Drinking in older adults: the role of changes in health and other influences on alcohol consumption over time

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Glossary

Musculoskeletal conditions – a group of diseases that affect muscles and the skeletal system
Off-trade – alcohol purchased for consumption elsewhere, for example at home
On-trade – alcohol purchased for consumption in pubs, hotels, restaurants, bars and clubs
Pharmacodynamic – interactions in which alcohol enhances the effects of medication
Pharmacokinetic – interactions in which alcohol interferes with the metabolism of medication
Upper aero-digestive tract – term encompassing the oral cavity, larynx, pharynx and oesophagus

Abbreviations

ABV	–	Alcohol by Volume
ADLs	–	Activities of Daily Living
AUDIT	–	Alcohol Use Disorders Identification Test
BAC	–	Blood Alcohol Concentration
BHPS	–	British Household Panel Survey
BMA	–	British Medical Association
C1CM	–	Cohort 1 Core Members
CAPI/SI/TI	–	Computer Assisted Personal /Self /Telephone Interviewing
CAQDAS	–	Computer Aided Qualitative Data Analysis Software
COM-B	–	Capability Opportunity Motivation – Behaviour
CVD	–	Cardiovascular Disease
ELSA	–	English Longitudinal Study of Ageing
FIMD	–	Fully Integrated Mixed Design
GF	–	Graduated Frequency
GLF	–	General Lifestyle Survey
GRAMMS	–	Good Reporting of a Mixed Methods Study
HBM	–	Health Belief Model
HSE	–	Health Survey for England
IADLs	–	Instrumental Activities of Daily Living
IMB	–	Information Motivation Behaviour
IQR	–	Inter Quartile Range
LFS	–	Living Costs and Food Survey
MAR	–	Missing at Random
MCAR	–	Missing Completely at Random
NatCen	–	National Centre for Social Research
NHS	–	National Health Service
NIAAA	–	National Institute on Alcohol Abuse and Alcoholism
NMAR	–	Not Missing at Random

NS-SEC	–	National Statistics – Socioeconomic Class
Opinions	–	The Opinions Survey
OR	–	Odds Ratio
PMT	–	Protection Motivation Theory
QF	–	Quantity Frequency
QUAL	–	Qualitative
QUAN	–	Quantitative
ScHARR	–	School of Health and Related Research
SCT	–	Social Cognitive Theory
SES	–	Socioeconomic Status
TLFB	–	Time Line Follow Back
TPB	–	Theory of Planned Behaviour
TRA	–	Theory of Reasoned Action
TTM	–	Transtheoretical Model
UK	–	United Kingdom
US/USA	–	United States of America

Abstract

Introduction

Alcohol consumption is common among older adults in England. Older adults may benefit from a reduction in alcohol consumption after health deterioration as drinking alcohol can worsen the symptoms of certain long-term conditions, affect the progression of diseases and interact with medications. The current research explores the factors that affect alcohol consumption change in older adults, focusing on how and why drinking behaviour is maintained or modified after health and non-health life changes.

Methods

The study design was integrated mixed methods. Secondary data analysis of the English Longitudinal Study of Ageing (ELSA) examined the association between health and non-health changes and drinking frequency and volume change in 5,892 adults aged over 50 years. Qualitative interviews were used to explore the reasons for and processes of drinking change in 19 older adults who had been diagnosed with a long-term condition. Analysis used a thematic approach and findings were organised within a 'Capability Opportunity Motivation – Behaviour' framework.

Results

Alcohol consumption was relatively stable among interview and ELSA participants; however, some older adults did modify their drinking over time. Alcohol consumption change was associated with both health and non-health changes, resulting in decreased stability of consumption over time. The process of behaviour change was facilitated by reflection on information about drinking and health and negative tangible experiences of the health consequences of drinking.

Discussion

Older adults in England enjoy consuming alcohol and cite a number of social and therapeutic reasons for drinking. Health and non-health changes decreased drinking stability for some older adults, with reflection on the costs and benefits of drinking within personal belief systems an important component of the change process. The highly habitual nature of alcohol consumption in older adults poses a challenge to healthcare professionals attempting to motivate behaviour change in this population.

Part I: Introduction and Literature Review

Chapter 1: Introduction

1.1 Background

Alcohol consumption is a common social practice in England and has been a part of British culture for centuries. Whilst many adults drink alcohol in moderation, in 2010 26% of men and 17% of women exceeded recommended weekly drinking limits (of 21 and 14 units respectively) whilst 19% of men and 13% of women were classified as binge drinkers based on their maximum alcohol intake on the heaviest drinking day in the previous week (Office for National Statistics 2012a). The implications of alcohol misuse can be widespread and include the individual, family and friends, and society, through health problems, relationship breakdown, crime, antisocial behaviour and loss of productivity (Strategy Unit 2004). The burden of alcohol-related ill health in England has been steadily increasing over recent years, with the number of hospital related admissions increasing from 510,800 in 2002/03 to 1,057,000 in 2009/10 (The NHS Information Centre 2011b). A dose response relationship has been identified between increasing alcohol consumption and a range of chronic and acute health problems including various cancers, haemorrhagic stroke, chronic pancreatitis, injuries and violence (Corrao et al. 2004). In contrast to the harms associated with alcohol misuse, moderate drinking can confer health and psychosocial benefits. Psychosocial benefits include mood enhancement, stress reduction and sociability, whilst health benefits have been found for cerebrovascular disease, diabetes mellitus and ischaemic heart disease (Ferreira & Weems 2008; Rehm et al. 2007; Peele & Brodsky 2000).

Alcohol research often focuses on younger people, but there are many reasons to be concerned about older drinkers too. Data from the General Lifestyle Survey indicates that men and women aged 65 years and older are most likely to report drinking 'almost every day' (Office for National Statistics 2012a). Additionally, average weekly alcohol consumption among older adults steadily increased in the period to 2006, although since 2008 data suggests a slight decline in average consumption in this population (Office for National Statistics 2012a). Older adults are at risk of the same negative outcomes from the misuse of alcohol as the general adult population as well as problems that are more specific to drinking in old age. For example, with increasing old age as levels of morbidity rise and the risk of falls increases, the costs of drinking may outweigh health benefits. However, the potential risks of drinking alcohol should be measured against the potential psychosocial benefits described above. There is currently a dearth of research exploring risky drinking behaviour in this population or

the costs and benefits of alcohol consumption and drinking change in older adults, making it difficult to effectively address alcohol misuse problems in this population.

Alcohol consumption is common among older adults in England, with abstention rates reported at just 10-14% of men and 20-26% of women aged 65 years and older (Robinson & Harris 2011; Lang et al. 2007). The majority of older adults who drink alcohol are considered to be low-level or non hazardous consumers, but 19.3% of those aged 55-64 years, 14.1% of those aged 65-74 years, and 10.5% of those aged 75 years and older were classed as hazardous or harmful drinkers when assessed using the Alcohol Use Disorders Identification Test (The NHS Information Centre 2009). Research on the drinking patterns of older adults in England has focused on gender variations in consumption so at present patterns of drinking by socioeconomic status, marital status and income are largely unexplored (The NHS Information Centre 2009).

A reduction in total consumption or abstention from alcohol is common as older adults age (e.g. Ilomäki et al. 2009; Moos et al. 2005; Eigenbrodt et al. 2001; Glass et al. 1995), although the proportion whose drinking declines over time does vary between countries and studies. For example, three US studies following adults aged 51-65 years at baseline reported substantially different proportions of people as changing their drinking over time, from approximately 30% of men and women (Molander et al. 2010; Perreira & Sloan 2001) to 46% of women and 67% of men (Glass et al. 1995). The highest proportion of changers was reported in the shortest follow-up period, which could indicate that this sample had a higher propensity to change or perhaps that the longer follow-up periods missed transient changes in consumption. Variations in drinking change over time are highlighted by the number of studies reporting diverse drinking trajectories (e.g. Platt et al. 2010; Gee et al. 2007; Moore et al. 2005). Such diverse findings demonstrate the need for a greater understanding of the timing, direction and magnitude of changes in older peoples' drinking.

Explanations for why adults might change their alcohol consumption as they age are abundant (Moos et al. 2005). Decreasing socialisation in old age may lead to a reduction in alcohol consumption (Stall 1987). Conversely, retirement may provide greater opportunities for alcohol consumption due to reduced role restrictions or involvement in drinking subcultures (Bacharach et al. 2004). Older adults may experience a decline in income upon retirement (Bardasi et al. 2002) making alcohol less affordable. However, disposable income during retirement has increased over time with retired adults today having a disposable income that is on average over two and a half times higher in real terms than in 1977 (Office for National Statistics 2012b). Given the linear relationship between income and expenditure

on alcohol (Booth et al. 2008) rising levels of disposable income may result in increased drinking.

With increasing age the risk of experiencing negative outcomes from consuming a given level of alcohol is likely to increase. Moderate or low levels of alcohol consumption among older adults may result in deleterious health outcomes not present in younger adults due to ageing associated bodily changes; for example advancing ill health, changes in levels of body fat and body water, inefficiency of liver enzymes and decreased hepatic blood flow that results in a higher blood alcohol concentration from a given amount of alcohol (Chrome et al. 2012; Simmill-Binning et al. 2009; O'Connell et al. 2003; Dufour & Fuller 1995). Morbidity and premature mortality may also contribute to reductions in drinking as individuals with worse health may drink less, and heavier drinkers may be more likely to die at a younger age, and are thus less likely to be represented in older samples (Stall 1987). There is evidence that when people experience problems with their health (e.g. diagnosis with a long-term condition or admission to hospital) they are likely to reduce their alcohol intake or abstain (e.g. Molander et al. 2010; Glass et al. 1995). Reasons for a decrease in consumption might relate to disengagement from drinking settings due to poorer health, a reduced tolerance of alcohol, being prescribed medications, or advice from healthcare professionals (Krause 1995). Early research in this area dates to the 1980s when British men diagnosed with ischaemic heart disease or newly prescribed regular medical treatment were found to be more likely to reduce their drinking or quit (Shaper et al. 1988; Wannamethee & Shaper 1988), with further evidence accumulating since then (e.g. Moos et al. 2005; Walton et al. 2000; Glass et al. 1995).

Changes in drinking are not necessarily linear or applicable to whole populations. For example, older men and women respond differently to health events with women more likely to engage in less frequent alcohol consumption due to health stressors (Brennan et al. 1999). Income differentially affects changes in alcohol consumption in response to health stressors: following a change in health individuals with an income above the poverty line reported no change in consumption whilst those with an income below the poverty line reported a 28% reduction in drinking days (Dawson et al. 2005). Other factors such as education level and marital status have also been linked to alcohol consumption trajectories in older adults and may therefore directly or indirectly influence changes in drinking over time (Brennan et al. 2010a; Platt et al. 2010; Perreira & Sloan 2001). Examining how changes in health and non-health factors affect alcohol consumption in older adults may improve understanding of how drinking behaviour changes over time in this population.

The current research is focussed on how drinking behaviour is modified in response to both health deterioration and non-health changes across all levels of alcohol consumption. In

England, 71% of adults aged 65 years and older report at least one long-term condition, with prevalence of most diseases increasing with age (Craig and Mindell 2007). Alcohol consumption can worsen the symptoms of certain long-term conditions, affect the progression of diseases, and interact with medications (The American Geriatrics Society 2003). These interactions can occur at relatively low levels of consumption, thus a substantial proportion of the older population may be risking their health as a result of their drinking. Through developing an understanding of drinking behaviour change after health deterioration among older adults, health-promoting interventions might be developed to prevent drinking-related problems. The current research is particularly timely given that populations around the world have a growing proportion of older adults due to increasing life expectancy and declining fertility rates (World Health Organisation 2012). It is predicted that by 2034, 23% of the UK population will be aged 65 years and older (Bayliss & Sly 2010). The current research addresses the need to better understand the relationship between health deterioration and alcohol consumption, as well as other non-health factors that affect drinking, to prevent avoidable alcohol-related health problems in this rapidly growing population.

1.2 Rationale for exploring the factors affecting older adults' drinking

There is a paucity of research exploring alcohol consumption behaviour in older adults and an absence of the recognition of this issue within policy documents (such as the National Service Framework for Older Adults or the Alcohol Harm Reduction Strategy). In recent years research around older people's drinking has increased in prominence, but despite the increased interest in alcohol consumption among older adults, drinking in this population is largely overlooked in research, policy and practice (Wadd & Forrester 2011). At present there are two key areas of research activity related to alcohol consumption in older adults in England that aim to improve the health of older adults and facilitate ageing with dignity.

The first body of research is around the identification and treatment of older problem drinkers who are often a hidden or excused group of alcohol misusers. Older peoples' drinking may be hidden or masked for a number of reasons: shame, isolation and underreporting of consumption on the patient side, healthcare professionals' reluctance to ask about drinking or lack of awareness about the potential importance of alcohol misuse in older adults, and the similarity between symptoms of an alcohol problem and the ageing process (such as depression, insomnia and self-neglect) (Wadd & Forrester 2011; Dar, 2006). Clear guidance on appropriate screening instruments to identify risky levels of drinking in older adults is lacking

as there is a dearth of practical screening instruments designed for older drinkers (Crome et al. 2011). Whilst awareness of problematic drinking among older adults may be increasing, the prevalence remains lower than in younger age groups as adults aged 65 years and older are the least likely to drink above current guidelines. This makes the cost-benefit ratio of any intervention less favourable (Holmwood 2012). Treatment can be effective for older problem drinkers: the limited research to date suggests that older drinkers do not have worse outcomes than younger drinkers and may respond better to treatment (Moy et al. 2011; Brennan et al. 2003). Given that current treatments are usually developed on younger adults, interventions specifically designed for use with older adults may have greater success in this population.

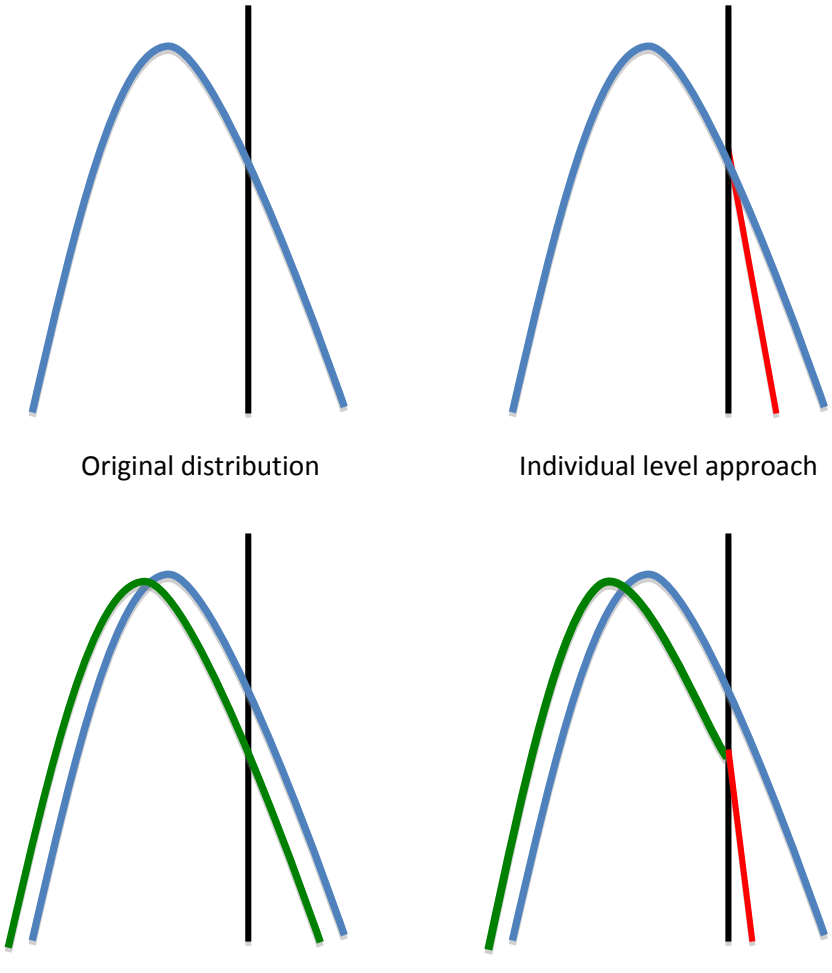
The second area of current research activity is around safe drinking limits for the older adult population and whether or not these should be different to the general adult population. Drinking guidelines for the general adult population were last modified in the mid-1990s, but they do not allow for altered physiology, long-term conditions or use of prescription drugs, all common in the older population. These factors vary considerably between individuals, making firm population level recommendations very difficult for older adults (Holmwood 2012). In 2011 the Royal College of Psychiatrists published a report on older drinkers that recommended drinking guidelines should be lower for older adults. Based upon recent evidence, the committee suggested a 'safe limit' for older people of 1.5 units per day or 11 units per week, with binge drinking defined as over 4.5 units for men and 3 units for women (Crome et al. 2011). In 2012 the Science and Technology committee produced a parliamentary report discussing the merits of producing guidelines for older adults (Science and Technology Committee 2012) and as a result the Alcohol Policy Team at the Department of Health are exploring the possible development of drinking guidelines for older adults that are based upon scientific evidence on the risks and benefits of drinking alcohol for this population (Alcohol Policy Team 2012).

Existing research is largely focussed on defining, identifying and treating 'problem drinking' in older adults. Through exploring the wider relationship between alcohol and health, social, financial and other factors in broad samples of older adults, such as in the current research, we might be better able to understand alcohol consumption behaviour in this population. Better understanding might aid in the prevention or earlier identification of 'problem drinking' and prevent alcohol related harm in this population through recognition of the factors and processes that drive alcohol consumption behaviour. Improved recognition of the wider relationship between alcohol and health may also facilitate the development of public health messages or interventions to reduce risky drinking in older adults.

1.3 Position of the researcher

Interest in the wider relationship between alcohol and health, social and financial factors in older adults was influenced by the researcher's background in public health. A public health approach to health promotion might incorporate both high-risk, individual level and broader population level strategies to reduce prevalence of risky health behaviours such as smoking and excessive alcohol consumption (see Figure 1.1). Individual-level strategies are targeted at people who have been identified as engaging in a risky behaviour (such as a level of alcohol consumption that is above drinking guidelines) through screening. An individual level approach can have a high individual benefit; however, such approaches only have a limited effect for decreasing population level risk, providing a temporary fix rather altering the underlying causes of illness and they require continuous and expensive screening to identify high-risk individuals (Rose 1985). Population level strategies are intended to shift the distribution of a given behaviour for the whole population, for example through a mass media

Figure 1.1: Illustration of intended impact of individual and population level strategies in public health



campaign, thus decreasing the number of people engaging in risky behaviour. The potential gains of population level approach are extensive and the costs of screening are low but the effect on each participating individual may not be very significant (Rose 1985). In practice we often use a combination of these approaches in public health.

So, from a public health perspective, it is important to develop an understanding of the factors that influence alcohol consumption among older adults who drink at a harmful level to understand how we might engage with such individuals through an individual level strategy, as well as among older adults who report a low or moderate level of consumption to explore how we might generate a reduction in risk for the whole population. Given that drinking guidelines were devised to indicate the level of alcohol that an average adult in the population might consume without significantly increasing their risk of harmful side effects, older adults who engage in moderate drinking may still experience negative side effects from drinking within these guidelines due to aging associated physiological changes that affect alcohol absorption, potential affects of alcohol on the symptoms and/or progression of long-term conditions and interactions with prescribed medications (e.g. Crome et al. 2011). Thus, a reduction in drinking among even moderate older adults drinkers may confer population health benefits.

A public health background has resulted in an interest in all levels of alcohol consumption where a different background, for example in the addiction field, might have resulted in a focus on higher level and dependent drinkers. However, from this public health perspective the researcher is less interested in long-term abstention. Understanding motivations for recent transition to abstention can facilitate understanding of drinking behaviour change over time, but where older adults are lifetime or long-term abstainers their experiences are perceived to be of limited relevance to the older adult drinking population. Long-term abstainers can tell us little about what motivates change in alcohol consumption in older adults when their recent history does not include drinking.

Whilst the researcher identifies a number of reasons why older adults may benefit from a reduction in alcohol consumption, it is also believed that there are potentially positive side effects of alcohol consumption in older adulthood that may mitigate the maintenance of moderate or higher levels of alcohol consumption. For example, the researcher perceives alcohol to be a social activity and that older adults whose only social contact is meeting friends in the pub two or three times a week might experience greater suffering through reducing their social contact, for example in terms of isolation and loneliness, than they might benefit from a reduction in their alcohol consumption. Thus, the researcher acknowledges potential benefits of alcohol consumption for older adults. Some of the implications of my background

and beliefs regarding alcohol consumption among older adults for the design of the research and interpretation of findings are examined in Chapter 9 (Section 9.4, p.211).

1.4 Research aims

The aims of the current research were threefold. Firstly, given the dearth of information on demographic variations in drinking patterns and motivations to drink alcohol in older adults in England, the current research was designed to broaden knowledge of alcohol consumption in this population. Secondly, given most of the previous research on the relationship between health deterioration and subsequent changes in alcohol consumption was conducted in the United States of America (USA) where levels of alcohol consumption in older adults are lower than in England, the current research aimed to improve understanding of how alcohol consumption changes over time and in response to changes in health in a population with higher levels of alcohol consumption. In particular, the current research was interested in the impact of health deterioration, including diagnosis with a long-term condition, decreases in self-rated health and problems with functioning and mobility, on alcohol consumption. Finally, the mechanisms underlying change and stability in alcohol consumption over time in older adults who have a long-term condition were explored to identify the processes that motivate drinking change. Previous use of qualitative methods to explore how and why alcohol consumption changes over time in older adults is limited, so this research should aid in the development of a more detailed understanding of drinking change in this population.

1.5 Methodology

A mixed-methods study was designed to explore the complex social phenomenon of alcohol consumption in older adults and how drinking behaviour is modified after health deterioration. The initial research design was explanatory follow-up (Creswell & Plano Clark 2007), using quantitative data to develop an overview of the relationship between health deterioration and alcohol consumption change, and qualitative interviews to enhance the comprehensiveness of the research by examining the processes underlying significant quantitative findings. The qualitative research was thus initially intended to clarify relationships found during the quantitative analysis. The first phase of this sequential mixed methods design involved using the English Longitudinal Study of Ageing (ELSA) to explore changes in alcohol consumption in older adults who experienced health deterioration

compared to those who did not. Preliminary change score analysis of complete cases found no significant differences in alcohol consumption over time for adults reporting a change in health status compared to those reporting no change in health. The absence of significant findings following preliminary analysis required adaptation of the study design, as there were no significant findings for the qualitative interviews to explore.

The revised strategy for the in-depth interviews was to select a diverse sample of older adults who had been diagnosed with a long-term condition to explore their alcohol consumption over time in relation to their health. During the early interviews the design remained explanatory follow-up, however over time it became evident that a range of non-health factors had influenced drinking change over time, and so the decision was made to revisit the ELSA data to explore these other factors as far as was possible given the questions asked within ELSA. The quantitative data was also re-analysed using a different approach to the preliminary change score analysis technique, as explained in Chapter 4 (p.85). This iterative use of secondary data with in-depth interviews is not common within the mixed-methods literature. The key methodological issues arising during the project and how this design fits within existing mixed-methods typologies are discussed in Chapter 3.

1.6 Thesis structure

The thesis is split into three parts. Part I situates this work within the context of previous research on alcohol consumption and changes in drinking over time in older adults. Chapter 2 examines the relevant literature on topics including the measurement of alcohol consumption, alcohol consumption patterns of older adults, and factors affecting change in drinking over time in older adults. This chapter also introduces some theories and models of behaviour change that can be used to facilitate understanding of alcohol consumption behaviour change.

Part II presents the methodology and methods that were used to explore the research objectives. Chapter 3 describes the research philosophy underpinning this research and discusses mixed methods study design, data collection and analysis issues before the quantitative and qualitative methods and analysis techniques are presented in Chapters 4 and 5 respectively.

Part III presents the findings of the quantitative and qualitative analysis in three results chapters. Chapter 6 documents findings on drinking among older adults in England including current patterns of consumption, demographic variations in drinking and changes over time. Chapter 7 presents quantitative findings on the factors associated with stability and change in

alcohol consumption over time. Chapter 8 describes the factors affecting long-term alcohol consumption behaviour discussed within the qualitative interviews, organising the data within a Capability Opportunity Motivation– Behaviour (COM-B) framework. Finally, the key findings are highlighted and discussed in the context of previous literature in Chapter 9. This final chapter also describes the strengths and limitations of the current research and presents some implications for policy and practice. Chapter 9 finishes with the conclusions of this research.

Chapter 2: Literature review

2.1 Introduction

This chapter presents the literature exploring alcohol consumption and change over time in older adults. There has been a recent increase in research examining alcohol consumption behaviour and change over time in older adults, including drinking patterns and factors that lead to change over time. However, this research has largely originated from the USA and has been quantitative in nature. This chapter draws together the evidence from the USA and other countries, to develop an understanding of current evidence on this subject.

The general principles of systematic reviewing were applied to produce a literature review that used a systematic approach in the search for, critique and synthesis of the current research evidence (Aveyard 2007). Databases including Medline, EMBASE, Web of Science and PsychInfo were searched from 1990 to present for English language publications. The search strategy used a 'building blocks' approach (Booth 2008). Key terms included: alcohol*, alcohol consumption, drinking, health, chronic disease, diagnosis, long-term condition, retirement, bereavement, divorce, family, income, education, social class, ageing, older adults, senior citizens and elderly. Topic specific journals (including alcohol-related, older people-related and public health journals) and sources of non-peer reviewed material (such as websites, books and proceedings of meetings) were manually checked on a regular basis and the bibliographies of selected literature were searched by hand for further relevant articles.

Quality assessment tools provided by the Critical Appraisal and Skills Programme (CASP) were used to aid in the quality assessment of papers. Studies were evaluated against between 10 and 12 criteria depending on the study design. Key quality assessment questions were focused around the clarity of the research aims and appropriateness of the methods chosen. The use of CASP tools facilitated a consistent approach to quality appraisal, encouraging measurement of studies of similar design against the same criteria. Whilst CASP tools were valuable in guiding the critical appraisal process, it was important to balance use of the scores against other factors such as the amount of evidence available on a given topic. Thus, studies were not automatically excluded if they scored low using the CASP criteria, particularly if the research provided insight into an issue where there was a paucity of evidence.

Section 2.2 explores problems surrounding the accurate measurement of alcohol consumption and describes how this research manages common concerns. In Section 2.3, current evidence on the alcohol consumption of older adults in the UK is presented and

compared to the drinking patterns of older adults in other countries. Demographic variations in alcohol consumption are also reviewed alongside the reasons why older adults drink. Section 2.4 examines factors that influence change in drinking over time in older adult populations: firstly changes in health, then social changes and finally financial influences are illustrated using previous research that predominantly originates from the USA. The limited qualitative evidence on the experience of drinking change is also examined. Section 2.5 reviews theories and models of behaviour change and discusses how they apply to older adults and drinking behaviour. Section 2.6 provides a summary of the literature presented in this chapter whilst 2.7 presents the thesis objectives that were developed to address research gaps identified by this review of relevant literature.

2.2 Measuring alcohol consumption

Accurate measurement of alcohol consumption can be challenging. Three types of measures currently exist, each with different strengths and limitations. To improve accuracy, data on consumption can also be triangulated. Unless stated otherwise, the evidence in Section 2.2 is not specific to research with older adults because such research is not available.

2.2.1 Current measures

Alcohol consumption can be measured using Blood Alcohol Concentration (BAC), sales data or tax receipts, and surveys. BAC denotes the level of alcohol in the bloodstream and provides a common platform to determine levels of intoxication. Alcohol is processed and removed from the body fairly quickly, so BAC must be measured within a short time period of drinking activity (Wolff & Marshall 2006; Rehm 1998). No other marker has been identified that has the combined sensitivity and specificity of BAC for measuring alcohol consumption (Wolff & Marshall 2006). Whilst BAC provides an accurate measure of consumption, due to the short half-life of alcohol in the blood stream after drinking activity has ceased, BAC better measures consumption on specific occasions rather than longer term drinking patterns.

Alcohol sales data and tax receipts are commonly used to calculate per capita consumption, tracking alcohol consumption over time in entire populations (Greenfield & Kerr 2003). Such aggregate measures are the broadest measure of population consumption and are useful for producing reasonably accurate estimates of drinking within a population using readily available data sources (Greenfield & Kerr 2003). However, a number of issues might compromise the accuracy of sales data including the exclusion of data on self-imported or

home brewed alcohol from per capita measurements, not all alcohol sold is consumed, not everybody in the population drinks, and visitors to a region are not included in the denominator of consumption calculations, which distorts the calculation because visitors cannot be excluded from the numerator (Greenfield & Kerr 2003, Giesbrecht et al. 2000). Using alcohol sales data or tax receipts it is not possible to measure drinking in specific groups, such as older adults.

Surveys are used to calculate individual level alcohol consumption or expenditure and are essential for measuring patterns of consumption that cannot be identified using sales data, such as drinking quantity and frequency (Greenfield & Kerr 2003). Surveys can provide data on factors such as drinking locations, beverage preferences, and drinking problems. However, a principle concern of survey measures is the extent to which they accurately represent drinking in a given population due to problems with sampling frames (Gmel & Rehm 2004) and non-response bias (Greenfield & Kerr 2003) (see section on response accuracy on p.34 for further detail). Discrepancies between aggregate and individual level calculations of total consumption are high; for example, in Canada, survey measures have recorded only 30-40% of per capita consumption (survey measures used past 12-month drinking frequency and drinking volume on usual and heavy drinking days) (Rehm et al. 2010). The substantial amount of alcohol sales data not captured by surveys has been attributed to underreporting (Casswell et al. 2002) and sample frame defects (only using non-institutionalised populations) (Gmel & Rehm 2004). However, surveys that report a higher volume of consumption are not necessarily superior (Del Boca & Darkes 2003; Rehm 1998): for example, Rehm argues that total consumption derived from survey measures should only account for around 70% of total alcohol sales for reasons such as high non-response rates among heavier drinkers (Rehm 1998). Despite the shortfall in total alcohol consumption in surveys compared to per capita consumption, research has found consistent strength of association between per capita and survey data for most measures (Nelson et al. 2010), indicating that both aggregate and individual level data are useful for monitoring consumption in a population.

Survey data measuring alcohol consumption can be triangulated with expenditure data collected using surveys such as the Living Costs and Food Survey (LFS) in the UK, where respondents record all household food and drink purchased in a two-week diary (Office for National Statistics 2010). However, this approach is limited due to different units of analysis: expenditure surveys are often completed at the household level (Office for National Statistics 2010; US Bureau of Labour Statistics 2010; Australian Bureau of Statistics 2006) whilst consumption surveys are usually at the individual level.

Survey data could also be compared to data on health and social harms to determine if levels of consumption approximate those expected given the level of harm in an area. For example, in Switzerland data from population surveys has been compared to cirrhosis mortality to estimate alcohol dependence in the population (Kuendig 2010), finding agreement between estimates. Establishing the relationship between a given level of alcohol consumption and negative health outcomes relies upon the quality of risk estimates reported in the epidemiological literature, and therefore may be subject to error if risk estimates are incorrect (Jones et al. 2008). Although comparing aggregate level data and individual consumption, this approach can provide an indication of survey validity.

2.2.3 Quality markers in survey research

The validity and reliability of alcohol data collected using surveys can be improved by selecting an appropriate measurement instrument and mode of collection, as well as securing a high response rate and designing questions to minimise bias.

Measurement instruments

Four instruments are commonly used to measure alcohol consumption: quantity-frequency (QF), graduated-frequency (GF), timeline follow back (TLFB), and diary records (Greenfield & Kerr 2008; Jansen et al. 2008; Rehm 1998). QF records average alcohol consumption per occasion and average frequency of drinking occasions, combining the two to calculate a total volume (Rehm 1998). Respondent burden is minimal and therefore large samples of data can be collected fairly rapidly (Del Boca & Darkes 2003), although within-person variability can be high. GF records unit consumption on the heaviest drinking day in a given reference period and the frequency of that level of consumption. Subsequently the frequency of drinking one less than that maximum amount is recorded, and so on (Jansen et al. 2008). GF measures consumption with reasonable accuracy although can overestimate consumption. The data collection process is laborious, particularly if participants drink heavily on certain occasions (Greenfield et al. 2010; Greenfield & Kerr 2008; Rehm 1998). TLFB uses the biographical context of drinking episodes to trigger memories of alcohol consumption (Jansen et al. 2008). Such context specific methods often report consumption volumes that align closer with sales figures, but have been criticised for potential overestimation due to the overlapping of contexts (Casswell et al. 2002; Rehm 1998); thus TLFB should be designed carefully to avoid overlapping social contexts. Finally, drinking diaries can be used to measure drinking, with participants recording each drink at the time of or shortly after consumption, minimising recall bias (Rehm 1998). Food and drink diaries are time intensive for participants

and the length of the diary period may affect how accurately alcohol consumption is represented, particularly if the participant is a sporadic drinker.

The measurement instrument chosen can affect total consumption rates reported (Stockwell et al. 2008; Stockwell et al. 2004). Examining the proportion of per capita sales accounted for in a household survey, Stockwell et al. (2008) found the QF measure covered 64.6% of sales, the GF 69.2% of sales, and asking participants what they drank yesterday 80.7% of sales. However, a Spanish project involving 120 individuals asked to complete five different measures of drinking over one year found minimal variation between measures (Serra-Majem et al. 2002). Repeat exposure to drinking questions may have led to greater accuracy between measures due to familiarity (Khadjesari et al. 2009). A comparison of alcohol consumption recorded using both a telephone survey and an alcohol consumption question embedded within a dietary intake questionnaire found that 13% of adults aged 64 years and older reported greater alcohol consumption using the dietary intake questionnaire than during the telephone survey (Wilcox & King 2000). A dietary intake questionnaire may result in the reporting of higher levels of alcohol consumption because dietary cues may improve alcohol consumption recall or because embedding drinking questions within a dietary questionnaire may partially defuse the potentially sensitive nature of alcohol consumption questions. Finally, retrospective drinking diaries have been found to measure a higher level of alcohol consumption and to identify a greater proportion of heavy and high-risk drinkers among adult men attending in a community based drug and alcohol treatment setting than a quantity frequency measure (Shakeshaft et al. 1999). This suggests that drinking diaries might be useful for identifying higher-level drinkers; however, the extent to which these findings can be generalised to the older adult population may be limited. Additionally, whilst diary records may be a more accurate measure of consumption (Gmel & Rehm 2004; Rehm 1998), there is a high level of respondent burden and in practice, quicker and less burdensome measures of drinking, such as QF and GF, are often used.

Modes of data collection

Modes of survey administration include pen and paper, online, and structured interviews. The survey administration approach can impact upon response rates and accuracy. Technology such as computer-assisted personal, telephone or self-interviewing (CAPI/CATI/CASI) can enhance the accuracy and quality of data by aiding skip patterns, reducing time burden, simplifying data collection and minimising error (Casswell et al. 2002).

CASI/CATI/CAPI each involve an increasing level of contact with the research team. Research has found that responses to questions on socially undesirable behaviour may be

more honest using CASI because this is the most anonymous mode of data collection (Bronner & Kuijlen 2007). In support of this, Spijkerman et al. (2009) found CAPI respondents reported lower substance misuse prevalence rates than an online panel; however, the response rate for the online panel was poor at only 35.5% compared to 62.7% for the CAPI. Similarly, heavier drinkers were found to respond more accurately to surveys that did not involve a face-to-face interview, although no difference was found for non- or moderate drinkers (Crum et al. 2002). In contrast, a comparison of telephone and face-to-face interviewing found no difference in abstention rates, volume of consumption or higher level drinking between groups (Greenfield et al. 2000). Research using internet based surveys may be more challenging with older adult populations, who are less likely to have access to the internet and may be less familiar with such technologies (Selwyn et al. 2003). Thus, telephone and face-to-face interviewing may be more appropriate in this population. Where alcohol consumption data is collected within households or health surveys, the main interview is often CAPI with a self-completion component for sensitive issues. This dual approach may be the best option for achieving a balance between higher response rates and data accuracy.

Response rates

Survey response rates vary considerably: for example, the studies included in Section 2.3 exploring alcohol consumption patterns in ageing adults report response rates ranging from 48.7% (Weyerer et al. 2009) up to 97% (Hajat et al. 2004). Over time survey response rates are falling (Tourangeau 2004), with implications for the accuracy and validity of findings. Weyerer at al. (2009) obtained age and gender data for 99.7% of non-respondents, finding participants were significantly younger and more likely to be male than non-respondents. Non-respondents may have had different alcohol consumption patterns to the responding population, biasing the study results. Response rates can be maximised by making multiple attempts to contact members of the sample population, providing incentives, and using an appropriate mode of assessment, for example older populations prefer face-to-face participation (Auster & Janda 2009). Before analysis, data should be weighted to account for non-responders or missing data should be imputed. Research that aims to represent population consumption should also ensure the sample size is sufficiently large to accurately capture drinking in the population.

Response accuracy: measurement biases and misunderstanding

A range of additional issues might affect the accuracy of reported alcohol consumption, including social desirability bias, recall bias, time frame and the misunderstanding of standardised measures (Davis et al. 2010; Greenfield & Kerr 2008; Stockwell et al. 2008;

Casswell et al. 2002). Social desirability bias is the tendency to present a favourable self-image in questionnaire research (De Mortel 2008). Individuals may be more likely to report virtuous characteristics and deny impulsive behaviour, particularly in relation to socially sensitive subjects such as alcohol consumption. The result may be underestimation of both alcohol consumption and the harmful consequences of drinking (Davis et al. 2010; De Mortel 2008; Kirchner et al. 2007). Examination of the impact of social desirability bias in a general population found a probable underestimation of heavy drinking, but this did not compromise predictors of heavy drinking (Welte and Russell 2006). Recall bias might affect reported consumption if past drinking is forgotten, minimised or imagined different from reality. Current drinking habits can also influence recall of past drinking, usually exerting a downward influence as drinking declines with age (Greenfield & Kerr 2008).

Time frame used may contribute to mis-estimation of alcohol consumption. Thirty day and 12-month periods are commonly used, although some studies report 'past week' or measures of drinking 'yesterday' (The NHS Information Centre 2011a; Midanik et al. 2010; Stockwell et al. 2008). Whilst responses to a 12-month reference period might suffer from recall bias, 30-day or past week samples can miss infrequent light or intermittently higher-level drinking (Greenfield & Kerr 2008). Midanik et al. (2010) compared 12-month with 30-day measures, finding over a quarter of people who reported abstinence in the past 30-days stated they drank at least monthly using a 12-month measure. Given the limits of 12-month and 30-day measures, both frames should be included where possible.

An additional concern is that standard drink measures are often misunderstood. For example, measuring alcohol consumption in Australia, Stockwell et al. (2008) found that the average drink consumed contained 12.8g ethanol compared to the 10.0g of an official standard drink. In the US, a national alcohol survey found high variability of ethanol content in what was being classed as a standard drink, with particularly high underestimation of wine and spirits (Kerr et al. 2005). Finally, in Scotland when people were asked to demonstrate the size of a usual glass of spirits they poured on average 2.3 units, whilst an official single measure is 1 unit (Gill 2004). Misunderstanding standardised drinks measures may contribute to the under-reporting of alcohol consumption.

Various techniques can be employed to improve survey response accuracy: clearly defining the time frame (Greenfield & Kerr 2008); sensitively choosing adjacent questions (Schwarz 1999); and using beverage specific measures (Casswell et al. 2002). Additional success may be achieved by considering ease of question interpretation (Schwarz 1999). Terminology used to measure alcohol consumption might be of particular interest; for example use of the term 'standard drink' or 'unit' versus containers such as numbers of cans or

glasses of alcohol. Response accuracy is thus affected by a range of factors, from recall bias to misunderstanding the alcohol measures being used. Techniques to minimise the impact of these limitations on response accuracy should be included in the planning of data collection.

2.2.3 Application to the current research

The English Longitudinal Study of Ageing was used to explore the relationship between health, social and financial changes and alcohol consumption. The ELSA design is detailed in Chapter 4 but a number of decisions taken during the planning stages should have improved the validity and reliability of the data including: asking both drinking frequency and quantity questions; measuring volume using drink containers rather than standard measures; clearly defining the time frame; maximising response rates using reminders and incentives; and conducting face-to-face interviews with a self-completion alcohol consumption section.

2.3 Alcohol consumption among older adults

This section describes alcohol consumption among older adults as reported in previous research conducted in the UK and other countries. Key research is summarised in Appendix I (p.240). Within epidemiological studies that report alcohol consumption in older adults, the age of the youngest participant ranges from 50 years upwards, thus all literature that includes data on adults aged 50 years and older was included within this review of alcohol consumption among older adults.

2.3.1 Older adults in the UK

Older adults consume less alcohol than younger adults. Alcohol consumption and heavy drinking peaks when an adult is in their early 20s and then declines steadily with increasing age (see Figures 2.1 and 2.2) (The NHS Information Centre 2011b; Kerr et al. 2009; Kemm 2003). Three main explanations for this pattern of decreasing drinking with increasing age observed in cross-sectional studies that measure drinking in different age groups are proposed. These are that alcohol consumption changes over time as a result of age effects, period effects and cohort effects. These potential explanations are not independent and in practice all three may influence alcohol consumption trends at any point in time.

Age effects are the influence of physiological, biological and social changes that occur during chronological aging that will affect all birth cohorts at any one time (Pabst et al. 2012). For example, moving from young adulthood to middle age people may reduce their alcohol

consumption as a result of social changes such as family obligations, whilst older adults may reduce their alcohol consumption as a result of health problems. This explanation is generally assumed to be the primary driving mechanism for lower levels of alcohol consumption in older adulthood, with older adults consuming less alcohol as a result of their lifecourse position. Period effects are characteristics of the economic, legal and social environment that may influence alcohol consumption. For example, alcohol consumption in the USA was influenced by prohibition in the 1920s and early 1930s and more recently drinking behaviour may have been affected by the financial crisis of 2007-2008 and the subsequent global economic recession. In a recent study among 60-75 years olds in Finland liberalisation of alcohol and changing customs were cited to have influenced alcohol consumption over time (Haarni & Hautamaki 2010). Period effects can modify alcohol consumption through a range of mechanisms including by altering the context in which alcohol is consumed, increasing or

Figure 2.1: Proportion of men exceeding daily drinking guidelines

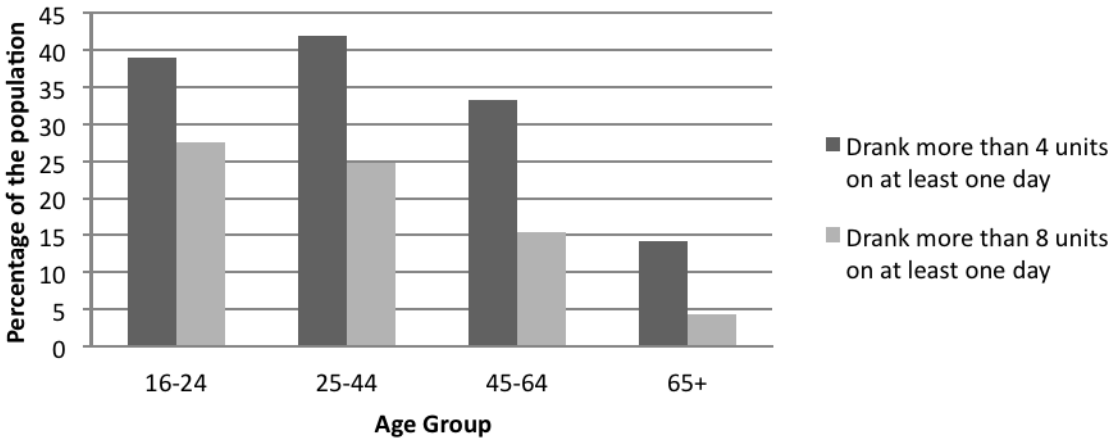
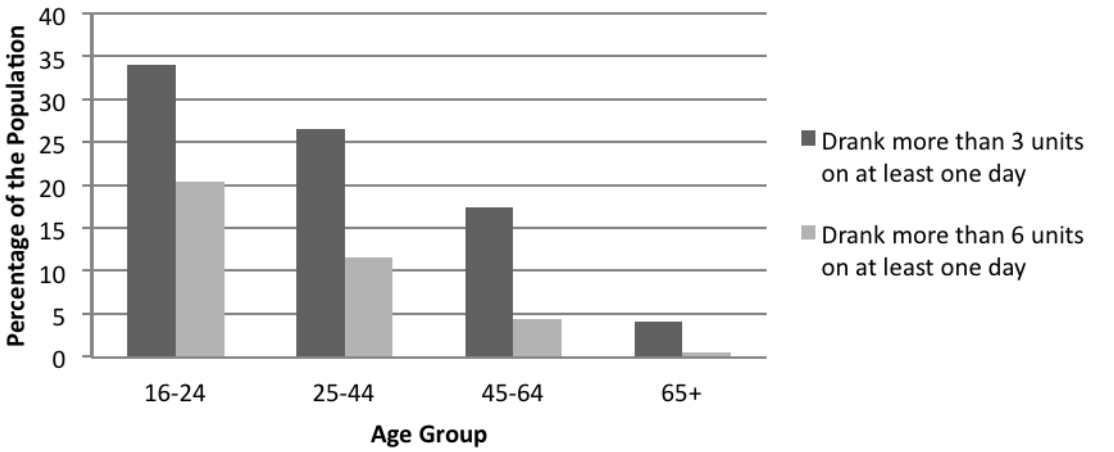


Figure 2.2: Proportion of women exceeding daily drinking guidelines



decreasing the affordability of alcohol, and making alcohol more or less available through legislation and regulation. Cohort effects are the influences of being born at a particular period in time that affect the circumstances of growing up, for example having experienced certain historical events or social changes. A child who moved into adulthood during prohibition in the USA might have a very different attitude towards alcohol consumption than one who grew up in the 1960s and 1970s when alcohol was legal, readily available and socially acceptable. Thus, younger cohorts may drink more alcohol because they were born at a different time when alcohol habits had changed and so they developed different drinking behaviour.

Overall therefore, the drinking patterns of older adults today may be affected by current and past events and are entwined with drinking across the life course. Lower levels of drinking in older age are not simply a manifest of lifecourse position so we should consider cohort and period effects to understand drinking behaviour change over time in this population.

Various national surveys in the UK collect data on alcohol consumption including the Health Survey for England (HSE), the Opinions Survey (Opinions), and the General Lifestyle Survey (GLF). The data presented here is from the most recent available year for each survey. Data in the national surveys is available for adults aged 45-64 years and 65 years and older. Adults aged 45-64 have been included as three-quarters of this group are in the older adult age bracket defined above.

Alcohol consumption is reported using a range of categories within different studies, particularly when comparing research from different countries. To facilitate cross-study comparison, reported levels of consumption are presented within the following categories: low-, mid-, higher-level and binge drinkers (see Table 2.1). These categories are based around UK drinking guidelines of not regularly consuming more than 2-3 units per day for women and 3-4 units per day for men, where a unit is the equivalent of 8 grams or 10 millilitres of pure ethanol (Department of Health 2011). Women should consume no more than 14 units a week and men no more than 21 units (BMA Board of Science 2008).

The GLF records data on abstinence, drinking frequency, heaviest drinking day and average weekly consumption. The Opinions Survey measures drinking frequency and consumption on the heaviest drinking day in the last week. The most recent year of the HSE measured consumption on the heaviest drinking day in the previous week. The GLF and HSE are larger with over 8,000 participants each compared with 2,110 in the Opinions. At 73%, the response rate for the GLF was much higher than HSE and the Opinions, both at around 58%.

The GLF reported past 12-month abstention rates of 27% for women and 15% for men aged 65 years or older, with lower rates in the 45-64 age group of 16% for women and 11% for men (Robinson & Harris 2011). The Opinions Survey was comparable at 14% of women and

13% of men 45-64 years, rising to 30% of women and 15% of men aged 65 years or older (The NHS Information Centre 2010). The lower rates of abstention among younger old adults may be a result of both an age and cohort effect: an age effect because research has illustrated that alcohol consumption declines within increasing age (e.g. Kemm 2003) and a cohort effect because younger old adults today represent the baby boom generation who grew up during more liberal times when alcohol was more available, affordable and acceptable than among adults aged over 65 years and, therefore, the younger age group are more likely than older old adults to have drunk alcohol across the lifecourse (Smith & Foxcroft 2009). Evidence from the US suggests that baby boomers use alcohol at a higher rate than previous generations of older adults (Blow & Barry 2012). As a result of this cohort effect we may expect abstention rates among older adults to decline as young old adults move into older age. This is supported by research in Sweden that found limited variation in abstention rates within cohorts of adults over time, but large variations between cohorts, with stability characterising the abstention rates of people born since the 1940s (Ahacic et al. 2012).

Measuring average weekly consumption the GLF found 65% of men and 75% of women aged 45-64 years to be drinking within government guidelines, with two-thirds of this group reporting low-level drinking. Low and mid-level drinking increased with age to 73% of men and 86% of women aged 65 years and over. Data on heaviest drinking day within the GLF found slightly fewer low- and mid-level drinkers in the 45-64 years group (59% of men and 68% of women) but more in the over 65 group (Robinson and Harris 2011). By comparison, in Opinions and HSE fewer than half of men and women aged 45-64 years were low or mid-level drinkers. Low and mid-level drinking increased with age, for example in HSE from 40% of people aged 45-54 years to 80% of people aged over 65 years (The NHS Information Centre 2011a). These figures highlight between survey variations in higher-level drinking and the impact that different drinking measures have on the classification of drinking behaviour.

Rates of binge drinking, defined as ≥8 units on one occasion for men and ≥6 for women,

Table 2.1: Drinking categories

Category	Daily consumption	Weekly consumption	Relation to guidelines
Low	<16g/day men <12g/day women	<84g/week men <56g/week women	Up to ½ the weekly or daily limit respectively
Mid	16-32g/day men 12-24g/day women	84-168g/week men 56-112g/week women	Between ½ & the max weekly or daily limit
Higher	>32g/day men >24g/day women	>168g/week men >112g/week women	Exceed daily or weekly limit
Binge	>64g/day men >48g/day women	-	Drink >2x daily or weekly limit on occasion

also varied between the surveys. Among those aged 45-64 years, men reported rates of binge drinking between 24% (GLF) and 30% (Opinions) and women between 15% (GLF) and 28% (Opinions). In the over 65s, rates were much lower at 2% (GLF and HSE) and 5% (Opinions) for women and 5% (GLF and HSE) and 9% for men (Opinions). So, binge drinking is more common among men and declines with increasing age. Alcohol dependence, measured using the Severity of Alcohol Dependence Questionnaire, was 5.0% in men aged 55-64 years and 3.0% in men aged 65-74 years, with respective rates among women at 0.9% and 0.6% (The NHS Information Centre 2011a). Data suggests that prevalence of dependence decreases with age.

Aside from these surveys, data on alcohol consumption in older adults is limited. Extensive literature searching found one peer-reviewed article reporting different alcohol consumption data in an older adult population. Consumption was reported for adults aged 75 years and over registered at GP practices across England, with a response rate of 97% (Hajat et al, 2004). In this study 10% of men and 25% of women reported abstention. Abstention was disaggregated into lifetime non-drinkers and former drinkers, with former drinkers comprising only a small proportion of the abstaining population, whilst lifetime abstention was more likely with increasing age (Hajat et al, 2004). Data suggests that prevalence of higher-level drinking among the drinking population declined with age from 6.5% and 3.8% among men and women aged 75-79 years, to 4.0% and 2.1% among men and women aged 90 years and over (Hajat et al. 2004). These figures are lower than the comparable weekly limits used in the GLF; however, some of the variation may be explained by the older age of this GP sample.

In summary, alcohol consumption is common among older adults in England. Compared with the adult population, older adults are more likely to be abstainers and less likely to exceed drinking guidelines. The majority drink within government guidelines although a considerable minority drink at potentially harmful levels. The 45-64 age group are more likely to be higher-level or binge drinkers than the over 65s, with twice as many higher-level drinkers and three times more binge drinkers. Men are twice as likely to binge drink as women.

2.3.2 Older adults in other countries

To frame levels of alcohol consumption among older adults in the UK in an international context, studies from other countries were reviewed. Rationale for this comparison stemmed from the need to know how comparable levels of alcohol consumption were between countries to determine if research on drinking behaviour after a change in health, social or financial circumstances from other countries could be generalised to the UK. Data is included from 10 national surveys and eight general practice and community samples collected since 1990. Inter-country comparisons were challenging due to variation in standard drink sizes and

alcohol consumption guidelines, but to facilitate this comparison alcohol consumption was converted to grams of ethanol and condensed into the drinking categories identified in Table 2.1 (p.39). Methods and key findings for each study are presented in Appendix I (p.240). Studies with a low response rate or small sample size may be less representative.

Rates of abstention vary widely around the world (see Figure 2.3). Abstention is highest in North America, with rates varying widely across Europe, particularly for women. A few studies reported abstention rates in the over 75s only, finding rates are higher in this age group compared with the over 65s in Europe and the UK, but similar in the USA (Weyerer et al. 2009;

Figure 2.3: Rates of abstention in the over 65s

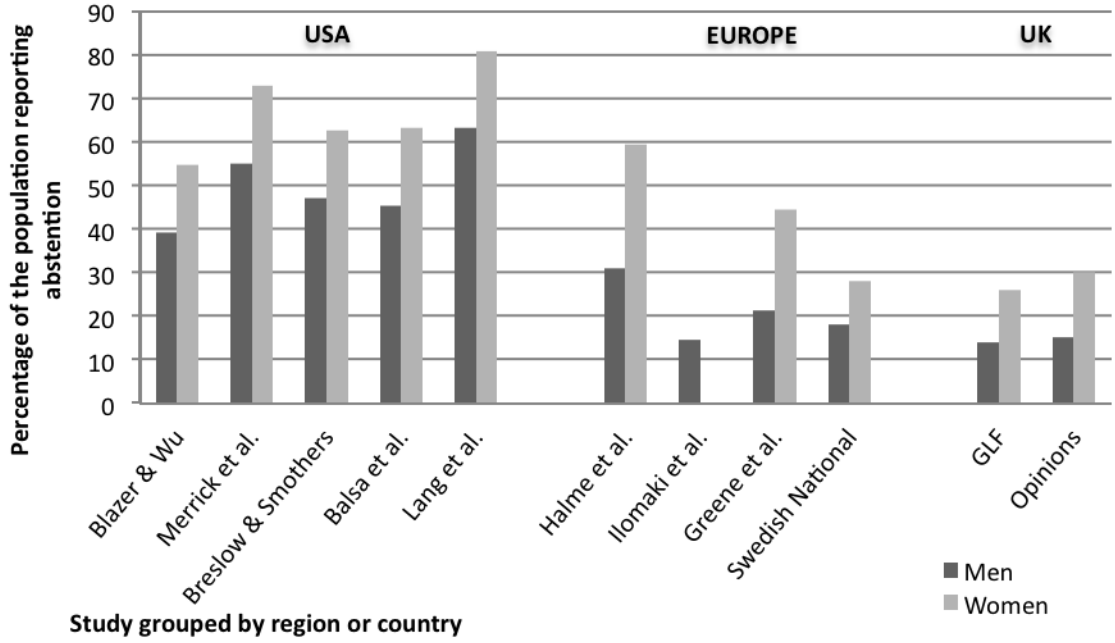
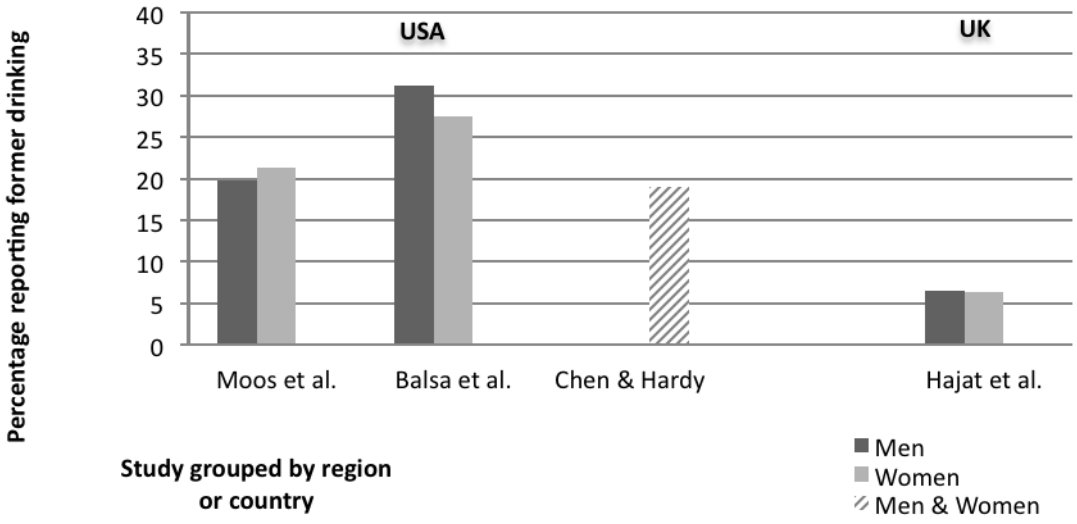


Figure 2.4: Rates of former drinking among older adults



Ganry et al. 2001; Dent et al. 2000). Limited data is available on former drinking, but this information is of particular importance given that this research is focused on how older adults change their drinking patterns after health deterioration, with one potential outcome being to quit drinking. Figure 2.4 illustrates that former drinking is more common among older adults in the USA and Canada than the UK (Moos et al. 2009; Balsa et al. 2008; Hajat et al. 2004), suggesting that older adults these countries may be more likely to stop drinking as they age. Turning to higher-level drinking, comparison across these studies was challenging as some used mean alcohol consumption averaged over drinking and non-drinking days whilst others used average consumption on drinking days only. The former could underestimate hazardous drinking patterns as higher-level drinking occasions are combined with non-drinking days to give lower overall consumption. Studies reporting consumption on the heaviest drinking day were more likely to report greater numbers of higher-level drinkers.

Low and mid-level consumption characterises the majority of drinking in the UK, but higher-level and binge drinking is still common. Few studies outside the UK report such high rates of higher-level drinking when measured using either heaviest drinking day or average weekly consumption (see Figures 2.5 and 2.6), particularly among women.

Binge drinking is also more common in the UK, although there is a clear gender difference around the world with older women less likely to binge drink than their male counterparts. Rates of binge and higher-level drinking decline with increasing age (Swedish National Institute of Public Health 2010; Blazer & Wu 2009; Ilomäki et al. 2009; New Zealand Ministry of Health 2008). Data suggests that prevalence of alcohol dependence among older adults in England is similar to other countries, with 2.9% of older adults in Brazil classed as alcohol dependent (Castro-Costa et al. 2008), and 4.8% of men and 1.2% of women in the USA (Balsa et al. 2008). Overall prevalence is around 3%, with fewer women dependent on alcohol than men.

Different drinking patterns cannot be explained by differing sample ages as there is variation within age groups. For example, rates of higher-level drinking in men aged 75 years and older have been reported at 11.1% in Australia, 35.6% in the US, 16.5% in Germany and 13.6% in New Zealand. Variation may be linked to cultural differences in acceptability of higher-level drinking.

Figure 2.5: Higher-level weekly drinking in older adults

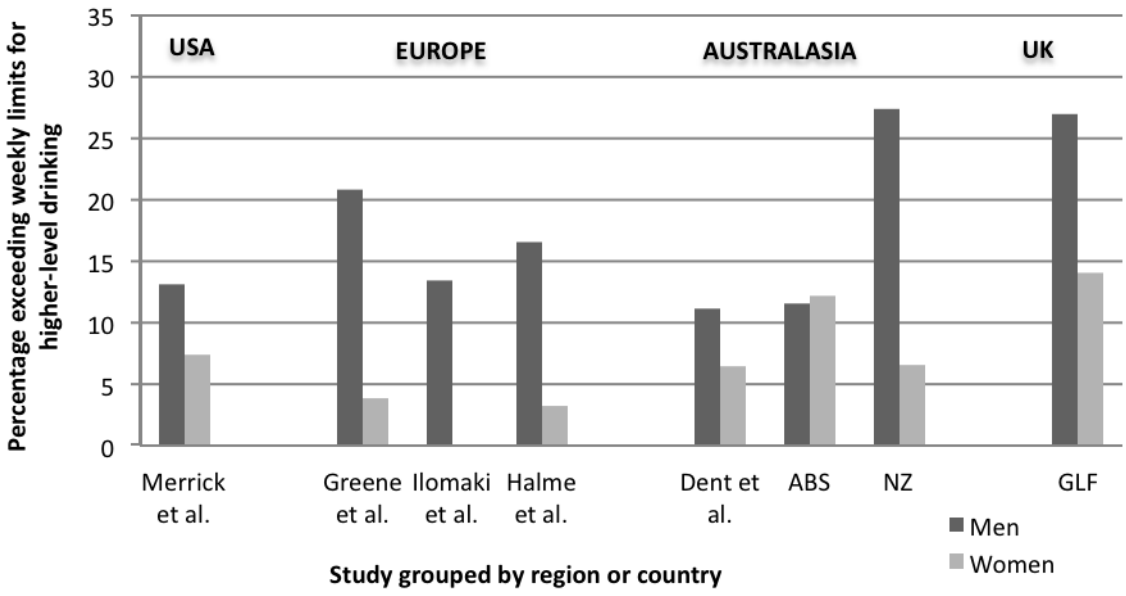
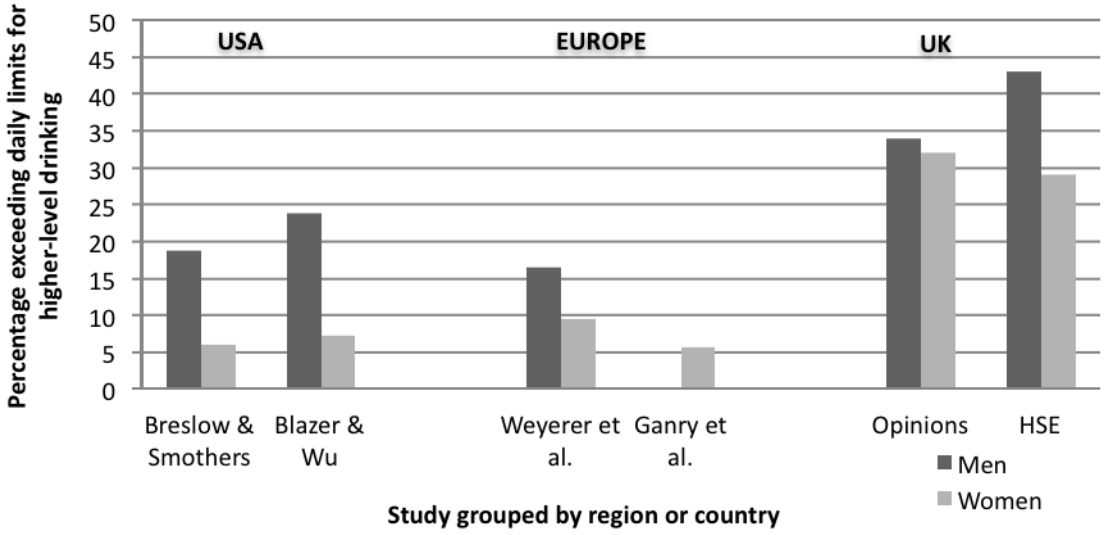


Figure 2.6: Higher-level daily drinking in older adults



2.3.3 Demographic variations in alcohol consumption

Limited research has explored demographic variations in alcohol consumption in older adults, with the exception of gender. Studies that have examined demographic differences have included marital status/living arrangements, education, income and race/ethnicity. Given that the evidence on racial or ethnic differences originates from the USA (e.g. Bryant & Kim 2012) and the substantial variation in ethnic composition of the UK compared with the US, data on ethnic differences in alcohol consumption are not presented here.

