chile in the following chapters, as they are considered key variables for policy implementations for reducing health inequalities in the country (Jadue & Marin, 2005).

In terms of *income*, Chile has been defined as a middle income nation (Vega et al., 2001; Espejo, 2005) with an urgent need for redistribution. This is not only necessary to ensure adequate consumption by vulnerable groups, but also because it contributes to reducing the gaps in health and quality of life. Encouraging direct interventions in the health problems of the poor also affects the income generation capacity of these groups, helping them to overcome poverty. Spending on health not only helps prevent and treat disease, but also helps people to develop more productive lives. In this way, it influences the reduction of

income inequalities and poverty (Larrañaga, 2005). Concerning *occupation* as a determinant of health, Solar et al. (2005) have proposed that the occupational health system in Chile has not incorporated changes in work organization and labour relations, resulting in a lack of coverage and a quality system that has not been adequately evaluated in the country. The challenges of real interdisciplinary work are central to the development of public policies on the health of workers. The participation of different stakeholders and the empowerment of employees, especially those in low-paid occupations, is central. The evaluation of the relationship and integration of health systems and occupational health has been considered an important aspect of health reform in Chile. There are also challenges for research into the conditions of employment and work as a social determinant of health in the country. This involves, for instance, improving the understanding of contractual status, working hazards, time spent at work, working conditions specific to gender and their relationship to health, and others (Solar et al., 2005).

Chile has developed several efforts to reduce inequalities in *access to health care*. The most notable policies in the last 40 years are: Maternal and child health programme since the 1960s; National food supplement programme since the '70s; Expanded immunization programme since 1974; National Acute Respiratory Infections programmes in 1990; Tracking preterm or low birth weight programme in 1995; Neonatal Surfactant Programme in 1997; and Fortification of flour with folic acid in 2000. Despite these achievements in access to health care and service utilization, other important elements to consider are the need for implementation of modern information systems in at least two areas: (1) the management of health institutions; and (2) the monitoring of the health status of the population through the availability of epidemiological data obtained from local levels in real time (Hernandez, Sandoval and Delgado, 2005).

Overall, action on the SDH must involve the government, civil society, local communities, business, and international agencies. Communities must be empowered at local levels to achieve success (Syme, 2004), but also ministries are crucial to the realisation of change and the commitment of international agencies (Marmot et al., 2008; Exworthy, Blane and Marmot, 2003; Lurie, 2002). Chile has initiated a significant process of transformation in the public health system and has recognised the relevance and urgency of tackling health inequalities in the local population. However, research is needed on the SDH among the immigrant population in Chile. This research will try to shed the light on this particular problem, for later work on policy interventions, to protect this potentially vulnerable group.

CHAPTER 5

METHODOLOGICAL APPROACH

Epidemiology and the web of causation

“Multiple causation’ is the canon of contemporary epidemiology, and its metaphor and model is the ‘web of causation.’ Expressed through the notion of ‘multifactorial etiology’ and embedded in the statistical techniques of ‘multivariate analysis’, the belief that population patterns of health and disease can be explained by a complex web of numerous interconnected risk and protective factors has become one of this discipline’s central concepts. Equally entrenched is the corollary that epidemiology’s power to improve the public’s health rests upon its ability to identify-and predict the results of breaking selected strands of this causal web.”

Krieger, N.2001

Summary Box 5

What is already known?

This study is framed in the discipline of Social Epidemiology, which is defined as the field that investigates social determinants of population distributions of health, disease, and wellbeing, rather than treating such determinants as mere background to biomedical phenomena.

What does Chapter 5 add?

The purpose of this research is to explore the living conditions and health status of the immigrant population in Chile and to compare them to the local population. Seven specific research questions are posed and a Chilean national representative survey conducted in 2006 is analysed.

Overview

The purpose of this thesis is to explore the living conditions and health status of international immigrants in Chile and how they compare to the Chilean-born population. After describing the main characteristics of the migration process, its relation to health and the importance of the Social Determinants of Health (SDH) as key features among the immigrant population, this chapter briefly presents the methodological approach of this research. The following six chapters present the most significant results of this study, which are then discussed and related to policy implications in Chile in Chapter 12.

Introduction

The purpose of this research is to explore the living conditions and health status of the immigrant population in Chile and to compare then to the local population. Seven specific research questions have been posed and a Chilean national representative survey conducted in 2006 has been analysed. The thesis is a secondary data analysis of a cross-sectional national survey conducted in Chile in 2006. This chapter is divided into five sections. The first part describes the type of research considered, the second part displays the main research questions and the third states the study objectives. The fourth section is dedicated to an explanation of the main materials and methods used to conduct the research, describing in particular, the variables available from the CASEN survey 2006 and how they were collected and recoded before use here. The fifth section examines ethical considerations. In particular it discusses the permission and access obtained for the surveys, any potential risks, vulnerable groups, potential benefits and the University of York Ethics Committee Approval. The final section briefly discusses the limitations of this research.

5.1 TYPE OF RESEARCH

This is a *quantitative study*, which has been defined as a “formal, objective, systematic process in which numerical data are utilised to obtain information about the world” (Burns & Grove, 2005, p37). Quantitative research is thought to be objective and deductive, as it tests theory. The purpose of this research has been to describe and understand the underlying truth about the living conditions and health of the immigrant population in Chile, or at least provide a first step towards that direction from a quantitative perspective. Data expressed in numerical form and statistical modelling are assumed to comprise the best possible strategy to use, at the time this study was conceived, for revealing the relationship between health and the SDH among immigrants in Chile and how they compare to the Chilean-born (Burns & Grove, 2005).

This research emerges from the *Social Epidemiology* discipline, which is defined by Nancy Krieger (2001a) as the field that explicitly investigates social determinants of population distributions of health, disease, and wellbeing, rather than treating such determinants as mere background to biomedical phenomena (also see definitions in Chapter 1). It requires attention to theories, concepts, and methods conducive to illuminating intimate links between variables. Social epidemiology, in other forms and known by other names, has been used for decades, if not centuries (Krieger, 1994). However, discussions of levels of analysis (Subramanian & Kawachi, 2004), integration of group and individual-level exposures (Diez-Roux, 2004), human development and life course approaches (Galobardes, Lynch and Smith, 2004), and identification of mediating pathways (Kaplan, 2004) are currently dominating this discipline (Berkman, 2004). This research will not be able to develop all of these significant aspects of the discipline, but is a first step towards understanding a under studied population in Chile: the International Immigrant Population (IIP).

5.2 RESEARCH QUESTIONS

These research questions are developed after taking into account the latest model on the SDH and its key components (i.e. sets of SDH: *demographic*, *socioeconomic* as a measure of social position, *material*, and *access to health care*) and how they relate to a range health outcomes. The following research questions also incorporate migration-related determinants, which are embedded in each research question.

5.2.1 Overarching research question

What are the living conditions and health status of the international immigrant population in Chile and how do they compare to the Chilean-born population?

5.2.2 Specific research questions

1. What is it known about the migration process and its association to health and to the model on the Social Determinants of Health (SDH)? [Chapters 1 to 4]

Using the CASEN survey 2006:

2. What are the demographic characteristics of international immigrants in Chile and how do they compare to the Chilean-born? [Chapter 6]
3. What are the socioeconomic conditions of this group and how do they compare to the Chilean-born? [Chapter 7]
4. Do immigrants report having access to the Chilean health care system and how does this compare to the Chilean-born? [Chapter 8]
5. What is the health status (recent and chronic conditions) of international immigrants in Chile and how does it compare to the Chilean-born population? [Chapters 9 and 10]
6. What are the living conditions and health status of those who preferred not to report their migration status in the CASEN survey 2006, and how do they compare to the international immigrant population? [Chapter 11]
7. How do the key findings from this research contribute to the current knowledge of immigrants in Chile and what are their potential policy implications in this country and Latin America? [Chapter 12]

5.3 METHODS

5.3.1 Type of study

Cross-sectional secondary data analysis from an anonymous national representative survey conducted in 2006 in Chile, the CASEN survey.

5.3.2 Instrument

In Chile, three possible sources of data exist to study migrants, those being information from the Migration Department in the Chilean Government, Census data, and, since 2006, the CASEN survey. The first has significant limitations for the measurement and exploration of undocumented migration and the second (Census) is one of the best sources of data on demographic characteristics, but does not provide a wide range of information on health status to relate to the socioeconomic determinants of the migrant population. The CASEN survey is the only dataset available in Chile that overcomes this limitation, but also presents significant limitations of its own, in particular, a high rate of missing values on migration status. This aspect will be further described and explored in the second part of this thesis, especially in Chapter 11.

The National Socioeconomic Characterization Survey (CASEN) is a national population based survey carried out in Chile by the Ministry of Planning since 1987. It describes the socioeconomic situation, as well as the impact of social programmes on living conditions, for the Chilean population. The CASEN survey is conducted by the Chilean Ministry of Planning (MIDEPLAN), in collaboration with the National Institute of Statistics (INE) and the University of Chile (MIDEPLAN, 2006). The 2006 instrument for data collection appears in Appendix-1 (Appendix Book, in Spanish only). This survey is conducted in order to:

1. Provide information to characterize the situation of households and the population, especially those in poverty and the groups identified as priorities for social policy, with respect to demographics, education, health, housing, occupation and income.
2. To estimate the coverage, targeting and distribution of major tax expenditure on social programs nationwide, to assess their impact on households.

5.3.3 Sample

5.3.3.a) *Sample design*

The sampling frame of the CASEN survey in 2006 included every region in Chile (XV regions). The inclusion criteria for random selection of households were: (1) all urban counties with over 40 000 inhabitants; and (2) all rural counties irrespective of the number of inhabitants. It also included people living in transient camps in any of these counties, who represented less than 1% of the total population. There was a random selection of a small proportion of counties with less than 40 000 inhabitants, but hard to reach counties were excluded, because of their very difficult geographical access (overall exclusion of 16 counties from 351 in total).

5.3.3.b) *Sampling strategy*

The determination of the sample size of the 2006 CASEN survey considered the inclusion of each of the XV regions of the country (and the urban and rural communities within each of them) of a size that allowed later adequate reliability estimations. It was intended to establish a maximum absolute error of 5% and a confidence level of 95%, assuming maximum variance (MIDEPLAN, 2006). The geographical boundaries between regions and communities within the regions were categorised by pre-defined geographical “sections” provided by a national directory of sampling units, which was estimated in 2003 by the Chilean National Statistics Institute (INE). The complex sampling strategy used in the CASEN survey considered urban and rural stratification and two stages of random selection of participants. The first stage considered the random selection of the pre-defined sections. The second stage was a random selection of the households within those sections. Finally, information at an individual level was collected for all the members of the selected households, from a single respondent.

5.3.3.c) *Sample size and response rate*

The sample for the analysis consisted of 268 873 people who belonged to a sample of 73 720 households (44 854 urban and 28 866 rural ones) from 335 counties across the 13 regions of Chile (from a total of 351 counties in the country, representing 95.4% of the total Chilean territory) (INE, 2009). The response rate of the 2006 CASEN survey was 84.8%. The mean number of households included in the CASEN survey per region was representative of the total population within each region and also representative of the population in each urban and rural setting from each region (MIDEPLAN, 2006; INE, 2009).

5.3.4 Recruitment and data collection

5.3.4.a) First Phase: Pre-test

Having defined the questionnaire in consultation with various stakeholders and prior to the data collection, a pre-test was conducted in order to make a quantitative and qualitative analysis of responses to the questionnaire. This was conducted in order to assess the quality of the questions, the clarity of its contents and to determine the average time required for the interview. For the pre-test, 610 urban and 390 rural questionnaires were conducted. With the results from this piloting test, corresponding adjustments were made to the questionnaire and its implementation in the field.

5.3.4.b) Data collection

Data collection technique was a face-to-face interview during November and the first half of December in 2006. Ideally, the person who took part in the interview was the head of household or spouse. However, if not present, any household member over 18 was invited to answer the survey.

A data quality surveillance system was established during data collection. In order to detect systematic non-sampling errors and missing data, a comprehensive strategy of information control was developed, which firstly consisted of a manual review of the surveys. If systematic errors or missing values were found, then the questionnaires were returned to the interviewer for correction and completion. In addition, a random sample of around 10% of households surveyed was revisited for assessment of the accuracy of the information collected in the first visit. Data validation was also conducted through exploratory data analysis during the data collection and transcription of the instruments. The original instrument used in the CASEN survey is available in Appendix 1 in the Appendix book.

5.3.5 Primary and secondary outcomes of this study

5.3.5.a) Primary outcome: the health status of immigrants

Health status of the international immigrant population in Chile.

5.3.5.b) Secondary outcomes: the Social Determinants of Health (SDH) in the different populations under study and comparisons between them

1. Demographic characteristics of international immigrants in Chile.
2. Socioeconomic status and material living conditions of international immigrants in Chile.
3. Access to health care, need and use of health care services by the international immigrant population in this country.
4. Differences in demographic, socioeconomic and material factors, and access to health care between the immigrants and the Chilean-born population.
5. Differences in the association between health status and the different sets of social determinants of health (demographics, socioeconomic and material, and access to health care) between the immigrants and the Chilean-born population.
6. Differences in the demographic, socioeconomic and access to health care determinants between the immigrants and those who preferred not to respond to the question on migration status in the survey.
7. Differences in the association between health status and social determinants of health (demographics, socioeconomic and material, and access to health care) between the immigrants and those who preferred not to respond to the question on migration status in the survey.

5.3.6 Variables selected from the CASEN survey (summarised in Appendix 5.1 and 5.2)

The *dependent variable* “*health status*” was measured through a varied number of indicators. Similar to the categorisation used in Chapter 3, these health outcomes have been organised into two broad categories: recent health events and chronic conditions. These variables were collected as the presence or absence of any of them in the past and they differed from the variables included in Chapter 8 on use of health care services in the way that the latter ones were collected, by asking people if they have sought any particular care (e.g. use of the pap smear service, the number of attendances for any mental, dental and other specialist health care). The recent health events have a *one month* time frame of occurrence, while the chronic conditions are well-established long-term illnesses collected

by the CASEN survey. As mentioned in Chapter 3, several health problems presented in the literature review are not available in the CASEN survey 2006, but there are still some relevant measures of health to include in this thesis. The health indicators available in this dataset are described in the following paragraphs.

Recent health events include the following variables:

1. ***Any health problem or accident in the past month:*** dichotomous variable indicating the presence of any recent health problem or accident in the last 30 days.
2. ***Any medical health attention received in the past month:*** dichotomous variable indicating the presence of any medical health attention received in the last 30 days.
Number of medical attentions received: count variable indicating the number of any medical health attention received in the last 30 days.
3. ***Any emergency health attention received in the past month:*** dichotomous variable indicating the presence of any emergency health attention received in the last 30 days.
Number of emergency attentions received: count variable indicating the number of any emergency health attention received in the last 30 days.

The variables categorised as chronic conditions are the following:

1. ***Any disability:*** dichotomous variable indicating the presence of one or more disabling conditions or no disabilities from a list of 6 alternatives (visual, hearing, speaking, physical, cognitive, and psychiatric disability).
Type of disability: dichotomous variable indicating the presence of each of the six possible disabling conditions: visual; hearing; speaking; physical; cognitive; and psychiatric disability. The question asked by the interviewer was: Do you or any of the people who live in the household have any of the following long-term health conditions?
 - a. Blindness or difficulty to see even when using lenses? (visual disability).
 - b. Deafness or difficulty to hear even when using hearing aids? (hearing disability).
 - c. Muteness or speaking difficulties (speaking disability).
 - d. Physical or mobility impairment (physical disability).
 - e. Cognitive or learning difficulties (learning disability).
 - f. Mental or psychiatric difficulties (psychiatric disability).
2. ***Any chronic condition or cancer:*** dichotomous variable indicating the presence or absence of any health attention received in the past year from a chronic condition or cancer.

The *independent variables*, that is, each set of *Social Determinants of Health* (SDH) included in this research are presented in Table 5.1. The indicators used to establish the differences in the SDH and health status between the study groups (the immigrants versus the Chilean-born and the immigrants versus the missing values) are presented in Appendix-5.2.

Table 5.1 Brief description of each independent variable: the Social Determinants of Health (SDH) as measured in the CASEN survey 2006

Set of SDH	Variable	Type of variable
Migration status	International immigrant	Dichotomous variable [yes/no]
	Preferred not to report migration status (missing values of this question)	Dichotomous variable [yes/no]
	International immigrant offspring	Dichotomous variable [yes/no]
Demographics	Age	Continuous variable
	Age group	Categorical: <16, 16-65, >65 years old
	Sex	Dichotomous variable [male/female]
	Marital status	Categorical: single, married, divorced, widow
	Belong to any minority ethnic group	Dichotomous variable [yes/no]
	Type of minority ethnic group	Categorical: Aymara, Atacamenho, Mapuche and other
	Zone*	Dichotomous variable [urban/rural]
Socioeconomic determinants	Number of household members	Count variable
	Individual income per month	Continuous (in Chilean pesos and USD)
	Household income per month per capita	Continuous (in Chilean pesos and USD)
	Household income quintile per month per capita*	Categorical: five quintiles of household income distribution
	Current employment status	Dichotomous variable [employed/unemployed]
	Contractual status	Dichotomous variable [has contract/does not have contract]
	Type of contract	Dichotomous variable [permanent/temporary]
	Job status	Dichotomous variable [full time/ part time]
	Type of occupation	Categorical: executive, private sector, public sector, self-employed, domestic service
	Economically inactive among those 16-65 years old*	Dichotomous variable [yes/no]
	Reasons for being inactive	Categorical: student, housewife, retired, ill
	Unemployed among those 16-65 years old*	Dichotomous variable [yes/no]
	Reasons for being unemployed	Categorical: found a job and starts soon, can't find a job, don't want to work, has intermittent informal job, other not stated
	Educational level	Categorical: none, primary school, high school, technical level, university level
Household assets	Each of them dichotomous:	

Material living conditions		Car [yes/no] Washing machine [yes/no] Fridge [yes/no] Water heater [yes/no] Landline phone [yes/no] Cable TV [yes/no] Computer [yes/no] Home access to Internet [yes/no] Mobile [yes/no]
	Quality of the Housing Index (index combining quality of ceiling, floors and walls)*	Categorical: acceptable, sub-standard, unfit
	Household overcrowding rate, CASEN definition*	Categorical: mild, moderate, severe
	Household overcrowding rate, Townsend definition ^ψ	Dichotomous [no overcrowding/overcrowding]
	Sanitary index (index combining access to clean water and public sewage system)*	Dichotomous [acceptable/deficient]
Access to health care	Health care provision	Categorical (multinomial): none, public 100% free of charge, public with co-payment, private, other not stated
	Use of cervical screening programme	Dichotomous variable [yes/no]
	Number of preventive health care attentions received in the past 3 months	Count variable
	Type of preventive health care attention received in the past 3 months	Categorical (multinomial): well baby care, antenatal care, chronic disease, gynaecological, preventive adult/elderly, other, don't remember
	Any mental health care attention received in the past 3 months	Dichotomous variable [yes/no]
	Number of mental health care attentions received in the past 3 months	Count variable
	Any dental health care attention received in the past 3 months	Dichotomous variable [yes/no]
	Number of dental health care attentions received in the past 3 months	Count variable
	Any specialty health care attention received in the past 3 months	Dichotomous variable [yes/no]
	Number of specialty health care attentions received in the past 3 months	Count variable

*These variables were coded and analysed as recommended by the principal investigators of the CASEN survey 2006, Ministry of Planning in Chile (MIDEPLAN 2006). These are fully described in Appendix 5.1 in the Appendix book

^ψAs defined by the Townsend score, see Appendix 5.2 in the Appendix book

5.3.7 Data analysis

This section provides an overview of the methods used in this thesis. It describes the rationale used to analyse the dataset and post estimation tests included to assess the quality of the estimates obtained. However, the subsequent chapters provide a description of specific methods used in each of them. Chapter 6 includes spatial analysis, Chapter 7 includes cluster analysis and principal components analysis (PCA), Chapter 8 includes multinomial regression, Chapters 9 includes Poisson regression and Chapter 10 includes exploratory factor analysis (EFA). Chapter 11 uses most of these approaches to analyse the living conditions and health of those preferring not to report their migration status. Because of the wide range of methods used in this thesis, it was decided to provide a description outlining the research methodology in this chapter and describe other specific statistical techniques when appropriate in the second part of the thesis.

5.3.7.a) Exploratory review of the database and use of weighted sample

An exploratory review of the database was carried out through summary statistics of each variable included in the study. Data imputation was not considered for this study, as almost all variables had a very low rate of missing values (below 0.005%). Notably, the single variable that reported a higher rate of missing values was the international migration status, which had a 0.67% of missing values.

The CASEN dataset was obtained from a secure web page from the responsible institution directly into version 10.0 STATA program in December 2008, to ensure data quality. In addition, almost all the analysis was conducted with a *weighted sample* in order to attain population-based estimates, as the survey had a complex multistage sampling strategy. The dataset was, therefore, analysed by using the survey command for the statistical programme STATA 10.0, which allowed a population size of 16 130 743 individuals, a close representation of the national population of the country according to the latest Census (INE, 2008). Demographic characteristics of the total population in Chile according to the CASEN survey 2006 were also a close representation of the population in the country according to the latest census (INE, 2008).

5.3.7.b) Descriptive and stratified analysis

Descriptive analysis was conducted for each variable under study, by the estimation of means and standard deviation if the variables were continuous. Categorical variables were described by estimating proportions with corresponding 95% confidence intervals. In addition, stratified analysis for each dependent variable was conducted, by each set of Social Determinants of Health.

5.3.7.c) Analysis of association between dependent and independent variables

The crude association between the independent variables and the dependent variables was studied, using the chi-square test (categorical variables), Pearson correlation (continuous variables), and t-test (one binary and one continuous variable) when required. If an association was found, its crude direction and magnitude was estimated through simple logistic regression (binary variables), simple linear regression (continuous variables), poisson regression (count variables), or multinomial regression (multinomial variables) with a 95% confidence level. This provided a crude coefficient, Odds Ratio (OR), Incidence Rate Ratio (IRR) or Relative Risk Ratio (RRR) and its corresponding 95% confidence interval.

Multivariable regressions (logistic, multiple, poisson, or multinomial according to the type of dependant variable) were also conducted to analyse the relationship between the dependant variables (mostly health outcomes, but also access to health care in Chapter 8) and different sets of covariates (different sets of SDH). This allowed observation of the covariate (regarding migration status and the SDH) which was most strongly associated with the dependant variable (health outcomes) in presence of other covariates. This analysis was conducted to compare between the immigrant and the Chilean-born populations and also within two main subgroups: by age groups (under 16, 16-65, over 65 years old) and by sex (male versus female).

The modelling strategy *most frequently used* in this study was the following:

- 1) Multiple regression models were used to estimate the relationship between a health outcome and a *single set* of SDH (i.e. demographic, socioeconomic, material, access to health care, and migration-related).
- 2) Multiple regression models to estimate the relationship between a health outcome and a *combination of sets* of SDH. For this, a new set of SDH was added progressively to the model, in order to assess changes in magnitude and significance of the associations at every stage.

- 3) Full adjusted multiple regression models were used to estimate the relationship between a health outcome and *all sets* of SDH. Because of multi-collinearity observed in the models, most full adjusted models firstly included all covariates with a statistically significant association to the dependent variable. P-values, adjusted R-squares and goodness of fits of these full models were assessed at this stage (details in the following paragraph).
- 4) Finally, all covariates from demographic, socioeconomic and migration sets of SDH were then added to the full model in order to assess if the addition of one or more of these key SDH would improve the fit of the models. The final regression models were then obtained and are presented in each results chapter.
- 5) Results presented in Chapters 6 to 11 describe findings from the final adjusted models, after conducting all the analyses described in points 1 to 4.

Additionally, when theoretically relevant, the correlation between different health outcomes and different covariates was tested and assessed as to whether linear combinations of these covariates would estimate more parsimonious models, through exploratory factor analysis (EFA, consider the same as factor analysis, FA, in this thesis) and principal component analysis (PCA). These methods are detailed in the following results chapters. With regard to post-estimation tests of the models, p-values, the amount of variance explained by the Adjusted R-squared value (R^2 , multiple regressions) or Adjusted McFadden pseudo R-squared value (R^2 , logistic, Poisson and multinomial regression) and the goodness of fit (GOF) of the models were analysed. Specific GOF tests, the Akaike Information Criterion (AIC, Bozdogan, 1987 and 2000) or simply the F value of the model were also estimated. The most parsimonious model to explain the different health outcomes was then presented (i.e. the one with the highest R-squared or F value, lowest AIC). Joint (Wald) tests were carried out to test the significance of categorical variables with more than 2 categories (significance of the trends). Because of the availability of a large number of potential explanatory variables, testing of variables and interaction terms was primarily guided by theories on the SDH and their effects on the health of the immigrant population. Rather than testing all possible interactions, these were restricted to terms of scientific interest and according to previous literature to support their exploration, which is presented at the beginning of each chapter on results (Chapters 6 to 11).

5.3.7.d) *Measuring social and health inequalities*

Social and health inequalities were conceptualised as the difference in social characteristics and health outcomes between two compared groups, those of the international immigrant population and the Chilean-born population. Health inequalities between these two main comparison groups are compared particularly in terms of *social position* (household income, educational level, and type of occupation) and *material living standards* (overcrowding, quality of the housing and sanitary conditions). Health inequalities were quantified as the differences between the extreme (the highest compared to the lowest) household income quintiles, educational levels or types of occupation, within both the immigrant and the Chilean-born population; and between two equal categories across populations.

5.3.7.e) *Confounding analysis*

Each exploration of the association between health and the different SDH included the potential confounding effect of theoretically relevant variables by a regression model (logistic, multiple linear, Poisson, etc). Throughout this analysis, the confounding-adjusted coefficient or OR with its 95% confidence interval were obtained when pertinent. The epidemiological definition of a confounder is a distortion in the estimated exposure effect that results from differences in risk between the exposed and unexposed that are not due to exposure (Rothman & Greenland, 1998; Greenland, Robins and Pearl, 1999). Confounding then occurs when an observed association is in fact due to a mixing of the exposure, the disease and a third factor (Hennekens, Buring and Maurent, 1987). The criteria I used for identifying a confounding variable was the following: the factor should be associated with the exposure under study, should be a cause or a risk factor for the outcome, should be associated with the outcome even in the presence of the exposure, and should not be an intermediate variable in the path between the exposure and the event (Glymour et al., 2005; Hernan et al., 2002, Moyses, 2000). Any change of direction and of magnitude over 10% in the crude estimated OR was considered a confounding effect (Hernan et al, 2008).

5.3.7.f) *Interaction analysis*

The possible interaction effects existing between the independent variables on the dependent variables were studied through regression models that included multiplicative interaction effects. With these analyses the estimated adjusted coefficient or OR for each dependent variable was obtained, with the corresponding 95% confidence interval. As stated by Stronegger, Berghold and Seeber (1998), there are different ways to define interaction between factors in epidemiological studies. In their standard form, methods of event data

analysis assume a *multiplicative* parameterization of interaction. However, evidence from empirical investigations as well as causal models of disease aetiology, e.g. the simple independent action model of Finney (Finney, 1971) or the sufficient-component-causes model of Rothman (Rothman, 1976; Hogan et al., 1978; Walker, 1981), suggest additive or other kinds of *non-multiplicative* concepts of interaction. Beyond this discussion, the epidemiological study design as well as the underlying causal model are determinants of the interaction structure of the data and should be considered in the model selection process. Using generalized linear models with different parametrical link functions depending on the type of dependent variable under study, the existence of multiplicative interaction structures in the CASEN 2006 data were explored. The underlying theoretical model used throughout analysis was the latest model on the SDH presented in Chapter 4.

5.3.7.g) Spatial analysis

To provide further description of the findings, spatial analysis was used to describe the living conditions and health status of the international immigrant population and the Chilean-born. Spatial descriptive analyses were performed using the MapWindow programme (see Chapter 6).

5.4 ETHICAL CONSIDERATIONS

5.4.1 Access to the survey

The CASEN survey dataset was downloaded after a request approved from their local web pages in December 2008 (<http://www.mideplan.cl/final/categoria.php?secid=25&catid=124>). The dataset provided to the chief investigator was anonymous. It only included an individual and household identification that had no correlation with the Chilean personal identification card. Therefore, the anonymous status of participants has been respected for this secondary data analysis. No data have personal identifiers, making it is highly unlikely that these data could be used to trace the identity of participants.

5.4.2 Potential risks

During the analysis, the CASEN survey dataset was only accessible by a password securely kept in the ARRC server (ARRC data analysis cluster) at the University of York, in my personal account. This avoided the potential risk of other persons accessing and misusing the data. Data analysis took place on a single computer provided by the University of York for personal use from August 2009 to June 2011. Additionally, individual data will never be published. Only aggregated results from these datasets are presented in this thesis.

5.4.3 Vulnerable groups

The CASEN survey covers children under 18, those with learning disability, people with mental illness, people with dementia, and adults who were unable to provide consent, who lived at home at the time of the data collection. These groups were not directly interviewed. Their demographic and health information was collected by the head of the household or their proxy and these participants were anonymous. In addition, respondents could refuse to answer any question at any stage of the interview.

5.4.4 Potential benefits

From a general viewpoint, there is an equity concern about how to maximise benefits of migration to every country and community around the world (distributive justice). As shown by the understanding of migration through Globalisation, poor countries should receive even greater returns, because of the loss of their active labour, young, highly educated population. The relationship between migration and social disparities needs further understanding, as social class might determine the probability of movement and its future consequences.

Migration and population mobility are increasingly important health determinants and require greater multilateral attention. Moreover, several health inequalities might be growing among these populations because of migration.

This research contributes to further understanding of migration in Chile and Latin America and its repercussions for health outcomes. Potential benefits are related to the future development of policy strategies to improve Social Determinants of Health among both the migrant population and, secondarily, the Chilean population in the country. It should stimulate future development of research in this field in Chile. It could motivate other Latin American countries to start research on health inequalities and immigrants' health. It will also provide relevant evidence for political international relationships among the Andean Community and other Latin American committees. Findings from this study will be disseminated to local authorities in Chile through the following institutions: the Chilean Initiative for Health Equity, the International Organization for Migration in Chile and the Chilean Ministry of Health.

5.4.5 Ethics Committee Approval

This research obtained approval from the Research Governance Committee (HSRGC) at the University of York in July 2009. The aim of this committee is to ensure that research in the Department of Health Sciences has met stringent standards of governance.

5.5 SURVEY LIMITATIONS

Some limitations of the CASEN dataset were noted, prior to analysis:

1. The CASEN survey's coverage was national, except for some remote and inaccessible locations, and institutionalised people (hospitalised, imprisoned, elderly living in institutions), and these populations are therefore not included in this study's analyses. The Chilean population interviewed in the survey might not entirely represent those who refused participation, or those not invited to participate. Consequently, some of those excluded, such as people in hospitals, prison or the elderly living in institutions, may have poor health and are not adequately represented in this dataset.
2. The use of weighted measures in all the analyses assumes independence between individuals and that those individuals included in the study are representative of the section where they live.

3. Overall, 15.20% of the Chilean population refused participation and no data were collected from them in order to determine significant differences between those who accepted participation, or reasons for not wanting to participate in the survey.
4. The cross-sectional design of the survey did not allow analysis of causal pathways between exposure (i.e. Social Determinants of Health) and health outcomes. However, a theoretical framework of the understanding of the relationship between structural and intermediate determinants and health (from the latest model by the Commission on the SDH by the WHO, 2008) was used to support the hypothesis and data analysis.
5. Of special interest was potential bias concerning international immigration status, as there were 0.67% of missing values for this variable in the dataset. It has also been reported in the past that undocumented immigrants might refuse participation more frequently than the local population. They would probably represent those living in poorer conditions and with a higher chance of presenting with a health problem. Therefore, the health status and Social Determinants of Health of undocumented immigrants might be underrepresented in this study. This aspect is further discussed in Chapter 11.

CHAPTER 6

WHAT ARE THE DEMOGRAPHIC CHARACTERISTICS OF IMMIGRANTS IN CHILE AND HOW DO THEY COMPARE TO THE CHILEAN-BORN?

Who are the international immigrants in Chile?

*Young, active workers,
coming mostly from bordering countries
and concentrating in the cities...*

Departamento de Extranjeria y Migracion, Chile, 2007

Summary Box 6

What research question is included in this chapter?

What are the demographic characteristics of international immigrants in Chile and how do they compare to the Chilean-born?

What is already known?

- Most immigrants come from other Latin American countries, especially those on Chile's borders (Peru, Argentina, Bolivia and Ecuador), motivated by employment opportunities.
- They are mostly young and educated, but with a decreasing proportion of professional immigrants and an increase of immigrant women over time.

What does Chapter 6 add?

- One percent of the total sample in the CASEN survey 2006 reported international immigrant status and an additional 0.7% preferred not to report their migration status.
- Results from this chapter show demographic patterns consistent with previous government reports in Chile.
- However, there are significant differences in the demographic characteristics of immigrants by country of origin and years living in Chile.

Overview

This chapter adds further information to the current knowledge on demographic characteristics and migration-related determinants of international immigrants in Chile.

Introduction

The purpose of this chapter is to provide a description of demographic and migration-related determinants of health in the international immigrant population (IIP) in Chile. Analyses used in this chapter are descriptive but provide an introduction to the analytic chapters that come later in this thesis. Chapter 7 will focus on socioeconomic determinants of health among immigrants and Chapter 8 on access to health care. Chapters 9 and 10 will be dedicated to the relationship between health status and the different sets of SDH among the immigrant population in Chile.

This chapter is structured in five sections. The first section briefly describes general migration patterns in Chile. The second provides a concise review of the evidence on demographic determinants of health among immigrants worldwide and in Latin America. The third section displays the results of descriptive and stratified analysis from this study on the same demographic variables and the fourth part presents some migration-related determinants of health in the international immigrant population in Chile. The fifth section of this chapter is a discussion of the results, contrasting them with the international literature and also addressing strengths, limitations and possible future research in this field.

6.1 GENERAL MIGRATION PATTERNS IN CHILE: STUDY RESULTS

The population represented in this study corresponds to households and people living in them. The sample for the analysis consists of 268 873 people who belonged to a random sample of 73 720 households (44 854 urban and 28 866 rural ones) of 335 counties across the 15 regions of Chile, from a total of 351 counties in the country (further detail in Chapter 5). The following pages will describe the main findings on migration status in Chile, according to the CASEN 2006 survey. Those findings are summarised in these three key points:

Figure 6.1 Summary of key findings on migration status in the CASEN 2006 survey

1. One percent of the total Chilean population reports international immigrant status, but there is a significant proportion of missing values in the question on migration status in the CASEN survey (0.67% of missing values).
2. On average, immigrants have been in Chile for 11 years; however, a third of them have been in the country for less than a year.
3. Around 70% of immigrants come from bordering countries (Peru, Argentina, Ecuador and Bolivia) and there are distinctive characteristics between immigrants, dependent on their country of origin.

Around 1% of the population from the CASEN 2006 survey reported international immigrant status (0.96%, $n=154\,431$ estimated population, $n=1,877$ real observations) and having lived for 10.95 ± 16.48 years on average in the country. A further 0.67% of the total sample did not respond the question on migration status (missing values, 95%CI 0.58-0.78, $n=1,477$ real observations, 108 599 estimated population). An additional 2.13% of the population reported having a child living in a different county or region at the time of the interview (see Table 6.1).

Descriptive analysis of demographic characteristics of the sample shows that 45.21% of immigrants are men (men: women ratio 0.82) and the mean age is 33.41 ± 0.078 SD. Forty-five percent of this population is single, 45.49% married and the rest divorced or widowed. Around 6% of the population reports belonging to a minority ethnic group, Mapuche being the most frequent (2.96%). Over 90% of immigrants live in the urban area and most of them live in the Central area (regions V to VII including the metropolitan region. On average, households have 3.96 members ± 0.15 SD. (Table-A6.1, A6.2 and A6.3, Appendix-6).

Table 6.1 Description of the migration status of the total Chilean population, CASEN Survey 2006 (weighted sample size= 16 130 743)

Migration status	Absolute count	Percentage %	95% CI
International immigrant	1.877	0.96	0.87-1.06
International immigrant (missing values)	1.477	0.67	0.58-0.78
<i>Among those who report being international immigrants:</i>			
Years living in the country:		-	-
Less than a year	530	32.03	27.32-37.11
1 to 5 years	349	18.37	14.78-22.61
6 to 10 years	351	17.56	14.45-21.18
11 to 15 years	163	7.80	5.46-11.03
16 to 20 years	154	8.32	6.29-10.93
21 or more years	330	15.92	13.14-19.16
Country of origin:		-	-
Peru	398	27.81	23.38-32.72
Argentina	612	26.13	22.31-30.35
Bolivia	326	5.86	3.98-8.56
Ecuador	67	5.01	3.12-7.92
Other countries	474	35.19	30.75-40.61
<i>Other migration status reported in the survey:</i>			
Internal migrant	96.713	44.33	43.90-44.77
Migrant's offspring:		-	-
International immigrant's child living outside of Chile	181	0.11	0.08-0.14

6.2 DEMOGRAPHIC DETERMINANTS OF HEALTH: A LITERATURE REVIEW

The following pages display a succinct literature review of several demographic SDH that have been widely explored in the past, especially in developed countries, and will summarise what is already known about each of them among the *Latin American migrant population*. Table 6.5 at the end of this chapter provides further information about key papers available in the international scientific literature at the time this research was conducted.

6.2.1 What is known about age as a determinant of health?

It is commonly accepted that age determines several health conditions and that, in turn, recent and chronic health conditions affect life expectancy and aging in any population. Throughout the literature reviews in Chapters 3 and 4, the relationship between migration and health has been described at various age intervals or periods. Following a life course perspective, it has been shown that what happens during early life affects health in the long-term. As Marmot et al. (2008, 2010) stated, investment during the early years of life has some of the greatest potential to reduce health inequities. Early child development affects subsequent life chances through development of skills, education, occupational opportunities, and health status (Marmot et al., 2008; Wilkinson, 2006). For this chapter, age is perceived as a key determinant of health and intimately related to the migration process. Because of the distinctive association between migration and labour structure, age is not only considered as a continuous variable, but also categorised according to labour force groups. Therefore, immigrants under 16 years old (children), between 16 and 65 years old (working age group) and over 65 years old (retired) are also explored as separate groups. Studies in Chile and Latin America suggest that the migrant population tends to be young and active, but also includes political refugees, minority ethnic groups and women (UNESCO, 1999; Alvarado and Sanchez, 2002; CELADE, 2008; Departamento de Extranjeria y Migracion, 2007; Lloyd-Sherlock, 1998; Almandoz, 1997; Lattes and Bertonecello 1997).

6.2.2 Why include gender as a determinant of health?

Gender inequalities have been considered pervasive in all societies (Marmot et al., 2008). Most of the literature has suggested that gender could be a cause of inequalities in migration for women, as the decision on whether or not to move may depend on men in their family (Martine, Hakkert and Guzman, 2000; Shedlin and Deren, 2002). However, there is some debate on this matter, as certain authors consider the literature to be flawed. They have suggested that migration is determined by other factors, like social or socioeconomic and marital conditions and, consequently, they propose that migration might only express the

substitution of one inequality for another (Martine, Hakkert and Guzman, 2000). In contrast, other authors have argued that migration could be a positive experience for women, offering opportunities for development and freedom (Shedlin and Deren, 2002; Martine, Hakkert and Guzman, 2000; Pedraza, 1991). Martine highlighted six major problems within female migrants in Latin America, which are: the growing magnitude of female migration; the invisibility of gender as an issue in some countries; the disparities in gender migration patterns; the impact of migration on women's behaviour; reproductive consequences of migration; and specific policies in the field (Martine, Hakkert and Guzman, 2000; CEPAL, 2001; UNFPA, 2005; UN, 2002). Even though international migration could offer women an opportunity of freedom from disliked gender roles in their countries of origin, they may continue to be affected by discrimination and abuse in the receptor country (Martine, Hakkert and Guzman, 2000; Kelso & DeLaet, 1999; Radcliffe, 1990; Altamirano, 2000; IDEAS, 2009).

Overall, it appears that women's health in the context of migration is a serious and persistent problem. There is a lack of comprehensive studies of gender-specific differences in psychological distress in a diverse group of immigrants. Human rights related to migration are key aspects for women, and the Latin American region is now facing growing movements of low-income women struggling for better living opportunities for themselves and their families. Chile has experienced a significant reduction in gender inequality in recent years (Gonzalez et al., 2009), but there are still challenges related to access to, and use of, health care (Vega et al., 2003). It is known that a growing proportion of low-income Latin American women immigrate to Chile to work in domestic service (Departamento de Extranjeria y Migracion, 2007). Awareness of this emerging pattern has raised concern about the vulnerability of migrant women and human rights, due to their possible occupational and living conditions. However, no nation-wide study has reported the living conditions of immigrant women in Chile.

6.2.3 Literature on ethnic minority status, migration and health

Ethnicity has been strongly correlated with health inequalities in the past (Bhopal et al., 2007; Bhopal, 2009) and, simultaneously, immigration status has also been associated with ethnicity and skin colour (Dealberto, 2007; Vander and Link, 1998; Compere and Duval, 1992). The relationship between ethnicity and migration has been widely studied, and has become a major area of research in recent decades. Pickett and Wilkinson (2008) and Halpern and Nazroo (1993) have systematised several studies concerning ethnic density and related health consequences in different settings. In terms of mental health, for example, studies have shown that ethnic immigrants (particularly blacks, Latinos and east-Europeans)

had higher rates of admissions when compared to white native populations (Muhlin, 1979; Cochrane and Bal, 1988; Boydell, 2001; Neeleman, Wilson-Jones and Wessley, 2001) (see Chapter 3 for more detail).

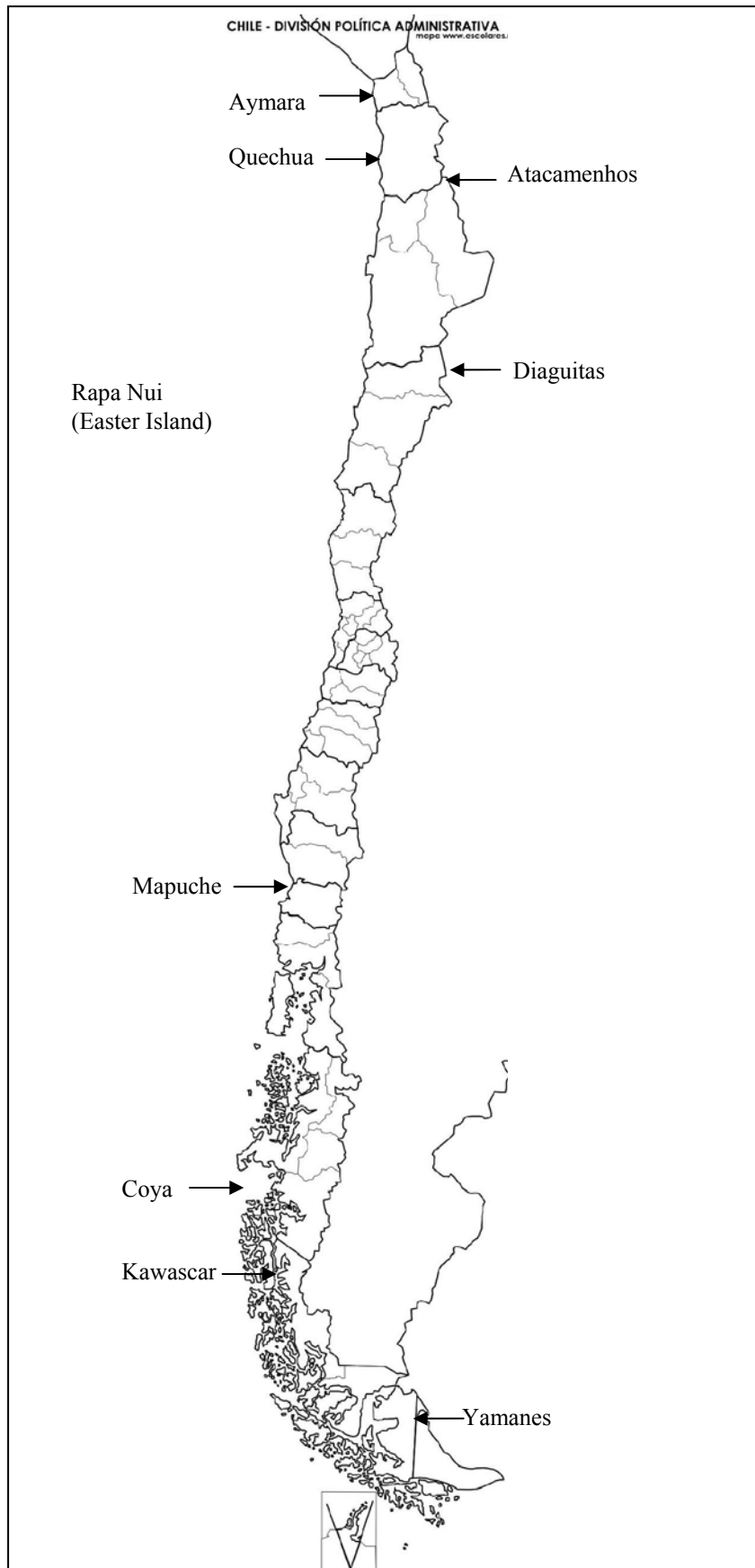
Regarding the ethnic composition of Chile, this country does not make ethnic classifications of its population and, rather, has the tendency to consider it as a homogeneous ethnic group (Hoberman, 2007). The Chilean-born population belongs to two major ethnic groups, White and a large proportion of *Mestizo* (those born from the White and the indigenous ethnic population during the Spanish colonization), which together constitute about 95.4% of the population. The additional 5-7% of the population in Chile report belonging to a minority ethnic group, which ancestries are from the indigenous pre-hispanic colonization in Chile. Both national and international organizations have been working on improving the life conditions of the nine different ethnic groups legally recognised in Chile, these being the Aymara, Diaguita, Rapanui, Quechua, Mapuche, Atacameño, Coya, Kawaskar, and Yagan (in order from north to south of Chile, see Figure 6.2) (MIDEPLAN, 2006).

The Aymara people are a native ethnic group in the Andes and Altiplano regions of South America including Chile, Peru, Argentina, Bolivia and Ecuador. The Diaguita, also called Diaguita-Calchaquí, are a group of South American indigenous peoples. The Diaguita culture developed between the 8th and 16th centuries in what are now the provinces of Salta, Catamarca, La Rioja and Tucumán in northwestern Argentina, and in the Atacama and Coquimbo regions of northern Chile. The Rapa Nui or Rapanui are the native Polynesian inhabitants of Easter Island, or Rapa Nui, in the Pacific Ocean. The Quechuas (also Runakuna, Kichwas, and Ingas) is the collective term for several indigenous ethnic groups in South America who speak a Quechua language (Southern Quechua mainly), belonging to several ethnic groups in South America, especially in Peru, Ecuador, Bolivia, Chile, Colombia and Argentina. The largest group of ethnic population belongs to the Mapuche group, which represents around 4-5% of the total ethnic population in Chile. They constitute a wide-ranging ethnicity composed of various groups who shared a common social, religious and economic structure, as well as a common linguistic heritage. Their influence extended between the Aconcagua River and Chiloé Archipelago and later eastward to the Argentine pampa. The Atacameños (also called Atacamas or Likan-antay) are a Native American people who inhabited the Andean portion of the Atacama Desert, mainly in what is today Chile's Antofagasta Region. Their language is known as Kunza. The Coya people (actually spelled Colla) precede the Inca people, who overthrew them before Spanish Conquistadors arrived. The Kawaskar is an almost extinct minority ethnic group that has lived in the Southern Patagonia of Chile. The Yaghan, also called Yagán, Yahgan (the original spelling), Yámana or Yamana, are the indigenous inhabitants of the islands south of Isla Grande de

Tierra del Fuego extending their presence into Cape Horn. The Yaghan were nomads who traveled by canoes between islands to collect food (INE, 2002; Aylwin, no date).

Some evidence has shown differential prevalence of different health outcomes among the minority ethnic and migrant populations. In addition, qualitative research has reported different understanding of health and wellbeing, disease and treatment in these groups (Carrasco et al., 2004; Diaz-Mujica et al., 2004; Amador, 2010). It is likely that there is a growing immigrant population with a minority ethnic background in Chile, especially *Atacameña*, *Aymara* and *Quechua*, because of their geographical proximity to the country, and the increasing proportion of Andean Latin-American countries' immigration, where those minority ethnic groups live. The health status of these ethnic groups, especially when compared to the local non- minority ethnic population, remains unclear in Chile, and no study analysing the ethnicity of immigrants in Chile at a quantitative nation-wide scale has been conducted.

Figure 6.2 Geographical locations of legally recognised Chilean ethnic groups



Map source: [<http://recursosenpowerpoint.blogspot.com/2009/03/actividad-las-reservas-naturales-de.html>]

6.2.4 Urbanization and geographical determinants among immigrants

As stated by Tunstall, Shaw and Dorling (2004), research in geography, epidemiology and public health has shown that the place where people live has a significant effect on their health. Marmot et al. (2008) have recently highlighted the fact that in 2007, for the first time, more people worldwide were living in urban than in rural settings. Almost 1 billion people live in slums (Ooi and Phua, 2007). Urbanisation is reshaping population health problems, particularly among poor people in urban areas, towards non-communicable diseases, accidental and violent injuries, and effects of ecological disaster (Campbell and Campbell, 2007; Yusuf et al., 2001; Wilkinson, 2004; Wilkinson, 2006; Marmot et al., 2008; Marmot et al., 2010; Dealberto, 2007; Boydell, 2001).

Regarding the Latin American literature, Dufour and Piperata (2004) have recognised that urbanization is an important demographic phenomenon that has transformed the settlement pattern in this region from rural to predominantly urban in less than 50 years. Understanding the biological consequences of this change in settlement patterns is an important challenge for human biologists. One approach to understanding the effects of urban environments on human biology has been to study rural-to-urban migrants. They suggest that in Latin America, research on urbanization and health has shown that 1) the fertility of migrants tends to be intermediate between that of rural and urban populations, and 2) migrants tend to suffer higher rates of mortality and morbidity, at least initially, than long-term urban residents. They also indicate that studying rural-to-urban migrants requires careful attention to a number of conceptual issues. One issue is the definition of rural and urban. These two types of settlements are no longer as distinct as they once were, and "urban" can mean very different things in different places. Another issue is the complexity of current migration patterns. There is the classic case of people moving from a distinctly rural setting to a distinctly urban one and staying there for the remainder of their lives is not the norm. Third, the urban environments of large cities are extraordinarily heterogeneous environments with enormous socioeconomic differentials in health. Hence, it matters whereabouts in the urban environment the migrants live (Dufour and Piperata, 2004; Wratten, 1995). Other Latin American authors support these ideas (Bender, Rivera and Madonna, 1993; Brockerhoff, 1999; Brockerhoff, 1995; Brockerhoff, 1994; De oliveira and Roberts, 1996; Guimares & Fischman 1985; Monteiro et al., 1989; Timoreus, Walker et al., 2002).

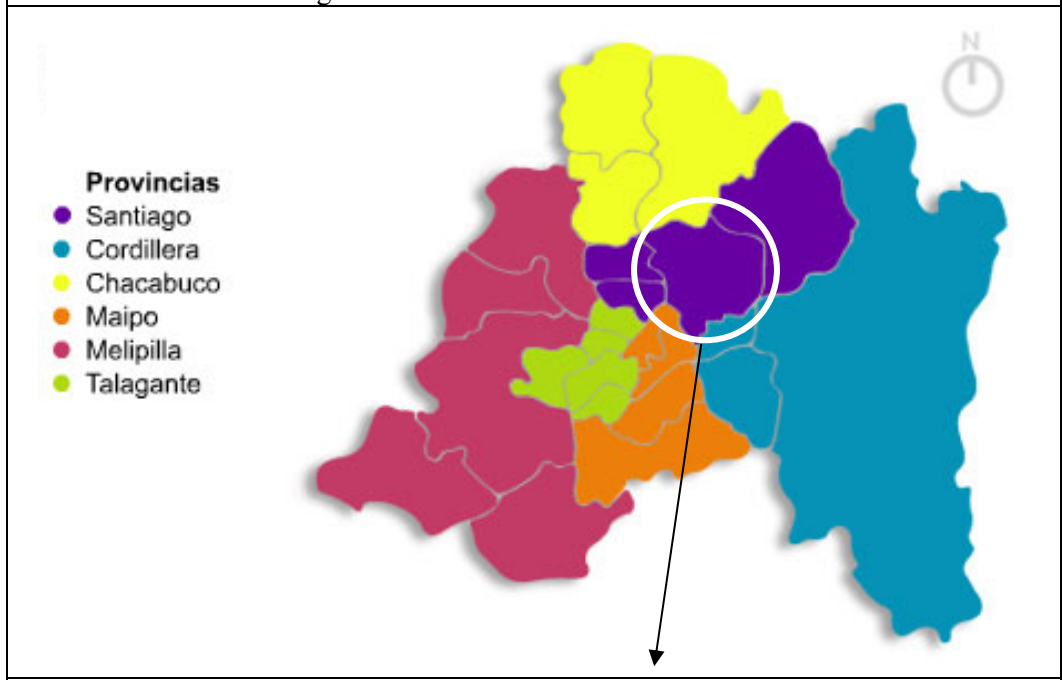
More recently, Rodgers, Beall and Kanbur (2011) discuss the particular idea that Latin American cities are "fractured", by focusing on the way slums and shanty towns have been conceived. This discussion is significant since, according to UN-Habitat (2007, p.36), "Latin America is the most urbanized region in the world.... Over three-quarters of its population

resided in cities at the turn of the twenty-first century, a proportion that is estimated to rise to almost 85 percent by 2030". In relation to migration patterns and urbanisation in the region, towards the latter half of the nineteenth century, large scale international migration also began to play a prominent role in shaping patterns of urbanization in the region, as the region saw significant human influx from all over the world. Most immigrants, however, came from impoverished areas of Europe—in particular Italy and Spain—and were hoping to start afresh in a Latin America that was very much viewed as a virgin land of opportunity. This international migratory flow tapered off following the First World War, but internal rural-urban migratory flows soon took over as a new and even more significant source of urban growth (Rodgers, Beall and Kanbur, 2011). Chile was part of both processes and its urbanisation has been shaped to different degrees by their occurring.

There are also important elements of Chile's geography that require consideration. Chile includes continental territory stretching across the Latin American region; some islands located in the Pacific Ocean (Easter Island being the largest one) and also part of the Antarctic territory. According to current legislation (2007), the country is divided into 15 regions, which are, in turn, divided into 51 provinces and 351 counties. Because of their relevance to this study, three regions will be described in more detail: the Metropolitan region, the XV region and the V region. The XIII Metropolitan region is the most populated in the country with 6.5 million inhabitants, containing 6 provinces and 52 boroughs. The most populated province within the region is Santiago, where Gran Santiago city is located. Gran Santiago city contains 35 boroughs (see Figure 6.3) and is where most of Chile's economic development has occurred (the so called "centralisation" of the working force in the capital of Chile). The XV region of *Arica and Parinacota* was created in 2007 (see Figure 6.4). It was created by dividing the I region into two: the I region and the XV region (Law No. 20.175). The main reason for creating this new XV region was to enforce and promote positive relationships with bordering countries in the north part of the country, the part with the most active border in terms of international immigration. The XV region has 2 provinces and 4 boroughs. Finally, the V region of *Valparaiso* includes 6 provinces, 36 continental boroughs and two more island boroughs, one each located in Easter Island and Juan Fernandez Island, respectively. The continental V territory is the second most populated region, with just under 2 million inhabitants according to the latest Census in 2002 (see Figure 6.5).

Figure 6.3 Map of the XIII Metropolitan region in Chile

The 6 Provinces of the region

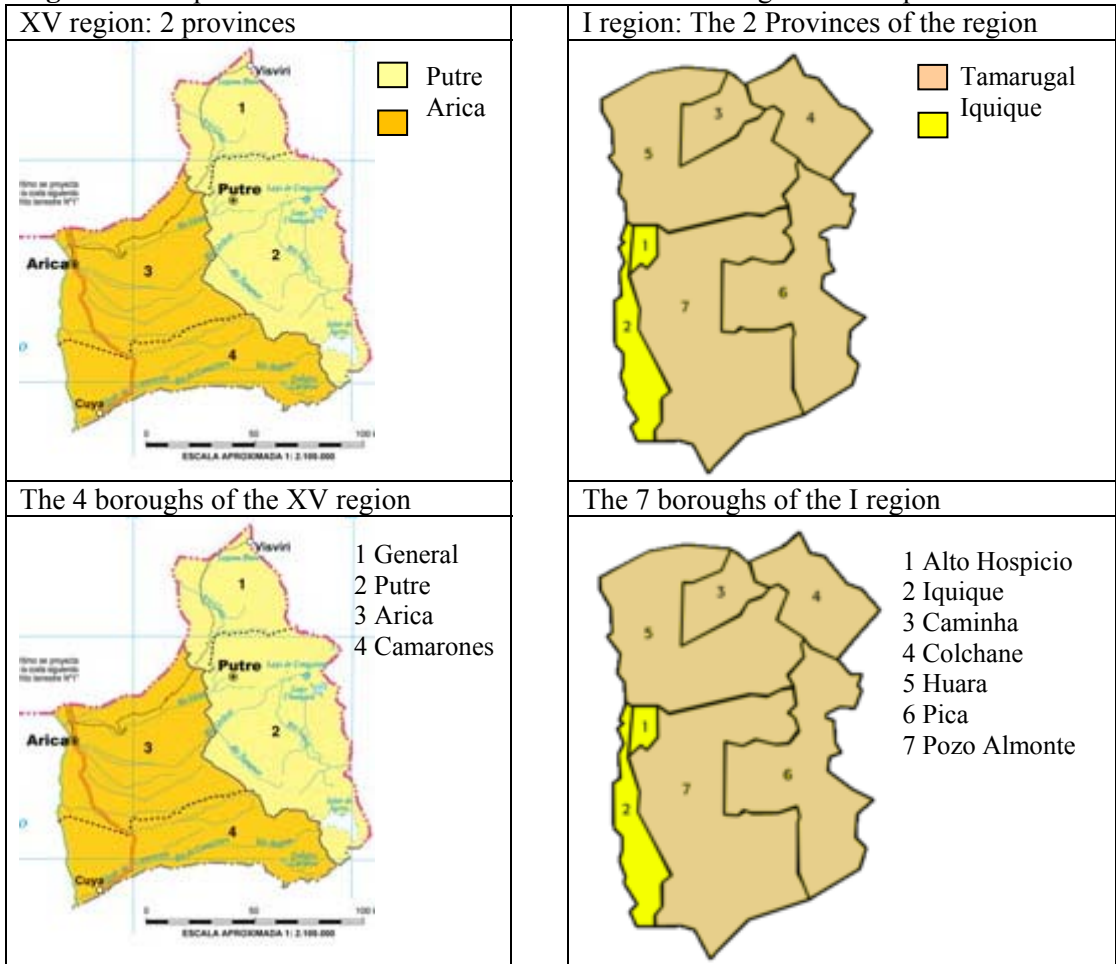


The 35 Boroughs of Gran Santiago city, located in the Santiago province



Source: [http://friendsbyblood.blogspot.com/2008_10_01_archive.html]

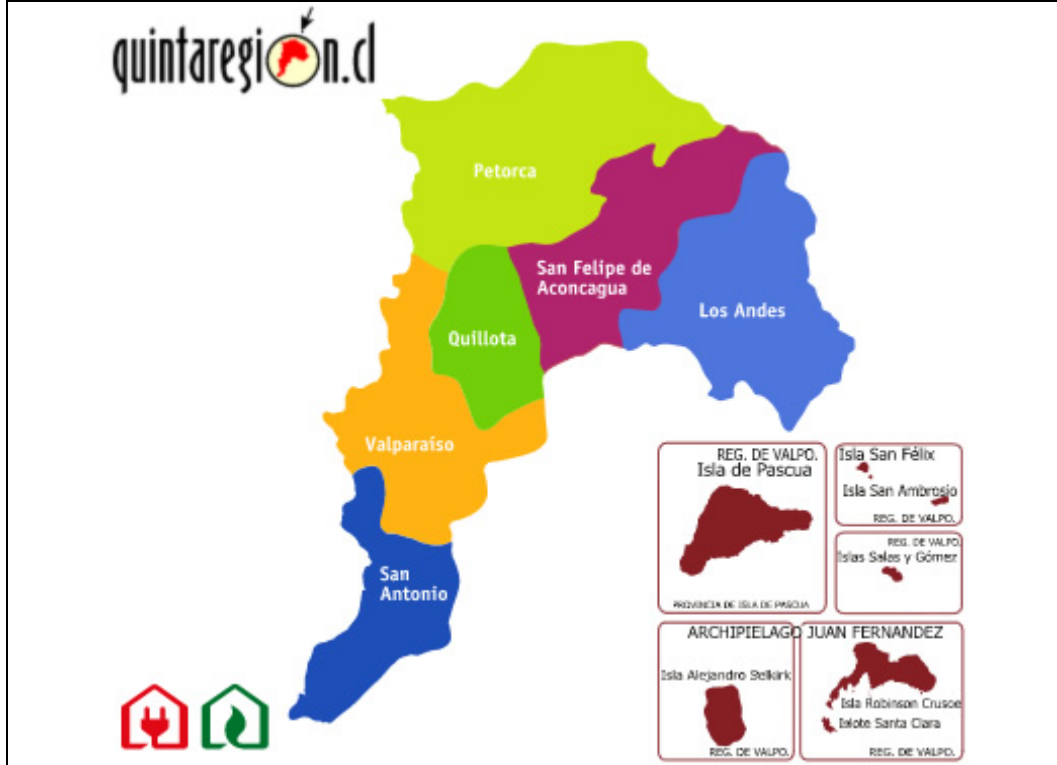
Figure 6.4 Map of the XV of Arica and Parinacota and the I region of Tarapaca in Chile



Sources: [<http://www.educarchile.cl/Portal.Base/Web/verContenido.aspx?ID=130586>] and [http://es.wikipedia.org/wiki/Regi%C3%B3n_de_Tarapac%C3%A1]

Figure 6.5 Map of the V region of Valparaíso in Chile

The 6 Provinces of the region



The 38 boroughs of the V region



Source: [<http://www.quintaregion.cl/region/region03.shtm>]

6.3 DEMOGRAPHIC CHARACTERISTICS OF INTERNATIONAL IMMIGRANTS IN CHILE: STUDY RESULTS

6.3.1 Summary of key findings

The following pages will provide a detailed description of the key demographic characteristics of international immigrants in Chile:

Figure 6.6 Summary of key findings on migration status in the CASEN 2006 survey

1. Most international immigrants are of working age, between 16 and 65 years old, and live in urban settings and in the Central area of Chile.
2. Around 60% of immigrants in Chile are women, but this proportion decreases over years living in the country. Again, most males and females live in urban settings and in the Central area of Chile.
3. On average, there are more married than single immigrants in Chile. However, working age immigrants are more likely to be single.
4. Around 6% of immigrants in Chile belong to a minority ethnic group and they are less frequently Mapuche and more frequently Aymara than the Chilean-born ethnic minority population.
5. Additionally, there are more minority ethnic immigrants living in the Northern area than their Chilean-born counterparts. There is also a higher proportion of widowed minority ethnic immigrants than widowed minority ethnic Chilean-born.
6. There are significant differences in the geographical location of immigrants in Chile, especially when stratifying by sex, age, country of origin and years living in the country.

6.3.2 Age distribution of international immigrants in Chile

Mean age is not statistically different between immigrants and the Chilean-born (33.41% versus 32.97%, respectively, Table-A6.1, Appendix-6). When stratifying age by demographic SDH, there are differences in mean age by marital status and ethnic group. There is a higher mean age of immigrants with single status (21.28 years old versus 18.04 years old in the Chilean-born) and a significantly lower mean age of immigrants who report being married (40.80 years old versus 46.05 years old) and divorced (42.77 years old versus 47.61 years old) compared to the Chilean-born. Further details appear in Table 6.2.

There is a significantly higher proportion of immigrants in the active labour age group than the Chilean-born (79.08% versus 66.41%, $p < 0.0001$) (Table-A6.1, Appendix-6). There is a significantly lower proportion of immigrants under 16 years old in Chile when compared to the local children (13.60% versus 25.27%, $p < 0.0001$) (Table-A6.1, Appendix-6). Most single immigrants are in the working age group (68.98%), and there is a significantly lower rate of single >65 years old immigrants (1.33%, Table-A6.7). The Chilean-born show a significant decreasing proportion of males over the age groups as age rises (see Figure 6.7) that is not observed among immigrants. There is a significantly higher proportion of female immigrants in the working age group than the Chilean-born (82.14% versus 66.69% in Table-A6.6, $p < 0.0001$) and a higher proportion of adult immigrants living in urban settings than the

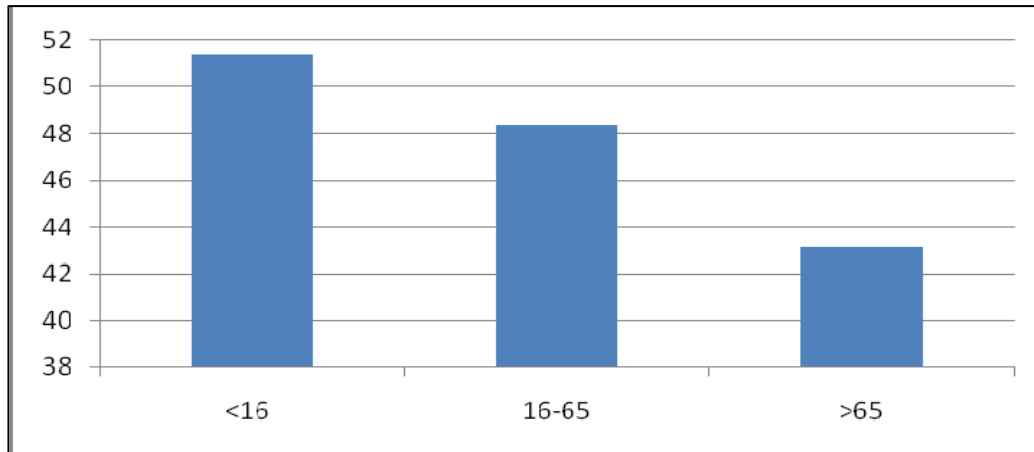
equivalent group from the Chilean-born (see Table-A6.4). There is a higher rate of working age immigrants living in the Central area (74.91% in table-A6.4 versus 62.32% in Table-A6.5, $p < 0.0001$) and a higher proportion of immigrants in the 16-65 years age group belonging to the Aymara ethnic group than the Chilean-born (2.66 versus 0.46%, $p < 0.0001$).

Table 6.2 Stratifying age as a *continuous* variable by different demographic SDH, a comparison between the immigrant and the Chilean-born, CASEN survey 2006

Demographic determinants of health	International immigrant population Mean (95%CI)	Chilean-born population Mean (95%CI)
Sex: Male	33.95 (31.80-36.10)	31.87 (31.69-32.06)
Female	32.97 (30.84-35.10)	33.98 (33.79-34.18)
Area:		
Northern	35.04 (31.23-38.84)	32.20 (31.73-32.66)
Central	33.65 (31.72-35.57)	32.94 (32.73-33.16)
Southern	30.44 (26.45-34.43)	33.33 (33.09-33.57)
Zone: Urban	33.32 (31.63-35.01)	34.40 (34.17-34.64)
Rural	34.81 (31.79-37.82)	32.74 (32.57-32.92)
Marital status:		
Single ^a	21.28 (19.77-22.79)	18.04 (17.92-18.23)
Married ^a	40.80 (39.23-42.55)	46.05 (45.86-46.24)
Divorced ^a	42.77 (39.95-45.60)	47.61 (47.21-48.00)
Widow	72.55 (67.49-77.61)	70.53 (70.14-70.92)
Belonging to any ethnic group	32.27 (28.58-35.96)	29.72 (29.23-30.21)
Ethnic group type:		
Aymara ^a	35.31 (31.79-38.83)	29.25 (27.03-31.47)
Atacameño ^a	48.96 (45.06-52.86)	30.81 (27.96-33.66)
Mapuche	28.85 (22.25-35.44)	29.73 (29.22-30.24)
Others	27(-)*	29.44 (25.67-33.21)

*One observation ^a $p < 0.0001$ when comparing categories between different populations

Figure 6.7 Proportion of males in each age group among the Chilean-born population, CASEN survey 2006 (weighted sample 16 130 743)



6.3.3 Gender patterns among immigrants in Chile

The international immigrant population has significantly fewer men than the Chilean-born (45.21% versus 48.66%, $p < 0.05$) (Table-A6.1, Appendix-6). There is no significant difference in the proportion of male and female immigrants in the working age-group, but there are more immigrant males in this age group than among the Chilean-born (75.35% versus 65.87%, $p < 0.0001$) (Table-A6.6, Appendix-6) and 1.2 times more immigrant females than among the equivalent Chilean-born (82.14% versus 66.69%, $p < 0.0001$). A significantly lower proportion of both male and female immigrants tend to live in rural settings compared to the Chilean-born. Among the Chilean-born, a significantly higher rate of males live in rural areas compared to Chilean-born (13.44% versus 12.43%, $p < 0.0001$) (Table-A6.6, Appendix-6). There is a higher proportion of both male and female immigrants living in the Central area than the Chilean-born (74.68% versus 61.82% for males, 73.00% versus 62.07% for females, respectively). Among minority ethnic groups, there is a 5.6 times higher rate of Aymara immigrant women than their Chilean-born counterparts (2.58% versus 0.46%) (Table-A6.6, Appendix-6).

6.3.4 Marital status patterns among immigrants

Immigrants are less likely to be single (45.81% versus 50.57%, $p < 0.0001$) and more likely to be married than the Chilean-born (45.49% versus 40.76%, $p < 0.05$) (Table-A6.1, Appendix-6). Single and married immigrants are significantly more likely to live in the Central area of Chile compared to the Chilean-born (74.15% versus 61.45% in the single group, 74.24% versus 62.29% in the married group) (Table-A6.7, Appendix-6). There is a higher rate of single, married and widowed Aymara immigrants than the equivalent Chilean-born groups. This might be explained by the larger overall proportion of Aymara population among immigrants than among the Chilean-born living in the country (Table-A6.7, Appendix-6). Married male immigrants are fewer than their Chilean-born counterparts (48.05% versus 41.73%) and Chilean-born married females are significantly less than the married local men (39.75% versus 41.73%) (Table-A6.6, Appendix-6). In both the immigrant and the Chilean-born population, there are more divorced women than men (Table-A6.6, Appendix-6). Further comparisons can be found in Table-A6.7, Appendix-6.

6.3.5 Minority ethnic patterns among immigrants in Chile

Almost 6% of the immigrant population in Chile report belonging to any minority ethnic group. The international immigrant population are less frequently Mapuche (2.96% versus 5.71%, $p < 0.05$) and more frequently Aymara than the Chilean-born (2.33% versus 0.52%,

$p < 0.0001$) (Table-A6.1, Appendix-6). There is a 3 times higher proportion of Chilean-born children with an ethnic background than the equivalent group from the immigrant population (31.08% versus 11.21%) and a lower proportion of 16-65 years old Chilean-born people with a minority ethnic background than the equivalent immigrant group (62.63% versus 85.47%, $p < 0.0001$) (Table-A6.8, Appendix-6). There is a higher proportion of immigrants living in the Northern area with a minority ethnic background than their equivalent from the Chilean-born (64.81% versus 12.66%) (Table-A6.8, Appendix-6).

6.3.6 Where do immigrants live?

The following pages will add some key findings describing the geographical distribution of immigrants in Chile, some results on immigrant density, and socioeconomic patterns by region and county in Chile. Maps presented in this section were developed in the free online software MapWindow GIS version 4.8.1 in October-November 2010.

First, *immigrant density* was explored. It was defined as the percentage of the total population living in a determined geographical area (region, province or borough) that are international immigrants. Results show that the most immigrant dense regions are the Metropolitan (0.61% of total population in that region are international immigrants, 95%CI 0.53-0.70), the V region (0.061%, 95%CI 0.045-0.083), and the I region (0.041%, 95%CI 0.02-0.06) (see Figure 6.8). Within these regions, different patterns of immigrant density appear by province and borough. Both the V and the Metropolitan regions contain 6 provinces and as it can be observed in Figures 6.9 and 6.10, Santiago and Cordillera are the most immigrant dense provinces in the Metropolitan region; and Valparaíso and Quillota provinces the most immigrant dense ones in the V region of Valparaíso. Each province has a particular characteristic that might explain its international interest. The province of Santiago for example, is where the labour force in the region is concentrated, while Cordillera province is a relatively deprived area (Bengoa, 2006). Something similar happens with the provinces of Valparaíso and Quillota, respectively. Immigrant density was further explored by borough within these two regions (see Figure 6.9). As can be observed in the figure, there is a polarisation in the boroughs where immigrants live. In Santiago city for example, two of the most immigrant dense boroughs are the wealthiest ones in the city (Las Condes and Vitacura) and the other two are relatively poor or middle-low class (Santiago and La Florida, respectively).

Figure 6.8 Immigrant density by region of the country

- 0 – 0.20%
- 0.21 – 0.40%
- 0.41 – 0.60%
- 0.61 – 0.80%
- ≥ 0.81%

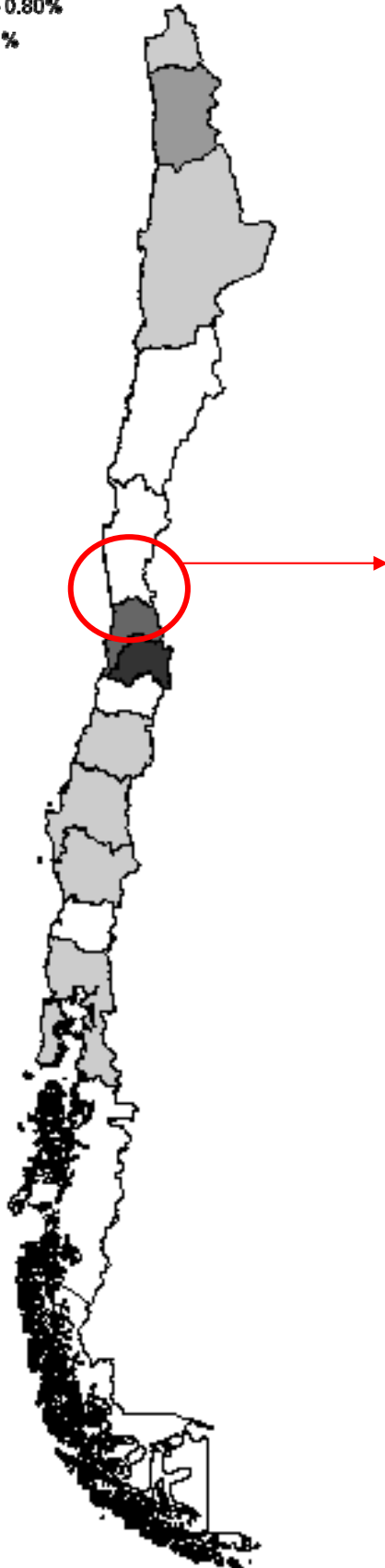


Figure 6.9 Immigrant density by province and borough in the XIII Metropolitan region

The 6 provinces in Santiago



The 35 boroughs in Santiago

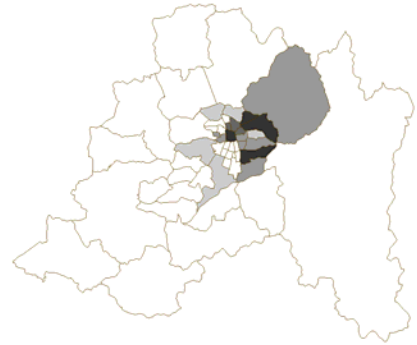


Figure 6.10 Immigrant density by province and borough in the V region of Valparaiso

The 6 continental provinces in Valparaiso



The 36 continental boroughs in Valparaiso



Second, the location of *male and female* immigrants by region was explored. For this, a male: female ratio for international immigrants was created, as it has been previously used in the country for demographic descriptions (INE, 2009). A ratio of 1.0 represents a balance between men and women in a particular place (region, province or borough), whereas a ratio less than 1.0 (white and light grey in the maps) represents a higher proportion of women than men, and a ratio greater than 1.0 represents a higher proportion of international immigrant men than women in that area (dark grey in the maps).

Within the total immigrant population, most of the male immigrants were located in the regions VIII, XV and XIV regions and most of the females in the regions XV and XII. It should be noted however, that 12 of the 15 regions show a higher rate of immigrant women than men (regions with either white or light grey in Figure 6.11). When observing the male: female ratios of the most immigrant dense regions by boroughs (see Figure 6.12) quite diverse patterns are found. Within the total immigrants living in the I region of Tarapaca, the single borough with more men than women is Huara, and all the other 6 boroughs have more women than men. With regards to the V region of Valparaiso, only 9 boroughs have a male: female ratio greater than 1. Some of them are relatively wealthy boroughs like Viña del Mar, and Santo Domingo and others are considered relatively poor like La Ligua, San Esteban, Lay Llay and Nogales.

In the XIII Metropolitan region, 19 boroughs show a male: female ratio greater than 1 and again, these regions have very different socioeconomic characteristics. For example, Providencia and La Reina are wealthy boroughs, while others like El Bosque, Lo Espejo and Lo Prado are poor boroughs. Besides, all boroughs with a significantly higher rate of female than male immigrants (male: female ratio less than 0.5, shaded white in the map) are poor boroughs (Cerrillo, Cerro Navia, La Cisterna, La Granja, Pedro Aguirre Cerda, Pudahuel, Renca, Puente Alto, Pirque, Colina, Lampa, Tiltil, Buin, Maria Pinto, San Pedro and Peñaflor), with the exception of Peñalolen and Macul. These two boroughs are very special as they show great socioeconomic inequality within them (that is, between neighbourhoods in each borough). There are private condominiums in some areas and, just two blocks from there, very poor and segregated dwellings can be found (an illustration in Figure 6.13).

Figure 6.11 Immigrants male: female ratio by region of the country (the darker the region the higher the proportion of male than female)

≤ 0.50
 $0.51 - 1.00$
 > 1.00

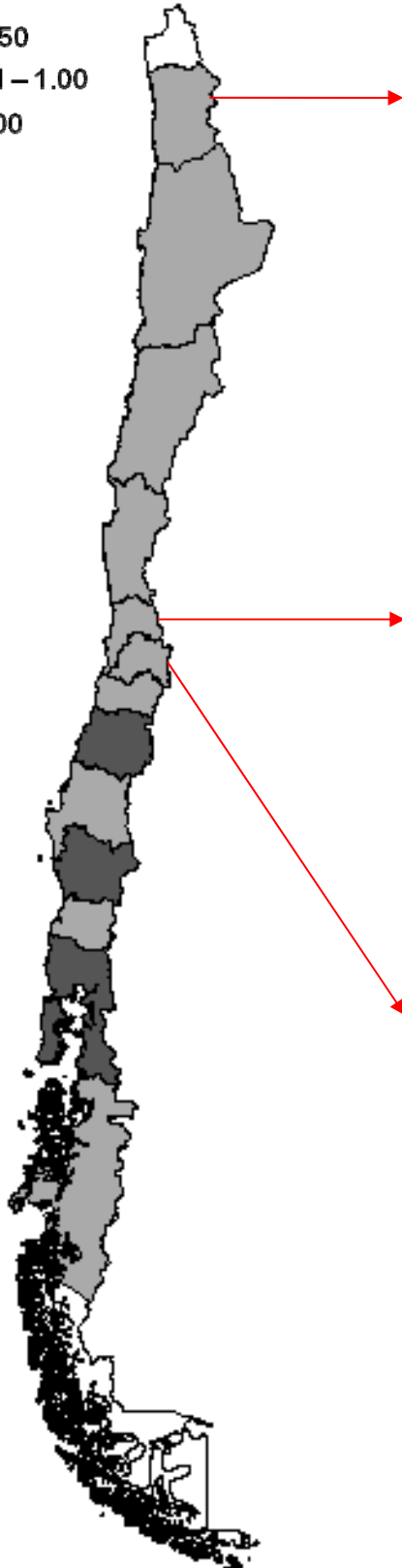


Figure 6.12 Immigrants male: female ratio in the three most immigrant dense regions of the country

Male: female ratio by borough in the I region of Tarapaca



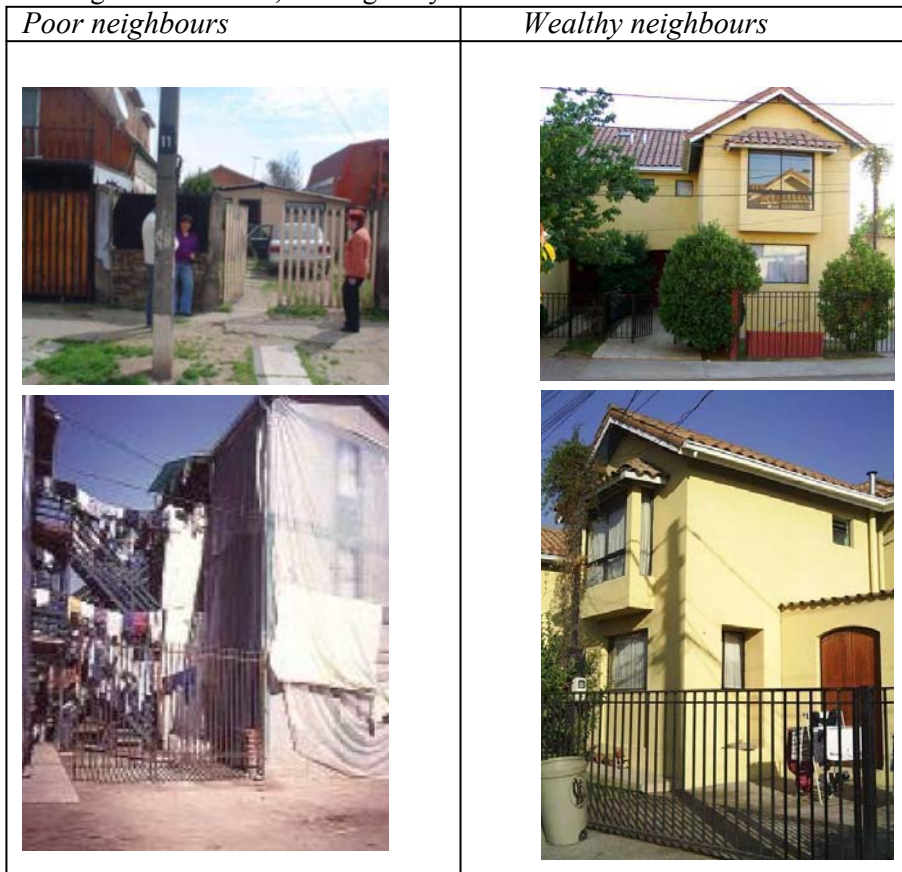
Male: female ratio by borough in the V region of Valparaiso



Male: female ratio by borough in the XIII Metropolitan region



Figure 6.13 An illustration of socioeconomic inequality between neighbourhoods in the borough of Peñalolen, Santiago city



Sources: [<http://images.nuroa.cl/santiago/77756857-excelente-sitio-urbanizado-penalolen-santiago-terrenos-penalolen.jpg>], [<http://img142.imageshack.us/img142/9588/17tm7.jpg>], [<http://img3cdn.adoosimg.com/a19a5e05778091027f2ee289251b-1-3.jpg>] and [http://images04.olx.cl/ui/1/92/89/6698389_1.jpg]

Third, immigrants' location by *age groups* was explored. For this, the proportion of immigrants at working age among the total immigrant population in a certain area was estimated. Regions with the highest rate of immigrants of working age are the V of Valparaiso and the IX of Araucania, but no region shows a rate below 0.71% of immigrants in this age group. Again, within the most immigrant dense regions, great variability is found. In addition, all boroughs with the highest rate of immigrants of working age in the XIII Metropolitan region are relatively poor, including the poorest borough in Santiago, La Pintana (Conchali, El Bosque, La Granja, La Pintana, Lo Prado, Pedro Aguirre Cerda, Quilicura, Quinta Normal, Renca, Tiltill, Buin, Paine, El Monte, and Penhaflor) (see Figure 6.14 and 6.15)

Figure 6.14 Percentage of immigrants at working age (16-65 years old) by region of the country

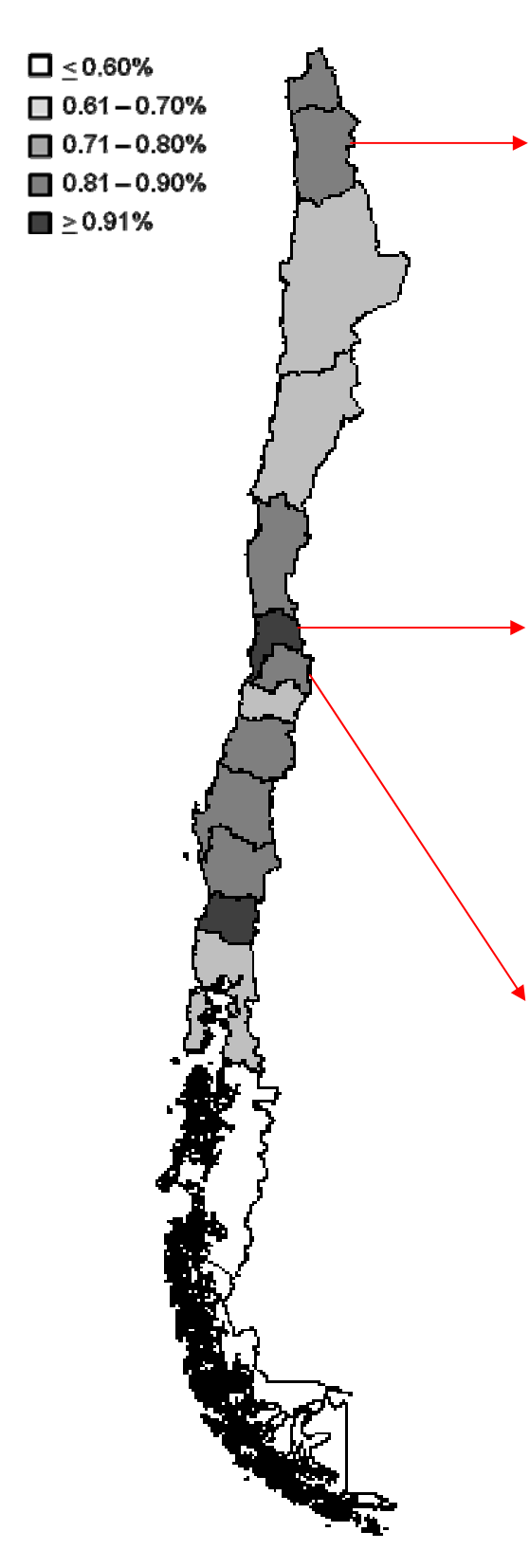
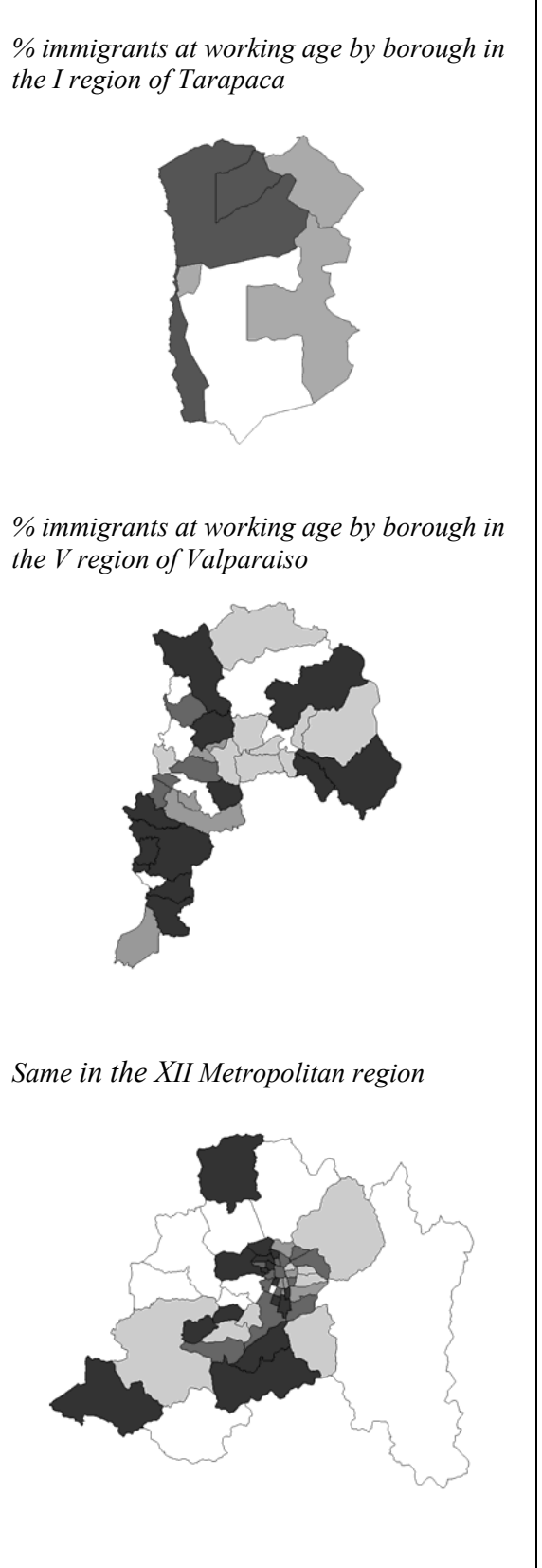


Figure 6.15 Percentage of immigrants at working age by borough in the three most immigrant dense regions of Chile



Fourth, the location of international immigrants by *years living in the country* was estimated. A comparison of the location between immigrants living less than a year in Chile and over 20 years is presented in Figures 6.16 to 6.19. These patterns suggest that recent immigrants might tend to locate in the Northern half of the country and then move to the Southern area over time. However, these differences could also be due to differences in patterns by age groups or to a cohort effect among immigrants. Concerning the XIII Metropolitan region for example, aggregate estimates suggest a decrease in immigrant density over time, but estimations between boroughs in the region show that in some boroughs immigrant density tends to increase (Maipu, Providencia, Renca, Pirque, Calera de Tango, Curacavi, Maria Pinto, Padre Hurtado and Peñaflor), most of them being rural or semi-rural areas and relatively poor, with the single exception of Providencia that is a very wealthy borough. Within the 5 wealthiest boroughs of Gran Santiago city (La Reina, Las Condes, Lo Barnechea, Providencia, and Vitacura), four of them have decreased their immigrant density over time. These findings could be confirmed with trajectory models of the migration process and longitudinal data, which are not currently available for the country.

Fifth, immigrants' location by *country of origin* was analysed (Figures 6.20 to 6.27). The four most frequent countries of origin were explored and results show that most *Peruvian* immigrants are located in the two Northern regions of the country, the XV and I regions; and the XIII Metropolitan region. Within the XV and I regions, the most Peruvian dense boroughs are the bordering and the coastal boroughs where ports and work opportunities are concentrated. In the capital, the most immigrant dense boroughs are socioeconomically deprived. Concerning *Argentinean* immigrants, most of them are concentrated in the IX, XIV and XI regions. Historically, this has been the case, as many people from Argentina would cross to Chile through trans-Andean routes located in the Southern area of the country. The intimate relationship between Chile and Argentina across several centuries is represented in these findings. *Bolivian* immigrants are located in the Northern area of Chile, in regions XV, I and II. Within the XV region, the Putre borough is the most Bolivian dense, while almost all boroughs in the I region except Iquique and Alto Hospicio have a high density of Bolivian immigrants. The II region is not as dense as the other regions, with the exception of the Taltal and Ollague boroughs. Finally, *Ecuadorian* immigrants can only be found in the III region of Atacama, and particularly in the Copiapo and Caldera boroughs. Reasons for this concentration in the region cannot be determined through this study, and would probably require a qualitative approach, in addition to more socio-demographic measures for a more comprehensive understanding of this phenomenon.

Figure 6.16 Percentage of immigrants living for less than 1 year in Chile by region of the country

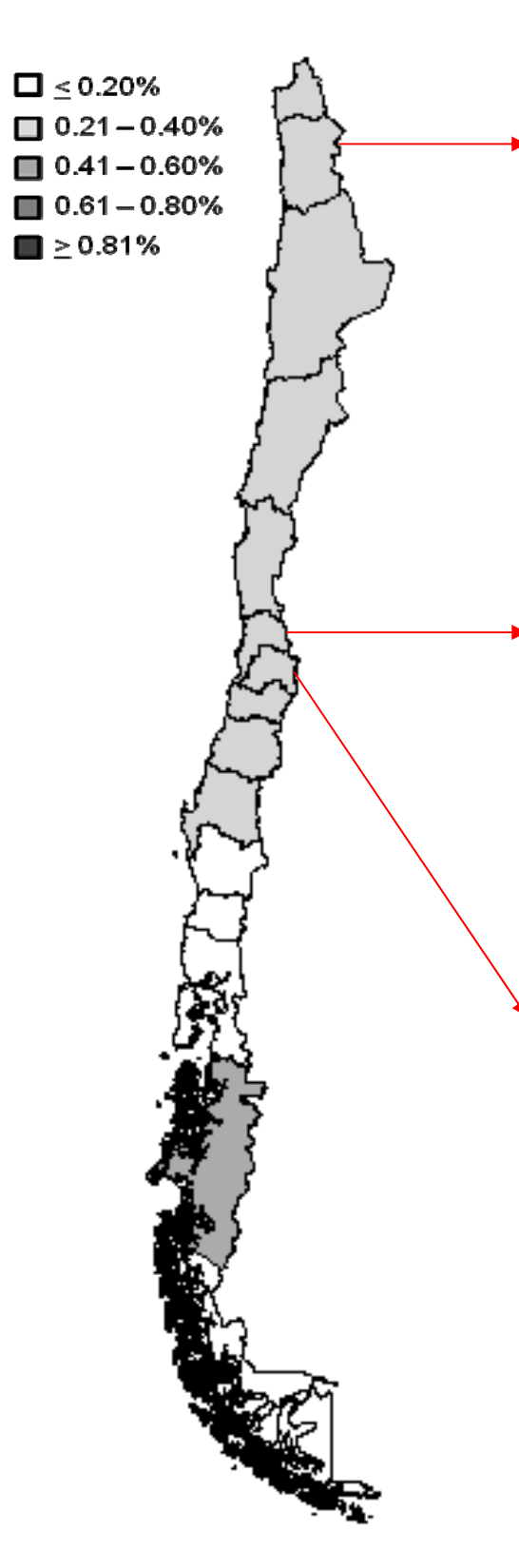


Figure 6.17 Percentage of immigrants living for less than 1 year in Chile by borough in the three most immigrant dense regions

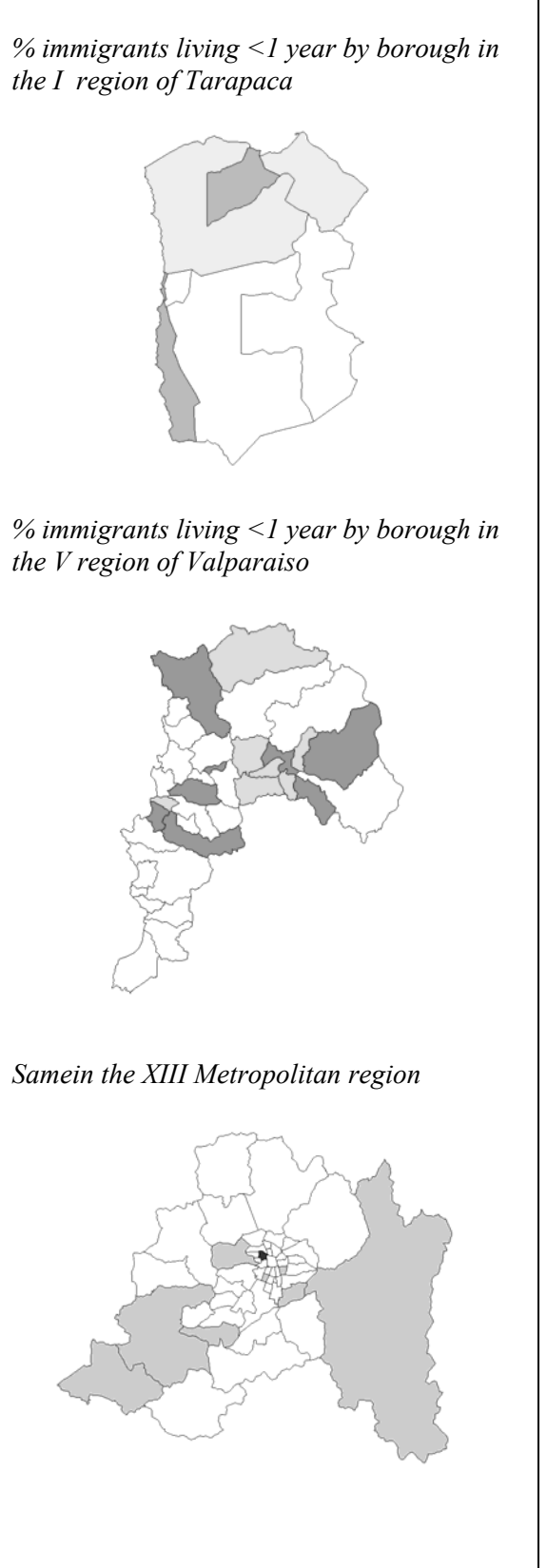


Figure 6.18 Percentage of immigrants living for over 20 years in Chile by region of the country

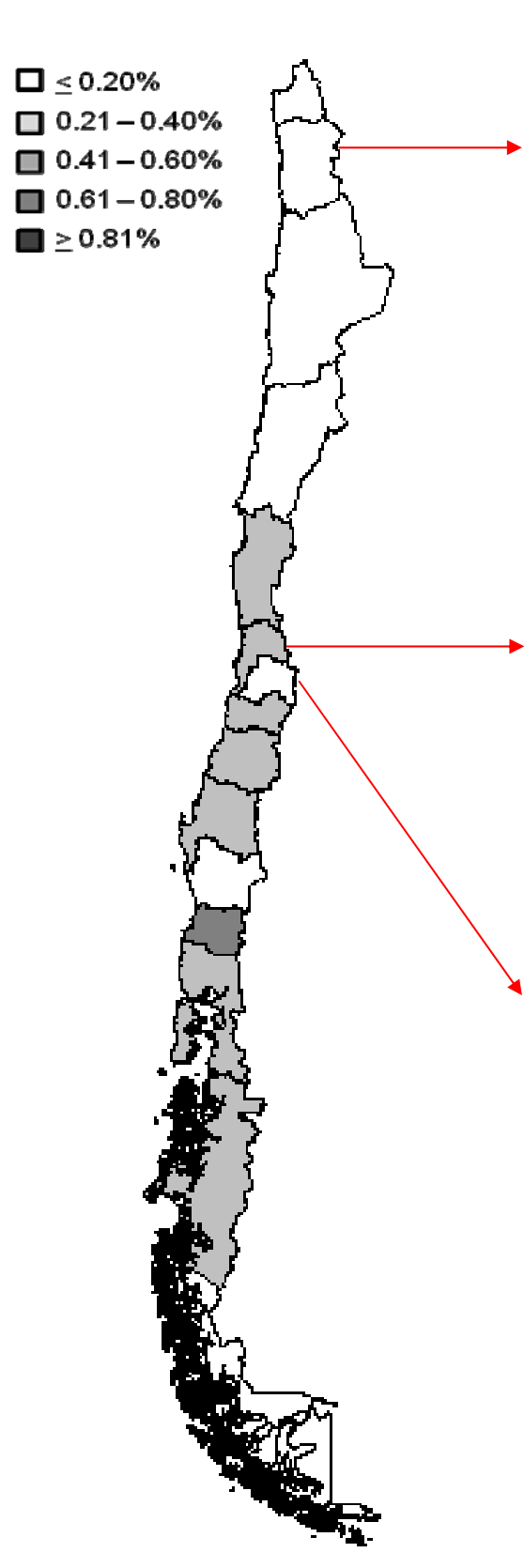


Figure 6.19 Percentage of immigrants living for over 20 years in Chile by borough in the three most immigrant dense regions

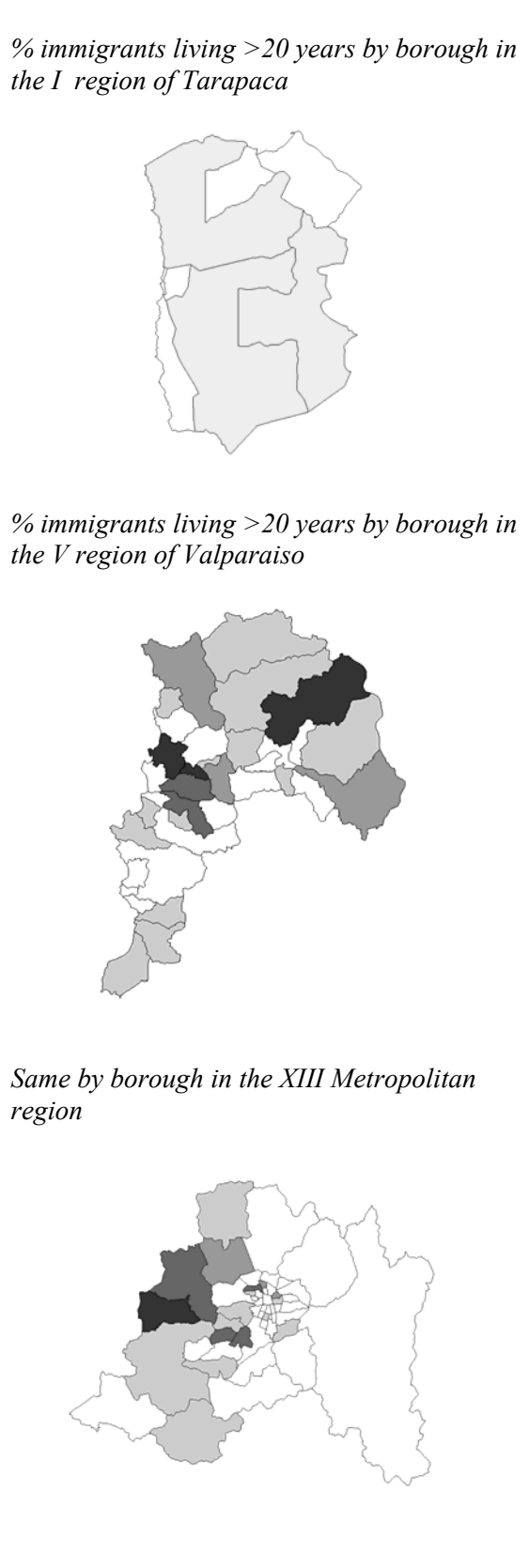


Figure 6.20 Percentage of **Peruvian immigrants** living in Chile by region of the country



Figure 6.21 Percentage of Peruvian immigrants living in Chile by borough in the XV, I and XIII regions

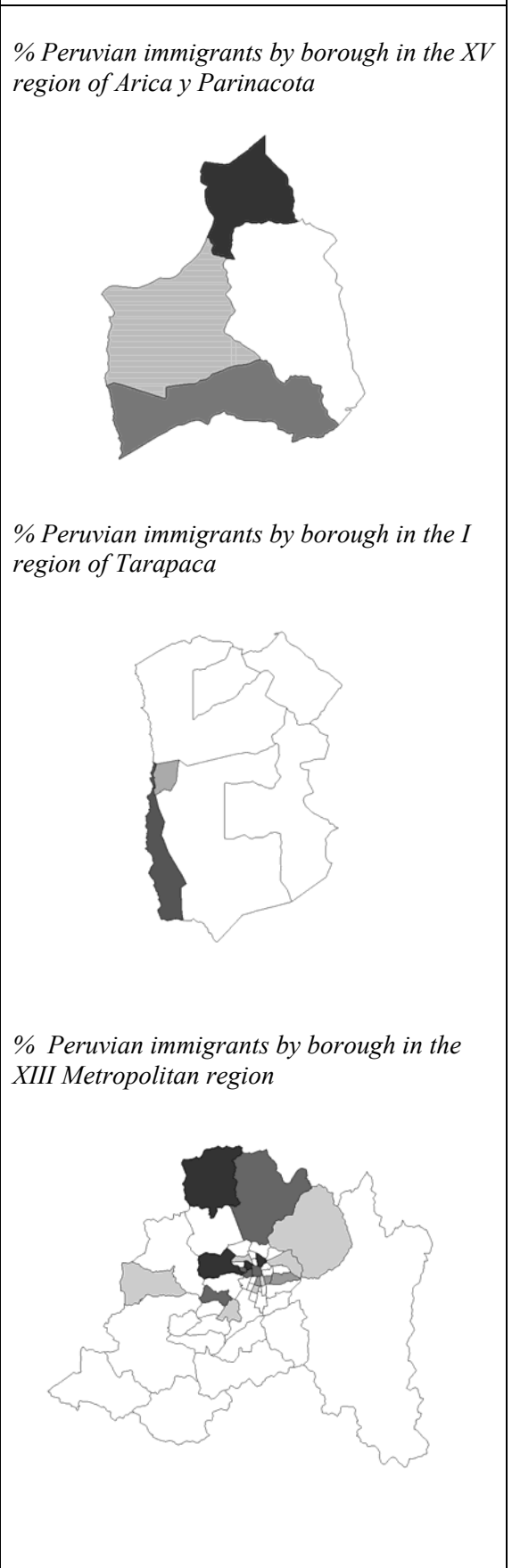


Figure 6.22 Percentage of **Argentinean immigrants** living in Chile by region of the country

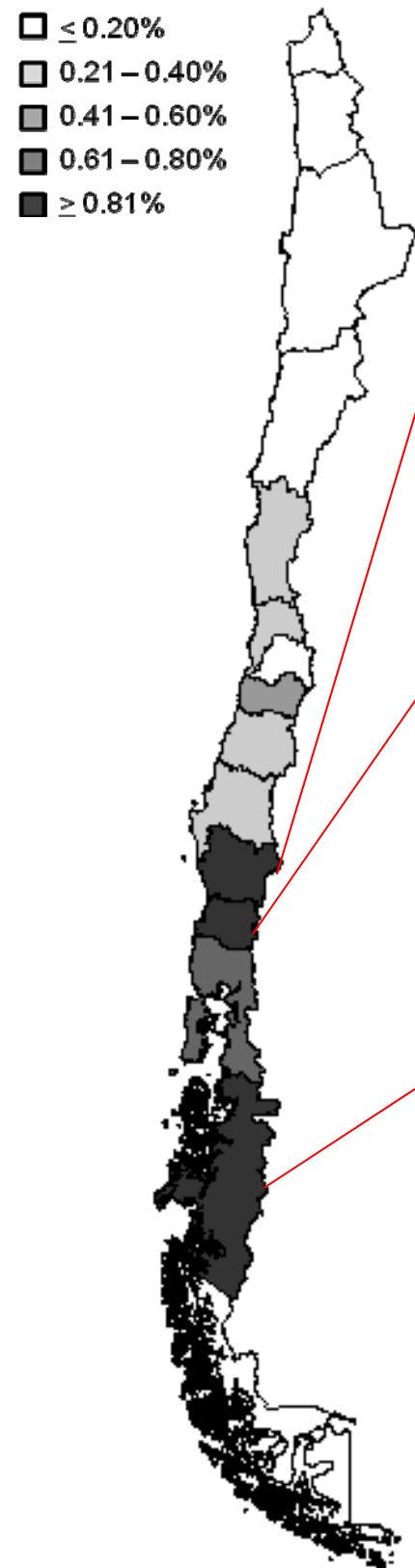
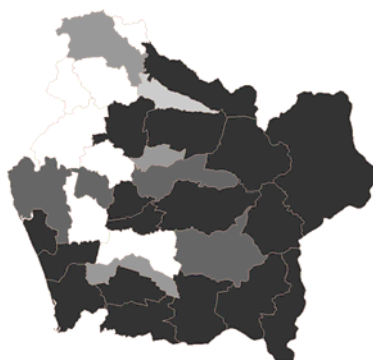
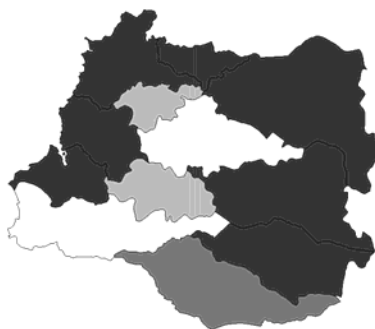


Figure 6.23 Percentage of Argentinean immigrants living in Chile by borough in the IX, XIV and X regions

% Argentinean immigrants by borough in the IX region of Araucania



% Argentinean immigrants by borough in the XIV region of Los Rios



% Argentinean immigrants by borough in the XI region of Magallanes

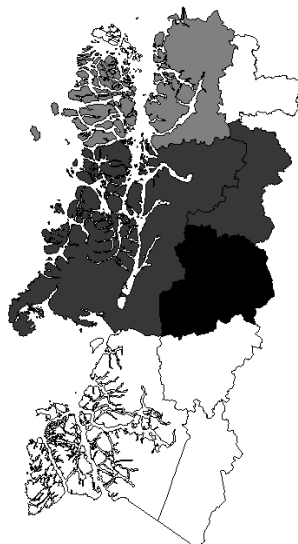


Figure 6.24 Percentage of **Bolivian immigrants** living in Chile by region of the country

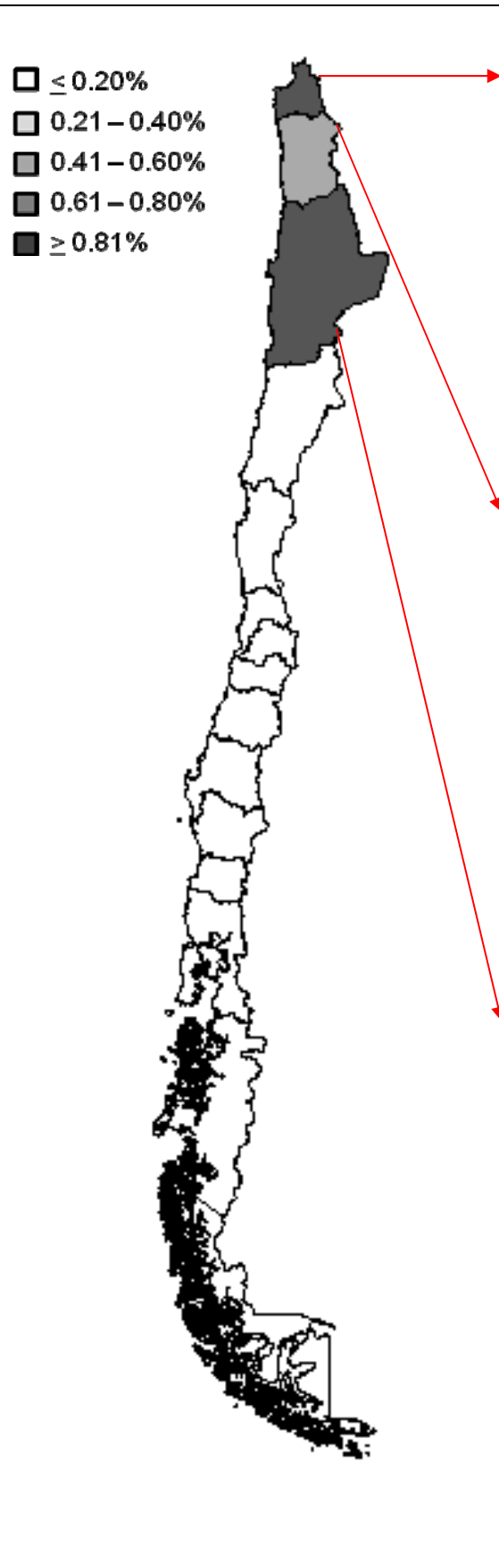


Figure 6.25 Percentage of Bolivian immigrants living in Chile by borough in the XV, I and II regions

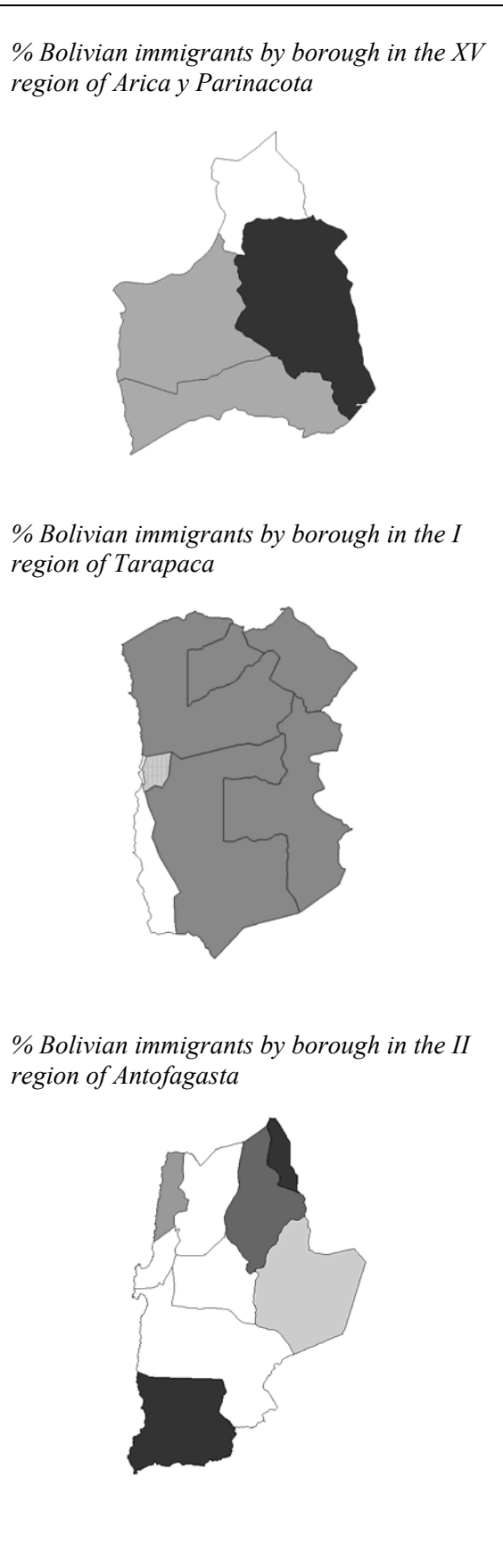


Figure 6.26 Percentage of Ecuadorian immigrants living in Chile by region of the country

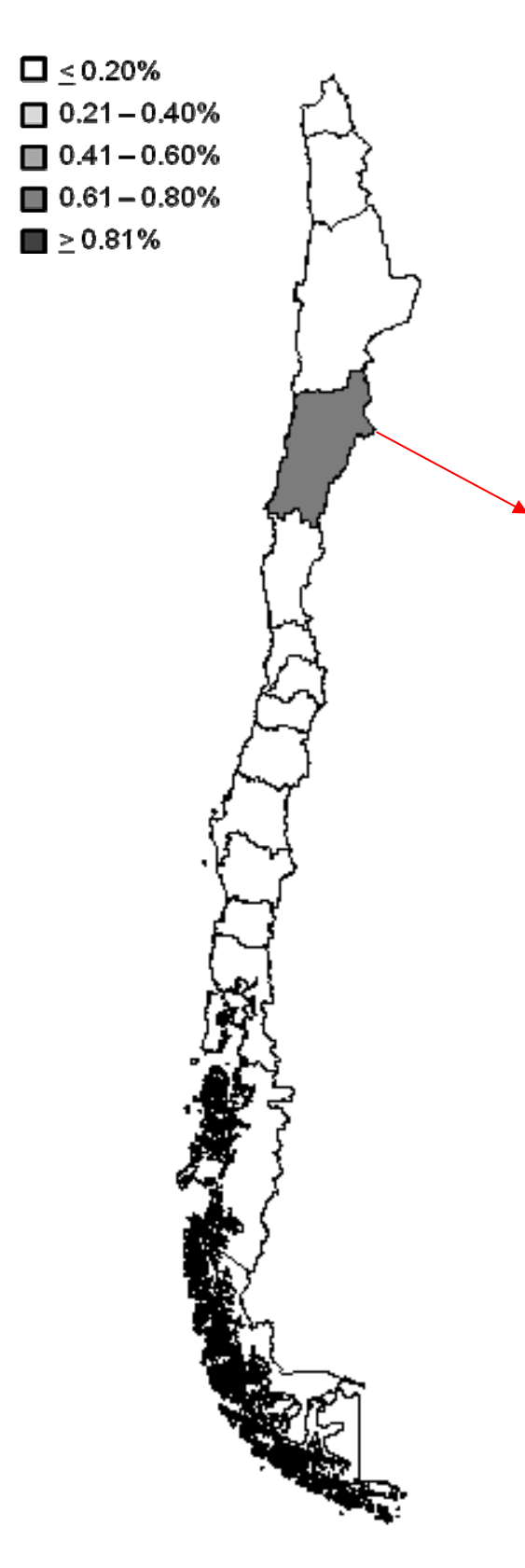
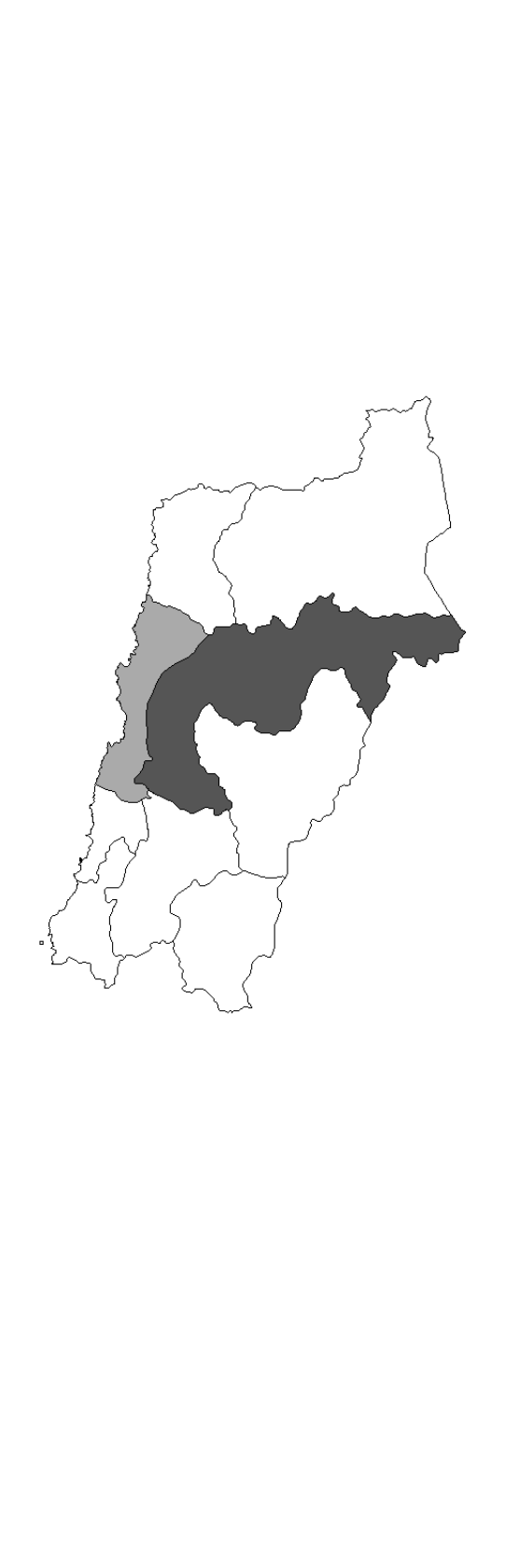


Figure 6.27 Percentage of Ecuadorian immigrants living in Chile by borough in the III region of Atacama



6.4 MIGRATION-RELATED FACTORS AMONG INTERNATIONAL IMMIGRANTS IN CHILE: STUDY RESULTS

6.4.1 Years living in the country: temporary versus long-term immigration

On average, international immigrants have lived for 10.95 ± 16.48 years in the country. When stratifying this by sex, age group, zone and area, no significant differences are found in immigrants' mean years living in Chile. However, when observing the mean years living in the country by marital status, immigrants with single status show a significantly lower mean period of time in Chile than all other categories. Also, when comparing mean years in Chile by type of minority ethnic group, immigrants belonging to the Mapuche community have lived for a significantly longer period of time in Chile than all other ethnic groups (see Table 6.3 in the following page).

