Rural Depopulation and Levels of Living in Post War Japan: the Case of Kyoto and Shiga Prefectures

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Submitted for the degree of Ph.D

October, 1984

VOL 2

Department of Geography

University of Sheffield

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CHAPTER SIX

MEASURING LEVELS OF LIVING

6.1 INTRODUCTION

There are two methods commonly used for the derivation of level of living scores. The first involves the simple linear addition of domain and indicator variables to obtain the composite level of living index. The second is rather more sophisticated, and in this case component scores derived from factor or principal components analysis are aggregated to form the final index (Smith, D, M. 1973) The suitability of either method depends partly on the function of the level of living scores and the manner in which they are interpreted. If they are to act as a purely descriptive device, for comparative purposes possibly, the linear additive method is reckoned to be sufficient. If, on the other hand, they are to provide the basis for future planning and government policy implementation the component scores method, which enables a useful breakdown of the various aspects (components) of levels of living, is generally preferred. The second criterion for selecting the right method depends on the role played by domains in the construction of the index. The component scores method requires that domains have no more than a conceptual role to play, that they simply provide a framework for the selection of all the indicator variables relevant to general levels of human well-being and levels of living. If domains are specified in an operational context, however, the linear additive method must be used.

In the present research, levels of living - which act as a surrogate measure for the average place utility function - are a descriptive device. Furthermore, since domains provide the basis for the estimation and application of priority weightings they need to be fully integrated into the analytical procedures used for the derivation of level of living scores. Clearly then, the linear additive method is the one to be adopted. Theoretically, it would be possible to place priority weightings on components rather than domains, but problems of component interpretability would make the formulation of precise questions in an attitudinal survey difficult. In any case, limitations on the time available for field work in Japan precluded this alternative.

The method for the determination of level of living scores for each of the sample settlements in Kyoto and Shiga prefectures is described by the standard (Z) score additive model:

$$LOL_{xj} = \sum_{i=1}^{9} a_{xi} . D_{ij} \; ; \quad D_{ij} = \sum_{i=1}^{n} b_i \, Z_{ij}$$

where LOL_{xj} is the Level of Living perceived by population sub-group x, for each agricultural settlement (j = 1, 2, ... 168), D_{ij} is the domain score (9 domains), and Z_{ij} is the standardized value of each domain indicant. The parameters 'a' and 'b' are weightings, 'a' representing the value of domain priority expressed by population sub-group 'x', and is derived from a questionnaire survey. The 'b' parameter is an empirically derived variable weighting which is designed to remove the effects of unequal bias produced in the standardizing procedure for domain indicators.

This chapter is concerned first of all with the detailed explanation of these procedures, including the choice of variable indicators, their transformation, further selection, and weighting, as well as providing a detailed account of the questionnaire survey used to determine domain priority weightings. In the concluding sections the final results are carefully analysed, and maps are presented showing level of living scores for each of the sample settlements.

6.2 LEVEL OF LIVING VARIABLE INDICATORS

To aid understanding, the standard score additive model can be represented graphically, in its most simple form (Figure 6.1). The choice of domain items, discussed in the previous chapter, is designed to incorporate all the aspects which are relevant to the well-being of individuals in rural settlements in Japan. Altogether, nine domain items have been selected.

Variable indicators are quantitative measures of phenomena, and provide the basis for computing a numerical value for each domain item. It is an important assumption then, that domain scores are a function of the numerical value of the variable indicators (Drewnowski, 1974; 19). This means it is critical that a correct balance of indicators should be achieved. There should not be too few, in which case the representation of the domain is oversimplified - nor should there be too many, for this carries the risk of double counting and potential bias. Instead, a sufficient number is sought so that all the main aspects of the domain are covered, and all variables contribute equally to the final value of the domain score. Ideally variables should represent the output rather than the input of aspects, and should only relate specifically to the 'population at risk'

Figure 6.1 Basic Standard Score Additive Model

Domain	Variable Indicators		Domain Score		Weighting
1. State of Agriculture	X_1) X_2) X_n)	=	D_1	x	W_1
2. Other employment opportunities	X_1) X_2) X_n)	=	D_2	x	W_2
3. Natural environment	X_1) X_2) X_n)	=	D_3	x	W_3
4. Health	X_1) X_2) X_n)	=	D_4	x	W_4
5. Education	X_1) X_2) X_n)	=	D_5	x	W_5
6. Leisure	X_1) X_2) X_n)	=	D_6	x	W_6
7. Access to local services	X_1) X_2) X_n)	=	D_7	x	W_7
8. Access to urban places	X_1) X_2) X_n)	=	D_8	x	W_8
9. Population structure	X_1) X_2) X_n)	=	D_9	x	W_9

(Knox, 1975; 32). Thus, if higher education is considered to be one aspect of the education domain, the indicator variable should measure the number of college graduates rather than, for instance, expenditure on college education, and should be related to the population aged between 16 and 25 rather than the whole population.

At small spatial units of data aggregation in particular, the greatest problems of variable selection will be associated with the question of data availability. At all levels, first of all, the accuracy of some data will be suspect, simply because of the very nature of the problems they attempt to measure. Venereal disease and drug addiction are obvious examples, as well as income levels and other aspects of a highly personal nature. Also, many aspects of life may be considered unquantifiable anyway, particularly features relating to human emotions such as job satisfaction, and contentment with the home and family environment. The immediate problem, however, lies with the fact that wide area surveys are necessarily reliant on published data sources for information. Very few countries produce official data sources aggregated at small spatial units like the hamlet or village. Where such information does exist, it tends to be highly selective and of only partial relevance to the quantification of overall levels of living. The considerable range and volume of information which is inevitably required for this purpose is only rarely presented in a single survey or census based on this scale. Fortunately, Japan is something of an exception to this rule.

The Census of Agricultural Settlements (Nōgyō Shūraku Kādo) has been undertaken three times, in 1960, 1970, and in 1975. The 1975 Census, however, unlike the previous two, was based on only a sample of settlements and not the full number of approximately 143,000 settlements. The range of questions has broadened with each successive census and although the emphasis is still on agricultural conditions, increasing importance is also attached to questions on social and community structures. The 1970 Census for instance is able to provide at least some information on each of eight of the nine domains which constitute overall levels of living. The one exception is the leisure and recreation domain, although aspects of this were included in the 1975 sample census. Additional data for this research are provided by the Census of Population, the Census of Establishments, the Survey of Agricultural Incomes (Seisan Nōgyō Shōtoku Tōkei), the Census of Forest Households, the Census of Population Welfare, Shiga and Kyoto Prefectural Yearbooks, telephone directories, and the series of 1:50,000 settlement maps.

The selection and measurement of indicator variables from these sources needs to be undertaken with considerable care, with particular attention paid to the quality and accuracy of information, and the spatial scale and time period for which each variable is presented. Finally, great care should be paid to the normative sign allocated to each variable, indicating whether high values have a positive or negative contribution to increased levels of living.

6.2.1. The State of Agriculture and Forestry

Agriculture and forestry are the traditional sources of employment in the rural area and, until recent years, the main source of income in most farm households. Accordingly, variable indicators

TABLE 6.1 THE STATE OF AGRICULTURE AND FORESTRY

	Indicator	Sign
i)	Rice production per 10 ares.	+
ii)	Agricultural income per farm household	+
iii)	Agricultural income per person engaged in agriculture	+
iv)	% farms with less than 0.5 Ha. (1960)	-
v)	% farms with less than 0.5 Ha. (1970)	-
vi)	Av. cultivated land area per farm household (1960)	+
vii)	% farms with rice as the main crop	+
viii)	Av. income in forest households from forest products	+
ix)	% farms owning forest land	+
x)	% farms engaged in charcoal burning (1960)	-
xi)	% farms engaged solely in agriculture (Sengyō) - (1960)	+
xii)	% farms engaged solely in agriculture (Sengyō) - (1970)	+
xiii)	No. of cultivators (10 horsepower) per 100 farm Households	+
xiv)	No. of rice harvesters per 100 farm households	+
xv)	% total households which are farms (1960)	+
xvi)	% total households which are farms (1970)	+
xvii	% total population engaged in primary industries	+
xviii)	Ratio of farm households in 1960 to the number of farm households in 1970	+

should reflect these two major items of social concern.

Whilst data availability for this domain item is generally very good, it will be noted that some indicator variables measure variations at the municipal, rather than the agricultural settlement level (e.g. 'Agricultural Income per person engaged in Agriculture'). Such variables are included because they provide a reliable measure of opportunities available in the immediate vicinity of each agricultural settlement, and are therefore an important contribution to the overall domain score.

The first seven indicators for this domain are generally reflective of agricultural productivity, average size of land holding and, in consequence, agricultural income. Strictly speaking agricultural income, as a variable reflecting output rather than inputs should be sufficient by itself, but the accuracy of measures of 'agricultural income per farm household' is open to question. Clearly many farmers are reluctant to reveal their true incomes in Census surveys, and a considerable amount of under-reportage is expected. The variable is nevertheless included because it provides at least some indication of relative differences in agricultural income between settlements. The measure of 'income per person engaged in agriculture' is considered to be more accurate, since it is based on known production costs and agricultural revenue for each crop grown. It is calculated at the municipality level, however, and only included here for the general picture of the state of agriculture it provides for the area immediately surrounding each village or settlement. It may also be taken as a surrogate measure for the possibility of employment as hired labour on other peoples' farms in the same district.

Indicators iv) and vi) reflecting size of agricultural land holding, are included not only for their importance in evaluating agricultural income, but also to provide some indication of the internal structure of agricultural production within villages. Average size of land holding by itself gives no idea of whether farms are roughly equal in size, and therefore receive similar incomes, or whether a few are very large and the majority only small, or vice versa. Figures for the proportion of farms with less than 0.5 hectares are provided for 1960 as well as 1970, so that some indication of the direction of change, if any, is given for this crucial period. Also, by adding these two together, a rough estimation of the mean value for 1965 is provided. Ideally all figures would be obtained for this year since it marks the beginning of the period for which migration is measured. Unfortunately, this procedure is not always possible and, in many cases, figures are provided for 1970 only. Where this is done, for instance, 'rice production per 10 ares,' it is assumed little or no change in relative value is likely to have occurred during the previous five year period.

The allocation of signs in this group is straight forward, with the possible exception of the seventh indicator: the proportion of farms for which rice, in economic terms, is the most important crop. A positive sign is awarded, indicating that higher values contribute to better levels of living, because greater dependence on rice production reflects a high degree of financial security. This is due to the price support mechanisms for rice which have been operative since the war, and which provided a particularly powerful stimulus to rice production in the late 1960s. Farms principally dependent on other crops have not been protected in this way, and are susceptible to the fluctuations in agricultural revenue determined by free market forces. Although it is recognised that certain crops grown in certain regions (e.g. fruit and vegetables on the urban fringe) may provide for considerably higher financial returns than rice production, such factors are very difficult to incorporate in a single index, other than actual measures of agricultural income. It is suggested, therefore, such differences are covered by indicators ii) and iii), reflecting relative agricultural incomes.

The significance of forestry in the village economy is dealt with by indicators viii), ix), and x). Average forest income is estimated for each forest household in the old municipal districts (Kyū shi-chō-son). This is an intermediate level of data aggregation, rarely used nowadays, between the agricultural settlement and the modern municipality. Like the measure of individual agricultural income, it represents the state of forestry in the local environment immediately surrounding each agricultural settlement and can act as a surrogate for measuring the opportunity for forest employment on other peoples' forest lands. When combined with the proportion of farmers in each settlement who own forest land it also provides a rough approximation (albeit the best available) of the overall contribution of forestry, and its related products, to the local village economy. The 'proportion of farms engaged in charcoal burning in 1960' gives some idea of the level of dependence on this declining activity in each settlement. Although it represents an alternative source of income, a negative sign is awarded because the higher the degree of dependence, the greater the impact of decline over the years 1960-1965 is likely to have been felt.

Indicators xi) and xii), the 'proportion of sengyō 'farms' in 1960 and 1970,' reflect the overall state of agriculture in each settlement. If conditions are good, and agricultural income is high, it is anticipated that the proportion of farmers engaged solely in agriculture will be similarly high. By taking both years, an indication of any change in conditions is provided. The level of mechanization, expressed by the number of cultivators and rice harvesters per 100 farm households, is similarly taken to represent overall agricultural conditions. The number of rice harvesters, in particular, reflects the nature of the local terrain, the size of fields, and the willingness, and ability of farmers to make substantial investments in agricultural production. This is in itself a reflection of the farmers own attitudes concerning the present state of agriculture and its future potential.

The final aspect of this domain is covered by indicators xv) to xviii). The proportion of the total population directly involved with agriculture and forestry, and the change in the number of farm households reflect the overall importance which primary industries play in the local community and social structures. The only problem here is that estimates of total population and total households are not available for all agricultural settlements in the sample (see Chapter 7).

6.2.2. Opportunities for Non-Agricultural Employment

Whilst the importance of agriculture in local economies has declined in recent years, employment in non-agricultural industries, particularly manufacturing, has taken an increasingly more dominant role. Variables for this domain item should reflect the availability of non-agricultural employment, and may be measured at the municipality as well as the agricultural settlement level. This is because people are prepared to commute outside their own settlements to find work.

TABLE 6.2 Non-Agricultural Employment

Indicator		Sign
i)	% Type 2 Kengyō farms 1960	+
ii)	% Type 2 Kengyō farms 1970	+
iii)	Jobs per thousand population in non-agricultural activities 1963, by municipality	+
iv)	Jobs in non-agricultural activities 1966	+
v)	Jobs in non agricultural activities 1969	+
vi)	Jobs in non agricultural activities 1972	+
vii)	Jobs per thousand population in manufacturing industries, 1966, by municipality	+
viii)	Jobs in manufacturing industries, 1969	+
ix)	Jobs in manufacturing industries, 1972	+

Three indicator variables are selected for this domain, although each one is measured over a period of time. Figures for 'Type 2 Kengyō' measure the number of farm households which rely for their principal source of income on non-agricultural activities. This information is presented in the Census of Agricultural Settlements, but clearly does not refer to the type of alternative work available, its location, nor the level of wages available. The other indicators are derived from the Census of Establishments, and are aggregated at the municipality level. This is acceptable, since it reveals the number of jobs available in the immediate vicinity of each agricultural settlement. An alternative system perhaps would have been preferred, based, for instance, on an arbitrary radius drawn from the centre of each settlement, but such information is neither readily available nor can it be accurately estimated. Jobs in manufacturing industries are chosen not only because of the importance of this sector to overall Japanese economic development, but because they represent the most viable form of alternative employment, open to all ages, both sexes, and all levels of educational attainment. Strong emphasis is placed on change over time because, given the rapidity of growth in the non-agricultural sector during the period 1965 to 1975, it is important to identify the areas where growth is particularly concentrated. The allocation of signs to these variables is straightforward. All have positive signs indicating that higher levels of opportunity for alternative employment contribute to improved levels of living.

6.2.3. The Natural Environment

Terrain and climate are important considerations in the overall well-being of people in rural settlements in Japan, particularly where these conditions are harshest.

TABLE 6.3 The Natural Environment

Indicator		Sign
i)	Height above sea level	-
ii)	Maximum height variation within 1 km radius of village centre	-
iii)	No. of days each year village is cut off by snow	-
iv)	Average maximum depth of winter snowfall	-

Precise information on local climatic conditions are normally unavailable at the agricultural settlement level, but climatic charts for this region suggest that local variations in the amount of sunshine, temperature, and, in particular, rain and snowfall are strongly dependent on the nature of the terrain.

That is, the higher and more mountainous areas tend to have less sunshine, lower temperatures, and higher levels of precipitation than lowland areas (Nihon Jishi Kenkyūjo, 1976). These conditions are taken to be indicative of a harsh natural environment, and are represented by the first two variable indicators. Negative signs are awarded to each.

Superimposed on this pattern of local variations in climate, however, is the more general pattern in winter months where prevailing north-westerly winds bring heaviest precipitation to areas in the north of the region To take account of this, two variables specifically relating to the amount of snow in agricultural settlements each year are also included.

6.2.4. Health

Ideally, variable indicators for this domain should measure the expectancy of a healthy life, but this is impossible owing to the nature of the available data. Instead, most of the indicators here reflect relative levels of accessibility to health care.

TABLE 6.4. Health

Indicators		Sign
i)	Time required for a doctor to arrive in the case of a night-time medical emergency	-
ii)	Distance to the nearest hospital	-
iii)	No. of health establishments per 1000 population	+
iv)	Infant death rate (under 1 year old)	-
v)	No. of underweight births (less than 2.5 kg) per 1000 live births	-

Clearly the most useful measure of the proximity of medical services to each settlement is the 'time required for a doctor to arrive in the case of a night-time medical emergency'. The second and third measure the level of accessibility to more general forms of medical care. 'Nearest hospitals' relate specifically to each settlement, although it is impossible to draw any kind of distinction between hospitals which might specialize in one particular form of medical care only (e.g. mental hospitals, maternity units, geriatric units), and general hospitals. The 'total number of health establishments' incoporates all hospitals, clinics, and dental clinics, and is measured at the municipality level. So too are the measures for infant deaths and underweight births. They are included because they provide the best available indications, not only of pre and peri-natal care facilities in the immediate vicinity of each agricultural settlement, but also of the general standard of health provision and health education in each local region. The allocation of signs in this domain is straightforward.

6.2.5. Education

The quality of school education, the number of extra curricular activities offered by schools, and the nature of relationships between teachers, children, and parents are the topics of prime concern in most post-war Japanese families, or, more precisely, the concern of mothers (Dore, 1978), but these aspects cannot be adequately measured at this small scale of data aggregation without a detailed knowledge of each school in the region. Since this information is unavailable, variable indicators for this domain relate solely to accessibility.

TABLE 6.5 Education

Indicator		Sign
i)	Distance to nearest kindergarten	-
ii)	Distance to nearest elementary school	-
iii)	Distance to nearest junior high school	-
iv)	Distance to nearest senior high school	-

This is, nonetheless, an extremely important constituent of overall levels of well-being in rural settlements. Negative signs are allocated to all four variable indicators.

6.2.6. Leisure and Recreation

Whilst clearly an important aspect of well-being, leisure time in Japanese villages is traditionally spent in the home, or in group meetings in a designated house or the village community hall

(Beardsley, et al. 1959). Festivals are similarly centred within the village, whilst village outings, which are usually organized on an annual basis, may be to any destination (religious shrine, spa, or otherwise) anywhere in the country. The increase in private car ownership does seem to be influencing a gradual breakdown of these traditional patterns, however, and alternative sources of recreation and amusement are being sought (Dore, 1978; 224). Small coffee-shops have become popular informal meeting places for young people, in town and countryside alike, whilst bars cater for the slightly

TABLE 6.6 Leisure and Recreation

Indicator		Sign
i)	Distance to the nearest coffee-shop	-
ii)	Distance to the nearest bar	-

older generations, though they tend to be exclusive to males. Distances to the nearest coffee-shop and bar are included as variables in this domain item, therefore, and negative signs are allocated to each.

Sports facilities are an important aspect of leisure and recreation, but sport is often organized on an informal basis and the proper facilities are not necessarily required. If they are, schools or factories usually provide the necessary amenities. Ten pin bowling, however, has gained enormously in popularity since the early 1970s and this does require specially constructed bowling alley facilities. A considerable number of these have in fact appeared in the rural area in recent years, and the 1975 sample Census of

Agricultural Settlements does include a question on accessibility to them. Since this 'craze' was not really evident in the mid 1960s, however, when measures of leisure and recreation facilities are required, this is not included in the variable list.

6.2.7. Access to Local Services

A considerable amount of information exists for the measurement of accessibility to local shops and services. The 1970 Census of Agricultural Settlements gives details on the time required to travel

TABLE 6.7 Access to Local Services

	Indicator	Sign
i)	Time required to get to the local town office	-
ii)	Time required to get to the agricultural co-op office	-
iii)	Distance to the nearest dept. store/ supermarket or street market	-
iv)	Distance to the nearest Post Office	-
v)	% farms with a telephone	+
vi)	No. of cars per 100 farm households	+
vii)	Time required to the nearest bus stop or train station	-
viii)	Frequency of trains/buses per day	+

to the local town office (yakuba) and the agricultural co-operative offices, telephone directories indicate the location of department stores (which always have large food markets), supermarkets, and street markets, and 1:50000 settlement maps show the location of post-offices. Between them, these variables cover all the main items of daily service and shopping requirements for which direct personal contact is required. Banking facilities are generally available at the agricultural co-operative offices, or at any post-office.

Increasingly, in recent years, the telephone has replaced the need for personal contact when conducting official business or transactions (Smith, R., 1978; 138). High rates of telephone ownership therefore help reduce the negative effects of isolation and poor accessibility, particularly when an ever-increasing range of goods and services (e.g: libraries, groceries, drinks) may be delivered to one's door on request.

Although problems of poor accessibility are eased to some extent by telephone communications, the local access domain should nevertheless incorporate measures of the private and public transport facilities available in each settlement. Car ownership rates for farm households, as well as measures of the time required to walk to the nearest bus stop (or train station, if nearer), and the daily frequency of service are therefore included.