There is no clear relationship between marital status or living arrangements and drinking. Cohabiting women aged 75 years and older in the UK were more likely to be higher level drinkers (Hajat et al. 2004), but in Finland living alone was found to be a risk factor for higher level drinking in those aged 65 years and older (Halme et al. 2010). Whilst married individuals aged 75 years and older in Germany were more likely to be higher level drinkers compared with single, divorced or widowed people (Weyerer et al. 2009), in the USA married people aged 50 years and older were less likely to be higher level drinkers than their non-married counterparts (Blazer & Wu 2009). The difference between these two samples may reflect the age of the population, indicating that as age increases being married leads to higher alcohol consumption compared with non-married individuals.

Higher education was associated with increased probability of drinking, and drinking more among adults aged 50 years and older in Finland, Australia, the USA and France (Halme et al. 2010; Blazer & Wu 2009; Ganry et al. 2001; Dent et al. 2000), but was also protective against binge drinking among older adults in the USA (Blazer & Wu 2009). Across countries with varied drinking patterns among older adults, having a higher level of education is therefore a risk factor for drinking alcohol, and drinking more alcohol, but may be protective against binge drinking.

The relationship between income and binge drinking varies between countries. In England higher income has been associated with both higher-level drinking and binge drinking (The NHS Information Centre 2010). In the USA however, although higher income was a risk factor for higher level drinking, it was found to be either protective against binge drinking (Blazer & Wu 2009) or not predictive of binge drinking (Merrick et al. 2008).

2.3.4 Reasons for drinking

Our understanding of alcohol consumption behaviour and changes in drinking after health deterioration can be aided by consideration of why older adults drink. In contrast to adolescents and young adults, the evidence on reasons for drinking among older adults is limited. Data has been collected through interviews, open-ended questions within questionnaires and structured questionnaires with older adults from New Zealand, the USA, and Finland (Immonen et al. 2010; Riley & King 2009; Khan et al. 2006).

Alcohol consumption was frequently cited as a social activity, with older adults drinking for social reasons, socialisation, and at celebrations (Immonen et al. 2010; Khan et al. 2006). Drinking was also associated with enjoyment, having fun, relaxation and meals, and is often reported as a habitual behaviour (Immonen et al. 2010; Khan et al. 2006). A small number of older adults in New Zealand reported drinking alcohol because of its health benefits (Khan et

al. 2006). Alcohol was also used for medicinal purposes and to manage pain: medicinal use of alcohol increased with age from 9.8% of those aged 65-70 up to 46.6% of those aged over 90 years (Immonen et al. 2010; Riley & King 2009; Aira et al. 2008; Arcury et al. 1996). Among higher-level older adult drinkers, alcohol was used to relieve depression, loneliness and anxiety (Immonen et al. 2010).

2.4 Changes in alcohol consumption over time

Most of the research on changes in drinking over time in older adults is quantitative. Quantitative research is valuable for illustrating patterns of alcohol consumption change at a population level. It can also be used to identify associations between changes in health and non-health factors and alcohol consumption over time. To understand these associations and the mechanisms underlying drinking modification or stability, qualitative research is required to explore salient experiences and beliefs that motivated change. For example, if a change in health leads to a change in alcohol consumption, what is it about that change in health that caused a modification of drinking behaviour? Summaries of the studies that have explored the factors affecting drinking change are presented in Table 3 in Appendix I (p.247).

2.4.1 Changes in drinking among older adults

Longitudinal studies exploring alcohol consumption in older adults illustrate the variability of drinking over time. Studies of older men and women from Europe, the USA and Australasia have reported mixed findings including stability, increasing and decreasing frequency of drinking and average volume consumed per drinking occasion over time.

A number of studies have reported an increase in abstinence over time in older adults (e.g. Shaw et al. 2010; Platt et al. 2010; Glass et al. 1995). One third of participants studied by Platt et al. reported abstinence at baseline compared with two thirds at follow-up, with most behaviour change occurring whilst participants were aged 50-59 years. In Australia, 18% of adults aged 75 years and older who drank at baseline had ceased drinking after 3 years, although 19% of those who were abstinent at baseline drank at follow-up (Dent et al. 2000). Total volume of consumption among drinkers was often stable over time (Brennan et al. 2010a; Ilomäki et al. 2009; Dent et al. 2000), but increasing frequency of moderate drinking was reported in some populations (Molander et al. 2010; Ilomäki et al. 2009). Heavy drinking and binge drinking decreased over time (Molander et al. 2010; Brennan et al. 2010a; Ilomäki et al. 2009). This data suggests that whilst in some populations abstinence does increase

significantly over time, for older adults who drink volume of alcohol consumed may remain stable over time as heavy drinking episodes decrease but frequency of moderate drinking episodes increases. Higher rates of transition to abstinence were reported most often in studies from the USA.

Change in drinking over time varied by baseline alcohol consumption (Brennan et al. 2010a; Molander et al. 2010; Glass et al. 1995). Baseline drinking predicted both drinking at follow-up and variance in consumption over time (Bacharach et al. 2004). Whilst higher-level drinkers had greater scope for drinking decline, low- to mid-level drinkers most often became abstainers over time (Eigenbrodt et al. 2001). History of problem drinking also affected change in drinking over time. This may be because participants experiencing problem drinking at baseline are more likely to seek help and so transition to abstinence by follow-up (Perreira & Sloan 2001). Elsewhere, individuals who demonstrated long-term patterns of high-risk drinking in response to stress were more likely to report increased consumption in response to significant life changes (Moos et al. 2005).

Gender also affects changes in drinking over time. Men and women have different alcohol consumption patterns, as was illustrated in Section 2.3; higher-level drinking is more common in men, whilst abstinence is greater in women. Higher levels of baseline drinking in men provide greater potential for change over time. Supporting this, research in the USA found that men were more likely to change their alcohol consumption over time, and to demonstrate a greater change than women (Brennan et al. 2010a; Moore et al. 2005; Glass et al. 1995). Gender also affected reactivity to life events, with older women but not men showing a significant decline in alcohol consumption in response to health problems, and women more likely than men to respond to a health burden with abstinence (Moos et al. 2005; Brennan et al. 1999). Differences in alcohol metabolism and tolerance between men and women may affect how alcohol consumption is modified into older age (Molander et al. 2010; Moos et al. 2005).

Marital status has been related to change over time, with unmarried people (single, divorced/separated or bereaved) reporting a faster age-related decline in drinking or transition to abstinence than married individuals (Shaw et al. 2010; Moore et al. 2005). Education has also been related to change, with a lower level of education associated with a faster decline in consumption over 10 years in all adults (Moore et al. 2005), whilst in adults over 50 years a higher level of education was associated with increased drinking over a 10-year (Molander et al. 2010) and 15-year period (Platt et al. 2010). Thus far, no research has examined the processes underlying these changes in alcohol consumption.

Having described how alcohol consumption changes over time in older populations and how these changes vary by demographic characteristics, Sections 2.4.2 to 2.4.4 present evidence examining the health and non-health life changes that have been associated with changes in alcohol consumption over time in other countries. Section 2.4.2 describes how changes in health and smoking status can influence alcohol consumption. Section 2.4.3 examines previous research on the relationship between changes in marital status and relationships with wider family and friends and how this can affect alcohol consumption. Finally, Section 2.4.4 reviews evidence for a relationship between a change in economic activity status or financial circumstances and drinking behaviour.

2.4.2 Changes in health and alcohol consumption

When confronted with health deterioration individuals may choose to decrease their alcohol consumption or abstain from drinking (Molander et al. 2010; Moos et al. 2005; Perreira & Sloan 2001; Walton et al. 2000; Glass et al. 1995; Shaper et al. 1988; Wannamethee & Shaper 1988). Motivations to reduce drinking following health deterioration include disengagement from drinking settings due to poorer health, decreased tolerance of alcohol, being prescribed medications that interact with alcohol, and advice from doctors (Krause 1995). Alternatively, in response to ill health individuals may maintain stable alcohol consumption (e.g. Platt et al. 2010) or increase their drinking, for example where alcohol is used to help manage chronic pain or heart valve disorders (Riley & King 2009; Aira et al. 2008).

Research suggests that changes in health can affect alcohol consumption through four mechanisms: practical or social incentives, somatic incentives, cognitive incentives and affective incentives (Kärner et al. 2005). Practical incentives are changes in the working or home environment and the external environment, whilst social incentives are the experience of social context and how this affects lifestyle change (positively or negatively), for example through the influence of shared concerns between friends or family members. Somatic incentives are sensorial signals that tell the individual something about their body, for example if they experience pain they may want to co-operate with lifestyle change to reduce pain symptoms. Cognitive incentives are thoughts and beliefs about lifestyle change, for example motivational thoughts based on reflection and finally affective incentives are the influence of emotions on lifestyle changes and the impact of self-esteem, reluctance to change behaviour and the preference for satisfying immediate needs (Kärner et al. 2005).

Practical incentives include physical health factors (such as limited mobility) that may result in reduced access to shops to buy alcohol or disengagement with settings where alcohol is consumed, as well as physical environment changes (such as hospitalisation or nursing home

admission) that restrict access to alcohol through organisational constraints that reduce opportunities to drink (Gee et al. 2007; Glass et al. 1995). The physical symptoms of some health conditions may reduce tolerance of alcohol and may trigger negative side effects (Krause 1995), acting as somatic incentives for behaviour change. Treatment (such as prescribed medications) may affect alcohol consumption if drinking is contraindicated or patients are advised to limit their consumption. For example alcohol can react with some anti-diabetic drugs resulting in nausea and headaches, whilst non-narcotic pain relievers mixed with alcohol may increase the risk of gastric bleeding (NIAAA 1995). Given the potential interactions with medications some older adults may reduce their alcohol consumption to prevent both negative side effects and disease progression, often as a result of medical advice (Platt et al. 2010). Cognitive incentives may affect alcohol consumption following a change in health status, for example if condition is perceived to be related to previous drinking then behaviour may be modified in an effort to prevent further deterioration. Research on motivations for drinking change found that breast cancer survivors who believed their cancer was related to alcohol consumption, or who thought change would ward off recurrence, were most likely to reduce their drinking (Rabin & Pinto 2006). Finally, social incentives may affect drinking after a change in health. Following health deterioration friends and family members may encourage reduced drinking to prevent further complications (Moos et al. 2005).

Research evidence on changes in alcohol consumption after changes in health

Hospitalisations, symptoms of disease, diagnosis of a long-term condition and acute health events all predicted a decrease in alcohol consumption in the USA (Molander et al. 2010; Moos et al. 2005; Perreira & Sloan 2001). In older problem-drinkers who cut-down or stopped drinking over a three-year period, two-thirds attributed their change in drinking habits at least in part to health problems (Walton et al. 2000).

Community dwelling adults aged over 65 years in the USA were significantly more likely to reduce their alcohol consumption if hospitalised or admitted to a nursing home during a 3-year follow-up period (Glass et al. 1995). This is perhaps surprising given that alcohol consumption among hospitalised and nursing home individuals is reported to be higher than in the community (Johnson 2000; Joseph 1995). These reviews on alcohol consumption in nursing homes report wide variation in the proportion of nursing home residents abusing or dependent upon alcohol; for example 2.8% to 49% (Joseph 1995). The type of hospital or nursing home under study, the subgroup of patients chosen, and the measurement instrument used all influenced this variation. For example, Joseph (1995) interviewed many patients who

were only temporarily admitted to hospital or a nursing home, so participants may have stopped drinking to avoid further hospitalisation.

The relationship between change in health and alcohol consumption is neither linear nor applicable to all forms of health deterioration, with considerable variation in drinking change by disease category. Among moderate drinkers who suffered a myocardial infarction (MI) only 16% quit drinking whilst 84% continued to drink moderately (Carter et al. 2010). Recent evidence supporting a beneficial impact of alcohol consumption on cardiovascular disease and mortality (Mukamal et al. 2010; Corrao et al. 2004) may have influenced abstention rates in this population. A study of older adults in the USA found that receiving a new diagnosis of diabetes mellitus or stroke were the strongest predictors of drinking trajectory, with individuals diagnosed with these conditions 65% less likely to be an increasing drinker (Platt et al. 2010). Evidence of alcohol consumption following diagnosis of upper aero digestive tract cancer[1] found between 34% and 57% of patients were reported to continue drinking after diagnosis (Miller et al. 2005), with younger and lighter drinkers more likely to abstain. This is despite the strong evidence for alcohol being a cause of upper aero digestive tract cancers. Abstinence rates in cancer patients varied depending upon the primary site, with 47-59% of head and neck cancer survivors but only 8-16% of breast and lung cancer survivors ceasing alcohol consumption post diagnosis (Demark-Wahnefried et al. 2005). This data on breast cancer is comparable to findings from Canada where 19.4% of women reported reducing alcohol intake in the year following a breast cancer diagnosis (Maunsell et al. 2002). Where health deterioration was associated with alcohol consumption, individuals may experience greater social expectation to reduce drinking and advice from health professionals on reducing the risk of relapse.

In contrast to the evidence supporting a decline in consumption after a change in health, some studies have found no relationship; for example no significant relationship was found between hospitalisation and alcohol consumption over time in one study in the USA (Platt et al. 2010) and no change between pre-and post-diagnosis drinking was found in Canadian adults diagnosed with hypertension (Neutel & Campbell 2008). In Demark, there was no significant difference in change in alcohol consumption over time between men who had cancer and men who did not have cancer (Karlsen et al. 2012).

[1] Upper aero-digestive tract is a term encompassing the oral cavity, larynx, pharynx and oesophagus.

Alcohol use has been reported as a form of self-medication. Research in mixed-age populations found alcohol was commonly used to treat chronic pain. Riley and King (2009) found that over a quarter of their US sample used alcohol to manage pain; 20% sometimes, 4% frequently and 3% always, whilst Arcury et al. (1996) found 15% of their Canadian sample had used whisky and 5.3% still used it to manage pain. In addition to pain management, alcohol is used for heart and vascular disorders and mental problems. Among Finnish adults aged 75 years and older, 40% of men and women used alcohol for such medicinal purposes, although 68% used only low levels (Aira et al. 2008). In this study 12% responded negatively to the alcohol consumption question but stated that they did use alcohol for medicinal purposes, suggesting that older adults might not consider the medicinal use of alcohol when asked to report on their general alcohol consumption.

General adult and older samples in the USA have reported prevalence of alcohol use for insomnia at 13% (Roehrs et al. 2002; Sproule et al. 1999), with users predominately male and single. Whilst older adults were more likely use prescription drugs for their insomnia, almost a sixth of this population used alcohol to help them sleep. Whilst moderate alcohol consumption might initially promote sleep, within a few days of continued use the effects diminish. Alcohol also results in increased sleep disturbance during the night (Stein & Friedmann 2005).

In summary, the relationship between a change in health status and drinking is varied but there is evidence supporting the hypothesis that alcohol consumption decreases as health deteriorates. New disease diagnosis, functional limitations and hospitalisation have all been widely associated with a decline in drinking over time. However, research suggests that particular conditions may bring about different changes in alcohol consumption, with some diseases more likely to result in a decline or abstention than others. In addition, some older adults report the use of alcohol to manage the symptoms of their health conditions, which may result in increased alcohol consumption or a slower decline over time than otherwise expected. As much of the research on the relationship between a change in health status and alcohol consumption has been conducted in the US, the current research expands knowledge of this relationship in the UK.

2.4.3 Experiences of changing drinking

In a review of the literature on health behaviour after cancer diagnosis, Pinto & Trunzo (2005) found that few studies investigated alcohol use after diagnosis, with available literature focussing on head and neck cancer. They found the focus of behaviour change research to be on the experience of modifying diet, exercise and smoking after disease diagnosis (e.g.

Malpass et al. 2009; Satia et al. 2009; Pinto & Trunzo 2005). Available evidence focuses on stroke and heart disease and highlights the complexities underlying behaviour change.

Exploring factors that facilitate and constrain lifestyle change in patients with coronary heart disease, Kärner et al. (2005) found issues such as physical symptoms, support from social networks, work issues, thoughts and beliefs about lifestyle change, self-esteem, and feelings of restriction and reluctance promoted or hindered change. In relation to acute myocardial infarction, participants acknowledged the harmful effects of bad lifestyle habits and identified lifestyle as a cause of their heart attack, but lifestyle change was reported to be more difficult than expected, with failure to change associated with trying to change too much at once (Condon & McCarthy 2006). In contrast, moderate heart failure patients in Sweden discussed their experiences of decreased tolerance to alcohol, which led to an avoidance of drinking following their health deterioration (Europe & Tynilenne 2004).

Lifestyle beliefs and behaviours after stroke in 29 patients across Scotland included alcohol as one of four lifestyle factors that increase risk of stroke recurrence (Lawrence et al. 2010). Personal beliefs about alcohol consumption (e.g. alcohol is stress relieving), the importance of family members beliefs, personal experiences (e.g. reducing alcohol consumption and still having a stroke) and how people understand lifestyle information (e.g. 'red wine reduces cholesterol') all impacted upon alcohol consumption change in this study.

2.4.4 Social changes and alcohol consumption

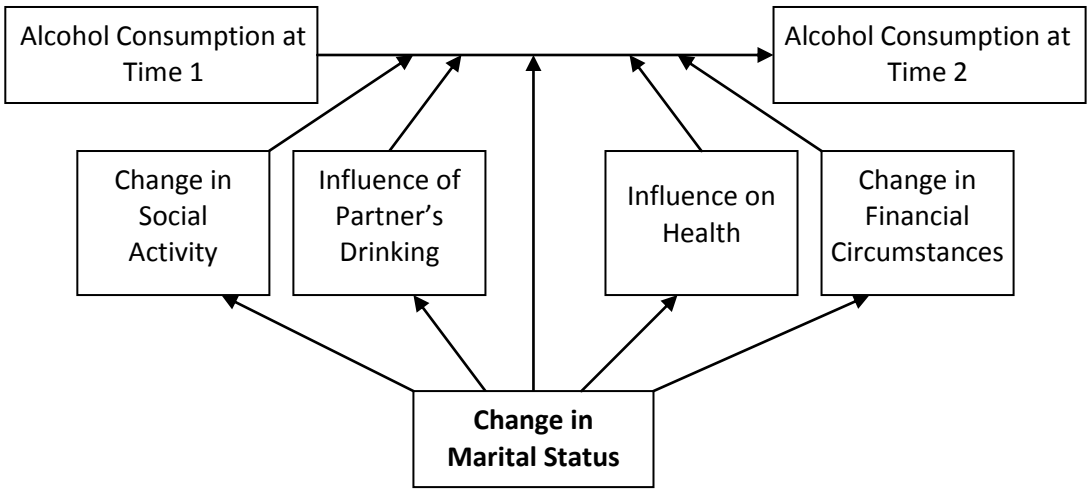
Change in marital status

A number of pathways exist through which a change in marital status might affect alcohol consumption (see Figure 2.7). The pathways are illustrated with reference to bereavement, which may affect alcohol consumption directly or indirectly. Directly, the emotions associated with losing a partner might impact on drinking habits; the desire to drink may be reduced or alcohol may be used as a coping mechanism (Grimby & Johansson 2009). Indirectly, bereavement can affect alcohol consumption through health deterioration, for example bereavement may lead to the development of depression (Williams 2005). Bereavement might affect drinking through modifying social activity related to drinking or if the spouse/partner was a drinking partner (Ward et al. 2008). Loss of a spouse may affect financial circumstances: bereaved individuals in the UK are at particular risk of debt and poverty (Kemp et al. 2004). Changes surrounding bereavement may impact negatively on financial circumstances, for example household income may decrease or surviving partners may be managing finances for the first time (Corden et al. 2008). Financial problems and income are linked to changes in alcohol consumption (Brennan et al. 2010a).

Research on the impact on alcohol consumption of a change in marital status has reported varied findings. Getting married was found to result in a decline in heavy drinking and drinking problems in the USA (Karlamangla et al. 2006; Perreira & Sloan 2001). Getting divorced was reported to have increased alcohol consumption over time and following divorce older adults were less likely to become abstainers (Platt et al. 2010; Perreira & Sloan 2001). Bereavement was linked to increased drinking among older US men who were higher-level drinkers at baseline (Glass et al. 1995). No relationship was found for older women, which may indicate that bereavement is more isolating for elderly men (Glass et al. 1995). This concurs with a study of older men in Australia that suggested loss of spousal care in recently bereaved men may explain higher levels of drinking in this group than in a matched sample of married men (Byrne et al. 1999), but conflicts with Grimby and Johansson (2009) who found that one third of Swedish widows drank alcohol for relief of grief. A recent US study found that alcohol consumption increased in the two years following bereavement, before steadily decreasing and then stabilising. In this study the increase in consumption was highest among higher-level drinkers and among men rather than women (Liew 2011). One US study found no change in alcohol consumption following a change in marital status, but with a 10-year follow-up period transient changes in drinking patterns may have been missed (Molander et al. 2010).

A qualitative study exploring the role of alcohol in the lives of older adults in England found that alcohol was sometimes used to cope with loss and loneliness following bereavement (Ward et al. 2008). Bereaved women in this study reported drinking less than when their husbands were alive but occasionally having a glass of wine as a 'pick-me-up'. Family and friends were reported to encourage drinking to cope with grief. History of heavy

Figure 2.7: Interactions between change in marital status and change in drinking



drinking led to alcohol being used as a prop following bereavement (Ward et al. 2008).

Change in family or friends

Change in social relationships for reasons such as bereavement, relocation, caring responsibilities, change in social activities or change in drinking attitudes may affect alcohol consumption over time. Current literature exploring the influence of wider family and friends on change in alcohol consumption over time is limited, but some research has explored these potential influences on drinking among older adults.

In Japan, loss of a loved one was associated with a curvilinear drinking trajectory: a short to medium-term increase in drinking followed by a long-term decrease (Gee et al. 2007). The loss of a friend due to moving home was associated with increased drinking among older adults in the USA, particularly among heavier baseline drinkers (Glass et al. 1995). This study also reported that a sick or injured relative was linked to increased drinking among heavier baseline drinkers. Relocation might also lead to decreased consumption if it affects contact with drinking partners or access to social settings, with social isolation reported to increase the odds of abstinence over time (Shaw et al. 2010). Experiencing significant loss can lead to increased excessive drinking or reduced consumption, depending on coping strategy and available social support (Veenstra et al. 2007; Jennison 1994).

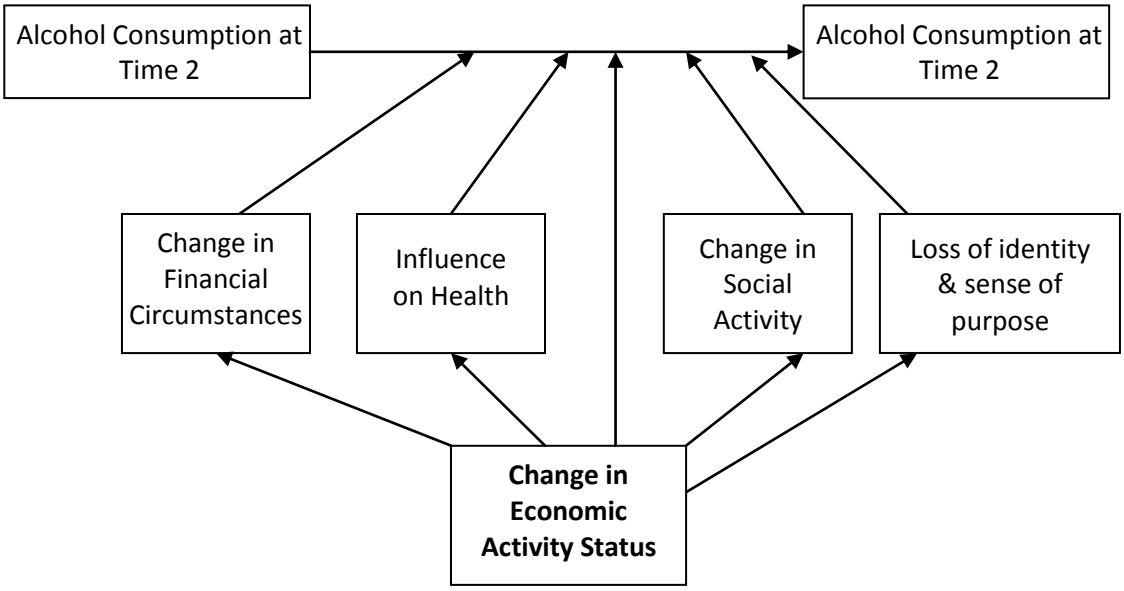
Assuming caring responsibilities may affect alcohol consumption through impact on social activity (Umberson et al. 2010). A study of informal carers in Britain found 88% changed their usual activities due to their caring role, with over half reducing their social activity (Simon et al. 2009). Thus caring responsibilities may lead to a reduction in alcohol use. Informal caring can also affect health (Umberson et al. 2010): one third of informal carers of dementia sufferers in England suffer from depression (Saad et al. 1995) and carers of stroke patients were 2.5 times more likely to suffer psychological distress than matched controls (Simon et al. 2009). The stress derived from caregiving has been reported to result in alcohol use for distress management among the carers of people with dementia (Saad et al. 1995) stroke (Lawrence et al. 2010) and cognitive disorders (Connell 1994).

2.4.5 Financial and economic changes and alcohol consumption

Change in economic activity status

A change in economic activity status is common in older adults. The move from employment to retirement can have both a positive and negative impact on health, social activity and financial circumstances. Figure 2.8 illustrates the pathways through which economic activity status might directly and indirectly affect drinking.

Figure 2.8: Interactions between change in economic activity status and drinking



The relationship between economic activity status and health is complex (Moen 1996). A move out of paid work may occur due to deteriorating health that prohibits employment (Banks et al. 2006; Disney et al. 2006): 28.8% of men and 24.7% of women in Britain cited their ill health as the main reason for retiring (Banks 2006). Where individuals retire for reasons other than health, the decline in physical activity and social interaction may lead to physical and functional limitation and depression (Dave et al. 2008). Changes in social activity and the increase in time available for leisure pursuits following retirement may affect alcohol consumption both positively and negatively (Touvier et al. 2010; Chaix et al. 2007; Ekerdt et al. 1989). If alcohol-related social activities or networks are centred on employment then retirement may lead to reduced drinking, for example, if drinking in the pub after work was a common social activity. Alternatively, increased leisure time may increase opportunities to drink, increasing alcohol consumption (Zins et al. 2011; Ekerdt et al. 1989). Alcohol consumption may also be affected by loss of role or work identity following retirement (Kuerbis & Sacco 2012), with drinking used as a coping mechanism. Such feelings of loss may be experienced both by retirees who transitioned to retirement involuntarily and those who chose to retire (Bacharach et al. 2008). Finally, transition to retirement may impact on financial circumstances (Chaix et al. 2007; Bardasi et al. 2002), with the potential for lower income to impact upon the affordability of alcohol (Peirce et al. 1994).

Research on change in economic activity status has reported mixed findings. Individuals who became employed were more likely to remain drinkers between the ages of 53 and 64 years than become non-drinkers, although transitioning to unemployment predicted a greater

total number of drinks per month compared with stable employment over time (Molander et al. 2010). Older adults suffering involuntary job loss were twice as likely to start drinking compared with those still in employment, but no difference was found in quantity consumed between employed and unemployed drinkers (Gallo et al. (2001). Retirement was associated with increasing consumption over six years among US adults but over a longer follow-up period of 14-years this association diminished (Perreira & Sloan 2001; Platt et al. 2010). This finding concurs with research that examined drinking behaviour in the five years before and after retirement in a French sample, where the prevalence of heavy drinking increased immediately after retirement for men and women in managerial and clerical roles, but decreased over the first four years of retirement in men and non-managerial women (Zins et al. 2011). A weak relationship was found between retirement and a reduction in drinking problems in Dutch older men (Neve et al. 2000). Elsewhere no relationship was found between retirement and mean change in alcohol consumption, although retirees were more likely to occupy the extremes of abstinence or heavier drinking (Brennan et al. 2010b; Bacharach et al. 2004; Ekerdt et al. 1989).

Interviews in England highlighted the diversity of alcohol consumption patterns upon retirement including increased consumption at the pub, increased consumption at home, and stable consumption (Ward et al. 2008). There was a view that the pub is an important place of social contact following retirement and going to the pub was viewed as an activity that had been regular during working life that would continue upon retirement (Ward et al. 2008).

These mixed findings are supported by a recent review of 13 studies investigating the relationship between retirement and alcohol use that found retirement may not have a strong direct influence on alcohol consumption behaviour (Kuerbis & Sacco 2012). However, factors such as the process of retirement (voluntary versus involuntary) and individual characteristics may affect alcohol consumption behaviour in older adults around the time of their transition out of the labour force (Kuerbis & Sacco 2012).

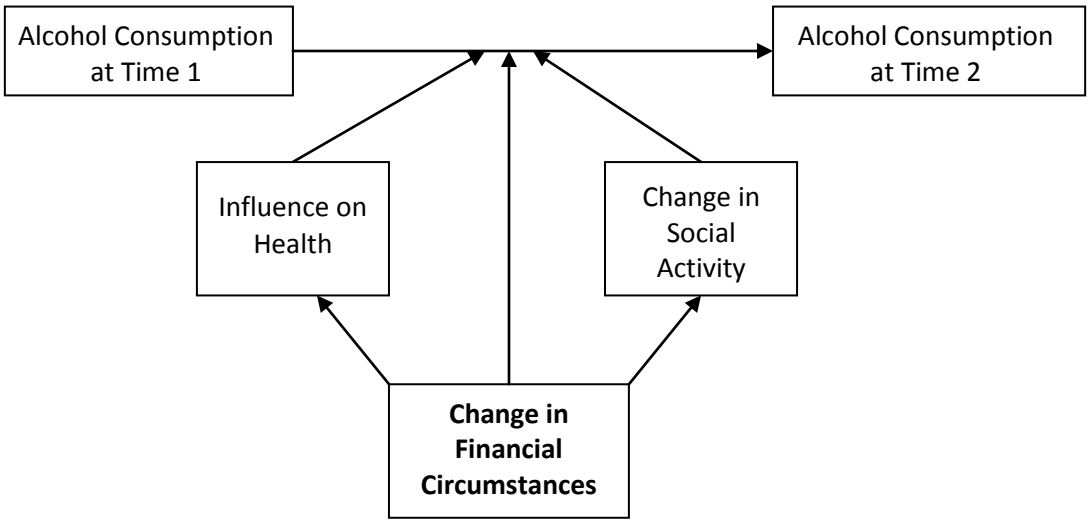
Change in financial circumstances

Changes in finances circumstances such as a change in income or experiencing financial problems can affect alcohol consumption**.** The potential pathways of change are illustrated in Figure 2.9. A change in income may have a direct effect on consumption if a reduction in money renders alcohol unaffordable at the current level of drinking. Indirectly, financial circumstances could affect drinking through social activity. Money can facilitate social activities and participation in society for older adults so a lower income may influence involvement in alcohol related activities (Gabriel & Bowling 2004). A change in financial situation could also

affect alcohol consumption through health; for example a sudden decrease in income may lead to depression, with a subsequent impact on drinking.

Whilst research has explored the impact of low income at baseline on long-term alcohol consumption patterns (e.g. Brennan et al. 2010a; Molander et al. 2010), few studies have examined the impact of a change in income. In the USA a relationship was found between financial stressors and a decline in quantity and frequency of alcohol consumption over time in older men, and frequency in older women (Brennan et al. 1999). Additionally, individuals with

Figure 2.9: Interactions between financial circumstances and change in drinking



a longer financial planning horizon were more likely to have stable consumption, with a longer financial planning horizon indicating fewer current financial problems, perhaps as the individual considered saving and planning for future spending to be important (Platt et al. 2010). Qualitative research found upwards and downwards influences of financial factors on older adults drinking. One view was that alcohol had become cheaper making it more affordable. Another was that being on a pension limited the amount of alcohol you could afford to purchase (Ward et al. 2008). Among heavy drinkers the affordability of alcohol was considered a significant barrier to reducing consumption.

2.5 Theories and models of behaviour change

This section describes the key features of different and models of behaviour change that can be used to aid understanding of why alcohol consumption behaviour changes variously in

older adults. Each is briefly outlined before the framework most relevant for organising the factors affecting alcohol consumption behaviour change in older adults is identified.

2.5.1 Dominant behaviour change theories and models

Behaviour change theories attempt to understand both individual differences in health behaviours and how such behaviours change over time. Dominant theories and models that could be applied to explain individual level changes among older adults include the Health Belief Model, the Theory of Planned Behaviour, Protection Motivation Theory, Social Learning Theory, the Transtheoretical Model and Capability Opportunity Motivation – Behaviour.

The Health Belief Model (HBM) proposes that action is dependent upon the interaction between four beliefs: 1) perceived susceptibility to a problem, 2) belief that the problem has potentially serious consequences, 3) there is a course of action available to decrease susceptibility, and 4) the benefits of action outweigh the costs. Cues to action and self-efficacy have been included in the HBM more recently, improving the explanatory power of the HBM for understanding long-term behaviour change (Glanz et al. 2008; Baum et al. 1997). Perceived susceptibility and severity of consequences constitute perceived threat, with greater perceived threat increasing engagement in positive health-related behaviours (Baum et al. 1997). For example, if an older adult with type II diabetes believes that their level of alcohol consumption is high enough to affect their blood glucose control (perceived susceptibility) and that poor glucose control has negative implications (perceived severity of consequences), they are more likely to decrease their alcohol consumption than one who does not believe poor glucose control is a problem or who does not think they drink enough alcohol to affect glucose control. The HBM is particularly useful for illustrating the importance of individual beliefs in motivating change and assessing the costs and benefits of action (Davies & Macdowall 2006). For example, in examining health behaviours using a model based upon the HBM, Jensen et al. (1992) found that both health beliefs and demographic factors had a significant and varied impact on seven healthy behaviours in older adults. Additionally, belief in the importance of physical activity for own health and the influence of the physician were both significant for increasing physical activity in older Medicare beneficiaries (Burton et al. 1999).

Whilst the HBM has been used successfully to understand differences in health behaviours, it has also received a number of criticisms. The notion of perceived susceptibility assumes that people are rational actors, but in reality health behaviours are determined by a combination of environmental factors and the individuals' habitual, emotional, and non-rational reactions to the external world (Taylor et al. 2007a). The HBM has also been criticised for failing to adequately specify the relationship between the key elements and for having a

lower predictive ability than other social cognition models (Taylor et al. 2007a). Originally developed for use in health promotion for screening and immunisation, HBM is most frequently used in the context of health services uptake.

The Theory of Planned Behaviour (TPB) hypothesises that a behaviour is affected by the strength of an intention to adopt that behaviour: the greater an individual's motivation to put in the effort to change, the greater their chance of success (Băban & Crăciun 2007). The strength of an intention to change is controlled by the perceived likelihood that adopting a given behaviour will have the desired outcome and social norms surrounding the behaviour. The TPB was introduced to expand the Theory of Reasoned Action (TRA) (Fishbein & Ajzen 1975), with the TPB including perceived behavioural control as an additional behavioural predictor and predictor of intentions. TPB postulates that an individual is more likely to engage in behaviours over which they feel they have more control, with control influenced by internal and external factors (Băban & Crăciun 2007). In TPB beliefs underlie all behaviour; thus by modifying underlying beliefs, introducing new beliefs or changing existing beliefs, risky behaviour can be changed. Previous research that used the TPB to study alcohol behaviour focused on younger adults. For example, among students behavioural intentions have been found to predict subsequent behaviour (Armitage et al. 1999). However, elsewhere attitudes and past behaviour predicted binge drinking and were not significantly mediated by behavioural intentions (Bentler & Speckart 1979). Perceived behavioural control was not a significant predictor of binge drinking behaviour among students, whilst self-efficacy and social facilitation did predict drinking behaviour (Ross & Jackson 2012). The Theory of Planned Behaviour can include subjective norms but does not focus on the impact of environmental or social factors on behaviour change because it is primarily oriented toward individual behavioural intentions (Taylor et al. 2007a). Thus, whilst it can examine individual *perceptions* of external environmental and social factors that may influence behaviour change (subjective norms) the TPB cannot reflect potentially observable facts of the environment, such as the impact of the number of pubs in a local area on drinking behaviour. The theory of planned behaviour can therefore be used to predict alcohol related behavioural intentions but may not adequately explain actual drinking behaviour in older adults because it cannot fully account for the range of environmental and social factors that, alongside behavioural intentions, determine alcohol consumption.

Social Cognitive Theory is built on the understanding of interactions between individual and environment, recognising that environment shapes our behaviour in complex ways through process such as reciprocal determinism (Davies & Macdowall 2006). Three 'personal cognitive' factors are important in SCT; observational learning, expectations, and self-efficacy

(Davies & Macdowall 2006). Observational learning is behaviour copied from others to gain rewards perceived to be associated with that behaviour, expectations are the anticipated outcomes of certain behaviour, and self-efficacy is an individual's perceived ability to make specific changes to affect an outcome. SCT may be useful for explaining alcohol consumption behaviour as drinking is often influenced by friends or family (Hallgren 2007).

SCT has been used to understand behaviour change in older adults. Among type I and II diabetes patients with respective average ages of 51.1 years and 63.0 years, SCT was useful for explaining the setting of physical activity goals and changing behaviour. Outcome expectancies and social support influenced goal setting and behaviour change, but self-efficacy was the strongest factor (Plotnikoff et al. 2008). In older women with heart disease self-efficacy was a modest but significant predictor of disease management behaviour (including adequate exercise and recommended diet) at four and 12 months post-diagnosis (Clark & Dodge 1999). In older Medicare beneficiaries higher self-efficacy predicted lower health risk in five health behaviours including alcohol (Grembowski et al. 1993). In community-dwelling older women self-efficacy was a significant predictor of dietary, exercise and stress management behaviour, but outcome expectancies only predicted stress management (Conn 1997). Self-regulation was the only SCT component affecting regular exercise among older adults independent of gender, income, ethnicity and education (Umstattd & Hallam 2007). This suggests that self-efficacy may be related to socio-demographic characteristics in older adults. Whilst much of the research using SCT to understand behaviour change in older adults focuses on physical activity, the key concepts can also be used to explore alcohol consumption behaviour change in older adults as they already have been in research among adolescents and young adults (e.g. Glanz et al. 2008; Dijkstra 2001; Burke 1999). For example, Dijkstra (2001) examined the influence of positive and negative alcohol expectancies, social influence and self-efficacy on university students, finding that social effects and the social context of drinking had the greatest predictive strength for drinking acquisition, with little effect of any factor on cessation.

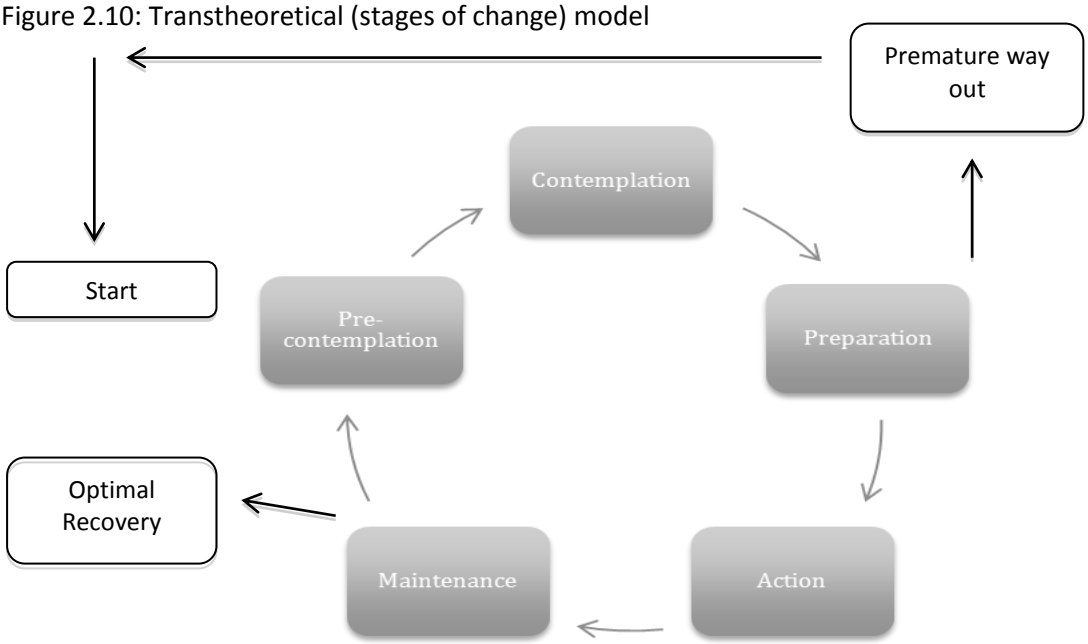
Protection Motivation Theory (PMT) explores the effectiveness of fear arousing communication for promoting behaviour change (Băban & Crăciun 2007). The key elements of PMT are threat appraisal (perceived severity of a threatened event and probability of occurrence) and coping appraisal (perceived efficacy of preventive behavior and self-efficacy). The hypothesis underlying PMT is that fear produces a cognitive response resulting in the intention to adapt behaviour. Fear arousing communication provokes analysis of the perceived vulnerability to an outcome, with threat appraisal most effective for producing positive behaviour change where the individual is faced with a new threat, such as diagnosis with a long-term condition. Alongside threat appraisal individuals conduct a coping appraisal,

examining the perceived effectiveness of behaviour change and their ability to make changes. In the alcohol field, PMT has been used to explain drinking behaviour in pregnancy (Morris et al. 2007), adolescents' intentions to abstain from alcohol (Stainback & Rogers 1983), and attitudes towards alcohol consumption in older adults (Runge et al. 1993). However, recent research that tested PMT as a model for disease prevention and health promotion found that only certain, non-unique, elements of PMT (such as self-efficacy) predicted behavioural intentions and change (Plotnikoff & Trinh 2010; Plotnikoff et al. 2009; Blanchard et al. 2009).

The HBM, TPB, SCT and PMT are distinct theories of health behaviour change that attempt to identify the factors that underlie behaviour change. Two additional integrative transtheoretical models have been developed that apply basic constructs from across these four theories to provide a broader model of health behaviour change: the Transtheoretical Model (TTM) and Capability Opportunity Motivation – Behaviour (COM-B) (Prochaska & DiClemente 1984; Michie et al. 2011).

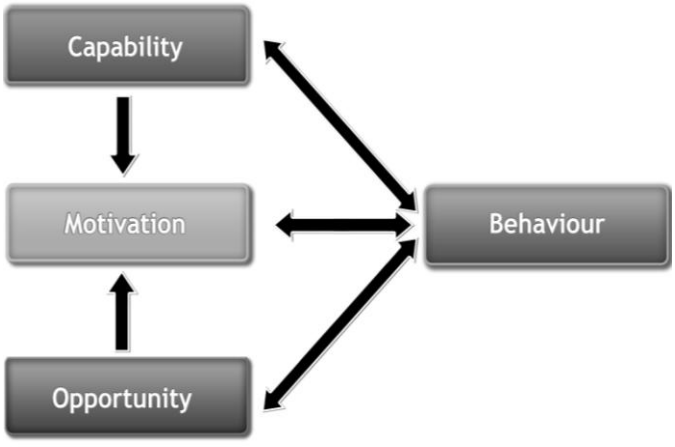
The Transtheoretical Model (TTM) assesses an individual's readiness to enact a new behaviour and provides strategies to guide the individual through the change process. It was introduced as a multi-stage model to describe behaviour change as a process rather than an event (Prochaska & DiClemente 1984). A key element of the TTM is the stages of change model (see Figure 2.10). There are five stages of change, but at any point an individual may withdraw from the process and return to an earlier stage. It is particularly useful for targeting behavioural interventions at groups who are at different stages in the change process, for example information leaflets to pre-contemplators and social support to those in maintenance (Davies & Macdowall 2006). The model has been used widely in health behaviour change among older adults. For example, in an assessment of 10 healthy behaviours among older adults most people were found to occupy either pre-contemplation or maintenance, highlighting the need to focus interventions at the pre-contemplation stage (Nigg et al. 1999). The stages of change have also been identified as helpful for recognising the diverse needs of substance misusers and identifying where the client and treatment provider meet (Di Clemente et al. 2004). However, the stages of change model has been criticised for artificially dividing the change process into stages, assuming individuals make stable and coherent plans, focusing on conscious decision making and neglecting issues around associative learning and the challenges of habit breaking (West 2005). Whilst potentially useful for developing and targeting interventions to individuals at different points in the change process, the stages of change model is less useful for organising the range of factors that affect drinking change in older adults.

Figure 2.10: Transtheoretical (stages of change) model



Capability Opportunity Motivation – Behaviour (COM-B) (see Figure 2.11) forms the central component of the behaviour change wheel, a relatively new framework for characterizing and designing behaviour change interventions (Michie et al. 2011). The COM-B was developed out of a review of behaviour change intervention theories. In the initial stages of development Michie et al. (2011) identified motivation as a key component of the framework, considered vital for any type of behaviour change. Motivation was defined broadly, as 'brain processes that energize and direct behaviour' (Michie et al. 2011, p.4), including both automatic processes and reflective choice or intention. Two additional factors were considered necessary for volitional behaviour change given sufficient motivation: capability and opportunity. These three factors were identified from work in two separate spheres – a meeting of behavioural theorists organized by the US National Institute of Mental Health in 1991 that involved the developers and/or leading proponents of five major behavioural

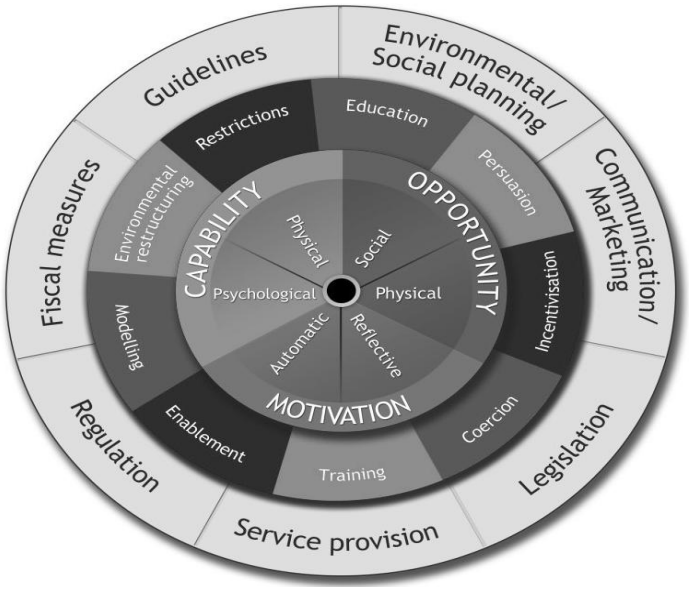
Figure 2.11: The COM-B system (figure taken from Michie et al. 2011)



theories[2], and the US criminal law system (means, motive and opportunity). Michie et al. (2011) suggest that the commonalities in terms of the application of theory between these two different disciplines support this model of behaviour change. Capability, opportunity and motivation can influence behaviour as illustrated in Figure 2.11. The behaviour change wheel incorporates a range of macro and micro level interventions to influence capacity, opportunity or motivation to change behaviour (see Figure 2.12).

Capability, opportunity and motivation are each subdivided into two groups resulting in six components (see Table 2.2): physical capability, psychological capability, reflective motivation, automatic motivation, physical opportunity and social opportunity. Physical capability is possession of the necessary skills and physical ability to change behaviour whilst psychological capability is having the knowledge or understanding about a given condition as well as the emotional, cognitive and behavioural skills required for change. Reflective motivation focuses on the individual's understanding of how knowledge applies to their personal situation, feelings about the benefits and drawbacks of current behaviour, and beliefs about the consequences of proposed changes. Consideration of these elements of reflective motivation drives the decision making process about whether or not to change behaviour. Where reflective motivation is a conscious process, automatic motivation describes unconscious drivers of behaviour including habit, imitative learning and emotions related to a

Figure 2.12: The behaviour change wheel (figure taken from Michie et al. 2011)



[2] The five theories (and theorists) were social cognitive theory (Albert Bandura), the health belief model (Marshall Becker), reasoned action (Martin Fishbein), self-regulation and self-control (Frederick Kanfer), and subjective culture and interpersonal relations (Harry Triandis).

given behaviour. Physical opportunity comprises physical environmental factors that affect behaviour whilst social opportunity describes social influences on behaviour.

Given the very recent development of COM-B and the behaviour change wheel, limited research has tested the practical application of this model for organising findings related to behaviour change or developing interventions. The exception is research that used the wheel to explore message generation on variable message signs on roads in Queensland. The author of this research on variable road signs proposed that the behaviour change wheel was beneficial in providing a comprehensive framework for generating safety messages that could be targeted to different groups of drivers (Mitchell 2011). Whilst the behaviour change wheel is very broad in coverage when compared to other theories and models of behaviour change, this facilitates incorporation of a fuller range of factors that might influence health behaviour, which can be mapped to different types of intervention using the wheel.

2.5.2 A model for drinking behaviour change in older adults

Elements of each of these theories and models have salience for research on alcohol consumption change in older adults, in part due to the overlap of key concepts. To date there has been a limited amount of research exploring the relevance of behaviour change models for understanding drinking change in older adults and the current research did not set out to address this gap in knowledge. However, appreciation of the salient elements of different models of behaviour change was useful for identifying different themes within the interview data. Components that span models and were relevant to drinking change in older adults

Table 2.2: Example of theoretical domains included within each component of the COM-B*

Capability	Physical	• Skill development • Enabling interventions (e.g. surgery)
	Psychological	• Imparting knowledge or understanding about condition • Training emotional, cognitive and/or behavioural skills • Capacity to engage in necessary thought processes e.g. reasoning
Motivation	Reflective	• Recognition of the relevance of knowledge about the condition and alcohol consumption to personal situation • Positive or negative feelings about the behavioural target • Beliefs about ability to act and consequence of action
	Automatic	• Associative learning that elicits positive and negative feelings and impulses relating to the target • Imitative learning • Habit • Emotion (e.g. fear, depression, anxiety, affect)
Opportunity	Physical	• Physical environment (e.g. person x environment interaction, barriers and facilitators, resources)
	Social	• Social influences (e.g. social pressure, social norms, group conformity)

*Adapted from Michie et al. 2011 & Cane et al. 2012

included social norms surrounding alcohol consumption, cues to action, decisional balance, threat appraisal, and perceived efficacy of preventive behaviour. Of all of the theories and transtheoretical models described in Section 2.5.1, the COM-B was identified as the most useful organising framework for the data on drinking behaviour change and maintenance in older adults because it was the only one that included all of the factors identified by the older adults as relevant to drinking change. The stage of analysis at which COM-B was introduced as an organising framework is described in Section 5.5.3 (p.122) and the particular components of the COM-B that were used to organise the data are outlined in Section 8.2 (p.165).

2.6 Summary

Alcohol consumption data collected through surveys plays a central role in exploring drinking in older adults. Whilst concerns surrounding the accuracy of surveys are legitimate, well-conducted surveys can be sufficiently accurate to be useful. Surveys are currently the best available measure for measuring drinking and related problems at the individual level.

Alcohol consumption is common in the older population. Abstention rates are lower in the UK than in most countries at around 10-15% of older men and 25% of older women. Older adults in the UK are more likely to be higher-level or binge-drinkers compared with those in Europe, Australasia and the US. Although alcohol consumption declines with age, in the UK around a quarter of men and a fifth of women aged over 65 years drink at a higher-level. As most of the research on change in alcohol consumption following a change in health has originated outside the UK, these differences have implications for the generalisability of previous research findings.

Despite these limitations, the predictors of change in alcohol consumption identified in previous research were examined to guide the selection of variables for analysis in the current research. Changes in health have been identified as one factor often affecting drinking over time in older adults, with evidence supporting the hypothesis that alcohol consumption decreases as health deteriorates. New disease diagnosis, functional limitations and hospitalisation have all been widely associated with a decline in drinking over time. However, research suggests that particular conditions may bring about different changes in alcohol consumption, with some diseases more likely to result in a decline or abstention than others. In addition, some older adults have reported the use of alcohol to manage the symptoms of their health conditions, which may result in increased alcohol consumption or a slower decline over time than otherwise expected. Other significant changes that variously affect alcohol

consumption behaviour over time were also explored, including changes in marital status, social relationships and financial circumstances.

Exploring alcohol consumption change in older adults who have experienced recent changes in health is important: whilst alcohol can have adverse health effects in the presence of long-term conditions there are a number of reasons why older adults might choose not to reduce their alcohol consumption, including social benefits, enjoyment and self-medication. The interaction between these costs and benefits of alcohol consumption needed to be examined to understand the underlying reasons for drinking patterns in this population.

2.7 Thesis aim and objectives

Given that existing research on older adults is predominantly focused on defining, identifying and treating 'problem drinking', the current research explored the wider relationship between changes in health and non-health factors and alcohol consumption in older adults. The aim was to improve the UK evidence base in the area of alcohol consumption change in older adults, exploring factors that affect change and maintenance of drinking behaviour in a population where limited previous research has been conducted. The focus was on how and why older adults modify or maintain their drinking behaviour after health deterioration, but as is evidenced through Part III a number of non-health life changes were also relevant for understanding alcohol consumption behaviour change in this population.

The objectives of this thesis were to:

I. To examine the alcohol consumption behaviour of older adults, including socio-demographic variations in consumption and reasons for drinking alcohol, using data from ELSA and interviews with older adults.
II. To describe how alcohol consumption changes over time in older adults and explore differences in behaviour change between older adults who do and do not experience life changes (e.g. changes in health) using data from ELSA.
III. To explore the processes underlying change or maintenance of drinking behaviour in older adults who have been diagnosed with a long-term condition, using in-depth interviews.

The specific research questions that were answered within each Objective are:

Objective I:
1) What are the current alcohol consumption patterns of older adults and how do they vary by socio-demographic characteristics?
2) What purpose(s) does drinking serve for older adults?

Objective II:
3) What are the patterns of change over time in alcohol consumption?
4) What is the relationship between changes in health and alcohol consumption change in older adults?
5) What is the relationship between non-health changes and alcohol consumption change in older adults?

Objective III:
6) What kind of knowledge do older adults have of the relationship between health and alcohol consumption?
7) What mechanisms lead to a change or maintenance of alcohol consumption behaviour in older adults after a change in health?

Part II: Methodology and Methods

Chapter 3: Methodology

3.1 Introduction

Chapter 3 describes the methodological approach of the current research. An introduction to mixed methods research and some epistemological and technical considerations are presented in Section 3.2. Section 3.3 introduces different study designs for mixed methods research before describing the initial research design and subsequent evolution of this study. Section 3.3 also outlines the measures that have been taken to ensure the quality of this mixed methods research. Finally, Section 3.4 presents the ways in which the quantitative and qualitative components of the research were integrated at various stages of the project including analysis and interpretation, as well as outlining how contradictions within the data were managed. Chapter 3 focuses on how and why the quantitative and qualitative data were integrated within this project. Detailed descriptions of the quantitative and qualitative research are presented in Chapters 4 and 5 respectively.

3.2 Epistemology and application of mixed methods

In contrast to the quantitative and qualitative traditions, mixed methods research has relatively recently emerged as a separate approach to research (Teddlie & Tashakkori 2009). Defined as 'research in which the investigator collects and analyses data, integrates the findings, and draws inferences using both qualitative and quantitative approaches or methods in a single study or program of inquiry' (Teddlie & Tashakkori 2009, p.7), mixed methods research is the combination of qualitative and quantitative tools within one project. Whilst 'mixed methods' is accepted terminology for research that combines quantitative and qualitative methods, common synonyms include synthesis, integrating and multi-method research (Creswell 2009). As a result of the increased interest in mixed methods research a range of textbooks on conducting mixed methods research as well as new journals dedicated to mixed methods research have been published over recent years (O'Cathain et al. 2007).

Mixed methods researchers face additional challenges to mono-method researchers when developing research projects for two key reasons: epistemological considerations around the combining of quantitative and qualitative methods and the technical challenge of integrating methods to develop good quality mixed methods research. The practicalities of

ensuring good quality research are outlined in Section 3.3.3. Epistemological considerations originate from differences in the epistemological and ontological underpinnings of quantitative and qualitative research: for example, quantitative research is associated with positivism whilst qualitative research is associated with interpretivism or constructionism (Bergman 2008; Ritchie & Lewis 2003). Some of the key tendencies of quantitative and qualitative research are presented in Table 3.1. These differences are often viewed as opposites, but despite these differences in quantitative and qualitative research there are also areas of overlap between these two approaches to research, for example qualitative research can undertake a limited amount of quantification (Bryman 2008).

The epistemological complications of transcending methodological 'boundaries' in this way are an important consideration in the development of a mixed methods project (Devine & Heath 1999). Debates around the feasibility of mixed methods research usually focus on either (or both of) the 'embedded methods' or 'paradigm' arguments (Bryman 2008). The embedded methods argument proposes that methods are associated with epistemological and ontological commitments and therefore cannot be combined because different methods subscribe to different versions of reality and how we can know that reality. However, in practice methods choices, rather than being directed wholly by epistemological and ontological considerations, are driven by practicalities and methodological traditions within different fields (Platt 1996). Additionally, the dichotomies or polar assumptions of qualitative and quantitative research are too basic and do not adequately characterise the different approaches to research (Hammersley 1992), with the epistemological assumptions related to a given method more tendency than assumption (Bryman 2008). The paradigm argument contends that quantitative and qualitative research are different paradigms, and paradigms are incommensurable, so methods integration is only superficial at best and occurs within a single paradigm. However, as with the embedded methods argument an assumption is made on the interconnectedness of methods with epistemology. Additionally, there is no definitive

Table 3.1: Some qualities of quantitative & qualitative research (Bergman 2008; Hammersley 1992)

Qualitative	Quantitative
Realism	Idealism
One or many constructed realities, or no reality	Single reality
Interdependence of the knower and known	Possibility & need to separate knower & known
Value-laden research process and output	Possibility and necessity of value-free research
Centrality of context, cannot generalise	Ability to generalise beyond contextual limits
Inductive, exploratory research	Deductive research
Meanings	Behaviour
Words	Numbers

evidence that quantitative research and qualitative research are paradigms (Bryman 2008), so even if paradigms are incommensurable, mixed methods research can be justified because quantitative and qualitative research are not separate paradigms.

Mixed methods researchers should choose methods that are appropriate to the research context and questions they attempt to answer (Silverman 2006; Devine & Heath 1999). In health and social research, methods are often combined on this pragmatic rather than an ideological basis (O'Cathain et al. 2007). Pragmatism views qualitative and quantitative research as complementary research strategies that can be used to answer different types of research question (Ritchie & Lewis 2003). Pragmatism rejects a choice between positivist and constructivist views; rather than prioritising methods, the problem and how it can be addressed is most important (Creswell 2003). Whilst mixed methods researchers often choose pragmatism, this can be problematic for many researchers because pragmatism can result in neglect of the epistemological underpinnings of research methods (Ritchie & Lewis 2003).

A mixed methods approach was used in the current research because the different research questions were best approached using a combination of quantitative and qualitative tools. As described in Section 3.3 below, the initial study design was sequential with equal weighting between the quantitative and qualitative research, developing into an integrated design as the research progressed as a result of movement between the quantitative and qualitative components. Equal weighting occurs where the quantitative and qualitative phases of a mixed methods project are assigned equal priority within the design, collection, analysis and interpretation stages of a project. The equal weighting was assigned because, given the paucity of information on drinking change following health deterioration among older adults in the UK, the quantitative research was required to improve understanding of this association at a national level. However, the qualitative research was as important because it facilitated greater understanding of why older adults changed their drinking behaviour that might help to focus interventions to modify drinking and reduce alcohol-related harm in this population.

It has been suggested that the most comprehensive research on factors related to behaviour change and consumer perspectives of change uses a sequential mixed methods approach (Forthofer 2003). Sequential equal weight mixed methods research is also the most frequently reported mixed methods research in three behavioural science journals (Lopez-Fernandez & Moline-Azorin 2011), suggesting this approach has been found useful across the field of behaviour change. Sequential and integrated mixed methods have been used previously to answer questions on alcohol consumption behaviour change, providing more comprehensive understanding of behaviour change than would have been observed using a single method (e.g. Ames et al. 2008; Castro & Coe 2007). Thus, the decision to mix methods

was a pragmatic decision that acknowledged the successes of previous mixed methods alcohol research. However, this decision was not made within an epistemological void. I adopted a subtle realist position, believing that 'social phenomena… exist independent of people's representations of them [and] are only accessible through those representations' (Ritchie & Lewis 2003, p.13). Subtle realists believe that we cannot be certain of the validity of any belief, but that we should assess claims to knowledge for plausibility, supporting evidence, compatibility with current beliefs and chance error. Thus, for subtle realists knowledge is 'beliefs about whose validity we are reasonably confident' (Hammersley 1992, p.50). As a subtle realist I believe there is an independent reality that research may reflect accurately. Knowledge may be considered true if our beliefs correspond to such independent phenomena, provided that in making such claims researchers do not alter the independent phenomena so that the claim becomes true. In reality social researchers are unlikely to exert substantial influence on what they describe because many powerful factors are involved (Hammersley 1992). I believe that there are many differing points of view on a given topic and that in social research reality is represented from one of those views: other viewpoints are also valid and would produce different accounts of the same reality. In practice, my position as a subtle realist required vigilance for error and acknowledgement that I have my own beliefs and assumptions that can influence my approach to and interpretation of findings. Through reflexivity, such assumptions and the potential impact of them are made explicit in the written account of the current research.

3.3 Study design

Mixed methods study design is influenced by the justification for combining quantitative and qualitative research. Bryman (2006) presents a fairly comprehensive set of motivations for mixing methods including: triangulation or greater validity, completeness or to produce a more comprehensive account, explanation of findings, understanding unexpected results, instrument or theory development, sampling, illustration, offsetting weaknesses from single methods, and to confirm and discover (Bryman 2006). This list is not exhaustive, but identifies different rationale that researchers have given for their mixed methods research. It can be condensed to produce a more parsimonious set of justifications for mixing methods: confirmation, complementarity, development and comprehensiveness. Firstly, comprehensiveness, using quantitative and qualitative methods to produce a fuller understanding of the phenomenon under investigation, has been identified as a principle

driver in the decision to undertake mixed methods health services research (O'Cathain et al. 2007; Sandelowski 2003). In health research, mixed methods has developed from the acknowledgement that the wide range of research questions we want to explore cannot be answered using quantitative research alone, with qualitative research needed to engage with the complexities of health and the social environment (O'Cathain et al. 2007). Secondly, quantitative and qualitative methods can also be used together to develop new theory or instruments as well as guide sampling strategies (Greene et al. 1989). A third motivation to mix methods is for confirmation, to compensate for weaknesses in each methodology (Small 2011). In practice, this methodological triangulation is rarely cited as a reason for combining quantitative and qualitative research (Greene et al. 1989). Finally, a mixed approach can be used for complementarity, to verify results across studies and ensure findings are not an artefact of a particular methodological approach (Small 2011; Morgan 1998). Confirmation and complementarity have been criticised for a lack of feasibility due to the different epistemological traditions of quantitative and qualitative methods (Sale et al. 2002). Sale et al. argue that these two methodological approaches cannot study the same phenomenon and so one set of data cannot be used to confirm or complement the other. Instead, they propose that mixed methods should mix quantitative and qualitative data by using similar outcome measures across research whilst distinguishing between what quantitative research can measure and the lived experiences qualitative research can explore (Sale et al. 2002). This corresponds to ideas around comprehensiveness as a driver for mixed methods research, which is the purpose of mixing methods within this project.