When contrasting those immigrants living less than a year in Chile versus those living over 20 years in the country (Tables-A6.2, Appendix-6), both time-categories share a significantly higher proportion of immigrants in the 16-65 year age group, living in urban settings, and living in the Central area of the country. However, immigrants with <1 year in Chile are significantly more likely to be women than men (56.78% versus 43.22% men) and this disappears in the >20 years group. Besides, the first group (<1 year living in Chile) shows a higher proportion of immigrants with single marital status than the other marital categories (51.14%), while those living >20 years in Chile have a higher proportion of married immigrants compared to the other categories (61.60%) (Table-A6.2, Appendix-6). There is a modest increase in male immigrants and a modest decline in female immigrants over time (Figures 6.28 and 6.29). Immigrants under 16 years old also show a decrease over time, which is not found in the other two age groups (Figure 6.30).

Table 6.3 Stratifying years living in the country as a *continuous* variable by different demographic determinants of health in the immigrant population, CASEN survey 2006 (weighted sample size= 154 431)

Demographic determinants of health	Mean Years living in the country	95%CI
Sex: Male ^a	11.92	9.96-13.87
Female	10.15	8.72-11.58
Age categories: ^a		
<16	3.82	3.07-4.57
16-65	10.00	8.82-11.18
Over 65	34.38	24.31-44.46
Area:		
Northern	13.02	9.13-16.91
Central	9.99	8.56-11.42
Southern	14.27	10.71-17.83
Zone: Urban	10.81	9.47-12.14
Rural	13.21	10.32-16.07
Marital status: ^a		
Single	7.03	5.92-8.15
Married	12.97	11.05-14.89
Divorced	15.43	10.07-20.79
Widow	26.17	13.59-38.75
Belonging to any ethnic group	14.30	8.82-19.78
Ethnic group type: ^a		
Aymara	10.75	9.45-12.05
Atacameño	15.33	7.19-23.47
Mapuche	45.84	34.53-57.15
Others	11.05	5.20-16.84

^a p<0.0001 when comparing categories within a same dimension

Figure 6.28 Gradient of male immigrants living in the country over years, CASEN 2006 (weighted size= 154 431)

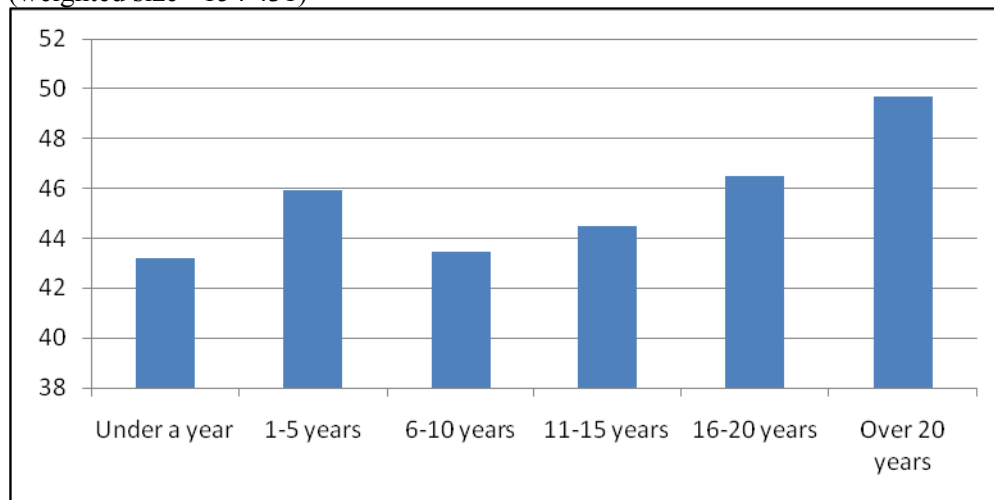


Figure 6.29 Gradient of female immigrants living in Chile over time, CASEN 2006 (weighted size= 154 431)

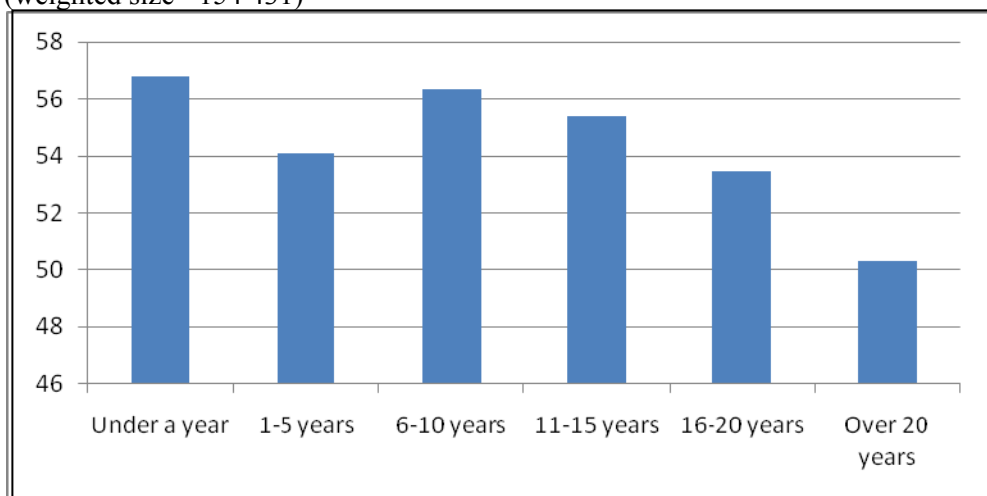
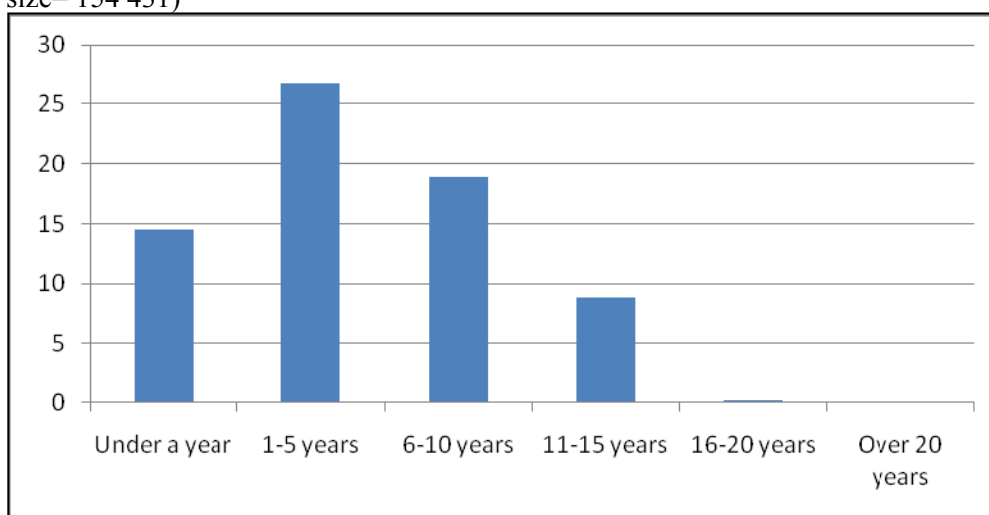


Figure 6.30 Gradient of immigrants under 16 years old over time, CASEN 2006 (weighted size= 154 431)



6.4.2 Country of Origin: shaping distinctive patterns between immigrants

The CASEN 2006 survey shows that immigrants come from a total of 52 countries. Consistent with previous evidence, most of them come from other Latin American countries, especially Peru (27.81%), Argentina (26.13), Bolivia (5.86%) and Ecuador (5.01%) (Figure 6.31). The other 35.19% of the total immigrants come from a wide range of countries from all over the world. In order of frequency, the most prevalent “other countries” are the USA (2.82%), Spain (2.39%), Brazil (2.29), Italy (1.70%), Germany (1.49%), Colombia and Uruguay (both the same 1.33%), Venezuela (1.17%), Cuba (1.01%), Mexico (0.95%) and Paraguay (0.85%). The final 17.86% of immigrants come from a total of 41 different countries.

Figure 6.31 Description of proportions of immigrants in Chile by country of origin, CASEN 2006 survey



Map Source: [<http://www.avis.com/images/global/en/maps/latinAmericaMap.gif>]

Immigrants from Peru, Argentina, Bolivia and Ecuador show a significantly higher proportion of women than men (Figure 6.32). All four most frequent Latin American countries show a significantly higher rate of 16-65 years old and a high proportion of people living in urban settings when compared to the others (see Figure 6.33). Nonetheless, there are large differences in the area of the country where immigrants live, depending on their country of origin (Figure 6.34). There is a significantly higher proportion of people with a minority ethnic background among immigrants coming from Bolivia (54.01%) and this is statistically different from the other countries (Figure 6.35). The Aymara and the Mapuche ethnic groups are the two most reported among the international immigrants in Chile and

also vary in proportion between countries (Figures 6.36-37). In terms of years living in the country, immigrants coming from Argentina have the longest mean time in Chile (16.45 years) and those coming from Peru show the shortest mean time (4.73 years) (Figure 6.38).

Overall, the four most common supplier countries are Peru, Argentina, Bolivia and Ecuador. Those who come from *Peru* tend to be mostly women (60.27%), of working age (86.45%), almost exclusively living in urban settings and mostly in the Central area of the country, married or single, with a relatively low proportion of ethnic minority status and who migrated to Chile quite recently (mean 4.73 years). All these characteristics suggest labour-related motivations to migrate and possibly immigrants who stay in the country for a relatively short period of time. Those who come from *Argentina* tend to be mostly women, of the labour-active age group but also some elderly people (6.57%) and children (14.57%), living in urban settings, and mostly single or married. They have lived in Chile for a mean period of 16.45 years and among those with ethnic background (5.80%) the Mapuche group is the most often reported (4.79%).

Those who come from *Bolivia* tend to be mostly women, but this rate remains lower than immigrant women from the other countries (59.14%) and this group has the highest rate of immigrants of labour-active age (89.20%). Interestingly, they also display the highest rate of immigrants living in rural settings (14.86%). Most of them live in the Northern area (83.55%), which might be explained by the geographical proximity between the two countries. Most of them are either married or single, but also show the highest rate of widow immigrants compared to immigrants from other countries (7.60%). Moreover, they show the highest rate of immigrants with a minority ethnic status (54.01%), mostly Aymara (33.87%) and Mapuche (19.74%). They have lived in the country for a mean period of 12.47 years. These characteristics suggest Bolivian immigrants are quite a complex group, possibly poorer or unsettled, as they do not move very far from their country's border and because they belong to ethnic groups like the Aymara, that are known to live in social and economic deprivation. This could also explain the higher rate of rural settlement among them.

Those who come from *Ecuador* tend to be almost equally male and female, with a relatively lower proportion of immigrants of the labour-active age and a significantly higher rate of children (24.62%), mostly living in urban settings, and the second most frequent group living in the Northern area of Chile after the Bolivian (28.21%). They are mostly single or married, but also show the highest rate of divorced immigrants (14.68%). They have a relatively low proportion of immigrants from minority ethnic backgrounds and all of them belong to the Mapuche community (6.16%). They have also lived in Chile for a relatively short period of

time compared to immigrants from other countries (mean of 6.24 years). These results appear in Table-A6.3, Appendix-6.

It could be hypothesised that Ecuadorian immigrants are more likely to come with their families to Chile than immigrants from the other three Latin American countries, which could explain the more balanced distribution of age. When exploring the number of household members by country of origin, there are no significant differences in the mean number of household members by country of origin (mean Ecuador 4.35 people, Peru 4.08, Argentina 4.18 and Bolivia 4.08), but some immigrants might still live in Chile with other immigrants who are not relatives. It has been reported that immigrants living in poor conditions tend to live in overcrowded housing in order to share living expenses. It may be the case that Ecuadorian immigrants are more likely to live with family members, while immigrants from other countries tend to live with other non-related immigrants, due to socioeconomic deprivation. On the other hand, it could be that most Ecuadorian immigrants are relatively wealthier than immigrants from the other countries and are able to travel with their families. Socioeconomic factors will be discussed later in Chapter 7.

The category of *other countries* was placed into three sub-groups: (1) other Latin American and Caribbean countries (12.23% 95%CI 9.30-15.92%); (2) European countries and the USA (19.13%, 95%CI 15.17-23.84%); and (3) other countries (3.64%, 95%CI 2.16-6.09%). The first of eleven of these includes Colombia, Brazil, Costa Rica, Mexico, and El Salvador. Over 80% of them are working age, the male: female ratio is 1:1, around 90% live in urban zones in the Central area, a third of them have lived for a year or less in the country and none of them belong to a minority ethnic group. European countries and the USA include 27 countries like Germany, Belgium, Austria, Spain, France, England, and others. Around two thirds are working age, most of them are men (male: female ratio 1.42), almost all of them live in urban settings in the Central area and around 60% have lived for over a year in Chile. Finally, the 14 “other countries” include different countries like Australia, Canada, China, Japan, Iraq, Egypt, and Mozambique. Again, most of them are men (male: female ratio 1: 69) of working age and living in the urban zone in the Central area. As with the European countries and the USA, over 60% of them have lived in Chile over a year.

Figure 6.32 Rank of proportion of *women* by country of origin from the Latin American region, CASEN 2006 (weighted size= 154 431)

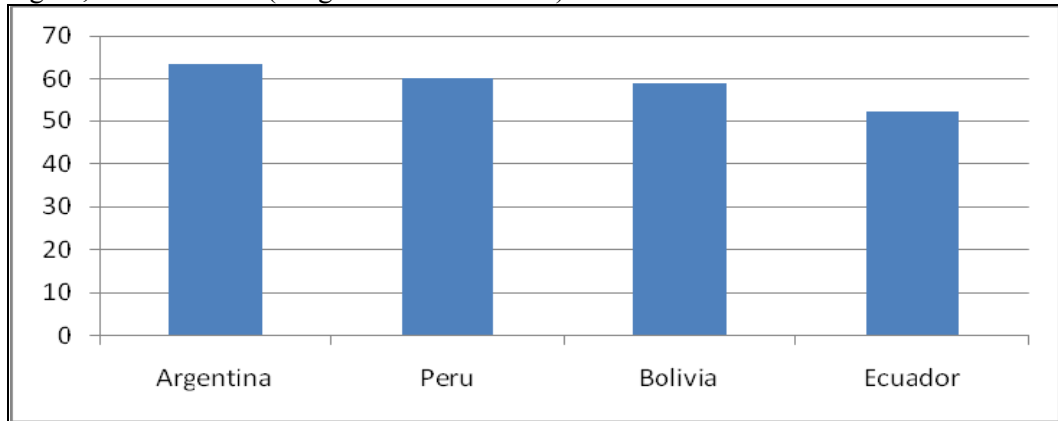


Figure 6.33 Proportion of immigrants *living in the rural versus urban setting* by country of origin from the Latin American region, CASEN 2006 (weighted size= 154 431)

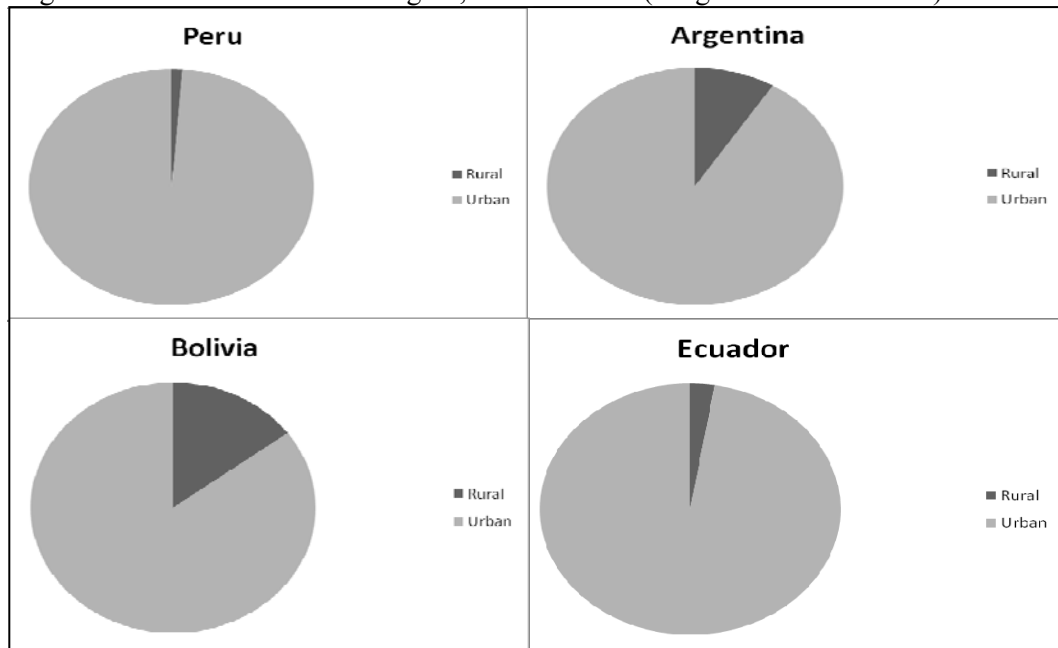


Figure 6.34 Proportion of immigrants living in the Northern, Central and Southern areas of Chile by country of origin from the Latin American region, CASEN 2006 (weighted size= 154 431)

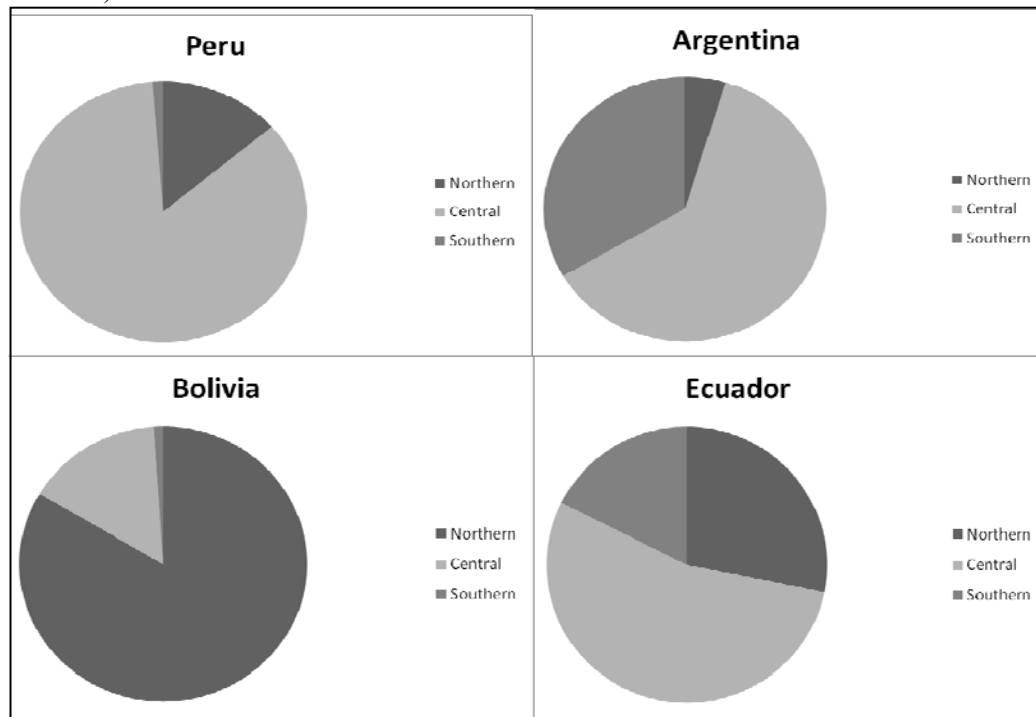


Figure 6.35 Rank of proportion of immigrants who belong to an ethnic group by country of origin from the Latin American region, CASEN 2006 (weighted size = 154 431)

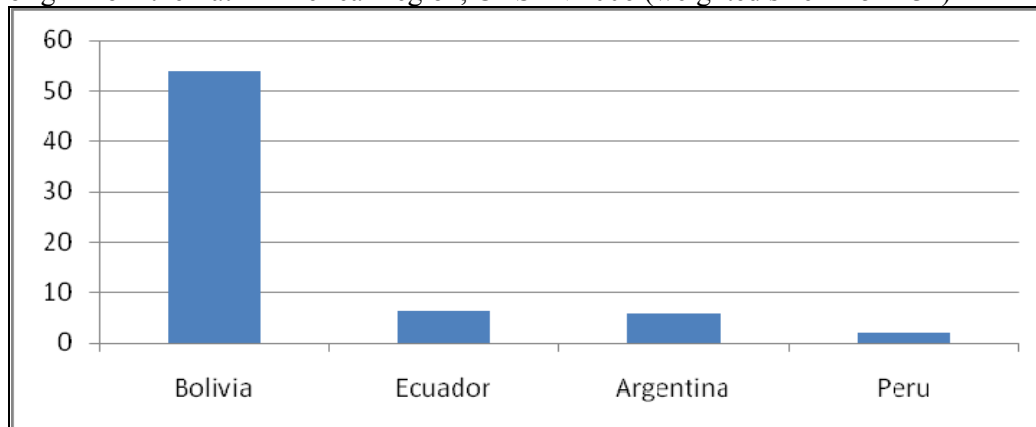


Figure 6.36 Rank of proportion of immigrants who belong to the *Aymara ethnic group* by country of origin from the Latin American region, CASEN 2006 (weighted size= 154 431)

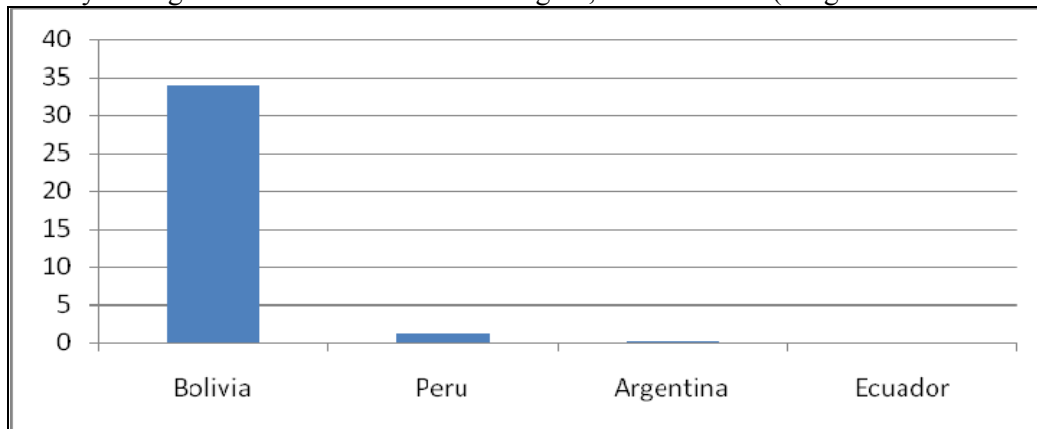


Figure 6.37 Rank of proportion of immigrants who belong to the *Mapuche ethnic group* by country of origin from the Latin American region, CASEN 2006 (weighted size= 154 431)

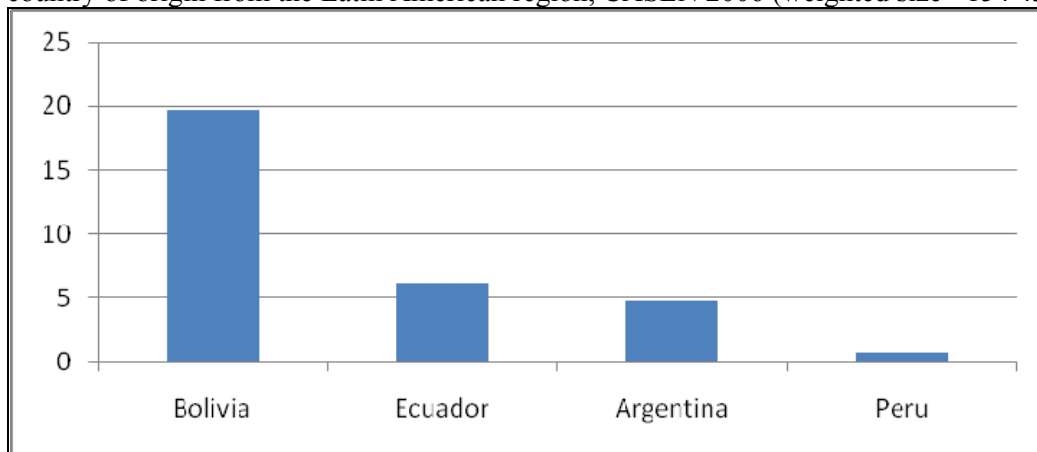
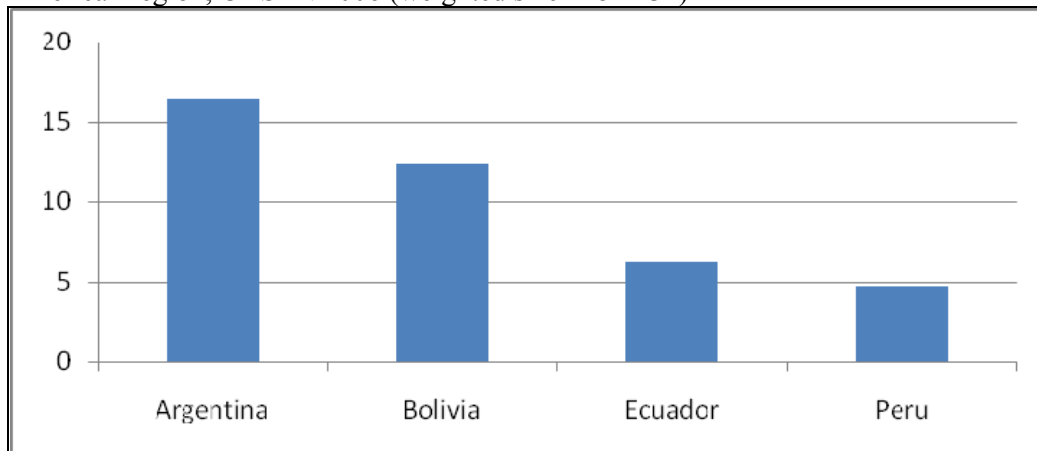


Figure 6.38 Rank of *mean years living in Chile* by country of origin from the Latin American region, CASEN 2006 (weighted size= 154 431)



6.5 DISCUSSION

Results from this chapter suggest the complexity and heterogeneity of the international immigrant population in Chile as regards their demographic characteristics and migration profile. Additionally, the analysis of their geographical location suggests significant variation in their socioeconomic status, which will be further explored in the next chapter. The following pages will discuss what this chapter adds to the knowledge concerning the living conditions of immigrants in Chile and its strengths and limitations.

6.5.1 Contrasting key findings with other studies and theories on migration

6.5.2.a) Literature and theory on migration as a determinant of health

It has been accepted that migration is a social determinant of health. As stated by Davies, Mosca and Frattini (2010), migrants are affected by social inequalities and are exposed to several experiences during the migration process that put their wellbeing at risk. National statistics in Chile show that immigration to the country is not large in numbers (1.6-1.8% approximately, equal to 258-350 thousand persons), but it has had a positive impact on services' innovation and economic growth (Departamento de Extranjeria y Migracion, 2007). Two key papers have showed quite similar results to the findings in this chapter. Martinez (2003a), in a brief working paper on migration patterns in Chile from the latest Census 2002, and Acuña et al. (2003), gave population estimations and projections for the period 1950-2050. Martinez (2003a) highlighted the social context during which his paper was written. In the 1990's, some academic groups started disseminating the idea that Chile had become a "pole of attraction" for international immigration and this received considerable attention from the mass media, which made a connection between this apparent enormous flow of immigrants and a reduction of labour opportunities for the local population. Stigma and discrimination issues emerged almost immediately, especially against those coming from Bolivia and Peru. These people were perceived as poor, "lower status" immigrants who came to the country to "steal" the jobs from the Chilean-born.

It is true that the 2002 Census shows the highest number of international immigrants in Chile since 1952, with just over 180 thousand people. Nonetheless, Chile had higher rates of international immigration during the first half of the 20th century, up to 4% of the total population, then progressive decreases since the 1950's. Even in 2002, the number of Chilean emigrants remains larger than the number of international immigrants living in the country, which gives a negative net migration ratio. Most Chilean emigrants live in Argentina (220 thousand people), the US (85 thousand people), Canada (25 thousand people)

and Spain (18 thousand people) (Martinez, 2003a). Overall, immigration to Chile is still very small, compared to other countries like the US, Spain, Canada or the UK, and migration patterns probably do not significantly shape Chile's current demography (Martinez, 2003a; CELADE, 2003). Nonetheless, findings from this chapter suggest that a proportion of immigrants might be living in relatively poor conditions (as found among those living in poor areas) and the hypothesis of a gentrification process among a group of immigrants over years living in Chile versus changes in migration patterns should be further explored.

6.5.2.b) Literature and theory on demographic determinants of health among immigrants

There is some literature discussing demographic factors and how they interact with other Social Determinants of Health (SDH, e.g. Nazroo, 2003; Sacker et al., 2000). Some have been particularly interested in these relationships in the context of migration (e.g. Davies, Mosca and Frattini, 2010; Karl-Trummer, Novak-Zezula and Meltzer, 2010). With regards to **age**, immigrants in extreme age groups are the ones most strongly associated with mortality and morbidity, and differences in health widen in early life and with increasing age (Williams and Collins, 1995). **Gender, belonging to a minority ethnic group and living in rural versus urban areas** do matter in the immigrant population. For instance, it has been stated that the relationship between women, poverty and migration is strong but complex and not completely understood (Williams and Collins, 1995). Of data on ethnic groups, mask important patterns of variation between subgroups and their health outcomes (Sorlie et al., 1993; Vega and Amaro 1994; Williams and Collins, 1995; Nazroo, 2003). Immigrant women and immigrant minority ethnic groups also face racism and different types of discrimination (e.g. Williams and Collins, 1995; Furino, 1992; Sorel et al., 1992; Nazroo, 2003; Rogers, 1992; Krieger et al., 1993; Karlsen and Nazroo, 2002).

Some of the results from this study are consistent with previous data from the Chilean Government. The “new immigration” patterns in Chile have been presented before in the literature review section (Chapter 2), and they highlighted the marked regional and especially Andean immigration and working age group immigrants coming to Chile, the progressive urbanization of immigrants who tend to concentrate in the capital, and a growing rate of women immigrants coming to work (Departamento de Extranjeria y Migracion, 2007; Martinez, 2003a; Stefoni, 2001). In addition, a migration pattern slightly favouring female immigration to Chile since 1992 has also been reported before, in contrast to a historical male immigration to the country since 1952 (men:women ratio from 2002 Census was 0.91 among immigrants) (Martinez, 2003a; Stefoni, 2002). Female immigration influx is particularly relevant among Peruvian immigrants (Stefoni, 2002), and the reported association with domestic service has created labour segmentation and a sense of intolerance

and discrimination against them (IDEAS, 1997; IOM, 2002; Martinez, 2003a). Results from this chapter continue to support the linkage between gender and migration in Chile. There are also results from this chapter that are new to the understanding of social determinants of international immigrants in Chile. Marital status, minority ethnic status, years living in the country, and subgroup analysis by country of origin, add knowledge to what has already been described on immigrants in Chile in the past. Results from this chapter show, on one hand, that immigrants are a unique group and quite different from the population in the host country in terms of their demographic characteristics; and on the other hand, there is great heterogeneity and complexity within the immigrant group in Chile. The relative importance of age indicated in previous studies, for example, is strongly supported by these results, as a selective group of working age are more likely to migrate to Chile. Ethnicity and country of origin appear to be relevant social determinants of the immigrant population in Chile and further understanding of the meaning and implications of both demographic determinants in terms of health among immigrants needs to be addressed. Some other key findings concerning international immigrants' demographic characteristics deserve more discussion in the Chilean context. These elements are presented here with the aim of stimulating hypothesis formulation for future research in this field (Table 6.4).

Table 6.4 Key findings concerning international immigrants' demographic characteristics

<i>Key finding from this chapter</i>	<i>Discussion</i>
Relative higher rate of over 65 years old widowed immigrants compared to the Chilean-born	This finding suggests either migration during retirement for those whose partners died, or premature death of one of the couple while living in Chile together
Relative higher rate of immigrant women of working age than Chilean-born women	This finding suggests a gendered selection in the migration process and labour structure and opportunities in the country might merit further observation (see also 6.2.3).
Reduced number of immigrants in the Southern area of the country	This finding reflects the strong centralization of development and economic investment around the metropolitan region in the Central area (Oyarzo, 2000), even though this concentration was found in all the age-groups
Relatively higher proportion of immigrants belonging to a minority ethnic group, especially Aymara group, compared to Chilean-born	(1) There might be cultural reasons favouring migration among Aymara members in recent times, even though they have not been recognised as a traditionally nomadic group (Minority Rights Group International, 2008); (2) There could be socioeconomic explanations secondary to poverty and deprivation (no money to travel a farther distance); (3) It could be chain migration among ethnic minorities and, through the push-and-pull explanation, the numbers tend to go up in a natural fashion if social ties with local members are maintained after migration and if the experience of migrating was positive for those who did it first (Martine, Hakkert and Guzman 2000; Easterlin, 1961; Faist 2000); (4) There could be political issues in the countries of origin, where oppression, discrimination, poverty and social vulnerability threatening ethnic groups would encourage them to migrate to a new country despite the risks and challenges involved in such a journey; (5) There could be a combination in the context of globalisation, in which poor people from ethnic groups might obtain manual occupations on the Chilean border (Martine, Hakkert and Guzman, 2000; Massey, 1999; Giddens, 1990); (6) It could be due to a growing interest among immigrants in Chile's health care system (Carrasco-Garrido et al., 2007; Cots et al., 2007; Torres and Sanz, 2000).

Additionally, a comment from the emigrant viewpoint should be mentioned. Push-and-pull theory, chain migration theory and, indirectly, globalisation theory could support the idea that Chilean emigrants from the 1970's (secondary to General Pinochet's dictatorship) and their offspring might be returning to the country after several decades. Even though the return of Chilean emigrants to the country could explain part of the current migration pattern, this issue is almost excluded in the latest debates on immigration in Chile (Martinez, 2003a). Their demographic characteristics and those of their offspring, if returning to Chile, certainly require further attention from researchers and policy makers in the country.

Interesting findings also emerged from spatial exploratory analysis of immigrants living in Chile. Exploratory results from this suggest the importance of place to international immigrants in Chile. Distinctive patterns are related to socioeconomic and historical development in the country and international relationships with bordering countries over time, similar to other studies in Latin America (Bratsberg, 1995). This chapter suggests geographical characteristics of international immigrants in the country and provides some hypotheses to test in the future. Overall, it supports the idea that *place* probably creates the nature of people and their health and, in this sense, immigrants might choose where to live in Chile according to the social and environmental characteristics of each region and borough in Chile. Nonetheless, much more can be done in terms of place, migration and health in Chile. Chain migration and push and pull theories might be intimately related to immigrants' decisions as to where to live, along with importance of globalisation and socioeconomic aspects of immigrants and their families. All these elements should be further analysed when more (quantitative, qualitative and mixed) and better (especially longitudinal) data is available in Chile.

In addition to the demographic factors described in this study, other interesting hypotheses have emerged from recent evidence collected on migration and individual and broader mediators affecting the health of the migrant population (see models in Chapter 4). Diet, behaviours, gene-environmental interactions, psychological stability, and others, have been suggested as relevant variables that need further understanding among migrants (Carta et al., 2005a; Carta et al., 2005b; Eaton and Harrison, 2000; Patel and Gaw, 1996; Karmi, 1997). Family conflicts (De Jong and Seinmetz, 2003), the loss of cultural cohesion and contact with fellow-countrymen, the presence of confidential relationships (friends) and family in the foreign country, and others, might mediate psychological stability in the immigrant population and could be further explored in Chile (Carta et al., 2002, Wilkinson, 2000; Wilkinson, 2006).

6.5.3 Strengths, limitations and future research in this area

A comprehensive understanding of demographic determinants of health among international immigrants is essential. The process of migration is inevitably selective and depends on both local and broader dynamics within a country and also at an international level. Immigrants in Chile at the time of this survey were a distinctive and heterogeneous group and their demographic characteristics seem to be mostly determined by labour market issues. The right to search for a better life, especially in the context of globalisation and international industrialisation, supports the argument that healthy young people might have migrated to Chile in the past decade. However, more complex and possibly hidden features, like female and ethnic migration into Chile, might also be determined by structural national policies and market opportunities, which in addition might selectively discriminate against certain immigrant groups. The return of forced political emigrants from the 1970s should also be included in the current debate.

Up to now, international relationships between Chile and other Latin American countries seem to be stable and peaceful. Special conventions with Peru, for example, could explain the relatively higher proportion of immigrants from this country into Chile (Dona, 2002; Martinez, 2003a). Nonetheless, these conventions are quite recent and were historically created as a consequence of the growing immigration of Peruvians to Chile. They reflect a lack of anticipation of this phenomenon in the region, despite the international evidence and experience of other countries worldwide. At the same time, these conventions do not necessarily assess migration patterns and processes in an accurate or effective way, and

certainly do not address all the issues raised by selective workforce migration or occupational conditions of immigrants in the country.

In addition, existing sources of data on migration in Chile do not tackle the challenge of understanding the social determinants of Chilean emigrants in foreign countries, the conditions of current immigrants before they moved into Chile or the complex dynamics of changes immigration patterns over time. Quite innovative methodologies in this topic have been developed in other countries like the US (e.g. The New Immigrant Survey 2002-2008, conducted by the Office of Population Research at Princeton University) and could be useful for further exploration of both international immigrants in Chile and Chilean emigrants living in foreign countries. These relatively new methods, however, are very expensive as they engage issues related to hard to reach populations and national representative population estimates. At the same time, political interest and context determines the urgency and relevance of this particular topic over time, and affect the chances of funding or definition as a social priority.

Historical events in the region and worldwide could also explain current patterns of migration to Chile and could help in the understanding of the relationship between the migration process and the demographic dynamics and health status of international immigrants in Latin America and this particular country. Intergenerational connections in migration patterns, major historical events and changes in national and international policies should be included in the debate as a new perspective, not only to explain labour force migration but also in order to anticipate and protect the health and well-being of current immigrants in the country and their offspring, returning emigrants and future immigrants coming to Chile in the next decades. In this framework, migration is without a doubt, a key Social Determinant of Health not only for migrants but for every member of a society. Finally, the intimate association between demographic characteristics and labour market conditions at a global level suggests that there is also a need to connect the findings from this chapter on migration status and demographic SDH of the immigrant population with educational qualifications, occupational characteristics and income of immigrants living in Chile. This would allow a more comprehensive and clearer description of who international immigrants in Chile are, what their socioeconomic needs are and later, their health status. The main findings from this chapter give a context within which to explore other SDH in the following chapters.

Table 6.5 Summary table of the available publications on different demographic SDH among the international immigrant population in Latin America

<i>SDH</i>	<i>Specific SDH</i>	<i>Authors</i>	<i>Year</i>	<i>Study design or report aim</i>	<i>Immigrant population</i>	<i>Host country</i>	<i>Results</i>
Demographic SDH	Age	CELADE	2008	Report that summarizes the trends and patterns of migration throughout Latin America and the Caribbean until the early 2000s.	Latinos	Latin America	Persistent economic tensions, exacerbated by a deep and prolonged crisis, the short-term effects of the structural adjustment programs and the adverse social conditions derived from the long-lasting incidence of poverty and inequality may have contributed to the diversification of demographic and socio-economic characteristics of Latin American and Caribbean migrants. Great impact of serious socio-political convulsions and violence leading, in some cases, to the militarization of conflicts, and the rupture of the rules of peaceful coexistence in society. Another significant factor was the change in the policy-making provisions of the host countries, which, whether deliberately or not, had an effect on the qualitative make-up of migratory flows.
		Depto Extranjeria y Migracion	2007	Governmental report in Chile focusing on the migration patterns in this country	Mostly Latinos	Chile	The immigrant population in Chile is predominantly characterized by work, with a low percentage of children: nearly 18% of the total immigrant population.
		Alvarado & Sanchez	2002	Report on migration patterns in Latin America, a view from the ICFTU/ORIT	Latinos	Developed countries	Historically speaking, the migratory movements of the population of Latin America and the Caribbean have been closely related to the development of societies in these regions and, more specifically, to economic, social and political imbalances.

		UNESCO	1999	Report on globalisation and migration in Latin America and the Caribbean	Latinos	Other Latin American countries and US	Much migration in Latin America is intra-regional, with the US being the predominant destination outside the region. Detailed presentation of migration flows in different countries, highlighting immigrants being of working age and moving mostly for work opportunities, if not political prosecution and civil war.
		Lloyd-Sherlock	1998	Cross-sectional study of the relationships between socioeconomic change, public policy, and the welfare of elderly people in Brazil	Internal migration	Brazil, rural-urban movement	Socioeconomic change and public policy had an important effect on older people's quality of life. Rapid migration and the existence of formal pension programs had not undermined informal support for older people in poor urban areas, and family support was still the principal source of income.
		Almandoz	1997	Cross-sectional analysis studying the settlement of immigrants from Chile and Bolivia in a town in the province of Buenos Aires [Argentina]	Chilean and Bolivian	Argentina	Chilean immigrants live in Tandil in greater numbers than Bolivian immigrants, but are also older. Though certain mobility is not unknown, they usually hold low skilled jobs and are only by exception granted social security and medical insurance.
		Lates & Bertonecello	1997	Growth and changes -by age, sex, and place of birth- in the structure of the total population of the Buenos Aires metropolitan area for the decade of the 1980s	Immigrants	Argentina	The growth of the economically active population over age 15 for different groups of national origin, sex, and age showed much greater heterogeneity. Women from neighbouring countries were responsible for 10.3% of the growth in the economically active female population aged 30-34 and 40-44 between 1981 and 1991. The absolute and relative increases in migrants from neighbouring countries and their greater economic participation tend to increase the general level of economic activity.
	Gender	IDEAS	1997	National survey on tolerance and non discrimination in Chile	Immigrants	Chile	These reports suggest the existence of intolerance and discrimination from the Chilean population to some immigrants in Chile, mostly those in poor conditions and coming from Peru and Bolivia, which tend to be women.
		Depto Extranjeria	2007	Governmental report in Chile focusing on the migration patterns in this country	Mostly Latinos	Chile	The immigrant population in Chile has a significant proportion of women. A large group of them work in domestic service and live in relative poverty, away from

		Migracion					their families and sending remittances to their relatives.
		UNFPA	2005	Report of the UNFPA expert group, on migration including the Millennium goals	Latinos	America	In developing regions, migration is usually undertaken to improve the family's economic conditions. Women's reasons for migration, however, may be motivated by other non-economic factors. An important part, although less explicit, of women's migration might also be the search for more open milieus. Gender-related factors, such as surveillance of daughters, or lack of socially accepted options to get out of a bad marriage, or fleeing from domestic violence, are conditions that can "push" women out. Migration functions not just as an economic safety valve, but as an avenue to allow women passage into safer, more enabling environments.
		UN Monitoring	2002	Report of the UN on women's health with a life course approach	Undetermined	Undetermined	The report describes a wide range of health issues among women, highlighting the vulnerability that some migrant women experience throughout the migration experience. These includes forced migration, violence, living away from the family, trafficking and sexual exploitation, and others
		Stefoni	2002	Cross-sectional descriptive study to explore Peruvian immigration to Chile	Peruvian	Chile	The study emphasises labour and social exclusion suffered by migrant women in Santiago. Peruvian migration is mainly feminine and with a high labour concentration in domestic jobs.
		Alvarado & Sanchez	2002	Report on migration patterns in Latin America, a view from the ICFTU/ORIT	Latinos	Developed countries	Gender is a key dimension of international migration. In the American continent as a whole, according to ECLAC estimates, there has been a shift from predominantly female migration (in the 1970s and 1980s) to mainly male migration (thereafter). However, if we restrict our analysis to cross-border migration between Latin American countries, we can see that there is a strong trend towards "feminization".

		OIM	2002	Cross-sectional exploratory study of the perception of bordering immigration to Chile	Immigrants from bordering countries	Chile	Bordering immigration to Chile is based on work opportunities and reunification of separated families. A large proportion of bordering immigrants are women travelling to work in low paid domestic service, especially those coming from Peru.
		ECLAC-Costa Rica	2001	A report with presentations, comments, conclusions and final panel review of the Symposium on International Migration in the Americas, held in September 2000 in Costa Rica	Latinos	America	Different discussion papers highlight the urgent need to protect Latin American migrants and their children. Similar to previous report.
		Martine	2000	Discussing paper on social aspects of international migration	Immigrants	Undetermined	Socioeconomic consequences of migration are double or contradictory. Migration can have positive and negative effects both on individuals and on communities of origin and destination. It also suggests specific consequences in migrant women, also with positive and negative effects in their living conditions and occupational status.
		Altamirano	2000	Cross-sectional descriptive study to explore Peruvian migration to Chile	Peruvian	Chile	There is a feminisation of the immigration of Peruvian migrants to Chile.
		Radcliffe	1990	Cross-sectional case studies of the placement of peasant women in external labour markets	Peruvian Andean women	Other Latin American countries	This study illustrates the complex micro- and macro-level factors that determine the mix of productive and reproductive labour. Male migration is high in the 11-40-year age group, but becomes seasonal once men marry. Peasant girls under 15 years of age tend to be allocated to external labour markets (largely domestic service) by parents and godparents; after 15 years, however, when children are considered to reach adulthood, there is a shift toward self-motivated migration or recruitment by employers and agents. The eldest daughter typically enters migration at age 14 years and sacrifices her education,

							while younger siblings remain in the home longer. In all but the poorest families, female migration for waged labour ends with marriage.
		De Lattes	1989	Discussing paper	Latinas	Latin America	An increasing body of research findings demonstrates the importance of women migrants--especially women as independent migrants. The predominance of women in Latin American rural-to-urban migration flows is well known, but female majorities are found in other important flows (e.g., in some inter-urban and international flows) as well. In general, female migrants tend to be younger than their male counterparts. The kinds of employment most commonly sought by women migrants are related to their traditional roles in the home and in child rearing.
	Ethnicity and race	Sundsquist	1995	A population-based study on the influence of social factors on self-reported illness in immigrants in Sweden	Latinos and others	Sweden	223 Latin American refugees, 333 Finnish and 126 south European labour migrants and 841 Swedish controls. The strongest independent risk indicator for long-term illness was being a Latin American refugee, with an estimated odds ratio of 2.78. Low social class, low material standards, age 45-64 years and overweight were significantly associated with long-term illness.
	Urbanization and place	Rodgers et al	2011	Report on urbanization in Latin America by the UNU-WIDER organisation	Immigrants	Latin America	Latin American cities are “fractured”, in the way that slums and shantytowns have been conceived. In relation to migration patterns and urbanization in the region, towards the latter half of the nineteenth century, large scale international migration also began to play a prominent role in shaping patterns of urbanization in the region, but internal rural-urban migratory flows soon took over as a new and even more consequent source of urban growth.
		Dufoult & Piperata	2004	Discussing paper	Internal migrants	Latin America (rural-urban)	In Latin America 1) the fertility of migrants tends to be intermediate between that of rural and urban populations, and 2) migrants tend to suffer higher rates of mortality and morbidity, at least initially, than long-term urban residents. There is some indication that the actual physical conditions under which migrants live in urban areas—and these tend to be among the most impoverished—are more important variables than migrant status per se.

		Brockhoff	1999	Discussing paper on UN projections on urban population in developing countries in 2000	Internal migrants	Developing countries(rural-urban)	The study suggests a slower growth of urban cities in Latin America than projected by the UN: there is a shift in these figures for Latin America and the Caribbean: some 17 percent fewer urbanities according to the 1996 projection.
		De Oliveira & Roberts	1998	Similar as previous	Internal migrants in Latin America	Developing countries (rural-urban)	Similar findings to previous study.
		De Oliveira & Roberts	1996	Chapter of a book edited by Gugler J in 1998	Internal migrants in Latin America	Developing countries (rural-urban)	In Latin America, the pace of migration increased dramatically after World War II and was at its peak in the 1950s.This phenomenon shifted the greater proportion of the population from rural to urban areas. Now the majority (>75%) of Latin Americans live in urban areas.
		Brockhoff	1995	Data from 15 Demographic and Health Surveys are used to examine whether rural-urban migrants in developing countries experience higher child mortality after settling in towns and cities than do lifelong urban residents	Internal migrants	Developing countries (rural-urban)	Children of female migrants from the countryside generally have much poorer survival chances than other urban children. This survival disadvantage is more pronounced in big cities than in smaller urban areas, among migrants who have lived in the city for many years than among recent migrants, and in urban Latin America than in urban North Africa and sub-Saharan Africa.
		Brockhoff	1994	Similar as previous	Internal migrants	Developing countries	Similar findings to previous study.
		Bender et al	1993	Discussing paper	Internal migrants	Latin America (rural-urban)	Those born and reared in rural areas bring with them knowledge and skills learned in and adapted to rural areas; those same skills may be maladaptive in urban areas.
		Chant	1991	Cross-sectional study of factors	Internal	Costa Rica	Urbanization in Latin America has been due largely to the

				fueling urbanization in Guanacaste province, Costa Rica are explored	migrants	(rural-urban)	expansion of economic activities in urban centres, but in Guanacaste, rural employment persists among the poor. The study reveals that in Guanacaste, urbanization is more strongly linked to the reproductive (e.g., housing and welfare) needs of household survival than to productive (employment and income) needs.
Migration-related SDH	Country of origin	Gonzalez et al	2006	Cross-sectional study to examine the prevalence and determinants of high risk (HR) human papilloma virus (HPV) by country of origin in women in Spain	Latinas: Colombian, Ecuadorian, and others	Spain	Prevalence of HR HPV is more than three times higher in Latin Americans than in Spaniards. Latin American women's HPV prevalence resembles more that of their countries of origin. It is essential that health service providers identify these women as a priority group in current cervical screening programmes.
		Bratsberg	1995	Cross-sectional population-based study to explore the variation in legal and illegal immigration flows across seventy source countries	Latinos	US	Earnings in the source country and the distance from the US form significant deterrents of both legal and illegal immigration flows. We also find that illegal immigration is more sensitive to such factors than is legal immigration.
	Years living in the country	Corona	1993	Cross-sectional study exploring differences in the amount and characteristics of Mexican migration to the United States	Mexican	US	Migrants' places of origin and destiny, their occupation in both Mexico and the US, and the length of their stay are significant. Migrants' age and relocation costs are also relevant to migrants living conditions in the US.

CHAPTER 7

WHAT ARE THE SOCIOECONOMIC CONDITIONS OF IMMIGRANTS IN CHILE AND HOW DO THEY COMPARE TO THE CHILEAN-BORN?

What do we need to know about the socioeconomic status of the immigrant population in Chile?

In October 2009, an old mansion of an ancient district of Santiago burned completely, leaving seventy people homeless. The vast majority of them were of Ecuadorian origin. Thankfully, no fatalities were reported, despite the magnitude of the incident.

Only a few blocks of distance from that scene, hundreds of immigrants walk around the centre of the capital every day. There is currently no reliable quantitative information about how they live or what their health status is, but media news such as the one mentioned above - and simple observation - reminds us what their chances might be in the country, at least for a significant proportion of them...

Hurtado, radio University of Chile, 2009

Summary Box 7

What research question is included in this chapter?

What are the socioeconomic conditions of this group and how do they compare to the Chilean-born?

What is already known?

Government figures indicate that immigrants tend to live in good conditions as a whole, but previous qualitative studies have reported poor living conditions among particularly vulnerable immigrant subgroups in Chile.

What does Chapter 7 add?

- Immigrants live in quite polarised conditions in the country.
- Due to the great heterogeneity of the socioeconomic status of immigrants in Chile, three clusters were created through hierarchical cluster analysis, combining income, education and employment status.
- Most immigrants live in good household material conditions, but some of them are living in poor quality household and sanitary conditions.
- The representation of social status through socioeconomic conditions and material living standards vary between the immigrant and the Chilean-born.

Overview

This chapter provides a detailed description of indicators of socioeconomic status among immigrants in Chile, and compares them to the Chilean-born population. Findings from this chapter will be crucial to understanding the relationship between socioeconomic status and health analysed in the following chapters. Overall, international immigrants are a very complex and heterogeneous group, polarised by their socioeconomic status. Further consideration of these socioeconomic differences should be taken into account in targeting health policy interventions for the immigrant population in Chile.

Introduction

Socioeconomic status (SES) is a complex and multidimensional variable and a key determinant of health and wellbeing. Socioeconomic status has been frequently measured by income, education and occupation. However, particularly in developing countries, material living standards have also been recognised as a reliable measure of wealth and social class. The purpose of this chapter is to describe the socioeconomic patterns of international immigrants in Chile and compare them to the Chilean-born. The first section of this chapter describes the literature on some key indicators of SES: income, level of education and occupation, and displays these factors among immigrants in Chile. These variables represent a dimension of the relative position of a person within the social scale of the community in which they live. The second section of this chapter describes the material living conditions of the immigrant population in Chile, and compares this to the Chilean-born population. The third and final section of this chapter provides a discussion of the key findings. Methodological issues related to the different measurements used in this part of the study, a discussion on the connection between the findings and the different migration theories described in Chapter 2, and a contrast with international evidence are presented in the final section of this chapter.

7.1 SOCIOECONOMIC STATUS (SES) OF IMMIGRANTS IN CHILE: LITERATURE REVIEW AND STUDY RESULTS

Socioeconomic status (SES) has been recognised as an important determinant of self-reported health and risk or incidence of disease or mortality. Throughout the world, people of lower socioeconomic strata tend to have more health problems than those belonging to higher strata, frequently with a consistent social gradient of health. The purpose of this first section of Chapter 7 is to describe the related literature, and examine income, educational level and occupation among immigrants in Chile. It first summarises what is already known about each of these socioeconomic SDH and then presents the key results from this study. A summary table of the literature review of these particular SDH can be found at the end of this chapter, highlighting previous evidence on the socioeconomic determinants of *international immigrants in Latin America* (Table 7.4).

7.1.1 Income

7.1.1.a) What is it known about income as a determinant of health?

Income has been considered a cause of poor health through both a direct and an indirect mechanism. The direct mechanism that has been proposed suggests that income determines the quality of material conditions that affect health. An example is the lack of a solid house to combat cold during the winter, which is dependent on both the household income and the ability to buy (see the material/neo material model in Chapter 4) (Galobardes et al., 2006a; Galobardes et al., 2006b; Liberatos, Link and Kelsey, 1988; Coleman and Rainwater, 1978; US Bureau Census, 1982). In addition, individual and household income have been associated with better access to health care, reduced exposure to environmental pollutants, a better diet and working conditions, and better public services.

The proposed indirect mechanism is more complex and is based on the social theory of Max Weber (Weber, 1946; Lipset, 1968; Hollinshead, 1971) and Karl Marx (Bottomore, 1983, Lipset, 1968). Money is an indicator of social prestige at an individual and household level. In this sense, not only is the absolute income of a person relevant, but also relative income, that is how much your income relates to the economic scale of your society. Thus, relative income is a psychosocial factor (see the psychosocial model in Chapter 4). Additionally, international studies have examined income inequality among immigrants worldwide. This literature highlights the resurgence of income inequality in some advanced industrial societies, which may reflect the impact of an increasingly integrated world economy (see globalisation theory in Chapter 2). This has been typified by growing capital mobility,

heightened international competition, and an increase in migration (Alderson and Nielsen, 2002; Alderson and Nielsen, 1999; Borjas, 1994; Zhong et al., 2007; Regev & Wilson, 2007; Winegarden and Boon, 1993; Mayr, 2003; Moore and Pacey, 2002; Frick et al., 1997; Moore and Pacey, 2003).

Some research has been conducted on income and its relation to health in Latin America (Takenaka and Pren, 2010; Barham and Boucher, 1998; Allensworth, 1997; Borjas, 1996; Gomez and Diaz, 1988; Mora and Gomez, 1980) and the Chilean population. In the past, the Gini Coefficient has been estimated in Chile as a measure of income inequality. The Gini Coefficient is well established as a conventional, ad hoc measure of income inequality (Dorfman, 1978). It was created in the early 1970s from the theory on relative income by Runciman (1966). As clearly explained by Yitzahki (1979, p. 321),

“The essence of this theory is that the impact of deprivation resulting from not having X when others have it is an increasing function of the number of persons in the reference group who have X. In other words, the social evaluation of the deprivation inherent in a person's not having X is an increasing function of the proportion of those who do have it. By quantifying this statement, we shall show that one plausible concept of deprivation in a society can be represented by uG , where G is the Gini coefficient and u is the income that each person would have in an egalitarian society (u is average income).”

The Gini coefficient ranges between 0 and 1, “zero” being perfect equality and “one” perfect inequality. In Chile, Larrañaga (2005) reported that from the beginning to the end of the dictatorship (1973-1989), the Gini rose from 0.47 to 0.57. Within the period of the dictatorship, a period of rapid deepening of inequality took place until 1981, after which it exhibited a more moderate growth. Then, during the centre-left wing period after the dictatorship (the period headed by *La Concertación*), there was a decrease in inequality until 1998 and since then it has begun to rise again (Espinoza & Rios, 2005). In addition, findings on health inequalities related to income in Chile have been reported (Subramanian et al., 2003; MIDEPLAN, 2003) and a clear gradient in self-reported health status by household income per capita quintiles has been found (see Table 7.1) (Larrañaga, 2005). Nonetheless, there is no study in Chile exploring the income distribution among immigrants in Chile and no other similar study has been found in Latin America.

Table 7.1 Proportion of Chilean adults with “bad” or “very bad” self-reported health status, by income quintile and age group (Larrañaga, 2005)

Age range	Household per capita Income Quintile					Total
	I poorest	II	III	IV	V richest	
15-29	2.9	1.7	1.5	1.8	1.5	1.9
30-44	6.3	4.4	3.7	3.2	1.3	4.0
45-64	19.2	12.9	11.9	7.7	5.0	11.1
65+	24.6	22.7	20.2	13.7	7.9	18.0
Total	10.7	8.2	8.3	5.8	3.3	7.4

7.1.1.b) Describing income among the international immigrant population (IIP) in Chile and its differences with the Chilean-born population: study results

Significant differences are found in income between the IIP and the Chilean-born (Table-A7.1, Appendix-7.1). Concerning **individual income**, the international immigrant population (IIP) has a 1.8 fold higher mean income per month than the Chilean-born population, and this difference is significant (\$ 618 620 Chilean versus \$342 605 Chilean pesos, $p < 0.0001$). Very similar results are found for the total **household income**, as the IIP reports a 1.7 times higher mean household income per month (\$1 228 662 versus \$706 690 Chilean pesos, $p < 0.0001$) and 2.7 times higher mean **household income per capita** (\$395 750 versus \$143 341 Chilean pesos, $p < 0.0001$).

While the immigrants have a higher mean income, they also have a significantly wider gap between the wealthiest and the poorest income groups than the native population (20: 20 ratio). For example, when observing the total **household income per capita by quintiles** among the IIP, there is a 23-fold gap between the richest and the poorest quintile. In contrast, the Chilean-born population has a 13-fold difference between the wealthiest and the poorest income quintile. Moreover, the wealthiest quintile from the IIP appears to be 1.67 times richer than its equivalent quintile from the Chilean-born population ($p < 0.0001$) (see Figure 7.1). The mean income of the other four quintiles from the IIP shows no significant difference with their equivalent groups among the Chilean-born.

Graphical presentations of these income differences are in Figures 7.2 and 7.3. In these quantile-quantile plots, the X-axis shows the household income per capita (continuous variable) in the IIP and the Y-axis shows the distribution of the same variable in the Chilean-born population. The 45-degree line represents no difference in household income per capita between the two groups. As can be observed in Figure 7.2, most of the IIP have a significantly higher income than the Chilean-born. This is shown by a trajectory of income below the 45-degree line. Moreover, in some cases immigrants make almost double the

income of the equivalent group from the Chilean-born (see, for example, when income goes up to \$4 000 000 Chilean pesos in the graph, equivalent to USD\$ 7692, green line). Nonetheless, there is an interesting contrast when comparing the poorest group from both populations (see the household income per capita per month below \$50 000 Chilean pesos in Figure 7.3, equivalent to USD\$ 96.15). This shows the poorest international immigrants actually earning less than the equivalent poorest group from among the Chilean-born (differences non significant). Overall, there are significant differences in income, both within international immigrants living in Chile and between them and the Chilean-born population. Immigrants, on average, seem to have better income status than the Chilean-born, but quintile stratification shows a wider gap between the rich and the poor among immigrants than the Chilean-born. In addition, the poorest immigrants are slightly poorer than the Chilean-born, even though this difference is not significant.

Stratified analysis shows that among the Chilean born population, there is a significantly higher proportion of women in the two poorest income quintiles ($p < 0.0001$). Most of the immigrants up to 65 years old live in the highest income quintiles (43.83% and 4.91, respectively), whereas the highest proportion of elderly immigrants (over 65 years old) live in the poorest income quintile (3.07%). The highest proportion of immigrants with Mapuche ethnic background lives in the wealthiest income quintile (1.37%), but followed by the second poorest quintile (0.66%). In contrast, the highest proportion of Chilean-born belonging to the Mapuche ethnic minority live in the third income quintile (1.28%) followed by the second poorest income quintile (1.25%).

Figure 7.1 Description of the mean household income per capita quintiles in the immigrants (IIP) and the Chilean-born population in Chilean pesos, CASEN 2006 (weighted sample size= 16 130 743)

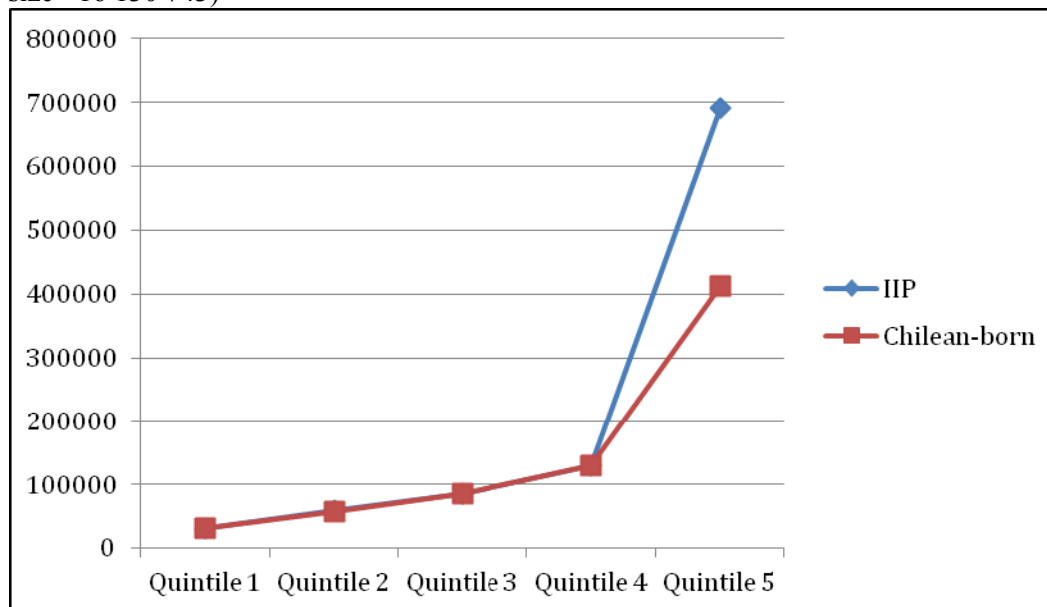


Figure 7.2 Quantile-quantile plot of the household income per capita (continuous variable) of the IIP versus the Chilean-born (non weighted estimations, n=268 873)

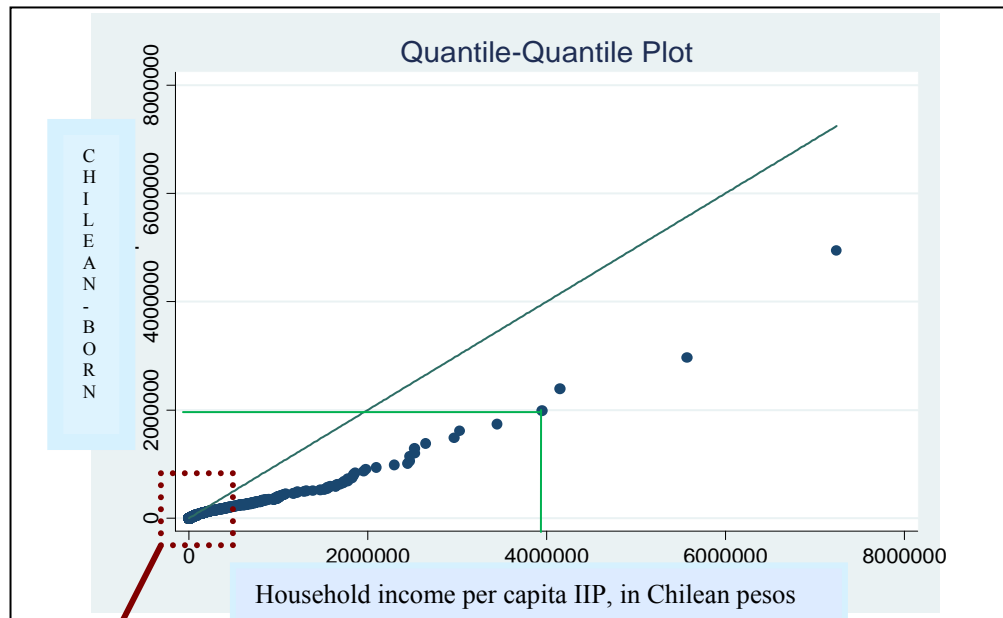
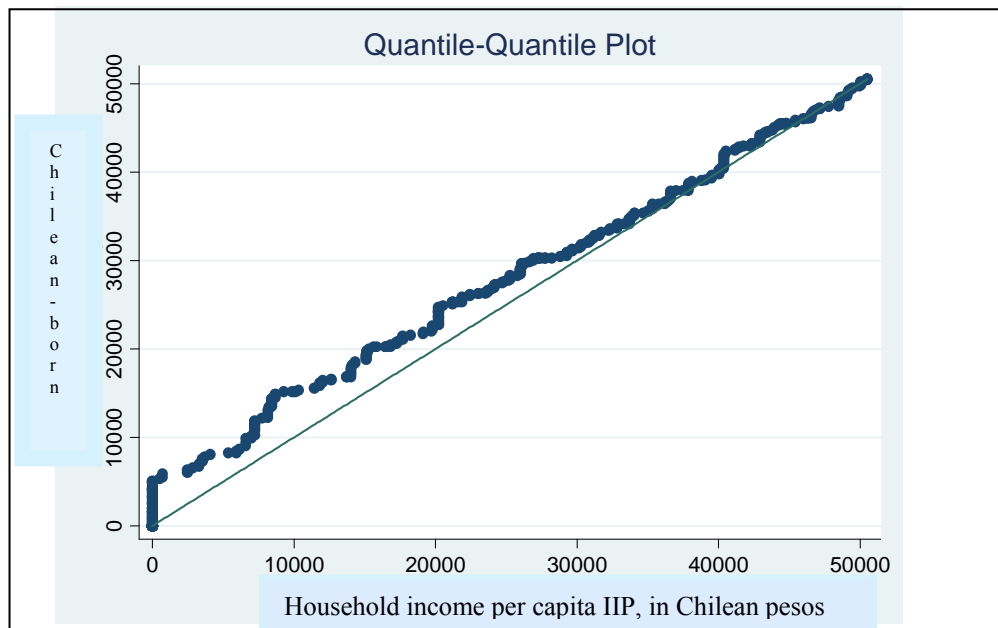


Figure 7.3 Quantile-quantile plot of the poorest income group in the IIP versus its equivalent in the Chilean-born, CASEN survey 2006 (non weighted estimations, n=268 873)



Interesting findings also appear when stratifying by migration related factors. Immigrants coming from Bolivia have a significantly lower mean household income per capita per month than immigrants coming from other countries (mean \$141 108 Chilean pesos, 95%CI \$91 906- \$194 311). Most of immigrants coming from Peru and Ecuador (mean income \$235 391 and \$ 263 320, respectively) live in the two wealthiest income quintiles (over 70% of them), whereas only half of immigrants coming from Argentina (mean income \$230 069) live in the top richest income quintiles. No significant differences are found by years living in Chile.

7.1.2 Educational level

7.1.2.a) What is it known about education as a determinant of health?

Education has been proposed to be one of the major determinants of health of a population (Marmot et al., 2008). It is a useful indicator of SES, as it is associated with lifestyle and risk behaviours, with the ability to solve problems related to health and with social values such as the importance of looking after one's own health (Bartley, 2007; Shewry et al., 1992; Chandola, 1998; Sacker et al., 2000). It is considered a reliable measure, because it tends to be reported with greater accuracy than more sensitive indicators, like income. In adults it is relatively stable over time and can be a precursor of income and occupation throughout a person's life (Kitagawa & Hauser, 1973; Faia, 1981; Sheatsley, 1983; Schmitt, 1965; MacMahon et al., 1970). Educational level and migration are intimately related, and education has obviously influenced migration processes (Tseng, 2001; Greenwood, 1985; De Jong & Gordon, 1999; Ritsila and Ovaskainen, 2001). Highly educated people are more prone to move than the rest of the population. The health status of highly educated migrants, however, can be threatened in the host country over time (Zilber and Lerner, 1996; Tseng 2001). Educational level has been analysed in the general population in Chile (ENS, 2003) (see Table 7.2). There are no data on immigrants' educational level and its relation to health. However, growing non-professional immigration in the country has been reported, with a reduction of professional and technical immigrants from 64% in 1992 to 45% in 2002 (Departamento de Extranjeria y Migracion, 2007, more detail in Chapter 2).

Table 7.2 Health of the Chilean population and its relation to SES (Larrañaga, 2005)

Condition	SES by educational level			Significant differences?
	Low	Medium	High	
High blood pressure	1.7	1.4	1.0	Yes
High blood cholesterol	0.6	0.6	1.0	-
Obesity	1.6	1.2	1.0	Yes
Diabetes Mellitus	3.0	2.0	1.0	Yes
Smoking	0.7	1.2	1.0	Yes
Sedentary activity level	2.8	1.3	1.0	Yes
Metabolic syndrome	1.0	0.8	1.0	-
High/very high cardiovascular risk	1.1	1.0	1.0	-
Possible angina during effort	3.0	2.0	1.0	Yes
Musculo-skeletal symptoms	1.6	1.4	1.0	Yes
Depressive symptoms	1.6	1.4	1.0	-
Kidney function alterations	0.6	0.7	1.0	-
Chronic respiratory conditions	2.2	1.4	1.0	Yes
Hearing capacity reduction	3.2	1.9	1.0	Yes
Gastro oesophageal reflux	1.3	1.0	1.0	-
Confirmed cognitive deterioration	16.9	2.1	1.0	Yes
High prostatic antigen	1.7	2.4	1.0	-

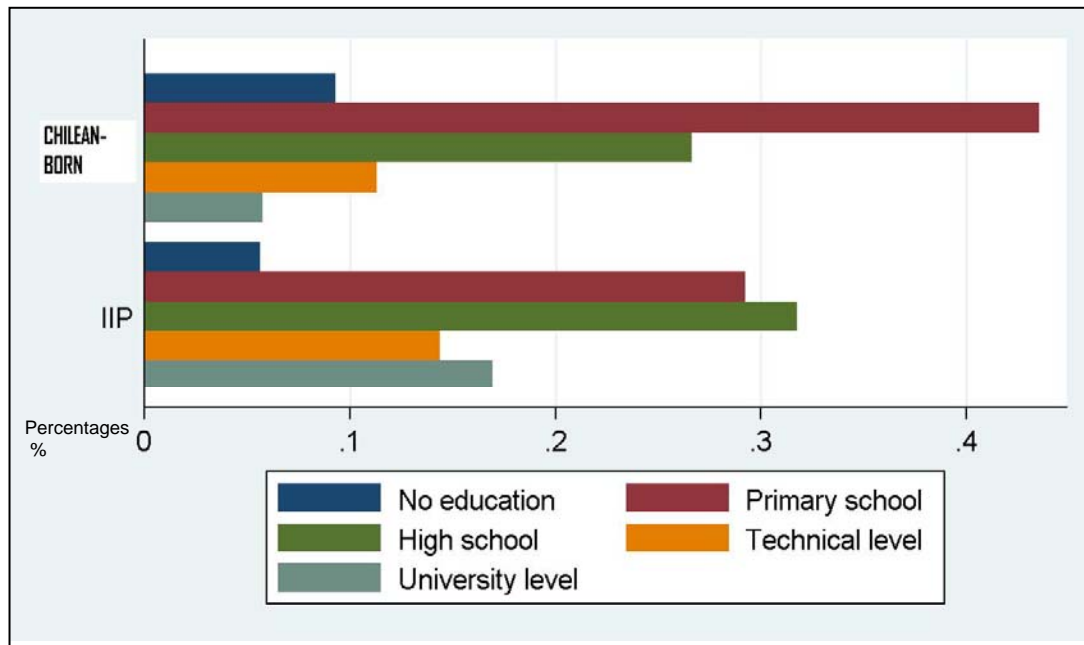
7.1.2.b) Describing educational level among the immigrant population (IIP) in Chile and its differences with the Chilean-born population: study results

Significant differences are found in the level of educational between the IIP and the Chilean-born (Table-A7.1, Appendix-7). In contrast to past accounts in Chile, the IIP reports 2.7 times the rate of university level education than the Chilean-born (27.32% versus 9.86%, $p < 0.0001$). They also report significantly lower rates of no education (2.38% versus 7.39%, $p < 0.0001$) and primary school levels (18.79% versus 34.68%, $p < 0.0001$) than the Chilean-born (see Figure 7.4). Despite these, the majority of the IIP have a low educational status, as over half of them report having only received up to high school or lower level education.

Stratified analysis shows that among the IIP the highest proportion of people over 16 years old have high-school level education, followed by university level (29.48% and 25.29%). In the Chilean-born, the highest proportion of people over 16 years old also reports high school level, but this is followed by pre-school education level instead of university level (25.87% and 16.28%). In both the IIP and the Chilean-born, the highest proportion of people belonging to a minority ethnic group report having pre-school education level, followed by high school level. Additionally, among the IIP, the highest proportion of people living in the poorest income quintile has high school level education and it could represent a mixture of immigrant subgroups, such as professional immigrants without a job and immigrant postgraduate students coming to Chile to study but living in poor conditions. In contrast, the highest proportion of those immigrants living in the wealthiest income quintile reports university level education.

There is no clear gradient of income by educational level in the IIP, as 26.23% of immigrants living in the poorest income quintile have received a university education (high school level in first place with 28.34%). In contrast, 42.12% of immigrants living in the wealthiest income quintile have university level, followed by high school level with a 26.46%. In the Chilean-born, most of those with university level live in the wealthiest income quintile, whereas most of the local population living in the three poorest income quintiles report pre-school education level. In this group, there is a clear gradient of income by educational level.

Figure 7.4 Description of the educational level categories in each population under study, the IIP and the Chilean-born, CASEN 2006 (weighted sample size= 16 130 743)



7.1.3 Occupation

7.1.3.a) What is it known about occupation as a determinant of health?

Health effects of occupation and health inequalities among occupation types have been shown in the past (Smith et al., 1998; Whitehead, 1991; Smith, 1999). Two components in relation to work as a social determinant of health have been distinguished (Solar et al., 2005), one relating to employment policies in a society and occupation as an indicator of social class, and the other to working conditions themselves. Additionally, international processes of globalisation might determine many of the current employment conditions at both regional and global levels. These aspects could determine the opportunities for education, income, and the type of occupation in the workplace (see globalisation process in Chapter 2). It might be partly a reflection of occupation related to a person's social class that, when observing the migrant population worldwide, immigrants tend to work in manual/semi-manual occupations that might involve some risk to health. Occupational accidents among immigrants have also been described as twice as frequent among as local workers (EESC, 2007; Bollini and Siem, 1995; Huismann, Welandt and Greiger, 1997).

Throughout Latin America, and including Chile, the labour market has experienced an expansion of peripheral occupations in the last two decades, including many self-employed, temporary and part-time jobs, with uncertainty in access to formal employment. Along with this, job insecurity is high, especially in small companies in the highly competitive industry and user services in the expanding sector of social services (Almandoz, 1997; Greenlees and Saenz, 1999; Szasz, 1994; Borjas and Tienda, 1993; Lozano, 1992; Kossoudji and Ranney, 1984; Sullivan, 1984). This evidence describes the inextricable two-way relationship between occupation and health, first occupation as a dimension of social class in society and second health risk factors existing within a particular occupational setting. In Chile, growing immigration of the economically active has been reported, from 31% in 1992 to 48% in 2002, and a growing rate of women migrating to Chile to work in domestic service (EESC, 2007).

7.1.3.b) Describing occupational status among the immigrant population (IIP) in Chile and how it differs from the Chilean-born population: study results

Three groups emerge from the descriptive analysis of occupational status and as collected by the CASEN survey: the employed; the unemployed; and the inactive group. **The employed** represent those in the active age group (between 16 and 65 years old) who have a job at the time of interview. Occupation categories considered in the CASEN survey are executive/managerial, self-employed, working in the public system, in the private system, and in domestic service. Results show that 60.97% of the immigrant population report being active workers at the time of the interview, and this is not different from the Chilean-born rate (57.13%) (Table-A7.1, Appendix-7). In contrast to what has been reported in the past in Chile, the employed IIP presents a significantly higher proportion of people with managerial/executive occupations than employed locals (1.7 times higher, 5.23% versus 3.10%, $p < 0.05$). However, the IIP also reports a significantly higher rate of people in domestic service than the Chilean-born, and this is consistent with the literature (2.9 fold higher, 16.65% versus 5.65%, $p < 0.0001$). In contrast, immigrants report a lower proportion of private employee occupations than the Chilean-born (54.27% versus 60.94%, $p < 0.0001$) (see Figure 7.5). These marked differences display the heterogeneity that exists in the immigrant population in Chile, and how this group is polarised by socioeconomic variables like income and type of occupation.

Stratified analysis shows that in both the IIP and the Chilean-born population, most employed people belong to the working age group. The proportion of people under 16 years old and employed is higher in the Chilean-born than the immigrant population (17.97% and 8.30%). There is a clear positive gradient in the two populations under study between higher

income and employment rate. Nonetheless, the gradient is steeper in the IIP, due to a greater difference between the poorest and richest income quintiles (2.59% versus 36.96%, a 14-fold difference in employment rate between the two extreme income quintiles in the IIP). The Chilean-born in contrast, show a 4.2-fold difference between the same two extreme quintiles (4.64% versus 19.50%) (Figure 7.6). The highest proportion of employed immigrants has high school level education, followed by university level (19.17% and 17.69%). In contrast, the highest rates of employment in the Chilean-born are reported in the pre-school and high school educational levels (34.83% and 9.65%) and 5.97% of the employed Chilean-born reports university level education.

Both the IIP and the Chilean-born most frequently report private jobs (54.27% and 60.94%, respectively) and self-employment as the second most frequent (17.50% in the IIP and 20.55% in the Chilean-born) (Table-A7.1, Appendix-7). Additionally, employed immigrants and the Chilean-born living in the poorest income quintile mostly work in the private sector (31.59% and 53%, respectively). However, the second most frequent occupation among the poorest immigrants is domestic service, whereas the poorest employed Chilean-born people report self-employment as the second most frequent category. The IIP show a 3 times higher rate of people working in domestic service than the Chilean-born (16.08% versus 5.30%). Ninety-five percent of those working in domestic service are women. Moreover, almost all those employed immigrants who work in domestic service in the poorest income quintile are women (99%, based on only 13 real observations).

Figure 7.5 Description of the proportion of different occupation types among the employed IIP and the Chilean-born, CASEN 2006 (weighted sample size= 16 130 743)

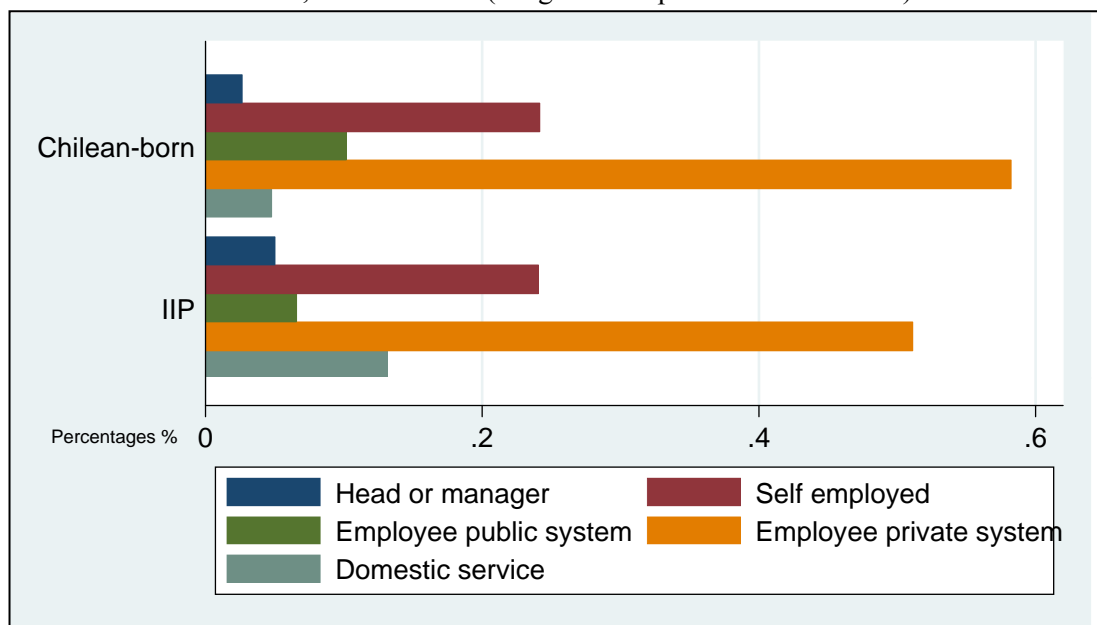
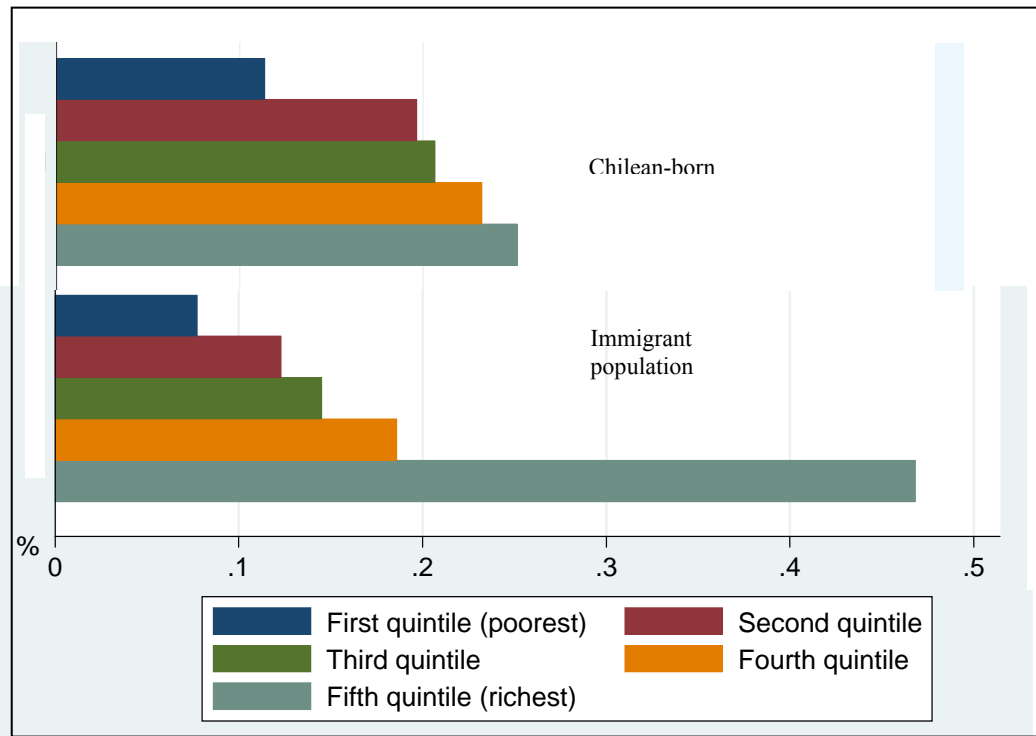


Figure 7.6 Description of employment rate by income quintiles in the IIP and the Chilean-born. CASEN 2006 (weighted sample size= 16 130 743)



The unemployed represent those in the working age group, who therefore could have been working at the time of interview but were not. It should be noted that the definition of “unemployment” in Chile used in this study is quite different from that used in the UK. According to the Chilean Ministry of Planning, unemployed people are not only those looking for a job that have not been able to find one (similar to the UK definition), but also include those who have found a job but are yet to start work, those who don’t want to work and those who have an intermittent informal job (for example, a teenager who helps in the local shop). The proportion of unemployment in the Chilean-born is 5.49% versus a <1% rate in the IIP. Among them, two significant differences are found. First, a smaller proportion of unemployed international immigrants report not being able to find a job (0.83% versus 2.16%, $p < 0.0001$) and second, a larger group of immigrants report an “other not stated” reason for being unemployed compared to the Chilean-born (10.25% versus 5.30%, $p < 0.0001$) (Figure 7.7).

A significantly higher proportion of unemployed people are women in both the IIP and the Chilean-born. There is no clear gradient of unemployment by income quintiles in the IIP as the two highest rates of unemployment are found in the two extreme quintiles. Something similar is found in the Chilean-born, as the highest rate of unemployment is found in the poorest quintile (1.49%) followed by the richest quintile (1.07%). Finally, unemployed immigrants are better-educated people than the unemployed Chilean-born. A technical level

of education is the most reported among unemployed immigrants, followed by high school level (3.13% and 1.02%).

The inactive group represent those who were in the working age group, but for some reason are not expected to work or to receive a monthly payment from their work (excluding social benefits). This categorisation is widely used in Chile and includes housewives, the ill, retired, and students. There is no difference in the proportion of the different categories of inactive status from the immigrant and the Chilean-born populations (37.47% versus 37.48%) (Table-A7.1, Appendix-7). Additional stratified analysis from inactive immigrants compared to the local population shows that there is a lower rate of ill inactive international immigrants compared to the ill inactive Chilean-born population and that this difference is significant (1.76% versus 7.05%, $p < 0.0001$) (see Figure 7.8). Stratified analysis of the inactive group shows that there is a higher proportion of inactive women in the immigrant population than in the Chilean-born (25.29% versus 18.90%) and a higher proportion of 16-65 years old people inactive in the IIP versus the local population (28.99% versus 19.40%). There is no significant difference in the proportion of students (28.19% versus 22.98%), housewives (9.37% versus 17.26%) and retired (24.85% versus 33.19%) living in the poorest income quintile between immigrants and Chilean-born.

7.1.4 Summary of key findings from this section

Details of the results described above appear in Table-A7.1, Appendix-7.1. Overall, throughout this initial analysis of the socioeconomic determinants of health among the IIP, two clear groups seem to emerge. The first, larger group of immigrants have a high level of education, income and type of occupation. The second, smaller one is in a very different situation, with low income, only up to primary school level of education and high rates of people working in domestic service. Because of this great heterogeneity, complexity and polarisation of the findings among the immigrants' socioeconomic status, cluster analysis was conducted in order to categorise the immigrant population by a combination of their income, educational level and occupational status.

Figure 7.7 Description of the proportion of people at different unemployed categories in the IIP and the Chilean-born, CASEN 2006 (weighted sample size= 16 130 743)

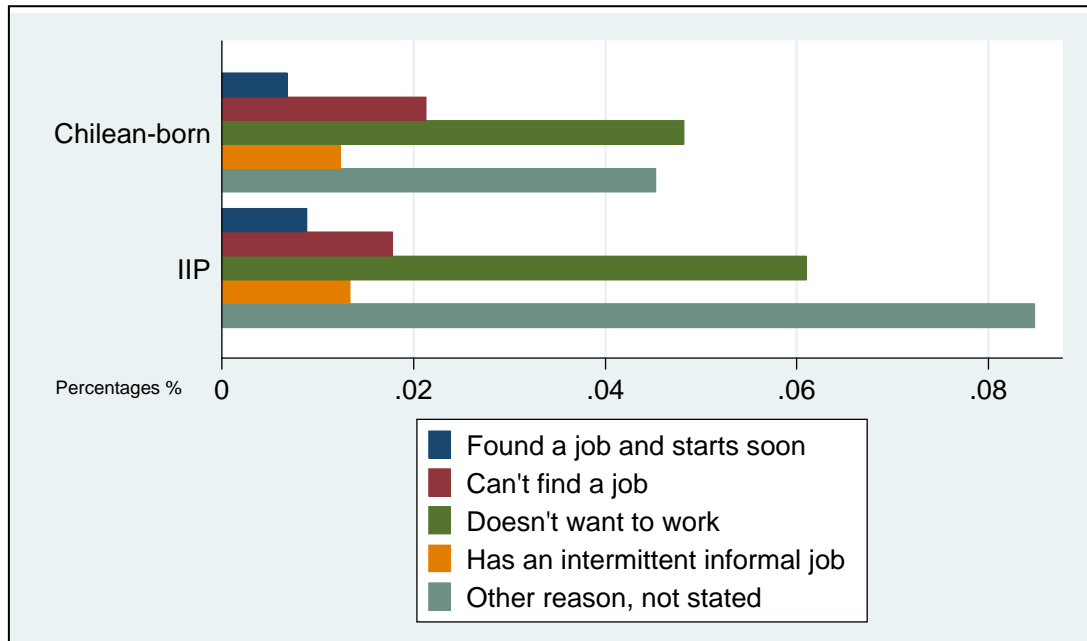
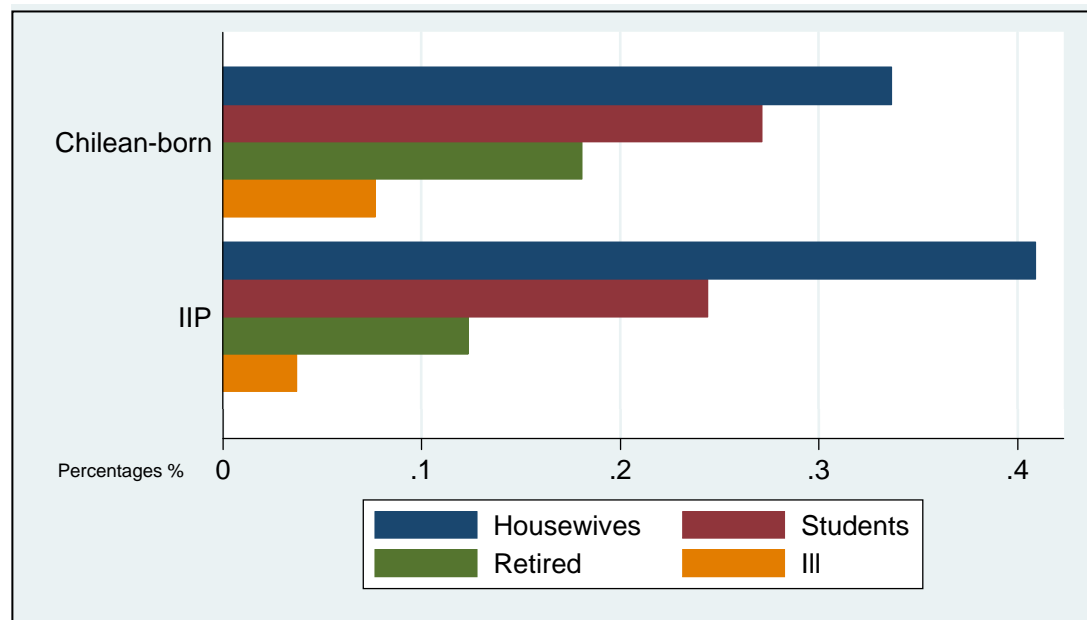


Figure 7.8 Description of the proportion of people at different inactive categories in the IIP and the Chilean-born, CASEN 2006 (weighted sample size= 16 130 743)



7.1.5 Clustering immigrants in Chile according to their socioeconomic status

7.1.5.a) Brief justification of the method used for this analysis

Because of the complex and varied socioeconomic conditions of the immigrant population in this study, the estimation of a latent variable of socioeconomic status throughout cluster analysis was explored. This method allows the grouping of individuals according to their similarities, discriminating between immigrants with different characteristics and gathering together those with similar attributes. Among a wide range of multivariate techniques, cluster analysis was considered the most suitable one to describe the different groups that co-exist in the international immigrant population according to their SES. A detailed explanation of this method and how it was used in this particular dataset is presented in Appendix-7.2.

7.1.5.b) Study results: measuring the latent variable of socioeconomic status

Three clusters were selected from the hierarchical cluster analysis, as a representation of the latent variable “socioeconomic status” among the immigrant population in Chile. These three clusters categorised immigrants into high, medium and low socioeconomic groups. Table 7.3 presents the proportion of immigrants belonging to each cluster. As an expected consequence of the complete-linkage hierarchical method used, most of the socio-demographic determinants of health showed a clear gradient by socioeconomic status. The Low SES group emerged as the most vulnerable group, and the High SES the most protected. Details are presented in the following paragraphs.

First cluster: immigrants with low socioeconomic status. Over 60% of this group were women. They were the youngest group, with a mean age of 25 years, 10 years younger than the High SES. Over half of them were single, and they also reported the highest rate of belonging to a minority ethnic group (7.91%). They showed the highest proportion of people living in rural areas, but this was still very low (11.57%). They also reported the highest proportion of people living in the Northern area of Chile (25.64%), which was consistent with the highest proportion of Aymara ethnic people, who belonged to this cluster and lived in that area. In addition, almost 60% of the immigrants in this group had been in Chile for less than 5 years and a third less than a year (34.85%). They showed the highest proportion of people coming from Argentina (39.09%), Bolivia (10.11%) and Ecuador (6.17%) compared to the other two groups. This *first cluster* included immigrants with up to high school level education and the two poorest income quintiles (mean household income per capita of around 80 USD). Less than half of them were currently employed (42.70%), none

of them had managerial occupations, 6 in 10 worked in the private sector and 2 in 10 worked in domestic service. They also had the highest rate of people who could not find a job (1.78% versus 0.21% in the second cluster and 0.90% in the third cluster), didn't have a contract (39.97%) or worked in a temporary job (34.24%). In addition, they had the highest proportion of housewives (33.18%) and ill people (2.73%).

Second cluster: immigrants with medium socioeconomic status. This was an interesting group as it combined aspects of the other more extreme SES clusters. Nonetheless, there were some distinctive characteristics. Fifty-seven percent of them were women; their mean age was 33 years and almost 70% belonged to the active age group (15-65 years old). There was a slightly lower rate of people belonging to minority ethnic groups compared to the Low SES (7.75%), but they belonged to a wider range of ethnic group types and not only Aymara or Mapuche. Most of them lived in the Central area (72.62%) and, again, over 50% had lived for less than 5 years in Chile. However, they also included a group of immigrants living 21 or more years in Chile (16.38%). Most of them came from Peru and Argentina (35.16% and 25.18%). Most of the immigrants in this *second cluster* had technical level education (62.14%), but there were no immigrants with university level education. They reported living in almost every income quintile, except for the poorest. Over 60% of them were employed at the time of the interview and most of them worked either in the private sector (47.26%) or domestic service (29.23%). They had the highest rate of retired persons (16.33%) and the lowest rate of housewives (17.20%).

Third cluster: immigrants with high socioeconomic status. Almost half of them were men and their mean age was 35 years, which was older than the mean age of the other two clusters, but they did not have the highest proportion of elderly people. In fact, over 90% of them were of labour active-age, between 16 and 65 years old. Most of them reported being married, closely followed by single (51.10% and 42.05%). This cluster reported the lowest proportion of immigrants belonging to an ethnic minority group (2.79%) and the highest proportion of people living in urban settings and the Central area, compared to the other two groups (96.20% and 80.70%). One in three immigrants from this cluster had lived less than a year in Chile, but the other two thirds were relatively well distributed across the other categories, for years living in the country. Most of them came from Argentina (22.74%) and Peru (21.18%); however, around half of the immigrants included in this cluster came from a wide range of "other" non-Latin American countries. Immigrants belonging to this *High SES* cluster had either technical or university level education only (38.06% and 61.94%). People from this group reported a higher household income per capita - 14.2 times the Low SES group (\$1097 USD). Over 60% were currently employed and they showed the highest proportion of people in managerial occupations (7.83%) and working in the public sector

(10.21%). They also reported the lowest rates of immigrants working in domestic service (6.12%), with an intermittent job (0.34%), retired (7.65%) and ill (0.54%). In contrast, they showed the highest rate of students among the three clusters (50.67%). These results appear in Tables-A7.2 and A-7.3 in Appendix-7.

Table 7.3 Description of the three socioeconomic groups after cluster analysis

SES cluster	Absolute frequency	Percentage %	Weighted frequency	Weighted percentage %	95% Confidence intervals
Low	398	21.24	17 636	11.42	9.11-14.23
Medium	889	47.44	68 522	44.36	40.07-48.75
High	587	31.32	68 273	44.21	39.99-48.52
Total	1877	100	154 431	100	-

Figure 7.9 Summary of the characteristics of the clusters (weighted size= 154 431)

Cluster 1 (n=398)	Cluster 2 (n=889)	Cluster 3 (n=587)
63% women	57% women	51% women
Mean age 25 years old	Mean age 33 years old	Mean age 35 years old
30% < 15 years	All age categories	94% 16-65 years
Up to high school only	All except University level	60% professional degree
2 poorest quintiles 1 & 2	>50% middle quintiles 3 & 4	60% richest quintile
42% employed	64% employed	63% employed
No heads or managers	All categories	8% managers, 59% private sector
60% <5 years in Chile	50% <5 years in Chile	30% <1 year in Chile
40% from Argentina	>60% from Argentina & Peru	From Argentina & Peru, followed by “other countries
<i>Description summary: Low SES</i>	<i>Description summary: Medium SES</i>	<i>Description summary: High SES</i>

7.2 HOUSEHOLD MATERIAL LIVING STANDARDS

7.2.1 Literature review and specific methods used in this section

Household conditions have emerged as a relevant Social Determinant of Health (SDH), because of their reported relationship with different health problems (Ross and Mirowsky, 2001; Niclas, Naess and Claussen, 2007; Berkman and Syme, 1979). As presented in Chapter 4, much of the evidence for material causes of health inequalities has come from studies which showed that health is worse and life expectancy lower in people who live in poor material conditions. It has been proposed that these health indicators are directly related to income, housing quality and assets (Mustard et al., 1997; Wolfson et al., 1993; Kaufman et al., 1998; Pappas et al., 1993; Lynch et al., 2001b). The direct mechanism suggests that the lack of a solid house to combat cold and damp during the winter, which is dependent on the household income, is strongly associated with poorer health (Galobardes et al., 2006a; Galobardes et al., 2006b; Liberatos, Link and Kelsey, 1988; Coleman and Rainwater, 1978; US Bureau Census, 1982, Susser and Susser, 1996). Additionally, and particularly in developing countries, material living standards have also been recognised as a reliable measure of wealth and social class and therefore affect health through an indirect psychosocial mechanism (discussion on material/neo material and psychosocial models in Chapter 4) (Alvarez, Muzzo and Ivanovic 1982; Alvarez, Wurgaft and Salazar, 1985).

Extensive data on the effect of socioeconomic position on health has been presented for developed countries, but less is known about the effect of material living standards on health among emerging economies like Chile (Subramanian et al., 2003; Tung-Liang, 1999). A summary table from the literature review on material living standards can be found at the end of this chapter, highlighting previous evidence on the material determinants of *international immigrants in Latin America* (Table 7.4). Overall, some groups of Latin American migrants seem to live in relative deprivation (Sundquist, Iglesias and Isaacson, 1995a; Sundquist, 1995b; Sundquist, 1995c; Sundquist, 1995d; Sundquist, 1994) and Chile requires further understanding of the relationship between health and household material conditions, in the local general population and among the immigrant population. Immigrants in Chile might be living in poorer household material conditions and so at a higher risk of developing health problems, especially those living at a lower socioeconomic status. Material conditions, at a household level, can include many indicators, often correlated, such as quality of the walls, ceiling and floor, sanitary conditions, overcrowding, noise, temperature, and assets. The CASEN survey incorporates most of these dimensions. And due to their high correlation, it was necessary to conduct multivariate analysis to combine these multiple measures into reliable indexes. Two indexes were created, a household asset index (HAI), combining nine

different assets measured in the survey, and a combined material index (CMI) that included all the nine assets plus quality of housing, overcrowding and sanitary conditions, as an integrated measure of material living standards of the household. Appendix-7.3 explains the multivariate methods used to construct these indexes (Principal component analysis, PCA, Apendices-7.3.1, 7.3.2 and 7.3.3.).