6.2.8. Access to Urban Areas

Three indicators are used to measure accessibility to urban areas. Each reflects the relative degree of access to a different level in the urban settlement hierarchy, ranging from large township, to major city, and national capital. Urban places offer a much wider range of

TABLE 6.8 Access to Urban Areas

Indicator		Sign
i)	Distance to densely inhabited districts (DIDs)	-
ii)	Distance to Kyoto	-
iii)	Distance to nearest train station	-

goods, services, and administrative functions (as well as employment opportunities) than are immediately available in rural areas and small townships, and a certain level of contact with them is essential to overall well-being. The Census of Agricultural Settlements records the distance between settlements and the Densely Inhabited District with which levels of contact are greatest. Generally, these tend to be the nearest DID to each settlement, although this is not necessarily the case. There are approximately twenty-five DIDs in Kyoto and Shiga prefectures, the majority of which are really no more than large townships, with populations ranging from 5,000 to 25,000. DIDs on the fringe of Kyoto city are larger, with populations of 50,000 to 100,000, but none of these compare to Kyoto itself with a population of over one million. As the only true metropolis in the region, some indication of the distance between Kyoto and each settlement is important. This is obtained from large scale settlement maps, taking the shortest road distance between the respective locations.

The third indicator, distance to the nearest train station, is included for two reasons. First, since not all people have access to private transport, the relative ease with which people can travel to the major urban districts will depend partly on their proximity to the rail network, which offers the major alternative to road transport. All the DIDs, it should be pointed out, are served by rail in this region. Secondly, since long distance rail travel is considerably faster, and generally less expensive, than travelling by road, access to the rail network (both national and private) is an important consideration for journeys to major metropolitan centres like Osaka, Nagoya, or Tokyo which lie outside the study region. Distances to the nearest rail station are measured from 1:50000 settlement maps, although one specific problem does arise here. Many of these maps include stations on the new Kosei-sen, a major line running the length of the western shore of Lake Biwa which was only opened in 1972. Because this line was not operational for most of the period for which migration is estimated, these stations were excluded from consideration, and distances measured to the nearest stations on the pre-existing network.

6.2.9. Population Structures

Family associations, community involvement, and social participation are all extremely important elements of well-being in both traditional and modern Japanese rural society. Various indicators relating to the population structure in individual communities provide the most effective means of describing the likely strength of these formal and informal human relationships.

TABLE 6.9 Population Structure

Indicator		Sign
i)	Total population	+
ii)	Dependency ratio	-
iii)	Proportion of old (aged 60+) people	-

Unfortunately, detailed breakdowns of total population are not available for agricultural settlements, and measurement of the variables for this domain presents considerable problems. Data can only be extracted from Census of Population tabulations, presented at the enumeration district level, and this requires that enumeration district and agricultural settlement boundaries correspond exactly for accurate measurement. Furthermore, since migration rates and population structures are so strongly related, it is absolutely imperative that measures of population structures are taken immediately prior to the period of subsequent migration. This limits the data source to the 1965 Population Census only.

Using procedures described in Chapter Seven, matching sets of enumeration districts and agricultural settlements were obtained for 138 of the total sample of 168 villages in the study area for the 1965 census year. For the remaining 30 settlements, generally located on the urban fringe of Kyoto city, no such correspondence was evident, and data on population structures cannot be collected. Where information is available, details on three relevant indicator variables can be extracted. The first is total population size, and a positive sign is awarded since the greater the population the more opportunity there is for the development of a wide range of community organizations. Also, greater opportunities exist for meeting people of the same age, either as friends or as marital partners. The second indicator is a dependency ratio, being the ratio of the total number of people aged less than 15 years and 60 years or over to the remainder of the population who are aged between 15 and 59 years. A high dependency ratio indicates greater pressure is placed on the 15 to 59 age group to support the non-productive child and retired population, and so a negative sign is awarded. The third indicator is similar to this, taking the proportion of the total population who are aged 60 years or more. This is to provide an indication of the overall balance of population structures, with particular regard to the extent to which populations are ageing. Very often, the relative ageing of populations is the result of previous age-selective out-migration, and is here taken to represent the loss of a correct balance in age structures, and indicative of a general decline in overall levels of community interaction, particularly between younger age groups.

The need to obtain level of living data for the period prior to migration has been stressed not only in relation to measurement of the ninth domain, but to all domain items. It may be apparent, however, that given the great variety of data sources which are utilized this has not always been possible. The main source of information, the 1970 Census of Agricultural Settlements, for the most part measures phenomena as they were in 1970, not in 1965. Other data sources include the 1:50000 series of settlement maps which were all published in the early 1970s, and the full series of telephone directories for this region (6 volumes) which could only be obtained for 1978. Estimates of migration, meanwhile, can only be provided for the ten year period between 1965 and 1975.

Many of the variable indicators, especially for the first two domains and the ninth domain, do correspond to the required time period, either as direct measures, or as 'averaged' values taking the difference between figures for the two census years: 1960 and 1970. Other variables are not subject to change anyway, notably those measuring features of the natural environment such as height above sea-level, and those relating to urban access, such as distance from Kyoto. A little over half of the total of 56 variable indicators, on the other hand, represent measures of conditions as they were in 1970 or later, and are subject to possible change over time. For some of these it can be said that change, whether absolute or relative, is perhaps unlikely to have occurred to any great extent since the mid 1960s. This applies to relative productivity levels in agriculture, and subsequent income levels, and to the location of various service facilities such as the town office, agricultural co-operative office, and post offices. The opening of the Kosei-sen rail line in 1972, however, does illustrate how even supposedly established features of the landscape do change, particularly during a period of rapid economic expansion such as that experienced in Japan during the 1960s. This applies especially to the location of various private facilities such as food stores, bars, and coffee shops. Considerable doubts concerning the validity of measures derived from 1978 telephone directories must be raised, therefore, when a full decade separates them from the time for which knowledge of the actual state of conditions is really required.

Unfortunately, nobody, including the prefectural telephone offices, appears to retain out-of-date telephone directories and no alternative source of information is available. The choice is restricted then to rejecting these indicators altogether, or measuring 1978 conditions on the assumption that important or significant changes have not occurred during the previous thirteen or so years. The importance of these measures to the determination of overall levels of well-being (they include not only both indicators in the leisure and recreation domain, but also distance to senior high schools, and distance to food markets) means that the latter option is preferred. In fact, the assumption may not be entirely groundless, since although the proprietors of bars or food markets may change quite often, and various enlargements or alterations carried out, the actual purpose of most buildings and shops tends to remain the same. A supermarket for instance, may replace an old street market but the location of where the same goods are sold remains unchanged. Nevertheless, the lack of sufficient evidence to fully support this assumption means that although the best possible estimate of 1965 levels of living (in relative if not absolute terms) is obtained, the results must be viewed with this problem of data availability in mind.

6.3 THE ESTIMATION OF DOMAIN SCORES

Before each set of variable indicators can be combined to provide respective domain scores, a certain number of transformations on the original data must be carried out. The procedure is briefly outlined as follows:

1. Inter-correlate all the variables within each domain item to check for double counting.
2. Remove any variables which are shown to be double counting (with the aid of factor analysis).
3. Check for normality in the distributions of the remaining variables.
4. Transform data which are not distributed normally.
5. Transform normalized data to Z scores.
6. Weight standardized variables by their original coefficients of variation.
7. Sum weighted Z scores to produce domain scores.

6.3.1. Double Counting

Domain scores are the aggregate value of a series of indicator variables, all of which are assumed to be equally weighted. If double counting exists, that is to say two or more variables represent different expressions of the same phenomenon, an unequal bias will be introduced. It is therefore important to be able to recognize whether or not double counting occurs, and to ensure that any resulting bias is removed, or at least reduced.

One method to achieve this is to subject all the variables within a domain item to principal components analysis. Following this, component scores for each settlement may be calculated, which are standardized and then summed in the normal way to produce domain scores. The attraction of using this technique is that original data set is rewritten in orthogonal form, where the correlation coefficients between component scores will be zero and double counting does not arise. The major drawback,on the other hand,is that components may not be readily identifiable, and the subsequent interpretation of results is difficult. This is particularly so if component scores are calculated. The technique requires that all components are included in the analysis and not just those with the highest eigenvalues, which often tend to be the easiest to interpret (Johnston, 1978). If high correlations do exist between variables, and the result of this is more than one high loading on any given component, it is almost inevitable that minor components will not be clearly associated with any single variable or group of variables since the number of components is always equal to the number of original variables. Precise interpretation is therefore impossible, and is in any case probably indicative of the fact that real world situations and relationships are rarely expressed in orthogonal form. Furthermore, use of this technique assumes that any relationship (i.e. where r ≠ 0), whether significant or not, constitutes some degree of double counting. In fact, chance or coincidental relationships may exist which, strictly speaking, do not indicate double counting and will not therefore, lead to biased results.

An alternative method is preferred then, which is open to much easier interpretation and which is not influenced by the effect of chance relationships. Quite simply, an arbitrary cut-off point is assigned, expressed as a value of r, or r^2, above which serious double counting may be deemed to exist, and below which the possibility of double counting is not considered serious enough to introduce significant bias. This value is fixed quite high, at $r^2 = .7$ ($r = .8366$). That is to say, if 70% or more of the total variance is shared between two variables, they are considered likely to be measuring the same thing, and one should be excluded from further analysis. If on the other hand the level of unique variance is 31% or more, variables are considered to be sufficiently different to warrant inclusion as separate, independent indicator variables. Since variables are maintained in their original form the subsequent interpretation of results will be straightforward.

The first step is to construct correlation matrices for all the variables in each domain item. From this it is discovered that in only two of the nine domains (Agriculture, and Non-agricultural employment opportunity) are relationships between certain variables strong enough to exceed the cut-off point of $r = .8366$ (Table 6.10). It is,perhaps, no great surprise that the variables thus affected relate to some aspect of change over time, with the single exception of 'average size of cultivated land holding in 1960'. That is, the

TABLE 6.10 HIGHLY CORRELATED VARIABLE RELATIONSHIPS

Variables	Correlation Coefficient
Domain: Agriculture and Forestry	
% farms with less than 0.5 ha (1960) % farms with less than 0.5 ha (1970)	.8540
% farms with less than 0.5 ha (1960) Av. cultivated land area per farm household (1960)	.8432
% farms with less than 0.5 ha (1970) Av. cultivated land area per farm household (1960)	.8406
No. of farm households 1960 No. of farm households 1970	.8595
Domain: Non-agricultural employment opportunities	
Jobs per thousand pop. in non-agricultural activities (1963) " " " " " " " (1966)	.9165
" " " " " " " (1966) " " " " " " " (1969)	.9378
" " " " " " " (1966) " " " " " " " (1972)	.8524
" " " " " " " (1969) " " " " " " " (1972)	.9281
Jobs per thousand pop. in manufacturing industries (1966) " " " " " " " (1969)	.9316
" " " " " " " (1969) " " " " " " " (1972)	.9211

same variable is measured for two or more different points in time, and if a substantial degree of change in spatial distributions has occurred it may be anticipated that correlation coefficients between these measures will be low. Clearly however, whilst these patterns do illustrate some degree of change, the changes over such a relatively short space of time are not great enough to justify the inclusion of each measure as an independent variable. They are, in effect, double counting. Some method has to be devised then, to reduce the variable list so that 'repitition measures' are excluded from analysis.

In this case, factor analysis proves particularly useful. Similar to principal components analysis, it is a method which enables groups of variables to be identified which share a high level of common variance. Unlike principal components analysis, however, factors are weighted towards those variables whose communality estimates are greatest. (In the factor method used here, estimates of communality are based on the squared multiple correlation coefficients of variables.) If rotation (varimax) is employed to obtain the best fit of factors against the respective variable groupings, the end result is that the variable with the highest loading on any particular factor may be considered the most representative of that variable group, and should therefore be maintained in subsequent analysis. The other variables may be considered redundant and should be discounted from further analysis. Factor loadings for the twelve highly intercorrelated variables in the first two domains are presented in Table 6.11. It may be noted that they fall into four distinct variable groups, so that four variables are carried through for further analysis. These are:

TABLE 6.11 FACTOR LOADINGS FOR 12 HIGHLY CORRELATED VARIABLES

Group	Variable	Factor Loading
1	% farms with less than 0.5 ha (1960)	-.8519)
	% farms with less than 0.5 ha (1970)	-.8733)
	Av. cultivated land area per farm household (1960)	.8538)
2	No. of farm households 1960	.8355)
	No. of farm households 1970	.9834)
3	Jobs per thousand pop. in non-agricultural activities (1963)	.7878)
	(1966)	.9153)
	(1969)	.9251)
	(1972)	.9250)
4	Jobs per thousand pop. in manufacturing industries (1966)	.9138)
	(1969)	.9129)
	(1972)	.7835)

1. % farms with less than 0.5 ha in 1970
2. Number of farm households in 1970
3. Jobs per thousand population in non-agricultural activities in 1969
4. Jobs per thousand population in manufacturing industries in 1966.

The remaining eight variables are discounted from subsequent analysis.

6.3.2. Standard (Z) Scores and Normality of Distribution

If variables are combined in any way to form composite domain scores it is essential that they are expressed in a form which makes them directly comparable. The normal standardization procedure is to transform values to Z scores, and this is the method adopted here. The conversion formula is stated:

$$Z = \frac{x - \bar{x}}{\sigma}$$

where Z is the Z score, x is the original variable value, $\bar{x}$ is the mean value, and σ the standard deviation of the original variable. Thus, values are expressed in terms of unit deviation from the mean score, which is held at zero. Provided the frequency distribution is normal, probability theory suggests that 95.45% of all values should have Z scores within the range of +2.0 and -2.0, and that 99.7% should have scores between +3.0 and -3.0. If the frequency distribution is not normal on the other hand, these values become meaningless and there is a considerable danger of bias being introduced when Z scores are summed to produce the final domain scores. This is illustrated in Figure 6.2.

Figure 6.2 Hypothetical frequency distributions showing effects of skew on standard (Z) score conversions

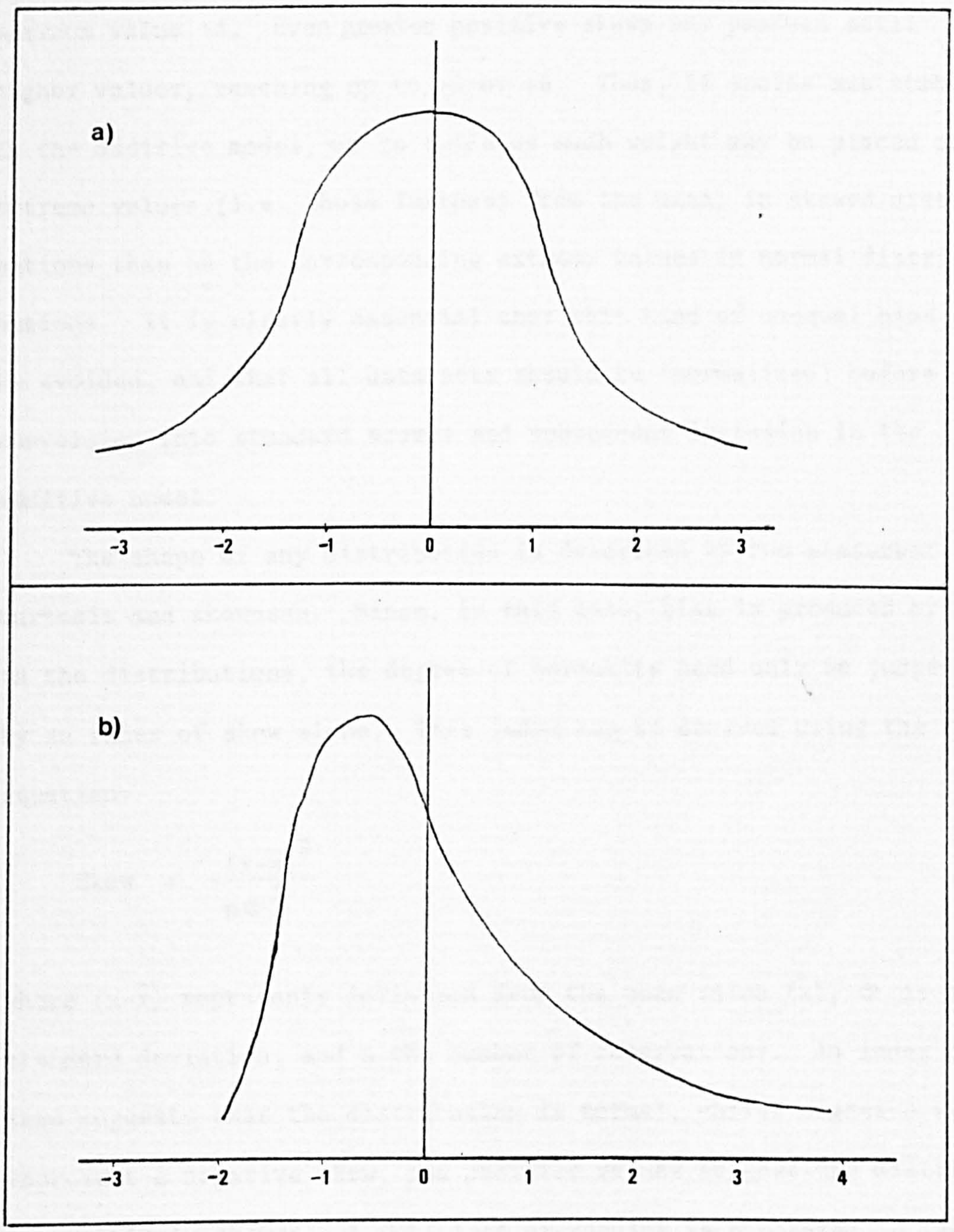


Figure 6.2a shows a normal distribution of Z scores, with values ranging between -3 and +3. If the Z scores of all the indicator variables are similarly distributed, it is reasonable to expect that all scores will lie more or less within this range of values. In a positively skewed distribution (Figure 6.2b), however, the range of values is distorted so that the minimum value is only -2 and the

maximum value +4. Even greater positive skews may produce still higher values, reaching up to +5 or +6. Thus, if scores are combined in the additive model, up to twice as much weight may be placed on extreme values (i.e. those furthest from the mean) in skewed distributions than on the corresponding extreme values in normal distributions. It is clearly essential that this kind of unequal bias should be avoided, and that all data sets should be 'normalized' before conversion into standard scores and subsequent inclusion in the additive model.

The shape of any distribution is described by two measures: kurtosis and skewness. Since, in this case, bias is produced by skew in the distributions, the degree of normality need only be judged by an index of skew alone. This index can be derived using the equation:

$$\text{Skew} = \frac{(x-\bar{x})^3}{n\sigma^3}$$

where $(x-\bar{x})$ represents deviation from the mean value $(\bar{x})$, σ is the standard deviation, and n the number of observations. An index of zero suggests that the distribution is normal, whilst negative values represent a negative skew, and positive values suggest the distribution is positively skewed. A full list of results is presented in Table 6.12.

Unfortunately the index of skew gives no more than just a rough guide to the kind of transformation required to produce normal distributions, and very rarely, even after transformation, is the value of zero finally achieved. In general, however, moderate positive skews require a square root transformation, whilst more severe positive skews require logarithmic transformations. Negative skews require that

TABLE 6.12 INDEX OF SKEW FOR ORIGINAL AND TRANSFORMED VARIABLES, MEAN SCORES AND STANDARD DEVIATIONS

Domain	Variable	Original Skew	Transformation	Transformed Data Skew	Mean	Standard Deviation
I	i	-0,35	x^2	0.09	162855.2	52798.8
	ii	2.27	$\sqrt{}$	0.08	16.38	6.36
	iii	0.79	$\sqrt{}$	0.22	34.89	6.73
	iv			Discounted		
	v	0.53	$\sqrt{}$	-0.15	6.50	1.96
	vi			Discounted		
	vii	-0.92	x^2	-0.33	5218.6	3260.3
	viii	3.67	log	0.21	0.27	0.13
	ix	0.95	$\sqrt{}$	-0.11	6.52	3.42
	x		log-log	0.43	0.23	0.13
	xi	0.33			31.65	20.80
	xii	2.27	log	-0.35	0.63	0.60
	xiii	0.04			68.39	30.50
	xiv	1.92	log	0.07	0.41	0.63
	xv			Discounted		
	xvi		x^2	-0.26	5249.2	2981.6
	xvii	-0.46			50.49	22.14
	xviii		x^3	-1.00	743210.1	239309.1
II	i	0.76	$\sqrt{}$	-0.27	5.59	2.18
	ii	-0.15			62.49	23.10
	iii			Discounted		
	iv			Discounted		
	v	0.45	$\sqrt{}$	0.07	17.12	3.11
	vi			Discounted		
	vii	0.94	$\sqrt{}$	0.34	8.82	3.11
	viii			Discounted		
	ix			Discounted		

(continued)

TABLE 6.12 (contd.)

Domain	Variable	Original Skew	Transformation	Transformed Data Skew	Mean	Standard Deviation
III	i	1.23	$\sqrt{\ }$	0.11	10.04	4.15
	ii	0.92	$\sqrt{\ }$	0.11	10.32	5.84
	iii	8.18	log-log	1.98	-0.33	0.16
	iv	9.82	log-log	1.92	-0.10	0.11
IV	i	1.63	log	0.13	1.10	0.33
	ii	1.97	log	-0.35	0.76	0.38
	iii	0.53	$\sqrt{\ }$	0.26	5.87	3.06
	iv	1.84	log	-0.16	2.05	0.22
	v	0.73	$\sqrt{\ }$	0.20	25.23	2.79
V	i	2.24	log	-0.25	0.09	0.46
	ii	3.29	log-log	0.64	0.23	0.06
	iii	2.98	log	0.19	0.44	0.33
	iv	1.75	$\sqrt{\ }$	0.60	2.48	0.94
VI	i	2.51	log	-0.12	0.23	0.57
	ii	1.26	$\sqrt{\ }$	0.31	2.88	1.21

(continued)

TABLE 6.12 (contd.)