Three key considerations within a mixed methods design are timing, weight and stage of mixing (Creswell 2009; Leech & Onwuegbuzie 2007). Firstly, the qualitative and quantitative components of a mixed methods project can be implemented sequentially (e.g. quan –> qual) or concurrently (e.g. quan + qual). A sequential design might use the findings from one phase of research to inform sampling or questionnaire design for a second phase of research whilst a concurrent design collects and then analyses different types of data simultaneously. Secondly, the priority attributed to each component is significant: the quantitative and qualitative can be weighted equally, or one element can be weighted over the other (e.g. QUAN –> qual). For example, a small qualitative study might be used to develop measures for a questionnaire to be distributed nationally. Finally, the stage of mixing should be explicit, as mixed methods research should be integrated so that the whole project is more that the sum of the parts (Creswell 2009). Data can be integrated at one or more of the collection, analysis and interpretation stages of a project, as discussed in Section 3.4.

Whilst these three elements are central to developing a mixed methods project, in the development of typologies of mixed methods research other design features have also been considered including the number of methodological approaches used, the number of phases, the function of the study, and the theoretical or ideological perspective (Teddlie & Tashakkori 2009). Typologies can be useful for organising the multitude of research designs that exist with the field and an awareness of these different designs was important when planning this project; however, current typologies are not exhaustive (Teddlie & Tashakkori 2009). At the outset of this research, the four design types presented by Creswell and Plano Clark (2007) were favoured as a simple yet functional typology for mixed methods research (see Table 3.2).

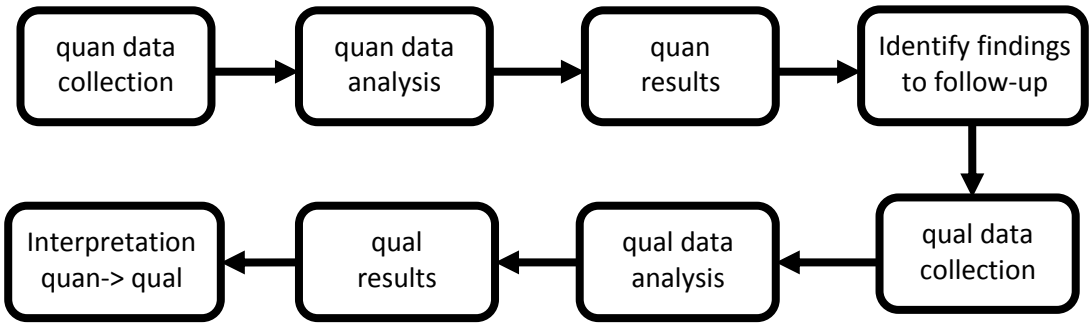
3.3.1 Initial research design

Research that was attentive both to changes in drinking patterns resulting from changes in health (and non-health) factors in older age and the multiple contextual factors that influenced these patterns of drinking change required a mixed methods approach. This project was designed as an explanatory follow-up study (Creswell & Plano Clark 2007). Explanatory follow-up is a sequential design that uses qualitative research to follow up the results of quantitative analysis, exploring significant or unexpected findings in depth (Morse 1991). The data collection and analysis stages for a typical explanatory follow-up design are illustrated in Figure 3.1. Comprising two phases of data collection, an explanatory design is advantageous to lone researchers as one phase can be completed before the other begins, although the process

Table 3.2: A typology of mixed methods research (Creswell & Plano Clark 2007)

Design Type	Description	Variants
Triangulation	A one-phase design where quantitative and qualitative data on a topic is collected concurrently and the findings from all data are used to improve understanding of a phenomenon from different perspectives.	Convergence Data transformation Validating QUAN data Multilevel
Embedded	A design where one methodological approach is supplementary to the other. For example, where qualitative research fulfils a secondary role in a primarily quantitative study.	Experimental Correlational
Exploratory	A sequential design that uses a first phase of qualitative research in inform subsequent quantitative research, for example for instrument development.	Instrument development Taxonomy development
Explanatory	A sequential design that uses qualitative research to explore significant or unexpected findings from quantitative research, for example to improve understanding of relationships.	Follow-up Participant selection

Figure 3.1: Follow-up explanations model (adapted from Creswell & Plano Clark 2007)



can be lengthy and adequate time must be allocated to the second phase of the research (Creswell & Plano Clark 2007). Given that most of the research exploring the relationship between changes in health and subsequent alcohol consumption originated in other countries, it was important to first establish how patterns of alcohol consumption change over time in England. Hence, the quantitative research was the first phase of the study. The theoretical assumption underpinning the first phase of this research was driven by knowledge of the relationship between changes in health and alcohol consumption from the literature: it was expected that health deterioration would result in a decline in alcohol consumption over time. The second phase of the current research was designed to use qualitative research to further explore significant findings related to changes in health and drinking. The sampling strategy and topic guide for the qualitative research were dependent upon the findings of the quantitative analysis. The quantitative and qualitative research were assigned equal weighting within the overall project. Integration was planned both during the development of the qualitative data collection strategy and during the interpretation of findings.

3.3.2 Design evolution

The research design was modified at two stages during the research process. The first change occurred when the theoretical assumption underlying the quantitative analysis was found to be inadequate. Preliminary quantitative analysis found no relationship between changes in health and alcohol consumption over time. Given that the qualitative research was initially conceived to generate a fuller understanding of the significant findings of the quantitative research, the absence of any significant quantitative results affected the purpose of the qualitative research. The qualitative research was developed into an exploration of the alcohol consumption of older adults who had been diagnosed with a long-term condition. The interviews were designed to explore both alcohol consumption habits and health over time, and probe how older adults view the relationship between their health and their drinking. The

sampling strategy is detailed in Chapter 5, but the aim was to recruit a diverse sample of older men and women from different socioeconomic groups with whom to explore these concepts.

The second, more significant change to the research design occurred during the early thematic analysis of in-depth interviews when the variety of motivations to change drinking over time became evident. Health was cited as a driving factor for behaviour change, as well as social, financial and psychological factors. The range of stimuli for drinking change evident in the interviews prompted a re-examination of additional variables around social and financial change within the ELSA data. Within the mixed methods literature the potential for this type of design modification during a project is recognised: new conditions or information that emerges may cause the researcher to adapt their design (Johnson & Onwuegbuzie 2004), or researchers may add another phase of data collection or analysis to explore dissonance (Creswell et al. 2008). In addition to examining some new variables, at this stage the decision was made to modify the statistical analysis technique from change score analysis to chi-squared analysis of the association between life changes and different patterns of drinking change because using an aggregate change score measure concealed the diversity of drinking behaviour changes within the ELSA sample (see Section 9.3.2 p.209 for a more detailed explanation of this decision).

The final mixed methods design is illustrated in Figure 3.2. This design is most like what Teddlie and Tashakkori (2009, p156-157) call a 'Fully Integrated Mixed Design' (FIMD). Similar to the FIMD, this project uses the data in a dynamic and reciprocal manner to inform collection, analysis and interpretation of further data. The range of data collected with ELSA facilitated this recursive element, because a number of questions on social and financial circumstances were asked during data collection and so it was possible to identify relevant variables to examine, at a population level, the relationships between non-health factors and alcohol consumption that were evident within the qualitative data.

Although the research design has evolved over time in terms of priority and sequence, the justification for mixing methods has remained constant: to provide a fuller picture of alcohol consumption behaviour and change over time in older adults who have experienced health deterioration. In particular, the project aimed to improve understanding of the mechanisms that resulted in a change in drinking behaviour after disease diagnosis in older adults. However, given the paucity of knowledge on drinking change after a change in health in this population the quantitative research was necessary to first test the initial theoretical assumption of the current research by identifying patterns of drinking change that could then inform the qualitative sampling strategy. The reciprocal nature of the final design increases

comprehensiveness through a more detailed probing of emergent findings to understand the broader patterns of and individual motivations for change.

The objectives and research questions set out at the end of Chapter 2 are presented below, identifying which research questions are answered by the quantitative and which are answered by the qualitative data (see Figure 3.3).

Figure 3.2: Diagrammatic representation of mixed methods design

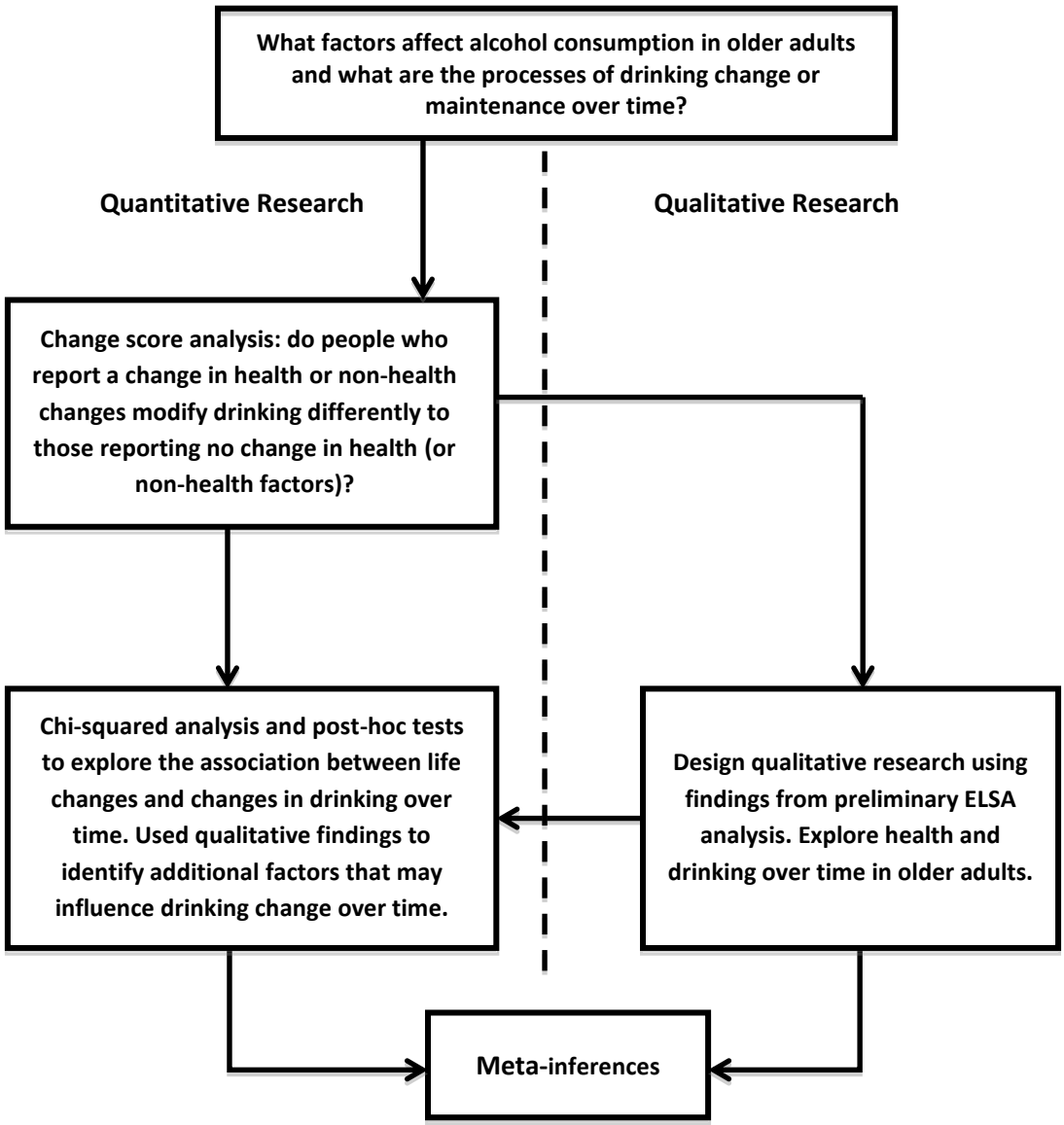
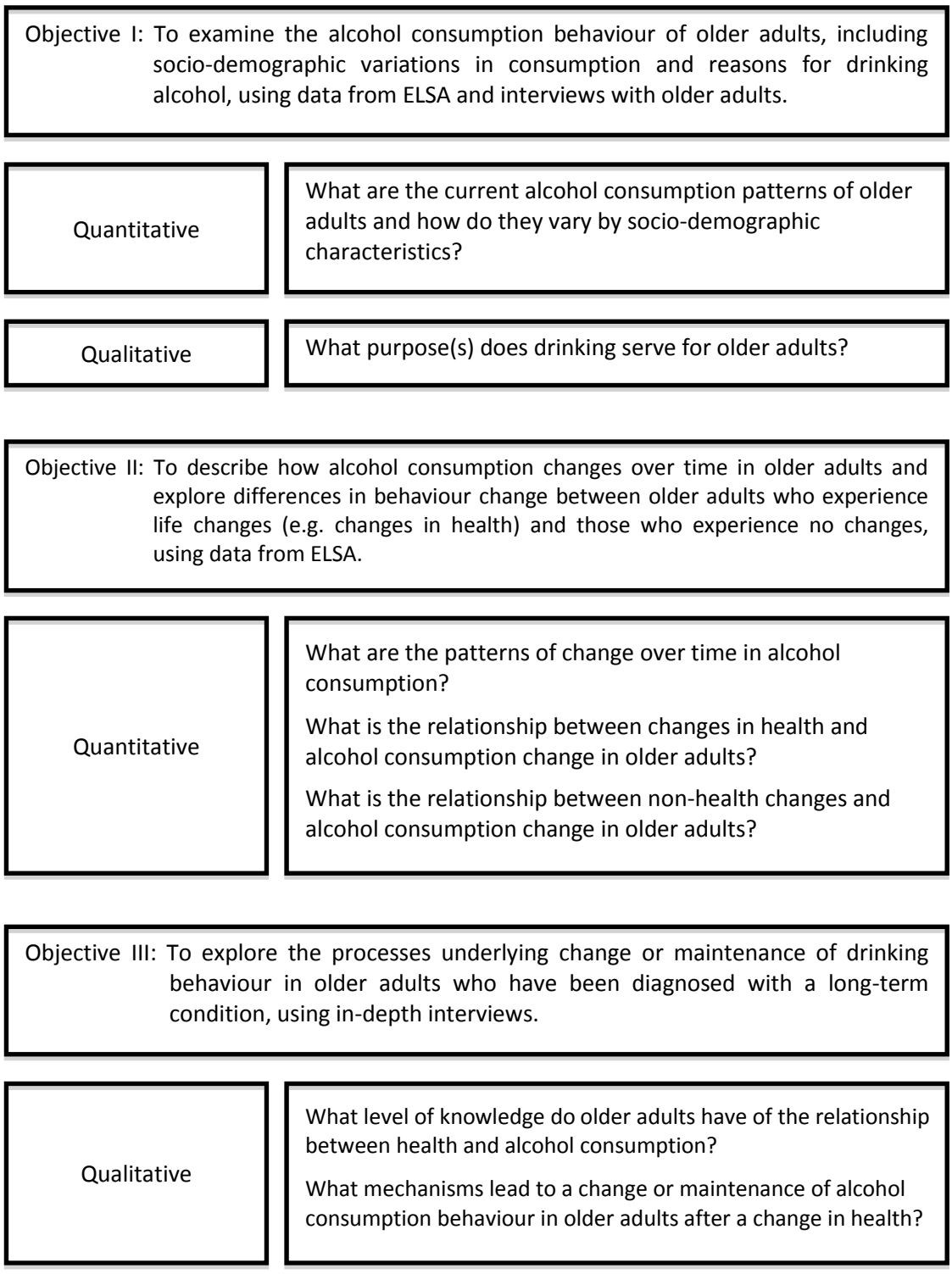


Figure 3.3: Quantitative and qualitative research questions



3.3.3 Quality in mixed methods research

Quality criteria for judging mixed methods research have relatively recently been developed. In 2004, a review of criteria for judging primary mixed-methods research in health found that there were no measures specifically for assessing the quality of mixed methods studies, although quality criteria for assessing qualitative and quantitative research within their separate paradigms in mixed methods projects was common (Sale & Brazil 2004). A review of UK health research funded by the Department of Health found a widespread lack of justification for mixing methods as well as a lack of transparency in both the mixed methods research design and individual methods used, making judgements about research quality challenging (O'Cathain et al. 2008).

Good quality mixed methods research should apply standards of quality to each separate strand of the research project as well as the meta-inferences that develop out of the integration of findings (Teddlie & Tashakkori 2009). Within the current research the guidance 'Good Reporting of A Mixed Methods Study' (GRAMMS) developed by O'Cathain et al. (2008) was used to ensure a good quality project. The different elements of GRAMMS and where they are described in relation to the current research are presented in Table 3.3. GRAMMS considers aspects of both the design quality and interpretive rigour of a mixed methods study, features that Teddlie and Tashakkori (2009) also consider to be important for the development of good quality inferences. Design quality requires that appropriate procedures be used to collect and analyse the data, whilst interpretive rigour explores issues of consistency, analytic distinctiveness, efficacy and interpretive correspondence (Teddlie & Tashakkori 2009). In practice this meant asking questions of the research such as: *Do inferences follow findings? Have I made the most credible inferences? Do the meta-inferences incorporate separate inferences and have I explained inconsistencies? Do my inferences correspond to the purposes of the study? Do the meta-inferences justify the use of mixed methods?* Consideration of these types of quality assessment question should have improved the quality of the current research.

Table 3.3: Good reporting of a mixed methods study (GRAMMS) (O'Cathain et al. 2008)

Quality Measure	Location
1) Justification for using a mixed methods approach	Section 3.3
2) Description of the research design in terms of purpose, priority & sequence	Section 3.3
3) Description of each method (sampling, data collection and analysis)	Chapters 4 & 5
4) Description of where and how has integration occurred	Section 3.4
5) Discussion of the limitations of the methods (apart and together)	Section 9.3
6) Discussion of the insight gained from mixing methods	Section 9.1 & 9.2

3.4 Data Integration

Section 3.3 described how the design of this mixed methods project influenced integration of quantitative and qualitative data at the data collection stage. This section outlines further integration of the data that occurred during data analysis and the interpretation of findings, as well as at the writing stage. Historically, genuine integration of qualitative and quantitative findings within mixed methods research has been limited (Bryman 2007). This limitation arises from a number of barriers to integration including methodological preference, skill specialisms, structure, timelines, and the problem of writing for different audiences (Bryman 2007). More recently, integration seems to have increased at various levels including during data collection, analysis and interpretation (Bazeley 2009). This development should enhance the findings of mixed methods studies so that they are more valuable than the constituent qualitative and quantitative components.

3.4.1 Analysis

Data within different components of a mixed methods project may be analysed concurrently or sequentially, with quantitative and qualitative results converging at a point of intersection following sequential analysis. Integrating quantitative and qualitative data during the analysis process can help the researcher to better understand what the data shows (Onwuegbuzie & Teddlie 2003); for example, qualitative, in-depth data may be used to probe a theory to develop a better understanding of a quantitative finding. Techniques for integrating during analysis include use of 1) a mixed methods matrix and 2) following a thread (O'Cathain et al. 2010). The mixed methods matrix requires multiple forms of data on single cases and therefore is not appropriate for use within the current research. Following a thread is an iterative approach to data analysis introduced by Moran-Ellis et al. (2006) that explores individual concepts arising in one set of data to the other available data, trying to improve understanding of the phenomenon of interest by analysing across datasets.

In addition to analysing qualitative data as qualitative data and quantitative data as quantitative data, one area of mixed methods research has been to explore quantitising or qualitising data (Creswell 2003; Teddlie & Tashakkori 2009). An example of this transformative mixed methods approach is described by Singer et al. (1998) who used a longitudinal data set to develop rich individual life histories for a few cases and then explored across these rich descriptions for commonalities and distinguishing features between groups of women with different mental health outcomes. Whilst transformative mixed methods, and particularly the quantitising of qualitative data, are relatively common within mixed methods research, there

are a number of criticisms of these approaches (Sandelowski et al. 2009; Driscoll et al. 2007). Principle concerns when quantitising qualitative data are the loss of narrative depth and flexibility, and the limitations of statistical analysis (e.g. small sample sizes) (Driscoll et al. 2007). Conversely, qualitising numerical data may produce an over-simplified view of reality (Teddlie & Tashakkori 2009). Data is not transformed within the current study.

Preliminary quantitative analysis was completed before the qualitative data collection strategy was developed, so integration with qualitative data was not possible at this early stage. During analysis of the qualitative data it became evident that a range of social and economic factors had influenced alcohol consumption over time in the study population and this finding prompted the inclusion of additional social and economic variables from ELSA in further quantitative analysis. The qualitative analysis and second phase of quantitative analysis began as separate, sequential analyses; however, analysis converged when it became beneficial to use results obtained from the quantitative analysis to further explore the qualitative data (e.g. to examine areas of agreement and dissonance), and vice versa. This process of movement between the quantitative and qualitative data during the latter phases of the analysis facilitated a more thorough examination of the phenomenon under study that resulted in greater overall understanding, emphasising the importance of integration of data at this stage.

3.4.2 Interpretation

Where qualitative and quantitative data are collected and analysed separately, the results can be compared at the interpretation stage with the aid of a comparative table (Woolley 2009). Combining findings at this stage can help to provide a more complete picture and is often called triangulation: using '…qualitative and quantitative methods to examine different aspects of an overall research question' (O'Cathain et al. 2010, p.1147). Triangulation can begin by gathering all findings together in a matrix or table and looking for complementarity, convergence and dissonance within the data, where dissonance indicates further scrutiny of the data to attempt to understand why the difference exists (O'Cathain et al. 2010) (see Section 3.4.3). This probing should help to provide a more comprehensive understanding of the phenomenon under study. Exploring the data as a whole in this way can facilitate the development of 'meta-themes' that cut across the quantitative and qualitative data (Farmer et al. 2006). Examination of meta-themes aids in the generation of meta-inferences: conclusions drawn from the simultaneous interrogation of the quantitative and qualitative strands of a project during interpretation. Such meta-inferences are a fundamental component of a good mixed methods study (Teddlie & Tashakkori 2009). Overall, integration

should result in 'meaningful conclusions on the basis of consistent or inconsistent results' (Teddlie & Tashakkori 2009, p.305).

During the interpretation phase of this project the quantitative and qualitative findings were collated into one document to facilitate exploration across all of the data for areas of agreement and dissonance. The different focus of the two phases of the research limited the benefit of this technique because the findings relevant to each research question did not cut across methods. However, this process was useful for confirming the similarity between samples and some of the factors that affected alcohol consumption behaviour change, for example certain changes in health and family bereavement. The technique of following a thread, implemented during the analysis phase, was continued during the integration phase, with the iterative process of moving between the datasets used to understand findings in the context of the broader research objectives. Integration at this stage generated a number of meta-inferences that would not have been identified using the methodological approaches separately (see Section 9.1.8, p.197).

3.4.3 Contradictions within the data

Data from different sources within a mixed methods study may be complementary or conflicting, with a number of explanations proposed for why quantitative and qualitative findings might conflict (Moffatt et al. 2006; Sale et al. 2002; Devine & Health 1999; Bryman 1988). One explanation is that qualitative and quantitative methods are employed to answer different but related questions so a difference in findings may not be that surprising: the two approaches often explore different aspects of a phenomenon so research may only be superficially comparable (Moffatt et al. 2006; Sale et al. 2002; Bryman 1988). Where results differ it is important to explore the comparability of the different samples to identify whether differences in findings could stem from samples with vastly different social and economic characteristics (Moffatt et al 2006; Bryman 1988). Another explanation is potential variations in outcome measures. It is essential to examine outcome measures to see if they are comparable, as differences in measurement may explain dissonance between datasets (Moffatt et al. 2006).

Mixed methods researchers should explore conflicting data because this probing can highlight issues that are 'fruitful areas of inquiry in their own right' (Bryman 1988, p.134). Examining discordant findings is important even where there is general convergence on a topic (Bryman 1988), as this will reduce the risk of losing information in the selective search for similar results (Sale et al. 2002). Additionally, it cannot be assumed that one set of results is 'more true' than another and thus that the 'deviant' findings can be discarded (Devine &

Heath, 1999). We need to explore dissonance to improve our understanding of both the phenomena themselves and how we should address conflict in mixed methods research. As such, throughout the analysis stage of the current project the qualitative and quantitative data was interrogated for both convergence and divergence of findings. This generated a more nuanced understanding of both the similarities and differences in the data and how the findings might be triangulated to provide a richer understanding of alcohol consumption change among older adults.

3.4.4 Presentation of results

Deciding how to present mixed methods results can be challenging as authors must address issues such as different traditions around style, language and voice in quantitative and qualitative research, as well as make decisions around the ordering of results (O'Cathain 2009).

Integration at the reporting stage is complicated by differences in the language predominantly used within these two methodologies (Sandelowski 2003): for example, quantitative data is traditionally reported using numbers whilst qualitative writing attempts to avoid quantifying language. Additionally, quantitative research traditionally reports in the third person whilst qualitative research can be presented in the first person (O'Cathain 2009). A shared language is required so that both quantitative and qualitative researchers can understand the findings of mixed methods research (Sandelowski 2003). The current research is written in the third person except where, through my subtle realist stance, I reflect on my influence on the research design and process. The dissonance between qualitative and quantitative language is balanced by using phrasing familiar to the separate paradigms where possible. The credibility of the reporting of different methods is enhanced by the use of graphs and tables to illustrate the quantitative results and quotations for the qualitative findings. The balance of tables and quotations is approximately even throughout the results chapters supporting the equality of the quantitative and qualitative components of the current research within the study design.

The ordering of the presentation of results was determined by the nature of the research findings. One approach to reporting mixed methods results is to present findings sequentially, whilst another is to enhance integration by descriptively combining quantitative and qualitative findings in textual presentation (Happ 2009; Woolley 2009). The latter approach is an integrated model of report writing that avoids sequential reporting of different phases of a mixed methods project, merging quantitative and qualitative findings together in different themed chapters (O'Cathain 2009). An integrated model of reporting was not appropriate for the majority of the findings of the current research because of the difference

in focus of the quantitative and qualitative research, so respectively, Chapters 7 and 8 organise the findings separately. However, Chapter 6 presents both quantitative and qualitative data because the focus of the chapter, on drinking among older adults, was addressed within both strands of the research.

3.5 Summary

This chapter has described the mixed methods approach adopted in the current research. The relatively recent emergence of mixed methods research as a separate methodology was briefly outlined and some of the criticisms mixed methods researchers encounter in relation to their mixing of qualitative and quantitative methods were introduced, for example the embedded methods argument. The broad range of justifications for conducting mixed methods research including confirmation, complementarity, theory or instrument development and comprehensiveness were explored and the key design decisions that must be considered (such as weighting, timing and sequence) were described. The justification for using a mixed methods approach in the current research was to develop a more thorough understanding of alcohol consumption behaviour change in older adults.

The initial research design was an explanatory follow-up study. However, the study design evolved over time in response to a change made to the original theoretical assumption after preliminary quantitative analysis found this assumption to be erroneous. Following the discussion of this design evolution, quality criteria for judging mixed methods studies were identified, providing a framework for ensuring that the current research was good quality. The key features of a good mixed methods study (such as justification for mixing methods and detailed descriptions of separate methods) were outlined in Table 3.3, alongside references to the section or chapter within this thesis where the relevant evidence to support adherence to these criteria is presented. Finally, the process of integrating the quantitative and qualitative data was discussed in Section 3.4. Data was integrated at the stages of analysis, interpretation and presentation of findings.

Chapter 4: Quantitative methods

4.1 Introduction

Chapter 4 describes the methods used to collect and analyse the quantitative data. Section 4.1.1 provides a rationale for the quantitative phase of the research before Section 4.2 discusses ethical issues in epidemiological research. Section 4.3 introduces the English Longitudinal Study of Ageing (ELSA) and describes issues such as data collection, sampling, response rates and missing data. Section 4.4 explains the development of variables used within the analysis, including how the final alcohol consumption variables were developed using the raw alcohol data available in the ELSA datasets. Finally, Section 4.5 describes the statistical methods used for analysis, including how missing data was handled, descriptive statistics and cross-wave analysis.

4.1.1 Rationale

The primary objectives of the quantitative research were to improve knowledge of the alcohol consumption patterns of older adults in England and understand how drinking behaviour changed in older adults who experienced health deterioration compared with those experiencing no change in health. Additionally, the relationship between social, financial and work-related changes and alcohol consumption frequency and volume over time were examined. The quantitative approach addressed four research questions:

1) What are the current alcohol consumption patterns of older adults and how do they vary by socio-demographic characteristic?
2) What are the patterns of change over time in alcohol consumption?
3) What is the relationship between changes in health and alcohol consumption change in older adults?
4) What is the relationship between non-health changes and alcohol consumption change in older adults?

Given the longitudinal nature of the research questions, a secondary dataset that asked questions on health and alcohol consumption at repeated time points was required. There was neither the capacity nor time to set up a new cohort study as part of this PhD. ELSA was identified as the best available survey to use because it contained the data on alcohol consumption and health required to answer the research questions and was a large sample of adults aged 50 years and older.

4.1.2 Defining older adults

It was evident from the review of the literature on older adults' drinking in Chapter 2 that there is no clear age threshold at which people become 'older adults', with the term used to identify a heterogeneous group of individuals aged 50 years and older. Similar to previous research, treatment agencies in the UK have different age thresholds for eligibility for older person's services, with the lowest threshold 50 years and older (Wadd et al. 2011). For the purposes of the current research all adults aged 50 years and older were classified as older adults. Using a definition of 50 years and older captured changes in alcohol consumption as adults progress from middle to older age, and during the transition to retirement (66% of men and 55% of women stop working before the state retirement age (Banks & Smith 2006). Additionally, whilst the prevalence of long-term conditions is particularly high among adults aged 65 years and older, data suggests that prevalence increases with increasing age. Half the population aged 55-64 have hypertension, whilst rates of ischemic heart disease, stroke and diabetes all increase rapidly from 45 years (Craig and Mindell 2011). Including adults aged 50 years and over should have captured more disease diagnosis, and particularly diagnosis of first long-term condition, than only including adults aged over 65 years.

4.2 Ethics

Prior to commencing this secondary data analysis it was important to consider ethical issues surrounding epidemiological research and to obtain ethical approval for the analysis of secondary anonymised data (see Appendix III, p.263). The Multi-centre Research and Ethics Committee granted initial ethical approval for ELSA (Scholes et al. 2009). Approval for the secondary analysis of the anonymised ELSA data was received in November 2010 from the ScHARR Ethics Committee. The data usage was also registered with the Economic and Social Data Service, which was a requirement for gaining access to the raw ELSA files.

In the design and conduct of the current research a number of ethical issues were considered, including whether or not participants consented to their data being used for future research, if participants could object to how the data is being used, and if participants could be identified as a result of the analysis performed. Each of these questions is addressed in turn.

1. Consent for use in future research

   Within the consent process for participation in ELSA individuals consent for their anonymised data to be made available to researchers for future research.

2. Objection to current usage and interpretation

   Given that participants consented for their data to be used in future research and this analysis only uses the anonymised data collected within the personal interview and self-completion questionnaire to examine patterns of behaviour change over time, ELSA participants should not object to this usage. Data analysis was performed to a high scientific standard and the results are reported appropriately.

3. Identification of anonymised participants

   The data was analysed at a national level and describes patterns of alcohol consumption change for groups of older adults who experienced different health and non-health changes, therefore it would not be possible to identify any individual ELSA participants from the data presented in Chapters 6 and 7.

Other ethical issues that were considered when deciding to use ELSA for secondary data analysis included the extent to which the research process had minimised harms and maximised benefits to participants, rights to confidentiality had been protected, and privacy and informed consent had been maintained. The well-documented ELSA data collection process facilitated a judgement on these ethical concerns. It was evident from technical reports that the process of data collection ensured confidentiality and anonymity, required informed consent and minimised harm to participants.

4.3 The English Longitudinal Study of Ageing

ELSA is a cohort study that has examined the same participants over time through successive waves of data collection. It is a representative sample of older adults living in private households in England and, at present, data from four waves of data are available for researchers to utilise. Wave 1 was collected in 2002-03, Wave 2 in 2004-05, Wave 3 in 2006-07 and Wave 4 in 2008-09. At each wave of data collection between 2002 and 2009, data was recorded prospectively on over 6,000 demographic, social, financial and health variables. The demographic variables and large sample size facilitated some subgroup analysis. A sound understanding of the ELSA methods and datasets was required before starting analysis because I was not involved in either the design of the study or collection of the data.

4.3.1 Data collection

Data was collected using a personal interview and a self-completion questionnaire by the National Centre for Social Research (NatCen) in Collaboration with University College

London and the Institute for Fiscal Studies (Taylor et al. 2007b). In Waves 2 and 4 an additional nurse visit was carried out but the nurse data was not used within this study. Eligible individuals were invited to participate at each wave by letter, following which an interviewer visited each home. Some participants were interviewed immediately and for others the interviewer agreed to return at a convenient time (Scholes et al. 2009). Interviews were completed using Computer Assisted Personal Interviewing (CAPI), permitting the interviewer to reflect back to participants' responses from previous waves. The self-completion questionnaire was completed after the interview and returned by post, except during concurrent interviews when individuals completed the questionnaire whilst their partner responded to the private modules of the interview (cognitive function, expectations, psychosocial health, effort and reward, and final questions) (Scholes et al. 2009). The average length of an individual interview was 1 hour 25 minutes, whilst concurrent interviews were 2 hours and 5 minutes on average. Health and socio-demographic data was collected in the CAPI interview and alcohol data in the self-completion questionnaire.

4.3.2 Health and alcohol data

ELSA contains a wide range of health data including information on doctor diagnosed long-term conditions, measures of subjective health such as self-rated health, and standard questionnaires such as the Rose Angina Questionnaire. Additionally, participants were asked about difficulty with activities of daily living (ADLs) and instrumental activities of daily living (IADLs), mobility, sight and hearing. Some data on medication was collected although the questions varied across the waves.

Questions on alcohol consumption asked about past 12-month and 7-day drinking frequency, different beverages consumed on the heaviest drinking day in the last week, and past week consumption. There was variation across the waves as to which alcohol consumption questions were asked, with implications for accurately measuring change over time. The alcohol data may be suboptimal because ELSA was not primarily designed to answer questions around alcohol consumption so consistency of measurement over time was not a principal concern for the survey designers. Due to changes in the questions used to measure drinking the Wave 1 data had to be excluded from all analysis because the alcohol consumption data was not comparable with Waves 2, 3 and 4. At Wave 1 participants were asked the same question about drinking frequency that was asked at subsequent waves, but

the response options were substantively different[3], and participants were not asked any questions on drinking volume so change in volume between Wave 1 and Wave 2 could not be measured. Drinking frequency was measured consistently after Wave 1, but there was a change in the volume measure from heaviest drinking day to past week drinking. At Waves 2 and 3, participants were asked to record the specific beverages they consumed on their heaviest drinking day in the previous week but at Wave 4 the number of measures of beer, wine and spirits consumed over the past seven days were measured. Whilst measuring consumption on the heaviest day may highlight individuals whose drinking exceeds safe limits (Greenfield & Kerr 2008) it may inflate calculations of average alcohol consumption, as we do not know if heaviest drinking day represents usual alcohol consumption. Conversely, only measuring how much beer, wine and spirits were consumed over seven days might hide hazardous drinking patterns. The implications of the change in question for measuring quantity change over time are presented in Section 4.4 (p.96).

In addition to concerns over changes in the alcohol consumption questions between the waves, there was some ambiguity in the questions used to assess alcohol consumption that may have led to measurement error. For example, Wave 4 question 41 of the self-completion questionnaire asked 'During the last seven days, how many glasses of wine did you have?' (Nunn et al. 2010, p.507). Ensuring that actual drink sizes are correctly captured by questions on alcohol consumption is important for accuracy of calculations of total alcohol consumption. In ELSA the size of the glass of wine is not requested, despite that in the UK three different sized measures (125/175/250ml) are used in the on-trade (bars, pubs, restaurants, clubs and hotels) and measures poured in the off-trade are likely to vary considerably. Lack of information on drink sizes may have resulted in the mismeasurement of consumption.

Despite concerns with the alcohol consumption data available in ELSA, it is the best available source of data for exploring the relationship between changes in health status and alcohol consumption in older adults. Elements of the questionnaire design such as the measurement of both drinking frequency and quantity, beverage specific measures and the collection of drinking data within a self-complete questionnaire should have improved the alcohol data accuracy.

[3] Response options at Wave 1 were: twice a day or more, daily or almost daily, once or twice a week, once or twice a month, special occasions only, or not at all?
Response options at Waves 2-4 were: almost daily, five or six days a week, three or four days a week, one or two days a week, once or twice a month, once every couple of months, once or twice a year, or not at all?

4.3.3 Sample design and population

The ELSA sample was drawn from respondents to the Health Survey for England (HSE) in 1998, 1999, and 2001. The HSE is an annual cross-sectional survey of households in England, selected using a multi-stage stratified probability sampling design. The sample was drawn from the Postcode Address file ensuring that at least 99% of the population of England were included within the sampling frame (Prior et al. 2003). The advantages of using HSE to establish the ELSA population were: 1) good coverage of private households in the UK, 2) screening of eligible participants at low cost using data collected in HSE, 3) households had participated in one survey so they may have been more amenable to taking part in another, and 4) HSE recorded a large amount of data on health that could be used in ELSA (Taylor et al. 2007b).

There were limitations to using HSE to sample for ELSA. As HSE only sampled private households, individuals living in institutions were excluded from ELSA at baseline. ELSA has followed people moving into care after baseline to explore the circumstances surrounding their move (Taylor et al. 2007b), but this institutional sample is not included within the current analysis. Additionally, the response rate for the HSE was 73.4% in 1998, 69.7% in 1999 and 67.3% in 2001 so non-response bias may have affected the baseline ELSA sample population (Prior et al. 2003). In total, from an HSE sample of 31,051, 11,578 households (18,813 individuals) were invited to participate in ELSA. Households were eligible to participate if they responded to HSE, consented to be re-contacted for future related research, and had at least one living member born before 1st March 1952 (Taylor et al. 2007b). It is estimated that 65% of adults aged 50 years and older that were invited to participate in HSE in 1998-2001 were invited to take part in the ELSA Wave 1 fieldwork, with the exact figure unknown because the number of HSE non-respondents that would have been age eligible to participate in ELSA is approximated. Households that did not participate in ELSA Wave 1 because no age eligible member consented to be re-contacted were more likely than responders to have a 50-54 or 85+ year old as the oldest in the household, less likely to have a household member with a longstanding illness and more likely to be of a lower social class (Taylor et al, 2007b). Compared with the population aged 50 years and older based upon the UK census, the ELSA baseline sample was more likely to be in mid old age, of a higher social class and have a longstanding illness.

The 18,813 older adults eligible to participate in ELSA Wave 1 were those individuals living in an HSE responding household at the time of the interview born before 1st March 1952, as well as their partners aged less than 50 years (n=1,046). The current data analysis only included individuals born before 1st March 1952, known as core sample members, as this was the age group of interest. Thus, partners aged less than 50 years were excluded from the

current research. Of respondents at ELSA Wave 1, 94.1% were core sample members (n=11,391) (Scholes et al. 2008). New cohorts of adults aged over 50 years were added at Waves 3 and 4 so this core sample is referred to as cohort 1 core members (C1CM).

4.3.4 ELSA response rates

Baseline ELSA data was collected at Wave 1 in 2002-03. At each subsequent wave respondents from previous waves were contacted unless they had died, asked not to be re-contacted, or moved abroad (Scholes et al. 2008). The number of C1CM participants retained between Waves 1 and 4 is presented in Table 4.1. Of the 17,676 age-eligible individuals invited to participate in ELSA at Wave 1, 64% consented to participate. After 4 waves of data collection, 58.1% of C1CM remained in the study, which is 37.3% of the original sample invited to ELSA. Of the 4,768 participants no longer in ELSA at Wave 4, 621 became ineligible at Wave 2 and a further 421 at Wave 3 (Scholes et al. 2009). Wave 4 ineligibility has not yet been published. Three quarters of those lost to follow-up declined to participate. Response rates were maximised using techniques including:

1) An individually tailored advance letter and information leaflet
2) Repeated calls to eligible households (including at weekends)
3) Use of the same interviewer at all waves where possible
4) Tracing movers using the state pensions database and mover letters
5) A financial incentive to participate

If the self-complete questionnaire was not returned then NatCen sent a follow-up request by letter and then telephone, at which point they offered to complete the questionnaire by telephone (Scholes et al. 2009).

Table 4.1: Core member respondents

	Cohort 1 Core Members
Invited to ELSA	17,767
Wave 1 (2002-03)	11,391 (64.4%)
Wave 2 (2004-05)	8,781 (49.9%)
Wave 3 (2006-07)	7,168 (40.3%)
Wave 4 (2008-09)	6,623 (37.3%)

4.3.5 Missing data in ELSA

Participants lost to follow-up resulted in missing data. It was important to understand potential reasons for missing data as systematic differences between respondents and non-responders could bias findings. Attrition, caused when individuals dropped out of the study after one or more waves of data collection, may have led to a loss of statistical power. Occasionally participants re-entered the cohort, for example if they were retraced or became eligible again, resulting in a range of patterns of longitudinal missingness as illustrated in Table 4.2. As the current research examined change over time it was only possible to include participants who had completed at least two waves of data collection. As explained in Section 4.3.2 Wave 1 was also excluded because of poor alcohol consumption data. Thus, participants following patterns 1, 2, 4 and 6 were included for analysis.

The implications of cohort attrition were particularly important for the findings of subsequent analyses if attrition was related to the outcome of interest, here alcohol consumption. Examination of responder status at Wave 3 by Wave 2 drink category (abstainer, low/moderate, or higher level drinker) found no significant difference in drink category between responders and those lost to follow-up (χ^2=7.560, p=0.109). At Wave 4, responders were significantly more likely to have been higher-level drinkers at Wave 3 (χ^2=156.153, p<0.000), suggesting higher-level drinkers were more likely to be retained within the sample between Waves 3 and 4. A relationship between change in health and attrition could also bias the study findings, for example participants who experienced health deterioration between waves may have been more likely to withdraw from the study if their poorer health made it more difficult to participate. If participants who experienced a change in health were more likely to have withdrawn, this would have implications for measuring the relationship between changes in health and alcohol consumption. Drop out between waves prohibited direct measurement of health change over time, but among participants completing Waves 2 and 3 the group with poor self-rated health and previous disease diagnosis at Wave 2 reported more

Table 4.2: Patterns of missing data in ELSA

	Number of Cases	Missing Patterns			
		Wave 1	Wave 2	Wave 3	Wave 4
1*	6018	Y	Y	Y	Y
2*	1179	Y	Y	Y	X
3	1341	Y	Y	X	X
4*	242	Y	Y	X	Y
5	171	Y	X	X	Y
6*	192	Y	X	Y	Y
7	146	Y	X	Y	X
8	2102	Y	X	X	X

* Patterns included in the current analysis.

changes in health over time. Participants lost to follow-up had worse self-rated health and were more likely to report a cardiovascular disease at Wave 2 and a cardiovascular or other chronic disease at Wave 3. Thus, participants lost to follow-up may have experienced more changes in health over time than responders and were more likely to be abstainers or low-moderate level drinkers in the wave prior to drop out. Individuals lost to follow-up were also significantly more likely than responders to have been living in London and to have reported a limiting long-standing illness during the previous wave, have a lower level of education, be of non-white ethnicity, and rent rather than own a home (Scholes et al. 2009; Scholes et al. 2008). Respondents were more likely to be in middle old age whilst younger men and older women were underrepresented (Taylor et al, 2007b). The attrition of older adults with poorer health is replicated in longitudinal studies across Europe and Anglophone countries (Bhamra et al. 2008; Young et al. 2006; Goldberg et al. 2006). Attritors have also been found to be older, of lower SES, female, unmarried, less educated and to engage in fewer social activities (Bhamra et al. 2008). Thus ELSA is similar to other longitudinal studies of older adults in relation to the characteristics of participants lost to follow-up. Nevertheless, the issues raised are still relevant for interpreting the quantitative findings.

In addition to attrition between the waves, among ELSA participants at a given wave there was a proportion of cross-sectional non-response to various questions including those on alcohol consumption. Cross-sectional missing alcohol data was divided into non-returners and non-completers, where non-returners did not return the self-completion questionnaire to the data collectors and non-completers returned the questionnaire but did not complete the alcohol consumption questions. Table 4.3 shows the proportion of participants in each category of cross-sectional missingness in Waves 2 to 4. As with cohort attrition, the implications are particularly important if missingness is related to alcohol consumption or change in health status.

The incidence of non-return was higher than non-completion. Rates of non-return increased with age: 93% of participants in their 60s at Wave 2 returned the questionnaire compared with 73% of individuals aged over 85 years of age (Scholes et al. 2008). Non-

Table 4.3: Reasons for cross-sectional missingness

	Wave 2		Wave 3		Wave 4	
	Frequency	**%**	**Frequency**	**%**	**Frequency**	**%**
Non-completers	157	2.1	296	3.9	157	2.1
Non-returners	689	9.0	970	12.7	893	11.7
Responders	6,785	88.9	6,365	83.4	6,587	86.2
Total	7631	100.0	7631	100.0	7631	100.0

Table 4.4: Nominal logistic regression for responding versus non-completion at Wave 3

	Responders	Non-completers	OR (95% CI)
Gender			
Male	2736 (44.7%)	546 (43.1%)	0.917 (0.792-1.063)
Female	3387 (55.3%)	720 (56.9%)	Reference
Age Group			
50-59	1974 (32.2%)	304 (24.0%)	1.731 (1.453-2.062)
60-69	2128 (34.8%)	329 (26.0%)	1.803 (1.528-2.129)
70+	2021 (33.0%)	633 (50.0%)	Reference
Marital Status			
Single	295 (4.8%)	74 (5.8%)	1.086 (0.799-1.476)
Married (1st & Only)	3432 (56.1%)	536 (42.3%)	1.682 (1.408-2.010)
Remarried	652 (10.6%)	91 (7.2%)	1.805 (1.371-2.377)
Legally Separated or Divorced	623 (10.2%)	165 (13.0%)	0.941 (0.741-1.195)
Widowed	994 (16.2%)	334 (26.4%)	Reference
Self-Rated Health			
Good	4552 (74.3%)	718 (56.7%)	2.045 (1.627-2.570)
Fair	1093 (17.9%)	302 (23.9%)	1.387 (1.081-1.781)
Bad	338 (5.5%)	137 (10.8%)	Reference
Ethnicity			
White	5916 (96.5%)	1136 (89.7%)	4.125 (2.843-5.985)
Non-White	79 (1.3%)	63 (5.0%)	Reference
Socioeconomic status			
Higher managerial & professional	624 (10.2%)	97 (7.7%)	1.426 (1.076-1.890)
Lower managerial & professional	1498 (24.5%)	209 (16.5%)	1.841 (1.475-2.298)
Intermediate	859 (14.0%)	145 (11.5%)	1.552 (1.213-1.987)
Small employers & own account workers	601 (9.8%)	133 (10.5%)	1.197 (0.926-1.548)
Lower supervisory & technical	655 (10.7%)	147 (11.6%)	1.285 (1.004-1.645)
Semi-routine	964 (15.7%)	246 (19.4%)	1.141 (0.917-1.421)
Routine	761 (12.4%)	237 (18.7%)	Reference

returners were more likely to have poor eyesight, be of non-white ethnicity, rent rather than own a home, live in a deprived area and to work or be permanently sick/disabled rather than retired (Scholes et al. 2008). Analysis of the characteristics of non-completers compared with responders at Wave 3 found they were more likely to be in their 70s at Wave 2, be divorced rather than widowed or married, have poor self-rated health, be of non-white ethnicity and a lower socioeconomic status (see Table 4.4). These findings were replicated in the Wave 4 data.

Both non-returners and non-completers differed from responders in drinking frequency at the previous wave (χ^2=59.710, df6, p<0.001). Individuals in these categories were more likely to have been abstainers and less likely to have been higher-level drinkers. Non-completers were also less likely to have been binge drinkers at the previous wave (see Table 4.5). This suggests that cross-sectional missing data is not more common in higher-level drinkers as expected from previous research on alcohol consumption. When the relationship between level of drinking at previous wave and cross-sectional missingness is adjusted for demographic characteristics, this relationship is no longer significant.

Table 4.5: Drinking quantity category at Wave 2 by Wave 3 missing data category

	Non-complete	Non-return	Responder	Total
Abstainer	46 (19.6%)	89 (16.4%)	539 (9.7%)	674 (10.6%)
Low/Moderate level drinker	138 (58.7%)	289 (53.2%)	3,025 (54.2%)	3,452 (54.3%)
Higher level drinker	30 (12.8%)	95 (17.5%)	1,266 (22.7%)	1,391 (21.9%)
Binge drinker	21 (8.9%)	70 (12.9%)	755 (13.5%)	846 (13.3%)
Total	235	543	5,585	6,363

χ^2=59.710 p<0.001

Participants who responded to the alcohol consumption questions reported fewer changes in health over time. To determine which changes in health were significant for predicting missing alcohol data cross-sectional missingness was examined by different long-term conditions (e.g. cardiovascular disease and psychiatric conditions) as well as self-rated health and activities of daily living (ADLs). The results in Table 4.6 show that new psychiatric conditions, worsening of self-rated health and increase in number of problematic ADLs predict non-return, whilst an increase in problematic ADLs and a new chronic condition predict non-completion.

These findings correspond to the ELSA technical data reports that find certain types of poorer health predicted non-return and non-completion (e.g. Scholes et al. 2008). As a result of the potential relationship between missing data, abstention and changes in health, missing data was imputed during data analysis (see Section 4.5.1, p.102).

Table 4.6: Changes in health that predict non-response and non-return at Wave 3

	χ^2	Standardised Residuals*	
		Non-complete	Non-return
New CVD (in addition to previous disease)	2.472, p=0.291	0.5	1.5
New CVD	2.466, p=0.291	0.9	-1.4
New Chronic (in addition to previous disease)	15.491, p<0.001	3.8	0.7
New Chronic	2.973, p=0.226	1.0	1.3
New Psychiatric (in addition to previous disease)	0.015, p=0.993	-0.1	0.0
New Psychiatric	59.416, p<0.001	-0.8	7.7
Worse self-rated health	36.133, p<0.001	-0.5	-4.9
Increase in pain	8.083, p=0.089	1.0	2.2
Increase in number of problematic ADLs	61.738, p<0.001	3.2	5.5

*** Standardised residuals are** used to determine which cells caused the statistically significant difference. Positive values mean the cell is over-represented and negative values that it is under-represented in the actual sample.

4.4 Development of variables for analysis

Raw data from multiple ELSA datasets was collated in one file to enable the development of variables for analysis. This file contained data from the Wave 2, 3 and 4 core datasets as well as the derived variables and financial derived variables files for each wave. Data extracted from the core datasets included information relating to health, socio-demographic characteristics, and alcohol consumption. Some of the raw health and alcohol consumption data required development into more meaningful derived variables for analysis. This section describes the raw variables extracted and the new variables developed.

4.4.1 Alcohol consumption variables

In the self-completion questionnaire data on past 12-month and seven-day drinking frequency was collected alongside data on beer, spirit and wine consumption on the heaviest drinking day in the past week (at Waves 2 and 3) and total consumption in the past week (at Wave 4). During analysis change in alcohol consumption was measured using both the 12-month frequency measure (ELSA variable: *scako*) and total unit consumption (sum of beer, spirit and wine consumption) that was derived from the raw alcohol data (see Table 4.7 for raw measures of drinking quantity). Respondents who answered 'did not drink in the previous 12 months' at all three waves were classed as abstainers and excluded from analysis of the relationship between life changes and alcohol consumption over time (n=485). Participants

Table 4.7: Alcohol consumption unit conversion rates

Wave 2	Wave 3	Wave 4	Unit Conversion*
Large can of beer *(ELSA variable: scabnlc)*	Large can of beer *(ELSA variable: scabnlc)*	Beer *(ELSA variable: scdrpin)*	1 drink = 2 units
Pint of beer *(ELSA variable: scabnp)*	Pint of beer *(ELSA variable: scabnp)*	-	1 drink = 2 units
Small can of beer *(ELSA variable: scabnsc)*	Small can of beer *(ELSA variable: scabnsc)*	-	1 drink =1.5 units
Large can of strong beer *(ELSA variable: scabslc)*	Large can of strong beer *(ELSA variable: scabslc)*	-	1 drink = 3 units
Pint of strong beer *(ELSA variable: scabsp)*	Pint of strong beer *(ELSA variable: scabsp)*	-	1 drink = 4 units
Small can of strong beer *(ELSA variable: scabssc)*	Small can of strong beer *(ELSA variable: scabssc)*	-	1 drink = 2 units
Alcopops *(ELSA variable: scapopg)*	Alcopops *(ELSA variable: scapopg)*	-	1 drink =1.5 units
Sherry *(ELSA variable: scasher)*	Sherry *(ELSA variable: scasher)*	-	1 drink = 1 unit
Spirits *(ELSA variable: scaspir)*	Spirits *(ELSA variable: scaspir)*	Spirits *(ELSA variable: scdrspi)*	1 drink = 1 unit
Wine *(ELSA variable: scawin)*	Wine *(ELSA variable: scawin)*	Wine *(ELSA variable: scdrwin)*	1 drink = 2 units

* Unit conversions taken from Goddard et al (2007)

who reported abstention at all three waves were excluded from the analysis because the current research was interested in how older adults who drink alcohol modified their behaviour following health and non-health life changes.

Drinking frequency

Participants recorded how often they had an alcoholic drink in the past 12 months: almost every day, 5 or 6 days a week, 3 or 4 days a week, 1 or 2 days a week, once or twice a month, once every couple of months, once or twice a year, or not at all. The same question was asked at Waves 2, 3 and 4. Change in drinking frequency was measured as movement between categories, with any downward movement classified as a decrease, and vice versa.

Drinking volume

Total unit consumption was calculated using the question on number of different types of alcoholic beverage consumed in a given time frame and unit content of typical drinks provided by Goddard et al. (2007) (see Table 4.7 for the unit conversion rates of each drink). As described previously unit consumption across all three waves was not directly comparable so instead of comparing unit change, participants were categorised into one of four groups depending upon their drinking volume and change was defined as movement between these groups. Table 4.8 shows the boundaries for each drinking volume category.

Individuals in the top group were drinking in excess of current government daily drinking guidelines at Waves 2 and 3, and close to the recommended weekly maximum intake at Wave 4[4]. Participants in this drinking group may be putting their health at risk due to their alcohol consumption. Daily drinking limits were designed to minimise acute risk whilst reflecting the amount of alcohol that could be consumed on most days without significantly increasing the

Table 4.8: Boundaries for the four categories of drinking volume

	Bottom group	3rd group	2nd group	Top group
Wave 2 (Heaviest day)	0	>0 and <4 units	≥4 and <7 units	≥7 units
Wave 3 (Heaviest day)	0	>0 and <4 units	≥4 and <7 units	≥7 units
Wave 4 (Past week)	0	>0 and <6 units	≥6 and <18 units	≥18 units

[4] Daily drinking guidelines are no more than 2-3 units (16-24g of ethanol) per day for a woman and 3-4 units (24-32g of ethanol) per day for a man (Department of Health 2011). The recommended maximum weekly intake is no more than 14 units (112g of ethanol) a week for a woman and 21 units (168g of ethanol) for a man (BMA Board of Science 2008).

long-term risk of a negative alcohol-related outcome (Bondy et al. 1999). They are underpinned by epidemiological evidence supporting a causal relationship between alcohol and various harms, but particularly physical consequences (Hawks 1994). Current drinking guidelines were developed for the general adult population, so may not be appropriate for older adults, people with long-term conditions that can be affected by alcohol, or those taking medications that may interact with alcohol.

Drinking trajectories

Drinking frequency and volume trajectories were calculated using the data on changes in alcohol consumption between successive waves. Five separate drinking trajectories were defined: stable, increasing, decreasing, increasing-decreasing and decreasing-increasing. Participants in the stable category were those who maintained the same level of consumption at all three waves. The increasing trajectory included those who increased their alcohol consumption over time whilst the decreasing trajectory was comprised participants who decreased their drinking over time. Participants who increased their consumption between Waves 2 and 3 and decreased their consumption between Waves 3 and 4, or vice versa, were assigned to the appropriate fluctuation category.

4.4.2 Health variables

The main ELSA interview was used to collect data on a range of long-term conditions, self-rated health, functioning and mobility at each wave. These variables were used to measure health deterioration over time. Whilst data was available for both positive and negative changes in health, given that the current research was primarily interested in how older adults change their alcohol consumption following new disease diagnosis and other negative changes in health, the relationship between health improvements and long-term alcohol consumption was not explored. Data was available for 18 long-term conditions that were grouped into three different categories for analysis based upon classification within the original ELSA datasets: cardiovascular disease (CVD), psychiatric conditions, and 'other' chronic disease. A participant was classed as having a new diagnosis of CVD if they reported new diagnosis of one of the following: high blood pressure, high cholesterol, angina, heart failure, heart murmur, heart attack, abnormal rhythm, stroke or other heart problems. A new psychiatric condition was indicated if new psychiatric disease, Alzheimer's or dementia was reported. New 'other' disease was reported where an individual had been newly diagnosed with diabetes, lung disease, asthma, arthritis, osteoporosis, cancer or Parkinson's. Conditions were grouped together in this way to ensure there were sufficient new diagnoses in each category to identify

significant differences in drinking change over time. To distinguish between individuals for whom the diagnosis was a first condition and not, pre-existing disease was used to sub-divide categories where possible. For example, participants with new CVD were subdivided into new CVD with no previous long-term condition and new CVD with a previous long-term condition. This was to acknowledge that alcohol consumption change in individuals who already have a long-term condition might differ from those for whom the diagnosis was a first long-term condition.

In addition to doctor diagnosed long-term conditions, data was collected on self-rated health, experience and severity of pain, activities of daily living (ADLs), instrumental activities of daily living (IADLs) and mobility. The scale used to measure self-rated health differed between the waves[5] so self-rated health was condensed into good, fair and poor to facilitate comparison across all three waves, with change classed as a movement between these three categories. Although there was a risk of positive bias in Waves 2 and 4, there was minimal variation in the percentage of participants reporting good, fair and poor health at each wave. Experience and severity of pain was recorded as none, mild, moderate or severe 'most of the time', with a change in pain defined as a movement between categories of severity. ADLs, IADLs and mobility, all measuring functional ability, were summed to show how many problems each participant reported (see Table 4.9 for the list of ADL/IADL/mobility problems). ADLs are personal care tasks such as bathing and dressing, whilst IADLs are higher-level functions such as

Table 4.9: Activities of daily living, instrumental activities of daily living and mobility

Activities of daily living	Instrumental activities of daily living	Mobility
➢ Dressing	➢ Preparing a hot meal	➢ Lifting/carrying over 10lbs
➢ Walking 100 yards	➢ Shopping for groceries	➢ Stooping, kneeling or crouching
➢ Eating (including cutting up food)	➢ Using a map to get around a strange place	➢ Getting up from a chair after sitting for a long period
➢ Bathing or showering	➢ Making telephone calls	➢ Walking across a room
➢ Getting out of bed	➢ Taking medications	➢ Sitting for about two hours
➢ Using the toilet	➢ Managing money	➢ Pulling/pushing large objects
	➢ Doing work around the house or garden	➢ Reaching or extending arms above shoulder level
		➢ Picking up a 5p coin from a table
		➢ Climbing several flights of stairs without resting
		➢ Climbing one flight of stairs without resting

[5] At Waves 2 and 4 the response scale was: excellent, very good, good, fair and poor
At Wave 3 the response scale was: very good, good, fair, poor and very poor

Table 4.10: Changes in health measured in ELSA

Measure of Health	Categories	Measure of Change
Original		
Experience of pain *(ELSA variable: HePaa)*	None, Mild, Moderate & Severe	Movement between categories
Smoking status *(ELSA variable: HESka)*	Yes: smoker No: non-smoker	Movement between categories
Derived		
New CVD (no previous disease)* New CVD (previous disease)* New Chronic (no previous disease)* New Chronic (previous disease)* New Psychiatric*	Yes: new diagnosis since previous wave No: no new diagnosis since previous wave	Yes = change No= no change
Self-rated health *(ELSA variable: Hehelf)*	Good, Fair & Poor	Movement between categories
Activities of daily living*	Range of problems from 0-23	Increase or decrease in reported problems

* The ELSA variable is not included within the table because the derived variable was developed out of multiple raw variables that changed name between the different waves. See Appendix II (p.261) for a full list of raw health variables used.

shopping and transportation (The British Psychological Society & Gaskell 2007). Change was measured as any increase or decrease in problematic activities. For clarity, the different health changes and how they were measured are presented in Table 4.10. In addition to changes in health, changes in smoking status were included in analysis as during the in-depth interviews changes in smoking were identified as influencing drinking. Other factors identified as influencing drinking during the interviews, such as use of warfarin, either were not measured in ELSA or not consistently measured over time, so could not be included in the analysis.

4.4.3 Non-health variables

The relationship between a range of social and financial variables and alcohol consumption was explored to increase knowledge of how such factors affect alcohol consumption and drinking change over time in older adults. The original and derived variables analysed are displayed in Table 4.11. These variables were identified as potentially influencing alcohol consumption over time from the literature and/or in-depth interviews.

4.4.4 Original and additional (different-from-planned) statistical analysis

The health and non-health variables included in the final analysis were not all included within the original plan of analysis. In Chapter 3, the evolution of the mixed methods design of the current research was described, including that as a result of the findings of the qualitative research additional, non-health variables were examined in the final quantitative analysis (see Section 3.3.2, p.75).