7.2.2 Findings from this study

7.2.3.a) A description of each household material determinant of health in the IIP and the Chilean-born population

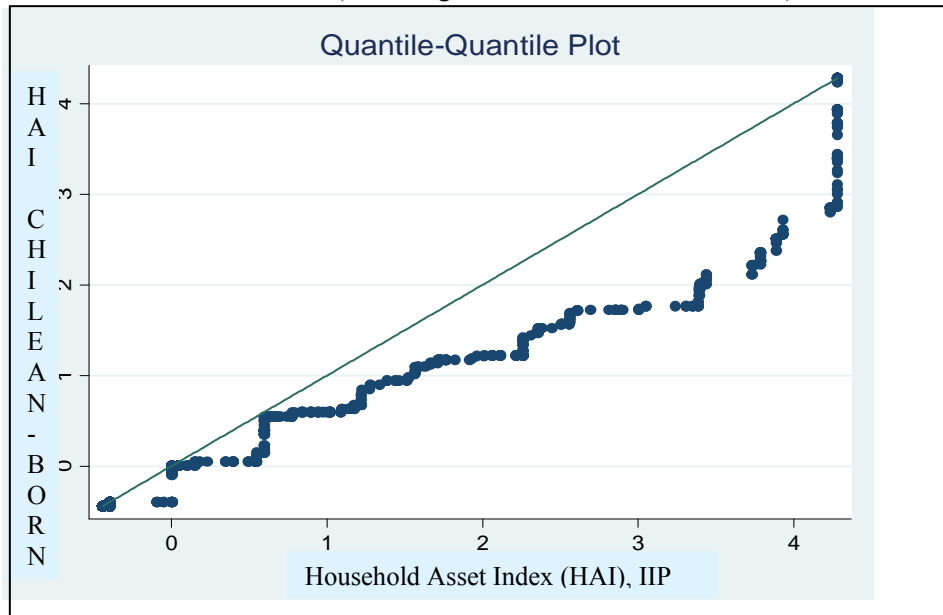
Tables-A7.4 and A7.5, Appendix-7.1, describe the material determinants of health of the IIP and the Chilean-born. Almost no difference was found in terms of the quality of the household between these groups, with two exceptions. First, the IIP reported a higher proportion of poor quality ceilings (0.58% versus 0.20%, $p<0.0001$) and second, the IIP reported a lower rate of regular quality flooring (17.96% versus 22.07%, $p<0.05$). Despite these particular differences, the aggregated quality of the housing index, created as recommended by the Chilean Planning Ministry (see Chapter 5), showed no significant difference. In terms of sanitary conditions and household overcrowding, again, overall the IIP reported significantly better conditions than the Chilean-born. The IIP had a slightly larger number of household members and this difference was significant. They also had a higher rate of single-member households and a lower rate of 8 or more household members ($p<0.0001$). Immigrants reported a lower rate of deficient sanitary conditions (as measured by the sanitary index, 9.33% versus 17.21%, $p<0.0001$) and a lower overcrowding rate, using both the CASEN and Townsend criteria. In addition, the IIP reported a higher proportion of ownership of each of the nine household assets than the Chilean-born and these differences were significant ($p<0.0001$).

There were also interesting findings on the immigrants' material conditions by socioeconomic status. For each variable used to estimate the material living conditions of the immigrant population, there was a clear gradient by SES cluster (Table-A7.5, Appendix-7). In every case, those in the High SES group lived in significantly better material conditions than both the Medium and the Low SES groups. In contrast, immigrants in the bottom SES group always had worse living conditions than both the Medium and the High SES groups. Results were consistent for quality of the housing, number of bedrooms and total rooms of the household, sanitary conditions, overcrowding, and every household asset measured in the survey.

7.2.3.b) The household asset index (HAI) and the combined material index (CMI) in the IIP and the Chilean-born

Results showed that the immigrant population owned significantly more household assets than the Chilean-born (HAI mean score 0.33 for the Chilean-born versus mean 1.05 for the IIP, $p < 0.0001$ adjusted Wald test). This difference has been displayed graphically in Figure 7.10. In this quantile-quantile plot, the X-axis shows the HAI (continuous variable) in the IIP and the Y-axis shows the distribution of the same variable in the Chilean-born population. The 45 degrees line represents no difference in HAI between the two groups and, similar to the graph on income, the IIP had a higher assets score than the Chilean-born. In addition, the IIP lived in significantly better combined household material conditions than the Chilean-born (a mean score of 0.42 in the Chilean-born versus 1.17 in the IIP, $p < 0.0001$ adjusted Wald test). Besides, when comparing the HAI and CMI between different socioeconomic groups among the immigrant population, there was a clear gradient of both HAI and CMI by socioeconomic status. As mentioned in the previous analysis, those in the High SES group lived in significantly better material conditions than both the Medium and the Low SES groups. In contrast, immigrants in the bottom SES group always had worse living conditions than both the Medium and the High SES groups.

Figure 7.10 Quantile-quantile plot of the household asset index (HAI) of the IIP versus the Chilean-born, CASEN 2006 (non weighted estimations, n=268 873)



Both the HAI and the CMI were categorised into quintiles for further comparative description of the living conditions between the IIP and the Chilean-born (Figures 7.11 and 7.12), by household income quintiles. Interestingly, international immigrants living in the wealthiest income quintile did not display a proportionally higher score in the HAI (Figure 7.11) than for example, those in the poorest income quintile. This might mean that wealthy immigrants did not own a larger number of household assets or that other relevant assets for this group were not well captured by the CASEN survey. Similar findings appear for the CMI score by income quintiles (Figure 7.12). These findings could suggest how indicators of socioeconomic position, as a representation of social values, might vary between different populations and within income groups in a same population. Cultural and socioeconomic backgrounds may shape decisions as to how to express socioeconomic status, for example, how many household assets immigrants living in Chile decide to buy irrespective of their income. More research, including other assets (their number and quality) and subjective perspectives of SES in Chile could be conducted in the future, in order to better understand this finding.

Figure 7.11 Description of the mean household asset index (HAI) by income quintiles in the IIP and the Chilean-born, CASEN 2006 (weighted sample size= 16 130 743) [Range of the HAI score: -1.00 to 9.87]

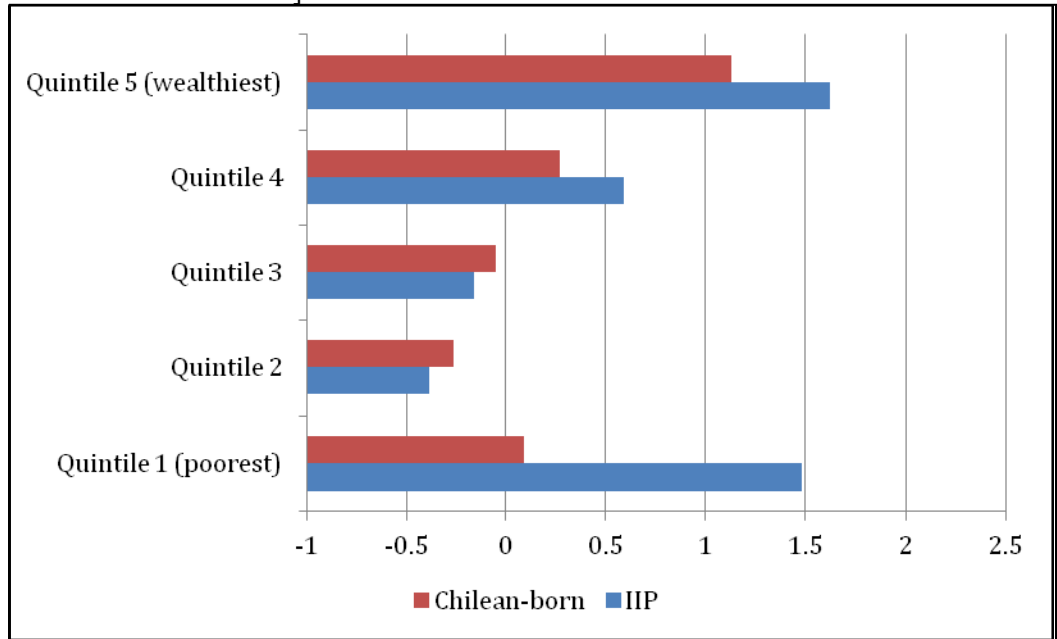
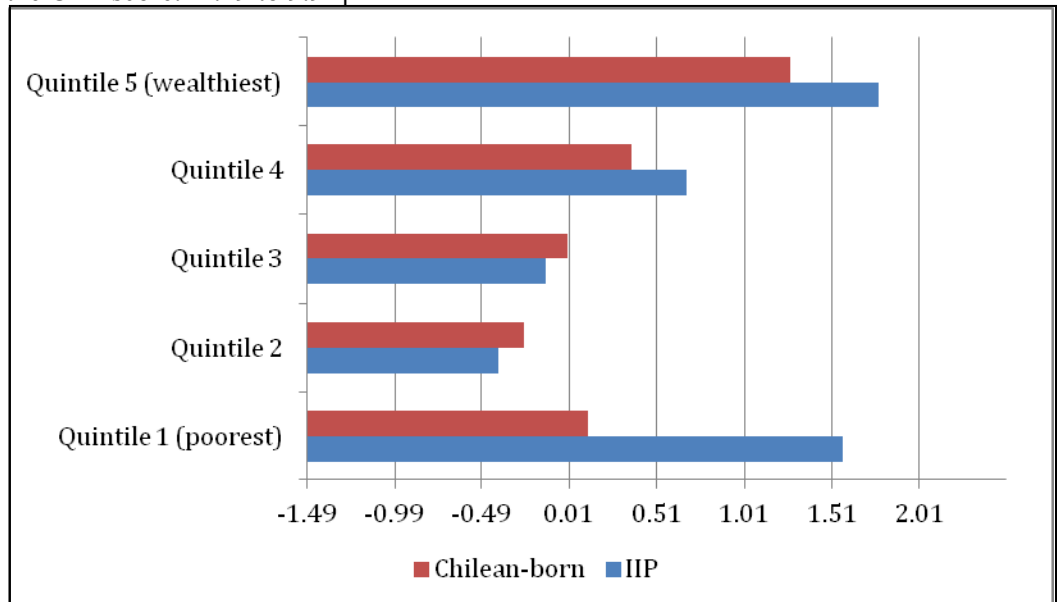


Figure 7.12 Description of the mean combined material index (CMI) by income quintiles in the IIP and the Chilean-born, CASEN 2006 (weighted sample size= 16 130 743) [Range of the CMI score: -1.49 to 9.94]



7.3 DISCUSSION

Results from this chapter add to the findings from Chapter 6 on the socio-demographic and geographical characteristics of the immigrant population and continue to indicate the great heterogeneity and complexity that exist concerning the living conditions of international immigrants in Chile. The following will discuss the key results related to the socioeconomic status of this population in Chile.

7.3.1 Methodological discussion

7.3.1.a) Why cluster analysis?

Among different multivariate techniques, *cluster analysis* appeared to be the most appropriate method for grouping the immigrant population. Cluster analysis is a simple and yet robust method of identifying groups that are masked by a “cloud of individual variability” in their attributes. That is, some immigrants might simultaneously have different indicators of socioeconomic position, like a high level of education but a relatively poor income. When observing these variables as components of socioeconomic position, methods for dealing with so-called *weak typologies* need to be considered and cluster analysis is recommended (Olsen, 2010). As a result, the immigrants living in the low SES cluster clearly emerged as a vulnerable group with regards to their socioeconomic and material conditions. It could be argued that other multivariate methods should have been used to group the immigrant population. However, neither exploratory factor analysis (*EFA*) nor *PCA* were ideal, as results can be difficult to interpret if more than one factor is obtained (as often occurs after *EFA* or *PCA*, according to one factor two individuals may be very different while, according to another factor, they may be quite similar) (Houweling, Kunst and Mackenbach, 2003; Filmer and Pritchett, 2001; Bollen, Glanville and Stecklov, 2002; Johnosn & Wicherin, 2002; Jollife, 2002; Recher, 2002; Jackson, 1991). Neither was *discriminant analysis* ideal, as this method requires the inclusion of a “predictor” or dependent variable in order to classify the data, which was not an aim at this stage of the analysis (Fukunaga, 1990; Baudatt & Anouar, 2000). *Multiple correspondence analysis* was also excluded as this statistical technique does not adequately manage ordinal variables, like educational level (van Kerm, 1998).

The multivariate method selected for the construction of the two weighted indexes, the HAI and CMI, was principal component analysis (PCA), as it fulfilled the purpose of data reduction with the highest proportion of variance explained. This weighted method was considered superior to other strategies for constructing fixed indexes, as it has been stated that "equal weights have the appeal of simplicity and apparent objectivity, but these qualities only mask the fact that the imposition of numeric equality is completely arbitrary" (Filmer and Pritchett, 2001, p116). Some research conducted in the fields of social epidemiology and health economics, has suggested that the first component obtained from PCA is a reliable representation of the multidimensional variable of interest. That is, the percentage of variance in the different items included in the analysis that are explained by the first principal component is one of the best possible approaches to the real variable of interest (Houweling, Kunst and Machenbach, 2003). Further discussion appears in Appendix-7.3.

Three relevant limitations should be noted. First, different researchers have used different assets and there is no information on the extent to which the use of alternative lists of asset items leads to different outcomes (Bollen, 2002; Houweling, Kunst and Machenbach, 2003; Doku, Koivusita and Rimpela, 2009). Second, PCA is a method that should be used with continuous variables only and not binary measures, such as household assets. It is currently debated how to use PCA with binary variables or which other multivariable method would be better than PCA in this regard. However, at the time this analysis was conducted, PCA was still considered the best approach for constructing a household asset index by different authors (Filmer and Prischett, 2001; Bonilla-Chacin and Hammer, 1999; Filmer and Pritchett, 1998). Third, PCA is an exploratory technique that should be followed up by more sophisticated techniques, such as confirmatory factor analysis (CFA) for binary variables.

7.3.2 Comparing results of this chapter to international evidence

7.3.2.a) Income

Consistent with international literature, income was a very relevant dimension of SES among the international immigrant population and the Chilean-born. As stated by Marmot (2010, p43) "although there is far more to inequality than just income, income is linked to life chances in a number of salient ways", such as the opportunity for every person to flourish and lead his/her own life. This variable was measured at an individual and household (per capita) level and both measures provided an interesting description of this dimension of SES in the Chilean setting. Individual income has been reported as a good indicator of recent

changes in a person's health and household income as a better predictor of social prestige (Galobardes et al., 2006a; Galobardes et al., 2006b; Liberatos, Link and Kelsey, 1988; Coleman and Rainwater, 1978; US Bureau Census, 1982; Susser and Susser, 1996). There was a 23-fold gap between the poorest and the richest immigrants living in Chile (ratio between quintiles 5 and 1), whereas the Chilean-born showed a 13-fold gap between the same income quintiles (same 20:20 ratio). Both results express the scale of income inequality in Chile. Despite some knowledge of the severity of income inequality in the total Chilean population (UN, 2005), nothing was previously known about the situation of the immigrant population. Besides, these findings are consistent with the idea that economic growth in the past decade has not narrowed income inequality in Chile.

Significant evidence has been presented in the past indicating that relative deprivation, beyond absolute income, is an important SDH. Different studies in high-income countries have shown how health is influenced more by income distribution within a society than by economic growth. In the developed world it has been found that the majority of the population is no longer substantially affected by the absolute material standard of living (Wilkinson, 1994). Moreover, the persistent income-dependence of health disparities worldwide, including in the developing world, has suggested that health policy interventions in any country or community should adopt an equity-sensitive approach, giving greater attention to those who are most in need, like both the immigrant and the Chilean-borns' poorest income groups (Heuveline, Guillot and Gwatkin, 2002). Moreover, given the greater scale of inequality in the IIP found in this study and their struggle with discrimination, and social exclusion reported in the past, this group requires urgent attention (Martínez, 2003a; Martínez, 2003b; Stefoni, 2005; IOM and MINSAL, 2008a; IOM and MINSAL, 2008b; Nunez-Carrasco, 2008). Finally, it is a challenge to understand how both absolute and relative incomes independently affect health in developing countries. The contribution of income to socioeconomic status became clear between the immigrant and the Chilean-born populations. However, further investigation is needed to understand how the socioeconomic status of immigrants in Chile, and income in particular, interacts with the meaning of income as a measure of SES in the host society.

A clear association between education and health has been reported worldwide. In Chile in particular, three relevant health outcomes have been associated with educational inequality, those being infant mortality, life expectancy and some risk factors like obesity (Espejo, 2005). Moreover, educational inequality shapes physical and mental health and also income, employment and quality of life (Marmot, 2010). Nowadays, Chile has reached an average of 10.1 years of schooling. However, there has been a large difference between urban and rural sectors, reducing the figure in the latter to a little over six years. Nonetheless, access to eight years of basic education has become virtually universal, and access to secondary education has been reported to exceed 92% (Espejo, 2005). Findings from this study showed a slightly inferior educational status in the Chilean-born population than previous studies, with only 73% of Chileans with up to secondary (high) school education. When contrasting these results with the immigrants, the IIP reported a 2.7 times higher rate of university level education than the Chilean-born and also reported significantly lower rates of no education and primary (or pre) school levels. These findings showed immigrants in a better educational situation than the Chilean born, though previous studies have shown a decreasing rate of highly qualified professionals and technicians arriving in Chile in recent years (EESC, 2007). Due to better labour opportunities in the foreign country, not only in manual jobs but also in skilled occupations, it is often indicated that those who migrate are not poorly educated individuals, but those with higher education and the capacity to move (Ritsila and Ovaskainen, 2001; Buchan, 2007). However, being “highly educated” in a poor country is not the same as being “highly educated” in a developed one. Income and social class differences between countries need further attention for a better understanding of migration processes worldwide.

Despite the better educational level found on average among the immigrants compared to the local Chilean population, cluster SES groups showed quite different patterns of educational distribution among immigrants. In this sense, those in the low SES group had only up to high school level education, whereas 60% of those in the high SES group had university level. It has been suggested that social disparities in skills and qualifications must be reduced in every community (Marmot, 2010). According to the findings from this chapter, this would be relevant for both the immigrant and the local population. However, it might be most relevant among the immigrants in particular, due to poor specific educational policies, discrimination and social isolation that have been reported in the migrant population elsewhere and could exist in Chile (Martine, Hakkert and Guzman, 2000; Mahroum, 2000; Massey, 1999; Finney & Simpson, 2009). Overall, educational inequalities are persistent in Chile, despite significant efforts and achievements to balance educational opportunities and

outcomes. These results could be developed by further research into the social determinants of educational outcomes in immigrants and the Chilean-born, like family background, neighbourhood, relationship with peers, discrimination in educational settings and continuing education while working, among others (Marmot, 2010).

7.3.2.c) Occupation

Health effects of occupation and health inequalities between occupation types have been shown in the past, indicating a higher risk of poor health among those in low status occupations (De Jonge et al., 2000; Marmot et al., 1997; Karasek et al., 1988; Siegrist, Klein and Voigt, 1997; Whitehead, 1991). In this regard, results on equality in health among workers should be one central criterion for the evaluation of occupational health and social policies related to health. In this study, occupation was a valuable dimension of SES and especially useful in illustrating the heterogeneity and complexity of the immigrants' SES. Despite the fact that immigrants and Chilean-born had a similar proportion of employed people, immigrants had much more polarised results. A good example of this was that, simultaneously, the immigrant population reported a higher rate of managerial/executive and domestic service occupations than the Chilean-born. These two poles became clearer after cluster analysis, where only 42% of immigrants in the low SES group were employed and no managerial occupations were found among them. In contrast, 8% of immigrants living in the high SES cluster showed managerial/executive occupations. In addition, the characteristics of the occupational health system should be considered.

The Chilean occupational health system is a mutual, private, non-profit organization, which aims to manage the risks of social insurance against industrial accidents and occupational diseases. Social Protection Law No 16744 stipulates that depending on the number of employees, insurance and occupational accidents should be paid by the employer. This feature determines the existence and requirement of an employment contract, but recent data indicated that 22% of employees nationally lack such a contract, and therefore are deprived of the benefits of the legislation. It has, however, been reported that the levels of protection are higher in the most vulnerable population: 40% in the poorest quintile, versus 11.3% in the richest quintile (Concha et al., 2004; Concha and Labbe, 2005). Despite this, it is believed that the occupational health systems are limited to the role of providing access to preventive and curative services to vulnerable and exposed workers. Given changing conditions and international work environments, an increase in informal workers and poor employment and working conditions, countries are confronted with new demands for occupational health systems. For this reason, the occupational health systems, including that of Chile, need to respond to these changes and, above all, to respond to the most vulnerable

groups and those excluded from the system (Concha and Labbe, 2005). Many workers worldwide are trapped in a cycle of low-paid, poor quality work and unemployment (Marmot, 2010) and Chile is no exception. There is a relationship between a person's status at work and the amount of control and support they have there (e.g. Karasek et al., 1988; Siegrist et al., 1990). These factors, in turn, have biological effects and have been related to increased risk of disease. Additionally, patterns of unemployment both reflect and reinforce the social gradient, and serious inequalities in labour market opportunities have been recognised in the past (Marmot, 2010). When considering the relatively high rate of immigrants in domestic service in Chile, mostly women and usually poorly paid and immigrants and Chilean-born that are self-employed, a discussion on minimum income for healthy living conditions in Chile should be addressed as an equity matter for the total population living in the country.

A significant challenge exists as to how to measure and interpret those that report being "self-employed". Similar to other developing countries, self-employment in Chile can be an expression of unemployment, where, for example, the head of a family informally sells goods in the street without license. This is often seen in large cities in Chile. In contrast, it can also represent a real investor who runs his own business within all legal regulations. The meaning of self-employment as a measure of socioeconomic status and social class depends upon the local context. Finally, further occupational factors among the immigrant population could be considered in future studies, for example, status at work and discrimination, isolation and self perception of autonomy and control in the workplace, relationships with peers and authorities, over-commitment at work, and the balance between effort and reward (Wilkinson, 1994; Karasek et al., 1988; Siegrist et al., 1990; Marmot, 1991; De Jonge et al., 2000).

7.3.2.d) Material living conditions

It has been stated in the past that enriching the measurement of socioeconomic position beyond social class is particularly valuable in exploring health inequalities among different outcomes. In this sense, not only is educational level or occupational status related to morbidity and mortality, but so is home ownership or ownership of certain basic assets (Davey Smith, Bartley and Smith, 1990; Wilkinson, 1994; Smith, 1999). A clear example of this is that in Britain, people who own houses and have two cars are healthier than those who rent a house and have one car (Wilkinson, 1994). In this study both the HAI and the CMI showed high internal reliability and provided interesting information on complementary dimensions of socioeconomic status. These, added to the classic measures of socioeconomic position (education, income and occupation) allowed a detailed comparison between

international immigrants and the Chilean-born. Among immigrants, the HAI did not show a proportional increase in score in the highest quintile when compared to the wealthiest income quintile (comparing quintile 5 in the IIP in Figure 6.1 with Figure 6.11).

The CMI on the other hand, as it combined household assets with sanitary conditions, overcrowding and quality of housing, provided an integrated overview of the living conditions of the population of Chile. As mentioned before, the combination of direct and indirect factors affecting health, at an individual and community level, supports the use of the CMI as a relevant measure for developing countries. In this study, it was a reliable measure of socioeconomic position in the Chilean setting. Although both indexes developed in this study were imperfect and did not account for all the existing variances, they still accounted for a higher proportion of variance than other international studies (World Bank, 2003; World Bank, 2005). When comparing a CMI with similar index used in previous studies in developing countries, it appears that the CMI developed for this study was able to explain a higher proportion of the total variance than those used in Tanzania (Mwageni, 2002), Thailand (Prakongsai, 2003) the Mediterranean (Verropoulov and Tsimbos, 2008), and Brazil and Ethiopia (Vyas & Kumaranayake, 2006).

Table 7.4 Summary table of available publications on SES and material determinants of the international immigrant population in Latin America

<i>Socioeconomic SDH</i>	<i>Specific socioeconomic SDH</i>	<i>Authors</i>	<i>Year</i>	<i>Study design</i>	<i>Immigrant population</i>	<i>Host country</i>	<i>Results</i>
Socioeconomic status	Income	Takenaka & Pren	2010	Cross-sectional analysis of the impact of international migration on the socioeconomic conditions of migrants	Immigrants mostly Latinos	Peru	Data from the Latin American Migration Project indicates that international migration contributes to an individual's socioeconomic wellbeing. Those who migrate tend to come from relatively privileged backgrounds and gain further relative economic advantage by moving out of the country.
		Braham & Boucher	1998	Cross-sectional analysis of net effects of migration and remittances on income distribution	Immigrants	Nicaragua	For a sample of households in Blue fields, Nicaragua, migration and remittances increase income inequality when compared with the no-migration counterfactual.
		Allensworth	1997	Cross-sectional analysis of earnings mobility of Mexican-origin women and men: comparison with U.S.-born Mexican-Americans and non-Hispanic whites	Mexican	US	With greater time in the United States, male immigrants achieve average earnings comparable to U.S.-born Mexican Americans, but not to non-Hispanic whites, controlling for human capital variables. With greater time in the United States, female immigrants approach the number of hours of paid work of U.S.-born women, but not the earnings received per hour. Gains in earnings associated with age, time in the US, and English proficiency differ by gender, reflecting structural differences in the labour market.
		Borjas	1996	Cross-sectional study of the trends in the earnings of Mexican immigrants during 1970-1990	Mexican	US	There has been a decline in the relative wage of successive Mexican immigrant waves in the past three decades and little wage convergence occurs between the typical Mexican immigrant and the typical native worker.
		Gomez & Diaz	1988	The evolution of research on migration from Colombia to Venezuela during the last 15 years is examined	Immigrants	Colombia	The study of international migration in Colombia led to research on economic conditions, the flow of remittances, occupations, and income cycles in countries in Latin America.

		Massey	1987	Cross-sectional analysis of undocumented status and wage rates in the UC	Mexican	US	Legal status had no direct effect on wage rates earned by male migrants. Legal status also had little effect on the kind of job that migrants took in the US, but it did play an important indirect role in determining the length of time that migrants stayed in that country.
		Mora & Gomez	1980	Cross-sectional study to determine reasons for the chronic national labour shortage in the Venezuelan agrarian sector	Colombians	Venezuela	The income of agricultural wage earners and the conditions of labour force reproduction in Venezuela are discussed as factors contributing to the labour shortage. With reference to Colombia, the rapid growth of international commerce and the policy of limiting wages are suggested as factors, which contribute to emigration.
	Education	Departamento de Extranjeria y Migracion	2007	Governmental report in Chile focusing on the migration patterns in this country	Mostly Latinos	Chile	The immigrant population in Chile includes highly educated immigrants, but this rate has declined over time.
	Occupation	Greenlees & Saenz	1999	Cross-sectional study on the work force participation of married, Mexican-origin immigrant women who came to the US in the 1980s	Mexican immigrant wives	US	Positive factors indicating the likelihood of being employed in 1989 for Mexican immigrant wives were: 1) being 25-54 years of age; 2) higher educational levels; 3) speaking fluent English; 4) lower levels of husband's income and non-labour income; 5) employment of husband in 1989; 6) absence of children under age 6 at home; 7) lower non-Hispanic female unemployment rates; 8) higher work force proportion employed in immigrant female-dependent occupations; 9) lower proportions of the Metropolitan Statistical Areas (MSA) population being of Mexican origin; and 10) smaller MSA populations.
		Almandoz	1997	Cross-sectional study of the settlement of immigrants from Chile and Bolivia in a town in Argentina	Chilean and Bolivian	Argentina	Chilean immigrants live in Tandil in greater numbers than Bolivian immigrants, but are also older. Though certain mobility is not unknown, they usually hold low skilled jobs and are only by exception granted social security and medical insurance.

		Zabin & Hughes	1995	Cross-sectional study exploring the probable effects of the North American Free Trade Agreement (NAFTA) on migration from Mexico to US	Mexican	US	Two features of employment in export agriculture were found to be specially significant in lowering the costs of U.S. migration: first, working in export agriculture exposes migrants to more diverse social networks and information about U.S. migration; second, agro-export employment in northern Mexico provides stable employment, albeit low-wage employment, for some members of the family close to the border.
		Szasz	1994	The volume of female migration to Santiago and in the employment patterns of migrant women in the female labour market from 1950	Migrant women	Chile	Gender considerations including cultural norms governing female sexual behaviour and marriage status appear to exercise a decisive influence on the occupational status of migrant women in Santiago. Low status, single women migrating to Santiago have been concentrated in domestic service in part because of their need to find work providing safe living quarters.
		Borjas & Tienda	1993	Cross-sectional study of employment in recently legalized immigrants	Latinos and others	US	Compared to the total foreign-born population, the legalized immigrant population differs in four important respects that bear on labour market position: 1) a younger age structure; 2) a less balanced gender composition; 3) a greater representation of Latin Americans; and 4) fewer years of U.S. residence.
		Lozano	1992	Cross-sectional household surveys on the agricultural production in the Dominican Republic	Haitian temporary migrant farmers	Dominican Republic	The massive entry of Haitian agricultural workers into rice, coffee, and other agricultural production affects demographic patterns. Different labour migration micro-systems were detected among the workers studied: a circular system including sugar and coffee, a circular system in which peasants from the North of Haiti worked in rice cultivation, and noncircular settlement of former sugar cane cutters in coffee and rice.
		Kossoudji & Ranney	1984	Using a Mexican national survey, this study provides a profile of temporary Mexican female migrants in US	Mexican	US	Immigrant Mexican women in unskilled jobs averaging nearly the same wages as white-collar women. The dramatic exception is private household workers, who earn less than 1/4 of the wage rates of other women.

		Sullivan	1984	Cross-sectional quantitative analysis of occupational prestige of women workers born in Cuba or Mexico	Cuban and Mexican women	US	Predicted prestige scores, controlled for social class, narrow the prestige score gap between Cuban and Mexican women, but increase the gap between immigrant men and women. The data suggest that the social mobility process for female immigrants differs from the process for males, perhaps because cultural barriers to "pink collar" jobs of nominally higher status restrict women's mobility.
Material living standards		Sundquist	1995	To examine whether there are differences in living conditions and self-rated health between different migrants	Migrants including Latin American	Sweden	Labour migrants and refugees in particular lived in rented flats while Swedes lived in privately owned one-family homes. All immigrants and, in particular, repatriated Latin Americans had low material standards and meagre economic resources compared with Swedes. Being a Latin American refugee, a South European or Finnish labour migrant were independent risk indicators of self-rated poor health.
		Sundquist	1994	Similar to previous	Migrants including Latin American	Sweden	Similar to previous study.

CHAPTER 8

DO IMMIGRANTS REPORT HAVING ACCESS TO THE CHILEAN HEALTH CARE SYSTEM AND HOW DOES THIS COMPARE TO THE CHILEAN-BORN?

« Right to access to health care to all immigrants in Chile, but only if legally documented »

The Metropolitan Health Service in Chile has a policy to facilitate entry into the public health system for immigrants who have their papers in order and are not enrolled in primary care clinics. Those interested must attend the primary clinic nearest their home.

Consulado General del Perú en Santiago de Chile

Summary Box 8

What research question is included in this chapter?

Do immigrants report having access to the Chilean health care system and how does this compare to the Chilean-born?

What is already known?

Previous qualitative studies in Chile indicate that immigrants in Chile do not fully understand the health care system and might not access it or use it as often as they might actually need it while living in the country.

What does Chapter 8 add?

- Compared to the Chilean-born, immigrants living in Chile are more likely to report no entitlement to health care provision or other not stated health insurance. They are also less likely to report access to the public health care system, both free of charge and with co-payment. Nonetheless, there are clear gradients of access to types of health care provision by SES cluster among immigrants.
- There are no differences between immigrants and the Chilean-born in the use of health care services, but significant differences appear by SES cluster, country of origin and years living in the country.

Overview

The previous chapter showed that immigrants were a very heterogeneous and complex group, polarised by socioeconomic status. In this chapter it is hypothesised that socioeconomic status is a key determinant of immigrants' access to the Chilean health care system. This chapter addresses three different but related domains: *access to* health care provisions, *use of* health care programmes (also reported as “utilisation”) and access to health care among those *in need* (e.g. immigrants with a chronic condition (disability) and those with any health problem in the past month).

Introduction

The purpose of this chapter is to provide a description of the patterns of access to and use of health care (or “healthcare” in this thesis) among the international immigrant population in Chile. It is hypothesised that socioeconomic status is a key determinant of access to the complex and mixed Chilean health care system by immigrants, which includes the public (FONASA) and the private (ISAPRES) sectors. This is also consistent with the international literature on access to, need for and use of health care, presented in the first section of this chapter. Some relevant research has been conducted in Chile and this is briefly described in the second section.

The third section presents the methodological approach used in this chapter. Section 8.4 shows descriptive, stratified and multivariable analyses on health care provision entitlement and section 8.5 develops the same analyses but with conditional models for a subgroup of immigrants that was considered to potentially be in need of health care (people with any disability and any health problem or accident in the past month). Section 8.6 describes the use of certain preventive health care programmes in Chile and section 8.7 discusses the results of this chapter.

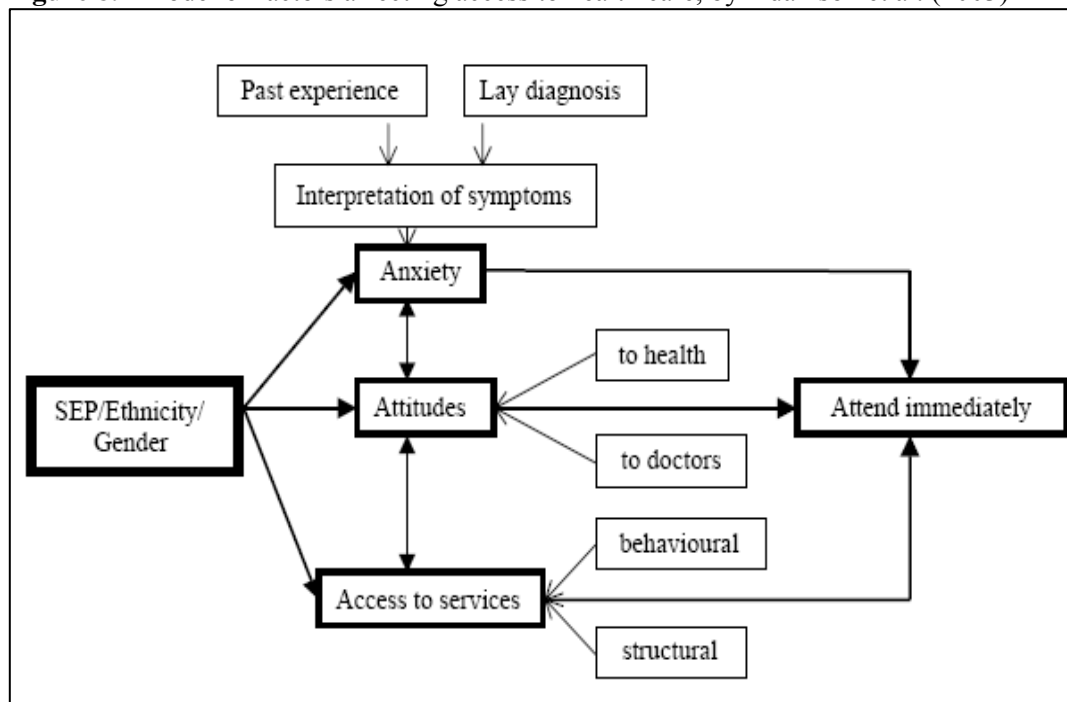
8.1 ACCESS TO, NEED AND USE OF HEALTH CARE

Equity in health care is of vital importance to many countries (Allin, 2008; Romanow, 2002). *Access to health care* in particular, has been recognised as a determinant of health worldwide (e.g. ten Have and Bijl, 2002; Crijnen, Bengi and Verhust, 2000) including Latin America (Muñoz-de-Bustillo and Perez, 2010; Garland, Andrage and Page, 2010; Vermeer and van den Muijsenberg, 2010; Simich, Wu and Nerad, 2007). Although it has been argued that health care systems do little to reduce health inequalities in a society (Adamson, Hunt and Ebrahim, 2003a; McKeown, Record and Turner, 1975; Mackenbach, Stronks and Kunst, 1989), there is growing evidence that innovative medical technologies can have a major positive impact on life expectancy and quality of life (Tunstall-Pedoe et al., 2000; Bunker, Frazier and Mosteller, 1995; Goldman and Cook, 1984). In addition, *use of health care* may vary between vulnerable groups, including international immigrants. According to studies from the 80s and early 90s in the US, Hispanic immigrants, particularly Mexican-Americans, tend to underutilize ambulatory services. Other studies have reported that immigrant women tend to use inpatient facilities less than men (Hough et al., 1987; ten Have and Bijl, 2002; Crijnen, Bengi and Verhulst, 2000). Other countries have also reported distinctive patterns of use of services among vulnerable populations.

Different explanatory models related to health care were found in the literature (Dunlop, Coyte and McIsaac, 2000; Alegria et al., 2002; McKinlay and Marceau, 1999; Adamson, Hunt and Ebrahim, 2003a). Possibly the most complete model for explaining access and use of health care among vulnerable populations like women, ethnic minority groups and people with low socioeconomic position, has been proposed by Adamson and colleagues (see Figure 8.1). This model expresses the complexity of diverse and multilevel determinants of access to and use of health care among relevant groups. This is a very clear and useful model, as many of the factors that it highlights have also been reported by other authors (Dracup et al., 1995). However, one interesting aspect not included in this model is how access is shaped by the actual *need for health care* attention. This issue is recognized by the authors of the model but is excluded from most studies on access to health care (Balarajan, Yuen and Machin, 1992; Ben-Shlomo, White and McKeigue, 1992; Carr-Hill, Rice and Roland, 1996; Collins and Klein, 1980; Nazroo, 1997; Smaje and Le Grand, 1997; Whitehead, 1994). Surprisingly, in the literature, these aspects of health care frequently seem to overlap and are often not clearly presented in a well-defined framework. In addition, even in countries where access to health care is free, immigrants do not always take advantage of available services (Dias, Severo and Barros, 2008; Goddard and Smith, 2001; Scheppers et al., 2006; Gardner, 2007; Fennely, 2004).

It has been stated that access to and actual use of health care services by immigrants is the result of a complex web of determinants (Hargreaves et al., 2006; Reijneveld and Stronks, 2001), dependent on whether a society is able to create a user-friendly environment for immigrants (Dias, Severo and Barros, 2008; Scheppers et al., 2006, Braveman and Gruskin, 2003a; Braveman and Gruskin, 2003b). In Latin America, it is suggested that immigrants tend to have lower access to and use of health care (Muñoz-de-Bustillo, and Perez, 2010; Garland, Andrage and Page, 2010; Vermeer and van den Muijsenberg, 2010; Simich, Wu and Nerad, 2007). In Chile, some descriptions of access to health care among the total population have been published and are presented in the following section, but no study has explored access to health care among the immigrant population in the country from a national-representative level. In addition, a summary table from the literature review can be found at the end of this chapter, highlighting the scarcity of available information on access to and use of health care among *international immigrants in Latin America* (Table 8.4).

Figure 8.1 Model of factors affecting access to health care, by Adamson et al. (2003)



8.2 A FURTHER DESCRIPTION OF THE CHILEAN HEALTH CARE SYSTEM

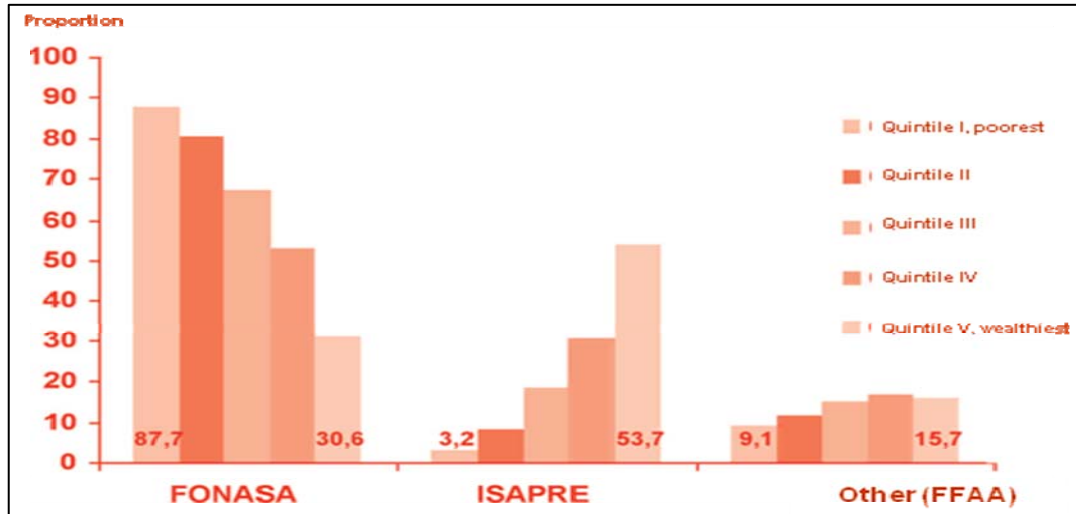
The Chilean health care system has experienced significant changes over time. From its creation in 1952 until the dictatorship period, it was a public integrated system. During the 1980s, the military government took a series of measures to stimulate growth in membership of the private health system, called ISAPRESs. Currently, the Chilean health care system is a mixed system. With regard to both supply and insurance, public (FONASA) and private (ISAPRESs) sectors coexist with little interaction between them (Oyarzo, 2000; Arteaga, Astorga and Pinto, 2002). The population in Chile has been unevenly distributed within the health insurance system (CASEN, 2003). In 2003, 72% of the population belonged to the public system (FONASA), 16% to the private system (ISAPRESs) and 3% to the Army system (FFAA). Importantly, 9% of the population said they did not have any health insurance cover.

The CASEN survey includes five different categories of provision entitlement in Chile: no health care provision; public free of charge; public with co-payment; private; and other not stated. The free of charge provision entitlement corresponds to a means-tested approach for those below the poverty line, and also includes the disabled and the retired. The public with co-payment provision type, in contrast, charges a variable proportion of a person's earnings. Immigrants in Chile can access any of these health care provision types, and have the right to access the public health care system. Nonetheless, to register in the public health care system they must have their legal documents up to date. Undocumented immigrants are not allowed access to the public health care system, but can use the private system and pay out of pocket if they wish.

In Chile, indicators of population health have improved considerably and steadily in recent decades. Consequently, Chile has health indicators that are similar to those observed in higher-income nations. However, the results are less promising when analysed using indicators that reflect health care system performance. Inequalities in health care systems or between population groups in Chile have been defined previously as differences, after taking into account the needs, preferences and availability of care (Hernandez, Sandoval and Delgado, 2005). The Feedback Survey was conducted in 2000, during the design stage of the recent Chilean health reform and aimed at describing the Chilean health care system from perspective of users. Its results showed some disparities in access to services and benefits, quality of care, waiting times, customer satisfaction and financial coverage. Care was perceived as more satisfactory in the private system. However, in evaluating both financial and health protection, the survey showed that users perceived the public system as more

supportive and comprehensive (Hernandez, Sandoval and Delgado, 2005). Chile also has inequities in entitlement to health provision by income. Among all beneficiaries of FONASA, 87.7% are in the poorest quintile I, while only 30.6% belong to wealthiest, V. Correspondingly, in the population belonging to the private health system ISAPRESs, 3.2% are in the poorest quintile I and 53.3% in the wealthiest quintile V (see Figure 8.2) (Hernandez, Sandoval and Delgado 2005).

Figure 8.2 Proportion of beneficiaries of the Chilean health systems, according to their income status (Hernandez, Sandoval and Delgado, 2005)



Currently, no quantitative population-based study has explored access to, use or need of health care among immigrants in Chile. However, qualitative studies have reported that this is one of the main health problems faced by migrants, due to a lack of coordination between government agencies in charge of immigration policies (OIM and MINSAL, 2008a; OIM and MINSAL, 2008b). Specific strategies to support the right to access to health care in Chile by immigrants are displayed in Table 8.1.

Table 8.1 Strategies to support the right to access to health care by immigrants in Chile

Strategy	Description
<i>Programme for pregnant immigrant women</i>	Supported by the Social Organizations Directorate, the Chilean Ministry of Health and the Department of Immigration and Migration, migrant women who are pregnant and have no current legal documentation can attend the primary clinic nearest their home for guidance. This enables them to access the health system and receive documentation to approach the Department of Immigration and obtain a temporary visa for one year.
<i>Programme for immigrants under 18 years old</i>	There is a collaboration agreement between the Chilean Ministry of Health and the Ministry of the Interior, to regularize migration for immigrants' under 18 years. Immigrants under that age and in social risk situations can receive health care in the public health network, on an equal basis and regardless of their immigration status and that of their parents (Resolution No. 1914 of March 13, 2008 and REGULAR 14 Number 3 229, of June 11th, 2008).
<i>Free medical care for Peruvians with precarious resources</i>	Since late August 2002, the General Consulate of Peru in Santiago has an agreement with the Chilean Red Cross with the voluntary additional contribution of the Peruvian community physicians. This is a Free Medical Clinic serving Peruvians, whether documented or not, for economic reasons or otherwise unable to access these services from other government or private institutions. The clinic provides a primary care service (consultations) (Consulado general del Peru en Santiago de Chile, 2009).
<i>Social security agreement between the republic of Peru and the republic of Chile</i>	Convention concerning the right of Peruvian pensioners to receive health benefits equivalent to those of the country of residence, such as retirement pensions and social benefits due to disability (Consulado general del Peru en Santiago de Chile, 2009).

8.3 A BRIEF METHODOLOGICAL EXPLANATION

Descriptive and stratified analyses were conducted for each variable under study, as displayed in detail in Chapter 5, and a summary of the dependent variables appears in Figure 8.3. Multivariable multinomial and logistic regressions were conducted to analyse relationships between dependent variables (access to and use of health care) and different Social Determinants of Health (SDH). Weighted regression modelling was conducted in two stages. First, each set of SDH (demographic, socioeconomic, material, migration status) was regressed to either access or use of health care as the dependent variable. Second, an adjusted model with all sets of SDH was estimated. Conditional regression models were also estimated by age group and sex. Join (Wald) tests were carried out to test the significance of categorical variables with more than two categories (testing trends). To avoid methodological issues arising from a high level of collinearity among variables, only those significantly associated with the dependent variable were included in the final model (p-value<0.05 at a 95% confidence level). This criterion is frequently reported in other recent studies on access to and use of health care (Allin, 2008). Confounding and multiplicative interaction effects were also assessed (further methodological explanation in Chapter 5).

8.3.1 Weighted multinomial regression models

Weighted multinomial regression models were developed in order to estimate the relationship of the different SDH included in this study and the type of health care provision entitlement. Type of provision is a qualitative multinomial or polytomous variable of 5 categories: no health care provision (labelled as “0”); free public provision (“1”); public with co-payment (“2”); private (“3”); and other not stated (“4”). Multinomial variables differ from ordinal variables in the sense that their categories of response have no order. Multinomial regressions fit maximum likelihood models with discrete dependent variables when the dependent variable takes more than two outcomes and the outcomes have no natural order (Aldrid & Nelson, 1984; Hosmer & Lemeshow, 2000; Judge et al., 1985). Even though multinomial regression models can be more difficult to interpret because they estimate a larger number of parameters than usual logistic regression, they also provide more parsimonious models and efficient estimates.

For this study, having no health care provision (“0”) was used as the reference category. The multinomial regression then estimated the Relative Risk Ratios (RRR) of the association between each explanatory variable (SDH) and each category of the outcome (type of health care provision) and its corresponding 95% confidence intervals (95%CI). Therefore, each multinomial regression model estimated a set of coefficients that corresponded to each type

of provision: free public provision; public with co-payment; private; and other not stated. Each category of the outcome was compared to having no health care provision (reference) in the presence of other categories. With regard to post-estimation tests, p-values, the amount of variance explained by the adjusted pseudo R-squared and the Akaike Information Criterion (AIC) to assess the goodness of fit of multinomial regression models were estimated. The lower the AIC value the better the fit of the model. The most parsimonious model to explain the different health outcomes was then presented. To complement the general AIC method to test GOF of the models, the multinomial goodness-of-fit test for large sample tests with survey design correction (GOF) were estimated (F-adjusted mean residual test, Rao & Scott, 1981; Jann, 2008). A p-value<0.05 (significant) test suggests a good fit of the model (i.e. the alternative hypothesis that the model does not have an adequate goodness of fit is rejected). The most parsimonious model to explain the different health outcomes was then presented.

8.3.2 Weighted logistic regression models

A description of weighted logistic regression was presented in Chapter 5. The Odds Ratio (OR) of presenting a particular health care outcome (e.g. of having accessed the universal Pap smear programme in Chile) and its 95% CI are estimated. With regard to post-estimation tests and similar to those described for multinomial modelling, p-values and significance of trends, the amount of variance explained by the adjusted pseudo R-square and the Archer and Lemeshow goodness of fit test (GOF) for a logistic regression model fitted using survey sample data were estimated (F-adjusted mean residual test, Archer and Lemeshow, 2006). In this case, a p-value>0.05 (non significant) suggests a good fit of the model (i.e. the alternative hypothesis that the model does not have an adequate goodness of fit cannot be rejected). The most parsimonious model to explain the different health outcomes was then presented.

8.3.3 Summary graphs

Final adjusted models are displayed through forest plot graphs, with the exception of multinomial regression models. Forest plot graphs were selected to show the SDH that remained significantly associated with each dependent variable, even after controlling for all other significant social determinants included in the study, in both the immigrant and the Chilean-born populations. Additionally, each socioeconomic cluster (low, medium, high) was included as a co-variate in the fully adjusted model in the immigrant population (as dummy variables, high SES as reference). This allowed exploration of the effect of each SES cluster on the dependent variables. A methodological summary is presented in Figure 8.4.

Figure 8.3 Summary of dependent variables included in this chapter (dependent variables appear in red in the figure)

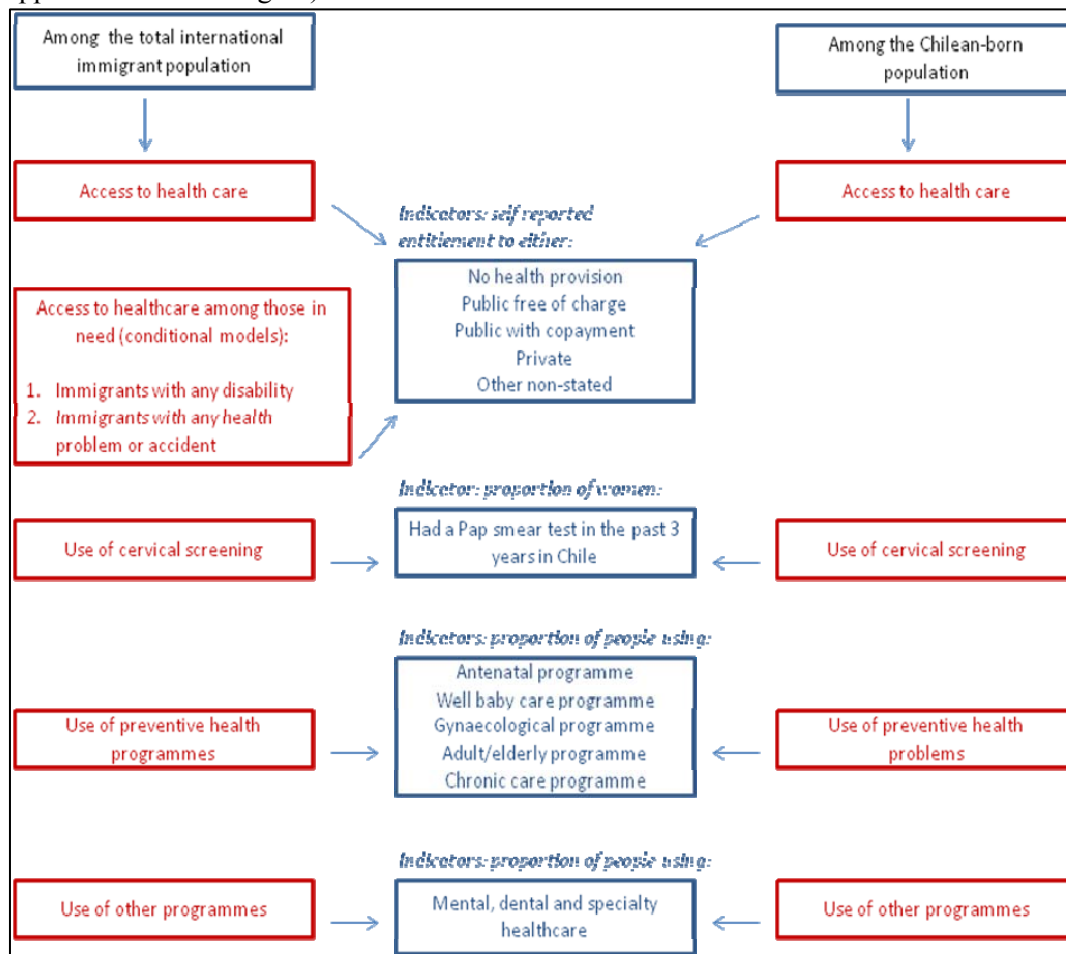
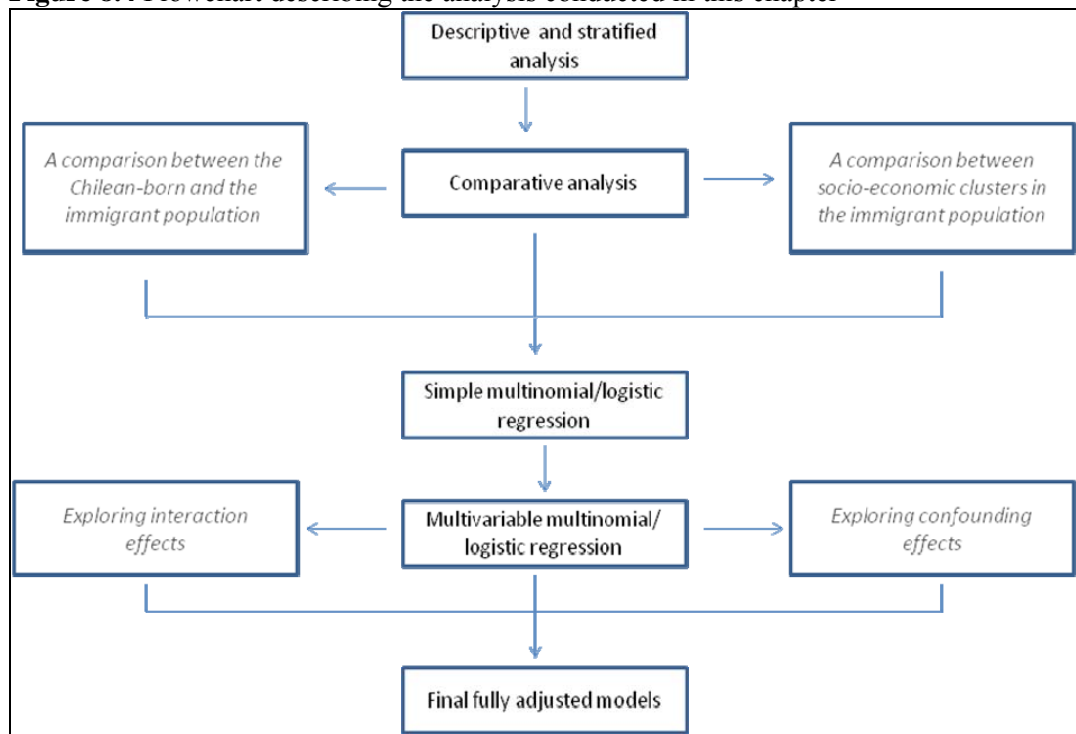


Figure 8.4 Flowchart describing the analysis conducted in this chapter



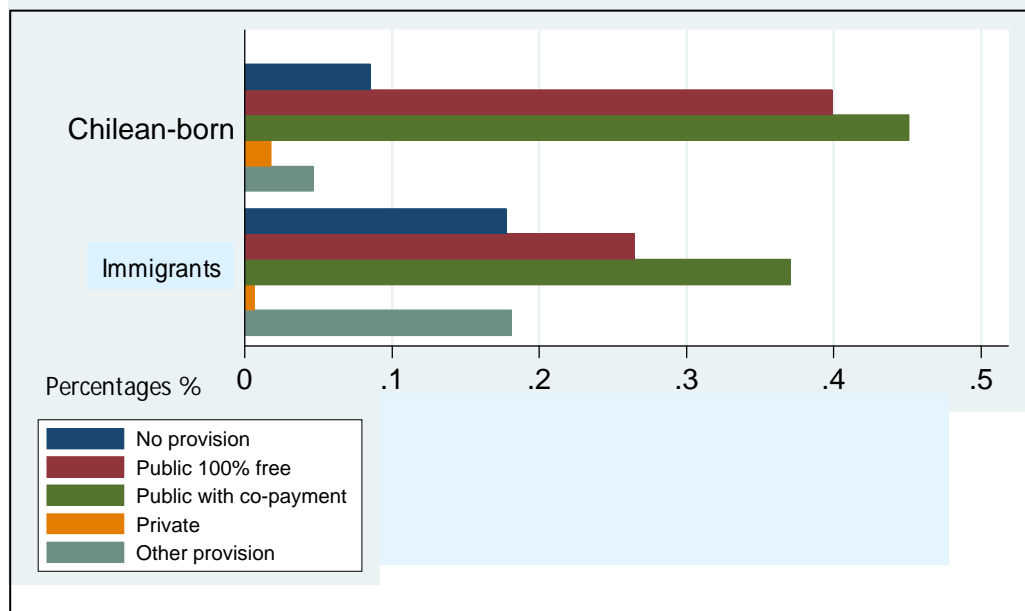
8.4 HEALTH CARE PROVISION ENTITLEMENT IN CHILE: STUDY RESULTS

8.4.1 Describing health care provision entitlement among the IIP in Chile

8.4.1.a) Descriptive analysis

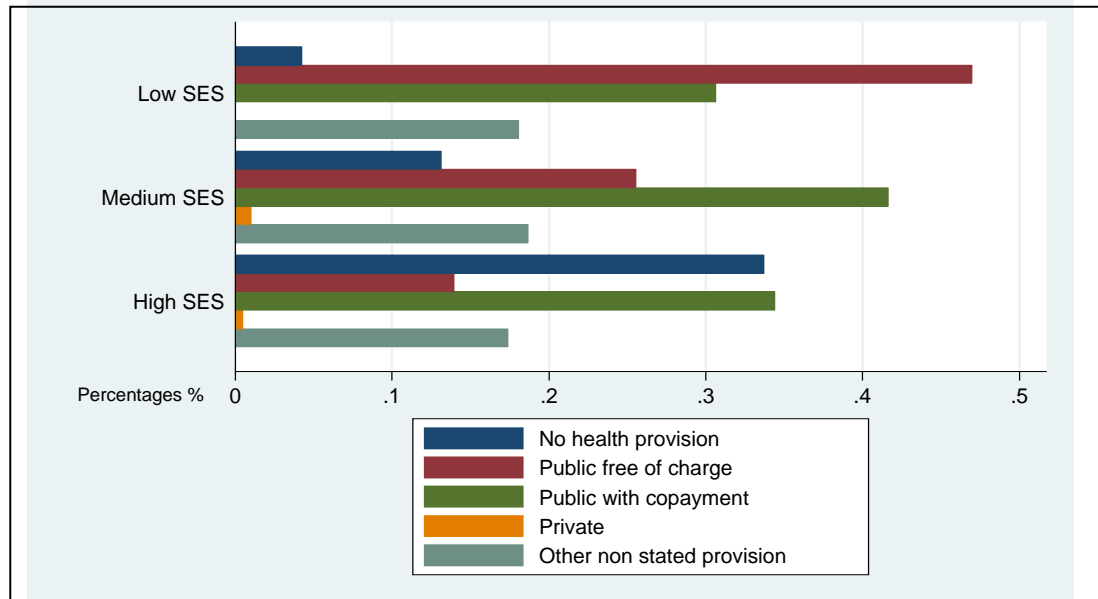
Most of the immigrant population in this study report having public insurance with some co-payment (39.11%) followed by no provision (28.14%) and other non-stated types (15.52%). The two least reported types are private (1.97%) and public free of charge (15.26%). Similarly, the Chilean-born population report public with some co-payment as the most frequent provision type (47.54%), but is followed by the public free of charge type (29.53%) and no health care provision (12.25%). Almost 3% of the Chilean-born report private (1.4 times higher but not significantly different to the immigrants) and only a 4.98% report another non-stated type (Figure 8.5). Overall, a significantly higher proportion of immigrants have no and other provision types and a significantly lower proportion of both types of public health provision than the Chilean-born. However, it should be noted that over half of the total immigrant population and almost 80% of the Chilean-born population are entitled to free public health care provision (Table-A8.1, Appendix-8).

Figure 8.5 Description of access to different types of health care provision between the immigrant and the Chilean-born population, CASEN 2006 (weighted sample size= 16 130 743)



No immigrant from the Low-SES cluster has access to the private health care system and about a third of them are entitled to the public free system, after a 40.48% entitled to public with co-payment. Among immigrants living in the Medium-SES cluster, most of them belong to the public with co-payment health care system (44.92%) followed by those with no health provision (20.86%). Most of the immigrants living in the High-SES cluster report having no health care provision and public with co-payment types (Figure 8.6). There is a clear inverse gradient of access to free of charge public provision and a positive gradient of no health care provision by the SES clusters in immigrants (Table-A8.2, Appendix-8).

Figure 8.6 Description of access to different types of health care provision among immigrants by socioeconomic cluster, CASEN 2006 (weighted sample size= 154 431)



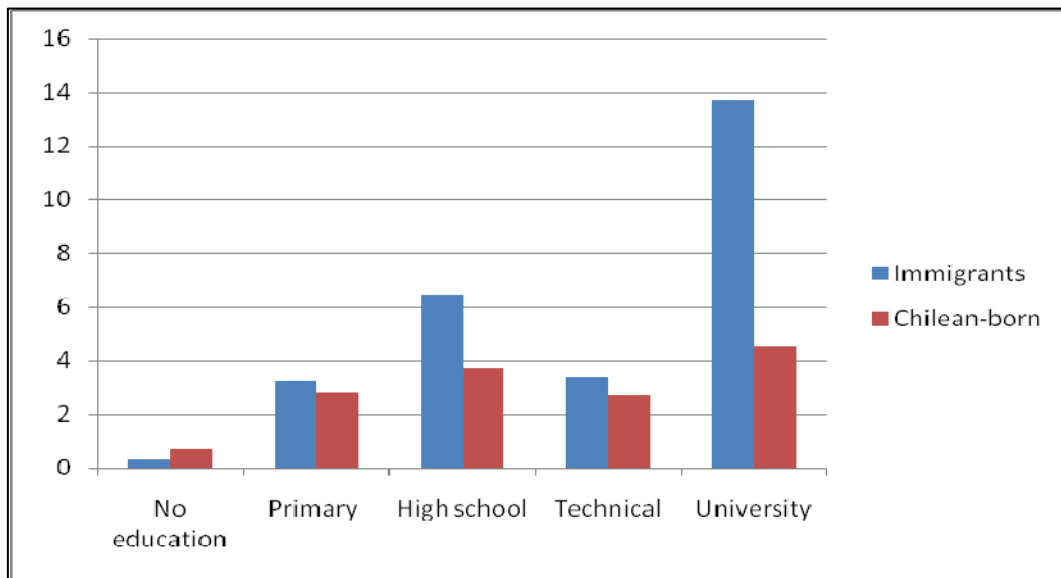
8.4.1.b) Health care provision entitlement in the IIP and the Chilean-born population: stratified analysis

The immigrant population has a significantly higher proportion of immigrant women entitled to the public with co-payment provision than men (23.92% versus 15.19%, $p < 0.0001$). Chilean-born women report a higher proportion of both types of public provision entitlement and a 1.7 times higher proportion of belonging to the public free of charge type than immigrant women (16.29% versus 9.22%, $p < 0.0001$). Immigrant women have a 1.8 times higher rate of no health care provision than Chilean-born women (13.25% versus 7.27%, $p < 0.0001$). Similarly, immigrant men have a 1.8 times higher rate of no provision than the Chilean-born men (14.88% versus 7.98%, $p < 0.0001$).

The two most reported provision types in all age categories of the immigrant population are public with co-payment and no provision. Despite the significantly lower proportion of immigrants with private provision, this type is most frequently reported by the >65 years old group (1.27%). The Chilean-born also report the public with co-payment provision type most frequently in all age groups, but is followed by public free of charge. Immigrants have a 2 fold higher proportion of working age group with no provision than the Chilean-born equivalent group (22.45% versus 11.02%, $p < 0.0001$). In addition, elderly immigrants have a 3.8 fold higher rate of no provision than the equivalent age group from the Chilean-born population (1.70% versus 0.45%, $p < 0.0001$).

Immigrants living in the poorest quintile report public with co-payment provision as the most frequent type, followed by no provision. Middle-income quintiles also have the public with co-payment type most frequently, but followed by public free of charge type. In contrast, no health provision is most often reported among immigrants living in the wealthiest quintile (21.32%). There is no clear gradient in access to health provision emerging among immigrants by income quintiles. The Chilean-born have very different results. There is a clear positive gradient of no access to provision, public with co-payment, private and other non-stated types by income quintiles (and a clear negative gradient of public free of charge by income quintiles in the Chilean-born)(see Figure 8.7).

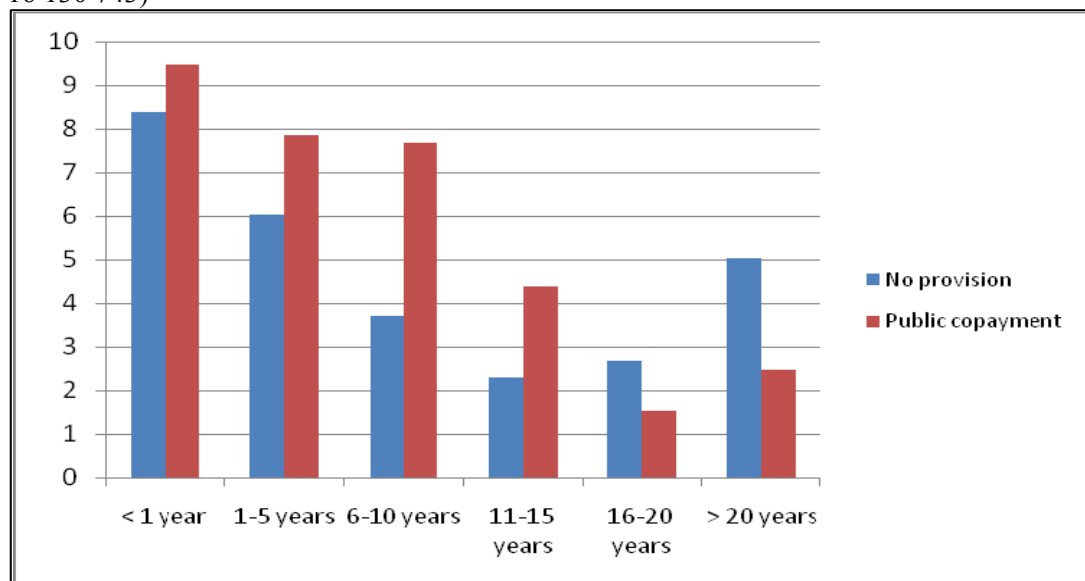
Figure 8.7 Proportion of people with no health care provision in Chile by educational level, a comparison between the immigrant and the Chilean-born population, CASEN 2006 (weighted sample size= 16 130 743)



Both employed and unemployed immigrants report public with co-payment and no provision types most frequently, and this pattern is similar to the Chilean-born population. Immigrants working in managerial/executive positions more frequently have no provision, while self-employed immigrants often have other non-stated types and private sector workers often have the public with co-payment type. Immigrants working in domestic service are mostly entitled to public with co-payment, followed by other not stated provision types.

Those coming from Peru and Ecuador mostly reported the public with co-payment type, followed by no provision. Those coming from Argentina and Bolivia also reported the public with co-payment type but followed by free of charge provision. There is a negative gradient in no health provision and public with co-payment by years living in the country, except for the “>20 years” category that has a slightly higher proportion of people than the previous categories (Figure 8.8). There is no clear gradient of free of charge provision and most immigrants who report private provision have lived for less than a year in Chile.

Figure 8.8 Proportion of immigrants with no health care provision and public with copayment provision by years living in the country, CASEN 2006 (weighted sample size= 16 130 743)



8.4.2 Factors associated with type of provision entitlement among immigrants in Chile

8.4.2.a) A comparison between the IIP and the Chilean-born: partially adjusted models by each set of SDH adjusted by demographic variables

Compared to immigrants with no health care provision in Chile, those with access to **free public** health care provision are more likely to be women (Relative Risk Ratio, RRR 1.69), to live in rural settings (RRR 3.77) and to live with one or more other persons (number of household members RRR1.27, count variable) (Table-A8.3, Appendix-8). There is a significant negative gradient of access to public free health care by educational level (trend p-value <0.001, Figure 8.9), but no clear gradient by income (trend p-value<0.001, Table-A8.4, Appendix-8). Socioeconomic clusters do display a negative gradient for this provision type (Figure 8.10), even after adjusting for other demographic variables (Table-A8.5, Appendix-8). Partial adjusted models also show a significant association between free public provision and material household conditions (CMI RRR 0.03 and HAI RRR 1.25) (Table-A8.6, Appendix-8)

Figure 8.9 Description of the Relative Risk Ratio (RRR) of having access to public free health care by educational level among immigrants living in Chile (no health care=ref, multinomial regression), CASEN 2006 (weighted size= 154 431)

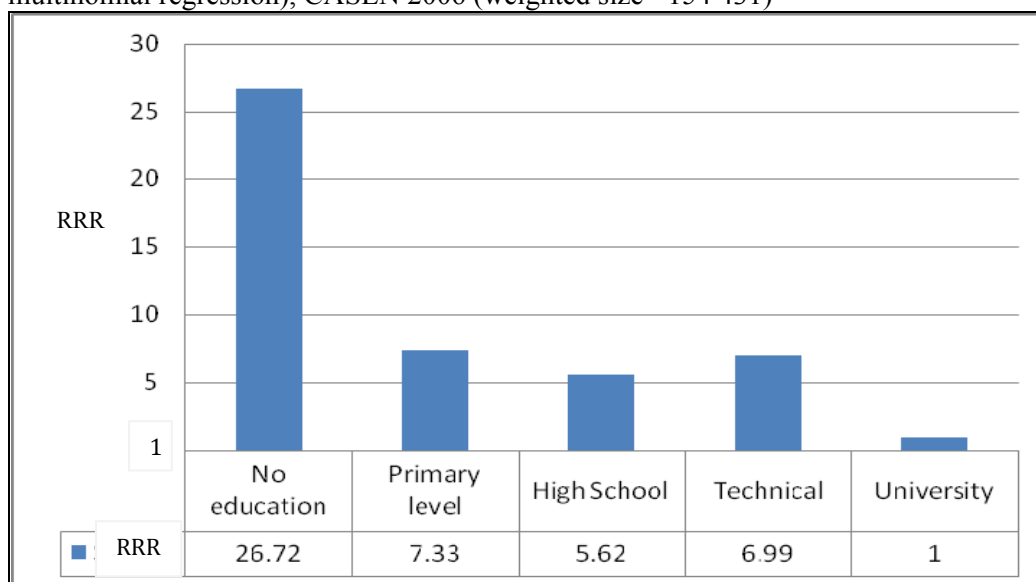
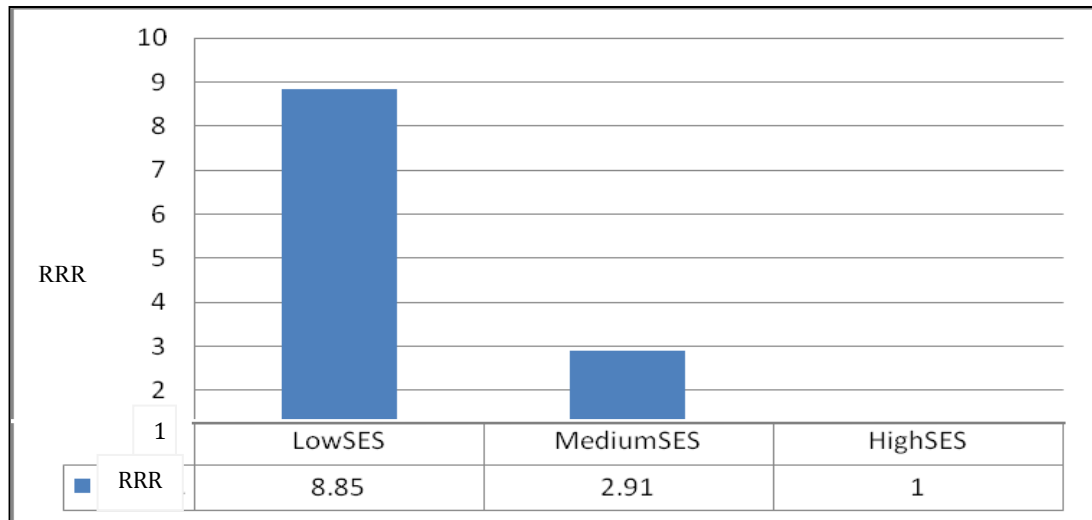
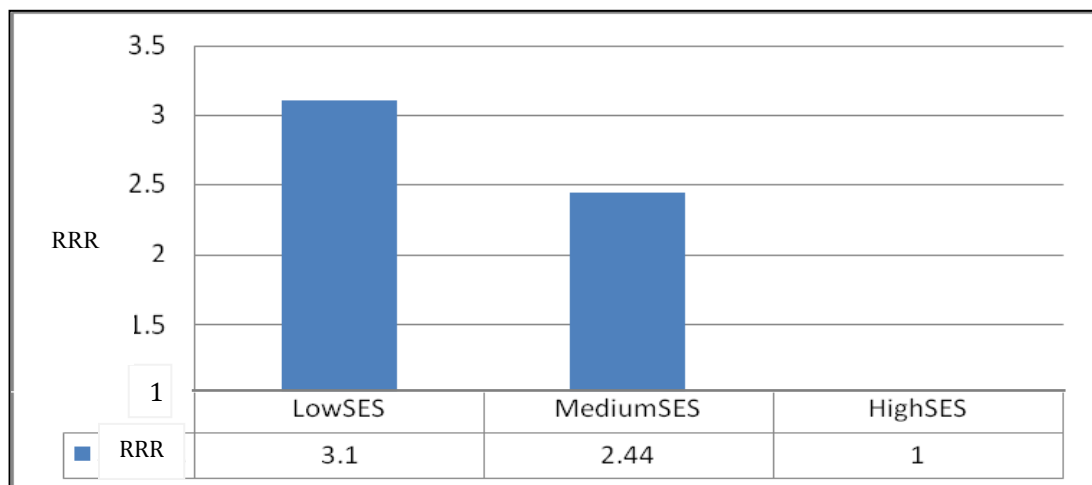


Figure 8.10 Description of the Relative Risk Ratio (RRR) of having access to public free health care by SES cluster among immigrants living in Chile (no health care=ref, multinomial regression), CASEN 2006[weighted size 154 431]



Compared to immigrants with no health care provision in Chile, those with access to **public with co-payment** health care provision are more likely to be women (RRR 1.75) and to live with another person (RRR number of household members, count variable, of 1.20) (Table-A8.3, Appendix-8). There is a moderate but significant negative gradient by educational level (trend p-value<0.0001) and a significant association by income (no clear gradient, trend p-value<0.0001, Table-A8.4, Appendix-8). There is a clear negative gradient by SES cluster (Figure 8.11) (Table-A8.5, Appendix-8); and there is no significant association with material housing conditions (Table-A8.6, Appendix-8).

Figure 8.11 Description of the Relative Risk Ratio (RRR) of having access to public with co-payment by SES cluster among immigrants living in Chile (no health care=ref, multinomial regression), CASEN 2006 (weighted size 154 431)



Compared to immigrants with no health care provision in Chile, those with access to *the private* health care system are less likely to belong to a minority ethnic group (RRR 0.60). There is also a significant association between this provision type and educational level (no gradient, trend p-value<0.0001). Finally, those immigrants with access to *other not stated* health care provision are more likely to live in rural settings (RRR 2.57). No other demographic, socioeconomic or material or SDH are differently associated to this provision type compared to immigrants with no health care provision. Similar findings are observed in the Chilean-born population, but this population shows significant associations with a wider range of demographic, socioeconomic and material factors. Further detail appears in Tables A8.3, A8.4, A8.5 and A8.6 in Appendix 8.

8.4.2.b) Health care provision entitlement by age groups in the IIP: partially adjusted models (by demographics only)

Immigrant children (under 16 years) with access to free public health care provision are more likely to belong to an ethnic group (RRR 17.28) and to live in any household income quintile except the wealthiest (no clear gradient) compared to immigrant children with no health care provision (trend p-value<0.001). However, the association between this provision type and ethnicity disappeared after controlling by material housing standards (confounding effect) probably due to the strong relationship between ethnicity and absolute poverty in Chile. Immigrant children with access to public with copayment provision are more likely to be female (RRR 3.41) and this association is maintained after controlling for other factors. Immigrant children with access to the private system are more likely to be older (RRR age 1.18, continuous variable) and less likely to belong to any minority ethnic group (RRR 0.14). Immigrant children living in rural settings are more likely to be entitled to other not stated health care provision (RRR 19.23) compared to those with no health care provision.

Compared to working age immigrants with no health care provision, those accessing free public provision are more likely to be women (RRR 1.95), to live with another person (RRR number of household members 1.27, count variable), and to live in rural settings (RRR 2.92). These associations disappear when controlling by material living standards (confounding effect of poverty). There is a clear negative gradient of access to this provision type by SES cluster in this age group (Figure 8.12). Working age immigrants accessing public with copayment provision are more likely to be women (RRR 1.63) and there is also a negative gradient by SES cluster (Figure 8.13). There seems to be an association between the private health care provision type and socioeconomic and material SDH among working age immigrants, but there are too few observations to support this finding. No significant association is found for other not stated provision in this age group.

Figure 8.12 Description of the Relative Risk Ratio (RRR) of having access to free public provision by SES cluster among immigrants at working age in Chile (no health care=ref, multinomial regression), CASEN 2006 (weighted size= 154 431)

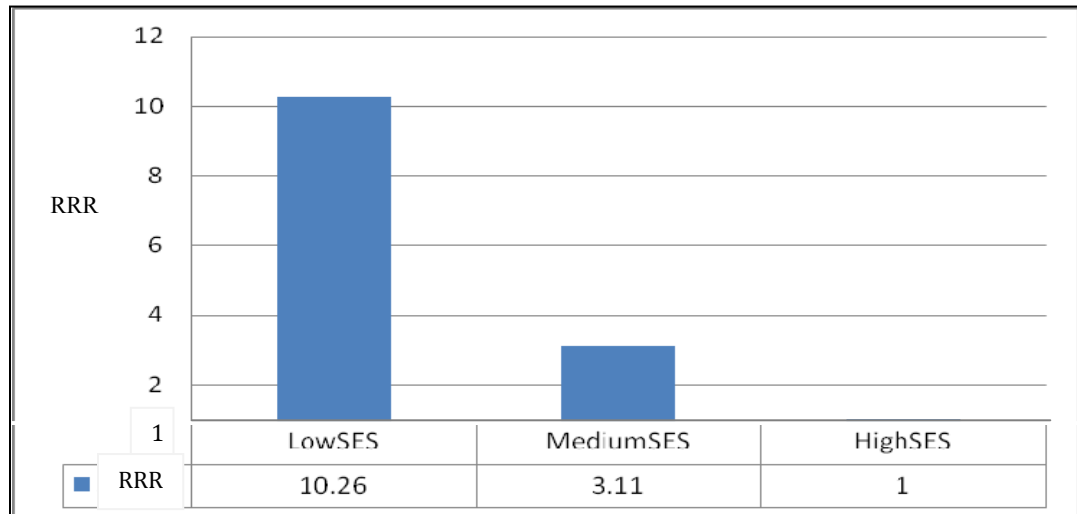
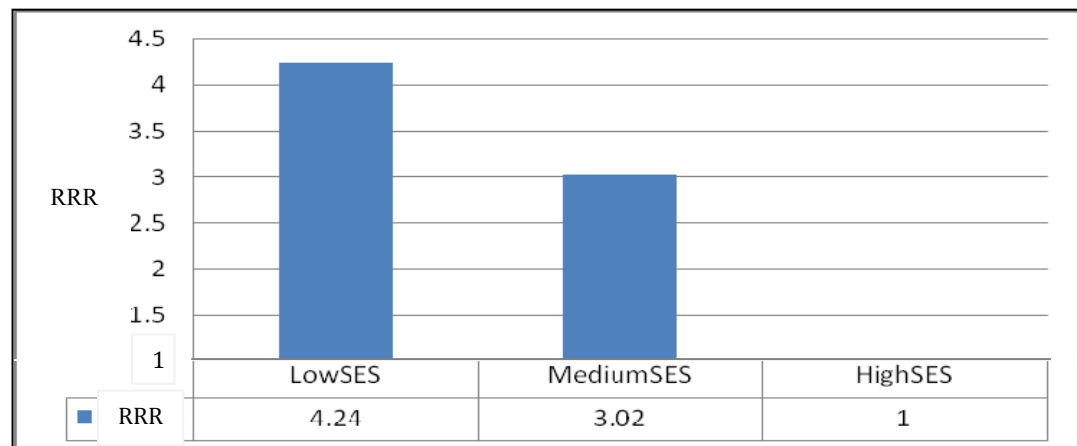


Figure 8.13 Description of the Relative Risk Ratio (RRR) of having access to public with co-payment provision by SES cluster among immigrants at working age in Chile (no health care=ref, multinomial regression), CASEN 2006 (weighted size= 154 431)



Elderly immigrants with access to free public health care provision are more likely to belong to a minority ethnic group (RRR 5.13), to live with someone else (RRR 3.10) and to be poorer (RRR household income, continuous variable, of 0.99) than the same group with no access to health care. Those accessing public with co-payment care are more likely to be better educated (no clear gradient by educational level) and those accessing the private system are more likely to live in urban settings (RRR rural 0.71) and less likely to belong to a minority ethnic group (RRR 0.58) compared to elderly immigrants with no health care provision. Elderly immigrants with other not stated provision entitlement are more likely to live with someone else (RRR 4.03) than those with no health care provision in the same age group.

8.4.2.c) Final adjusted models in the IIP and the Chilean-born

The final adjusted multinomial model of the relationship between health care provision entitlement (5 categories) and the different SDH in the international immigrant population is presented in Table 8.2. The equivalent model for the total Chilean-born population is displayed in Table 8.3. Overall, demographic and socioeconomic SDH are consistently associated with the type of health care provision entitlement among immigrants, and this is consistent with the strong association between provision entitlement and SES cluster (Tables-A8.3 to A8.6, Appendix-8). The final adjusted model of immigrants explains 15.19% of the total variance (adjusted R-squared, R²) and presents the lowest AIC value (AIC 4442.5) compared to other alternative models estimated by removing and adding covariates to this model. The addition of the migration-related covariate country of origin improved the fit of the model. The same model using SES cluster instead of education, income and occupation obtained a slightly lower adjusted-R² but a slightly slower AIC value (R² 11.96% and AIC 4578.2).

The final adjusted model in the Chilean-born population displays a combination of demographic, socioeconomic and material factors affecting access to type of health care provision. A quadratic effect of age and an interaction effect between sex and income improved the fit of the model. The adjusted R² for this final model is 22.55% and the AIC is 40516.6. Other alternative models estimated by removing and adding covariates to this model did not obtain a significantly lower AIC than this.

Table 8.2 The final adjusted multinomial model to explore the relationship between health care provision entitlement (5 categories) and the different SDH in the international immigrant population, CASEN 2006 (weighted size= 154 431) [Significant values in grey shade in the table]*

SDH	RRR	Lower 95%CI	Upper 95%CI
<i>FREE PUBLIC HEALTH CARE PROVISION</i>			
Zone	4.05	1.90	8.60
Sex	1.68	1.03	2.72
Belong to ethnic minority group	2.13	0.63	7.14
Education level:			
No education	18.24	3.23	102.78
Primary level	4.06	1.56	10.53
High school	3.47	1.36	8.85
Technical	4.11	1.55	10.88
University	1.00	(signif. trend)	
Household income per capita (continuous)	0.99	0.99	0.99
Argentina	2.88	1.47	5.65
Peru	2.39	1.03	5.53
Ecuador	0.35	0.05	2.47
<i>PUBLIC WITH CO-PAYMENT HEALTH CARE PROVISION</i>			
Zone	2.49	1.33	4.67
Sex	1.60	1.06	2.41
Belong to ethnic minority group	1.53	0.47	4.97
Education level:			
No education	4.57	1.24	16.89
Primary level	2.50	1.03	6.06
High school	3.04	1.33	6.97
Technical	2.90	1.23	6.86
University	1.00	(signif. trend)	
Household income per capita (continuous)	0.99	0.99	0.99
Argentina	2.55	1.38	4.75
Peru	2.80	1.38	5.90
Ecuador	0.65	0.20	2.07
<i>PRIVATE HEALTH CARE PROVISION</i>			
Zone	0.45	0.04	4.46
Sex	2.62	0.62	11.03
Belong to ethnic minority group	0.15	0.16	0.78
Education level:			
No education	0.52	0.08	0.93
Primary level	6.93	0.45	10.52
High school	1.51	0.12	18.16
Technical	3.26	0.30	35.09
University	1.00	(not signif. trend)	
Household income per capita (continuous)	0.99	0.99	0.99
Argentina	0.04	0.006	0.29
Peru	0.58	0.17	0.98
Ecuador	0.17	0.03	0.77
<i>OTHER NOT STATED HEALTH CARE PROVISION</i>			
Zone	3.06	1.38	6.78
Sex	0.94	0.59	1.50
Belong to ethnic minority group	2.85	0.95	4.50
Education level:			
No education	2.21	0.54	9.04
Primary level	2.09	1.007	4.36
High school	1.57	0.79	3.12
Technical	1.58	0.71	3.51
University	1.00	(not signif. trend)	
Household income per capita (continuous)	0.99	0.99	0.99
Argentina	0.95	0.48	1.89
Peru	1.50	0.65	3.48
Ecuador	0.20	0.06	0.68

*No health care=baseline category

*Pearson's Chi square GOF test (Jann, 2008) p<0.001, F-value 4559.0

Table 8.3 The final adjusted multinomial model to explore the relationship between health care provision entitlement (5 categories) and the different SDH in the Chilean-born population, CASEN 2006 (weighted size= 15 882 767) [Significant values in grey shade in the table]*

SDH	RRR	Lower 95%CI	Upper 95%CI
<i>FREE PUBLIC HEALTH CARE PROVISION</i>			
Age	0.87	0.83	0.91
Age2	1.001	1.0009	1.002
Sex (female=1)	1.12	1.03	1.24
Zone	2.13	1.73	2.61
Number household members	0.98	0.93	1.04
Belong to ethnic minority group	20.4	1.34	3.10
Education level:			
No education	113.91	19.37	170.47
Primary level	50.36	32.56	77.92
High school	8.90	6.51	12.15
Technical	3.23	2.35	4.43
University	1.00	(signif. trend)	
Household income per capita (continuous)	0.99	0.99	0.99
Has a contract	0.31	0.25	0.39
Type of contract (part time=1)	2.23	1.83	2.74
CMI	0.95	0.91	0.99
Access to Pap smear	0.89	0.74	1.06
Interaction sex*household income	0.65	0.62	0.69
<i>PUBLIC WITH CO-PAYMENT HEALTH CARE PROVISION</i>			
Age	0.90	0.86	0.93
Age2	1.001	1.0007	1.002
Sex (female=1)	1.10	1.001	1.19
Zone	1.65	1.38	1.97
Number household members	1.001	0.96	1.04
Belong to ethnic minority group	1.57	1.06	2.30
Education level:			
No education	34.66	6.10	96.12
Primary level	15.24	10.78	21.52
High school	4.92	4.08	5.95
Technical	2.40	2.03	2.84
University	1.00	(signif. trend)	
Household income per capita (continuous)	0.99	0.99	0.99
Has a contract	1.60	1.31	1.95
Type of contract (part time=1)	1.33	1.12	1.58
CMI	0.93	0.75	0.96
Access to Pap smear	0.86	0.75	1.003
Interaction sex*household income	0.78	0.74	0.82
<i>PRIVATE HEALTH CARE PROVISION</i>			
Age	0.93	0.83	1.02
Age2	1.001	0.99	1.002
Sex (female=1)	1.01	0.95	1.12
Zone	0.24	0.10	0.56
Number household members	1.10	0.99	1.22
Belong to ethnic minority group	1.24	0.36	4.30
Education level:			
No education	10.49	0.70	15.62
Primary level	2.34	0.67	8.09
High school	3.20	1.83	5.60
Technical	2.23	1.23	4.05
University	1.00	(signif. trend)	
Household income per capita (continuous)	0.99	0.99	0.99
Has a contract	0.30	0.18	0.48
Type of contract (part time=1)	1.70	1.05	2.74
CMI	0.98	0.68	1.65
Access to Pap smear	1.06	0.68	1.65
Interaction sex*household income	1.01	0.88	1.16
<i>OTHER NOT STATED HEALTH CARE PROVISION</i>			
Age	0.90	0.83	0.98

Age2	1.001	0.99	1.002
Sex (female=1)	1.07	1.001	1.17
Zone	1.84	1.35	2.51
Number household members	1.004	0.92	1.09
Belong to ethnic minority group	1.56	0.88	2.76
Education level:			
No education	4.26	0.45	39.90
Primary level	8.28	4.73	14.50
High school	2.91	1.86	4.54
Technical	1.44	0.94	2.21
University	1.00	(not signif. trend)	
Household income per capita (continuous)	0.99	0.99	0.99
Has a contract	0.17	0.12	0.25
Type of contract (part time=1)	2.05	1.44	2.93
CMI	0.94	0.88	1.01
Access to Pap smear	0.45	0.3	0.62
Interaction sex*household income	0.79	0.73	0.85

*No health care=baseline category

*Pearson's Chi square GOF test (Jann, 2008) $p < 0.001$, F-value 40672.0

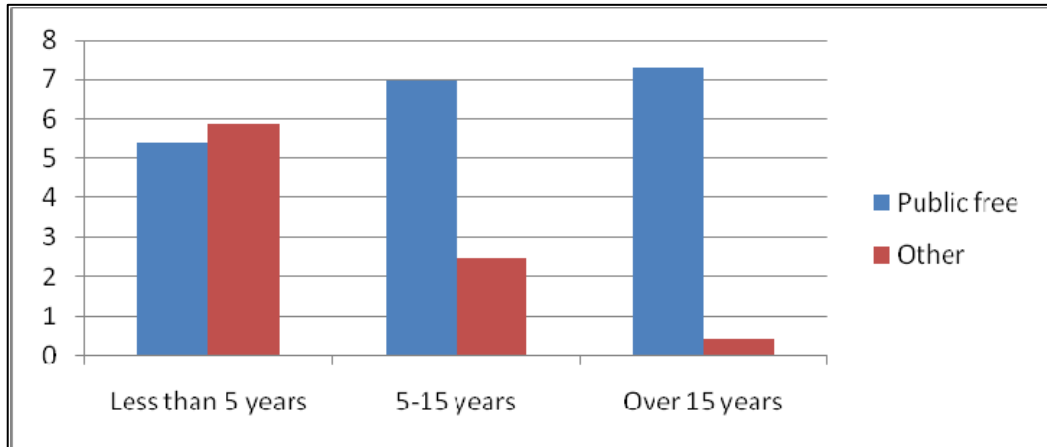
8.5 EXPLORING ACCESS TO HEALTH CARE AMONG IMMIGRANTS WITH HEALTH NEEDS: STUDY RESULTS

Two case studies were included to assess how the need for health care might modify access to the Chilean health system among international immigrants: immigrants with a chronic condition (disability) and immigrants with a recent health event (any health problem or accident, AHPA). They were selected in an attempt to describe the potential variability in access to health care in Chile, depending on distinctive health care needs. Importantly, the decision of including any disability in this analysis does not imply that disabled people always have poor health (e.g. a person in a wheelchair might perceive his/her health to be as good as a person without that condition). The decision of including the condition is particularly relevant in the context of the Chilean health care system, since disabled people in the country have the opportunity to attend different free of charge health care services available in the public system or to pay for them in the private sector.

8.5.1 Access to health care in Chile by immigrants with recent health events: any health problem or accident (AHPA) in the past month

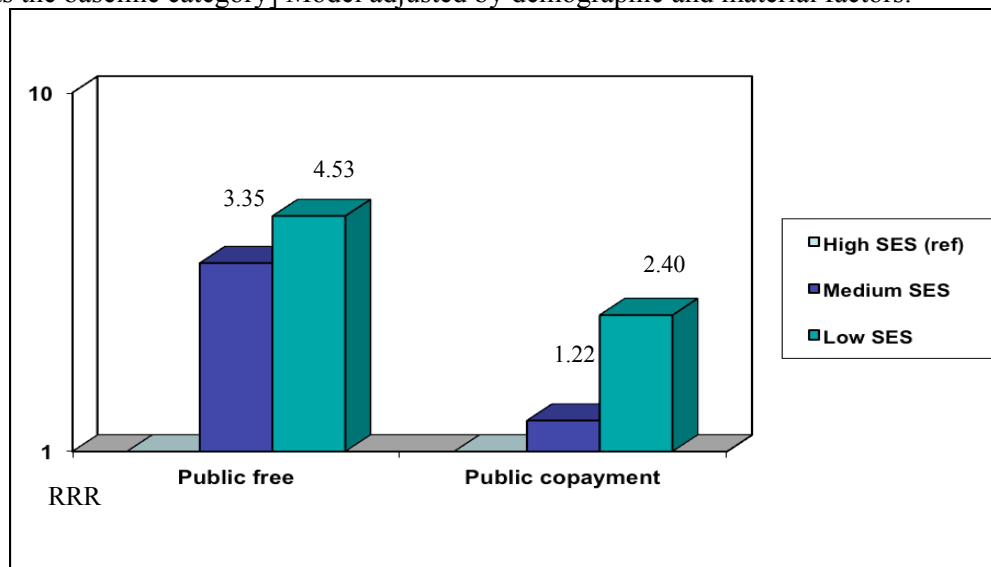
Around 10% of the immigrant population report having AHPA in the past month. Within this group, 78.66% of them report seeking care in the Chilean health care system for this reason and this is not different from the Chilean-born population. Immigrants with AHPA have a 1.8 times higher rate of no health provision (24.40% versus 13.61%), whereas the Chilean-born have a 1.6 times higher rate of public free of charge provision (31.79% versus 19.64%). No significant difference is found by sex, but Chilean-born with AHPA of all age groups most frequently report public free of charge provision, while the most frequent among immigrants is public with co-payment and no health provision (in the elderly). When stratifying by country of origin, immigrants with AHPA show no differences and all report public with co-payment type as the most frequently accessed. By years living in the country, there was a clear positive gradient in public free of charge and a clear inverse gradient in public with other not stated provision types (see Figure 8.14). When fitting the full adjusted model of the immigrant population that report having AHPA in the past month, only the CMI is significantly associated with access to *public free of charge* provision in the immigrant population (RRR 0.66), and immigrants with AHPA in the past month seem to be more likely to have access to this provision than those without health care insurance, but this is not significant (RRR 1.32) (weighted multinomial regression model, no health care provision as the baseline category).

Figure 8.14 Health care provision entitlement among immigrants with any health problem or accident in the last month, stratified by years living in the country, CASEN 2006 (weighted sample size= 154 431)



In contrast, only household income is significantly associated to *public with copayment* provision among immigrants with AHPA in the past month. There are not enough observations to fit a multinomial model explaining access to the *private health provision* among immigrants with AHPA in the past month, but the Chilean-born show a significant association with region, being employed, the CMI and the HAI. When adding the socioeconomic clusters as dummy variables in the full models (High-SES reference), immigrants in the Low and Medium SES groups were more likely to have access to public free of charge and public with co-payment types compared to the baseline category, with a somewhat clear inverse gradient, despite not reaching statistical significance (Figure 8.15).

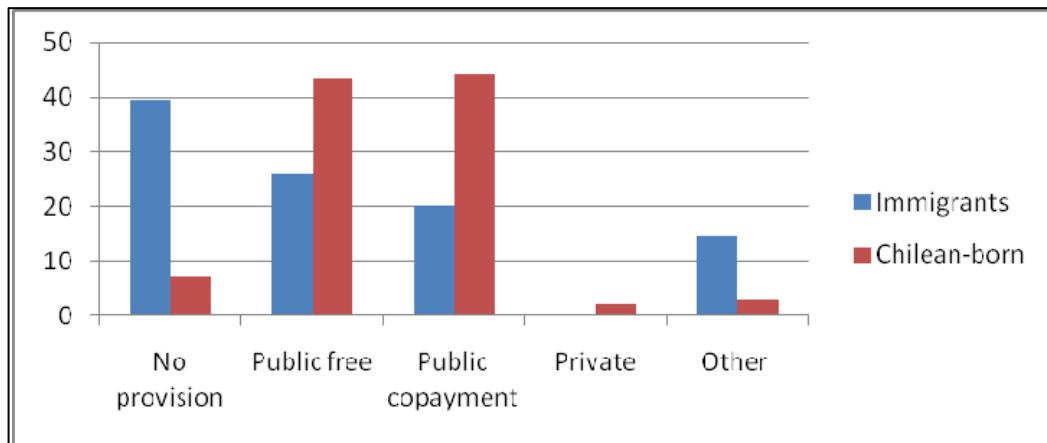
Figure 8.15 Relative Risk Ratio (RRR) of having access to the public free and with co-payment health care provisions in Chile by SES clusters among immigrants, CASEN 2006 (weighted sample size= 154 431) [weighted multinomial regression, no health care provision as the baseline category] Model adjusted by demographic and material factors.



8.5.2 Access to health care in Chile by immigrants with a chronic condition: any disability

Three percent of the immigrant population report having a disability. Most of them report having no health care provision (39.45%) and is followed by public free of charge provision (25.89%). There is a negative gradient of type of provision upon their costs among disabled immigrants, excluding private provision that was not reported at all (see Figure 8.16). Most of the uninsured disabled immigrants are men (27.43% versus 12.03% women). In addition, disabled immigrant men report a 7 times higher rate of no health care provision than equivalent disabled Chilean-born men (27.43% versus 3.77%).

Figure 8.16 Types of health care provision entitlement among disabled populations, CASEN survey 2006, (weighted sample size= 16 130 743)



Disabled > 65 years old immigrants most frequently report no health care provision, while disabled Chilean-born of the same age group most frequently report public free of charge provision. For both disabled immigrants and Chilean-born, those living in rural areas mostly report public free of charge provision, however, disabled immigrants living in cities have a 6 times higher rate of no health care provision than disabled Chilean-born living in urban areas (38.69% versus 6.99%). No clear gradient is found by educational level or household income quintiles, except for the public free of charge type. For this provision type, there is a clear negative gradient by income quintiles in both populations under study (see Figure 8.17). Unemployed disabled immigrants report public free of charge provision as the most frequent and this does not differ from the unemployed disabled Chilean-born. When stratifying by socioeconomic cluster, there is a positive gradient for no provision and a negative gradient for public free of charge (blue and red bars in Figure 8.18). Finally, there is no clear pattern of health provision by country of origin or years living in the country among the disabled immigrant population living in Chile.

Figure 8.17 Proportion of disabled immigrants with access to public free of charge provision type by household income quintiles, CASEN 2006 (weighted sample size= 154 431) [Quintile 1 the poorest and Quintile 5 the wealthiest]

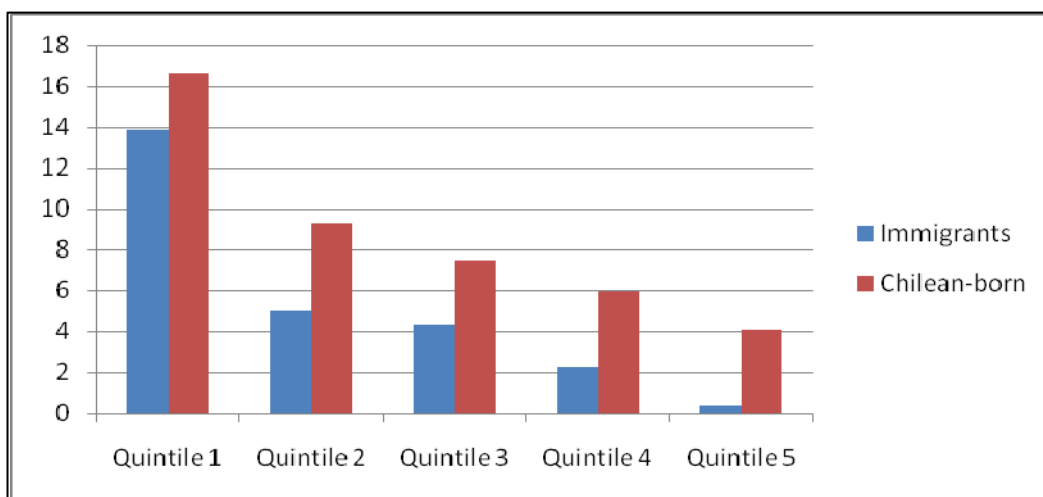
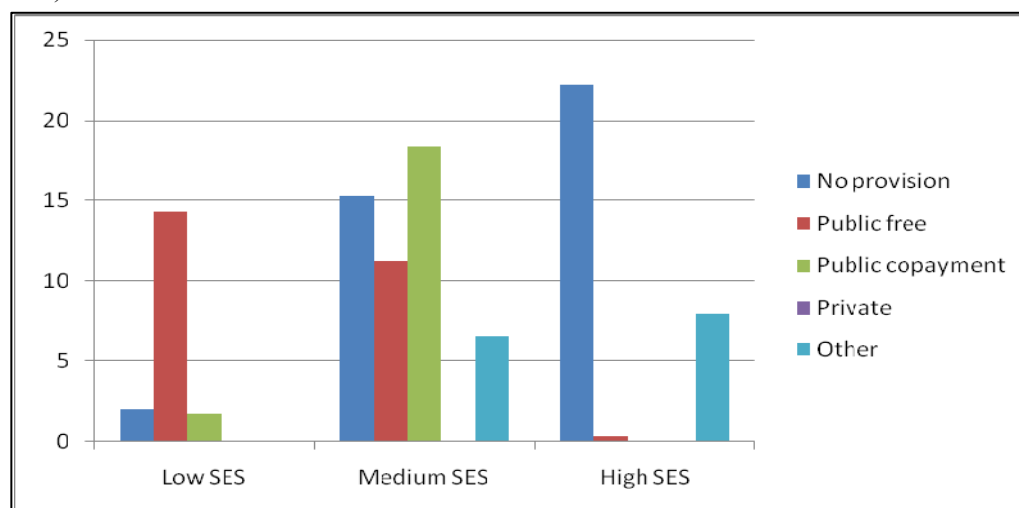


Figure 8.18 Proportion of disabled immigrants with access to different types of health care provision in Chile by socioeconomic cluster, CASEN 2006, (weighted sample size= 154 431)



Compared to those uninsured, access to *public free of charge* provision among disabled immigrants is mostly related to educational level and household income quintiles.

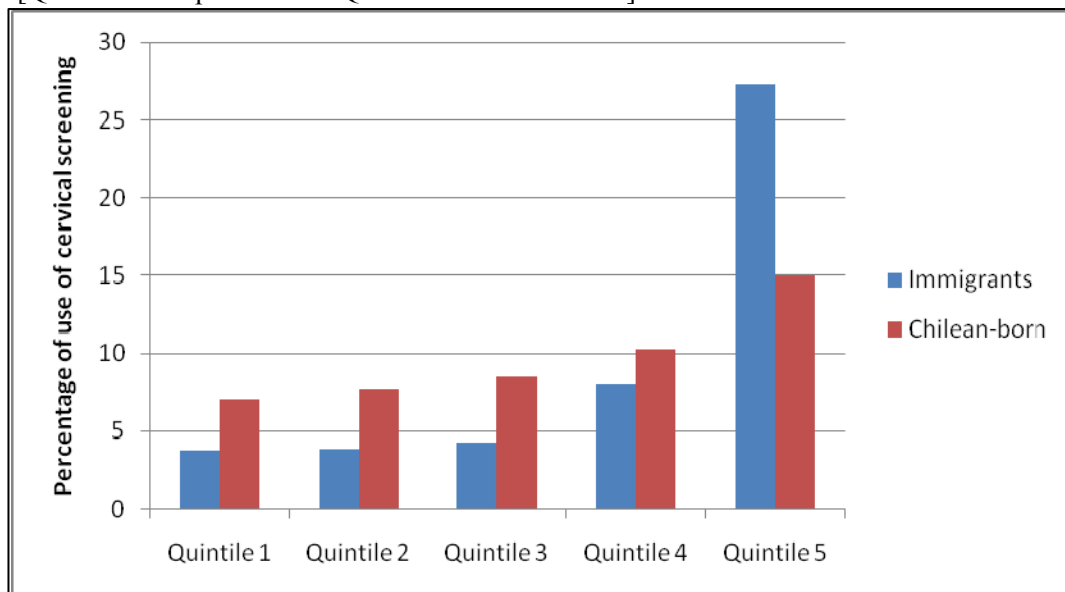
Interestingly, being disabled is not a predictor of having access to this provision type in the immigrant population (RRR 3.08) (weighted multinomial regression, no health care provision as the baseline category). Among disabled immigrants, access to *public with copayment provision* has a significant association with educational level. Immigrants with disabilities are less likely to be entitled to this provision than those uninsured (RRR 0.39).

8.6 USE OF HEALTH CARE PROGRAMMES IN CHILE: STUDY RESULTS

8.6.1 Use of the cervical screening programme by immigrants

The Chilean health care system provides universal coverage to the Pap smear test every 3 years to all women in the country, irrespective of their legal status. The CASEN survey includes a question on whether eligible women (>25 years old or sexually active) have taken a Pap smear in the past 3 years (yes/no, dichotomous variable). Among immigrant women that have stayed for 3 years or longer in Chile, there is a 52.34% rate of use of the cervical screening programme and this is not significantly different from the Chilean-born population (48.51%). When stratifying by age group, no significant differences appear in the use of Pap smear programmes between immigrant and Chilean-born women. However, immigrant women living in rural areas have a lower use of the Pap smear than Chilean-born women living in rural areas (2.73% versus 5.98%). Immigrant women with university level education have a 3 fold higher use of the Pap smear programme than the equivalent Chilean-born group (17.55% versus 5.74%). Additionally, there is a clear positive gradient of the use of this programme by income quintiles in both immigrant and the Chilean-born women, but it is steeper among the immigrant population (Figure 8.19).

Figure 8.19 Use of cervical screening programme by income quintiles, a comparison between the immigrant and the Chilean-born population (weighted sample size= 16 130 743) [Quintile 1 the poorest and Quintile 5 the wealthiest]



Further analysis was conducted to explore the social determinants associated with access to the Pap smear programme in the Chilean-born and the international immigrant population (Table-A8.7, Appendix-8). Partially adjusted regression models show that the quality of housing index is significantly associated with access to Pap smear in the last 3 years in the IIP (inverse gradient, trend p-value<0.0001).

A final model was fitted to explore social determinants of the use of the cervical screening programme among international immigrants and the Chilean-born population. As can be observed in Figure 8.20, only marital status and educational level remain significantly associated with use of the cervical screening programme among immigrant women. Immigrants in the Low and Medium socioeconomic clusters show a lower chance of using the cervical screening programme than those in the High SES, but these differences are not significant in the fully adjusted model (OR 0.33 and 0.58, respectively).

Figure 8.20 Final adjusted models for access to cervical screening programme, a comparison between the international immigrants and the Chilean-born, CASEN survey 2006. [Line: OR=1.0]

Social determinants among international immigrants (F 7.42, Prob>F 0.0001) OR (95%CI)		Social determinants in the Chilean-born population (F 509.25, Prob >F 0.0001) OR (95%CI)	
Married	4.04 (2.39, 6.82)	Age	0.99 (0.99, 1.00)
Divorced	2.38 (1.05, 5.39)	Married	4.97 (4.67, 5.30)
Widow	0.64 (0.14, 2.79)	Divorced	3.33 (3.01, 3.69)
No education (university=ref.)	0.53 (0.11, 2.54)	Widow	1.28 (1.14, 1.44)
Primary school	0.30 (0.15, 0.61)	Income quintile 1 poorest (quintile 5 richest=ref.)	0.77 (0.72, 0.83)
High school	0.37 (0.21, 0.65)	Income quintile 2	0.94 (0.87, 1.02)
Technical level	0.89 (0.43, 1.83)	Income quintile 3	0.93 (0.86, 1.00)
		Income quintile 4	0.87 (0.80, 0.93)
		HAI	1.09 (1.07, 1.11)
		Age2	0.90 (0.85, 0.95)
Pseudo R2=0.0908, F-adjusted mean residual test=32.98, GOF p-value<0.001*		Pseudo R2= 0.1531, F-adjusted mean residual test=157.53, GOF p-value<0.001*	

*A p-value >0.05 suggests good fit of the model.

8.6.2 Use of other preventive health care programmes by immigrants

In addition to an assessment of the use of the Pap smear programme in Chile, a separate question was asked in the CASEN survey concerning other preventive health care programmes available in the primary health care level in the country. These programmes are free of charge in the public system but can only be accessed if legal documents are updated and are not universal irrespective of legal status, as with the Pap smear testing. These other preventive health care measures include antenatal, well-baby (health monitoring from newborns to 2 years old), adult and elderly care, chronic care and gynaecological care. On average, immigrants report a higher use of antenatal and adult/elderly preventive health care programmes than the Chilean-born population. However, when stratifying by socioeconomic clusters, immigrants in the Low-SES cluster report the lowest rate of antenatal care (0.51%), preventive adult and elderly care (13.88%) and any other preventive care attention (8.57%). Immigrants living in the second Medium SES cluster show the lowest rate of well-baby care (12.59%). Among those living in the High SES cluster, 100% of their children under 2 years old received well-baby care. Each of the 4 main types of preventive care programmes are analysed in relation to different SDH. Key results are presented in Figure 8.21.

Figure 8.21 Key findings on the relationship between some preventive health programmes and their different SDH by immigrants in Chile, CASEN 2006 (Final model in Figure A8.1, Appendix-8) (multiple weighted logistic regression models for each type)

1. **Well-baby care:**
 - a. Age is negatively associated with access to this type of preventive care in the two populations under study (OR 0.51 and 0.04, $p < 0.001$).
 - b. In addition, international immigrants show a higher chance of using this programme (OR 3.62, $p < 0.001$), even after adjusting for age and other socio-demographic variables.
 - c. People coming from Argentina are also more likely to have access to this service than those coming from any other country (OR 9.63, $p < 0.05$).
2. **Antenatal care:**
 - a. Age is negatively associated with the use of this programme in the two populations under study (OR 0.87 and 0.71, $p < 0.001$).
 - b. The Northern area and people with higher educational level and income show a higher chance of using this programme in the immigrant population ($p < 0.001$) and this is not found in the Chilean-born.
 - c. Being an international immigrant and coming from Bolivia is positively associated with access to antenatal care (OR 2.46 and 12.10 respectively, $p < 0.05$).
3. **Chronic care** preventive programme in the IIP:
 - a. After controlling for socio-demographic and socioeconomic factors, age, being married and divorced compared to single, having no education and primary level education show a positive association with access to this preventive care programme ($p < 0.001$).
4. **Gynaecologic preventive** care in the IIP:

Age has a negative association (OR 0.96, $p < 0.05$) and coming from both Peru and Argentina show a positive association (OR 36.32 and 14.47, $p < 0.05$).