Domain	Variable	Original Skew	Transformation	Transformed Data Skew	Mean	Standard Deviation
VII	i	2.90	log	0.21	1.23	0.31
	ii	2.16	log	-0.04	1.19	0.34
	iii	1.59	log	-0.32	0.51	0.55
	iv	1.76	log	-0.26	0.20	0.40
	v	-1.38	x^3	-0.81	695887.0	381455.4
	vi	0.36			35.49	20.05
	vii	4.16	log	0.39	0.81	0.35
	viii	3.48	log	0.28	1.18	0.44
VIII	i	1.81	log	-0.28	0.63	0.62
	ii	1.06	log	-0.45	1.19	0.36
	iii	0.59	$\sqrt{\ }$	-0.08	1.65	1.19
IX	i	3.88	log	0.36	2.44	0.31
	ii	0.96	log	0.28	1.84	0.10
	iii	0.38	$\sqrt{\ }$	0.03	3.87	0.40

n.b. 'Discounted' variables are those removed because of double-counting.

values be raised to certain power (e.g. x^2, x^3) to produce a normal distribution. These transformations may be applied to the original data sets, and the index of skew recalculated. If the new index has a value nearer to zero than that for the original data set (or for any other method of transformation), then the transformation is adopted. As a check on the efficiency of transformations in removing the skew bias Z scores are calculated at this stage. From probability theory it is then possible to estimate the likely range of values when distributions are normal, and these can be checked against the actual range of values obtained.

Since, in a normal distribution, 95.5% of values lie between +2 and -2 standard deviations from the mean, 99.7% of values between ± 3 standard deviations, and so on, if the number of observations is known the number of values which are within these ranges can be calculated. Conversely, the expected number of observations which have values outside these ranges can similarly be calculated. Thus, probabilities may be expressed in binomial form, using the expression:

$$Y = np \pm 2.\sqrt{npq} \qquad \text{(at the 95\% confidence level)}$$

where Y is the expected number of observations within a range of predetermined Z score values, n is the number of observations, and p and q are probability estimates whose combined value is equal to one. The equation can be fitted for any range of values, by adjusting the probability levels of p and q, and three examples are presented in Table 6.13. Both two-tailed and one-tailed estimates are shown in the table, representing the expected number of observations within a given range of values irrespective of sign, and with either positive or negative sign only. Y values are rounded to the nearest whole number in all cases.

TABLE 6.13 EXPECTED NUMBER OF OBSERVATIONS WITHIN SPECIFIED Z SCORE RANGE

Z Score Range		p = Probability of Values within specified Range	q = Probabbility of Values Outside Specified Range	Y (95%)	
3.0 <	2 tailed:	0.0027	0.9973	0	2
	1 tailed:	0.00135	0.99865	0	1
2.0 <	2 tailed:	0.045	0.955	2	13
	1 tailed:	0.0225	0.9775	0	8
1.5 ~ 2.0	2 tailed:	0.0881	0.9119	7	22
	1 tailed	0.04405	0.95595	2	13

n.b. Y is calculated for Domains I-VIII only, where n = 168

In Domain IX, n = 138.

These values may then be compared to the actual number of observations for each variable which lie within the specified ranges. If the actual numbers are within the calculated ranges of Y, then the variable distribution can be said to approximate to a normal distribution, and no unequal bias will be anticipated for any value.

This check on the Z scores of all the transformed variables revealed that all but two have values within the specified ranges and may thus be considered normally distributed. The two exceptions are variables III iii), and III iv). (The 'number of days each year villages are cut off by snow', and the 'average amount of snowfall each winter'.) As may be reasonably expected, both variables have a strong positive skew and both required log-log transformations. Even this fails to remove the skew totally, however, and a few settlements with high levels of snowfall still maintain very high Z scores. Since the domain item which they measure is principally concerned with relative levels of snowfall anyway, these values are not considered unreasonable and the resultant bias towards these variables noted and accepted.

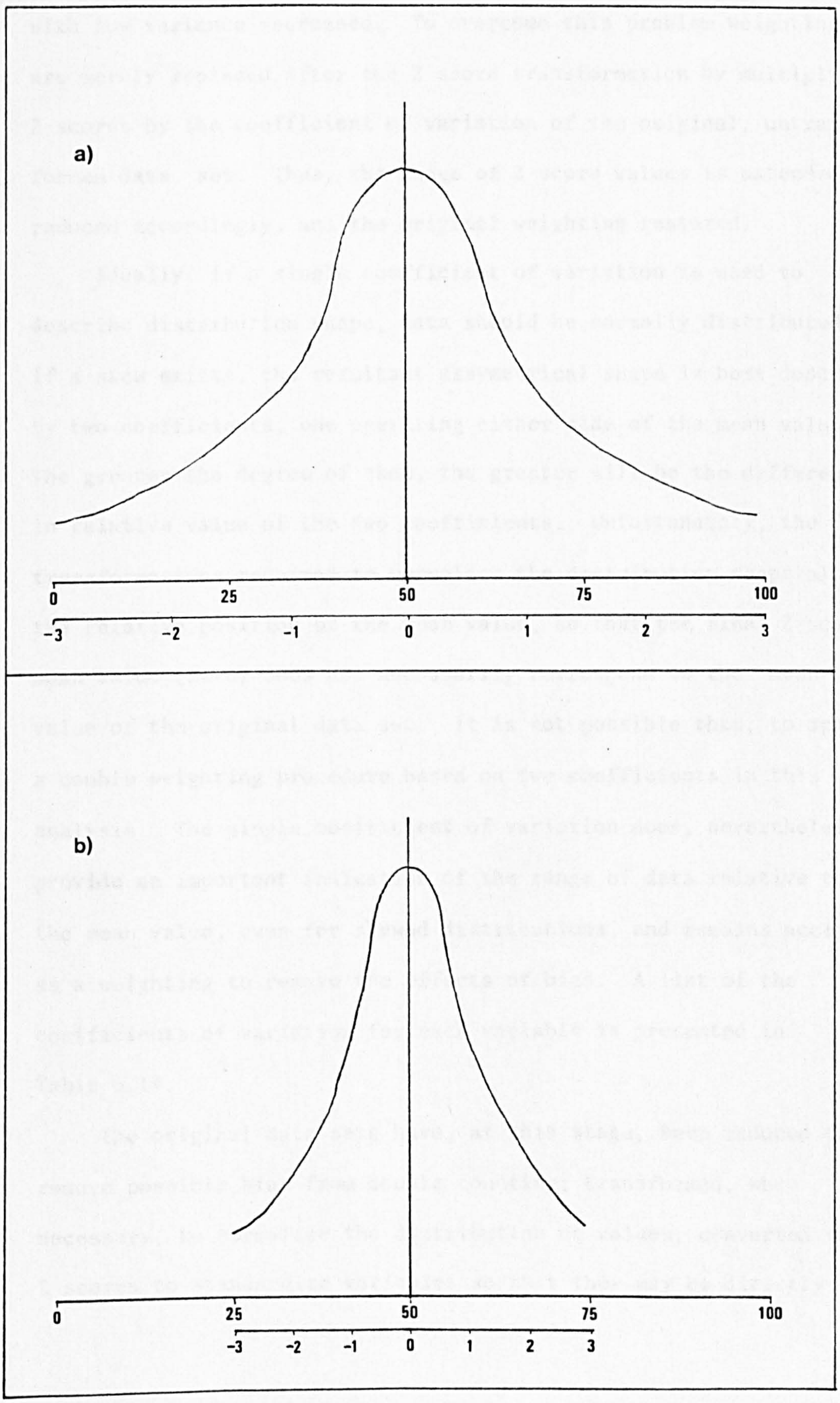
Finally, certain transformations cannot be undertaken if there are negative or zero values in the original data sets. This applies particularly to square-root and logarithmic procedures. Where such values are evident a constant (e.g. 0.5) is added to the whole set to overcome the problem. This of course does not affect the relative positions of values.

6.3.3. Weighting Z Scores by the Coefficient of Variation

Paradoxically, conversion of either the original or transformed data sets into Z scores removes certain inherent weighting properties and in so doing, gives rise to a further possibility for unequal bias. For example, two normally distributed variables share the same absolute mean value (50), but each has a different range of values, with variable a. ranging from 0 to 100, and variable b. from 25 to 75 (Figure 6.3). In other words the coefficient of variation (standard deviation/mean) differs markedly between the two variables, and this is reflected in the different shapes of the distributions. When converted to Z scores, however, this difference in shape is no longer apparent since Z scores are 'compressed' into the specified range of absolute values, and standard deviations, which are an alternative measure of variance and distribution shape, are set at unity for all variables.

The problem becomes apparent if it is assumed that variables a and b are set on a ratio scale, and that both have a positive sign, so that high values represent a good state of well-being. Thus, in terms of variable a, settlements with the highest values can be said to be at least ten times better off than settlements at the other end of the scale. With variable b on the other hand high scoring settlements are, at the most, only three times better off than the lowest scoring ones. Although rather a crude example, this does at least serve to illustrate how variables with a high coefficient of variation, where values are widely dispersed around the mean, are likely to have a considerably greater contribution to overall levels of well-being than variables where the distribution of values is grouped closely around the mean. By removing this inherent weighting in variables, conversion to Z scores can be said to create an unequal bias. The relative importance of

Figure 6.3 Hypothetical frequency distributions showing the effect of sample variance on standard (Z) score conversion.



N.B. Top scales show actual values, lower scales show Z scores.

variables with large variance is diminished, and that of variables with low variance increased. To overcome this problem weightings are merely replaced after the Z score transformation by multiplying Z scores by the coefficient of variation of the original, untransformed data set. Thus, the range of Z score values is extended or reduced accordingly, and the original weighting restored.

Ideally, if a single coefficient of variation is used to describe distribution shape, data should be normally distributed. If a skew exists, the resultant assymetrical shape is best described by two coefficients, one operating either side of the mean value. The greater the degree of skew, the greater will be the difference in relative value of the two coefficients. Unfortunately, the transformations required to normalize the distribution shape alter the relative position of the mean value, so that the final Z score mean value (zero) does not necessarily correspond to the mean value of the original data set. It is not possible then, to apply a double weighting procedure based on two coefficients in this analysis. The single coefficient of variation does, nevertheless, provide an important indication of the range of data relative to the mean value, even for skewed distributions, and remains acceptable as a weighting to remove the effects of bias. A list of the coefficients of variation for each variable is presented in Table 6.14.

The original data sets have, at this stage, been reduced to remove possible bias from double counting; transformed, when necessary, to normalize the distribution of values; converted to Z scores to standardize variables so that they may be directly

TABLE 6.14 COEFFICIENTS OF VARIATION (V) FOR EACH INDICATOR VARIABLE

Domain	Variable	V	Domain	Variable	V
I	i	0.17	V	i	1.10
	ii	0.73		ii	0.77
	iii	0.38		iii	0.88
	v	0.56		iv	0.76
	vii	0.47			
	viii	1.68	VI	i	0.78
	ix	0.83		ii	1.28
	x	2.21			
	xi	0.66	VII	i	0.88
	xii	1.28		ii	0.85
	xiii	0.45		iii	1.09
	xiv	1.37		iv	0.90
	xvi	0.39		v	0.33
	xvii	0.44		vi	0.56
	xviii	0.16		vii	1.13
				viii	1.25
II	i	0.67			
	ii	0.37	VIII	i	0.74
	v	0.36		ii	0.58
	vii	0.68		iii	1.25
III	i	0.75	IX	i	1.03
	ii	0.91		ii	0.23
	iii)	3.75		iii	0.20
	iv	0.33			
IV	i	0.81			
	ii	0.85			
	iii	0.88			
	iv	0.54			
	v	0.22			

comparable; and weighted by their original coefficients of variation. It is now possible to sum the weighted Z scores for each settlement so that a series of domain scores is produced. Before these in turn are aggregated to form the final level of living scores, however, they must also be weighted according to the relative value preferences expressed by various groups of individuals. These preferences are determined by an attitudinal survey, undertaken during the spring and early summer of 1978.

6.4. THE ESTIMATION OF VALUE PREFERENCES BY ATTITUDINAL SURVEY

There are two important aspects relating to the planning and undertaking of attitudinal surveys. The first is the formulation of a questionnaire and the second is to devise a sampling framework whereby respondents are chosen. Before either of these can be attempted, a decision must be made with respect to the manner in which the survey is undertaken. Essentially, two approaches are possible: postal surveys or direct contact. The latter method was chosen for this research for reasons which include the likelihood that higher response rates would be obtained, as well as a broader cross section of the rural population. Most importantly though, direct personal contact with respondents meant that an opportunity would be provided to experience, first hand, village life in the sample area, and to witness some of the problems associated with living in the more remote rural districts.

6.4.1. The Questionnaire

Briefly restated, the specific aims of this survey were:

1. to obtain an expression of individuals' value preferences for each of the nine domain items;

2. to discover the extent to which these value preferences differ between individuals, and, especially, between groups of individuals with certain shared personal characteristics;
3. to provide for a number of inbuilt checks on the effectiveness of this kind of survey in measuring value preferences and levels of living.

In order to meet these aims three different types of questions are required. Firstly there are questions which elicit some form of attitudinal statement (i.e. value preferences); secondly, those which elicit a factual statement (i.e. regarding personal characteristics such as age and occupation); and thirdly, questions which seek a descriptive statement (e.g. to describe major changes which have occurred over the previous fifteen years). The precise phrasing and ordering of these questions must accord with certain 'rules' or preconditions general to all questionnaire surveys, as well as with a series of further requirements specific to each particular type of question. First of all, questions should be as short as possible, simple, and unambigious. Loaded, or leading questions must be avoided, as well as irrelevant questions, and those which seem unnecessarily personal. If possible, questions should be ordered in a logical sequence so that a degree of continuity is maintained between successive questions. It is also helpful if the easier, factual questions precede the rather more complex attitutinal questions, although some would argue it is perhaps best if personal questions requiring details of age, occupation and so on are left until the end of the questionnaire to allow rapport to be established first (Oppenheim, 1966). Specific problems, on the other hand, relate principally to eliciting attitudinal statements. Not only must great care be placed on the precise wording of questions, but also on the means by which respondents are able to express their answers. Because responses tend to be extremely sensitive to even small changes in wording, context, or emphasis it is often better to develop a series of questions relevant to a particular type of attitude than to rely on just one question. This can, however, lead to problems regarding the length of the questionnaire form.

The full text of the questionnaire devised for this research is given in Appendix IV. Before dealing with specific problems relating to the phrasing and ordering of questions one or two more general comments and observations require a brief mention. Firstly, literacy rates in Japan are high, and questionnaire forms could be handed out to respondents for them to read and fill in themselves. This method generally enables a better understanding of questions than if they are presented orally, particularly when it is a 'foreigner' who is conducting the survey. Some older people do find writing a problem, however, so written responses were kept to a minimum. Instead, respondents were asked to tick a pre-printed answer, at least for all the factual questions. Secondly, the original draft was prepared in English and then translated into Japanese. Special attention had to be given to the problem of question wording, therefore, to ensure that no subtleties of language would be lost in translation. In particular, the lack of prepositions in the Japanese language means great care had to be taken to avoid possible ambiguities. Furthermore, different styles of speech may be adopted in Japanese to suit the particular relationship held between speaker and listener. Questionnaires generally adopt the polite/formal mode of speech, even though this can make sentences appear rather stilted and detracts from simplicity. Although this is probably unnoticed by native speakers, on one or two occasions respondents did point out after completing the form that the language used was perhaps more formal than really necessary.

Specific problems relating to the actual content of the questionnaire may be discussed in the order they arise in the final draft.

6.4.2. Questionnaire: Introduction

An introduction is a necessary item not only to inform respondents of the nature of the research they are assisting with, but also to assure them that information they are providing is treated in total confidence and will not be used for purposes other than the specified research objectives. It may be noted in passing that individual names and addresses were never required and so were not asked for. One retrospective criticism of the introduction used here is that the research description emphasised interest in Kaso districts and the problems associated with severe rural depopulation, rather than concern with the rural area in general. Whilst not totally inaccurate, the questionnaire was nevertheless carried out in a sample of settlements drawn from the whole rural area and not just those districts suffering severe depopulation. The term 'Kaso' was emphasised simply because it is a problem with which most people in Japan are presently familiar, and rural inhabitants in particular would be able to readily associate themselves with the research objectives. However, this does carry the danger of introducing a 'halo effect' in the responses whereby individuals are possibly inclined to provide answers they feel the interviewer expects to hear, or that will not cause them to 'lose face', rather than expressing their true feelings. (Knox and MacLaran, 1978).

6.4.3. Questionnaire: Section I

It was decided to present all the factual questions first, so that any feelings of inhibition in the respondents might have a chance to disappear before the crucial attitudinal questions were posed. Historical circumstance has dictated in Japan that people should regularly give away information about themselves, either in official questionnaires, census counts, local government registers, or shrine and temple registers (Beardsley et al., 1959; 50). Thus, throughout the whole course of this survey there was never any refusal to answer questions on the grounds that they infringed on personal liberty, nor even was there any apparent reluctance to answer personal questions.

Although it was known that migration data at the settlement level can only be broken down by age, and possibly sex, it was decided, nevertheless, to ask questions on two more sets of personal attributes, occupation and educational background, to enable a more detailed understanding of the characteristics which have a strong potential influence on value-shaping systems. This at least would provide useful background material for the subsequent interpretation of migration statistics. All the answers in this section were pre-printed, with ages divided into five year age groups. It was of course, important to ensure that these age groupings correspond to the particular age ranges identified in the Census of Population (i.e. 0-4 years rather than say 1-5 years). The question on educational background had to take account of the reform of the education system just after the war, and both old and new school terminology is employed. This question was always accompanied by a verbal enjoinder, stressing that respondents should mark only the final level of schooling they achieved.

The principal occupational groupings identified in this section were 'mainly engaged in agriculture or forestry', or 'mainly engaged in non-agricultural activities'. Presented as a filter question, respondents were then asked to provide further, more detailed information on the types of occupation they were engaged in. Since this latter information was intended to provide descriptive background material only, respondents were encouraged to provide as much detail as possible and were therefore permitted to fill in more than one of the filter elements if applicable. Thus, someone engaged mainly in non-agricultural activities, but who also farmed part-time could respond to questions on <u>Kengyō</u> in part iv.a as well as to questions on his main economic activity in part iv.b (see Appendix IV).

The final question in this section asks respondents if they have engaged in seasonal migration for employment during the previous three years. This question was similarly intended for descriptive purposes only, to provide an indication of the extent, and the variety of types of seasonal migration which occurs within the study area.

6.4.4. <u>Questionnaire: Section II</u>

Two attitudinal questions are incorporated in this section of the questionnaire. They are distinguished from other questions in the survey by the fact that they require respondents to attach a numerical value to specific attitudes or judgements they hold. The first of the questions (IIa) aims to provide a subjective appraisal of levels of living in the respondents own villages, based on scores awarded to each of the nine domain items. The second (IIb), is crucial to the main objective of the survey, and asks respondents to express value preferences on the nine domains. The questions are deliberately presented in this order, to allow respondents the opportunity to familiarize themselves with the full list of domain items before attempting to express degress of relative preference on them. Both questions are inevitably rather complex so, as an aid to easier understanding, they share the same format and scoring system.

The basic format of the questions is divided into three sections: the initial problem; presentation of the domain items; and explanation of the scoring system.

6.4.4. i) The initial problem: Each question begins by setting a concisely phrased problem, or situation, which the respondents are asked to consider. This provides the framework for the rest of the question, and brings the respondents' attention to the specific task at hand. In question IIa the problem is simply for respondents to compare their own village with what they consider to be an ideal village environment. This is set on the assumption that subjective quality of life is influenced by "the discrepancy between a person's present condition and his estimate of an ideal, or appropriate condition" (Blake, Weigl, and Perloff, 1975; 612). Furthermore, one of the major problems with this kind of attitudinal research is that different individuals experience different frames of reference. This can lead to problems of interpretation and, in particular, comparison of results (Oppenheim, 1966; 85). Use of the term 'ideal' standardizes frames of reference to the extent that it is a relatively neutral unbiased expression (unlike, for instance 'good' or 'bad'), and scores may be adjusted, or self-anchored, on a scale which is fixed according to each individual's impression of an ideal environment (Kilpatrick and Cantril, 1960; Knox and MacLaran, 1978). Thus, the maximum score (100) is equivalent to individuals' definitions of ideal conditions and the minimum score (0) to a situation which represents the least ideal conditions. This facilitates the direct comparison of scores, both between individuals, and between domain items.

In question IIb respondents are asked to consider the relative importance of domain items in terms of their relative contribution to the creation of an ideal environment. The specific objective of the question is to produce a series of quantifiable priority, or value preferences which may subsequently be used as weightings in the main 'objective' level of living analysis. It is important then, that consideration of the relative merits of the domains is removed from all external influences such as the existing availability of services in respondents' villages, and the relative costs of provision of new services. Respondents are ideally required to consider domains with all other such factors held equal. Although it may be almost impossible to encourage respondents to actually achieve this state of mind in reality, it is nevertheless essential that great care be taken in the wording of this question to ensure that no misleading bias is introduced. In particular, no reference should be made to the existing state of affairs in villages and words like 'better' or 'improved environment' must be avoided. Once again, the expression 'ideal environment' is sufficiently neutral in this respect, and is therefore maintained.