Table 4.11: Original and derived socio-demographic variables

Original		
Sex *(ELSA variable: indsex)*	Male, Female	
Ethnicity *(ELSA variable: fqethnr)*	White, Non-White	
Marital status *(ELSA variable: dimar)*	Single, Married, Remarried, Separated, Divorced, Widowed	
Economic activity status *(ELSA variable: wpdes)*	Retired, Employed, Self-employed, Unemployed, Permanently sick or disabled, Looking after home or family	
Work-related pressure – heavy workload *(ELSA variable: scworkg)*	Respondent feels under constant pressure from a heavy workload? Strongly agree, Agree, Disagree, Strongly disagree	
Work-related pressure – time pressure *(ELSA variable: scworkl)*	Respondent feels under constant time pressure at work? Strongly agree, Agree, Disagree, Strongly disagree	
Financial problems *(ELSA variable: scqoli)*	How often a shortage of money stops the respondent from doing things? Often, Sometime, Not often, Never	
Spousal relationship *(ELSA variable: scptrg)*	How close the respondents' relationship with their partner is? Very, Quite, Not very, Not at all	
Derived		
Age group *(ELSA variable: indager)*	50-59, 60-69, 70+	Age group assigned based upon indager
Income group *(ELSA variable: eqtotinc_bu)*	Income decile	Income group assigned based upon eqtotinc_bu
Socioeconomic status *(ELSA variable: anssec)*	Higher managerial/professional, Lower managerial/professional, Intermediate, Small employers/ own account workers, Lower supervisory/ technical, Semi-routine, & Routine	NS-SEC long version recoded to short version
Death of a family member *(ELSA variable: disib, dinma & dinfa)*	Yes, No	Category assigned from questions on mother, father and sibling death

The original plan of quantitative analysis included examination of the association between diagnosis with a long-term condition, including cardiovascular, psychiatric and 'other' conditions (such as diabetes, cancer and arthritis), and changes in drinking frequency and quantity over time. The original analysis also examined associations between changes in self-rated health, experience of pain and problems with activities of daily living and drinking frequency and volume change. As emerging findings from the qualitative interviews illustrated the relative importance of social, financial and psychological factors for motivating drinking behaviour change in older adults, the decision was taken to include additional non-health variables from ELSA in further quantitative analysis. A range of original ELSA variables were identified and derived variables developed to measure social, financial and work-related changes (see Table 4.11), including death of a family member, frequency of social contact and income. Findings from both the original analysis of health-related changes and the different-from-planned analysis of non-health factors are reported in Chapter 7.

4.5 Statistical Analysis

This section describes the statistical techniques used to understand current alcohol consumption patterns in older adults and analyse the relationship between changes in health and non-health variables and alcohol consumption over time. The method used for handling missing data is described first, before the statistical tools used for descriptive analysis and exploring change over time are presented. The statistical analysis was conducted using SPSS version 19 (SPSS, Chicago, IL, USA).

4.5.1 Handling missing data

Section 4.3.5 described the characteristics associated with the three different types of missing data in ELSA: cohort attrition, cross-sectional non-return and cross-sectional non-completion. To determine an appropriate method to manage this missing data, it was necessary to identify which of three different types of missing data were occurring within the ELSA dataset (Little & Rubin 2002).

1. Missing Completely at Random (MCAR) occurs when the missing data is unrelated to the observed or unobserved characteristics of participants. Complete case analysis would theoretically produce the same findings as if there was no missing data, just with a smaller sample size. An example of MCAR would be where tossing a coin determines participation in a survey. MCAR data may be ignored but the resultant smaller sample size would result in a reduction of power to detect relationships.
2. Missing at Random (MAR) is where missing data is related to some observed variable within the data, but not the variable of interest. For example older women who are widowed may be less likely to respond to alcohol consumption questions than the average member of the population. Under such circumstances findings would be both inefficient and subject to bias. Data missing at random could be imputed using single or multiple imputation methods (Schafer & Graham 2002).
3. Not Missing at Random (NMAR) occurs where data is missing because of the response that would have been received if the data were not missing (i.e. missing data depends on the unobserved variable). An example of NMAR would be if heavy drinkers were less likely to have answered the alcohol questions even after adjustment for other observed factors such as age and gender. NMAR data should not be ignored and is the most difficult condition to model because it is unlikely that the exact missingness mechanisms will be known (Schafer & Graham 2002). A joint model of the missingness mechanism and the data should be used to obtain valid inferences in the case of NMAR data,

preferably with no more than 25% of the variable data missing (Scheffer 2002; Schafer & Graham 2002).

Section 4.3.5 identified a number of participant characteristics that were associated with missing data, including ethnicity, health, housing tenure, marital status and social class. The missing data was therefore classified as MAR, because the missing data is related to observed variables within the data, but not the variable of interest when adjustment was made for observable demographic characteristics.

As this missing data may have resulted in loss of statistical power to detect a relationship and biased results (Myers 2011), a method for imputation was required. Methods for handling missing data include listwise or pairwise deletion, mean substitution, hot deck imputation, maximum likelihood, expectation maximization and multiple imputation. Each approach has strengths and limitations. For example mean substitution is a straightforward method for imputation that maintains a complete dataset, but because all imputed values are the same mean value it deflates variation in the variable and reduces standard errors. More statistically complex methods such as maximum likelihood or expectation maximization may produce better estimates of missing values, but such methods are computationally intensive and focus on obtaining accurate estimates of parameters rather than replacing missing values (Myers 2011). That these approaches do not directly replace missing values made their use within the current research challenging, because imputed values were used to calculate the direction of change between successive waves and three-wave drinking trajectories.

Hot deck imputation was identified as an approach to missing data that could incorporate the information on demographic characteristics associated with missing data and provided a single imputed value. Hot deck imputation involved replacing missing values with the value of a participant with similar characteristics identified by the researcher. The hot deck procedure sorted cases within a set of variables that were predictive of non-response but not of substantial interest to the research questions, that included little or no missing data and were discrete values (Myers 2011). Respondents with complete data were matched on all the variables determined by the researcher to respondents with missing data. Missing values were then randomly imputed from matched complete cases so that the distribution of responses was maintained. SPSS Syntax published by Myers (2011) was used to enable the hot deck imputation to be performed in SPSS. The syntax is available from http://www.afhayes.com/public/hotdeck.pdf. Imputation was completed for cross-sectional missing data resulting from non-return or non-completion of the questionnaire using demographic variables that were collected either at baseline or at each wave, resulting in complete data for all 5,892 drinkers.

The success of hot deck imputation may be limited for small samples because the method requires a good match of donors to recipients, and this can restrict the covariate information that can be used in the imputation (Andridge & Little 2011). Given the large sample size available for this analysis donor matching was not a concern and the covariate information used was not limited by the size of the donor pool. An additional issue was how to handle missing data where there was data missing from different variables for different participants across the sample. To date there has been insufficient research testing solutions for this problem (Andridge & Little 2011). With the exception of the alcohol consumption data, the level of missing data across other analysis variables in the sample was very low, so this problem should not have greatly affected the imputation process in the current research.

4.5.2 Analysis techniques

Chapter 6 begins with a presentation of descriptive statistics. The number and percentage of participants in each demographic category were calculated to identify the characteristics of the sample population and then measured against the 2001 Census to determine comparability of the ELSA sample to the older adult population of England and Wales. To establish socio-demographic differences between ELSA participants who reported alcohol consumption versus past-12 month abstention, binary logistic regression of abstainers versus drinkers was completed. Binary logistic regression was used because the outcome variable was dichotomous. The resultant odds ratios (ORs) and 95% confidence intervals indicate the odds that the comparison group were drinkers rather than abstainers when compared with the reference group, with confidence intervals that did not cross 1 signifying a significant difference between two groups.

Chapter 6 also presents the alcohol consumption behaviour of drinkers in the ELSA sample. The frequency with which each past-12 month drinking frequency category was reported for males and females is documented first, before the average volume of alcohol consumed on the heaviest drinking day at Waves 2 and 3 and in the past week at Wave 4 is presented. Drinking volume was positively skewed (see Figure 6.2, p.**Error! Bookmark not defined.**) so the median consumption and inter-quartile range (IQR) were used to calculate average unit consumption. The average consumption of the heaviest 5% of males and females was calculated as well as the average consumption of all males and females, to illustrate the average drinking volume of the heaviest older adult drinkers.

Demographic variations in drinking among males and females were measured using Kruskal-Wallis and post-hoc tests. Kruskal-Wallis is a non-parametric alternative to the 1-way ANOVA used for comparison of more than two groups (Bland 2000). A non-parametric test was

required for the analysis of differences in frequency because the predictor variable was nominal and the outcome data was ordinal. A non-parametric test was also necessary for the analysis of differences in drinking volume despite the interval nature of this data, because of the heavily positively skewed distribution of the unit consumption data. In the Kruskal-Wallis test values were converted to ranks and the distribution of ranks was compared between groups to determine the test statistics (Kinnear & Gray 2009). Post-hoc tests were conducted using Mann-Whitney to make pairwise comparisons.

The association between drinking frequency and volume between successive waves was measured using chi-squared tests. Chi-squared tests can be used to test for an association between categorical variables. The test was designed for large samples and is considered valid where 80% of expected cell frequencies exceed 5 cases and all expected cell frequencies exceed 1 case (Bland 2000). Chi-squared tests a null hypothesis of no association between two variables, with the alternative being that there is an association of any kind. Chi-squared tests cannot test the nature or strength of an association between two variables (Agresti 2002). Chi-squared tests were utilised in Chapter 7 to identify changes in health, social, financial and work-related variables that were significantly associated with changes in drinking frequency or volume between successive waves. Odds ratios were calculated for being an increasing versus stable and decreasing versus stable drinker for the independent variables where a significant association was identified using chi-squared tests. These ORs were used to determine the strength of the relationship between various life changes and changes in alcohol consumption over time.

Given that multiple significance tests were conducted on this ELSA dataset, a Bonferroni correction was calculated. The Bonferroni method was used to adjust the critical significance level to account for the increased likelihood of encountering a type I error with multiple testing, where the null hypothesis is incorrectly rejected. The acceptable critical significance level was defined at 0.05, so in 20 tests one spurious result would be expected. To reduce the chance of type I error, the Bonferroni method calculates a new critical significance level at which the probability is reduced to 0.05 for all the tests combined. Thus, the new critical significance level is $0.05/k$, where k is the total number of tests run (Bland 2000). For example, if 17 tests were run then $0.05/17=0.003$, so we would consider that where $p<0.003$, the finding is significant at the 0.05 level. Adjusting statistical significance for the number of tests performed has been criticised for increasing the likelihood of type II errors, where truly significant findings are deemed non-significant (Perneger 1998). There is uncertainty surrounding the number of false negatives that may result from an adjustment of statistical significance. Whilst there is no general consensus on the best procedure to adopt when

performing multiple comparisons, the Bonferroni method can be useful to 'temper enthusiasm when a large number of tests are being carried out' (Campbell et al. 2007, p.289). Clarity surrounding what tests are conducted and why has been suggested as the best method for dealing with multiple comparisons (Perneger 1998). Given the number of statistical tests conducted on the ELSA data alongside the limitations of using the Bonferroni method, this method was considered the most appropriate to use for preventing the risk of type I errors given the large number of statistical tests conducted.

4.6 Summary

This chapter has described the methods that were used to collect and analyse quantitative data within this mixed methods project. The English Longitudinal Study of Ageing was used to examine the association between changes in health and non-health factors and changes in alcohol consumption over time for 5,892 adults aged 50 years and older. Participants were recruited using a multi-stage stratified probability sampling design. Data on a range of variables including health and alcohol consumption was collected over three waves between 2002 and 2007 using a computer assisted personal interview and self-completion questionnaire. Data analysis was conducted using SPSS 19. Missing data was identified as being 'missing at random' and imputed using the hot deck method. Binary logistic regression was used to examine demographic variations in abstention versus drinking. Demographic variations in drinking among males and females were measured using Kruskal-Wallis and post-hoc tests. The association between health and non-health changes and drinking frequency and volume between successive waves was measured using chi-squared tests and odds ratios were calculated for the independent variables where a significant association was identified using the chi-squared tests. Having described the methods used within the quantitative phase of the current research, the next chapter presents the data collection methods and analysis used in the qualitative phase.

Chapter 5: Qualitative methods

5.1 Introduction

This chapter describes the rationale for interviewing older adults and the methods that were used to collect and analyse the qualitative data. Section 5.1.1 outlines the reasons for using qualitative methods before Section 5.2 describes the method that was used to generate data on alcohol consumption and health, including the type of interview, interview practicalities, the topic guide and use of field notes. The sampling and recruitment strategy are described in Section 5.3 before Section 5.4 outlines ethical considerations around recruitment, informed consent, recording data, approaching sensitive topics, and safety. Data analysis is described in Section 5.5, including the approach to analysis and quality criteria for assessing qualitative research.

5.1.1 Rationale

The overarching objective of the current research was to improve knowledge of how older adults change their alcohol consumption over time and in response to health and non-health changes. Exploring process is a common use of qualitative research (Maxwell 1996) and within the current project qualitative research was used to improve understanding of the processes that lead to a change or maintenance of drinking over time. The qualitative approach addressed four research questions:

1) What purpose(s) does drinking serve for older adults?
2) What kind of knowledge do older adults have of the relationship between health and alcohol consumption?
3) Why do older adults change (or maintain) their alcohol consumption over time?
4) What mechanisms lead to a change or maintenance of alcohol consumption behaviour in older adults after change in health?

Thus, the qualitative research added depth of understanding to the quantitative research on patterns of drinking change over time and facilitated investigation of subjects not accessible using a quantitative approach (such as processes of change).

5.2 Method selection

In designing the current research three different approaches to qualitative data collection were considered: participant observation, focus groups and interviews. Briefly, in participant observation the researcher immerses themself in a particular group for a period of time to observe naturally occurring behaviour and listen and engage in conversations, whilst focus groups and interviews involve data generation through verbal recounting (Ritchie & Lewis 2003). The prolonged contact with participants during an observational study can help to improve understanding of deviant behaviours (Bryman 2008), but as the current research sought to understand the processes involved in individual behaviour change and to allow participants to describe their own understanding of the relationship between health and alcohol consumption, a generated data approach was required (Ritchie & Lewis 2003). Focus groups are a group interview that explores a specific topic whilst examining the interactions between members of the group during discussions (Bryman 2008), whilst interviewing provides opportunity for detailed examination of individual perspectives on a given topic (Ritchie & Lewis 2003). As the individual account was required to understand motivations for drinking and reasons for change or maintenance of consumption over time within personal contexts, the interview was the most appropriate tool for qualitative data collection. The potentially sensitive nature of the research further supported the decision to conduct one-to-one interviews rather than focus groups.

5.2.1 Approach to interviewing

The main approaches to qualitative interviews are in-depth, unstructured interviews that have a broad agenda mapping the issues of importance, and semi-structured interviews where the there is a greater level of pre-specification of question order and specific wording of questions (Ritchie & Lewis 2003). An in-depth approach to interviewing was used so that the topics that participants felt were relevant in relation to their alcohol consumption and health could be explored flexibly. Open-ended, responsive questioning provided interviewees with the opportunity to identify factors of importance to their drinking behaviour and facilitated greater probing. There were six different topic areas to cover during the interview, and when starting each new topic a broad question, for example ‘would you like to tell me a bit about yourself?’ or ‘would you like to tell me about your health?’, was used. A topic guide was used as a memory aid to ensure consistency in the range of topics explored in each interview, but the question order and wording varied considerably from the topic guide for each participant. The development and content of the guide is outlined in Section 5.2.4.

5.2.2 Role of the researcher

The role of the researcher as 'extractor of pre-existing data' versus 'data generation collaborator' in in-depth interviews is the subject of debate among qualitative researchers (Ritchie & Lewis 2003). Kvale (1996) described these two stances using 'miner' and 'traveller' metaphors: the former assumes knowledge is waiting within the participant to be uncovered by the researcher whilst the latter presumes some co-creation of knowledge through the collaboration of interviewer and interviewee. Many qualitative researchers believe they are active in the data generation process, necessitating reflection upon their role in the interview (Mason 2002). Reflection on how I interacted with participants to generate data was an important element of the analysis process in this research, facilitated through the use of field notes (see Section 5.2.5). Within my subtle realist approach I believe that an independent reality exists, but this reality can only be accessed through our social representations of it. In practice therefore, using the language of Kvale, whilst it may be possible to 'mine' for 'nuggets' of information on a given phenomenon, the relationship between interviewer and interviewee will affect the social construction of that reality. For example, greater rapport between researcher and participant might lead to a more descriptive experience of a given phenomenon that aids our understanding of meaning whilst where there is a low level of rapport that same phenomenon might only be described briefly or the participant may not respond to probing, and this would hinder our understanding of reality.

To foster a productive relationship with participants there are a number of skills that a researcher must develop. In addition to careful preparation before the interviews, good listening skills, a good memory, and the ability to ask clear and logical follow up questions are crucial for building credibility and rapport (Ritchie & Lewis 2003; Mason 2002). The role of the researcher is interactive and, as such, within the structured conversation the interviewer must empathise with the participant without over-involvement (Rubin & Rubin 2005). Negotiating the interviewer role was challenging but it was a position with which I became more comfortable with practice. For example, I learnt quite quickly to remain quiet until absolutely certain the participant had finished talking after I found myself interrupting the flow of the first interview, and I learnt to reflect back on earlier stages of the interview to build rapport by making participants feel I was really engaged in what they were telling me. Even so, the relationships that I developed with participants did vary over time for a number of reasons, some of which I have identified in Section 5.2.5.

5.2.3 Interview practicalities

Interviews were scheduled to last between 45 minutes and one hour: long enough to cover each topic without being so long that the participant lost interest (Ritchie & Lewis 2003). If the interview length was approaching an hour participants were asked if they were happy to continue, or if they would prefer to stop and/or continue another time. Three interviews lasted over an hour (68, 73 and 78 minutes long) and on each occasion the participant was happy to continue. Most interviews were conducted in the homes of participants, one at a place of work and three in a private office at a leisure centre. When selecting a venue for interview all participants cited convenience as the reason for their choice. In preparation for each interview I considered the venue when deciding how to present myself. When interviewing participants in their home I dressed in smart casual clothing, but when interviewing in the leisure centre and place of work I modified my dress to be appropriate for each environment so that my presence was less conspicuous. When presenting myself it was important to balance professionalism with an approachability that enabled me to build a productive relationship with each participant. All of the interviews were completed successfully and with a few exceptions they were conducted without interruption: one interview was disrupted when a spouse entered the room, another when a friend entered the room, and a third by a short telephone conversation. The flow of all three interviews was resumed quickly following the disturbance.

5.2.4 Topic guide

A topic guide was developed to ensure consistency of relevant topic coverage across the interviews (see Appendix III for the final version, p.263). The guide included six subject areas: introduction to the research, personal background, experience of health, factors affecting health, current and past alcohol consumption, and motivations to change consumption. The initial topic guide was piloted on two older adults. During the pilots the focus was on the order of topics and how to phrase questions on alcohol consumption in a way that was acceptable to older adults. Following the pilots and the earlier interviews the topic guide was modified twice to reflect what worked well during the interviews and developments in the project.

Each interview began with an introduction to the research project followed by the collection of demographic information to provide context for analysis. Interviews usually opened with the question ‘Would you like to tell me a bit about yourself?’ which served the dual purpose of eliciting background information and helping to relax participants into the interview. Following the section on background information most interviews loosely followed

the structure outlined in the topic guide, but some did vary widely depending upon the topics of importance to the participants, which required me to monitor the topic guide to ensure that each subject was covered at some point during the interview. Alcohol consumption almost always came up later in the interview after participants had talked about their health at length. Current and past drinking were described in different contexts (such as at home, in restaurants, in public houses), either spontaneously or during questioning, because context specific measures have been shown to reflect alcohol consumption more accurately (see Section 2.2.3, p.32).

5.2.5 Field notes

Field notes were recorded alongside interview data, providing an opportunity to document observations made outside the immediate context of the interview, such as thoughts about the dynamics and tone of the encounter (Arthur & Nazroo 2003). Field notes were written immediately after the interview with additional comments added over time, for example following transcription. These notes constituted an informative part of both the development of the fieldwork over time and the analysis process. Reflecting back over each interview after transcription brought a number of benefits: 1) it highlighted questions that could be phrased better, 2) it alerted me to my nuances as a researcher so that I could modify potentially problematic habits (such as asking double questions), and 3) it identified new areas to probe that I could add to the topic guide. During analysis, my early reflections on the interviewer/interviewee relationship and how I felt participants perceived me as an interviewer talking with them about their health and alcohol consumption given my age, gender and background contributed to my understanding of the variation in encounters. I also spent time reflecting on the different motivations people offered for giving an interview, including enjoying participating in research projects, wanting to help out a student, and having nothing better to do. Recognising the main reason for participation explained some of the difference in the development of the interviewee-interviewer relationship, for example those who took part because they wanted to help out a student gave some of the longest interviews.

5.3 Sampling

In qualitative research the characteristics of the population are often used as the basis for selection (Ritchie & Lewis 2003). A purposive sampling strategy was used, informed by the aims of the qualitative research and the findings of the quantitative analysis. This section

describes the rationale for choosing a purposive sample and the sample size, the characteristics for which participants were selected and the recruitment strategy.

5.3.1 Purposive sampling

Purposive sampling is a criteria-based selection method where individuals are chosen because of their ability to contribute information needed to answer the research questions (Mason 2002). In purposive sampling it is therefore important to think critically about sampling criteria and choose cases based upon how they might illustrate a particular phenomenon (Silverman 2009). A balance should be maintained between selecting cases to capture diversity whilst ensuring sufficient representation of each characteristic so that relevant factors in a particular process can be identified. The heterogeneity of the population, the number of selection criteria and the extent to which nesting of criteria is required all impact upon the required sample size (Ritchie & Lewis 2003).

The purposive sampling strategy was chosen because to improve understanding of the processes of alcohol consumption behaviour change in older adults following a diagnosis with a long-term condition I needed to interview a heterogeneous sample of older people who had been diagnosed with a long-term condition. Capturing heterogeneity aims to represent the entire range of variation of a given phenomenon (Ritchie & Lewis 2003; Mason 2002). Sampling criteria were developed using previous literature and the preliminary quantitative data analysis that examined the socio-demographic characteristics that predicted change in alcohol consumption over time. I interviewed to the point of saturation with respect to processes of alcohol consumption behaviour change over time, where new interviews no longer added anything to the overall story (Glaser & Straus 1967). In total 19 interviews were conducted with a diverse sample of older adults, at which point no substantively new themes of relevance to the research questions had been identified from the last 5 interviews. These figures are supported by research examining the operationalisation of saturation, which found saturation could occur with between 6 and 30 participants (Guest et al. 2006).

5.3.2 Sampling characteristics

A heterogeneous sample was recruited to capture a range of experiences that could be used to identify central themes that cut across the variety of cases (Ritchie & Lewis 2003; Mason 2002). Key sampling characteristics were age, gender, level of alcohol consumption, socioeconomic status and long-term condition. Men and women aged between 60 and 80 years of age were eligible. A narrower age range was chosen for the qualitative research than was used in the quantitative research because interviewing adults within this smaller age

range permitted a more detailed exploration of alcohol consumption behaviour in a group of mid- to older-old adults who are most likely to experience health deterioration. During recruitment potential participants were asked if they drank alcohol or had stopped drinking since diagnosis. Current drinkers were asked how often they had a drink as a crude gauge of level of consumption so that I could ensure a spread of low, moderate and higher-level drinkers. Socioeconomic status was measured using participant neighbourhood and the indices of multiple deprivation, an area based measure of deprivation (Department for Communities and Local Government 2011). Given the broad range of long-term conditions prevalent in society and the multitude of ways in which alcohol may interact with different diseases and treatments, recruitment was focussed on three long-term conditions that are common in the older adult population: cardiovascular disease, diabetes and musculoskeletal conditions. The potential consequences of drinking alcohol with these conditions are outlined as a rationale for their selection.

In the 2006 Health Survey for England 13.6% of men and 13.0% of women reported being diagnosed with a cardiovascular disease. Prevalence increased with age and rose sharply for men aged over 65 years and women aged over 75 years (Craig & Mindell 2008). For most heart conditions a moderate level of consumption does not adversely affect health, but drinking in excess of government guidelines can affect blood pressure, heart rhythm and damage the heart muscle (British Heart Foundation 2012). At a lower level of consumption alcohol can have a negative effect on certain medications, for example alcohol potentiates the effect of analgesics so can increase the effects of the drug and affects the metabolism of warfarin (a common anti-coagulation medication) and so acute or chronic heavy drinking can increase the risk of bleeding (British Heart Foundation 2012). In addition to negative side effects of drinking alcohol for the heart there may be some protection against heart disease from regular consumption of a low level of alcohol (Mukamal et al. 2010; Corrao et al. 2004). It was interesting to explore alcohol consumption following diagnosis with a cardiovascular disease to observe how older adults interpreted this information about the benefits of drinking for cardiovascular health.

Diabetes affects 5.1% of people in England and 90% of people with diabetes have type 2 diabetes. Prevalence increases with age from fewer than 1% of men and women aged 16 to 24 years, to 15.7% of men and 10.4% of women aged 65 to 74 years (Diabetes UK 2010). Prevalence increases quickly in men aged 45 years and older and women aged 55 years and older. People with a diagnosis of diabetes can drink alcohol but are advised to limit their consumption to 2 units a day for a woman and 3 units per day for a man (Diabetes UK 2009). Moderate and higher-level drinkers might want to reduce their alcohol consumption following

a diagnosis of diabetes because alcohol reduces the livers' ability to release glucose to raise blood glucose levels, may reduce awareness of hypoglycaemia warning signs, contains calories so may contribute to weight gain, and may worsen the pain, tingling and numbness associated with nerve damage (Diabetes UK 2009).

Musculoskeletal conditions are relatively common among older adults and prevalence increases with age. For example, 2% of men and 3% of women aged 45-64 years in the UK have osteoarthritis rising to 7% of men and 10% of women aged over 75 years (Arthritis Research UK 2011). Rheumatoid arthritis and osteoporosis prevalence also increase with age and both are more prevalent in women than men (Arthritis Research UK 2011; International Longevity Centre 2010). Moderate or higher-level drinkers diagnosed with a musculoskeletal condition might want to modify their alcohol consumption for a number of reasons: acute and chronic alcohol consumption may lead to falls and fractures, alcohol promotes bone loss and can affect control, weakness and pain in all muscle groups, high alcohol consumption on first line drugs such as non-steroidal anti-inflammatories is undesirable (as alcohol potentiates the irritation of the stomach lining with aspirin and non-steroidal anti-inflammatories, increasing the risk of gastric bleeding and ulcers) and abstention is often recommended with disease modifying drugs, such as methotrexate where alcohol increases the risk of hepatotoxicity (Sofat, 2002).

When data collection began a maximum time from diagnosis of 24-months was stipulated because the research required recall of alcohol consumption prior to diagnosis, which may be more difficult with time (see Section 2.2.3, p.34). However, in the early interviews participants were reflecting back on their alcohol consumption patterns over ten or more years and how this had changed, or not, following new disease diagnosis. Given this, in arranging later interviews flexibility in the maximum time since diagnosis was increased. The decision to extend the maximum time since diagnosis was supported by a study on the reliability of alcohol recall over a 23-year period among 574 US doctors with an average age of 71 years. This research reported notable reliability between concurrent measurements (23 and 15 years ago) and recalled measurements. Although differences between concurrent and recall measurements were significant, the actual variation between concurrent and recalled measurements was 0.47 drinks on 6.3 drinks per week after 15 years and -0.79 on 7.4 drinks per week after 23 years (Chu et al. 2010). Thus, longer-term recall of alcohol consumption can be reliable. Older adults were eligible to participate in the current research if they had consumed alcohol in the 12-months prior to diagnosis, or if they had drunk alcohol since their diagnosis.

In addition to the key sampling criteria, baseline health and family unit were monitored to ensure a range of experience. Baseline health was chosen to observe the differences in change among individuals for whom this diagnosis was their first long-term condition compared with an additional condition. Family unit was monitored to enable exploration of the experiences of individuals who lived with family compared with those who lived alone, as family members can both support and hinder behaviour change (Lawrence et al. 2010).

5.3.3 Recruitment

Recruitment began with older adults identified through voluntary and community organisations in the 'Help Yourself' database, a website with details for over 5000 such organisations in Sheffield and the surrounding area (Sheffield Libraries Archives and Information Services & NHS Sheffield Library Service 2010). Five organisations were selected in the first instance, three disease specific support groups (one for each long-term condition) and two lunch clubs. Information on age restrictions and the geographical location of meetings were provided on the 'Help Yourself' database, facilitating selection of suitable organisations. Public houses in socioeconomically contrasting neighbourhoods were also selected to recruit higher-level drinkers.

In June 2011 all of these organisations were contacted to ask if they would be interested in helping to recruit older adults who had recently been diagnosed with a long-term condition to this research. Negative responses were received from the landlords of the public houses because they had concerns that my research would have a negative impact on their business. I received more positive responses from the lunch clubs, but in practice they were not viable recruitment sites because although they were advertised for adults aged 50 years and older, almost all of the people who attended were over 80 years old and therefore not eligible to participate in my research. A slightly different approach was taken in each disease specific society: one society displayed a flyer inviting participation at their drop in centre (see Appendix III, p.268), one posted an advertisement on their website, and the third invited me to come to an event to talk to members and invite them to participate. I recruited one participant from each of these disease specific societies. The details of the recruitment process with regards to ethics are outlined in Section 5.4.

By August 2011 it was evident that my initial approach was not a productive strategy so I identified new recruitment sites where I would be able to attend meetings to talk directly to potential participants about my research. I approached three exercise groups, one for people recovering from cardiac events and two for people with limited mobility. Two of these groups invited me to attend one of their exercise sessions to inform people about my research

resulting in the recruitment of six participants. I also approached three social groups for older adults and one of these allowed me to give a short presentation on my research at a quarterly meeting, following which a further three participants were recruited. This face-to-face recruitment approach was much more successful than the information flyer approach that had been necessary within two of the disease specific organisations from the first round of recruitment. An additional seven participants were recruited through snowballing, with informal contact networks used to identify people who might be willing and eligible to take part in my research. Recruitment ended in January 2012.

From early in the recruitment period people with diverse characteristics were recruited to interview, so ensuring a heterogeneous sample was not difficult. However, towards the end of recruitment it was necessary to focus on adults in the older age group and lower level drinkers to increase the representation of these characteristics.

Four older adults who volunteered to participate were not interviewed. Two men were excluded because they could not remember when they had been diagnosed with their long-term condition (one cardiovascular disease and one diabetes). It was assumed that if they could not remember when they were diagnosed, they would have had difficulty in recalling the information required during the interview. Two women were excluded because they had stopped drinking many years before their diagnosis (3 years and 20 years previously).

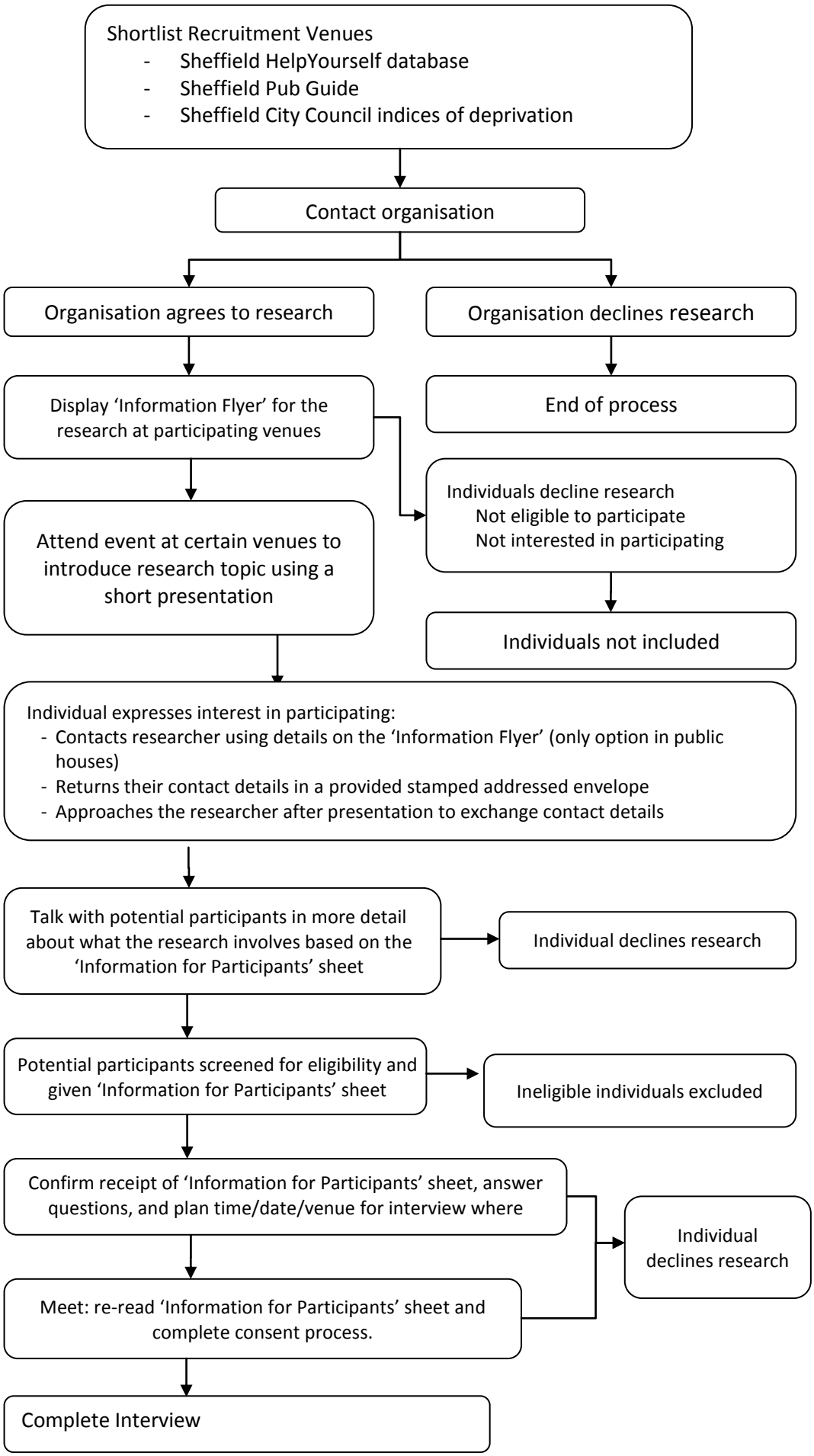
5.4 Ethical considerations

The current research underwent scientific review and was approved by the ScHARR ethical review committee at the University of Sheffield in May 2011 (see Appendix III p.264). Ethical considerations included those both generic to research involving human participants and concerns more specific to research involving older adults and discussing the sensitive subjects of health and alcohol consumption.

5.4.1 Recruitment

The recruitment process is illustrated in Figure 5.1. Potential participants expressed an interest in participating either by approaching me in person after a recruitment event or by taking an information flyer with my contact details and making contact at a later date. The information flyer and sheet were piloted with three people aged over 60 to check the content was appropriate. When potential participants expressed an interest taking part, screening questions were asked on age, long-term condition and alcohol consumption to check eligibility.

Figure 5.1: Recruitment and consent process, and timeline



For participants who were not eligible I explained why they could not take part and thanked them for expressing interest in my research. Eligible participants were given a more detailed verbal description of what the research process involved and an information sheet to read that contained relevant information about the research (see Appendix III, p.270). Participants were reassured that their participation was voluntary and they could withdraw from the process at any time without repercussions, that the process was confidential, and all data would be held anonymously. Having read the information sheet people were given the opportunity to ask any questions they had about the research and if they still wanted to participate then an interview was arranged at a convenient time and location. No one withdrew from the project at or following this point in the recruitment process. Contact details were exchanged so that I could phone each participant 24 hours before the interview to ask if they still wanted to participate and so they could contact me with questions, to change the interview date or venue, or withdraw.

5.4.2 Informed consent

It was important to obtain informed consent from each older adult before conducting their interview. Informed consent requires that participants are aware of the purposes of the research, what is required of them, the topics that will be covered, how the data will be used and who will see the data (Ritchie & Lewis 2003). During the recruitment process this information was provided both verbally and in writing in the information sheet. Both the verbal and written presentation of this information were succinct so as not to overwhelm potential participants with unnecessary details of the research. Before the interview started participants were asked to sign a consent form (see Appendix III, p.272) to confirm they were voluntering to take part in the research, had been given the opportunity to ask questions about the research, were happy to be recorded and for the anonymised data to be used in future research, and that they knew that could withdraw at any time.

Participants were offered a £10 gift voucher to thank them for participating in the research. Offering a financial incentive to participate could be seen as coercing people who did not really want to be interviewed into participation, particularly poorer older adults who might have felt they needed the financial reward. However, the £10 was offered in the form of a gift voucher and was a small enough denomination that it seemed fair return for participation without being so high as to be coercive (Head, 2009). The relatively slow recruitment rate also suggests that this £10 gift voucher did not coerce participation solely for need of the financial reward. Around a third of participants from across different levels of area deprivation refused the financial incentive or asked me to donate the money to charity.

5.4.3 Recording and transcribing

The interviews were recorded using digital voice recorders to capture a complete account of the exchange. Audio recording allowed me to focus on listening to interviewees and formulating follow-up questions rather than having to spend time writing notes during the interview. Recording also facilitated a more detailed analysis of each encounter because during analysis I was able to listen to the participants' own language, which aided exploration of nuance and depth of response. The information sheet outlined how the recorded media would be stored and used and who would have access to the data, whilst the consent form asked for consent to be recorded so there was a clear agreement between the researcher and participants regarding the recorded media. Following each interview the audio files were transferred to a computer where they were held in a password protected folder, and the unprotected audio files were deleted from the digital recorder. All the recordings were transcribed as soon as possible after each interview as a first step towards familiarisation within the analysis process. All data was anonymised at the point of transcription: participants' names were replaced with a code indicating their gender and interview number (e.g. M1 for the first male interview) and all potentially identifying material (such as home street name) was given a pseudonym. After completing each transcription I listened to the interview once again whilst reading the transcript to check for accuracy. Similar to the audio files, all transcripts were held in password protected files to prevent unauthorised individuals from accessing the data.

5.4.4 Approaching sensitive topics

The interviews required discussion of the potentially sensitive subjects of health and alcohol consumption habits. Throughout recruitment it was made very clear to participants that the interview would require them to talk in depth about their health and alcohol consumption, so people who would have found these topics particularly sensitive may have chosen not to participate. I did not encounter any problems in probing health or alcohol consumption habits, although some participants were obviously less comfortable talking about their drinking than others. The topic guide was developed so that these topics were introduced after 'warm-up' questions around personal background. The questions on alcohol consumption were piloted with older adults contacted through Sheffield Expert Elders network: involving older adults in question development facilitated the design of alcohol consumption questions using language appropriate for this population. During follow-up questions the respondents' own phraseology was used where possible. I developed a contact

sheet for advice on health and alcohol consumption to give to participants who I felt had been affected by the interview process, but this sheet was not required.

5.4.5 Additional considerations

There were two additional considerations during the data collection period. The first was researcher safety. Some of the older adults interviewed had limited mobility and many had restrictive transport arrangements, making it difficult for them to attend an interview outside their home. A private room at a leisure centre was used for three interviews and an office at one participant's place of work for another, but otherwise interviews were conducted in the home, raising issues around researcher safety. Before each interview I made contact with a colleague to let them know I was going into a home. After the interview I made contact again to let them know the interview was finished and I was in my car about to leave the property. On each occasion I left details of the interview location in an envelope with my colleague so that they only had to know the address of the participant if I had been out of contact for 2 hours and they believed that there might be problem.

The second consideration was around the well-being of the participants. The interview process was designed to be sensitive to the needs of older adults who were potentially frail or vulnerable (Gubrium & Holstein 2002). Throughout the process participants were observed for indications that they were finding the interview difficult or tiring. At the start of each interview participants were informed that they could pause or stop the interview at any time and continue on another occasion if needed, but in practice this was not necessary. Each interview was adapted to the participant, for example when interviewing older adults who were hard of hearing I adapted my speech to ensure that they could understand my questions.

5.5 Analysis

Analysis began whilst data collection was ongoing. Initial analysis was a process of data management, sorting and reducing the large amounts of textual data into a more manageable format (Ritchie & Lewis 2003). As the sample size was determined by data saturation it was important to begin this analysis process as soon as possible following each interview so that the point of saturation could be identified. Additionally, concurrent analysis and data collection assisted with timely and more accurate analysis (Maxwell 1996), with interviews transcribed verbatim and field notes written straight after the interview facilitating a more complete recollection of each encounter. Using this iterative approach of collecting and

analysing data simultaneously enabled use of emerging themes to refine questions for future interviews (Pope & Mays 2006; Patton 2002).

5.5.1 Approach to analysis

A thematic approach to analysis was used in the current research. Thematic analysis 'is a method for identifying, analysing and reporting patterns within data' (p.79), providing a flexible tool that can assist in the generation of a detailed account of data without requiring a theoretical framework to guide analysis (Braun & Clarke 2006). Thematic analysis provides a rigorous and transparent system to 'assist the researcher in the search for insight' (Boyatzis 1998 p.vi). Thematic analysis is often used in the analysis of data targeted to specific research questions (Bowling & Ebrahim 2005), as in the current research. The decision to take a thematic approach to analysis was a pragmatic one. This approach facilitated generation of a rich and complex account of the data that could be used to answer the research questions and identify an appropriate framework for understanding drinking change based up the data rather than an *a priori* framework based upon previous research of change in different populations.

Thematic analysis has been criticised for abandoning several key traditional characteristics of qualitative research: an iterative approach to data collection, induction of themes, and flexibility in design and sampling (Bowling & Ebrahim 2005). There are a number of pitfalls to avoid when conducting thematic analysis (Braun & Clarke 2006), including failure to actually analyse the data, using data collection questions as 'themes', weak analysis (with too much overlap between themes or lack of internal coherence in themes), and mismatch between the data and analytic claims. Whilst the flexibility of a thematic approach to analysis can be advantageous, this can make it difficult to know which aspects of the data to focus on for a thicker description. These potential drawbacks considered, the researcher can take measures to ensure that a good thematic analysis is conducted, for example by preventing overlap between themes, and can convey this to the audience through explicit documentation of the process of analysis (Braun & Clarke 2006). Thus, the limitations of thematic analysis are limitations of the way that some researchers use thematic analysis rather than inherent problems with the approach, and through an awareness of these potential drawbacks such errors were avoided in the current research. A thematic approach was particularly apposite here for summarising key features of the large amount of data generated from the interviews, highlighting similarities and differences across the data, identifying patterns and generating unanticipated insights.

5.5.2 Data management tools

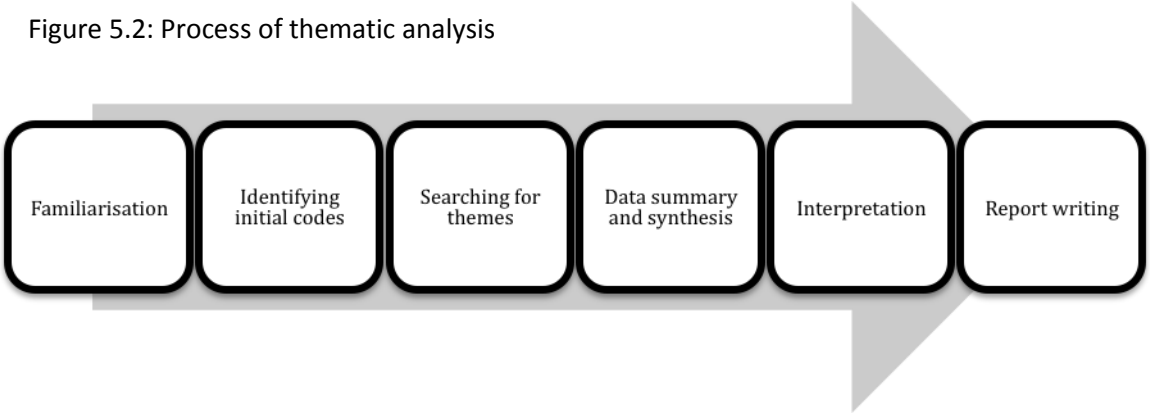
Computer aided data analysis (CAQDAS) can help to manage data by enabling a consistent approach to coding and facilitating the retrieval of coded data across multiple interviews (Ritchie & Lewis 2003). It is important when using CAQDAS to acknowledge the limitations of such software. CAQDAS cannot be used to take shortcuts in the analysis process and cannot replace the role of the researcher; no package is able to structure data analysis or perceive links between data and theory (Pope et al. 2000). As CAQDAS is relatively mechanistic it can lead to superficial interest in the context of coded data when context should be central to analysis (Mason 2002).

A CAQDAS package was used to facilitate the process of data management. Following transcription each interview was read twice for familiarisation with the data before the data was imported into HyperRESEARCH™ (ResearchWare, Inc. 2011). The use of CAQDAS helped to build links between the data and manipulate codes relatively easily, as well as retrieve codes across interviews. Each code was assigned a different colour to permit identification of codes within the context of each transcript although in practice this colour coding was not particularly useful as there were so many codes that I could not remember which colour referred to which code. Although HyperRESEARCH™ does have theory building facilities, this part of the programme was not used, and instead a manual approach to analysis was adopted after the data had been coded.

5.5.3 Stages of analysis

Analysis involved six interrelated stages that are illustrated in Figure 5.2. The first stage was familiarisation. Familiarisation began with transcription and writing up field notes, followed by reading each transcript through twice to acquaint myself with the content. This first stage facilitated initial code identification, the second stage of the analysis process. Codes were used to identify similar material across transcripts (e.g. 'medication' or 'medical advice') whilst categories were groupings of codes on a similar topic (e.g. health or social activity) and

Figure 5.2: Process of thematic analysis



themes were used to facilitate an understanding of behaviour change or stability (e.g. routine). Initial categories were developed out of an overview of the data with interesting segments of data collated within codes. Identification of codes was facilitated using markers such as repetitions, similarities and differences within and across interviews, and transitions between topics (Ryan & Bernard (2003). Codes were refined as familiarisation with the text improved and ideas were cross-referenced across multiple transcripts. For example, after three interviews had been transcribed and coded, 54 codes had been introduced. Cross-referencing across the interviews and consideration of the relationship between these codes resulted in re-classification into 37 codes within five broader categories. These codes were then applied consistently to the data as new transcripts were collected, with continuous review of codes and categories throughout the process.

As the amount of coded data increased as the interviews progressed the search began for themes within the data. Coded data was de-contextualised and rearranged into categories to facilitate comparison of the data, aiding the development of theoretical concepts. Within themes, data was subsequently re-contextualised when trying to explain variation across cases to explore the importance of context. Data was examined within and across categories to identify themes that aided understanding of alcohol consumption behaviour change in older adults. At this stage it became evident from looking across the data that Capability, Opportunity, Motivation – Behaviour (COM-B) (Michie et al. 2011) could be a useful organising framework because the drivers of change that participants reported (such as personal negative experiences relating to alcohol consumption, drinking habits and physical opportunities to drink) aligned with the three components of COM-B. COM-B was therefore introduced to facilitate organisation of the data, with different components of the framework identified as themes, for example reflective motivation and automatic motivation. The inception and development of COM-B by Michie et al. is described in Chapter 2 (p.61).

As the structure of these themes developed, information was summarised and synthesised: data was sorted within the COM-B components and materials that illustrated key arguments were gathered together in a matrix. Using a matrix reduced the amount of textual data to a manageable level and started the process of collating evidence for subsequent interpretation. All relevant material was collected in the participants' own language and annotated with my thoughts and comments as appropriate. Throughout this analysis process I reflected on and discussed the development of codes, categories and themes with my supervisors during our monthly meetings. This process aided movement back and forth between the raw data and themes and ultimately produced a more thorough analysis with deeper exploration of the data that helped me to develop a more convincing and well-

organised story about the data relevant to the research questions. This feedback also helped me to identify my own researcher biases, assumptions and flawed logic so that I could overcome these threats to validity.

The penultimate stage of analysis was data interpretation. Given the mixed methods design this stage involved a substantial degree of iteration between the quantitative findings and qualitative data. The qualitative analysis produced a descriptive account of how older adults think about alcohol consumption in relation to their health and identified the processes through which disease diagnosis leads to maintenance of or change in alcohol consumption behaviour. The objective was to search for phenomena that might aid understanding of the processes that led to alcohol consumption change or maintenance following disease diagnosis. Critical analysis of the research findings using the techniques of constant comparison and deviant-case analysis (Silverman, 2009) helped to improve confidence in the validity of conclusions drawn from the data. For example, using the constant comparative method I attempted to disprove conclusions drawn by searching the raw data for discrepant evidence. The culmination of the analysis process was writing this thesis. This final stage provided an opportunity to draw together the data into a coherent story, illustrating findings using segments of the original transcripts (White et al. 2003).

5.5.4 Quality criteria

To ensure that the qualitative data analysis was conducted in a rigorous manner, the process of data analysis was cross-referenced against a checklist for good thematic analysis developed by Braun & Clarke (2006) as the research and analysis was ongoing (see Table 5.1).

Good quality qualitative research requires attention to quality at all stages of the research process. In the quantitative analysis the intention was to produce findings that were both reliable and valid. In qualitative research these concepts are not particularly useful for judging the quality of a study. In qualitative research ideas around reliability are often expressed in terms of replicability (of the research process) and dependability (of the findings) (Ritchie & Lewis 2003). Replicability and dependency can be monitored through internal checks on the data (such as did the sample represent the target population and was the fieldwork carried out consistently?) and clear and detailed presentation of the process that lead to the research findings. Equally, validity is not a concept that many qualitative researchers strive for given the conflict between common epistemological stances of qualitative research and the positivist nature of validity; however, credibility and transferability of findings are important. Demonstrating credibility is challenging as no methods can ensure the aspects of the world under study have been adequately understood

Table 5.1: Quality criteria checklist (Braun & Clarke 2006)

Process	Criteria
Transcription	The data have been transcribed to an appropriate level of detail, and the transcripts have been checked against the tapes for 'accuracy'
Coding	Each data item has been given equal attention in the coding process Themes have not been generated from a few vivid examples, but instead the coding process has been thorough, inclusive & comprehensive All relevant extracts for each theme have been collated Themes have been checked against each other and back to the original data set Themes are internally coherent, consistent, and distinctive
Analysis	Data have been analysed & interpreted rather than paraphrased or described Analysis and data match each other – the extracts illustrate the analytic claims Analysis tells a convincing and well-organised story about the data and topic A good balance between analytic narrative and illustrative extracts is provided
Overall	Enough time was allocated to complete all phases of the analysis adequately
Written report	The assumptions about & approach to thematic analysis are clearly explicated There is good fit between what you claim to do & what you show you have done Language & concepts used in writing are consistent with the epistemological position of the analysis Researcher is positioned as *active* in the research process; themes do not just emerge

(Mason 2002). To assist in achieving credibility qualitative findings should accurately reflect the phenomenon being studied as perceived by the population under study (Hammersley 1992) and during analysis there must be adequate evidence to support interpretation and that evidence should be sufficient (e.g. no sample biases) (Ritchie & Lewis 2003).

5.6 Summary

This chapter has described the methods that were used to collect and analyse qualitative data within this mixed methods project. In-depth interviews were used to generate data on health and alcohol consumption from 19 older adults with heart disease, diabetes or a musculoskeletal condition. Participants were sampled purposively from voluntary and community organisations and through snowballing. Interviews were recorded and transcribed verbatim before being analysed thematically. HyperRESEARCH™ software was used to assist in data management and coding. A thematic approach to analysis was adopted and data was ultimately organised within the COM-B framework. During analysis the techniques of the constant comparative method and deviant case analysis were used to challenge my interpretations. A quality criteria checklist was used to improve the quality of the analysis and the replicability, credibility and transferability of findings. Having detailed the methodological approach and the individual quantitative and qualitative methods used within the current research, Part III now presents the findings of the quantitative and qualitative research.

Part III: Results and Discussion

Chapter 6: Drinking among older adults

6.1 Introduction

This chapter presents findings on the current alcohol consumption behaviour of the two samples of older adults and how this behaviour has changed over time. Section 6.2 describes the ELSA participant characteristics and answers two of the research questions outlined in Chapter 2: what are the current alcohol consumption patterns of older adults and how do they vary by socio-demographic characteristics? And what are the patterns of change over time in alcohol consumption? Section 6.3 introduces the interview sample, describes drinking patterns within this sample and presents the changes over time that participants discussed during the interviews. This section answers one of the research questions identified in Chapter 2: what purpose(s) does drinking serve for older adults? Section 6.3 also provides the context for Chapter 8, where the processes of change in alcohol consumption as they are understood from interviewing this group of older adults are presented.

6.2 Alcohol consumption patterns in ELSA

6.2.1 ELSA participant characteristics

Between 2004 and 2008, 6,376 adults aged 50 years and older completed three waves of ELSA and were eligible for inclusion in the current analysis. This sample comprised 55.5% women and 44.5% men (see Table 6.1). Participants were distributed across the older age range, with approximately one third aged 50-59 years, another 60-69 years and the final third aged 70 years and older. Most participants were of White ethnicity. Participant socioeconomic status, recorded using the National Statistics Socioeconomic Classification, was distributed across the socioeconomic hierarchy, with the most frequently reported class being lower managerial and professional. At baseline, the majority of participants were married, whilst 16.4% were widowed, 9.4% divorced and 4.9% single. Over half the sample was retired and 31.8% were employed.

Table 6.1: ELSA participant characteristics

Participant characteristics		Number	%
Gender	Male	2,835	44.5%
	Female	3,541	55.5%
Age	50-59	2,065	32.4%
	60-69	2,252	35.3%
	70+	2,059	32.3%
Ethnicity	White	6,293	98.7%
	Non-white	81	1.3%
Socioeconomic status	Higher managerial/professional (I)	655	10.3%
	Lower managerial/professional (II)	1,560	24.5%
	Intermediate (III)	898	14.1%
	Small employers/own account workers (IV)	619	9.7%
	Lower supervisory (V)	681	10.7%
	Semi-routine (VI)	1,023	16.0%
	Routine (VII)	777	12.2%
	Unclassified (VIII)	163	2.6%
Marital status	Single	312	4.9%
	Married or remarried	4,355	68.3%
	Separated	67	1.1%
	Divorced	598	9.4%
	Widowed	1,044	16.4%
Economic activity status	Retired	3,286	52.4%
	Employed	1,997	31.8%
	Unemployed	46	0.7%
	Permanently sick or disabled	298	4.7%
	Looking after home or family	635	10.0%
	Other	21	0.3%
Total		6,376	100%

The ELSA sample is comparable to the population of England and Wales aged 50 and over based upon the 2001 census, a decennial population survey (Office for National Statistics 2004). In the 2001 census 54% of the population aged over 50 was female and just over 96% of the sample was of White ethnicity. Socioeconomic status and marital status were also comparable to the ELSA population. The only large variation in demographic characteristics was in economic activity status, with only 39% of census respondents retired compared with 52% of ELSA participants (Office for National Statistics 2004). Thus, ELSA participants were more likely to be retired, which makes sense given that ELSA is voluntary and retired people may have more time available to participate in research, but otherwise represented the older population of England and Wales.

In addition to socio-demographic characteristics, a range of health-related data was collated during the ELSA interview (see Table 6.2). At baseline, three-quarters of the sample reported good self-rated health whilst only 5.6% reported bad health. Cardiovascular disease and 'other' chronic conditions (such as diabetes, cancer and musculoskeletal conditions) were reported by 45.3% and 47.7% respectively, whilst the prevalence of psychiatric conditions was lower at 5.8%. Problems with ADLs/IADLs/mobility were widespread; only 43.2% of people reported no limitations. Finally, 36.6% of the sample reported experiencing regular pain, with 7% of participants indicating that pain was usually severe. Individual between-wave changes in these six areas of health are described in Chapter 7 and are used as independent variables for analysis of the association between changes in health and drinking over time.

Table 6.2: ELSA participant baseline health status

Participant health		Number	%
Self-rated general health	Good	4,858	76.3%
	Fair	1,157	18.2%
	Bad	354	5.6%
Limited activities of daily living	None	2,756	43.2%
	1 or 2	1,791	28.1%
	3+	1,829	28.7%
Usual level of pain	None	4,043	63.4%
	Mild	690	10.8%
	Moderate	1,191	18.7%
	Severe	449	7.0%
Cardiovascular disease	Yes	2,888	45.3%
	No	3,488	54.7%
Psychiatric condition	Yes	198	5.8%
	No	6,178	94.2%
Other chronic condition	Yes	3,044	47.7%
	No	3,332	52.3%
Total		6,376	100%

6.2.2 Alcohol consumption among ELSA participants

Of the 6,376 ELSA participants described in Section 6.2.1, 484 (7.6%) were abstainers across the study period. The remaining 5,892 individuals reported drinking alcohol at one or more wave and so were included for analysis of drinking change over time. Before describing the alcohol consumption behaviour of this group of drinkers, some socio-demographic differences between the abstainers and drinkers are presented in Table 6.3. Compared with women, men were significantly more likely to be drinkers than abstainers (OR 1.61 95%CI 1.29-

2.02). Adults aged 50-59 years were twice as likely to be drinkers rather than abstainers, compared with those aged 70 years and older (OR 2.06 95%CI 1.57-2.69). Non-white participants comprised only 1% of drinkers but 4.5% of abstainers. Married, remarried and divorced individuals were significantly more likely to be drinkers whilst widowed participants reported higher rates of abstention. The odds of drinking versus abstaining increased with higher social class, with participants in the higher managerial and professional class 3.8 times more likely to drink than abstain compared with those in the routine social class (95% CI 2.23 to 6.57). Thus, compared with drinkers, abstainers were more likely to be female, older, of non-white ethnicity, from a lower social class and widowed. Some of these significant findings may be chance findings due to the relatively small number of abstainers in certain categories (see Table 6.3). However, these findings do reflect other data on alcohol consumption in England that found older adults, women, the widowed and those from lower social classes report lower rates of past-week alcohol consumption (The NHS Information Centre 2010). Given persistent gender variations in drinking behaviour, both in ELSA and across studies that measure alcohol consumption in England such as the HSE and GLF, all data on drinking in this chapter is presented separately for men and women.

Table 6.3: Binary logistic regression for drinking compared with being an abstainer

Predictor Variables		Abstainers	Drinkers	Odds Ratio (95% CI)
Total		484 (7.6%)	5,892 (92.4%)	
Gender	Male	148 (30.6%)	2,687 (45.6%)	1.61 (1.29-2.02)*
	Female	336 (69.4%)	3,205 (54.4%)	Reference
Age group	50-59	101 (20.9%)	1,964 (33.3%)	2.06 (1.57-2.69)*
	60-69	157 (32.4%)	2,095 (35.6%)	1.47 (1.16-1.85)*
	70+	226 (46.7%)	1,833 (31.1%)	Reference
Ethnicity	White	462 (95.5%)	5,831 (99.0%)	6.36 (3.61-11.22)*
	Non-white	22 (4.5%)	59 (1.0%)	Reference
Socioeconomic status	(I)	17 (3.6%)	638 (11.1%)	3.83 (2.23-6.57)*
	(II)	81 (17.3%)	1,479 (25.7%)	2.30 (1.67-3.16)*
	(III)	66 (14.1%)	832 (14.5%)	1.89 (1.35-2.66)*
	(IV)	40 (8.5%)	579 (10.1%)	1.66 (1.12-2.46)*
	(V)	61 (13.0%)	620 (10.8%)	1.19 (0.84-1.68)
	(VI)	111 (23.7%)	912 (15.9%)	1.16 (0.86-1.56)
	(VII)	92 (19.7%)	685 (11.9%)	Reference
Marital status	Single	27 (5.6%)	285 (4.8%)	1.13 (0.71-1.79)
	Married	230 (47.5%)	3,435 (58.3%)	1.51 (1.18-1.94)*
	Remarried	40 (8.3%)	649 (11.0%)	1.55 (1.05-2.29)*
	Separated	4 (0.8%)	63 (1.1%)	1.77 (0.61-5.14)
	Divorced	40 (8.3%)	558 (9.5%)	1.50 (1.01-2.23)*
	Widowed	143 (29.5%)	901 (15.3%)	Reference

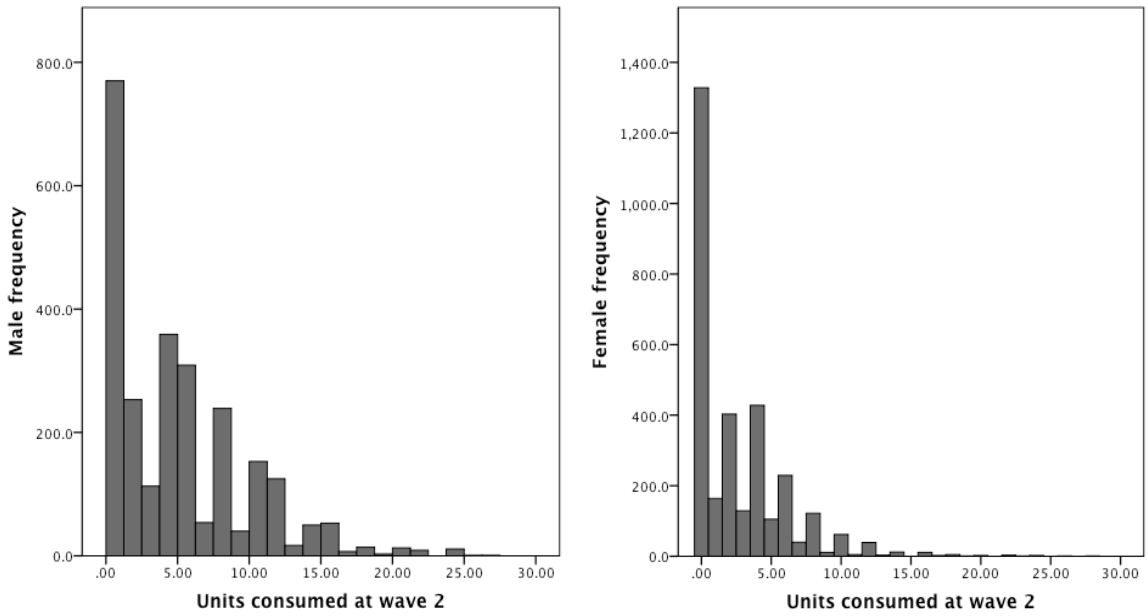
* Significant finding

Figure 6.1: Past 12-month drinking frequency at Wave 2, by gender

Among drinkers at baseline, a greater proportion of men drank on a weekly basis than women (see Figure 6.1). The most frequently reported past 12-month drinking frequency was '1 or 2 days a week' for men and women (29.8% and 26.2% respectively). Drinking 'almost every day' was reported by 24.7% of men and 15.3% of women, whilst women were more likely to report drinking on 'one or two days a year' (13.4% versus 4.7%). Similar patterns of drinking frequency were observed at Waves 3 and 4.