When including SES clusters in the models, significant findings emerge. For *antenatal care*, there was a clear positive gradient of use of this service by SES cluster and use was significantly lower among those living in the Low SES (Low SES OR 0.10, Medium SES 0.30). There was a non significant inverse gradient in the chance of using *chronic care* programmes by cluster groups among immigrants (Low SES OR 3.25, Medium SES OR 1.42). Additionally, there was no clear gradient in the chance of using *gynaecological care, adult/elderly care and well baby care* in the immigrant population by socioeconomic cluster.

8.6.3 Mental, dental and specialist health care received in the past 3 months

An additional question was asked in the CASEN survey regarding any mental, dental and specialty health care received in the past 3 months (binary variables). There is no significant difference in the use of these services between immigrants and the Chilean-born. There is a clear positive gradient of use of any dental or specialist health care by socioeconomic group (Figure 8.22). None of these clusters is significantly different from the Chilean-born rates of any mental, dental or specialist health attention received, due to the wide confidence intervals in the immigrant population. Figure 8.23 summarises the key findings of the association between mental, dental and specialty care and the SDH. Final adjusted models of these variables appear in Figures-A8.1, A8.2 and A8.3 in Appendix-8 (forest plot graphs)

Figure 8.22 Proportion of immigrants using any mental, dental or specialist attention in the past three months, a comparison by socioeconomic clusters (weighted sample size= 154 431)

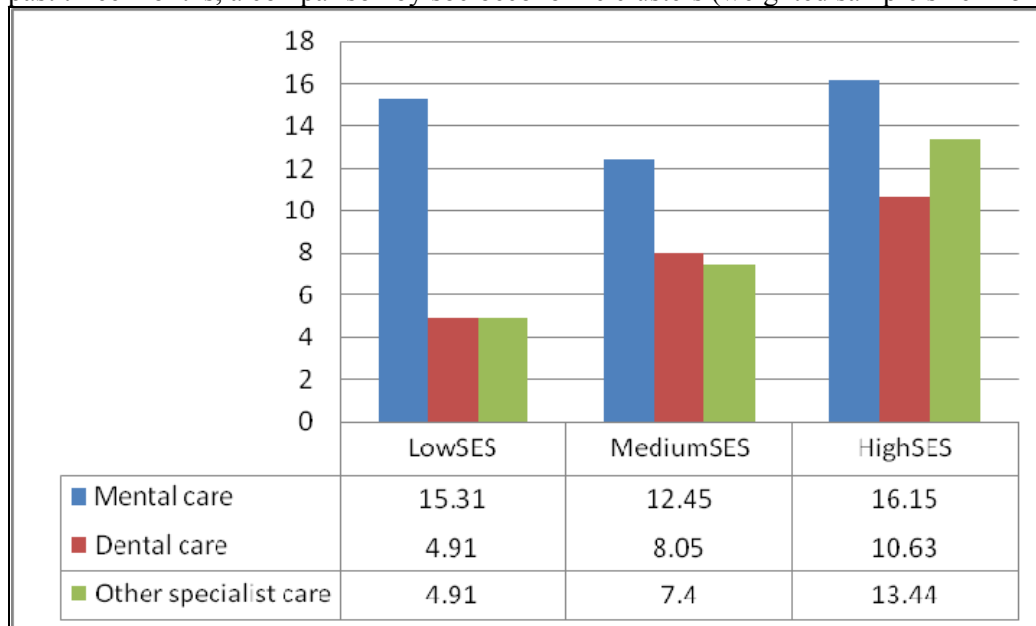


Figure 8.23 Key findings on the relationship between mental, dental and specialist attentions received and their different SDH by immigrants in Chile, CASEN 2006 (weighted logistic regressions)

1. ***Mental health care*** received in the past 3 months:
Living alone, being inactive or unemployed, having access to any health provision but private, and living in the country for more than a year are significantly associated with higher use.
2. ***Dental health care*** received in the past 3 months:
 - a. International immigrants living alone show a lower chance of using this care.
 - b. Inactive and unemployed people, with any but private health provision or using the Pap smear programme, or with a higher household asset index or combined material index score are more likely to have received dental care.
3. ***Specialist health care*** received in the past 3 months:
 - a. Divorced, unemployed and immigrants living alone have higher rates and those coming from Peru and Bolivia are less likely to use it (OR 0.61 and 0.22).
4. When including the socioeconomic clusters as co-variates in the final adjusted models in the international immigrant population (High-SES as reference) both Low and Medium show a lower chance of using any dental and specialist health care attention. In contrast, Low SES shows a higher chance of using any mental health care than those in the High SES. However, none of these associations is significant ($p>0.05$).

8.7 DISCUSSION

8.7.1 Summary of key findings from this chapter

A summary of the key findings from this chapter is presented in Figures 8.24-8.26.

Figure 8.24 Summary of the key findings from this chapter related to health care provision entitlement

1. Most of the immigrant population in this study report public with some co-payment provision type followed by no provision and other non-stated types. The two least reported types are private and public free of charge.
2. Factors affecting access to different types of health care provision among immigrants are a combination of demographic (sex, living in rural settings, number of household members), socioeconomic (SES cluster) and material SDH (CMI, sanitary index, overcrowding). Socioeconomic factors appear to be particularly relevant in the relative risk of accessing different health care provision types.

Figure 8.25 Summary of the key findings from this chapter related to the use of the Pap smear programme

1. Immigrant women living in rural areas show a lower use of Pap smear than Chilean-born women living in rural areas.
2. No difference is found by employment status, but immigrant women with university level showed 3-fold higher use of the Pap smear programme than their equivalent among the Chilean born.
3. Additionally, there was a clear positive gradient of use of this programme by income quintiles in both immigrant and Chilean-born women, but it was steeper among the immigrant population.
4. Finally, when observing access to Pap smear by socioeconomic cluster, there was no significant difference between them.

Figure 8.26 Summary of the key findings from this chapter related to the use of preventive health programmes

1. Interesting findings emerged when stratifying by socioeconomic clusters. Immigrants in the first Low SES cluster report the lowest rate of antenatal care, preventive adult and elderly care and any other preventive care attention.
2. When stratifying the immigrant population by socioeconomic cluster, there was a clear but not significant positive gradient of use of any dental or specialist health care by socioeconomic group.

8.7.2 Methodological discussion

8.7.2.a) *How to measure need of health care?*

As mentioned previously, the concept of need is problematic (Morris, Sutton and Gravelle, 2005; Culyer, 1995; Mooney et al., 1991). Not all differences in rates of service use constitute inequities, making adjustment for “legitimate” sources of difference, such as need, necessary (Alegria et al., 2002; Padget, 1994). The concept of horizontal equity appears when individuals with the same need consume the same amount of health care. If use varies with non-need variables like income or education there is horizontal inequity. There is vertical equity when individuals with different levels of need consume appropriately different amounts of health care (Morris, Sutton and Gravelle, 2005). International studies tend to show that higher income and education are associated with a greater likelihood of specialist physician service use, but not always with the use of primary physicians, and people with lower income may be making more use of hospital services but not necessarily surgical services (Dunlop, Coyte and McIsaac, 2000; Manga, Broyles and Angus, 1987; Roos and Mustard, 1997; Veugelers and Yip, 2003; McIsaac, Goel and Naylor, 1997; Roos et al., 2004).

One recent and technically advanced study investigating equity in 21 developed countries found that after standardizing for need differences, higher-income groups had increased probability of both general practitioner (GP) and specialist visits (pro-rich distribution of health care use), with the reverse seen in inpatient care (pro-poor distribution) (Allin, 2008). The method used in this study to explore access to health care among immigrants was to add morbidity as a co-variate in the final adjusted models and then to conduct conditional models for those with poor health status. This has been included in several studies in the past and a consistent association with increased physician utilisation, for both primary and specialist, has been found (Allin, 2008; Alegria et al., 2002; Morris, Sutton and Gravelle, 2005; van Doorslaer and Masseria, 2004).

Findings from this study indicate the relevance of exploring and combining in the analysis different domains of health care: access to health care provision in the total populations and among those in potential need (the disabled and those with any health problems or accidents) and the use of a large number of health care programmes. Each domain has a particular relationship with socioeconomic status and migration status and provides a broader explanation of this matter in Chile, among both the Chilean-born and the immigrant population. The consideration of a “need” approach was thought to be relevant and a useful

method for demonstrating further inequalities and inequities existing between the international immigrant population living in Chile and the Chilean-born.

8.7.2.b) A discussion on the fitted models obtained in this chapter

Results from this study showed a great variation in the goodness of fit (GOF) of the estimated models. The adjusted R-squared roughly ranged between 10% and 25%. Due to the complexity involved in the construction of these estimates, the amount of variance explained by the models is only an approximation. Nonetheless, the low levels of explanatory power identified in this study are consistent with those reported in the literature (Dunlop, Coyte and McIsaac, 2000; Arling, 1985; Birch and Abelson, 1993; Birch, Eyles and Newbold 1993b). In addition, in this study, the Chilean-born sample size was sufficient to have statistical significance (95% confidence level and 80% power) for rate ratios approaching 1.1 (Demidenko, 2007). However, analyses of the immigrant population and its socioeconomic clusters involved subgroups of the overall sample with more limited power. For that reason, those analyses for multiple comparisons were not adjusted but are reported here as an aid to hypothesis generation. This approach has also been used in the past in studies analysing access and use of health care among specific groups (Glazier et al., 2009).

8.7.3 Discussion and interpretation of key results among immigrants in the Chilean context

8.7.3.a) Demographic determinants of access to and use of health care

With regard to **age**, it is consistently associated with health care use among many different populations worldwide. Patterns, however, vary between groups as a reflection of broad policies and local interventions. Morris, Sutton and Gravelle,(2005) and Williams, Culyer and Maynard (1997) for example, have suggested that entitlement to health care should decline with age since capacity to benefit declines and older individuals have achieved more of their “fair innings” of life expectancy. Others might argue that if morbidity measures capture all the potential for an individual to benefit from health care then age ought to have no effect, or that providing more care to older individuals, even if it is less effective, can be seen as a sign of social solidarity or as a means of compensating the elderly for other disadvantages (such as lower incomes) (Morris, Sutton and Gravelle, 2005; Williams, Culyer & Maynard, 1997). Above and beyond this debate, findings from this study support the idea that in Chile, the immigrant population showed different patterns of access to and use of health care by age groups.

Gender was significantly associated with provision type in both the immigrant and the Chilean-born populations. In addition, distinctive patterns have been found by gender for the use of any mental, any dental and any specialist services. Previous international studies have reported that women are more likely than men to make at least one visit and to make frequent visits to both GPs and specialists (Dunlop, Coyte and McIsaac, 2000). According to Morris, Sutton and Gravelle (2005), however, holding all other variables constant, women have lower propensities to use inpatient health care, though the effect is smaller and insignificant for outpatient visits. Other studies indicate that utilization of health services among immigrant men remained significantly associated with length of stay, legal status, and country of origin. Among immigrant women, use of health services has been significantly associated with length of stay and country of origin (Dias et al., 2008). Besides, indicators of health care need considered in previous studies have also included interactions between age and sex (Allin, 2008) and this could be further explored in Chile in the future.

Concerning **zone, region and province** of residence and health care use, striking findings have emerged from studies conducted in the past. According to Allin (2008), some variation in inequity in Canada has been found across provinces and national trends showing pro-rich inequity in the probability of a GP, specialist or dentist visit, but no significant evidence of inequity in inpatient care. In addition, there has been a tendency for residents of urban communities to make more visits to physicians than rural residents (Allin, 2008; Dunlop, Coyte and McIsaac, 2000; Fylkesnes, 1993). This also has been shown by other studies (Broyles et al., 1983). In most instances, rural respondents have been more likely to experience barriers to obtaining primary and secondary care than their counterparts, as those in urban areas might have less travel time, greater ability to reach services and a greater physician/patient ratio (Dunlop, Coyte and McIsaac, 2000; Fylkesnes, 1993). In addition, people in urban areas tend to encounter shorter waiting lists and individuals are less likely to visit their GP if they live in areas with greater access deprivation (Morris, Sutton and Gravelle, 2005). In this study, provision entitlement was associated with living in rural areas, particularly for the public free of charge and other not stated provision types (partially adjusted weighted multinomial regressions).

8.7.3.b) Socioeconomic determinants of access and use of health care

Income and education are the two main domains of socioeconomic status that have been largely reported in previous international studies on access to and use of health care. Employment status and type of occupation are, in contrast, less frequently discussed. It appears that **income** is not the only cause of inequitable patterns of health care use by income groups, but that other socioeconomic factors are also contributing to inequity.

Individuals with lower income are still making more use of services than those with higher incomes (Allin, 2008).

Concerning *education*, it has been positively associated with physician utilisation (Dunlop, Coyte and McIsaac, 2000). McIsaac, Goel and Naylor (1997) for example, found a positive association between educational attainment and use of health care at the secondary care level, but a negative association between education and physician use in primary care. Findings from Dias et al. (2008) on the other hand, showed that more than 10 years of schooling or being born in Eastern European or South American countries were significantly associated with a lower probability of using health services in Portugal, both for males and females. Explanations of the association between education and use of health care may include better health knowledge and health attitudes, leading to greater demand for care and better ability to navigate the health system. Those with higher educational attainment may also have more social contact with physicians, both in university and afterwards, than those with lower educational attainment (Glazier et al., 2009). Educational attainment as a primary exposure is relevant, but by itself it does not capture the complexity of social position, so other dimensions should be included in the analysis. It should be noted, however, that educational level is relatively stable during the adult life course and had a high response rate in the CASEN survey.

Other measurements of SES were included in this study. *Employment status* did not remain a significant determinant of access to and use of health care in the fully adjusted models of the two populations under study. Nonetheless, contractual status, the HAI and the CMI were significantly associated with the different dependent variables included in the analysis. These domains have been less frequently included in studies in the field, especially among developed countries, but might require additional exploration in developing countries like Chile.

8.7.3.c) Migration status as a determinant of access and use of health care

Among different variables included in international research in this topic, country of origin, legal status (and contractual status) and length of time in the foreign country remained most consistently associated with health care use in the international immigrant population. Dias et al. (2008) found that after adjusting for all variables, utilization of health services remained significantly associated with length of stay, legal status, and country of origin among immigrants in Portugal. Analysis by country of origin showed that immigrants from Eastern European countries reported being more dissatisfied or very dissatisfied with the health care system than individuals from Africa and South America (Dias et al., 2008).

Patterns of health services utilization in the host country can be influenced by immigrants' country of origin because health beliefs, previous experience of illness and health care might vary according different origins. In this study, *country of origin and years living in the country* were relevant variables associated with access to and use of health care services in Chile.

8.7.4 Comparing access to health care between immigrants and the Chilean-born

Findings from this chapter provide some understanding of the complexity of the Chilean health care system and how access to health care provision entitlement might be affected by different SDH. In the Chilean-born population, there was a wide range of SDH affecting the chance of accessing different types of health care provision in the country. In addition, some relevant interactions were found in both the immigrant and the Chilean-born populations. These complex interactions allowed us to observe the heterogeneity within the populations under study with regard to their social determinants of access to and use of health care in Chile. They included individual and household conditions, with clear gradients by quality of the housing, income and educational level (summary in Figure 8.27).

Figure 8.27 Key findings from this chapter in relation to access to health care between immigrants and the Chilean-born

1. Immigrants have a significantly higher proportion of people with no and other provision type and a significantly lower proportion of both types of public health provision than the Chilean-born.
2. Over half of the total immigrant population and almost 80% of the Chilean-born population are entitled to public health care provision (combining free and copayment types). This is significantly higher than has been reported in the previous CASEN survey (2003).
3. Among immigrants, access to free public provision is associated with living in rural settings, being female, belonging to an ethnic group, a lower SES cluster, and coming from Argentina and Peru. Similar findings are observed for access to public with co-payment but with smaller magnitudes. Access to the private health care system is affected by ethnicity and country of origin (both with a negative association) and access to other not stated provision is significantly associated with living in rural settings, education level and country of origin (Ecuadorian immigrants in particular).
4. An unexpectedly low rate of private provision was found among the Chilean-born (2.70%), which does not match with previous CASEN surveys (16%, but without the use of weights).
5. With regards to the use of the Pap smear programme, immigrant women show no significant difference to the Chilean-born population. The final fitted model shows that marital status and educational level remain significantly associated to access to cervical screening in immigrant women. In contrast, age, marital status, household income and household asset index are significantly associated to Pap smear use in Chilean-born women.
6. There was no significant difference in the use of any mental, dental or specialist services between immigrants and Chilean-born.

8.7.4.b) A key component of access to health care among immigrants: perceived barriers to health care use

According to Dias et al. (2008), understanding the issues related with migrants' health and their utilization of health services is challenging because of gaps in databases, the heterogeneity of immigrant populations, and uncertainty about how migration affects health. Although those who migrate are often healthier than residents, because of the various selection processes they experience (Llacer et al., 2007; Razum, Zeb and Rohrmann, 2000), migrants are usually exposed to several health risks. The vulnerability associated with moving to an unfamiliar environment makes access to prevention and health care services a major component of the health response of host societies (Politzer et al., 2001; Lenz, Bauer-Dubau and Jelinek, 2006; Kandula, Kersey and Lurie, 2004). Access to and actual utilization of health services is the result of a complex web of determinants (Hargreaves et al., 2006).

At least seven broad types of barriers have been presented in the literature in the past and a growing body of literature indicates that immigrants face individual, socio-cultural, economic, administrative, and political barriers when using health services (Dias et al., 2008; Goddard and Smith, 2001; Scheppers et al., 2006; Fennely, 2004). First, financial barriers to health care utilisation have been reported (Dunlop, Coyte and McIsaac, 2000; Shah, 1994). Second, studies have shown that patient preferences and expectations play an important role in accounting for the variation in the use of specialist services between those in high and low SES (Dunlop, Coyte and McIsaac, 2000; Langley et al., 1992). In this sense, those less educated or poor may be less able to express their need for care (Stewart, 1990).

Third, behaviours like smoking, alcohol consumption and lack of physical activity are well-known risk factors for many diseases as well as for pain in general. However, the relationship between behaviours and the use of health care is not as straightforward as it might seem (Adamson, Hunt and Ebrahim, 2003a; Adamson et al., 2003b; Dunlop, Coyte and McIsaac, 2000). Fourth, language barriers and other communication problems are significant as factors that contribute to exclusion and have been widely reported in the past among immigrants in their relation to access and use of health care (Carta et al., 2005a; Carta et al., 2005b). Fifth, lack of appropriate and timely access were identified in some studies as waiting times, providers' attitudes, cost, distance and transportation (Dias et al., 2008). Sixth, providers' attitudes have also been reported as perceived barriers (Dias et al., 2008; Grove & Zwi, 2006; Wolfers, Verghis and Marin, 2003) and might not match immigrants' views and expectations of health and care (Fenta, Hyman and Noh, 2002; Blais and Maiga, 1999; Eshiett and Parry, 2003). Seventh and finally, there could be geographical barriers, inability to secure a regular physician and difficulty in obtaining a referral to specialist care (Allin, 2008).

8.8.4.c) Further equity considerations: does universal care matter? What about undocumented immigrants?

The Chilean health care system does not provide full universal coverage irrespective of migration status. As stated by Allin (2008), some studies of equity reveal that the introduction of universal coverage better aligns the distribution of health services according to need (Mhatre and Deber, 1992), although inequity can persist (Aschcroft, 2009). For example, Glazier et al. (2009) found that universal health insurance appears to be successful in achieving income equity in physician visits. However, it does not eliminate education-related gradients in specialist care. Moreover, even in countries where access to health care is guaranteed, immigrants do not consistently take advantage of available services (Dias et al., 2008; Scheppers et al., 2006). Research in this area often uses access to health care as a proxy for utilization, although the two concepts may encompass different sets of conditions (Donabedian, 1972; Oliver and Mossialos, 2004). Equal access for equal need presumes that individuals are given equal opportunities to access services. Nonetheless, inequity in utilization may not solely reflect inappropriate or unfair differences in service use, as utilization is affected by personal characteristics, such as individual preferences, expectations and beliefs. Therefore, observed inequity in utilization may not necessarily be unfair. Examining equity in terms of health care use is consistent with interpretations by many experts in this matter (Birch and Abelson 1993a; Birch, Eyles and Newbold, 1993b).

A striking example of the complexity of equity considerations involving health utilisation is the case of undocumented immigrants. In that particular group, in spite of some efforts to improve their access to health care in Chile, in particular for pregnant women and children irrespective of their legal status, there are possibly still gaps between rights and accessibility. Undocumented immigrants might not access health care services due to administrative obstacles or fear of being reported to the police. As informed by the international literature, undocumented migrants are more likely to report lower utilization and to lack adequate information about the available health care facilities (Carta et al., 2005a; Carta et al., 2005b). There are migrants who fall outside the existing health and social services in Chile and this is particularly true for undocumented immigrants. Nonetheless, there is an obvious need to better understand how to ensure access to health care services and to deliver appropriate care to immigrants, and that special consideration must be given to recent and undocumented migrants (Dias et al., 2008). Analysis of access to and use of health care among people who preferred not to report their migration status in the CASEN survey and potential undocumented immigrants will be presented later in Chapter 11.

8.7.5 Other findings

This section discusses access to mental, dental and specialist care among immigrants. In the case of *mental health care*, it may be that mental health problems lead to stigmatisation of immigrants. The quality and availability of mental health provision for immigrants is very patchy in many countries and some have reported no support for immigrants (Carta et al., 2005a; Carta et al., 2005b). Some studies have indicated that Latinos experience great difficulties in obtaining adequate access to mental health services in countries across the world (Alegría et al., 2002; Woodward, Dwinnel and Arons, 1992; Ruiz 1993; Ginzburg, 1991) and are underrepresented in mental health care settings (Vega et al., 1999; Hough et al., 1987). Other studies have shown comparable levels of use of mental health services among Latinos and non-Latinos (Portes, Kyle and Eaton, 1992; Alegría et al., 1991).

Possible methodological explanations for these divergent results are differences in the measures used to assess psychiatric disorders and service use, response bias due to instrumentation (Guarnaccia, 1992), differences in geographic locations, and differences in measures of access to mental health services. The differences have also been attributed to the selection of covariates or to uncontrolled factors such as level of psychiatric morbidity, insurance coverage, and socioeconomic status (Alegría et al., 2002; Flazkerud and Hu, 1992; Solis et al., 1990). Moreover, substantial evidence indicates that social position plays a major role in psychiatric disorders and service use (Alegría et al., 2002; Holzer et al., 1986; Snowden, 1999). In this study the international immigrant population living alone were significantly more likely to use mental health care services. In contrast, the Chilean-born population showed a significant association between any mental health care attention received and age, sex, marital status, living in the rural area, living alone, having university level education, and a higher HAI score.

According to the findings from this study, *dental care* among the international immigrant population was significantly associated with higher income and the CMI, while among the Chilean-born there were additional significant associations with socio-demographics, income and education, and employment status. Dental care has been reported as a most significantly pro-rich type of specialist care worldwide, both for the total number of visits and the probability of at least one visit. However, notable variation has been observed between countries and regions within countries (Allin, 2008). This is not surprising given that this service is often left partially outside the public system and complementary insurance coverage is held almost exclusively by the wealthy and younger age groups (Allin, 2008; Bhatti, Rana and Grootendorst, 2007).

This study found that the number of household members and the CMI remained significantly associated with *specialist care*. It has been reported that the use of specialist care is greater for those with higher socioeconomic status, especially education. However, most studies that consider a broad range of demographic, socioeconomic and need characteristics do not distinguish between primary and specialist use (Dunlop, Coyte and McIsaac, 2000). Higher income and education levels have been associated with a greater likelihood of making at least one visit to a specialist during a one year period. In countries with combined public and private insurance, uninsured adults were significantly less likely than privately insured persons to use specialist care (Cockrell and Mayer, 2007; Franks and Clancy 1997). In contrast, other studies found that managed care enrollees receive more referrals from their primary care physician than other adults (Franks and Clancy, 1997; Ferris et al., 2001). Overall, for specialist visits, pro-rich inequity is consistently higher than is seen with GPs for both the probability of a visit and also the total number of visits (Allin, 2008). Additionally, the well-documented disparity in specialist care favouring higher-income and better-educated individuals (e.g. Allin, 2008, Dunlop, Coyte and McIsaac, 2000; van Doorslaer and Masseria, 2004) may be important in securing an initial appointment, but not in accessing further needed specialist care (Allin, 2008; Asada and Kephart, 2007).

8.7.6 Strengths, limitations and further research in this area

Perceived strengths of this study are that it uses individual-level rather than area level socioeconomic status, reports both education and income effects, includes self reported health care utilization, analyses both contact with the health care system and frequency of contacts in some cases, and adjusts for morbidity, all of which are important advances compared with previous work in Chile. Despite these strengths, there are relevant limitations (Figure 8.28). One in particular is the lack of further information on what “other not stated” health care provision means, especially as this category accounts for a large proportion of cases. These cases could be in some way related to the low rate of immigrants with private insurance, since international health insurances are offered by the private sector only in several countries in the Latin American region. Nonetheless, the hypothesis that immigrants with private and other not stated provision overlap could not be tested in this study, due to limitations of the dataset. Additionally, immigrants with no health care provision entitlement might still access the private sector and pay out of pocket when needed, and information on these choices are not captured by the CASEN survey.

Further research could be developed based on the results of this study.

First, to consider the extent that health care services’ use depends on both supply and

demand-side factors, it might be important in future studies in Chile to include a variable representing patient demand.

Second, a key question to include in further studies is whether international immigrants know where to seek health care if they have any health problems (Dias et al., 2008).

Third, in this study there is a lack of data on quality of care provided, client satisfaction and problems experienced when interacting with health services. This limits knowledge of the determinants of the utilization of health care services (Sundsquist, 2001; Fenta, Hoyman and Noh, 2007), which need further exploration to inform planners and providers of services and to ensure equitable access to appropriate health care (Dias et al., 2008; Anderson, Tang and Blue, 2007; Hjern et al., 2001).

Fourth, further information on “no health care provision” and “other not stated” provision entitlement and decisions on where to seek care among immigrants without any health care provision needs to be addressed for better understanding of the factors affecting access to health care in the international immigrant population in Chile and how they might differ from the Chilean-born.

Figure 8.28 Recognised limitations of this analysis, CASEN 2006 survey

1. The CASEN survey did not directly provide information about access and use of the different levels of health care (primary, secondary or tertiary). One aspect of public and private insurance not addressed by this study and some others is the extent to which the scope of covered services affects access to specialist care. Some public programmes might tend to have broad definitions of covered services, while private plans may have more restrictive guidelines for medical necessity and covered services (Cockrell and Mayer, 2007; Fox and McManus, 2001; Markus et al., 2006).
2. Another important consideration for public insurance programs, often not addressed in current studies, is the endogeneity of public insurance and specialist care. Only certain studies have been designed in a way that limits the effects of selection into different health programs (Cockrell and Mayer, 2007). This study attempted to control for most of the relevant variables that could affect this phenomenon, but they could still exist in the results presented and require further exploration.
3. Self-reported health care use may be biased because of problems in recall. If recall difficulties affect all population groups equally, then they are not a problem (it might account for additional error affecting the confidence intervals, but not bias). However, if population groups report use in a systematically different way (e.g., older people may have worse recall), then bias is introduced (Allin, 2008; Glazier et al., 2009). Some researchers believe self-reporting of physician visits may be unreliable (Roberts et al., 1996) and that recall for hospital visits is generally better than that for physician contacts (Allin, 2008, Barer, Manga and Shillington, 1982; Adamson, Hunt and Ebrahim, 2003a; O'Donnell and Propper, 1991; Lindeboom and van Doorslaer, 2004). However, numerous studies support the validity of self-reported health status, demonstrating significant relationships with a wide range of measures of health status (Kaplan and Camacho, 1983; Mossey and Shapiro, 1982; Sutton et al., 1999).
4. Some studies have considered use of a detailed number of specialist health care programmes which are not available in this study (see for example Glazier et al., 2009). Differences in the use of specific speciality care could be hypothesised from the differences found in the use of specific preventive health care programmes (i.e. gynaecological and adult/elderly programmes) and could be further explored in future studies.
5. When considering the model by Adamson, Hunt and Ebrahim (2003) presented in section 8.1, relevant variables affecting the access to and the use of health care were not included in this study as they were not available in the CASEN survey. Past experience, interpretation of symptoms, anxiety and attitudes to health, doctors and other behaviours could be analysed in future studies on access and use of health care in the Chilean population.

Table 8.4 Summary table of the available publications on access to and use of health care by international immigrant population in Latin America

<i>Access to health care</i>	<i>Specific measure</i>	<i>Authors</i>	<i>Year</i>	<i>Study design</i>	<i>Immigrant population</i>	<i>Host country</i>	<i>Results</i>
Access to health care	Provision entitlement	OIM & Minsal	2008a	An analysis of the migrant population in Santiago Chile	Immigrants	Chile	Immigrants face difficulties related to access to health care (15% uninsured), the lack of adequate information on the rights and duties of migrants, the overloaded primary care centres and the strong demand for attention by the migrant population, and discrimination and prejudice because of their socioeconomic conditions.
Use of health care	Use of health care	Munhoz de Bustillo et al	2010	To identify patterns of public health care utilization by Latin American immigrants in Spain	Latinos	Spain	Latin American immigrants show lower utilization rates of public health care services than the native-born population, with the exception of hospital stays. Multivariate analysis indicates statistically significant differences only in the case of hospital stays (the probability of staying in a hospital in the last year is 2.8% higher for Latin American immigrants than among locals) and utilization of emergency rooms (0.205 more visits than the Spanish-born population)
		Garland et al	2010	Unique aspects of the care of HIV-positive Latino patients in US	Latinos living with HIV and AIDS	US	Clinicians who care for HIV-infected patients are likely to encounter Latino patients, regardless of their practice location. Providing optimal care to this population may be especially challenging for clinicians practicing in areas of newer Latino expansion, where culturally appropriate services may be sparse.

		Vermeer and van den Muijsenberg	2010	Cross-sectional study to provide national data about the attendance of migrant women at the national breast cancer screening in the Netherlands	Migrants including Latinas	The Netherlands	The attendance rates of migrant women originating from Africa, Asia or Latin America (63%), such as Turkish women (62%) and especially Moroccan women (54%), were significantly lower ($P=0.00$).
		OIM & Minsal	2008b	Qualitative analysis of the mental health of Peruvian immigrant population resident in the north of Santiago	Peruvian	Chile	Immigrants show high levels of anxiety and depressive symptoms. They face difficulties related to access to the health care system associated to lack of information and discrimination.
		Simich & Nerad	2007	Qualitative study to explore experiences of living without regular immigration status and implications for health security among irregular migrants in Toronto.	Migrants including Latinos	Canada	The majority of study participants came to Canada to escape violence as well as lack of economic opportunity in home countries in Latin America, and most have tried to follow correct immigration procedures. Most are parents working in low-paying, exploitative jobs. They have attempted to lead productive and meaningful lives, but lack social support beyond the immediate family. They showed signs of suffering from trauma, depression, chronic stress, family separation and stress-related physical illnesses. Despite expressing self-esteem and using personal coping skills effectively, many reported unmet health needs and described barriers to help-seeking.

CHAPTER 9

WHAT IS THE HEALTH STATUS OF IMMIGRANTS IN CHILE AND HOW DOES IT COMPARE TO THE CHILEAN-BORN POPULATION? PART I: RECENT HEALTH EVENTS

Summary Box 9

What research question is included in this chapter?

What is the health status (recent health events) of international immigrants in Chile and how does it compare to the Chilean-born population?

What is already known?

Previous qualitative studies in Chile indicate that immigrants in Chile experience significant health needs that might not be fully covered by the health care system while living in Chile.

What does Chapter 9 add?

Compared to the Chilean-born, immigrants living in Chile have a lower prevalence of some recent health events. However, there are clear gradients of these health outcomes among immigrants by SES cluster, country of origin and years living in the country.

Overview

This fourth chapter of results describes the prevalence and social determinants of three recent health events: any health problem or accident in the past month, the instances of medical attention received in the past month, and the instances of emergency attention received in the past month. The complex relationship between different social determinants and recent health outcomes in the immigrant population in Chile is presented and discussed in this chapter. This will be followed by consideration of certain long-term health conditions in the subsequent chapter.

Introduction

The three first chapters on results (Chapters 6, 7 and 8) have described the demographic, socioeconomic and access to health care determinants of health in the immigrant population, and how they differ from the Chilean-born population. Chapter 9 is dedicated to describing and exploring the relationship between three recent health events and different sets of SDH, these being any health problem or accident in the past month, the instances of medical attention in the past month and the instances of emergency attention in the past month. The definition of “recent health events” is somewhat arbitrary but is intended to distinguish between recent experience of poor health and chronic health conditions, as *defined and collected* by the CASEN survey 2006. The criterion used to define a recent health event was the brief time frame for its appearance (the past 30 days). Recent health problems may, however, be caused by chronic conditions. The causes of recent health events, however, are not described by the CASEN survey 2006. It should be noted that among those recently settled in Chile, recent health problems could also to some extent reflect the health status of immigrants before migration. Long-term chronic conditions will be addressed in the Chapter 10.

9.1.1 What is it known about the recent health events included in this chapter among international immigrants?

Chapter 3 presented evidence on some recent health outcomes that have been studied among immigrants in the international literature and that were not available for analysis in this study. It indicated that the international immigrant population worldwide mostly shows lower rates of a range of recent health outcomes in comparison to local populations. However, international evidence also suggests a higher prevalence of some recent mental health events like anxiety disorders, and other illnesses like STDs. In this chapter, recent health events include the following measures: any health problem or accident in the past month, the number of medical attentions in the past month and the number of emergency attentions in the past month.

Literature on recent health outcomes exists, similar to those included in this chapter. Evidence of accidents among immigrant children in Greece shows a 3 times higher risk in this population than the native one (Glania et al., 2010). Temporary pain has also been reported among immigrant cleaning workers in the US (Premji and Krause, 2010; Uchino, Muto and Muto, 2010). Immigrant status does not seem to lead to increased involuntary emergency attentions (Douzenis et al., 2010). Employment in a more physically demanding occupation may pose particular risks of workplace injury and accidents. In Canada, immigrants with poorer English skills and refugees are more likely to be employed in more physically demanding occupations. This evidence suggests that greater attention to the prevention of workplace injuries among particular groups of new immigrants may be required. Reported factors that might determine a higher prevalence in some recent health outcomes among immigrants on the point of arrival and afterwards are cultural differences (Shirakawa, Nakagawa and Miyasaka, 2003), bereavement and grief (Quiroga, 1997), the rupture of daily life experiences (Trad and Bomfin, 2003), Globalisation and social inequalities (Medina, 2001), and the lack of supportive policy strategies in local and international contexts (Nubia, Martin and Arias, 2000).

When this study was conducted, little research was located that assessed the types of recent health events among immigrants in Latin America and Chile that are considered in this study. No study of the outcomes of any health problems or accident and emergency visits among immigrants was found in the Latin American region. Only one study was found concerning medical care and this was focused on immigrant children living in Switzerland (Depallens et al., 2010). Eighty-seven percent of the children were natives of Latin America,

36% being less than two years old. This population of children lived in precarious conditions with family incomes below the poverty level. The main reasons for consultation were infectious diseases, a check-up requested by the school or a check-up for newborn children. Most of the children were in good health and the others were affected by illnesses similar to those found in other children of the same age. At least 13% of the children were obese and 27% were overweight. All children who were of educational age went to school during the year after the first check-up and 48% had health insurance.

9.1.2 What do these recent health events mean in Chile?

The three recent health events included in this chapter are multidimensional or complex measures of health status. Having any health problem or accident (AHPA) in the past month, for instance, attempts to measure the current health status of the population in Chile but combines a recent medical event and an accident. Each dimension of the variable might have very different social determinants. In addition, there is no measurement of the severity or frequency of those health problems or accidents. The CASEN survey does, however, contain a further dimension of this health outcome as the next question asked of those who report having any health problem or accident in the past month is “did you seek care?”

Both the instances of medical attention and of emergency attention received in the past month share some of the characteristics with the other recent health events outcomes. They combine feeling ill with accessing the health care system, but there may be different social determinants associated with each element. The instances of medical attention might depend on the baseline health status of immigrants and also whether they are entitled to particular health care provision and understand the health care system (who to call, how, where to go, and others). The instances of emergency attention received in the past month is a particularly interesting recent health event. It could be proposed that this variable is not as biased (selection bias against immigrants) as the other two outcomes, due to the “emergency law” in Chile that provides health care to any person in an emergency situation regardless of legal status. However, often one can only receive emergency care in Chile if the individual asks for it or someone else asks on his/her behalf. Undocumented immigrants might prefer not to seek emergency care if they are unaware of the universal emergency law and fear legal prosecution. These immigrants would not be properly captured in this study, or would be incorrectly labelled as a “zero” value. In addition, because of the characteristics of the health care system in Chile, findings from recent health outcomes included in this study are inevitably confounded by aspects of health care that are not included in the dataset, such as waiting lists and lack of material and human resources. Differences in access to health care

by geographical location may also be related to these outcomes and are closely associated with such health management issues in the country.

9.1.3 Methodological explanation

Descriptive and stratified analyses were conducted for each variable under study as explained in Chapter 5. Multivariable regressions were conducted to analyse the relationship between the dependent variables (any health problem/ accident; number of medical and number of emergency care attentions received in the past month) and the different sets of SDH. This allowed observation of which SDH was associated with each dependent variable in the presence of other covariates, and also exploration of the existence of confounding and interaction effects (see Chapter 5 for further explanation of these strategies). Multivariable modelling was conducted in two stages with the use of sample weighting, in order to obtain population-representative estimates. First, each set of SDH was regressed on the dependent variable. Each “recent health event” model was estimated separately and adjusted by demographic variables only. Stratified analysis by sex and age group was also conducted. Second, a final adjusted model with all sets of covariates combined was estimated as described in Chapter 8. Through a manual step-wise process, the most parsimonious model was selected for each recent health outcome as the *final adjusted model*.

9.1.3.a) Logistic multiple regressions

Odds Ratios (OR), 95% confidence interval (95%CI) and p-values, the amount of variance explained by the pseudo R squared and the Archer and Lemeshow goodness of fit test (GOF) for a logistic regression model fitted using survey sample data were estimated (F-adjusted mean residual GOF test, Archer and Lemeshow, 2006). A p-value above 0.05 (non significant) of the GOF test suggested good fit of the model. Every time a significant p-value was obtained (most of the cases), the model with the larger F value was considered to be the most parsimonious model, even when the GOF test showed lack of fit. This process was repeated for each final adjusted model in the total immigrant and the Chilean-born populations, and also for different age and sex groups.

Poisson regression models were estimated for the two count variables included in this chapter: the number of medical attentions and the number of emergency attentions received in the past month. Two particular characteristics of these variables should be mentioned: (1) they have a large proportion of 0 values; and (2) they are over-dispersed. The large proportion of 0 values observed in both count variables included in this chapter affected the reliability of a regular Poisson model and a “zero-inflated” two-part model was used instead. As to the second feature, if the *equidispersion* assumption (the mean equals the variance) of a Poisson regression is not present, that is the variable is overdispersed, a negative binomial regression should be selected over regular Poisson regression. Overdispersion was tested for each dependent variable and each set of determinants of health, as recommended by Cameron and Trivedi (2009), following a simple two-step rule. First, a regular Poisson is estimated with the variables of interest and a new predictive variable is created from this model. Second, overdispersion is tested by comparing the dependent variable of interest (number of medical and emergency attentions) with the new predicted variable from the Poisson regression, through a multiple linear regression (that is, comparing the observed versus the predicted values). A statistically significant p-value (<0.05) rejects the hypothesis of equidispersion and negative binomial regression should be selected instead. Appendix 9.2 presents the histograms and results for each overdispersion test conducted. All of them showed overdispersion.

Zero-inflated negative binomial (NB) regression was finally selected to estimate these models, as it was the best possible method to account for a large proportion of 0 values and overdispersion simultaneously (Cameron and Trivedi, 2009). Goodness of fit of each model was tested through the Young test that compares a zero-inflated negative binomial regression with a regular negative binomial regression. A statistically significant p-value (<0.05) suggests that the models are different and that the zero-inflated model should be chosen over the regular negative binomial model. If there is no significant difference, then the regular negative binomial model fits as well as the zero-inflated one (Cameron and Trivedi, 2009). In almost every case, zero-inflated regression had a significantly better fit than the regular negative binomial regression, with the exception of partially adjusted models using SES clusters as covariates in the immigrant population (see Appendix 9.3). In some cases, weighted zero-inflated NB regression was difficult to estimate, due to software and data limitations (e.g. the large size of the dataset or non convergence of zero-inflated values when there were very few non-zero observations). Whenever that happened, a non-weighted zero-inflated binomial regression was estimated. In addition, for some specific subpopulations with very few observations of these count variables in the dataset (e.g. children) only a

weighted regular binomial regression was possible. In such cases zero values were truncated from the variables of interest, to reduce potential bias secondary to the utilization of inappropriate analytic techniques and to attain more precise population based estimates. Incidence Rate Ratios (IRR), 95%CI and p-values, the amount of variance explained by MacFadden's Adjusted R-squared and the Akaike Information Criterion (AIC) to test the goodness of fit (GOF) of the models (non weighted models only) were estimated (the lower the value of the AIC the better the fit of the model) (Bozdogan, 1987; Bozdogan, 2000).

9.1.4 Graphical representation of final models

Final models are displayed in this chapter through forest plot graphs. Forest plot graphs have been selected to show the most parsimonious models that could be estimated and present the social determinants that remained significantly associated to each dependent variable. A summary of the methods used in this chapter is presented in Figure 9.1 and a summary of the dependent variables included appears in Figure 9.2.

Figure 9.1 Flowchart describing the analysis conducted in this chapter

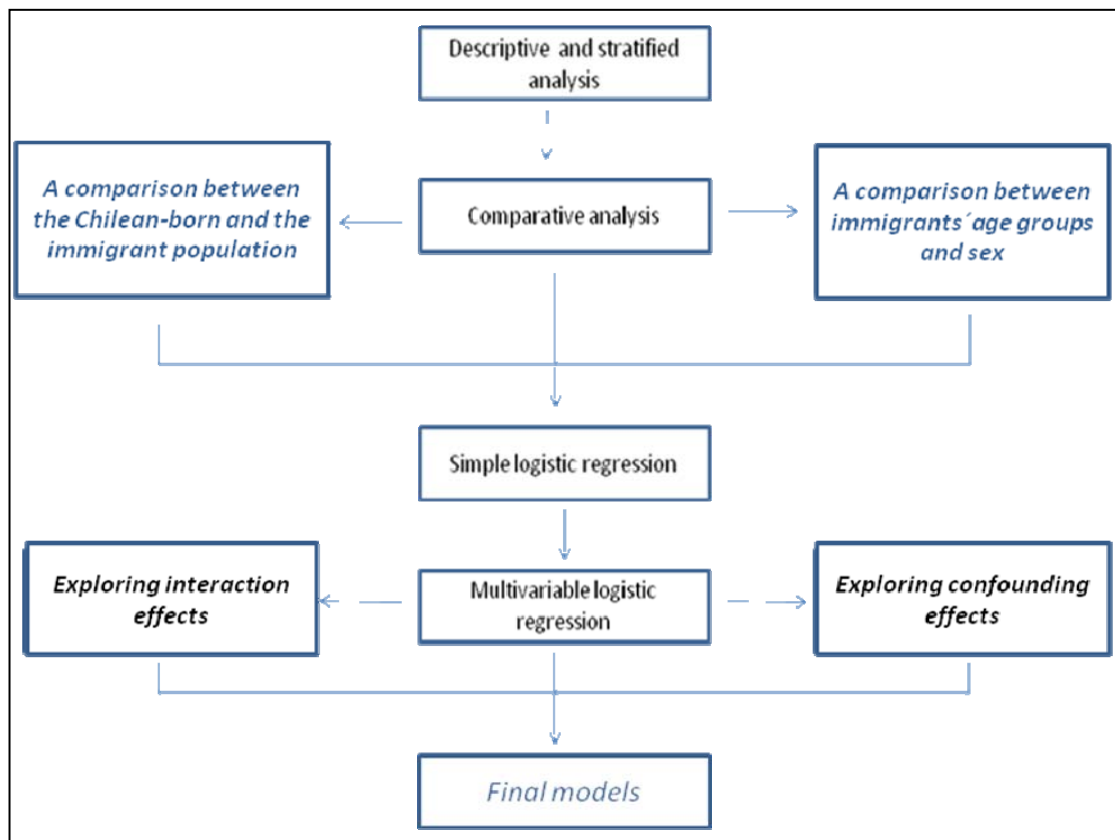
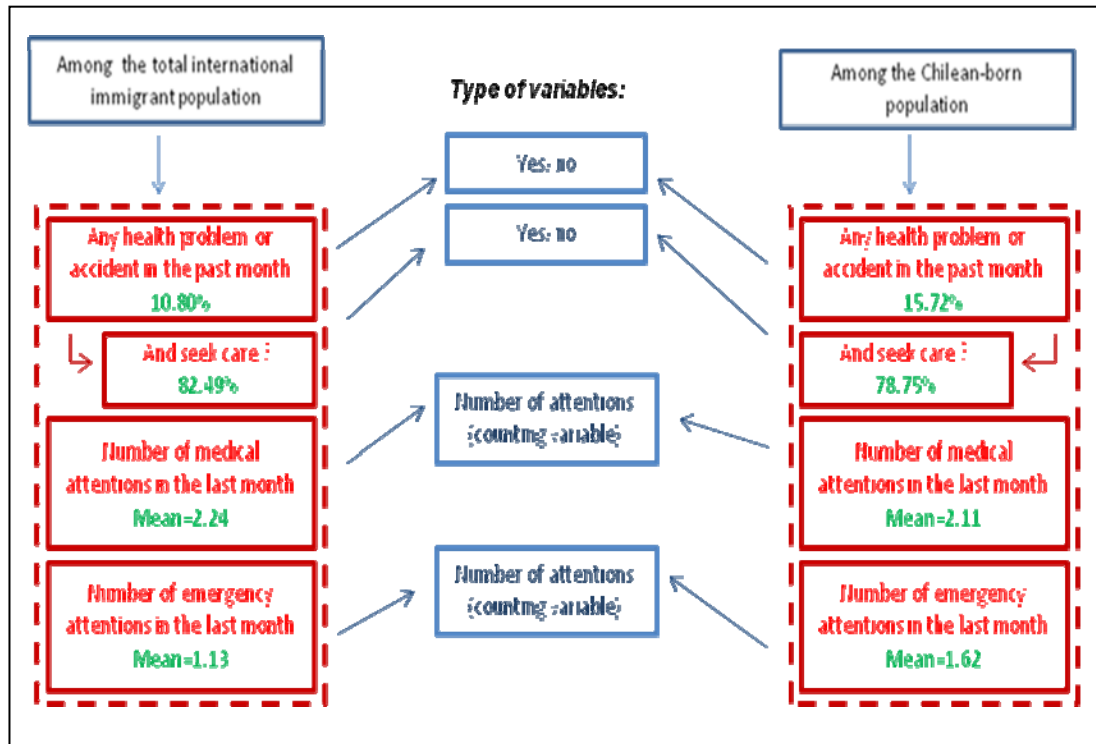


Figure 9.2 Summary of dependent variables included in this chapter (dependent variables appear in red and crude prevalence of each recent health event in green)



9.2 ANY HEALTH PROBLEM OR ACCIDENT (AHPA) IN THE LAST MONTH

9.2.1 Descriptive results

Tables A9.1-A9.2 in Appendix-9.1 describe the prevalence of AHPA in the last month. International immigrants report a lower rate of AHPA than the Chilean-born (10.80% versus 15.72%) and this difference is significant ($p < 0.001$). Among those who reported a health problem, a slightly smaller proportion of immigrants seek care from the Chilean health care system than the Chilean-born, but this difference is not statistically significant (78.75% versus 82.49%).

Significant differences are found when stratifying the proportion of immigrants with AHPA who seek care by socioeconomic status (Figures-9.3 and 9.4). Immigrants in the poorest income quintile have a significantly lower rate of care seeking than those immigrants in the two wealthiest quintiles ($p < 0.01$). No difference is found by health care provision type (Figure-9.5). Female immigrants have a higher rate of AHPA than male immigrants (12.14% versus 9.09%) but these rates are not different from the Chilean-born. There is a clear positive gradient of presenting this outcome by age among immigrants; however, this is not found in the Chilean-born (Figure-9.6). Both immigrants and Chilean-born living in the poorest income quintile and with no education show the highest rates (17.47% and 14.65%, respectively, $p\text{-value} > 0.05$). In addition, no clear gradient is found among immigrants by type of occupation, but there is a clear negative gradient in the Chilean-born population (Figure-9.7). Immigrants coming from Argentina have the highest rate of AHPA (13.21%), followed by Peru (11.11%), Ecuador (9%) and Bolivia (8.43%).

Figure 9.3 Crude prevalence of people with any health problem/ accident **who seek care, by income quintile**, a comparison between the immigrant and the Chilean-born population (weighted sample size=16 130 743)

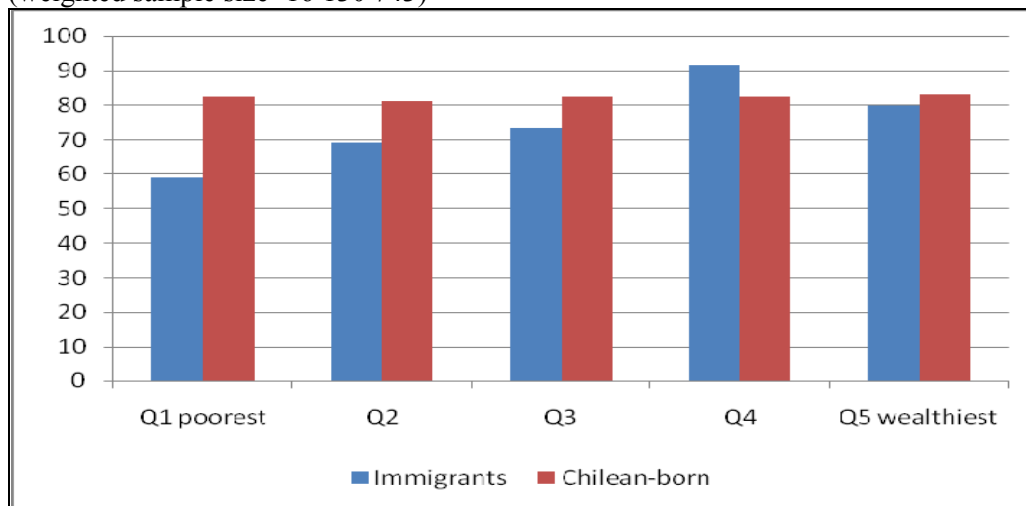


Figure 9.4 Crude prevalence of people with any health problem/ accident **who seek care, by educational level**, a comparison between the immigrant and the Chilean-born population (weighted sample size=16 130 743)

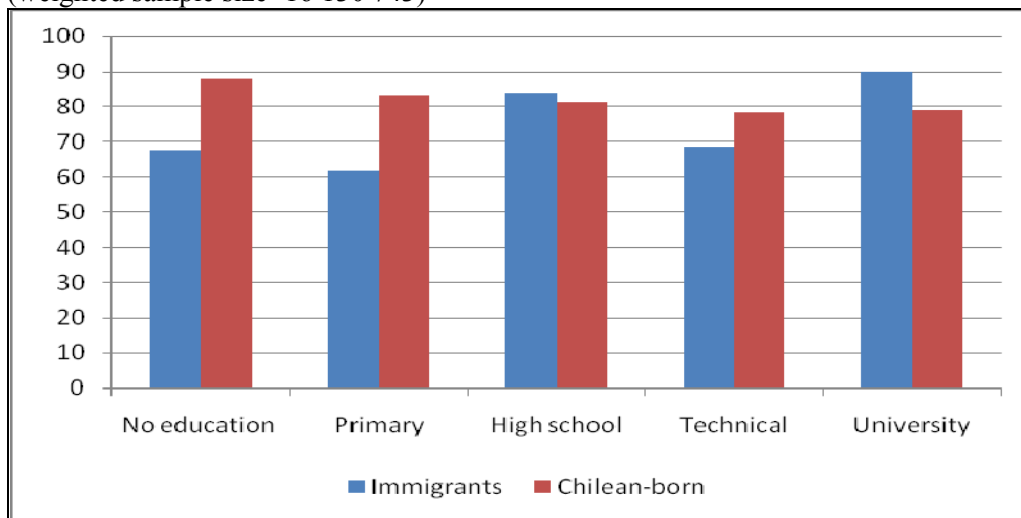


Figure 9.5 Crude prevalence of people with any health problem/ accident **who seek care, by provision type**, a comparison between the immigrant and the Chilean-born population (weighted sample size=16 130 743)

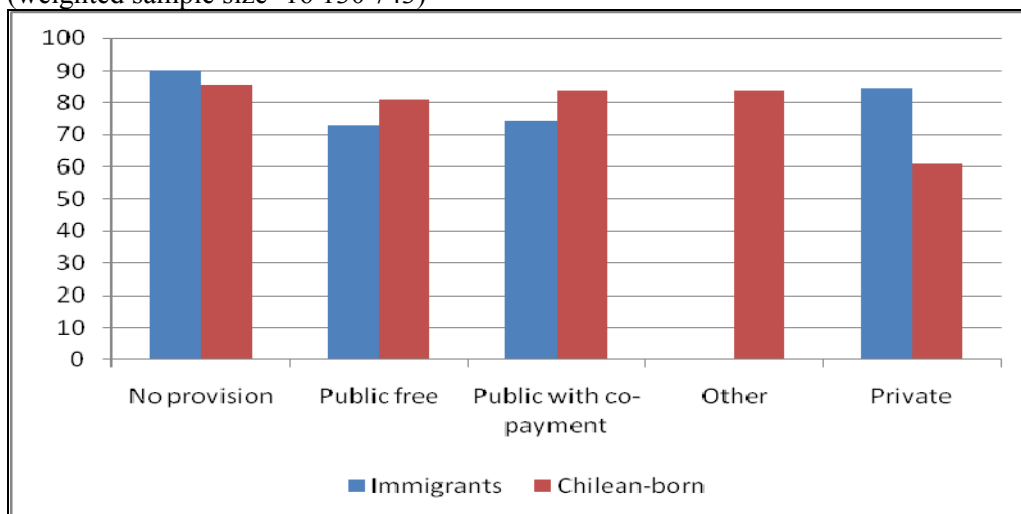


Figure 9.6 Crude prevalence of any health problem/ accident in the past month by age groups, CASEN 2006 (weighted sample size= 16 130 743)

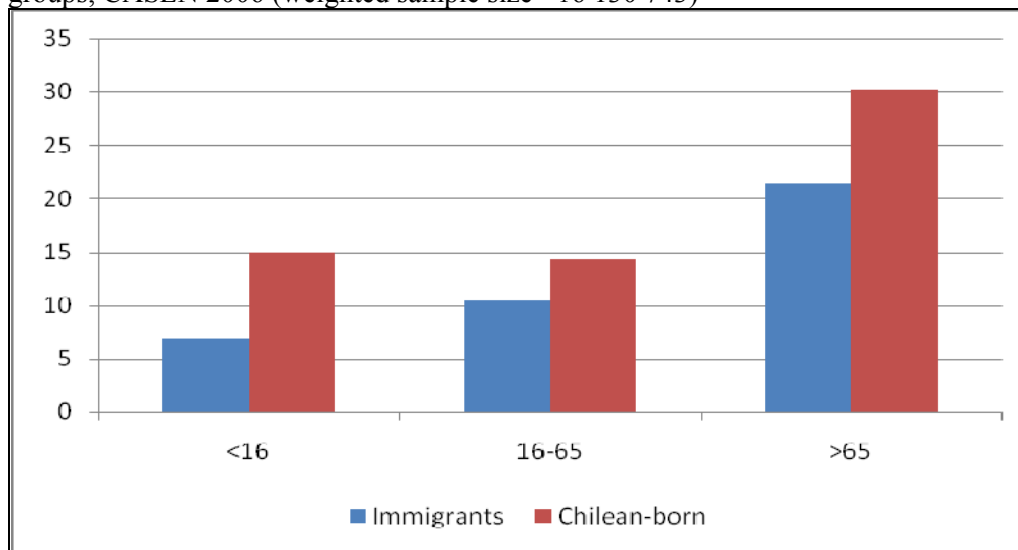


Figure 9.7 Crude prevalence of any health problem/ accident in the past month by type of occupation, CASEN 2006 (weighted sample size= 16 130 743)

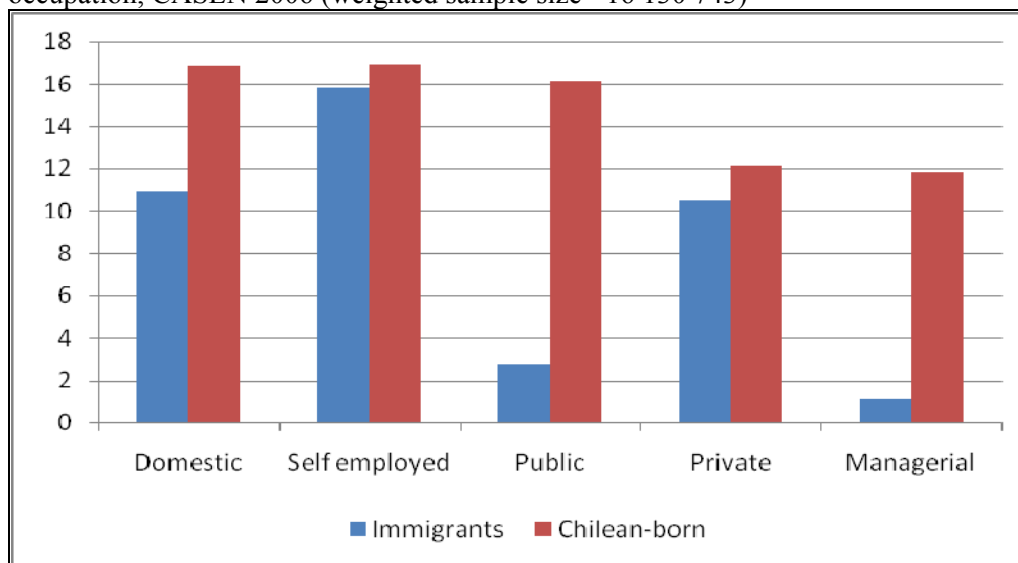


Table 9.1 Crude prevalence of different recent health events included in the CASEN 2006 survey, stratified by clustered socioeconomic groups (weighted sample size= 154 855)

Health Outcomes	Low SES % (95%CI)	Medium SES % (95%CI)	High SES % (95%CI)	Total Immigrants % (95%CI)	Chilean-born population % (95%CI)
Any health problem or accident last month	8.18 (4.49-14.44)	12.69 (9.58-16.61)	9.36 (6.40-13.48)	10.76 (8.67-13.29)	15.76 (15.45-16.08)
Mean medical attentions	1.86 (0.96-2.76)	2.35 (1.73-2.96)	2.25 (1.55-2.95)	2.24 (1.81-2.66)	2.11 (2.06-2.15)
Mean emergency attentions	1.44 (1.04-1.84)	1.14 (0.94-1.33)	1.04 (0.97-1.11)	1.13 (1.02-1.25)	1.62 (1.58-1.66)

9.2.2 The relationship between AHPA and each set of SDH

9.2.2.a) *Immigrants versus the Chilean born*

Being employed is negatively associated with this health outcome (OR 0.13). Distinctively, among international immigrants, being inactive (all categories separately and combined: student, housewife, retired or ill, trend p-value<0.001) and having a temporary work contract (OR 2.58) are positively associated with presenting with AHPA in the past month. All types of health care provision show a positive association with AHPA (private type as the reference, trend p-value<0.001). Immigrants with no health care provision have a 17 times higher chance of presenting with AHPA compared to those immigrants with private provision (Table-A9.3, Appendix-9.1). The Chilean-born show a significant association with a range of SDH: age, sex, marital status, living in rural zone, number of household members, being employed, workday dedication, sanitary index, HAI, and access and use of health care services.

9.2.3.b) *Immigrants versus the Chilean born by age groups*

Among ***child immigrants***, socioeconomic status (SES clusters) is associated with this recent health outcome and it remains significant when controlling for other SDH (clear negative gradient, High SES reference, trend p-value<0.0001). Immigrants coming from Bolivia show a lower chance of having this outcome (OR 0.08), even after adjusting for other socio-demographic determinants. Chilean-born children show a significant association between AHPA and age (OR 0.93) and area of the country in which they are living (Northern area with a lower chance of AHPA, trend p-value<0.0001) (Table-A9.4 and A9.5, Appendix-9.1).

With regard to the ***working age-group***, female immigrants show an almost two times higher chance of AHPA in the past month (OR 1.87), even after controlling for other SDH. Age loses its significance in the presence of sex (confounding effect). Chilean-born working age population show a significant association between AHPA and all demographic determinants, except area of the country, and having a temporary work contract (OR having a contract 0.79) (Tables A9.4 and A9.5, Appendix-9.1).

Concerning ***elderly immigrants***, those belonging to Low and Medium-SES clusters show a significant higher chance of having this health outcome than those in the high SES cluster (OR 12.06 and 8.14, respectively, High SES reference, trend p-value<0.001). Elderly immigrants entitled to all provision types show a higher chance of AHPA when compared to immigrants entitled to the private type and to years living in the country (modest gradient,

trend p -value <0.001). The Chilean-born elderly show a significant association between AHPA and age, sex, ethnicity, rurality and number of household members (Tables-A9.4 and A9.5, Appendix-9.1).

9.2.3.c) Multivariable models in the immigrant population by sex

A significant association between age and AHPA is observed among immigrant men (OR 1.02), but not women. Three significant differences between sex groups are observed. First, immigrant men show a positive association between SES clusters and AHPA (OR 3.44 low SES, OR 3.75 medium SES, high SES reference category; trend p -value <0.05). Second, male immigrants with either public 100% free or public with co-payment provision type show a higher chance of presenting this outcome than those with private provision (OR 5.14 and 3.54, respectively, trend p -value <0.001). Third, female immigrants show a significant association with material determinants of health, which is not found among the male group. Immigrant women with an acceptable sanitary index show a higher chance of reporting AHPA (OR 5.60).

9.2.3 Final models of AHPA in the past month

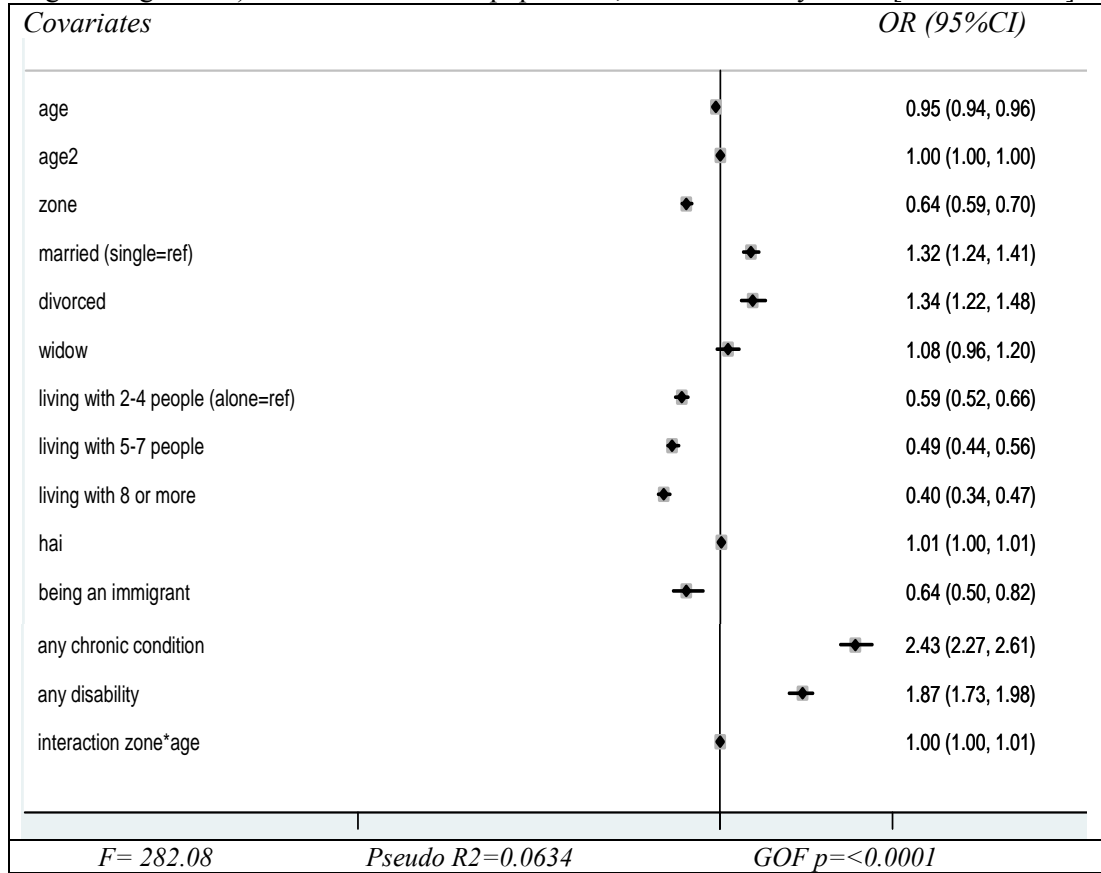
Among international immigrants, only age remains significantly associated with AHPA (OR 1.02) ($F=10.49$, Pseudo $R^2=2.23\%$, GOF $p<0.01$). The inclusion of other recent health events, reduced the F value of the model but slightly increased the pseudo R^2 ($F=7.24$, Pseudo $R^2=3.35\%$, GOF $p<0.01$). Among the Chilean-born, in contrast, the most parsimonious model estimated appears in Figure-9.8. A similar model excluding other health events among the Chilean-born appears in Figure-A9.1, Appendix 9.1 for further comparison. The model shows similar results to the one presented in this section.

Final models among immigrants by sex show similar results from the partially-adjusted models. The only remaining co-variate in the fully adjusted model for male immigrants is SES clusters (OR low 3.33, OR medium 3.67, $F=5.10$, Pseudo $R^2=9.10\%$, GOF $p<0.01$). Among female immigrants, age appears as the single covariate significantly associated with AHPA in the final adjusted model (OR 1.02, $F=4.33$, Pseudo $R^2=1.12\%$, GOF $p<0.01$).

Final logistic models by age groups show that ethnicity is the only remaining significant variable for immigrant children (OR 7.97, $F=5.13$, Pseudo $R^2=5.24\%$, GOF $p<0.01$). Among the working age immigrant group, sex and age are significantly associated with this health outcome (OR 2.01 and 1.02 respectively, $F=6.95$, Pseudo $R^2=2.21\%$, GOF $p<0.01$). Finally, among elderly immigrants, a clear negative gradient by SES clusters appears (OR low SES

13.47, OR Medium SES 7.83, high SES reference) ($F=3.07$, Pseudo $R^2=22.25\%$, GOF $p<0.01$).

Figure 9.8 Final model of **any health problem or accident in the past month** (multiple logistic regression) in the Chilean-born population, CASEN survey 2006. [Line: OR=1.0]



9.3 NUMBER OF MEDICAL AND EMERGENCY ATTENTIONS RECEIVED IN THE LAST MONTH

9.3.1 Descriptive results

There are no significant differences in the mean number of *medical attentions* between immigrants and the Chilean-born (2.24 versus 2.11) (Table-A9.1, Appendix-9.1). Stratified analysis of the mean number of medical attentions by sex shows a higher mean among the female Chilean-born than male (2.15 versus 2.04, $p < 0.05$). Immigrants belonging to any ethnic group show a significantly lower mean number of medical attentions received in the past month (1.30 versus 2.28) and this difference is not observed in the Chilean-born. There is a clear positive gradient by age groups in both populations (Figure 9.9), but no gradient by SES cluster among immigrants (mean of 1.86 low, 2.34 medium, 2.25 high SES). A negative gradient of the number of medical attentions is observed by educational level in the Chilean-born (Figure-9.10). Immigrants coming from Bolivia have the highest mean (2.23) followed by Peru (2.18), Argentina (1.98) and Ecuador (1.78). There is a weak positive gradient of the number of medical attentions received by years living in the country (Figure-9.11).

Figure 9.9 Crude mean number of medical attentions received in the past month by age groups, a comparison between the Immigrant and the Chilean-born populations, CASEN 2006 (weighted sample size= 16 130 743)

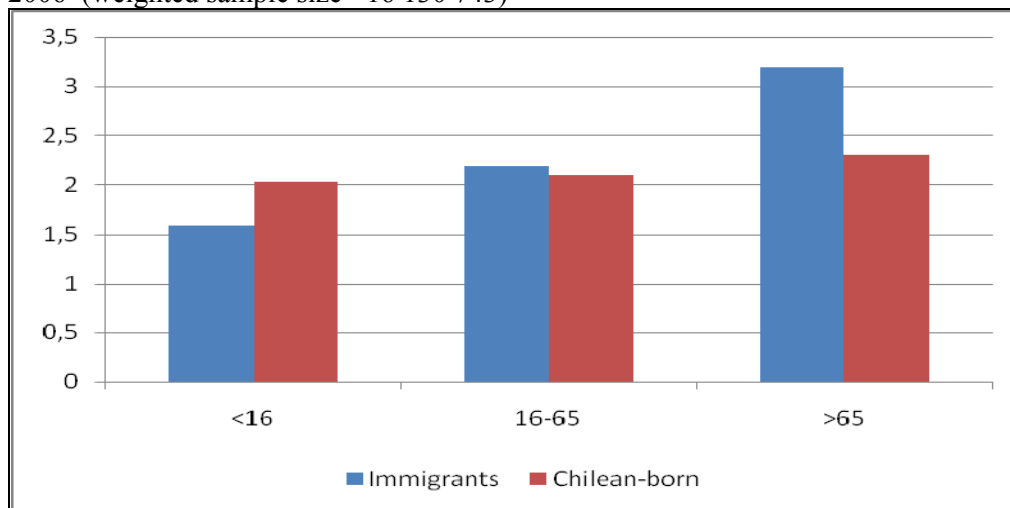


Figure 9.10 Crude mean number of medical attentions received in the past month by educational level, a comparison between the immigrant and the Chilean-born populations, CASEN 2006 (weighted sample size= 16 130 743)

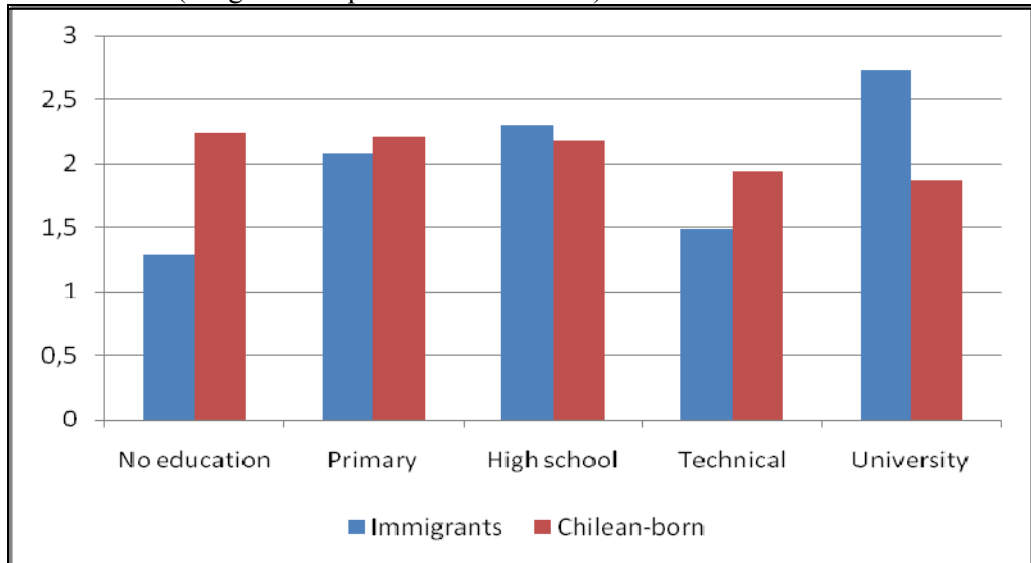
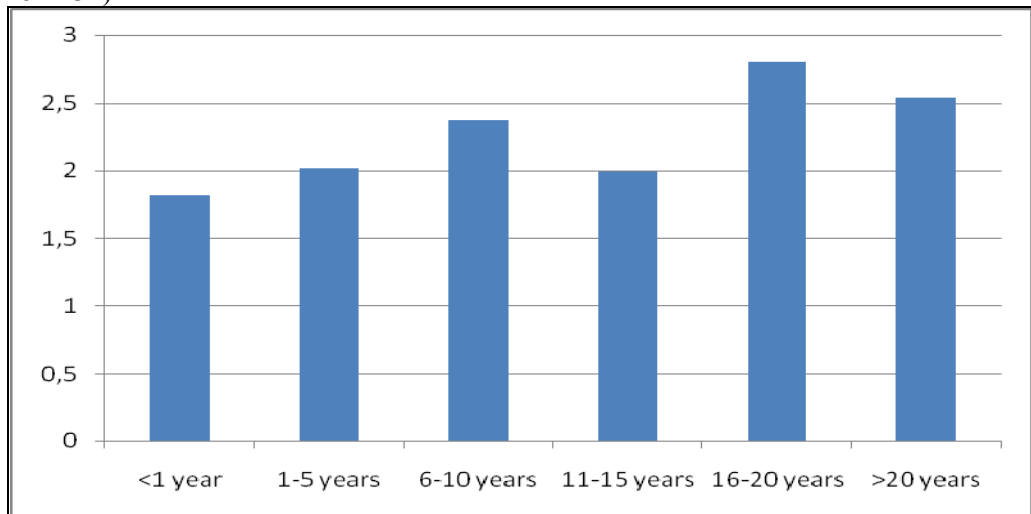


Figure 9.11 Crude mean number of medical attentions received in the past month by years living in the country among the immigrant population, CASEN 2006 (weighted sample size= 154 431)



Regarding the number of *emergency attentions* received in the past month, there is a higher proportion of immigrants with a single emergency consultation compared to the Chilean-born (92.76% versus 73.07%, $p < 0.001$), but a lower rate of two consultations (3.36% versus 13.97%) (Table-A9.1, Appendix-9.1). There is a higher mean of female consultations among the Chilean-born (1.68 versus 1.54, $p > 0.05$). There is no gradient by age group among immigrants, but a clear positive gradient is observed in the Chilean-born (Figure-9.12). In addition, there is a clear negative gradient by SES clusters among immigrants (Figure-9.13) and clear gradients by household income quintiles (Figure-9.14) and educational level (Figure-9.15). The Chilean-born show the same gradients (Figure-9.16). Immigrants coming

from Peru and Argentina are the only ones who have received an emergency attention in the past month (mean 1.29 and 1.08, respectively).

Figure 9.12 Crude mean number of emergency attentions received in the past month by age groups, a comparison between the immigrant and the Chilean-born populations, CASEN 2006 (weighted sample size= 16 130 743)

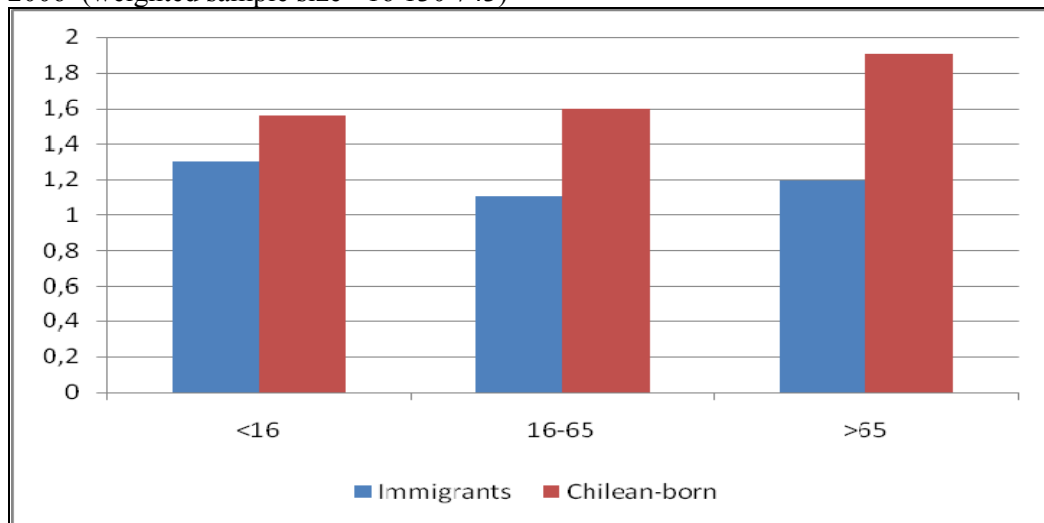


Figure 9.13 Crude mean number of emergency attentions received in the past month by SES clusters in the immigrant population, CASEN 2006 (weighted sample size= 154 431)

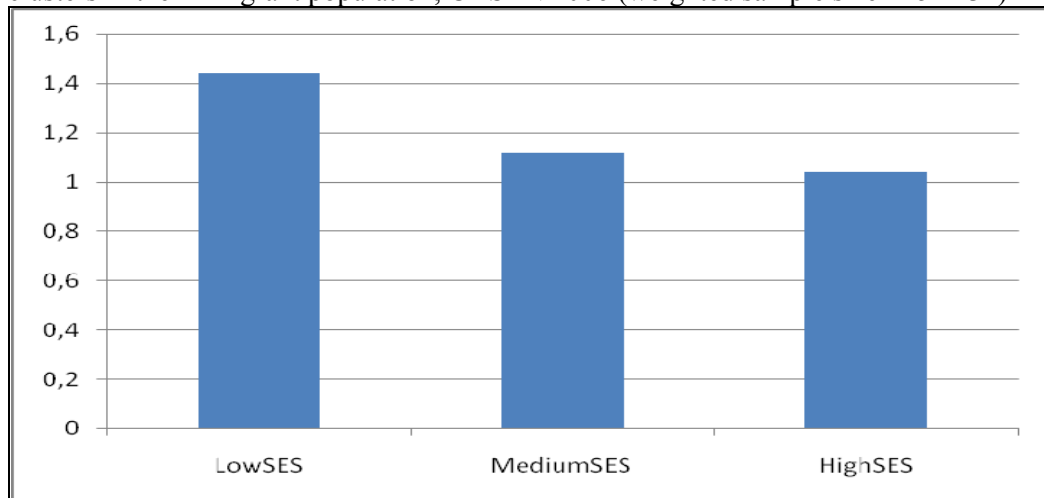


Figure 9.14 Crude mean number of emergency attentions received in the past month by household income quintiles, a comparison between the immigrant and the Chilean-born populations, CASEN 2006 (weighted sample size= 16 130 743)

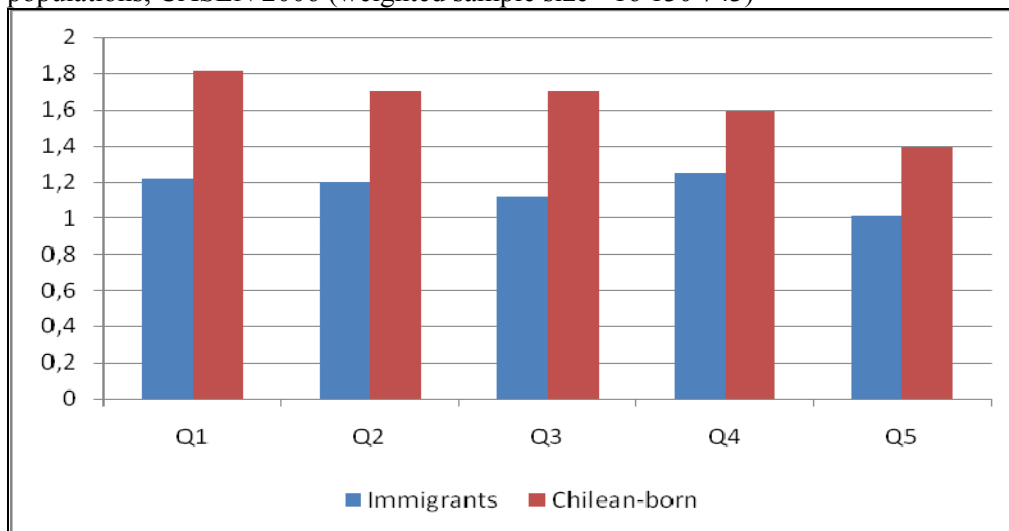


Figure 9.15 Crude mean number of emergency attentions received in the past month by educational level, a comparison between the immigrant and the Chilean-born populations, CASEN 2006 (weighted sample size= 16 130 743)

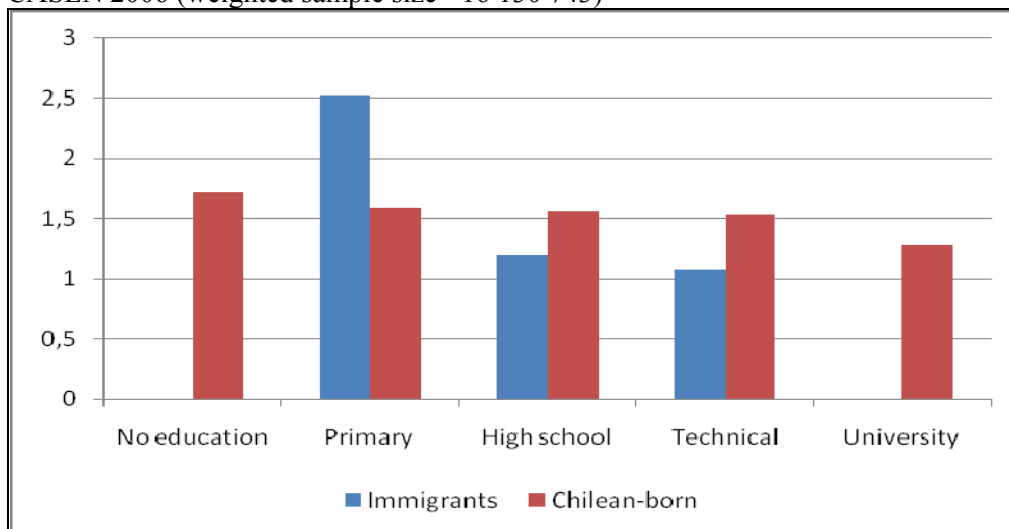
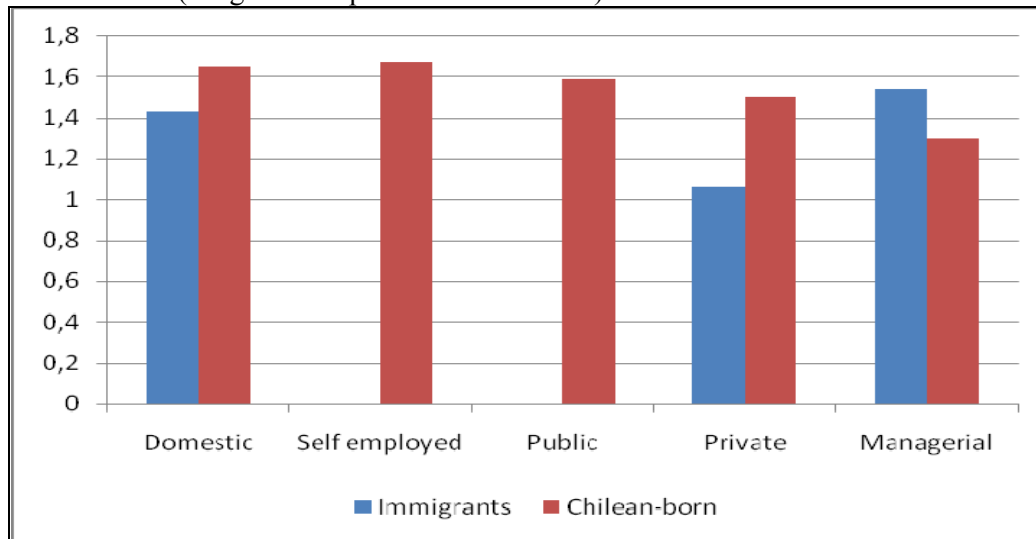


Figure 9.16 Crude mean number of emergency attentions received in the past month by type of occupation, a comparison between the immigrant and the Chilean-born populations, CASEN 2006 (weighted sample size= 16 130 743)



9.3.2 The relationship between the number of medical/emergency care and each set of SDH

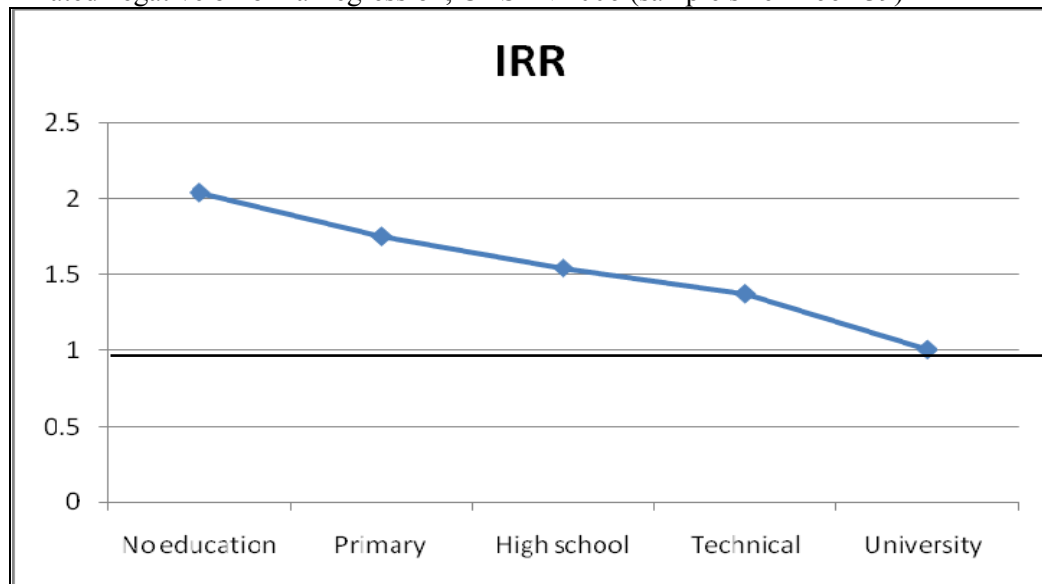
Appendix-9.2 presents the histograms and overdispersion tests for the 2 count variables. Appendix-9.3 presents the Vuong test comparing negative binomial with zero-inflated negative binomial regression for the relationship between each SDH and these variables.

9.3.2.a) Immigrants versus the Chilean born

Partially adjusted models of the number of *medical attentions* received in the past month in the immigrant population show that age is significantly associated with this outcome (IRR 1.01, weighted zero-inflated NB regression). Within the Chilean-born population, age and female gender are positively associated with this outcome (IRR 1.006 and 0.18, respectively, non-weighted zero-inflated NB regression), while living in a rural area shows a negative association (IRR 0.67). The number of household members, employment status, and use of health care services also show a significant association with with this outcome in the local population (Table-A9.6, Appendix-9.1).

Partially adjusted models of the number of *emergency attentions* received in the past month in the immigrant population show that public provision is positively associated with this health outcome (public free of charge IRR 1.46, public with co-payment IRR 1.16, private type reference; trend p-value<0.05; weighted regular NB regression). Among the Chilean-born population, all demographic determinants are significantly associated with the number of emergency attentions, with the exception of ethnicity and the number of household members. The higher the household income per capita, the lower the risk of presenting this short-term outcome and, similarly to the number of medical attentions, there is a clear negative gradient by educational level in the Chilean-born (Figure-9.17; non-weighted zero-inflated BN regression). There is a higher risk when the number of household assets rises (HAI IRR 1.59), but a lower overall risk when all material conditions are combined together (CMI IRR 0.60; non-weighted zero-inflated BN regression). There is an increased risk of an emergency attention among those Chilean-born who receive cervical cancer screening or a higher number of preventive programme attentions received in the past (IRR 1.16 and 1.26, respectively, non-weighted zero-inflated NB regression) (Table-A9.7, Appendix-9.1).

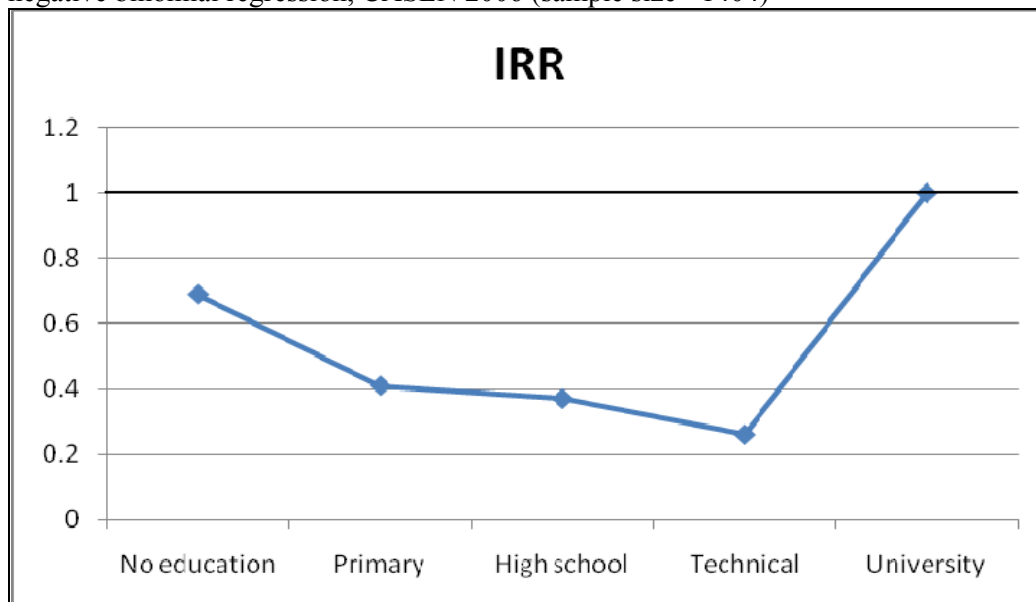
Figure 9.17 Partially adjusted IRR of the number of emergency attentions received in the past month by educational level among the Chilean-born population, non-weighted zero-inflated negative binomial regression, CASEN 2006 (sample size= 266 439)



With regards to the SDH affecting the risk of presenting an increased number of *medical attentions* in the past month among immigrant children (<16 years old), there is a higher risk among older and male children (IRR age 1.22, IRR female 0.35; non-weighted zero-inflated NB regression). Among working age immigrants (16-65 years old), both household income per capita and educational level have a marginal effect over the number of medical attentions received (IRR household income 0.99, p=0.058) (Figure-9.18; trend p value=0.067). In the elderly immigrants group (>65 years old), no SDH included in the analysis seems to affect the number of medical attentions received in the past month.

There is a lower risk of *emergency attentions* among immigrant girls over boys (IRR 0.68; weighted regular NB regression). In the working age group, those belonging to an ethnic minority have a higher risk of an increased number of emergency attentions (IRR 1.75; weighted regular NB regression). In the elderly immigrant group, sex and household income per capita have a modest effect on the number of emergency attentions received in the past month (IRR female 0.63, IRR household income continuous variable 1.0001; weighted regular NB regression). No significant association was found among the immigrant female population.

Figure 9.18 Partially adjusted IRR of the number of medical attentions received in the past month by educational level among working age immigrants, non-weighted zero-inflated negative binomial regression, CASEN 2006 (sample size= 1404)



Among immigrant males, there is a higher risk of *medical attentions* when living in the Central and Southern area, compared to the Northern area (IRR 3.12 and 1.97, respectively; trend p-value<0.05; non-weighted zero-inflated NB regression). There is also a negative association between household income per capita and arecent health event among men (IRR 0.99). The single variable associated with this health event among immigrant women is provision type. Immigrant women with access to all provision types except private show a lower risk of presenting this outcome (Figure-9.19; trend p-value<0.05). With regards to the number of *emergency attentions* in the immigrant male population, those who belong to an ethnic minority are less likely to present with this outcome (IRR 0.01; weighted zero-inflated NB regression). There is a higher risk of presenting with this short-term outcome if belonging to any public health care provision (Figure-9.20).

Figure 9.19 Partially adjusted IRR of the number of medical by provision type among immigrant females, CASEN 2006 (sample size 266 439)

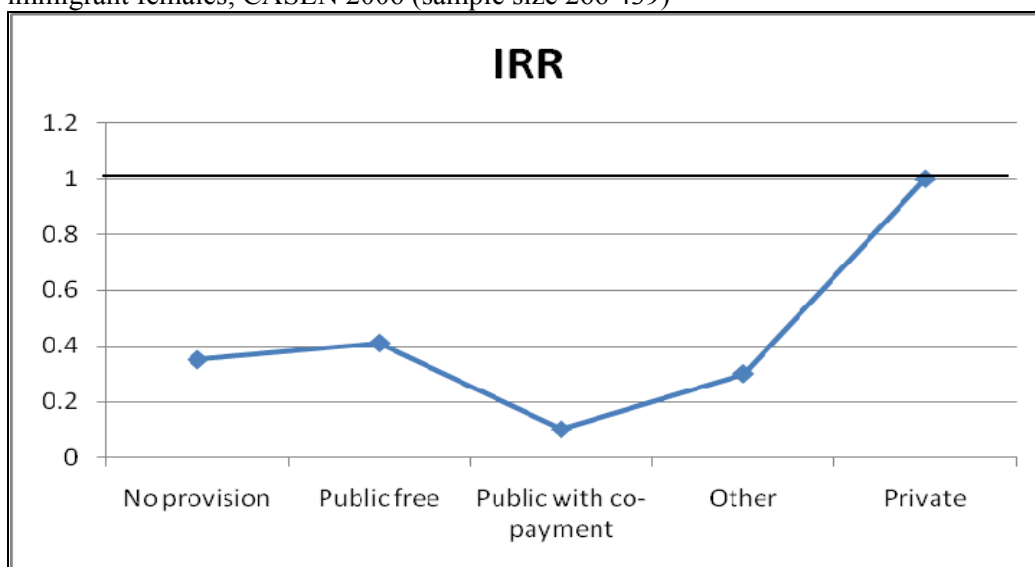
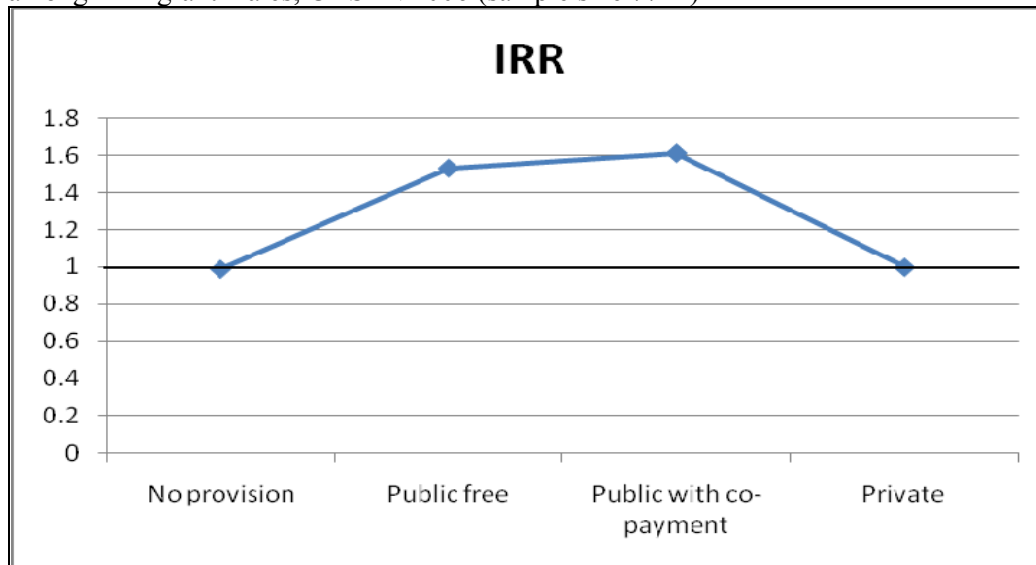


Figure 9.20 Partially adjusted IRR of the number of emergency attentions by provision type among immigrant males, CASEN 2006 (sample size 7712)

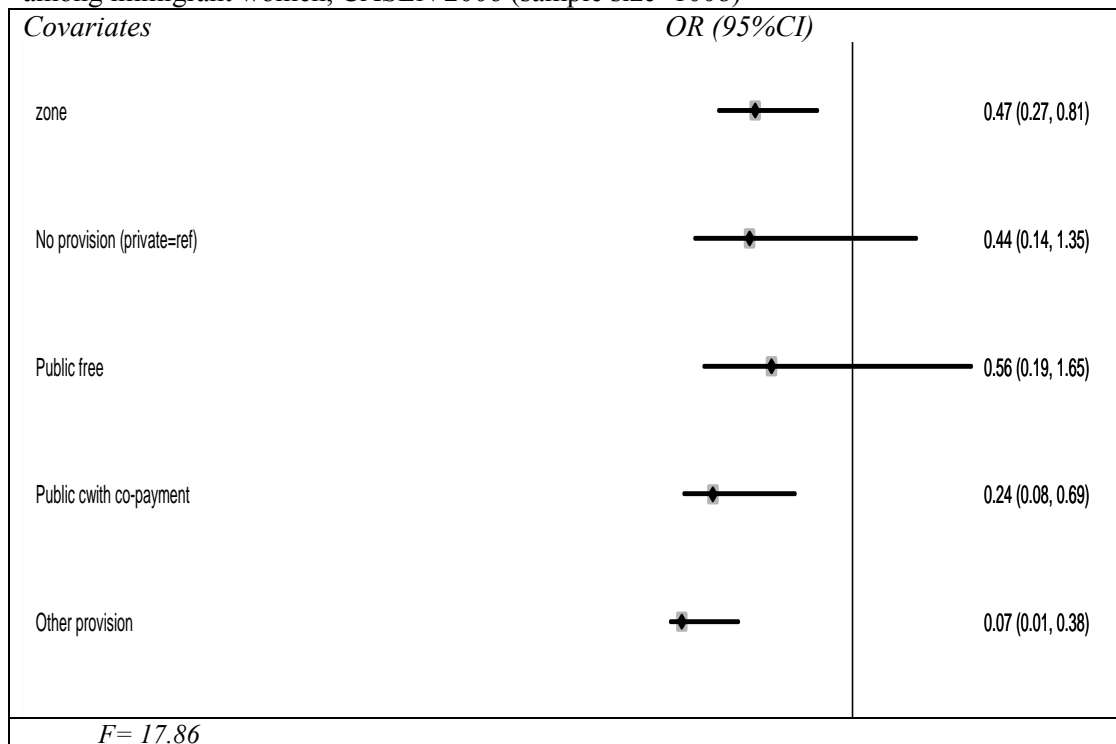


9.3.3 Final models

Among immigrants, age is consistently associated with the number of *medical attentions* received (IRR 1.02, weighted zero-inflated NB regression, $F=12.95$, McFadden Adjusted $R^2=0.7\%$, AIC GOF test value= 1.10). In the Chilean-born population, sex (IRR female 1.07), living in a rural area (IRR 0.80) and having access to other preventive programmes (IRR 1.30) are significantly associated with this recent event (weighted zero-inflated NB regression, McFadden Adjusted $R^2=2.00\%$, AIC GOF test value= 2.14).

Final models by sex show that age (IRR 1.02) and living in rural areas (IRR 0.37) affect this outcome in male immigrants (non-weighted zero-inflated NB regression, McFadden Adjusted $R^2=0.9\%$, AIC GOF test value=0.99), whereas it is rural living (IRR 0.47) and provision type (negative gradient; trend $p\text{-value}<0.05$) that affect this outcome among immigrant women (Figure-9.21; non-weighted zero-inflated NB regression, McFadden Adjusted $R^2=1.50\%$, AIC GOF test value=1.17). Among the immigrant children, household assets and material conditions are associated with this outcome (HAI IRR 0.09, CMI IRR 3.18, weighted regular NB regression, $F=6.84$, McFadden Adjusted $R^2=5.00\%$, AIC GOF test value=2.70). For immigrants of working age, ethnicity is associated with this recent event (IRR 0.54, weighted regular NB regression, $F=9.61$, McFadden Adjusted $R^2=0.20\%$, AIC GOF test value=3.80). For elderly immigrants, those with a higher household income and those from Argentina show a lower risk of having this outcome (household income IRR 0.99, Argentina IRR 0.35, weighted regular NB regression, $F=16.46$, McFadden Adjusted $R^2=0.9\%$, AIC GOF test value=0.20).

Figure 9.21 Final model of the **number of medical attentions** received in the past month among immigrant women, CASEN 2006 (sample size=1008)



Provision type is the single significant variable affecting the number of **emergency attentions**, with a weak negative gradient (Figure-9.23, trend p-value<0.05; weighted regular NB regression, F=645.35). The Chilean-born, in contrast, show a significant association with rural living, educational level and access to different prevention programmes (Figure-9.23, non-weighted zero-inflated NB regression). A similar model excluding use of health care services among the Chilean-born appears in Table-A9.8, Appendix 9.1, for further comparison. This model shows similar results to the one presented in this section.

By sex, the area of the country is associated with this outcome among immigrant men (Central IRR 0.55, Southern IRR 0.51, Northern ref., trend p-value<0.001; weighted regular NB regression, F=253.48). Access to different preventive programmes and education are associated with emergency attentions in immigrant women (Figure 9.24, weighted regular NB regression, F=3.84). Children coming from Peru and with a lower HAI have a higher chance of presenting with this outcome (Peru IRR 2.10, HAI IRR 0.06, weighted regular NB regression, F=8.81). In the working-age immigrant group, living in a rural area, HAI and CMI are associated with the number of emergency attentions (Figure 9.25; weighted regular NB regression, F=1.82). Finally, in the elderly group, those with a higher household income per capita (continuous variable) have a higher risk of presenting this outcome (IRR 1.0001, weighted regular NB regression, F=351.86).

Figure 9.22 Final model of the **number of emergency attentions** received in the past month among immigrants, CASEN 2006 (weighted sample size=154 431)

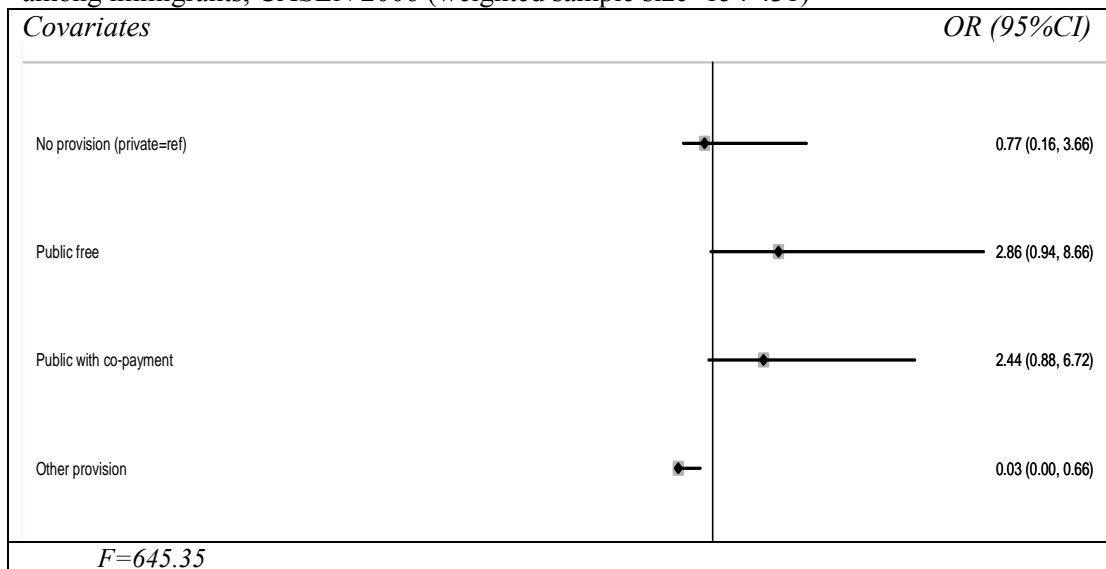


Figure 9.23 Final model of the **number of emergency attentions** received in the past month among the Chilean-born, CASEN 2006 (sample size=28 769)

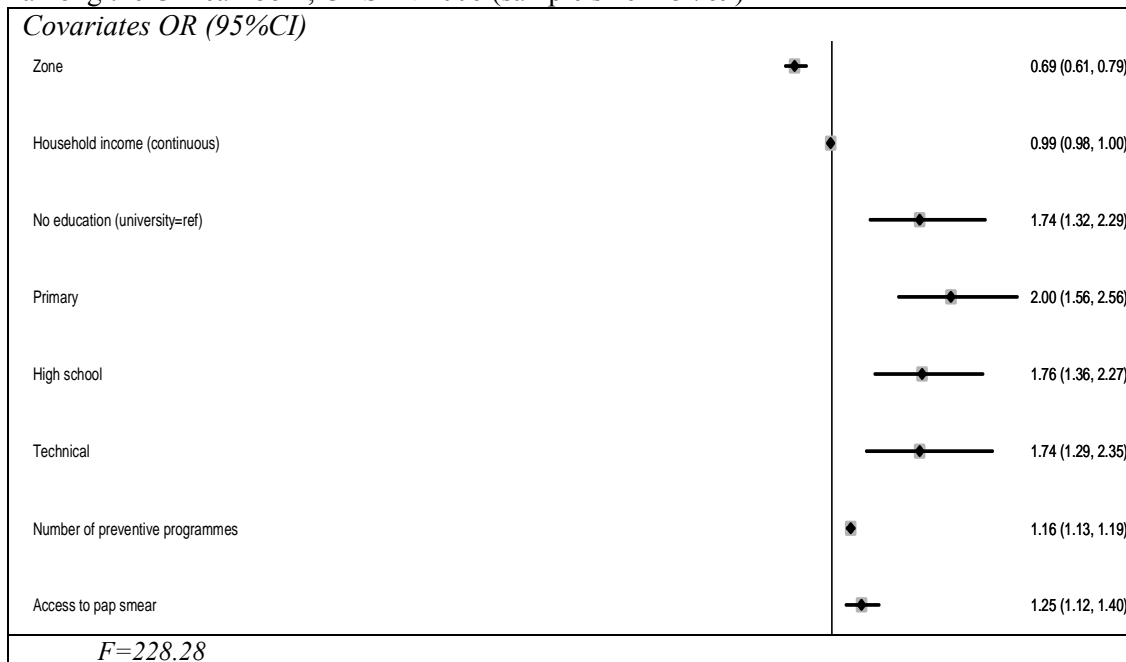


Figure 9.24 Final model of the **number of emergency attentions** received in the past month among immigrant women, CASEN 2006 (weighted sample size=154 431)

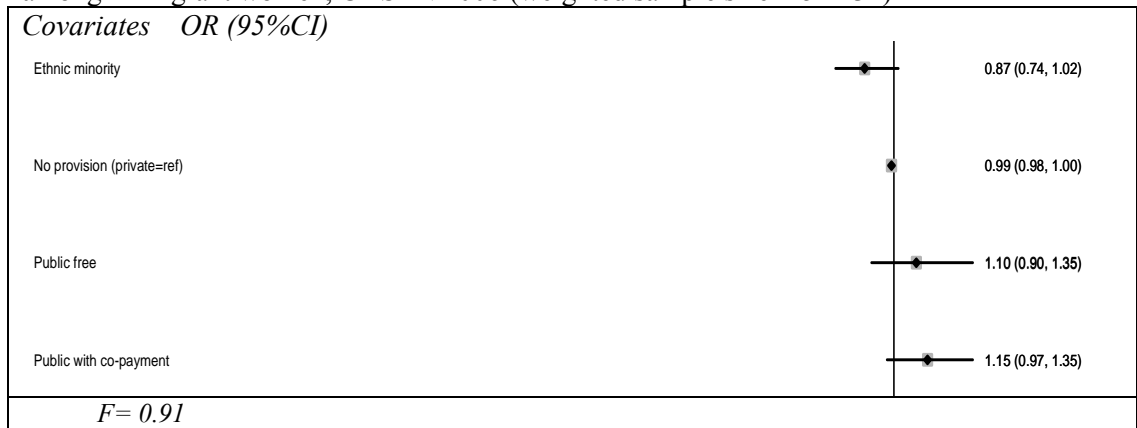
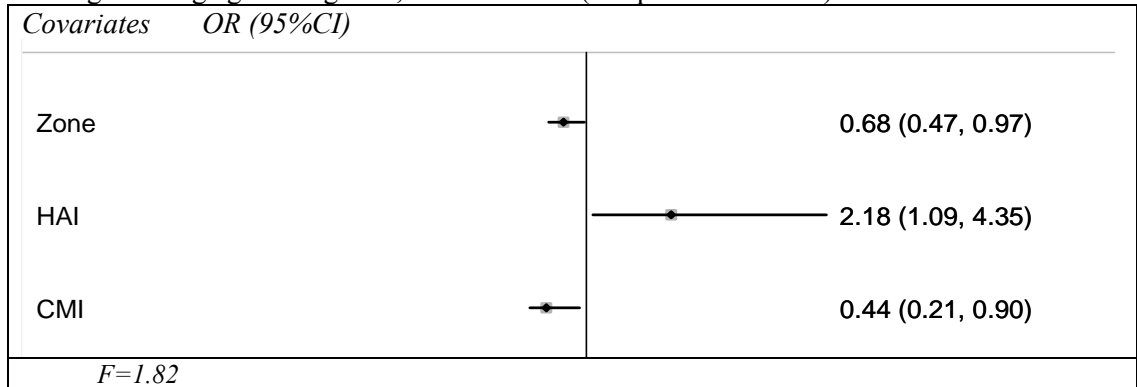


Figure 9.25 Final model of the **number of emergency attentions** received in the past month among working age immigrants, CASEN 2006 (sample size=28 769)



9.4 DISCUSSION

9.4.1 Summary of key findings

The key findings from this chapter are summarised in the following Figures 9.26-9.28.

Figure 9.26 Summary of key findings on *AHPA* in the immigrant population

1. The immigrant population shows a lower prevalence of this outcome than the Chilean-born population. Within the immigrant group, women and older people, those living in the poorest income quintile, those without education, and those coming from Argentina, show a higher prevalence of this outcome.
2. Partially adjusted models show that the SDH that increase the chance of having any health problem or accident in the past month among immigrants are not having a job or being under a temporary contract, being inactive, having no provision and working in the public sector. Other significant social determinants appear when stratifying by sex and age group in the partially adjusted models in this group.
3. Final logistic models show that age and other health events are strongly associated with this outcome in the total immigrant population and among immigrant women, while SES is associated among immigrant men. Socioeconomic status is the most important variable among immigrant children, whereas sex and age are most important within the working age group and SES and other health problems in the elderly immigrant population.

Figure 9.27 Summary of key findings on *medical attentions received in the past month* in the immigrant population

1. There is no difference in the mean number of medical attentions between the immigrant and the Chilean-born population. Within the immigrant population, those who belong to an ethnic minority group have a lower mean number of medical attentions, and those who are older, come from Bolivia and with a longer period of time living in the country show a significantly higher mean number.
2. Partially adjusted models show that age is positively associated with this outcome in the immigrant population, but different demographic and socioeconomic determinants of health affect the number of medical attentions received in the Chilean-born. Again, other significant social determinants appear when stratifying by sex and age groups in the partially adjusted models.
3. Age is consistently associated with the number of medical attentions among immigrants. In the male immigrant group, age and rural living are associated with this outcome, while rural living and provision type are associated with this outcome among females. Material conditions affect the number of medical attentions among immigrant children, ethnicity in the working age group and income and country of origin among the elderly.