Since the expression 'ideal environment' is introduced in question IIa, respondents should be already familiar with the concept and this may help as an aid to easier understanding. On the other hand, repetition of the expression in question IIb may encourage respondents to believe this is merely a continuation of the first question. In other words, respondents may feel they are being asked to consider the relative importance of domains in terms of improving their own village environments. If this is the case, domains with low scores on question IIa will be awarded correspondingly high scores on question IIb. As a check on the 'reliability' of question IIb therefore, it will be necessary when the results are analysed to correlate domain scores on the two questions. If high negative coefficients are apparent the weightings derived from question IIb may after all prove meaningless.

6.4.4. ii) <u>Presentation of domain items</u>: It is essential that descriptions of the domain items are kept as brief as possible, so that they may be easily understood. At the same time, they should incorporate to the fullest possible extent all the aspects on which objective measures of the domain items have been based. This is because domains are on the whole rather complex structures, and a descriptive label which is too short may be interpreted in different ways by different people. This problem also applies, of course, to question IIb which ascertains domain weightings.

By far the most complex of the domain items is the first one: the state of agriculture and forestry. Various aspects of this domain include productivity levels, size of holding, and agricultural earnings; levels of mechanization; economic dependence on primary industries; forestry; and the decline of charcoal burning. To expect respondents to consider each one of these items, and then place a single numerical value to describe the overall state of affairs in agriculture would lead to major difficulties. Moreover, it is unlikely that the decline of an activity, like charcoal burning, can be realistically compared to a situation in an imagined ideal environment. The domain description, in question IIa, is therefore presented in relatively simple terms: "The present state and future potential of agriculture and forestry in your village". By asking respondents to consider future potential, it is assumed they will take account of the recent trends in local village agriculture. If activities have undergone decline this should be reflected in a low score for future potential.

Descriptions of the remaining eight domain items are, in comparison, relatively straight-forward. In all these cases direct mention can be made of the aspects which form the basis for objective measurement of the domains, since they are few in number and generally complementary to one another. It will be noted from the text (Appendix IV) that the descriptions in question IIb differ slightly from those in question IIa, since they omit any mention of the respondent's home village.

A final point concerning domain descriptions is the order in which they are presented. Five of the domains relate specifically to questions of accessibility, whether to education, medical, or leisure facilities, or to other services and facilities in either the local area, or in the urban districts. In order to avoid 'double counting', it is clearly important that the three specific access domains (education, health, and leisure) precede the more general considerations of accessibility (local and urban access).

6.4.4. iii) The scoring system. A number of scoring systems are in general use for the quantification of attitudes and perceptions and they may be distinguished from one another by the particular type of numerical scaling system they employ (Oppenheim, 1966). Most commonly, this is one of a possible three: the ordinal scale; the interval scale; or the ratio scale. Whilst ordinal scales (ranking) are clearly suited to the evaluation of relative priority preferences they cannot be adequately adapted for use in question IIa. Interval scales, on the other hand, would be suitable for use in both questions and have the advantage that they are extremely easy to understand. They can, if desired, remove the necessity for respondents to assign a numerical score to domain items altogether. Instead, a check may be placed in one of a range of pre-printed descriptive categories, for instance: 'not important · fairly important · important · very important · essential'. On completion of the questionnaire, the interviewer may then assign numerical equivalents to these categories, so that 'not important' = 0;'fairly important' = 1, and so on. The problem with this technique, and also with ordinal scaling, is that numerical values are determined arbitrarily and do not necessarily progress in a linear fashion. Thus, values cannot be compared with one another in terms of relative proportions or percentages. Since question IIb is intended to provide weightings, where an expression of relative value is essential, interval scales are totally unsuitable for use in this type of further analysis.

Ratio scales are therefore adopted for both questions, despite the fact that they are potentially the most difficult to comprehend fully. They require that respondents place a numerical value against each domain item, equivalent to their perception of either the present state of their local environment, or the degree of relative importance of the nine domain items. Scores are standardized within the range 0 to 100, and a value of 50, for example, is taken as twice as good, or twice as important as a value of 25. Although a smaller scale range, e.g. 0-10 is more commonly used (Knox and McLaran, 1978), it is felt here that the larger scale range offers greater freedom of expression whilst being no more, or less difficult to comprehend. To aid respondent's understanding of this question, descriptive categories are in fact used, but only by way of example. Thus, it is suggested that scores in the range 76-100 represent very good conditions, or a high degree of importance, whilst scores in the range 0-25 reflect poor conditions, or low degrees of importance. Such categories cannot strictly be defined as constituting an interval scale, since respondents are able to choose a large number of alternative scores within each of the categories.

To obtain the final subjective level of living scores and domain weightings the scores recorded by relevant population sub-groups (e.g. people living in the same village, or in the same age-group) are simply added together and, if desired, averaged.

6.4.5. <u>Questionnaire: Section III</u>

The third and final section of the questionnaire presented no major difficulties. Two questions were included, both of which allowed respondents the opportunity to record detailed written statements. Also, both questions were intended to provide some sort of check on the validity of obtaining value preferences on domain items in this manner.

Question IIIa simply asks respondents if they feel that there are any other major issues relevant to everyday life in the rural area which are not covered by the nine specified domain items. This clearly provides a check on the overall coverage of the domain items used to measure levels of living. If respondents answered 'YES' to this question they were then asked to state in detail the additional items they feel should have been included.

The final question, IIIb, asks respondents what, if any, have been the major changes affecting everyday life during the previous fifteen years. Because such a time span is not always easy to envisage clearly, respondents were reminded that the Tokyo Olympic Games were held in 1964, co-incident with the beginning of the period they are asked to consider. Although open questions such as this may cause problems when the results are analysed, uninhibited descriptive statements provide much greater detail than closed questions where respondents merely tick a pre-printed answer. Since the potential usefulness of this question is restricted to qualitative description rather than providing a means for quantitative adjustment of domain weightings, the 'open' format is preferred to a 'closed' one.

6.4.6. The Sampling Schedule

The greatest restriction on the operation of this questionnaire was the very limited amount of time available for field work in Japan. From the point when initial planning of the questionnaire began in March, 1978 there were only 4 months in which to complete the project. Since it was intended that all interviews should be conducted personally, and that no extra interviewers would be employed, it was decided that a maximum number of 250 questionnaires could be completed within the time limits. Furthermore, time would not allow for a properly organized pilot survey to be undertaken prior to the main questionnaire survey. These restrictions were for the large part due to the fact that interviews could only be carried out at weekends, when the majority of village populations would be at home rather than attending school, or working in factories elsewhere.

Instead of a pilot survey, the draft manuscript of the questionnaire was handed out to students at the Geography Research Institute, Kyoto University and a subsequent discussion held concerning the ease and accuracy of interpretation of the questions. As a result of this, certain minor omissions in the first draft became evident, which were corrected in the final questionnaire form.

Next a sampling framework had to be devised which took account of certain necessary pre-conditions. Firstly, it is important that the sample is spread over a wide range of village types, including 'lowland' villages as well as remote mountain villages. At the same time, the number of sample villages could not be too great since each would have to include a sufficient and representative sample of population. Also, as an aid to increased efficiency when conducting the questionnaire survey, villages should not be too widely scattered over the study area. If they were, the number of potential interviews it would be possible to carry out on any single day would be limited due to the increased time spent travelling between each village.

The basis for the sampling schedule is already provided by the 5% random sample of agricultural settlements in the study area (see Chapter Four). If all these villages were included in the questionnaire survey, however, only one or two responses could be elicited from each (i.e. $\frac{250}{168}$). This would clearly be unsatisfactory, particularly with regard to attempts to measure subjective levels of living in each village. A further sub-sample of one in ten of these villages would mean, on the other hand, a total of only 17 villages with an average of about 15 responses from each. In both operational terms and in terms of sample sizes these figures appear much more acceptable. In order to ensure that the sampled villages were not too widely scattered the 10% sample was based on municipalities rather than individual settlements. Thus, a sample of one in ten municipalities in Kyoto and Shiga prefectures was taken, and any of the original '5% sample of agricultural settlements' located within these selected municipalities became the villages where the questionnaire would be carried out (Figure 6.4). By this means, a total of 24 villages was chosen, with an average of 10-11 responses from each. Although these figures are considered only just within the range of acceptability, use of this technique does have the advantage that sample settlements are clustered, so that two or three could be visited easily on the same day.

The number of responses expected from each village should clearly be proportional to the size of the population in each village. Otherwise, if the distribution of questionnaires is spread equally between all 24 villages, responses will have an undue bias towards small, often remote settlements with low populations. On the other hand, if this distribution is determined by the relative sizes of total population, the great majority of responses would be concentrated

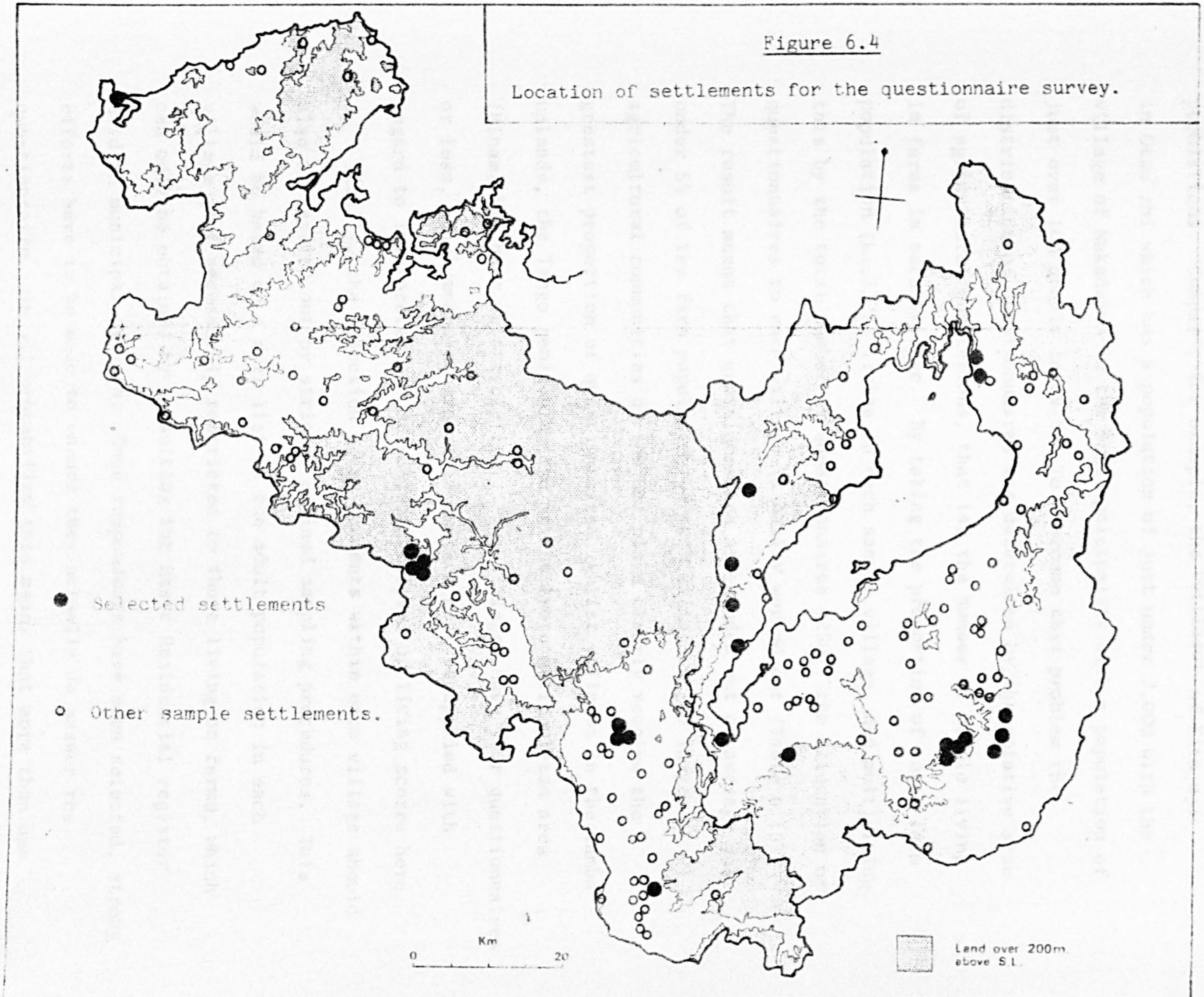


Figure 6.4

Location of settlements for the questionnaire survey.

in just one or two suburban villages which have large urban populations. Compare, for example, the 'village' of Kita-oji in Otsu shi which has a population of just under 2,000 with the village of Nakadaira in the same municipality with a population of just over 100 people in 1975. To overcome this problem the distribution of questionnaires was determined by the relative size of agricultural populations, that is, the number of people living in farms in each village. By taking the proportion of total farm population (i.e.5328) living in each sample village, and multiplying this by the total number of questionnaires (250), the allocation of questionnaires to each village is easily worked out (Table 6.15). The result means that questionnaires are handed out on average just under 5% of the farm population of each village. The larger agricultural communities of the Omi plain clearly receive the greatest proportion of questionnaires, whilst villages in the Tamba uplands, the Tango peninsula, and in the Kyoto metropolitan area (Minami-ku) have relatively few. Five villages have four questionnaires or less, which means considerable caution must be applied with regard to interpretation of subjective level of living scores here.

Ideally, the selection of respondents within each village should also be carried out by strictly defined sampling procedures. This would be based on a full list of the adult population in each village (not necessarily restricted to those living on farms), which can only be obtained by consulting the Basic Residential register held in municipal offices. Once respondents have been selected, strong efforts have to be made to ensure they actually do answer the questionnaire. In all probability this means that more than one visit should be made to each village, otherwise response rates are likely to be very low. Even if all respondents are contacted

TABLE 6.15 THE DISTRIBUTION OF QUESTIONNAIRES TO SAMPLE SETTLEMENTS

Municipality	Settlement	Farm population (1960)	% of total farm popn.	No. of q'aires
OTSU-SHI	Kita-oji	335	6.3	16
	Ogoto	531	10.0	25
	Shimozaichi	291	5.5	14
	Nakadaira	67	1.3	3
	Nukui	79	1.5	4
	Kiryu	838	15.7	39
HINO-CHO	Hara	250	4.7	12
	Kitabata	237	4.4	11
	Zao	290	5.4	13
	Shimohasama	260	4.9	12
	Kizu	296	5.6	14
	Okubo-minami	383	7.2	18
	Nekoda	184	3.5	9
TAKATSUKI-CHO	Shigenori	56	1.1	3
	Nishiatsuji	98	1.8	5
MINAMI-KU	Shinden	107	2.0	5
	Joraku	108	2.0	5
	Kiyoi	47	0.9	2
YAMASHIRO-CHO	Kitamura	179	3.4	8
TAMBA-CHO	Nakahata	140	2.6	6
	Tsuji	155	2.9	7
	Nakamura	57	1.1	4
	Shiodatani	137	2.6	6
KUMIHAMA-CHO	Omu	203	3.8	9
TOTAL		5328	100.0	250

beforehand, and arrangements made exactly when to visit them, it is extremely unlikely that a schedule can be constructed whereby all are interviewed on just one visit.

Restrictions on time and the financial resources available to conduct this survey meant, however, that such rigid sampling procedures would be almost totally inoperable within the existing framework of selected village sites. Generally speaking only one visit to each village was possible, and no time was available for the extremely labourious task of searching Basic Residential Registers in at least seven different municipal offices. The only practical alternative therefore, was to visit the sample villages and find people there and then who were willing to answer the questionnaire. In doing so, an attempt was made to achieve the correct balance between male and female respondents, and also between young and old, and people engaged in agriculture or non-agricultural activities. In this respect, an approximate idea of the population and occupational structures of villages could be gained beforehand, by studying the Census of Agricultural Settlements. Despite this, however, a number of factors combined to produce slightly inbalanced, or biased results (Table 6.16).

First of all, it occasionally proved difficult to find a sufficient number of respondents to meet the target quota even without a formal sample framework. In the village of Kiryu for instance, only 32 responses were achieved instead of the initial quota of 39. Unfortunately, time did not permit an extra visit to be made there, but the point remains that when there is a

TABLE 6.16 NUMBER OF RESPONDENTS BY AGE, SEX, OCCUPATION, AND EDUCATIONAL ATTAINMENT

AGE	NO.	ACTUAL %	EXPECTED %
0 - 29 years	59	29%	43%
30 - 59 years	112	55%	39%
Over 60 years	32	16%	18%
	203	100%	100%
SEX			
Male	115	57%	
Female	88	43%	
	203	100%	
OCCUPATION			
Mainly Agriculture	51	25%	
Non-Agricultural	98	48%	
Other	54	27%	
	203	100%	
EDUCATIONAL ATTAINMENT			
Junior High School	83	42%	
Senior High & Beyond	115	58%	
	119	100%	

difficulty of finding anyone who is prepared to answer the questionnaire, any attempt to organise a correct balance between respondents becomes almost impossible. In fact the number of refusals was fairly low, although they tended to be concentrated into one of two groups. Firstly, housewives occasionally demurred from answering the questionnaire, preferring to pass it on to their husbands to complete. This may be related to Galtung's observation that there is "a general difficulty, in traditional societies, of obtaining interviews with anybody (other than the head of the household) without causing intolerable suspicions and anxiety" (1971, 92). For this reason, the number of male respondents tends to be higher than the number of females. The second group of people for whom refusal rates were quite high were the elderly, and, in particular, elderly women. A frequent argument was that they could not read easily, or that such matters were really beyond their comprehension and that it would be better to ask their sons and daughters for the required information. As a result the number of respondents aged over 60 is slightly lower than anticipated, standing at just 16% of the total. In fact, estimates of the sample villages population age distribution, derived from enumeration district returns for the 1975 Census of Population (see Chapter Seven), suggest that the proportion of elderly people should be just over 18%.

By far the greatest discrepancy (so far as can be reliably ascertained,occurs in relation to the number of young respondents, aged under 30. Whereas the expected number of respondents is about 43% of the total, the actual number of young respondents is considerably lower, at only 29%. The problem is that whatever day of the week is chosen to visit the villages, many young people are simply not there during daylight hours. During weekdays, and even saturdays, they are at school or out at work, whilst on sundays many people go to the nearest town for shopping or for various leisure activities. Unfortunately, there is no easy way round this problem, since difficulties of travelling to and from the villages precluded any questionnaires being undertaken in the evening or at night-time. As a result, it has to be accepted that the sample population is unbalanced, with undue emphasis, or bias, placed on the intermediate age range (i.e. people aged between 30 - 59).

One final problem is that during the course of the survey it became apparent that the original estimate of 250 responses was set too high. Time was not sufficient to complete this number of questionnaires and a decision had to be made with regard to how the quota could be reduced. The easiest, and most practical solution was to omit three villages from the survey altogether. Shinden, on the south-western fringe of the Kyoto metropolis; Kita-oji, near the centre of Otsu city; and Okubo-minami, in Hino-cho were selected for omission. All three have high proportions of non-agricultural populations resident in them, but the crucial deciding factor was that their population and occupational structures, as well as other general environmental characteristics are duplicated in other nearby settlements which remain included in the survey. The potential bias resulting from the exclusion of these villages is thus minimized. The complete survey therefore yielded only 203 responses, drawn from 21 different villages.

6.5 ANALYSIS OF QUESTIONNAIRE RESULTS

The existence of a considerable sample bias concerning the selection of questionnaire respondents would pose a number of serious problems if subsequent analysis of priority preferences were to be based solely on village populations as a whole. In fact, attention is focused primarily on population sub groups, where people share the same age, sex, occupation, or level of educational attainment. Thus, despite the exclusion of three of the sample settlements, there is no evidence to suggest that serious imbalances occur between respondents within any particular sub-group, nor is there any reason why comparison of average values between sub-groups cannot be made. Numerical value preferences (question IIb) are therefore presented for each of the relevant population sub-groups in Table 6.17.

Although the absolute range of values is not particularly great - whether viewed down the domain items or across the various sub-groups - a number of extremely interesting observations can nevertheless be made from these results. Generally speaking most groups express accessibility to medical and educational facilities as being of prime importance (values in the high 60s and low 70s) whilst access to leisure facilities is universally held to be the least important domain item (high 40s and low 50s). All groups, including those mainly engaged in agriculture, consider opportunities for non-agricultural employment to be more important than the future development of agriculture and forestry although, rather surprisingly, both domains tend to fall comparatively low on the list of priorities. Also of interest is the fact that access to urban places is consistently awarded a higher degree of importance than access to local amenities.