Unit consumption on the heaviest drinking day in the previous week was measured at Waves 2 and 3. Unit consumption was positively skewed, with 80% of participants reporting consumption of 10 units or less (see Figure 6.2). Among past-week drinkers, average male consumption on the heaviest drinking day was 6 units (IQR 4-9) and female consumption was 4 units (IQR 2-6). The heaviest 5% of male drinkers consumed an average of 17 units on occasion (IQR 16-20) whilst the heaviest 5% of female drinkers consumed 11.75 units (IQR 10-14). At Wave 4, drinking quantity was measured using total past-week consumption. Median male consumption was 14 units (IQR 6-24) and female consumption was 8 units (IQR 4-14). The heaviest 5% of male drinkers consumed an average of 32 units (IQR 14-52) and women 17 units (IQR 10-29). At Wave 2, 35% of drinkers reported zero unit consumption on the heaviest drinking day in the previous week. Of this group, 75% reported a drinking frequency of less than weekly, which may explain the past week unit consumption of zero. The conflicting

Figure 6.2: Unit consumption on the heaviest drinking day in previous week at Wave 2



responses of the 580 individuals who reported drinking frequency on '1 or 2 days a week' but consumption of 0 units in the previous week may be explained by illness or infrequent events (such as a holiday or childcare responsibilities during school vacation that influenced their alcohol consumption in the previous week). A similar proportion of drinkers reported no past week alcohol consumption at Waves 3 and 4, at 34.7% and 31.2% respectively.

Table 6.4 shows the proportion of drinkers at each wave within the low-, mid-, and higher-level drinking groups introduced in Chapter 2 (p.38) to enable comparison of alcohol consumption across studies. Approximately 60% of men were higher-level drinkers at Waves 2 and 3, exceeding recommended daily drinking limits, and over 25% consumed more than 8 units on occasion. Similarly, 60% of women were higher-level drinkers and one in six were binge drinkers. At Wave 4, 30% of men and 22% of women exceeded weekly guidelines of 21 units for men and 14 units for women. Thus, a substantial proportion of drinkers in the ELSA

Table 6.4: Proportion of drinkers reporting none, low-, mid- and higher-level drinking

Category	Gender	Wave 2	Wave 3	Wave 4
None	Male	27.2%	25.8%	21.7%
Did not drink in the previous week	Female	42.7%	42.2%	39.0%
Low-level*	Male	4.7%	5.1%	41.7%
Up to ½ the weekly or daily limit respectively	Female	9.2%	8.7%	45.4%
Mid-level*	Male	36.5%	35.7%	28.4%
Between ½ & the max weekly or daily limit	Female	29.9%	29.7%	32.3%
Higher-level*	Male	58.8 %	59.2%	30.0%
Exceed daily or weekly limit	Female	60.9%	61.6%	22.3%
Binge drinker* (included as higher-level)	Male	27.3%	26.2%	N/A
At least double daily or weekly limit	Female	16.8%	15.6%	N/A

* Percentage of past-week drinkers

cohort were drinking at potentially harmful levels. Compared with older age groups in national surveys such as the GLF and HSE, unit consumption in ELSA at Waves 2 and 3 was high; for example, the proportion of higher-level drinkers aged 50 years and older was over 20% greater than the level reported in the GLF for adults aged 45 years and older. However, measuring past week consumption at Wave 4, the proportion of higher-level drinkers was comparable to average weekly drinking measured in the GLF. The percentage of binge drinkers in ELSA is comparable to adults aged 45-64 years in the GLF at 24% of men and 15% of women, but not older old adults.

The past 12-month abstention rates in ELSA of 9.5% of women and 5.2% of men are much lower than both the GLF and the Opinions Survey. For example, in the GLF 27% of women and 15% of men aged over 65 years and 16% of women and 11% of men aged 45-64 years reported abstention. So, older adults in ELSA were more likely to be drinkers than older adults participating in other national surveys, and were more likely to be higher-level drinkers when measured using heaviest drinking day but not when measured using past-week consumption. Drinking frequency cannot be compared with other national surveys because past 12-month drinking frequency was measured differently across surveys.

As indicated in Chapter 4, to enable inclusion of all three waves of volume data in analysis of change over time, four drinking volume categories were calculated and participants were assigned to one of the four categories depending on their unit consumption. The volume category boundaries for men and women are presented in Table 6.5. Change in drinking quantity was measured using these categories in Section 6.2.4. For men, the boundaries at Waves 2 and 3 incidentally corresponded to current drinking guidelines, with drinkers in the 3rd group drinking within guidelines, the 2nd group exceeding guidelines but not binge drinking, and the top group binge drinking. Comparatively, only women in the top group at Waves 2 and 3 were exceeding guidelines. At Wave 4, a proportion of men and women in the top group were exceeding weekly drinking guidelines of 21 units for men and 14 units for women.

Table 6.5: Drinking volume category boundaries at Waves 2-4

		Bottom group	3rd group	2nd group	Top group
Wave 2	Male	0	>0 and ≤4	>4 and ≤8	>8
(Heaviest drinking day)	Female	0	>0 and ≤2	>2 and ≤4	>4
Wave 3	Male	0	>0 and ≤4	>4 and ≤8	>8
(Heaviest drinking day)	Female	0	>0 and ≤2	>2 and ≤4	>4
Wave 4	Male	0	>0 and ≤9	>9 and ≤20	>20
(Past week consumption)	Female	0	>0 and ≤3	>3 and ≤10	>10

6.2.3 Demographic variations in drinking among ELSA participants

Gender variations in consumption at baseline by age group, socioeconomic status (SES), economic activity status and marital status at Wave 2 are presented in Tables 6.6 and 6.7. Table 6.6 shows past 12-month drinking frequency for all 5,892 drinkers whilst Table 6.7 shows past week drinking for participants who reported consuming alcohol in the past week. Ethnicity was not included because over 98% of the sample was White.

There was significant variation in the distribution of drinking frequency and volume by age group among men and women. Younger men drank more frequently on average and consumed a higher volume per drinking occasion whilst older women drank less frequently and consumed a lower volume. Drinking frequency was associated with socioeconomic status, with men and women of higher SES reporting more frequent alcohol consumption, but there was no significant association between SES and drinking volume. Drinking frequency and volume were significantly associated with economic activity status in men and women, with retired or permanently sick or disabled women reporting less frequent consumption, unemployed men reporting a higher average drinking volume, and retired men reporting a

Table 6.6: Kruskal Wallis Test for difference in drinking frequency by demographic characteristics

		Male			Female		
		N	**Median frequency**	**Kruskal Wallis**	**N**	**Median frequency**	**Kruskal Wallis**
Total		2,599	1-2 days/week		3,110	1-2 days/week	
Age group	50-59	872	3-4 days/week	**χ_2=13.7, p<0.001***	1,030	1-2 days/week	**χ_2=59.3, p<0.001**
	60-69	931	1-2 days/week		1,107	1-2 days/week	
	70+	796	1-2 days/week		931	1-2 days/month	
Socioeconomic status	(I)	482	3-4 days/week	**χ_2=116.4, p<0.001**	136	3-4 days/week	**χ_2=172.3, p<0.001**
	(II)	688	3-4 days/week		745	1-2 days/week	
	(III)	126	1-2 days/week		688	1-2 days/week	
	(IV)	334	1-2 days/week		227	1-2 days/week	
	(V)	390	1-2 days/week		211	1-2 days/month	
	(VI)	223	1-2 days/week		659	1-2 days/month	
	(VII)	296	1-2 days/week		365	1 day/2 months	
Economic activity status							
	Retired	1,419	1-2 days/week	**χ_2=22.3, p<0.001**	1,568	1-2 days/month	**χ_2=29.4, p<0.001**
	Employed	972	1-2 days/week		886	1-2 days/week	
	Unemployed	22	1-2 days/week		18	1-2 days/week	
	Permanently sick or disabled	135	1-2 days/week		114	1 day/2 months	
	Looking after home & family	42	1-2 days/week		515	1-2 days/week	
Marital	Single	130	1-2 days/week	χ_2=6.8, p=0.233	141	1-2 days/month	**χ_2=94.8, p<0.001**
	Married	1,716	1-2 days/week		1,641	1-2 days/week	
	Remarried	335	1-2 days/week		295	1-2 days/week	
	Separated	26	1-2 days/week		35	1-2 days/week	
	Divorced	189	1-2 days/week		341	1-2 days/month	
	Widowed	203	1-2 days/week		656	1-2 days/month	

* With Bonferroni correction p<0.006 is significant

lower average drinking volume. Finally, marital status was significantly associated with drinking frequency and volume for older women but not men, with widowed, divorced and single women reporting less frequent consumption and widowed women also reporting a lower consumption volume.

These findings highlight the presence of demographic variations in both drinking frequency and volume in older adults. Many of the variations in alcohol consumption were small, with median frequency or volume changing by one frequency category or unit of alcohol. The largest variation in alcohol consumption was found for different age groups, with older adults reporting lower median unit consumption and drinking frequency.

Table 6.7: Kruskal Wallis Test for difference in drinking volume by demographic characteristics

		Male			Female		
		n	**Median units (IQR)**	**Kruskal Wallis**	**n**	**Median units (IQR)**	**Kruskal Wallis**
Total		1,893	6 (4-9)		1,782	4 (2-6)	
Age group	50-59	682	7 (4-10)	**χ_2=109.1, p<0.001***	681	4 (3-7)	**χ_2=143.7, p<0.001**
	60-69	683	6 (4-10)		644	4 (2-6)	
	70+	528	4 (2-7)		457	3 (2-4)	
Socioeconomic status	(I)	411	6 (4-9)	χ_2= 4.8, p=0.571	110	4 (3-8)	χ_2=16.7, p=0.010
	(II)	542	6 (4-9)		497	4 (2-6)	
	(III)	87	4 (2-8)		428	4 (2-6)	
	(IV)	215	6 (4-10)		136	4 (2-6)	
	(V)	252	6 (3-9)		102	4 (2-6)	
	(VI)	135	6 (4-8)		321	4 (2-6)	
	(VII)	205	6 (4-10)		149	4 (2-5.25)	
Economic activity status	Retired	1,008	5 (3-8)	**χ_2=47.8, p<0.001**	826	4 (2-5)	**χ_2=80.4, p<0.001**
	Employed	756	6.5 (4-10)		586	4 (3-7)	
	Unemployed	19	8 (4-8)		13	4 (2-6)	
	Permanently sick or disabled	78	6 (4-10)		56	4 (2-6)	
	Looking after home and family	26	6 (3-8)		295	4 (2-6)	
Marital status	Single	92	6.25 (4-10)	χ_2= 12.0, p=0.035	81	4 (2-5)	**χ_2=63.0, p<0.001**
	Married	1,233	6 (4-9)		1,009	4 (2-6)	
	Remarried	262	6 (4-10)		187	4.25 (3-7)	
	Separated	20	6 (4-8)		21	4 (2.25-6)	
	Divorced	145	7 (4-10)		187	4 (2-6)	
	Widowed	141	5 (3-8)		297	3 (2-4)	

* With Bonferroni correction p<0.006 is significant

6.2.4 Association between measures of drinking in successive waves of ELSA

This section presents data on the percentage of participants with stable, increasing and decreasing drinking between successive waves (see Table 6.8 and 6.9) and cross tabulations of drinking frequency and quantity in successive waves (see Appendix IV, Tables 1 to 4, p.274-276). Chi-squared tests were used to measure the strength of association between different levels of alcohol consumption at successive waves.

Over half of complete cases reported stable drinking frequency over time. Stability was more common in men than women (see Table 6.8). Approximately 20% of participants increased their drinking frequency between waves, whilst 22% of men and 28% of women decreased their frequency. Comparing complete cases with all participants (with imputed data), a smaller percentage of men and women maintained stable consumption frequency between the waves, with a greater proportion both increasing and decreasing consumption.

Changes in drinking quantity were similar between men and women across the waves:

Table 6.8: Analysis of change in drinking frequency between waves

Change Category	Complete cases (n=4,110)		All cases (n=5,892)*	
	Wave 2-3	Wave 3-4	Wave 2-3	Wave 3-4
Male				
Stable Drinkers	58.4%	57.7%	54.1%	47.1%
Increasing Drinkers	18.8%	20.2%	20.9%	26.9%
Decreasing Drinkers	22.8%	22.1%	25.0%	26.0%
Female				
Stable Drinkers	52.0%	51.5%	47.8%	41.9%
Increasing Drinkers	20.2%	20.2%	22.7%	25.9%
Decreasing Drinkers	27.8%	28.3%	29.5%	32.2%

* Including imputed data

Table 6.9: Analysis of change in drinking quantity between waves

Change Category	Complete cases (n=4,110)		All cases (n=5,892)*	
	Wave 2-3	Wave 3-4	Wave 2-3	Wave 3-4
Male				
Stable Drinkers	56.5%	50.0%	53.0%	42.9%
Increasing Drinkers	22.5%	29.0%	24.2%	33.4%
Decreasing Drinkers	21.0%	21.0%	22.8%	23.7%
Female				
Stable Drinkers	54.7%	50.8%	52.0%	46.1%
Increasing Drinkers	22.2%	28.8%	23.6%	30.9%
Decreasing Drinkers	23.1%	20.4%	24.4%	23.0%

* Including imputed data

over 50% of complete cases were stable, whilst approximately 20% decreased. The proportion of increasing drinkers rose from 22% between Waves 2-3 to 29% between Waves 3-4. Findings for all participants compared with complete cases were more comparable than for drinking frequency, but again a smaller percentage reported stability over time. Given the inefficiency of complete case analysis and potential bias that may arise from excluding cases with missing data (see Chapter 4, p.92), subsequent analyses were performed on all cases (n=5,892).

Change in drinking frequency was measured as a movement between drinking frequency categories defined in ELSA. The chi-squared statistics for males and females indicated an association between drinking frequency at Waves 2 and 3 (male: χ_2=3336.5, p<0.001 & female: χ_2=3970.7, p<0.001) and Waves 3 and 4 (male: χ_2=2324.3, p<0.001 & female: χ_2=2924.4, p<0.001). Drinking 'almost every day' and '1 or 2 days a week' were the most stable frequencies (see Appendix IV, Tables 1 and 2, p.274-275). The majority of participants whose drinking frequency category changed moved one category, indicating a modest change in drinking frequency; however, between Waves 2 and 3, 11.5% of men and 9.7% of women and between Waves 3 and 4, 18.2% of men and 15.0% of women changed by three categories or more.

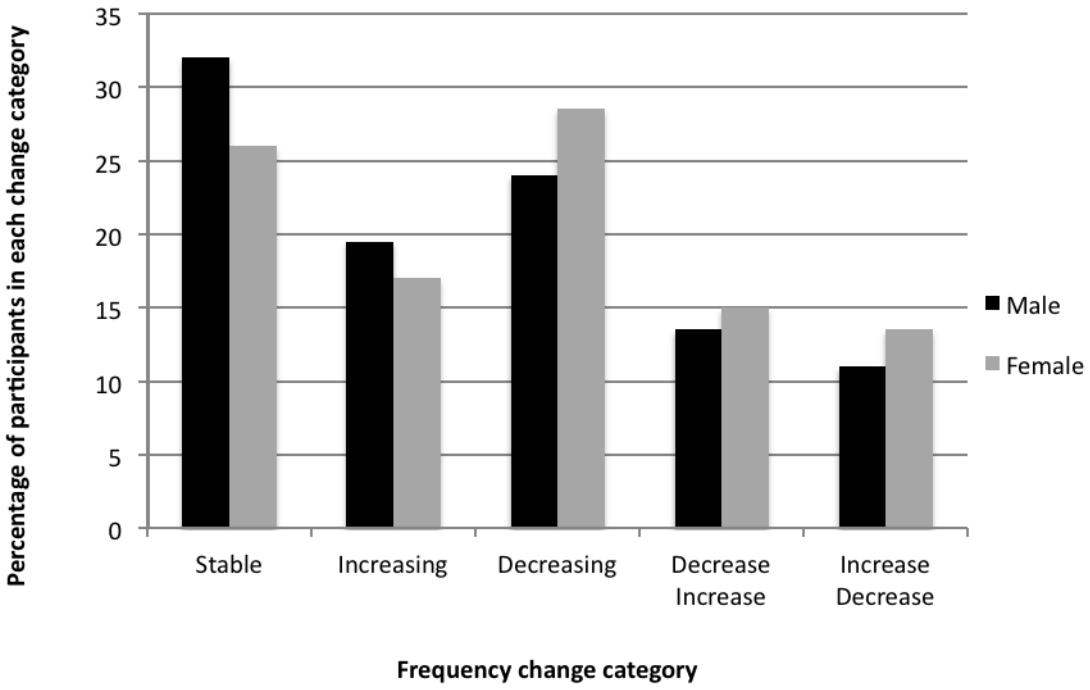
Change in drinking volume was measured using change between drinking volume categories (see Appendix IV, Tables 3 and 4, p.276). Similar to drinking frequency, the chi-squared statistics for volume indicated an association between consecutive waves (Wave 2-3 male: χ_2=1070.5, p<0.001 & female: χ_2=1066.9, p<0.001, Wave 3-4 male: χ_2=641.5, p<0.001 & female: χ_2=770.6, p<0.001). Participants in the top and bottom groups were more likely to report stable drinking volume over time, with a greater proportion of women remaining stable in the bottom group and men in the top group. The stability of higher-level consumption over time among men may indicate drinking is a resilient, habitual behaviour among older men.

6.2.5 Identification of alcohol trajectories in ELSA

In addition to measurement of drinking change between consecutive waves, change over all three waves of ELSA was measured. A diverse range of increasing and decreasing patterns of drinking frequency and volume were evident across the sample, including movement into and out of abstention. Three-wave changes in consumption are henceforth referred to as trajectories.

Examining three wave changes in men, stability was the most common frequency trajectory whilst increasing drinking was the most common volume trajectory (see Figure 6.3 and Table 5 in Appendix IV, p.276). However, given the change in measurement from heaviest drinking day to past-week consumption this figure should be interpreted with caution. One quarter of men had a decreasing drinking frequency trajectory, whilst one in five had a decreasing volume trajectory. Among women, 28.5% reported an overall decline in drinking frequency over time, whilst 26% reported stable drinking frequency. Stability was the most common volume trajectory, with 30.2% of women reporting stability and 18.2% a declining consumption. One quarter of participants described a pattern of drinking frequency and volume that increased and then decreased over time, or vice versa, suggesting that a proportion of older adults have fluctuating alcohol consumption patterns. Over half of the increases and decreases in frequency of drinking reported by participants with fluctuating trajectories were of one category, so many of the changes in drinking were relatively small.

Figure 6.3: Three-wave drinking frequency change



6.2.6 Socio-demographic variations in alcohol trajectories

The drinking trajectories identified within the ELSA dataset varied by socio-demographic characteristics (see Tables 6.10 and 6.11). Drinking frequency trajectory was significantly different between men and women (χ^2=44.8, p<0.001), with men more likely to report a stable or increasing drinking frequency trajectory and less likely to report a decreasing trajectory than women. Socioeconomic status was also significantly associated with drinking frequency trajectory (χ^2=66.5, p<0.001). Participants in the highest socioeconomic class were significantly more likely to report stable drinking frequency over time whilst those of lower SES were less likely to report stable and more likely to report a fluctuating frequency trajectory.

Drinking quantity trajectory varied by gender χ^2=27.1, p<0.001), age group (χ^2=36.7, p<0.001) and socioeconomic status (χ^2=52.5, p<0.001). In contrast to drinking frequency, men were significantly less likely to report a stable drinking volume trajectory and more likely to report an increasing volume trajectory than women. Adults in the oldest age group were more likely to report stable drinking volume and less likely to report fluctuating trajectories. Adults in the two oldest groups were more likely to have increasing trajectories and the youngest age group less frequently reported increasing drinking over time. Finally, older adults in the highest socioeconomic class were less likely to have stable volume and more likely to increase their consumption over time.

These findings highlight socio-demographic variations in drinking change among older adults that have not been established previously. New findings are:

1. Stability of drinking frequency decreases with decreasing socioeconomic class, with people in the lowest class more likely to report a decreasing trajectory.
2. Stability of drinking volume fluctuates across the socioeconomic spectrum, with participants in lower classes more likely to have a stable trajectory and adults in the highest class more likely to have an increasing trajectory.
3. Adults in the oldest age group were significantly more likely to report stable drinking volume over time. Adults aged over 60 years were more likely to report increasing drinking volume over time than younger old adults.

The finding of no variation in drinking change by martial status contradicts previous research from the USA that found unmarried individuals decreased their alcohol consumption faster with increasing age than married individuals (Shaw et al. 2010; Moore et al. 2005). Having explored the alcohol consumption patterns of ELSA participants, the next section describes alcohol consumption behaviour within the interview sample.

Table 6.10: Variations in drinking frequency trajectory by baseline demographic characteristics

		Stable	Increasing	Decreasing	Decreasing Increasing	Increasing Decreasing	χ2
Total		1695 (28.8%)	1072 (18.2%)	1557 (26.55)	846 (14.4%)	709 (12.1%)	
Gender	Male	865 (32.3%)	518 (19.3%)	645 (24.1%)	367 (13.7%)	284 (10.6%)	**χ^2=44.8, p<0.001**
	Female	830 (25.9%)	554 (17.3%)	912 (28.5%)	479 (15.0%)	425 (13.3%)	
Age Group	50-59	594 (30.3%)	335 (18.1%)	518 (26.4%)	279 (14.2%)	213 (10.9%)	
	60-69	635 (19.9%)	394 (18.8%)	518 (24.7%)	283 (13.5%)	263 (12.6%)	χ^2=22.4, p=0.004
	70+	466 (25.5%)	323 (17.7%)	521 (28.5%)	284 (15.5%)	233 (12.8%)	
Socioeconomic status	(I)	234 (36.7%)	109 (17.1%)	151 (23.7%)	79 (12.4%)	65 (10.2%)	
	(II)	456 (30.9%)	262 (17.7%)	391 (26.5%)	205 (13.9%)	164 (11.1%)	
	(III)	247 (29.8%)	148 (17.8%)	239 (28.8%)	107 (12.9%)	89 (10.7%)	
	(IV)	167 (28.9%)	109 (18.9%)	147 (25.5%)	90 (15.6%)	64 (11.1%)	**χ^2=66.5, p<0.001**
	(V)	156 (25.2%)	131 (21.2%)	155 (25.1%)	107 (17.3%)	69 (11.2%)	
	(VI)	239 (26.2%)	166 (18.2%)	237 (26.0%)	127 (13.9%)	142 (15.6%)	
	(VII)	154 (22.6%)	122 (17.9%)	197 (28.9%)	110 (16.2%)	98 (14.4%)	
Economic activity status							
	Retired	887 (28.8%)	565 (18.4%)	813 (26.4%)	441 (14.3%)	369 (12.0%)	
	Employed	593 (30.9%)	352 (18.3%)	504 (26.3%)	256 (13.3%)	215 (11.2%)	χ^2=43.5, p=0.003
	Permanently sick/disabled	52 (20.2%)	53 (20.6%)	62 (24.1%)	55 (21.4%)	35 (13.6%)	
	Looking after home or family	155 (27.4%)	94 (16.6%)	153 (27.1%)	81 (14.3%)	82 (14.5%)	
Martial status							
	Single	87 (30.6%)	48 (16.9%)	73 (25.7%)	48 (16.9%)	28 (9.9%)	
	Married	1045 (30.5%)	626 (18.3%)	892 (26.0%)	481 (14.0%)	384 (11.2%)	
	Remarried	181 (27.9%)	108 (16.7%)	195 (30.1%)	85 (13.1%)	79 (12.2%)	χ^2=31.9, p=0.045
	Separated	19 (30.2%)	11 (17.5%)	14 (22.2%)	9 (14.3%)	10 (15.9%)	
	Divorced	148 (26.7%)	103 (18.6%)	145 (26.2%)	82 (14.8%)	76 (13.7%)	
	Widowed	215 (23.9%)	175 (19.4%)	238 (26.4%)	141 (15.6%)	132 (14.7%)	

With Bonferroni correction p<0.001 is significant at the p<0.05 level

Table 6.11: Variations in drinking quantity trajectory by baseline demographic characteristics

		Stable	Increasing	Decreasing	Decreasing Increasing	Increasing Decreasing	χ^2
Total		1666 (28.8%)	1516 (25.8%)	1098 (18.7%)	833 (14.2%)	769 (13.1%)	
Gender	Male	676 (25.2%)	747 (27.9%)	519 (19.4%)	319 (14.6%)	347 (12.9%)	**χ^2=27.1, p<0.001**
	Female	990 (30.9%)	769 (24.0%)	579 (18.1%)	442 (13.8%)	422 (13.2%)	
Age Group	50-59	544 (27.8%)	436 (22.3%)	392 (20.0%)	302 (15.4%)	284 (14.5%)	
	60-69	561 (26.8%)	576 (27.5%)	373 (17.8%)	308 (14.7%)	275 (13.1%)	**χ^2=36.7, p<0.001**
	70+	561 (30.6%)	504 (27.5%)	333 (18.2%)	233 (12.2%)	210 (11.5%)	
Socioeconomic status	(I)	146 (22.9%)	202 (31.7%)	119 (18.7%)	93 (14.6%)	78 (12.2%)	
	(II)	415 (28.1%)	378 (25.6%)	288 (19.5%)	228 (15.4%)	169 (11.4%)	
	(III)	218 (26.3%)	206 (24.8%)	149 (18.0%)	123 (14.8%)	134 (16.1%)	
	(IV)	166 (28.8%)	153 (26.6%)	111 (19.3%)	69 (12.0%)	77 (13.4%)	**χ^2=52.5, p<0.001**
	(V)	184 (29.8%)	145 (23.5%)	125 (20.2%)	92 (14.9%)	72 (11.7%)	
	(VI)	280 (30.7%)	248 (27.2%)	148 (16.2%)	124 (13.6%)	111 (12.2%)	
	(VII)	209 (30.6%)	150 (21.9%)	136 (19.9%)	82 (12.0%)	107 (15.6%)	
Economic activity status							
	Retired	822 (28.6%)	849 (27.6%)	556 (18.1%)	423 (13.7%)	369 (12.0%)	
	Employed	512 (26.7%)	451 (23.5%)	391 (20.4%)	300 (15.6%)	266 (13.9%)	χ^2=43.8, p=0.002
	Permanently sick/disabled	81 (31.6%)	53 (20.7%)	44 (17.2%)	30 (11.7%)	48 (18.8%)	
	Looking after home or family	172 (30.4%)	146 (25.8%)	96 (17.0%)	69 (12.2%)	82 (14.5%)	
Martial status							
	Single	95 (33.5%)	63 (22.2%)	46 (16.2%)	43 (15.1%)	37 (13.0%	
	Married	926 (27.0%)	923 (26.9%)	634 (18.5%)	497 (14.5%)	449 (13.1%)	
	Remarried	171 (26.4%)	170 (26.2%)	144 (22.2%)	82 (12.7%)	81 (12.5%)	χ^2=40.0, p=0.009
	Separated	11 (17.5%)	16 (25.4%)	13 (20.6%)	10 (15.9%)	13 (20.6%)	
	Divorced	176 (31.7%)	112 (20.1%)	104 (18.7%)	85 (15.3%)	79 (14.2%)	
	Widowed	287 (31.9%)	232 (25.7%)	157 (17.4%)	116 (12.9%)	109 (12.1%)	

With Bonferroni correction p<0.001 is significant at the p<0.05 level

6.3 Alcohol consumption in the interview sample

This section presents information on the current alcohol consumption behaviour of the older adults who were interviewed, as well as patterns of drinking change over time.

6.3.1 Interview participant characteristics

A total of 19 adults aged between 59 and 80 years of age were interviewed. The sample included a balance of men and women from across the age range (see Table 6.12). Arthritis and cardiovascular disease were more common, whilst diabetes and osteoporosis were less frequently reported. Half the group reported having two or more of the long-term conditions that were sampled, whilst two thirds also reported at least one other condition. The sample was drawn from across geographical areas with differing levels of deprivation resulting in a socioeconomically diverse sample of older adults. Many of those interviewed lived in their own home, but four lived in council rented accommodation and one rented privately. Twelve of the interviewees were married or living with a partner, three were widowed and three divorced, whilst one was single. Four people were engaged in either full- or part-time work whilst the remainder were retired, with four participants reporting that they had taken early retirement for health reasons and one to fulfil caring responsibilities. The majority of participants were defined as mid-level drinkers, drinking on a weekly basis within government

Table 6.12: Interview participant characteristics (identified during the interview)

Sampling characteristics	
Male	10
Female	9
60-69	10
70-80	9
Cardiovascular disease	11
Type II diabetes	4
Arthritis	11
Osteoporosis	4
20% most deprived	5
Mid-level deprivation	7
20% least deprived	7
Abstainer (Not currently drinking)	1
Low-level drinker (Frequency less than weekly and quantity within government guidelines)	3
Mid-level drinker (Frequency at least once a week but quantity within government guidelines)	9
Higher-level drinker (Daily drinking or occasional drinking in excess of government guidelines)	6
Lived alone	7
Lived with partner	12
Diagnosis first long-term condition	6
Diagnosis not first long-term condition	13
Total	**19**

guidelines. Six participants reported a higher-level of alcohol consumption, ranging from 6 units to 18 units per drinking occasion and frequency varying from fortnightly to daily.

On reflection I believe that I captured a diverse sample of older adults with different drinking behaviours and health problems. The participants that were most difficult to attract into the sample were abstainers and low-level drinkers, perhaps because they did not think they were suitable for the current research because of their low or zero level of consumption. During later recruitment, after it had become clear that few participants had a low-level of consumption, I emphasised that I was interested in talking to people who had given up alcohol or who only drank infrequently. This attracted two low-level drinkers into the sample but no more eligible abstainers.

6.3.2 Current alcohol consumption among interview participants

Current drinking among the interview participants ranged from nothing to daily consumption of one or two bottles of wine. One individual classified himself as an abstainer, having stopped drinking three months before the interview; otherwise participants reported drinking alcohol at least once in the past year. Participants described their current alcohol consumption, including usual frequency and volume consumed, personal drinking limits, drinking on special occasions and reasons for drinking alcohol. Participants reported a range of drinking patterns, which are described below in categories identified using key features of the drinking behaviour including the routine versus spontaneous nature of drinking and social versus private drinking.

<u>Routine social drinkers</u>

Routine social drinkers were characterised by routine or habitual drinking and an expression of alcohol consumption as a predominantly social activity. Drinking behaviour was classed as routine either if alcohol was consumed on a regular basis or if consumption was linked to a regular activity, for example M1 always drinks alcohol when attending football meetings that occur intermittently around 12 times a year. There was widespread portrayal of alcohol consumption as a routine behaviour, for example:

> I don't drink in at lunchtime, it's an evening habit really I suppose. (M2)
>
> I would never drink but Sunday lunch, I always loved a glass with me Sunday lunch. (F6)
>
> When we're at home we may have a glass of wine maybe alternative nights or occasionally if we're watching something interesting on the television we might have a

> glass of something… If we have visitors obviously you, when you serve a meal you give them a pre-meal drink and then the wine with the meal... (M10)

Routine social drinkers were defined as either mid-level drinkers or higher-level drinkers at the lower end of the higher-level drinking spectrum. Drinking occurred in environments including the home, other peoples' homes, when out for a meal, and in pubs or clubs. However, whilst drinking at home and with a meal were widely reported, pub and club drinking was less common except in a sub-group of men who reported routinely drinking in this environment. This sub-group consumed most of their alcohol in pubs or clubs, with the occasional additional drink at home or when out for a meal. For the men who drank routinely in a pub or club, reasons for drinking included the friendly and sociable atmosphere and the opportunity to converse with casual acquaintances or friends. Explicitly or implicitly, for these men alcohol consumption constituted a part of their social life.

Women and men who drank with their partner were generally emphatic about *not* going to pubs (or clubs):

> We don't go in pubs at all… (F2)

> We do not go, we do not for example go to 'the pub' so it would either be in a restaurant or it would be at home. (F3)

For these participants the pub was seen as an undesirable and expensive place to drink alcohol. There was a view that it was pleasurable to have a social drink at home with your partner, but that people might engage in alcohol consumption more frequently or drink a greater quantity of alcohol when they were with friends, for example:

> I don't know, I think, well for me I think mainly it's the social, you know, sort of if people came in in the evenings my husband would usually say do you fancy a glass of anything and I would say or do you fancy a coffee or a tea, you know, and it would be whatever the guests decided on, if they said we'll have a glass of wine or something or we'll have a gin and tonic, well, I would join in. (F9)

Participants believed that visitors should be offered an alcoholic beverage when they came to your home and that alcohol was a central component of social dining, although the limit of consumption was set by drink driving limits where people had to drive home. Whilst the social aspects of drinking were clearly articulated by routine social drinkers, drinkers in this group also expressed a range of other motivations to drink alcohol including for relaxation, as stress relief, to enjoy whilst watching television, increased affordability, to complement food, and for enjoyment of the taste of alcohol.

The demographic characteristics of this group of routine social drinkers were diverse, including a mix of men and women from across the age spectrum. All participants from the least socioeconomically deprived areas were routine social drinkers and the majority of this group were also homeowners. Most of this group were married or living with a partner and many had active social lives or social events that they attended with relative frequency.

Routine private drinkers

Routine private drinkers were individuals whose drinking was defined as routine in the same way as routine social drinkers, but who did not identify alcohol consumption as a social activity. Alcohol consumption was a private activity that occurred at home. The drinking patterns of this group were characterised by higher-level quantity and frequency of consumption, with a minimum intake of 8-10 units on four or more days a week. Older adults in this group described signs of past and/or current problematic alcohol consumption including an inability to control consumption and experiencing guilt after drinking.

Routine private drinkers cited a number of motivations to drink alcohol that aid understanding of their pattern of heavy consumption. Enjoyment was a key factor alongside the complementarity of wine and food. However, negative reasons for drinking such as the relief of depression, to prevent boredom, and to manage a difficult spousal relationship were also cited as strong motivators of consumption. One woman with depression described her difficult relationship with her husband and how their relationship drove her to drink alcohol:

> If I wasn't so depressed as I am I probably wouldn't drink as much. I think I drink a lot, that's my doing, you know, and I probably could cut that down, but that's you know, I just, at weekends when I know he's here… (F4)

This older woman consumed alcohol on the four evenings a week that her husband was at home, but when he worked at night during the rest of the week she did not drink any alcohol.

Drinkers in this group were aware that their consumption was high and that this may ultimately have an impact on their health. Individuals were either in contact with health professionals about their level of alcohol consumption or expressed a desire to seek help that they have not yet acted upon. Routine private drinkers were in their early to mid-sixties and had been either mid- or higher-level consumers for many years. They reported having no or very few friends. They had experienced personal loss and were unhappy with an aspect of their personal life or current financial situation, with this discontent a possible driver for their alcohol consumption (e.g. see F4 quote above).

Spontaneous drinkers

Spontaneous drinkers were those who did not express any pattern or routine when describing their alcohol consumption behaviour:

> I: Do you drink alcohol?
> P: Not really love. I'll show you the glass if ever I think oh maybe a could drink a little drop of port or a little drop of sherry tonight, which is once in perhaps 2 or 3 months. (F7)

They were low-level drinkers, consuming alcohol less than weekly and drinking only one or two alcoholic drinks on any drinking occasion. Except when on holiday, this group drank alcohol in their own home or in the home of a family member rather than in pubs or clubs. For widowed individuals, the practice of drinking at home where they lived alone meant alcohol consumption was usually a solitary activity. Indeed, spontaneous drinkers did not identify alcohol consumption as a social activity in the way of most routine drinkers. However, elements of the drinking behaviour of spontaneous drinkers could be considered social in nature, for example:

> If one of the daughters invites us for dinner we always take a bottle of wine and never bring any back, not because we've drunk it all, I'll only have one glass and my wife will have a spritzer, and we'll leave the wine there like. Same when they come here, which is not very often now like, but when they do they always bring a bottle. (M7)

Thus, alcohol consumption was both a private and/or social activity for spontaneous drinkers.

Spontaneous drinkers consumed alcohol for the purposes of enjoyment of the flavours or because it was a special occasion, such as being on holiday. Alcohol use was also reported on occasion for medicinal purposes. This group expressed a number of reasons to not drink that may have influenced their low level of alcohol consumption. There was a consensus that alcohol is superfluous to everyday life and a belief that alcohol is not very good for general health. For example, one participant talked about his belief that alcohol is bad for health that developed whilst observing the negative side effects of excessive consumption growing up as the son of a publican:

> Seeing so many other people getting blind drunk. When we lived in the pub even though it was wartime and you couldn't get a lot of beer, still people used to get drunk and after the war it got terrible… you'd see people… they'd be in the pub or sat at tables and chairs in the yard outside and they used to just sit there knocking it back and knocking it back, and then you used to see them throwing up like, and I thought I'm never going to get like that ever! And apart from a couple of occasions I never have. (M7)

Spontaneous drinkers reported never having been heavy drinkers, with mid- or low-level drinking normal throughout their adult lives. Demographically, this group comprised adults at the older end of the sample, aged 77 years or older who lived in areas of mid-level deprivation. The group was a mix of married and widowed individuals living in owner occupied or private rented housing with different levels of self-rated health.

6.3.3 Changes in alcohol consumption among interview participants

During the interviews participants described their past alcohol consumption. In particular, they were asked to discuss any changes in their drinking over the lifecourse and how their consumption had changed over the past 10 years. As the current research was exploring how older adults changed or maintained their alcohol consumption following changes in health, they were also asked to reflect on their alcohol consumption around the time of and shortly following diagnosis of the long-term condition for which they were recruited to the research, as well as any other long-term conditions they reported during the interview.

Distinct patterns of change in long-term alcohol consumption were observed, resulting in four categories of drinking change over time: stable, increasing, decreasing and fluctuating. These four categories are based upon sustained modifications to drinking, ignoring temporary changes to routine consumption, for example during periods of acute ill health. In addition to direction of change, there was a distinction to be made between gradual versus sudden change in consumption. Detailed analysis of the data on reasons for and processes of change in alcohol consumption are presented in Chapter 8, but the key features of each change category and the speed of change are described below as an introduction to drinking changes present in the qualitative sample.

<u>Patterns of consumption over time</u>

One pattern was of stability in alcohol consumption over time. Drinkers in this group were very aware that their alcohol consumption pattern had not changed over time, using phrases such as ‘Oh forever!’ (F6) and ‘No it’s been consistent. Just the same as long as I can remember’ (F8) when asked if their alcohol consumption had changed or remained stable over time. This group comprised a mix of low-, mid- and higher-level drinkers of diverse age, marital status and health status. All members of this group were from areas of middle or low-level rather than high-level deprivation, and all lived in their own home. There was large variation in drinking patterns within this group, with some people drinking habitually whilst others reported more spontaneous, infrequent alcohol consumption.

A second pattern was of decreasing alcohol consumption over time. All members of this group were routine drinkers before their change in consumption, and most remained routine drinkers but at a lower level of consumption after the change. Decreasing drinkers reported diverse changes over time, for example, from weekly consumption of three drinks on one night to one drink once or twice a year, to a decrease from 10 pints three or four times a week to 2½ pints three times a week. Within this group, drinkers reported a mixture of sudden and gradual changes in consumption over time. Sudden change was characterised by a one off decrease in consumption whilst gradual change was described as a series of small reductions in drinking over time as activity patterns change, with individual drivers for this change harder to identify. In general, decreases in consumption were greater for men than women, although men reported a higher level of past drinking, which facilitated a greater reduction over time. Decreasing drinkers were of diverse age, area level deprivation, marital and health status.

The third pattern of change over time was that of increasing consumption. This group of drinkers had been low- or mid-level drinkers at the lower end of the mid-level drinking scale for the majority of their adult life and had increased their consumption in recent years in response to a number of factors that are discussed in Chapter 8. Increased consumption included both frequency and volume, for example with drinking changing from infrequent consumption of a single drink to half a bottle of wine three times a week. Changes in consumption were described as gradual rather than sudden increases, resulting in higher-level or frequent mid-level drinking. This group comprised women aged 59-64 years from areas of diverse deprivation, who were married and homeowners.

The final pattern of change was that of fluctuation. An individual's long-term consumption pattern was described as fluctuating where they had made sustained changes to their consumption in both an upward and downward direction over the 10-year period. For example, M6 described moving to his current home ten years previously, at which point he had mid-level alcohol consumption. Over time his consumption gradually increased as he developed friendships with men in the local pub that resulted in longer and more frequent visits. At the peak of his consumption he drank 8 to 10 pints on a Sunday afternoon and less than that during the week. Eventually he stopped going to the pub and started drinking at a moderate level at home with his partner. This level of consumption lasted for 18 months before he became abstinent. Thus, over a 10-year period his drinking both increased and decreased. Fluctuating drinkers had diverse demographic characteristics but all reported a period of higher-level drinking during the past 10 years. Drinking change was a combination of gradual and sudden changes with increases in consumption reported as gradual but decreases as sometimes gradual and other times sudden behaviour changes.

6.4 Summary

This chapter has described the participant characteristics for the ELSA sample and interviewees, current drinking behaviour within these two groups and changes in alcohol consumption over time. A range of drinking patterns was observed in these older adult samples, with different frequencies and volumes of consumption recorded in ELSA and discussed by interview participants. Whilst many older adults did consume a low-level of alcohol, a substantial proportion of older adults reported regularly consuming a high-level of alcohol. Motivations for drinking were diverse, with a widespread view that drinking is a social activity, and other reasons including taste, relaxation, and stress relief.

Patterns of change over time were mirrored between the two samples with participants reporting stable, increasing, decreasing and fluctuating alcohol consumption over time. The most frequently reported long-term consumption pattern in ELSA was that of stability, but successive wave change was reported by over half of older adults, with two-thirds reporting a change at some point over three waves. Socio-demographic characteristics influenced change: age in women, economic activity status in men, and socioeconomic status in men and women. The complex nature of changes in drinking behaviour over time was highlighted during the interviews and is described in Chapter 8. First, Chapter 7 presents data on the association between changes in health, social, financial and work-related factors and change in alcohol consumption over time.

Chapter 7: Factors associated with changes in alcohol consumption in older adults

7.1 Introduction

This chapter examines the relationship between changes in health, social, financial and work-related factors and alcohol consumption change in older adults, using data from ELSA. The purpose of this chapter is to answer research questions 4 and 5:

4) What is the relationship between changes in health and long-term alcohol consumption in older adults?
5) What is the relationship between non-health changes and long-term alcohol consumption in older adults?

Each section below explores the relationship between alcohol consumption change and different factors that could affect drinking that were identified from the literature and analysis of the qualitative data. Changes in each factor are described first, before analysis of the association between the various life changes and drinking frequency and volume is presented.

7.2 Health and alcohol consumption change

This section examines the relationship between changes in health and drinking. Changes in health are presented first, then the relationship between health deterioration and alcohol consumption change between successive waves is examined using chi-squared and post-hoc tests.

7.2.1 Changes in health

Participants reporting stability of health were in the minority, with 57% of men and 61% of women reporting some measure of health deterioration. The percentage of men and women reporting change or stability in different measures of health between successive waves are presented in Table 7.1 and Table 6 in Appendix IV (p.277). Between Waves 2 and 3, 14.3% of men and 15.1% of women experienced a worsening of self-rated health, 21.6% of men and 25.6% of women reported an increase in problems with ADLs/IADLs/mobility, and 16.9% of men and 19.5% of women recorded a worsening of pain. Under new diagnoses, 7.5% of men and 8.7% of women reported a new CVD diagnosis in addition to a previous condition and

Table 7.1: Changes in health reported between Waves 2 and 3

		Male n(%)	Female n(%)	Total n(%)
No change		1,162 (43.3%)	1,251 (39.0%)	2,413 (41.0%)
Self-rated health	Worsened	383 (14.3%)	485 (15.1%)	868 (14.7%)
	Improved	200 (7.4%)	262 (8.2%)	462 (7.8%)
Activities of daily living	Worsened	579 (21.6%)	821 (25.6%)	1,400 (23.8%)
	Improved	667 (24.8)	1,107 (34.5%)	1,774 (30.1%)
Pain	Worsened	454 (16.9%)	625 (19.5%)	1,079 (18.3%)
	Improved	396 (14.8%)	532 (16.6%)	928 (15.8%)
New CVD (in addition to previous condition)		198 (7.5%)	271 (8.7%)	469 (8.2%)
New CVD (no previous condition)		361 (13.8%)	451 (14.4%)	812 (14.1%)
New 'other' chronic disease (in addition to previous condition)		106 (4.0%)	165 (5.3%)	271 (4.7%)
New 'other' chronic disease (no previous condition)		197 (7.5%)	219 (7.0%)	416 (7.2%)
New psychiatric condition		45 (1.7%)	69 (2.2%)	114 (2.0%)

13.8% of men and 14.4% of women reported a new CVD diagnosis with no previous condition. A new 'other' chronic condition in addition to a previous long-term condition was reported by 4% of men and 5.3% of women, whilst a further 7.5% of men and 7% of women reported a new 'other' chronic condition with no previous condition. Finally, 1.7% of men and 2.2% of women were diagnosed with a new psychiatric condition.

In addition to measured widespread health deterioration in this sample of older adults, there were also reported improvements in health. Between Waves 2 and 3, 7.8% of older adults reported an improvement in self-rated health, whilst 30.1% reported a decrease in problems with ADLs/IADLs/mobility and 15.8% reported an improvement in their average level of pain. These figures illustrate that whilst older adulthood is a period of health deterioration and the majority of older adults in ELSA reported some form of health deterioration over time, health improvements also occur within this population.

Changes in health between Waves 3 and 4 were comparable to changes between Waves 2 and 3 and are presented in Table 6 (Appendix IV, p.277).

7.2.2 Association between health deterioration and drinking in successive waves

Of participants reporting no change in health between Waves 2 and 3, 54.8% reported stable drinking frequency, 25.0% decreased drinking frequency and 20.2% increased frequency. These figures were compared with the percentage of respondents in each drinking frequency change category who reported a negative change in health. The results for Waves 2 to 3 and 3 to 4 are presented in Tables 7.2 and 7.3. Between Waves 2 and 3, participants who reported a worsening of self-rated health were significantly less likely to report stable alcohol

Table 7.2: Cross tabulation of Wave 2-3 frequency change category with changes in health

		Wave 2-3 drinking frequency change			
	N	Stable	Decreased	Increased	χ^2
No change in health	2,413	1,322 (54.8%)	604 (25.0%)	487 (20.2%)	Reference
Worsened self-rated health	867	368 (42.4%)	238 (32.6%)	216 (24.9%)	**χ^2=39.2, p<0.001**
Increased problems with activities of daily living	1,418	657 (46.9%)	425 (30.4%)	318 (22.7%)	χ^2=22.5, p=0.010
Increased pain	1,078	516 (47.9%)	324 (30.1%)	238 (22.1%)	χ^2=15.1, p=0.050
New CVD (in addition to previous condition)	469	239 (51.0%)	130 (27.7%)	100 (21.3%)	χ^2=2.4, p=0.297
New CVD (no previous condition)	812	404 (49.8%)	225 (27.7%)	183 (22.5%)	χ^2=6.2, p=0.050
New 'other' chronic disease (in addition to previous condition)	271	127 (46.9%)	82 (30.3%)	62 (22.9%)	χ^2=6.3, p=0.050
New 'other' chronic disease (no previous condition)	415	201 (48.4%)	120 (28.9%)	94 (22.7%)	χ^2=5.8, p=0.550
New psychiatric condition	114	48 (42.1%)	38 (33.3%)	28 (24.6%)	χ^2=7.2, p=0.050

With Bonferroni correction p<0.001 is significant at the 0.05 level

consumption than older adults who experienced no changes in health (χ^2=39.2, p<0.001). Compared to participants reporting no change in health, those reporting a worsening of self-rated health were significantly more likely to report increased (OR 1.6, 95%CI 1.3-1.9) or decreased (OR 1.7, 95%CI 1.4-2.0), than stable drinking frequency. No other change in health was significantly associated with drinking frequency change between Waves 2 and 3.

Between Waves 3 and 4, 50.3% of participants who experienced no change in health reported stable drinking frequency, whilst 25.5% decreased and 24.5% increased their

Table 7.3: Cross tabulation of Wave 3-4 frequency change category with changes in health

		Wave 3-4 drinking frequency change			
	n	Stable	Decreased	Increased	χ^2
No change in health	2,236	1,124 (50.3%)	571 (25.5%)	541 (24.2%)	Reference
Worsened self-rated health	646	220 (34.0%)	264 (41.0%)	162 (25.0%)	**χ^2=76.9, p<0.001**
Increased problems with activities of daily living	1,673	677 (40.5%)	544 (32.5%)	452 (27.0%)	**χ^2=23.0, p<0.001**
Increased pain	1,167	493 (42.2%)	375 (32.1%)	299 (25.6%)	**χ^2=39.4, p<0.001**
New CVD (in addition to previous condition)	422	195 (46.2%)	145 (34.4%)	82 (19.4%)	χ^2=14.9, p=0.010
New CVD (no previous condition)	444	202 (45.5%)	129 (29.1%)	113 (25.5%)	χ^2=3.7, p=0.157
New 'other' chronic disease (in addition to previous condition)	235	101 (34.0%)	75 (31.9%)	59 (25.1%)	χ^2=5.7, p=0.059
New 'other' chronic disease (no previous condition)	471	205 (43.5%)	147 (31.2%)	119 (25.3%)	χ^2=8.5, p=0.050
New psychiatric condition	110	46 (41.8%)	38 (34.5%)	26 (23.6%)	χ^2=4.8, p=0.091

With Bonferroni correction p<0.001 is significant at the 0.05 level

consumption. Significant differences were documented for participants experiencing a worsening of self-rated health (χ^2=69.8, p<0.001), experience of pain (χ^2=39.4, p<0.001) and problems with ADLs/IADLs/mobility (χ^2=23.0, p<0.001). Older adults who reported a worsening of self-rated health were more likely to both increase (OR 2.4, 95%CI 1.9-2.9) and decrease (OR 1.5, 95%CI 1.2-1.9) their drinking frequency than those with no change in health. Older adults who reported an increase in pain were also more likely to both increase (OR 1.5, 95%CI 1.3-1.8) and decrease (OR 1.3, 95%CI 1.1-1.5) their drinking frequency. Finally, those who experienced an increase in problems with ADLs/IADLs/mobility were more likely to both increase (OR 1.6, 95%CI 1.4-1.8) and decrease (OR 1.4, 95%CI 1.2-1.6) their frequency. No other health changes were significantly associated with drinking frequency change between Waves 3 and 4.

There were no significant relationships between drinking volume change and changes in health between Waves 2 and 3 or Waves 3 and 4 (see Appendix IV, p.277-278, Tables 7 & 8). Thus, whilst drinking frequency change was significantly associated with certain changes in health, such health changes did not significantly affect drinking volume when measured using drinking volume categories. Measuring Wave 2-3 drinking change on the heaviest drinking day in the previous week, there were significant variations in the proportion of participants reporting stable and decreasing consumption by change in health. Older adults reporting a worsening of self-rated health (χ^2=26.2, p<0.001), an increase in problems with ADLs/IADLs/mobility (χ^2=16.7, p<0.001) and a new cardiovascular disease (in addition to previous condition) (χ^2=16.0, p<0.001) were more likely to report stable volume consumption and less likely to have decreased their consumption over time. The difference in findings dependent upon the measure of volume consumed may indicate that using drinking categories did not adequately capture the relationship between changes in health and drinking volume over time. However, given the change in questions asked between Waves 3 and 4, this was the best available approach to analysing change between all three waves.

In addition to these changes in health, the association between changes in smoking status and alcohol consumption over time were examined. Between Waves 2 and 3, 156 (2.6%) participants stopped smoking and 73 (1.2%) started smoking, and between Waves 3 and 4, 195 (3.3%) stopped smoking whilst 141 (2.4%) started smoking. There was no significant association between changes in smoking status and drinking frequency or volume change between Waves 2 and 3, but there was an association between stopping smoking and drinking frequency at Waves 3 and 4 (χ^2=26.8, p<0.001). Those who stopped smoking were significantly more likely to report an increase (OR 2.3, 95% CI 1.5-3.5) or decrease (OR 2.0, 95% CI 1.3-3.0)

in drinking frequency than those with no change in smoking status. The association between change in drinking volume and smoking did not reach significance at Wave 4.

7.3 Social change and alcohol consumption

This section examines the relationship between changes in social relationships and drinking. The frequency of changes in social relationships (such as frequency of social contact) is described first and then the association between social changes and change in alcohol consumption between successive waves are examined using chi-squared and post-hoc tests.

7.3.1 Social changes

Social changes, measured as change in frequency of contact with family and friends, death of a family member and closeness of relationship with partner, were common in this sample of older adults. Fewer than 1 in 6 participants experienced no social change between successive waves as a result of the large reported variation in frequency of contact with family and friends over time (see Table 7.4). The group of participants reporting no social change was used as the comparator in analysis of the influence of social changes on alcohol consumption. Death of a family member (spouse, sibling or parent) was reported by 12.5% of participants between Waves 2 and 3, rising to 15.1% between Waves 3 and 4. Approximately 5% of the sample experienced deterioration in their relationship with their partner. Frequency of social contact with family and friends varied, with a third of participants reporting stable contact, whilst one third decreased and one third increased their frequency of social contact.

Table 7.4: Changes in social situation reported between Waves 2 and 3 and Waves 3 and 4

		Male n (%)	Female n (%)	Total n (%)
		Wave 2-3 changes		
No change		430 (19.7%)	410 (12.8%)	840 (14.3%)
Death of a family member	Yes	329 (12.2%)	410 (12.8%)	739 (12.5%)
Closeness of relationship to partner	Worsened	131 (4.9%)	142 (4.4%)	273 (4.6%)
	Improved	146 (5.4%)	136 (4.2%)	282 (4.8%)
Frequency of social contact	Decreased	836 (31.1%)	982 (30.6%)	1,818 (30.9%)
	Increased	882 (32.8%)	1033 (32.2%)	1,915 (32.5%)
		Wave 3-4 changes		
No change		392 (14.6%)	352 (11.0%)	744 (12.6%)
Death of a family member	Yes	372 (13.8%)	520 (16.2%)	892 (15.1%)
Closeness of relationship to partner	Worsened	173 (6.4%)	180 (5.6%)	353 (6.0%)
	Improved	140 (5.2%)	129 (4.0%)	269 (4.6%)
Frequency of social contact	Decreased	827 (30.8%)	948 (29.6%)	1,775 (30.1%)
	Increased	925 (34.4%)	1,049 (32.7%)	1,974 (33.5%)

Table 7.5: Cross tabulation of drinking frequency change with social changes

		Wave 2-3 drinking frequency change			
	N	Stable	Decreased	Increased	χ^2
No change	840	484 (57.6%)	199 (23.7%)	157 (18.7%)	Reference
Death of a family member	736	357 (48.5%)	197 (26.8%)	182 (24.7%)	**χ^2=14.1, p<0.001**
Closeness of relationship to partner	282	148 (52.5%)	77 (27.3%)	57 (20.2%)	χ^2=2.3, p=0.313
Frequency of social contact	1,815	925 (51.0%)	512 (28.2%)	378 (20.8%)	χ^2=10.3, p=0.010

		Wave 3-4 drinking frequency change			
	N	Stable	Decreased	Increased	χ^2
No change	744	404 (54.3%)	200 (26.9%)	140 (18.8%)	Reference
Death of a family member	888	332 (37.4%)	288 (32.4%)	268 (30.2%)	**χ^2=50.8, p<0.001**
Closeness of relationship to partner	268	104 (38.8%)	90 (33.6%)	74 (27.6%)	**χ^2=19.7, p<0.001**
Frequency of social contact	1,773	798 (45.0%)	521 (29.4%)	454 (25.6%)	**χ^2=20.9, p<0.001**

With Bonferroni correction p<0.001 is significant at the 0.05 level

7.3.2 Association between social changes and drinking in successive waves

Social changes were significantly associated with frequency change category between successive waves (see Table 7.5). Death of a family member was significantly associated with drinking frequency between Waves 2 and 3 (χ^2=14.1, p<0.001) and Waves 3 and 4 (χ^2=50.8, p<0.001). Between Waves 2 and 3 those reporting death of a family member were more likely to report both decreased (OR 1.3, 95% CI 1.1-1.7) and increased drinking frequency (OR 1.6, 95% CI 1.2-2.0) than those reporting no social changes. Similarly, between Waves 3 and 4 participants reporting a family death were almost twice as likely to report decreased rather than stable consumption (OR 1.8, 95%CI 1.4-2.2) and over twice as likely to report increased drinking frequency (OR 2.3, 95%CI 1.8-3.0) than those reporting no social changes.

There was no significant difference in frequency change for those reporting deterioration in the relationship with their partner between Waves 2 and 3. Between Waves 3 and 4 there was an association between decrease in spousal relationship and drinking frequency (χ^2=19.7, p<0.001), with participants experiencing deterioration in spousal relationship more likely to report an increase (OR 2.1, 95% CI 1.4-2.9) or decrease (OR 1.7, 95% CI 1.3-2.4) in drinking frequency. Change in frequency of social contact was also significantly associated with changes in drinking frequency between Waves 3 and 4 (χ^2=20.9, p<0.001), but not Waves 2 and 3 (χ^2=10.3, p=0.010). Between Waves 3 and 4, participants reporting changes in social contact were more likely to report increased (OR 1.3, 95%CI 1.1-1.6) and decreased (OR 1.6, 95%CI 1.3-2.1) drinking frequency than stable consumption.

Examining the associations between social changes and change in drinking volume category, there were no significant successive wave associations (see Appendix IV, p.278, Table 9). There were also no significant associations between social change and changes in drinking on the heaviest drinking day in the previous week between Waves 2 and 3. These findings suggest that social changes do not influence volume of consumption in older adults, but may affect drinking frequency.

7.4 Financial changes and alcohol consumption

This section examines the relationship between financial changes and alcohol consumption change. First, changes in financial situation are presented before the association between financial changes and drinking change between successive waves is examined using chi-squared and post-hoc tests.

7.4.1 Financial changes

Change in financial situation was measured using change in income decile and a question on whether participants felt that a shortage of money stopped them from doing what they want to do (always, often, sometimes, never) (see Table 7.6). Income was selected as an objective measure of financial situation whilst participants' feelings about a shortage of money were used as a more subjective measure of financial status. Between Waves 2 and 3, income decile decreased for 31.7% of participants and increased for 35.4%. A greater shortage of money was reported by 24.6% of the sample at Wave 3 compared with Wave 2, whilst 26.7%

Table 7.6: Changes in financial situation reported between successive waves

		Male n (%)	Female n (%)	Total n (%)
		Wave 2-3 changes		
No change		451 (16.8%)	531 (16.6%)	982 (16.7%)
Income	Decreased	844 (31.4%)	1,025 (32.0%)	1,869 (31.7%)
	Increased	957 (35.6%)	1,129 (35.2%)	2,086 (35.4%)
Shortage of money stops them doing what they want	Worsened	680 (25.3%)	769 (24.0%)	1,449 (24.6%)
	Improved	692 (25.8%)	881 (27.5%)	1,573 (26.7%)
		Wave 3-4 changes		
No change		396 (14.7%)	444 (13.9%)	840 (14.3%)
Income	Decreased	967 (36.0%)	1,148 (35.8%)	2,115 (35.9%)
	Increased	914 (34.0%)	1,119 (34.9%)	2,033 (34.5%)
Shortage of money stops them doing what they want	Worsened	673 (25.0%)	770 (24.0%)	1,443 (24.5%)
	Improved	785 (29.2%)	985 (30.7%)	1,770 (20.0%)

of participants stated than they felt less often financially restricted. Between Waves 3 and 4, 35.9% of participants reported a decrease in income decile whilst 34.5% increased. A greater shortage of money compared with Wave 3 was reported by 24.5% of the sample at Wave 4, whilst 20% reported feeling less often financially restricted at Wave 4 than they had at Wave 3. At Wave 3 16.7% of participants and at Wave 4 14.3% of participants reported no change in their financial situation measured using these two variables. This group is used as the comparator in subsequent analysis.

7.4.2 Association between financial change and drinking in successive waves

Financial changes were associated with changes in drinking frequency between successive waves (see Table 7.7). There was a statistically significant association between change in drinking frequency and change in shortage of money at Waves 3-4 (χ^2=31.4, p<0.001), and this association also approached significance at Waves 2-3. Participants reporting an increased shortage of money to do the things they want were more likely to report increased (OR 1.7, 95%CI 1.4-2.2) or decreased (OR 1.5, 95%CI 1.2-1.8) frequency compared with those participants reporting no financial changes. Change in income did not reach statistical significance between Waves 2 and 3, but between Waves 3 and 4 there was an association between decreased income and drinking frequency (χ^2=31.4, p<0.001). Participants reporting a decrease in income were significantly more likely to have decreased (OR 1.4, 95% CI 1.2-1.8) or increased (OR 1.3, 95% CI 1.1-1.6) their drinking frequency than maintained stable consumption compared with participants with stable financial circumstances.

Table 7.7: Cross tabulation of drinking frequency change with financial changes

		Wave 2-3 drinking frequency change			
	n	Stable	Decreased	Increased	χ^2
No change	982	545 (55.5%)	253 (25.8%)	184 (18.7%)	
Income	1,868	929 (49.7%)	533 (28.5%)	406 (21.7%)	χ^2=8.7, p=0.010
Shortage of money stops them doing what they want	1,445	716 (49.6%)	378 (26.2%)	351 (24.3%)	χ^2=12.2, p=0.003

		Wave 3-4 drinking frequency change			
	n	Stable	Decreased	Increased	χ^2
No change	840	437 (52.0%)	220 (26.2%)	183 (21.8%)	
Income	2,112	924 (43.8%)	674 (31.9%)	514 (24.3%)	**χ^2=17.1, p<0.001**
Shortage of money stops them doing what they want	1,438	578 (40.2%)	438 (30.5%)	422 (29.3%)	**χ^2=31.4, p<0.001**

With Bonferroni correction p<0.001 is significant at the 0.05 level

Table 7.8: Cross tabulation of drinking volume change with financial changes

		Wave 2-3 drinking volume change			
	n	Stable	Decreased	Increased	χ^2
No change	902	511 (56.7%)	186 (20.6%)	205 (22.7%)	
Income	1,757	902 (51.3%)	424 (24.1%)	431 (24.5%)	χ^2=7.2, p=0.050
Shortage of money stops them doing what they want	1,332	648 (48.6%)	325 (24.4%)	359 (27.0%)	**χ^2=13.8, p<0.001**
		Wave 3-4 drinking volume change			
	n	Stable	Decreased	Increased	χ^2
No change	804	418 (52.0%)	162 (20.1%)	224 (27.9%)	
Income	1,996	891 (44.6%)	484 (24.2%)	621 (31.1%)	χ^2=12.8, p=0.003
Shortage of money stops them doing what they want	1,371	567 (41.4%)	322 (23.5%)	482 (35.2%)	**χ^2=23.5, p<0.001**

With Bonferroni correction p<0.001 is significant at the 0.05 level

The association between changes in financial situation and change in drinking volume are presented in Table 7.8. Change in drinking volume was significantly associated with change in shortage of money at Waves 2-3 (χ^2=13.8, p<0.001) and Waves 3-4 (χ^2=23.5, p<0.001), with those reporting a greater shortage more likely to be increasing (Wave 2-3 OR 1.4, 95%CI 1.1-1.7 and Wave 3-4 OR 1.6, 95% CI 1.3-1.9) or decreasing (Wave 2-3 OR 1.4, 95%CI 1.1-1.7 and Wave 3-4 OR 1.5, 95% CI 1.2-1.8), than stable drinkers. The association between change in drinking volume and income change did not reach statistical significance at Wave 3 or 4.