Figure 9.28 Summary of key findings on *emergency attentions received in the past month* in the immigrant population

1. There is a lower mean number of emergency attentions in the immigrant population compared to the Chilean-born. More immigrants seek emergency care just once, while the Chilean-born tend to do so more often. Within the immigrant group, there is a negative gradient of the mean number of emergency consultations by SES cluster.
2. Provision type is a determinant of the number of emergency attentions received in the immigrant group, while various demographic, socioeconomic, material and migration dimension affect this outcome in the Chilean-born population.
3. Final adjusted models repeat the findings of the partially adjusted models, health care provision type is strongly associated with this outcome in the total immigrant population, with a weak negative gradient related to costs associated with each provision type. Among immigrant men, the area of the country affects this outcome, while education and access to other preventive programmes affect the number of emergency attentions among immigrant women. Final adjusted models show that material conditions, rural living and country of origin are relevant social determinants of this outcome in different age groups.

9.4.2 Methodological discussion

As can be observed in the previous sections of this chapter, in almost every estimated model in the immigrant population, the most parsimonious models show lack of statistical fit and the proportion of variance explained by these models is also low. Even though the analytical approach to these recent health outcomes attempted to provide robust and efficient estimates, results presented here should still be considered as exploratory findings in need of confirmation. Future strategies, like the reduction of the proportion of missing values in the migration status question from the CASEN survey, could significantly improve this issue. Moreover, the inclusion of other new dimensions of the migration experience and migration status in Chile could also make a relevant contribution to the proportion of variance that could be explained for the different health outcomes. Following the discussion from Chapter 7 on socioeconomic status, there should also be a methodological discussion on the relevance and usefulness of both the HAI and the CMI. As Tables 9.2 and 9.3 show, there is a rather consistent non-significant association between HAI and CMI and the different recent health outcomes. The same is found in the Chilean-born, with the exception of the number of emergency attentions in the past month.

Table 9.2 Adjusted OR or IRR (by demographic and socioeconomic) of **recent health events in the Chilean-born**. A comparison between different dimensions of material determinants of health, CASEN survey, 2006 [Significant values in grey shade in the table]

Health Outcomes	Overcrowding rate (Townsend criteria)		Sanitary Index		Household quality Index				HAI (9 assets)		CMI (all previous combined)	
	OR-IRR	95% CI	OR-IRR	95% CI	Substandard		Unfit		OR-IRR	95% CI	OR-IRR	95% CI
					OR-IRR	95% CI	OR-IRR	95% CI				
Any health problem/accident	0.84	0.77-0.88	1.31	1.24-1.37	0.96	0.91-1.01	0.89	0.73-1.10	1.01	1.007-1.02	1.01	1.01-1.02
Number of medical attentions	1.06	1.02-1.10	1.07	1.01-1.13	0.95	0.95-1.02	0.98	0.89-1.18	0.99	0.98-1.004	0.99	0.98-1.003
Number of emergency attentions	1.17	1.10-1.25	1.07	1.01-1.13	1.01	0.97-1.05	0.97	0.87-1.18	1.002	0.98-1.03	1.008	0.98-1.01

Table 9.3 Adjusted OR or IRR (by demographic and socioeconomic variables) of **recent health events in the IIP**. A comparison between different dimensions of material determinants of health, CASEN survey, 2006 [Significant values in grey shade in the table]

Health outcomes	Overcrowding rate (Townsend)		Sanitary Index		Household quality Index				HAI (9 assets)		CMI (all the previous combined)	
	OR-IRR	95% CI	OR-IRR	95% CI	Substandard		Unfit		OR-IRR	95% CI	OR-IRR	95% CI
					OR-IRR	95%CI	OR-IRR	95% CI				
Any health problem/accident	0.98	0.57-1.68	1.14	0.60-2.16	1.43	0.86-2.37	2.24	0.43-11.63	1.02	0.94-1.10	1.03	0.95-1.11
Number of medical attentions	0.90	0.64-1.27	1.57	0.88-2.80	0.75	0.60-0.95	0.90	0.16-5.39	1.02	0.96-1.08	1.02	0.96-1.08
Number of emergency attentions	1.35	1.02-1.84	0.94	0.88-1.11	0.99	0.83-1.03	0.94	0.16-5.39	0.98	0.95-1.007	0.97	0.94-1.004

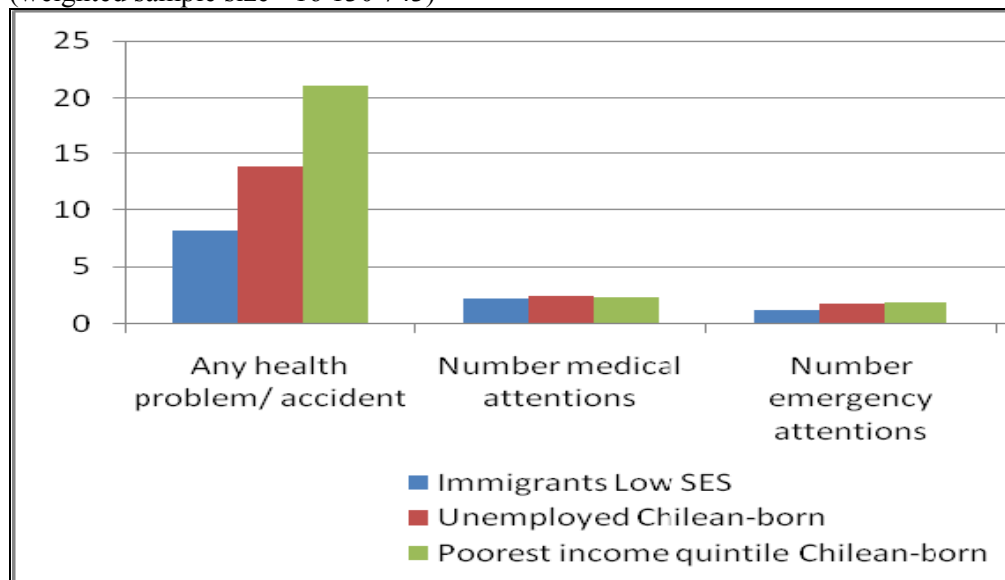
9.4.3 Discussion and interpretation of key results among immigrants in the Chilean context

9.4.3.a) The relative importance of SES in the context of the healthy migrant effect

The great socioeconomic heterogeneity within the immigrant population in Chile described in Chapter 7 could also explain some of the differences observed in the recent health events explored in this chapter. Even though there seems to be a “healthy migrant” effect, as described in Chapter 3, there are differences by SES. The health migrant effect disappears in the low SES immigrant cluster. Individual SES (income, education, occupation, contractual status) affects each health event considered in this study, especially AHPA. Immigrant men living in either Low or Medium SES-clusters show a three fold higher chance of presenting with any health problem/accident than immigrant men in the high SES cluster.

There is no significant difference in the prevalence of recent health events between immigrants in the Low-SES cluster and the unemployed Chilean-born (Figure-9.29) despite the immigrants being on average 8 years younger. Results suggest the complexity involved in the health status of the IIP and how different measures of SES might indicate specific components of the multidimensional concept of social position. However, other important dimensions of social position are not included in this study and could contribute to the differences in recent health events, such as experiences of stigma and discrimination, occupational conditions and the special status of political refugees in need that might live in Chile.

Figure 9.29 Crude prevalence/mean of different recent health events, comparison between Low-SES immigrants, unemployed and poorest income quintile Chilean-born, CASEN 2006 (weighted sample size= 16 130 743)



Country of origin and years living in the country are also important variables affecting the incidence of recent health events included in this chapter. In the final adjusted models, country of origin is significantly associated with the number of medical and emergency attentions received in the past month. Elderly immigrants from Argentina show a lower risk of high numbers of medical attentions received in the past month, whereas immigrant children coming from Peru have a higher risk of emergency consultations in the same time period. These significant associations between health and country of origin suggest the importance of the context of origin in the current living conditions and health status of international immigrants in Chile.

With regard to years living in the country, there is a positive unadjusted gradient of the mean number of medical attentions in the total immigrant population. Even though there is no consistent association between years living in the country and the three recent health events in the IIP, there is some suggestion of the “paradox of assimilation” for the number of medical attentions. This paradox, as described in Chapter 3, proposes an increased rate of mortality and morbidity events over time among international immigrants, as their health becomes more similar to the local population or worse (Rumbaut, 1997; Fennelly, 2005; Lassetter and Callister, 2009). Immigrants living less than a year in Chile might report the health status that they had before migrating to this country. In fact, immigrants living over 20 years in country show a 5 to 10 fold higher prevalence of the health events included in this chapter than immigrants with less than a year in the country. The extent and the speed to which immigrants’ health deteriorates over the years they are living in Chile needs further study.

9.4.4 Contrasting key findings with the international literature: the Latino paradox and mobility bias

Along with the healthy migrant effect, the Latino paradox described in Chapter 3 should also be discussed. The Latino paradox reports lower rates of mortality and morbidity in the Latino immigrant population in the host society (e.g. USA and the UK as described in the international literature) versus the native population. Cultural protective factors like social cohesion could be at the root of such differences (Shaw, Pickett and Wilkinson, 2010). This paradox has been observed even among the most deprived Latino immigrants living in the host country. In this study, the Latino paradox cannot be tested in a straightforward fashion, since it is located in the Latin American region. Nonetheless, significant differences in the likelihood of presenting with some of the recent health outcomes included in this study by

country of origin could imply relevant cultural differences that might be related to differences in the migration process and the life experience in Chile. Moreover, as Chile is a Latin American country it could be suggested that immigrants coming to this country from outside this region would be “naturally” protected by this society, including those most deprived, but that seems not to be the case. Again, immigrants in the low SES cluster are not better off than the local Chilean-born and in some cases, such as that of women, children, the elderly or the least educated immigrants, have the same health rates as the native population in Chile.

Another interesting issue to discuss is related to the existence of some mobility bias in this piece of research. Mobility bias would result from an inflation of the denominator base in the prevalence of some health events, due to migrants often returning to their home country for short periods of time (Matos et al, 1991). For example, Peruvian female immigrants whose children live in their country of origin might decide to return to Peru for short periods of time and receive some medical care before they return to Chile to work. No variable from this dataset allows exploration of this idea, but it could be addressed in future related studies. A third of the total immigrant population has lived in Chile for less than a year and some of this group might be immigrants in circular migration within Latin America, staying for short periods in the country and moving to other countries for labour opportunities in a continuous migration process. The healthy condition that is required for this type of circular migration could also explain some of the lower rates among immigrants compared with the Chilean-born and could be further assessed in the future.

9.4.5 Summary and further research in this area

According to the key findings of this study, the association between recent health events and demographic, socioeconomic, material and migration determinants continues to exist. Its complexity cannot be understated, but the significant associations found between health, migration and the SDH included in this study could be considered by policy makers and other relevant institutions in Chile. Future research could divide the outcomes included in this chapter into separate measures and incorporate the causes of these health events. Other recent health events could also be investigated, such as infectious diseases including HIV and AIDS, clinical biomarkers and individual-risk behaviours and also mortality rates. These could be particularly relevant health outcomes in the immigrant population in Chile, particularly when considering the high prevalence of these health outcomes among immigrants in the international literature (see Chapter 3).

CHAPTER 10

WHAT IS THE HEALTH STATUS OF IMMIGRANTS IN CHILE AND HOW DOES IT COMPARE TO THE CHILEAN-BORN POPULATION? PART II: CHRONIC CONDITIONS

Summary Box 10

What research question is included in this chapter?

What is the health status (chronic health conditions) of international immigrants in Chile and how does it compare to the Chilean-born population?

What is already known?

Previous qualitative studies in Chile indicate that immigrants in Chile experience significant health needs that might not be fully covered by the health care system while living in Chile.

What does Chapter 10 add?

Compared to the Chilean-born, immigrants living in Chile have a lower prevalence of some chronic health conditions. There are, however, clear gradients of these health outcomes by SES cluster, country of origin and years living in the country.

Overview

This chapter is dedicated to exploring the relationship between two chronic conditions, disability and any medical attention received for a chronic condition or cancer in the past year; and different sets of SDH. Results from this chapter complement the previous one on recent health events in the international immigrant population compared with the Chilean-born.

Introduction

This chapter is structured in four sections. The first explains the analytical approach to this chapter. The second describes the prevalence and SDH associated with any disability and six different types of disability among immigrants in the country (visual, hearing, physical, learning, speaking and psychiatric). The third section presents the prevalence and SDH associated with any health care consultation for a chronic condition or cancer in the past year. The fourth section discusses the key findings from this chapter, contrasting them with international literature and suggesting further possible steps for research in Chile on this topic.

10.1 BRIEF LITERATURE REVIEW AND METHODOLOGICAL EXPLANATION

Two chronic conditions are available in the CASEN survey 2006: disability, and any health care attention due to a chronic condition or cancer. Both of them are recognised public health problems in Chile and their prevalence has increased over time (ENS, 2003; ENS 2009).

Regarding *disability*, it has been defined as a worldwide public health priority and the International Classification of Functioning, Disability and Health (ICF) has proposed a shift from a biomedical perspective of this dysfunction to a broader social understanding of disability (WHO, 2001). By including contextual factors in the classification, ICF allows the impact of the environment on a person's functioning to be recorded (WHO, 2000; WHO, 2001). The Social Determinants of Health (SDH) in this sense have emerged as a significant aspect of current debates on the role of disability as a barrier to addressing health inequalities in Chile, and achieving health for all (WHO, 2008). This study explores this relationship in international immigrants and differences from the Chilean-born population. Analysis by type of disability (visual, hearing, physical, learning, speaking and psychiatric) and age group is also considered.

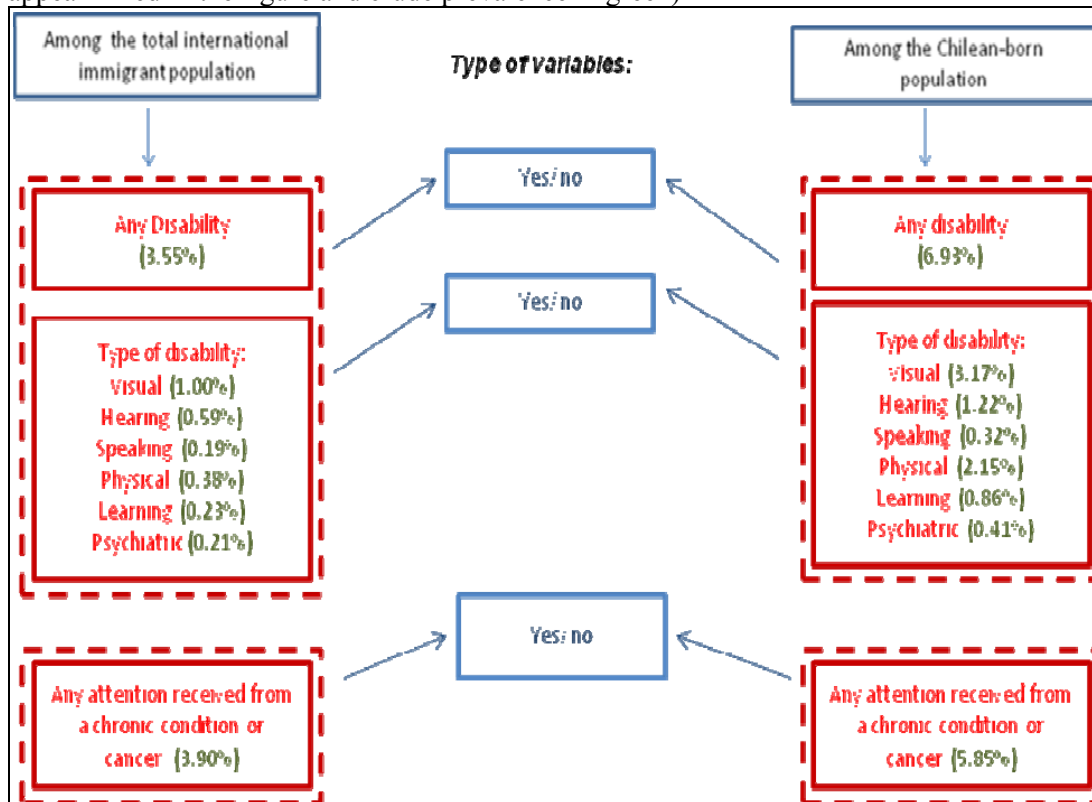
Regarding *chronic conditions or cancer*, their prevalence and risk factors have been widely researched and their patterns are known to differ between countries, especially when comparing developed and developing ones. Therefore, immigrants could face different types and magnitudes of risk for chronic health problems in both the country of origin and the host country. Most migration in the world has flowed from low-income to high-income countries and immigrants might have brought health issues related to poverty into wealthy countries (EESC, 2007). On the other hand, immigrants may have an increased risk of a chronic condition in the host country over time, not only due to aging but also to other social determinants that exist in the more developed country. Some negative chronic consequences of migration have been reported to be higher body mass index, respiratory diseases, coronary heart disease, and diabetes (Cagney, Browning and Wallace, 2007; Dubowitz et al., 2007; Park et al., 2008; Alter, Austin and Tu, 2005; Fagerli, Lien and Wandel, 2005; Finucane and McMullen 2008; Fischbacher, 2001).

In addition, there is literature concerning *cancer* incidence among migrant populations. Most of the studies have explored lung (Buiatti et al., 1985; Singh and Siapush, 2001), bladder (Vigotti et al., 1988), stomach and colorectal (Fascioli, Capoccacia and Marioti, 1995), breast and gynaecological cancers (Toniolo et al., 1989; Kliewer and Smith, 1995). Many studies have examined cancer rate differences between the immigrant and the host or sending populations in the past. The literature tends to support the idea that risk factors for cancer due to environmental determinants change after migration, with a continuum from very low risk

(healthy migrant effect) to a higher risk for some cancers more common in developed countries (breast cancer, for example). In the Latin American context, there are some studies exploring the relationship between different Social Determinants of Health and disability and chronic conditions, most of them among the elderly population (Menendez et al., 2005; Al Snih et al., 2010; Reyes-Ortiz et al., 2006) and using self-reporting measures (Wong, Pelaez and Palloni, 2005). These studies have found that the population in Latin America is aging and that the prevalence of obesity varies significantly between countries. None of these studies, however, have taken into account migration. No study in Latin America was found to analyse the relationship between disability and migration at the time the literature search was conducted. With regards to chronic conditions and migration, only two studies were found and these reported the relative higher rates of Chagas disease among Latin American immigrants in France (Salamanca et al., 2009) and Switzerland (Jackson et al., 2010). Concerning cancer rates among Latin American migrants or migrants in Latin America, three studies were found and these were located in the Netherlands (Vermeer and van den Muijsenberg, 2010), Argentina (Matos et al., 2001), and Cuba and the US (Shai, 1991). These studies suggest mixed rates of cancer among immigrants, depending on the type of cancer considered and in the cases of lower rates a disappearance of this lower rate over the time living in the foreign country. Further details of these studies appear in Table 10.3 at the end of this chapter.

Chile has a lower prevalence of disability compared to other Latin American countries (FONADIS, 2004), but a growing overall prevalence of chronic conditions (ENS, 2003; ENS, 2009). The CASEN survey 2006 includes an overall measure of disability (“any disability”), six sub-types of disability (visual, hearing, speaking, learning, physical, psychiatric) and also a question on reported causes of disability. In addition, it uses a single combined indicator of having received any health care attention due to a chronic disease or cancer in the past year, but it does not explore further information concerning type, severity, or current treatment of these health outcomes. All these variables are binary and specific analytical methods for this type of variable have already been described in Chapters 5 and 9 (e.g. Figure 9.1). A summary of key dependent variables included in this chapter appears in Figure-10.1. It should be noted that the health outcomes in this chapter are correlated to recent events included in Chapter 9. For example, an immigrant with a chronic condition could have also reported an accident in the past month (a “recent health event”). The division of outcomes between Chapters 9 and 10 is somewhat arbitrary and the link between them will be discussed later.

Figure 10.1 Summary of dependent variables included in this chapter (dependent variables appear in red in the figure and crude prevalence in green)



10.2 ANY DISABILITY AND DIFFERENT TYPES OF DISABILITY

10.2.1 Descriptive results

The international immigrant population (IIP) reports a significantly lower prevalence of any disability than the Chilean-born (3.55% versus 6.96%, $p < 0.001$). Likewise, both visual and physical types of disability are reported significantly less in the IIP than the Chilean-born (1.00% versus 3.17% and 0.38% versus 2.15%, respectively). All other types of disability are not significantly different between the two populations. The IIP also reports similar mean values of the number of disabilities and the proportions of causes of disability when compared to the Chilean-born. The only two exceptions are having one disability and having a disability due to an accident, which are significantly lower among immigrants ($p < 0.001$) (Table-A10.1, Appendix-10.1).

Stratified analysis shows that there is a clear positive gradient of any disability by age in both the immigrant and the Chilean-born populations (Figure-10.2). Male immigrants have a higher rate of any disability than the female immigrant population (4.33% versus 2.90%) and the opposite situation is observed among the Chilean-born (Figure-10.3). Regarding any disability by socioeconomic status, there is a clear negative gradient of this chronic health outcome by SES clusters in the immigrant group (Figure-10.4) and a negative gradient by household income quintiles and educational level in the immigrant and the Chilean-born groups (Figures-10.5-10.6). Similarly, unemployed people from the immigrant and the Chilean-born populations have a significantly higher prevalence of any disability (9.48% among immigrants and 8.78% among the Chilean-born) than those who are not unemployed. Ecuadorian immigrants have the lowest rate of any disability, followed by Bolivian and Peruvian (0.18%, 0.23% and 0.40%). There is no clear gradient of any disability by years living in the country, but those living in Chile for 20 years or more show the highest prevalence of this chronic condition (1.85%) (Table-A10.2, Appendix-10.1).

Figure 10.2 Crude prevalence of any disability by age groups in the immigrant and the Chilean-born populations, CASEN 2006 (weighted sample size= 16 130 743)

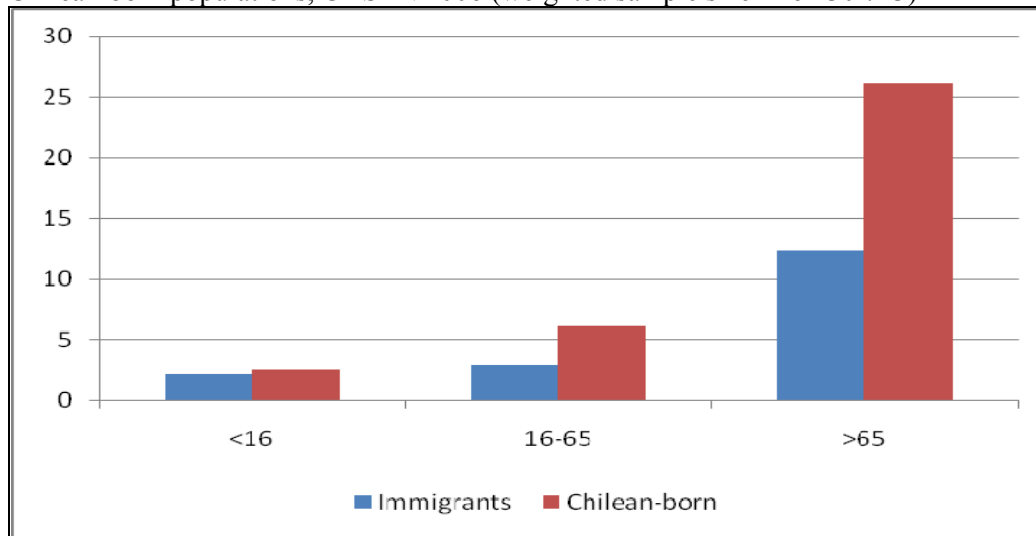


Figure 10.3 Crude prevalence of any disability by sex in the immigrant and the Chilean-born populations, CASEN 2006 (weighted sample size= 16 130 743)

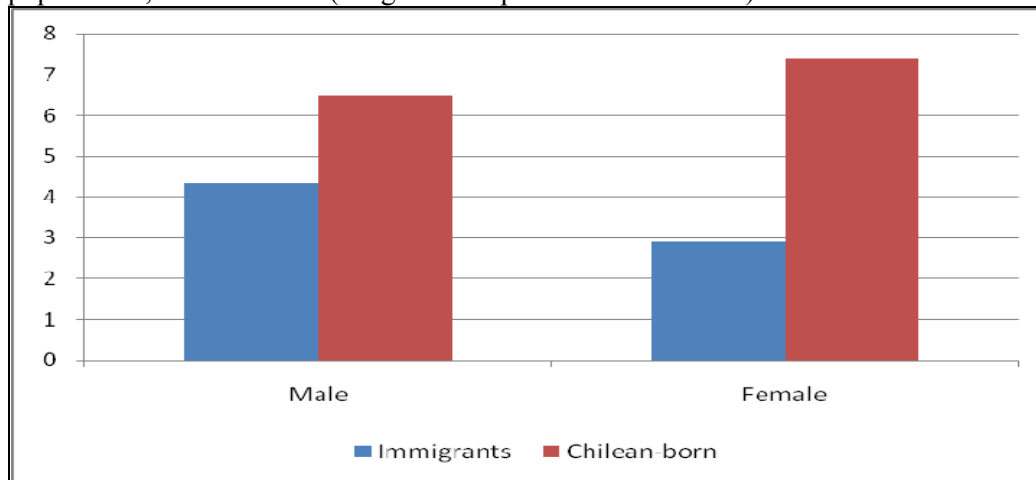


Figure 10.4 Crude prevalence of any disability by SES clusters in the immigrant population, CASEN 2006 (weighted sample size= 154 855)

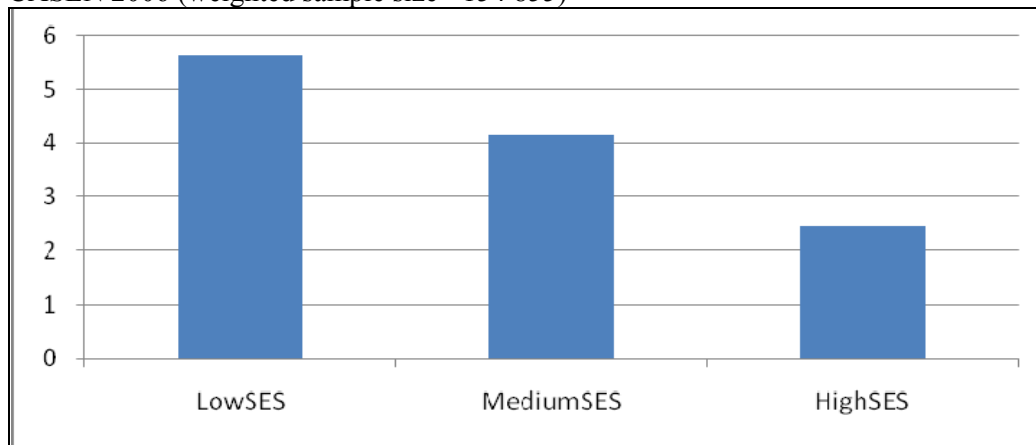


Figure 10.5 Crude prevalence of any disability by household income quintiles in the immigrant and the Chilean-born populations, CASEN 2006 (weighted size= 16 130 743)

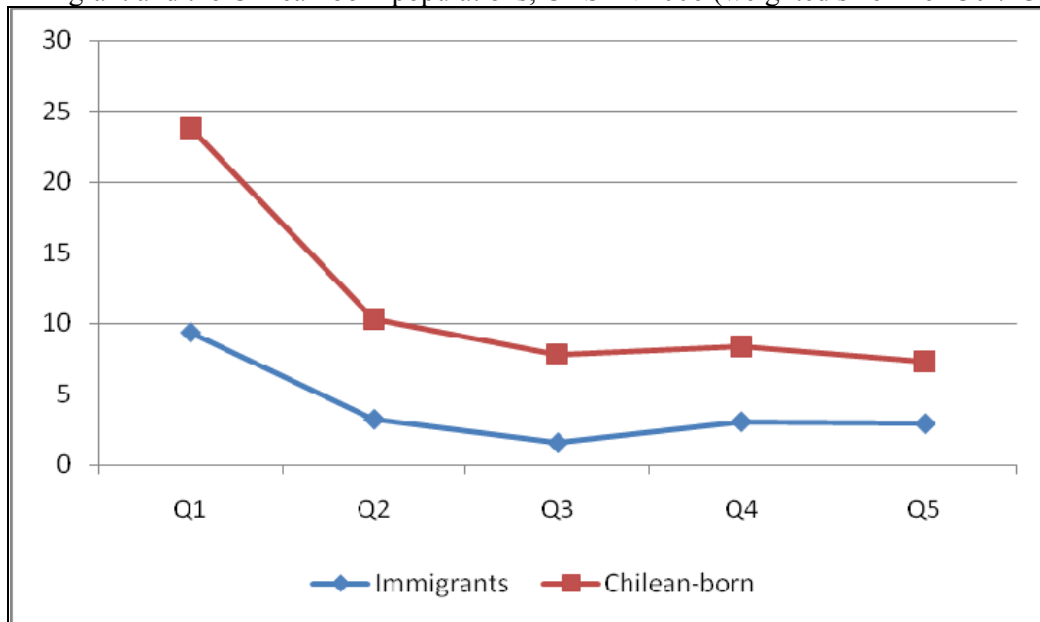
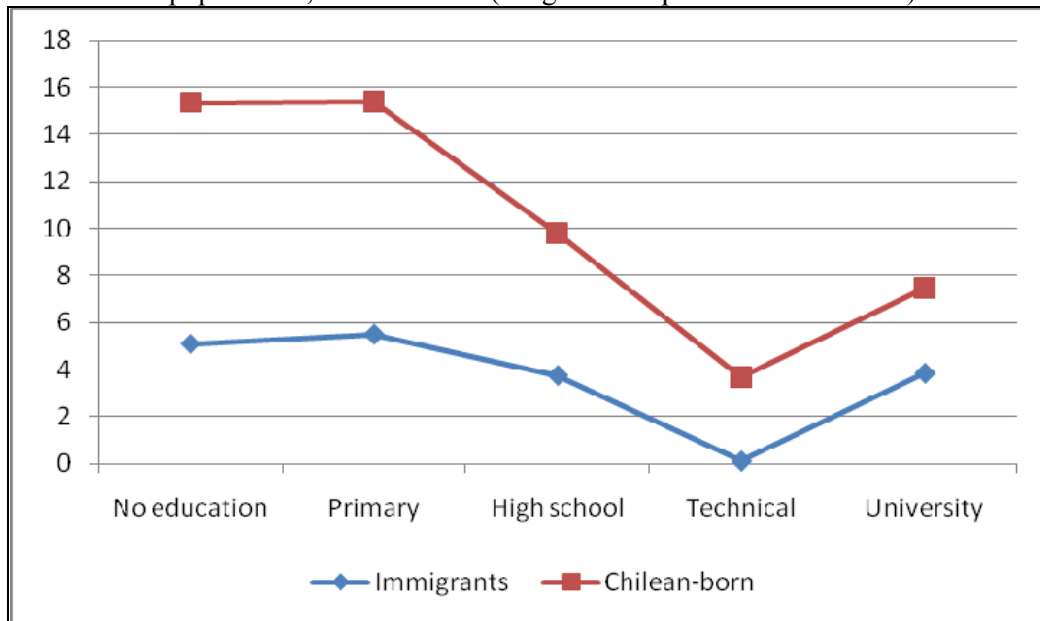


Figure 10.6 Crude prevalence of any disability by educational level in the immigrant and the Chilean-born populations, CASEN 2006 (weighted sample size= 16 130 743)



10.2.2 The relationship between any disability and each set of SDH

10.2.2.a) Any disability in the immigrant population versus the Chilean-born

Partially adjusted models were conducted to explore the relationship between any disability and different sets of SDH. Each set was adjusted by demographic variables (age, sex, zone, ethnicity and area of the country). Within the immigrant population, age is significantly associated with this chronic condition (OR 1.04, age as a continuous variable). Ill immigrants also show a higher chance of being disabled (OR 16.86, but trend p-value of inactive status >0.05) and immigrants with access to all types of health care provision but private are more likely to be disabled (trend p-value<0.0001). Among the Chilean-born in contrast, several SDH affect the chance of presenting with any disability (Table-A10.3, Appendix-10.1).

10.2.2.b) Any disability in the immigrant population versus the Chilean-born by age groups

Disability in the *immigrant child population* shows a significant association with sex (female OR 0.13), area of the country (central OR 8.77, Southern OR 3.77, Northern reference, trend p-value<0.001), and a clear negative gradient by SES clusters (Low SES OR 8.37, Medium SES OR 5.03, High SES reference, trend p-value<0.001). Chilean-born children in contrast, show a significant association with age (OR 1.05), belonging to a minority ethnic group (OR 1.46), living in rural settings (OR 0.77), income (clear negative gradient, trend p-value<0.001), and material determinants of health (CMI OR 3.28) (Tables-A10.4-A10.5, Appendix-10.1).

When comparing the *working age populations* between the immigrant and the Chilean-born, the immigrant working age population shows a positive association between any disability and age (OR 1.06), having an employment contract (OR 3.93), having access to the Pap smear programme (OR 0.05), provision type (all types with higher chance compared to private, trend p-value <0.001) and a non significant gradient by SES clusters (Low SES OR 3.16 and Medium OR 1.24, High reference, trend p-value >0.05). Within the adult Chilean-born population, there is a clear association with age (OR 1.05), marital status (single at a higher risk than all other types, trend p-value<0.001), belonging to an ethnic group (OR 1.18), the number of household members (OR 0.96, that is living alone at a higher risk, trend p-value<0.001) and a clear but not significant negative gradient by educational level, having a contract (OR 0.75), having a temporary job (OR 1.32), having access to the Pap smear programme (OR 0.67), having received preventive health care in the past (OR 1.08) and different material conditions (Tables-A10.4 and 10.5, Appendix-10.1).

Disability in *elderly immigrants* has a significant association with age (OR 1.33) and belonging to a minority ethnic group (OR 6.23). It also shows a clear negative gradient by SES clusters (Low SES OR 23.46 and Medium SES OR 6.37, High as the reference, trend p-value<0.001). Among the elderly Chilean-born, there are different SDH affecting the chance of presenting any disability. Age (OR 1.05), living alone (OR 0.95), and different material conditions are significantly associated with this chronic condition. In addition, there is a clear but not significant negative gradient by household income and educational level (Tables-A10.4 and A10.5, Appendix-10.1).

10.2.2.b) Partially adjusted models of any disability among immigrants by sex

Male immigrants show a consistent association between any disability and age (OR 1.04, p<0.001). No other SDH affects the chance of presenting with this chronic health outcome, with the exception of coming from Argentina (OR 0.20, marginal p-value of p=0.057). Within the female immigrant population, age and zone are significantly associated with any disability (age OR 1.05 and living in a rural area OR 2.85). Living in a rural area, however, loses statistical significance in the presence of material determinants (confounding effect). Belonging to a minority ethnic group is significantly associated with this health outcome only when adjusted by socioeconomic determinants and SES clusters. Provision type is also associated with any disability, as immigrants with access to every type of provision have a higher chance of being disabled when compared to those immigrants with private provision type (reference, trend p-value <0.01).

10.2.2.d) Partially adjusted models by type of disability: the IIP versus the Chilean-born

Six types of disability were included in the CASEN survey: visual, hearing, physical, learning, speaking, and psychiatric disability. Analysis of the relationship between each type of disability and the SDH in the IIP was conducted (adjusted by demographics, Tables-A10.6 and A-10.7, Appendix-10.1). In terms of *visual disability*, area of the country (trend p-value<0.001), the number of household members (OR 1.21) are significant factors associated with this outcome in the immigrant population, and those international immigrants working in the private and public sectors show a higher chance of presenting with disability type (OR 19.94 and OR 13.77 respectively, trend p-value<0.0001). Living in a household with an adequate sanitary index or overcrowded (OR 0.03 and OR 2.14) and immigrants with access to both types of public health care provision (free of charge OR 5.10 and with co-payment OR 2.28, trend p-value<0.0001) are more likely to have visual disability, whereas immigrants coming from Bolivia show a significant lower chance of presenting this condition (OR 0.22).

With regards to *hearing disability* in the IIP, immigrants living with someone else (OR 0.53) show a lower chance of this type of disability. Immigrants who have used any health care services in Chile (OR 0.02) and those coming from Argentina are also at a lower risk (OR 0.08). Concerning *learning disability*, people living in the rural area have a higher risk than those in the urban areas (OR 8.50). Immigrants are also more likely to have a learning disability caused by an accident or a disease compared to a congenital cause (OR 3.52 and OR 46.62, respectively, trend p-value<0.0001). Peruvian and Argentinean immigrants (OR 13.98 and OR 9.55, respectively) show a positive association with *physical disability* (p<0.001), along with living in rural settings (OR 3.95). No significant differences are found for *speaking disability*, with the exception of the number of household members (OR 0.75) and living in an overcrowded household (OR 0.09). For *psychiatric disability*, age (OR 1.06), the number of household members (OR 0.70) and coming from Ecuador (OR 46.35) have significantly more chance of this type of disability in the IIP.

Within the Chilean-born population, age, gender and having a primary level of education are all significantly associated with different types of disability, except for psychiatric disability. For most types of disability, there is a higher chance of being either single or divorced. Living in a rural area does not affect physical and cognitive disability, but it does affect the other four disability types. Educational level shows a gradient with all types of disability, except speaking disability. Income shows the same gradients for visual, speaking and psychiatric disabilities only. Employed Chilean-born people present a significantly lower chance of having a physical, cognitive, and psychiatric disability. Moreover, people with either a cognitive or psychiatric disability have a significantly higher chance of being self-employed, unemployed or inactive; while those with a visual or hearing disability have a higher chance of being economically inactive. Finally, only visual, physical and cognitive disabilities have any association with material living standards (Table-A10.7, Appendix-10.1).

10.2.3 Final models

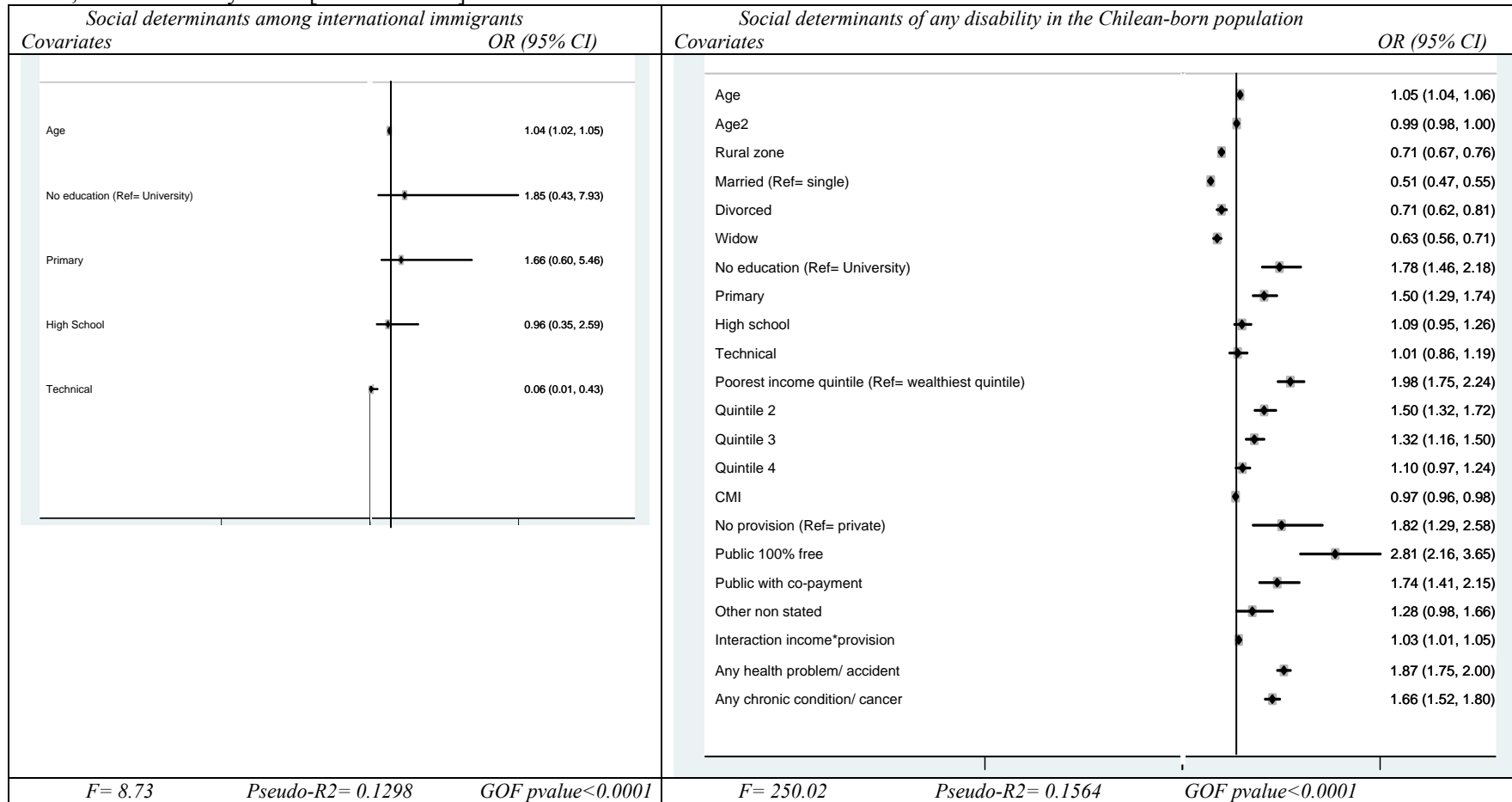
The final adjusted model presenting any disability in the IIP in Chile shows that age and educational level are the SDH independently associated with this long-term health outcome (trend p-value for educational level <0.05). No other covariate included in the model reaches a significant p-value or improves the fit of the model.

In contrast, several SDH are significantly associated with the chance of presenting with any disability in the Chilean-born population (Figure-10.7). Socioeconomic determinants and material conditions are independently associated with this outcome in the Chilean-born, but

the relative magnitude of material determinants decreases in the presence of education and income. A similar model excluding other health events among the Chilean-born appears in Table-A10.8, Appendix 10.1, for further comparison. This model shows similar results to the one presented in this section.

Among the immigrant children, the final model only includes sex as the significant determinant of any disability (OR 0.13, F value=4.75, Pseudo R2=12.58%). Within the adult immigrant population, age is the only covariate included in the final model (OR 1.06, F=11.46, Pseudo R2= 8.01%). The final model for the immigrant elderly includes age (OR 1.26), ethnicity (OR 36.73) and SES clusters (trend p-value<0.001, full model F value=7.32, Pseudo R2=13.46%).

Figure 10.7 Final adjusted models for any disability (multiple logistic regression), a comparison between international immigrants and the Chilean-born, CASEN survey 2006. [Line: OR=1.0]



10.3 ANY HEALTH CARE ATTENTION RECEIVED FOR A CHRONIC CONDITION OR CANCER IN THE PAST YEAR

10.3.1 Descriptive results

The IIP reports a lower rate of any chronic disease or cancer (excluding disability) in the last year than the Chilean-born (3.90% versus 5.85% $p < 0.001$, Table-A10.9, Appendix-10.1).

When stratifying by sex, the female Chilean-born population shows a higher prevalence of being treated by any chronic condition or cancer in the past year than the female immigrant group (4.09% among female immigrants and 7.20% among female Chilean-born). There is a clear positive gradient of this long-term health outcome by age group (Figure-10.8) but all immigrants under 65 years old have a significantly lower rate of this outcome than the same Chilean-born age group. There is a significantly higher prevalence of any chronic condition or cancer among minority ethnic groups, within both immigrants and the Chilean-born. Immigrants who did not belong to a minority ethnic group show a 9 times lower rate of having this outcome than the non-ethnic Chilean-born population (Figure-10.9).

There is no gradient of any chronic disease or cancer in the past year by household income quintile in the immigrant population and a modest negative gradient in the Chilean-born (Figure-10.10). The same findings appear by educational level (Figure-10.11) and by SES cluster (Figure-10.12). There is also a significantly higher rate of any chronic disease/cancer in the unemployed Chilean-born. The ranking of the prevalence of this health outcome by country of origin is as follows: Argentina (0.84%), Peru (0.47%), Bolivia (0.16%), and Ecuador (0.47%). Concerning years living in the country, international immigrants living less than a year in Chile are the ones with the highest proportion being treated by a chronic disease or cancer, followed by those living over 20 years in Chile (1.29% and 1.22%, respectively). The first group is mostly working-age population (66.52%, the rest are elderly) and women (63.16%). Most of them live in urban settings (98.80%) and in the Central area (79.90%), and do not belong to minority ethnic groups (98.65%). Almost 80% of them live in the two top income quintiles and work in the private sector, and 40% report university level education, but one in three reports not having a work contract.

Figure 10.8 Crude prevalence of any chronic condition or cancer by age groups in the immigrant and the Chilean-born populations, CASEN 2006 (weighted size= 16 130 743)

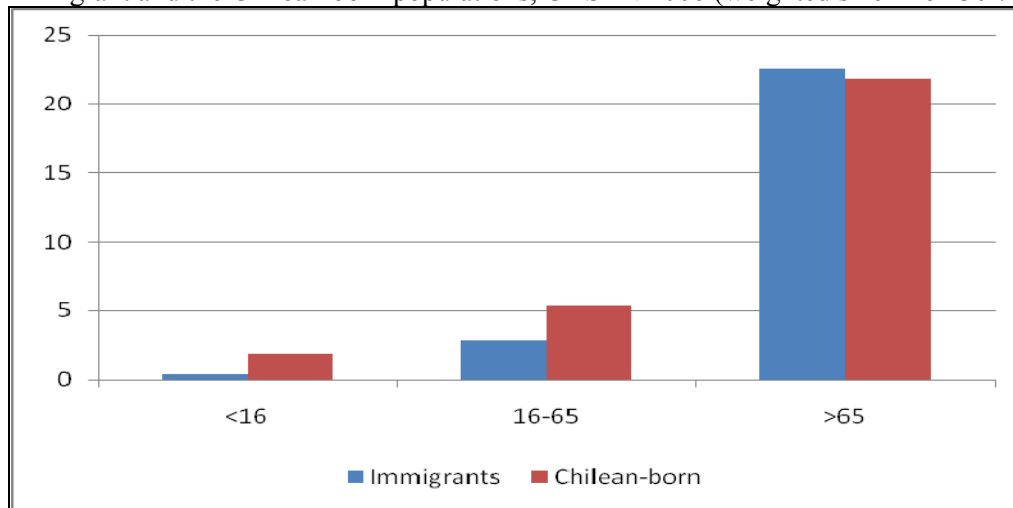


Figure 10.9 Crude prevalence of any chronic condition or cancer by ethnic belonging in the immigrant and the Chilean-born populations, CASEN 2006 (weighted size= 16 130 743)

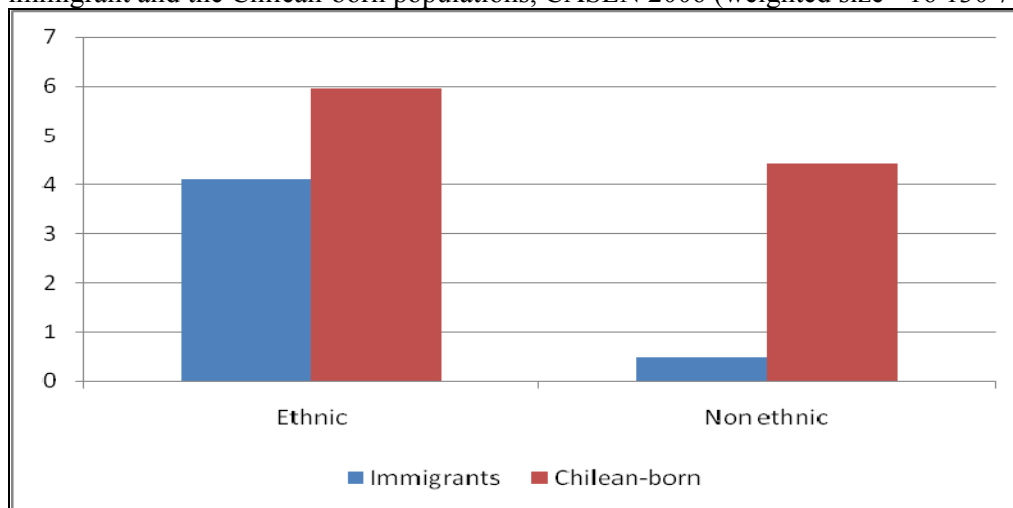


Figure 10.10 Crude prevalence of any chronic condition or cancer by household income quintiles in the immigrants and the Chilean-born, CASEN 2006 (weighted size= 16 130 743)

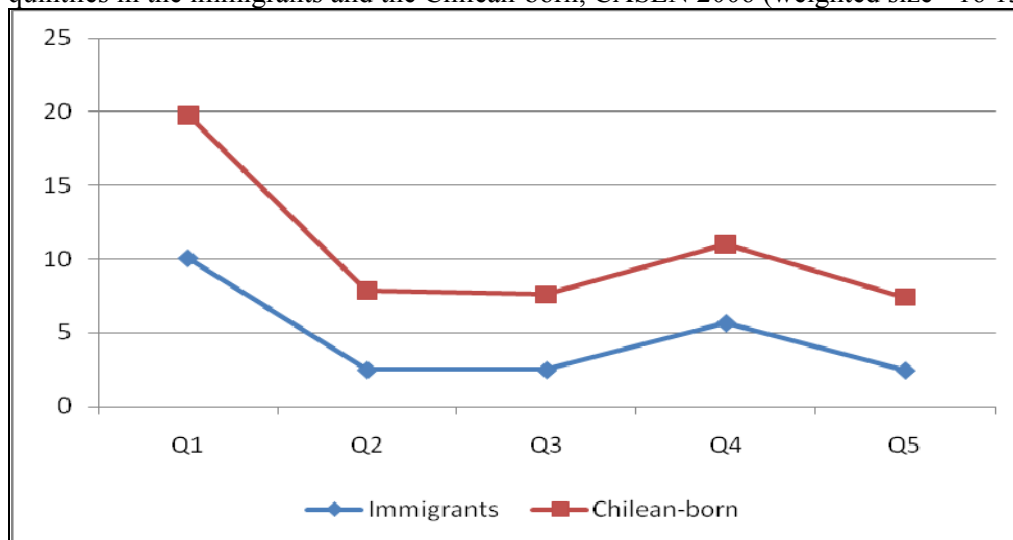


Figure 10.11 Crude prevalence of any chronic condition or cancer by educational level in the immigrant and the Chilean-born populations, CASEN 2006 (weighted sample size= 16 130 743)

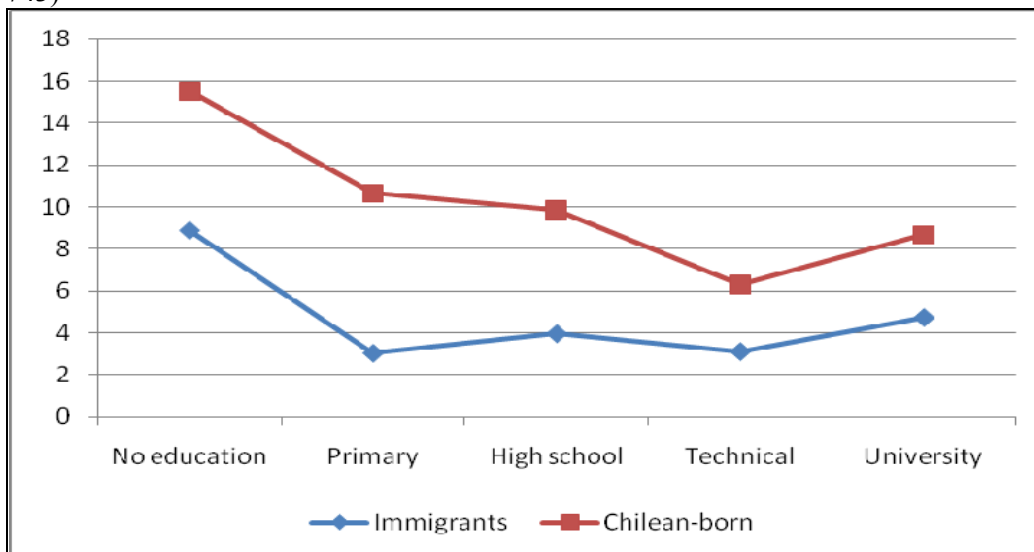
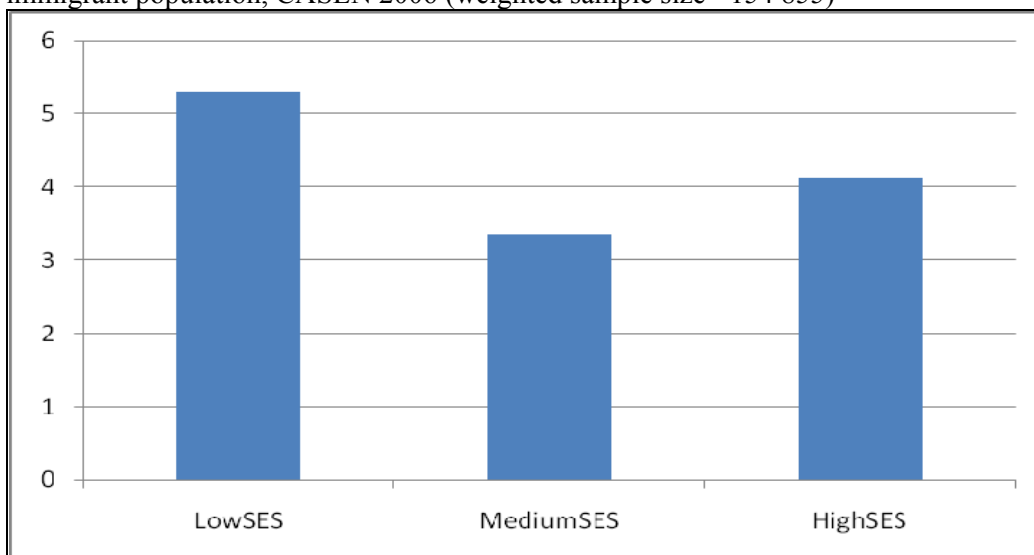


Figure 10.12 Crude prevalence of any chronic condition or cancer by SES clusters in the immigrant population, CASEN 2006 (weighted sample size= 154 855)



10.3.2 The relationship between any chronic condition/ cancer and each set of SDH

10.3.2.a) *Partially adjusted models of any consultation for a chronic condition or cancer in the past year: international immigrants versus the Chilean-born*

The dichotomous variable “having received any care due to a chronic disease or cancer during the last year” and its association with the different SDH was analysed (adjusted by demographic variables only) and compared between the Chilean-born and the IIP (Table-10.A11, Appendix-10.1). Not many social determinants appeared to be associated with reporting any chronic disease or cancer in the past year in the international immigrant group. As observed for some types of disability, international immigrant women show a higher chance of presenting with this event (OR 2.78). Age shows a significant positive association with a chronic condition or cancer in the past year (OR 1.05). Immigrants belonging to an ethnic minority group are less likely to present with this health outcome (OR 0.08). Immigrants that are either unemployed or inactive show the same positive association with this long-term health event (trend p-values <0.05). In contrast to other outcomes, reporting a chronic condition or cancer in the past year is positively associated with the Combined Material Index (CMI), but not the Household Asset Index (HAI) (CMI OR 1.14). This finding suggests it is the aggregation of quality household, household assets owned, sanitary conditions and overcrowding, is significantly associated with being treated by a chronic condition or cancer, and this is not found when each of these variables are analysed separately. Coming from Peru is associated with a lower risk (OR 0.40).

The Chilean-born population have quite different results, except for age, sex and CMI. There is a higher chance of presenting with chronic conditions or cancer for those that belong to a minority ethnic group (OR 4.76), probably due to the higher risk observed in the Aymara group. Along with CMI (OR 1.03), there is also a positive association with sanitary index and the HAI (OR 1.23 and 1.03, respectively). The Chilean-born population have a higher risk of consulting for a chronic condition or cancer in those women that use the cervical screening programme (Pap smear, OR 1.17). This finding is not surprising since the Chilean government advocates the promotion of women and children’s health. Women in Chile are usually aware of Pap smear and gynaecological programmes, and those who do not attend them may have reasons for not attendance, such as cost of transportation, not having child care and lack of time. These factors tend to be more frequent among women living in socioeconomic deprivation (Solis et al 2010, Sepulveda 2005, Lamadrid 1996).

Age (OR 0.72) and the number of household members (OR 0.47) are associated with having a chronic condition or cancer in international immigrants **under 16 years old**. Among the Chilean-born, in contrast, there is a negative association between being female, older and living in the rural setting and presenting with this health outcome (ORs 0.76, 0.88 and 0.49, respectively). Chilean-born children living in all income quintiles have a lower chance of presenting with this outcome compared to the wealthiest quintile (no gradient, trend p-value<0.001), those living in households with substandard or unfit material indices have a higher chance of presenting with a chronic disease/cancer (no gradient, trend p-value<0.001) and those Chilean-born children whose households have adequate sanitary conditions and are not overcrowded have a lower chance of presenting with this outcome (OR 0.19 for adequate sanitary index and 1.60 for overcrowding, respectively)(Tables-A10.12-A10.13, Appendix-10.1).

Among international immigrants of working age, **between 16 and 65 years old**, immigrant women and older immigrants have a higher chance of having a chronic condition or cancer in the last year (OR 4.35 and 1.09, respectively). The first two associations are also found in the Chilean-born adult population, but with smaller magnitudes (female OR 1.90 and age OR 1.07). The Chilean-born also show a significant association with marital status, ethnic background (OR 0.84), income (clear negative gradient, trend p-value<0.001), and having received any health care attention in the past (OR 1.07). Adult immigrants also show a significant association with overcrowded households (OR 1.47), and the use of any health care services (OR 0.45). When observing immigrants **over 65 years old**, those belonging to an ethnic group (OR 0.02), not living alone (OR 1.87 for number of household members, count variable) and SES clusters are all determinants significantly associated with having a chronic disease or cancer in the past year (Low SES OR 11.43, Medium SES OR 0.65, High SES reference, no clear gradient, trend p-value<0.001). Elderly immigrants coming from Peru and Bolivia also show a significant lower chance of presenting this health outcome (OR 0.06 and 0.30, respectively). The elderly Chilean-born, in contrast, have a significant association with gender (female OR 1.28), living in rural areas (OR 0.81), marital status (all categories combined significantly associated with this outcome, compared to the single elderly local population, trend p-value <0.05), and the mean number of preventive health care attentions received in the past (OR 1.03) (Tables-A10.12-A10.13, Appendix-10.1).

Immigrant men show a positive association with age (OR 1.07) and marital status (single as reference category, trend p-value <0.05) with any chronic condition or cancer, whereas female immigrants show a positive association with age (OR 1.06) and number of household members (with a clear positive gradient, living alone as reference category, trend p-value <0.001). No socioeconomic or material variables are associated with any chronic condition or cancer in the past month among immigrant men and women. Provision type is the only covariate significantly associated with this outcome among the immigrant male population (a positive gradient, private type as reference category, trend p-value <0.001). Immigrants coming from Peru and Bolivia also have a significant association with this long-term health outcome in the male group but not in the female immigrant population (Peru OR 0.06 and Bolivia OR 0.03, respectively).

10.3.3 Final models

Figure 10.13 describes the final adjusted model of “chronic condition or cancer in the past year”. As can be observed in this figure, the chance of presenting this outcome among the international immigrant group is mostly associated with age, sex, zone, ethnicity, educational level, combined material index and not living alone. The Chilean-born have similar associations, with the addition of marital status, health care provision type and other health problems, along with some significant multiplicative interaction effects. A similar model excluding other health events among the Chilean-born appears in Table-A10.14, Appendix 10.1, for further comparison. This model shows similar results to the one presented in this section. Among immigrant children, it is only age and the number of household members that is significantly associated with any chronic disease or cancer in the past year (OR 0.82 and 0.61 respectively, $F=18.08$, Pseudo R-squared=5.00%). The inclusion of other health events does not improve the fit of this model. Among the adult immigrant population, age and sex are significantly associated with any chronic disease or cancer in the last year (OR age 1.09, OR female 3.48, $F=21.95$, Pseudo R-squared=18.52%). The final model for elderly immigrants shows a significant association with belonging to an ethnic group (OR 0.14, $F=5.04$, Pseudo R-squared=2.23%).

Finally, a weighted combined index to integrate different health outcomes in a measurement was also explored, through exploratory factor analysis. This analysis was conducted in order to assess the potential existence of a single combined measure of health status among immigrants in Chile, which could better represent their health in a more robust and efficient way than a collection of diverse health outcomes presented in the previous chapters. This

combined measure of health status could, therefore, potentially provide additional information to the results obtained from the recent health events and the chronic conditions analysed before. A detailed description of this method and its results in the immigrant population and the Chilean-born is presented in Appendices-10.2 (Tables-A10.15 to A10.19), 10.3 and 10.4.

Two global-health-status indexes were created, one for each population under study: the immigrant and the Chilean-born populations. These were skewed continuous variables that for proper statistical analysis required transformation and the use of generalised linear models (GLM). Results showed that the main factors associated with these indexes are age, sex and socioeconomic status. Since these results do not add further comprehension to the SDH of international immigrants nor distinctive comparisons with the Chilean-born, they have been included in Appendix-10.2 and are not discussed further in this main document.

Figure 10.13 Final adjusted models of having chronic condition or cancer in the past year (multiple logistic regression), a comparison between the Chilean-born, the international immigrants and its missing values, CASEN survey 2006. [Line: OR=1.0]

<i>Social determinants among international immigrants</i>		<i>Social determinants among the Chilean-born population</i>	
<i>Covariates</i>	<i>OR (95% CI)</i>	<i>Covariates</i>	<i>OR (95% CI)</i>
Age	1.07 (1.05, 1.09)	Age	1.04 (1.03, 1.05)
Sex (female=1)	2.36 (1.12, 4.96)	Sex	1.49 (1.40, 1.60)
Ethnicity	0.07 (0.01, 0.46)	Rural zone	0.60 (0.51, 0.71)
No education (Ref= University)	4.47 (1.04, 19.17)	Number of household members	0.98 (0.96, 1.00)
Primary	0.59 (0.12, 2.81)	No education (Ref= University)	0.74 (0.51, 1.07)
High school	0.93 (0.26, 3.30)	Primary	0.79 (0.62, 1.00)
Technical	1.38 (0.40, 4.67)	High school	0.75 (0.62, 0.90)
CMI	1.13 (1.01, 1.27)	Technical	0.69 (0.58, 0.81)
Number of household members	1.35 (1.15, 1.59)	Married (Ref= single)	1.31 (1.20, 1.44)
		Divorced	1.30 (1.12, 1.51)
		Widow	1.09 (0.96, 1.25)
		CMI	1.03 (1.01, 1.04)
		No provision (Ref= private)	0.83 (0.47, 1.44)
		Public 100% free	1.29 (0.90, 1.85)
		Public with co-payment	1.46 (1.08, 1.97)
		Other non stated	1.21 (0.87, 1.67)
		Age2	0.99 (0.98, 1.00)
		Interaction age*zone	1.00 (1.00, 1.01)
		Interaction education* provision	0.95 (0.91, 0.99)
		Any disability	1.56 (1.43, 1.70)
		Any health problem/ accident	2.39 (2.23, 2.50)
F=7.28	Pseudo-R2=0.2528	GOF pvalue<0.0001	F= 297.56
			Pseudo-R2=0.1801
			GOF pvalue<0.0001

10.4 DISCUSSION

10.4.1 Summary of key findings

The key findings from this chapter are summarised in Figures-10.14 to 10.16. As mentioned in the introduction, chronic health outcomes included in this chapter are to some extent correlated with the recent events analysed in Chapter 9. Results from this chapter show for example, that an immigrant with a chronic condition is also more likely to have any health problem or accident in the past month. The division between Chapter 9 and Chapter 10 is to some extent arbitrary and the link between them is important. In addition, “any disability” and “any chronic condition or cancer” are combined measures of health conditions. The SDH associated with those who have been diagnosed with any chronic condition or a neoplasm in the past year cannot be discriminated in this study.

Figure 10.14 Key findings from this chapter in relation to *any disability* in Chile

1. The international immigrant population shows a significantly lower prevalence of any disability than the Chilean-born population, and of subtypes for visual and physical disability. The international immigrant population also shows a lower rate of one disability and of an accident as the cause of the disability compared to the local population.
2. Partially adjusted models show that age and access to health care are the main determinants associated with any disability in the immigrant population, while there are several SDH of disability in the Chilean-born.
3. Conditional regression models by sex and age group show significant differences between the two populations under study. The immigrant child population shows an association between any disability and sex, area and SES clusters (clear negative gradient). Immigrants of working age show a significant association between any disability and age, contractual status, access to health care and SES clusters (the same clear negative gradient). Elderly immigrants show an association with age, rural settings and SES clusters (clear negative gradient). Male immigrants have a significant association between any disability and age and coming from Argentina, while female immigrants show a significant association with this chronic condition and age, zone, ethnicity and health care provision type.
4. Each type of disability shows a particular pattern of association with different sets of SDH between the immigrant and the Chilean-born populations. Figure 10.20 describes these patterns in summary.
5. The final model of any disability in the international immigrant group shows that the independent significant determinants of this chronic condition are age and educational level only, versus several SDH in the Chilean-born.

Figure 10.15 A summary of the SDH of each type of disability in the international immigrant and the Chilean-born population, CASEN survey 2006*

	Visual	Hearing	Speaking	Learning	Physical	Psychiatric
SDH of disability in the immigrant population in Chile, by type of disability:						
<i>Crude Rate (%)</i>	<i>1.00</i>	<i>0.59</i>	<i>0.19</i>	<i>0.38</i>	<i>0.23</i>	<i>0.21</i>
Demographic	✓ ^a	✓ ^b	✓ ^b	✓ ^c	✓ ^c	✓ ^d
SES	✓ ^q					
Material	✓ ^e		✓ ^f			
Access to health care	✓ ^g	✓ ^g				
SDH of disability in the Chilean-born, by type of disability:						
<i>Crude Rate (%)</i>	<i>3.17</i>	<i>1.22</i>	<i>0.32</i>	<i>2.15</i>	<i>0.86</i>	<i>0.41</i>
Demographic	✓ ^h	✓ ⁱ	✓ ^j	✓ ^k	✓ ^l	✓ ^m
SES	✓ ⁿ	✓ ⁿ	✓ ^o	✓ ^p		✓ ⁿ
Material				✓ ^r		✓ ^s
Access to health care	✓ ^g				✓ ^t	✓ ^u

*Partially adjusted models (by demographics), a tick represents that at least one variable of each set of SDH is significantly associated to the health outcome. The tick represents a statistical significant association.

^a Household members and area of the country

^b Household members

^c Zone

^d Household members and age

^e Sanitary index and Townsend Overcrowding

^f Townsend Overcrowding

^g Access to preventive health care programmes

^h Age, sex, ethnicity and rural zone

ⁱ Age, sex and marital status

^j Sex and rural zone

^k Age, sex, marital status, rural zone and number of household members

^l Age and marital status

^m Age, marital status and rural zone

ⁿ Temporary contract

^o Educational level

^p Educational level and household income

^q Type of occupation

^r Sanitary index, CMI and HAI

^s Townsend Overcrowding

^t Access to Pap smear and to preventive health care programmes

^u Type of provision, access to Pap smear and to preventive health care programmes

Figure 10.16 Key findings from this chapter in relation *any attention received for a chronic disease or cancer* in the past year

1. There is a lower rate of any chronic condition or cancer in the total immigrant population versus the total Chilean-born population.
2. Partially adjusted models show that sex, age, being unemployed, belonging to a minority ethnic group, the CMI and coming from Peru are significant SDH of any chronic condition or cancer in the immigrant population. The same partially adjusted models in the Chilean-born show several SDH affecting the chance of living with a chronic condition among them.
3. Conditional regression models by sex and age groups show significant differences between the two populations under study. The immigrant child population shows an association between any chronic condition or cancer and age and number of household members. The adult immigrant population shows a significant association between this long-term condition and sex and age. The elderly immigrant population shows an association between this outcome and belonging to an ethnic group, living alone, the SES clusters (no clear gradient) and coming from Bolivia and Peru. Male immigrants show a significant association between any chronic condition/cancer and age, marital status, health care provision type and coming from Peru and Bolivia, whereas the female immigrant subpopulation shows a significant association with age and the number of household members.
4. The final model of any chronic condition or cancer among the international immigrant populations shows that age, sex, zone, ethnicity, educational level, the CMI and the number of household members are all significant SDH of this long term condition. The Chilean-born population shows the same SDH, along with others.

10.4.2 Methodological discussion

10.4.1.a) Logistic models for long-term health outcomes

As was discussed in Chapter 9, the logistic regression models estimated to analyse the relationship between health and the different sets of social determinants have relevant methodological and analytical limitations. Similar to chapter 9, the most parsimonious logistic models estimated in the immigrant population still show lack of statistical fit. In addition, the proportion of variance explained by these models is quite low. Even though the analytical approach to these health outcomes attempted to provide robust and efficient estimates, results presented here should still be considered as exploratory findings. As mentioned in the previous chapter, a reduction of the proportion of missing values in the migration status question from the CASEN survey could significantly improve this issue. Moreover, the inclusion of other new dimensions of the migration experience and migration status in Chile could also make a relevant contribution to the proportion of variance that could be explained for the different health outcomes.

10.4.1.b) The association between chronic conditions and the HAI and the CMI

Similar to Chapter 9 and following the discussion from Chapter 7 on socioeconomic status, a brief comment on the relevance and usefulness of both the HAI and the CMI in their relation to health status is included here. As Tables-10.1 and 10.2 show, there are consistent non-significant associations between HAI and CMI and the different health outcomes in the international immigrant population. In contrast, the Chilean-born, despite being a larger group, did not show the same consistency of results.

Table 10.1 Adjusted Odds Ratio (OR) or Coefficient (GLM) of presenting **different chronic health conditions in the IIP**. A comparison between different dimensions of material SDH, CASEN survey, 2006 (weighted sample size=154 855) [Significant values in grey shade in the table]

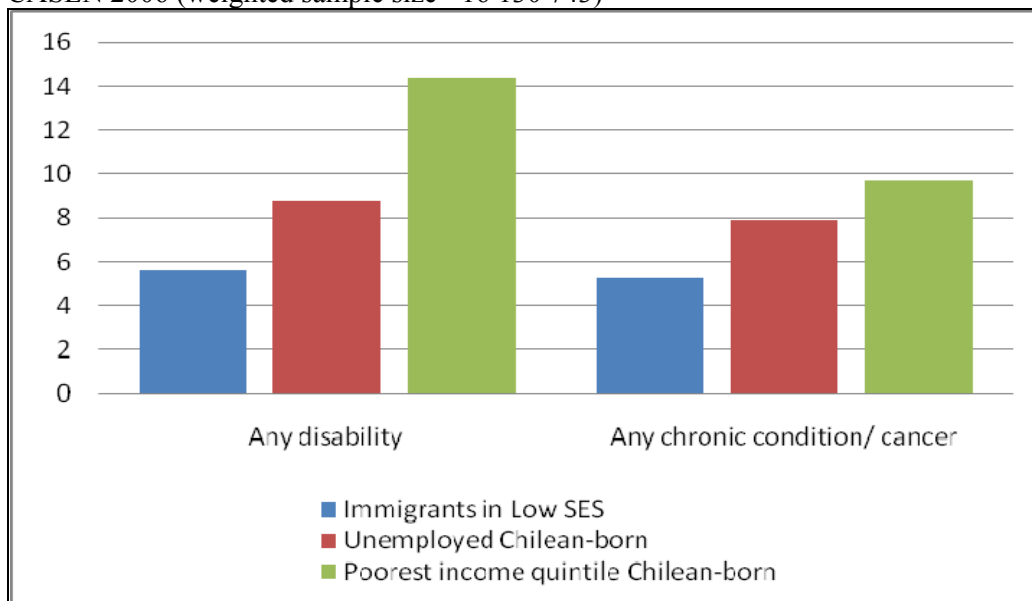
Health Outcomes	Overcrowding rate (Townsend criteria)		Sanitary Index		Household quality Index				HAI-PCA (9 assets)		CMI-PCA (all the previous combined)	
					<i>Substandard</i>		<i>Unfit</i>					
	OR/ Coeff	95% CI	OR/ Coeff	95% CI	OR/ Coeff	95% CI	OR/ Coeff	95% CI	OR/ Coeff	95% CI	OR/ Coeff	95% CI
Any disability	0.51	0.21-1.23	0.84	0.44-1.58	0.65	0.34-1.22	2.59	0.54-12.36	0.94	0.82-1.08	0.94	0.82-1.08
Chronic disease/ cancer	0.77	0.31-1.94	1.22	0.40-3.72	0.64	0.25-1.64	0.15	0.01-1.41	1.12	0.99-1.26	1.11	0.99-1.26
Immig-HSI	-73.11	-109.6- -37.76	43.77	24.00 – 63.52	-59.77	-90.47 - -29.07	0	-	28.34	15.12- 41.55	-28.82	-4.23- -50.41

Table 10.2 Adjusted Odds Ratio (OR) or Coefficient (GLM) of presenting **different chronic health conditions in the Chilean-born**. A comparison between different dimensions of material SDH, CASEN survey, 2006 (weighted sample size= 16 130 743) [Significant values in grey shade in the table]

Health Outcomes	Overcrowding rate (Townsend criteria)		Sanitary Index		Household quality Index				HAI-PCA (9 assets)		CMI-PCA (all the previous combined)	
					<i>Substandard</i>		<i>Unfit</i>					
	OR/ Coeff	95% CI	OR/ Coeff	95% CI	OR/ Coeff	95% CI	OR/ Coeff	95% CI	OR/ Coeff	95% CI	OR/ Coeff	95% CI
Any disability	0.69	0.64-0.74	1.04	0.98-1.10	1.26	1.18-1.34	1.90	1.54-2.35	0.96	0.95-0.97	0.96	0.95-0.97
Chronic disease/ cancer	1.05	0.88-1.25	1.23	1.01-1.50	0.93	0.80-1.08	0.76	0.37-1.57	1.03	1.007-1.05	1.03	1.01-1.05
Global HSI	1.32	-1.79 – 4.44	-1.15	-4.09- 1.77	0.93	-1.28- 3.15	0.93	-2.81- 6.12	-4.98	-18.95 – 8.97	5.05	-9.14 – 19.24

As presented in Chapter 9, when comparing long term and combined measures of health between immigrants in the low socioeconomic cluster to the Chilean-born in socioeconomic deprivation, there are significant differences between them (Figure-10.17). Time spent in the country did not seem to explain these differences, but further consideration of time in prospective studies could be conducted to confirm these findings. At the same time, early life SDH should be explored in the immigrant population in order to better understand these different patterns. Results from this chapter suggest the complexity involved in the health status of international immigrants in Chile and how different measures of socioeconomic position might indicate specific components of the multidimensional concept of social position. However, other important dimensions of social position are not included, and could contribute to the differences in long-term health outcomes, such as experiences of stigma and discrimination, occupational hazards, individual health-risk behaviours and the special issues of political refugees in need.

Figure 10.17 Crude prevalence/mean of different short-term health outcomes, a comparison between the Low SES immigrants, unemployed and poorest income quintile Chilean-born, CASEN 2006 (weighted sample size= 16 130 743)



10.4.3 Contrasting key findings with the international literature

10.4.3.a) Disability in Chile

This is the first study exploring the relationship between disability (any and sub-types of disability available in the CASEN 2006 dataset) and socioeconomic position in the international immigrant population in Chile. Age and education are key variables in this population, while among the Chilean-born, income, education, occupation and material measures of socioeconomic position, along with some demographic characteristics, are independently associated with the chance of being disabled. Interestingly, in classic measures of SES (income, education and occupation) were independently and consistently associated with any disability in the Chilean-born, whereas material living conditions were partially confounded by the formentioned classic measures. In addition to this, each type of disability showed a particular pattern of related SDH in the two populations under study, which also varied by age group. The complex relationship between socioeconomic status and material living conditions in developing countries like Chile needs further research and debate (see for example, Zitko and Cabieses, 2011).

Some descriptive findings of the prevalence of any and each type of disability are consistent with those reported in the past in the total population in Chile (MIDEPLAN, 2004). There is, however, no other population-based study on the prevalence of disability in the immigrant population or exploring the relationship between disability and socioeconomic position in this group has been published to compare with these results. National surveys in Chile have shown an increase in the rate of long-term conditions like disability over time, especially affecting those living in the lower socioeconomic strata (ENS, 2003; ENS, 2009; Cabieses, Espinoza and Zitko, 2011). International studies on social epidemiology have found that income; education, occupation and material living standards showed a gradient of disability across all levels of each domain (Marmot and Wilkinson, 2004; Bartley, 2007; Davey Smith et al., 1996a; Davey Smith et al 1996b, Lynch et al., 1996). Results from these international studies are consistent with findings from the present chapter. In addition, many other studies have analysed a particular type of disability or the relationship of disability to a specific SDH (Emerson and Hatton, 1995; Bowen and Gonzalez, 2010; Adamson et al., 2003a; Adamson et al., 2003b; Hagen et al., 2000). Results from this chapter provided a broad understanding of a wide range of types of disabilities and their relationship with different SDH.

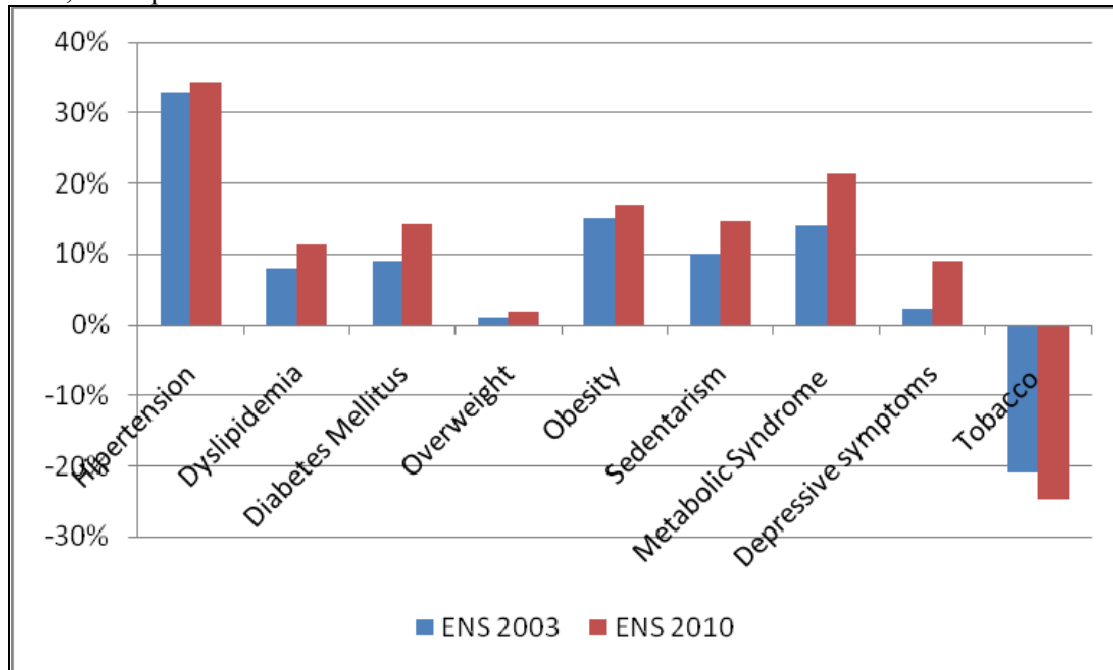
Results from the National Health Survey 2009-2010 were recently released in Chile. They highlight the growing prevalence of various individual health-risk behaviors, such as abusive alcohol consumption, tobacco consumption, poor diet and sedentary lifestyle (ENS, 2009). These individual behaviours are well-known risk factors for multiple chronic diseases, which have also increased over time in Chile (ENS, 2003; ENS, 2009). Obesity, hypercholesterolemia, hypertension, and alcohol abuse for example, are potent mediators of the relationship between unhealthy lifestyles and chronic health conditions that have a high cost to the health care system (Allotey et al., 2010; Sikken et al., 2010), such as diabetes, liver damage, coronary heart disease, lung cancer, and others (Lynch et al., 1996). This survey did not include the health of the international immigrant population, although I sent a formal request for the conclusion of a question on migration status to the principal investigator in Chile in 2008.

The ENS 2009-2010 survey indicates a fine social gradient in the prevalence of individual health-risk behaviors. That is, the lower the social position of a person the higher the risk of obesity, sedentary lifestyle and poor diet. The only exception is smoking, which has a higher rate among those at a higher social position. Although measurements between the previous ENS-2003 and the recent ENS 2009-2010 may not be directly comparable, it seems that the gap in the prevalence of these behaviours among people in the lowest socioeconomic strata compared to the top has increased over time (Figure 10.18) (Cabieses, Espinoza and Zitko, 2011).

No previous population-based study on chronic conditions in the international immigrant population in Chile has been conducted, but there are some relevant data in the international literature. Coronary heart disease (CHD) is the leading cause of death of the Asian Indian population in the US, although the dietary risk factors that predispose this group to chronic disease have not been clearly defined (Enas, Yusuf and Mehta, 1992; Jonnalagadda and Diwan, 2002). It has been uncertain if the increased risk in this immigrant population is genetically predetermined before migration or is acquired as a consequence of migration through a process of dietary and behavioural adaptation. Supporting this idea, as explained by Jonnalagadda and Diwan (2002), inadequate consumption of folate, vitamins B12 and B6 have been associated with increased levels of homocysteine, a risk factor for coronary heart disease. Likewise, low calcium intake has been associated with increased risk of both osteoporosis and hypertension among women of Asian origin.

Most studies concerning CHD and risk factors in immigrants have been from the US and the UK. In studies from the UK, there are contradictory findings regarding key issues related to knowledge of and attitudes to lifestyle risk factors for CHD. Some studies have reported poor knowledge (Farooqi et al., 2000) while others have found that most patients with CHD tend to be well informed on the factors related to cardiovascular health (Beishanand and Nazroo, 1997; Lip, 1996).

Figure 10.18 Crude gaps in the prevalence of various health problems and individual health-risk behaviours by educational level in Chile over time. The graphic shows the difference in these rates between people with primary educational level versus university level; a comparison between the ENS2003 and ENS 2009-2010*



Source: Cabieses, Espinoza and Zitko, 2011

*This figure shows the difference in the prevalence of different health problems between people with extreme education levels, measured in twocross-sectional population-based surveys in Chile. Results show a higher prevalence of such problems in those with less education (positive rates). In all cases except tobacco consumption, the gap has increased over time with a higher risk among those with the lowest educational level. The graph does not consider changes in methodology in measuring risk factors or diseases, nor particular target population corrections.

With regards to diet and diabetes in the migrant population, studies have suggested that lack of the necessary intercultural knowledge to provide better support and advice among migrant populations about food consumption is a key element. Fagerli, Lien and Wandel (2005) for instance, have explored the experience of dietary advice among Pakistani-born persons with Diabetes Mellitus (DM-2) in Oslo and found that advice was generally experienced as inadequately based on the participant's food-cultural background, leaving the person with diabetes to do the translation between different levels of knowledge. Finucane and McMullen (2008) found that self-management and modifying diet while upholding valued symbolic and social meanings of food, and reconciling spiritual and

biomedical interpretations of disease causality, were relevant cultural aspects to consider. In addition, Dubowitz and colleagues (2007) proposed that among foreign-born populations, neighbourhood composition was associated with individual diet, above and beyond individual-level characteristics, illuminating the relationship between social context, immigrant health and diet.

Concerning physical activity, such as brisk walking or similar levels of exertion, it has been associated with a 30–50% reduction in the risk of CHD and reductions in obesity, diabetes and stroke. Studies on physical exercise in migrant population in the UK have shown that it is lower among those of Indian, Pakistani and Bangladeshi ethnic origin than among the general population (Fischbacher, Hunt and Alexander, 2004). According to the authors, the size of the differences reported varied across studies, but were substantial, broadly consistent, and not clearly related to the method of measurement, the definition of physical activity or the geographical location.

A significant amount of research among the immigrant population has focused on *breast and cervical cancer* screening and incidence. The most frequent conclusion has been that immigrant and minority ethnic group women generally have a relatively lower use of these preventative health services, with some variation by ethnicity (Strachan, Leon and Dodgeon, 1995; Clark et al., 1999; Ahmad and Stewart, 2004; McDonald and Kennedy, 2005). In terms of breast cancer, rates have been lower among Japanese women, but Japanese immigrant women in the US have experienced increases in the rate after migration (Buell, 1973; Rogerson and Han, 2002). With regards to cervical cancer, migrant women have tended to report higher rates, however, follow-up time and age at migration have been suggested as important effect modifiers for cervical cancer risks (Azerkan et al., 2008). In order to compare the risk of *gynaecologic cancer* among foreign-born women with the risk among those born in Sweden and to elucidate the risk of cancer in relation to age at migration and duration of residence, Beiki et al. (2009 and 2010) followed a cohort of 5.3 million women between 1969 and 2004 in Sweden. They found that adjusted relative risks of cervical, endometrial and ovarian cancers were lower or the same among foreign-born women compared to those born in Sweden and that they did not vary by duration of residence or by age at migration.

Finally, some recent research has focused on *prostate cancer*. Beiki and collaborators (2009 and 2010) compared the risk of prostate cancer among foreign-born men with Swedish-born men. They found foreign-born men had a significant 40% decreased risk of prostate cancer compared to Swedish-born men. The overall risk by both duration of residence or age at immigration was lower among immigrants. However, after additional adjustment for

birthplace and age at immigration, the risk increased among immigrants who stayed 35 years and longer compared to those who stayed less time. Overall, findings suggest that time spent in the host country and area of birth is a relevant determinant of cancer rates, even more than area of residence and area of death (McKay, Macintyre and Ellaway, 2003; Vigotti et al., 1988; Buiatti et al., 1985; Coggon, 1999; Strachan, Leon and Dodgeon, 1995; Bullati et al., 1989).

10.4.4 Strengths, limitations and further research in this area

As found in Chapter 9, results in this chapter on long term conditions in the international immigrant population show there is no simple story to tell about this group. Multiple complex patterns are present and similarities and discrepancies between immigrants and the Chilean-born may mask different explanatory mechanisms that are hard to disentangle in a single cross-sectional survey. Similar to Chapter 8, results from this chapter reflect the complexity involved in using a SDH framework and especially the construct of socioeconomic position (Galobardes et al., 2006a; Galobardes et al., 2006b; Liberatos, Link and Kelsey, 1988) in the migrant population. For example, the need to consider the local *ecosocial* context (Krieger, 2001a; Krieger, 2001b) and a lifecourse approach when defining and measuring the SDH should be further explored in Chile. Despite these limitations, findings from this study contribute to an understanding of the living conditions and health status of international immigrants in Chile. Both recent events and long term conditions among the migrant population are complex multidimensional public health problems, not only in Chile but also in many other developing and developed countries. Factors like stress, social support, trust, self-perception of occupational control and autonomy, among others, should be considered in future studies on the health of international immigrants in Chile, ideally prospectively (Bartley, 2007; Wilkinson, 2006; Wilkinson & Pickett, 2009).

Table 10.3 Summary table of the available publications on chronic health conditions among international immigrant population in Latin America

<i>Recent health events</i>	<i>Specific measure</i>	<i>Authors</i>	<i>Year</i>	<i>Study design</i>	<i>Immigrant population</i>	<i>Host country</i>	<i>Results</i>
Chronic conditions and cancer	Chagas disease	Jackson et al	2010	Cross-sectional study to assess the prevalence and risk factors for Chagas disease, among Latinos in Switzerland	Latinos	Switzerland	Chagas disease is highly prevalent among Bolivian migrants in Switzerland. Chronic cardiac and digestive complications are substantial. Screening of individuals at risk should be implemented in nonendemic countries and must include undocumented migrants.
		Salamanca et al 2009		Cross-sectional study to estimate the prevalence of Chagas disease	Latinos, second generation Latinos	France	Estimation of the number of <i>Trypanosoma cruzi</i> infected individuals and expected number of Chagasic cardiomyopathies in France. Around 157,000 individuals were potentially exposed. It is estimated that 1,464 [895-2,619] are infected by <i>T. cruzi</i> , of which 63 to 555 may evolve towards a chronic cardiomyopathy.
	Cancer	Vermeer et al	2010	Study to explore the attendance of migrant women at the national breast cancer screening	Latinos and others	The Netherlands	The attendance rates of migrant women originating from Africa, Asia or Latin America (63%), such as Turkish women (62%) and especially Moroccan women (54%), were significantly lower than Dutch women.
		Matos et al	1991	Mortality rates from different cancers in migrants to Argentina from 11 individual countries and 6 groups of countries were compared with those in the Argentina-born	Latinos and others	Argentina	Almost all countries of origin have higher mortality rates from gastric cancer than Argentina, but the risk declines in migrants and for European migrants become similar to that of the Argentinian-born. In contrast, mortality from oesophageal cancer is significantly lower in European countries than in Argentina. For cancer of the colon and breast, most countries have lower mortality rates than the Argentinian-born, the exceptions being Uruguay and Germany, and migrants demonstrate a convergence of risk towards that of Argentinian-born

		Shai	1991	Cancer mortality in Cuba and among the Cuban-born in the United States: 1979-81	Cuban	US	The age-adjusted death rates for lung and prostate cancer are lower among the Cuban-born in the US than they are among Cubans in Cuba and whites in the US. Death rates for cervix and rectum cancer among the Cuban-born in this country are also low relative to Cubans in Cuba and whites in the US. Stomach cancer mortality among Cuban-born men in the US is lower than for men in Cuba or for white men in the US, but Cuban-born women in this country have rates that are slightly higher than those of US white women.
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CHAPTER 11

WHAT ARE THE LIVING CONDITIONS AND HEALTH STATUS OF THOSE THAT PREFERRED NOT TO REPORT THEIR MIGRATION STATUS AND HOW DO THEY COMPARE TO THE IMMIGRANTS?

“...You ask, Cyclops, what my name is. I will tell you: My name is Nobody and Nobody is how everyone calls me...”

Ullises, The Odyssey

Summary Box 11

What research question is included in this chapter?

What are the living conditions and health status of those that preferred not to report their migration status in the CASEN survey 2006, and how do they compare to the international immigrant population?

What is already known?

Government figures suggest that there might be a significant group of immigrants living in undocumented status in Chile and, therefore, not accessing to the health care system and potentially with significant health needs.

What does Chapter 11 add?

- The missing values (under the acronym of MS-MV) from the question on migration status in the CASEN survey represent a complex group, mostly affected by socioeconomic deprivation and poverty.
- Those who preferred not to report their migration status may be undocumented migrants; there is however, little direct evidence to support this.
- Regardless of their migration status, this is a vulnerable group that needs special consideration in Chile.

Overview

This chapter is dedicated to exploring the living conditions and health status of those that preferred not to report their migration status in the CASEN survey 2006. This chapter complements the findings from those that did report being international immigrants, which have been the focus of attention in Chapters 6 through 10. There is a significant amount of international literature that reports under- and mis-representation of the migrant population worldwide. It has been suggested that fear of prosecution among those migrants living undocumented in a foreign country might largely explain these phenomena. Even though this particular chapter cannot explore the reasons for respondents preferring not to report migration status in this survey, it provides a first step towards a better understanding of who this group might be, how they live and what their health status was at the time of the interview.

Introduction

This chapter summarises the most important aspects of the similarity and difference between the international immigrant population and those that preferred not to report their migration status (“MS-MV”, the acronym for migration status missing values). There is no way to unravel if this group of “migration status missing values” contains immigrants; an exploration of similarities and differences between this group and the international immigrant population can, however, suggest some directions for future research.

This chapter is organised in five sections. The first is a brief methodological explanation of the analysis used in this chapter. The second section describes the socio-demographic and material living standards of the MS-MV and compares them to the IIP (similar to Chapters 6 and 7). The third section explores access to, need and use of the Chilean health care system in the MS-MV and compares them to the IIP (similar to Chapter 8). The fourth section describes the health status of this group, including recent health events (similar to Chapter 9) and chronic conditions (similar to Chapter 10). Finally, section five discusses the key findings from this chapter.

11.1 BRIEF METHODOLOGICAL EXPLANATION OF THIS CHAPTER

11.1.1 Why describe this group in Chile?

As stated in previous chapters (5 and 6), a significant proportion of people interviewed in the CASEN survey 2006 preferred not to report their migration status (0.67%, 95%CI 0.58-0.78; equivalent to 1477 observations). The CASEN survey has very high response rates for virtually all questions. The question regarding migration status was distinctive, as it had the greatest number of missing values of any of the questions in the survey. This chapter is dedicated to exploring the similarities and differences between the immigrant and the MS-MV groups. The CASEN survey 2006 asked about migration status for the first time. The question on migration status combines internal and international migration and is phrased in the following way (see also Appendix-5.1):

<i>When you were born, where did your mother live?</i>	<i>CATEGORY</i>
1: in the same county/ section you live now	CHILEAN-BORN
2: in a different county/ section	INTERNAL MIGRANT
3: in a different country	INTERNATIONAL IMMIGRANT
9: no data	MIGRATION STATUS- MISSING VALUES

It is possible that *some* of those in the MS-MV group could actually be immigrants who fear reporting their migration status. This is supported by the fact that only 0.96% of the total population reported being international immigrants in the CASEN survey; however, when the missing values are added to this rate, the proportion rises to 1.63%, which is very similar to the prevalence reported by the Chilean government some years ago (1.6-1.8%)(IOM, 2003). These national statistics are considered to be accurate and robust, and come from the Migration Department in Chile through a detailed exploration of people coming in and out of the country every year (Depto Extranjeria y Migracion, 2007). There are no other available data in Chile, so these figures are assumed to be the “gold standard” rate of immigration in the country.

There are no data to strongly support the idea that the missing values correspond to international immigrants, but this can be hypothesised when observing the international evidence of under-representation of the migrant population in multiple studies (Asch, Leake and Goldberg, 1994; Berk et al., 2000; Marshall et al., 2005; Newbold and Danforth, 2003). Fear of prosecution for being undocumented, stigma and discrimination have been reported in these groups in other countries in the past (Glaesmer et al., 2009; Boyd, 1999; Pikhart, Drbonlav and Dzurova, 2010; Bresa, 2010; Bodenman et al., 2009, Simich, Wu and Nerad,

2007) and should be explored in the Chilean context. If there is a similar situation in Chile, then undocumented immigrants that preferred not to report their migration status might be unemployed or working without a contract, living in relative deprivation in small rented and possibly overcrowded accommodation, as has been described through qualitative research in some small purposive samples of immigrants in the past (Nuñez-Carrasco, 2008). In addition, their undocumented condition would not allow them to have access to health care, since this system is only available to those legally documented in Chile (with few exceptions for children, pregnant women and people with an emergency health condition, see Chapter 8).

I conducted qualitative exploration of the hypothesis that some portion of the MS-MV corresponds to international immigrants among key informants in Chile, who led the field data collection in the CASEN survey 2006. After contacting three people who led the data collection, according to the methodological documentation of the CASEN survey (MIDEPLAN, 2006), via e-mail, there was no clear consensus about whom the MS-MV might represent. One person believed there was no connection: [*“they are too few observations to assess such a hypothesis”*], another said it could be possible: [*“Some of the people interviewed said they lived with old people and they didn’t know their country of origin or that the old members wouldn’t remember”*] and the third person did not reply to the e-mail message after several attempts (Private communication, 2010).

Interestingly, the MS-MV is not older than the international immigrants. In fact, there is a significantly higher proportion of children under 16 years old in this group. Since further qualitative exploration could not be conducted (key informants were not interested in providing any more detailed information about the data collection phase) comparative analysis between these two groups (international immigrants and the MS-MV) was explored. Table 11.2 summarises the literature review at the end of this chapter. These findings suggest the poor living conditions and health of a large group of undocumented immigrants in different countries all over the world (CEPAL, 2001; Marcelli and Heer, 1997; Singer and Massey, 1998; Verduzco, 1995; Espenshade, 1995a; Espenshade, 1995b; Castillo, 1993; Davila and Saenz 1990; Bean, Browning and Frisbie, 1984; Pinto, 1981; Wolff et al., 2008; Chappuis et al., 2010; Roer-strier and Olshtain-Mann, 1999; Simich, Wu and Nerad, 2007; Woff et al., 2010, Anderson, 2008).

11.1.2 Analytical approach to this chapter

This chapter summarises the most important features of the similarities and differences between the international immigrant population and those who preferred not to report their migration status (MS-MV). A large number of analyses were conducted for this chapter, and summary tables are available in the Appendix Book. Descriptive and stratified analysis, different multivariable analysis depending on the nature of the dependent variable, and the steps followed for partial and full adjusted models have been described in detail elsewhere (see Chapter 9, point 9.1). The same rationale is followed here.

11.2 SOCIO-DEMOGRAPHIC CHARACTERISTICS AND MATERIAL LIVING CONDITIONS OF THOSE THAT PREFERRED NOT TO REPORT THEIR MIGRATION STATUS

11.2.1 Demographic characteristics

The MS-MV has a higher proportion of men than the international immigrants (51.27% versus 45.21%, $p < 0.05$) and a younger mean age (26.13 versus 33.41 years-old, $p < 0.001$). There is a significantly larger proportion of children under 16 years old in the MS-MV (45.25% versus 13.60%, $p < 0.001$) and a smaller proportion of people of working-age (47.26% versus 79.08%). However, the working age group prevails as the largest in both the MS-MV and immigrants. There is also a larger proportion of single people (64.30% versus 45.81%, $p < 0.001$) and no difference in the proportion of people who belong to an ethnic minority group, but there is a higher rate of “other” ethnic type in the MS-MV (4.45% versus 0.0078%) (Table-A11.1, Appendix-11).

Stratified analysis shows that more people from the MS-MV group live in rural areas than among the immigrants (9.99% versus 6.03%, $p < 0.001$) and significantly more people live in the Southern area of the country (20.78% versus 13.19%). There is a higher mean number of household members in this group compared to the international immigrants (mean 4.91 versus 3.96, $p < 0.001$). There is a higher proportion of men of working age in the MS-MV (51.39% versus 43.04%, $p < 0.001$), a lower rate of people from this group living in urban areas (90.02% versus 94.77%) and a higher rate living in the south of the country (21.36% versus 11.81%). Clear not significant gradients are observed in the rates of gender; urban/rural setting and area of the country by age group in the MS-MV population (Figures 11.1-11.3).

The MS-MV group has a higher rate of male children (48.15% versus 15.93%), a lower rate of males of working-age (46.97% versus 75.35%), a higher rate of men in the Northern area (23.04% versus 11.58%) and Central area (54.86% versus 74.68%), a higher proportion of single men (65.41% versus 46.62%) and a lower proportion of married men (32.26% versus 48.05%) than the international immigrants ($p < 0.001$). The same differences are observed when comparing the female populations, except for a significantly lower rate of women from the MS-MV group living in the Central area (60.75% versus 74.68%) (Table-A11.4, Appendix-11). When stratifying by marital status, the MS-MV have a lower proportion of single people of working-age (28.71% versus 68.98%), a higher rate of single people in the Northern area (24.42% versus 9.98%) and a lower rate of single people in the Central area than immigrants (55.03% versus 74.15%). There is also a lower proportion of married people from the MS-MV group living in the Central area (59.77% versus 74.15%) and a higher rate in the Southern area of Chile (22.93% versus 15.88%) (Table-A11.5, Appendix-11).

Within those that report belonging to a minority ethnic group, there is a higher proportion of minority ethnic children in the MS-MV group (40.29% versus 11.21%) and a lower rate of minority ethnic people of working age (48.51% versus 85.47%) than the IIP ($p < 0.001$). A lower proportion of ethnic people who preferred not to report their migration status live in the Northern area compared to the equivalent immigrant population (21.38% versus 64.8%) and again there is a higher proportion with “other not stated” ethnic type in the MS-MV than in the immigrant group (79.61% versus 1.40%) (Table-A11.6, Appendix-11). There might be some association between fear of reporting being an undocumented immigrant and belonging to a minority ethnic group in this sub-population, since they might share common experiences of stigma and discrimination, but this cannot be explored directly in this dataset.

Figure 11.1 Crude gradients in the prevalence of male population in the MS-MV’s group, CASEN survey 2006 (weighted sample size= 108 599)

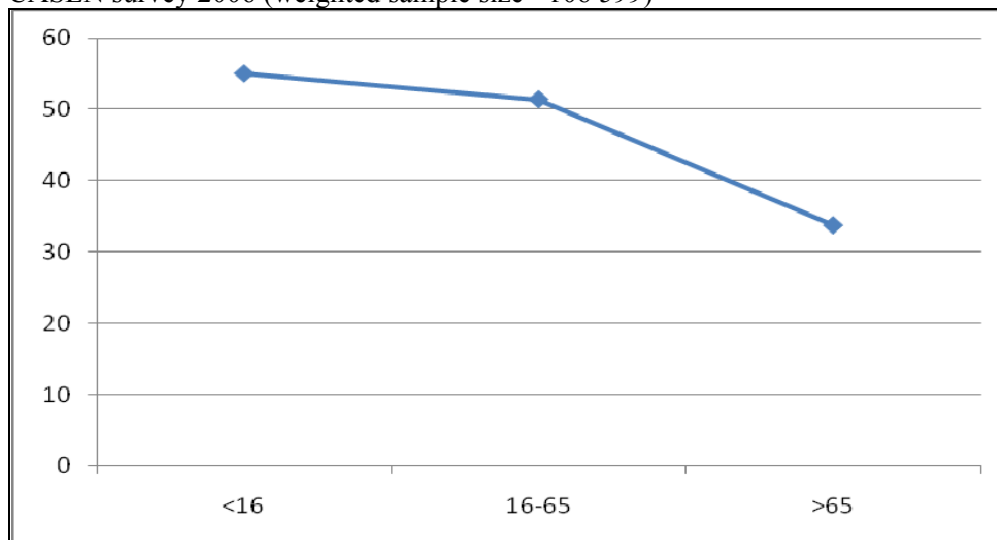


Figure 11.2 Crude gradients in the prevalence of urban population in the MS-MV group, CASEN survey 2006 (weighted sample size= 108 599)

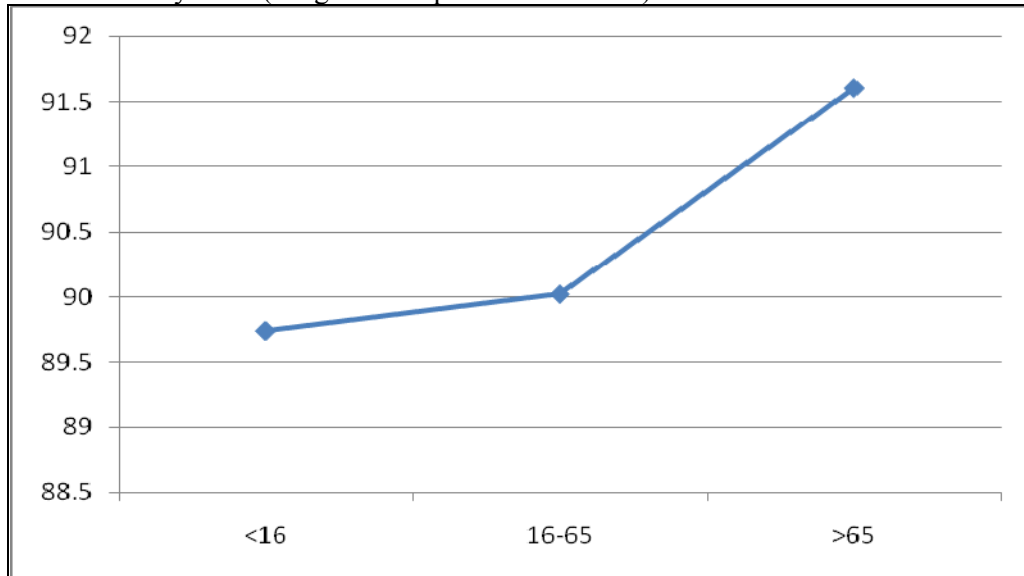
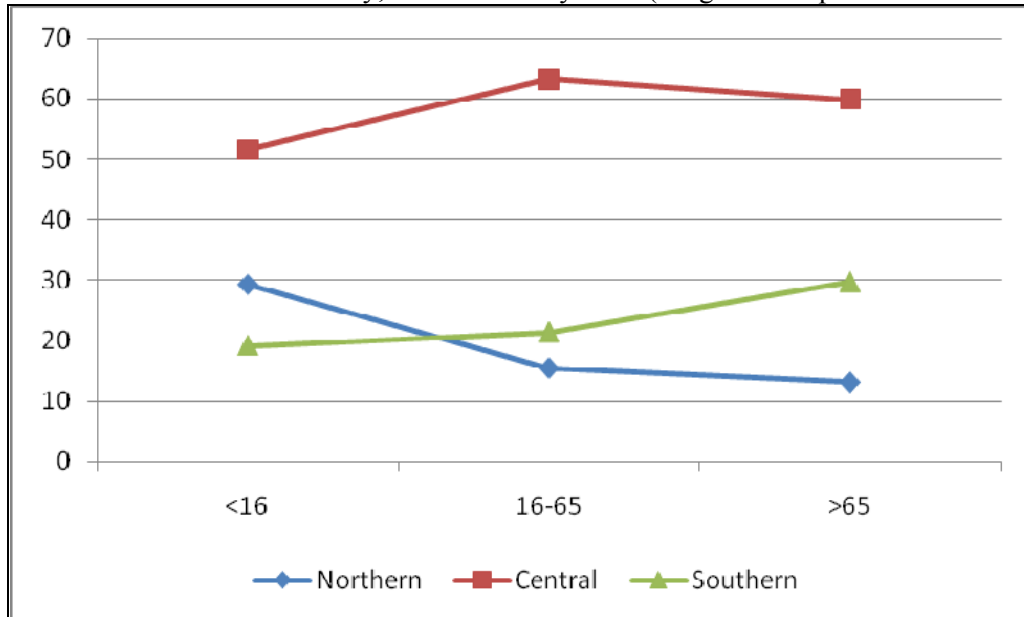


Figure 11.3 Crude gradients in the prevalence of population from the MS-MV group living in different areas of the country, CASEN survey 2006 (weighted sample size= 108 599)

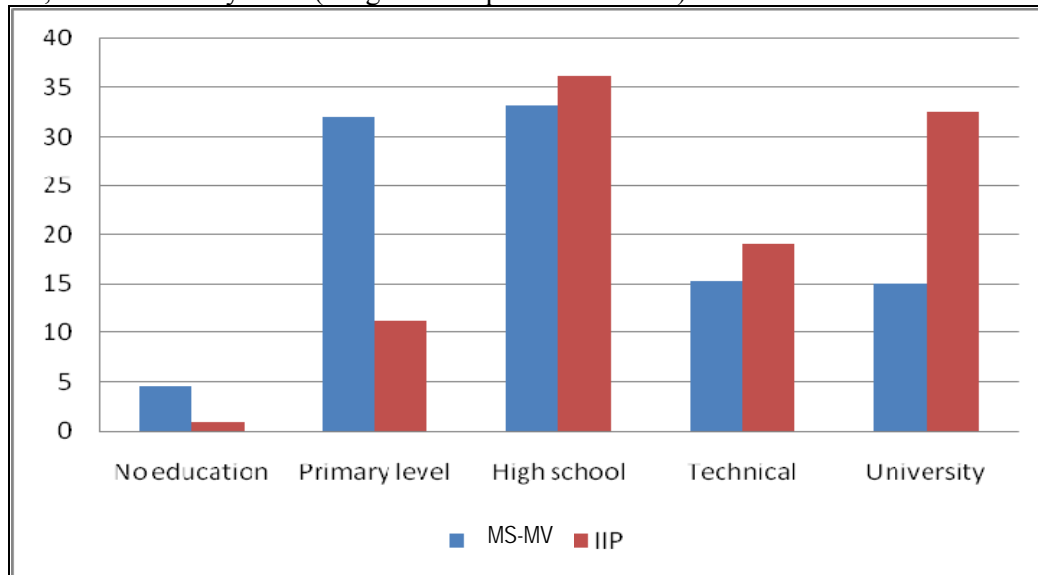


11.2.2 Socioeconomic conditions

When comparing the *educational level* of the adult population in both groups, significant differences appear. The MS-MV group has a 9.2 times higher proportion of adult people with no education (21.96% versus 2.38%) and a 2.8 times higher proportion of people with up to primary level education, compared to the immigrant group (33.92% versus 18.79%, Figure-11.4). Concerning *income*, people in the MS-MV group report a lower mean individual income per month, a lower mean household income per month and a lower mean household income per capita per month. The international immigrant population reports a 2.2

times higher mean household income per capita per month than the MS-MV group (\$395 750 versus \$174 386 Chilean pesos). When stratifying by income quintiles, there is a significantly higher rate of people living in the second poorest income quintile in the MS-MV group (21.18% versus 9.14%) and a significantly lower rate of people in the wealthiest income quintile than the IIP (29.15% versus 51.26%). And when comparing the mean household income per capita per month by income quintile between the two study groups, it is clear that the MS-MV has a narrower distribution of income compared to the international immigrant population. For example, the poorest income quintile is not as poor as the equivalent quintile from the IIP and the richest quintile in the MS-MV earns on average 60% of the equivalent quintile among international immigrants. In relation to *occupational status*, there is a significantly higher proportion of ill people in the MS-MV group than in the international immigrant population (11.55% versus 1.76%). The ill people who preferred not to report their migration status have the same mean age as in the international immigrant population (54.33 versus 54.33) and no differences in other demographic characteristics (Table-A11.7, Appendix-11).