TABLE 6.17 VALUE PREFERENCES EXPRESSED ACCORDING TO POPULATION SUB-GROUP

Domain		AGE			SEX		OCCUPATION		EDUCATION	
		0-29	30-59	60+	M	F	Mainly Agric.	Mainly Non-agric.	Up to Junior High	Senior High and Beyond
I	Agriculture	59.5	58.3	64.1	56.9	63.2	61.7	56.5	61.2	58.2
II	Other Employment	63.7	64.4	64.4	63.0	65.6	63.2	63.6	65.3	63.2
III	Natural Env.	64.0	59.9	68.3	61.2	64.2	63.3	60.1	65.3	60.4
IV	Education	70.0	67.7	67.2	66.5	70.8	67.2	66.4	69.0	68.0
V	Medical	74.9	70.5	67.4	69.8	73.3	69.7	70.3	72.4	70.6
VI	Leisure	51.6	48.0	51.1	47.5	52.2	50.8	48.7	50.4	49.1
vII	Local Access	67.2	64.0	63.6	61.8	68.9	64.7	63.0	66.2	63.6
VIII	Urban Access	70.5	65.5	65.3	64.5	70.3	67.2	65.6	67.9	66.1
IX	Population	60.1	59.4	70.5	60.8	62.5	64.8	59.5	64.3	59.5

Underlined values significantly different at 5% level.

Looking at variations in scores across the columns, greatest change occurs in the score awarded to the ninth domain - population. Here, a high level of importance is attached by the over 60 age group, and those engaged primarily in agriculture. Although care has to be taken to note that a certain amount of double counting may exist here, it does appear that this group, who may perhaps be termed 'traditionalists', is extremely concerned about the effects of rural exodus on population structures and in particular, about the problem of succession. Younger people, and those not primarily involved in agriculture, on the other hand, attach a comparatively low level of importance to this domain. Looking at each of the four categories in turn, Students T tests can be utilized to show where other significant differences emerge. Besides the difference in priority scores for the population domain, a significant difference at the 5% level of confidence exists between scores for the under 30 and over 60 age groups on the health domain (V). Whereas it may be anticipated that elderly people should express greater concern for local health services provision, this is not in fact the case. The younger age group provides very clear indication that they consider this domain the most important of all whilst the over 60s rank medical provision only third, behind population and the natural environment.

Differentiating by sex of respondents, females award higher scores than males on each one of the nine domain items. Significantly higher scores are evident for three of these: agriculture (I), local access (VII), and urban access (VIII). This may be indicative of the fact it is the female's responsibility to ensure an adequate supply of food for the household, as well as other household requirements. Not only do women have to do most of the shopping, and other administrative tasks, but they also undertake a considerable share of the work in agriculture. In many cases, such agricultural activity is directed toward self-sufficiency only, rather than the sale of produce on a commercial basis.

In the third category, occupational status of respondents, it is not surprising that those engaged mainly in agriculture award a higher level of importance to the agricultural domain (I) than do those engaged in other activities. Similarly, the 'agriculturalists' award higher priority scores for the population domain (IX). Though these differences are comparatively large in relation to the difference in scores on other domain items, they are not quite significant at the 5% level and so must be viewed with some caution.

It is intended that the priority scores shown in Table 6.17 are utilized, as they stand, as weightings on domain items for the calculation of level of living scores. Before this can be carried out, however, a certain number of checks need to be made on their reliability for use in this way. First of all, it was suggested in the discussion of Section II of the questionnaire that the phrasing of question IIb may have been slightly ambiguous. That is, respondents may have been led to believe that the question on priority preferences actually referred to the relative importance of domain items in terms of improving the state of affairs in their own village environments. If this is actually so, one would expect high negative coefficients of correlation between question IIa and IIb on each of the domain items. That is, where scores are low in response to question IIa, indicating low levels of satisfaction with the present state of affairs in the respondent's village, correspondingly high scores for question IIb may be anticipated if this kind of ambiguity occurs. Table 6.18 presents the correlation coefficients of the domain scores on each of these two questions. This shows, in fact, that only four of the nine correlations are significant at the 5% level and that here the relationships

TABLE 6.18 CORRELATION COEFFICIENTS BETWEEN QUESTION IIa AND IIb

Domain		$r_{IIa,IIb}$
I	Agriculture	0.263*
II	Other employment	0.197*
III	Natural environment	0.192*
IV	Education	-0.040
V	Medical	-0.102
VI	Leisure	0.245*
VII	Local access	0.028
VIII	Urban Access	-0.026
IX	Population	0.078

* Significant at 5% level

actually move in a positive direction. Coupled with the fact that all the values are extremely small anyway these results indicate that no ambiguity was apparent in question IIb after all.

A second, slightly wider interpretation of the results in Table 6.18 is also possible. This refers to the general criticism of the use of attitudinal surveys to obtain expressions of priority preference, suggesting that priorities may be strongly affected by levels of personal attainment. That is, individuals who have achieved success in any particular aspect of life may be inclined to undervalue the relative importance of that aspect. So far as personal attainment levels may be represented by levels of satisfaction with the state of the local environment, the low positive correlation coefficients derived in Table 6.18 certainly do not offer any support for this argument. The connection between attainment and satisfaction levels is, however, rather a tenuous one and a rather more useful test may be to consider the relationship between educational attainment, for which a direct measure is provided by the questionnaire, and the level of importance attached to education as a domain item. If the nominal classification of educational attainment levels (i.e. junior school, junior high, senior high, college, and university) is converted to a ratio scale with values of 1 to 5, so that junior school = 1; university = 5, values may be correlated with priority scores expressed for education in question IIb. For low levels of attainment it is anticipated that priority scores will be high and vice versa. In fact, the resultant correlation coefficient, whilst at least negative, is insignificant at the 5% level of confidence ($r_{x,y} = -0.028$), indicating that the criticism is invalid in this particular instance.

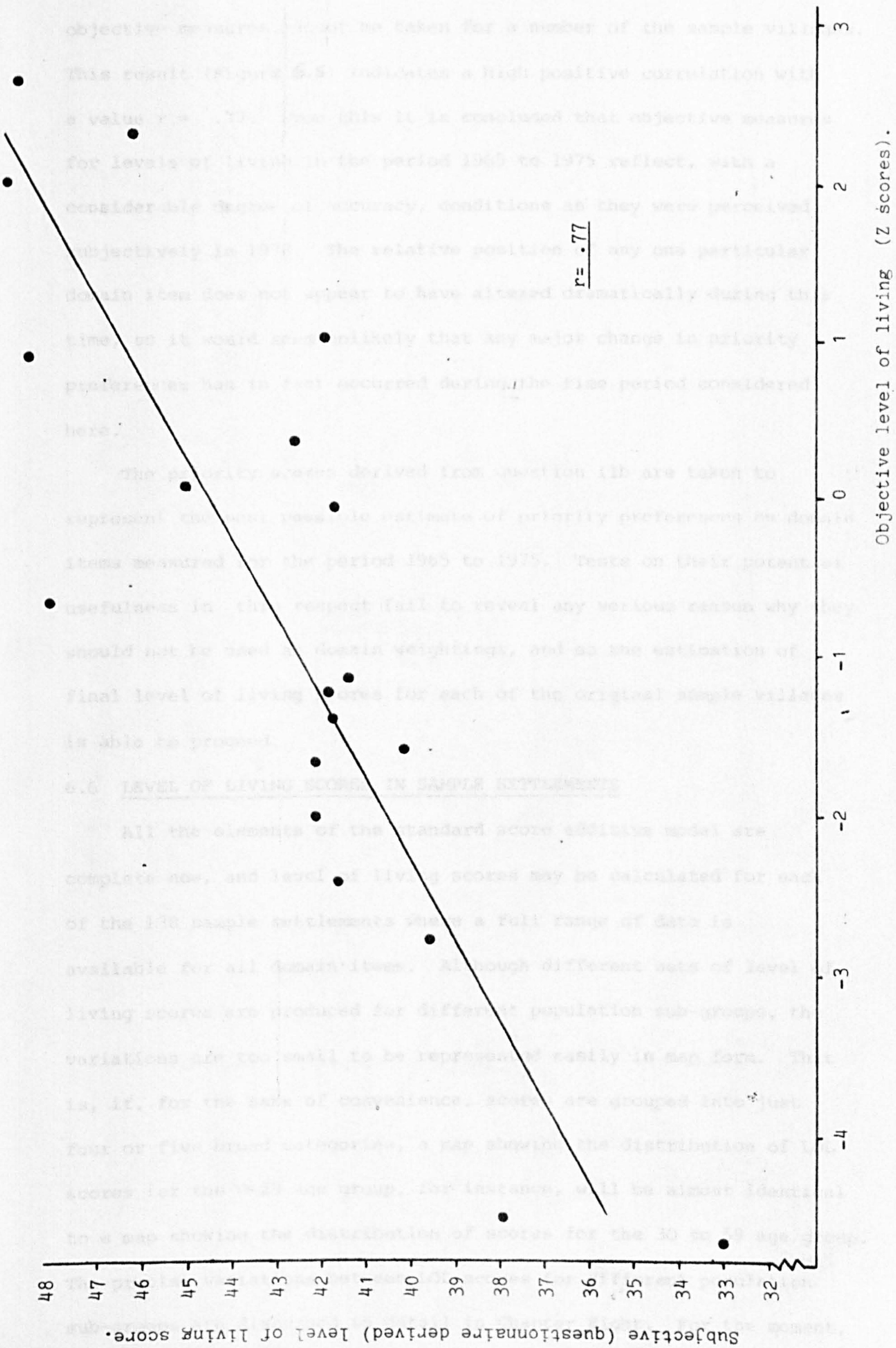
Finally, the question of whether or not relative priority preferences have changed between 1965 and 1978 is crucial to the main object of this survey, since it concerns the potential usefulness of these priority scores as domain weightings. The results of Question III of the questionnaire are able to provide at least a partial answer

Question IIIa of the questionnaire asked respondents to consider whether or not they thought the list of nine domain items covered sufficiently all the main aspects of their daily lives. The great majority, 86%, thought that they did. Those who did not tended to emphasise matters of purely local interest as alternative domain items, or else merely repeated items already covered by the domain headings (e.g. sports facilities, agricultural produce price fluctuations, libraries, the marriage problem). Perhaps in retrospect this latter point indicates that domain descriptions were rather too short after all. Nevertheless, the main point to note is that there was a general consensus of opinion that all the major aspects of rural life are covered by the nine domains, and that no new, clearly identifiable and important aspect of personal well-being has arisen in recent years.

Question IIIB asked respondents what, if any, have been the major changes since 1964 which have affected their daily livelihoods. 59% of responses indicated that there had been important changes, 52% answering that these had been for the better, and only 7% stating that change had been for the worse. Once again, changes for the worse tended to relate to specific local issues, the main case in point being the village of Ogoto, in Otsu-shi, where a large 'turkish-bath - sauna' establishment has opened recently. Well known nationally, local inhabitants felt it attracted the 'wrong sort of person' to the community who may prove morally corrupting to young children in the village. Changes for the better, on the other hand, tended to be described in terms of much wider issues. A frequent response was the very general statement that "standards of living had improved". More specific answers emphasised "improvements in transport" which, coupled with "agricultural mechanization", led to "greater opportunities for non-agricultural employment". This in turn meant "higher levels of family income" and many associated benefits. Also mentioned, however, were "improved accessibility to schools and shops", whether as a result of "the building of paved roads" or the "provision of a better bus and train service", as well as an "improved level of local service facilities, including water, gas, and telephones". It is also worth noting that these responses were not limited to people living in any one particular village or area, but that a similar range of statements was offered by people living in each one of the 21 sample villages.

Clearly it is seen that change has occurred during the years 1965 to 1978, and that it is not limited to any one particular domain item but has affected almost the full range of items. Has this change been great enough though, to have brought about a change in the relative ordering of priority preferences? Unfortunately it is possible to do no more than provide a rough indication of the likely answer to this question since the true picture of priority preferences as they stood in 1965 can never be accurately measured. To estimate the likely magnitude of change therefore, level of living scores derived by the standard score additive model (for the period 1965-1975) are correlated with subjective level of living scores derived from question IIa of the questionnaire. Both sets of scores are at this stage unweighted, and both are based on only eight domain items. The ninth domain, population structure, is excluded because

<u>Figure 6.5</u> Relationship between 'objective' and 'subjective' level of living scores.



objective measures cannot be taken for a number of the sample villages. This result (Figure 6.5) indicates a high positive correlation with a value $r = .77$. From this it is concluded that objective measures for levels of living in the period 1965 to 1975 reflect, with a considerable degree of accuracy, conditions as they were perceived subjectively in 1978. The relative position of any one particular domain item does not appear to have altered dramatically during this time, so it would seem unlikely that any major change in priority preferences has in fact occurred during the time period considered here.

The priority scores derived from question IIb are taken to represent the best possible estimate of priority preferences on domain items measured for the period 1965 to 1975. Tests on their potential usefulness in this respect fail to reveal any serious reason why they should not be used as domain weightings, and so the estimation of final level of living scores for each of the original sample villages is able to proceed.

6.6 LEVEL OF LIVING SCORES IN SAMPLE SETTLEMENTS

All the elements of the standard score additive model are complete now, and level of living scores may be calculated for each of the 138 sample settlements where a full range of data is available for all domain items. Although different sets of level of living scores are produced for different population sub-groups, the variations are too small to be represented easily in map form. That is, if, for the sake of convenience, scores are grouped into just four or five broad categories, a map showing the distribution of LOL scores for the 0-29 age group, for instance, will be almost identical to a map showing the distribution of scores for the 30 to 59 age group. The precise variations between LOL scores for different population sub-groups are discussed in detail in Chapter Eight. For the moment,

Figure 6.6a Levels of living for sample settlements (Kyoto).

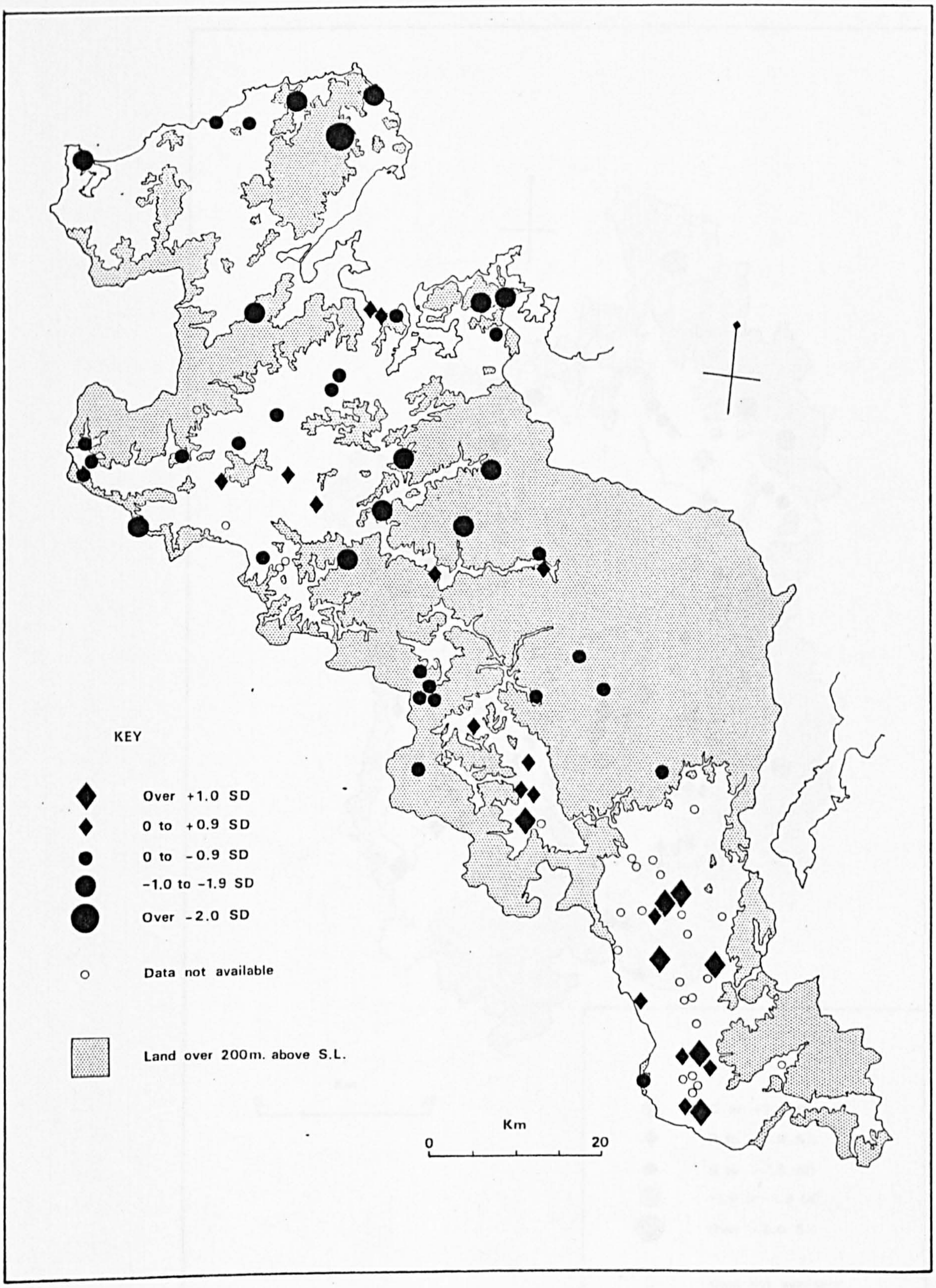
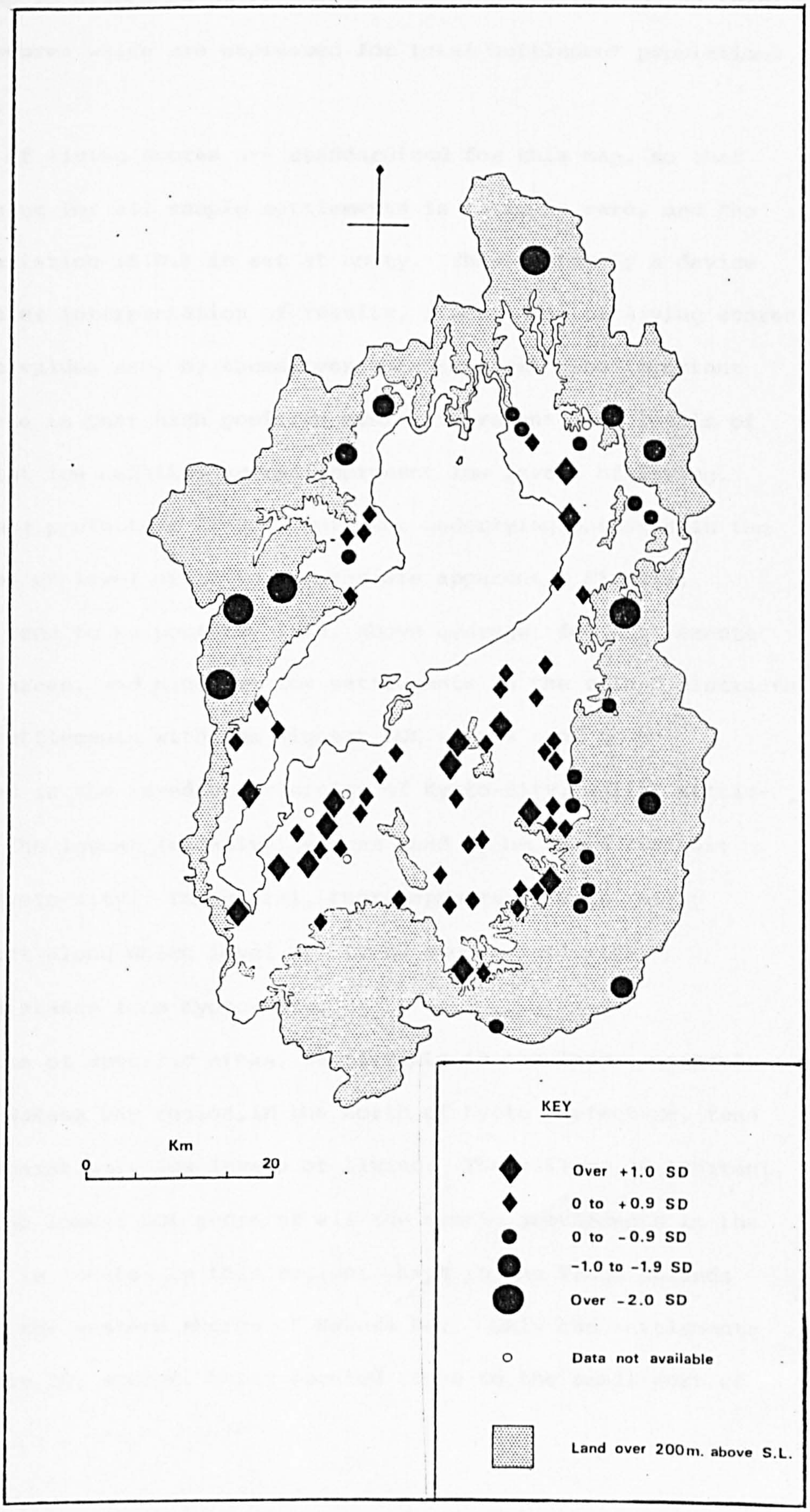


Figure 6.6b Levels of living for sample settlements (Shiga).



only one map is presented here, showing the broad variations in level of living scores which are expressed for total settlement populations (Fig. 6.6).

Level of living scores are standardized for this map, so that the mean value for all sample settlements is taken as zero, and the standard deviation (S.D.) is set at unity. This is purely a device for the easier interpretation of results, since level of living scores as absolute values are, by themselves, meaningless. The important thing to note is that high positive scores represent high levels of living whilst low negative scores represent low levels of living.