7.5 Work-related change and alcohol consumption

This section examines the relationship between work-related changes and alcohol consumption change. Work-related changes relate to the pressure of a heavy workload and time pressures. Changes in work-related pressure are presented before the association between work-related changes and drinking change between successive waves are examined using chi-squared.

7.5.1 Work-related changes

Analysis of work-related changes was conducted as a result of the findings of the qualitative interviews where older adults discussed the impact of increasing pressures at work on their alcohol consumption behaviour. Within ELSA, both the pressure of a heavy workload and time pressures at work were recorded, so changes in pressure could be measured.

Table 7.9: Changes in work-related pressure reported between successive waves

		Male n (%)	Female n (%)	Total n (%)
		Wave 2-3 changes		
Not in employment		1,446 (53.8%)	1,914 (59.7%)	3,360 (57.0%)
No change		270 (10.0%)	226 (7.1%)	496 (8.4%)
Pressure of a heavy workload	Increased	149 (5.5%)	151 (4.7%)	300 (5.1%)
	Decreased	210 (7.8%)	194 (6.1%)	404 (6.9%)
Time pressures	Worsened	127 (4.7%)	130 (4.1%)	257 (4.4%)
	Improved	190 (7.1%)	173 (5.4%)	363 (6.2%)
		Wave 3-4 changes		
Not in employment		1,427 (53.1%)	1,889 (59.0%)	3,316 (56.3%)
No change		189 (7.0%)	151 (4.7%)	340 (5.8%)
Pressure of a heavy workload	Increased	143 (5.3%)	120 (3.7%)	263 (4.5%)
	Decreased	161 (6.0%)	122 (3.8%)	283 (4.8%)
Time pressures	Worsened	126 (4.7%)	109 (3.4%)	235 (4.0%)
	Improved	140 (5.2%)	117 (3.7%)	257 (4.4%)

Between successive waves, 5% and 4.5% respectively of older adults reported an increase in pressure of a heavy workload whilst 4.4% and 4.0% reported an increase in time pressure at work (see Table 7.9). Workload pressure decreased for 6.9% of participants between Waves 2 and 3, and 4.8% between Waves 3 and 4, whilst 6.2% and 4.4% respectively reported an improvement in time pressures at work. No change in work-related pressure was reported by 8.4% of the sample between Waves 2 and 3, and 5.8% between Waves 3 and 4. This group is used as the comparator in subsequent analysis.

7.5.2 Association between work-related change and drinking in successive waves

There were no significant associations between changes in drinking frequency between successive waves for participants reporting an increase in work-related pressure compared with those reporting no changes in pressure at work (see Appendix IV, p.279, Table 10). Additionally, no significant association was found between changes in work-related pressure when measured using change in drinking volume category across all the waves or heaviest drinking day in the previous week for Waves 2-3 (see Appendix IV, p.279, Table 11). The different findings between the qualitative and quantitative studies may have arisen from variations in measurement of the concept of work-related pressure, with the ELSA variables not capturing the same sentiment behind work-related pressure as a motivation for drinking change as described during the interviews. Alternatively, changes in work-related pressure may exert no measurable influence on long-term alcohol consumption behaviour in older adults in England.

7.6 Summary

This chapter has presented data on the stability and change in drinking behaviour of older adults who reported changes to their health, social, financial and work circumstances compared with those who experienced no changes. The purpose of the analysis was to identify whether or not older adults who experienced a change such as health deterioration modified their drinking behaviour differently to older adults experiencing no change in health. The principle finding is that certain changes in health, social and financial circumstances do affect alcohol consumption behaviour in older adults, with such changes generally leading to a decrease in stability of drinking frequency and/or volume. Drinking behaviour change in older adults following life changes is therefore more complicated than anticipated: for example, it was expected that health deterioration would lead to a reduction in alcohol consumption, but this analysis found that older adults who reported certain changes in health were more likely to either decrease or increase their drinking frequency compared with older adults reporting no changes in health over the same time period. Findings relating to change in drinking are set against a background of relatively stable consumption in this population.

Key findings on the association between changes in health, social and financial circumstances and alcohol consumption are:

1. Older adults who experience deterioration in self-rated health, pain and ADLs/IADLs/mobility report greater instability in drinking frequency than those who report no negative health changes.
2. Older adults who experience deterioration in self-rated health and ADLs/ IADLs/mobility, as well as diagnosis with CVD, report increased stability in drinking volume when measured using change in unit consumption on the heaviest drinking day in the previous week.
3. Older adults who stopped smoking were significantly more likely to modify their alcohol consumption frequency.
4. Older adults who experienced a decrease in social contact, death of a family member or deterioration in spousal relationship had greater instability of drinking frequency, reporting more increased and decreased drinking.
5. Decreased income was associated with a decline in drinking frequency stability, whilst a shortage of money was associated with instability of drinking frequency and volume.

There was no association between work-related changes and alcohol consumption change, nor was disease diagnosis associated with drinking frequency or volume except for cardiovascular disease when measured using heaviest drinking day in the previous week.

Chapter 8: Factors influencing drinking in older adults with long-term conditions

8.1 Introduction

Chapter 6 presented the changes in drinking over time that were reported during the qualitative interviews: some participants described stable long-term consumption behaviour and others patterns of increasing, decreasing and fluctuating drinking. This chapter explores whether or not changes in drinking behaviour are associated with change in life circumstances through examining the diverse reasons that older adults gave for alcohol consumption change, structured within a Capability Opportunity Motivation - Behaviour (COM-B) framework (Michie et al. 2011). Section 8.2 describes how the raw interview data was managed within the COM-B framework described in Chapter 2 (p.61). Sections 8.3 to 8.7 explore the different factors that affected alcohol consumption in older adults with a long-term condition within different domains of the COM-B, using quotations from the in-depth interviews to illustrate findings. Section 8.8 describes how the range of factors that positively and negatively influenced alcohol consumption combined to have an overall affect on individual drinking behaviour before the chapter is summarised in Section 8.9.

8.2 Capability Opportunity Motivation – Behaviour (COM-B)

During analysis it became evident that the factors affecting drinking could be organised using the COM-B model. As described in Chapter 2 (p.61), COM-B forms the central structure of the 'behaviour change wheel', an integrative framework for characterizing and organising behaviour change interventions (Michie et al. 2011). To recapitulate, capability is possession of the necessary skills and physical ability and the knowledge or understanding about a given condition required for change, reflective and automatic motivation focus respectively on the individual's understanding of how knowledge applies to their personal situation and habitual behaviour, imitative learning and emotions related to a given behaviour, whilst physical and social opportunity comprise environmental factors and social influences on behaviour.

After all the relevant raw data was extracted from the interview transcripts, each data item was organised into the appropriate COM-B component. It was important to ensure that extracted data retained adequate context for categorisation into the appropriate COM-B

component and where data could not be classified it was re-contextualised within the original transcript to facilitate organisation. For example, the following quote required re-contextualisation for identification as physical opportunity:

> I'm not as young as I used to be, I used to be able to hold me own at one time but I've got no chance now. (M4)

In the instances where re-contextualisation did not clarify the appropriate category, I discussed the classification of this data with my supervisors to identify appropriate placement. Given the broad nature of the components of the COM-B framework it was ultimately possible to identify suitable placement for all of the data relevant to the research questions.

The process of organising the data within the COM-B framework was productive because it enabled the development of analysis beyond description of the factors affecting alcohol consumption behaviour to identify broader themes of influence. These broader themes and how they translated to the different COM-B components are illustrated in Table 8.1. Only the components of the COM-B that were relevant to the current research are included in Table 8.1. Certain components were not relevant to the population under study; for example, physical capability was excluded because participants did not report any factors categorised as physical capability. Similarly, some elements within the different components were excluded because they were not relevant to the analysis, for example imitative learning within automatic motivation and behavioural skills within psychological capability.

Table 8.1: Linking the factors affecting alcohol consumption to COM-B components

COM-B Component		**Factors affecting alcohol consumption**
Psychological capability	Knowledge or understanding	• Knowledge of impact of drinking on long-term conditions • Knowledge of impact of drinking on medication
Reflective motivation	Applying knowledge to personal situation Beliefs about consequences of maintaining or changing behaviour	• Beliefs about the health consequences of drinking • Impact of alcohol on relaxation/sleep • Non-health consequences of drinking e.g. social
Automatic motivation	Emotion Habit	• Associative learning • Emotional responding • Habitual behaviour
Physical opportunity	Environmental context	• Legislation • Finance • Physical environmental
Social opportunity	Social environment	• Changes in social activity • Drinking as a social activity • Spousal influence

8.3 Psychological capability

Psychological capability for behaviour change incorporates having the relevant knowledge and understanding about a condition required to make a decision about change and possessing the necessary cognitive and behavioural skills to enact change. Knowledge of the link between different long-term conditions or prescribed medications and alcohol varied among the older adults interviewed. Some knowledge was identified as imparted by medical professionals whilst other knowledge was generated from professional or personal experiences. This section presents data on the attempts of participants to avoid receiving medical knowledge relating to their health and alcohol consumption, as well as the types of medical knowledge that participants reported being given. Section 8.4 on reflective motivation then describes how this knowledge was utilised, considering participants' willingness to engage with medical knowledge, whether or not the knowledge aligned with their existing belief systems, and how personal experiences supported or contradicted medical knowledge.

8.3.1 Initiation and avoidance of knowledge

Participants were asked to describe conversations they had with medical professionals regarding their health and alcohol consumption. Some individuals reported being given drinking advice and others reported initiating conversations on alcohol consumption:

> When I started taking these tablets I did ask the doctor if I would be all right to drink and she said as long as it's in moderation… because if you like a drink that can be a hindrance can't it, if you take tablets. (F8)

In contrast, there was a view that to avoid having to change drinking behaviour, conscious avoidance of discussing alcohol consumption with medical professionals was a good tactic. For example, M2 believed that his doctor would suggest decreasing his alcohol consumption to reduce his weight and improve his arthritic symptoms, so when the doctor did not bring up alcohol consumption he chose to avoid the topic:

> I wondered whether the doctor would say anything about drinking but none of them ever actually did… I suppose I took the easy way out there… I thought carry on my lifestyle if I can. (M2)

Thus, some individuals reported avoiding talking about their alcohol consumption unless prompted, because they did not want to be encouraged to make lifestyle changes. This highlights the importance of questioning older adults about their alcohol consumption so that drinking behaviour cannot be easily hidden from healthcare professionals.

8.3.2 Types of medical knowledge

In addition to reporting having or avoiding conversations about the relationship between long-term conditions and alcohol consumption at the point of diagnosis, participants described talking about the interactions between medication and alcohol consumption with their doctor, discussing the results of medical tests, and reading alternative sources of medical advice (such as websites, books and information printed by the media). These different types of medical knowledge made available to older adults were subsequently used to challenge current behaviour through reflective motivation.

Participants reported being presented with the results of medical tests, such as blood results and liver function tests, and discussing the implications and potential solutions with healthcare professionals. For example, M6 described the advice his doctor had given on receiving a result indicating he had a high level of liver enzymes:

> She told me did the doctor, she said you know, stop it, don't drink, see if that gets the enzymes down in the liver. (M6)

Knowledge obtained through medical tests was then used in decisions to change or maintain drinking behaviour. Interviewees also described accessing medical information from other sources such as the media and books:

> We're very aware, or we think that we're aware, through reading or television, of what we should be doing… we're quite well educated and quite well read and we've got a fair idea of what we should be doing or what the latest idea is. (F3)

Conversations on the potential interactions between alcohol and prescribed medications were also discussed during interview. Some participants described being given advice relating to specific medications they had been prescribed, for example:

> With the tablets I take I go haywire so I mean, when I first had to go on to Prednisolone they told me I couldn't have any drinks whatsoever. (F5)

Other participants described modifying their drinking behaviour after reading the information leaflet included in medication packets:

> I don't drinking on painkillers 'cos in my head alcohol and analgesics don't go together… and when I take Diclofenac I don't drink either 'cos the instructions warn you not to drink too much, so I think why bother at all. (F1)

This knowledge on potential interactions between medication and alcohol consumption, obtained through healthcare professionals and other sources, was used in the decision making

process alongside knowledge regarding the potential consequences of drinking for long-term conditions and the results of medical tests.

8.4 Reflective motivation

Reflective motivation is the reasoning process that balances positive and negative knowledge, understanding and emotion around a given behaviour and so drives behaviour change. This section describes the different aspects of reflective motivation that can be used to understand the behaviour change practices of older adults: willingness to consider medical knowledge, how knowledge aligns with existing belief systems, and how personal experiences support or contradict medical knowledge.

8.4.1 Willingness to consider medical knowledge

Section 8.3 presented the different types of knowledge relating to alcohol consumption and health reported by older adults. Drinking behaviour change was influenced by willingness to reflect on such medical knowledge, with participants who did consider this information more likely to implement behaviour change than those who were not willing to reflect on medical knowledge. For example, F5 reported being advised to stop drinking because of prescription medication, but on reflection did not want to stop drinking so negotiated with the doctor for permission to have a glass of wine:

> I had to fight hard enough to get me one glass of wine, that wasn't very easy but I managed it. (F5)

F5 accepted that there was a risk but upon consideration decided that having one glass of wine a week, with the doctors' permission, was an acceptable balance of the costs and benefits of drinking.

Where medical knowledge included test results, this presented a stronger challenge to beliefs than abstract knowledge about potential risks, encouraging reflection on consequences. In receiving a medical test result that led his doctor to recommend abstinence from alcohol, M6 was willing to consider this advice and subsequently modified his drinking behaviour despite the high level of enjoyment he reported from alcohol consumption. When M5 underwent liver function tests he was not motivated to reflect on the risks of his heavy drinking because the test result was normal:

> My liver is fine… I have blood tests fairly regular and they've all come back fine… so as far as I'm concerned my drinking's not doing my liver any harm. (M5)

This is an example of selective reflection: M5 chose to consider just one scenario of potential risk and was not willing to consider other areas of risk, such as the implications of his drinking on his diabetes. The normal liver function test was used to justify continuation of his current pattern of alcohol consumption.

8.4.2 Existing belief systems and medical knowledge

Medical knowledge was understood within existing belief systems regarding alcohol consumption and health. This section describes how medical knowledge interacts with existing belief systems to influence drinking behaviour.

Beliefs about the health consequences of drinking alcohol were widely discussed during the interviews, with participants occupying one of three categories: those who believed they did not drink enough to affect their health, those who believed their drinking could affect their health, and those who knew alcohol was affecting their health. These three beliefs were dispersed across this sample of older adults, including those with different drinking patterns and socio-demographic characteristics.

Participants who reflected that their current drinking did not affect their health or interact with prescription medications gave a number of different reasons for this belief. For example, the level at which they drank alcohol would not affect their particular conditions:

> Well I think what… with what I drink now, I don't think it's doing anything wrong to the conditions I've got. That sums it up really, I don't drink a lot and that's it. (M1)

Or because they did not *need* alcohol, it could not affect their health:

> Well, you know, I've never thought about it because, as I say, I drink very little nowadays… I don't need it, so… I don't think it can affect my health at all. (M3)

Or that alcohol would not affect medications if taken at a different time of day to alcohol:

> No because I always take it, it's a blood pressure tablet and I always take it first thing in the morning so I'm unlikely to have had a drink, you know, until the evening or something like that. (M10)

Others prioritised other healthy behaviours, such as exercise or diet, above changing alcohol consumption, for example:

> I'm more concerned with eating healthily than with drinking 'cos we just don't come into the category like. (M7)

The view that current levels of drinking would not affect health and that other health behaviours should be prioritised above changing alcohol consumption recurred frequently

during interviews, exerting a stabilising influence on alcohol consumption behaviour. There was also widespread opinion that current drinking was too low to impact on medications.

In contrast to the view that drinking would not affect health or medications, some participants reported a range of negative health consequences of drinking, including night sweats and headaches. These negative health consequences were described by participants as frustrating and disruptive, but were not strong enough to generate sustained behaviour change. No participant described a chronic negative health consequence of drinking (such as liver disease or pancreatitis) that might have motivated alcohol consumption change.

In addition to participants who reported negative health consequences of their drinking, there was a view that alcohol consumption could, at some undetermined point in the future, have negative health consequences. Among participants who reported higher-level drinking there was a belief that drinking may have serious health consequences:

> I stopped drinking because I didn't actually want to die. (M5)

> I think sometimes it might affect my health, in the end. (F4)

However, the impact of this belief was not a long-term decline in alcohol consumption, with F4 reporting a gradual increase in consumption over time and M5 reporting abstention for an 18-month period before starting to drink again. M5 did not report a specific trigger for starting drinking again, stating that he 'felt like it'. This suggests that for some older adults a belief that alcohol may have health consequences in the future is not sufficient to motivate a sustained decrease in consumption.

Among lower-level drinkers there was also a view that drinking could have general negative health consequences:

> I know objectively that it's better for people and for me not to drink. (F3)

> I do do that every now and again I don't have any alcohol because I think it don't do me any good, and then it just creeps back into the social events doesn't it. So I do have what I call times when I don't drink at all, and then times when I do. (F1)

And negative consequences through weight gain due to alcohol consumption:

> I suspect my weight and my alcohol consumption are related and my weight probably affects potentially anything to do with joints so there is a correlation there I'm sure. (M2)

These beliefs rarely had adequate saliency to result in a decline in alcohol consumption, with some participants reporting stable and others increasing long-term consumption despite concerns about implications for health. M2 reported stable consumption despite thinking that

there might be a relationship between his weight and alcohol consumption, perhaps because he was ambivalent about the potential negative consequences of his weight. Participants who believed that their alcohol consumption was higher than optimal but still reported a long-term increase in consumption reported apparent struggles with cognitive dissonance, resulting in short-term fluctuations in their alcohol consumption. Whilst they reported feeling guilty about their level of drinking, ultimately, the strength of their beliefs on the negative health implications of drinking was outweighed by the benefits of drinking. Individuals in this group often emphasised the benefits they got from drinking, perhaps in an attempt to resolve cognitive dissonance regarding their health and alcohol consumption and justify their level of consumption despite the negative consequences.

In addition to the interrelationship of belief systems and negative health impacts, participants with cardiovascular disease described being given medical knowledge relating to the potential benefits of alcohol consumption for cardiovascular health. Interviewees talked about receiving this information during cardiac rehabilitation following a heart attack, or during appointments with their consultant. On the one hand this advice could be used to support drinking behaviour:

> My consultant told me that whiskey was only 2nd to red wine for heart disease, and if it's good enough for him it's good enough for me. (M8)

The medical knowledge that this individual has absorbed aligns with his existing belief system and current alcohol consumption behaviour, so he can enact medical advice without having to consider a behaviour change. Elsewhere, this medical knowledge was reported to exert unwanted pressure to drink alcohol to obtain the health benefits of drinking:

> I keep reading a glass of wine every day is good for you as you get older and I think well if you don't particularly want a glass of red wine how can it be good for you? (F9)

For F9, medical knowledge conflicted with her drinking habits and preferences. The result was that the medical advice was ignored, but only after reflection on the positive and negative impacts of behaviour change. None of the older adults interviewed reported increasing their alcohol consumption as a result of reflection on the potential cardiovascular benefits of drinking. There was a limited awareness of such health benefits of drinking beyond participants who reported a cardiovascular disease.

The extent to which medical knowledge challenged or fit within existing belief systems affected drinking behaviour change. For example, M2 discussed his experience of being diagnosed with gout, but despite acknowledging the potential link between his drinking and his symptoms, he chose to adopt a different, less personally challenging dietary change:

> I started to think about what I was consuming that might be, erm… having an affect. And the obvious one is drink, but I didn't want to stop having a drink. But I honed in on citrus… and realised that I at the time I was having grapefruit every morning on cereal… and I thought I wonder, you know, people had said to me there was a connection between citrus fruit, and I wasn't eating a great amount of fruit, the occasional apple, banana whatever, so I stopped and, dare I say it, touch wood… I haven't had gout since. (M2)

The success of modifying diet rather than alcohol consumption on the symptoms of his gout demonstrated to M2 that it was not necessary to change his drinking habits, thus he maintained a high level of consumption:

> It's a popular explanation for gout, people say oh you're drinking too much red wine or something… that's a throwaway remark that everybody seems to make and I ignored it because I found the solution was there for me and with no adverse effects. (M2)

That M2 ignored advice regarding alcohol and gout might suggest that he was not psychologically capable of engaging in reasoning; however, he did use reasoning to identify an alternative solution that fit within his existing belief system.

The examples in this section have illustrated how reflection on medical advice, and how effectively it can be internalised within individual belief systems around alcohol consumption behaviour and health, influence maintenance or change of drinking behaviour.

8.4.3 Personal experiences

The third domain within reflective motivation is that of personal experiences, where participants reported changing their alcohol consumption behaviour in response to an event or tangible consequence of drinking. For example, M4 who took regular morphine to relieve the pain caused by osteoarthritis and osteoporosis described an incident that led to a reduction in his usual drinking quantity from five pints per drinking occasion:

> It was when I started on the morphine that I cut right down… I went all dizzy and fell over. So I'm limiting meself now. I sometimes have two and a half if I'm in a good conversation, but it's never any more than two and a half. (M4)

He reflected on his knowledge of the potential interactions between morphine and health and balanced the negative experience that he attributed to morphine against the personal benefits of drinking, concluding on reflection that behaviour change was appropriate.

A group of older adults used medication to enable them to continue drinking alcohol when they suffered gastric pain. Their personal experience was that taking the medication reduced gastric pain and therefore they could continue drinking without pain rather than

changing drinking behaviour. For example, M3 was prescribed a proton pump inhibitor (medication that reduces gastric acid production) when he experienced stomach pain:

> Well, I was put on the tablets because I was having some pain in my stomach, sometimes after eating and sometimes after a sherry, so I had the tablets and it was marvellous, you know, never had a problem. (M3)

His personal experience was that taking this medication prevented his gastric pain and he therefore believed that it was a good solution for his problem. Whilst taking such medication one participant still occasionally experienced some gastric pain so chose to drink alcohol with a lower alcohol by volume (ABV):

> Perhaps after I've had me glass of wine on a Sunday but it's not very often… I try to drink wine with lower alcohol content so that I'm not drinking so much. (F5)

Knowledge of the health consequences of alcohol consumption was reinforced by personal experience that transformed abstract risks into tangible effects. For example, F5 could describe in detail the effects of drinking alcohol on her body:

> Now with me, with what I've got, alcohol, even just a little bit, sends my body in an uproar. I mean it can cause me to have diarrhoea, bleeding and just well, I'm just not with it. With what I've got, rheumatoid arthritis, the other one, osteoporosis, then there's fibromyalgia, myasthenia gravis, well they're all to do with muscles so I mean it affects the brain alcohol, which then will affect my muscles and I can't control anything… (F5)

For F5 this reasoning had an impact on long-term alcohol consumption through restricting consumption to one glass of wine a week.

In addition to personal experiences of the interactions between alcohol consumption and health or medications, participants described their personal experience of the impact of alcohol on sleep and relaxation. There was a view that alcohol had a beneficial impact on relaxation and conflicting views on the effect of alcohol on sleep. Alcohol was used as a tool to facilitate relaxation in general, with a meal, and after work. Whilst some participants implied that they used alcohol to relax, others were explicit. For example, in describing reasons for drinking alcohol one woman acknowledged:

> … One drinks because it is a wonderful anaesthetic and a relaxant and it would be wrong to say, to pretend otherwise. (F3)

This view developed from personal experience regarding the effects of alcohol.

Regarding alcohol and sleep, there was one view that alcohol facilitated sleep but a contrasting view that whilst it may be easier to get to sleep after an alcoholic drink, quality of

sleep is worse. There was a third view that alcohol does not affect sleep, which was often voiced by participants with a low-level of consumption. An example of a participant who found that drinking was beneficial described specific circumstances that he felt illustrated a positive relationship between his alcohol consumption and sleep:

> I sleep better when I've been drinking. I've just done, last week and the week before I've just done four nights up in Barnsley… I've just done four days last week and four nights when I come home, I don't get home 'till 10 half past 10 and it's take me tablets, straight to bed, and it's been half past seven, eight o'clock next morning, which is very unusual because I'm usually up between five and six most mornings. (M1)

In his experience therefore, on the nights when he consumed alcohol he also had a better night's sleep.

Participants who reported that drinking negatively affected their sleep described a number of different reasons for this belief including finding it harder to work the following day, waking up thirsty, and needing to visit the toilet during the night, for example:

> I do get back off to sleep but I do feel tired when I go to bed and maybe sleep for an hour or two and then wake up. If I, the odd, very odd occasions when I've had more than one glass of, red wine especially, I do wake up feeling very thirsty. (F9)

> The only way in which it might is as I've got older I find that if I'd had a lot to drink at the night then I'll probably have to get up at some point during the night and visit the toilet… (M10)

Participants described how these personal experiences sometimes resulted in the modification of their drinking behaviour: for example F9 reported limiting her alcohol consumption to two glasses of wine to prevent repeatedly waking up thirsty during the night and F2 tried to avoid drinking alcohol on a week night because she believed that it affected her ability to concentrate at work the next day.

Within this group of older adults there was also a view that alcohol can aid the process of getting to sleep, with alcohol occasionally used for medicinal purposes:

> My husband said why don't you have a whisky and that might, I found I was coughing so much when I went to bed and he said that might just put you over to sleep. (F9)

Such medicinal benefits of alcohol consumption were reported for short-term illness rather than long-term conditions. Participants describing a medicinal benefit to drinking were among the older participants in the sample.

8.5 Automatic motivation

Automatic motivation describes unconscious motivations to undertake a given behaviour. During interview, participants described a number of factors that could be described as automatic motivators to change alcohol consumption. These factors, illustrated below, can be broadly characterised as habit, emotion, and associative learning.

8.5.1 Habitual drinking and emotion

Participants widely described a fixed drinking routine that was occasionally modified, for example during episodes of acute illness, but that reverted back to the original level after a short period of time. This drinking routine had a stabilising influence on long-term alcohol consumption and was reported to make sustained behaviour change challenging, for example because 'it [alcohol] just creeps back in' (F1) to daily routines. Thus, habit exerted a stabilising influence on long-term alcohol consumption.

Whilst the habitual nature of alcohol consumption was not problematic for some older adults, there was a sub-group of higher-level drinkers whose compulsion to consume alcohol once a bottle was open illustrated a potentially deleterious aspect of their drinking routine:

> I always finish a bottle of wine, what's the point of putting the cork back in it? … I don't keep a lot of wine in the house but if it's 10.30 and I've finished a bottle and I don't want to go to bed I'll have another one. (M5)

> I just do, I can't bear to see it there… Once the bottle's open, yeah. I just sit here, you know, drinking and watching that. It does take a few hours… (F4)

M5 called himself a 'controlled alcoholic', stating that he kept a limited supply of alcohol in the house to prevent himself from reverting back to old habits, but it was evident that he still struggled with controlling his drinking habits in certain situations where alcohol was available. F4 described a complex relationship with alcohol that was underpinned by social problems that might be influencing her drinking behaviour, including depression and loneliness. These examples highlight the potentially negative impacts of habitual drinking.

In contrast to participants who described a habitual pattern of drinking that was difficult to break, others reflected on how their drinking habits had changed over time leading to a reduction in overall consumption, for example:

> At one time I would normally have a glass of wine with our evening meal. Now I might have a glass once a week, once a couple of weeks, when I feel like, I don't automatically have a glass of wine with my meal. I do like a gin and tonic and there again as well I probably used to have a gin and tonic most nights, I don't now, I have a gin and tonic occasionally and to be quite honest I find I appreciate it more. (F9)

Often participants could not identify a cause for this gradual change in consumption, but attributed it to not feeling like or not wanting to drink as much alcohol or to drink as frequently as in the past:

> It just crept up on me sort of thing, I think, I'd no desire to… one time of day, oh I must have a glass of wine with so-and-so with me dinner and it doesn't bother me now. (M3)

Participants reporting a gradual decrease in alcohol consumption resulting from a change in habits were generally older than those participants reporting stable habits. These examples highlight the importance of understanding individual drinking habits before promoting a change in consumption in older adults with a long-term condition.

Drinking was widely identified as an ordinary part of daily life and participants normalised their consumption within their social group. As such, there was a common view that current levels of consumption were moderate or low and so there would be no health implications of drinking. The normalisation of drinking behaviour has been evidenced in other age groups in England, for example younger adults (Seaman & Ikegwuonu 2010; Parker 2005).

In addition to the direct influence of habit on long-term alcohol consumption, emotion influenced long-term alcohol consumption behaviour through the interaction between emotion and habit: for example, social drinkers widely described alcohol consumption as an enjoyable activity. Emotion is an instinctive or intuitive feeling. During discussion of the factors that influenced alcohol consumption participants revealed three separate basic (or primary) emotions (Parrott 2001): joy, sadness and fear. Firstly, there was a view that drinking was an enjoyable activity:

> The only thing I have and I like, and my friends and doings knows I like it and they buy me a bottle, is a bottle of whiskey. And, as I say, about five nights, four or five nights a week I'll have two tots of whiskey with water and I enjoy it... (M3)

This illustrates how the emotion attached to drinking alcohol can result in routine consumption. The view that alcohol consumption was enjoyable was widespread among the older adults interviewed and exerted a stabilising pressure on drinking.

Depression was reported to have a direct effect on alcohol consumption, with increased consumption used to provide relief from sadness:

> If I wasn't so depressed as I am I probably wouldn't drink as much. I think I drink a lot, that's my doing, you know, I probably could cut that down, but that's you know, I just, at weekends when I know he's here, you know, and I can't talk to him about it. (F4)

As a result of using alcohol consumption to relieve depression, this older woman had developed an alcohol consumption habit that she found very difficult to break.

Finally, fear of the health consequences of drinking alcohol at a given level was a strong automatic motivator to reduce long-term alcohol consumption, for example:

> Through fear... If somebody tells you to stand on your head and that you wouldn't ever have another heart attack by doing that, you'd do it. (F2)

This fear presented in participants with different levels of alcohol consumption and resulted in a sustained decrease in overall drinking. The fear emotion distinguished these participants from individuals who expressed reflective motivation to change their drinking based upon beliefs about health consequences of drinking (see p.171). Whilst the latter made a considered choice to modify or maintain their drinking behaviour, participants who were afraid felt compelled to change their behaviour. For example, F2 described the cardiac nurse talking about the benefits of moderate alcohol consumption and how she reduced her alcohol consumption after the heart attack, but could not rationalise changing her drinking behaviour because it already complied with the medical advice on moderate drinking.

Thus, all three emotions exerted pressure on alcohol consumption, with joy and sadness exerting pressure to increase consumption, and fear decreasing consumption in some, but not all circumstances. Acknowledging the influence of emotions on drinking behaviour and understanding the role of alcohol for older adults is important when trying to modify alcohol consumption behaviour, so that achievable targets for change can be identified and additional support provided where necessary, for example treatment for depression.

8.5.2 Associative learning

Within automatic motivation a number of examples of associative learning were evident, where older adults had developed their drinking behaviour based upon perceived consequences of that behaviour. For example, there was a view that alcohol consumption was beneficial for the relief of stress and depression. In describing how this belief developed, participants described an associative learning pattern, whereby they once had a drink after a stressful event and found it facilitated relaxation. Subsequently, the practice of drinking to relax or for stress relief increased in frequency with implications for overall level of consumption. In describing why her drinking had increased over time one participant said:

> Definitely stress… I lead a very busy life. I have a very demanding job. I say no more. (F3)

There was acknowledgement among participants who were currently employed or had previously been employed in demanding jobs that using alcohol to relax after work was a deleterious behaviour, but necessary to cope with the demands of work, for example:

> I used to find it hard to switch off after work without a drink and so I started drinking wine, a bottle or two after work to help me relax. Whilst I was drinking I would say it wasn't uncommon for me to drink 160 units in a week… I'm quite surprised my drinking 160 plus units a week for all those years didn't cause some long-term damage. (M5)

Among participants who drank alcohol for stress relief, some short-term decreases in alcohol consumption were described when in a different environment, for example on holiday. However, after periods of lower consumption, the initial, higher-level of consumption was gradually resumed:

> When I'm on holiday I actually rarely drink because you remove the stressors, then, and also, and usually I can continue that until the stressors grow. (F3)

Where alcohol was used for relief because of associative learning, behaviour was very difficult to modify without a change to the underlying work or social situation. This is evidenced by participants who attempted to decrease their long-term consumption but after a short period of time reverted to their former drinking behaviour in response to unresolved stressors.

8.6 Physical opportunity

Participants described a number of environmental factors that exerted either an upward or downward pressure on their alcohol consumption. Environment is used in a broad sense to include the wide range of aspects of the built, legal, political, financial and social environment that may impact on alcohol consumption. The factors of importance to the older adults in this study can be grouped into three categories: legislation, finance and the physical environment.

8.6.1 Legislation

There was a view that drinking behaviour was moderated by drink-driving legislation. Participants described organising a designated driver who would abstain from alcohol or limit him or herself to one alcoholic drink during an evening. Whilst drink-driving legislation has been in place for many years, there was a perception that this legislation had a greater impact on alcohol consumption with increasing age because people drove to social events more frequently than in younger adulthood. In relation to drink driving the concerns that participants described were the risk of causing harm to others through dangerous driving and being caught over the legal alcohol limit in a random breath test.

In particular, drink-driving laws affected older adults who described a social life that centred on exchanging meals with friends, for example:

> We have people for meals and they all are driving home so it limits I think the amount of wine we take anyway. (F9)

Social dining was a practice most often described by older adults living in the least deprived areas. Individuals living in less deprived areas also reported more car ownership so drink driving legislation may have been more relevant for these older adults.

8.6.2 Finance

Participants discussed the influence of changes to the cost of alcohol on their long-term consumption patterns. Two contrasting views developed. The first view was that alcohol has become increasingly expensive so continued drinking at a former, higher-level is no longer affordable, for example:

> Me drinking changed when beer kept going up and up. I used to play darts three times a week and at one time I used to go out with £2 and I'd got enough. When it got up to £5 a night and I still hadn't got enough, that's when I packed a lot of me drinking up. (M1)

Older adults who cited the increased cost of alcohol as a reason for decreased consumption described a pattern of drinking that centred on pubs or social clubs (the on-trade). In contrast, there was a second view that alcohol has become more affordable over time as prices have decreased relative to increases in disposable income, for example:

> Alcohol is very cheap now… When we were younger alcohol was, was much more expensive and we didn't have the money. (F3)

Older adults holding the view that alcohol is more affordable nowadays (as a result of their increasing affluence) predominantly drank alcohol at home or at friends' homes (off-trade) and tended to report long-term increases in consumption that they explained in part using the increased affordability of alcohol. Participants preferring off-trade consumption tended to live in less deprived areas whilst on-trade drinkers were more often, but not exclusively, living in the most deprived areas.

8.6.3 Physical environment

Within the group of older adults whose past and/or current alcohol consumption was centred on the on-trade, certain aspects of the physical environment had impacted on drinking behaviour. One factor was neighbourhood safety, with decreased drinking resulting from a reluctance to go out (to the pub or club) after dark:

> I only go out at dinnertime because at night I don't feel very safe to be honest… Those young'uns can be a bit intimidating. (M4)

Increasing age and worsening health were felt to have exacerbated this concern, with some participants suggesting that when younger they did not feel so vulnerable, for example:

> I'm not as young as I used to be, I used to be able to hold me own at one time but I've got no chance now. (M4)

Thus, feeling unsafe in the local neighbourhood influenced behaviour both through decreasing the number of drinking occasions and changing patterns of consumption to daylight hours.

Pub closures were also reported to have affected alcohol consumption behaviour. A situation of successive pub closures in certain areas was described that severely reduced opportunities for alcohol consumption, for example:

> That's one of, you know, me changes what cut me down in me drink. Because if I go down t'pub now, well I've only just found out yesterday… we used to go in't *Red Lion*[6]. They've turned that into a nursery. We used to go down't *Queens Head*, now that's been sold and they're gonna knock it down. So we haven't got a pub on the estate now, only the little club. (M1)

Similar to neighbourhood safety, this situation was worsened by declining mobility that prevented travel outside of the local neighbourhood to find a different drinking establishment.

A third factor in the physical environment was the presence of second hand smoke in pubs. Whilst the relevance of this reason for drinking change has decreased since the smoking ban was enacted in 2007, the impact of second hand smoke in pubs on health was cited as a reason for declining alcohol consumption in pubs and clubs:

> I think when I look back it was because of me health… I used to be chesty a lot at one time and I was in other people's smoke. (M9)

> No, we don't go out to social clubs now, we haven't done for years. My wife… has become allergic to cigarette smoke. (M7)

Despite the smoking ban these participants have not resumed their previous drinking habits. This may be evidence of the stability of established drinking habits.

[6] These pub names have been changed for the purposes of anonymity

8.7 Social opportunity

Given that alcohol consumption was widely believed to be a sociable behaviour by this sample of older adults it is unsurprising that they expressed strong social influences on drinking over time. In particular, changes to usual social activities, shifting responsibilities and personal relationships contributed to participants' explanations for their behaviour change. These social factors can be grouped into three broad categories: changes in social activity, drinking as a social activity, and spousal influence.

8.7.1 Changes in social activity

Participants talked about how their social activities had changed over time. For some people the changes were gradual whilst others could identify one or more specific reasons for modifying their social activities. Where social activities involved alcohol consumption, a change in attendance could subsequently affect overall level of drinking. For example, one participant used to play bingo with his sons-in-law in the club on a Sunday afternoon and enjoyed drinking with them during the game, but over time they stopped going to bingo together because of competing family priorities, and so his alcohol consumption declined. Another participant used to go social dancing every week with her husband but when he died she stopped going:

> We used to go dancing once a week and I'd have two or three vodka and tonics, that was it when he died… everything stopped. (F7)

Whilst changes in social activity often exerted a downward pressure on long-term alcohol consumption, some participants did report increases in alcohol consumption as a result of changes in their social activity that were related to changes in their familial role. In particular, reduced childcare responsibilities in older age increased the opportunity to engage in different social activities that might include drinking alcohol, for example:

> I: What would you say the main reasons are for your increased drinking?
> P: … I think the social aspect has changed, of what you, 'cos when you've got young children you don't do the same social things do you, so I think the social aspects have changed, that you go out with friends without having children. So you're not looking after children and chasing after children, so I suppose it's around the change in maturity and, you know, the social aspects of going out without kids. (F1)

This was a view expressed by older women in the sample but not older men. In the period before having children these women described very low-level alcohol consumption, in part due to the unaffordability of alcohol and the low priority given to alcohol consumption within daily life. This low level of consumption was maintained throughout the period of parental

responsibility because the requirements of looking after children were not commensurate with drinking alcohol. Once children had grown up responsibilities changed and it was possible to engage in social activities involving alcohol consumption, facilitated by increased affluence that meant alcohol was more affordable and changed beliefs about the role of alcohol in daily life.

8.7.2 Drinking as a social activity

There was a group of interviewees for whom drinking alcohol at a pub or club was their main social activity. This group comprised older men from across the socioeconomic spectrum. These men reported few, if any, social activities they enjoyed other than visiting the pub or club on a regular basis. Drinking establishments were viewed as a good place to 'interact with blokes… banter with the lads' (M2), a place where 'there's always plenty of people there to talk to' (M4). Alcohol consumption was stable among this group of men, except following exposure to tangible negative health or social consequences of drinking. For example, one man described a negative interaction between alcohol and his medication that incentivised a reduction by half in alcohol consumption to prevent a repeat occurrence.

This pattern of consumption was usually expressed as volitional behaviour; however, peer pressure did also influence frequency of alcohol consumption:

> It was there and it was convenient and there was a, I mean if I didn't go out the bloody phone would ring 'we're waiting for you, are you coming over?'… You can't make an excuse because they know that there's no reason you can't go. (M6)

These pressures lead to maintenance of a high level of alcohol consumption despite having a heart attack: although M6 reportedly stopped drinking during rehabilitation he described quickly returning to this pattern of heavy drinking once his (formal) rehabilitation programme was complete. This highlights a tension experienced between enjoyable, volitional social activity and social pressure to behave differently. Whilst men in this group described this form of drinking behaviour as a personal choice, for some there was an element of social pressure to the frequency of drinking occasions or number of alcoholic beverages consumed.

8.7.3 Spousal influence

Social opportunity to drink was influenced by partners drinking, surveillance, and spousal relationship. There was a view that alcohol consumption had changed over time as a result of changes in the drinking habits of a husband or wife, or to influence another's drinking:

> My wife has cut back on her drinking and quite often if she's not having a drink I'll say well I'll not bother either. (M10)

> I've gone out with me ex[7] for a meal at dinnertime and to stop her having a drink with a meal we've had a soft drink, both of us, and it's not worried me. (M1)

This illustrates the effect that both current and past partners drinking can have on ones own drinking; however, this influence varied from couple to couple. Whilst some of the older adults described enjoying a bottle of wine with their partner on a regular basis and not often drinking alone, others highlighted the differences between their drinking and that of their partner:

> I have a glass of wine occasionally… I don't drink as much as my husband 'cos he's a beer drinker. (F1)

> If we're sat in here together yes he'll probably share a bottle with me, but he does go out and play snooker so he'll probably have a couple of pints there. (F8)

Among older married men there was a view that their wives monitored their alcohol consumption to ensure that they were not drinking too much. This surveillance was described variously, for example one man seemed perturbed by his wife's concern stating 'she watches me like a hawk' (M8) whilst another provided an explanation for monitoring consumption 'she's also been keeping an eye on diet and calories' (M10) that suggested he was content to have his alcohol consumption measured. This surveillance acted to prevent any sustained increase in drinking, but was not described as a factor that lead to a decline in consumption.

The third spousal influence on alcohol consumption was the spousal relationship. A poor spousal relationship, characterised by a lack of understanding between husband and wife, resulted in a gradual increase in alcohol consumption over time:

> He drives me, he seems to be driving me [to drink]… that's how bad my marriage has got. (F4)

Drinking was used as a coping mechanism to manage a difficult marital situation in which the participant was trapped because of her financial circumstances. Whilst only one participant reported a poor spousal relationship, this example illustrates the use of alcohol as a support mechanism by older adults during periods of personal difficulty.

In contrast to a poor spousal relationship resulting in increased alcohol consumption, the impact of heavy alcohol consumption on a partner or spouse was cited as a motivation to reduce alcohol consumption. One man described a drinking habit he developed in his later working years of spending Sunday afternoons in the pub:

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[7] M1 divorced his wife because she was an alcoholic but he still enjoyed spending some time with her and she lived on the same estate and so they socialized together.

> The shifts that I used to do got me home about half past one, two o'clock on a Sunday and I used to go down or into the pub and I wouldn't come home 'til seven or eight o'clock at night so I was absolutely… and she used to go potty. And really I mean, at the end of the day I stopped it because… well it went on for eighteen months it went on for, probably a bit longer than that, but I mean I got, I got a lot of grief and then I sort of thought about it and I thought well it's not fair on her, nacks her Sundays up. (M6)

Ultimately the social benefits of this higher-level drinking habit were outweighed by the relationship costs resulting in a change in behaviour.

8.8 Understanding drinking behaviour change and stability

It is evident that a range of factors affect long-term alcohol consumption behaviour in older adults. Interviewees described a number of reasons for making or resisting drinking change including health, social and financial factors that exerted an upward, downward or stabilising pressure on their drinking. Examining how these reasons for change or stability interacted within each individual improved understanding of the mechanisms that lead to drinking change or stability in older adults. It is proposed that long-term drinking behaviour can be understood within an information-motivation-behaviour (IMB) framework (Fisher & Fisher 1992). This framework, described below, aids an understanding of the processes through which an individual might progress when considering a change in their drinking behaviour. Sections 8.3 to 8.7 highlighted the complexities of drinking behaviour change (such as maintenance of consumption despite knowledge of potential risks) and this framework is helpful for exploring what influenced the decisions taken around long-term alcohol consumption behaviour.

Information is the combination of knowledge and understanding in this context. Knowledge is information acquired externally, for example imparted by a healthcare professional or through education. Each individual possessed some knowledge about the consequences of drinking alcohol for health and/or prescribed medications. The accuracy and depth of this knowledge varied across the sample, with some participants reporting inaccurate knowledge whilst others provided a detailed description of the potential health implications of drinking alcohol. Understanding developed when knowledge was internalised and an individual could judge how information was applicable to their personal circumstances. Knowledge was internalised and understood differently depending on perceptions of alcohol, personal beliefs about drinking consequences and prior experience that could translate abstract knowledge into tangible consequences. *Motivation* describes the internal process of balancing the

emotional and social benefits of drinking with potential health, financial and other costs. Understanding was linked to motivation through a bi-directional relationship. An individual who had an understanding that alcohol could affect their long-term condition evaluated whether the risk of alcohol influencing their health outweighed the enjoyable aspects of drinking. This balancing process may have been subconscious. Where there were costs of drinking, older adults may have bartered internally to counter the increase in risk from drinking by changing a different lifestyle behaviour. The result was a reduction of cognitive dissonance through the adaptation of understanding about the negative impacts of alcohol on health and the maintenance of stable drinking behaviour. This information motivation behaviour process is illustrated using Composite Case Studies[8] 1 to 4. These case studies illustrate how knowledge and/or personal experiences situated within personal belief systems can influence motivation to modify or maintain behaviour resulting in different long-term alcohol consumption patterns.

The balance of costs and benefits of drinking that drive motivation to maintain or change differed according to the direction of alcohol consumption change. Increasing drinkers universally described more benefits of drinking alcohol and emphasised the value of one or more of these benefits whilst stating few, vague or seemingly less urgent reasons to decrease or stop drinking. For example, reasons for drinking included stress relief, relief of depression and sociability, whilst the costs of drinking were 'I think it don't do me any good' (F1) or 'it might impact on me health in the end' (F4). Increasing drinkers described a process of gradual change over time. Decreasing drinkers who reported a gradual change identified more costs of drinking and accentuated the importance of one or more of these costs whilst describing fewer benefits. In contrast, decreasing drinkers who suddenly changed their alcohol consumption described a balance of advantages and disadvantages but reported a tangible event that had affected their drinking behaviour. This type of change is illustrated in Composite Case Study 1. This type of event motivated change through providing older adults with first hand experience of the potential consequences of drinking or changing their circumstances so that drinking was no longer a natural part of their routine. Stable drinkers described a number of costs and benefits to drinking, but the benefits usually outnumbered the costs. The key difference between increasing and stable drinkers was that whilst increasing drinkers emphasised the importance of some of the benefits of drinking, stable drinkers were generally ambivalent

[8] These composite case studies are portraits compiled using details from two or more participants who together illustrate a drinking behaviour change. Composite case studies are used as the detail provided within each case study might have made it possible to identify individual participants, breaching anonymity (Creswell 2012).

about the benefits and costs of drinking, resulting in a situation where routine drinking prevailed because there was no motivation to change behaviour.

In addition to the importance of the IMB framework for recognising the value of disseminating medical knowledge and the subsequent process of internalisation that this knowledge must undergo to encourage reflection on the costs and benefits of changing drinking behaviour, physical and social opportunities for drinking independently influenced changes in alcohol consumption behaviour. As illustrated in Composite Case Study 3, social and physical opportunities to drink may change over time with knock-on influences on personal consumption. Changes in opportunities for drinking may have coincided with changes in health that also precipitated a drinking change, or may have occurred independently of changes in health. Changes in the physical and social opportunity to drink were often reported by older adults to have been more influential on their drinking change than changes that occurred to their health, perhaps because drinking habits are harder to break whilst past drinking 'infrastructure' remains in place. For example, it is easier to stop drinking if you only drink whilst out dancing and you stop dancing, rather than continuing to dance but trying to resist alcohol whilst in a social situation where historically you have habitually drunk alcohol.

Composite Case Study 1: Sudden decreasing drinker

Ray is 68 and lives with his wife in a council flat in an area of high-level deprivation. He is a routine social drinker who drinks in the club three or four times a week. He is mid-level drinker who usually has a couple of pints of lager on each drinking occasion. This has been his drinking routine for over a year, before which time he would meet with friends just as regularly but drink five pints of lager. Ray has arthritis, osteoporosis, diabetes and chronic obstructive pulmonary disease. He is currently taking 19 prescription medications for his conditions. His knowledge of the health implications of alcohol consumption is very limited but he did make the generic statement that drinking too much is bad for health. He does not consider his own health and drinking to be related. When he was diagnosed with arthritis and osteoporosis two years ago he did not change his drinking habits. After a period of time he was prescribed morphine for back pain but his drinking remained stable at five pints per occasion until he experienced a dizzy spell, which he reasoned was drinking too much whilst taking morphine. Since that time he has limited his drinking to a maximum of two and a half pints. This experience illustrates how a tangible consequence of drinking can affect understanding of the relationship between alcohol and health. He did not want to experience the dizziness again so he elected to change his drinking behaviour.

Composite Case Study 2: Gradual decreasing drinker

Tom is aged 79 and lives with his partner in their own home in an area of mid-level deprivation. He is a routine social drinker and alcohol is an integral part of his social life, which centres on sharing meals with friends. Tom enjoys drinking alcohol because it complements a meal and makes an evening more relaxed. Whilst he suffers from arthritis and heart disease for which he takes medication, he does not believe drinking will affect his medication because he takes his tablets in the morning and only drinks alcohol in the evening. Tom is aware of some health risks of drinking alcohol including damage to the liver and kidneys, weight gain and gout. Over the past five years his drinking has gradually decreased from two or three drinks a day to one or two drinks three or four times a week. Tom described a number of reasons for his drinking change: 1) his partner had decreased her drinking over time with knock on effects on his drinking, 2) he was diagnosed with gout and so cut down on his drinking, 3) he started to wake during the night after drinking alcohol to visit the toilet and so he now tries to limit his drinking to control this need, and 4) his favourite pub closed down a couple of years ago and he does not enjoy the other local pubs. These factors had combined to result in a gradual decrease in drinking over time, despite the reported social benefits. The process of drinking change for Tom is clear: he had some knowledge about the affects of drinking on health and he understood that knowledge to be relevant to his situation, for example he knew gout was linked to alcohol and he was diagnosed with gout so he reduced his drinking. In choosing to reduce his drinking he balanced the costs of drinking, for example pain from gout and needing to visit the toilet during the night, with the social benefits. As his partner had reduced her drinking the social benefits of drinking had also diminished over time. His motivation to change was adequate resulting in decreased drinking.

Composite Case Study 3: Stable drinker

Marcus is 63 and lives alone in an area of low-level deprivation. He is a routine social drinker who goes to the pub every day to drink beer and 'banter with the lads'. He is a higher-level drinker, often consuming three or four pints of beer in one sitting. He also enjoys drinking alcohol when out for a meal with friends. His current drinking behaviour has been routine for over 20 years. Marcus was recently diagnosed with arthritis for which he takes anti-inflammatory tablets. He exhibited awareness of some of the health risks of drinking alcohol including weight gain and the negative impact carrying extra weight will have on arthritic joints. Despite being overweight and acknowledging the potential impact of weight on his arthritis, he has not changed his drinking. Furthermore, in the past he has taken measures in other lifestyle areas to prevent having to change his drinking. A few years ago he was diagnosed with gout. His initial symptoms were treated but when the problem kept recurring he was advised to change his lifestyle to reduce the risk. Friends suggested that he should reduce his drinking but he did not want to so he sought an alternative solution. Through research he found that dietary changes might be sufficient to prevent recurrence of gout, so he modified his diet whilst maintaining his level of drinking. He had no further problems with gout after making dietary changes. Marcus demonstrates that even having the knowledge and understanding regarding the risks of drinking alcohol, individuals may find alternative solutions to enable maintenance of habitual behaviour where drinking change does not fit within existing belief systems.

Composite Case Study 4: Increasing drinker

Michelle is 60 and lives with her husband in an area of low-level deprivation. She is a routine social drinker who enjoys drinking alcohol when socialising with friends, but also uses alcohol to relax after a stressful day at work. Michelle has had a heart attack and as a result takes prescription medications. She also suffers from osteoarthritis and occasionally takes pain relief medication. Over the past ten years her alcohol consumption has gradually increased and she reports a number of reasons for this increase including increasing levels of stress at work, changes in social activity resulting from changes in maturity and reduced childcare responsibilities, and the increased affordability of alcohol. Michelle describes how she usually drinks alcohol on two or three nights a week, but does not drink when taking painkillers because analgesics and alcohol should not be mixed. She believes that it would be better for her health if she did not drink so every now and again she stops drinking, for example when on holiday, but over time she gradually starts drinking again at social events and as the stresses of work grow. This illustrates that even when individuals have the motivation to change their alcohol consumption behaviour, the habitual nature of alcohol consumption and the perceived benefits of drinking can hinder long-term change.

8.9 Summary

This chapter has described and analysed the factors that this sample of older adults perceived to be important in determining their long-term alcohol consumption patterns within a COM-B framework. Sections 8.3 to 8.7 presented evidence to support the relevance of difference components of the COM-B for drinking change in older adulthood. The key findings are that:

1. Knowledge is a crucial first step in the process of drinking behaviour change after a change in health and is gained through various media. Some older adults actively seek medical knowledge whilst others avoid medical knowledge as a way to prevent challenges to existing behaviour.
2. Reflection on medical knowledge and how well it fits into individual belief systems around health and alcohol consumption influences long-term consumption behaviour.
3. Personal experiences (both positive and negative) promote behaviour change through turning abstract risks into tangible consequences.
4. Habit exerts a strong stabilising influence on alcohol consumption behaviour, but can be broken by emotional drivers (such as fear) and associative learning.
5. Physical limitations and changes in social opportunity to drink are strong, direct influences on drinking behaviour change.

The risk of negative health consequences generated action following a balance of the benefits of change against the costs, informed by possession of and reflection on medical knowledge. Where the benefits equalled or outweighed the costs of drinking stable consumption prevailed because alcohol was a highly habitual and enjoyable behaviour.

Chapter 9: Discussion and conclusions

9.1 Key findings

This chapter uses the quantitative and qualitative findings to provide new insights into drinking behaviour change in older adults. Below, the key findings for each research question are discussed in turn before Section 9.2 highlights what the current research contributes to existing knowledge of drinking behaviour change in older adults.

9.1.1 Current alcohol consumption patterns and socio-demographic variations

Patterns of alcohol consumption were highly varied across both samples of older adults, with some participants reporting abstention and many drinking at a level that could be harmful to health. Compared with previous research that measured alcohol consumption in older men and women, a greater proportion of ELSA participants were drinkers, and among the drinkers a higher proportion reported higher-level drinking (Robinson & Harris 2011; The NHS Information Centre 2011a). The most prevalent drinking frequencies among older adults were 1-2 times a week and 6-7 times a week, although more men drank 6-7 times a week than women. Drinking frequency cannot be compared with previous research in England because ELSA measured past-12 month whilst previous studies measured past-week frequency. In ELSA, older men aged 50-59 years and men and women in the highest socioeconomic class reported an above average alcohol consumption frequency. Women aged 70 years and older, those in lower socioeconomic classes and the single, divorced or widowed drank alcohol less frequently. Volume of alcohol consumed was above average for the divorced, the unemployed and men aged 50-59 years, but significant variations in drinking volume were not present in women.

Previous research in England has not measured drinking variation by age group among older adults. Previous research has examined marital and cohabitating status, for example Hajat et al. (2004) reported that cohabiting women aged over 75 years in the UK were more likely to drink more than their counterparts who lived alone. Research conducted outside of the UK, in the US and Germany respectively, found that unmarried older adults were both more (Blazer & Wu 2009) and less (Weyerer et al. 2009) likely to have a higher level of alcohol consumption. In ELSA older divorced men, but not women, reported higher than average drinking volume. Given the varied findings on the influence of marital status on alcohol consumption it is likely that the relationship is complex and may be dependent on underlying

factors such as coping mechanisms. Previous research also found that higher education and income were predictive of higher level drinking (e.g. Blazer & Wu 2009; Dent et al. 2000), which may support the finding that men and women from the higher socioeconomic classes drink alcohol slightly more frequently, perhaps as a result of greater disposable income making alcohol more affordable and social norms around regular alcohol consumption. Previous research has not disaggregated older adults by economic activity status.

Overall, 60% of the drinkers in the ELSA sample consumed more alcohol on at least one occasion in the previous week than is recommended by government daily drinking guidelines for adults. These guidelines might already be too generous for older adults given physiological alterations that occur during ageing such as decreased efficiency of liver enzymes and changes in body fat and body water (Simmill-Binning et al. 2009; O'Connell et al. 2003; Dufour & Fuller 1995). In combination with long-term conditions and prescription medication taking that is common in older adulthood, it is plausible that a substantial proportion of older adults are drinking at a level that could cause harm to their health.

9.1.2 Purposes of drinking

Drinking was often described as a social activity or a component of socialising. It was reported to be a pleasant accompaniment to food as well as a beverage consumed for the enjoyment of the taste of the drink itself. In addition to these positive reflections on the purposes of drinking, there was a view that alcohol could be used to relieve stress, depression and boredom, as well as for medicinal purposes, for example to help one get to sleep when unwell. Thus, older adults used alcohol with both positive and potentially harmful motivations, particularly where alcohol was used to cope with underlying problems. The reasons for drinking described by older adults during interview aligned with previous research on motivations for drinking among older adults from other countries, recorded using open and closed survey questions and qualitative interviews (e.g. Haarni & Hautamaki 2010; Immonen et al. 2010; Khan et al. 2006).

The purposes of drinking were linked inextricably to drinking patterns in older adults, highlighting the importance of understanding why older adults drink before attempting to motivate behaviour change. Additionally, given the habitual nature of drinking, behaviour modification may be a lengthy process, with potential for relapse to original behaviour, as is evidenced in research on drinking behaviour change in other general population samples (Dawson et al. 2007).

9.1.3 Patterns of drinking change over time

Long-term alcohol consumption behaviour in ELSA was stable for one in three older adults over the four years of follow-up. Participants who changed their drinking reported either increasing, decreasing or fluctuating consumption, where the latter was either increasing then decreasing drinking, or vice versa. This variety in long-term consumption echoes previous quantitative and qualitative research on changes in alcohol consumption over time among older adults (e.g. Haarni & Hautamaki 2010; Platt et al. 2010). However, in contrast to previous research (e.g. Shaw et al. 2010; Glass et al. 1995), the proportion of the ELSA sample reporting abstinence at each wave remained stable, suggesting that becoming abstinent over time is not common among older adults in England.

Within the current research, associations between age and drinking change and socioeconomic status and drinking change that have not been reported previously were found, as well as gender differences in drinking change. Men were more likely to report stable drinking frequency whilst women more often reported stable drinking quantity. This partially contradicts previous research that found older men were more likely to decrease their consumption over time than women (Brennan et al. 2010a; Moore et al. 2005; Glass et al. 1995); however, this research originated in the USA where older women consume a low level of alcohol and so have less scope for decreasing their consumption over time. A slightly higher proportion of men increased their drinking frequency and quantity over time than women, whilst a higher proportion of women reported decreasing frequency. Age was not a significant predictor of drinking frequency but was associated with drinking volume trajectory, with adults aged 70 years and older more likely to have reported stable and less likely to have reported fluctuating consumption. Higher SES was associated with a greater stability in drinking frequency but lower stability in drinking volume.

Economic activity status and marital status were not associated with changes in drinking over time. Previous research has explored the relationship between marital status and changes in alcohol consumption over time, and in contrast to the current research, which found no significant relationship, unmarried individuals reported a faster decline in drinking than married individuals (Shaw et al. 2010; Moore et al. 2005). Differences in drinking change over time by economic activity status have not been reported previously.

9.1.4 Relationship between health deterioration and alcohol consumption over time

The relationship between changes in health and alcohol consumption over time was varied. There was no significant relationship between disease diagnosis and drinking change. Changes in self-rated health, pain and ADLs/IADLs/mobility were associated with changes in

drinking frequency and volume over time, with both increasing and decreasing drinking more common among participants experiencing such health deterioration than among older adults who experienced no health changes. These findings resonated with the qualitative research. Older adults at interview described changes in drinking related to changes in their physical symptoms, their experience of negative side effects from drinking (separate to or in conjunction with medication) and after reflection on lifestyle advice given by medical professionals. The diagnosis of a long-term condition as a health event on its own was not reported to affect alcohol consumption.

Previous research has reported mixed findings on the relationship between health deterioration and alcohol consumption. Whilst some studies reported that acute health events, diagnosis with a long-term condition and symptoms of disease resulted in decreased alcohol consumption over time (Molander et al. 2010; Moos et al. 2005) others found that changes in consumption varied by specific long-term condition (Platt et al. 2010; Demark-Wahnefried et al. 2005) or that no relationship existed between changes in health and alcohol consumption (Neutel & Campbell 2008). The current findings concur with previous research that found alcohol consumption varied by type of health deterioration. The principal finding that changes in health in older adults resulted in greater instability of long-term consumption has not been reported in previous research, where changes in drinking have been reported only as decreased consumption.

9.1.5 Relationship between non-health changes and drinking over time

Changes in social and financial factors reported in ELSA were significantly associated with alcohol consumption change. Participants reporting changes in social or financial factors (such as death of a family member or change in income decile) were significantly more likely to report a change in their drinking frequency or volume, with both increasing and decreasing drinking more common than among older adults who experienced no change to their social or financial situation. These findings from ELSA resonated throughout the qualitative research, with interviewees describing how social and financial changes had positively or negatively affected their alcohol consumption behaviour.

Previous research that examined the impact of non-health life changes on subsequent alcohol consumption has examined bereavement, relocation and financial stressors. Spousal bereavement has been linked to increased drinking among older men (Byrne et al. 1999; Glass et al. 1995), but conflicting findings have been reported among older women, with no relationship reported between bereavement and alcohol consumption change in US women (Glass et al. 1995), but a report that one third of women drank for relief of grief in Sweden

(Grimby & Johansson 2009). In England, previous research reported different changes in alcohol consumption following bereavement, with some older adults using alcohol as a coping mechanism whilst others reported drinking less than when their partner was alive (Ward et al. 2008). Thus, previous research has separately found both increased and decreased consumption following bereavement. Increased and decreased drinking following relocation have also been reported separately, for example in the USA in one study the loss of a friend due to moving home was associated with increased drinking (Glass et al. 1995) whilst in another the social isolation that resulted from relocation was reported to increase the odds of abstinence over time (Shaw et al. 2010). Finally, financial stressors have been reported to decrease alcohol consumption over time (Brennan et al. 1999). Examining the quantitative and qualitative findings in light of previous research, it is evident that non-health stressors have been found to both increase and decrease alcohol consumption over time, but rarely have increased and decreased consumption in response to life events been reported within the same study population.

9.1.6 Level of knowledge of the relationship between alcohol and health

Interview participants generally had a shallow understanding of the relationship between health and alcohol consumption. There was a view that excessive drinking could affect the liver and that drinking too much could lead to weight gain. There was a widely held view that alcohol consumption would not affect health or long-term conditions, held by older adults with a range of long-term conditions and alcohol consumption ranging from infrequent low level to frequent moderate and occasional high use. Rarely did participants describe any potential interactions between alcohol and their own health conditions or medications, except where they had experienced such interactions first-hand. The view that alcohol would not affect health may have arisen from a limited awareness of the health implications of drinking, or, alternatively, could be a way to resolve cognitive dissonance around the health impacts of drinking (see Section 9.2.2 for further discussion of cognitive dissonance).