Figure 11.4 Crude prevalence of educational level in the adult population in the MS-MV and IIP, CASEN survey 2006 (weighted sample size 108 599)

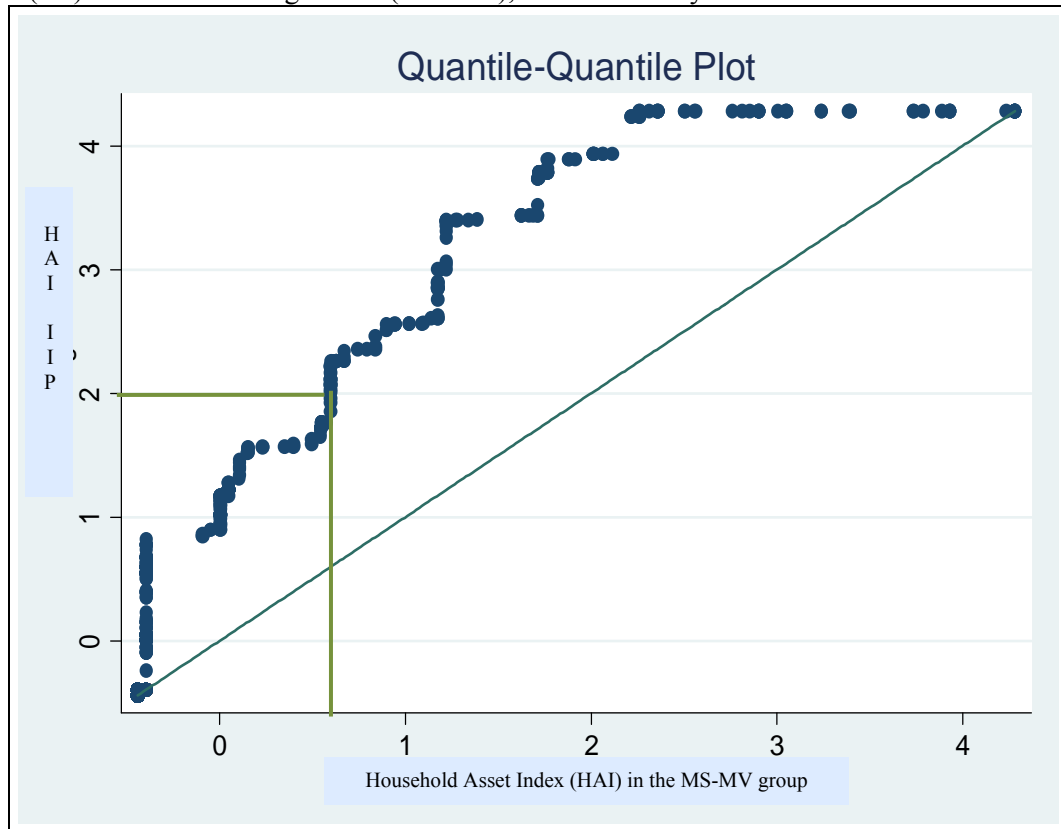


11.2.3 Material living conditions

A higher proportion of people in the MS-MV group live in overcrowded housing compared to immigrants (36.96% versus 25.79%) and a lower rate of people in the former group reports owning the nine household assets included in the CASEN survey. Additionally, the MS-MV group has a lower mean score on the HAI and the CMI (-0.11 versus 1.05 and -0.01 versus 1.17, respectively; adjusted Wald test p-value<0.001). Overall, the MS-MV lives in

worse material conditions than immigrants. This is not due to the quality of the household or sanitary conditions separately, but is reflected in the combined measures of material living standards that are significantly worse in the MS-MV. Overcrowding and owning fewer assets than the immigrants explain these differences. Figure-11.5 compares the HAI score values between the IIP and its missing values. As is can be observed in this figure, most of the HAI scores in the immigrant group are double the scores obtained in the MS-MV (see green line in the Figure as an example)(Table-A11.8,Appendix-11).

Figure 11.5 Quantile-quantile plot of the household asset index (HAI) of the immigrants (IIP) versus its missing values (MS-MV), CASEN survey 2006



11.3 ACCESS TO, NEED AND USE OF HEALTH CARE BY THOSE THAT PREFERRED NOT TO REPORT THEIR MIGRATION STATUS

11.3.1 Descriptive results

A significantly higher proportion of people are entitled to the 100% free of charge provision among the MS-MV than the immigrants (31.96% versus 15.27%) and this finding could be considered a relatively accurate proxy for poverty in Chile (due to its means-tested selection criteria described before). There is also a significantly lower rate of people with “other not stated” provision type in the MS-MV compared to immigrants (4.58% versus 15.57%) and a lower use of the Pap smear programme (29.07% versus 47.28%). A higher rate of people in the MS-MV reports using the well baby care programme and a lower rate reports using antenatal, gynaecological and preventive adult and elderly programmes, even though there is a higher proportion of ill adults among the MS-MV population (Table A11-9, Appendix-11).

These results do not necessarily mean that all the people in the MS-MV group are undocumented immigrants. They could also be Chilean-born people, living in poverty, who understand the general aspects of the health care system in Chile and recognise that they are entitled to 100% free of charge public health care provision. A lower rate of access to Pap smear among the female population living in socioeconomic deprivation has been reported in the past in Chile, but migration status has not been included as a key dimension for exploration in these studies (Solis et al., 2010; Sepulveda and Prado, 2005; Ferreccio, Prado and Luzoro, 2004; Lamadrid and Alvarez, 1996). On the other hand, it could be that those having access to the public free of charge provision are immigrants living for a longer period of time in the country, since a change in the patterns of provision entitlement has been observed among immigrants (see Chapter 8) favouring public free of charge entitlement over time among immigrants in need (i.e. sick immigrants, see Chapter 8, point 8.6.2) and reductions in entitlement to public with co-payment provision in the total immigrant population over the years since immigration (see Chapter 8, point 8.4.1.b). It could also be that immigrants that initially belong to the public with co-payment become poorer over years, or different patterns on access to health care by group of immigrants over time (cohort effect) due to distinctive policies favouring some particular health provision type over another (this was not identifiable in the literature by the author while conducting this research).

Regarding the use of antenatal care in the past three months, the rate observed in the MS-MV is similar to that in the Chilean-born group and not to the immigrant population. However, it could also be the case that undocumented immigrants did not access antenatal care in the

past year despite being pregnant, because they did not know that this is a universal programme in Chile, irrespective of legal status. And once they have given birth and are informed about the universal well-baby care programme, they start and continue to use it.

When observing the differences in the proportion of people accessing well baby care, there is a significantly higher rate of people in the MS-MV accessing this programme in the past three months compared to both the immigrants and the Chilean-born (58.74%). The well baby care programme in Chile includes the first 2 years for any child, irrespective of its legal status, or that of its parents or carers. It is recommended that visits take place every month in the first year of life and every 2-3 months in the second year of life. When comparing the rate of use of well baby care among children under two years old only, there are no significant differences between the MS-MV, the IIP and the Chilean-born (all of them close to a 100% attendance). There might be a shared understanding of the importance of attending well baby care sessions in the Latin American region, regardless of the country of origin. This can be hypothesised in light of the vast efforts over decades of international organizations like the Pan American Health Organization (PAHO) to protect the health of the children under 5 years old in this region (PAHO, 2007; Frenk et al., 1999).

11.3.2 Factors associated with provision entitlement: a comparison between the MS-MV and the immigrant population

When observing the social determinants associated with *100% public free of charge* health care in the MS-MV group, those with a lower household income per capita have a higher chance of reporting this particular provision type (RRR 0.99, continuous variable) (compared to no health care provision, baseline category, weighted multinomial regression). In contrast, among immigrants, sex, age, zone, and household income are significantly associated with this provision type. Concerning the social determinants associated with *public with some co-payment* health care provision, among those who preferred not to report their migration status compared to no health care provision, there is no significant association with any of the variables collected by the CASEN survey.

Immigrants show significant association with sex (female RRR 1.82) and educational level (moderate negative gradient). The social determinants associated with the *private* provision type in Chile in the MS-MV are age (RRR 1.02) and household income per capita (RRR 0.99, continuous variable). Among the IIP, age (RRR 1.08) is the single significant variable associated with this type of health care provision. Finally, educational level is the single variable significantly associated with *other not stated* provision type in the MS-MV (no clear gradient, trend p-value<0.001). In the IIP, zone (RRR 3.05) is the variable associated

with this provision type (weighted multinomial regression, no health care provision as the baseline category).

11.3.3 Factors associated with access to Pap smear: a comparison between the MS-MV and the immigrant population

Women in the MS-MV group married or divorced (OR 5.47 and 5.18, trend p -value <0.001), who belong to a minority ethnic group (OR 0.23) and unemployed (OR 0.17) have a significantly different chance of using of the Pap smear programme in Chile. In the female IIP in contrast, it is ethnicity (OR 0.23), having a temporary contract (OR 0.37) and having a poor quality of the household the factors that seem to affect the chance of having access to this programme in the past three years, as recommended by national guidelines (Table-A11.11, Appendix-11).

11.3.4 Factors associated with the use of any mental, dental and other specialist services

The partial adjusted models show that living in rural areas (OR 0.44) and having a temporary contract (OR 0.18) are the key determinants of having received any *mental health care* in the past 3 months in the MS-MV population. Among immigrants, the number of household members (OR 0.83) is associated with having received any mental health attention in the past 3 months (Table-11.12, Appendix-11). Concerning having received *dental health* attention in the past 3 months, both populations show a significant effect of sex, but in opposite directions. The MS-MV has a higher chance of having received dental care if female (OR 2.42), whereas the immigrants show a lower chance being female (OR 0.56). There is a lower chance of having received dental care in the past 3 months among those immigrants with a temporary contract (OR 0.30) and this was not found in the MS-MV group (Table-11.13, Appendix-11). Only two SDH seem to affect the chance of having received *any other specialist* attention in the past 3 months in the MS-MV, belonging to an ethnic group (OR 0.21) and the number of household members (OR 0.68). The immigrant population shows a significant association with age (OR 1.01) and the number of household members (OR 0.62) (Table-A11.14, Appendix-11).

11.3.5 Access to and use of the Chilean health care system among those in need

Similar to the analysis conducted in Chapter 8, two specific health outcomes are selected to explore the access to and use of health care: any health problem or accident in the past month and any disability. Descriptive analysis of provision entitlement among those in the MS-MV that report any health problem or accident shows that these groups have a significantly lower

rate of people entitled to “other not stated” health care provision (1.13% versus 8.78% among immigrants in same need). Among those with any disability, there is a lower proportion of people with “no provision” in the MS-MV group compared to immigrants (1.49% versus 39.45%), a higher rate of people with “public free of charge” entitlement in the MS-MV group (54.49% versus 25.89%, p-value=0.05) and a higher rate of people with the “private” provision type than among the immigrants (7.08% versus none)(Table-11.1).

Table 11.1 Access and use of the Chilean health care system among those in need, a comparison between the MS-MV and the immigrant population, CASEN 2006

Dimensions	International immigrant population living in Chile % (95%CI)		Those who preferred not to report their migration status % (95%CI)	
	With any health problem/ accident	With any disability	With any health problem/ accident	With any disability
<i>Type of provision:</i>				
None or don't know	24.40 (15.20-36.30)	39.45 (22.88-58.87)	13.44 (7.26-23.51)	1.49 (0.32-6.69)
Public 100% free	19.64 (13.21-28.19)	25.89 (15.52-39.92)	32.88 (23.55-43.77)	54.91 (38.55-70.30)
Public co-payment	47.17 (36.23-58.39)	20.16 (9.88-36.77)	52.53 (40.92-63.81)	35.19 (20.38-53.53)
Private	-	-	0.01 (0.001-0.09)	7.08 (1.86-23.51)
Other	8.78 (4.36-16.90)	14.49 (4.92-35.70)	1.13 (0.30-4.20)	1.33 (0.18-9.29)
Use of cervical cancer screening programme (yes)	50.25 (36.26-64.20)	38.44 (20.74-59.85)	39.04 (22.38-58.72)	29.44 (11.95-56.19)

11.4 HEALTH STATUS OF THOSE WHO PREFERRED NOT TO REPORT THEIR MIGRATION STATUS

11.4.1 Recent health events

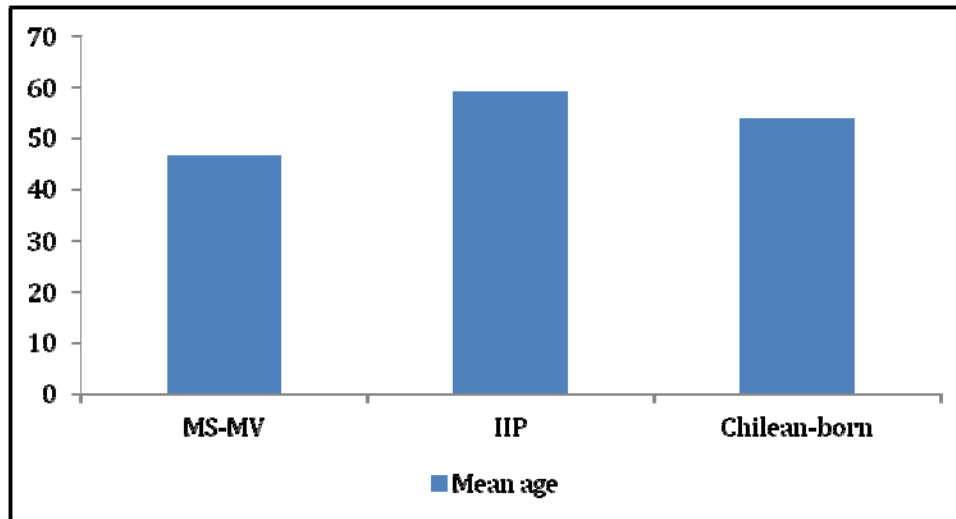
11.4.1.a) Any health problem or accident in the past month (AHPA)

There is no difference in the prevalence of AHPA between the two populations under study (14.12% in the MS-MV and 10.80% in the IIP) (Table-A11.15, Appendix-11). Nonetheless, those in the MS-MV group with AHPA seek care in a higher proportion than the immigrants (92.74% versus 78.75%). The MS-MV group with AHPA is also significantly younger than the equivalent Chilean-born population (see Figure 11.6). When considering the total population living in Chile and having the *international immigrants* as the reference category, those that preferred not to report their migration status show a higher chance of having AHPA (OR 1.53, 95%CI 1.06-2.19) and the Chilean-born also have a significantly higher chance than the immigrants (OR 1.59, 95%CI 1.29-2.03) (data adjusted by demographics, not shown). Conditional partially adjusted models show that the only social determinant of AHPA among both the MS-MV and the international immigrants is having a temporary contract. That is, in the MS-MV there is a negative association with this recent health event (OR 0.14), while there is a positive association among immigrants (OR 2.58) (Table-A11.16, Appendix-11).

When conducting conditional models for each age group, the *child population* from the MS-MV shows a significant association between AHPA and age (OR 0.86) and belonging to an ethnic group (OR 0.11), while the same group in the international immigrant population shows a significant association with SES clusters only (clear negative gradient, trend p-value<0.001) and coming from Bolivia (OR 0.08). Occupational conditions in the *adult* MS-MV population appears to be the key determinant of AHPA (being unemployed OR 0.13, having a temporary contract OR 0.19), suggesting that there might be important risk factors for this recent event related to the working conditions in this group. Among adult immigrants, being female is the single key determinant of presenting with any health problem or accident (OR 1.87). *Elderly people* from the MS-MV show a significant association with area of the country (trend p-value<0.0001), educational level (all categories with a lower chance of presenting with any health problem or accident than those at the university level, trend p-value<0.001) and material conditions (inadequate sanitary index OR 3.53, overcrowded household OR 0.10, HAI 3.40, CMI 0.24). The material factors suggest that those in material deprivation have a higher chance of presenting with this recent health event, but that overcrowding might be a significant mediator, reducing the chance of having

any health problem or accident in the past month among elderly people in the MS-MV group. Similar to the child immigrant population, elderly immigrants show a clear negative gradient of this health event by SES clusters and no other variable significantly affects the chance of having any health problem or accident the last month (Tables-A11.17-A11.18, Appendix-11).

Figure 11.6 Crude mean age of those who report any health problem or accident in the past month, a comparison between the immigrant, the MS-MV group and the Chilean-born, CASEN 2006



11.4.1.b) Number of medical and emergency care attentions received in the past month

Descriptive analysis shows no difference in the mean number of *medical attentions* received in the past month between the immigrants and those that preferred not to report their migration status (2.24 in the IIP and 2.67 in the MS-MV). Conditional partially adjusted models show that the SDH of the number of medical attentions received in the past three months in the MS-MV are sex (female IRR 1.76) and educational level (all categories with a higher risk ratio than the university level, no gradient, trend p-value<0.001). In contrast, in the IIP they are age (IRR 1.01, continuous variable) and living in a rural setting (IRR 0.67) that affect the chance of changing the number of medical attentions received in the past three months (Table-A11.19,Appendix-11).

Conditional models for each age group were also conducted. Children in the MS-MV population show a significant association between the number of medical attentions received and sex (female IRR 2.16), whereas child immigrants show an association with household income (all categories with a higher chance than the university level, no gradient, trend p-value<0.001), sanitary index (IRR 2.43) and overcrowding (IRR 0.60). People in the MS-MV of working age have a significant association between the number of medical attentions

and age (IRR 1.03) and educational level (all categories with a higher risk ratio than the university level, no gradient, trend p-value<0.001), while no significant association is observed among the working age immigrants. Elderly people from the MS-MV group have a significant association with sex (female IRR 2.92) and marital status (all categories with a higher risk ratio than single people, trend p-value<0.001), whereas elderly immigrants show a significant association with age (OR 0.95) and sex (female IRR 0.49).

Descriptive analysis shows a significant difference in the mean number of **emergency attentions** received in the past month between the immigrants and those that preferred not to report their migration status (mean 1.13 in the IIP versus 1.40 in the MS-MV). Stratified analysis shows that people with any emergency consultation in the MS-MV are younger than the immigrant population. When observing this difference by age group, a significantly larger proportion of children in the MS-MV group reports this event compared to the child immigrant population (Figures 11.7-11.8). The “number of emergency consultations” variable shows a higher proportion of people in the MS-MV having two emergency attentions (23.79% versus 3.36% in the IIP) and a lower rate of people in this group having received only one emergency consultation in the past month (72.34% versus 92.76% in the IIP) compared to the international immigrant population.

When considering the total population living in Chile, with the *international immigrants* as the reference category, those that preferred not to report their migration status show a higher chance of emergency consultations (IRR 1.27, 95%CI 1.07-1.52) and the Chilean-born also have a significantly higher chance than the immigrants (IRR 1.44, 95%CI 1.30-1.60) (data adjusted by demographic characteristics, not shown). Conditional partially adjusted models show that the contractual status (IRR 0.29) is the only significant variable associated with the number of emergency consultations received in the past three months in the MS-MV group (Table-11.20, Appendix-11) and the number of household members (IRR 1.10), workday dedication (IRR 0.61), provision entitlement (trend p-value<0.0001) and use of health care services in the IIP.

Conditional models for each age population were also conducted. Results show that age is the only significant variable associated with the number of emergency consultations received in the past three months in the MS-MV group (IRR 0.95) and sanitary index the only one associated with this recent health event in the immigrant population (IRR 3.87). Different occupational determinants seem to be associated with this outcome among those of working age in the MS-MV group (being unemployed IRR 0.60; having a contract IRR 0.34). In contrast, several social determinants appear to be associated with the health event under study among the immigrants. Belonging to a minority ethnic group (IRR 1.54), number of

household members (IRR 1.12), having a contract (IRR 0.47), having a full time job (IRR 0.61) and all material conditions of the household positively affect the risk of emergency care consultations received in the past 3 months. The worse the material conditions, the higher the risk of emergency consultations in the working-age immigrant population.

Among the elderly populations in both study groups, there is a positive association with the number of household members (MS-MV IRR 1.23; IIP IRR 1.61) and sanitary conditions (MS-MV IRR 9.27; IIP IRR 39.80). However, the elderly MS-MV population also shows a significant association with household income (all categories with a higher risk ratio than the wealthiest income quintile, no gradient, trend p-value<0.001), while the elderly immigrants also show a significant association with age (IRR 0.97) and area of the country (Central area IRR 0.60, Southern area IRR 0.44, Northern as reference category, trend p-value<0.001).

Figure 11.7 Crude mean age of people presenting any emergency consultation in the MS-MV group, the immigrant and the Chilean-born populations, CASEN 2006 [non significant differences]

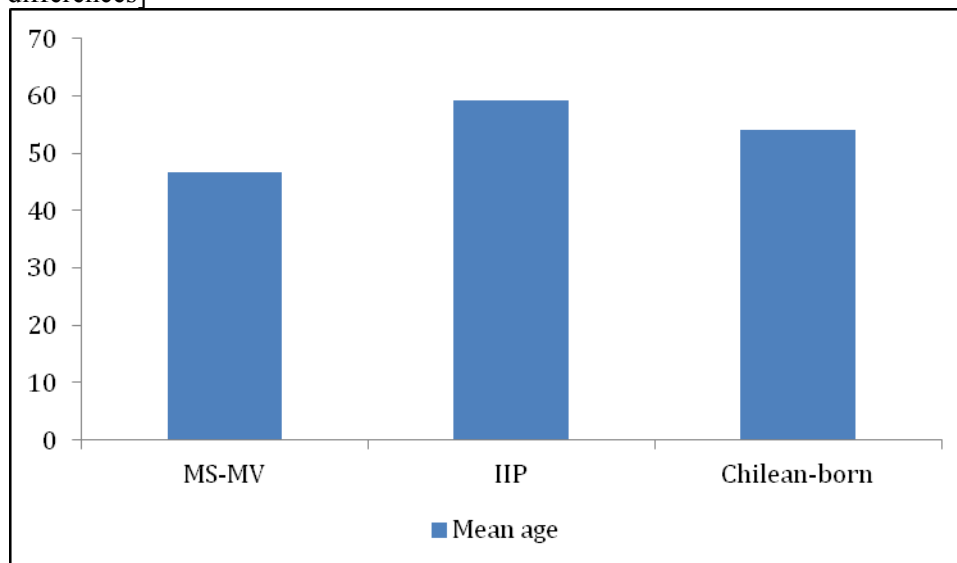
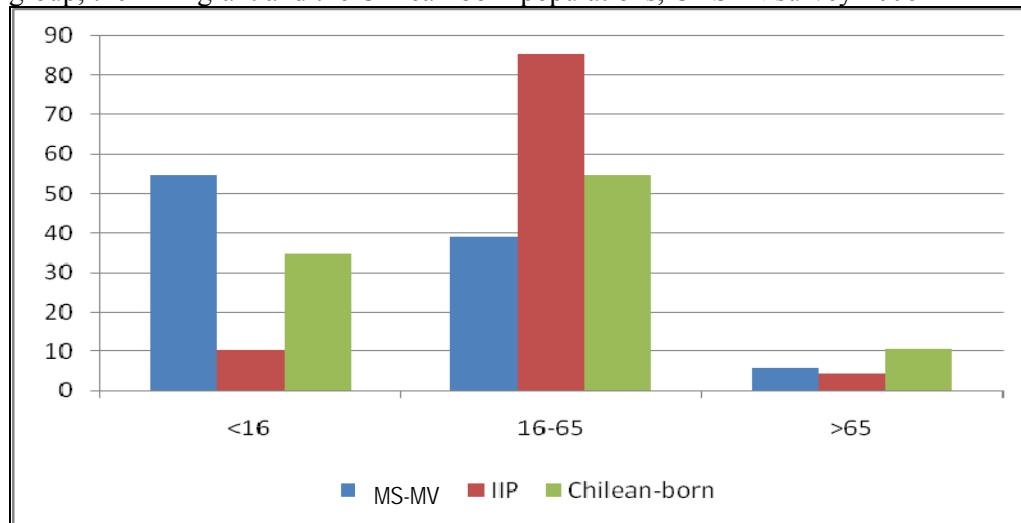


Figure 11.8 Crude prevalence of any emergency consultation by age groups in the MS-MV group, the immigrant and the Chilean-born populations, CASEN survey 2006



11.4.2 Chronic health conditions

11.4.2.a) Any Disability

The group that preferred not to report its migration status has a significantly higher rate of **any disability** than the immigrant population (7.42% versus 3.55%). Disabled people in the MS-MV group report a 6 times higher prevalence of accidents as the cause of disability than the immigrants (17.69% versus 2.92%, $p < 0.001$) (Table-A11.21, Appendix-11). When considering the total population living in Chile and with the *international immigrants* as the reference category, those that preferred not to report their migration status show a significantly higher chance of being disabled than the immigrants (OR 2.04, 95%CI 1.40-2.98) and the same results appear in the Chilean-born (OR 2.72, 95%CI 1.59-4.67) (adjusted by demographic characteristics, data not shown). Partially adjusted models show that the significant determinants of any disability in the MS-MV population are age (OR 1.04), sex (female OR 0.39), educational level (all categories with a higher chance of presenting with this outcome than those at university level, trend p -value < 0.001), and working full time (OR 0.02). The international immigrant population in contrast, shows a significant association between any disability and age only (OR 1.04) (Table-A11.22, Appendix-11).

Conditional partially adjusted models of any disability by each age group were also estimated. Infants in the MS-MV show a significant association between any disability and age (OR 1.25) only, while child immigrants do not show an association with age and show a significant association with sex (female OR 0.13), area of the country (Central OR 8.77, Southern OR 3.08, Northern reference category, trend p -value < 0.001) and SES clusters

(clear negative gradient, trend p-value<0.001). People of working age in the MS-MV show a significant association between any disability and age (OR 1.08), sex (OR 0.38), educational level (all categories with a higher chance of presenting this outcome than those at university level, trend p-value<0.001) and having a contract (OR 0.71). Immigrants of working age show the same association with age (OR 1.06) and having a contract (OR 3.93) but no other significant factors relate to this long-term health outcome.

Those over 65 years old in the MS-MV group report a significant association between any disability and age (OR 1.16), belonging to a minority ethnic group (OR 0.20) and educational level (all categories with a higher chance of presenting with any disability than those at university level, trend p-value<0.001). The elderly immigrant group shows the same positive association between any disability and age (OR 1.33) but with the opposite direction of association between this health outcome and belonging to a minority ethnic group. In this case, there is a higher chance of being disabled when being part of a minority ethnic group (OR 6.23) and this is not a protective factor as observed among those that preferred not to report their migration status. In addition, elderly immigrants show a clear negative gradient of any disability by SES clusters (trend p-value<0.001). Comparative analysis between the MS-MV and the immigrant population by each type of disability was also conducted and the key findings are presented in Figure 11.9 (Table-A11.23 and A11.24, Appendix-11).

Figure 11.9 Comparative analyses between the MS-MV and the immigrant population by each type of disability, CASEN survey 2006 (Tables A11.25 and A11.26)

<i>Visual disability</i>	Significant association with having a contract among the total MS-MV group (OR 0.06), while there is a significant association with area of the country (Central OR 40.06, Southern OR 9.89, Northern area as reference, trend p-value<0.001), the number of household members (OR 1.21, continuous variable) and some material conditions (sanitary index OR 0.03; overcrowding OR 2.14) among immigrants.
<i>Hearing disability</i>	The MS-MV group shows a significant association with age (OR 1.07) and sex (female OR 0.12), while the immigrant population shows a significant association between this disability type and the number of household members, with a higher chance when living alone (OR 0.53).
<i>Speaking disability</i>	The MS-MV group shows a significant association between this type of disability and educational level (all categories with a higher chance of presenting this outcome than those at university level, no clear gradient, trend p-value<0.001), while immigrants show a significant association between this disability type and the number of household members (OR 0.75).
<i>Physical disability</i>	In the MS-MV, all causes of disability have a higher chance of presenting with this type of disability than a congenital anomaly (reference category)(disease OR 4.37, accident OR 1.84, other OR 2.23, trend p-value<0.01). There is also a significant association with age (OR 1.05), area of the country (Central OR 17.48, Southern 38.38, Northern ref., trend p-value<0.001), educational level (Figure 11.10) and household income (Figure 11.11). Among the IIP, living in rural areas is the single variable affecting the chance of a physical disability.

Figure 11.9 (cont.) Comparative analyses between the MS-MV and the immigrant population by each type of disability, CASEN survey 2006

Learning disability	There is a significant association between age (OR 1.06), belonging to an ethnic group (OR 0.13), the number of household members (OR 1.69) and household income quintiles (all categories with a higher chance of presenting this type of disability than those at the University level, no gradient, trend p-value<0.001); and this disability type in the MS-MV group. In the immigrant population there is a significant association between this type of disability and its cause (all categories at a higher chance than a congenital anomaly; disease OR 46.62, accident OR 3.52, trend p-value<0.001).
Psychiatric type	In the MS-MV group there is a significant association between this disability and age (OR 1.07), educational level (all categories with a higher chance of presenting this type of disability than those at the university level, no gradient, trend p-value<0.001), household income (all categories with a higher chance of presenting this type of disability than those in the wealthiest income quintile, no gradient, trend p-value<0.001) and sanitary conditions (OR 1.34). Among immigrants, there is a significant association between psychiatric disability and age (OR 1.06) and the number of household members (OR 0.70).

Figure 11.10 Partially adjusted gradient of physical disability by educational level in the MS-MV group, CASEN 2006 (adjusted by demographics)

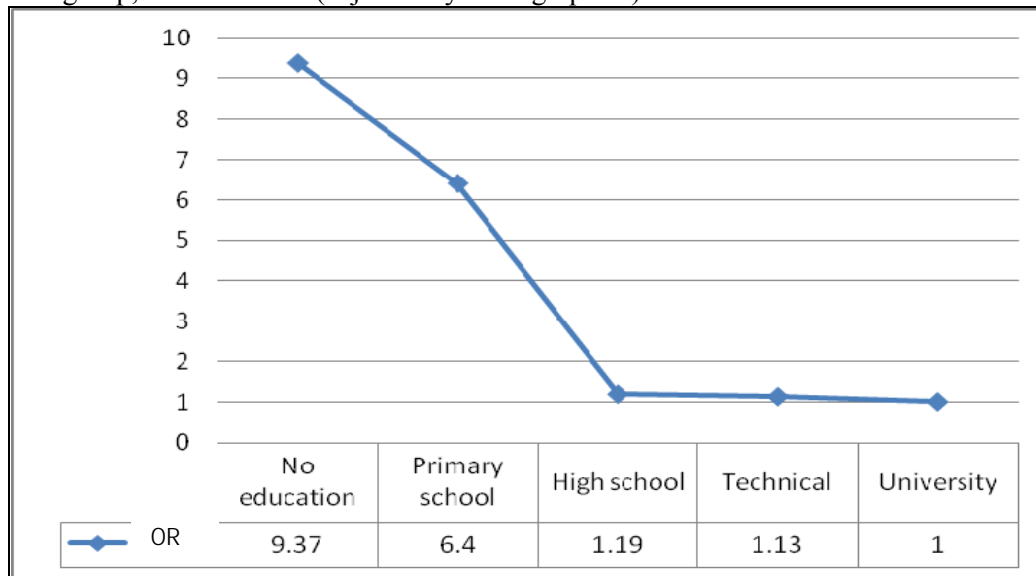
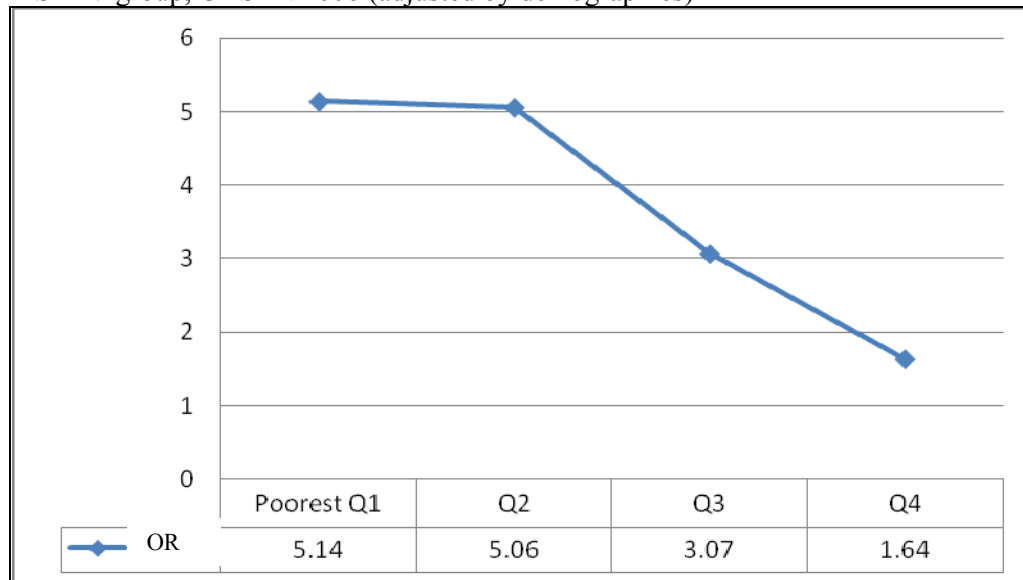


Figure 11.11 Partially adjusted gradient of physical disability by income quintiles in the MS-MV group, CASEN 2006 (adjusted by demographics)



11.4.2.c) Any attention received for a chronic disease or cancer in the past year

There is no significant difference in the prevalence of any attention received for a chronic disease or cancer in the past year between the MS-MV and the immigrant population (4.26% versus 3.90%) (Table-A11.27, Appendix-11). The people in the MS-MV group with a chronic condition or cancer in the past year are slightly younger than the immigrants and the Chilean-born that present with the same condition (Figure-11.12).

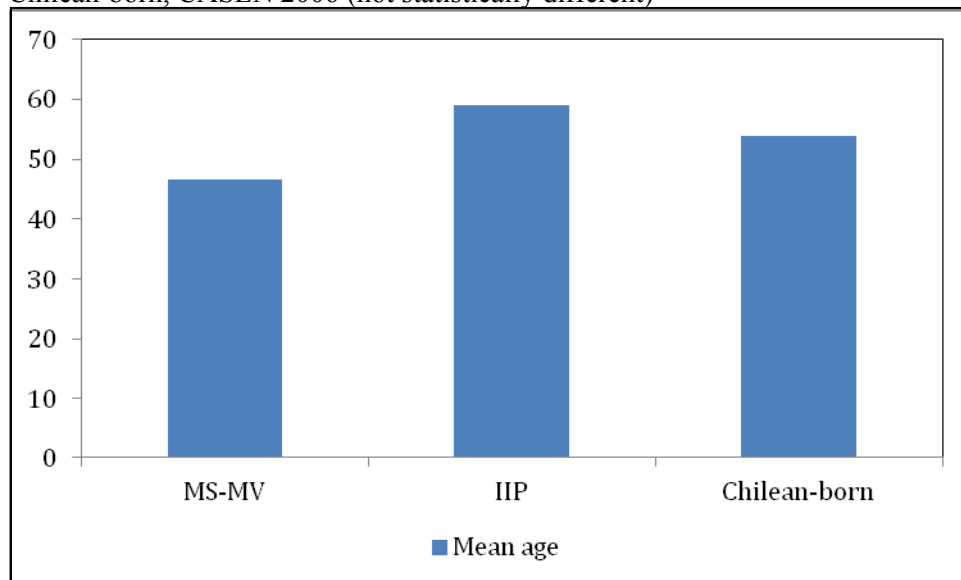
When considering the total population living in Chile and with the *international immigrants* as the reference category, those that preferred not to report their migration status do not have a significantly different chance of presenting with this outcome than the immigrants (OR 1.25, 95%CI 0.68-2.28). However, the Chilean-born show a 50% higher chance of having received care for a chronic disease or cancer in the past year than the international immigrant population (OR 1.50, 95%CI 1.007-2.25) (adjusted by demographic characteristics, data not shown). Partially adjusted models show that the single significant determinant of this long term outcome in those that preferred not to report migration status is age (OR 1.02), whereas international immigrants show a significant association between any chronic disease or cancer and age (OR 1.05), sex (female OR 2.78), belonging to an ethnic group (OR 0.08), the number of household members (OR 1.23), and the CMI (OR 1.14) (Table-A11.28, Appendix-11).

Conditional partially adjusted models by each age group were also conducted. Children in the MS-MV show no significant association between any chronic disease/cancer and the

different social determinants included in this study. In contrast, the child immigrants show a significant association between this long term health outcome and age (OR 0.72) and the number of household members (OR 0.47). Among those of working age in the MS-MV group, there is a significant association between any chronic disease/ cancer and age (OR 1.06) and belonging to a minority ethnic group (OR 0.05), whereas adult immigrants show a significant association with age (OR 1.09) and sex (female OR 4.35).

When observing the elderly group in the MS-MV population, there is a significant association between this long-term outcome and belonging to a minority ethnic group (OR 28.68) and educational level (all categories with a higher chance of presenting this outcome than those at university level, no gradient, trend p-value<0.001). The elderly immigrant population, in contrast, shows a significant association between any consultations for a chronic disease or cancer in the past year and the number of household members (OR 1.87) and SES clusters (no clear gradient but significant trend, p-value<0.01)(Tables-A11.29-A11.30, Appendix-11).

Figure 11.12 Crude mean age of people that received any health care attention for a chronic disease or cancer in the past year, a comparison between the MS-MV, the IIP and the Chilean-born, CASEN 2006 (not statistically different)



11.5 DISCUSSION

11.5.1 Summary of key findings

The hypothesis that the missing values could correspond to undocumented immigrants in fear of prosecution was explored by a detailed analysis of their different Social Determinants of Health and a comparison with the immigrant population. Results show that the MS-MV is a complex group, mostly affected by socioeconomic deprivation and poverty. As expected, it is very difficult to identify strong evidence to support the possibility that those who preferred not to report their migration status are undocumented immigrants. However, it is clear that, whatever their migration status, this is a vulnerable group that needs special consideration in this research. A summary of the key findings appears in Figures 11.13-11.17.

Figure 11.13 Key findings of the socio-demographic characteristics of the MS-MV group compared to the immigrant population

1. The MS-MV group has more men, is younger and more likely to live in rural areas and the south of the country than the immigrant population. It also has a higher mean number of household members and contain a higher rate of people with “other not stated” ethnic type.
2. There are some significant differences when comparing people of working age. Among the MS-MV there is a larger group of men, living in rural settings and the Central and Northern areas of the country than the equivalent immigrant population.
3. The MS-MV group shows a larger group of people with no education at all ages and among those of working age compared to the immigrants. They also show a lower mean income (all different measures of income), a narrower distribution of income and a higher rate of inactive, ill people compared to immigrants.
4. There is a higher proportion of people in the MS-MV group living in overcrowded housing and with fewer household assets than the international immigrant population.

Figure 11.14 Key findings of access to, need and use of the Chilean health care system by the MS-MV group compared to the immigrants

1. People in the MS-MV group report a higher rate of free public provision type entitlement and lower “other” provision type than the international immigrant population.
2. The MS-MV group shows a higher use of the well baby programme and a lower use of the Pap smear, antenatal, gynaecological, and adult and elderly preventive programmes compared to immigrants. It is interesting also to observe a lower use of the “adult/elderly preventive programme” for chronic conditions, since a larger group of them are ill compared to immigrants.
3. There are different patterns of social determinants of entitlement to each type of health care provision in Chile in the MS-MV and the immigrant populations. Socioeconomic and material factors prevail as the most frequent factors affecting these patterns.
4. Access to and use of the Chilean health care system among those in need (those with some illness in both comparison groups) show interesting results. Those in need in the MS-MV group seem to be more involved in the Chilean health care system than the immigrants, since they show higher rates of public free of charge (also a good proxy in Chile for poverty) and private entitlement.

Figure 11.15 Key findings of recent health events in the MS-MV versus the immigrant population

1. People with any health problem or accident in the past month are significantly younger in the MS-MV group than international immigrants. Occupational conditions are the key determinants of this health outcome in the MS-MV population.
2. With respect to the number of medical consultations received in the past month, there are no significant differences between the comparison groups, and the SDH for this outcome in the MS-MV are sex and educational level.
3. The MS-MV has a higher mean of emergency consultations and this group is also younger than the immigrants (over 50% are children).

Figure 11.16 Key findings of chronic conditions in the MS-MV versus the immigrant population

1. There is a higher prevalence of disability in the MS-MV population compared to the Chilean-born. In addition, this group reports an accident as the cause of the disability six times more frequently. The social determinants of any disability in the MS-MV group are age, sex, educational level and occupational conditions.
2. There are different social determinants associated with each type of disability included in the study. Figure 11.17 summarises these patterns.
3. There are no differences in the prevalence of any consultation received due to a chronic condition or cancer in the past year between the two comparison groups. Age is the single determinant associated with this long-term outcome among those that preferred not to report their migration status.

Figure 11.17 A summary of the SDH of each type of disability in the MS-MV group and the international immigrant population, CASEN survey 2006*

	Visual	Hearing	Speaking	Learning	Physical	Psychiatric
SDH of disability in the immigrant population in Chile, by type of disability:						
<i>Crude Rate (%)</i>	<i>1.00</i>	<i>0.59</i>	<i>0.19</i>	<i>0.38</i>	<i>0.23</i>	<i>0.21</i>
Demographic	✓	✓	✓	✓	✓	✓
SES						
Material	✓		✓			
SDH of disability in the MS-MV group, by type of disability:						
<i>Crude Rate (%)</i>	<i>1.68</i>	<i>1.10</i>	<i>0.47</i>	<i>0.75</i>	<i>1.07</i>	<i>0.99</i>
Demographic		✓		✓	✓	✓
SES	✓		✓	✓	✓	✓
Material				✓		

*Partially adjusted models (by demographics), a tick represents that at least one variable of each set of SDH is significantly associated to the health outcome. The tick represents a statistical significant association.

11.5.2 Methodological discussion

11.5.2.a) The issue of under and misrepresentation of immigrants in research

Migration is a global phenomenon with incompletely understood health effects (Sousa et al., 2010). Research efforts to understand the health of immigrants have, however, been hampered by the quality of available data. Undocumented immigrants are likely to be missing from population databases, making it impossible to identify a complete, accurate sampling frame for use in migration research. Legal status is a sensitive subject, potentially leading to self-selection out of survey participation, skewing results and limiting the study of the impact of legal status on the interface between migration and health (Sousa et al., 2010; Gushulak and MacPherson, 2006).

The fact that there is a large group of people in the CASEN survey that preferred not to report their migration status is not surprising. Several national-level studies worldwide have found a significant under-representation of immigrants in comparison to government estimations (Almandoz, 1997; Flores et al., 2002; Whiteford, 1991; Tsai and Salazar, 2009; Boyd, 1999). This under-representation of the immigrant population in international studies relates to the total population and to some specific groups, not only undocumented immigrants but also women, children and minority ethnic groups. Similar findings appear in this chapter.

Efforts have been made to improve the representation of the international migrant population in research, but current research methodologies are being challenged by the complexity involved when studying migrants. Many limitations have already been described in this thesis (Chapters 2 and 3). It appears that this study confirms the need for concrete national research strategies to overcome these limitations in Chile. Latin America as a whole faces a great challenge developing culturally sensitive approaches to these groups. International evidence on specific sampling strategies used in hard to reach populations, qualitative research on specific vulnerable immigrant groups, and a robust tool for consistent data collection over time in nation-wide surveys could be considered in Chile and the region to address these issues.

11.5.2.b) The MS-MV group as a vulnerable, hard to reach, heterogeneous population

A recent study by Sousa et al (2010) shows a response rate of 55% among undocumented immigrants. Other studies, which have used small samples to explore their living conditions and health status, have not always reported response rates (Glaesmer et al., 2009; Boyd,

1999; Pikhart, Drbohlav and Dzurova, 2010; Bresa 2010; Bodenman et al., 2009; Simich, Wu and Nerad, 2007; Gaston-Johansson et al., 2010). Undocumented immigrants are recognised as a hard-to-reach population (Sousa et al., 2010; Simich, Wu and Nerad, 2007; Dawood, 2008). There are many challenges associated with conducting research on hard-to-reach populations, beginning with how to identify and sample certain groups for health research (Southern et al., 2008; Schoenfeld et al., 2000; Faugier and Sargent, 1997; Baines, 1984; Arnold et al., 1989; Steinmetz et al., 1985). Some populations are particularly vulnerable and hard-to-reach, including the homeless (Faugier and Sargeant, 1997). Other populations, however, may be defined by characteristics such as ethnicity or country of origin that may not be recorded in routinely available data sources (Quan et al., 2006).

Undocumented immigrants are an important group to study because the limited data available suggest they are extremely vulnerable to lower self-reported health, accidents, injuries, and psychosocial distress resulting from poor working conditions (Pikhart Drbohlav and Dzurova, 2010; Sousa et al., 2010; Ahonen et al., 2009a; Ahonen et al., 2009b; Akhavan et al., 2004; Lopez-Jacob et al., 2008; Simich, Wu and Nerad, 2007) and marginal living conditions, associated with poverty, social exclusion, and discrimination (Agudelo-Suarez et al., 2009). Reasons for this are multiple and complex, including socioeconomic deprivation, social isolation, experiences of stigma and discrimination, language limitations, higher rates of isolated ethnic groups in some cases, psychological stress in the migration process and arrival in the host country, changes in legal status, fear of prosecution and deportation, and others.

The CASEN survey 2006 did not seem to have anticipated how to reach and collect data on undocumented immigrants. If we assume that people in the MS-MV group are international immigrants, then the proportion they contribute to the total immigrants in Chile in the CASEN survey is 43.5%. There is heterogeneity within undocumented immigrants in other literature (Simich, Wu and Nerad, 2007) and the same pattern is found in the MS-MV group in this study. Undocumented immigrants combine immigrants who stopped working at different life-points, their partners and family if they have them, sick unemployed people, healthy young immigrants looking for job opportunities, refugees, and asylum seekers, women and their children, and many others. Further exploration and clarification of the migration and legal status of the MS-MV group in Chile is required. This would set the context for future policy interventions to protect this vulnerable, hard-to-reach, heterogeneous population, through evidence-based tailored strategies and interventions. Their living conditions and health should be a national priority, since the possible injustice of their living conditions and health status threatens their lives, increases costs to the health care system and has deep consequences for the life and health of their children in Chile.

11.5.3 Contrasting key findings with the international literature

11.5.3.a) Demographic characteristics

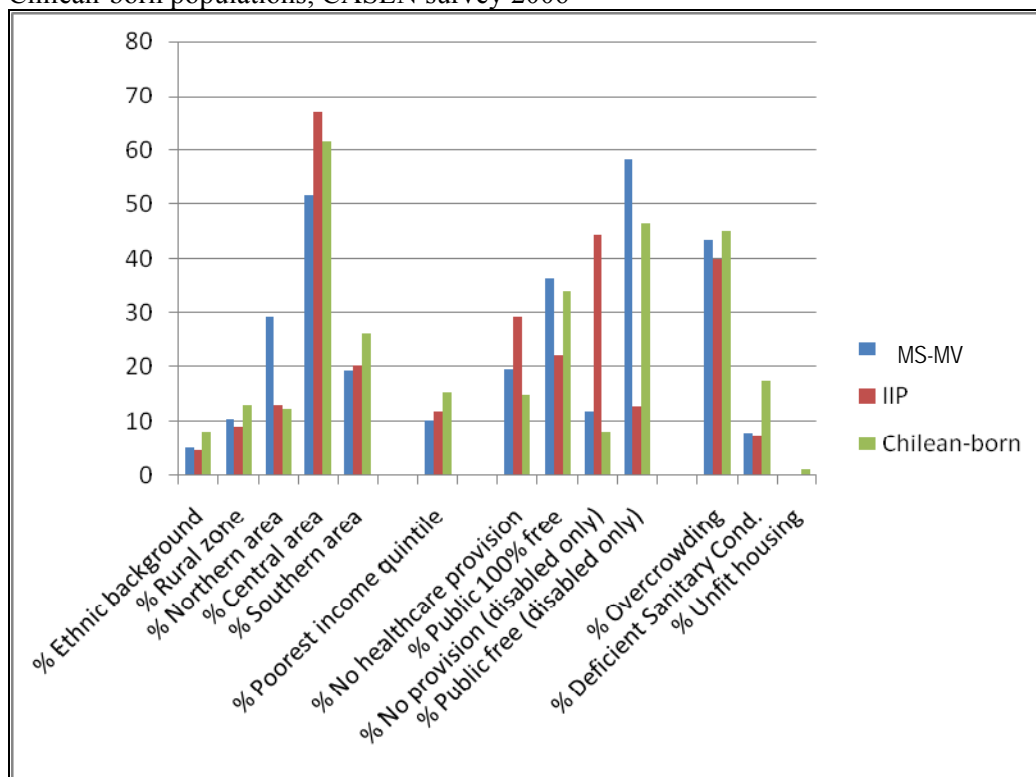
Many interesting findings appear when observing differences in the living conditions and health status between subpopulations, such as comparing age groups and male versus female populations in the MS-MV and the international immigrants. There is some literature describing differential socioeconomic vulnerability and illnesses among undocumented immigrant children, ethnic groups and women in Europe (Borrell et al., 2008; Rodriguez and Alvarez, 2008; Rodriguez and Gonzalez, 1998). These studies consistently recommend more research on this topic, not only for academic purposes but also to better understand policy implications with respect to those vulnerable, underserved populations. It is striking to observe the high proportion of children less than 16 years old in the MS-MV group found in this dataset. It was obvious that they did not themselves choose not to report their migration status (an adult had to be interviewed instead in this survey) but for some reason their parents, relatives or carers chose this option. The research and policy implications of this finding may be crucial. As stated by Mendoza (2009, 1999a, 1999b, 1991) and other authors (Hernandez and Washington, 1998; Fuentes-Afflick, Hessol and Eperez-Stable, 1998; Schumacher, Pawson and Kretchemer, 1987; Wein et al., 2004), the large growth in the number of children living in immigrant families, has produced health care problems that are a concern.

These children and their families should be characterized by their country of origin, culture, religious background, social class, reasons for immigrating, health status before and after immigrating, access to resources, and receptiveness of the socio-political environment in the host country. Some common factors like poverty and racial or ethnic biases can affect health status and access to health care for these children. The characteristics of their immigrant family can also influence the health disparities they experience. In addition to these, material deprivation and social isolation related to undocumented immigration, along with the processes of acculturation and enculturation in the foreign country might severely affect their lives and health. Thus, it is imperative that we understand the health inequalities experienced by immigrant children, especially those coming from undocumented families and the impact of current and future public policies on their health status.

As can be observed in Figure 11.18, the child population in the MS-MV group does not seem to live in significantly greater socioeconomic and material deprivation than in either the immigrant or the Chilean-born group. The MS-MV children in need (disabled, for example)

appear to have better health care insurance than the other two populations (a significantly higher rate has public free of charge provision). Despite these overall findings, there may be some vulnerable subgroups of children hidden within the total group in the MS-MV and the other two subpopulations. Moreover, these findings suggest that the children in the MS-MV group are at least as poorly protected as the immigrant and the Chilean-born infant populations. No child in Chile should be uninsured. No child should suffer from the consequences of living in absolute poverty, in overcrowded or unfit households. It is certainly not just to give a child access to health care only when they are disabled or in acute need. They should have insurance before that event happens and health care should be focused on prevention (Asanin and Wilson, 2008; Asanin and Wilson, 2009).

Figure 11.18 Crude prevalence of sociodemographic and material living conditions in the infant population in Chile, a comparison between the MS-MV group, the immigrant and the Chilean-born populations, CASEN survey 2006



There is evidence in the international literature that undocumented immigrants tend to have lower *salaries* than the local population in Europe and this is correlated with poor health outcomes (Barro-Lugo et al., 2004; Sousa et al., 2010; Porthé et al., 2009; Porthé et al., 2010). In this study, the MS-MV population had a significantly lower salary than the international immigrant population. In keeping with the discussion regarding international immigrants in Chapters 9 and 10, and as can be seen in Figure-11.19 comparing the crude prevalence of different health outcomes between populations, the MS-MV appears to have a significantly lower rate of health problems than the Chilean-born population living in the poorest income quintile, but there is no significant difference between immigrants in the Low-SES cluster and the unemployed Chilean-born. It should be noted that the statistical difference disappears between the total MS-MV group and the Chilean-born in the poorest income quintile when the comparison is made with the people in the poorest income quintile in the MS-MV (Figure 11.20).

With regards to *education*, it has also been documented that irregular immigrants tend to report lower educational levels than the host population in Europe (Sousa et al., 2010; Asamoah et al., 2004). In this study, the adult MS-MV population shows higher rates of no education compared to the international immigrant population, but no difference when compared with the Chilean-born. Education is a key determinant of health in any society, since it is strongly associated with lifestyle and healthy behaviours, life course health events, child wellbeing and life expectancy (Bartley, 2007; Shewry et al., 1992; Sacker, et al., 2000). In addition, it is a fundamental determinant of wellbeing among immigrants, since it affects labour opportunities, social position, resilience and stigma experienced in any interaction with the host society (Tseng, 2001; Greenwood, 1985; De Jong and Gordon, 1999).

Figure 11.19 Crude prevalence/mean of different health outcomes, a comparison between the MS-MV, Low SES immigrants, unemployed and poorest income quintile Chilean-born, CASEN 2006

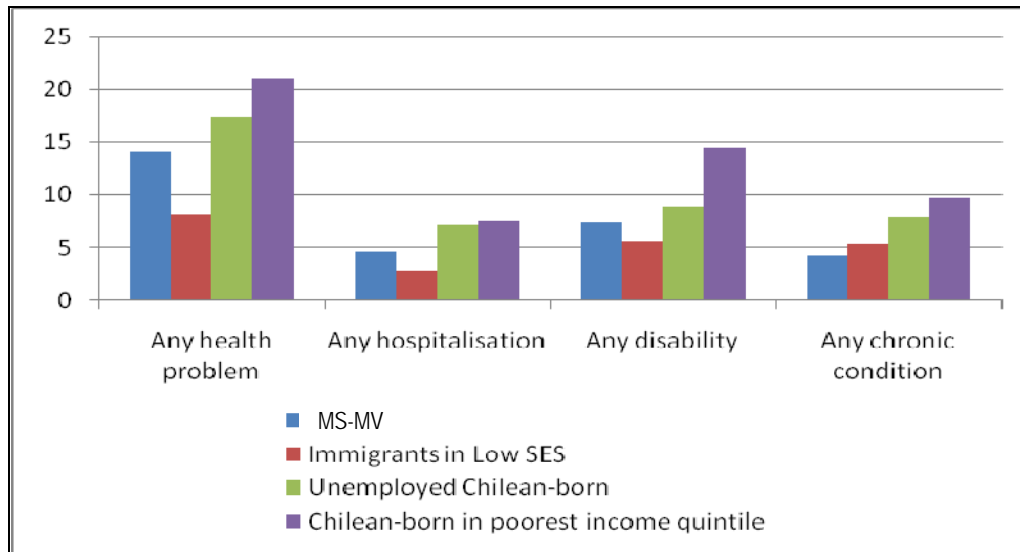
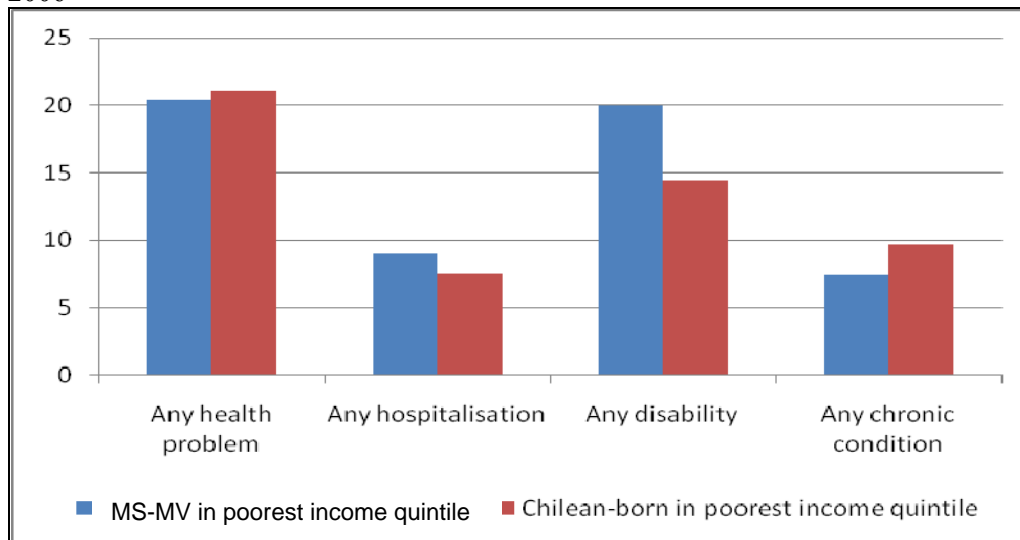


Figure 11.20 Crude prevalence/mean of different health outcomes, a comparison between people in the poorest income quintile in the MS-MV group and the Chilean-born, CASEN 2006



There is a growing body of evidence describing the complex relationship between the legal status of international immigrants, *occupational conditions* and health (Sousa et al., 2010; Porthe et al., 2009; Porthe et al., 2010; Benach, Muntaner and Santana, 2007). As stated by Kandula, Kersey and Lurie (2004), although previous research on the healthy migrant effect suggests a phenomenon of selective migration, migrants might still face adverse health effects arising from disadvantaged circumstances in their new environment, including economic and social factors in the labour market (see globalisation theory, Chapter 2). In addition to legal status, employment conditions are especially relevant to migration and health, as economic motivations to move are common. Unemployment and temporary

employment for example, increase risks of psychological morbidity and occupational injuries among temporary workers (Virtanen et al., 2005; Sousa et al., 2010; Barro-Lugo et al., 2004). Certain forms of temporary contracts have also been associated with poor health, varying by health outcome, sex, and social class (Borrell et al., 2008). Informal employment might have severe and lasting consequences for health, particularly among vulnerable groups like irregular immigrants in a foreign-country. Legal status, migration and occupation are significant SDH that require further understanding in Chile and worldwide.

In this study, occupational conditions appear to be a relevant determinant of some health outcomes included in the CASEN survey 2006. In the MS-MV group, unemployed women share a lower use of the universal Pap smear programme, people with a contract have a lower prevalence of any mental health consultation in the past three months and any health problem or accident in the past four weeks, and people working full time have a lower chance of being disabled. Within the working age population in the MS-MV group, those who have a contract are at a lower chance of being disabled. These findings are quite consistent with the international literature mentioned above, with two exceptions. In the total MS-MV population, having a temporary contract appears to be a protective factor for any mental health consultation and any health problem or accident in the past month. This could be an artefact due to a numerator/denominator bias existing in this dataset, or a bias related to the data collection process (i.e. (1) undocumented immigrants reporting that they have a temporary contract when they do not have one for fear of prosecution, (2) very young immigrants coming to work for a few months in Chile in the harvest season, around November-December, that corresponds with the time of data collection of the CASEN 2006). It could also be that people in the MS-MV group with a contract, and a temporary contract, could be a small group of young wealthy executives in the country for a short time with economic stability but no long-term contract.

These ideas were explored further. First, almost the same proportion of people with temporary contracts is observed in the MS-MV, the immigrant and the Chilean-born populations (29.34%, 29.55% and 33.33%) and therefore the numerator/denominator bias was initially dismissed (even though there could still exist some residual confounding effect due to data limitations). Second, over 90% of temporary workers in the MS-MV are over 16 years old (91.51%). Third, there are no people reporting having a temporary contract who are executives in the MS-MV group (Figure-11.21). Future research could be conducted to explore this phenomenon, and the potential existence for buffering factors protecting those with temporary contracts in Chile. Aspects like relationship with peers and superiors, autonomy and control over life and work, the presence and characteristics of the family, perception of discrimination, differences in social class between immigrant's origin and host

societies and other cultural characteristics might be part of an explanatory mechanism (Sousa et al., 2010; Shaw, Pickett and Wilkinson, 2010; Wilkinson, 2006; Agudelo-Suarez et al., 2009; Ahonen et al., 2009a; Akhavan et al., 2004; Garcia et al., 2009).

Interesting findings appear when comparing the different health outcomes by occupational conditions in the MS-MV, the immigrant and the Chilean-born. Similar to analyses conducted by other researchers recently (Sousa et al., 2010), I compared these three groups under the assumption that the MS-MV might be undocumented immigrants and that they are a vulnerable hard-to-reach population. As can be observed in Figures-11.22-11.26, there are marked patterns in the crude prevalence of different health outcomes by population under study. Depending on the health condition observed, occupational status might have a small (e.g. the number of medical consultations) or large impact (e.g. any health problem/accident) on the difference in prevalence between the MS-MV group, immigrants and the Chilean-born.

The magnitude of the difference also depends on the indicator of occupational conditions used. Few studies that have measured similar indicators of occupational status, like having a contract, and whether it is permanent or temporary in undocumented immigrants, and these studies have only compared self-reported overall health and mental health (Sousa et al., 2010). The consideration of other health outcomes, such as the ones included in this research, provides some additional understanding as to how occupation and legal status might affect a wide range of health outcomes in –potentially- irregular and documented immigrants (Gulushak and MacPherson, 2006; Kandula et al., 2004; Lopez-Jacob et al., 2008; Rodriguez and Alvarez, 2008; Simich, Wu and Nerad, 2007; Magalhaes, Carrasco and Gastardo, 2010).

Figure 11.21 Crude prevalence of type of occupation those with a temporary contract. A comparison between the MS-MV, the immigrant and the Chilean-born populations, CASEN 2006 [note that the self-employed do not have a formal contract]

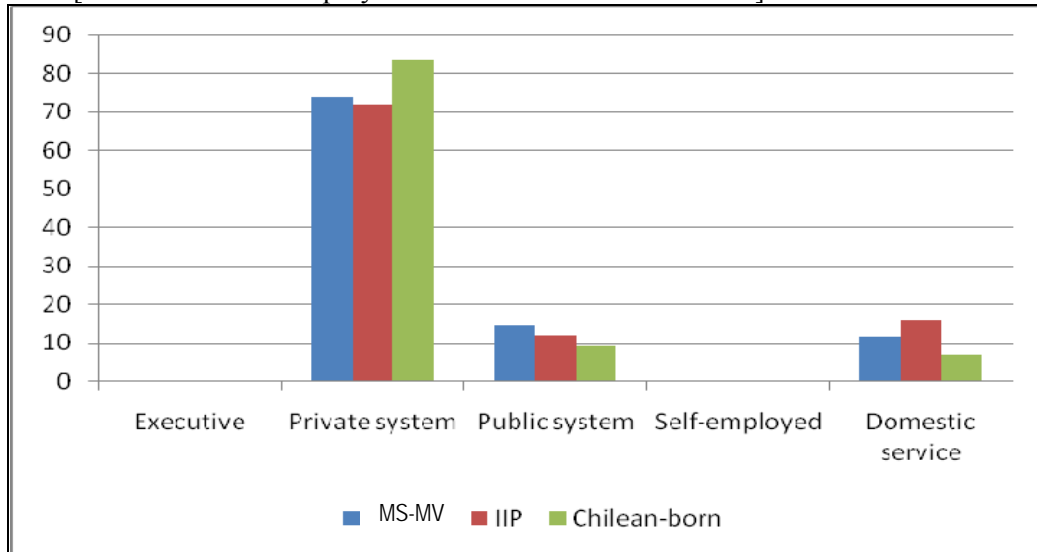


Figure 11.22 Crude prevalence of *any health problem or accident* by occupational conditions in Chile. A comparison between the MS-MV, the immigrant and the Chilean-born populations, CASEN 2006

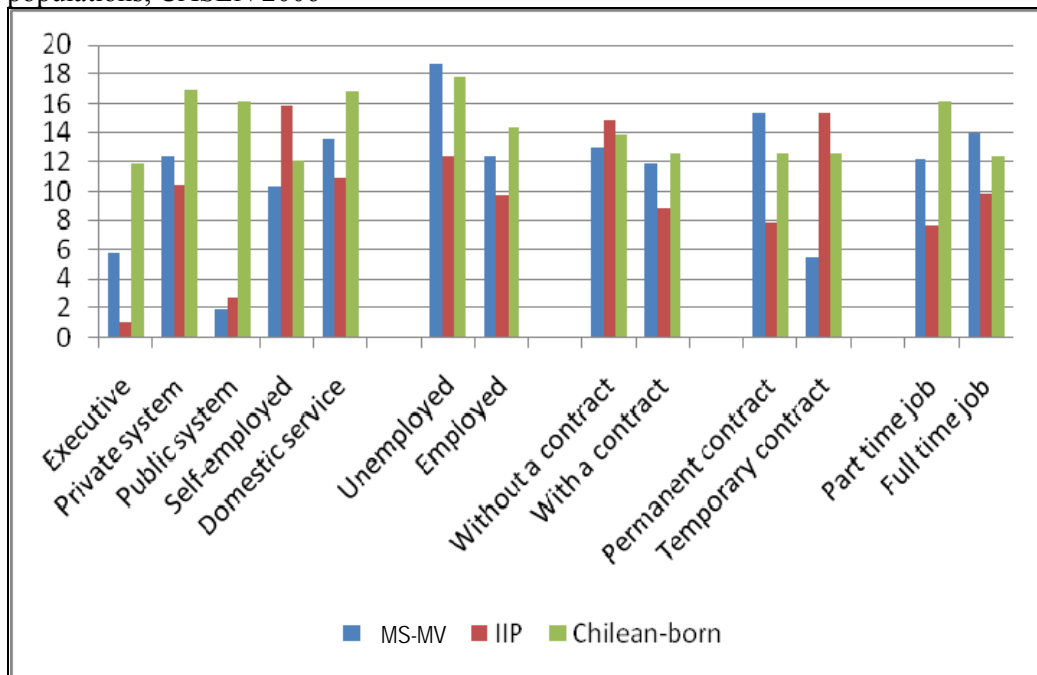


Figure 11.23 Crude prevalence of *number of medical consultations received in the past month* by occupational conditions in Chile. A comparison between the MS-MV, the immigrant and the Chilean-born populations, CASEN 2006

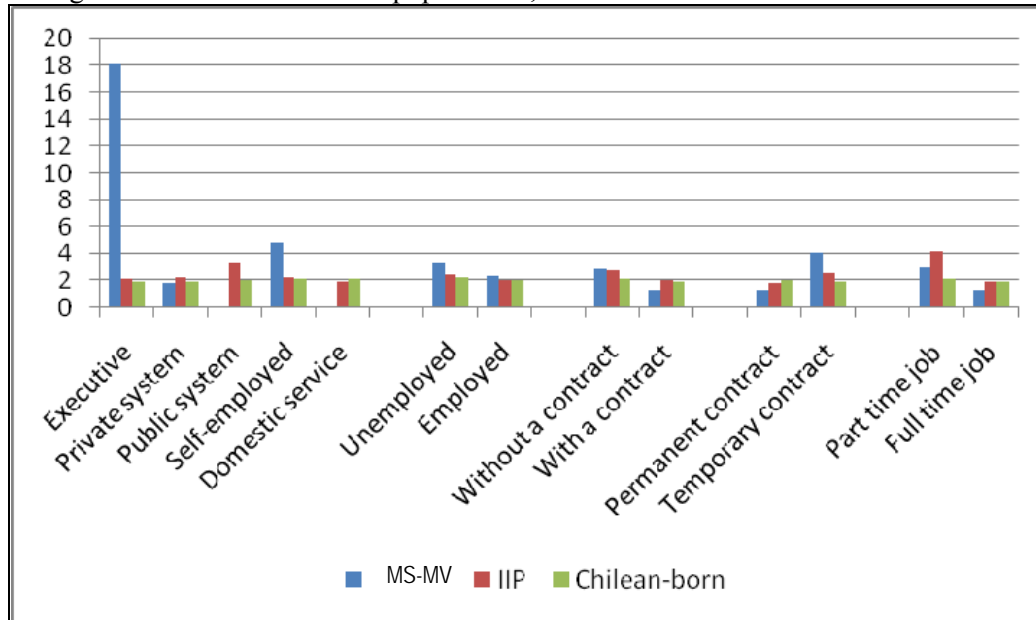


Figure 11.24 Crude prevalence of *number of emergency consultations received in the past month* by occupational conditions in Chile. A comparison between the MS-MV, the immigrant and the Chilean-born populations, CASEN 2006

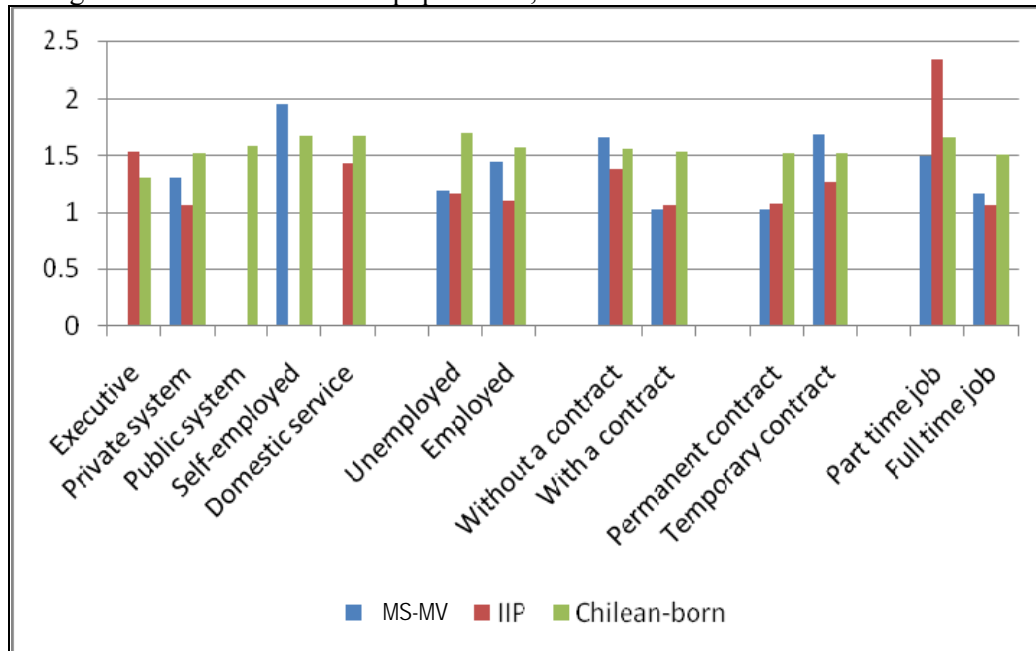


Figure 11.25 Crude prevalence of *any disability* by occupational conditions in Chile. A comparison between the MS-MV, the immigrant and the Chilean-born populations, CASEN 2006

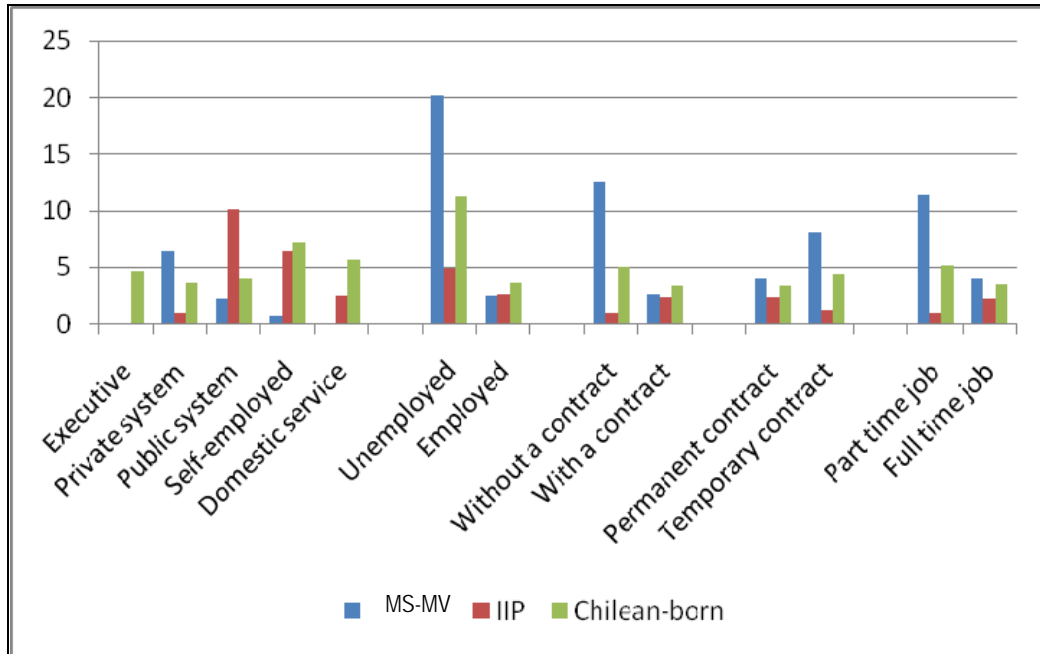
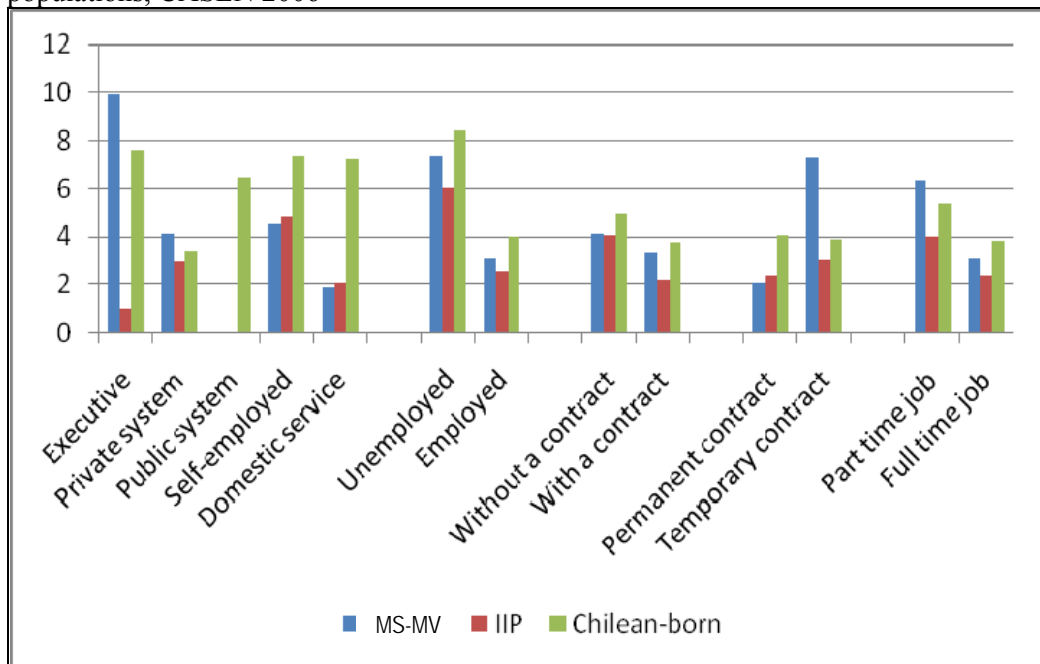


Figure 11.26 Crude prevalence of *any chronic condition or cancer* by occupational conditions in Chile. A comparison between the MS-MV, the immigrant and the Chilean-born populations, CASEN 2006



11.5.3.c) Material living standards

In this study, those families that preferred not to report their migration status show worse general material conditions than the international immigrants. This is due to the higher overcrowding rate and lower proportion of people owning the nine household assets included in the CASEN survey 2006, compared to the immigrant group. There are a large number of studies on material conditions in developing countries, but most of them do not include migration or legal status as a key determinant. Nonetheless, there are some studies describing relatively high overcrowding rates among undocumented immigrants in Spain, up to 70% of the total irregular immigrant population is overcrowded and many also have poor housing conditions (Barros-Lugo et al., 2004). The lack of work permit, unemployment and poverty strongly affect the living standard of migrants all over the world, especially those with irregular status (see direct and indirect pathways of material deprivation on health inequalities, Chapter 4).

The relationship between migration, legal status, health and material deprivation requires further consideration in Chile and Latin America. Different indicators of housing standards and culturally specific indicators of material deprivation need to be developed for each society and could be addressed in future research on migration and health in the Latin American region. Multivariable analysis in this chapter shows how socioeconomic status is a key determinant of health in the MS-MV group, international immigrants and the Chilean-born population. Each group has distinctive demographic and health profiles, but they all share the strong association between social position and health. It needs to be explored to what extent material conditions are a relevant dimension of socioeconomic position in Chile, and how this might vary among different cultural subgroups within the country. While there is a recognised interest in material deprivation as a measure of absolute poverty in Chile, a complementary understanding of relative poverty is needed.

11.5.3.d) Access and use of health care

Immigrant health care is the product of dynamic interactions between societal factors and individual socioeconomic and cultural characteristics (Choi, 2006; Choi, 2008; Choi, 2009; Portes, Kyle and Eaton, 1992). Immigrants, one of the most vulnerable populations (Aday, 1993), have been repeatedly demonstrated to experience a disproportionate lack of health insurance and full access to health care. They tend to underutilize and delay seeking professional health care services compared with native-born citizens in the US and Europe (Brown et al., 2000; Camarota & Edwards, 2000; Carrasquillo, Carrasquillo and Shea, 2000; Institute of Medicine, 2002).

Moreover, there is wide variation in health care experiences by citizenship, length of stay and country of origin within immigrant groups (Carrasquillo, Carrasquillo and Shea, 2000; Leclere, Jensen and Biddlecom, 1994). As observed in this thesis, there are important individual factors affecting access to and use of health care services among immigrants and the MS-MV group. In the latter, it was not possible to disentangle those migration and legal determinants associated with health care entitlement in the country. However, interesting socio-demographic determinants emerged in this study. A significantly higher proportion of people in the MS-MV group are entitled to the public free of charge provision and a lower proportion of women in this group use the Pap smear programme. Other international studies on immigrants have reported lower rates of access and use of health care and the Pap smear programme in particular (Asamoia et al., 2004; Fedeli et al., 2010) and this appears to be correlated with a low level of education.

Regarding baby care, the MS-MV group shows a higher use of the well baby programme than the immigrant group. Interestingly, while other studies in the US have reported lower rates of well baby care among Hispanic immigrants, the evidence of the causal effect of lack of access to such a programme on child health is weak to non-existent (Mendoza, 2009). Other social determinants might play a more important role than access to health care in protecting the immigrant infant's health, such as ethnic density (see Chapter 6) (Halpern and Nazroo, 2000; Pickett and Wilkinson, 2008), acculturation and enculturation (see Chapter 12), natural selection (the healthy migrant effect, see Chapter 3), social integration and social capital, and others. These protective factors might interact with perceived barriers to health care, such as language, lack of information and of cultural appropriateness, costs, and legal status (with both positive and negative effects) (Berry, 1997), and others (Asanin & Wilson 2010; Asanin and Wilson, 2008; Porthe et al., 2010; Lee et al., 2010; Teng et al., 2007; Bauer et al., 2000; Fuentes-Afflick and Hessol, 2009; Phinney et al., 2001).

Significant contextual factors have been reported as crucial determinants of access to and use of health care among immigrants. Given that choice of health care is based on the available options in physical and social environments where individuals or groups are situated, the social context of immigrants might play a significant role in determining their utilization of health care systems and their health outcomes (Choi, 2009; Portes, Kyle and Eaton, 1992), particularly in countries without universal coverage, like Chile and most Latin American countries. The socially constructed and socially patterned features of physical and social environments in spatial and non-spatial communities (e.g. ethnic groups) can be important social forces that affect the health care and health outcomes of a population, interacting with

individual characteristics (Aday and Andersen, 1974; Macintyre, Ellaway and Cummins, 2002; Veenstra et al., 2005).

Both material living conditions and access to health care in Chile are policy-driven determinants of health. According to Aday and Andersen (1974, 1981), health policy is an overarching factor determining the population's health access and utilization of services by framing health care financing (e.g. public and private health care systems in Chile, and free of charge versus with co-payment within the public system) and organizations (e.g. primary care centers and outreach programmes). Moreover, federal and state health policies determine the level of social entitlement of subpopulations to receive public assistance for health care (Derose, Excarce, and Lurie, 2007; Kaushal and Kaestner, 2005). As stated by Choi (2009), health policies directly and indirectly influence health care experiences and decisions about health care behaviors, shaping the availability and affordability of health care services. Overall, the effects of the social and especially the policy context of health care access in Chile, particularly among immigrants and those who might live undocumented and in relative socioeconomic and material deprivation, remain under-researched and should be further explored in the future.

11.5.4 Strengths, limitations and further research in this area

This chapter explores what the missing values from the question on migration status might represent. It is a limited approach to researching a challenging, hard-to-reach population, but it is still the first quantitative attempt to consider the health of potential undocumented immigrants in Chile. Results from this chapter cannot clarify whether the missing values actually correspond to undocumented immigrants; however, they show that this particular group lives in significant economic poverty and material deprivation. They seem to be more involved with the Chilean health care system than the international immigrant population, but the extent of this involvement varies between different subgroups. As with the immigrant population, people in the MS-MV group show a strong association between socioeconomic position and health, especially occupational conditions and material living standards. Therefore, direct research and policy interventions could be addressed to better understand this group and to find ways of improving their living conditions and health status.

As can be seen in this study, legal status is a difficult phenomenon in the international immigrant population and little is known of differential patterns and flows of documented/undocumented changes within this population and potential vulnerable subgroups. As suggested by Sousa et al. (2010), it could be that living conditions and socioeconomic vulnerability have a larger impact on the health status than the legal status of

either regular or undocumented immigrants in the host country. But that is in Spain, a country with free universal coverage and a large rate of immigrants. If the missing values included in this study are considered to represent undocumented immigrants, then there might be a further interaction between migration, legal status, and socioeconomic position that should be better understood in Chile. Even if they are not considered to represent undocumented immigrants, these missing values still indicate a vulnerable population in great need of further policy consideration. Moreover, *changes* in legal status might be an additional unexplored social determinant of the health of this group.

The results of this chapter suggest many issues in need of further study, possibly through a separate survey of migration, as has been done in several other countries. It is important to distinguish whether those who preferred not to report their migration status –and their children- are truly international immigrants. Future CASEN surveys should include repeated assurances of confidentiality with respect to questions on migration. Reasons why people prefer not to report their migration status and legal status could also be explored, for example by asking the adult population if they have legal permission to work in the country (Sousa et al., 2010). The following should be explored in the future in the country: country of origin; years living in the country; previous occupational status; changes in legal status in the past; latest job; occupational conditions and work-related stress and hazards; social position when living in the country of origin and changes since arrival in Chile; experiences of stigma and discrimination; reasons for not returning to the country of origin; changes in health status over time living in Chile; social security insurance; a refugee status or experience of any abusive situation; and contextual factors (social capital, social isolation, community resources, and others).

Other relevant health outcomes, as reported by international studies among immigrants, could also be considered in future research, such as mental health problems, especially anxiety, depression and post-traumatic stress disorders. Moreover, misrepresentation of immigrants in Chile needs to be cautiously addressed, for example by categorising families as immigrants if at least one of the parents was not born in Chile, and first and second generation immigrants should be distinguished. Chile and the Latin American region should not neglect undocumented immigrants in their research programmes. Policy-makers must explicitly highlight the need for more research in this matter in the near future. This is an urgent topic that requires sensitive approaches, methodological innovation and strong transference to policy. Evidence on hard-to-reach populations, irregular immigrants worldwide, translational research and mixed methods (combining quantitative with qualitative research) could be considered in future research in this topic, both in this country and the region.

Table 11.2 Summary table of the available publications on undocumented immigrants in Latin America

<i>SDH and health events</i>	<i>Specific measure</i>	<i>Authors</i>	<i>Year</i>	<i>Study design</i>	<i>Immigrant population</i>	<i>Host country</i>	<i>Results</i>
Social Determinants of Health	Living conditions	CEPAL-Costa Rica	2001	Report indicating limitations and challenges in broder crossing in Latin America	Latinos	Latin America	Although the majority of countries in the region have records of entries and departures via their international ports, there are serious problems with this source. As the aim of these records isto register border crossings, which may be numerous, it is a difficult task to identify the actual migrants; the coverage of entries and departures may differ among the different check-points; the information received on the persons entering or departing from the countries is scarce and not very useful for analysis; the data collected are not always processed adequately and, when this does take place, publication is delayed. Also, despite the efforts made to establish comparable criteria, the methods of recording entries and departures are not the same in all countries. They have the same limitations as those affecting other administrative records –such as those relating to passports, visas, foreigners present in the country or work permits.
		Singer & Massey	1998	Discussing theoretical paper	Mexican	US	A theoretical model is developed that views undocumented border crossing as a well-defined social process influenced by the quantity and quality of human and social capital that migrants bring with them to the border, and constrained by the intensity and nature of U.S. enforcement efforts.
		Marcelli & Heer	1997	Cross-sectional study on how unauthorized Mexicans compare with other ethno-racial groups	Mexicans	US	Unauthorized Mexicans had relatively fewer years of formal education (either in the U.S. or in Mexico) and had been in the US a relatively shorter period than immigrants of other ethno-racial backgrounds in 1990.

		Verduzco	1995	Discussing paper	Mexican	US	The focus is on the importance of Mexican workers who became part of the industrial work force at the beginning of the twentieth century. The composition of the present-day migrant flow, including undocumented workers, is described.
		Espenshade	1995	Study that examines how data on Immigration and Naturalization Service border apprehensions are related to the flow of undocumented migrants	Mexican	US	It develops a demographic model of the process of unauthorized migration across the Mexico-US frontier. This model is both a conceptual framework that allows us to see theoretical linkages between apprehensions and illegal migrant flows, and a methodological device that yields estimates of the gross number of undocumented migrants.
		Castillo	1993	Analysis of trends in illegal labor migration between Mexico and the United States from 1924 to 1986	Mexican	US	Constant flow of undocumented immigrants to the US from Mexico, but there can be an underestimation of real flows due to data limitations.
		Davila & Saenz	1990	Study exploring monthly flow of Mexican undocumented immigration to the US	Mexican	US	Findings suggest that there is a significantly negative relationship between the one month lag of maquiladora employment and INS apprehensions. Employment growth in the maquiladora sector tends to be followed by a reduction of apprehensions one month later. The study also finds that male and female apprehensions appear to respond to relatively similar economic factors.
		Bean et al	1984	Study exploring the socio-demographic characteristics of Mexican immigrant status groups in the US	Mexican	US	The pattern of sociodemographic differences among these groups provides support for the idea that the first two categories contain a substantial fraction of undocumented immigrants. These two groups (especially the first) reveal characteristics that one would logically associate with undocumented immigrants--age concentration (in young adult years), high sex ratios, low education and income levels, and lack of English proficiency.

		Pinto	1981	Study to characterise undocumented and illegally resident migrant women in Venezuela	Latinas	Venezuela	There has been a massive immigration of undocumented Latin American people to Venezuela in the late 1970s and this creates important social and health inequalities in the country. Illegal resident women in Venezuela live in relative poverty, exclusion and vulnerability.
		McPethers & Schlagenhauf	1981	Study examines the relationship between national macro economic variables and the flow of illegal aliens into the US	Mexican	US	There is a widening effect of the economic gap between the United States and Mexico.
Health events	STDs	Wolff et al	2008	Cross-sectional study	Undocumented immigrants mostly from Latin America	Switzerland	This population of undocumented, pregnant migrants consisted primarily of young, Latino-American women. Compared to women in the control group, undocumented migrants showed higher prevalence rates of genital chlamydia trachomatis infection.
	Chagas disease	Chappuis et al	2010	Validation of a rapid immunochromatographic assay for diagnosis of Trypanosoma cruzi infection among Latin-American Migrants in Geneva, Switzerland	Undocumented immigrants	Switzerland	The Chagas Stat-Pak is an accurate diagnostic test for T. cruzi infection among undocumented Latin-American migrants living in Europe.
	SDH and health	Roer-strier et al	1999	Ecological study to describe the formation and characteristics of new illegal migrant workers in Jerusalem	Illegal Latin American	Jerusalem	Looked specifically at illegal Latin American foreign workers' reasons for and process of migration, their accommodation and living conditions, allocation of employment, daily cultural and social conditions, education and health issues concerning children and families, perceptions of relations with host culture and perceptions of well-being and future expectations.

	Mental health	Simich & Nerad	2007	Qualitative study to explore experiences of living without regular immigration status and implications for health security among irregular migrants in Toronto.	Migrants including Latinos	Canada	The majority of study participants came to Canada to escape violence as well as lack of economic opportunity in home countries in Latin America, and most have tried to follow correct immigration procedures. Most are parents working in low-paying, exploitative jobs. They have attempted to lead productive and meaningful lives, but lack social support beyond the immediate family. They showed signs of suffering from trauma, depression, chronic stress, family separation and stress-related physical illnesses. Despite expressing self-esteem and using personal coping skills effectively, many reported unmet health needs and described barriers to help-seeking.
	Tuberculosis	Wolff et al	2010	Cross-sectional study including undocumented migrants in a TB screening program in 2002	Migrants including Latinos	Switzerland	Compared to legal residents, undocumented migrants had an adjusted OR for TB-related fibrotic signs of 1.7 (95% CI 0.8-3.7). The OR of TB-related fibrotic signs for Latin American (vs. other) origin was 2.7 (95% CI 1.6;4.7) among legal residents and 5.5 (95% CI 2.8;10.8) among undocumented migrants.
	Mortality	Anderson	2008	Discussing paper of the methods utilized in the US of the medical examiner for undocumented border crossers	Latinos and others	US	The combined effects of a dry, hot environment and the remoteness of some of the trekking corridors can quickly render a deceased person unidentifiable by visual means. Thus, our office is faced with not only an increase in the number of deaths requiring medico-legal investigation but also an increase in the number of decedents needing additional specialized examinations in an effort to effect identification.

CHAPTER 12

HOW DO THE KEY FINDINGS FROM THIS RESEARCH CONTRIBUTE TO CURRENT KNOWLEDGE AND WHAT ARE THEIR POTENTIAL POLICY IMPLICATIONS?

“The biggest disease today is not leprosy or tuberculosis, but rather the feeling of being unwanted, uncared for and deserted by everybody”

Mother Theresa of Calcutta (1910-1997)

Summary Box 12

What research question is included in this chapter?

How do the key findings from this research contribute to current knowledge of immigrants in Chile and what are their potential policy implications in the country and Latin America?

What is already known?

Governments in Latin America including the Chilean government have recognised the importance of understanding the living conditions and health of the migrant population in this region. Significant efforts have been made regarding this matter in the past, but more specific and evidence-based policy recommendations need to be developed.

What does Chapter 12 add?

- This study adds to the current knowledge of international immigrants in Chile. Direct policy implications have been developed from this study, highlighting the need to emphasise policies that improve the living conditions and protect the health of immigrants living in Low-SES.
- Further research in this topic needs to be conducted in Chile in the future, using the key findings from this study as a starting point for a better understanding of the living conditions and the health status of immigrants in the country.

Overview

The Republic of Chile is a middle-income South American country with an intermediate level of development. Although Chile has shown improvements in global health status, not all socioeconomic groups have benefited from development to the same extent. One significantly understudied group in Chile is the international immigrant population. In the last decade, Chile has experienced a “new immigration” pattern involving young immigrants coming mostly from Latin American countries to work. This thesis is the first quantitative population-based study exploring the living conditions and health status of international immigrants in Chile. Despite its recognised limitations, its key findings provide some guidance for improving policy strategies in this group in Chile and for future research in this topic.

Introduction

This final chapter aims to provide an overview of the thesis and present recommendations for policy improvement and future research on international immigrants in both the country and the region. This chapter is divided into eight sections. The first is a brief summary of the main findings of this study. The second is a general discussion of the strengths and limitations of the CASEN survey 2006 and other aspects of the methodology. The third section is a summarised interpretation of key results from this study in the context of the Chilean setting. The fourth section is a general interpretation of results in relation to the different theoretical models of migration and a discussion of their applicability and relevance to this research. The fifth section discusses the latest model of the Social Determinants of Health (SDH) and its utility when studying the dynamic and complex migration process. The sixth section presents some policy implications of this research and the seventh and final section displays some alternative approaches for future research into the living conditions and health status of international immigrants in Chile and Latin America. The final section of this chapter contains concluding remarks to the thesis.

12.1 OVERVIEW OF THIS STUDY

This first section will provide an overview of the key findings of this thesis. It describes the main arguments supported by this piece of research and what is added to the current knowledge of immigrants in Chile. A summary of the main ideas put forward in this section are also detailed in Table 12.2, which also includes the main strengths and limitations of the variables examined in this research. A summary PowerPoint presentation is included in Appendix-12-1.

12.1.1 Theoretical approach and research questions

This research adopts a specific conceptual framework that combines, within the social epidemiology paradigm, the model of the Social Determinants of Health (SDH), explanatory mechanisms of health inequalities and the complex relationship between migration and health. For this study, an international immigrant was considered to be a person who, in the CASEN survey in 2006, reported living in Chile but was born in a different country. Currently, the Social Determinants of Health (SDH) are conceptualised in a complex fashion. The most recent model of the SDH developed by the Commission of the SDH at the World Health Organization (WHO) in 2008 indicates the wide range of SDH affecting the wellbeing and health of populations. It encompasses different levels: macro; mezzo, with social position as the key dimension; and micro, with individual risk factors and material living standards. Possibly the most significant contribution of this model is that it is built upon an exhaustive review of the international evidence and it suggests the existing inter-relationships between different SDH, and between them and health. However, it is a cross-sectional model that does not address the effect of variations in SDH over time. This is a major issue when studying migration processes and their effects on health.

After conducting an extensive review of the literature on migration and health, I was able to develop a model to combine the SDH and the migration process. This model has been presented in Chapter 3, Figure 3.2. Even though this model is limited to the available literature on migration and is a simplified version of the true complexity involved in the effects of different SDH on the migration process, it does suggest that time is a key dimension in this particular topic. It is, therefore, a more dynamic model than the SDH model, but it needs further development and more importantly, it needs to be tested through high quality longitudinal data collection that includes the living conditions and health of immigrants from before migrating and after arriving in the host country and, ideally, through generations. Because of the limited data in Chile on immigrants and their living conditions and health, it was only possible to analyse in this thesis, international immigrants who

already lived in Chile. Neither was any data collected on their SDH before migrating. Nonetheless, this is the first study in Chile to explore the relationship between the living conditions (i.e. the SDH) and the health status of international immigrants in the country, with a population-based sample.

The overarching research question of this study was: what are the living conditions and health status of international immigrants in Chile and how do they compare to the Chilean-born? The considered the following issues in detail: what was already known in this matter (research question 1); the demographic and migration-related characteristics of immigrants (research question 2); the socioeconomic conditions and material living standards (research question 3); the access to and use of health care among immigrants in Chile (research question 4); the health status of immigrants including recent health events and chronic conditions (research question 5); and how they all compare to those who preferred not to report their migration status in the CASEN survey (research question 6); in order to develop specific policy recommendations in the country (research question 7). The following section considers findings from the research in relation to these issues.

12.1.2 Immigrants in Chile: no single or simple story

One percent of the total individuals sampled in the CASEN survey 2006 reported being an international immigrant and an additional 0.7% preferred not to report their migration status. Among those identified as immigrants, results from this study show certain patterns in their migration-related characteristics consistent with previous government reports in Chile. Most immigrants (over 70%) come from other Latin American countries, especially those bordering Chile (Peru, Argentina, Bolivia and Ecuador). There is a mixture of short, medium and long time periods of immigrants living in the country, a third of immigrants have been in Chile for less than a year but an additional third have stayed for ten years or longer. Compared to the Chilean-born, immigrants in Chile are more likely to be of working age (16 to 65 years old), married and belonging to the *Aymara* minority ethnic group. Most immigrants live in the central area of the country, especially the Metropolitan region and the V port region. However, they live in very different boroughs within these regions, which have great variations in their levels of area deprivation. Additionally, there are significant differences in the demographic characteristics of immigrants by country of origin and years living in Chile.

The great complexity observed in the demographic and migration-related dimension of life for immigrants in Chile continued to be found when exploring their socioeconomic conditions. Immigrants live in quite polarised conditions in the country. A group of them live

in very good conditions, have a high level of education and work in high-status jobs. In contrast to this, a smaller but still significant group of immigrants live in the two poorest income quintiles, have up to high-school education only and work in domestic services. Due to the great heterogeneity of the different measures of socioeconomic status of immigrants in Chile, three clusters were created through hierarchical cluster analysis, combining income, education and contractual status. These clusters provided a meaningful representation of a latent variable of social position within immigrants in Chile. A comparison of these clusters to the Chilean-born assumes similar expressions of high-status are found across those two populations. It is a first step towards a broader discussion of the matter. An example of this complexity is the exploration of the material conditions of immigrants in Chile, in particular their household assets. Immigrants living in the wealthiest income quintile do not display a significantly higher number of assets than those in the other income quintiles, and similar findings appear in the Chilean-born. There are also some significant differences in socioeconomic status and material living conditions by SES cluster, country of origin and years living in the country among immigrants in Chile.

12.1.3 Do immigrants report being entitled to the Chilean health care system?

Compared to the Chilean-born, immigrants living in Chile are more likely to report no health care provision entitlement or other non stated health insurance. They are also less likely to report access to the public health care system, both free of charge (for those living in poverty) and with co-payment (proportional to earnings). Nonetheless, there are clear gradients of access to health care provision types by SES cluster among immigrants and some of these gradients are different from what might be expected. The higher the SES cluster, the lower the rate of public free of charge entitlement and the higher the access to other, not stated health provision. Interestingly, there is a positive gradient of no health care provision entitlement by SES cluster. That is, the higher the SES of immigrants the higher the rate of no health care provision (same as expected). This differs somewhat from the expected pattern, since those in the high SES could afford to pay for health insurance. Reasons for the difference cannot be explored in this research, but could be related to lack of understanding of the health care system, health beliefs and expectations about the health care system from their country of origin, misconceptions or mistrust of Chilean health care, self-perception as a healthy person and therefore a belief that access to health care is unnecessary, among others. Studies of Latin American immigrants in the UK have also suggested that immigrants prefer to pay out of pocket for private care when needed, rather than accessing the public health care system. Multivariate analysis from the study also suggests that socioeconomic status could be a key determinant of provision entitlement among immigrants in Chile.

There are no significant differences in the use of different health care services between immigrants and the Chilean-born in Chile, but clear positive gradients emerge in the use of the Pap smear programme, dental care and other specialist care by SES cluster among immigrants. This is quite notable, as the Pap smear programme is universal in Chile. Regarding the use of the Pap smear programme in Chile, High-SES immigrant women are using this service more often than immigrants with Low-SES immigrant women in Chile. Additionally, no clear pattern was found in the use of the mental health care programme by immigrant SES clusters in Chile. Immigrants show a higher use of this service compared to any dental or other specialist care, and no gradient by SES cluster was found. This finding possibly reflects the complex relationship between mental health and socioeconomic status. The lack of a gradient does not mean there is no relationship between these factors. It might just be that the relationship is not linear. For example, higher rates of mental care use compared to other services could be explained by a particular emphasis within primary care in Chile upon increasing the use of this particular programme in the country. At the same time, that argument does not explain why immigrants from the low SES cluster and with no health care provision access more often this service, and might be even paying for this service out of pocket. Reasons for this phenomenon need to be explored in the future.

12.1.4 Are immigrants healthier than the Chilean-born?

The total immigrant population show an apparent “healthy migrant effect”, though this disappears when adjusting for SES clusters. This pattern can be observed in all of the five health events included in this study. Immigrants living in the Low-SES cluster have the same prevalence of the five health problems as the total Chilean-born. Moreover, when comparing the rates between immigrants in the Low-SES cluster, the Chilean-born in the poorest income quintile and unemployed Chilean-born, three of the five health problems show no difference in prevalence between these groups. The two health problems that seem to be less frequently reported among immigrants in the Low-SES are any health problem or accident (AHPA) and any disability.

Great variations in the rate of health problems can also be found when stratifying by country of origin and years living in the country. For instance, Ecuadorian immigrants in the Low-SES cluster show a similar prevalence of AHPA and any disability to the most deprived Chilean-born. Immigrants living in the Low-SES and living over 20 years in Chile, also show a 10 times higher prevalence of AHPA and a five times higher prevalence of any disability than immigrants in the same Low-SES cluster but living in Chile for less than a year.

12.1.5 Do immigrants in the Low-SES cluster have a higher risk of health problems simply because they are poorer? Is there any specific migration-related risk?

This is a difficult question to answer through a single cross-sectional secondary data analysis. In an attempt to explore possible explanatory factors associated with the chance of presenting with different health events in Chile, including being an immigrant as an independent risk factor, analysis was conducted considering the total Chilean population sampled in the CASEN survey. This analysis also allowed for exploration of the effect of different SDH upon the chance of being sick in Chile, as organised by the sets of SDH used in this research (demographic, socioeconomic, material, and access and use of health care). A summary table of these results appears in Table 12.2 in the following page and it highlights the key role socioeconomic status plays in the chance of presenting with different health problems in Chile. For almost every outcome, being an international immigrant was a protective factor, even after adjusting by several demographic covariates, but the relationship is no longer significant after adjusting for socioeconomic conditions. Material living standards and access and use of health care did not significantly modify the direction or magnitude of the association between socioeconomic status and health. It should also be noted that while results are no longer significant after adjustment for socioeconomic factors, the pattern of lower risk among immigrants remains consistent in this analysis.

12.1.6 And what about those that preferred not to report their migration status?

Results show that the people that preferred not to report migration status in the CASEN 2006 survey (MS-MV) represent a complex group, mostly affected by socioeconomic deprivation and material absolute poverty. It is difficult to find clear evidence to support the idea that those who preferred not to report their migration status are actually undocumented immigrants. However, it is possible to state that, whatever their migration status, this is a vulnerable group that needs special consideration in Chile.

Table 12.1 Odds Ratio of presenting different health events if being an international immigrant in Chile, models progressively adjusted by different sets of SDH, CASEN survey 2006 (weighted sample size= 16 130 743) [SES: socioeconomic variables]

Health outcomes	Crude OR/ IRR of being immigrant (95%CI)	Adjusted OR/ IRR by demographics (95%CI)	Adjusted OR/ IRR by demographics + SES (95%CI)	Adjusted OR/ IRR by demographics + SES + material (95%CI)	Adjusted OR/ IRR by demographics + SES + material + provision entitlement (95%CI) ^ψ
Any health problem or accident	0.64* (0.50-0.81)	0.63* (0.49-0.80)	0.76 (0.52-1.21)	0.72 (0.49-1.08)	0.72 (0.48-1.08)
Number of medical attentions	1.06 (0.87-1.28)	1.05 (0.87-1.26)	1.16 (0.85-1.59)	1.15 (0.83-1.59)	1.14 (0.83-1.58)
Number of emergency attentions	0.69* (0.62-0.77)	0.69* (0.62-0.77)	0.82 (0.68-1.04)	0.82 (0.66-1.01)	0.82 (0.66-1.01)
Any disability	0.49* (0.34-0.70)	0.50* (0.34-0.73)	0.67 (0.29-1.54)	0.70 (0.30-1.60)	0.70 (0.30-1.60)
Any chronic condition or cancer	0.65* (0.44-0.95)	0.67* (0.42-0.96)	0.67 (0.29-1.54)	0.70 (0.39-1.60)	0.70 (0.39-1.60)

* $p < 0.001$, weighted logistic and zero-inflated negative binomial regression models

^ψNo significant differences when adding use of health care services to the model

12.1.7 How does this study contribute to the policy making process in Chile?

This is the first quantitative population-based analysis on the association between SDH and the health of immigrants in Chile. Key findings from this study support the results of previous qualitative research, suggesting that some groups of immigrants in Chile live in poor conditions and have urgent health needs. The key findings from this research have been disseminated to several international conferences in the UK and Chile. Results from this thesis have also been incorporated in the New Health Plan for Chile 2011-2020 from the Ministry of Health in Chile, within the chapter on health inequalities. A paragraph on the living conditions and health of immigrants in Chile has been added and is a direct contribution from this thesis to health policy in Chile. Additionally, the importance of future research in this group is highlighted.

Table 12.2 Summary table of this thesis on the living conditions and health status of international immigrants in Chile

<i>Specific SDH and health status of immigrants</i>	<i>Current knowledge in this topic</i>	<i>What does this thesis adds to the knowledge</i>	<i>Strengths of the variables used</i>	<i>Limitations of the variables used</i>
Demographic characteristics of immigrants in Chile	<ul style="list-style-type: none"> ▪ They are mostly young and educated, but with a decrease of professional immigrants and an increase of immigrant women over time 	<ul style="list-style-type: none"> ▪ Results from this chapter show consistent demographic patterns with previous governmental reports in Chile ▪ However, there are significant differences in the demographic characteristics of immigrants by country of origin and years living in Chile 	<ul style="list-style-type: none"> ▪ Low rate of missing values ▪ A wide range of demographic characteristics included in the CASEN survey ▪ The widely used Townsend definition of overcrowding was possible to create from the data 	<ul style="list-style-type: none"> ▪ Sex collected as a binary variable (men/women) and other <i>gender</i> types are not collected ▪ Changes in residency over time, as an expression of socioeconomic mobility among immigrants, is not captured by CASEN ▪ Other minority ethnic groups, besides the ones that are legally recognised in Chile, are not captured by this study ▪ Religion is not included
Migration patterns among immigrants in Chile	<ul style="list-style-type: none"> ▪ Most immigrants come from other Latin American countries, especially bordering ones (Peru, Argentina, Bolivia and Ecuador) motivated by working opportunities 	<ul style="list-style-type: none"> ▪ There are significant differences in the migration and demographic patterns among immigrants in Chile depending on their country of origin and years living in the country 	<ul style="list-style-type: none"> ▪ Low rate of missing values ▪ Years living in Chile collected as a continuous variable ▪ Wide range of countries of origin 	<ul style="list-style-type: none"> ▪ Important migration-related variables, such as being first, second or third generation immigrants, legal status, reasons for migrating, expectations and beliefs related to the migration are not collected in this survey ▪ Other dimensions on the migration experience not collected in the CASEN like acculturation and enculturation processes, and stigma and discrimination ▪ The question on migration status combines international with internal migrants ▪ There is a high rate of missing values on the question of migration in the CASEN survey

<i>Specific SDH and health status of immigrants</i>	<i>Current knowledge in this topic</i>	<i>What does this thesis adds to the knowledge</i>	<i>Strengths of the variables used</i>	<i>Limitations of the variables used</i>
Socioeconomic conditions of immigrants in Chile	<ul style="list-style-type: none"> ▪ Government figures indicate that immigrants tend to live in good conditions as a whole, but previous qualitative studies have reported poor living conditions of particular vulnerable immigrant subgroups in Chile 	<ul style="list-style-type: none"> ▪ Immigrants live in quite polarised conditions in the country ▪ Due to the great heterogeneity of the socioeconomic status of immigrants in Chile, three clusters were created through hierarchical cluster analysis, combining income, education and contractual status ▪ Most immigrants live in good household material conditions, but some of them are living in poor quality household and sanitary conditions. ▪ The representation of social status through socioeconomic conditions and material living standards vary between the immigrant and the Chilean-born 	<ul style="list-style-type: none"> ▪ Low rate of missing values ▪ A wide range of socioeconomic variables were included in this study ▪ Income as continuous and categorised variable ▪ A range of occupations included ▪ Inactive and unemployed status also collected 	<ul style="list-style-type: none"> ▪ Educational status only categorical, no information regarding total numbers of years of education, type of education and area of education collected ▪ The Household Asset Index uses principal component analysis with binary variables instead of continuous variables ▪ The same methodological limitations for the Combined Materiality Index ▪ Socioeconomic status before and during the migration process not collected in the CASEN ▪ Changes in income, occupation and assets ownership are not collected ▪ Other assets could be included in order to explore a better representation of socioeconomic status among immigrants and how that differs from the Chilean-born ▪ Further occupational variables could have been collected, providing more information about occupational hazards and psychosocial pathways of inequalities in health among poor immigrants in Chile (balance/imbalance at work, rewards, peer support, over commitment, locus of control and autonomy at work, etc.)

<i>Specific SDH and health status of immigrants</i>	<i>Current knowledge in this topic</i>	<i>What does this thesis adds to the knowledge</i>	<i>Strengths of the variables used</i>	<i>Limitations of the variables used</i>
Access to and use of health care services by immigrants in Chile	<ul style="list-style-type: none"> ▪ Previous qualitative and convenience quantitative studies in Chile indicate that immigrants in Chile do not fully understand the health care system and might not access it or use it as often as they might actually need it while living in the country 	<ul style="list-style-type: none"> ▪ Compared to the Chilean-born, immigrants living in Chile are more likely to report no health care provision entitlement or other non stated health insurance. They are also less likely to report access to the public health care system, both free of charge and with co-payment. ▪ There are clear gradients of access to health care provision types by SES cluster among immigrants ▪ There are no differences between immigrants overall and the Chilean-born in the use of health care services, but significant differences appear by SES cluster, country of origin and years living in the country 	<ul style="list-style-type: none"> ▪ The study includes a range of types of provision entitlement and use of health care services ▪ The study includes access to and use of health care in the total populations and among those in need 	<ul style="list-style-type: none"> ▪ Further information on what “other non stated” provision means was not collected in the survey ▪ Further information on how do immigrants “without health care provision” access and use health care when needed was not collected in the survey ▪ Reasons for choosing one health insurance over another by immigrants in Chile and changes over time are not collected in CASEN ▪ Perceived experiences of discrimination in the health care system by immigrants was not collected ▪ Different stages to clearly identify effective coverage in health care were not disentangled in this survey. E.g. immigrants presenting a health problem, accessing the health care system, being informed about their diagnosis, being treated and followed up, immigrants feeling satisfied about this experience.

<i>Specific SDH and health status of immigrants</i>	<i>Current knowledge in this topic</i>	<i>What does this thesis adds to the knowledge</i>	<i>Strengths of the variables used</i>	<i>Limitations of the variables used</i>
Recent health events among immigrants in Chile	<ul style="list-style-type: none"> ▪ Previous qualitative and convenience quantitative studies in Chile indicate that immigrants in Chile experience significant health needs that might not be fully covered by the health care system while living in Chile 	<ul style="list-style-type: none"> ▪ Compared to the Chilean-born, immigrants living in Chile have a lower prevalence of some recent health events (any health problem or accident and any emergency care). ▪ However there are clear gradients of these health outcomes among immigrants by SES cluster, country of origin and years living in Chile 	<ul style="list-style-type: none"> ▪ A range of recent health events were available ▪ The variable any health problem or accident included a further question on seeking health care 	<ul style="list-style-type: none"> ▪ Any health problem or accident is a combined variable that was not further disentangled in the survey among those who report having any of these health problems in the last month ▪ Reasons for medical and emergency care were not collected in the survey ▪ Results (solved/not solved) of each recent health event was not collected by the CASEN ▪ Other relevant recent health outcomes among immigrants were not collected in CASEN, such as infectious diseases, SDTs, acute stress and anxiety, and others (see Chapter 3)
Chronic health conditions among immigrants in Chile	<ul style="list-style-type: none"> ▪ Previous qualitative and convenience quantitative studies in Chile indicate that immigrants in Chile experience significant health needs that might not be fully covered by the health care system while living in Chile 	<ul style="list-style-type: none"> ▪ Compared to the Chilean-born, immigrants living in Chile have a lower prevalence of some chronic health conditions (any disability and any chronic condition or cancer) ▪ Nonetheless, again there are clear gradients of these health outcomes by SES cluster, country of origin and years living in the country 	<ul style="list-style-type: none"> ▪ Relevant and relatively prevalent chronic health conditions were available ▪ The variable any disability included a question on type of disability (6 categories) 	<ul style="list-style-type: none"> ▪ Any chronic condition or cancer is a combined variable that was not further divided in the survey among those who report having any of these chronic health problems ▪ Causes of any chronic condition or cancer were not collected in the survey ▪ Other relevant chronic health outcomes among immigrants were not collected in CASEN, such as depression and other mental health problems, diabetes and coronary heart disease, mortality rates, and others ▪ The question on any chronic condition or cancer combines presenting the problem, being acknowledged of its occurring by the person or family, and being treated from it in the last year. ▪ Health behaviours (tobacco consumption, alcohol, drugs, exercise, and others), antropometric measures (e.g. height, weight, blood pressure) and other significant blood tests (e.g. glycemia, lipids) were not included in the CASEN survey. These could be key mediators in the relationships found between the SDH and health problems (both recent health events and chronic conditions) among immigrants and the Chilean-born

<i>Specific SDH and health status of immigrants</i>	<i>Current knowledge in this topic</i>	<i>What does this thesis adds to the knowledge</i>	<i>Strengths of the variables used</i>	<i>Limitations of the variables used</i>
Hypothesis on undocumented immigrants in Chile	<ul style="list-style-type: none"> ▪ Governmental figures suggest that there might be a significant group of immigrants living in undocumented status in Chile and, therefore, not accessing to the health care system and potentially with relevant health needs 	<ul style="list-style-type: none"> ▪ The missing values from the specific question on migration status in the CASEN survey represent a complex group, mostly affected by socioeconomic deprivation and poverty ▪ This missing values group may contain undocumented immigrants but it is very difficult to directly support the idea ▪ However, it is possible to state that, whatever their migration status this is a vulnerable group that needs special consideration in Chile 	<ul style="list-style-type: none"> ▪ If all missing values were international immigrants, the prevalence of immigration to Chile according to the CASEN survey would be very close to previous government estimations 	<ul style="list-style-type: none"> ▪ Migration status is a complex question in the survey, with five different categories of response and combining international and internal migration ▪ Important migration-related variables are not collected, such as legal status, and their association with socioeconomic status, access to health care, and health status of immigrants in Chile

12.2 METHODOLOGICAL DISCUSSION: FURTHER DISCUSSION

Throughout this thesis, important limitations to this research, and the CASEN survey in particular, have been described (general limitations on migration research in Chapter 2, point 2.7.1, limitations on migration and health research in Chapter 3, point 3.5, specific research challenges in Chile in Chapter 4, point 4.3.2, limitations of the CASEN survey 2006 in Chapter 5, point 5.5). In an ideal situation, this research would have had a cohort design, following all international immigrants currently living in Chile, irrespective of their legal status, and collecting data from their living conditions and health status since the time they lived in their countries of origin. There would be no missing values and all relevant variables related to the health status and SDH of both the immigrants and the Chilean-born population, at a national representative scale, would be captured. In this ideal situation, causal analysis would be plausible and robustness of findings should strongly promote health and policy interventions to improve the health and living conditions of international immigrants in Chile. Since ideal data does not exist in Chile, this secondary analysis provides a modest first attempt towards a better understanding of the living conditions and health status of immigrants at a population-based level.