In Kyoto prefecture (Fig. 6.6a), two underlying patterns in the distribution of level of living scores are apparent. Firstly, the scores tend to be positive (i.e. above average) for settlements in lowland areas, and negative for settlements in the upland districts. Secondly, settlements with the highest LOL scores tend to be concentrated in the immediate vicinity of Kyoto-city, whilst settlements with the lowest (negative) scores tend to be those furthest away from Kyoto-city. In general, there appears to be a fairly even gradient along which level of living scores fall with increased distance from Kyoto-city.

In terms of specific areas, settlements in the Tango peninsula and in the Wakasa Bay region, in the north of Kyoto prefecture, tend to have comparatively low levels of living. The village of Ashitani, which has the lowest LOL score of all the sample settlements in the prefecture, is located in this region: high in the Tango uplands overlooking the western shores of Wakasa Bay. Only two settlements have positive LOL scores, being located close to the small port of

Miyazu, where a number of local service facilities are available.

In the Tamba upland region, settlements with positive LOL scores tend to be situated in lowland basins, surrounding the cities of Fukuchiyama, Sonobe, and Kameoka. The majority of settlements in this region have negative scores, however, including some which are situated in the more remote areas of the Fukuchiyama basin. The lowest scores are found in the upland districts in the north of the region, particularly in Ayabe municipality where local and urban access is poor; where the agriculture and forestry potential is limited; and where there is heavy winter snowfall. In contrast, upland settlements in the south of this region have rather better LOL scores, partly because the winter climate here is less severe, and partly because this district is the centre of the thriving Kitayama forest industry.

Finally, settlements in the Kyoto basin have very high LOL scores, for a number of reasons. Firstly, the agricultural environment is comparatively good: rice cultivation being combined with profitable market gardening and tea growing. Secondly, a wide range of well-paid non-agricultural employment opportunities are available in nearby Kyoto and Osaka cities. Thirdly, there is generally very good accessibility to local and urban service and welfare facilities, including schools and hospitals. It is also worth noting that most settlements in the sample for which level of living data are unavailable are located here. Objectively measured LOL scores are not possible, therefore, but the subjective appraisal of this writer, based on local knowledge of the area acquired during fieldwork in Japan, is that the levels of living experienced in those settlements are no different from the levels of living experienced in those other settlements in the Kyoto basin where LOL data are available.

In Shiga prefecture (Fig. 6.6b), the dominant pattern is for high levels of living in the lowland area, notably the Omi plain region, and lowest levels of living in the upland districts. Moreover, the variations seem particularly accentuated in this prefecture, with 14 settlements having LOL scores in excess of +1.0 S.D., compared to seven in Kyoto prefecture, and five settlements with scores lower than -2.0 S.D., compared to only one in Kyoto. It is also of interest to note that this range of scores is evident within the borders of a single municipality: Otsu-shi, which stretches along the western edge of the prefecture.

As already noted, this general representation of the distribution of level of living scores for sample settlements is more or less the same for all population sub-groups. It therefore represents the 'average place utility' of settlements, as generally perceived by people living throughout the rural area of Kyoto and Shiga prefectures. Furthermore, it is proposed that this distribution will coincide closely with the general distribution of net migration rates for sample settlements in these two prefectures. Before this hypothesis may be tested, however, it is necessary to turn attention in the next chapter to the measurement of net migration rates in the sample settlements.

CHAPTER SEVEN

MEASURING NET MIGRATION RATES

7.1 INTRODUCTION

Consideration in this chapter turns to the dependent variable, and the measurement of net migration rates in each of the sample settlements, 1965 to 1975.

In contrast to the many problems associated with measuring levels of living, this might appear to be a relatively straightforward and simple task. Conceptually, attempts to measure levels of living are handicapped by the lack of a generally accepted, fully comprehensive list of items which constitute 'the factual circumstances of well being'. As a result, the final choice of indicator variables, the apportionment of relative weightings and so on are often left to the subjective and idiosyncratic judgement of the researcher. Even then, his decisions are severely constrained by the availability, or non-availability of published data which, in turn, limits interpretation of the final index. Set against this, migration may be viewed as a clearly defined event, operating within readily identifiable spatial and temporal parameters. Thus, in effect, the measurement of migration flow should amount to no more than a simple head count of individuals who, in this particular instance, moved into or out of the sample agricultural settlements during the ten year period between 1965 and 1975.

In reality, data on population movements are not readily available at the sub-municipal level, and an actual head count of individuals is not practicable. Instead, it is necessary to make an estimate of the volume or rate of net migration flow using one, or a combination of some of the numerous techniques devised for this purpose. Methods which utilize the Basic Demographic Equation and/or Life Table analysis to estimate net migration flow are in common use, and are generally considered to be relatively simple to operate, and to produce reasonably reliable results (Woods, 1979). However, their reliability is to a very great extent conditional upon the nature and the quality of the sources of raw population data. It is essential, for instance, that the vital statistics should incorporate population breakdowns into suitable areal units and, ideally, breakdowns by age group and sex. Information on local birth and death rates are also required. Furthermore, all this information should be presented on a regular basis over time, with a constant, unchanging format.

If any of these requirements cannot be met, the method of estimation tends to become more complex in order to maintain acceptable limits of reliability in the final result. In Japan, whilst data sources are extremely good at the municipal and prefectural level, it will be seen that many of these conditions cannot be easily met at the agricultural settlement level. Moreover, it will be seen that some techniques to estimate net-migration are not ideally suited to areal units with a small population base anyway. The outcome, rather paradoxically, is that despite the actual and objective nature of the migration event, the measurement or estimation of net migration flow in Japanese agricultural settlements involves procedures which are just as complex and time consuming as those employed in the previous chapter for the measurement of levels of living.

7.2 THE METHOD OF ESTIMATION

The most simple formula for the estimation of net migration flow is based on the Basic Demographic Equation, and takes the form:

Net migration during period t, t + n = Population change t, t + n - Natural population increase (i.e. Births - Deaths) t, t + n.

Provided that the quality of the data source is assured, this formula probably offers the most reliable estimate of net-migration and is also the most adaptable, since it can be applied to any size of spatial territory and to any population sub-group or cohort living within that area. Unfortunately, in Japan, the only reliable and regular source of demographic information at the sub-municipal level is the Population Census. But, by simple definition the Census is a head count of individuals who live at a particular place at a single, specified point in time. In other words, the Census does not have the facility to include information on the number of births and deaths which occur during inter-censal periods. This means, if the Basic Demographic Equation is to be used, that natural population increase must itself be estimated before net migration can be known.

In order to do this, a simple form of life table analysis may be used. In essence, population totals (at time t) are multiplied by known fertility and mortality rates to give absolute numbers of births and deaths. Since these tend to be highly dependent on the age and sex structure of a given population, the accuracy of estimation is greatly improved if age-specific fertility and mortality rates are used in conjunction with the relevant population sub-totals. Thus, the number of deaths is calculated using the formula:

$$D_{t,\ t+n} = ({}_nM_x \cdot {}_nP_x) + ({}_nM_{x+n} \cdot {}_nP_{x+n}) + ({}_nM_{x+2n} \cdot {}_nP_{x+2n}) + \ldots$$

where D is the number of deaths, and M is the age/sex specific mortality rate for population sub-group P. The subscript t denotes the Census year (i.e. 1965 or 1970), and n represents both the length in years of the inter-censal period, and the width of each population age group. Finally, the subscript x denotes the lowest age of the lowest age group in the population (i.e. x = 0), so that x + n, x + 2n ... represent the lowest age in each successive age group.

Estimation of the number of births follows the same basic procédure, except age-specific fertility rates are substituted for mortality rates (m), and population sub-group totals (P) are adjusted so that only females (or married females, or females co-habiting with a male partner, etc.) are included. The total number of births is then the sum of all the births for each population sub-group. All sub-groups are, quite clearly, mutually exclusive and the total number of groups is determined by the age range and age/sex distribution of the whole population.

In respect of the values taken by t and n, it should be noted that unlike many countries (e.g. France), the Japanese government conducts the Population Census at regular, rather than irregular, intervals. In fact, throughout the whole of the post war period, the inter-censal interval has remained a constant five years. The breakdown of population by five year age groups is also a customary procedure in most Census tabulations. Since the period over which net migration is estimated in this survey is ten years, spanning two inter-censal intervals, it would be possible to set t at 1965 and n = 10. However, it is preferable to make n as small as possible for two reasons. Firstly, age-specific fertility and mortality rates show a strong tendency to change over time. Between 1965 and 1972, for instance, the overall birth rate in Japan increased slightly from 18.6/'000 to 19.3/'000 whilst the death rate fell from 7.1/'000 to 6.5/'000. More significantly, the mortality rate for children less than one year old fell from 18.5/'000 to 11.7/'000 (Jinkō Mondai Hangikai, 1974). Secondly, there is liable to be a considerable variation in fertility and mortality rates within different age groups, particularly between the fertility rates for women aged 30 and 39 years, for instance, or the mortality rates of people aged between 70 and 79 years. If n, which represents both the length of the 'inter-censal' period, and the width of age groups is kept to its minimum possible value, the effect of these changes and variations will also be minimized, and the accuracy of estimation will improve accordingly. It is therefore desirable to consider each inter-censal period independently, so that t = 1965, 1970 and n=5.

Following a similar line of argument, this means that the initial Basic Demographic Equation should be applied twice for each settlement, for the two inter-censal periods 1965-1970 and 1970-1975. For each period total population change is adjusted for the difference between the number of births and deaths, leaving a residual amount which, whether positive or negative, is equivalent to the volume of net migration. Finally, the two values of net-migration obtained for each settlement may be summed, and divided by the total population for 1965 to give an overall net migration rate for the whole ten year period.

7.3 PROBLEMS RELATING TO DATA DEFICIENCIES

Despite a comprehensive coverage in the Population Census of a wide range of socio-economic as well as demographic aspects of the Japanese population, there are a number of serious inadequacies relating to the specific data required for the estimation of net-migration rates in agricultural settlements. These data deficiencies may be briefly summarized as follows:

1. The areal breakdown of population data in the Census does not incorporate 'agricultural settlements'.
2. In the 1965 Population Census, there are no age/sex breakdowns of population for areas smaller than the municipality. Population is broken down by age, but for people over the age of 30 the width of each age group is set at ten rather than five years.

   Moreover, in the 1970, and 1975 Censuses, people over the age of 64 years are classed in a single age group. In other words, the value of 'n' does not remain constant.
3. Information on mortality and fertility levels, age-specific or otherwise, is not included in the Population Census. This information can be obtained from other sources, but not for the sub-municipal level.

Also, there is a fourth aspect which, whilst not necessarily the result of a data deficiency, can nevertheless be included in this list:

4. Age/sex breakdowns of sub-municipal populations often result in figures which are too small to be suitable for use in life-table analysis.

It is clear that the estimation of net-migration rates cannot proceed until each of these problems has been studied carefully, and solutions are found to overcome them. Whilst the method of estimation outlined in section 7.2 will remain essentially the same, it will be necessary in view of these data inadequacies to introduce a certain number of modifications to the methodology.

7.3.1. Agricultural Settlements and Enumeration Districts

It is essential that population data are broken down by agricultural settlements or an equivalent area. Otherwise, migration estimates will not correspond to the areas for which levels of living are measured. Also, measurement of the ninth domain (population structure) for level of living scores relies on the same data source as for migration estimates. Here again, it is clearly important that population data are taken for areas which correspond with the agricultural settlements in the sample.

In the Population Census, besides the standard presentation of results for prefectures and municipalities, a selection of results are also tabulated for enumeration districts (chōsa-ku). These are the areas for which individual Census enumerators are delegated responsibility during the actual Census count. Typically, each area incorporates just 50 households, so that their actual size tends to be determined by the local density of population. On average they are smaller than individual agricultural settlement areas, and this is illustrated by the fact that in 1975 there were 650,000 enumeration districts compared to an approximate figure of only 143,000 agricultural settlements (Nōgyō Shūraku Kenkyūkai, 1977). Moreover, whilst the number of agricultural settlements fell slightly after 1965, the number of enumeration districts increased by more than 170,000 (Bureau of Statistics, 1975).

Notwithstanding the fact that some enumeration districts are located in densely inhabited urban areas, where no agricultural settlements are found, it is common for agricultural settlements to incorporate maybe two or three, or even as many as ten or fifteen enumeration districts.

Unfortunately, because enumeration district and agricultural settlement boundaries are defined according to entirely different sets of criteria, they are not always coterminous with each other. Agricultural Settlement boundaries were, for the greater part, defined in 1960 by officials from the Ministry of Agriculture, Forestry and Fisheries. Settlements were determined according to the social bonds which held distinct communities together, and the historical traditions which identify the physical and spiritual barriers between different communities (Nōgyō Shūraku Kenkyūkai, 1977; 3). Since 1960, these boundaries have remained fixed, except in a relatively small number of cases where either settlements have become totally deserted or, for the sake of administrative convenience, settlements have been merged to form larger units. Enumeration district boundary delineation, on the other hand, is carried out by representatives from each municipality, who work under the direct supervision of Census co-ordinators appointed by the Prefectural Offices. Overall control of all aspects of the Census meanwhile rests with the Bureau of Statistics in the Office of the Prime Minister, in Tokyo. Apart from the general rule that enumeration districts should all incorporate, as near as possible, 50 households, the only other criterion laid down for their delineation is that they should take account of "geographically apparent features for their boundaries (Bureau of Statistics, 1975). Inevitably, interpretation of this guideline is open to a wide range of possibilities. In some municipalities, for instance, officials merely trace a straight line between prominent natural features such as hill summits. Alternatively, an irregular path is traced, following the lines of roads, railways, rivers, irrigation ditches, and the like. A third possibility, however, is that enumeration district boundaries are drawn along existing territorial divisions, such as between different ōaza. This is important, since in the district of Japan which includes Kyoto and Shiga prefectures, ōaza are often taken to be synonymous with agricultural settlements (Nōgyō Shūraku Kenkyūkai, 1977)

This link between enumeration districts, ōaza, and agricultural settlements provides the main basis for population data to be compiled at the agricultural settlement level. Clearly, if an agricultural settlement area corresponds to an ōaza, and the ōaza boundary is used to delineate one, or a combination of two or more enumeration districts, a precise data match is possible.

Although it is found that in the majority of cases good boundary fits do exist between enumeration districts and agricultural settlement areas, the problem is compounded by the fact that enumeration district boundaries are liable to be redrawn before each Census. Exactly one year before the Population Census is actually undertaken, an order is issued from Cabinet directing municipal officials to define all the enumeration districts falling within their jurisdiction. In many cases, this simply means that the boundary pattern which existed formerly is maintained for the subsequent Census. However, the officials have to ensure that the requirement of 50 households per enumeration district is still met, and if this is not the case, boundaries have to be re-drawn. This applies particularly in urban areas, where houses are frequently constructed between Censuses, and, to a slightly lesser extent, to remote rural areas which experience a decline in the number of households due to severe out-migration. In these cases, enumeration districts must be reduced in size if there is an increase in the number of households, and enlarged if the number of households has fallen below the required level. The overall increase in the number of enumeration districts between 1965 and 1975 clearly suggests the predominant trend is for them to become smaller over time. Sometimes this is achieved by merely sub-dividing existing districts into two or more new areas so that the original boundary perimeter is still maintained. When the former boundary pattern is completely changed, however, or in cases where enumeration districts are enlarged, it is no longer possible to distinguish the area covered by the earlier enumeration district. This means it becomes impossible to obtain population data for the same area over time, so that net-migration rates cannot be estimated.

The Bureau of Statistics does not, unfortunately, provide any clear indication of where or when enumeration district boundaries are changed. In order to discover this, and also to find which agricultural settlements have boundaries which correspond to enumeration districts in the first place, it is necessary to make a close and careful scrutiny of agricultural settlement and enumeration district boundary descriptions for each settlement, and for each

Census year. Without doubt, a certain number of settlements will be found for which population data cannot be collected because there is no good fit between agricultural settlement and enumeration district boundaries. Additionally, there will be settlements for which reliable population data cannot be collected over time, because of a change in enumeration district boundaries. In such cases, net migration rates cannot be estimated and there is no alternative but to exclude these settlements from the correlation between migration and levels of living.

7.3.2. Enumeration Districts and Census Tabulations

Only an abridged selection of Census results are tabulated for enumeration districts. These are presented in the volume 'Census Results for Enumeration Districts'(Chōsa-ku Betsu Shūkeikekka), which is available for public inspection at relevant prefectural offices, and at the Bureau of Statistics in Tokyo. Results at this level were first published in 1965, and have been produced for each subsequent Census. Unfortunately, the content and format of data presentation tends to vary from one Census to the next, often making the comparison of population data over time rather difficult.

One problem for instance, is that unlike the 1970 and 1975 Census tabulations, the results for 1965 do not incorporate an age breakdown of male and female populations. This means that the number of births in the period 1965 to 1970 cannot be readily estimated using the age-specific fertility method. It would perhaps be possible to estimate the age distribution of female populations in 1965 using known age-specific sex ratios in subsequent years, but this would require considerable research time and would, at best, produce results of dubious reliability. It is necessary, therefore, to consider an alternative method of estimating the number of births in each settlement for this period.

By far the simplest alternative is to regard the number of births between 1965 and 1970 as equivalent to the number of infants aged between 0 and 4 years in 1970. This of course ignores the possibility of infant mortalities, and assumes that no children under the age of five are involved in moves into or out of the sample settlements. In fact, the risk of under-estimating the number of births because some may die in the first five years of life is of no consequence, since this does not effect the eventual estimation of net-migration rates. These births and subsequent infant deaths merely cancel each other out. The assumption that infants are not involved in any migration, however, may at first appear to be unreasonable, and certainly will affect the estimation of net-migration rates. On the other hand, it may be emphasised that this research is primarily concerned with the decision making process prior to migration, and therefore argued that infants under the age of five are not their own decision makers. Thus, in effect, the difference between two parents who move into a settlement with a young child, and a couple who move in just before the birth of a child may be considered irrelevant. Rather than counting three migrants in the first instance, and only two in the second, this method of estimating the number of births implies that only two migrants would be counted on either occasion. This can be justified if it is agreed that considerations of child upbringing are likely to be of far greater significance in the decision to migrate than factors concerned solely with the actual birth itself. In other words, people may make the same migration decision whether they are expecting a child, or if a child has just been born to them.

If this method of estimating the number of births is considered acceptable, then it could also be used for the subsequent 1970 to 1975 period, even though reliable age breakdowns of the female population are available for these years and the age-specific fertility method could also be used. Whilst the age-specific fertility method is perhaps the more reliable of the two, it is argued that complete accuracy in the estimation of the number of births is not of paramount importance. Furthermore, the age-specific fertility method requires a considerable amount of time, to both collect data on female age distributions and to estimate the number of births for each individual age group. Because of this, the simpler method is preferred, and estimates of the number of births during the period 1970 to 1975 will be similarly based on the number of infants aged between 0 and 4 years in each settlement, according to the 1975 Census tabulations.

The second problem arising from the comparison of Census tabulations for different Census years concerns the method of age breakdowns. Ideally, the width of each age group should be the same as the inter-censal period, or five years. This means it is possible not only to produce net-migration estimates for the total settlement population, but also provides the basis for estimating age-specific net migration rates. This can only be achieved when specified age groups of population can still be identified in the population age breakdowns of subsequent Census tabulations. In other words, people aged between 20 and 24 years in 1965 should be represented in a 25 to 29 age group in the 1970 Census, and a 30 to 34 age group in the 1975 Census. Clearly, it is also essential that all age groups are a constant, five year width.

In the 1965 Census, population is broken down into ten mutually exclusive age groups. People between the age of 0 and 29 years are classified into five year age groups (i.e. 0-4, 5-9, ... 25-29), whilst people between the ages of 30 and 59 years are classed into ten year age groups (i.e. 30-39, 40-49, 50-59). The tenth and final category incorporates all people aged 60 years and over. In the 1970 and 1975 Census tabulations, the age breakdown of population is by five year age groups up to the age of 64 (i.e. 0-4, 5-9, ... 60-64), with a final category of people aged 65 years and over.

Leaving aside the 60+ and 65+ age groups for the moment, the first task is to disaggregate the 1965 population aged between 30 and 59 years into six five year age groups. Since there is no means at all of ascertaining the correct five year age groupings the breakdown must be achieved on a somewhat arbitrary basis. The simplest method would be to halve the population in each ten year age group into two equal five year age groups. A slightly more sophisticated method, however, which should in theory produce rather more realistic and reliable breakdowns, is to disaggregate population according to known ratios of people in relevant pairs of five year age groups in subsequent years. This is best described by means of an actual example. In the settlement of Kitaoji, in Shiga prefecture, it is known that there are 366 people in the 30 to 39 age group in 1965. In 1970, this group has aged five years, so the equivalent population group is in the age range 35 to 44 years. The overall total of people in this age group is found to be 304, although this is broken down into two groups of 171 people aged between 35 and 39 years, and 133 people in the 40 to 44 age group. Finally, in 1975 the equivalent age range is 40 to 49 years, and it is found that of a total number of 284 people, 162 are aged between 40 and 44 years, and 122 are in the 45 to 49 age group. It is now assumed that the ratio of population in the 30 to 34, and 35 to 39 age groups in 1965 will be approximately in the order of 171: 133, and 162: 122. By taking an average of these two ratios, a standardized ratio of $^{57}/_{100}$: $^{43}/_{100}$ is produced. Applying this to the total of 366 in the initial ten year age group, the breakdown into five year age groups becomes 208 people aged 30 to 34 years, and 158 aged 35 to 39 years. For the sake of computational convenience these estimates are based on the left-hand figure in the ratio, and fractions are ignored.