Older adults with heart disease described the potential cardiovascular benefits of drinking alcohol, and some acknowledged that this had influenced their drinking behaviour. Among participants with no cardiovascular disease, awareness of the potential benefits of alcohol was lower and people were more sceptical of these potential benefits. This scepticism may have been influenced by the source of knowledge, with cardiovascular disease patients advised of the potential benefits by cardiologists or cardiac nurses whilst others obtained their knowledge from the media. Previous research examining the awareness of the impacts of alcohol consumption on health among older adults is limited. However, in the Omnibus survey

in 2008 respondents were asked whether or not they thought drinking increased a range of health risks that are caused or exacerbated by drinking such as accidents, coronary heart disease, liver disease and arthritis (Office for National Statistics 2009). The survey was administered to those aged 16 years and older with data on health risks disaggregated by age. Overall awareness of the risk of alcohol on complaints such as accidents, liver disease and alcohol poisoning was high, whilst knowledge of increased risk of arthritis and deafness were low. Adults aged 65 years and older were least likely to be aware of the health risks of alcohol consumption although some of the differences were not statistically significant. The low level of awareness of the wider potential health risks of alcohol consumption corresponds to findings from a YouGov poll of 2,000 adults in 2008 that found 82% of women were not aware of the link between alcohol and breast cancer whilst only 37% of drinkers were aware of link between alcohol and stroke and 56% of links to heart disease (Alcohol Learning Centre 2008).

9.1.7 Mechanisms for changing alcohol consumption over time

Drinking change in older adults can be understood within an information-motivation-behaviour (IMB) framework (Fisher & Fisher 1992). Each individual could recall some knowledge or information about the relationship between health and drinking. This information underpinned motivation to change behaviour, with individual understanding developing in conjunction with personal belief systems about alcohol and from tangible experiences of the negative (and positive) side effects of drinking. Behaviour was influenced both through the ways in which reflection on medical information and personal experience within belief systems affected motivation for change and also by possession of the behavioural skills necessary for change, such as the ability to access support for underlying problems or having the confidence to refuse an alcoholic drink in the pub. For each individual the costs and benefits of drinking change were balanced to determine long-term alcohol consumption. For example, one individual might decrease their drinking after experiencing negative side effects because the benefits of drinking less (no repeat event) are greater than the costs of drinking less (reduced time at the pub), whilst a different individual might choose to continue drinking at a higher level and risk the health consequences because they value the time spent in the pub over a repeat occurrence of the negative side effect. Thus, patterns of drinking change are complex and how alcohol consumption behaviour is affected by health deterioration and other changes may be difficult to explain when observed out of context.

The IMB framework was originally developed to better understand sexual health behaviour but over recent years has been applied in broader settings both within and outside of health research. To my knowledge it has not been applied previously to alcohol

consumption behaviour change; however, theoretical relationships have been found between the three IMB constructs and other lifestyle changes such as physical activity and diet in the USA (Kelly et al. 2012) and diet and exercise among Puerto Ricans with diabetes (Osborn et al. 2010), suggesting that this may be a useful framework for understanding drinking change in adults with a long-term condition. The IMB framework can be used to encourage behaviour change by focusing interventions on the area(s) that need development, for example disseminating information on the links between alcohol and health problems if the knowledge is missing, or providing access to support services to develop motivational or behavioural skills.

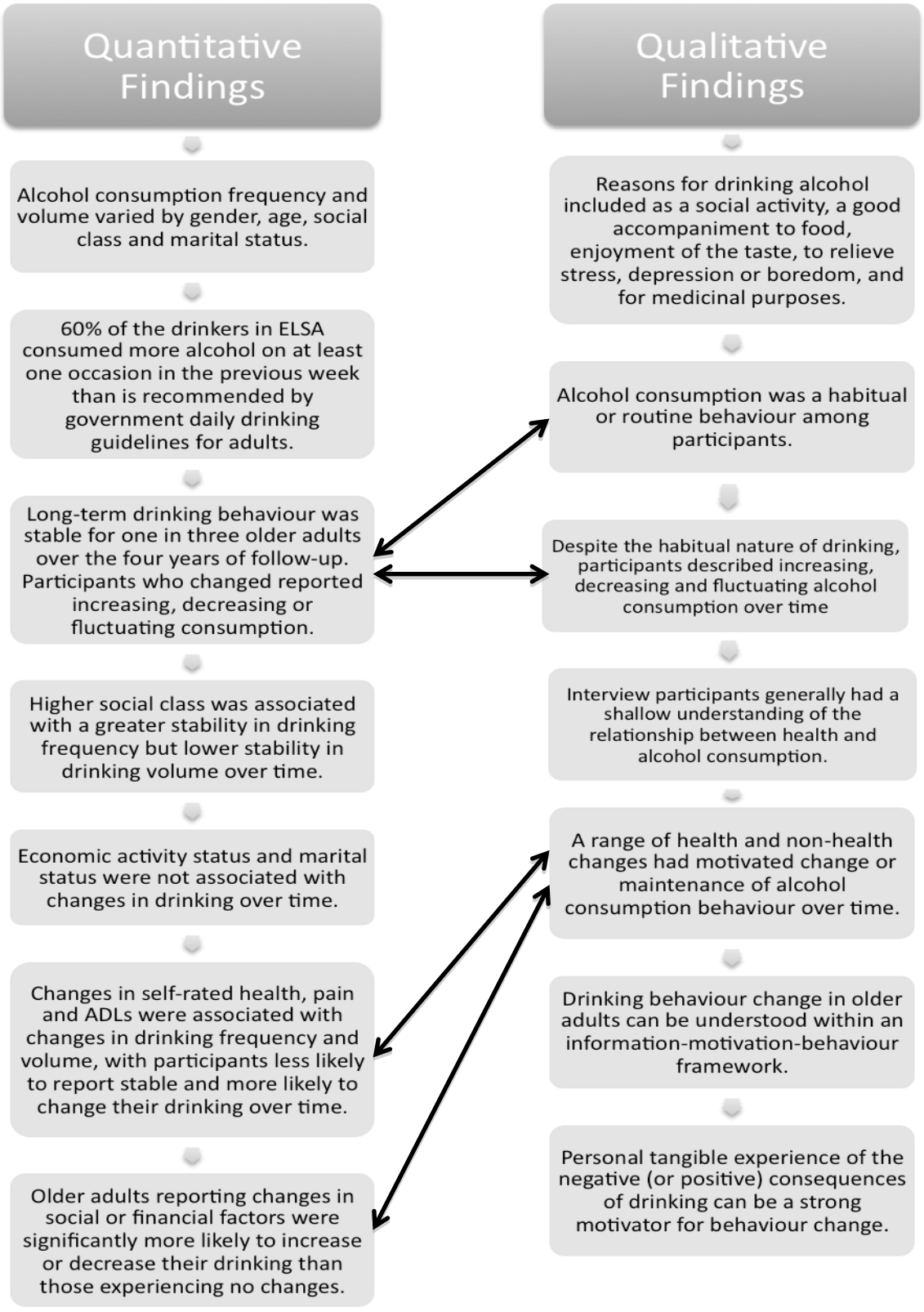
9.1.8 Meta-inferences

Integration of the quantitative and qualitative findings began by tracking themes across the two datasets. This process enabled the development of three meta-inferences, or conclusions, drawn from the simultaneous interrogation of the quantitative and qualitative strands of the current research during interpretation. The intersections of the quantitative and qualitative findings that underpin these meta-inferences are illustrated in Figure 9.1.

The first meta-inference relates to the multitude of different factors that affected drinking behaviour in older age. The range of life changes that were found to influence drinking change included, but were not limited to, self-rated health, activities of daily living, bereavement, spousal relationship and financial circumstances. The qualitative research also identified that a range of health, social, financial and work-related life changes influenced alcohol consumption change or maintenance over time among older adults. During analysis of the interview data an explanatory hypothesis developed that participants, either consciously or subconsciously, evaluated the costs and benefits of drinking behaviour change to determine whether the benefits of change outweighed the costs, for example in terms of loss of enjoyment and the challenges of breaking a habit. Thus, a wide range of health and non-health factors affected alcohol consumption behaviour change in older adults through a decisional balance that was often enacted subconsciously.

The second meta-inference relates to the patterns of drinking change, with older adults reporting diverse drinking changes over time. The quantitative analysis showed that changes in alcohol consumption over time in older adults who reported certain health or non-health changes were significantly different to older adults who reported no changes. The impact of life changes on alcohol consumption was decreased drinking stability, with participants who reported a life change more likely to either increase or decrease their alcohol consumption over time. During the interviews participants discussed a range of factors that had differentially affected their long-term alcohol consumption behaviour. The direction of change

Figure 9.1: Intersections between the quantitative and qualitative findings



varied within and across different life changes. However, whilst the direction of change varied after health and non-health changes, in the quantitative research a substantial proportion of participants did not change their alcohol consumption behaviour and this was echoed in the

qualitative research where a group of older adults made no changes to their alcohol consumption over time. During interview, participants who had made no changes to their drinking behaviour emphasised the routine nature of their alcohol consumption, highlighting that they had no drive to change this habitual behaviour.

This brings us to the third meta-inference, that drinking is a relatively stable, habitual behaviour in older adults. The qualitative research highlighted the routine nature of alcohol consumption behaviour, both in older adults who maintained stable drinking behaviour and in those who increased or decreased their alcohol consumption over time. The habitual nature of alcohol consumption reported in the qualitative findings resonates in the quantitative findings. For example, over 50% of older adults maintained stable drinking frequency and volume between consecutive waves and the majority of changers reported a change in drinking frequency or volume of just one category. The frequency with which participants reported no or only a small change in alcohol consumption suggests that drinking is a relatively stable behaviour in this population and the qualitative research supports this finding and identifies stability as relating to the habitual nature of alcohol consumption.

The aim of the current research was to explore the factors that affect change and maintenance of drinking behaviour in older adults, focusing on how and why older adults change their alcohol consumption after health and non-health life changes. In addition to the separate quantitative and qualitative findings presented in Section 9.1, this section has described three meta-inferences that may not have been identified without a mixed methods approach. These meta-inferences correspond to the purposes of the study as they contribute to understanding of how and why older adults change or maintain their drinking behaviour over time. In the derivation of these meta-inferences, the qualitative and quantitative research was used together in different ways. For example in the first meta-inference, the qualitative research was used both to confirm the quantitative findings and explain how the different factors that affect drinking are balanced within individuals. The quantitative and qualitative findings were also used together to enhance overall findings, for example meta-inference three used the qualitative research to identify habit as an underlying factor in motivating drinking stability and the quantitative findings were used to identify how widespread drinking stability was among older adults.

9.2 Key contributions to current knowledge

In 2011 the Older Persons' Substance Misuse Working Group of the Royal College of Psychiatrists published a report that highlighted 'a significant number of older adults consume alcohol at dangerous levels' (p.7) and described the influence of physical health problems and prescription medications as well as socio-demographic changes on the development of alcohol problems in later life (Royal College of Psychiatrists 2011). The report recommended that GPs should screen everyone aged over 65 years for substance misuse problems both as part of routine health checks and after experiencing major life events (Royal College of Psychiatrists 2011). The current research has provided evidence in support of the claim that many older adults drink at a level that is hazardous or harmful to their health, and has examined how and why older adults change or maintain their alcohol consumption behaviour following the types of 'major life event' described in 'Our Invisible Addicts' (Royal College of Psychiatrists 2011). In exploring why older adults change or maintain their drinking behaviour the aim was to develop a greater understanding of the factors motivating drinking change in this population that could be used to develop health promoting interventions. The current research makes four key contributions to knowledge of alcohol consumption behaviour in older adults. Each contribution is discussed below and situated within current literature.

9.2.1 Habitual behaviour

Behaviour that is performed on a daily or weekly basis in stable and predictable supporting contexts can develop into a habit (Ouellette & Wood 1998). The routine nature of alcohol consumption among the older adults interviewed suggests that for many in this group drinking was a habitual behaviour. Long-term stability in alcohol consumption was common and modifications in consumption over time were often only small. The habitual nature of alcohol consumption in older adults is supported by recent research in the USA that found most individuals diagnosed with a chronic condition did not adopt healthier behaviours. Changes in alcohol consumption were small and only for specific conditions such as cancer, stroke, diabetes and lung disease (Newsom et al. 2012). The habitual nature of drinking in this population has implications for behaviour change.

Most behaviour takes the form of repetitive actions, which frees our minds for non routine thoughts and decisions, but means that new information is not sought or taken into account when performing certain behaviours (Jager 2003). The more automated drinking behaviour, or any other behaviour, the harder it is to change. Thus, older adults who expressed long-term stable patterns of routine alcohol consumption may find it especially challenging to modify that behaviour in response to a health or non-health change. For these individuals, their drinking habit satisfies a need: for example, M2's pub habit satisfied his need for male

social contact after retirement and F6's routine of drinking with Sunday lunch reminded her of family traditions. The strength of a habit can result in the satisfaction of one need at the cost of another (Jager 2003), so despite potential health risks of drinking alcohol for some older adults the difficulty of breaking a habit and lack of motivation may result in the maintenance of potentially harmful drinking behaviour.

For established habits, the conscious decision to not drink requires both motivation and opportunity to change, but suppression of established behaviour is affected by the fact that to supress behaviour one has to think about that behaviour, thus increasing preoccupation with that behaviour and making it more difficult to change. For addictive behaviour it has been found most affective to ban behaviour (although this is not practical in most situations) or to avoid stimuli (Jager 2003). For example, to break a drinking habit that is centred on the pub, it would be more effective for the individual to stop going to the pub than to continue going to the pub but commit to drinking non-alcoholic drinks.

Thus, to change an established habitual behaviour greater success may be achieved by modifying physical or social opportunities to drink. Increasing knowledge about the risks of drinking may not be effective because people do not often consider new information when performing routine behaviour. Providing opportunities for reflection on new information about the risks of drinking may also increase the probability of behaviour change, although the strength of potential risks of drinking will be balanced against the costs of breaking the habit to determine the relative overall merit of behaviour change for the individual.

9.2.2 Importance of reflection

Older adults reacted differently to health deterioration depending on their reflections on knowledge about health and alcohol consumption. Disseminating information about the potential health risks of alcohol consumption alone did not affect behaviour without internalisation of new information within personal belief systems. Thus, critical reflection is essential in the process of turning external knowledge into action, motivated by information that is integral to the experiences of the individual as a result of their reflection upon it (Rubinelli et al. 2009). Previous research found that among families with children aged 12 to 17 years old, reflecting on lifestyle behaviours promoted statements of intention to change behaviour and reports of modified behaviour, suggesting that encouraging reflection can promote behaviour change, at least in the short-term (Colineau & Paris 2010). The current research extends this previous finding to a much older population and focuses on drinking behaviour change as opposed to generic lifestyle changes.

Where older adults were forced to reflect following personal negative experiences, this often triggered behaviour change. The importance of reflection on tangible experiences is supported by previous research that found that lifestyle changes were not considered important by patients with coronary heart disease who did not experience signals of the disease (Kärner et al. 2005). The current study may broaden the applicability of this previous finding to a wider range of long-term conditions.

It was evident from the qualitative interviews that a group of older adults were ambivalent towards changing their drinking behaviour. A way to work through this ambivalence and encourage commitment to change is through motivational interviewing. In motivational interviewing, clients are encouraged to talk about their reasons for and resistance to behaviour change, encouraging self-reflection (Hettema et al. 2005). In a review of behaviour change techniques for reducing excessive alcohol use (not alcohol dependence), 'reflection' was not specifically identified as a behaviour change technique although some of the techniques might facilitate reflection, including motivational interviewing, providing information on consequences, and reflective listening (Michie et al. 2012).

Whilst ambivalence was commonplace, there was also a group of older adults who had reflected on the potential risks of alcohol consumption and determined that they were at risk, but who did not change their long-term consumption behaviour. This conflict created cognitive dissonance. Cognitive dissonance occurs where an individual has inconsistent beliefs or attitudes regarding a particular behaviour. For example, one participant stated a belief that they drank too much alcohol and that this could affect their health negatively if they did not change their behaviour, but that same individual had increased their alcohol consumption over time. To resolve cognitive dissonance the individual must either channel their efforts into behaviour change or modify their beliefs. Using this example the individual might change their beliefs to 'I do not drink enough alcohol to affect my health' to reduce the cognitive dissonance. In the interview sample this dissonance may have lead to short-term drinking change, but often participants gradually reverted back to previous behaviour in response to factors such as work-related stress or social norms. Cognitive dissonance was implicit among stable, increasing and fluctuating drinkers, who appear to favour modifying beliefs over modifying behaviour. The implications of this for behaviour change are important because if these older adults were willing to modify their belief system over their behaviour that suggests their behaviour may be very inflexible.

9.2.3 Life changes lead to decreased drinking stability

Health deterioration and other social and financial changes were associated with decreased drinking stability. Older adults who experienced a change were more likely to either increase or decrease their drinking than those who did not experience change. However, these differences existed within an overall context of drinking stability, with increases and decreases in consumption often of small magnitude.

Different responses to health, social and other changes were found within the qualitative data that may help to explain the diversity in changes found with the quantitative data. Change can disrupt usual drinking routine resulting in decreased consumption, for example bereavement may affect social activities resulting in a change in drinking behaviour. Change can affect non-drinking aspects of routine resulting in a desire to maintain stable alcohol consumption to preserve an element of past routine, for example maintaining Sunday lunchtime drinking despite the family no longer visiting for Sunday lunch. Change can disrupt routine resulting in increased drinking, for example drinking to cope with a worsening spousal relationship. Finally, change may have no impact on routine resulting in stable alcohol consumption, for example maintenance of usual drinking behaviour despite being diagnosed with and prescribed medications for arthritis. Participants described different patterns of drinking change for similar life changes, for example following bereavement some older adults maintained stable drinking, others decreased their consumption and another reported fluctuating consumption. Such variety of response was evident across the range of life changes in this population.

The association between health and non-health changes and drinking instability over time may be a result of different coping mechanisms. Following stressful life events, some older adults may restrict their activity as a way to cope, for example if they are emotionally disturbed by stressors to the extent that they no longer engage in routine activities (Snyder 2001). In contrast, stressful life events have been associated with increased alcohol consumption, where alcohol was used as a coping strategy to manage difficult situations (Ward et al. 2008). Finally, research has found that health-related stressors can affect depressive symptoms through restriction of normal activities, so continued participation in routine activities can have beneficial impacts (Williamson 1998). These findings emphasise the importance of understanding individual situations before trying to change drinking behaviour.

9.2.4 Intertwined nature of motivations to drink alcohol

Alcohol consumption change in older adults is a complex balance of the costs and benefits of drinking, with change and stability motivated by the interactions between health,

social, financial, emotional and work-related factors. This meta-inference fits within a biopsychosocial model of alcohol consumption, which describes how biological, psychological and sociocultural factors interact to determine drinking behaviour. The biopsychosocial model was introduced by Engel in 1977 to counter the dominance of the biomedical model as a framework within which to understand and treat disease (Engel 1977). The biopsychosocial model proposes that psychological and sociocultural factors should be considered alongside biomedical factors in the study of disease, as psychosocial factors may modify the course of an illness. This model describes the ways in which disease and illness are affected by multiple levels of organisation, from the molecular to wider society (Borrell-Carrió et al. 2004).

The biopsychosocial model has salience across addictive behaviours (Griffiths 2005) and has been used previously in research on older adults' drinking, for example for assessing the treatment needs of older alcoholics in the USA (Kaempf et al. 1999). The current research supports the use of this model for exploring behaviour change with non-addicted older adults who might benefit from reducing their alcohol consumption. Using a biopsychosocial model to structure the costs and benefits of alcohol consumption for individual older adults should facilitate identification of the full range of factors that influence drinking behaviour. Older adults could then use the factors identified within each domain to produce a complete reflection on the costs and benefits of changing their drinking behaviour.

Drinking change (as opposed to maintenance of usual drinking behaviour) following health deterioration is motivated where the perceived costs of continued consumption outweigh all the benefits of drinking in other domains. Costs and benefits are expectations around alcohol consumption behaviour that can be direct (affecting neurotransmitters in the brain) or indirect (Cox & Klinger 2011). The different indirect expectations surrounding alcohol consumption are illustrated in Table 9.1. Individuals may assign different levels of importance to different types of effect so that whether or not an individual drinks is driven by whether the overall balance is positive or negative. Thus in addition to considering the costs and benefits of

Table 9.1: Indirect alcohol expectancies (Cox & Klinger 2011)

Positive effect of alcohol on other positive incentives e.g.) people are motivated to drink because they perceive that drinking will enable socialisation with other people.	Negative effect of alcohol on positive incentives - drinking will interfere with access to other incentives e.g.) if family & friends disapprove of drinking alcohol.
Positive effect on negative incentives e.g.) they perceive that alcohol will help them to cope with the pain caused by a long-term condition.	Negative effect on negative incentives e.g.) if people expect that alcohol will exacerbate physical or psychological suffering.

drinking change, older adults will reflect on the relative importance, within their existing personal belief system, of each of the costs and benefits of drinking that they have identified. Indeed, previous research has explored how the contribution of factors from different domains varied between individuals and within individuals over time: for example, an individual might start drinking heavily because of the satisfaction derived from escaping reality (a psychological motivation), but over time the importance of physical dependence may drive alcohol consumption more strongly than psychological motivations (Cox & Klinger 2011).

Whilst proposing that drinking behaviour change is motivated by a reflection on the costs and benefits of alcohol consumption in a range of health and non-health domains, it is important to emphasise that participants rarely described a conscious reflection on the costs and benefits of drinking, with notable exceptions being those older adults who reported changing their behaviour as a result of a negative personal experience. Rather, it is suggested that this process of reflecting on the costs and benefits of alcohol consumption may be a predominantly subconscious activity.

9.3 Methodological issues

This section discusses the methodological issues arising within the current research. First, a number of mixed methods issues are discussed, before the strengths and limitations of the quantitative and then qualitative research are presented.

9.3.1 Mixed methods issues

This mixed methods project was designed to provide a more comprehensive understanding of alcohol consumption change in older adults in response to health and non-health changes than could be achieved using solely quantitative or qualitative methods. The amalgamation of the quantitative and qualitative approaches is a key strength of the current research. A pragmatic decision was taken to use mixed methods based upon the strengths of different methods for answering different types of research questions (see Section 3.2 p.71-72). The quantitative analysis was used to identify patterns of change and factors associated with alcohol consumption over time, whilst the qualitative was used to identify factors associated with drinking change and also to explore the possible relationships between these factors and how they motivated changes in alcohol consumption. The original theoretical assumption underlying the quantitative analysis was that changes in health would result in a decrease in alcohol consumption among older adults, but the quantitative analysis found this

assumption to be fallacious (see Section 3.3.2 p.75). Instead, the principal quantitative finding was that changes in health and non-health factors are associated with greater instability in alcohol consumption. Understanding this finding would have been challenging without the qualitative findings on how various health, social and financial changes differentially affect alcohol consumption though mechanisms such as reflection on knowledge and personal experiences. Using qualitative research to develop a detailed understanding of how change in drinking developed for older adults was new in this population. Without the quantitative analysis of patterns of change at a national level, it would have been difficult to conclude anything about the commonality of the patterns of change and factors associated with change that were evident in the qualitative interviews. Thus, the two parts of the study enhance the comprehensiveness of the overall study and the contribution of the research to current knowledge.

The original research design was a quantitative qualitative sequential mixed methods design. Whilst the data collection and analysis were conducted sequentially, the final design was more integrated than a traditional explanatory sequential mixed methods design because the qualitative analysis informed further analysis of the secondary data (see Section 3.3.2 p.75). The flexibility of mixed methods research to emerging data is one of its strengths (Johnson & Onwuegbuzie 2004). Previous mixed methods alcohol research has used a variety of different approaches including surveys, ethnographic studies and qualitative interviews (e.g. Ames et al. 2008; Castro & Coe 2007). To my knowledge the use of large, national datasets alongside qualitative interviews is not common in alcohol research, and the current research demonstrates the potential benefit of such a mixed methods approach.

A common challenge in mixed methods research is ensuring that the separate quantitative and qualitative components, as well as the integration of these parts, are conducted to a high standard. In the development of the current research, ways to enhance the quality of the quantitative, qualitative and mixed methods componants were identified from the literature (e.g. see Table 5.1, p.125 for quality criteria in qualitative research). During the various stages of the current research these quality criteria were used to evaluate different aspects of the study. For example, a good mixed methods study should describe the research design in terms of purpose, priority and sequence, so in presenting the study design in Section 3.3 these elements of the current research were clearly stated. Reflection on these quality criteria throughout the research process has strengthened the overall research.

Finally, the qualitative sampling strategy evolved over time to reflect changes in the theoretical assumption of the study. Within an explanatory follow-up approach the qualitative sample would have been used to explore interesting or significant findings, with the

quantitative sample used to identify specific cases to follow-up where appropriate or the characteristics of participants to be recruited to the qualitative sample (Creswell & Plano Clark 2007; Morse 1991). The identification of specific cases to explore qualitatively was not possible in the current research because it was neither possible nor ethical to identify and contact ELSA participants. However, the quantitative analysis was used to identify relevant sampling characteristics that could be accessed using a separate sampling frame. Given the change in underlying theoretical assumption following the preliminary quantiative analysis, the focus of the qualitative research changed from exploring significant findings to exploring the general relationship between life changes and alcohol consumption in older adults with a long-term condition. The adapted qualitative sampling strategy fit well within the integrated design that superceded the explanatory follow-up design and highlights the importance of maintaining flexibility in mixed methods research to adapt to the findings of earlier studies within sequential designs.

9.3.2 Strengths and limitations of the quantitative research

The key strengths of the quantitative research are the range of health (and other) data that was collected within ELSA and the large, nationally representative sample of older adults. Over 400 health variables were recorded at each wave of ELSA, permitting the measurement of changes in a range of different areas of health including self-rated health, ADLs, and doctor diagnosed conditions such as heart attack, diabetes, cancer and dementia. Doctor diagnosed disease was classified into one of three groups - cardiovascular disease, psychiatric conditions and 'other' long-term conditions – to ensure an adequate sample in the positive group for comparison to participants who reported no changes in health. Despite categorising long-term conditions into groups of related diseases, the sample size would not have been adequate without the large number of older adults recruited into ELSA because the incidence of diagnosis of many of these long-term conditions is relatively low. In addition to the health variables, the ELSA interview recorded data on social, financial and demographic characteristics that facilitated quantitative follow-up after the qualitative analysis. Whilst it was not possible to explore all the factors that emerged from the qualitative interviews in subsequent quantitative analysis, as they were not measured or not measured consistently over time, some new variables were included. For example, change in closeness to partner/spouse was included in the second round of analysis following its identification as a driver of change during the qualitative analysis.

It was necessary to use secondary data given the longitudinal nature of the quantitative research objectives. It was not possible to conduct primary data collection within the time

frame of this project and achieving an adequate sample size and coverage with the resources available would have been impossible. In using a secondary data set it was not possible to control any element of the quantitative sample because data collection had already been completed for the waves included in this analysis. However, as illustrated in Chapter 4, the demographic characteristics of ELSA participants are comparable to the Census in England and Wales suggesting that the sample has generated an accurate national representation of older adults. ELSA was chosen because it was the most appropriate secondary data source available for answering the research questions and the data had not been used previously for research into the relationship between health deterioration and changes in alcohol consumption. The limitations of ELSA are detailed in Chapter 4, and include alcohol question changes that complication cross-wave comparison, changes in other variables measured such as taking blood-thinning medications and fear of neighbourhood, and the difficulties of fully understanding the contents of secondary data files. The Economic and Social Data Service, who hold the ELSA data for public use, have a repository for technical files that was used to improve understanding of the datasets, countering this third limitation.

In addition to the limitations described above, the accuracy of participant recall of alcohol consumption that is recorded in ELSA could be questioned. During the qualitative interviews in the current research, participants were asked how often they usually drank alcohol and how much they would drink on a normal occasion, as well as on special occasions and in different settings. The aim of these questions was to build up a comprehensive picture of consumption. At times during the interviews, participants recalled aspects of their drinking habit long after describing their alcohol consumption behaviour, for example one man who described a pattern of infrequent consumption did not disclose regular drinking with his family until 10 minutes after describing his alcohol consumption pattern. Thus, the limited drinking questions asked within ELSA may not accurately measure alcohol consumption. Additionally, the questions asked may be phrased sub-optimally and be too rigid to correctly capture alcohol consumption. In Waves 2 and 3 ELSA participants were asked about their alcohol consumption on the heaviest drinking day in the previous week, but during pilot interviews in the qualitative phase of the current research older adults did not relate to this phrasing because they did not see their drinking as ever being heavy. Whilst participants preferred to talk about usual consumption, even this phraseology was too restrictive for some individuals who wanted to describe variations in their drinking habit over periods of time. This suggests that drinking diaries may be a better way of measuring alcohol consumption accurately in older adults, although issues with non-completion of diaries among older adults have been reported (Bradley et al. 1998). For the purposes of the current research, potential

measurement bias may be less problematic provided that the bias is consistent over time, because it is the change in alcohol consumption itself that is the measure of interest. In their study of older male veterans, Bradley et al. (1998) found that whilst the first three AUDIT questions showed only moderate to good validity, these three questions showed excellent reliability and responsiveness to change when compared to interviews discussing drinking change. The questions asked in ELSA are similar to the questions measured in the AUDIT, recording drinking frequency and volume, but with no separate question on binge drinking.

Establishing the directionality of change within the quantitative data is challenging because the data was measured at two-year intervals: if a change in both health status and alcohol consumption occurred between two waves, how can we know which change happened first? Change in health status between Waves 2 and 3 could be compared to changes in alcohol consumption between Waves 3 and 4, but if drinking change is a response to a change in health we would expect the drinking change to occur relatively quickly after the change in health rather than years later. Thus, in Chapters 6 and 7 the associations between alcohol and life changes were reported but causality was not discussed. Problems around determining temporality using ELSA were negated by the understanding that has developed from integrating the quantitative and qualitative data in the current research. Whilst a significant association between changes in health and alcohol consumption was relevant as a stand alone finding, understanding change as a response to reflection on knowledge about the relationship between health and alcohol consumption, or perhaps a negative personal experience, helped the development of a greater understanding of this relationship.

The final discussion point is the quantitative analysis technique used within the current research. Chi-squared and post-hoc tests were used to establish whether or not an association existed between health and non-health changes, and changes in drinking frequency and volume over time. Chi-squared tests were chosen because of the nominal and interval nature of the dependent and independent variables. Change (or maintenance) of drinking frequency and volume were categorised as stable, increasing, or decreasing prior to analysis. The reason for this categorisation was that the preliminary change score analysis had examined average change in alcohol consumption between successive waves for participants who reported a change in, for example, self-rated health, compared to those reporting no changes in health, and found no significant difference. During the qualitative research it emerged that there were diverse patterns of drinking change over time, and this finding was used to return to the quantitative analysis to examine the ELSA data for similar diverse directions of change. Diverse patterns of change were identified within the quantitative data suggesting that using an average change approach masked individual increases and decreases in alcohol consumption.

Thus, a different answer is found to the question of whether or not health and non-health changes are associated with changes in alcohol consumption over time depending upon whether the measurement is average consumption or positive and negative changes in drinking. Using average changes in consumption would have lost important information about how much of the relationship is observed due to increases or decreases in drinking.

9.3.3 Strengths and limitations of the qualitative research

The qualitative interviews were designed to generate information on how and why older adults changed their drinking behaviour over time, with an emphasis on the processes underlying behaviour change. A particular strength of the qualitative research was the flexible topic guide, which encouraged participants to focus on describing the factors that were important to them rather than situating the discussion within a set of pre-determined factors. To facilitate this, most of the questions were open ended and the order in which the topic guide was covered was adaptable so that forcing a set order of questions upon participants did not disrupt the flow of the interview. This flexible and open-ended questioning resulted in the introduction of a number of factors that had not previously been considered as influencing drinking over time, for example that reduced childcare responsibilities can lead to increased alcohol consumption.

The different recruitment sites used within the sampling strategy and face-to-face recruitment process were additional strengths of the qualitative research. The mix of recruitment sites enabled the capture of participants from diverse backgrounds who had experienced a range of health and non-health changes that did or did not affect their long-term alcohol consumption patterns. The recruitment process was most successful in venues where a face-to-face approach was possible, perhaps because the opportunity for the older adults to observe the researcher giving a short presentation before deciding whether or not to volunteer reduced anxiety about the research process and characteristics of the researcher. Additionally, it was possible to speak with potential participants straight away to further explore their interest in participating in the research, rather than waiting for them to make contact using details provided on the information flyer.

A third strength of the qualitative research was the development of an environment in which older adults felt able to openly discuss their drinking behaviour and the factors that motivated change over time. Creating an interview situation in which participants were willing to open up required establishing a good rapport and creating trust, demonstrating interest in the individuals' story, showing a certain level of empathy, and being responsive: these are all concepts that have been described as important to a successful qualitative interview (Richie &

Lewis 2009). Reflecting upon my role in the interview process, for many of the older adults the age difference may have encouraged them to be more open when talking about their alcohol consumption than they might have been if talking to an older interviewer. For example, participants made comments about generational differences in alcohol consumption, including how their generation is able to better moderate alcohol consumption than the younger (my) generation. Given the higher level of alcohol consumption of the younger generation, older adults may have felt that they could talk more openly about their drinking because, by comparison to 'my' standards as they perceived them, their level of consumption was relatively low.

The qualitative research may have been limited by the relatively low representation of abstainers in the sample. It is possible that this narrowed understanding of what motivates abstinence following disease diagnosis among older adults. Recruiting abstainers was a challenge, perhaps because non-drinkers felt they would not have anything relevant to offer the research. Attempts were made to increase the number of abstainers by specifically asking for individuals who had given up drinking after diagnosis with a long-term condition to participate at the final two recruitment drives, however the only abstainers who volunteered had quit drinking many years previously and so were ineligible to participate. Although abstention was low among interview participants, it is plausible that abstainers follow the same information-motivation-behavioural framework for change as other older adults and so the findings may be as relevant for this population sub-group.

Given that older adults were asked to discuss their motivations for all drinking behaviour change during the interview, including sudden and gradual, and some of this behaviour change will have occurred outside of the conscious decision making process, reasons may have been subject to a degree of post-hoc rationalisation. Therefore, participants may have reflected and provided reasons for change that may not have operated at the time of actual change. Despite the risk of post-hoc rationalisation, the underlying concepts of capability, motivation and opportunity recurred across the interviews suggesting that they are credible factors in the process of alcohol consumption behaviour change.

9.4 Reflection on the influence of the researcher on the current research

In addition to exploring the strengths and weaknesses of the mixed methods, quantitative and qualitative components of the current research, it was important to reflect on how the background, experiences and beliefs of the researcher may have influenced the

design, conduct and interpretation of findings. For example, the decision to use the particular ELSA variables that were chosen for analysis was driven by my background in public health and a different researcher might have chosen different variables for analysis. Similarly, for the qualitative interviews another researcher might have developed a substantively different topic guide that focused on a different range of issues than the one used in this research. My position as a subtle realist and experience as a public health researcher are present throughout the research process, including the decision to use a mixed methods approach. Mixed methods research is often used in the School of Health and Related Research at the University of Sheffield where I have completed my PhD and Masters in Public Health and therefore I was receptive to the idea of using mixed methods research where appropriate. My decision to use mixed methods was also determined by my belief that we cannot adequately explore motivations for drinking change using quantitative methods alone; however, a researcher who only uses quantitative methods to explore behaviour change may not share this belief and would have designed a very different PhD. By acknowledging the intertwined nature of previous experience with current research we can critically examine our influence on research and awareness of our beliefs can assist us in minimising the impact of verbal and body language during the research encounter.

In addition to my influence on the research design and conduct, my beliefs around the positive and negative health and social effects of alcohol consumption may have influenced the interpretation of findings in the current research. For example, that I believe alcohol can have positive social effects might have meant that I more easily identified instances where older adults described a positive social effect of their alcohol consumption than a researcher who does not consider the positive impacts of drinking to be important. As a result it was important to examine the data thoroughly for findings that both supported and contradicted my assumptions, and to discuss findings and the interpretation of findings with my supervisors to ensure that the ultimate interpretation presented a balanced view of the data.

9.5 Future research

The current research examined changes in alcohol consumption in older adults across England using ELSA and explored the processes underlying behaviour change or maintenance using in-depth interviews with older adults with a long-term condition living in and around a city in Northern England. Future research could explore the mechanisms underlying drinking behaviour change in other contexts, for example a rural area or internationally, to observe

whether or not the same processes are transferable to the wider older adult population.

Future research could explore the ways in which health and non-health changes affect routine behaviour in older adults. The current research identified alcohol consumption as a habitual behaviour in older adults. Future research could explore the differential impact of life changes on drinking routine in older adults to determine why some people experience life changes and subsequently change their drinking whilst others maintain normality in their drinking routine as other aspects of their life change. Factors such as coping mechanisms and social support could be important for understanding this relationship, as they have been identified as underlying behaviour change elsewhere (e.g. Veenstra et al. 2007).

Another opportunity for future research is in the development of an intervention to reduce alcohol consumption in older adults with a long-term condition. COM-B was used as an organising framework for the qualitative findings, emphasising the importance of concepts such as psychological capability, reflective motivation and physical and social opportunities for alcohol consumption change and maintenance in older adults. Future research could utilise these findings to develop and test an intervention to promote drinking behaviour change in older adults with a long-term condition, using the relevant components of the behaviour change wheel to focus the intervention(s) (see Figure 2.12, p.62).

Finally, in the in-depth interviews participants described the influence of being prescribed medications and the impact of medication related side effects on their alcohol consumption. It was not possible to explore the impact of new prescription medications on alcohol consumption using ELSA because very few questions on prescription medication taking were asked, and the format of the questions that were asked varied between the waves. Future research could examine the impact, on alcohol consumption behaviour, of being prescribed medications that are theorised to have pharmacokinetic and pharmacodynamic interactions with alcohol[9] (Weathermon & Crabb 1999). By exploring the relationship between prescription medication taking and alcohol consumption change, knowledge of how widespread the potential for negative alcohol medication interactions would be increased and the information generated could be used to develop and target an appropriate intervention to reduce the risk of health problems.

[9] Pharmacokinetic interactions are those in which alcohol interferes with the metabolism of medication and pharmacodynamic interactions are those in which alcohol enhances the effects of medication, particularly in the central nervous system (Weathermon & Crabb 1999).

9.6 Implications for policy and practice

Older adults have diverse alcohol consumption patterns that vary by demographic characteristics. Over 60% of regular drinkers report consumption of a level of alcohol that could be harmful to their health and given the low level of abstention within this population this suggests a substantial number of older adults may be causing harm to their health from drinking alcohol. It is therefore important that we foster clinical environments in which discussing alcohol consumption with older adults is normal. The delivery of brief advice to older adults in a general practice setting has been successful in reducing higher-level drinking among non-dependent older adults in the US (Fleming et al. 1999). Creating environments in which alcohol consumption is discussed with older adults can be linked to recommendations made elsewhere that healthcare professionals should be able to screen and discuss alcohol use sensitively and deliver tailored brief interventions where appropriate (Wadd et al. 2011). However, the current research furthers that recommendation by highlighting the importance of understanding alcohol consumption as a habitual behaviour that is driven by a mix of biomedical and psychosocial factors that interact to influence consumption. Thus, it is important that within training on issues of older adults' alcohol consumption, healthcare professionals are made aware of the complexity of the decisional process for older adults.

In addition to encouraging conversations on alcohol consumption between healthcare professionals and their older patients, we should support the development of health promotion programmes that encourage older adults to drink less alcohol. Treatment for older drinkers should be flexible, including home-based services and different paces of progress but currently fewer than 1% of treatment services in the UK provide a tailored service for older drinkers (Wadd et al. 2011), suggesting that most older adults seeking treatment would have to join mainstream services. In addition to further development of specialist services, we should develop drinking reduction programmes for older adults who are not addicted to alcohol but who drink at hazardous or harmful levels. Such programmes should focus on the specific risks of drinking in older age and incorporate techniques from motivational interviewing to encourage reflection on the positive and negative effects of drinking across all areas of life, as well as support behaviour change where appropriate. Such programmes might consider using the COM-B and behaviour change wheel (Michie et al. 2011) to develop interventions. Health promotion programmes targeted towards individuals drinking at a hazardous or harmful level could be supplemented by broader public health interventions such as price controls to limit the availability of cheap alcohol or tougher drink driving legislation. Such wide-scale public health interventions might lower alcohol consumption across the whole

population, including among older adults who constituted 44% of the population of legal drinking age in England and Wales in the 2011 Census (Office for National Statistics 2012c).

Finally, older adults generally have a limited understanding of the relationship between health and drinking, particularly the ways in which alcohol may affect their long-term conditions or interact with medications. Given than many older adults may be drinking at a level that affects their health, we need a mechanism for improving understanding of these potential interactions. Whether it is a conversation with a health professional or public health information campaign, this will increase knowledge and encourage reflection that may motivate behaviour change in some older adults through the IMB framework. Without possession of knowledge on the potential interactions between long-term conditions, prescribed medications and alcohol, older adults cannot be expected to modify their drinking behaviour.

9.7 Conclusions

This study contributes to both research on alcohol consumption in older adults and the mixed methods literature. The contribution to mixed methods research is centred on the integrated and recursive use of secondary data analysis alongside interview data. The use of large scale national datasets alongside qualitative interviews in mixed methods research is not widely documented, and use of these two approaches in the current research allowed for the development of a more thorough understanding of alcohol consumption behaviour change following health and non-health changes in older adulthood. The breadth of data collected within ELSA permitted a revisit of the quantitative analysis after the interviews highlighted a number of different domains in which life changes had influenced alcohol consumption behaviour. Whilst it was not possible to follow-up on all of the domains due to being limited to the questions asked within ELSA, this second round of analysis facilitated a greater understanding of drinking behaviour change in the wider older adult population.

The current research has highlighted the factors that older adults consider to be important in motivating drinking change, including certain health, social, financial and work-related changes. This final chapter has emphasised the ways in which utilising a mixed methods approach has enhanced the findings of the current research and how these findings relate to previous research on alcohol consumption and drinking change in older adulthood. The current research contributes to current literature in four key ways:

- Alcohol consumption is a habit in older adults: many older adults maintain stable alcohol consumption over time or make only minor adjustments to their drinking. Individuals who have maintained a stable alcohol consumption routine for many years may find drinking behaviour change in response to any prompt particularly challenging. To change an established habitual behaviour greater success may be achieved by modifying physical or social opportunities to drink.
- Reflection is an important component of the process of drinking behaviour change: older adults must reflect on the knowledge they have on the risks of drinking within their personal belief systems to affect behaviour change. Following tangible negative experiences, reflection is often forced upon older adults, resulting in a greater rate of behaviour change in response to personal experience than following reflection on intangible knowledge. Motivational interviewing may be useful for encouraging reflection on the costs and benefits of alcohol consumption change.
- Health and non-health changes can result in decreased drinking stability: certain health and non-health changes are associated with increased drinking change over time among older adults; however, such changes exist within a context of drinking stability. Different responses to similar life changes may be a result of different coping mechanisms.
- A complex set of factors across different health, financial and social domains influence alcohol behaviour change or maintenance in older adults. The different factors affecting change can be situated within a biopsychosocial model of alcohol consumption. Drinking change following health deterioration is motivated where the perceived costs of continued drinking outweigh the benefits of drinking in other domains of the biopsychosocial model. Reflection on the costs and benefits of drinking may be a predominantly subconscious activity.

These key findings may contribute to policy and practice in the following three ways:

- The lack of recognition of hazardous or harmful drinking among older adults and the prevalence of higher-level consumption evident from the current research support the need to foster clinical environments in which discussing alcohol consumption with older adults is normal. This should increase awareness of higher-level drinking in older adulthood among healthcare professionals and encourage older adults to discuss their alcohol consumption more openly with healthcare professionals.
- The superficial understanding of the links between alcohol consumption and health/medication interactions highlights the need to develop a mechanism for

improving older adults' understanding of the potential interactions between alcohol consumption and the progression of long-term conditions/mediations. Without the relevant information on the potential risks of their alcohol consumption, older adults cannot be expected to change their drinking.

- The complexity of factors affecting alcohol consumption change and processes through which change is enacted support the development of health promotion programmes that specifically encourage older adults who drink at potentially hazardous or harmful levels to drink less alcohol. Such programmes should acknowledge the complexity of factors affecting alcohol consumption and might consider using the COM-B and behaviour change wheel to develop interventions.

Alcohol consumption is common among older adults in England. It has been established that older adults may benefit from a reduction in alcohol consumption after health deterioration as drinking alcohol can worsen the symptoms of certain long-term conditions, affect the progression of diseases and interact with medications. The current research has explored the factors that affect alcohol consumption change in older adults, focusing on how and why drinking behaviour is maintained or modified after health and non-health life changes. Older adults in England who experienced certain health or non-health changes were more likely to either decrease or increase their alcohol consumption than those who did not report life changes, although many older adults maintained stable alcohol consumption over time. To facilitate a reduction in alcohol consumption among older adults with long-term conditions, we should encourage reflection on the costs and benefits of drinking change, acknowledging the challenge that the highly habitual nature of drinking in older adults poses to alcohol consumption behaviour change.

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Appendix I: Key literature

Appendix 1 is comprised tables that outline the methods and key findings of research that has examined alcohol consumption in older adults and how consumption changes over time in response to socio-demographic and health changes in older adult populations.

Table 1: Alcohol consumption in the UK and other countries, with demographic variations

Author & Publication Year	Methods	Key Findings
	Studies from the UK	
The NHS Information Centre Office for National Statistics (2010a)	The Opinions Survey – cross-sectional, structured interviews with adults living in private households in Britain. In 2009, 2,110 adults were interviewed, a response rate of 58%. Data on adults aged 45-64 and ≥65 was included in Chapter 2.	• 13% of men & 14% of women aged 45-64 years, and 15% of men & 30% of women aged ≥65, were non-drinkers • Low[#] & mid[+] level drinking increased with age from 48% of men & 39% of women aged 45-64 to 66% of men & 68% of women aged ≥65 • Higher[*] level drinking decreased with age from 52% of men & 61% of women aged 45-64, to 34% of men & 32% of women aged ≥65 years • Binge[^] drinking decreased with age from 30% of men & 28% of women aged 45-64, to 9% of men & 5% of women aged ≥65 years
The NHS Information Centre (2011a)	Health Survey for England – cross-sectional, structured interviews with people living in private households in England. In 2010, 8,420 adults were interviewed, a response rate of 59%. Data on adults aged 45-64 and ≥65 was included in Chapter 2.	• Low & mid-level drinking increased with age from 40% of those aged 45-54, to 80% ≥65 • Higher level drinking decreased with age from 61% of men & 62% of women aged 45-54, to 22% men & 19% women aged ≥65 years • Binge drinking decreased with aged from 37% of men & 24% of women aged 45-54, to 5% of men & 2% of women aged ≥65 years
The NHS Information Centre (2011b)	General Lifestyle Survey – longitudinal rotational structured interviews with people living in private households in Britain. In 2009, 8,206 adults were interviews, a response rate of 73%. Data on adults aged 45-64 and ≥65 was included in Chapter 2.	• 11% of men & 16% of women aged 45-64 were non-drinkers, increasing to 15% of men & 27% of women aged ≥65 years • 65% of men & 75% of women aged 45-64, & 73% of men & 86% of women ≥65 years drank at a low to mid level • Higher level drinking decreased from 35% of men and 25% of women aged 45-64, to 27% of men & 14% of women aged ≥65 years • Binge drinking decreased with age from 24% of men and 15% of women aged 45-64 years, to 8% of men and 2% of women aged ≥65 years
Hajat et al. (2004)	A cluster randomised trial of patients aged ≥75 years from 53 general practice lists. Data on alcohol consumption was collected at baseline from 1995-99. 14,962 adults completed the alcohol consumption questions, a response rate of 97%.	• Lifetime abstention increased from 6.2% of men & 18.5% of women aged 75-79, to 14.1% of men & 31.1% of women aged ≥90 years • 6.1% of the sample was former drinkers, with comparable rates between men & women • 3.4% of drinkers reported a higher level of consumption, with men approximately twice as likely to be higher level drinkers than women • Never and ex-drinkers were less likely to live with a spouse, whilst drinkers were more likely to have contact with other people • Drinkers were more likely to be home-owners and less deprived individuals were more likely to drink and drink in moderation • Higher level drinkers tended to have no financial problems

Table 1: Alcohol consumption in the UK and other countries, with demographic variations

Author & Publication Year	Methods	Key Findings
	Studies from outside the UK	
Australian Bureau of Statistics (2009)	National Health Survey – structured interviews with adults living in private households in Australia. In 2007-08, 20,788 adults were interviewed, a response rate of 91%. Data on adults aged ≥45 was included in Chapter 2.	• Prevalence of lifetime abstention increases with age from 3.9% of men and 12.0% of women aged 45-54, to 12.1% of men and 23.5% of women aged ≥75 years • Among drinkers, higher level drinking is fairly stable with increasing age at around 18-24% of men and 22-25% of women • No higher level drinking is reported among adults aged ≥75
Balsa et al. (2008)	National Epidemiologic Survey on Alcohol & Related Conditions – personal interviews in a nationally representative US survey. Data was collected in 2001-02 from 6,861 Medicare beneficiaries aged ≥65.	• 14.2% of men & 35.7% of women reported lifetime abstention whilst 31.2% of men & 27.5% of women were former drinkers • 6% of women and 14% of men reported binge drinking in the past month • 1.2% of women & 4.8% of men were classified as having alcohol dependence or abuse • Compared to non-drinkers, drinkers were more likely to be white, married, have a higher income and be educated to degree level
Blazer & Wu (2009)	National Survey on Drug Use & Health – personal interviews with a sample of the US non-institutionalised population. Data collected in both 2005 and 2006 was used to increase the sample size, including 10,953 adults aged ≥50. The response rate was 76% in 2005 and 74% in 2006.	• 30.8% of men & 37.7% of women aged 50-64, rising to 39.2% of men & 54.8% of women aged ≥65 years reported abstention • Among drinkers, 39.6% of men & 65.2% of women aged 50-64, & 54.8% of men & 74.8% of women aged ≥65 drank at a low or mid-level • 27.5% of men and 20.9% of women aged 50-64 reported higher level drinking compared to 21.4% of men & 17.9% of women aged ≥65 • Binge drinking decreased with increasing age from 32.9% of men & 13.9% of women aged 50-64, to 23.8% of men and 7.3% of women aged ≥65 years • Married people were less likely to be higher-level drinkers than their non-married counterparts • Higher education and higher income was protective against binge drinking, but higher education was associated with increased probability of drinking and drinking more
Breslow and Smothers (2004)	National Health Interview Survey – a cross-sectional, representative, personal interview survey of the non-institutionalised US population. Data was pooled for 1997-01, resulting in a sample of 40,556 adults aged ≥60. The response rate averaged 74%.	• 47.2% of men & 62.8% of women abstain • Among drinkers, 80.3% of men & 92.1% of women were low or mid level consumers • 18.7% of drinking men & 6.1% of drinking women were higher level consumers • 4.8% of drinking men & 1.8% of drinking women were binge drinkers

Table 1: Alcohol consumption in the UK and other countries, with demographic variations

Author & Publication Year	Methods	Key Findings
Chen & Hardy (2009)	Canadian National Population Health Survey of non-institutionalised people followed up for 10 years from 1994-95. 4,187 people aged ≥50 completed the baseline survey, a response rate of 77%.	• 11.2% of the population reported lifetime abstention and 19% were former drinkers • The majority of drinkers were low or mid level consumers (95.1%) • 4.9% of drinkers were higher level consumers • Married people were more likely to be low or mid level drinkers whilst non-drinkers were more likely to be alone • Individuals who graduated from secondary education were more likely to drink than those who did not finished secondary school
Dent et al. (2000)	Personal interviews with a random sample of Australian non-institutionalised adults aged ≥75. Data was collected from adults in 1992 and 1995, with 630 participants at baseline, a response rate of 76%.	• Abstention rates were reported as 28% of men & 46% of women • Low and mid level drinking characterised the majority of drinkers, although 11.1% of men & 6.4% of women drank at a higher level • 4.9% of drinking men & 1.2% of drinking women reported binge drinking • Higher-level drinking was not related to any socio-demographic variable except never married or widowed men who were more likely to drink at a higher level
Fink et al. (2002)	A convenience sample of 549 drinkers aged ≥65 years recruited from academic and community primary care clinics in the US. The response rate was 51.7%.	• 67% of people reported low level consumption • 23% of people reported mid level consumption • 10% of people reported higher level consumption
Ganry et al. (2001)	A sample of 7,575 women aged ≥75 years, randomly selected from voter registration and health insurance membership rolls in 5 French towns. Alcohol data was collected from 1992-94 as part of a prospective study on risk of hip fractures.	• 59.7% reported abstention from alcohol • Among drinkers, 60% reported low and 34.2% reported mid level consumption • 5.7% of women were higher level drinkers • Higher-level drinkers were more likely to be of higher education and/or higher income • The proportion of women who were widowed decreased with increasing level of drinking
Greene et al. (2003)	Structured interviews with a sample of 518 non-institutionalised Irish adults aged ≥65 years identified from general practice registers. The response rate was 49.8%.	• Abstention was reported by 21.2% of men & 44.4% of women • The majority of drinkers reported low or mid level consumption, but 20.8% of men & 3.8% of women were higher level drinkers
Halme et al. (2010)	Health 2000 Study – baseline data from a longitudinal study of Finnish adults aged ≥30. Alcohol data was collected in 2000 using a self-administered questionnaire returned by 1,569 adults aged ≥65 years, a response rate of 72.7%.	• 31.1% of men aged ≥65 & 59.4% of women aged ≥65 reported abstention • Almost all women ≥65 were low or mid-level drinkers, 0.5% reported higher level drinking • 16.4% of men aged ≥65 were higher-level drinkers • Living alone and a higher level of education were both risk factors for higher level drinking compared to moderate drinking or abstinence

Table 1: Alcohol consumption in the UK and other countries, with demographic variations

Author & Publication Year	Methods	Key Findings
Hirayama et al. (2009)	A convenience sample of 577 Japanese adults aged 55-75 years attending community centres or health checks at hospitals in 2006. Data was collected using a structured questionnaire. The response rate was 75.3%.	• Low and mid level consumption characterised the majority of alcohol consumption behaviour, although 25.5% of men and 2.5% of women were higher level drinkers
Ilomaki et al. (2009)	Finnish Kuopio Ischaemic Heart Disease Risk Factor Study – a random sample of men aged 42, 48, 54 and 60 at baseline (1986-89) followed up at 4 and 11 years. Data was collected from 1,516 men, a response rate of 72%.	• Abstention increased with aged from 9.3% of men aged 53-55, to 17.8% of men aged 71-73 • Higher level drinking and binge drinking decreased with increasing age with the biggest decline in between the ages of 53-55 and 58-60 • Aged 53-55 only 2/5 of men were low or mid level drinkers, but by the age of 64-66 this had increased to 3/4 of men
Lang et al. (2007)	The US Health & Retirement Study – a probability sample of households & a stratified sample of Medicare enrolees. Data was collected for 13,333 adults aged ≥65 years between 1998 and 2002. The response rate was 80.4%.	• Levels of abstention were very high at 63.2% of men & 81.0% of women • Among drinkers, 14.3% of men & 3.8% of women were higher level drinkers with the rest low or mid level consumers
Merrick et al. (2008)	Medicare Current Beneficiary Survey, Access to Care File – a representative survey of the US Medicare population. Personal interviewing was used to collect data on 12,413 adults aged ≥65 years. Data was collected in 2003.	• The majority of the sample were non-drinkers, and abstinence increased with age from 55.0% of men & 73.0% of women aged ≥65, to 75.0% of people ≥81 years • Most drinkers were low or mid level consumers, but 35.6% of men & 14.8% of women were higher level drinkers • Higher level drinking was more prevalent with increasing income and level of education, but binge drinking was not significantly different across income or education groups • Widowed individuals were less likely to drinking within guidelines and even less likely that married or divorced individuals to be higher level or binge drinkers • Whites were significantly less likely to be non-drinkers
Moos et al. (2009)	A sample of US current or past drinkers aged 55-65 years at baseline in 1986-88, who had outpatient contact in previous 3 years. Participants were followed up at 1, 4, 10 & 20 years. 719 adults aged 75-85 years remained in the study after 20 years, 38% of the initial sample.	• 19.7% of men & 21.3% of women were former drinkers • 72.9% of women were low or mid level drinkers, with 27.1% classed as higher level consumers • Higher level drinking was more prevalent in men, with 55.4% classed as higher level drinkers and only 44.6% as low or mid level drinkers

Table 1: Alcohol consumption in the UK and other countries, with demographic variations

Author & Publication Year	Methods	Key Findings
New Zealand Ministry of Health (2008)	New Zealand Health Survey – a stratified probability sample of the New Zealand population. Data was collected from 12,488 adults in 2006-07 using personal interviews, a response rate of 68%. Data on 6,168 adults aged ≥45 was included in Chapter 2.	• Higher level drinking was much higher in men than women, and decreased with increasing age in men and women • 17.8% of men aged 45-54 were higher level drinkers compared to 3.2% of men aged ≥75 • 4.8% of women aged 45-54 were higher level drinkers compared to 0.3% of women aged ≥75
Swedish National Institute of Public Health (2010)	National Survey of Public Health – a random sample of non-institutionalised adults in Sweden. Data was collected in 2009 for 10,307 adults, a response rate of 59%. Chapter 2 includes data on 6,480 adults aged ≥45 years.	• Abstention increased with age from 8% of men & 14% of women aged 45-64, to 18% of men & 28% of women aged 65-84 years • Most drinkers were low or mid level consumers, but 15.2% of men & 7.0% of women aged 45-64, and 6.1% of men & 2.8% of women aged 65-84 years were higher level drinkers
Weyerer et al. (2009)	A non-institutionalised sample of adults aged ≥75 was randomly selected from general practices in urban Germany. Alcohol consumption data was collected as part of clinical structured interviews. Data was collected in 2003-04 from 3,224 adults, a response rate of 48.7%.	• 26.6% of men & 62.4% of women abstained • Most drinkers reported low or mid level consumption but 16.5% of men and 9.6% of women were higher level drinkers • Among all drinkers, 1.6% of men & 1.3% of women reported binge drinking • Higher level drinking was particularly high among people with a higher education and those not living alone

Low level drinkers – up to half weekly or daily alcohol intake limits (approximately 16g/day for men & 12g/day for women)

+ Mid level drinkers – between half and maximum recommended weekly or daily intake limits (between approximately 12-16g/day for men-women & 24-32g/day for men-women respectively)

Higher level drinkers – exceeding recommended weekly or daily alcohol intake limits (>168g/week for men and 112g/week for women, >32g/day for men and >24g/day for women)

^ Binge drinkers – exceeding double the recommended daily alcohol limits (>64g/day for men & >48g/day for women)

Table 2: Reasons for drinking

Author & Publication Year	Methods	Key Findings
Aira et al. (2008)	A random sample of adults aged ≥75 was drawn from the census data of Kuopio in Sweden. Data was collected in 2003 and the response rate was 78%. 699 participants who were living in their own homes were included in the analysis.	• 40% reported using alcohol for medicinal purposes • 13% denied drinking alcohol but reported using alcohol for medicinal purposes • Cardiovascular diseases and sleep disorders were the most commonly mentioned conditions for which alcohol was used • Quantity consumed medicinally was usually less than 1 unit (68% medicinal drinkers) • Medicinal use was more common in older age groups • Almost all medicinal drinkers simulateously used prescription and non-prescription drugs
Arcury et al. (1996)	Purposive sample of adults aged 32-86 years (mean=65.5) with arthritis. 219 people recruited from local physicians and social service agencies took part in open-ended interviews in 1986.	• 33 participants (15.0%) reported ever using 'Whiskey' as an arthritis remedy • 11 participants (5.3%) reported still using 'Whiskey' as an arthritis remedy
Immonen et al. (2010)	Postal questionnaire sent to a random sample of adults aged ≥65 years living in Espoo, Finland. Data was collected in 2007. The response rate was 71.6%. 831 drinkers (96% of all drinkers) gave reasons for their drinking.	Reasons for drinking alcohol reported: • 58.7% for 'having fun or celebration' • 54.2% for 'social reasons' • 20.1% for 'medicinal purposes' • 13.8% 'with meals' • Higher-level drinkers reported using alcohol to relieve depression, anxiety or loneliness • Medicinal use was more common among older adults • Men more often used alcohol as a past-time or sauna-drink than women
Khan et al. (2006)	Random sample of adults aged ≥65 on the electoral role in Christchurch, New Zealand. 100 current drinkers gave reasons for their drinking, first in response to an open-ended question and then responding to questions about specific reasons. The survey response rate was 58%.	• Most participants drank for social reasons • Only 4% drank because they thought alcohol was good for their health • Over half of the sample drank alcohol either before food (60%) or with food (53%) • 20% reported drinking to help them sleep, whilst 68% said it helps them to relax • A small number (n<10) reported drinking to cope with personal situations, such as feeling under pressure or lonely
Riley & King (2009)	Structured telephone interviews with a random sample of 1,636 community dwelling adults aged ≥65 in Florida. The response rate was 75.3%.	• 24% of older adults reported drinking alcohol to self-treat face pain, whilst 22% drank alcohol for toothache • Men were significantly more likely to treat with alcohol than women across all types of pain except burning mouth • Continuous or frequent arthritis pain was significantly associated with alcohol use • Being married reduced the risk of using alcohol and a higher level of education increased the risk for all pain symptoms

Table 3: Changes in drinking over time, with demographic variations

Author & Publication Year	Methods	Key Findings
Bacharach et al. (2004)	A sample of adults eligible for retirement in 3 blue-collar industries in the US. Participants were identified by local and national unions – all retirement eligible people in local unions were approached as well as a random sample from the national unions. Data was collected by telephone interview 6 months prior to retirement eligibility and 1 year later. At time 1, 1,279 people participated, a response rate of 46%. 88% of this baseline sample (n=1,122) participated at time 2.	• Baseline drinking was a significant predictor of drinking at follow-up • Mean quantity consumption was stable over time • Frequency of drinking days was slightly higher at follow-up (11.3 vs 10.9, p=0.05), but there was no difference by economic activity status
Brennan et al. (1999) Brennan et al. (2010a) Moos et al. (2005)	A sample of US current or past drinkers aged 55-65 years at baseline in 1986-88, who had outpatient contact in previous 3 years. Alcohol and stressor data was collected in a self-administered questionnaire. 1,884 participants completed the questionnaire at baseline. Of those alive at follow up, 95% participated in year 1, 94.5% in year 4, & 93% in year 10.	• Amount and frequency of alcohol consumption, as well as drinking problems, decreased over 4 years • Women responded to health stressors by reducing consumption • Women had more stable drinking patterns over time than men • Baseline guideline exceeders showed a much clearer pattern of group-level decline over time than within guidelines drinkers • Drinking problems at baseline predicted decline in number of drinks per day over 10 years • Being unmarried and having a lower income contributed to a faster decrease in drinks per day over time • Baseline health did not contribute to change in drinking • Higher levels of socialising with predicted lower drinking at baseline and slower change over time • Abstinence increased over time • Frequency, quantity and problem drinking all decreased over 10 years • Men drank more heavily than women over the follow-up period • A history of heavy drinking predicted heavier drinking
Dent et al. (2000)	A personal interview survey of Australian non-institutionalised adults aged ≥75 (random sample of World War II veterans/War Widows & a door knock survey). Data was collected from adults in 1992 and 1995, with 630 participants at baseline, a response rate of 76%.	• Prevalence of drinking was 64% at baseline and 60% at follow-up • 18% of drinkers at baseline stopped by follow-up and 19% of abstainers at baseline drank at follow-up • 23% of women & 13% of men stopped drinking • There was no significant change in average daily consumption among those who drank at both waves