Despite its limitations, this research is still significant to Chile. As mentioned in Chapter 1, until this study, only some limited qualitative data had been completed, on the living conditions and health status of some particular immigrant subgroups, mostly in the north bordering area and in the capital of Santiago (Amador, 2008; IOM and MINSAL, 2008a; IOM and MINSAL, 2008b; Nuñez-Carrasco, 2008). In 2006, for the first time, a national survey in Chile collected some information on migration status. The CASEN survey 2006, despite its recognised limitations, is the single national representative survey in Chile to explore the living conditions and health status of international immigrants. Consequently, this thesis represents a first step towards a broad understanding of this topic in Chile, within the framework of the Social Determinants of Health model.

There are a few additional comments to be made regarding the methodology used in this thesis in relation to: (1) the decision not to use multiple imputation methods to deal with the missing values; (2) the property of the estimates obtained from this study and the limitations of multiple comparison analysis; (3) the use of weighted versus multilevel analysis; and (4) the selection of the comparison group to analyse the immigrant population (the issue of defining the best counterfactual). These are presented in Appendices 12.2 to 12.5.

12.3 DISCUSSION OF RESULTS IN THE CHILEAN CONTEXT

12.3.1 Is there a risk of differential selection bias in this study?

In this thesis, there was an apparent healthy migrant effect in the total international immigrant population in Chile. For almost all the health indicators included in this research, the immigrants showed a significantly better health status than the local Chilean-born population. However, due to limitations of the data collection process and particularly the high proportion of people who preferred not to report their migration status, there is a significant risk of bias in relation to these results. In the ‘worse case-scenario’, where all missing values described in Chapter 11 correspond to undocumented international immigrants in fear of prosecution, results from this thesis will have considerably underestimated the health and social disadvantage of immigrants in the country. The same could have happened with institutionalised people who were not invited to participate in the CASEN survey in 2006.

Differential selective bias is widely known in epidemiology (e.g. Hernandez-Avila, Garrido and Salazar-Martinez, 2000; Bayona and Olsen, 2004) and also suggested in some of the literature on migration and health research (see Chapter 11 for a discussion on underrepresentation and misrepresentation of the migrant population). The fact that there is a risk that a group of undocumented immigrants living in poorer conditions and with worse health status for some health indicators is measured in this thesis indicates the importance of further investigation of the topic in Chile and the urgency to include it in the policy agenda. The findings from this thesis are only a first approximation of the living conditions and health of immigrants in Chile and, even though they might underestimate the proportion of immigrants in poverty and poor health, they still support the need for social and health protection of this group in Chile. In other words, in this analysis we might be observing the best possible scenario regarding the immigration phenomenon in Chile, and this “tip of the iceberg” phenomenon could hide significant health equity issues that might need further consideration.

12.3.2 The immigrant paradox (the healthy migrant effect)

Chapter 3 (point 3.2.2) has already defined the concept of the healthy migrant effect. This phenomenon has been reported in various studies worldwide in the past, but it is still considered to be controversial (Wu and Schimmele, 2005). The available international literature might suggest some policy implications, but the knowledge of the processes surrounding the healthy migrant effect remains incomplete in key aspects. For example, one

major dimension of the healthy migrant effect that requires further specification is whether length of time living in the host country modifies this health advantage through its interaction with socioeconomic and material deprivation, legal status, occupational hazards, stigma and discrimination, and other factors. As stated by Razum, Zeeb and Rohrmann (2000), the healthy migrant effect has become a potential effect modifier that needs to be properly understood and quantified. Future research should identify factors determining the size and possible attenuation with time of the mortality advantage among immigrants. Issues related to migrants' health go beyond the conventional management of diseases among mobile populations and are linked with the broader Social Determinants of Health and unequal distribution of such determinants (Davies, Mosca and Frattini, 2010). Even migrants with legal documents and in a more comfortable social and economic situation experience significant challenges and barriers in the host community.

12.3.3 Not only the healthy migrant effect in Chile part I: the paradox of assimilation

One striking finding of this study is that the apparent healthy migrant effect observed in the total immigrant population seems to disappear over time. For example, there is a positive unadjusted gradient of the mean number of medical consultations in the total immigrant population with number of years spent in Chile. However, time spent in the country did not explain the differences in, for example, any disability and any chronic condition or cancer in the past year.

This paradox has been observed in the international literature in the past, which has reported that the migrant health advantage diminishes dramatically over time. In what Rumbaut (1997) called the "paradox of assimilation," the length of time that an immigrant spent in a foreign country has been correlated with an increased risk of different health problems and poor health behaviours, such as low birth weight in infants (Fuentes-Afflick, Hessol and Eperetz-Stable, 1999; Peak and Weeks, 2002), anxiety and depression (Finch and Vega, 2003), cancer (Fennelly, 2005), general mortality (Singh and Siapush, 2001; Muening and Fahs, 2002), reduced life expectancy, increased cardiovascular disease, body mass index, and hypertension (Lassetter and Callister, 2009). These rates get very close to the local-born population 5, 10 or even 20 years after arrival, depending on the study. In some cases, they even overtake the local rates and immigrants become a severely sick population (Fennelly, 2005). These increased rates are maintained even after adjusting for age and other key demographic characteristics. Multiple factors could explain the variability found in health outcomes in this population over time (Lassetter and Callister, 2009). These may be related to acculturation, disease exposure, life style and living conditions, risky behaviours, social

support networks, cultural and linguistic barriers, experiences with racism, levels of awareness of cultural health practices among health care providers, and others.

The finding from this research suggesting that immigrants' health is deteriorating over time spent in Chile should be addressed as a matter of urgency. As stated before, migration is a dynamic, extended process with effects occurring years after physical relocation. Systemic change is required, including health policies that ensure equity for migrants, culturally appropriate health promotion, and routine assessment of migration history, cultural health practices, and disease exposure (Lassetter and Callister, 2009). Once again, it should be noted that the relationship between immigrants' health and time spent in Chile may not necessarily imply the deterioration of migrants' health over time in the country, but could instead be a cohort effect.

12.3.4 Not only the healthy migrant effect in Chile part II: further discussion on the relevance of socioeconomic status (SES) among immigrants

Descriptive analysis comparing the IIP to the Chilean-born showed that the total immigrants had better socioeconomic and material living conditions. They showed a significantly higher mean of individual and household income, and the richest income quintile was wealthier than the richest quintile in the local population. Immigrants also reported a higher rate of university education and a higher proportion of population working in managerial positions. In contrast to this, the IIP also showed a higher proportion of people working in domestic service than the Chilean-born and most of these people were women and lived in the poorest income quintile. Similarly, immigrants lived in boroughs with a broad range of levels of socioeconomic deprivation (see Chapter 6).

Further results from Chapter 7 suggested that immigrants in Chile were a very heterogeneous group, quite polarised by their SES. The great variability and to some extent polarisation of the SES in the immigrant population justified the decision to group them by their socioeconomic status. Cluster analysis was conducted to group immigrants into low, medium and high SES. Results of the cluster analysis showed that most of the demographic, socioeconomic and material determinants had a clear gradient by socioeconomic cluster in the IIP. It was the Low SES group that emerged as the most vulnerable group and the High SES the most protected group. Medium SES was an interesting combination of the other two extremes but still not as protected as the High SES. Moreover, the Low-SES immigrant subgroup emerged as a very vulnerable group and showed similar demographic, socioeconomic and material living conditions to the Chilean-born population and, in some cases, to the deprived local population. These findings unmasked the real conditions of a vulnerable sub-

group of the immigrant population. They also shed some light on the importance of taking the immigrant population into consideration in Chile, as they showed a wider income inequality gap than the Chilean-born, steeper gradients in different socioeconomic conditions and a particularly vulnerable sub-group living in poor conditions in a foreign country.

Later, when observing the relative proportions of people in the SES clusters in presenting with different health problems in the IIP (Chapters 9 and 10), SES was a significant social determinant of any health problem or accident in the past month among immigrant men, the number of emergency consultations received in the past month and any disability and each of the six types of disability in the total IIP. Moreover, a clear inverse gradient of any disability and any health problem or accident was found by SES, which remained after adjusting for various SDH. Immigrants in the low-SES group showed no "healthy migrant" effect and they had similar disease prevalence to the Chilean-born overall, despite being on average 10 years younger and having a higher proportion of women. This group had stayed in Chile on average for 8.82 years (34.67% of them less than a year and 57.07% less than 5 years). This pattern may reflect the decline in the healthy migrant effect or the changing characteristics of immigrants to Chile over time. This finding is interesting as it exposes a vulnerable and deprived sub-group of international immigrants in Chile, those living in the Low-SES cluster. The health of this particular group might be deteriorating very fast, despite being younger than the average Chilean-born population.

International literature suggests that international immigrants tend to live in more deprived socioeconomic and material conditions than the local population in the foreign country (e.g. Fennelly, 2005). However, they also tend to show a better health status of the immigrant population compared to the local one, especially on arrival. This study unveils a significant group that requires immediate attention in Chile, not only to improve their living conditions but also to protect their health and the health of their families and children. Besides, the complex interaction between SES, place of residence in Chile, material conditions, and other migration-related determinants like legal status, occupation hazards, stigma and discrimination, and others, should be further explored in the immigrants in Chile and their descendents. Additionally, the presence of cohort effects in the living conditions and health status of international immigrants in Chile needs to be disentangled in order to produce a robust estimate of the real needs of this population in Chile.

12.3.5 The migration status missing values: a hard to reach population

This study, despite its recognised limitations, addresses the global phenomenon of potential undocumented migration, about which much remains undiscovered. The hidden nature of the population of interest necessitates the use of other non 'gold standard' sampling methodologies commonly considered in national surveys, in order to assess the extent to which the findings from this thesis agree with some of those of qualitative studies in Chile and other countries (Amador, 2010; Nuñez-Carrasco, 2008; Ahonen et al., 2009a; Ahonen et al., 2009b)

It is well recognised that undocumented immigrants are a hard to reach population (Sousa et al., 2010; Simich, Wu and Nerad, 2007; Dawood, 2008). There are many challenges associated with conducting research on 'hard-to-reach' populations, beginning with how to identify and sample these groups for health research (Southern et al., 2008; Schoenfeld et al., 2000; Faugier and Sargent, 1997; Baines, 1984; Arnold et al., 1989; Steinmetz et al., 1985). Above all, the undocumented are extremely vulnerable to lower self-reported health, accidents, injuries, and psychosocial distress resulting from poor working conditions (Pikhart, Drbohlav and Dzurova, 2010; Sousa et al., 2010, Ahonen et al., 2009b; Akhavan et al., 2004; Lopez-Jacob et al., 2008; Simich, Wu and Nerad, 2007) and marginal living conditions, associated with poverty and social exclusion (Agudelo-Suarez et al., 2009).

Reasons for considering undocumented immigrants as a vulnerable, hard-to-reach population are multiple and complex, including socioeconomic deprivation, social isolation, experiences of stigma and discrimination, language limitations, higher rates of isolated ethnic groups, psychological stress, changes in legal status, fear of prosecution and deportation, and others. The CASEN survey 2006 did not seem to anticipate how to reach and collect data on undocumented immigrants. Consequently, there is a large proportion of "missing values" in the question on migration status and no relevant information regarding the reasons for not reporting this status was collected. Future research in the country needs to properly address this vulnerable, hard-to-reach population in Chile, and expertise from international researchers could be considered to attain more consistent and efficient estimators of living conditions and of the health status of undocumented immigrants.

There is a growing amount of expertise on specific methodological strategies and statistical techniques to deal with hard to reach populations. This thesis will not cover the vast extent of this topic, but must recognise its significance to Chile. Examples of potential strategies to use in the future are adequately defining hard to survey populations (e.g. whether they are hard to find, hard to reach, hard to persuade, etc.), and metrics for quantifying the level of

difficulty) and measuring undercounts (e.g demographic methods, dual system estimates, oversampling methods, network sampling, and others used to sample rare populations). Undocumented immigrants in Chile might be hard to sample, locate or contact, but they might also be hard to interview and for that reason weighting to correct undercoverage and low responses could be considered. Further methodological issues for possible use in future research in Chile among undocumented immigrants are related to advertising, special interviewing methods (like community-based interviewers), language and cultural translation, and others. A brief selection of specific sampling, data collection strategies and statistical methods when dealing with hard to reach populations can be found in Faugier and Sargeant (1997), Muhib et al. (2001), Atkinson and Flint (2001), Archivakd et al. (2001), Southern et al. (2008), Johnston and Sabin (2010), and Marpsat and Razafindratsima (2010).

Furthermore, and as stated by Durrant and Steele (2009), general non-response is a major problem facing researchers in the social and medical sciences. Non-response includes non-contact (no contact was made with the randomly selected household) and rejection of participation (contact was made but the household refused an interview). Response rates in many surveys have been falling over time (Martin and Matheson, 1999; De Heer, 1999; Steeh et al., 2001) and some indications suggest that the type of non-response may have changed over time, leading to a possible change in the nature of non-response bias (Groves, Cialdini and Couper, 1992; Groves, 2006). Non-response rates and non-response bias may both affect the quality of survey data, with potentially serious consequences for data analyses underpinning social science research. For this reason an important goal of survey research is to develop ways to minimize non-response, through survey design and data collection methodology, and to reduce the effect of non-response bias through modification of data analysis methods.

The response rate of the 2006 CASEN survey was 84.8%. There is no information available describing how many non-responses correspond to non-contacts and how many to rejection of participation. Current conceptual frameworks for survey participation have identified various key factors influencing non-response, such as individual and household characteristics, interviewer attributes, the social environment and survey design features. Theories about the effects of individual and household characteristics on survey participation have been presented by Durrant and Steele (2009) and are based on psychological concepts such as social exchange, civic engagement and social isolation and integration. A more recent theory is the leverage salience theory (Groves, Singer and Corning, 2000), focusing on the interaction between individual sample member characteristics and survey design features. In face-to-face surveys, it is generally recognized that interviewers have a vital role in contacting sample members and obtaining their co-operation, leading to clustering of

response behaviours by the sample units that are allocated to the same interviewer. These theories have not been explored in the Chilean setting, but non-response bias is still a significant issue among specific sub-groups and should be more fully addressed in the future.

12.4 INTERPRETATION OF RESULTS IN THE CONTEXT OF MIGRATION THEORIES

Four different theories of migration were described in Chapter 2 (point 2.5). Push and pull theory, cumulative causation theory, behavioural decision-making theory of migration, and migration through globalisation theory, are all salient theories to explain the migration process, each of them focusing upon different stages and aspects of migration. The first theory, the push and pull theory, was one of the first described in the literature and suggests that migration is affected by demographic characteristics and growth occurring in two different countries. This micro-level of explanation of the migration process, and mostly the first stage of deciding whether or not to move to a different country, cannot be addressed through this research in Chile. There is no information on the living conditions of international immigrants before arrival in Chile and no data was collected by the CASEN survey 2006 on the reasons for migration by this group.

The second theory, the cumulative causation theory, is a dynamic theory based on the “chain migration” phenomenon (Martine, Hakkert and Guzman, 2000; Greenwood, 1985). This theory states that every migration act alters the social context of societies involved, which will mediate future decisions related to migration. These social context alterations would tend to facilitate migration movements over time (Martine, Hakkert and Guzman, 2000). This particular study on international immigrants in Chile does not allow for further exploration of the complex and dynamic relationship between Chile and other countries, especially from Latin America, where most international immigrants come from. Nonetheless, distinctive patterns of immigrant groups by country of origin have been observed, and the large amount of Latin American immigrants in Chile is not a random feature. Significant historical, cultural and economic phenomena have taken place in this region to make Chile an appealing country to move to over the last decades. This is quite a significant element to consider for policy implications in the country, since the living conditions and the health status of international immigrants varies according to their countries of origin and their living conditions before arrival in Chile. International economic recession, extended civil wars and inequality in the region might mediate the decision to come to Chile for a large group of deprived or vulnerable individuals in Latin America, and this issue requires further research in the region.

Regarding the behavioural decision-making theory of migration, this is the most dynamic decision-making framework proposed in the literature, and includes *expectations* as its major component (Ajzen, 1988). This theory states that intentions are a product of social norms – perceptions of what significant others think about the behaviour- and the expectations that one will attain valued goals as a consequence of behaviour. It also identifies constraints and facilitators that can directly affect the outcome behaviour.

Little can be discussed in terms of this theory and the findings from this research. This theoretical model can probably be better addressed through qualitative and mixed methods approaches. Selective migration itself supports the idea that those who decide to move are somehow different from the rest of the population, and that expectations related to the foreign country are valued in a different way from those who do not move. Again, distinctive demographic, socioeconomic and material standard patterns of the total international immigrant population suggests that this group is, at least, different from the Chilean-born, but there is no data on the issuer societies with which to compare. From the key findings of this research, it could be recommended that the most significant group to study through this theoretical model are those immigrants living in the Low-SES cluster and those who preferred not to report their migration status. Those people living in socioeconomic deprivation include a large proportion of children and women, are hard-to-reach groups and need urgent policy interventions to protect their health and restore their living conditions. Unaccomplished expectations after arriving in Chile might induce severe levels of stress in these groups that might cause their health to deteriorate very quickly, despite the fact that they are relatively young.

The fourth most controversial model is the one that explains migration through globalisation. In this sense, some authors have stated that migration does not occur between unconnected countries, but between those that experience rapid change of economic and global commerce relationships (Martine, Hakkert and Guzman, 2000; Massey, 1990). The major underlying issue of global migration is the unsolved tension between *social isolation* and the effort of cultural integration (*multiculturalism*), which creates several difficulties for both the migrant population and the receiver society. The capitalist economy and international division of work are at the basis of this tension, as economical and cultural disparities cause population movement (Meyers, 2000).

Again, this research does not properly address international economic and labour relationships, market dynamics and their effects on immigration patterns in Chile. However, some findings suggest their underlying relevance, especially those related to legal status, occupational patterns and health among immigrants in Chile. Occupational conditions appear

to be a relevant SDH. In the MS-MV group, for example, unemployed women show a lower use of the universal Pap smear programme, people with a contract show a lower chance of needing any mental health consultation in the past three months or having any health problem or accident in the past four weeks; and people working full time have a lower chance of being disabled. Among the immigrant population, for instance, having any disability was significantly associated with a lower contractual status.

As briefly mentioned in Chapter 11, there is a growing body of evidence on the complex and strong relationship between the legal status of international immigrants, occupational conditions and health (Sousa et al., 2010; Porthe et al., 2009; Porthe et al., 2010; Benach, Muntaner and Santana, 2007). As stated by Kandhula et al. (2004), although previous research on the healthy migrant effect explains the phenomenon of selective migration, migrants may still face potential detrimental health effects stemming from disadvantaged situations in comparison to host populations, as well as unique economic and social factors in the labour market. In addition to legal status, employment conditions are especially relevant to migration-health issues, as economic motivations to move are common.

Much more needs to be understood in terms of globalisation, migration and health outcomes in the Latin American region. Depending on the health condition observed, occupational status might have a small or large impact on the difference of its prevalence between immigrants and the Chilean-born. The magnitude of the difference also depends on the indicator of occupational conditions used (Gulushak and MacPherson, 2006; Kandula, Kersey and Lurie, 2004; Lopez-Jacob et al 2008, Rodriguez-Alvarez, 2008; Simich, Wu and Nerad, 2007; Magalhaes, Carrasco and Gastaldo, 2010).

12.5 INTERPRETATION OF RESULTS IN THE CONTEXT OF THE MODEL OF THE SDH AND THE EXPLANATORY MODELS ON HEALTH INEQUALITIES

12.5.1 Results in the context of the model of the SDH

The literature review in Chapters 1 to 4 has described the current knowledge on the relationship between migration and health, with special attention paid to the role of the Social Determinants of Health (SDH) in this relationship. Three particular diagrams were developed and presented in this section. The first one summarises the evidence on the effects on health of the different stages of the migration process (Figure-3.2) and the second and third ones combine the evidence regarding migration and health with the latest model on the SDH (WHO, 2008) (Figures-4.2 and 4.3). All these figures allow for the key findings from this study to be placed into context.

Regarding the first Figure-3.2, it provides a summary of explanatory pathways for migrants' health issues, according to the global perspective. As stated in the previous section, the underlying cultural differences between societies –and the lack of acceptance of what is not considered the common pattern of being or daily living- could be determining negative effects, especially in terms of some health-related outcomes. The central proposition I have suggested in this diagram is that differences between the issuer and the receiver or host countries have determined the vulnerability of the migrant population. In addition, cultural discrepancies have remained as a key aspect of this complex relationship between migration and health. Social policies at the host country and the unavoidable tension between multiculturalism versus social isolation existing in globalised societies have also determined health effects among migrants over time, in a broad social, political and economical dimension.

Findings from this thesis are located in the third column of this diagram, related to the post-migration period. They involve mostly individual–level factors and access to health care, and they are more closely related to health outcomes in the host country, especially when compared to the pre-migration and the migration stages. The post-migration period accumulates significant risk and protective factors from the previous stages and it certainly is the most important place to start when researching the living conditions and health status of the immigrant population. Findings from this research highlight the value of monitoring the SDH and health status of international immigrants at a population-scale over time. Issues related to demographic patterns, socioeconomic position, access to health care and health events in this group might easily be taken into account for policy improvement in this topic in Chile. Nonetheless, Figure-3.2 reminds us that the story is not yet fully told. The

following steps should account for the pre-migration and migration stages, in order to obtain a clearer picture of the dynamic process of migration into Chile, reasons and expectations associated with the decision to migrate, and how they correlate with the actual experience of migrating, arriving in the foreign country and staying over time. In addition, it sheds some light on the living conditions and health status of second-generation immigrants in Chile, an issue that is not considered in this thesis due to data constraints. Overall, this study is a small contribution towards the broader, dynamic and complex picture of migration in Chile.

Figure 4.2 represents an inter-phase between the previous diagram and the one describing the model of the SDH. It allows the reader to observe, in a summarised fashion, the key SDH at the micro (individual), the meso (relational, family or community level) and the macro (societal, governmental, political, economic level) levels of factors affecting the living conditions and health status of international immigrants in any country. One striking example of the influential effects of the different levels of SDH on health and wellbeing is the case of international immigrants. The three levels of SDH affect each stage of the migration process in a different way and also interact with one another. Immigrants living and occupational conditions and health are severely affected by international policies, government support, characteristics of the health care system and overall tolerance to multiculturalism from the host society, along with individual and family predisposing and protective factors.

The same idea is represented in Figure-4.3, but following the structure of the latest model on the SDH (WHO, 2008). Specific components relevant for the migration process according to the international literature appear in *italic bold* in this diagram. This thesis was able to explore the relevance of most of the individual and household-level factors affecting the health of international immigrants, including SES and access to health care. However, the available dataset did not allow for exploration of more subjective dimensions related to the experience of migration, such as self-perceived stress, perception of stigma and discrimination, and accomplishment of existing expectations associated to immigration into Chile. It also did not allow for exploration of behaviours and biological genetic factors, and self-perceived social capital and social cohesion within the immigrant population and with other groups of Chilean-born people. These aspects could be considered in the future to complement this research.

One significant limitation was been observed when using the model of the SDH as the explanatory diagram of the relation between migration, the SDH and the health status of international immigrants in Chile. This model has the advantage of clearly establishing the different levels of SDH and their complex interactions affecting societies' wellbeing and

health status. Nonetheless, this model is mostly static, like a snap-shot picture of a particular situation at a particular point in time, and does not allow for the description of the dynamics within the migration process, its changes over time and its various effects on health. In this sense, Figure-3.2 might be more useful, as it displays components at every stage of the migration process and how they accumulate determining health outcomes over time. In addition to this, the general model of the SDH by the WHO does not stress some substantial factors that exist in the migration process and their effect on health and wellbeing, such as social support throughout migration (different from social capital when already living in the host country), acculturation and enculturation processes, stigma and discrimination, and the distinctive group of second generation immigrants. Figure-3.2 still requires empirical confirmation, especially in Chile and Latin America, but might become a significant contribution to the field, by providing a migration-specific model relating to the SDH and their effects on health and wellbeing within each stage of the migration process.

12.5.2 Results in the context of the explanatory models on health inequalities

Four explanatory models of health inequalities were described in Chapter 4 (see Table 4.1). Those models have been developed outside of Latin America and are based on research into health, primarily in the UK, the US and other developed countries. However, some key variables of these models were available in the CASEN survey 2006 and therefore were explored, as a first step towards an understanding of the transferability of these theoretical models into middle-income countries, such as those in Latin America, especially Chile. Possibly the key message to transmit from the results of this study is that a better understanding of these theoretical models from the perspective of developing countries needs to be addressed in the future. In a middle-income country like Chile, there is probably no clear separation between materialist, psychosocial and behavioural explanations of a population's health. Moreover, the complexity of the results obtained from this thesis suggests great interaction between them. Migration-related factors must be added to the puzzle as other significant determinants or explanatory factors that need further attention. This study is a first step towards that theoretical evidence-based understanding of the mechanisms and pathways that underlie health inequalities in Chile and in particular among immigrants in the country.

12.6 POLICY IMPLICATIONS FROM THE KEY FINDINGS OF THIS RESEARCH

Migration is a recognised determinant of health in every population around the world (Zimmerman, Kiss and Hossain, 2011; Gushulak and MacPherson, 2011). In Chile, six main policy implications are considered from the findings of this study. Possibly the main policy recommendation from this research is to continue and improve the monitoring of immigrants in Chile, and their living conditions and health status, with special emphasis on their socioeconomic status, cultural background, and changes in health over time spent in the country. This thesis describes the complexity of this population, its living conditions and health status, and further research needs to address this group in Chile.

Secondly, the CASEN should continue to include a question on migration status in the future, as a key component of the socioeconomic characterisation of the population in Chile. However, questions regarding migration status could also be improved. These questions should address internal and international immigration separately, and missing values should be of particular concern. They should be reduced by specific interview strategies and reasons for not reporting migration status should also be collected.

Third, further steps regarding migration-status missing values should be considered in Chile. This group needs to be further investigated, and in particular its strong association with legal status, contractual status and occupational conditions. Sampling strategies designed specifically for hard-to-reach groups could be taken into consideration in future CASEN surveys and the significant amount of international experience in this matter could be used to support its implementation in the Chilean context. Fourth, due to the great heterogeneity of the international immigrant population in Chile, tailored policy interventions concentrated on the most vulnerable and deprived sub-groups are urgently required. Immigrants living in Low-SES, as measured by income, education level and occupation, contain a high proportion of women, are relatively young and do not present the healthy migrant effect, even when most of them have stayed for less than 5 years in the country only. This particular group should be addressed as a vulnerable and deprived population and needs to be protected.

Fifth, culturally sensitive policy strategies should be considered. This research showed the distinctive patterns of living conditions and health by country of origin. Some protective policies have been conducted for immigrants from certain countries, like Peru. However, a large proportion of immigrants come from other countries and still are at significant risk in Chile. Future policies should be either broad enough to protect most – or all- of them, and culturally sensitive in their implementation and evaluation.

Sixth and finally, Chile's complex health care system also requires further consideration. There are important policies to support access to health care in Chile by some international immigrants, especially pregnant women, children, and people in emergency situations. These groups are covered, irrespective of their migration or legal status (universal policies). However for other immigrant groups and in other situations, provision entitlement is 100% dependent on legal status, which is dependent on contractual status in the country. According to this study, a large group of immigrants report no health care provision or "other", non-stated provision. This group of immigrants requires further protection by the health care system, especially if living in socioeconomic and deprived conditions.

12.7 FUTURE RESEARCH ON MIGRATION IN CHILE AND THE LATIN AMERICAN REGION

All throughout this thesis future research on migration and health has been considered and discussed. This section will summarise those ideas in a structured fashion, by organising them into three main areas: future research in relation to the CASEN survey, future research in relation to vulnerable immigrant sub-groups and future research in relation to broader aspects of migration in Chile and Latin America (social and health inequalities and the SDH). These suggestions build upon the multiple hypotheses generated from this particular thesis.

Concerning *future research in using the CASEN survey*, four main aspects could be considered. First, the question on international versus internal migration should be divided into two different questions. Second, concrete interviewing strategies to try to reduce the missing values on migration status should be established before data collection. Third, attention should be focused on how to reach and obtain more detailed information about hard to reach populations such as undocumented immigrants. Fourth, the section on migration could be expanded and further new questions should be asked, such as:

- Reasons for migrating to Chile
- Identify second and third generation immigrants
- Current legal status and changes in legal status over time
- Income and occupation before migration and since arrival, including type of occupation, occupational hazards and psychosocial dimensions of work
- Health status before migrating
- Health status upon arrival in Chile and onwards

- Features of immigration: alone or accompanied, with a job contract and its characteristics, documented or undocumented, first versus multiple migrations
- Family relationships (e.g. did they migrate with their family or not, hometown associations and remittances, etc.)
- History of immigration since arrival in Chile
- Perceptions of discrimination and stigma by immigrants at neighbourhood, work, health system, clearly identifying who are creating hostile comments and situations to them
- Current self-perceived global-health (e.g. EQ5D) and self-perceived stress
- Social capital and social cohesion with other immigrants and local communities in the country of origin and the host country
- Measures of social integration, acculturation and enculturation processes in the host country

In relation to analysis of the CASEN, *further statistical techniques* could be explored in the future. Random and not at random multiple imputations could be explored for the CASEN dataset and the migration-status missing values. The exploration of weighted multi-level techniques could be conducted in order to better attain population-based estimators from the CASEN survey. Latent confirmatory factor analysis for binary variables could be conducted in order to improve the exploratory estimation of the Household Asset Index (HAI) and Combined Material Index (CMI) in this thesis with special attention to binary variables. Further confirmatory latent factor analysis with binary and ordinal variables could also be estimated in order to improve the reliability of the global health status index among immigrants and the Chilean-born. Additionally, longitudinal analysis of the CASEN 2006 and 2009 could be conducted in order to explore changes in living conditions and health status of international immigrants over time. Finally, other comparison groups could be considered to explore the living conditions and health of immigrants in Chile, besides the Chilean-born, such as the population in the bordering countries.

Because of the distinctive findings in the group *that preferred not to report their migration status*, particularly in relation to their potential socioeconomic vulnerability while living in the country, further research on this group is merited. Five specific aspects could be expanded in the future. First, the current legal status of all international immigrants could be asked in the CASEN or other surveys. Second, health care provision entitlement since arrival in Chile and changes over time among immigrants could be identified, in order to explore how they interact with legal and contractual status in the country. Third, an interesting group for further investigation are immigrants who live in the lowest SES strata in the immigrant population. Future research could include information on how they experience their post-migration stage and how their health changes while living in Chile. Fourth, immigrants in

extreme age groups -children and the elderly- and women should be further studied, especially since they represent a large proportion of those living in the Low-SES cluster and those that preferred not to report migration status. Fifth, immigrants belonging to the *Aymara* ethnic group and living in the Northern area should be further explored. Even though they do not represent a large proportion of the total immigrants in the country, they tend to live in socioeconomic deprivation and might experience significant discrimination and racism while living in Chile, for being both immigrants and belonging to a minority ethnic group.

Finally, in relation to *broader aspects of social and health inequalities*, results from this study allow the consideration of five specific recommendations for future research on migration in Chile and the Latin American region. First, significant findings regarding the existing gaps in economic and educational inequalities between immigrant groups in Chile need further study. There needs to be greater understanding of how they relate to stigma and discrimination processes in the labour sector, and also to national and international policies. Second, acculturation and enculturation processes should be further addressed in research in the Chile and Latin America. Even though the region shares significant values, racism and class prejudice is quite common, and immigrants might suffer from this phenomenon. Third, as presented in Figure 12.3, several Social Determinants of Health have not yet been studied among immigrants and require further recognition, such as health behaviours, social capital and social cohesion, the relationship between genetics and environmental factors, changes in the health care system in Chile, interactions between countries in the Latin American region in recent years, the potential implementation of new migration policies in the future, and others. Fourth, it is possible that many social inequalities and health inequalities within the immigrant populations in the Latin American region might have a strong life course effect. Little research has been conducted in this specific group with this perspective internationally, and none in Chile. Mixed methods and the advocacy for long-term longitudinal monitoring of immigrants in Chile and in the region could provide valuable data to assess this life-course effect on social and health inequalities among immigrants. Fifth and finally, researchers in Latin America need to think of migration as a dynamic and complex process inextricably connected with broader economic, social and international features. Strong theoretical understanding of this process is urgently required to create better research questions and study designs. Better research provides better data, which provides better support for policy involvement. Robust evidence is by far the best support we can have.

12.8 CONCLUDING REMARKS

The Republic of Chile is a middle-income South American country with an intermediate level of development. Over the last 30 years, Chile has experienced deep economic and demographic change with consequential improvement in the health status of the population, a decline in infant and all cause mortality rates, and an increase in life expectancy (Albala and Vio, 1995). Although Chile has shown improvements in global health status, not all socioeconomic groups have benefited from the described developments in the same proportion. There are significant differences in the health status of the Chilean people when comparing the type of health care system - either public or private - geographical location, gender, and age (Arteaga, Astorga and Pinto, 2002b). The Chilean Health Reform, proposed in 2000 and implemented in 2003, is intended to reduce health inequalities and perceived health inequities across the country (Infante, de la Matta, 2000; PAHO, 2001; Jimenez, 1991; Jadue & Marin, 2005).

One significant population that has not received sufficient attention in health and social research in Chile are international immigrants. In the latest decade, Chile has experienced a “new immigration” pattern described as young immigrants coming mostly from Latin American countries to work in the country and locating mostly in the capital of Santiago (Departamento de Extranjería y Migración, 2007). However, little research has been conducted among immigrants in Chile, and most of that completed has been conducted in specific vulnerable sub-groups using a qualitative research perspective.

This thesis uses a population-based study to explore the living conditions and health status of international immigrants in Chile. According to the main findings of this study, immigrants are a heterogeneous group with wide variations in socioeconomic status (SES). There is an apparent “healthy migrant” effect found in the total immigrant population but this disappears after adjusting for SES. Immigrants showed clear gradients of health by SES, with different patterns according to the nature of the health problem considered. However, there was no difference in the prevalence of health problems among immigrants from low SES and the total Chilean population, despite their younger age. In addition, a proportion of those that preferred not to report their migration status could be undocumented immigrants and present higher socioeconomic deprivation than the immigrants as a whole and distinctive health patterns. Even though this thesis cannot determine whether this group represent undocumented immigrants, they still require attention from the policy sector since they are a vulnerable group.

A list of policy implications and recommendations for further research have been displayed in the final discussion, addressing the contribution and originality of this work for Chile and the Latin American region. The main policy recommendation from this research is to continue and improve the monitoring of immigrants in Chile, their living conditions and health status, with special emphasis on their socioeconomic status, cultural background, and changes in health over time spent in the country. Other recommendations focus on the need for a better understanding of those who preferred not to report migration status, the importance of maintaining and improving questions on migration status in the CASEN survey, the need for tailored strategies to protect the health of sub-groups of immigrants in socioeconomic deprivation, and further discussion on the relationship between migration status, legal status and access to the Chilean health care system.

Finally, a detailed plan of potential future research is presented, which builds from the international evidence synthesised in a narrative fashion in this thesis and also the key findings of this study. This thesis has made a consistent effort to this end, by developing an exhaustive review of the international and Latin American literature, providing a detailed explanation of the socio-political context in Chile at the time the CASEN 2006 survey data was collected, using the best possible statistical methods to obtain unbiased, robust and efficient effects measures within a very heterogeneous migrant population, assessing the quality of these measures, and recognising the various limitations and strengths of the variables and methods used. Additionally, it has developed a clear link between key findings and policy implications and suggests future research. This thesis is, naturally, not able to solve the issues regarding the identification of the best possible counterfactual for international immigrants in Chile, but it does recognise the existence of this issue and develops a series of systematic attempts to provide the best possible effects measures from a cross-sectional population-based dataset. That is, it tries to represent in the best possible way, the living conditions and health status of international immigrants in Chile in 2006.

List of abbreviations (in alphabetical order)

AIC	Akaike Information Criterion to assess GOF of regression models
AHPA	Any health problem or accident (in the past month)
CA	Cluster analysis
CASEN	National socio-economic characterisation (translation from Spanish)
CFA	Confirmatory factor analysis
CI	Confidence intervals, in this study at 95% level
CMI	Combined material index
CSDH	Commission for the Social Determinants of Health
DHS	Demographic health survey
EFA	Exploratory factor analysis, in this study used as synonymous of FA, because no confirmatory factor analysis (CFA) was conducted
FA	Factor analysis
GLMs	Generalised linear models
GOF	Goodness of fit test for regression models
HAI	Household asset index
HSI	The health status index created after FA for the immigrant and the Chilean-born populations
IIP	International immigrant population
Immig-HSI	The health status index for the international immigrant population in Chile
IOM	International Organization for Migration
IRR	Incidence Rate Ratio estimate from Poisson or negative binomial regression models
MIDEPLAN	Ministry of Planning in Chile (translation from Spanish)
MINSAL	Ministry of Health in Chile (translation from Spanish)
MS-MV	Migration status missing values
NHP	Number of health problems, count variable
OR	Odds Ratio from logistic regression models
PAHO	Pan American Health Organization
Pap	Papanicolaou test (cervical cancer screening)
PCA	Principal Component Analysis
RRR	Relative Risk Ratio from multinomial regression models
SDH	Social Determinants of Health

SES	Socio-economic status
USD	US (American) dollars
WHO	World Health Organisation
ZINB	Zero-Inflated Negative Binomial regression

References

- ABRAIDO-LANZA, A., DOHRENWEND, B., NG-MAK, D., AND TURNER, B. 1999. The Latino Mortality Paradox: A Test of the "Salmon Bias" and Healthy Migrant Hypotheses. *Am J P Health*, 89(10), 1543-48.
- ABRAMS, B., AND GUENDELMAN, S. 1995. Nutrient intake of Mexican-American and non-Hispanic white women by reproductive status: Results of two national studies. *Journal of the American Dietetic Association*, 95(8), 916–8.
- ACEVEDO-GARCIA, D., PAN, J., JUN, H.J., OSYPUK, T.L., AND EMMONS, K.E. 2005. The effect of immigrant generation on smoking. *Social Science & Medicine*, 61(6), 1223-1242.
- ACUÑA, E., PEREZ, J.C., VILLALON, J., AND VILLALON, G. 2003. *CHILE: Proyecciones y Estimaciones de Población. Total País Período de Información: 1950-2050*. Instituto Nacional de Estadísticas Subdirección Técnica Departamento de Demografía Subdepartamento Proyecciones de Población. Available at: www.ine.cl [Accessed: June 2010].
- ADAMS, K.M., GARDINER, L.D., AND ASSEFI, N. 2004. Health Care Challenges from the developing world: post- immigration refi gee medicine. *BMJ*, 328, 154852.
- ADAMSON, J., HUNT, K., AND EBRAHIM, S. 2003a. Socioeconomic position, occupational exposures, and gender: the relation with locomotor disability in early old age. *J Epidemiol Community Health*, 57, 453-455.
- ADAMSON, J., BEN-SHLOMO, Y., CHATURVEDI, N., AND DONOVAN, J. 2003b. Ethnicity, Socioeconomic Position and Gender – Do They Affect Reported Health-care Seeking Behaviour? *Social Science and Medicine*, 57, 895–904.
- ADAY, L.A. 1993. *At risk in America: The health and health care needs of vulnerable populations in the United States*. San Francisco: Jossey-Bass.
- ADAY, L.A., AND ANDERSEN, R.M. 1974. A framework for the study of access to medical care. *Health Services Research*, 9, 208–220.
- ADAY, L.A., AND ANDERSEN, R.M. 1981. Equity of access to medical care: a conceptual and empirical overview. *Medical Care*, 19, 4–27.
- ADHIKARI, R., JAMPAKLAY, A., AND CHAMRATRITHIRONG, A. 2011. Impact of children's migration on health and health care-seeking behavior of elderly left behind. *BMC Public Health*, 2, 11:143.
- ADLER, N.A., BOYCE, T., AND CHESNEY, M.A. 1994. Socioeconomic status and health. *Am Psychol*, 49, 15-24.

- AGUDELO-SUAREZ, A., GIL-GONZALEZ, R., RONDA-PEREZ, E., PORTHE, V., PARAMIO-PEREZ, G., GARCIA, A.M., AND GARI, A. 2009. Discrimination, work and health in immigrant populations in Spain. *Soc Sci Med*, 68, 1866–1874.
- AHMAD, F. AND STEWART, D. 2004. Predictors of Clinical breast examination among south Asian immigrant women. *Journal of Immigrant Health*, 6(3), 119-126.
- AHONEN, E.Q. AND THE ITSAL PROJECT. 2009a. Invisible work, unseen hazards: the health of women immigrant household service workers in Spain. *Am J Ind Med*, 53, 405–416.
- AHONEN, E.Q. AND THE ITSAL PROJECT. 2009b. A qualitative study about immigrant workers' perceptions of their working conditions in Spain. *J Epidemiol Commun Health*, 63, 936–942.
- AJZEN, I. 1988. *Attitudes, Personality and Behaviour*. Milton Keynes: Open University Press.
- AKHAVAN, S., BILDT, C., FRANZEN D., AND WAMALA F. 2004. Health in relation to unemployment and sick leave among immigrants in Sweden from a gender perspective. *J Immigr Health*, 6, 103–118.
- AL SNIH, S., GRAHAM, J.E., KUO, Y.F., GOODWIN, J.S., MARKIDES, K.S., AND OTTENBACHER, K.J. 2010. Obesity and disability: relation among older adults living in Latin America and the Caribbean. *Am J Epidemiol*, 171(12), 1282-8.
- ALBALA, C., VIO, F. 1995. Epidemiological transition in Latin America: The case of Chile. *Public Health*, 109, 431-42.
- ALDERSON, A. AND NIELSEN, F. 2002. Globalisation and the Great Turn: Income Inequality Trends in 16 OECD Countries *AJS*, 107 (5), 1244–99.
- ALDERSON, A. AND NIELSEN, F. 1999. Income Inequality, Development, and Dependence: A Reconsideration. *American Sociological Review*, 64, 606–31.
- ALDRID, J.H., NELSON, F.D. 1984. *Linear probability, Logit and Probit models*. Newbury Park, CA: Sage.73-77.
- ALEGRÍA, M., CANINO, G., RIOS, R., VERA, M., CALDERON, J., RUSCH, D., AND ORTEGA, A. 2002. Inequalities in Use of Specialist Mental Health Services Among Latinos, African Americans, and Non-Latino Whites. *Psychiatric services*, 53, 1547–1555.
- ALEGRÍA, M., ROBLES, R., FREEMAN, D.H. 1991. Patterns of mental health utilization among island Puerto Rican poor. *American Journal of Public Health*, 81, 875–879.
- ALEGRIA, P.E., SHROUT, M., GUARNACCIA, P., SRIBNEY, W., VILA, D., POLO, A., CAO, Z., MULVANEY-DAY, N., TORRES, M., AND CANINO, G. 2007. Understanding differences in past year psychiatric disorders for Latinos living in the US. *Social Science & Medicine*, 65 (2), 214-230.

- ALLENSWORTH, E.M. 1997. Earnings mobility of first and "1.5" generation Mexican-origin women and men: a comparison with U.S.-born Mexican-Americans and non-Hispanic whites. *Int Migr Rev*, 31(2), 386-410.
- ALLEYNE, G.A., CASAS, J.A., CASTILLO-SALGADO, C. 2000. Equality, equity: why bother? *Bulletin World Health Organ*, 78, 76-77.
- ALLIN, A. 2008. Does Equity in Health care Use Vary across Canadian Provinces? *Health care policy*, 3(4), 83-99.
- ALLOTEY, P., REIDPATH, D., YASIN, S., CHAN, C., AIKINS, A. 2010. Rethinking health-care systems: a focus on chronicity. *Lancet*, 376, 1-2.
- ALMANDOZ, M.G. 1997. Immigrants from across the border in Tandil: Chileans and Bolivians in the 1990s. *Estud Migr Latinoam*, 12(37), 491-521.
- ALTAMIRANO, T. 2000. *Liderazgo y organizaciones de peruanos en el exterior*. Pontificia Universidad Católica del Perú: Peru.
- ALTER, P.C. AUSTIN, J. V. TU, AND CANADIAN CARDIOVASCULAR OUTCOMES RESEARCH TEAM. 2005. Community factors, hospital characteristics and inter-regional outcome variations following acute myocardial infarction in Canada. *Canadian Journal of Cardiology*, 21 (3), 247-255.
- ALVARADO, I. AND SÁNCHEZ, H. 2002. *Migration in the Latin America and the Caribbean*. A view from the ICFTU/ORIT. 2002. Available at: <http://www.ilo.org/public/english/dialogue/actrav/publ/129/19.pdf> [Accessed: February 2009].
- ALVAREZ, G.G., CLARK, M., ALTPETER, E., DOUGLAS, P., JONES, J., PATY, M.C., POSEY, D.L., AND CHEMTOB, D. 2010. Pediatric tuberculosis immigration screening in high-immigration, low-incidence countries. *Int J Tuberc Lung Dis*, 14(12), 1530-7.
- ALVAREZ, M., MUZZO, S., AND IVANOVIC, D. 1985. Escala para medición del nivel socioeconómico en el área de Salud. *Rev Med Chile*, 113, 243-9.
- ALVAREZ, M.L., WURGAFT, F., SALAZAR, M.E. 1982. Measurements of the urban low socioeconomic level in families with malnourished infants. *Arch Latinoam Nutr*, 32(3), 650-62.
- AMADOR, M. 2010. [Oral presentation]. *Forced migration to emerging countries. Case: Chilean society receiving afro-colombian asylum seekers*. The 2010 Conference, British Society for Population Studies. University of Exeter. Available at: <http://www2.lse.ac.uk/socialPolicy/BSPS/annualConference/2010/2010%20Exeter.aspx#generated-subheading1> [Accessed: October 2010].
- ANDERSON, B.E. 2008. Identifying the dead: methods utilized by the Pima County (Arizona) office of the medical examiner for undocumented border crossers: 2001-2006. *J Forensic Sci*, 53(1), 8-15.

- ANDERSON, J.M., TANG, S., BLUE, C. 2007. Health care reform and the paradox of efficiency: "writing in" culture. *Int J Health Serv*, 37(2), 291-320.
- ARCHER, K.J., LEMESHOW, S. 2006. Goodness-of-fit test for a logistic regression model fitted using survey sample data. *The Stata Journal*, 6(1), 97-105.
- ARCHIBALD, C.P., JAYARAMAN, G.C., MAJOR, C., PATRICK, D.M., HOUSTON, S.M., AND SUTHERLAND, D. 2001. Estimating the size of hard-to-reach populations: a novel method using HIV testing data compared to other methods. *AIDS*, 3,S41-8.
- ARCIA, E.M., SKINNER, D., AND BAILEY, V. 2001. Models of acculturation and health behaviors among Latino immigrants to the US. *Social Science & Medicine*, 53(1), 41-53.
- ARLING, G. 1985. Interaction effects in a multivariate model of physician visits by older people. *Medical Care*, 23, 361-371.
- ARNOLD, A., JOHNSTONE, B., STOSKOPF, B., SKINGLEY, P., BROWMAN, G., LEVINE, M., AND HRYNIUK, W. 1989. Recruitment for an Efficacy Study in Chemoprevention - The Concerned Smoker Study. *Preventive Medicine*, 18, 700-10.
- ARRAU, F. 2002. *Conceptualización del plan AUGE en salud. Eje de la actual reforma en salud. Estudios de anticipación*, Biblioteca del Congreso Nacional de Chile. Available at: http://www.bcn.cl/carpeta_temas/temas_portada.2005-10-27.7644862447/documentos_pdf.2005-10-28.2320771530 [Accessed: July 2009].
- ARTEAGA, O., THOLLAUG, S., NOGUEIRA, A.C., DARRAS, C. 2002a. Información para la equidad en salud en Chile. *Pan Am J P Health*, 11(5/6), 374-385.
- ARTEAGA, O., ASTORGA, I., PINTO, A.M. 2002b. Inequalities in public Health care provision in Chile. *Cad Saúde Pública*, 18(4), 1053-66.
- ASADA, Y. AND G. KEPHART. 2007. Equity in Health Services Use and Intensity of Use in Canada. *BMC Health Services Research*, 7, 41.
- ASAMOA, K., RODRIGUEZ, M., GINÉS, V., VARELA, R., DOMINGUEZ, K., MILLS, C.G., SOTOMAYOR, G., AND BECK-SAGUÉ, C.M. 2004. Use of preventive health services by Hispanic/Latino women in two urban communities. *J Womens Health*, 13(6), 654-61.
- ASANIN, D.J. AND WILSON, K. 2010. My health has improved because I always have everything I need here. A qualitative exploration of health improvement and decline among immigrants. *Social Science & Medicine*, 70, 1219-1228
- ASANIN, D.J. AND WILSON, K. 2009. Education? It is irrelevant to my job now and it makes me very depressed...: Exploring the health impacts of under/unemployment among highly-skilled recent immigrants in Canada. *Ethnicity & Health*, 14(2), 185-204.

- ASANIN, J. AND WILSON, K. 2008. I spent nine years looking for a doctor: Exploring access to health care among immigrants in Mississauga, Ontario, Canada. *Social Science & Medicine*, 66(6), 1271-1283.
- ASCH, S., LEAKE, B. AND GELBERG, L. 1994. Does fear of immigration authorities deter tuberculosis patients from seeking care? *Western Journal of Medicine*, 161(4), 373-376.
- ASHCROFT JS. 2009. Primary medical care market. Destabilisation of primary care with equitable access. *BMJ*, 21(338), b1600.
- ATKINSON, R. AND FLINT, J. 2001. Accessing Hidden and Hard-to-Reach Populations: Snowball Research Strategies. *Social Research update*, 33, 1-4.
- AUDI, R. 2003. *Epistemology. A contemporary introduction to the theory of knowledge*. 2nd Edition. Great Britain: Routedledge. 157-178.
- AUSTRALIAN INSTITUTE OF HEALTH AND WELFARE. 2000. *Australia's health 2000*. Available at: https://www.mja.com.au/public/issues/172_12_190600/mathers/mathers.html [Accessed: March 2009].
- AYLWIN, J. no date. *Pueblos indígenas de chile: antecedentes históricos y situación actual*. Serie de documentos numero 1. Instituto de estudios indígenas universidad de la frontera. Available at: <http://rehue.home.xs4all.nl/art/ay11a.html> [Accessed: March 2009].
- AZERKAN, F., ZENDEHDEL, K., TILLGREN, P., FAXELID, E., AND SPARÉN, P. 2008. Risk of cervical cancer among immigrants by age at immigration and follow-up time in Sweden, from 1968 to 2004. *Int J Cancer*, 123(11), 2664-70.
- BAINES, C.J. 1984. Impediments to Recruitment in the Canadian National Breast Screening Study: response and Resolution. *Controlled Clinical Trials*, 5, 129-40.
- BALARAJAN, R., YUEN, P., AND MACHIN, D. 1992. Deprivation and general practitioner overload. *British Medical Journal*, 304, 529-534.
- BARER, M., MANGA, P. AND SHILLINGTON R. 1982. *Income Class and Hospital Use in Ontario*. Toronto: Ontario Economic Council. 51-63.
- BARHAM, B., BOUCHER, S. 1998. Migration, remittances, and inequality: estimating the net effects of migration on income distribution. *J Dev Econ*. 55(2), 307-31.
- BARKER, D.J. AND OSMOND, C. 1987. Inequalities in health in Britain: specific explanations in three Lancashire towns. *British Medical Journal*, 294, 749-52.
- BARRO-LUGO, S., SAUS, A.M., BARRO-LUGO, A., AND MARTÍ, M. 2004. Depresión y ansiedad en inmigrantes no regularizados. *Aten Primaria*, 34(9), 504.
- BARTLEY, M. 2007. *Health inequalities. An introduction to theories, concepts and methods*. Polite Press: Cambridge. 15-78.

- BAUDATT, G. AND ANOUAR, F. 2000. Discriminant analysis using a Kernel approach. *Neural Computation*, 12, 2385–2404.
- BAUER, H.M., RODRIGUEZ, M.A., QUIROGA, S.S., AND FLORES-ORTIZ, Y.G. 2000. Barriers to health care for abused Latina and Asian immigrant women. *J Health Care Poor Underserved*, 11(1), 33-44.
- BAYONA, M. AND OLSEN, C. 2008. *Observational Studies and Bias in Epidemiology*. Available at: www.collegeboard.com/prod.../yes/4297_MODULE_19.pdf [Accessed: July 2011].
- BEAN, F.D., BROWNING, H.L., AND FRISBIE, W.P. 1984. The sociodemographic characteristics of Mexican immigrant status groups: implications for studying undocumented Mexicans. *Int Migr Rev*, 18(3), 672-91.
- BEIKI, O., EKBOM, A., ALLEBECK, P., AND MORADI, T. 2009. Risk of prostate cancer among Swedish-born and foreign-born men in Sweden, 1961-2004. *Int J Cancer*, 124(8), 1941-53.
- BEIKI, O., GRANATH, F., ALLEBECK, P., AKRE, O., AND MORADI, T. 2010. Subtype-Specific Risk of Testicular Tumors among Immigrants and Their Descendants in Sweden, 1960 to 2007. *Cancer Epidemiol Biomarkers Prev*, 19(4), 1053–65.
- BEISHAN, S., AND NAZROO, J.Y. 1997. *Coronary Heart Disease, Construing the Health Beliefs and Behaviours of South Asian Communities*. London: Health Education Authority. 12-26.
- BENACH, J., MUNTANER, C., SANTANA, V. 2007. *Employment condition knowledge network (MCOMET). Employment condition and health inequalities. Final Report to the WHO Commission on Social Determinants of Health*. Available at: http://www.who.int/social_determinants/themes/employmentconditions/en/index.html [Accessed: May 2011]
- BENDER, D.E., RIVERA, T., AND MADONNA, D. 1993. Rural origin as a risk factor for maternal and child health in periurban Bolivia. *Soc Sci Med*, 37, 1345–1349.
- BENGOA, J. 2006. *Pobreza en Chile, identificacion de situaciones de pobreza por comuna*. CEME: Centro de Estudios Miguel Enriquez. Archivo Chile. Available at: www.archivochile.com/Ideas_Autores/bengoaj/bengoaj0005.pdf [Accessed: July 2011].
- BEN-SHLOMO, Y., WHITE, I., AND MCKEIGUE, P.M. 1992. Prediction of general practice workload from census based social deprivation scores. *Journal of Epidemiology & Community Health*, 46, 532–536.
- BERK, M.L., SCHUR, C.L., CHAVEZ, L.R. AND FRANKEL, M. 2000. Health care use among undocumented Latino immigrants. *Health Affairs*, 19(4), 51-64.
- BERKMAN, L. 2004. Introduction: Seeing the Forest and the Trees—From Observation to Experiments in Social Epidemiology. *Epidemiol reviews*, 26, 2-6.

- BERKMAN, L.F. AND KAWACHI, I. 2000. *Social Epidemiology*. Oxford: Oxford University Press. 32-121.
- BERKMAN, L.F. AND SYME, S.L. 1979. Social networks, host resistance and mortality: a nine-year follow-up study of Alameda County residents. *Am J Epidemiol*, 109, 186-204.
- BERNAL, G., BONILLA, J., BELIDO, C. 1995. Ecological validity and cultural sensitivity for outcome research: issues for the cultural adaptation and development of psychosocial treatments with Hispanics. *Journal of Abnormal Child Psychology*, 2, 67-82.
- BERRY, J.W. 1997. Immigration, acculturation, and adaptation. *Appl Psychol*, 46(1), 5- 68.
- BHATTI, T., RANA, Z., AND GROOTENDORST, P. 2007. Dental Insurance, Income and the Use of Dental Care in Canada. *Journal of the Canadian Dental Association*, 73(1), 57.
- BHOPAL, R.S., FISCHBACHER, C.M., STEINER, M. 2007. *Ethnicity and health in Scotland: can we fill the information gap?* Available at: <http://www.chs.med.ed.ac.uk/phs/research/Retrocoding%20final%20report.pdf> [Accessed: July 2009].
- BHOPAL, R.S. 2009. Medicine and public health in a multiethnic world. *Am J P Health*, 1-7.
- BHUGRA ,D., DESAI, M., AND BALDWIN, D. 1999a. Attempted suicide in West London. I: rates across ethnic communities. *Psychol Med*, 29, 1125-1130.
- BHUGRA, D., BALDWIN, D., DESAI, M. 1999b. Attempted suicide in West London. II: intergroup comparisons. *Psychol Med*, 29, 1131-39.
- BHUGRA, D., AND JONES, P. 2001. Migration and mental illness. *Adv Psych Treat*, 7, 216-223.
- BHUGRA, D. 2004. Migration and mental health. *Acta Psychiatr Scand*, 109, 306-12.
- BIBLIOTECA DEL CONGRESO NACIONAL DE CHILE. 2002. *Conceptualizacion del plan de acceso universal con garantias explicitas (AUGE). Eje de la reforma actual de salud*. Available at: http://www.bcn.cl/carpeta_temas/temas_portada.2005-10-27.7644862447/documentos_pdf.2005-10-28.2320771530 [Accessed: August 2009].
- BIRCH, S. AND ABELSON J. 1993a. Is Reasonable Access What We Want? Implications of, and Challenges to, Current Canadian Policy on Equity in Health Care. *International Journal of Health Services*, 23(4), 629-53.
- BIRCH, S., EYLES, J., AND NEWBOLD, K.B. 1993b. Equitable Access to Health Care: Methodological Extensions to the Analysis of Physician Utilization in Canada. *Health Economics*, 2, 87-101.

- BISAILLON, L.M. 2010. Panel--Overcoming exclusion: current research and legal issues in Canadian immigration policy for people living with HIV. *HIV AIDS Policy Law Rev*, 15(1), 84-90.
- BLAIS, R., AND MAÏGA, A. 1999. Do ethnic groups use health services like the majority of the population? A study from Quebec, Canada. *Soc Sci Med*, 48(9), 1237-45.
- BLANE, D., BARTLEY, M. AND DAVEY SMITH, G. 1998. Disease aetiology and materialist explanations of socioeconomic mortality differentials. *European Journal of Public Health*, 7, 385-91.
- BLANE, D., MITCHELL, R., AND BARTLEY, M. 2000. The inverse housing law and respiratory health. *J Epidemiol Commun Health*, 54, 745-9.
- BODENMANN, P., VAUCHER, P., WOLFF, H., FAVRAT, B., DE TRIBOLET, F., MASSEREY, E., AND ZELLWEGER, J.P. 2009. Screening for latent tuberculosis infection among undocumented immigrants in Swiss health care centres; a descriptive exploratory study. *BMC Infect Dis*, 24(9), 34.
- BOLLEN, K.A., GLANVILLE, J.L. AND STECKLOV, G. 2002. Economic status proxies in studies of fertility in developing countries: Does the measure matter? *Population Studies*, 56, 81-96.
- BOLLINI, P., AND SIEM H. 1995. No Real Progress Towards Equity: Health of Migrants and Ethnic Minorities On The Eve of the Year 2000. *Social Science Medicine*, (41)6, 819-828.
- BONILLA-CHACIN, M. AND J.S. HAMMER. 1999. *Life and Death Among the Poorest*. Johns Hopkins University and Development Economics Research Group, World Bank: Washington, DC. 5-24.
- BORJAS, G., FREEMAN, R.. AND KATZ, L. 1996. Searching for the effect of immigration on the labor market. *AEA papers and proceedings*, 86(2): 246-251. Available at: <http://ksghome.harvard.edu/~GBorjas/Papers/AER96.pdf> [Accessed: December 2008].
- BORJAS, G.J. AND TIENDA. M. 1993. The employment and wages of legalized immigrants. *Int Migr Rev*, 27(4), 712-47.
- BORJAS, G.J. 1996. The earnings of Mexican immigrants in the United States. *J Dev Econ*, 51(1), 69-98.
- BORJAS, G. J. 1994. The Economics of Immigration. *Journal of Economic Literature*, 32, 1667-717.
- BORRELL, C., MUNTANER, C., SOLE, C., ARTARCOZ, M., PUIGPINOS, M., BENACH, P., AND NOH, N. 2008. Immigration and self-reported health status by social class and gender: the importance of material deprivation, work organisation and household labour. *J Epidemiol Commun Health*, 62, e7.

- BOS, V., KUNST, A., KEIJ-DEERENBERG, I., GARSSSEN, J., AND MACKENBACH, J. 2004. Ethnic inequalities in age- and cause-specific mortality in The Netherlands. *International Journal of Epidemiology*, 33, 1112–1119.
- BOTTOMORE, T. 1983. *A Dictionary of Marxist Thought*. Oxford: Blackwell.
- BOWEN, M.E. AND GONZÁLEZ, H.M. 2010. Childhood socioeconomic position and disability in later life: results of the health and retirement study. *Am J Public Health*, S1, S197-203.
- BOYD, M. 1999. Gender, refugee status and permanent settlement. *Gender Issues*, 17(1), 5-25.
- BOYDELL, J. 2001. Incidence of schizophrenia in ethnic minorities in London: ecological study into interactions with environment. *BMJ*, 323, 1336-1338.
- BOZDOGAN, H. 2000. Akaike's Information Criterion and Recent Developments in Information Complexity. *Journal of Mathematical Psychology*, 44, 62–91.
- BOZDOGAN, H. 1987. Model Selection and Akaike's Information Criterion (AIC): The General Theory and Its Analytical Extensions. *Psychometrika*, 52, 345–370.
- BOYLE, P. 2004. Population geography: migration and inequalities in mortality and morbidity. *Human Geography*, 28(6), 767-776.
- BOYLE, P., NORMAN, P. AND REES, P. 2002. Does migration exaggerate the relationship between deprivation and limiting long-term illness? A Scottish analysis. *Social Science & Medicine*, 55(1), 21-31.
- BRATSBERG, B. 1995. Legal versus illegal U.S. immigration and source country characteristics. *South Econ J*, 61(3), 715-27.
- BRAVEMAN, P. AND GRUSKIN, S. 2003a. Defining equity in health. *J Epidemiol Community Health*, 57, 254 - 258.
- BRAVEMAN, P. AND GRUSKIN, S. 2003b. Poverty, equity, human rights and health. *Bull World Health Org*, 81(7), 539-45.
- BRESA, L. 2010. Uninsured, illegal, and in need of long-term care; the repatriation of undocumented immigrants by U.S. hospitals. *Law Rev*, 40(4), 1663-96.
- BRESLAU, J., BORGES, G., TANCREDI, D., SAITO, N., KRAVITZ, R., HINTON, L., VEGA, W., MEDINA-MORA, M.E., AND AGUILAR-GAXIOLA, S. 2011a. Migration from Mexico to the United States and subsequent risk for depressive and anxiety disorders: a cross-national study. *Arch Gen Psychiatry*, 68(4), 428-33.
- BRESLAU, J., BORGES, G., TANCREDI, D.J., SAITO, N., ANDERSON, H., KRAVITZ, R., HINTON, L., AGUILAR-GAXIOLA, S., MORA, M.E. 2011b. Health selection among migrants from Mexico to the U.S.: childhood predictors of adult physical and mental health. *Public Health Rep*, 126(3), 361-70.
- BRIMELOW, P. 1996. *Alien Nation: Common Sense About America's Immigration Disaster*. US: Harper-Perennial.

- BROCKERHOFF, M. 1994. The impact of rural-urban migration on child survival. *Health Transit Rev*, 4(2), 127-49.
- BROCKERHOFF, M. 1999. Urban growth in developing countries: a review of projections and predictions. *Popul Dev Rev*, 25, 757–778.
- BROCKERHOFF, M. 1995. Child survival in big cities: the disadvantages of migrants. *Soc Sci Med*, 40(10), 1371-83.
- BRONFMAN, R.L., NEGRONI, J.M., AND RUEDA, C.M. 2002. Mobile populations and HIV/AIDS in Central America and Mexico: research for action. *AIDS*, 16 (3), S42–S49.
- BROWN, E.R., OJEDA, V.D., WYN, R., AND LEVAN, R. 2000. *Racial and ethnic disparities in access to health insurance and health care*. Los Angeles, CA: UCLA Center for Health Policy Research & The Henry J. Kaiser Family Foundation.
- BROYLES, R.W., MANGA, P., BINDER, D.A., ANGUS, D.E., CHARETTE, A. 1983. The use of physician services under a national health insurance scheme: an examination of the Canada Health Survey. *Medical Care*, 21, 1037-1054.
- BRUNNER, E., MARMOT M., AND WILKINSON, R.G. 1997. Socioeconomic determinants of health: stress and the biology of inequality. *BMJ*, 314, 1472-6.
- BUCHAN, J. 2007. Health worker migration in Europe: assessing the policy options. *Migration and Health. Eurohealth*, 13 (1), 6-8.
- BUCHAN, J. 2004. Human resources for health in Europe. In: *Migration of health workers in Europe: policy problem or policy solution?* Available at: http://www.euro.who.int/document/e87923_4.pdf [Accessed: April 2009].
- BUCHAN, J. AND PERFILIEVA, G. 2006. *Health Worker Migration in the European Region: Country Case Studies and Policy Implications*. Division of Country Support. WHO Regional Office for Europe Copenhagen. Available at: www.euro.who.int/__data/assets/pdf_file/0009/102402/E88366.pdf [Accessed: May 2010]
- BUELL, P. 1973. Changing incidence of breast cancer in Japanese-American women. *J Nat Cancer Institute*, 51, 1479-83.
- BUIATTI, E., GEDDES, M., KRIEBEL, D., SANTUCCI, M., AND BIGGERI, A. 1985. A case control study of lung cancer in Florence, Italy. II. Effect of migration from the south. *J Epidemiol Community Health*, 39(3), 251–255
- BULATTI, E., PALLI, D., AND DECARLI, A. 1989. A case-control study of gastric cancer and diet in Italy. *Int J Can*, 44, 611-6.
- BUNKER, J.P., FRAZIER, H.S., AND MOSTELLER, F. 1995. The role of medical care in determining health: Creating an inventory of benefits. In B. C. Amick (Ed.), *Society & health*. New York: Oxford University Press. 305– 341

- BUNTON, R. AND BURROWS, R. 1995. Consumption and health in the “epidemiological clinic” of the late modern medicine. In: Bunton R, Nettleton S and Burrows S (eds.). *The sociology of health promotion*. London: Routledge. 206-25.
- BURNS, N. AND GROVE, S.T. 2005. *The Practice of Nursing Research: Conduct, Critique, and Utilization* (5th ed.) St. Louis: Elsevier Saunders: USA.
- CABIESES, B. AND TUNSTALL, H. 2011. Immigration of health workers to Chile: Is there a Latin American brain drain? *Pan J Public Health*, (in press).
- CABIESES, B., CIANELLI, R., FERRER L., LAGABRIELLE M., BERNALES, M. AND VILLEGAS, N. 2008. [Oral Presentation]. *Corporeality and sexuality in Mapuche women. key factors for self-care in HIV and AIDS*. Paper presented at the II Encuentro Internacional de Autocuidado en Salud, Santiago de Chile. November 2008.
- CABIESES, B., ESPINOZA, M.A. AND ZITKO, P. 2011. How to deal with increased individual risk behaviors in Chile? *Rev Medica de Chile*, 139, 686-688.
- CABLE, T.A., MELAND, E., SOBERG, T., AND SLAGSVOLD, S. 1999. Lessons from the Oslo study diet and anti-smoking trial: a qualitative study on long-term behaviour change. *Scan J Public Health*, 27, 206-12.
- CAGNEY, K., BROWNING, C., AND WALLACE, D. 2007. The Latino Paradox in Neighborhood Context: The Case of Asthma and Other Respiratory Conditions. *Am J Public Health*, 97, 919-925.
- CAI, W., POETHKO-MÜLLER, C., HAMOUDA, O., AND RADUN, D. 2011. Hepatitis B virus infections among children and adolescents in Germany: migration background as a risk factor in a low seroprevalence population. *Pediatr Infect Dis J*, 30(1), 19-24.
- CAIN, K.P., BENOIT, S.R., WINSTON, C.A., AND MAC KENZIE, W.R. 2008. Tuberculosis among foreign-born persons in the United States. *JAMA*, 300(4), 405-12.
- CAMAROTA, S.A., AND EDWARDS, J.R. 2000. *Immigrant's impact on the size and growth of the population lacking health insurance*. Washington, DC: Center for Immigration Studies. 54-89.
- CAMERON, A.C. AND TRIVEDI, P.K. 2009. Chapter 17: Count data models Models. In: *Microeconometrics using stata*. US: Stata Press.
- CAMERON, D. AND JONES, I.G. 1985. An epidemiological and sociological analysis of the use of alcohol, tobacco and other drugs of solace. *Community Med*, 7, 18-29.
- CAMPBELL, T. AND CAMPBELL, A. 2007. Emerging disease burdens and the poor in cities of the developing world. *J Urban Health*, 84 (3S), i54-i64.

- CANTWELL, M.F., ONORATO, I.M., CAUTHEN, G.M., BINKIN, N.J. AND TIPPLE, M.A. 1995. Tuberculosis screening of applicants for US immigration. *JAMA*, 273, 286-287.
- CARBALLO, M., DIVINO, J. AND ZERIC, D. 1998. Migration and health in the European Union. *Tropical Medicine and International Health*, 3(12), 936–944.
- CARRASCO, P.E., PÉREZ, B.F., ANGEL, B.B., ALBALA, B.C., SANTOS, M. J., AND LARENAS, Y. G . 2004. Prevalencia de diabetes tipo 2 y obesidad en dos poblaciones aborígenes de Chile en ambiente urbano. *Rev. Méd. Chile*, 132(10), 1189-1197.
- CARRASCO-GARRIDO, P., DE MIGUEL, A., HERNÁNDEZ, V. AND JIMÉNEZ-GARCÍA, R. 2007. Health profiles, lifestyles and use of health resources by the immigrant population resident in Spain. *Eur J Public Health*, 17(5), 503-507.
- CARRASQUILLO, O., CARRASQUILLO, A. I., AND SHEA, S. 2000. Health insurance coverage of immigrants living in the United States: differences by citizenship status and country of origin. *American Journal of Public Health*, 90, 917–923.
- CARR-HILL, R., RICE, N., & ROLAND, M. 1996. Socioeconomic determinants of rates of consultation in general practice based on fourth national morbidity survey of general practices. *British Medical Journal*, 312, 1008–1013.
- CARROLL, D., DAVEY SMITH, G., SHEFFIELD, D., SHIPLEY, M.J. AND MARMOT, M.G. 1997. The relationship between socioeconomic status, hostility and blood pressure reactions to mental stress in men: data from the Whitehall II study. *Health Psychol*, 16, 131-6.
- CARTA, M.G., BERNAL, M., HARDOY, M.C., AND HARO-ABAD, J.M. 2005a. Migration and mental health in Europe (the state of the mental health in Europe working group: appendix 1) *Clinical Practice and Epidemiology in Mental Health*, 1:13.
- CARTA, M.G., BERNAL, M., HARDOY, M.C., AND HARO-ABAD, J.M. 2005b. Report on the Mental Health in Europe Working Group. Migration and mental health in Europe (the state of the mental health in Europe working group: appendix 1). *Clin Pract Epidemiol Ment Health*, 31, 1:13.
- CARTA, M.G. KOVESS, V., HARDOY, M.C., MOROSINI, P.L., MURGIA, S., CARPINIELLO, B. 2002. Psychiatric disorders in Sardinian immigrants in Paris: a comparison with Parisians and Sardinians resident in Sardinia. *Social Psychiatry and Psychiatric Epidemiology*, 37, 112-117.
- CASTILLO, D. 1993. End of the borders? Undocumented migration from Mexico to the United States. *Probl Desarrollo*, 24, 95-119.
- CELADE (Centro Latinoamericano y Caribenho de Demografia). 2003. *America Latina: Poblacion por años calendario y edades simples: 1995-2005*. Santiago de Chile,

- Boletín Demográfico. XXXVI (71): LC/G 2197. Available at:
<http://www.eclac.org/celade> [Accessed: May 2010].
- CELADE (Centro Latinoamericano y Caribeño de Demografía). 2008. *Latin American and Caribbean international migration*. Available at:
<http://www.eclac.org/celade/default.asp?idioma=IN> [Accessed: April 2009].
- CEPAL (Comisión Económica para América Latina). 2001. *International Migration and Development in the Americas*. Symposium on International Migration in the Americas, San José de Costa Rica. Available at:
<http://www.eclac.org/publicaciones/Poblacion/2/LCL1632P!/LCL1632Pi.pdf>
 [Accessed: September 2009].
- CEPAL (Comisión Económica para América Latina). 2006. *International migration, human rights and development in Latin America and the Caribbean*. Summary and conclusions. Available at: <http://www.eclac.org/publicaciones> [Accessed: January 2009].
- CERDA, J., ROMERO, M.I. AND WEITSTRUCK, M.A. 2008. Mortalidad por cáncer infantil en Chile: Modelo de transición epidemiológica en la infancia. *Rev chil pediatr*, 79(5), 481-7.
- CHAMI, F. AND JAHJAH, K. 2006. Are Immigrant Remittance Flows a Source of Capital for Development? IMF Staff Papers. *International Monetary Fund*, 52(1):55-81.
- CHANDOLA, T. 1998. Social inequality in coronary heart disease: a comparison of occupational classifications. *Soc Sci Med*, 47, 525-33.
- CHAPPEL, R., VICKERS M. L. AND EVANS, H. (2000). The use of patient registers to estimate migration. Population and vital statistics ONS. *Population Trends*, 101, 19-24.
- CHAPPUIS, F., MAURIS, A., HOLST, M., ALBAJAR-VINAS, P., JANNIN, J., LUQUETTI, A., AND JACKSON, Y. 2010. Validation of a rapid immunochromatographic assay for diagnosis of *Trypanosoma cruzi* infection among Latin-American Migrants in Geneva, Switzerland. *J Clin Microbiol*, 48(8), 2948-52.
- CHOI, J.Y. 2009. Contextual effects on health care access among immigrants: Lessons from three ethnic communities in Hawaii. *Social Science & Medicine*, 69, 1261–1271.
- CHOI, J. 2006. *Social capital and state policy: Access to health care services among Filipino, Korean, and Marshallese immigrants in Hawaii*. Doctoral Dissertation, University of Hawaii, Manoa.
- CHOI, J. 2008. Seeking health care: Marshallese migrants in Hawaii. *Ethnicity and Health*, 13, 77–98.

- CHUN, K.M., CHESLA, C.A., KWAN, K.M.L. 2011. "So We Adapt Step by Step":
Acculturation experiences affecting diabetes management and perceived health for
Chinese American immigrants. *Social Science & Medicine*, 72(2), 256-26
- CIANELLI, R., CABIESES, B., MATSUMOTO, C., FERRER, L. AND ARAYA, A. 2005.
[Poster]. *HIV/AIDS prevention among disadvantaged groups in Chile: experience
in two training programmes*. Paper presented at the Optimizing Global health
through nursing science Conference. Chicago, United States.
- CIANELLI. R., CABIESES B., Ferrer, L., Miner, S., Carvajal, S., Bernales, M. & Irarrázabal,
L. 2007. [Póster]. *Exploring knowledge, attitudes and prevention practice towards
HIV/AIDS in urban Mapuche women*. Paper presented at the I Congreso Chileno
de Salud Pública. Santiago, Chile.
- CLANCY, C.M. AND FRANKS, P. 1997. Utilization of specialist and primary care: the
impact of HMO insurance and patient-related factors. *J Fam Pract*, 45, 500-508.
- CLARK, H., J. JOHNSON, J. BOTTORFF, AND BALNEAVES L. 1999. Breast health
practices and south Asian women. *The Canadian Nurse*, 95(9), 24-29.
- COBURN, D. 2000. Income inequality, social cohesion and the health status of populations:
the role of neo-liberalism. *Soc Sci Med*, 51, 135-46.
- COCHRANE, R. AND BAL, S.S. 1988. Ethnic density is unrelated to incidence of
schizophrenia. *B J Psychiatry*, 153, 363-366.
- COCKRELL, A. AND MAYER, M.L. 2007. Effects of insurance status on children's access
to specialist care: a systematic review of the literature. *BMC Health Services
Research*, 7, 194.
- COGGON, D. 1999. Occupational Cancer in the United Kingdom. *Environmental Health
Perspectives*, 107(S2), 239-244.
- COHEN, J. 2006. Mexico: Prevention Programs Target Migrants. *Science*, 313(5786), 478-
479.
- COLEMAN, R. AND RAINWATER, L. 1978. *Social standing in America: new dimensions
of class*. New York: Basic Books. 33-56.
- COLLINS, E., AND KLEIN, R. 1980. Equity and the NHS: Self reported morbidity, access,
and primary care. *British Medical Journal*, 281, 1111-1115.
- COMPERE, N., LEJACQUES, J., AND DUVAL, J. 1992. Mental health and ethnocultural
communities: From social marginalization to existential precariousness. *Santé
mentale au Québec*, 17(2), 285-93.
- COMUNIDAD ANDINA. 2008. *Acta Primer Foro Andino de Migraciones*. Quito, Ecuador.
Available at:
[http://intranet.comunidadandina.org/Documentos/Reuniones/DFinales/SG_FAM_I
_ACTA.doc](http://intranet.comunidadandina.org/Documentos/Reuniones/DFinales/SG_FAM_I
_ACTA.doc) [Accessed: November 2008].

- CONCHA, M. AND LABBE, J. 2005. La proteccion social y las enfermedades ocupacionales. Trabajo. In Jadue, L. and Marin, F. *Determinantes sociales de la salud en Chile*: Chile. 11-34.
- CONCHA, M., NELSON, D., AND DRISCOLL, T. 2004. Chapter 21. Selected Occupational Risks Factors. In WHO, *Comparative Quantification of Health Risks. Global and Regional Burden of Disease Attributable to selected major risks factors*. Washington: WHO. 231-45.
- CONSEJO NACIONAL DE POBLACIÓN. 1999. *La situación demográfica de México*. (1ª Ed). Mexico. Available at: <http://www.conapo.gob.mx/publicaciones/1999/PDF/99000.pdf> [Accessed: December 2008].
- CONSULADO GENERAL DEL PERÚ EN SANTIAGO DE CHILE. 2009. *Derecho a la salud, como acceder a la salud en Chile*. Available at: <http://www.conpersantiago.cl/?q=node/46> [Accessed: July 2010].
- CONWAY, D. AND COHEN, J. 1998. Consequences of Migration and Remittances for Mexican Transnational Communities. *Economic Geography*, 74(1), 26-44.
- COTLEAR, D. 1984. Urban employment and internal migration in Peru. *Economia*, 7(13), 65-98.
- COTS, F., CASTELLS, X., GARCIA, O., RIU, M., FELIPE, A., AND VALL, O. 2007. Impact of immigration on the cost of emergency visits in Barcelona (Spain). *BMC Health Serv Res* 7, 9.
- CRIJNEN, A., BENGI, A., ARSLAN, L., AND VERHULST, F. 2000. Teacher-reported problem behaviour in Turkish immigrant and Dutch children: a cross cultural comparison. *Acta Psychiatrica Scandinavica*, 102, 439-44.
- CRIMMINS, E.M., SOLDI, B.J., KIM, J.K., AND ALLEY, D.E. 2005. Using anthropometric indicators for Mexicans in the United States and Mexico to understand the selection of migrants and the "Hispanic Paradox." *Soc Biol*, 52, 164-177.
- CROTTY, M. 1998. *The foundations of social research: meaning and perspective in the research process*. Sage: London. 12-43.
- CSDH (Commission on the Social Determinants of Health, World Health Organization). 2005. *Communities: Tackling the root causes of ill-health*. WHO. Available at: http://www.who.int/social_determinants/en/ [Accessed: July 2009].
- CSDH (Commission on the Social Determinants of Health, World Health Organization). 2007. *8th Meeting*, Vancouver, Canada, June 7-9, Available at: [http:\mydocuments\john\cdsh\8th_meeting_csdh_report.doc](http://mydocuments\john\cdsh\8th_meeting_csdh_report.doc) [Accessed: July 2009].

- CSDH (Commission on the Social Determinants of Health, World Health Organization).
2008a. *Towards a Conceptual Framework for Analysis and Action on the Social Determinants of Health*. Discussion paper for the Commission on Social Determinants of Health. DRAFT. Available at:
http://www.who.int/social_determinants/en/ [Accessed: July 2009].
- CSDH (Commission on the Social Determinants of Health, World Health Organization).
2008b. *Closing the gap in a generation. Health equity through action on the Social Determinants of Health*. Available at:
http://www.who.int/social_determinants/thecommission/finalreport/en/index.html
[Accessed: July 2009].
- CULYER, A. 1995. Need – the idea won't do – but we still need it. *Social Science and Medicine*, 40, 727-730.
- DA VANZO, J. 1978. Does unemployment affect immigration?-evidence from micro data. *Review of economics and statistics*, 60, 504-514.
- DACHS, N. 1999. *Measures of inequality in health: what we have, what we need, how can we get there?* Washington D.C.: PAHO.
- DAHLGREN, G. AND WHITEHEAD, M. 1991 *Policies and strategies to promote social equity in health* Stockholm, Institute of Futures Studies. Available at:
www.swtphn.org.uk/.../Health%20Promotion%20Theoretical%20Frameworks%20CPD.ppt [Accessed: July 2009].
- DAVEY SMITH, G. AND EBRAHIM, S. 2003. 'Mendelian randomization': can genetic epidemiology contribute to understanding environmental determinants of disease? *Int J Epidemiol* 32, 1-22.
- DAVEY SMITH, G., HART, C., BLANE, D., GILLIS, C., AND HAWTHORNE, V. 1997. Lifetime socioeconomic position and mortality: prospective observational study. *BMJ*, 314, 547-52.
- DAVEY SMITH, G. AND HART, C. 2002. Lifecourse socioeconomic and behavioural influences on cardiovascular disease mortality: the Collaborative study. *Am J Publ Health*, 92, 1295-1298.
- DAVEY SMITH, G, NEATON, J.D., WENTWORTH, D, STAMLER, R., AND SATMLER, J. 1996a. Socioeconomic differentials in mortality risk among men screened for the multiple risk factor intervention trial: I: white men. *Am J P Health*, 86, 486-96.
- DAVEY SMITH, G., WENTWORTH, D., NEATON, J.D., STAMLER, R., AND SATMLER, J. 1996b. Socioeconomic differentials in mortality risk among men screened for the multiple risk factor intervention trial: II: black men. *Am J P Health*, 86,486-96.

- DAVEY SMITH, G. 1996. Income inequality and mortality: why are they related? Income inequality goes hand in hand with underinvestment in human resources. *BMJ*, 312, 987-8.
- DAVEY SMITH, G., BARTLEY, M. AND BLANE, D. 1990. The Black report on socioeconomic inequalities in health 10 years on. *BMJ*, 301, 373-377.
- DAVEY SMITH, G., BLANE, D. AND BARTLEY, M. 1994. Explanations for socioeconomic differentials in mortality: evidence from Britain and elsewhere. *Eu J P Health*, 4, 131-4.
- DAVIES, A,A, MOSCA, D., AND FRATTINI, C. 2010. Migration and health service delivery. *World Hosp Health Serv*, 46(3), 5-7.
- DAVILA, A., SAENZ, R. 1990. The effect of maquiladora employment on the monthly flow of Mexican undocumented immigration to the U.S., 1978-1982. *Int Migr Rev*, 24(1), 96-107.
- DAWOOD, M. (2008). Sampling rare populations. *Nurse Res*, 15(4), 35-41.
- DE ALMEIDA, N., KAWACHI, I., PELLEGRINI, A. AND DACHS, N. 2003. Research on health inequalities in Latin America and the Caribbean: Bibliometric analysis (1071-2000) and descriptive content analysis (1971-1995). *Am J Public Health*, 93, 2037.
- DE HEER, W. 1999. International response trends: results of an international survey. *J Off Statist*, 15, 129–142.
- DE JONG, G. AND GORDON, F. 1999. Choice processes in migration behaviour. In Pandit K. and Withers S., *Migration and Restructuring in the US*. New York: Rowman and Littlefield publishers, 273-292.
- DE JONG, G. 2000. Expectations, gender, and norms in migration decision-making. *Population studies*, 54, 307-19.
- DE JONG, G. 1994. Ambulatory mental health care for immigrants in the Netherlands. *Curare*, 17, 5-34.
- DE JONG, G., GORDON, F. AND STEINMETZ, S. 2003. A Receptivity Attitudes and Occupational Attainment of Male and Female Immigrant Workers. *Population Research and Policy Review*, 37, 1-26.
- DE JONGE, J., BOSMA, H., PETER, R., AND SIEGRIST, J. 2000. Job strain, effort-reward imbalance and employee well-being: a large-scale cross-sectional study. *Soc Sci Med*, 1317-1327.
- DE OLIVEIRA, O. AND ROBERTS, B. 1996. Urban development and social inequality in Latin America. In: Gugler J, editor. *The urban transformation in the developing world*. Oxford: Oxford University Press. 252–314.
- DE VOGLI, R. AND GIMENO, D. 2010. The G20 and the three global crises: what prospects for global health? *J Epidemiol Community Health*, 64(2), 99-100.

- DE VOGLI, R., GIMENO, D. AND MISTRY, R. 2009. The policies-inequality feedback and health: the case of globalisation. *J Epidemiol Community Health*, 63, 688-91.
- DEALBERTO, M.J. 2007. Why are immigrants at increased risk for psychosis? Vitamin D insufficiency, epigenetic mechanisms or both? *Medical Hypothesis*, 68, 259-267.
- DEANE, K.D., PARKHURST, J.O., JOHNSTON, D. 2010. Linking migration, mobility and HIV. *Trop Med Int Health*, 15(12), 1458-63.
- DEATON, A. AND LUBOTSKY, D. 2003. Mortality, inequality and race in American cities. *Soc Sci Med*, 1139-53.
- DEBONNE, J.M., NICAND, E., BOUTIN, J.P., CARRE, D., BUISSON, Y. 1999. Hepatitis C in tropical areas. *J Med Trop*, 59(4), 508-16.
- DEL REY, A. 2007. Determinants and consequences of internal and international migration: the case of rural populations in the south of Veracruz, Mexico. *Demographic research*, 16(10), 287-314.
- DEMIDENKO, E. 2007. Sample size determination for logistic regression revisited. *Stat Med*, 26(18), 3385-3397.
- DEPALLENS, S.D., PUELMA, M.J., KRÄHENBÜHL, J.D., GEHRI, M. 2010. The health status of children without resident permit consulting the Children's Hospital of Lausanne. *Swiss Med*, 15(140), 13048.
- DEPARTAMENTO DE EXTRANJERÍA Y MIGRACIÓN. 2007. *Desarrollo del fenómeno de las migraciones en Chile. Evolución de la gestión gubernamental desde 1990*. Subsecretaría del Interior. Ministerio del Interior. Available at: <http://www.extranjeria.gov.cl/filesapp/migraciones.pdf> [Accessed: November 2008].
- DEPARTAMENTO DE EXTRANJERÍA Y MIGRACIÓN. 2010. *Preguntas frecuentes acerca de la inmigración en Chile*. Secretaría y Administración General, Sistema de Gestión de la Calidad. Available at: <http://www.extranjeria.gov.cl/faq.html> [Accessed: November 2011].
- DERIEMER, K., CHIN, D.P., SCHECTER, G.F., AND REINGOLD, A.L. 1998. Tuberculosis among immigrants and refugees. *Arch Intern Med*, 158, 753-60.
- DEROSE, K. P., ESCARCE, J. J., AND LURIE, N. 2007. Immigrants and health care: source of vulnerability. *Health Affairs*, 26(5), 1258-1268
- DEY, A.N. AND LUCAS, J.W. 2004. *Physical and mental health characteristics of U.S.-born and foreign-born adults 1997-2002*. Division of Health Statistics, National Center for Health Statistics. Available at: http://www.cdc.gov/nchs/ppt/duc2004/dey_lucas.ppt [Accessed: April 2009].
- DIAS, S., SEVERO, M., AND BARROS, H. 2008. Determinants of health care utilization by immigrants in Portugal. *BMC Health Services Research*, 8, 207.

- DÍAZ-MUJICA, A., PÉREZ, M.A., GONZÁLEZ, P.C. AND SIMON, W. 2004. Concepts of sickness and healing in the Mapuche cosmology and the impact of occidental culture. *Cienc. Enferm*, 10(1), 9-16.
- DIEZ, M., OLIVA, J., DÍAZ, A., SEISDEDOS, T., SÁNCHEZ, F., GARRIGA, C., AND GALINDO, S. 2010. Migration and HIV in Spain. *Gac Sanit*, 24(6), 503-4.
- DIEZ-ROUX, A.V. 2004. The study of group-level factors in epidemiology: rethinking variables, study designs, and analytical approaches. *Epidemiol Rev*, 26, 104–11.
- DOCQUIER, F. AND MARFOUK, A. 2004. *Measuring the international mobility of skilled workers (1990-2000)*. Release 1.0. Available at: http://econ.worldbank.org/external/default/main?pagePK=64165259&theSitePK=469382&piPK=64165421&menuPK=64166093&entityID=000160016_20040922150619 [Accessed: February 2009].
- DOKU, D., KOIVUSITA, L. AND RIMPELA, A. 2009. Indicators for measuring material affluence of adolescents in health inequality research in developing countries. *Child Ind Res*, n/data.
- DOLLAR, D. AND KRAAY, A. 2004. Trade, growth, and poverty. *Economic J*, 114, F22–49.
- DONABEDIAN, A. 1972. Models for Organising the Delivery of Personal Health Services and Criteria for Evaluating Them. *Milbank Memorial Fund Quarterly*, 50, 103–54.
- DOÑA, C. 2002. *Percepcion de la inmigracion reciente en Chile a traves del analisis de medios de prensa, Santiago de Chile*. Tesis para obtener el titulo de Sociologo (inedito). Chile: Universidad de Chile.
- DONIACH, I., SWETTENHAM, K.V. AND HAWTHORN, M.K.S. 1975. Prevalence of asbestos bodies in a necropsy series in East London: association with disease, occupation and domiciliary address. *Br J Ind Med*, 32, 16-30.
- DORFMAN, R.A. 1979. Formula for the Gini Coefficient. *The Review of Economics and Statistics*, 61(1), 146-149.
- DOUZENIS, A., MICHPOULOS, I., ECONOMOU, M., RIZOS, E., CHRISTODOULOU, C., LYKOURAS, L. 2010. Involuntary admission in Greece: A prospective national study of police involvement and client characteristics affecting emergency assessment. *Int J Soc Psychiatry*, 24, 5-32.
- DRACUP, K., MOSER, D., EISENBERG, M., MEISCHKE, H., ALONZO, A., AND BRASLOW, A. 1995. Causes of delay in seeking treatment for heart attack symptoms. *Social Science & Medicine*, 40, 379–392.
- DRAPER, E. 1985. Women's work and development in Latin America. *Stud Comp Int Dev*, 20(1), 3-30.
- DUBOWITZ, T., SMITH-WARNER, S. A., ACEVEDO-GARCIA, D., SUBRAMANIAN, S. V., AND PETERSON, K. E. 2007. Nativity and duration of time in the United

- States: Differences in fruit and vegetable intake among low-income postpartum women. *American Journal of Public Health*, 97, 1787–1790.
- DUFOUR, D.L. AND PIPERATA, B.A. 2004. Rural-to-Urban Migration in Latin America: An Update and Thoughts on the Model. *American Journal of Human Biology*, 16, 395–404.
- DUMONT, J.C., MARTIN, J., AND SPILEVOGEL, G. 2007. *Women on the move: the neglected gender dimension of the brain-drain*. Discussion paper No. 2920. Bonn, Germany. Available at: www.oecd.org [Accessed: January 2009].
- DUNCAN, O.D. 1961. A socioeconomic index for all occupations. In: AJ Reiss Jr (ed.) *Occupations and social status*. New York: Free Press.109-38.
- DUNLOP, S., COYTE, P., AND MCISAAC, W. 2000. Socioeconomic status and the utilisation of physicians' services: results from the Canadian National Population Health Survey. *Social Science & Medicine*, 51, 123-133.
- DUNN, J. AND DICK, I. 2000. Social Determinants of Health in Canada's immigrant population: results from the National Population Health Survey. *Social Science & Medicine*, 51(11), 1573-1593.
- DURAND, J., PARRADO, E., AND MASSEY, D. 1996. Migradollars and development: a reconsideration of the Mexican case. *International Migration Review*, 30(2), 423-44.
- DURRANT, G., STEELE, F. 2009. Multilevel modelling of refusal and non-contact in household surveys: evidence from six UK Government studies. *J R Statist Soc A*, 172(2), 361-381.
- EASTERLIN, A. 1961. Influences in European Overseas Emigration before World War I. *Economic Development and Cultural Change*, (9)3, 331-351.
- EATON, W. AND HARRISON, G. 2000. Ethnic disadvantage and schizophrenia. *Acta Psychiatr Scand*, (407), 38-43.
- EDITORIAL. 2007. Migration of health personnel and its impact on health systems in developing countries. *J Ayub Med Coll Abbottabad*, 19(4), 1-2
- EESC (Comité Económico y Social Europeo). 2007. *Dictamen sobre el tema Salud y Migración*. Bruselas. Available at: http://eescopinions.eesc.europa.eu/viewdoc.aspx?doc=\\esppub1\esp_public\ces\soc274\es\ces1001-2007_ac_es.doc [Accessed: November 2008].
- EGAN, J.E., FRYE, V., KURTZ, S.P., LATKIN, C., CHEN, M., TOBIN, K., YANG, C., AND KOBLIN, B.A. 2011. Migration, neighborhoods, and networks: approaches to understanding how urban environmental conditions affect syndemic adverse health outcomes among gay, bisexual and other men who have sex with men. *AIDS Behav*, 15(S1), S35-50.

- EISENMAN, D.P., MEREDITH, L.S., RHODES, H., GREEN, B.L., KALTMAN, S., CASSELLS, A., AND TOBIN, J.N. 2008. PTSD in Latino patients: illness beliefs, treatment preferences, and implications for care. *J Gen Intern Med*, 23(9), 1386-92.
- ELFORD, J., PHILLIPS, A., THOMPSON, A.G., SHARPER, A.G. 1990. Migration and geographic variations in blood pressure in Britain. *BMJ*, 300, 291-295.
- EMERSON, E. AND HATTON, C. 1995. Contribution of Socioeconomic Position to Health Inequalities of British Children and Adolescents With Intellectual Disabilities. *American Journal on Mental Retardation*, 112(2), 140-150.
- ENAS, F.A., YUSUF, S., AND MEHTA, J.L. 1992. Prevalence of coronary heart disease in Asian Indians. *Am J Cardiol*, 70, 945-949.
- ENS (Encuesta Nacional de Salud Chile). 2010. *Tomo V: Resultados*. ENS 2009-2010. Available at: www.redsalud.gov.cl/ [Accessed: January 2011].
- ENS (Encuesta Nacional de Salud Chile). 2004. *ENS 2003*. Available at: www.redsalud.gov.cl/ [Accessed: January 2011].
- ESCHBACH, K., HAGAN, J., RODRIGUEZ, N., HERNANDEZ-LEON, R., AND BAILEY, S. 1999. Death at the border. *Int Migr Rev*, 33(2), 430-54.
- ESHIETT, M. AND PARRY, E. 2003. Migrants and health: a cultural dilemma. *Clin Med*, 3(3), 229-31.
- ESPEJO, F. 2005. Mayor escolaridad, mayor salud. In Jadue & Marin (eds.) *Determinantes Sociales de la salud en Chile*. Iniciativa Chilena de Equidad en Salud: Chile.
- ESPENSHADE, T.J. 1995a. Using INS border apprehension data to measure the flow of undocumented migrants crossing the U.S.-Mexico frontier. *Int Migr Rev*, 29(2), 545-65.
- ESPENSHADE, T. J. 1995b. Unauthorized Immigration to the United States, *American Review of Sociology*, 21: 195-216.
- ESPINOZA, H. AND RÍOS, V. 2005. *Protección Social en Salud para trabajadores del Sector Informal Urbano: Conceptos, mecanismos y una propuesta*. Unidad de Investigación del Centro de Estudios para el Desarrollo - CEDEP, Perú. 5-13.
- EVANS, D. B., AJAY, T., MURRAY, J.L. AND LAUER, J. 2001. Comparative efficiency of national health systems: cross national econometric analysis. *BMJ*, 323, 307 - 310.
- EVANS, R.G., BARER, M.L., MARMOT, M. 1994. *Why are some people healthy and others not? The determinants of health of populations*. New York: Aldine de Gruyter. 378.
- EXWORTHY, M., BLANE, D. AND MARMOT, M. 2003. Tackling Health Inequalities in the United Kingdom: The Progress and Pitfalls of Policy. *Health Services Research*, 38 (6 - Part II), 1905-1921.

- FAGERLI, R.A., LIEN, M.E. AND WANDEL, M. 2005. Experience of dietary advice among Pakistani-born persons with type 2 diabetes in Oslo. *Appetite*, 45(3), 295-304.
- FAIA, M.A. 1981. Selection by certification: a neglected variable in stratification research. *Am J Sociol*, 86, 1093-1111.
- FAIRCHILD, A.L. AND TYNAN, E.A. 1994. Policies of containment: immigration in the era of AIDS. *Am J Public Health*, 84, 2111–2122.
- FAIST, T. 2000. *The Volume and Dynamics of International Migration and Transnational Social Spaces*. 1st Ed. Oxford University Press. 50-96.
- FARIS, R.E. AND DUNHAM, H.W. 1939. *Mental disorders in urban areas: An ecological study of schizophrenia and other psychoses*, The University of Chicago Press, Chicago/London. Available at: <http://www.pep-web.org/document.php?id=psar.027.0251a> [Accessed: April 2009].
- FAROOQI, A., NAGRA, D., EDGAR, T., AND KHUNTI, K. 2000. Attitudes to lifestyle risk factors for coronary heart disease amongst South Asians in Leicester: a focus group study. *Family Practice*, 17, 293–297.
- FASCIOLI, S., CAPOCACCIA, R., AND MARIOTTI, S. 1995. Cancer Mortality in Migrant Populations within Italy. *Int J Epid*, 24(1), 8-18.
- FAUCI, A. 2008. *National Latino AIDS Awareness Day*. National Institute of Allergy and Infectious Diseases National Institutes of Health. Available at: <http://www3.niaid.nih.gov/about/directors/news/latino08.htm> [Accessed: April 2009].
- FAUGIER, J. AND SARGEANT, M. 1997. Sampling hard to reach populations. *Journal of Advanced Nursing*, 26, 790-7.
- FEACHEM, R.G.A. 2001. Globalisation is good for your health, mostly. *BMJ*, 323, 504–06.
- FEDALI, U., ALBA, N., LISIERO, M., ZAMBON, F., AVOSSA, F., AND SPOLAORE, P. 2010. Obstetric hospitalizations among Italian women, regular and irregular immigrants in North-Eastern Italy. *Acta Obstet Gynecol Scand*, 89(11), 1432-7.
- FELICIANO, C. 2005. Educational selectivity in US immigration: how do immigrants compare to those left behind? *Demography*, 42(13), 1-152.
- FELLAHI, K. AND DE LIMA, S. 2005. *Western Union and the World Market for remittances. Migration, Remittances and Development*. OECD. Available at: www.oecd.gov [Accessed: January 2009].
- FENNELLY, K. 2005. The Healthy Migrant Effect. *Healthy generations*, 5(3), 1-4.
- FENNELLY, K. 2004. *Listening to the experts: provider recommendations on the health needs of immigrants and refugees*. Malmo: Malmo University. 12-35.
- FENTA, H., HYMAN, I., AND NOH, S. 2007. Health service utilization by Ethiopian immigrants and refugees in Toronto. *J Immigr Minor Health*, 9(4), 349-57.

- FERRECCIO, C., PRADO, R., AND LUZORO, A. 2004. Population-based prevalence and age distribution of women papillomavirus among women in Santiago-Chile. *Cancer Epidemiology, Biomarkers & Prevention*, 13(12), 2271-1176.
- FERRIS, T.G., CHANG, Y., BLUMENTHAL, D., AND PEARSON, S.D. 2001. Leaving gatekeeping behind – effects of opening access to specialists for adults in a health maintenance organization. *N Engl J Med* 345, 1312-1317.
- FIELD, V., GAUTRET, P., SCHLAGENHAUF, P., BURCHARD, G.D., CAUMES, E., JENSENIUS, M., CASTELLI, F., GKRAKIA-KLOTSAS, E., WELD, L., LOPEZ-VELEZ, R., DE VRIES, P., VON SONNENBURG, F., LOUTAN, L. AND, PAROLA, P. 2010. EuroTravNet network. Travel and migration associated infectious diseases morbidity in Europe, 2008. *BMC Infect Dis*, 17, 10:330.
- FILMER D AND PRITCHETT LH. 1998. *Educational Enrollment and Attainment in India: Household Wealth, Gender, Village, and State Effects* World Bank: Washington.
- FILMER, D. AND PRITCHETT, L.H. 2001. Estimating wealth effects without expenditure data – or tears: an application to educational enrollments in states of India. *Demography*, 38, 115-132.
- FINCH, B.K. AND VEGA, W.A. 2003. Acculturation stress, social support, and self-rated health among Latinos in California. *J Immigr Health*, 5(3), 109-117.
- FINNEY, D.J. 1971. *Probit analysis*. 3rd ed. New York: Cambridge University Press. 58-98.
- FINNEY, N. AND SIMPSON, L. 2009. *Sleepwalking to segregation? Challenging myths about race and migration*. The Policy Press: University of Bristol, UK.
- FINUCANE, L. AND MCMULLEN, C.K. 2008. Making Diabetes Self-management Education Culturally Relevant for Filipino Americans in Hawaii. Melissa L. *The Diabetes Educator*, 34; 841.
- FISCELLA, K. AND FRANKS, P. 1997. Poverty or income inequality as a predictor of mortality: longitudinal cohort study. *BMJ*, 314, 1724-8.
- FISCHBACHER, U. 2001. Are people conditionally cooperative? Evidence from a public goods experiment. *Econ Lett*, 71, 397–404
- FISCHBACHER, C. M., HUNT, S., AND ALEXANDER, L. 2004. How physically active are South Asians in the United Kingdom? A literature review. *Journal of Public Health*, 26, 250-258.
- FISCHER, P., REINER, M., AND STRAUBHAAR, S. 1997. Should I stay or should I go? In: Hammar et al. (eds.) *International migration, Immobility and development*. Oxford: Breg Press. 49-90.
- FLASKERUD, J.H. AND HU, L. 1992. Racial/ethnic identity and amount and type of psychiatric treatment. *American Journal of Psychiatry*, 149, 379–384.
- FLORES, G., FUENTES-AFFLICK, E., BARBOT, O., CARTER-POKRAS, O., CLAUDIO, L., LARA, M., MCLAURIN, J.A., PACTER, L., RAMOS-GOMEZ,

- F.J., MENDOZA, F., VALDEZ, R.B., VILLARRUEL, A.M., ZAMBRANA, R.E., GREENBERG, R., AND WEITZMAN, M. 2002. The health of Latino children: urgent priorities, unanswered questions, and a research agenda. *JAMA*, 288(1):82-90.
- FOLCH, C., SANCLEMENTE, C., ESTEVE, A., MARTRÓ, E., MOLINOS, S., AND CASABONA, J. 2009. HIVITS-TS. Social characteristics, risk behaviours and differences in the prevalence of HIV/sexually transmitted infections between Spanish and immigrant female sex workers in Catalonia, Spain. *Med Clin (Barc)*, 132(10), 385-8.
- FOX, H.B. AND MCMANUS, M.A. 2001. A national study of commercial health insurance and Medicaid definitions of medical necessity: what do they mean for children? *Ambul Pediatr* 1, 16-22.
- FRANKS, P. AND CLANCY, C.M. 1997. Referrals of adult patients from primary care: demographic disparities and their relationship to HMO insurance. *J Fam Pract*, 45, 47-53.
- FRENK, J., FREJKA, T., BOBADILLA, J.L., STERN, C., LOZANO, R., SEPÚLVEDA, J., AND JOSÉ, M. 1991. La transición epidemiológica en America Latina. *Bol. Oficina Sanit. Panam*, 111, 485-96.
- FRICK, J.R., BUECHEL, F., KRAUSE, P., AND WAGNER, G.G. 1997. Immigration has increased income inequality and poverty in Germany slightly. *Economic Bulletin*, 34(2), 25-32.
- FRIST, W. 2005. Overcoming Disparities In U.S. Health Care. *Health Affairs*, 24(2), 445-451.
- FUENTES-AFFLICK E, HESSOL NA, PEREZ-STABLE E. 1999. Testing the epidemiologic paradox of low birth weight in Latinos. *Arch Pediatr Adolesc Med*, 153:147-153.
- FUENTES-AFFLICK, E., HESSOL, N.A., AND PEREZ-STABLE, E.J. 1998. Maternal birthplace, ethnicity, and low birth weight in California. *Arch Pediatr Adolesc Med*, 152(11), 1105–1112.
- FUENTES-AFFLICK, E. AND HESSOL, N.A. 2009. Immigration status and use of health services among Latina women in the San Francisco Bay Area. *J Womens Health*, 18(8), 1275-80.
- FUKUNAGA, K. 1990. *Introduction to statistical pattern recognition* (2nd ed.). Orlando, FL: Academic Press. 31-64.
- FURINO, A. 1992. *Health Policy and the Hispanic*. (1st Ed). Boulder: Westview.
- FYLKESNES, K. 1993. Determinants of health care utilization: visits and referrals. *Scandinavian Journal of Social Medicine*, 21, 40-50.

- GALOBARDES, B., LYNCH, J.W., AND DAVEY SMITH, G. 2004. Childhood socioeconomic circumstances and case-specific mortality in adulthood: systematic review and interpretation. *Epidemiol Rev*, 26, 7–21.
- GALOBARDES, B., SHAW, M., LAWLOR, D.A., LYNCH, J.W. AND SMITH, G. 2006a. Indicators of socioeconomic position (part 2). *Journal of Epidemiology and Community Health*, 60, 95–101.
- GALOBARDES, B., SHAW, M., LAWLOR, D.A., LYNCH, J.W. AND SMITH, G. 2006b. Indicators of socioeconomic position (part 1). *Journal of Epidemiology and Community Health*, 60, 7-12.
- GARCIA, A.M. 2009. Occupational health of immigrant workers in Spain [ITSALProject]: key informants survey. *Gac Sanit*, 23, 91–97.
- GARDNER, D.B. 2007. Immigration and health care reform: shared struggles. *Nurs Econ*, 25(4), 235-7.
- GARLAND, J.M., ANDRADE, A.S., PAGE, K.R. 2010. Unique aspects of the care of HIV-positive Latino patients living in the United States. *Curr HIV/AIDS Rep*, 7(3), 107-16.
- GASTON-JOHANSSON, F., HILL-BRIGGS, F., OGUNTOMILADE, L., BRADLEY, V., AND MASON, P. 2007. Patient perspectives on disparities in health care from African-American, Asian, Hispanic, and Native American samples including a secondary analysis of the Institute of Medicine focus group data. *J Natl Black Nurses Assoc*, 18(2), 43-52.
- GEE, E., KOBAYASHI, K., AND PRUS, S. 2003. Examining the healthy migrant effect in Later Life: Findings from the Canadian Community Health Survey. *Social and Economic Dimensions of an Aging Population Research Papers*, 98.
- GIDDENS, A. 1990. *The consequences of Modernity*. Stanford: Stanford University Press.
- GILSON, L. 1998. In defence and pursuit of equity. *Soc Sci Med*, 47, 1891–1896.
- GINZBURG, E. 1991. Access to health care for Hispanics. *JAMA*, 265, 238–241.
- GLAESMER, H., WITTIG, U., BRÄHLER, E., MARTIN, A., MEWES, R., AND RIEF, W. 2009. Are migrants more susceptible to mental disorders? *Psychiatr Prax*, 36(1), 16-22.
- GLANIA, T., LIALIARIS, T., TRIPSANIS, G., AND CONSTANDINIDIS, T.C. 2010. Socio-demographic risks of child injury in a Greek region. *Int J Adolesc Med Health*, 22(2), 263-70.
- GLAZIER, R.H., AGBA, M., MOINEDIN, R., AND SIBLEY, L.M. 2009. Universal Health Insurance and Equity in Primary Care and Specialist Office Visits: A Population-Based Study. *Ann Fam Med*, 7, 396-405.
- GLYMOUR, M., MARIA, J., WEUVE, J., BERKMAN, L., KAWACHI, I., AND ROBINS, J.M. 2005. When Is Baseline Adjustment Useful in Analyses of Change? An

- Example with Education and Cognitive Change. *American Journal of Epidemiology*, 162(3), 267-278.
- GODDARD, M. AND P. SMITH. 2001. Equity of Access to Health Care Services: Theory and Evidence from UK. *Social Science and Medicine*, 53, 1149–62.
- GOLDMAN, L., AND COOK, E. F. 1984. The decline in ischemic heart disease mortality rates. An analysis of the comparative effects of medical interventions and changes in lifestyle. *Annals of Internal Medicine*, 101, 825–836.
- GOMEZ, A. AND DIAZ, L.M. 1988. The current status of knowledge about labor migration from Colombia to Venezuela. *Estud Migr Latinoam*, 3(10), 397-413.
- GOMEZ, H. 2001. Social Determinants of Health. *Salud Publica de Mexico*, 43(4), 382-3.
- GONZÁLEZ, C., ORTIZ, M., CANALS, J., MUÑOZ, L., JARRÍN, I., DE LA HERA, M.G., GARCÍA-SAIZ, A., DEL AMO, J. 2006. Higher prevalence of human papillomavirus infection in migrant women from Latin America in Spain. *Sex Transm Infect*, 82(3), 260-2.
- GONZALEZ, R., REQUEJO, J., HARRIS, N., JYH, K., MERIALDI, M., BUSTREO, F., AND BETRAN, A.P. 2009. Tackling Health Inequities in Chile: Maternal, Newborn, Infant, and Child Mortality Between 1990 and 2004. *Am J Public Health*, 99, 1220-1226.
- GORDON-LARSEN, P., MULLAN, K., WARD, D., POPKIN, B.M. 2003. Acculturation and overweight-related behaviors among Hispanic immigrants to the US: the National Longitudinal Study of Adolescent Health. *Social Science & Medicine*, 57 (11), 2023-2034.
- GRAHAM, H. AND KELLY, M.P. 2004a. *Health inequalities: concepts, frameworks and policy*. NHS Briefing Paper. Available at: www.nice.org.uk/page.aspx?o=502453 [Accessed: November 2010].
- GRAHAM, H. 2004b. Social determinants and their unequal distribution: clarifying policy understandings. *The Milbank quarterly*, 82(1), 101-24.
- GRAHAM, H. 2002. Building an interdisciplinary science of health inequalities: the example of the lifecourse research. *Soc Sci Med*, 55, 2005-16.
- GRASMUCK, S. AND PESSAR, P. 1991. *Between two islands: Dominican international migration*. Berkeley: Univ Calif Press. 45-76.
- GRAVES, P. AND LINNEMAN, P. 1979. Household migration: theoretical and empirical results. *Journal of Urban Economics*, 6, 135-147.
- GREENLAND, S., ROBINS, J.M., AND PEARL, J. 1999. Confounding and Collapsibility in Causal Inference. *Statistical Science*, 14(1), 29-46.
- GREENLEES, C.S. AND SAENZ, R. 1999. Determinants of employment of recently arrived Mexican immigrant wives. *Int Migr Rev*, 33(2), 354-77.