Exactly the same method may be applied to populations in the 40 to 49 age group, but a slight refinement has to be made in order to calculate five year age groupings in the 50 to 59 age range. This is because, in the 1975 Census, the equivalent age groups are presented as 60 to 64 years, and 65 years and over. It is therefore not possible to know the exact number of people aged between 60 and 69 years, and the relevant age ratio cannot be obtained. Thus, it is necessary to base the estimation of five year groupings on the 1970 ratio of people aged 55 to 59, and 60 to 64 years, by itself.

It is not possible, unfortunately, to use a similar method to breakdown populations aged 60 years and over, or 65 years and over, into five year age groups. There is simply no way in which reasonable or reliable estimations can be produced, and the categories are best left as they are. This means that it will not be possible to obtain age-specific net migration rates for people over the age of 55 years. Whilst not of major importance, this does make the identification of a specific retirement age group, people aged between 60 and 70 years for instance, rather difficult. Of greater significance is the loss of accuracy this 'clumping' of the elderly age groups will cause in the estimation of total net migration rates. This is because age-specific mortality levels vary tremendously within the 60+ age range, and is illustrated by the fact that in 1975 the mortality rate for males aged 60 years was only 14/'000 compared to 108/'000 for males aged 80 years. For the female population the equivalent rates were 8/'000 and 80/'000 respectively (Shiga-ken Kikakubu, Dec. 1976). In any two settlements therefore, with the same number of people in the 60+ age range but with different age distributions within that group, the number of deaths occurring over a five year period is likely to vary significantly. If the age distributions are not known, however, estimates of mortality levels will produce the same result for both settlements. This inaccuracy inevitably affects the net migration estimate, and reduces its reliability accordingly. It is therefore extremely important that this factor is borne in mind when net migration rates are estimated, even though nothing can be done, unfortunately, to improve the situation.

7.3.3. Age-specific Mortality Rates

The only level at which data suitable for the calculation of age-specific mortality rates are available is for the prefecture. At the municipal level, Prefectural Yearbooks provide indication of the total number of deaths each year, but do not detail the number of deaths by age. At the agricultural settlement or enumeration district level, there are no published data on mortality rates whatsoever. This means that all settlements located within the same prefecture will have the same age-specific mortality rates applied to their populations, irrespective of size, type, or any other factor.

Whilst nothing can be done to alter the situation, it is nevertheless important to consider the possible effects this might have on the reliability of mortality estimates. If crude mortality rates were applied, for instance, the relevance of prefectural rates to local areas would certainly be called to question. This is because crude death rates (i.e. not age-specific) show considerable variation within prefectures and seem to be closely related to the degree of urbanity or rurality of an area. In Kyoto prefecture, the 1976 crude death rates in highly urbanized municipalities such as Uji-shi or Muko-shi averaged around 4/'000 population. In the more remote rural municipalities such as Tango-chō or Miwa-chō, however, the rates are as high as 11.5/'000 (Kyoto Prefectural Yearbook, 1978). Such a difference has in fact been evident for some years, and is also seen over a much wider, national level. In 1960, for instance out of the ten prefectures with mortality rates below the national average of 7.6/'000, five contained great industrial metropolises. Of the five with the lowest death rates, all but Hokkaido were strongly urban and industrial (Trewartha, 1965, 117). One of the major reasons for this spatial disparity is undoubtedly the effect of age selective migration on local population structures. During a period of sustained rural-urban migration, involving principally young people aged between 15 and 35 years, there will be an ageing of residual rural populations whilst urban populations become younger. Since older populations have higher mortality levels, the death rate in rural areas will inevitably be greater than in the cities.

If age-selective migration is the only reason for spatial variation in crude death rates, then the disparity between urban and rural areas should disappear if only age-specific mortality rates are considered. On the other hand, if other factors such as the standard of general health care, and conditions of living are also known to affect the level of relative death rates, spatial variations in age-specific mortality rates may still be in evidence. At the inter-municipal level, information on infant death rates provides the only means of assessing whether or not this might be so. Taking a combination of figures for 1970 and 1975, urban municipalities such as Uji-shi and Muko-shi in Kyoto prefecture average just under 7 deaths of infants less than one year old per thousand live births. In rural municipalities the figures seem considerably higher, at 25/'000 in Miwa-chō, for instance, and 11/'000 live births in Tangō-cho. Because of the relatively small number of live births in small rural municipalities, however, the percentage variation in infant death rate is likely to be quite large. In other words this particular index cannot be considered the most definitive guide to measuring spatial variation in local age-specific morality rates.

At the inter-prefectural level, age-specific mortality rates for 1970 are readily estimated by taking the number of deaths in each prefecture for the 0-14 and 65+ age groups, and dividing these by the total population in each age group. Taking the 0-14 age group first of all, the main urban prefectures of Tokyo and Osaka have rates of

1.57/'000 and 1.58 respectively. Out of four of the more remote rural prefectures_ Iwate, Shimane, Tottori, and Kagoshima, Shimane and Tottori have slightly lower rates, 1.47 and 1.50 respectively, whilst the other two have slightly higher rates, with Kagoshima at 1.61, and Iwate at 1.65. On this basis, it would seem that for this age group at least, there is no substantial difference in age-specific mortality rates between urban and rural prefectures. Mortality rates for the 65+ age group show a slightly different picture, however. In Tokyo and Osaka the rates are 53.3 and 55.6 respectively, whilst in Kagoshima it is 61.2, in Tottori 61.7, in Shimane 62.5, and in Iwate 63.0 (Jinkō Mondai Hangikai, 1974; Kōseishō, 1970). From these figures it would seem that elderly people in rural prefectures do experience slightly higher mortality rates than their counterparts in the main urban prefectures. This spatial disparity, as well as the one for infant mortality rates probably reflects the difference in hospital provision in urban and rural areas, since these are the age groups generally considered to be most at risk. Taken altogether though, there is no really strong evidence to show really major differences in age-specific mortality rates between rural and urban districts. Certainly, spatial variations in age-specific mortality rates do not appear to be as great as those for crude death rates. It is therefore not totally unreasonable to apply prefectural age-specific mortality rates to local settlement populations.

In order to achieve this, age-specific mortality rates must be calculated on the basis of five year age groupings up to the age of 59 years for 1965, and up to the age of 64 years for 1970. In addition, one rate must be calculated for those aged 60 or more in 1965, and one for those aged 65 and over in 1970. Altogether, two different sets of rates are calculated; one for all settlements in Kyoto prefecture, and the other for all settlements in Shiga prefecture. Whilst it would also be desirable to apply separate mortality rates to male and female populations, the lack of suitable age/sex population breakdowns for 1965 means this is not really practicable.

The data for the calculation of age-specific mortality rates are compiled from two sources. Information on the number of deaths in each prefecture, by five year age groups throughout, is provided each year in "Vital Population Statistics" (Jinkō Dōtai Tokei) published by the Ministry of Health and Welfare. Information on the total population in five year age groups for each prefecture is provided in the Population Census. In order to obtain basic age-specific mortality rates, the total number of deaths in each age group is simply divided by the total population of that age-group (Table 7.1). Rates are then expressed per thousand population.

These rates are of course for one year only, though it is desired that the number of deaths over a five year period are estimated. The simplest way to modify the rates so that they can be applied over a five year period is to merely multiply them by five. Care has to be taken, however, since this can produce misleading figures. In Shiga prefecture in 1970, for example, there were 664 deaths in the 60 to 64 year age group, out of a total population in that group of 38,052. This means an age-specific death rate for that year of 17.45. Multiplied by five, this produces a five year mortality rate of 87.25 but, this figure is inaccurate since it is based on the assumption that the standardized population of 1000 remains

Table 7.1 Population totals and numbers of deaths by age group, 1965 and 1970, for Kyoto and Shiga prefectures, and yearly and five - yearly age-specific mortality rates.

Kyoto prefecture, 1965

Age	Population	No of deaths	1 year mortality rate	5 year mortality rate
0-4	159729	729	4.56	22.8
5-9	137842	68	0.49	2.45
10-14	153614	60	0.39	1.95
15-19	249196	142	0.57	2.85
20-24	229301	209	0.91	4.55
25-29	180049	213	1.18	5.90
30-34	172047	246	1.43	7.15
35-39	153506	300	1.95	9.75
40-44	121989	345	2.83	14.15
45-49	105668	426	4.03	20.15
50-54	109841	694	6.32	31.20
55-59	99902	1044	10.45	51.21
60-64	82216	1427	17.36	83.91
65+	147908	9206	62.24	274.91

Kyoto prefecture, 1970

Age	Population	No of deaths	1 Year mortality rate	5 year mortality rate
0-4	185300	591	3.19	15.95
5-9	159933	65	0.41	2.03
10-14	138791	48	0.35	1.72
15-19	184688	89	0.48	2.41
20-24	277827	222	0.80	4.00
25-29	205589	245	1.19	5.96
30-34	176095	217	1.23	6.16
35-39	170099	288	1.69	8.47
40-44	150867	368	2.44	12.20
45-49	120586	404	3.35	16.75
50-54	104051	520	5.00	24.74
55-59	104982	926	8.82	43.30
60-64	93292	1346	14.43	70.12
65+	177987	10245	57.56	256.48

Table 7.1 (continued)

Shiga prefecture, 1965

Age	Population	No of deaths	1 year mortality rate	5 year mortality rate
0-4	66313	413	6.23	30.78
5-9	66684	33	0.49	2.45
10-14	78321	36	0.46	2.30
15-19	93944	68	0.72	3.60
20-24	68403	86	1.26	6.30
25-29	61453	104	1.69	8.45
30-34	65854	107	1.62	8.10
35-39	65318	146	2.24	11.20
40-44	51239	147	2.87	14.35
45-49	45275	189	4.17	20.85
50-54	45368	286	6.30	31.50
55-59	40759	487	11.95	58.32
60-64	35203	698	19.83	95.30
65+	69251	4843	69.93	349.65

Shiga prefecture, 1970

Age	Population	No of deaths	1 year mortality rate	5 year mortality rate
0-4	70483	295	4.19	20.95
5-9	67769	34	0.50	2.50
10-14	67188	20	0.30	1.50
15-19	80354	55	0.68	3.40
20-24	85732	78	0.91	4.55
25-29	68138	64	0.94	4.70
30-34	63062	84	1.33	6.65
35-39	66797	115	1.72	8.60
40-44	64466	142	2.20	11.00
45-49	51147	188	3.68	18.40
50-54	44273	287	6.48	32.40
55-59	43049	399	9.27	45.52
60-64	38052	664	17.45	84.29
65+	79265	5059	63.82	280.81

Source: Bureau of Statistics, 1965; 1970.
Koseisho, 1965; 1970.

constant throughout the period. This cannot be true since it is known that on average 17.45 people should die in the first year. Ignoring the fraction, this would leave a residual population of only 983. Multiplying this figure by the known mortality rate of $^{17.45}/_{1000}$ shows that 17.16 people are expected to die in the second year, leaving only 966 of the original 1000 population if the fraction is ignored. Repeating this process for each subsequent year the number of expected deaths continues to fall, to 16.86 in the third year, 16.56 in the fourth year, and 16.26 in the fifth year. If these mortality estimates are summed, the total number of expected deaths is found to be 84.29 per thousand population, compared to the original figure of 87.25. Clearly, these variations in mortality estimates are greatest when the basic ASM rate is high. When the ASM rate has a value less than 8.0 or so, the rate may be multiplied by five without any undue loss of accuracy.

When the five year ASM rates are all calculated, one or two interesting observations may be noted from the results (Table 7.1). First, the rates for both Kyoto and Shiga prefectures show a substantial decline between the two five year periods, particularly for children aged less than five years old and for adults aged more then 55 years. This undoubtedly reflects a general improvement in health and welfare provision in Japan during the late 1960s, but also casts an element of doubt on the validity of the mortality estimates. This is because the mortality level for 1969 for example, is calculated according to the 1965 mortality rate when in all probability, the actual value should be closer to the 1970 rate. It may have been more appropriate therefore, to base the calculations of five year mortality rates on an estimated 'mid point' value for 1967, and in the subsequent period, for 1973. However, it is felt that calculations based on actual, rather than estimated death and population totals are likely to be more reliable, despite this problem.

A second observation is that during both five year periods, ASM rates tend to be higher for the population in Shiga prefecture than in Kyoto prefecture. Once again, variations are greatest in the 0 to 4 age group, and for adults over the age of 50 or so. Whilst the precise reasons for this are difficult to isolate, the fact that Kyoto prefecture incorporates a major metropolitan area suggests that this disparity may be related to rural-urban differences. Although the variations in rates are not particularly large, this nevertheless serves as a cautionary reminder that the application of prefectural ASM rates to local populations probably reduces the reliability of the mortality estimates.

7.3.4. Age-specific mortality rates and small populations

If the ASM rate is given as 5.0, and the population in the relevant age group is 6250, simple multiplication of the two figures (n.b. 5.0/'000 = 0.005) provides the estimate for the number of deaths in that age group over a five year period. This result is found to be 31.25. The obvious problem here is that mortality levels should be considered in discrete rather than in continuous terms, and that fractional values have no bearing on reality. Yet, if the ASM rate is expressed as a fraction, multiplication will invariably produce another fraction. The simplest solution would be to round these fractions to the nearest integer, but this creates further difficulties if a smaller number in each age group is considered. If, for instance, there are only 475 people in a particular age group, and the ASM rate is still 5.0, the resultant mortality estimate is 2.375. Rounding the figure down to 2 in this case means that the original estimate is reduced by as much as 15%, and this clearly represents a considerable loss of accuracy. Taking the argument even further, it is likely that in many of the smaller settlements in this study, the number of people in a given age group will be no more than nine or ten, and in some instances could be as low as one or two. Multiplying these figures by the same ASM rate produces mortality estimates in the order of 0.005 to 0.05. If these figures are simply rounded down to zero, the implication is that no deaths occur at all in settlements with small populations. This is clearly unacceptable and an alternative solution must be found.

The only possibility for providing discrete mortality estimates, (other than zero), in settlements with small populations is to incorporate a random or probabilistic simulation technique into the analysis. The first step may be to identify the probabilities that a given number of deaths will occur. This can be achieved by saying:

The probability of someone remaining alive $= p$

The probability of someone dying $= q$

and,

$$p + q = 1$$

If the number of people in each age group is represented by n, the probabilities of 1, 2, 3 ... n people remaining alive are found by the expansion of:

$$(p + q)^n$$

Taking an actual example, if the ASM rate is 5.0/'000, and there are five people in the age group, then

$$(0.995 + 0.005)^5 = 0.9752 + 0.0245 + 0.0000246$$
$$+ 0.00000012 + 0.0000000003 + 0.000000000003 = 1.0$$

This means that there is a 97·52% chance that no one will die; a 2.45% chance that one person will die; a 0.00246% chance that two people will die; and so on

. The next step is to re-arrange these probabilities into a continuous numbered sequence, divided into six groups. The width of each of these groups is equivalent to the original probability levels. For the sake of clarity, only the first three groups are illustrated here:

0000001 - 9752000	:	0 deaths
9752001 - 9997000	:	1 death
9997001 - 9997246	:	2 deaths

If a seven figure number is chosen at random, it should be possible to place it within one of these groups. If it falls in the first group, then no death will be recorded. If the number lies in the second group, one death will be recorded, and so on.

The simple logic of this method, and the relative ease with which it appears to operate make it seem extremely suitable for the simulation of mortality levels. However, if the method is applied to large population groups, with a smaller ASM rate, the computations become extremely complex. An indication of the extent of this complexity is provided by completing the above example. Since the sixth solution (i.e. five deaths) has a probability set to twelve decimal places, the numbered sequence should also be arranged to include twelve figure numbers. Similarly, a twelve figure random number is required. If the size of population in each age group is increased, so that n = 50, for example, the probability that all 50 people will die will be extremely small indeed. In fact, the probability level will be set to so many decimal places that the method becomes almost impossible to operate. Even though it is extremely unlikely that a random number will produce this solution, it is essential that it is included in the numbered sequence. Otherwise, the possibility that all people might die is excluded completely, and would merely amount to a more sophisticated form of rounding figures to the nearest whole number. Thus, rather paradoxically, this method is unsuitable for use with settlements with large populations.

An alternative method for the random simulation of mortality levels has been devised by White for the projection of population structures in small rural communities in northern France (White, 1980). Here, a single three figure probability level is taken, equivalent to the ASM rate per thousand population. Then, three figure random numbers are examined, one for each individual in the relevant age group. If the random number has a value below the probability of dying, a death is recorded. If the random number has a value more than the probability of dying, no death is recorded. This process is continued until random numbers for the whole population in the age group have been considered. For example, if there are five individuals in a given age group, whose ASM rate is 005 per thousand, five three figure random numbers are examined. If any of these have a value of 005 or less, they are recorded as a death.

Thus, if three of the random number sets have a value of 005 or less, three deaths are recorded. The process is of course repeated for all age-groups, until the whole population of each settlement is accounted for.

The reliability of this method is just as good as the one previously outlined. In fact, it incorporates exactly the same principles as the former method, whilst avoiding the necessity to calculate separate probability levels for each possible solution. It is extremely simple to operate, and is suitable for use with a wide range of population sizes. For this reason it is selected as the method to be used in this study to simulate mortality levels.

Finally, it is important to note the difference in terminology between the estimation of mortality levels, and the simulation of mortality levels. When using simulation techniques which incorporate random procedures, the emphasis is no longer on an attempt to discover actual migration rates. This is not to say that considerations of accuracy and reliability in the methodology are no longer important. Rather, with simulation techniques an attempt is made to produce a type of pattern of mortality levels, which, to the best of ones knowledge, is most likely to reflect real world patterns. From the outset, it is recognised that more than one possible simulation exists, even though the same methodology and mortality rates are used. This carries important implications for consideration in the next chapter, when migration rates are correlated with level of living scores.

7.4 AGRICULTURAL SETTLEMENTS AND POPULATION DATA

Having now firmly established a methodological framework for the estimation, or simulation, of net-migration rates, the next task is to identify the agricultural settlements for which reliable population data are available for all three Census years in the period 1965 to 1975. To achieve this it is necessary to compare maps which show the delineation of agricultural settlement and enumeration district boundaries.

Agricultural Settlement maps for Kyoto and Shiga prefectures are held at prefectural branch offices of the Kinki Agricultural Planning Office, in Kyoto-city and Otsu- city respectively. These simply comprise a standard set of 1:50,000 topographic maps with agricultural settlement boundaries drawn freehand onto them. Only one set of maps has been compiled since Agricultural Settlements were first defined in 1960, and any boundary changes are represented by merely crossing out the original boundary, and drawing in the new one. Enumeration district maps, on the other hand, are completely redrawn before each Census, so that for the period 1965 to 1975 there are three sets of maps for each prefecture. These are all stored at the Bureau of Statistics, in Tokyo. Unfortunately, they are not drawn to a standardized format, and the quality of the maps and the scale at which they are drawn tends to vary considerably from year to year and from one area to another. Map scales, for instance, range from 1:3000 to 1:20,000 between different municipalities. This makes the accurate comparison of maps an extremely difficult task, and this is compounded by the fact that comparisons can only be achieved in the first place by making a hand-drawn copy of the Agricultural Settlement maps, and taking these to Tokyo where the enumeration district maps are kept.

There is, however, an additional source of information which to some extent aids the task of map comparison. This is the List of

Enumeration Districts (Chōsa-ku Ichiranhyō), providing a written description of each enumeration district, including details of street names (chō) and house numbers. Since the list is also revised before each Census it is reasonable to assume that if the descriptions for two different years are exactly alike, then the enumeration district boundaries have remained unaltered. But its value is limited by the fact that two apparently dissimilar descriptions do not necessarily mean that boundaries have been changed. This is because the descriptions tend to be abbreviated and rather terse, and because Japanese houses are rarely numbered in logical sequence. Different descriptions compiled by different officials may, in fact, refer to exactly the same group of households, although it is impossible to be sure of this without an intimate knowledge of the particular chō, and individual households in question.

In order to establish the goodness of fit between agricultural settlement and enumeration district boundaries over each of the three Census years, therefore, a total of four maps and three written descriptions must be carefully compared for each of the 168 sample settlements. Inevitably, a considerable amount of checking and cross-referencing is required, so that the whole process becomes extremely time-consuming. In the end, the poor quality of some of the maps and descriptions means that the final decision regarding the goodness of fit is often based on subjective rather than strictly objective consideration. Notwithstanding this, in the 1965 Census, a total of 138 settlements are judged to have a sufficiently good fit between agricultural settlement and enumeration district boundaries for reliable population data to be collected for that year. These data can be used for the measurement of the ninth domain in the calculation of level of living scores.

In marked contrast to this figure, there are only 86 settlements where agricultural settlement and enumeration district boundaries coincide for all three Census years, representing just 51% of the original sample. A map of their distribution (Figure 7.1) shows they are mostly situated in lowland areas, particularly on the Omi Plain and on the lowland fringe surrounding Lake Biwa in Shiga prefecture. The settlements where boundaries do not coincide, on the other hand, tend to be in mountainous areas and in districts on the urban fringe. In particular, there is a very strong concentration of these settlements in the immediate vicinity of Kyoto city. This is not altogether surprising, especially in view of the fact that the low level of boundary coincidence appears to be mainly due to changes in enumeration district boundaries over time. In urban and suburban areas, where there is likely to be a rapid increase in population due to net in-migration, enumeration districts need to be frequently reduced in size, whilst in mountain districts which suffer severe depopulation through heavy out-migration, enumeration districts have to be constantly enlarged. In most other lowland districts it may be surmised that population levels are sufficiently stable for enumeration districts to remain unaltered.