Table 3: Changes in drinking over time, with demographic variations

Author & Publication Year	Methods	Key Findings
Eigenbrodt et al. (2001)	Atherosclerosis Risk in Communities study of US adults aged 45 to 64 years at baseline. Baseline data was collected using a personal interview and follow-up data in clinical examinations at years 6 (1987-9) and 12 (1993-5). The longitudinal analysis includes 12,565 participants who responded to the alcohol questions at baseline and in 1993-5, a loss to follow-up of 20%.	• Abstinence increased over time – 17% of drinkers aged 45-49 at baseline were abstinent by follow-up, rising to 21.5% of those aged 60-64. • 15.9% of those aged 45-49 at baseline started drinking during follow-up compared to 8.2% in the oldest group • Men were more likely to start drinking over time than women • Occasional drinkers at baseline were most likely to become abstinent by follow-up. Only 8.3% of those that became abstinent had been higher level drinkers at baseline
Glass et al. (1995)	Yale Health and Aging Project – a probability sample of non-institutionalised adults aged ≥65 participated in either a personal or telephone interview. Alcohol data was collected in 1982, '85 and '88. This paper looks at changes between 1982 and '85 for 2,040 adults, a response rate of 72.5%.	• Abstinence rates increased over time • Average consumption decreased by 23% in men & 34% in women • Men were more likely to change their alcohol consumption than women, and to report larger changes (in both directions) • Alcohol consumption at follow-up was related to baseline consumption
Ilomäki et al. (2009)	Finnish Kuopio Ischaemic Heart Disease Risk Factor Study – a random sample of men aged 42, 48, 54 and 60 at baseline (1986-89) followed up at 4 and 11 years. Data was collected from 1,516 men, a response rate of 72%.	• Among men aged 48 and older at baseline, weekly consumption remained constant over time • The risk of frequent drinking increased significantly in all cohorts (OR 1.7 for ages 48-60) • The odds of binge drinking decreased among the oldest two cohorts (respective ORs 0.65 & 0.56)
Molander et al. (2010)	Wisconsin Longitudinal Study – a sample of people who graduated from Wisconsin high schools in 1957. Data was collected by telephone and postal interview in 1993 and 2004 when participants were around 53 and 64 years old. The response rate among living respondents found in 1993 was 94% (n=8,493) and a random subsample of 6,489 was taken for alcohol behaviours. At follow-up in 2004, 81% of this baseline sample (n=5,283) completed data collection.	• 15% of drinkers at baseline were nondrinkers at follow-up • 1/3 of nondrinkers at baseline were drinkers at follow-up • Number of drinking days per month increased over time (from 4.57-5.51 for women & 7.98-9.13 for men) • Average drinks per day decreased over time (from 1.8-1.55 for women & 2.31-2.11 for men) • Higher education, income, and better health at baseline predicted increased drinking over time • Baseline heavy drinking predicted drinking at follow-up

Table 3: Changes in drinking over time, with demographic variations

Author & Publication Year	Methods	Key Findings
Moore et al. (2005)	National Health and Nutrition Examination Survey – a probability sample of over 20,000 non-institutionalised US citizens of all ages. Baseline data was collected in 1971-75 and alcohol consumption data was collected at 4 follow-up periods for adults aged 25-74 at baseline. Data on 14,105 adults who had completed alcohol consumption data at at least one wave of data collection was included for analysis.	• 43% of the sample had stable alcohol consumption over time and 31% were consistent abstainers • 18% of participants stopped drinking during follow-up • Men's alcohol consumption declined 19% per decade of ageing compared to 13% for women • Unmarried people and smokers reported a faster age related decline in consumption • Individuals with a higher level of education reduced their drinking more slowly over time • Income did not affect age related changes in consumption
Perreira & Sloan (2001) Platt et al. (2010)	Health and Retirement Study – a longitudinal study on ageing in the US with data collected every 2 years. Baseline data was collected in a personal interview and all follow-up data by telephone interview. The response rate at each wave of data collection was approximately 80%. Adults aged 51-61 at baseline were included in these papers, followed up at 6 (n=7,731) & 14 (n=6,787) years (at 14 years all adults completing ≥5 of 8 waves were included).	• Over 6 years, 68% of the sample reported stable drinking, 23% decreased and 9% increased • People with a history of problem drinking were equally likely to increase & decrease consumption (Ors 1.5) • Most of the decline in alcohol consumption occurred when most participants were in their 50s • The proportion of abstainers increased from 35.2% to 66.3% over the 15 year follow-up. Older adults & women were more likely to abstain • Baseline history of problem drinking was predictive of being an increasing drinker relative to a stable abstainer • History of problem drinking predicted an increased likelihood of abstaining compared to being a decreasing drinker • Highly educated people were less likely to be abstainers and had the highest relative risk ratio for being increasing drinkers
Shaw et al. (2010)	Americans' Changing Lives Survey – a nationwide panel survey of adults aged ≥24 years. 3,617 personal interviews were conducted at baseline in 1986 and follow-up interviews in 1989, 1994 and 2001-2. The response rate at baseline was 68%, with follow-up response rates between 83% and 76% of survivors.	• The odds of abstenence compared to moderate drinking increased by 37% for every 5.4 years of age gained • The odds of heavy compared to moderate drinking decrease by 18% for every 5.4 years of age gained • During the study period, older adults were more likely to become abstinent than younger adults

Table 4: Changes in health and drinking over time

Author & Publication Year	Methods	Key Findings
Aira et al. (2005)	A random sample of adults aged ≥75 was drawn from the census data of Kuopio in Sweden. Data was collected in 2003 and the response rate was 78%. 699 participants who were living in their own homes were included in the analysis.	• 40% used alcohol medicinally • 13% denied drinking alcohol but reported using alcohol for medicinal purposes • Alcohol was most commonly use for cardiovascular diseases and sleep disorders • 68% of medicinal drinkers usually consumed less than 1 unit • Medicinal use was more common in older age groups • Almost all medicinal drinkers simulateously used prescription and non-prescription drugs
Arcury et al. (1996)	Purposive sample of adults aged 32-86 years (mean=65.5) with arthritis. 219 people recruited from local physicians and social service agencies took part in open-ended interviews in 1986.	• 33 participants (15.0%) reported ever using 'Whiskey' as an arthritis remedy • 11 participants (5.3%) reported still using 'Whiskey' as an arthritis remedy
Carter et al. (2010)	A prospective cohort of patients with acute MI recruited from 19 hospitals across the US. 325 moderate drinkers (frequency 2-4 times/month, quantity 1-4 drinks/day) were included in this analysis. Data was collected in a personal interview at baseline and telephone interviews at 1, 6 and 12 months.	• 16% of baseline drinkers quit during follow-up • Patients who quit drinking trended towards more rehospitalisations, more angina, worse disease specific quality of life & higher 3-year mortality
Condon & McCarthy (2006)	A qualitative study of patients experiences of making lifestyle changes after MI. Ten people were interviewed in-depth, 6 weeks after discharge.	• Experiences of change revolved around taking responsibility for change, getting professional support, responding to lifestyle warning signs and looking forwards to the future • Trying to change too much at once and lack of professional help in the community were barriers to successful lifestyle change
Demark-Wahnefried et al. (2005)	A review of the literature around promoting health behaviour change after cancer diagnosis.	• Alcohol consumption varies widely after cancer diagnosis. • 47-59% of head and neck cancer patients are abstinent post-diagnosis • 8-16% of breast and lung cancer survivors are abstinent post-diagnosis • Abstinence rates vary depending upon the association between drinking and the site of the cancer
Europe & Tynilenne (2004)	A qualitative study of men with chronic heart failure recruited from a hospital setting in Sweden. Twenty men aged 43 to 73 years participated in interviews with open-ended questions, to gain insight into living with moderate chronic heart failure.	• Men had plans to or had already changed their lifestyle, including diet, smoking, alcohol, exercise and stress • Decreased tolerance of alcohol was mentioned as a physical symptom of chronic heart failure

Table 4: Changes in health and drinking over time

Author & Publication Year	Methods	Key Findings
Glass et al. (1995)	Yale Health and Aging Project – a probability sample of non-institutionalised adults aged ≥65 participated in either a personal or telephone interview. Alcohol data was collected in 1982, '85 and '88. This paper looks at changes between 1982 and '85 for 2,040 adults, a response rate of 72.5%.	• Hospitalisation and nursing home admission significantly influenced alcohol consumption at follow-up in men (decline in consumption) • Nursing home admission (but not hospitalisation) was associated with reduced consumption in women • Heavier basline drinkers were more likely to reduce alcohol consumption in response to health events
Kärner et al. (2005)	In-depth interviews with 113 consecutive patients aged 70 years and under who had had a cardiac event. Interviews took place 6 weeks after the event and at 1 year. All data was collected between 1998 and 2000. The aim of the study was to explore how people in the rehabilitation phase of Coronary Heart disease experience facilitators and barriers to lifestyle change.	• Lifestyles behaviours of stress, drugs, physical exercise, diet and smoking were discussed • There were four main factors that affected interviewees behaviour change: somatic incentives, social/practical incentives, cognitive incentives and affective incentives
Lawrence et al. (2010)	Focus groups with 29 patients and 20 family members of people after stroke in Scotland. The research aimed to explore lifestyle beliefs and behaviour following stroke in this population. Participants were selected purposively through voluntary sector organisations.	• There was a belief that everybody knows drinking too much is unhealthy • The beliefs and attitudes of family members about healthy behaviours influenced their own beliefs • Understanding of lifestyle information around the health benefits of drinking influenced drinking behaviour • Personal experience – e.g. stopping drinking and still have a stroke, challenged the belief that healthy behaviour makes a difference
Maunsell et al. (2002)	Data was taken from 250 patients in a randomised trial assessing affects on quality of life in the year after breast cancer. Between October 1990 and July 1992 all newly diagnosed, eligible women in one hospital in Canada were invited to participate. Data was collected in personal interviews at baseline, 3 and 12 months post initial surgical treatment.	• 19.4% of the women changed their alcohol consumption during follow-up • 100% of these 'changers' made a positive change – i.e. they decreased their alcohol consumption
Miller et al. (2005)	A literature review of all published clinical research on prevalence and effects of alcohol consumption after oral cancer diagnosis.	• Research reports that between 34% and 57% of patients continue to drink after a diagnosis with oral cancer • Continued drinking increases the risk of recurrent cancer • Heavier drinkers are more likely to continue drinking after diagnosis • Alcohol consumption may fluctuate over time in this patient group • Male gender, older age, lower education & less severe diagnosis associated with continued drinking

Table 4: Changes in health and drinking over time

Author & Publication Year	Methods	Key Findings
Molander et al. (2010)	Wisconsin Longitudinal Study – a sample of people who graduated from Wisconsin high schools in 1957. Data was collected by telephone and postal interview in 1993 and 2004 when participants were around 53 and 64 years old. The response rate among living respondents found in 1993 was 94% (n=8,493) and a random subsample of 6,489 was taken for alcohol behaviours. At follow-up in 2004, 81% of this baseline sample (n=5,283) completed data collection.	• Experiencing a major medical diagnosis and hospitalisation both predicted both transition to abstinence and decreased drinking days among drinkers • Heavy drinking at baseline predicted transition to moderate or non-drinking following a major medical diagnosis • Hospitalisation decreased transitioning to heavy drinking
Moore et al. (2005)	National Health and Nutrition Examination Survey – a probability sample of over 20,000 non-institutionalised US citizens of all ages. Baseline data was collected in 1971-75 and alcohol consumption data was collected at 4 follow-up periods for adults aged 25-74 at baseline. Data on 14,105 adults who had completed alcohol consumption data at at least one wave of data collection was included for analysis.	• Starting smoking was associated with a 21% increase in alcohol consumption, and vice versa
Moos et al. (2005)	A sample of US current or past drinkers aged 55-65 years at baseline in 1986-88, who had outpatient contact in previous 3 years. Alcohol and stressor data was collected in a self-administered questionnaire. 1,884 participants completed the questionnaire at baseline. Of those alive at follow up, 95% participated in year 1, 94.5% in year 4, & 93% in year 10.	• Individuals who experienced more acute health events in year 3 drank less heavily at 4 years, and those who experienced a health event in year 9 drank less heavily at 10 years • Women with more health burden were more likely to be abstinent than men at 4 years
Neutel & Campbell (2008)	Canadian National Population Health Survey of non-institutionalised people followed up for 8 years from 1994-95. During the follow-up period 1,281 people reported hypertension in one cycle, but not the previous cycle – considered as new hypertensive patients.	• Excessive drinking was measured at >9 drinks/week for women and >14 drinks/week for men • There was no significant change in excessive alcohol use from before to after a diagnosis of hypertension • Excessive alcohol consumption did not change for patients using anti-hypertensive medication
Perreira & Sloan (2001) Platt et al. (2010)	Health and Retirement Study – a longitudinal study on ageing in the US with data collected every 2 years. Baseline data was collected in a personal interview and all follow-up data by telephone interview. The response rate at each wave of data collection was approximately 80%. Adults aged 51-61 at baseline were included in these papers, followed up at 6 (n=7,731) & 14 (n=6,787) years (at 14 years all adults completing ≥5 of 8 waves were included).	• Being hospitalised (OR 1.2) or diagnosed with a new long-term condition (OR 1.2) were associated with decreased drinking over time • Alcohol consumption decreased around the time of hospitalisation and subsequently rebounded • Hospitalisation did not predict drinking trajectory over 15 years • Women were more likely to abstain • Diagnosis with diabetes mellitus decreased the probability of being an increasing drinker by 65%

Table 4: Changes in health and drinking over time

Author & Publication Year	Methods	Key Findings
Riley and King (2009)	A longitudinal study of community-dwelling adults in Florida that reported orofacial pain and arthritis. Participants were approached by telephone and invited to participate in aq telephone survey. Data was collected for 10,385 people, a response rate of 53%.	• Men and younger adults were more likely to use alcohol to manage pain • 20% of adults sometimes used alcohol to manage pain, 4% frequently and 3% always • Increased probability of having reported alcohol, use to manage pain was found for people with greater pain frequency or duration and higher levels of depression
Sproule et al. (1999)	A cross-sectional survey exploring the use of non-prescription product for sleep among ambulatory older adults in Canada. 174 adults aged ≥60 years completed a self-administered questionnaire during hospital or pharmacy visits in June/July 1997.	• 48% of respondents had used sleep treatments in the past year • 27% had used a non-prescription product to help them sleep • Of subjects who used non-prescription products, 13% used alcohol
Walton et al. (2000)	78 older problem drinkers were recruited from non-treatment settings. Follow-up three years later made contact with 48 of the baseline sample and interviewed them by telephone. Participants were aged 55 years and older.	• 67.7% of problem drinkers who had cut down their drinking over time endorsed health problems as a reason for change • Additionally, 40.6% cut down because their doctor recommended it & 40% because of a concerned spouse

Table 5: Changes in marital status and drinking

Author & Publication Year	Methods	Key Findings
Brennan et al. (1999)	A sample of US current or past drinkers aged 55-65 years at baseline in 1986-88, who had outpatient contact in previous 3 years. Alcohol and stressor data was collected in a self-administered questionnaire. 1,884 participants completed the questionnaire at baseline. Of those alive at follow up, 95% participated in year 1, 94.5% in year 4, & 93% in year 10.	• More spouse stressors predicted a greater number of alcohol-related problems
Byrne et al. (1999)	A cohort study of recently widowed men aged ≥65 years living in Australia identified from the death records of their wives. Self-completed data was collected at 6 weeks, 6 months and 13 months after death from 57 widowed men. A cohort of 57 matched married men was identified from the electoral role for comparison.	• Similar proportions of married and widowed men drank alcohol, but widowed men drank more frequently and more per drinking occasion • Among widowers alcohol consumption was not signifiantly related to grief or anxiety • Loss of spousal care may explain higher levels of alcohol consumption among widowed men
Corden et al. (2008)	A mixed methods study combining data from the British Household Panel Survey and qualitative interviews with 44 surviving partners. Two thirds of the interviewees were women, and 1/3 were over the state pension age at the time of bereavement. Interviews were completed in 2007.	• Most people in the BHPS saw household income fall following bereavement, but some people were financially better off, e.g. if partners' death reduced financial needs • For surviving partners who had not been involved in financial management, death of their partner meant they had to quickly learn how to manage bills etc, and sometimes on a reduced budget due to changes in income • Lack of experience in managing financial was a source of worry
Glass et al. (1995)	Yale Health and Aging Project – a probability sample of non-institutionalised adults aged ≥65 participated in either a personal or telephone interview. Alcohol data was collected in 1982, '85 and '88. This paper looks at changes between 1982 and '85 for 2,040 adults, a response rate of 72.5%.	• Death or injury to a spouse was linked to increased drinking among heavier male drinkers • Womens drinking was not affected by stressful spousal events
Grimby & Johansson (2009)	A self-complete questionnaire sent to members of the Swedish organisation of widows and widowers. The study group was 1,053 widows (413 aged ≥65 years). Participants were asked to report changes in their drinking habits after their loss (for 96% of the sample this loss was 4 years or more before participation). The response rate to the postal questionnaire was low at around 20% (with no available information on non-responders).	• 35% of widows aged under 65 & 30% of those aged ≥65 reported drinking alcohol for relief of grief following bereavement • 11% of widows aged under 65 and 10% of those aged ≥65 reported a general increase in their alcohol consumption following their loss • Drinking for grief was correlated with increased use of sedative pills following bereavement

Table 5: Changes in marital status and drinking

Author & Publication Year	Methods	Key Findings
Karlamangla et al. (2006)	National Health and Nutrition Examination Survey – a probability sample of over 20,000 non-institutionalised US citizens of all ages. Baseline data was collected in 1971-75 and alcohol consumption data was collected at 4 follow-up periods for adults aged 25-74 at baseline. Data on 14,127 adults who had completed alcohol consumption data at at least one wave of data collection was included for analysis. Relative risks were calculated at the reference age of 56.5 years.	• 78.7% were married at baseline - 4.9% got married during follow-up and 22.7% become unmarried • Becoming unmarried (mostly due to being widowed) was associated with a higher probability of heavy drinking after the change (relative risk 1.6) • Getting married was associated with a lower probability of heavy drinking compared to no change in status (relative risk 0.55)
Kemp et al. (2004)	Narrative review of the literature on income poverty and routed into and out of poverty, with a chapter dedicated to poverty in older adults. To identify relevant literature the authors searched relevant databases, websites and bibliographies, as well as drawing on their existing knowledge.	• Bereavement is an important predictor of income change in older age, particularly for women who may not be entitled to their own pension • Household change (predominantly bereavement) has a strong relationship with predictors of poverty
Molander et al. (2010)	Wisconsin Longitudinal Study – a sample of people who graduated from Wisconsin high schools in 1957. Data was collected by telephone and postal interview in 1993 and 2004 when participants were around 53 and 64 years old. The response rate among living respondents found in 1993 was 94% (n=8,493) and a random subsample of 6,489 was taken for alcohol behaviours. At follow-up in 2004, 81% of this baseline sample (n=5,283) completed data collection.	• Changes in marital status had no significant impact on becoming abstinent or taking up drinking • Changes in marital status had no significant impact on change in drinking frequency or drinks per drinking day
Perreira & Sloan (2001) Platt et al. (2010)	Health and Retirement Study – a longitudinal study on ageing in the US with data collected every 2 years. Baseline data was collected in a personal interview and all follow-up data by telephone interview. The response rate at each wave of data collection was approximately 80%. Adults aged 51-61 at baseline were included in these papers, followed up at 6 (n=7,731) & 14 (n=6,787) years (at 14 years all adults completing ≥5 of 8 waves were included).	• Getting divorced was associated with increased drinking over time (OR 1.8) • Men who became widowers were more likely to increase their consumption (OR 2.3) • Problem drinking men who married were more likely to decrease their drinking (OR 0.2) • Changes in consumption occurred a period of time after the event • Getting divorced was linked to a higher likelihood of being a decreasing or sporadic drinker than abstainer
Ward et al. (2008)	20 in-depth interviews and 3 focus groups with adults aged between 50 and 89 living in private and sheltered housing in the south of England. Data collection focused on circumstances and meanings of drinking, as well as impact on their lives.	• Alcohol was used as a way to cope with bereavement • Drinking was encouraged by family members to help cope with grief • Female consumption often decreased following husbands death due to changes in social activity • Problem drinkers increased consumption following bereavement

Table 6: Changes in family or friends and drinking

Author & Publication Year	Methods	Key Findings
Gee et al. (2007)	Data from 2 cohorts of a national study of health and ageing in Japan – the 1st cohort began in 1987 & the 2nd in 1990. Follow-up was conducted every 3 years. 2,566 participants aged 60 and over took part at baseline. 1/3 died during follow-up, and a futher 1/3 dropped-out, leaving 915 respondent by wave 5 in 1999.	• Loss of a loved one predicted membership of the curvilinear drinking trajectory – a shorter term increase followed by a long-term decrease in alcohol consumption
Glass et al. (1995)	Yale Health and Aging Project – a probability sample of non-institutionalised adults aged ≥65 participated in either a personal or telephone interview. Alcohol data was collected in 1982, '85 and '88. This paper looks at changes between 1982 and '85 for 2,040 adults, a response rate of 72.5%.	• Men who were heavier drinkers at baseline were more likely to increase their drinking or have a smaller than expected decrease due to the loss of a friend from illness/a move or illness/injury of a relative • For women, losing a friend to a move or death of a close friend were associated with increased drinking • Women reporting heavier drinking at baseline were more likely to increase drinking after losing a friend or relative (to death or a move)
Jennison (1992)	A national sample of 1,418 non-institutionalised adults aged ≥60 years in the US.	• Those who suffered more significant losses more often drank heavily • Support (e.g. spouse, friends…) has a stress buffering effect, reducing drinking in response to life events • The increased magnitude of losses over time increase vulnerability
Lawrence et al. (2010)	Focus groups with 29 patients and 20 family members of people after stroke in Scotland. The research aimed to explore lifestyle beliefs and behaviour following stroke in this population. Participants were selected purposively through voluntary sector organisations.	• Healthy lifestyle choices are 'common sense', but healthy lifestyle messages from different sources were often confusing, affecting their credibility • Underlying beliefs about alcohol consumption had a strong influences on intention to change behaviours • Family members and friends can exert a strong influence of lifestyle beliefs and behaviours after stroke • Some carers used alcohol to cope with/relieve some of the stresses of caring responsibilities
Platt et al. (2010)	Health and Retirement Study – a biennial longitudinal study on ageing in the US. Baseline data was collected in a personal interview & all follow-up data by phone. The response rate at each wave of data collection was approximately 80%. Adults aged 51-61 at baseline were followed up for 14 years (n=6,787), with all adults completing ≥5 of 8 waves included.	• Having close friends nearby was associated with decreasing drinking & having relatives nearby was linked to a high probability of abstaining • Socialising more frequently with neighbours was associated with increasing drinking

Table 6: Changes in family or friends and drinking

Author & Publication Year	Author & Publication Year	Author & Publication Year
Saad et al. (1995)	Individuals with mild or moderate dementia and their informal carers (family or friends who undertook tasks at least once a week) were recruited from old-age psychiatry services in the West Midlands in England. 120 patients agreed to participate, a response rate of 90.5%. 109 of the participants had a main carer who was also interviewed.	• The most common coping strategies were watching TV (41.9%), reading (38.1%), spending time alone (31.4%), exercising (31.8%) and eating (30.1%) • 10.3% of carers used alcohol as a coping strategy • Alcohol as a coping stretagy was much less common among carers who lived with the dementia sufferer – 3.2% versus 10.3% of all carers • The authors suggest the prevalence of alcohol use to manage stress may be much higher than 10%, but that people were reluctant to disclose alcohol use as a coping strategy
Shaw et al. (2010)	Americans' Changing Lives Survey – a nationwide panel survey of adults aged ≥24 years. 3,617 personal interviews were conducted at baseline in 1986 and follow-up interviews in 1989, 1994 and 2001-2. The response rate at baseline was 68%, with follow-up response rates between 83% and 76% of survivors.	• Odds of heavy drinking was linked to social isolation and being unmarried • Unmarried & socially isolated older adults had a greater odds of becoming abstainers over time than younger adults
Simon et al. (2009)	A cohort of 105 informal, live-in carers of stroke patients in the South of England took part in personal interviews before discharge and then at 6 weeks and 15 months after discharge. The carer cohort was matched to a cohort of 50 non-carers over the same period. Data was collected in 2002-03. During the recruitment period only 1 carer decline to participate, and a further 41 were not interviewed because the patient moved in to residential care, died or was discharged before interview. Over time the sample size decreased, largely due to death of patients and movement into residential care (29.5% lost at wave 2 and 28.4% at wave 3)	• Psychological distress increased over time. At wave 1, 37 % of carers had significant distress compared to 54% at 6 weeks and 38% of 15 months • Carers were 2.5 times more likely to report significant psychological distress than matched controls • Psychological distress shows earlier in women than men • Stress is relatively stable over time – 90% of those stressed at 6 weeks were still stressed at 15 months & 92% of those not significantly stressed at 6 weeks were not stressed at 15 months • Activity restriction was common at 6 weeks & 15 months – at 6 weeks 88% of carers reported their usual activites had changed because of stroke care • Over time carers took back up some of the activities stopped at 6 weeks
Veenstra et al. (2007)	Dutch Lifestyle and Health Study – a cohort study on cardiovascular disease among adults identified from GP registers, aged 45-70 years at baseline in 1996. Data was collected in 4 consecutive years using a self-complete postal questionnaire. The response rate was 51.7%. This paper uses a random sample of 3,253 men & women from the baseline sample of 16,210.	• Mean alcohol consumption was 11.9 glasses a week for men and 5.2 for women at baseline, with little change over the follow-up period • Emotion coping affects the relationship between life-events and drinking – those with a high emotion coping score increase drinking after a negative life-event, whilst those with low emotion coping decrease drinking

Table 7: Changes in economic activity status and drinking

Author & Publication Year	Methods	Key Findings
Bacharach et al. (2004)	A sample of adults eligible for retirement in three blue-collar industries in the US. Participants were identified by local and national unions – all retirement eligible people in local unions were approached as well as a random sample from the national unions. Data was collected by telephone interview 6 months prior to retirement eligibility and 1 year later. At time 1, 1,279 people participated, a response rate of 46%. 88% of this baseline sample (n=1,122) participated at time 2.	• Frequency of drinking days was slightly higher at follow-up (11.3 vs 10.9, p=0.05), but the change in frequency did not vary by change in economic activity status • Compared to people remaining fully employed, the fully retired were twice as likely to engage in periodic heavy drinking at follow-up, controlling for periodic heavy drinking at baseline
Ekerdt et al. (1989)	A US study comparing 100 community-dwelling men who retired over a two year period with 316 men who remained employed. Survey data was collected as part of a larger panel study on ageing – the Normative Ageing Study.	• Retirement did not significantly predict changes in average consumption • Neither the proportion moving from drinker to abstainer status, nor the number of binge drinkers, varied by economic activity status • Retirees were more likely to report onset of periodic heavier drinking and drinking problems • Changes around retirement (such as social marginalisation) may impact on alcohol consumption, particularly if alcohol is used to cope with changes
Gallo et al. (2001)	Analysis of data on involuntary job loss from the US Health and Retirement Survey in 1992 and 1994. Participants at baseline were aged 51-61 years. 207 workers who experienced involuntary job loss were compared to 2,866 continuously employed people – all participants had been working for the same employer for 3 years before baseline, screening out seasonal workers & the marginally employed.	• Involuntary job loss was not associated with number of daily drinks at follow-up, controlling for socioeconomic and illness related covariates • Among non-drinkers at baseline, those who suffered involuntary job loss were twice as likely to start drinking (OR 2.01), albeit it at a low level for the majority (<1 drink/day)
Molander et al. (2010)	Wisconsin Longitudinal Study – a sample of people who graduated from Wisconsin high schools in 1957. Data was collected by telephone and postal interview in 1993 and 2004 when participants were around 53 and 64 years old. The response rate among living respondents found in 1993 was 94% (n=8,493) and a random subsample of 6,489 was taken for alcohol behaviours. At follow-up in 2004, 81% of this baseline sample (n=5,283) completed data collection.	• Entering employment predicted stable drinking categorisation over time (e.g. reporting alcohol consumption at both waves) • Transitioning to unemployment predicted an increase in total drinks per month (composite of drinking days and average drinks) relative to stable employment

Table 7: Changes in economic activity status and drinking

Author & Publication Year	Methods	Key Findings
Neve et al. (2000)	Analysis of data from a Dutch longitudinal study of ageing. Adults aged 16 to 64 at baseline in 1980 were followed up at 9 years. The response rate was 76% at baseline and 67% at follow-up, a total of 1,327 participants.	• Men who retired had a decrease in drinking problems compared to people of the same age who remained in employment • Men who retired decreased their alcohol consumption over time, although this result did not reach significance
Perreira & Sloan (2001) Platt et al. (2010)	Health and Retirement Study – a longitudinal study on ageing in the US with data collected every 2 years. Baseline data was collected in a personal interview and all follow-up data by telephone interview. The response rate at each wave of data collection was approximately 80%. Adults aged 51-61 at baseline were included in these papers, followed up at 6 (n=7,731) & 14 (n=6,787) years (at 14 years all adults completing ≥5 of 8 waves were included).	• Retiring was associated with increased drinking over time (OR 1.6). This increase was sustained over the 6 year time period • Retirement did not predict membership of any particular drinking trajectory
Ward et al. (2008)	20 in-depth interviews and 3 focus groups with adults aged between 50 and 89 living in private and sheltered housing in the south of England. Data collection focused on circumstances and meanings of drinking, as well as impact on their lives.	• Increased drinking at home or in pubs • The pub as a place to go and socialise with other pub goers • Going to the pub as a regular social activity throughout life that should continue upon retirement
Zins et al. (2011)	A sample of 12,384 employees working at a French national gas and energy company. The sample was aged 35-50 years at baseline in 1989. The study measured alcohol consumption in the 5 years before and after retirement.	• Prevalence of heavy drinking increased around retirement • Over the 4 years post-retirement, men and non-managerial women decreased their consumption • Increased consumption may be due to increased leisure time and not having to work the following day.

Table 8: Changes in financial circumstances and drinking

Author & Publication Year	Methods	Key Findings
Brennan et al. (1999)	A sample of US current or past drinkers aged 55-65 years at baseline in 1986-88, who had outpatient contact in previous 3 years. Alcohol and stressor data was collected in a self-administered questionnaire. 1,884 participants completed the questionnaire at baseline. Of those alive at follow up, 95% participated in year 1 and 94.5% in year 4.	• More financial stressors predicted reduced frequency of consumption among men and women, and additionally reduced quantity per drinking occasion among men
Gabriel & Bowling (2004)	National survey of quality of life of adults aged ≥65 living in private households in Britain. A semi-structured interview was conducted with 999 individuals (a response rate of 77%), and 80 were follow-up with in-depth interviews at 1 and 2 years after baseline. The qualitative data was used within this paper on quality of life.	• Money was linked to an ability to enjoy life and afford enjoyable things: an instrument that enabled them to do things they liked doing • Some people living on a state pension felt they could not afford to enjoy life – have a holiday, go to the cinema, ride on a train • Money helped people to participate in society
Platt et al. (2010)	Health and Retirement Study – a longitudinal study on ageing in the US with data collected every 2 years. Baseline data was collected in a personal interview and all follow-up data by telephone. The response rate at each wave of data collection was approximately 80%. Adults aged 51-61 at baseline were followed up for 14 years (n=6,787) - with all adults completing ≥5 of 8 waves included.	• Individuals with longer financial planning horizons were relatively more likely to be steady drinkers
Ward et al. (2008)	20 in-depth interviews and 3 focus groups with adults aged between 50 and 89 living in private and sheltered housing in the south of England. Data collection focused on circumstances and meanings of drinking, as well as impact on their lives.	• Being on a pension was limiting as you do not have a lot of money • Alcohol has become more affordable over time so it is more accessible now than in the past, facilitating daily drinking as part of a meal • More money to spend on alcohol now because no longer have to pay mortgage or look after children

Appendix II: Health variables

Appendix II documents the raw variables that were used to generate the derived disease diagnosis variables used to analyse alcohol consumption change in older adults experiencing health deterioration compared to those reporting no change in health.

Table 1: Cardiovascular disease raw variable names

	Wave 2	Wave 3	Wave 4
High blood pressure	hedias1, hedim01, hedim02, hedim03, hedim04, hedim05, hedim06, hedim07, hedim08	hedimbp, hedasbp	hedimbp, hedasbp
High cholesterol	hedim01, hedim02, hedim03, hedim04, hedim05, hedim06, hedim07, hedim08	hedimch, hedasch	hedimch, hedasch
Angina	hedias2, hedim01, hedim02, hedim03, hedim04, hedim05, hedim06, hedim07, hedim08	hediman, hedasan	hediman, hedasan
Heart failure	hedias4, hedim01, hedim02, hedim03, hedim04, hedim05, hedim06, hedim07, hedim08	hedimhf, hedashf	hedimhf, hedashf
Heart murmur	hedias5, hedim01, hedim02, hedim03, hedim04, hedim05, hedim06, hedim07, hedim08	hedimhm, hedashm	hedimhm, hedashm
Heart attack	hedim01, hedim02, hedim03, hedim04, hedim05, hedim06, hedim07, hedim08	hedimmi	hedimmi
Abnormal heart rhythm	hedias6, hedim01, hedim02, hedim03, hedim04, hedim05, hedim06, hedim07, hedim08	hedimar, hedasar	hedimar, hedasar
Other heart problems	hedias9, hedim01, hedim02, hedim03, hedim04, hedim05, hedim06, hedim07, hedim08	hedim85, hedim86, hedim96, hedasot	hedim85, hedim86, hedasot, hedizm52, hedizm51
Stroke	hedim01, hedim02, hedim03, hedim04, hedim05, hedim06, hedim07, hedim08	hedimst	hedimst

Table 2: Psychiatric condition raw variable names

	Wave 2	Wave 3	Wave 4
Psychiatric condition	hedids7, hedib01, hedib02, hedib03, hedib04	hedibps, hedbdps	hedibps, hedbdps
Alzheimer's	hedids8, hedib01, hedib02, hedib03, hedib04	hedibad, hedbdad	hedbdad, hedibad
Dementia	hedids9, hedib01, hedib02, hedib03, hedib04	hedibde, hedbsde	hedibde, hedbsde

Table 3: 'Other' chronic condition raw variable names

	Wave 2	Wave 3	Wave 4
Diabetes	hedim01, hedim02, hedim03, hedim04, hedim05, hedim06, hedim07, hedim08	hedimdi	Hedimdi
Lung disease	hedids1, hedib01, hedib02, hedib03, hedib04	hediblu, hedblu	hediblu, hedbslu
Asthma	hedids2, hedib01, hedib02, hedib03, hedib04	hedibas, hedbsas	hedbsas, hedibas
Arthritis	hedids3, hedib01, hedib02, hedib03, hedib04	hedibar, hedbsar	hedbsar, hedibar
Osteoporosis	hedids4, hedib01, hedib02, hedib03, hedib04	hedibos, hedbsos	hedibos, hedbsos
Cancer	hedids5, hedib01, hedib02, hedib03, hedib04	hedibca, hedbsca	hedibca, hedbsca
Parkinson's disease	hedids6, hedib01, hedib02, hedib03, hedib04	hedibpd, hedbspd	hedibpd, hedbspd

Table 4: Activities of daily living, instrumental activities of daily living & mobility variable names

	Wave 2	Wave 3	Wave 4
Difficulty bathing or showering	headb01,	headlba	headlba
Difficulty getting in and out of bed	headb02,	headlbe	headlbe
Difficulty dressing, including putting on shoes and socks	headb03, headb04,	headldr	headldr
Difficulty eating, such as cutting up food	headb05,	headlea	headlea
Difficulty doing work around the house or garden	headb06,	headlho	headlho
Difficulty using map to get around strange place	headb07,	headlma	headlma
Difficulty taking medications	headb08,	headlme	headlme
Difficulty managing money, such as bills and expenses	headb09, headb10	headlmo	headlmo
Difficulty preparing a hot meal		headlpr	headlpr
Difficulty shopping for groceries		headlsh	headlsh
Difficulty making telephone calls		headlph	headlte
Difficulty walking across a room		headlwa	headlwa
Difficulty using the toilet, including getting up or down		headlwc	headlwc
Difficulty getting up from chair after sitting long periods	heada01, heada02,	hemobch	hemobch
Difficulty climbing one flight stairs without resting	heada03,	hemobcl	hemobcl
Difficulty climbing several flights stairs without resting	heada04, heada05,	hemobcs	hemobcs
Difficulty lifting or carrying weights over 10 pounds	heada06,	hemobli	hemobli
Difficulty picking up 5p coin from table	heada07,	hemobpi	hemobpi
Difficulty pulling or pushing large objects	heada08,	hemobpu	hemobpu
Difficulty reaching or extending arms above shoulder level	heada09, heada10,	hemobre	hemobre
Difficulty sitting 2 hours	headb11,	hemobsi	hemobsi
Difficulty stooping, kneeling or crouching	headb12,	hemobst	hemobst
Difficulty walking 100 yards	headb13	hemobwa	hemobwa

Appendix III: Ethics, recruitment and interview documents

Ethical approval – quantitative research

The University Of Sheffield.

Cheryl Oliver
Ethics Committee Administrator

Regent Court
30 Regent Street
Sheffield S1 4DA

Telephone: +44 (0) 114 2220871
Fax: +44 (0) 114 272 4095 (non confidential)
Email: c.a.oliver@sheffield.ac.uk

8 November 2010

Lucy Gell
ScHARR

Dear Lucy

Health and Alcohol Consumption in Older Adults

I am pleased to inform you your supervisor has reviewed your project and classed it as 'low risk' so you can proceed with your research. The research must be conducted within the requirements of the hosting/employing organisation or the organisation where the research is being undertaken.

I have received a hard copy of your student declaration together with your Supervisor's confirmation for research that does not involve human participants and that you will be undertaking research which involves analysis of already existing data ('secondary data').

Yours sincerely

Cheryl Oliver
Ethics Committee Administrator

Cc: Petra Meier

Ethical approval – qualitative research

The University Of Sheffield.

Cheryl Oliver
Ethics Committee Administrator

Regent Court
30 Regent Street
Sheffield S1 4DA
Telephone: +44 (0) 114 2220871
Fax: +44 (0) 114 272 4095 (non confidential)
Email: ca.oliver@sheffield.ac.uk

Our ref: 0472/CAO

25 May 2011

Lucy Gell
ScHARR

Dear Lucy

Health and alcohol consumption in older adults

Thank you for submitting the above research project for approval by the ScHARR Research Ethics Committee. On behalf of the University Chair of Ethics who reviewed your project, I am pleased to inform you that on 25 May 2011 the project was approved on ethics grounds, on the basis that you will adhere to the documents that you submitted for ethics review.

The research must be conducted within the requirements of the hosting/employing organisation or the organisation where the research is being undertaken.

If during the course of the project you need to deviate significantly from the documents you submitted for review, please inform me since written approval will be required. Please also inform me should you decide to terminate the project prematurely.

Yours sincerely

Cheryl Oliver
Ethics Committee Administrator

The University Of Sheffield.

Topic Guide

Health and Alcohol Consumption in Older Adults

Research Aims to Explore:

- Experience of health
- Understanding of what affects health
- Attitudes towards alcohol consumption and alcohol consumption over time
- Motivations to consume alcohol and change alcohol consumption habits
- Potential strategies to reduce consumption in response to changing health

1. Introduction

- Introduce self and explain nature and purpose of research
- Introduce topic guide
- Introduce recorder (for accurate account and so as not to take copious notes)
- Stress confidentiality and anonymity
- Don't have to answer questions if don't want to

2. Background

- Tell me a bit about yourself
- Where live/type of accommodation
- Area in which they live – do they go out much?
- Household composition
- Economic activity status and details (if retired when, etc…)
- Activities/hobbies – frequency and duration.
- What else do you spend your time doing? [Reading/watching television/etc…]

3. Experience of health

- Long-term conditions? Acute problems? What and when? Probe each condition.
- Do they find any condition particularly limiting?
- What medications do you take for your health problems?
- How would you describe your health? [poor/fair/good]
- Do you find it difficult to do activities would like to do?

- Is there anything used to do but no longer feels able?
- Do you feel you have good mobility?
- Can you get out and about to do the things you want?
- If not, do you have people around to help you get out and about?

4. Factors affecting health

- Could you tell me what are they key factors you feel affect your health?
- How did you become aware that [diet/exercise/smoking] affects your health?
- And does this affect your behaviour?
- Probe awareness of healthy lifestyles.
- Have you modified your [diet/exercise/smoking] because of your health?
- What do you think a healthy diet is?
- Do you know any ways in which drinking alcohol can affect health?
- How much alcohol do you think it is safe to drink without damaging health?
- Do you know any benefits of drinking alcohol?
- Can you think of any medical conditions where drinking alcohol could be harmful?
- What do you think a good exercise routine is?
- Talk about their [diet/exercise/smoking] to get an impression of lifestyle.

5. Alcohol consumption

- Do you drink any alcohol nowadays?

IF YES:

- On average how often do you have a drink?
- How much do you drink on a usual occasion?
- Are there times when you might drink more than …?
- How much do you drink on those heavier drinking occasions?
- Where do you drink most often? (Home, pub, restaurant…)
- Why do you like to have a drink?
- What is the purpose of drinking for you (taste; social; pain; escapism; other)?
- How would you define your level of drinking? [e.g. low/moderate/higher/heavy]
- How would you rate your level of drinking compared to those around you?
- How much alcohol would you consider to be too much?
- Do you know anything about the government guidelines for drinking alcohol? [probe]
- Drinking for medicinal purposes?
- Drink and sleeping – any differences on days that drink?
- Drink and tablets – any side effects?

IF NO:

- Did you drink alcohol in the past?
- When did you stop drinking alcohol?
- Why did you stop drinking alcohol?

- Explore past drinking
    - Brief life history – any particular heavy drinking periods?
    - Drinking in run-up to diagnosis

If Changed:

- How did you find changing your drinking?

6. Motivations to change consumption

- Summarise alcohol consumption change/maintenance over time around diagnosis.
- Why do you think your drinking has changed over the past …?
- Probe responses to this question…
- Do you feel your drinking and health are related in any way? If yes, what ways?
- Have you changed your drinking in response to:
    - Your health?
    - Medications you take?
    - Pressure from a doctor/nurse/other?
    - Pressure from family/friends?

Information Flyer

Your participation in this project would be valued. If you would like to take part you can:

1) Contact the researcher, Ms Lucy Gell, on **0114 2663506 (please leave a message if I am not there)** or at **lucy.gell@sheffield.ac.uk**

2) Fill out your details below and post this leaflet back using a free post envelope

Your details:

Name:_____

Telephone number:_____

What time of day is it best to call you?

Morning	☐	Evening	☐
Afternoon	☐	Anytime	☐

You will be asked a few questions to work out if you are eligible to take part in the study. After the interview you will be offered a gift voucher as a thank you for your contribution to the research.

The University Of Sheffield.

Alcohol and Health

Are you between 60 and 80 years old?

Have you been diagnosed with diabetes, heart disease, arthritis or osteoporosis in the past year?

Do you either drink alcohol or have you stopped drinking in the past year?

Would you be willing to talk about your health and alcohol consumption with a researcher?

If you answered yes to these questions you could be eligible to participate in research at the University of Sheffield.

We often hear about the good and bad effects of drinking on our health.

This study uses interviews to explore the views of drinking and drinking patterns of older adults recently diagnosed with a long-term condition.

If you agree to participate you will have a one-off, individual interview with Ms Gell. The interview will be conducted at a time and place convenient to you.

Strict confidentiality will be observed throughout this study.

The University Of Sheffield.

Information for Participants

Research Project: Health and alcohol consumption in older adults

You have been invited to take part in a research project and it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and ask me if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part. Thank you for reading this.

What is the purpose of the research?

This research is looking at views of drinking and drinking patterns among older adults who have been diagnosed with a long-term condition. The study explores if older adults change their drinking or not after being diagnosed with a disease, and why. I will be writing up the study as part of a PhD.

Why have I been chosen?

You were chosen for this research because you have been diagnosed with a long-term condition. You are one of around 20 individuals taking part in this project.

Do I have to take part?

It is up to you to decide whether or not to take part in this research. If you do decide to take part you will be given this information sheet to keep (and be asked to sign a consent form) and you can still withdraw at any time without penalty or giving a reason.

What will happen to me if I take part?

You will have a one-off interview lasting about 45 minutes, talking about your recent health diagnosis and your views on and patterns of drinking.

What are the possible disadvantages and benefits of taking part?

It is not anticipated that you will be disadvantaged by taking part in this research. Whilst there are no immediate benefits for participants, it is hoped that this work will improve understanding of how disease diagnosis affects drinking in older adults.

What if something goes wrong?

If you wish to make a complaint about this research please contact the project supervisor: Professor Petra Meier, ScHARR, Regent Court, 30 Regent Street, Sheffield, S1 4DA.

Will my taking part in this project be kept confidential?

The information that I collect from you during the course of the research will be kept confidential. You will not be able to be identified in any reports or publications.

Will I be recorded, and how will the recorded media be used?

An audio recording of the interview will be made for the purposes of analysis. The recording will not be used for any other reason without your written permission.

Who will have access to the data and where will it be held?

All data will be held in confidence at the University of Sheffield under my control. I will delete all audio material when the project ends. No one outside the research team will have access to the data.

What will happen to the results of the research project?

The findings will be presented nationally and internationally with the aim of informing policy and practice for advice on drinking given to older adults recently diagnosed with a disease. Participants in the study will not be identifiable in any of the reported material.

Who is funding the research?

The Collaborations for Leadership in Applied Health Research and Care for South Yorkshire.

Has the research been approved by an ethics committee?

Yes, by the ethics committee of the School of Health and Related Research at the University of Sheffield.

Who should I contact for further information?

If you have any questions about the study or require any information, please contact me:

☏ Phone: 0114 2220700 (please leave a message if I am not there)

✉ E mail: lucy.gell@sheffield.ac.uk

💻 Post: Ms Lucy Gell, ScHARR, Regent Court, 30 Regent Street, Sheffield, S1 4DA

THANK YOU FOR TAKING THE TIME TO CONSIDER THIS RESEARCH

The University Of Sheffield.

Consent Form

Title of Research Project: Health and alcohol consumption in older adults

Name of Researcher: Ms Lucy Gell

Please initial box

1. I confirm that I have read the information leaflet explaining the above research project and I have had the opportunity to ask questions about the project. ☐

2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason and without there being any negative consequences. In addition, should I not wish to answer any particular question or questions, I am free to decline to do so at any time. ☐

3. I understand that my responses will be kept strictly confidential. I give permission for the researcher's university supervisors to have access to my anonymised responses. I understand that my name will not be linked with the research materials, and I will not be identified or identifiable in the report or reports that result from the research. ☐

4. I understand that an audio recording of the interview will be made for use by the researcher. The recording will be destroyed upon completion of the project. ☐

5. I agree for the anonymised data that is collected from me to be used in future research. ☐

6. I agree to take part in the above research project. ☐

_____	_____	_____
Name of Participant	Date	Signature
_____	_____	_____
Researcher	Date	Signature

To be signed and dated in presence of the participant

Any questions?

Please feel free to contact me:

☎ Phone: 0114 2220700 (please leave a message if I am not there)

E mail: lucy.gell@sheffield.ac.uk

Post: Ms Lucy Gell,
ScHARR,
The University of Sheffield,
Regent Court,
30 Regent Street,
Sheffield, S1 4DA.

Appendix IV: Results tables (Chapters 6 & 7)

This Appendix contains tables that illustrate findings reported in Chapters 6 and 7 that were not included in the main body of the text.

Table 1: Cross-tabulation of Wave 2 and 3 drinking frequency (all cases, n=5,892, row percentages)

		Past 12-month drinking frequency at Wave 3							
Past 12-month drinking frequency at Wave 2		Abstainer	1 or 2 Days a Year	1 Day Every 2 Months	1 or 2 Days a Month	1 or 2 Days a Week	3 or 4 Days a Week	5 or 6 Days a Week	Almost Every Day
Male	Abstainer	**11.5%**	44.3%	13.1%	9.8%	11.5%	4.9%	0.0%	4.9%
	1 or 2 Days a Year	14.6%	**46.3%**	11.4%	6.5%	12.2%	4.1%	0.8%	4.1%
	1 Day Every 2 Months	7.1%	16.1%	**33.0%**	24.1%	14.3%	1.8%	0.0%	3.6%
	1 or 2 Days a Month	2.0%	7.5%	17.1%	**38.2%**	25.6%	2.4%	2.0%	5.1%
	1 or 2 Days a Week	1.3%	2.5%	2.9%	11.4%	**63.8%**	12.1%	1.9%	4.1%
	3 or 4 Days a Week	0.5%	0.5%	0.5%	3.0%	25.4%	**47.6%**	12.0%	10.6%
	5 or 6 Days a Week	1.0%	1.5%	1.0%	2.1%	9.7%	20.0%	**32.8%**	31.8%
	Almost Every Day	1.2%	0.6%	1.1%	1.2%	6.3%	9.8%	11.0%	**68.9%**
Female	Abstainer	**21.4%**	46.6%	10.7%	5.8%	8.7%	1.0%	0.0%	5.8%
	1 or 2 Days a Year	20.3%	**47.6%**	13.5%	8.2%	6.8%	1.4%	0.7%	1.6%
	1 Day Every 2 Months	5.5%	24.9%	**29.5%**	25.8%	10.5%	0.6%	0.9%	2.2%
	1 or 2 Days a Month	2.7%	8.6%	18.1%	**43.6%**	22.1%	2.7%	1.5%	0.6%
	1 or 2 Days a Week	2.1%	3.7%	4.3%	17.1%	**57.1%**	10.2%	2.0%	3.4%
	3 or 4 Days a Week	1.7%	2.5%	2.2%	5.3%	26.4%	**42.1%**	11.5%	8.1%
	5 or 6 Days a Week	1.1%	1.7%	1.1%	2.8%	17.4%	24.7%	**24.2%**	27.0%
	Almost Every Day	0.8%	1.6%	2.2%	3.0%	7.6%	7.8%	10.8%	**66.1%**

Male: χ^2=3336.5, p<0.001 Female: χ^2=3970.7, p<0.001

Table 2: Cross-tabulation of Wave 3 and 4 drinking frequency (all cases, n=5,892, row percentages)

		Past 12-month drinking frequency at Wave 4							
Past 12-month drinking frequency at Wave 3		Abstainer	1 or 2 Days a Year	1 Day Every 2 Months	1 or 2 Days a Month	1 or 2 Days a Week	3 or 4 Days a Week	5 or 6 Days a Week	Almost Every Day
Male	Abstainer	**31.1%**	11.5%	8.2%	9.8%	16.4%	6.6%	4.9%	11.5%
	1 or 2 Days a Year	19.0%	**32.7%**	9.2%	13.1%	11.1%	4.6%	2.0%	8.5%
	1 Day Every 2 Months	7.7%	16.8%	**23.1%**	16.1%	22.4%	7.7%	0.7%	5.6%
	1 or 2 Days a Month	3.3%	3.3%	13.8%	**34.9%**	28.6%	4.5%	3.3%	8.2%
	1 or 2 Days a Week	2.1%	2.1%	4.2%	10.2%	**53.5%**	14.4%	4.4%	9.0%
	3 or 4 Days a Week	1.4%	2.1%	2.1%	3.8%	25.9%	**39.3%**	13.2%	12.2%
	5 or 6 Days a Week	0.5%	0.9%	1.4%	2.8%	9.5%	21.8%	**35.5%**	27.5%
	Almost Every Day	1.3%	1.9%	1.1%	2.1%	10.2%	9.6%	10.0%	**63.9%**
Female	Abstainer	**34.1%**	31.8%	6.5%	9.4%	10.6%	1.8%	1.2%	4.7%
	1 or 2 Days a Year	20.3%	**42.6%**	8.7%	8.5%	12.1%	3.1%	0.5%	4.3%
	1 Day Every 2 Months	9.7%	25.3%	**27.6%**	18.2%	10.4%	2.6%	1.0%	5.2%
	1 or 2 Days a Month	3.9%	9.9%	19.3%	**34.6%**	25.5%	3.5%	1.0%	2.3%
	1 or 2 Days a Week	2.7%	5.9%	6.0%	16.1%	**49.2%**	12.3%	3.3%	4.5%
	3 or 4 Days a Week	1.8%	2.9%	2.6%	6.5%	27.0%	**39.0%**	8.5%	11.7%
	5 or 6 Days a Week	1.2%	3.6%	0.6%	6.0%	13.1%	23.8%	**25.0%**	26.8%
	Almost Every Day	2.4%	3.9%	3.1%	4.4%	9.0%	8.7%	11.1%	**57.4%**

Male: χ^2=2324.3, p<0.001 Female: χ^2=2924.4, p<0.001

Table 3: Cross-tabulation of Wave 2 drinking quantity against Wave 3 drinking quantity (all cases, n=5,892, row percentages)

Wave 2 unit consumption category		Wave 3 unit consumption category			
		Bottom	3rd	2nd	Top
Male	Bottom	**53.6%**	27.0%	10.5%	8.9%
	3rd	22.9%	**50.6%**	20.0%	6.5%
	2nd	11.8%	25.7%	**41.0%**	21.5%
	Top	9.3%	8.9%	28.0%	**53.7%**
Female	Bottom	**67.2%**	14.5%	9.5%	8.8%
	3rd	35.6%	**35.0%**	18.2%	11.1%
	2nd	23.7%	18.9%	**34.2%**	23.2%
	Top	14.0%	11.3%	23.6%	**51.1%**

Male: χ^2=1070.5, p<0.001 Female: χ^2=1066.9, p<0.001

Table 4: Cross-tabulation of Wave 3 drinking quantity against Wave 4 drinking quantity (all cases, n=5,892, row percentages)

Wave 3 unit consumption category		Wave 4 unit consumption category			
		Bottom	3rd	2nd	Top
Male	Bottom	**45.5%**	28.3%	13.9%	12.3%
	3rd	21.3%	**41.5%**	24.6%	12.7%
	2nd	10.3%	24.8%	**32.7%**	32.2%
	Top	7.9%	13.8%	29.1%	**49.2%**
Female	Bottom	**61.7%**	13.4%	16.1%	8.8%
	3rd	33.6%	**16.1%**	35.3%	14.9%
	2nd	22.1%	10.5%	**38.0%**	29.4%
	Top	17.2%	6.3%	28.7%	**47.7%**

Male: χ^2=641.5, p<0.001 Female: χ^2=770.6, p<0.001

Table 5: Percentage of participants in each drinking trajectory

		Drinking Frequency	Drinking Quantity
Male	Stable	32.3%	25.2%
	Increasing	19.4%	28.9%
	Decreasing	24.1%	19.3%
	Decrease Increase	13.7%	14.6%
	Increase Decrease	10.6%	12.9%
Female	Stable	26.0%	30.9%
	Increasing	17.3%	24.0%
	Decreasing	28.5%	18.2%
	Decrease Increase	15.0%	13.8%
	Increase Decrease	13.3%	13.2%

Table 6: Changes in health reported between Waves 3 and 4

		Male n(%)	Female n(%)	Total n(%)
No change		1,098 (40.9%)	1,139 (36.5%)	2,263 (38.4%)
Self-rated health	Worsened	291 (10.8%)	359 (11.2%)	650 (11.0%)
	Improved	412 (15.4%)	441 (13.8%)	853 (14.5%)
Activities of daily living	Worsened	669 (24.9%)	1,007 (31.4%)	1,676 (28.5%)
	Improved	598 (22.3%)	890 (27.8%)	1,488 (25.3%)
Pain	Worsened	477 (17.8%)	690 (21.6%)	1,167 (19.8%)
	Improved	451 (16.8%)	605 (18.9%)	1,056 (18.0%)
New CVD (in addition to previous condition)		199 (8.5%)	223 (7.8%)	422 (8.1%)
New CVD (no previous condition)		203 (8.6%)	243 (8.5%)	446 (8.6%)
New 'other' chronic disease (in addition to previous condition)		80 (3.4%)	155 (5.4%)	235 (4.5%)
New 'other' chronic disease (no previous condition)		213 (9.1%)	258 (9.0%)	471 (9.0%)
New psychiatric condition		42 (1.8%)	70 (2.4%)	111 (2.1%)

Table 7: Cross tabulation of Wave 2-3 volume change category with changes in health

		Wave 2-3 drinking volume change			
	n	Stable	Decreased	Increased	χ^2
No change in health	2,225	1,151 (51.7%)	558 (25.1%)	516 (23.2%)	
Worsened self-rated health	819	445 (54.3%)	195 (23.8%)	179 (21.9%)	χ^2=1.6, p=0.442
Increased problems with activities of daily living	1,321	696 (52.7%)	311 (23.5%)	314 (23.8%)	χ^2=1.1, p=0.588
Increased pain	1,002	536 (53.5%)	225 (22.5%)	241 (24.1%)	χ^2=2.6, p=0.274
New CVD (in addition to previous condition)	443	243 (54.9%)	103 (23.3%)	97 (21.9%)	χ^2=1.5, p=0.483
New CVD (no previous condition)	755	412 (54.6%)	166 (22.0%)	177 (23.4%)	χ^2=3.1, p=0.212
New 'other' chronic disease (in addition to previous condition)	263	141 (53.6%)	58 (22.1%)	64 (24.3%)	χ^2=1.2, p=0.559
New 'other' chronic disease (no previous condition)	378	201 (53.2%)	92 (24.3%)	85 (22.5%)	χ^2=0.3, p=0.874
New psychiatric condition	106	50 (47.2%)	26 (24.5%)	30 (28.3%)	χ^2=1.5, p=0.461

With Bonferroni correction p<0.001 is significant at the 0.05 level

Table 8: Cross tabulation of Wave 3-4 volume change category with changes in health

		Wave 3-4 drinking volume change			
	n	Stable	Decreased	Increased	χ^2
No change in health	2,116	998 (47.2%)	443 (20.9%)	675 (31.9%)	
Worsened self-rated health	620	294 (47.4%)	146 (23.5%)	180 (29.0%)	χ^2=2.8, p=0.248
Increased problems with activities of daily living	1,612	715 (44.4%)	404 (25.1%)	493 (30.6%)	χ^2=8.9, p=0.050
Increased pain	1,110	473 (42.6%)	272 (24.5%)	365 (32.9%)	χ^2=7.7, p=0.050
New CVD (in addition to previous condition)	401	207 (51.6%)	90 (22.4%)	104 (25.9%)	χ^2=5.6, p=0.060
New CVD (no previous condition)	421	189 (44.9%)	108 (25.7%)	124 (29.5%)	χ^2=4.7, p=0.098
New 'other' chronic disease (in addition to previous condition)	231	114 (49.4%)	46 (19.9%)	71 (30.7%)	χ^2=0.4, p=0.817
New 'other' chronic disease (no previous condition)	450	211 (46.9%)	108 (24.0%)	131 (29.1%)	χ^2=2.5, p=0.280
New psychiatric condition	108	48 (44.4%)	24 (22.2%)	36 (33.3%)	χ^2=0.3, p=0.857

With Bonferroni correction p<0.001 is significant at the 0.05 level

Table 9: Cross tabulation of drinking volume change with social changes

		Wave 2-3 drinking volume change			
	N	Stable	Decreased	Increased	χ^2
No change	768	399 (52.0%)	190 (24.7%)	179 (23.3%)	
Death of a family member	690	363 (52.6%)	163 (23.6%)	164 (23.8%)	χ^2=0.3, p=0.883
Closeness of relationship to partner	260	137 (52.7%)	60 (23.1%)	63 (24.2%)	χ^2=0.3, p=0.856
Frequency of social contact	1,678	893 (53.2%)	399 (23.8%)	386 (23.0%)	χ^2=0.4, p=0.826

		Wave 3-4 drinking volume change			
	N	Stable	Decreased	Increased	χ^2
No change	688	319 (46.4%)	169 (24.6%)	200 (29.1%)	
Death of a family member	846	382 (45.2%)	199 (23.5%)	265 (31.3%)	χ^2=0.9, p=0.628
Closeness of relationship to partner	252	96 (38.1%)	77 (30.6%)	79 (31.3%)	χ^2=5.7, p=0.058
Frequency of social contact	1,690	735 (43.5%)	412 (24.4%)	543 (32.1%)	χ^2=2.4, p=0.304

With Bonferroni correction p<0.001 is significant at the 0.05 level

Table 10: Cross tabulation of frequency change with changes in work-related pressure

		Wave 2-3 drinking frequency change			
	n	Stable	Decreased	Increased	χ^2
No change	497	300 (60.4%)	129 (26.0%)	68 (13.7%)	
Pressure of a heavy workload	300	159 (53.0%)	78 (26.0%)	63 (21.0%)	χ^2=7.9, p=0.050
Time pressure	257	150 (58.4%)	61 (23.7%)	46 (17.9%)	χ^2=2.4, p=0.296

		Wave 3-4 drinking frequency change			
	n	Stable	Decreased	Increased	χ^2
No change	340	189 (55.6%)	72 (21.1%)	79 (23.2%)	
Pressure of a heavy workload	263	132 (50.2%)	72 (21.2%)	59 (22.4%)	χ^2=3.2, p=0.198
Time pressure	235	115 (48.9%)	65 (27.7%)	55 (23.4%)	χ^2=3.6, p=0.164

With Bonferroni correction p<0.001 is significant at the 0.05 level

Table 7.11: Cross tabulation of volume change with changes in work-related pressure

		Wave 2-3 drinking volume change			
	n	Stable	Decreased	Increased	χ^2
No change	323	143 (44.3%)	79 (24.5%)	101 (31.3%)	
Pressure of a heavy workload	278	154 (55.4%)	59 (21.2%)	65 (23.4%)	χ^2=0.1, p=0.949
Time pressure	232	124 (53.4%)	58 (25.0%)	50 (21.6%)	χ^2=1.0, p=0.599

		Wave 3-4 drinking volume change			
	n	Stable	Decreased	Increased	χ^2
No change	340	189 (55.6%)	72 (21.1%)	79 (23.2%)	
Pressure of a heavy workload	240	108 (45.0%)	64 (26.7%)	68 (28.3%)	χ^2=0.7, p=0.713
Time pressure	223	101 (45.3%)	64 (28.7%)	58 (26.0%)	χ^2=2.2, p=0.334

With Bonferroni correction p<0.001 is significant at the 0.05 level