- GREENSLADE, L., PEARSON, M., MADDEN, M. 1995. A good's man fault: alcohol and Irish people at home and abroad. *Alcohol and alcoholism*, 30(4), 407-417.
- GREENWOOD, D.C., MUIR, K.R., PACKHAM, C.J., AND MADELEY, R.J. 1996. Coronary heart disease: a review of the role of psychosocial stress and social support. *J Public Health Med*, 18, 221-31.
- GREENWOOD, M. 1985. Human Migration: theory, models and empirical studies. *Journal of regional Science*, 25(4), 521-44.
- GRIECO, E. AND BOYD, M. 1998. *Women and Migration: incorporating gender into international migration theory*. Florida State University: Center for the study of population.
- GROVE, N.J. AND ZWI, A.B. 2006. Our health and theirs: forced migration, othering, and public health. *Soc Sci Med*, 62(8), 1931-42.
- GROVES, R.M. 2006. Nonresponse rates on nonresponse bias in household surveys. *Publ Opin. Quarterly*, 70, 646-675.
- GROVES, R.M., CIALDINI, R.B. AND COUPER, M. 1992. Understanding the decision to participate in a survey. *Publ Opin Quarterly*, 56, 475-495.
- GROVES, R.M., SINGER, E. AND CORNING, A. 2000. Leverage-saliency theory of survey participation, description and illustration. *Publ. Opin. Q*, 64, 299-308.
- GUARNACCIA, P.J. 1992. Ataques de nervios in Puerto Rico: culture-bound syndrome or population illness? *Medical Anthropology*, 15, 1- 14,.
- GUIMARAES, J. J. AND FISCHMANN. A. 1985. Inequalities in 1980 infant mortality among shanty town residents in the municipality of Porto Alegre, Rio Grande do Sul of Brazil. *Bull. Pan. Am. Health Organ*. 19, 235.
- GUNNELL, J.D., FRANKEL, S., NANCHAHAL, K., BRADDON, F.E., AND DAVEY SMITH, G. 1996. Lifecourse exposure and later disease: a follow-up study based on a survey of family diet and health in pre war Britain (1937-1939). *Public Health*, 10, 85-94.
- GURAK, D.T. AND KRITZ, M.M. 1996. Social context, household composition and employment among migrant and nonmigrant Dominican women. *Int Migr Rev*, 30(2), 399-422.
- GUSHULAK, B.D. AND MACPHERSON, D.W. 2006. The basic principles of migration health: population mobility and gaps in disease prevalence. *Emerg Themes Epidemiol*, 3, 3.
- GUSHULAK, B.D. AND MACPHERSON, D.W. 2011. Health aspects of the pre-departure phase of migration. *PLoS Med*. 8(5), e1001035.
- HAGEN, K., HOLTE, H., TAMBS, K., AND TOR, B. 2000. Socioeconomic Factors and Disability Retirement From Back Pain: A 1983-1993 Population-Based Prospective Study in Norway. *Spine*, 25(19), 2480-2487.

- HALPERN, D., AND NAZROO, J. 2000. The ethnic density effect: results from a national community survey of England and Wales. *International Journal of Social Psychiatry*, 46(1), 34–46.
- HANSARD. H. 1994. *Sub-Group on Health Variations. Official Report of debates in Parliament in the UK*. 248. Available at: http://hansard.millbanksystems.com/written_answers/1994/oct/27/variations-in-health [Accessed: July 2009].
- HARGREAVES, S., FRIEDLAND, J.S., GOTHARD, P., SAXENA, S., MILLINGTON, H., AND ELIAHOO, J. 2006. Impact on and use of health services by international migrants: questionnaire survey of inner city London A&E attenders. *BMC Health Serv Res*, 6, 153.
- HART, C.L., DAVEY SMITH, G., AND BLANE, D. 1998a. Inequalities in mortality by social class measured at 3 stages of the lifecourse. *Am J Public Health*, 88, 471-4.
- HART, C.L., DAVEY SMITH, G., AND BLANE, D. 1998b. Social mobility and 21 year mortality in a cohort of Scottish men. *Soc Sci Med*, 47, 1121-30.
- HENDERSON, C. 2005. Neighbourhood characteristics, individual level, socioeconomic factors and depressive symptoms in young adults: The CARDIA study. *J Epid Comm Health*, 59, 322-328.
- HENNEKENS, C.H., BURING, J.E. AND MAYRENT, S.L. 1987. *Epidemiology in Medicine*. 1st ed. Little Brown & Co: USA. 20-45.
- HERNÁN, M., A., HERNÁNDEZ-DÍAZ, S., WERLER, M.M., AND MITCHELL, A.A. 2002. Causal Knowledge as a Prerequisite for Confounding Evaluation: An Application to Birth Defects Epidemiology. *Am J Epidemiol*, 155(2), 176-184.
- HERNANDEZ, D.J. AND CHARNEY, E. 1998. *From Generation to Generation: The Health and Well-being of Children in Immigrant Families*. Washington, DC: National Academies Press.
- HERNANDEZ, S., SANDOVAL, H., AND DELGAGO, I. 2005. Capitulo 1: Sistema de salud, Las diferencias entre lo público y lo privado. In: Jadue L & Marin F (eds). *Determinantes sociales de la salud, en la perspectiva de la equidad*. Chile: Iniciativa chilena de equidad en salud.
- HERNÁNDEZ-AVILA, M, GARRIDO, F. AND SALAZAR-MARTÍNEZ, E. 2000. Sesgos en estudios epidemiológicos. *Salud pública de México*, 42(5), 438-446.
- HERNÁNDEZ-ROSETE, O., GARCÍA, M., BERNAL, E., CASTAÑEDA, X., AND LEMP, G. 2008. Migración y ruralización del SIDA: relatos de vulnerabilidad en comunidades indígenas de México. *Rev Saúde Pública*, 42(1), 131-8.
- HEUVELINE, P., GUILLOT, M., AND GWATKIN, D. 2002. The uneven tides of the health transition. *Social Science & Medicine*, 55, 313–322.

- HJERN A, HAGLUND B, PERSSON G, ROEN M. 2001. Is there equity in access to health services for ethnic minorities in Sweden? *Eur J Public Health*, 11(2):147-52.
- HOBERTMAN, G. 2007. *Examining State Failure in Chile: The Ethnic Dilemma in the Mapuche Community*. The Midwest Political Science Association. Chile, 42-51.
- HOFFMAN, S., HIGGINS, J.A., BECKFORD-JARRETT, S.T., AUGENBRAUN, M., BYLANDER, K.E., MANTELL, J.E., AND WILSON, T.E. 2011. Contexts of risk and networks of protection: NYC West Indian immigrants' perceptions of migration and vulnerability to sexually transmitted diseases. *Cult Health Sex*, 13(5), 513-28.
- HOGAN, M.D., KUPPER, L.L., AND MOST, B.M. 1978. Alternatives to Rothman's approach for assessing synergism (or antagonism) in cohort studies. *Am J Epidemiol*, 108, 60-7.
- HOLLAND, P., BERNEY, L., BLANE, D., DAVEY SMITH, G., GUNNELL, D.J., AND MONTGOMERY, S.M 2000. Life course accumulation of disadvantage: childhood health and hazard exposure during adulthood. *Soc Sci Med*, 50, 1285-95.
- HOLLINGSHEAD, A.B. 1971. The indiscriminate state of social class measurement. *Social Forces*, 49(4), 563-567.
- HOLZER, C.E., SHEA, B.M., AND SWANSON, J.W. 1986. The increased risk for specific psychiatric disorders among persons of low socioeconomic status. *American Journal of Social Psychiatry*, 20, 259-271,.
- HOSMER, D.W. AND LEMESHOW, S.L. 2000. *Applied logistic regression*. 2nd Ed. New York: Wiley: 260-287.
- HOUGH, R.L., LANDSVERK, J.A., AND KARNØ, M. 1987. Utilization of health and mental health services by Los Angeles Mexican Americans and non-Hispanic whites. *Archives of General Psychiatry*, 44, 702-709.
- HOUWELING, T.A., KUNST, A.E. AND MACKENBACH, J.P. 2003. Measuring health inequality among children in developing countries: does the choice of the indicator of socioeconomic status matter? *Int J Equ Health*, 2(8): 1-12.
- HÜGLER, S. 2008. Work in foreign countries--doctors "without borders?" *Dtsch Med Wochenschr*, 133(47), 41.
- HUGO, G. 1993. Migrant women in developing countries. In United Nations, *Internal Migration of Women in developing countries*. New York: United Nations. 47-76.
- HUISMANN, C., WEILANDT X., AND GREIGER, A. 1997. *Country Reports on Migration and Health in Europe*. Bonn: Wissenschaftliches Institut der Ärzte Deutschlands e.V. 8-23.
- HUMMER, R.A., ROGERS, R.C., AMIR, S.H., FORBES, D., PARKER N., AND FRISBIE, W. 2000. Adult mortality differentials among Hispanic subgroups and non-Hispanic Whites. *Soc Sci Q*, 81, 459-47.

- HWANG, S.S., CAO, Y. AND XI, J. 2010. Project-induced migration and depression: a panel analysis. *Soc Sci Med*, 70(11), 1765-72.
- HYMAN, I. 2001. *Immigration and Health*. Health Policy Working Paper Series. Ottawa, ON: Health Canada.
- IDEAS (Fundacion IDEAS). 1997. *Primera Encuesta chilena sobre intolerancia y discriminacion. Informe y Analisis*, Santiago de Chile.; Universidad de Chile, Programa de Democracia Cultural.
- INE (Chilean National Institute of Statistics). 2002. Estadísticas sociales pueblos indígenas en Chile Censo 2002. INE. Available at: www.ine.cl [Accessed: November 2011].
- INE (Chilean National Institute of Statistics). 2008. *CHILE: Proyecciones y Estimaciones de Población. Total País 1950-2050*. Comisión Económica para América Latina y el Caribe División de Población Centro Latinoamericano y Caribeño de Demografía. INE. Available at: www.ine.cl [Accessed: September 2009].
- INE (Chilean National Institute of Statistics). 2009a. *Síntesis geográfica nacional. Compendio estadístico*. Available at: www.ine.cl [Accessed: November 2009].
- INE (Chilean National Institute of Statistics). 2009b. *CHILE: Compendio estadístico*. Available at: www.ine.cl [Accessed: June 2010].
- INE (Chilean National Institute of Statistics). 2005. *CHILE: Proyecciones y Estimaciones de Población . Total País 1950-2050*. Comisión Económica para América Latina y el Caribe División de Población Centro Latinoamericano y Caribeño de Demografía. INE. Available at: www.ine.cl [Accessed: September 2009].
- INE (Chilean National Institute of Statistics). 2003. *Censo de Población y Vivienda 2002*. Available at: www.ine.cl [Accessed: August2009].
- INE (Chilean National Institute of Statistics) 2006. *Estadísticas vitales Informe Anual*. Las Estadísticas de Chile: Ministerio de Salud, Chile. Available at: www.ine.cl [Accessed: August 2009].
- INEI Peru. 2008. *Encuesta Demográfica y de Salud Familiar. ENDES Continua 2004-2006. Informe Principal*. Instituto Nacional de Estadística e Informática (INEI) and Agencia de los Estados Unidos para el desarrollo internacional (USAID). Available at: http://www.measuredhs.com/aboutsurveys/search/metadata.cfm?surv_id=228&ctry_id=33&SrvyTp=type [Accessed: May 2009].
- INFANTE, A., DE LA MATA, I., LOPEZ-ACUNA, D. 2000. Reforma de los sistemas de salud en América Latina y el Caribe: Situación y tendencias. *Revista Panamericana de la Salud*, 8, 13-20.
- INSTITUTE OF MEDICINE. 2002. Unequal treatment: Confronting racial and ethnic disparities in health care In B. D. Smedley, A. Y. Stith, & A. R. Nelson (Eds.) *Unequal treatment*. Washington, DC: National Academy Press.

- INTERNATIONAL MONETARY FUND. 2010. *Report for selected countries and continents: Latin America and the Caribbean GDP ppp in 2010*. 2011 Available at: <http://www.imf.org/external/pubs/ft/weo/2010/02/weodata/index.aspx> [Accessed January 2011].
- IOM (International Organization for Migration). 2008. *Trata de Personas con Fines de Explotación Sexual y Laboral*. In collaboration with Chilean Ministry of Health. Available at: <http://www.oimchile.cl/Secciones/Areas/RealizacionEstudios.html> [Accessed: January 2009].
- IOM (International Organization for Migration) and MINSAL (Ministerio de Salud de Chile). 2008a. *Migración y salud en Chile. Estudio de Salud Global en población inmigrante en Chile*. Available at: <http://www.oimconosur.org/notas/buscador.php?nota=716> [Accessed: March 2009].
- IOM (International Organization for Migration) and MINSAL (Ministerio de Salud de Chile). 2008b. *Migración y salud en Chile. Estudio de Salud Mental en población inmigrante en la comuna de Independencia*. Available at: <http://www.oimconosur.org/notas/buscador.php?nota=716> [Accessed: March 2009].
- IOM (International Organization for Migration in Chile). 2002. *Estudio diagnóstico y percepción de la migración limitrofe en Chile. Caso Santiago*. Santiago de Chile, Seminario Taller. Available at: <http://www.oimconosur.org/> [Accessed: March 2009].
- IOM (International Organization for Migration in Chile). 2003. *World Migration Report: Managing Migration - Challenges and Responses for People on the Move*. Available at: http://publications.iom.int/bookstore/index.php?main_page=product_info&cPath=37&products_id=22[Accessed5: August 2010].
- IRWIN, A., VALENTINE, N., BROWN, C., LOEWENSON, R., AND SOLAR, O. 2006. The Commission on Social Determinants of Health: Tackling the Social Roots of Health Inequities. *PLoS Med*, 3(6),e106.
- IZAMBERT C. 2010. Europe: Securing legal protection against expulsion for HIV-positive migrants. *HIV AIDS Policy Law Rev*, 15(1):57-8.
- JACKSON, J.E. 1991. *A user's guide to principal component analysis*. 2nd Ed. New York: Springer. 21-86.
- JACKSON, Y., GÉTAZ, L., WOLFF, H., HOLST, M., MAURIS, A., TARDIN, A., SZTAJZEL, J., BESSE, V., LOUTAN, L., GASPOZ, J.M., JANNIN, J., ALBAJAR, N., VINAS, P., LUQUETTI, A., AND CHAPPUIS, F. 2010. Prevalence, clinical staging and risk for blood-borne transmission of Chagas

- disease among Latin American migrants in Geneva, Switzerland. *PLoS Negl Trop Dis*, 4(2), e592.
- JADAD, A.R. AND O'GRADY, L. 2005. How should health be defined? *BMJ*, 337, a2900.
- JADUE, L. AND MARIN, F. 2005. Determinantes sociales de la salud en Chile. En la perspectiva de la equidad. Available at: www.equidadchile.cl [Accessed: March 2009].
- JANN, B. 2008. Multinomial goodness-of-fit: large sample tests with survey design correction and exact tests for small samples. *The stata journal*, 8(2), 147-169.
- JELTOVA, I., FISH, M.C., AND REVENSON, T.A. 2005. Risky sexual behaviors in immigrant adolescent girls from the former Soviet Union: Role of natal and host culture *Journal of School Psychology*, 43(1), 3-22.
- JIMENEZ, J. 1991. Elementos para una política de salud: Problemas y desafíos del sistema de salud chileno. In: Atena E, editor. *Chile: Sistema de Salud en Transición a la Democracia*. Santiago: J. Jiménez org. 193-201.
- JOHNSON, J.V., STEWART, W., HALL, E.M., FREDLUND, P., AND THEORELL, T. 1996. Long-term psycho-social work-environment and cardiovascular mortality among Swedish men. *Am J Public Health*, 86, 324-31.
- JOHNSON, R. AND WICHERIN, D. 2002. *Applied Multivariate statistical analysis*. Fifth Ed.; Pearson Education International: Prentice Hall, US. 10-21.
- JOHNSTON, L.G. AND SABIN, K. 2010. Sampling hard-to-reach populations with respondent driven sampling. *Methodological Innovations*, 5(2), 38-48.
- JOKISCH, B. 2002. Migration and Agricultural Change: The Case of Smallholder Agriculture in Highland Ecuador. *Human Ecology*, 30(4).
- JOLLIFE, I.T. 2002. *Principal component analysis*. 2nd Ed. New York: Springer. 36-54.
- JONNALAGADDA, S. AND DIWAN, S. 2002. Nutrient Intake of First Generation Gujarati Asian Indian Immigrants in the U.S. *Journal of the American College of Nutrition*, 21(5), 372-380.
- JONSSON, D., ROSENGREN, A., DOTEVALL, A., LAAS, G., AND WILHELMSEN, L. 1999. Job control, job demands and social support at work in relation to cardiovascular risk factors in MONICA, Goteborg. *J Cardiovasc Risk*, 6, 379-85.
- JUDGE, G.G., GRIFFITHS, W.E., HILL, R.C., LUTKEPOHL, H., AND LEE, T.C. 1985. *The theory and practice of econometrics*. 2nd Ed. New York: Wiley: 768-772.
- KANDULA, N.R., KERSEY, M., AND LURIE, N. 2004. Assuring the health of immigrants: what the leading health indicators tell us. *Annu Rev Public Health*, 25, 357-376
- KANG, S. 2006. *Frequency of mental disorders in Korean immigrants in the city of São Paulo*. São Paulo. Thesis Presentada en Universidade Federal de São Paulo. Escola Paulista de Medicina. Curso de Psiquiatria e Saúde mental para obtención del

grado de Doutor. Available at: [http://bases.bireme.br/cgi-](http://bases.bireme.br/cgi-bin/wxislind.exe/iah/online/)

[bin/wxislind.exe/iah/online/](http://bases.bireme.br/cgi-bin/wxislind.exe/iah/online/) [Accessed: March 2009].

- KAPLAN, G.A. 2004. What's wrong with social epidemiology, and how can we make it better? *Epidemiol Rev*, 26, 124–35.
- KAPLAN, G. AND T. CAMACHO. 1983. Perceived Health and Mortality: A Nine-Year Follow-up of the Human Population Laboratory Cohort. *American Journal of Epidemiology*, 117, 292.
- KARASEK, R.A. 1988. Job Characteristics in Relation to the Prevalence of Myocardial Infarction in the U.S. *American Journal of Public Health*, 78, 910 -18.
- KARLSEN, S. AND NAZROO, J.Y. 2002. Relation between racial discrimination, social class, and health among ethnic minority groups. *Am J Public Health*, 92, 624–631.
- KARL-TRUMMER, U., NOVAK-ZEZULA, S., AND METZLER, B. 2010. Access to health care for undocumented migrants in the EU: A first landscape of Now Hereland. *Eurohealth*, 16(1), 13-16.
- KARMI, G. 1997. Migration and health in the UK. In: Huismann, A., Weilandt, C., Greiger, B. (eds) *Reports on Migration and Health in Europe*. Wissenschaftliches Institut der Arzte Deuthlands.
- KAUFMAN, J.S., LONG, A.E., LIAO, Y., COOPER, R.S., MCGEE, D.L. 1998. The relation between income and mortality in US blacks and whites. *Epidemiology*, 9, 147-55.
- KAUSHAL, N., AND KAESTNER, R. 2005. Welfare reform and health insurance of immigrants. *Health Services Research*, 40(3), 697–722.
- KAWACHI, I., KENNEDY, B.P., LOCHNER, K., AND PROTHORWSTITH, D. 1997. Social capital, income inequality and mortality. *Am J Public Health*, 87, 1491-8.
- KELSON, G.A. AND DELAET, D.L. 1999. *Gender and immigration*. New York University Press.
- KENNEDY, B.P., KAWACHI, I. AND PROTHORWSTITH, D. 1996. Income distribution and mortality: cross-sectional ecological study of the Robin Hood Index in the USA. *BMJ*, 312, 1004-7.
- KHAN, A., TANAKA, Y., SAITO, H., EBINUMA, H., SEKIGUCHI, H., IWAMA, H., WAKABAYASHI, G., KAMIYA, T., KURBANOV, F., ELKADY, A., AND MIZOKAMI, M. 2008. Transmission of hepatitis B virus (HBV) genotypes among Japanese immigrants and natives in Bolivia. *Virus Research*, 132(1-2), 174-180.
- KINDIG, D.A., SEPLAKI, C.L., AND LIBBY, D.L. 2002. Death rate variation in US subpopulations. *Bulletin of the World Health Organization*, 80, 9-15.
- KINDIG, D.A. 1998. Purchasing population health: aligning financial incentives to improve health outcomes. *Health Services Research*, 33, 223-42.

- KIRKCALDY, B., WITTIG, U., FURNHAM, A., MERBACH, M., AND SIEFEN, R.G. 2006. Health and migration. Psychosocial determinants. *Bundesgesundheitsblatt Gesundheitsforschung Gesundheitsschutz*. (9), 873-83.
- KIRMAYER, L.J., NARASIAH, L., MUNOZ, M., RASHID, M., RYDER, A.G., GUZDER, J., HASSAN, G., ROUSSEAU, C., AND POTTIE, K. 2010. Common mental health problems in immigrants and refugees: general approach in primary care. *CMAJ*, 23(2), 243-9.
- KITAGAWA, E.M. AND HAUSER, P.M. 1973. *Differential mortality in the United States: a study in socioeconomic epidemiology*. Cambridge, MA: Harvard University Press.
- KIVIMAKI, M., LEINO-ARJAS, P., LUUKKONEN, R., RIIHIMAKI, H., VAHTERA, J., AND KIRJONEN, J. 2002. Work stress and risk of cardiovascular mortality: prospective cohort study of industrial employees. *BMJ*, 325, 857-62.
- KLIEWER, E. AND SMITH, K. 1995. Ovarian Cancer Mortality among Immigrants in Australia and Canada. *Cancer Epidemiology, Biomarkers & Prevention*, 4, 453-58.
- KLIEWER, E. 1999. Epidemiology of diseases among migrants. *International Migration*, 141-64.
- KOHATSU, E.L. 2005. Acculturation: Current and future directions. In: R. J. Carter (Ed.), *Handbook of racial-cultural psychology and counseling: Theory and research* (Vol. 1). Hoboken, NJ: Wiley. 207-231
- KOSER, K. 2007. *International Migration*. Oxford Univ Pr: UK.
- KOSSOUDJI, S.A., RANNEY, S.I. 1984. The labor market experience of female migrants: the case of temporary Mexican migration to the U.S. *Int Migr Rev*, 18(4), 1120-43.
- KRIEGER, N., ROWLEY, D.L., HERMAN, A.A., AVERY, B., AND PHILIPS, M.T. 1993. Racism, sexism, and social class: implications for studies of health, disease, and well-being. *Am J Prev Med*, 9(suppl), 82-122.
- KRIEGER, N. 2001a. A glossary for social epidemiology. *J Epidemiology Community Health*, 55, 693-700.
- KRIEGER, N. 2001b. Theories for social epidemiology in the 21st century: an ecosocial perspective. *Int J Epidemiol*, 30, 668-677.
- KRIEGER, N. 1994. Epidemiology and the web of causation: has anyone seen the spider? *Soc Sci Med*, 39(7), 887-903.
- KRIEGER, N. 2003. Latin America Social Medicine: the quest for social justice and public health. *American Journal of Public Health*, 93(12), 1989-91.
- KRUPINSKI, J. 1975. Psychological maladaptations in ethnic concentrations in Victoria. In: I. Pilowsky, Adelaide (eds), *Cultures in collision*. Australian National Association for Mental Health. 49-58.

- KRUPINSKY, J. 1967. Sociological aspects of mental illness in migrants. *Social Science and Medicine*, 1(1), 267-282.
- KUH, D., BEN-SCHLOMO, Y. 1997. *A life course approach to chronic disease epidemiology*. Oxford: Oxford University Press.
- KYOBUTUNGI, C., RONELLENFITSCH, U., RAZUM, O., BECHER, H. 2006. Mortality from cancer among ethnic German immigrants from the Former Soviet Union, in Germany. *Eur J Cancer*, 42, 2577-84.
- LABONTÉ, R. AND SCHRECKER, T. 2007a. Globalisation and Social Determinants of Health: the role of the global marketplace (part 1 of 3). *Global Health*, 3, 1–10.
- LABONTÉ, R. AND SCHRECKER, T. 2007b. Globalisation and Social Determinants of Health: the role of the global marketplace (part 2 of 3). *Global Health*, 3, 1–17.
- LABONTÉ, R. AND SCHRECKER, T. 2007c. Globalisation and Social Determinants of Health: the role of the global marketplace (part 3 of 3). *Global Health*, 3, 1–12.
- LAMADRID- ALVAREZ, S. 1996. Knowledge and fears among Chilean women with regard to the Papanicolaou test. *Bull Pan Am Health Organ*, 30(4), 354-61.
- LANCASTER, H.O. 1990. Mortality and the evolution of Society. In: Verlag (ed), *Expectations of life*, Springer.
- LANDAUER, T.K. AND DUMAIS, S.T. 1997. A Solution to Plato's Problem: The Latent Semantic Analysis Theory of Acquisition, Induction, and Representation of Knowledge. *Psychological Review*, 1 (2), 211-240.
- LANGLEY, G.R., MACLELLAN, A.M., SUTHERLAND, H.J., AND TILL, J.E. 1992. Effect of non-medical factors on family physicians' decisions about referral for consultation. *Canadian Medical Association Journal*, 147, 659-666.
- LANTZ, P.M., LYNCH, J.W., HOUSE, J.S., LEWOSKI, J.M., MERO, R.P., MUSICK, M.A., AND WILLIAMS, D.R. 2001. Socioeconomic disparities in the health change in a longitudinal study of US adults: the role of health risk behaviours. *Soc Sci Med*, 53, 29-40.
- LARRAÑAGA, O. 2005. Las brechas de salud y las desigualdades en el ingreso. In: Jadue & Marin (eds), *Determinantes sociales de la salud en Chile*. Chile: Observatorio Equidad.
- LASSETTER, J. AND CALLISTER, L. 2009. The Impact of Migration on the Health of Voluntary Migrants in Western Societies. *Journal of Transcultural Nursing*, 20(1), 93-104.
- LATTES, A.E., BERTONCELLO, R. 1997. Demographic dynamics, migrants from bordering countries and economic activity in Buenos Aires. *Estud Migr Latinoam*, 12(35), 5-30.

- LECLERE, F.B., JENSEN, L. AND BIDDLECOM, A.E. 1994. Health care utilization, family context, and adaptation among immigrants to the United States. *Journal of Health and Social Behavior*, 35, 370–384.
- LEE, E. 1966. A theory of migration. *Demography*, 3, 47-57.
- LEE, S., MARTINEZ, G., MA, G.X., HSU, C.E., ROBINSON, E.S., BAWA, J. AND JUON, H.S. 2010. Barriers to health care access in 13 Asian American communities. *Am J Health Behav*, 34(1), 21-30.
- LENZ, K., BAUER-DUBAU, K., JELINEK, T. 2006. Delivery of Medical Care for Migrants in Germany: Delay of Diagnosis and Treatment. *J Travel Med*, 13(3), 133-7.
- LEONARDINI, C. 2008. *Relations between the Rapa Nui culture and the influence of the design imposed by Chile for medical interpreting intercultural understanding of health*. VI Congreso Chileno de Antropología. Available at: <http://ichantecolotl.blogspot.com/2008/03/vi-congreso-chileno-de-antropologa.html> [Accessed: April 2009].
- LIBERATOS, P., LINK, B.G., KELSEY, J.L. 1988. The measurement of social class in epidemiology. *Epidemiol Rev*, 10, 87–121
- LINDEBOOM, M. AND VAN DOORSLAER E. 2004. Cut-Point Shift and Index Shift in Self-Reported Health. *Journal of Health Economics*, 23(6), 1083–99.
- LIP, G.Y. 1996. Ethnic differences in public health awareness, health perceptions and physical exercise: implications for heart disease prevention. *Ethnic Health*, 1, 47–53.
- LIPSEGE, M., DIANIN, G., AND DUCKWORTH, E. 1993. A preliminary survey of Italian intravenous heroin users in London. *Addiction*, 88, 1565-72.
- LIPSET, S.M. 1968. Social class. *Int Encycloped Soc Sci*, 15, 298-316.
- LIVINGSTON, I. L., NEITA, M., RIVIERE, L., AND LIVINGSTON, S.L. 2007. Gender, acculturative stress and Caribbean immigrants' health in the United States of America: an exploratory study. *West Indian med*. 56(3), 213-222.
- LLACER, A., ZUNZUNEGUI, M.V., DEL AMO, J., MAZARRASA, L., BOLUMAR, F. 2007. The contribution of a gender perspective to the understanding of migrants' health. *J Epidemiol Community Health*, 61(Suppl_2), ii4-10.
- LLOYD-SHERLOCK, P. 1998. Old age, migration, and poverty in the shantytowns of Sao Paulo, Brazil. *J Dev Areas*, 32(4), 491-514.
- LOPEZ-JACOB, M.J. 2008. Occupational injury in foreign workers by economic activity and autonomous community (Spain 2005). *Rev Esp Salud Publica*, 82, 179–187.
- LOZANO, L. 1992. Foreign agricultural proletariat and seasonal migrations: Haitian workers in the Dominican agriculture. *Poblac Desarro*, (2), 38-67.

- LU, Y. 2008. Test of the 'healthy migrant hypothesis': a longitudinal analysis of health selectivity of internal migration in Indonesia. *Soc Sci Med*, 67(8), 1331-9.
- LURIE, N. 2002. What the federal government can do about the non-medical determinants of health. *Health affairs*, 21(2), 94-106.
- LYNCH, J., SMITH, G.D., AND HILLEMEIER, M. 2001a. Income inequality, the psychosocial environment, and health: comparisons of wealthy nations. *Lancet*, 358, 194-200.
- LYNCH, J., DAVEY SMITH, G., HILLEMEIER, M., RAGHUNATAN, T., AND KAPLAN, G. 2001b. Income inequality, the psycho-social environment and health: a comparison of wealthy countries. *Lancet*, 358, 194-200.
- LYNCH, J.W., KAPLAN, G.A., COHEN, R.D., TUOMILEHTO, J., AND SALONEN, J.T. 1996. Do cardiovascular risk-factors explain the relationship between socioeconomic status, risk of all-cause, cardiovascular mortality, and acute myocardial-infarction? *Am J Epidemiol*, 144, 932-42.
- LYNCH, J.W., KAPLAN, G.A., AND SALONEN, J.T. 1997b. Why do poor people behave poorly? Variation in adult behaviours and psycho-social characteristics by stages of the the socioeconomic lifecourse. *Soc Sci Med*, 44, 809-19.
- LYNCH, J.W., KRAUSE, N., KAPLAN, G.A. TUOMILEHTO, J., AND SALONEN, J.T. 1997a. Workplace conditions, socioeconomic status and the risk of mortality and acute myocardial infarction: The Kuopio Ischemic Heart Disease Risk Factor Study. *Am J Public Health*, 87, 617-22.
- MACINTYRE, S., ELLAWAY, A. AND CUMMINS, S. 2002. Place effects on health: how can we conceptualize, operationalize measure them? *Social Science & Medicine*, 55, 125–139.
- MACKENBACH, J.P., LOOMAN, C.W., AND KUNST, A.E. 1993. Air pollution, lagged effects of temperature and mortality: The Netherlands 1979-87. *J Epidemiol Community Health*, 47, 121-26.
- MACKENBACH, J. P., STRONKS, K., AND KUNST, A. E. 1989. The contribution of medical care to inequalities in health: Differences between socioeconomic groups in decline of mortality from conditions amenable to medical intervention. *Social Science & Medicine*, 29, 369–376.
- MACMAHON, B., COLE, P. AND LIN, T.M. 1970. Age at first birth and breast cancer risk. *Bull WHO*, 43, 209-21.
- MACPHERSON, D., GUSHULAK, B., AND MACDONALD, L. 2007. Health and foreign policy: influences of migration and population mobility. *Bulletin of the World Health Organization*, 85, 200-206.

- MAGALHAES, L., CARRASCO, C., AND GASTALDO, D. 2010. Undocumented Migrants in Canada: A Scope Literature Review on Health, Access to Services, and Working Conditions. *J Immigrant Minority Health*, 12, 132–151
- MAHROUM, S. 2000. High skilled globetrotters: mapping the international migration of human capital. *R & D Management*, 30(1), 23-31.
- MAKENBACH, J.P., KUNST, A.E., VACELAARS, A.E., GROENHOF, F. AND GEURTS, J.M. 1997. Socioeconomic inequalities in morbidity and mortality in western Europe. *Lancet*, 349, 1655-9.
- MALIN, M., AND GISSLER, M. 2009. Maternal care and birth outcomes among ethnic minority women in Finland. *BMC Public Health*, 20, 9:84.
- MALZBERG, N.N. 1964. Mental disease among foreign-born in Canada, 1950-1952, in relation to period of immigration. *Am J Psychiatry*, 120 (10), 971-973,
- MANGA, P., R.W. BROYLES AND D.E. ANGUS. 1987. The Determinants of Hospital Utilization under a Universal Public Insurance Program in Canada. *Medical Care*, 25(7), 658–70.
- MARCELLI, E.A. AND HEER, D.M. 1997. Unauthorized Mexican workers in the 1990 Los Angeles County labour force. *Int Migr*, 35(1), 59-83.
- MARDONES, F. 2004. Algunos antecedentes sobre la inequidad en la situación del adulto mayor en Chile. *Rev Med Chile*, 132, 865-72.
- MARKIDES, K.S., COREIL, J. 1986. The health of Hispanics in the southwestern United States: an epidemiologic paradox. *Public Health Rep*, 101, 253-265.
- MARKUS, A., ROSENBAUM, S., STEIN, R.E., JOSEPH, J. 2006. From SCHIP benefit design to individual coverage decisions. In: *Policy brief*, George Washington University:1-24.
- MARMOT, M. AND BELL, R. 2009. Action on the Health Disparities in the US. Commission on Social Determinants of Health. *JAMA*, 301(11), 1169-71.
- MARMOT, M. AND WILKINSON, R.G. 2001. Psychosocial and material pathways in the relation between income and health: a response to Lynch et al. *BMJ*, 322, 1233-36.
- MARMOT, M. 2004. *Status Syndrome. How your social standing directly affects your health*. Blumsbury: London.
- MARMOT, M. 2010. *Fair society, healthy lives. The Marmot Review*. Available at: <http://www.marmotreview.org> [Accessed: August 2010].
- MARMOT, M., FRIEL, S., BELL, R., HOUWELING, T.A., TAYLOR, S. 2008. Commission on Social Determinants of Health. Closing the gap in a generation: health equity through action on the Social Determinants of Health. *Lancet*, 8, 372(9650):1661-9.
- MARMOT, M. AND WILKINSON, R. 1999. *Social Determinants of Health*. New York: Oxford University Press. 16-91.

- MARMOT, M., AND WILKINSON, R.G. 2004. Psychosocial and material pathways in the relation between income and health: a response to Lynch et al. *BMJ*, 322, 1233-36.
- MARMOT, M. 2010. *Strategic Review of Health Inequalities in England Post 2010 (Marmot Review)*. Global health equity group, UCL research department of epidemiology and public health. Available at: <http://www.ucl.ac.uk/gheg/marmotreview> [Accessed: June 2010].
- MARMOT, M. 1999. Multi-level approaches to understanding social determinants. In: Berkman L, Kawachi I. (eds), *Social Epidemiology*. Oxford, England, Oxford University Press.
- MARMOT, M.G., ADELSTEIN, A.M., AND BULUSU. I. 1984. Lessons from the study of immigrant mortality, *Lancet*, 323, 1455-1457.
- MARMOT, M.G., ADELSTEIN, A.M., BULUSU, L. 1981. Cardiovascular mortality among immigrants to England and Wales. *Postgrad Med J*, 57, 760-762.
- MARMOT, M.G., DAVEY-SMITH, G., AND STANSFIELD, S. 1991. Health Inequalities among British Civil Servants: The Whitehall II Study, *Lancet*, 337(8754), 1387-1393.
- MARMOT, M.G. DAVEY SMITH, G., STANFELD, S., PATEL, C., NORTH, F., HEAD, J., WHITE I., BRUNNER, E. AND FEENEY, A. 1991. Health inequalities among British civil servants: the Whitehall II study. *Lancet*, 337, 138-93.
- MARMOT, M.G., BOSMA, H., HEMINGWAY, H., BRUNNER, E., AND STANSFELD, S. 1994. Contribution of job control and other risk factors to social variations in coronary heart disease incidence. *Lancet*, 350(26), 235-239.
- MARPSAT, M. AND RAZAFINDRATSIMA, N. 2010. Survey methods for hard-to-reach populations: introduction to the special issue *Methodological Innovations*, 5(2), 3-16.
- MARSHALL, K., URRUTIA-ROJAS, X., SOTO, F., AND COGGIN, C. 2005. Health Status and Access to Health Care of Documented and Undocumented Immigrant Latino Women. *Health Care for Women International*, 26, 916-936.
- MARTIN, C.J., PLATT, S.D., AND HUNT, S. 1987. Housing conditions and health. *BMJ*, 294, 1125-7.
- MARTIN, J., AND MATHESON, J. 1999. Responses to declining response rates on government surveys. *Surv. Methodol. Bull*, 45, 33-37.
- MARTINE, G., HAKKERT, R. AND GUZMAN, J.M. 2000. *Aspectos sociales de la migración internacional: consideraciones preliminares*. CEPAL y OIM. Costa Rica. Available at: http://www.eclac.org/publicaciones/xml/2/8852/lcg2124P_5.pdf [Accessed: November 2008].

- MARTINEZ, J. 2003a. *Breve examen de la inmigración internacional en Chile según datos generales del Censo 2002*. International Organisation for Migration in Chile. Available at: www.cimal.cl/publicaciones [Accessed: September 2009].
- MARTÍNEZ, R. 2003b. La reciente inmigración latinoamericana a España, CEPAL, Santiago de Chile, *serie Población y Desarrollo*, 40, LC/L.1922-P.
- MARTINY, A. 2000. *The lack of transparency in the health care sector: squandered resources, improper usage, deception — gateways to corruption*. Transparency International. Available at: http://www.transparency.org/documents/work-papers/health_care.html [Accessed: May 2009].
- MASSEY, D. 1999. International Migration at the Dawn of the Twenty-First Century: The Role of the State. *Population and Development Review*, 25(2): 303-322.
- MASSEY, D. 1990. Social Structure, Household Strategies, and the Cumulative Causation of Migration. *Population Index*, 56(1), 3-26.
- MASSEY, D., ALARCON, R., DURAND, J., AND GONZALEZ, H. 1987. *Return to Aztlan: The social process of international migration from western Mexico*. Berkeley: Univ Calif Press.
- MASSEY, D.S. 1987. Do undocumented migrants earn lower wages than legal immigrants? New evidence from Mexico. *Int Migr Rev*, 21(2), 236-74.
- MATOS, E.L., KHLAT, M., LORIA, D.I., VILENSKY, M., PARKIN, D.M. 1991. Cancer in migrants to Argentina. *Int J Cancer*, 49(6), 805-11.
- MAYR, K. 2003. Immigration and Majority Voting on Income Redistriubtion-Is there a Case for Opposition from Natives?, *Economics working papers 2003-08*, Department of Economics, Johannes Kepler University Linz, Austria. Available at: <http://www.econ.jku.at/> [Accessed: July 2009].
- MCDONALD, J., AND KENNEDY, S. 2005. Ethnicity, Immigration and Cancer Screening: Evidence for Canadian Women. *SEDAP Research Paper No. 145*. Available at: <http://socserv2.socsci.mcmaster.ca/~sedap/p/sedap145.pdf> [Accessed: April 2009].
- MCEWEN, BS. 1998. Protective and damaging effects of stress mediators. *N Engl J Med*, 338, 171-9.
- MCEWEN, M.M. 2005. Mexican immigrants' explanatory model of latent tuberculosis infection. *J Transcult Nurs*, 16(4), 347-55.
- MCGINNIS, J.M., P. WILLIAMS-RUSSO, AND KNICKMAN J.R. 2002. The Case for More Active Policy Attention to Health Promotion. *Health Affairs*, 21(2), 78–93.
- MCISAAC, W., V. GOEL AND D. NAYLOR. 1997. Socioeconomic Status and Visits to Physicians by Adults in Ontario, Canada. *Journal of Health Services Research and Policy*, 2(2), 94–102.
- MCKAY, L., MACINTYRE, S., AND ELLAWAY, A. 2003. *Migration and Health: a review of the international literature*. MRC Social & Public Health Sciences Unit.

- MCKENNA, M.T., MCCRAY, E., AND ONORATO, I. 1995. The epidemiology of tuberculosis among foreign-born persons in the United States, 1986-1993. *N Engl J Med*, 332, 1071-1076.
- MCKEOWN, T., RECORD, R. G., AND TURNER, R. D. 1975. An interpretation of the decline of mortality in England and Wales during the twentieth century. *Population Studies*, 29, 391-421.
- MCKINLAY, J.B., AND MARCEAU, L.D. 1999. A tale of 3 tails. *American Journal of Public Health*, 89, 295-298.
- MEDINA, M.E., NATERA, G., BORGES, G., CRAVIOTO, P., FLEIZ, C., AND TAPIA, R. 2001. From the XXth Century to the third millennium. Addictions and public health: *Drugs, alcohol and society*, 24(4), 3-19.
- MEJIA A, PIZURKI H, AND ROYSTON E. 1979. *Physician and nurse migration: analysis and policy implications. Report on a WHO study*. Geneva, World Health Organization. Available at: www.who.int [Accessed: December 2008].
- MEJIA-ORTEGA, L.M. AND FRANCO-GIRALDO, A. 2007. Latin-American social protection and development models. *Rev. salud pública*, 9(3), 471-483.
- MENDOZA, F. 2009. Health Disparities and Children in Immigrant Families: A Research Agenda. *Pediatrics*, 124, S187-S195.
- MENDOZA, F.S. AND DIXON, L.B. 1999a. The health and nutritional status of immigrant Hispanic children. In: Hernandez DJ, ed. *Children of Immigrants: Health Adjustment and Public Assistance*. Washington, DC: National Academies Press. 187-243.
- MENDOZA, F.S. AND FUENTES-AFFLICK, E. 1999b. Latino children's health and the family-community health promotion model. *West J Med*, 170(2), 85-92
- MENDOZA, F.S., VENTURA, S.J., VALDEZ, R.B. 1991. Selected measures of health status for Mexican-American, mainland Puerto Rican, and Cuban-American children. *JAMA*, 265(2), 227-232
- MENENDEZ, J., GUEVARA, A., ARCIA, N., LEÓN, E., MARÍN, C., AND ALFONSO, J. 2005. Chronic diseases and functional limitation in older adults: a comparative study in seven cities of Latin America and the Caribbean. *Pan American Journal of Public Health*, 17(5), 353-361.
- MERRILL, J. AND OWENS, J. 1986. Ethnic differences in self-poisoning: a comparison of Asian and White groups. *British J of Psychiatry*, 148, 708-712.
- MEXICAN MINISTRY OF FOREIGN AFFAIRS AND U.S. COMMISSION ON IMMIGRATION REFORM. 1998. *Migration between México and the United States, bi national study. Volume 1*. Morgan Printing, US. Available at:

[Accessed: December 2008].

- MEYERS, E. 2000. Theories of International Immigration Policy-A Comparative Analysis. *International Migration Review*, 34(4), 1245-1282.
- MHATRE, S.L. AND R.B. DEBER. 1992. From Equal Access to Health Care to Equitable Access to Health Care: A Review of Canadian Provincial Health Commissions and Reports. *International Journal of Health Services*, 22(4), 645-68.
- MIDEPLAN (Chilean Ministry of Planning). 2006. *CASEN 2006. Encuesta de caracterizacion socioeconomica nacional*. Documento metodologico. Available at: <http://www.MIDEPLAN.cl/casen/index.html> [Accessed: January 2009].
- MIDEPLAN (Chilean Ministry of Planning). 2004. *Serie CASEN 2003. Pobreza, distribucion del ingreso e impacto distributivo del gasto social*. Gobierno de Chile. Available at: http://www.risolidaria.tdata.cl/Portada/Dirseccion/Home_tercer_sector.asp?dir=Documentos_de_Analisis_TS&id=3893 [Accessed: August 2009].
- MIDEPLAN (Chilean Ministry of Planning). 2004. *First national study on disability. National Fund for disability (FONADIS)*. Santiago. Available at: <http://fonadis.cl> [Accessed: January 2011].
- MINSAL (Chilean Ministry of Health). 1999. *Sistematización de estudios de red asistencial: visión nacional. División de Inversiones y Desarrollo de la Red Asistencial. DINRED*. Santiago de Chile: Ministerio de Salud; Retrieved from [\[www.redsalud.gov.cl/\]](http://www.redsalud.gov.cl/) in January 2011.
- MINSAL (Chilean Ministry of Health). 2010. *Encuesta Nacional de Salud Chile. ENS 2009-2010. Tomo V: Resultados*. Available at: www.redsalud.gov.cl/ [Accessed: January 2011].
- MINSAL (Chilean Ministry of Health). 2004. Resumen Ejecutivo Encuesta Nacional de Salud, 2003. *El vigia: boletín de vigilancia en salud pública*. Departamento de Epidemiología Ministerio de Salud de Chile: Chile. Available at: <http://epi.minsal.cl> [Accessed: January 2011].
- MINSAL (Chilean Ministry of Health). 2000. *Políticas de salud y metas ministeriales 2000-2006*. Santiago de Chile: Ministerio de Salud. Available at: <http://epi.minsal.cl> [Accessed: January 2011].
- MINSAL (Chilean Ministry of Health). (2004). *Impacto del piloto AUGE en la atención de salud. Biblioteca del Congreso Nacional de Chile*. Available at: http://www.bcn.cl/carpeta_temas/temas_portada.2005-10-27.7644862447/documentos_pdf.2005-10-28.2320771530 [Accessed: July 2009].

- MINORITY RIGHTS GROUP INTERNATIONAL. 2008. *World Directory of Minorities and Indigenous Peoples - Peru : Aymara and highland Quechua*. Available at: <http://www.unhcr.org/refworld/docid/49749ccbc.html> [Accessed: September 2010]
- MIRDAL, G.M. (1985). The conditions of tightness: the somatic complaints of Turkish migrant women. *Acta Psychiatrica Scandinavica*, 71, 287-296.
- MITCHELL, R., BLANE, D. AND BARTLEY, M. 2002. Elevated risk of high blood pressure: climate and inverse housing law. *Int J Epidemiol*, 31, 831-8.
- MIYASAKA, L.S. 2000. *Mental health of two communities of japanese brazilians: a comparative study in Brazil and in Japan*. São Paulo. Available at: <http://bases.bireme.br/cgi-bin/wxislind.exe/iah/online/> [Accessed: March 2009].
- MLADOVSKY, P. 2007. Migrant health in the EU. Migration and health. *Eurohealth*, 13 (1), 9-11.
- MOLESKY J. 1986. Pathology of Central American refugees. *Migr World Mag*. 14(4):19-23.
- MONTEIRO, C.A., BENICIO, M.H., CONDE, W.L., AND POPKIN, B.M. 2000. Shifting obesity trends in Brazil. *European Journal of Clinical Nutrition*. 54 (4): 342-346.
- MOONEY, GH. 1983. Equity in health care: confronting the confusion. *Eff Health Care*, 1, 179-185.
- MOONEY, G., HALL, J., DONALDSON, C. AND GERRARD K. 1991. Utilisation as a measure of equity: weighing heat. *Journal of Health Economics*, 10, 475-480.
- MOORE, E.G. AND PACEY, M.A. 2002. *Changing Income Inequality and Immigration in Canada 1980-1995*. SEDAP Research Paper No. 85. Available at: <http://socserv2.socsci.mcmaster.ca/~sedap/p/sedap85.pdf> [Accessed: July 2009].
- MOORE EG. AND PACEY MA. 2003. Changing Income Inequality and Immigration in Canada, 1980-1995. *Canadian Public Policy / Analyse de Politiques*, 29, (1), 33-52.
- MORA, J. AND GOMEZ, A. 1980. Colombian migration to the Venezuelan agrarian sector: a binational context. *Tiers Monde*, 21(84), 735-47.
- MORGAN, C., CHARALAMBIDES, M., HUTCHINSON, G., AND MURRAY, R.M. 2010. Migration, ethnicity, and psychosis: toward a sociodevelopmental model. *Schizophr Bull*, 36(4), 655-64.
- MORRILL, R. 1993. Development, diversity, and research demographic variability in the United States. *Annals of the Association of American Geographers*, 83, 406-33.
- MORRIS, J.N., DONKIN, A.J.M., WONDERLING, D., WILKINSON, P., AND DOWLER, E.A. 2002. A minimum income for healthy living. *J Epidemiol Community Health*, 54, 885-9.
- MORRIS, S., SUTTON, M., AND GRAVELLE, H. 2005. *Inequity and inequality in the use of health care in England: an empirical investigation*. CHE Technical Paper Series

27. Centre for health economics, Technical paper series. Available at: <http://www.york.ac.uk/che/> [Accessed: July 2010].
- MOSSEY, J. AND E. SHAPIRO. 1982. Self-Rated Health: A Predictor of Mortality among the Elderly. *American Journal of Public Health*, 72, 800.
- MOYSES, S. 2000. *Identifying noncausal associations: confounding*. In: Szklo M, Nieto J. *Epidemiology. Beyond the Basics*. Geithersburg (MD): Aspen Publishers.
- MUENING, P. AND FAHS, M. 2002. Health status and hospital utilization among immigrants to New York City. *Prev Med*, 35, 225-232.
- MUHIB, F.B., LIN, L.S., STUEVE, A., MILLER, R.L., FORD, W.L., JOHNSON, W.D., SMITH, P.J., and Community Intervention Trial for Youth Study Team. 2001. A venue-based method for sampling hard-to-reach populations. *Public Health Rep*, 116(Suppl 1): 216–222.
- MUHLIN, M. 1979. Mental hospitalisation of the foreign-born and the role of cultural isolation. *International Journal of Social Psychiatry*, 25 (4), 595-605.
- MULLEN, K., WILLIAMS, R., HUNT, K. 1996. Irish descent, religion and alcohol and tobacco use. *Addiction*, 91(2), 243-254.
- MUÑOZ-DE-BUSTILLO, R. AND PÉREZ, J.I. 2010. Use of public health services by Latin American immigrants in Spain. *Salud Publica Mex*, 52(4), 357-63.
- MURPHY, H.B. AND VEGA G. 1982. Schizophrenia and religious affiliation in Northern Ireland. *Psychological Medicine*, 12, 595-605.
- MUSTARD, C.A., DERKSEN, S., BERTHELOT, J.M., WOLFSON, M., AND ROOS, L.L. 1997. Age-specific education and income gradients in morbidity and mortality in a Canadian province. *Soc Sci Med*, 45, 383-97.
- MWAGENI, E. 2002. *Initial Studies on Health Inequalities in the Rufiji River Basin, Coastal Tanzania: Evidence from a Demographic Surveillance System*. Rufiji DSS Equity Study – TEHIP Discussion Paper Number 3.
- NAZROO, J. 2003. The structuring of ethnic inequalities in health: economic position, racial discrimination, and racism. *Public Health matters*, 93(2), 277-284.
- NAZROO, J. 1997. Health and health services. In T. Modood, R. Berthoud, J. Lakey, J. Nazroo, P. Smith, S. Virdee, & S. Beishon (Eds.), *Ethnic minorities in Britain: Diversity & disadvantage*. London: Policy Studies Institute. 224–258.
- NEELEMAN, J., WILSON-JONES, C., AND WESSELY, S. 2001. Ethnic density and deliberate self-harm: a small area study in south east London. *J Epid and Comm Health*, 55, 85-90.
- NERIA, J. 2002. *Maternal child health risks of women from Latin America*. APHA. The Maternal and Child Health Community Leadership Institute. Available at: <http://www.apha.org/ppp/red/LatinAmeric.htm>. [Accessed: December 2008].

- NEWBOLD, K.B. AND DANFORD, J. 2003. Health status and Canada's immigrant population *Social Science & Medicine*, 57(10), 1981-1995.
- NICLAS, F., NAESS, O., AND CLAUSSEN, B. 2007. Area deprivation and its association with health in a cross-sectional study: are the results biased by recent migration? *International Journal for Equity in Health*, 6, 10.
- NIH (National Institutes of Health). 1999. *Trans-NIH Working Group on Global -Health and Climate Change*. Available at: <http://dpcpsi.nih.gov/collaboration/committees.asp> [Accessed: July 2009].
- NORMAN, P., BOYLE, P., AND REES, P. 2005. Selective migration, health and deprivation: a longitudinal analysis. *Soc Sci Med*, 60, 2755-2771.
- NORMAN, S., CASTRO, C., ALBRIGHT, C., AND KING, A. 2004. Comparing acculturation models in evaluating dietary habits among low income Hispanic women. *Ethnicity & Disease*, 14, 399-404.
- NORREDAM, M., GARCIA-LOPEZ, A., KEIDING, N., AND KRASNIK, A. 2010. Risk of mental disorders in family reunification migrants and native Danes: a register-based historically prospective cohort study. *Int J Public Health*, 55(5), 413-9.
- NUBIA, M., MARTIN, E., AND ARIAS, F. 2000. *Psychosocial and cultural effects of the displacement*. Santafé de Bogotá, D.C; Universidad Nacional de Colombia. Available at: <http://bases.bireme.br/cgi-bin/wxislind.exe/iah/online/> [Accessed: March 2009].
- NUÑEZ-CARRASCO, L. 2008. *Living on the margins: illness and health care among Peruvian migrants in Chile*. PhD Thesis Leiden University Medical Centre.
- O'DONNELL, O. AND C. PROPPER. 1991. Equity and Distribution of UK National Health Service Resources. *Journal of Health Economics*, 10, 1-19.
- OBACH, A. 2008. *Characterization of risk factors and vulnerability to HIV / AIDS in ethnic Aymara, Mapuche and Rapa Nui*. VI Congreso Chileno de Antropología. Available at: <http://ichantecolotl.blogspot.com/2008/03/vi-congreso-chileno-de-antropologa.html> [Accessed: April 2009].
- ODEGAARD, O. 1932. Emigration and insanity. A study of mental disease among Norwegian born population in Minnesota. *Acta Psychiatr Neurol*, 7, 1-206.
- OJEDA, V.D., ROBERTSON, A.M., HILLER, S.P., LOZADA, R., CORNELIUS, W., PALINKAS, L.A., MAGIS-RODRIGUEZ, C., AND TRATHDEE, S.A. 2011. A qualitative view of drug use behaviors of Mexican male injection drug users deported from the United States. *J Urban Health*, 88(1), 104-17.
- OLIVER, A. AND MOSSIALOS E. 2004. Equity of Access to Health Care: Outlining the Foundation for Action. *Journal of Epidemiology and Community Health*, 58(8), 655-58.

- OLSEN, W. 2010. *Weak typologies in mixed methods*. Oral presentation given at the Mixed Methods Workshop. 15th June 2010. Manchester University, Manchester.
- OOI, G.L. AND PHUA, K.H. 2007. Urbanization and slum formation. *J Urban Health*, 84 (3 suppl), i27-i34.
- OROZCO, M. 2002. Remittances. Globalisation and Migration. The Impact of family remittances in Latin America. *Latin American Politics and Society*, 44(2), 41-66.
- ORTIZ-HERNANDEZ, L., LÓPEZ-MORENO, S., AND BORGES, G. 2007. Desigualdad sócio-económica y salud mental: revisión de La literatura Latinoamericana. *Cad Saude Publica*, 23(6), 1255-72.
- OSMOND, C., SLATTERY, J.M., AND BARKER, D.P. 1990. *Mortality by place of birth*. In: Britton M (Ed), *Mortality and geography: a review of the mid-1980s, England and Wales*. OPCS Series DS No. 9 London: HMSO. 96-101.
- OYARZO, C. 2000. La descentralización financiera en Chile en la década de los noventa. *Revista Panamericana de la Salud*, 8, 72-82.
- PABLOS-MENDEZ, A. 1994. Letter to the Editor. *JAMA*, 271, 1237-1238.
- PADGETT, D.K., PATRICK, C.P., BURNS, B.J. 1994. Ethnicity and the use of outpatient mental health services in a national insured population. *American Journal of Public Health*, 84, 222–226.
- PAHO (Panamerican Health Organization). 2007. *Salud en las Americas 2007*. Volumen I. Regional. Washington, Organización Panamericana de la Salud (Publicación Científica y Técnica No. 622). Available at: www.ops.org [Accessed: January 2011].
- PAHO (Panamerican Health Organization). 2001. *Informacion para la equidad en salud en Chile*. Oficina Sanitaria Panamericana, Oficina Regional de la Organizacion Mundial de la Salud Representación en Chile. Available at: http://www.bcn.cl/carpeta_temas/temas_portada.2005-10-27.7644862447/documentos_pdf.2005-10-28.2320771530 [Accessed: May 2010].
- PAHO (Panamerican Health Organization). 1998a. *Indicadores/metodologías para medir/establecer equidad en salud*. Documento elaborado por el Programa Especial de Análisis de Salud (SHA) para la reunión de Gerentes en la OPS, con base en el Capítulo 1 del Informe Anual del Director de la OPS. Información para la salud, y presentado en la reunion de Gerentes en la OPS, Washington D.C., 25–30 de octubre de 1999.
- PALLONI, A. AND ARIAS, E. 2004. Paradox lost: explaining the Hispanic adult mortality advantage. *Demography*, 41, 385-415
- PAPPAS, G., QUEEN, S., HADDEN, W., FISHER, G. 1993. The increasing disparity in mortality between socioeconomic groups in the US, 1960 and 1986. *N Engl J Med*, 329, 103-9.

- PARK, K. M. NECKERMAN, J. QUINN, C. WEISS, AND A. RUNDLE. 2008. Place of birth, duration of residence, neighborhood immigrant composition and body mass index in New York City. *International Journal of Behavioral Nutrition & Physical Activity*, 5, 19,
- PATEL, S.P. AND GAW, A.C. 1996. Suicide among immigrants from the Indian subcontinent: a review. *Psychiatr Serv*, 47, 517-21.
- PEAK, C. AND WEEKS, J. 2002. Does community context influence reproductive outcomes of Mexican origin women in San Diego, California? *Immigr Health*, 4(3).
- PEDRAZA, S. 1991. Women and Migration: the social consequences of gender. *Annu Rev Sociol*, 17, 303-25.
- PETER, R., ALFREDSSON, L., HAMMAR, N., SIEGRIST, J., THEORELL, T., AND WESTERHOLM, L. 1998. High effort, low reward, and cardiovascular risk factors in employed Swedish men and women: baseline results from the WOLF study. *J Epidemiol Community Health*, 52, 540-7.
- PHINNEY, J.S., ROMERO, I., NAVA, M., AND HUANG, D. 2001. The role of language, parents, and peers in ethnic identity among adolescents in immigrant families. *J Youth Adolesc*, 30(2), 135–153.
- PHINNEY, J.S. 2003. Ethnic identity and acculturation. In: K. M. Chun, P. B. Organista, & G. Marín (Eds.), *Acculturation: Advances in theory, measurement, and applied research*. Washington, DC: American Psychological Association. 63-81.
- PICKETT, K.E. AND WILKINSON, R.G. 2008. People like us: ethnic group density effects on health. *Etnicity and Health*, 13(4), 321-334.
- PIKHART, H., DRBOHLAV, D. AND DZUROVA, D. 2010. The self-reported health of legal and illegal/ irregular immigrants in the Czech Republic. *Int J Public Health*, 55(5), 401-11.
- PINTO, A. 1981. Undocumented and illegally resident migrant women in Venezuela. *Int Migr*, 19(1/2), 241-60.
- PIZARRO, J. 2002. *Exigencias y posibilidades para políticas de población y migración internacional. El contexto latinoamericano y el caso de Chile*. Serie Población y Desarrollo. Centro Latinoamericano y Caribeño de Demografía (CELADE) - División de Población.
- PIZARRO, J.M. AND VILLA, M. 2005. *International migration in latin america and the caribbean: a summary view of trends and patterns*. United nations expert group meeting on international migration and development. New York, Available at: http://www.un.org/esa/population/meetings/ittmigdev2005/P14_JMartinez_ECLA C.pdf [Accessed: November 2008].

- PLATT, S.D., MARTIN, C.J., HUNT, S., AND LEWIS, C.W. 1989. Damp housing, mould growth and symptomatic health state. *BMJ*, 298, 1673-8.
- POLACHEK, S. AND HORVATH, F. 1977. A cycle-life approach to migration: analysis of the perspicacious peregrinator. In: Ehrenberg R. *Research labour Economics*, Greenwich CT: Jai Press. 103-149.
- POLITZER, R.M., YOON, J., SHI, L., HUGHES, R.G., REGAN, J., GASTON, M.H. 2001. Inequality in America: the contribution of health centers in reducing and eliminating disparities in access to care. *Med Care Res Rev*, 58(2), 234-48.
- PORTES, A., KYLE, D., EATON, W.W. 1992. Mental illness and help-seeking behavior among Mariel Cuban and Haitian refugees in South Florida. *Journal of Health and Social Behavior*, 33, 283–298.
- PORTES, A. AND RUMBAUT, R.G. 2001. *Legacies: The story of the immigrant second generation*. Berkeley, CA: University of California Press.
- PORTESAND, A. AND SENSENBRENNER, J. 1993. Embeddedness and Immigration: Notes on the Social Determinants of Economic Action. *Ajs*, 98 (6), 1320.
- PORTHE, V., AHONEN, E., VASQUEZ, M.L., POPE, C., AGUDELO-SUAREZ, A.A., GARCIA, A.M., AMABLE, M., BENAVIDES, N., BENACH, J., and ITSAL project. 2010. Extending a Model of Precarious Employment: A Qualitative Study of Immigrant Workers in Spain. *American journal of industrial medicine*, 53, 417–424 .
- PORTHE, V., BENAVIDES, F.G., VASQUEZ, M.L., RUIZ-FRUTOS, L., GARCIA, A.M., AHONEN, E., AGUDELO-SUAREZ, A.A., BENACH, J., and proyecto ITSAL. 2009. La precariedad laboral en inmigrantes en situacion irregular en Espana y su relacion con la salud. *Gac Sanit*, 23(Supl 1), 107–114
- PRAKONGSAI, P. 2004. *An application of asset index for measuring household living standards in Thailand*. International Health Policy Program (IHPP) – Thailand.
- PREMJI, S. AND KRAUSE, N. 2010. Disparities by ethnicity, language, and immigrant status in occupational health experiences among Las Vegas hotel room cleaners. *Am J Ind Med*, 53(10), 960-75.
- PRITCHARD, D. 1999. *Nicaragua: uso productivo de las remesas familiares*. CEPAL. Sede Subregional en México City, CEPAL. Sede Subregional en México. Available at: http://minisis.eclacpos.org/scripts/minisa.dll/144/BIB_PROFILE/WEBOPAC_DE T_AACR2_BIB/BIBLIO_CATEG+30.01.44+AND+BIBLIO_EDITION+01?SESSIONSEARCH [Accessed: December 2008].
- PRIVATE COMMUNICATION. 2010. *E-mail messages with PC, AO, OM*. (Leaders of field work of the CASEN survey 2006, confidentiality preserved). January 25th and 26th .

- QUAN, H., WANG, F., SCHOPFLOCHER, D., NORRIS, C., GALBRAITH, P.D., FARIS, P., GRAHAM, M., KNUDTSON, AND M., GHALI, W. 2006. Development and Validation of a Surname List to Define Chinese Ethnicity. *Med Care*, 44(4), 328-33.
- QUIROGA, S.E. 1997. Level of vulnerability of late migrant adolescents. *Rev argent clín psicol*, 6(3), 229-250.
- RADCLIFFE, S.A. 1990. Between hearth and labor market: the recruitment of peasant women in the Andes. *Int Migr Rev*, 24, 229-49.
- RAO, J. N. K., AND SCOTT, A. J. 1981. The Analysis of Categorical Data From Complex Sample Surveys: Chi-Squared Tests for Goodness of Fit and Independence in Two-Way Tables. *Journal of the American Statistical Association*, 76(374), 221–230.
- RAZUM, O., JAHN, A., BLETTNER, M., AND REITMAIER, P. 1999. Trends in maternal mortality ratio among women of German and non-German nationality in West Germany, 1980 to 1996. *Int J Epidemiol*, 28, 919–24.
- RAZUM, O., ZEEB, H., AND ROHRMANN, S. 2000. The ‘healthy migrant effect’-not merely a fallacy of inaccurate denominator figures. *Int J Epidemiol*, 29, 191-2.
- RECHER, A.C. 2002. *Methods for multivariate analysis*. 2nd Ed. New York: Wiley.
- REES, D., MURRAY, J., NELSON, G., AND SONNENBERG, P. 2010. Oscillating migration and the epidemics of silicosis, tuberculosis, and HIV infection in South African gold miners. *Am J Ind Med*, 53(4), 398-404.
- REGEV, T. AND WILSON, D. 2007. *Changes in income inequality across the U.S*, FRBSF Economic Letter, Federal Reserve Bank of San Francisco, issue Sep 21. Available at: <http://ideas.repec.org/a/fip/fedfel/y2007isep21n2007-28.html> [Accessed: July 2009].
- REIJNEVELD, S., & STRONKS, K. 2001. The validity of self-report use of health care across socioeconomic strata: A comparison of survey and registration data. *International Journal of Epidemiology*, 30, 1407–1414.
- REN, X.S. AND AMICK, B.C. 1996. Racial and ethnic disparities in self-assessed health status: evidence from the National Survey of Families and Households. *Ethn Health*, 1, 293–303.
- REYES-ORTIZ, C.A., OSTIR, G.V., PELAEZ, M., AND OTTENBACHER, K.J. 2005. Cross-national comparison of disability in Latin American and Caribbean persons aged 75 and older. *Arch Gerontol Geriatr*, 42(1), 21-33.
- RITSILÄ, J. AND OVASKAINEN, M. 2001. Migration and regional centralization of human capital. *Applied Economics*, 33, 317-325.

- ROBERTS, K.M. 2002. *Social inequalities without class cleavages in Latin America's neoliberal era*. *Studies in Comparative International Development (SCID)*, 36 (4), 3-33.
- ROBERTS, R.O., E.J. BERGSTRALH, I. SCHMIDT AND S.J. JACOBSEN. 1996. Comparison of Self-Reported and Medical Record Health Care Utilisation Measures. *Journal of Clinical Epidemiology*, 49, 989-95.
- RODGERS, D., BEALL, J., AND KANBUR, R. 2011. *Latin American Urban Development into the 21st Century*. Working Paper No. 2011/05. UNU-WIDER, World Institute for Development Economics Research. Available at: <http://bit.ly/mmVPuP> [Accessed: June 2011].
- RODRIGUEZ-ALVAREZ, E. 2008. Sociodemographic variables and lifestyle as predictors of self-perceived health in immigrants in the Basque Country [Spain]. *Gac Sanit*, 22, 404-412.
- RODRIGUEZ, J. AND GONZALEZ, G. 2006. Redistribution of the population and internal migration in Chile: continuity and change according to the last four national housing and population censuses. *Rev. geogr. Norte Gd*, 35, 7-28
- RODRIGUEZ MA, BAUER HM, FLORES-ORTIZ Y, AND SZKUPINSKI-QUIROGA S. 1998. Factors affecting patient-physician communication for abused Latina and Asian immigrant women. *J Fam Pract*, 47(4), 309-11.
- ROER-STRIER, D. AND OLSHTAIN-MANN, O. 1999. To see and not be seen: Latin American illegal foreign workers in Jerusalem. *Int Migr*, 37(2), 413-36.
- ROGERS, R. 1992. Living and dying in the USA: sociodemographic determinants of death among blacks and whites. *Demography*, 29, 287-303.
- ROGERSON, P.A. AND HAN, D. 2002. The effectsof migration on the detection of geographic differences in disease risk. *Social Science & Medicine*, 55, 1817-28.
- ROMANOW, R.J. 2002. *Building on Values: The Future of Health Care in Canada*. Ottawa: Commission on the Future of Health Care in Canada.
- ROOS, N.P. AND MUSTARD, C.A. 1997. Variation in Health and Health Care Use by Socioeconomic Status in Winnipeg, Canada: Does the System Work Well? Yes and No. *Milbank Quarterly*, 75(1), 89-111.
- ROOS, N.P., E. FORGET, R. WALLD AND L. MACWILLIAM. 2004. Does Universal Comprehensive Insurance Encourage Unnecessary Use? Evidence from Manitoba Says 'No'. *Canadian Medical Association Journal*, 170(2), 209-14.
- ROSE, G. 1985. Sick Individuals and Sick Populations. *International Journal of Epidemiology*, 14(1), 32-8.
- ROSENWAIKE, I. AND HEMPSTEAD, K. 1990. Mortality among three Puerto Rican populations: residents of Puerto Rico and migrants in New York City and in the balance of the United States, 1979-81. *Int Migr Rev*, 24(4), 684-702.

- ROSENWAIKE, I. 1987. Mortality differentials among persons born in Cuba, Mexico, and Puerto Rico residing in the United States, 1979-81. *Am J Public Health*, 77(5), 603-6.
- ROSES, M. 2008. *Migración y salud. Discurso de la Directora de la OPS en la ceremonia de apertura. 8va Conferencia Sudamericana de Migraciones* Septiembre 18. Montevideo, Uruguay. Available at: http://www.paho.org/Spanish/D/DSpeech_URU_Migracion_spa_Sep08.htm [Accessed: April 2009].
- ROSS, C.E. AND MIROWSKY, J. 2001. Neighborhood disadvantage, disorder, and health. *J Health Soc Behav*, 42, 258-276.
- ROTHMAN, K.J. AND GREENLAND, S. 1998. *Modern epidemiology*. 2nd ed. Lippincott Williams & Wilkins, Philadelphia. 7--12, 253--260, 2399—342.
- ROTHMAN, K.J. 1976. The estimation of synergy or antagonism. *Am J Epidemiol*, 103, 506-11.
- RUBALCAVA, L., TERUEL, G., THOMAS, D. AND GOLDMAN, N. 2008. The Healthy Migrant Effect: New Findings From the Mexican Family Life Survey. *Am J Public Health*, 98, 78-84.
- RUBENSTEIN, H. 1992. Migration, development and remittances in rural Mexico. *International Migration*. 30(2), 127-53.
- RUIZ, P. 1993. Access to health care for uninsured Hispanics: policy recommendations. *Hospital and Community Psychiatry*, 44, 958–962.
- RUMBAUT, R. 1997. Paradoxes of assimilation. *Sociol Perspect*, 40(3), 483-511.
- RUNCIMAN, W.G. 1966. *Relative Deprivation and Social Justice*. London: Routledge and Kegan Paul.
- SABIN, M., SABIN, K., KIM, H. VERGARA, M., AND VARESE, L. 2006. The mental health status of Mayan refugees after repatriation to Guatemala. *Pan Am. J Public Health*, 19(3), 163-171.
- SACKER, A., BARTJEY, M., FIRTH, D. & FITZPATRICK, R. 2000. Social inequalities in the health of women in England: occupational, material and behavioural pathways. *Soc Sci Med*. 52, 763-81.
- SALAMANCA, D.D., LA RUCHE, G., TARANTOLA, A., DEGAIL, M.A., JEANNEL, D. AND GASTELLU-ETCHEGORRY, M. 2009. Chagas disease in France: estimated number of infected persons and cardiac diseases in 2009, by risk groups. *Bull Soc Pathol Exot*, 102(5), 285-90.
- SANCHEZ, M. 1998. *Historia, teoría y método de la Medicina*. Masson: Chile.
- SANDEFOR, G., WILBUR, S.A. 1981. A dynamic analysis of migration: an assessment of the effects of age, family and career variables. *Demography*, 18, 55-368.

- SANDELL, S. 1977. Women and the economics of family migration. *Review of economics and statistics*, 59, 406-414.
- SAYIL, I. 1984. Psychiatric problems of Turkish labourers in Holland. *Int J Soc Psychiatry*, 30(4), 267-73
- SCHENK, L., NEUHAUSER, K. 2005. Methodological standards for migrant-sensitive epidemiological research. *Bundesgesundheitsblatt Gesundheitsforschung Gesundheitsschutz*, 48(3), 279-86.
- SCHEPPERS, E., VAN DONGEN, E., DEKKER, J., GEERTZEN, J., AND DEKKER, J. 2006. Potential barriers to the use of health services among ethnic minorities: a review. *Family Practice*, 23(3), 325-48.
- SCHMITT, D.R. 1965. Magnitude measures of economic and educational status. *Sociol Q*, 6, 387-91.
- SCHOENFELD, E.R., GREEN, J.M., WU, S-Y., O'LEARY, E., FORTE, F., AND LESKE, C. 2000. Recruiting Participants for Community-Based Research: The Diabetic Retinopathy Awareness Program. *AEP*, 10(7), 432-40.
- SCHRAMM, C. 2006. *What do we know about international migration from the Middle East and North Africa? A Migration Literature Review*. World Bank Middle East and North Africa Region. Available at:
<http://castor.iue.it/RSCAS/Research/SchoolOnEuro-MedMigration/2006pdfs/Paper%20Schramm.pdf> [Accessed: January 2009].
- SCHRECKER, T., LABONTE, R. AND DE VOGLI, R. 2008. Globalisation and health: the need of a global vision. *Lancet*, 372, 1670-76.
- SCHUMACHER, L.B., PAWSON, I.G., AND KRETCHMER, N. 1987. Growth of immigrant children in the newcomer schools of San Francisco. *Pediatrics*, 80(6), 861-868
- SCHWARTZ, S.J., WEISSKIRCH, R.S., ZAMBOANGA, B.L., CASTILLO, L.G., HAM, L.S., HUYNH, Q.L., PARK, I.J.K., DONOVAN, R., KIM, S.J., VERNON, M., DAVIS, M.J., AND CANO, M.A. 2011. Dimensions of acculturation: Associations with health risk behaviors among college students from immigrant families. *Journal of Counseling Psychology*, 58(1), 27-41.
- SCHWARTZ, S. J., UNGER, J. B., ZAMBOANGA, B. L., AND SZAPOCZNIK, J. 2010. Rethinking the concept of acculturation: Implications for theory and research. *American Psychologist*, 65, 237-251.
- SELTEN, J.P. AND SIJZEN, J. 1994. First admission rates for schizophrenia in immigrants to the Netherlands. The Dutch National Register. *Social Psychiatry and Psychiatric Review*, 29(2), 71-77.

- SEPÚLVEDA, C. AND PRADO, R. 2005. Effective cervical cytology screening programmes in middle-income countries: the Chilean experience. *Cancer Detect Prev*, 29(5), 405-11.
- SHAH, C.P. 1994. *Public Health and Preventive Medicine in Canada*, 3rd ed. University of Toronto Press, Toronto.
- SHAI, D. 1991. Cancer mortality in Cuba and among the Cuban-born in the United States: 1979-81. *Public Health Rep*, 106(1), 68-73.
- SHAW, M., DORLING, D. AND MITCHELL, R. 2002. *Health, place and society*. Pearson Education Limited: Edinburgh UK.
- SHAW, R.J., PICKETT, K.E. AND WILKINSON, RG. 2010. Ethnic density effects on birth outcomes and maternal smoking during pregnancy in the US linked birth and infant death data set. *Am J Public Health*, 100(4), 707-13.
- SHEATSLEY, P.B. 1983. Questionnaire construction and item writing. In: Rossi PH, Wright JD, Anderson AB, eds. *Handbook of survey research*. Orlando, FL: Academic Press.
- SHEDLIN, N., DRUCKER, E., DECENA, C.U., HOFFMAN, S., GAURI, B., SHARLENE, B., AND BARRERAS, R. 2006. Immigration and HIV/AIDS in the New York Metropolitan Area. *Journal of Urban Health: Bulletin of the New York Academy of Medicine*, 83(1), 43-58.
- SHEDLIN, M. G. AND DEREN, S. 2002. Cultural factors influencing HIV risk behavior among Dominicans in New York City. *Journal of Ethnicity in Substance Abuse*, 1(1), 71-95.
- SHEWRY, M.C., SMITH, W.C.S., WOODWARD, M. AND TUNSTALL PEDOE, H. 1992. Variation in coronary risk-factors by social-status: results from the Scottish heart health study. *Br J Gen Pract*, 42, 406-10.
- SHIRAKAWA, I., NAKAGAWA, D. AND MIYASAKA, L. 2003. Emigration and mental disorders of Brazilians in Japan . *J. Bras. Psiquiatr*, 52(1), 75-80.
- SIEGRIST, J., KLEIN, D., VOIGT, K.H. 1997. Linking sociological with physiological data: the model of effort-reward imbalance at work. *Acta Physiol. Scand. Suppl*, 640, 112 –116.
- SIEGRIST, J., PETER, R., JUNGE, A., CREMER, P., AND SEIDEL, D. 1990. Low Status Control, High Effort at Work and Ischaemic Heart Disease: Prospective Evidence from Blue-Collar Men. *Social Science & Medicine*, 31, 1127-34.
- SIKKEN, B.J., DAVIS, N., HAYASHI, C., AND OLKKONEN, N. 2010. *The Future of Pensions and Health care in a Rapidly Ageing World: Scenarios to 2030*. World Economic Forum (WEF). Available at: <http://www.weforum.org/reports/future-pensions-and-health-care-rapidly-ageing-world-scenarios-2030> [Accessed: January 2011].

- SIMICH, L., WU, F., AND NERAD, S. 2007. Status and health security: an exploratory study of irregular immigrants in Toronto. *Can J Public Health*, 98, 369–373.
- SIMON, J., MOORE, S. AND UNGAR, S. 1994. *The Economic Consequences of Immigration*. 2nd Ed. Michigan US.
- SINGER, A. AND MASSEY, D.S. 1998. The social process of undocumented border crossing among Mexican migrants. *Int Migr Rev*, 32(3), 561-92.
- SINGH, G.K. AND SIAHPUSH, M. 2001. All-cause and cause-specific mortality of immigrants and native born in the United States. *Am J Public Health*, 91(3), 392-399.
- SINISTERRA, M. 2005. Migración laboral internacional, remesas y crecimiento económico. *Estudios Gerenciales*. 97.
- SITTIG, J., COSSMAN, R., JAMES, W., CAMPBELL, C., BLANCHARD, T., AND COSBY, A. 2007. Persistent Clusters of Mortality in the United States. *American Journal of Public Health*, (97)12, 2148-50
- SMAJE, C. AND LE GRAND, J. 1997. Ethnicity, equity and the use of health services in the British NHS. *Social Science & Medicine*, 45, 485–496.
- SMITH, G.D., HART, C., WATT, G., HOLE, D., AND HAWTHORNE, V. 1998. Individual social class, area-based deprivation, cardiovascular disease risk factors, and mortality: the Renfrew and Paisley Study. *J Epidemiol Community Health*, 52, 399-405.
- SMITH, J.P. 1999. Healthy Bodies and Thick Wallets: The Dual Relation Between Health and Economic Status. *Journal of Economic Perspective*, 13(2), 145-66.
- SNOWDEN, L.R. 1999. *Psychiatric inpatient care and ethnic minority populations*, in *Cross Cultural Psychiatry*. Edited by Herrera JM, LawsonWB, Sramek JJ. Chichester, England, Wiley.
- SNYDER, V., SALGADO, N., CERVANTES, R.C., AND PADILLA, M. 1990. Migration and post-traumatic stress disorders: the case of Mexicans and Centro-Americans in the United States. *Acta psiquiátr. psicol. Am. Lat*, 36(3/4), 137-45.
- SOLAR, O., VEGA, J., CONCHA, M. AND LABBE, J. 2005. Las condiciones laborales y su influencia en la salud de los trabajadores. In: Jadue y Marin, *Determinantes sociales de la salud en Chile*: Chile.
- SOLIS, J.M., MARKS, G., GARCIA, M. 1990. Acculturation, access to care, and use of preventive services by Hispanics: findings from HHANES 1982-84. *American Journal of Public Health*, 80(suppl), 11–19,
- SOLIS, M.T., AGUAYO, F., VARGAS, M., OLCAY, F., PUSCHEL, K., CORVALÁN, A., AND FERRECCIO, C. 2010. Risk factors associated with abnormal cervical cytology among Chilean women: a case control study. *Rev Med Chil*, 138(2), 174-80.

- SOREL, J.E., RAGLAND, D.R., SYME, S.L., AND DAVIS, W.B. 1992. Educational status and blood pressure: the Second National Health and Nutrition Examination Survey, 1976-1980, and the Hispanic Health and Nutrition Examination Survey, 1982-1984. *Am. J. Epidemiol*, 135, 1339-48.
- SORLIE PD, BACKLUND E, JOHNSON NJ, ROGOT E. 1993. Mortality by Hispanic status in the United States. *J. Am. Medical Assoc.* 70: 2464-48
- SOUSA, E., AGUDELO-SUÁREZ, A., BENAVIDES, F.G., SCHENKER, M., GARCÍA, A.M., BENACH, J., DELCLOS, C., LÓPEZ-JACOB, M.J., RUIZ-FRUTOS, C., RONDA-PÉREZ, E., PORTHÉ, V., AND ITSAL project. 2010. Immigration, work and health in Spain: the influence of legal status and employment contract on reported health indicators. *Int J Public Health*, 55(5), 443-51.
- SOUTHERN, D.A., LEWIS, S., MAXWELL, C., DUNN, J.R., NOSEWORTHY, T.W., CORBETT, G., THOMAS, K., AND GHALI, W.A. 2008. Sampling 'hard-to-reach' populations in health research: yield from a study targeting Americans living in Canada. *BMC Medical Research Methodology*, 8, 57.
- SRISKANDARAJAH, D. AND DREW, C. 2006. *Brits abroad: mapping the scale and nature of British emigration*. Executive summary. IPPR.
- STAUFFER, W.M., KAMAT, D., AND WALKER, P.F. 2002. Screening of international immigrants, refugees, and adoptees. *Prim Care*, 29, 879-905.
- STEEH, C., KIRGIS, N., CANNON, B., AND DEWITT, J. 2001. Are they really as bad as they seem?: nonresponse rates at the end of the twentieth century. *J. Off. Statist*, 17, 227-247.
- STEFONI, C. 2002. Mujeres inmigrantes peruanas en Chile. *Papeles de poblacion*, 8(33), 117-144.
- STEFONI, C. 2001. *Representaciones culturales y estereotipos de la migración peruana en Chile*. Available at: <http://bibliotecavirtual.clacso.org.ar/ar/libros/becas/2000/stefoni.pdf> [Accessed: November 2008].
- STEINMETZ, N., BRECKENRIDGE, J., ZEISS, A.M., BRECKENRIDGE, J.N., GALLAGHER, D., AND THOMPSON, L.W. 1985. Solicitation of Elderly Depressives for Treatment Outcome Research: A Comparison of Referral Sources. *Journal of Consulting and Clinical Psychology*, 53(4), 552-4.
- STEPTOE, A., ROY, M.P., EVANS, O., AND SNASHALL, D. 1995. Cardiovascular stress reactivity and job strain as determinants of ambulatory blood pressure at work. *J Hypertens*, 13, 201-10.
- STEPTOE, A. 2000. Stress, social support and cardiovascular activity over the working day. *Int J Psychophysiol*, 37, 299-308.

- STEWART, M.J. 1990. Access to health care for economically disadvantaged Canadians: a model. *Canadian Journal of Public Health*, 81, 450-455.
- STILWELL, B., DIALLO, K., ZURN, P., DAL POZ, M., ADAMS, O., AND BUCHAN, J. 2003. Developing evidence-based ethical policies on the migration of health workers: conceptual and practical challenges. *Human Resources for Health*, 1, 8.
- STODDARD, P. 2009. Risk of smoking initiation among Mexican immigrants before and after immigration to the United States. *Social Science & Medicine*, 69(1), 94-100.
- STRACHAN, D.P., LEON, D.A., AND DODGEON, B. 1995. Mortality from cardiovascular disease among interregional migrants in England and Wales. *BMJ*, 310, 423-427.
- STRONEGGER, W.J., BERGHOLD, A., SEEBER, G.U. 1998. Epidemiologic and statistical interaction models and consequences for regression analysis. *Soz Praventiv med*, 43(6), 312-21.
- STRONKS, K., VAN DE MEHEEN, H., LOOMAN, C.W.N., AND MACKENBACH, J.P. 1997. Cultural, material and psychosocial correlates of the socioeconomic gradient in smoking behaviour among adults. *Prev Med*, 26, 754-66.
- STUART, G.W., KLIMIDIS, S., AND MINAS, I.H. 1998. The treated prevalence of mental disorder amongst women and the Australian-born: community and primary care rates. *Int Journal of Social Psychiatry*, 44(1), 22-34.
- SUBRAMANIAN, S.V., DELGADO, I., JADUE, L. 2003. Income inequality and Health: multilevel analysis of Chilean communities. *J Epidemiol Community Health*, 57, 844-48.
- SUBRAMANIAN, S.V. AND KAWACHI, I. 2004. Income inequality and health: what have we learned so far? *Epidemiol Rev*, 26, 78-91.
- SULLIVAN, T.A. 1984. The occupational prestige of women immigrants: a comparison of Cubans and Mexicans. *Int Migr Rev*, 18(4 Special Issue), 1045-62.
- SUNDQUIST, J., IGLESIAS, E., AND ISACSSON, A. 1995a. Migration and health. A study of Latin American refugees, their exile in Sweden and repatriation. *Scand J Prim Health Care*, 13(2), 135-40.
- SUNDQUIST, J. 1995b. Ethnicity, social class and health. A population-based study on the influence of social factors on self-reported illness in 223 Latin American refugees, 333 Finnish and 126 south European labour migrants and 841 Swedish controls. *Soc Sci Med*, 40(6), 777-87.
- SUNDQUIST, J. 1994. Refugees, labour migrants and psychological distress. A population-based study of 338 Latin-American refugees, 161 south European and 396 Finnish labour migrants, and 996 Swedish age, sex- and education-matched controls. *Soc Psychiatry Psychiatr Epidemiol*, 29(1), 20-4.

- SUNDQUIST, J. 1995c. Living conditions and health. A population-based study of labour migrants and Latin American refugees in Sweden and those who were repatriated. *Scand J Prim Health Care*, 13(2), 128-34.
- SUNDQUIST, J. AND JOHANSSON, S. 1995d. Migration and health: social and medical consequences of exile and repatriation. *Rev. méd. Chile*, 123(4), 426-38.
- SUNDQUIST, J. 2001. Migration, equality and access to health care services. *J Epidemiol Community Health*, 55(10), 691-2.
- SUTTON, M., CARR-HILL, R., GRAVELLE, H., AND RICE N. 1999. Do Measures of Self-Reported Morbidity Bias the Estimation of the Determinants of Health Care Utilization? *Social Science and Medicine*, 49, 867-78.
- SVEINSSON, P. 2009. *Who cares about the white working class? Runymmede Perspectives*. Available at: <http://www.runymmedetrust.org> [Accessed: February 2009].
- SWERDLOW, A.J. 1991. Mortality and cancer incidence in Vietnamese refugees in England and Wales: A follow-up study. *Int J of Epidemiol*, 20, 13-10.
- SYME, S.L. 2004. Social Determinants of Health: the community as an empowered partner. *Preventiv Chronic disease*, 1(1), 1-5.
- SZASZ, I. 1994. Women in labor and migration. The female labor market between 1950 and 1990 and migration of women to Santiago, Chile. *Notas Poblacion*, 22(59), 9-50.
- TAJER, D. 2003. Latin American Social Medicine: Roots, Development During the 1990s, and Current Challenges *Am J Public Health*, 93, 2023-2027.
- TAKENAKA, A. AND PREN, K.A. 2010. Leaving to get ahead: assessing the relationship between mobility and inequality in Peruvian migration. *Lat Am Perspect*, 37(5), 29-49.
- TARLOV, A. 1996. Social Determinants of Health: The sociobiological translation. In: Blane D, Brunner E, Wilkinson R, editors. *Health and social organization*. London: Routledge. 71-93.
- TAYLOR, E. 1999. The New Economics of Labour Migration and the Role of Remittances in the Migration Process. *International Migration*, 37(1), 63-86.
- TEN HAVE, M.L., BIJL, R.V. 2002. Inequalities in mental health care and social services utilisation by immigrant women. *The European Journal of Public Health*, 9, 45-51.
- TENG, L., ROBERTSON, M., BLACKMORE, E., STEWART, D.E. 2007. Health care worker's perceptions of barriers to care by immigrant women with postpartum depression: an exploratory qualitative study. *Arch Womens Ment Health*, 10(3), 93-101.
- TOMA, L. 2001. *Immigration phenomenon and right to health in Italy*. Proceedings of the 6th International Metropolis Conference; November 26-30. Rotterdam. Available at: http://international.metropolis.net/events/rotterdam/papers/1_toma.htm [Accessed: December 2008].

- TONIOLO, P., VAN KAPPEL, L., AKHMEDKHANOV, A., FERRARI, P., KATO, I., SHORE, R., AND RIBOLI, E. 2001. Serum Carotenoids and Breast Cancer. *American Journal of Epidemiology*, 153 (12), 1142-47.
- TOPPELBERG, C.O. AND COLLINS, B.A. 2010. Language, Culture, and Adaptation in Immigrant Children Child and Adolescent. *Psychiatric Clinics of North America*, 19(4), 697-717.
- TORREALBA, R. 1991. The migrant family: subsistence strategies in Dominican families in Venezuela. *Int Migr*, 29(3), 463-75
- TORRES-ALBERTO, M. AND SANZ, B. 2000. Health care provision for illegal immigrants: should public health be concerned? *J Epidemiol Community Health*, 54, 478-479
- TRAD, L AND BOMFIM A. 2003. The migratory process and mental health; breaks and continuity in daily life. *Physis (Rio J.)*, 13(1), 139-156.
- TSAI, J.H., SALAZAR, M.K. 2009. A theoretical model for understanding mental health, substance use, and work performance among Asian immigrants. *AAOHN J*, 57(10), 425-33.
- TSENG, W.S. 2001. *The handbook of cultural psychiatry*. Academic press: San Diego. 695-719.
- TUNG-LIANG, C. 1999. Economic transition and changing relation between income inequality and mortality in Taiwan: regression analysis. *BMJ*, 319, 1162-5.
- TUNSTALL, H, SHAW, M., AND DORLING, D. 2004. Places and Health. *J Epidemiol Community Health*, 58, 6-10.
- TUNSTALL-PEDOE, H., VANUZZO, D., HOBBS, M., MAHONEN, M., CEPAITIS, Z., KUULASMAA, K., & KEIL, U. 2000. Estimation of contribution of changes in coronary care to improving survival, event rates, and coronary heart disease mortality across the WHO MONICA Project populations. *Lancet*, 355, 668-669.
- UCHINO, A., MUTO, T., AND MUTO, S. 2010. Occupational health and safety services for immigrant workers in Japanese workplaces. *Ind Health*, 48(2), 231-5.
- UN (United Nations). 2005. *The ginni coefficient*. Available at: <http://www.scribd.com/doc/328232/United-Nations-Gini-Coefficient> [Accessed: March 2010].
- UN (United Nations). 1998. *Informe Desarrollo Humano en Chile. Las Paradojas de la Modernización*. Santiago, Programa de las Naciones Unidas para el Desarrollo.
- UN (United Nations). 2000. *Replacement Migration: Is It a Solution to Declining and Ageing Populations?* Population Division. Department of Economic and Social Affairs. Available at: <http://www.un.org/esa/population/publications/ReplMigED/Cover.pdf> [Accessed: December 2008].

- UN (United Nations). 2006. *Trends in total migrant stock: the 2005 revision*. Department of Economic and Social Affairs, Population Division. Summarized version. Available at: <http://www.un.org/esa/population/publications/> [Accessed: January 2009].
- UN (United Nations). 2003. *World Migration Managing Migration - Challenges and Responses for People on the Move*. International Organization for Migration.
- UN (United Nations). 2002. *World population monitoring. Reproductive rights and reproductive health*. Department of Economic and Social Affairs. Population Division. New York US.
- UNAIDS (Joint United Nations Programme on HIV/AIDS) and WHO (World Health Organization), 2008. *2008 Report on the Global AIDS Epidemic*. Available at: http://www.unaids.org/en/KnowledgeCentre/HIVData/GlobalReport/2008/2008_Global_report.asp [Accessed: April 2009].
- UNESCO (United Nations Educational, Scientific and Cultural Organization). 1999. *Globalisation and international migration in Latin America and the Caribbean: trends and prospectus for the 21st Century*. Available at: <http://unesdoc.unesco.org/images/0011/001185/118565Eo.pdf> [Accessed: February 2009].
- UNHCR (United Nations High Commissioner for Refugees). 1995. *The state of the world's refugees: in search of solutions*. Oxford University Press. 162-177.
- UNHCR (United Nations High Commissioner for Refugees). 1997. *The state of the world's refugees: a humanitarian agenda*. Oxford University Press.
- UNFPA (United Nations Population Fund). 2005. *Expert Group Meeting. International migration and the millennium development goals. Marrakech, Morocco*. Available at: <http://allafrica.com/sustainable/resources/view/00010724.pdf#page=21> [Accessed: December 2008].
- UN-Habitat 2007. *Enhancing Urban Safety and Security: Global Report on Human Settlements* London: Earthscan.
- URQUÍA, M.L. AND CAGNON, A.J. 2011. Glossary: migration and health. *J Epidemiol Community Health*, 29(2):108-119.
- US BUREAU OF THE CENSUS. 1982. *Statistical abstract of the United States: 1982-83*. Washington, DC: US GPO.
- VAHTERA, J., KIVIMAKI, M., PENTTI, J., AND THEORELL, T. 2000. Effect of change in psychosocial work environment on sickness absence: a seven year follow-up of initially healthy employees. *J Epidemiol Community Health*, 54, 484-93.
- VAN DE MHEEN, H., STRONKS, K., VAN DE BOS, J., MACKENBACH, J.P. 1998a. Does childhood socioeconomic status influence adult health through behavioural factors? *Int J Epidemiol*, 27, 431-7.

- VAN DE MHEEN, H., STRONKS, K., VAN DE BOS, J., MACKENBACH, J.P. 1998b. Role of childhood health in the explanation of Socioeconomic inequalities in early adult health. *J Epidemiol Community Health*, 52, 15-19.
- VAN DOORSLAER, E. AND C. MASSERIA. 2004. *Income-Related Inequality in the Use of Medical Care in 21 OECD Countries*. Paris: Organisation of Economic Co-operation and Development.
- VAN KERM, P. 1998. Simple and multiple correspondence analysis in Stata. *Stata Technical Bulletin*, 42, 210–217.
- VANDER, A. & LINK, B. 1998. Social class, ethnicity, and mental illness: the importance of being more than earnest. *AJPH*, 88(9), 1396-1402.
- VEENSTRA, G., LUGINAAH, I., WAKEFIELD, S., BIRCH, S., EYLES, J., & ELLIOTT, S. 2005. Who you know, where you live: social capital, neighborhood and health. *Social Science & Medicine*, 60, 2799–2818.
- VEGA, J., BEDREGAL, P., JADUE, L., AND DELGADO, I. 2003. *Equidad de Género en el Acceso y Financiamiento de la Atención de Salud en Chile*. Pontificia Universidad Católica de Chile, document de trabajo. Available at: <http://www.escuela.med.puc.cl/deptos/saludpublica/default.html> [Accessed: July 2010].
- VEGA, J., HOLLSTEIN, R.D., DELGADO, I., PÉREZ, J., CARRASCO, S., AND MARSHALL, G. 2001. Socioeconomic Health Inequities in an Intermediate-development nation: Chile, 1985-1996. In: Evans T. Whitehead M, Diderichsen F. Bhuiya A, Wirth M, eds. *Challenging Health Inequalities: From Ethics to Action*. New York: Oxford University Press. 122-37.
- VEGA, W.A. AND AMARO, H. 1994. Latino outlook: good health, uncertain prognosis. *Annu. Rev. Pub. Health*, 15, 39-67
- VEGA, W.A., KOLODY, B., AND AGUILAR-GAXIOLA, S. 1999. Gaps in service utilization by Mexican-Americans with mental health problems. *American Journal of Psychiatry*, 156, 928–934.
- VERDUZCO, I.G. 1995. Mexican migration to the United States: review of a historical process. *Estud Sociol*, 13(39), 73-94.
- VERMEER, B. AND VAN DEN MUIJSENBERGH, M.E. 2010. The attendance of migrant women at the national breast cancer screening in the Netherlands 1997-2008. *Eur J Cancer Prev*, 19(3), 195-8.
- VERROPOULOU, G. AND TSIMBOS, C. 2007. Socio-demographic and health-related factors affecting depression of the Greek population in later life: an analysis using SHARE data. *European Journal of Ageing*, 4(3), 171-181.
- VEUGELERS, P.J. AND A.M. YIP. 2003. Socioeconomic Disparities in Health Care Use: Does Universal Coverage Reduce Inequalities in Health? *Journal of Epidemiology and Community Health*, 57(6), 424–28.

- VIGOTTI, M.A., CISLAGHI, C., BALZI, D., GIORGI, D., LA VECCHIA, C., MARCHI, M., DECARLI, A., AND ZANETTI, R. 1988. Cancer mortality in migrant populations within Italy. *Tumori*, 74(2), 107–128.
- VILLA, M. AND MARTÍNEZ, J. 2001. *El mapa migratorio internacional de América Latina y el Caribe: patrones, perfiles, repercusiones e incertidumbres*. CELADE y CEPAL. Available at: <http://www.eclac.org> [Accessed: January 2009].
- VIRTANEN, M. 2005. Temporary employment and health: a review. *Int J Epidemiol*, 34, 610–622.
- VRIJKOTTE, T.G.M., VAN DOORNEN, L.P.J., AND DE GEUS, E.J.C. 1999. Work stress and metabolic and hemostatic risk factors. *Psychosom Med*, 61, 796-805.
- VYAS, V. AND KUMARANAYAKE, L. 2006. *Constructing socioeconomic status indices: how to use PCA?* University Oxford Press and The London School of Hygiene and Tropical Medicine.
- WADSWORD, M.E.J. 1997. Health inequalities in the lifecourse perspective. *Soc Sci Med*, 44, 859-70.
- WADSWORD, M.E.J. 1986. Serious illness in childhood and its association with later life achievements. In Wilkinson RG (ed). *Class and Health*. London: Tavistock. 50-74.
- WALKER, A.M. 1981. Proportion of disease attributable to the combined effect of two factors. *Int J Epidemiol*, 10, 81-5. 12.
- WALKER, R.T., PERZ, S., CALDAS, M. AND TEXEIRA DA SILVA, L.G. 2002. Land use and land cover change in forest frontiers: the role of household life cycles. *International Regional Science Review*. 25(2), 169–199.
- WANG, B., LI, X., STANTON, B., AND FANG, X. 2010. The influence of social stigma and discriminatory experience on psychological distress and quality of life among rural-to-urban migrants in China. *Soc Sci Med*, 71(1), 84-92.
- WANG, W., WANG, J., ZHAO, Q., DARLING, N.D., YU, M., ZHOU, B., AND XU, B. 2011. Contribution of rural-to-urban migration in the prevalence of drug resistant tuberculosis in China. *Eur J Clin Microbiol Infect Dis*, 30(4), 581-6.
- WARNER, T.D., FISHBEIN, D.H., KREBS, C.P. 2010. The risk of assimilating? Alcohol use among immigrant and U.S.-born Mexican youth. *Social Science Research*, 39(1), 176-186.
- WEBER, M. 1946. Class, status and party. In: Gerth H, Mills CW, eds. *From Max Weber: essays in sociology*. New York: Oxford University Press.
- WEIN, S.M., KUZANOVIC, Y., AND BESIC, S. 2004. Family consequences of refugee trauma. *Fam Process*, 43(2), 147–160
- WEITOF, R., GULLBERG, A., HJERN, A., AND ROSÉN, M. 1999. Mortality statistics in immigrant research: method for adjusting underestimation of mortality. *Int J Epidemiol*, 28, 756–63.

- WHITEFORD, P. 1991. Are immigrants overrepresented in the Australian social security system? *J Aust Popul Assoc*, 8(2), 93-109.
- WHITEHEAD, M. 1991. The Concepts and principles of equity in health. *Health Promotion International*, 6(3), 217-28.
- WHITEHEAD, M. 1994. Who cares about equity in the NHS? *British Medical Journal*, 308, 1284–1287.
- WHO (World Health Organization). 1978. *Declaration of Alma-Ata. International Conference on Primary Health Care*, Alma-Ata, USSR, 6-12 September. Available at: www.who.int/hpr/NPH/docs/declaration_almaata.pdf [Accessed: May 2010].
- WHO Regional Office for Europe (World Health Organization). 2006. *Health Worker Migration in the European Region: Country Case Studies and Policy Implications*. Available at: <http://www.euro.who.int/document/e88366.pdf> [Accessed: April 2009].
- WHO (World Health Organization). 2000. *The World Health Report 2000: health systems: improving performance*. World Health Organization, 10-17.
- WHO (World Health Organization). 2000. *Clasificación Internacional del Funcionamiento, de la discapacidad y de la Salud*. Grupo de Clasificación, Evaluación, Encuestas y Terminología, World Health Organization.
- WHO (World Health Organization). 2001. *International Classification of Function, Disability and Health*, second version. World Health Organization.
- WHO (World Health Organization). 2008. *Subsanar las desigualdades en una generación. Alcanzar la equidad sanitaria actuando sobre los determinantes sociales de la salud*. Report from the World Health Organization Commission on Social Determinants of Health.
- WHO (World Health Organization). 2004. *The world health report 2004—changing history*. Available at: www.who.int/whr/2004/en [Accessed: March 2009].
- WILD, S. AND MCKEIGUE, P. 1997. Cross sectional analysis of mortality by country of birth in England and Wales, 1970–92. *BMJ*, 314, 705–10.
- WILD, S.H., FISCHBACHER, C., BROCK, A., GRIFFITHS, C., AND BHOPAL, R. 2007. Mortality from all causes and circulatory disease by country of birth in England and Wales 2001–2003. *Journal of Public Health*, 29(2), 191–198.
- WILKINSON, R.G. 1994. The epidemiological transition: from material scarcity to social disadvantage? *Daedalus*, 123(4), 61-67.
- WILKINSON, R.G. AND PICKETT, K.E. 2006. Income inequality and population health: a review and explanation of the evidence. *Soc Sci & Med*, 62, 1768-84.
- WILKINSON, R.G. AND PICKETT, K.E. 2009. *The Spirit Level, Why More Equal Societies Almost Always Do Better*. Penguin Books Ltd (United Kingdom).

- WILKINSON, R.G. 2000. Deeper than “neoliberalism”. A reply to David Colburn. *Social Science & Medicine*. 51, 997-1000.
- WILKINSON, R.G. 2004. Why is violence more common where inequality is greater? *Annals New York Academy of Sciences*. 1-8.
- WILKINSON, R.G. 2006. The impact of inequality. *Social research*, 73(2), 711-732.
- WILKINSON, R.G. 1996. *Unhealthy societies. The afflictions of inequality*. London: Routledge.
- WILLIAMS, A., CULYER, A.J., AND MAYNARD, A. 1997. *Being reasonable about the economics of health: selected essays by Alan Williams*. Cheltenham: Edward Elgar. 333-9.
- WILLIAMS, D., AND COLLINS, C. 1995. US socioeconomic and racial differences in health: patterns and explanations. *Ann Reviv Sociol*, 21, 349-386.
- WILLIAMS, A. 1997. The rationing debate: rationing health care by age: the case for. *British Medical Journal*, 314, 820-37.
- WIMMER, A. AND SCHILLER, N.G. 2002. Methodological Nationalism and Beyond: Nation-State Building, Migration and the Social Sciences. *Global Networks*, 2 (4), 301–34.
- WINEGARDEN, C.R. AND BOON, KL. 1993. Undocumented immigration and income inequality in the native-born population of the US: econometric evidence. *Applied Economics*, 2525(2), 157 – 163.
- WOLFF, H., JANSSENS, J.P., BODENMANN, P., MEYNARD, A., DELHUMEAU, C., ROCHAT, T., SUDRE, P., COSTANZA, M.C., GASPOZ, J.M., MORABIA, A. 2010. Undocumented migrants in Switzerland: geographical origin versus legal status as risk factor for tuberculosis. *J Immigr Minor Health*, 12(1), 18-23.
- WOLFF, H., LOURENÇO, A., BODENMANN, P., EPINEY, M., UNY, M., ANDREOLI, N., IRION, O., GASPOZ, J.M., AND DUBUISSON, J.B. 2008. Chlamydia trachomatis prevalence in undocumented migrants undergoing voluntary termination of pregnancy: a prospective cohort study. *BMC Public Health*, 24(8):391.
- WOLFFERS, I., VERGHIS, S., MARIN, M. 2003. Migration, human rights, and health. *Lancet*, 362(9400), 2019-20.
- WOLFSON, M., ROWE, G., GENTLEMAN, J.F., AND TOMIAK, M. 1993. Career earnings and deaths: a longitudinal analysis of older Canadian men. *J Gerontol*, 48, 167-79.
- WONG, W.C., YIM, Y.L., AND LYNN, H. 2011. Sexually transmitted infections among female sex workers in Hong Kong: the role of migration status. *J Travel Med*, 18(1), 1-7.

- WOODWARD, A.M., DWINELL, A.D., AND ARONS, B.S. 1992. Barriers to mental health care for Hispanic Americans: a literature review and discussion. *Journal of Mental Health Administration*, 19, 224–236.
- WORLD BANK. 2003. *Measuring living standards: Household consumption and wealth indices. Quantitative techniques for health equity analysis—Technical Note 4*. Washington DC: World Bank.
- WORLD BANK. 2005. *World development indicators*. Washington, DC: World Bank. Available at: www.cpc.unc.edu/measure/publications/pdf/wp-99-13.pdf [Accessed. May 2011].
- WRATTEN, E. 1995. *Conceptualizing urban poverty*. *Environ Urban* 7:11–36.
- WU, Z., AND SCHIMMELE, C. 2005. The healthy migrant effect on depression: variation over time? *Canadian Studies in Population*, 32(2), 271-295.
- XIRIDOU, M., VAN VEEN, M., COUTINHO, R., AND PRINS, M. 2010. Can migrants from high-endemic countries cause new HIV outbreaks among heterosexuals in low-endemic countries? *AIDS*, 24(13), 2081-8.
- YITZHAKI, S. 1979. Relative Deprivation and the Gini Coefficient. *The Quarterly Journal of Economics*, 93 (2), 321-324.
- YUSUF, S., REDDY, S., OUNPUU, S., AND ANAND, S. 2001. Global burden of cardiovascular diseases, part I: general considerations, the epidemiologic transition, risk factors, and impact of urbanization. *Circulation*, 104, 2746-2753.
- ZABIN, C., AND HUGHES, S. 1995. Economic integration and labor flows: stage migration in farm labor markets in Mexico and the United States. *Int Migr Rev*, 29(2), 395-422.
- ZAMAN, M.J., DE MOLA, C., GILMAN, R.H., SMEETH, L., AND MIRANDA, J.J. 2010. The prevalence of angina symptoms and association with cardiovascular risk factors, among rural, urban and rural to urban migrant populations in Peru. *BMC Cardiovasc Disord*, 8, 10:50.
- ZHONG, X., CLARK, T, AND SASSEN, S. 2007. Globalisation, Producer Services and Income Inequality across US Metro Areas. *International Review of Sociology*, 17(3), 385 _391.
- ZILBER, N. AND LERNER, Y. 1996. Psychological Distress Among Recent Immigrants From the Former Soviet Union to Israel, II. The Effects of the Gulf War. *Psychological Medicine*. 26(3), 503-510.
- ZIMMERMAN, C., KISS, L., AND HOSSAIN, M. 2011. Migration and health: a framework for 21st century policy-making. *PLoS Med*, 8(5), e1001034.
- ZITKO, P. AND CABIESES, B. 2011. Socioeconomic position as a determinant of disability in Chile. *Disability and Health*. (in press)

ZLOTNIK, H. 1995. The South-to-North Migration of Women. *International Migration*

Review, 29(1), 229-254. .

ZUBER, P.L., MCKENNA, M.T, BINKIN, N.J., ONORATO, I.M., CASTRO, K.G. 1997.

Long-term risk of tuberculosis among foreign-born persons in the United States.

JAMA, 278, 304-7.