The implications this holds for the research are self-evident. In the first place, settlements for which reliable population data can be obtained are clearly not determined on any kind of random basis. Even more serious is the fact that the settlements on which interest in this research is primarily focused, where the most severe rates of out-migration have occurred, are automatically excluded from further

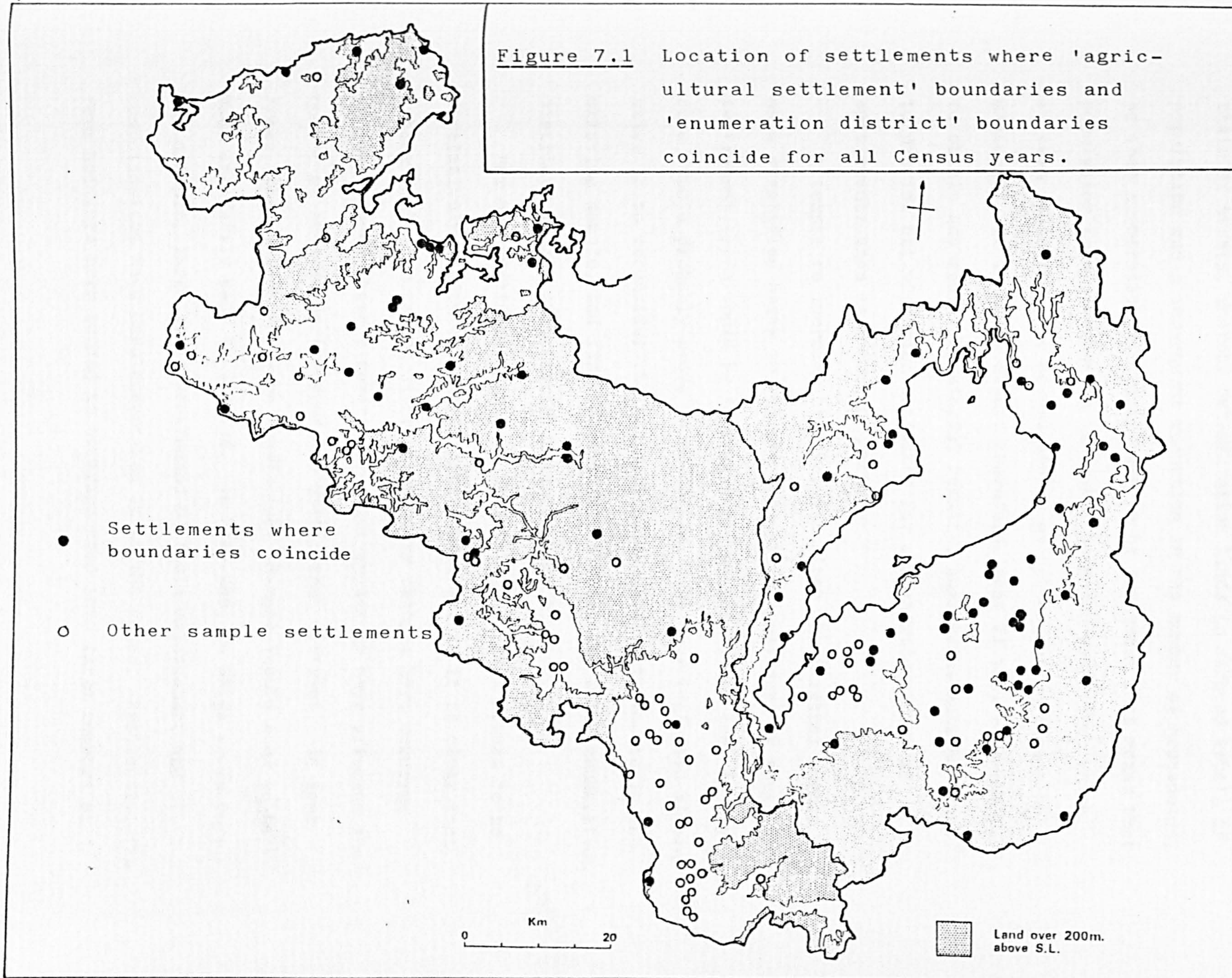


Figure 7.1 Location of settlements where 'agricultural settlement' boundaries and 'enumeration district' boundaries coincide for all Census years.

analysis. The reason for this revolves round a curiously circular chain of events, whereby out-migration leads to reduced levels of population and a subsequent reduction in the number of households, so that enumeration districts have to be revised. This means that population totals cannot be reliably compared over time, which in turn means that the actual amount of net-migration cannot be measured. It is quite clear, therefore, that if this research is to obtain any really meaningful results, some means must be found to provide net-migration estimates for a much wider range of settlements than is presently possible.

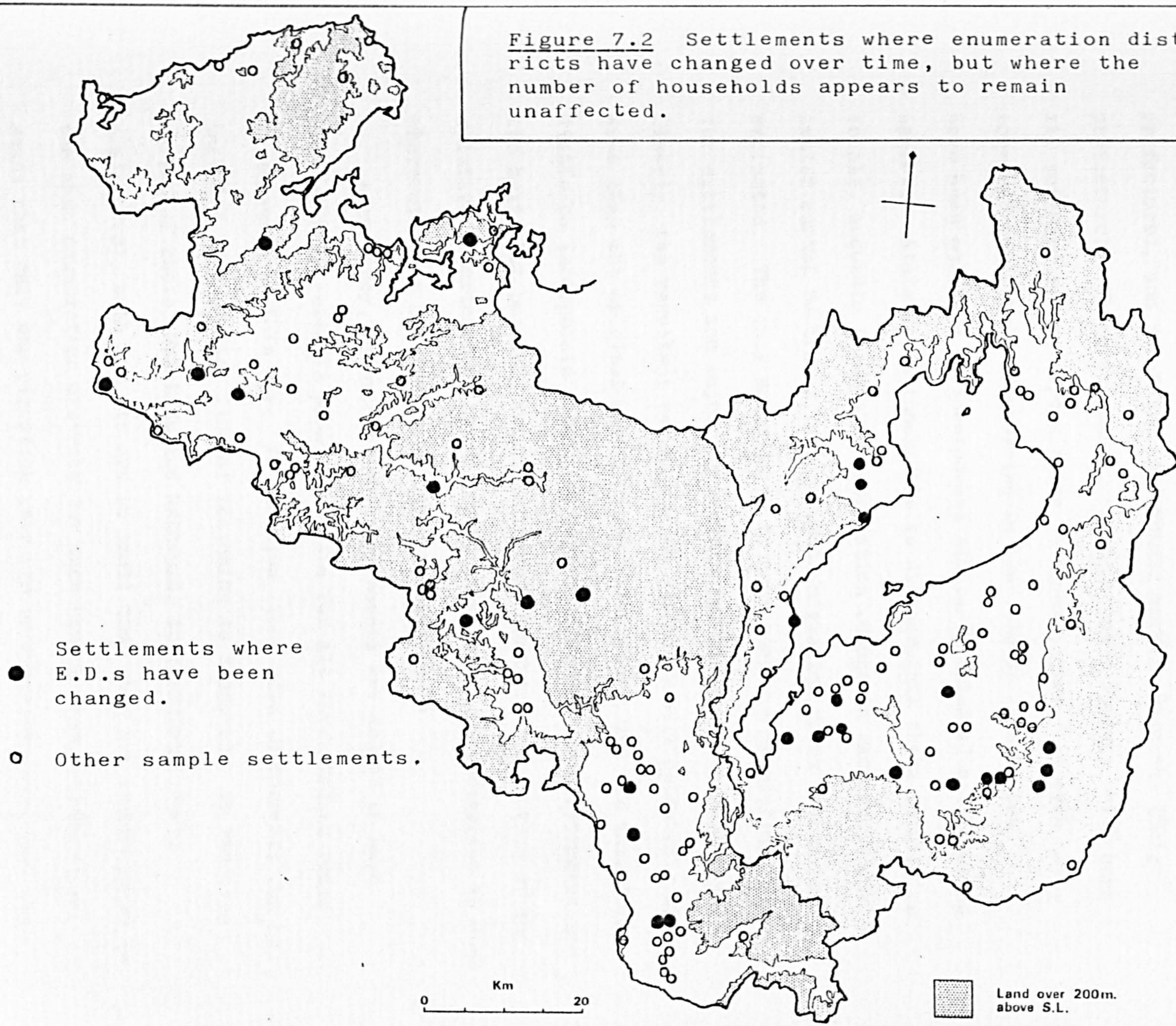
Attempts to increase or otherwise alter the original sample on a stratified basis to restore the 'correct balance' of rural settlement types would be impracticable at this stage and, in any case, would probably prove to be futile. The only realistic alternative is to reconsider the boundary patterns of settlements in the existing sample, and find representative areas for which enumeration districts remain effectively unaltered over time.

For one additional group of 28 settlements this proves to be a relatively straight forward task. Here, whilst it is clear that substantial enumeration district boundary changes have occurred at least once, these alterations do not appear to have affected the number of households incorporated within each district. In some areas, the reasons why such ineffectual changes should need to be made are fairly easy to surmise. In Hino-chō, in Shiga prefecture, for example, large scale programmes of field enlargement and consolidation have been undertaken in recent years. Previously, the farm holdings here tended to be fragmented into large numbers of small fields, scattered at various points around the villages and even within the boundaries of neighbouring settlements. Improvements to drainage and irrigation techniques have now enabled farmers to consolidate these holdings into larger units. This has brought about the destruction of former networks of footpaths and irrigation ditches which often marked the original boundaries between oaza, or settlements, and which also delineated former enumeration districts. Because enumeration district boundaries are regularly revised every five years they are able to take account of these changes relatively quickly. Such boundary alterations are made to conform to new field patterns and are not necessarily designed to affect the number of households included within each district. Population totals therefore remain unaffected and reliable net-migration estimates can be achieved after all.

Inclusion of these settlements increases the proportion for which reliable population data can be collected to 68% of the original sample. However, it is clear from a map of the distribution of these additional settlements (Figure 7.2) that they also tend to be located in lowland areas, being concentrated particularly in the Omi Plain region of Shiga prefecture. In fact, they tend to represent the most efficient and productive agricultural areas, where programmes of field consolidation are most viable and where they can be most readily afforded. Inclusion of these settlements does not rectify the problems which arise from changes in enumeration district boundaries due to changes in population levels, therefore.

In mountainous areas which have suffered severe population decline, the most common method for redrawing enumeration district boundaries

Figure 7.2 Settlements where enumeration districts have changed over time, but where the number of households appears to remain unaffected.



is to combine two former districts into one larger enumeration district. Settlements in the original sample which have been affected in this way include Kannonji, in Maizuru-shi (Kyoto prefecture), and Nakadaira, and Nukui, both in Otsu-shi (Shiga prefecture). These are small, remote, forest hamlets which have all suffered severe depopulation in recent years. In each case, enumeration district boundaries in the 1970 or 1975 Census have been enlarged to incorporate similarly situated neighbouring hamlets. Since it is impossible to disaggregate these population totals, accurate figures for population change in each individual hamlet cannot be traced, and separate migration rates cannot be estimated. The only solution is to take combined population totals for settlements and adjoining hamlets for all three Census years. Clearly, the resultant net-migration estimates will apply to a wider area than the original agricultural settlements, and are therefore liable to incorporate a certain degree of error. Such estimates are the best that possibly can be obtained, however, and in view of the relative importance of these areas, this method of estimation is used wherever it is considered suitable and desirable.

Altogether, a further ten settlements are judged to have sufficiently reliable population data for all three Census years if measured in this way. In addition, four more settlements can be included if a similar line of reasoning is accepted. In the case of two of these, Nakahata and Nakamura, in Tamba-chō (Kyoto prefecture), both hamlets are so small that they are incorporated in the same enumeration district for each Census year. Since this means that only one migration rate can be estimated, the same net-migration estimate is applied to both settlements independently.

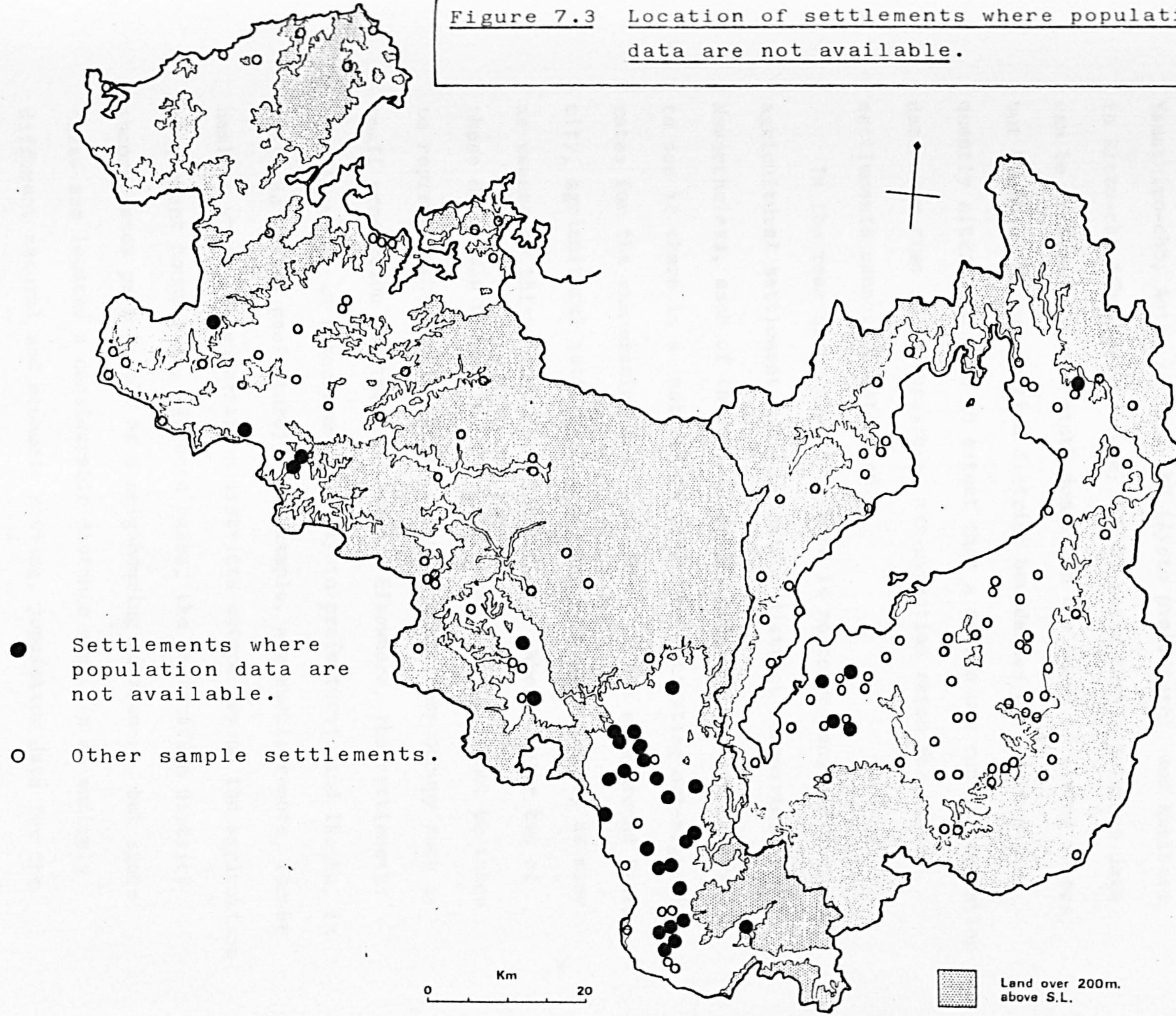
A slightly different situation affects Toshi-east and Toshi-west, in Kizu-chō (Kyoto prefecture). In this case the two settlements together form one ōaza, but this is sub-divided into three enumeration districts. Whilst the shape of these districts apparently remains unchanged over time, it is virtually impossible to determine which two districts best correspond to which one agricultural settlement. The simplest and most practicable solution is to combine the population figures for the whole ōaza, and apply the resultant net-migration estimate equally to both settlements.

Finally, there are a further five settlements where population totals can be compared over time, but only for areas which are slightly smaller than the original agricultural settlements. In all these cases the agricultural settlement area is represented by two or more enumeration districts. Whilst at least one of these districts has remained unchanged over time, the others in the area have been altered to such an extent that a continuous run of population data cannot be obtained. This is a relatively common occurrence, especially in areas on the urban fringe. Usually, the proportion of the agricultural settlement area which is occupied by the unchanged enumeration district is too small for truly representative population figures to be taken. In five instances, however, namely: Chihara, in Kameoka-shi; Oyushi, in Yukuno-chō; Tokumitsu, in Tango-chō (all in Kyoto prefecture), Fukuwaichiba, in Konan-chō; and Iso, in Maibara-chō (Shiga prefecture), the enumeration district is considered sufficiently large for the resultant net-migration estimates to reflect, with a reasonable degree of accuracy, the migration rates in the agricultural settlements as a whole. Of these, only Chihara is on the urban fringe. Oyushi and Tokumitsu, on the other hand, are comparatively remote, mountain settlements.

Thus, there are 19 settlements where enumeration districts do not correspond to agricultural settlement areas, and where population totals are affected accordingly. In all but five of these cases, the populations in the enumeration districts are larger than in the agricultural settlements. In order to justify the estimation of net-migration rates for these settlements, two points need to be stressed again. Firstly, there is no other means in which net-migration estimates can be realistically obtained for these settlements. Secondly, after close and careful study of all the available evidence, including information gained from actual visits to many of these settlements, it is believed that no significant difference is likely to exist for either the net-migration rate or the level of living score between the enumeration district and agricultural settlement area.

The inclusion of these settlements means that net-migration rates for the period 1965 to 1975 can now be estimated for a total of 133 settlements, representing just under 80% of the original sample. Figure 7.3 shows the distribution of the remaining 35 settlements for which reliable population data are not available for all three Census years. It is immediately apparent that most of these are concentrated in the vicinity of Kyoto-city in areas of major urban development, and a few are scattered in more remote rural areas to the north of Kyoto and Shiga prefectures.

Figure 7.3 Location of settlements where population data are not available.



In five of these settlements a good fit between the agricultural settlement and 1965 enumeration district boundaries was recognised. These are Kiyoi, in Minami-ku; Kohata, in Uji-shi; Kitamura, in Yamashiro-chō; Aoto, in Yagi-chō (Kyoto prefecture), and Kuribara, in Ritto-cho (Shiga prefecture). This means that population data can be measured for the ninth domain in the level of living scores, but because the enumeration district boundaries have been subsequently altered to such an extent that a continuous run of population data over time is not possible, net-migration rates for these settlements cannot be estimated.

In the remaining 30 cases, there is no correspondence between agricultural settlement and enumeration district boundaries at all. Nevertheless, each of these settlements has been studied carefully to see if there is a justifiable basis for estimating net-migration rates for the enumeration district area. In the area around Kyoto-city, agricultural settlement areas may be represented by as many as twenty or thirty enumeration districts. Where one or two of these do remain unchanged over time, they clearly cannot be taken to represent the settlement as a whole, since they occupy such a small proportion of the total area. Elsewhere, the settlements of Shimonojo, in Fukachiyama-shi (Kyoto prefecture), and Ikeoku, in Azai-cho (Shiga prefecture), for example, are small, remote, forest hamlets where the enumeration districts extend beyond the agricultural settlement boundaries. In both cases, the enumeration district incorporates part or all of a neighbouring settlement, but since these are located a considerable distance away, in an entirely different natural and economic setting, population data for the enumeration districts cannot be considered representative of the agricultural settlements alone. With these relatively few exceptions, however, the principal reason why reliable population data cannot be collected is that the enumeration district boundaries which most closely correspond to these settlements have been completely altered between Census years. Since these changes have affected the number of households included within the districts, there is simply no way in which migration rates can be accurately estimated. There is no alternative but to exclude these settlements from further analysis, and this inevitably leads back to the question of introducing possible bias into the sample.

In Chapter Four it was stated that there is no reliable and practicable means of accurately classifying individual agricultural settlements into specific rural 'types'. The breakdown into 'suburban villages', 'lowland plain villages', 'agricultural-mountain villages', and 'mountain villages' has been applied at the municipal level, but can only be used in a loose descriptive sense when referring to individual settlements. The only way to achieve a correct balance of all rural settlement types in the analysis therefore, is to take a random sample from all 'agricultural settlements' in the area. If any of these settlements are subsequently taken out of the sample on a non-random basis, then the remaining sample is no longer considered random.

For the sake of argument, it is probably fair to say that settlements representing all rural 'types' are included among the 35 settlements for which migration rates cannot be estimated. It may even be suggested that in some of these cases, the re-drawing of enumeration district boundaries appears to have been carried out on such an arbitrary basis, that this is tantamount to a random process. If the number of excluded settlements was restricted to just these few isolated cases, the removal of these settlements from the random sample would probably not give rise to undue concern. However, it is clear that the majority of the settlements fall into a similar 'type' classification, and that the re-drawing of enumeration district boundaries has been carried out for a very specific purpose. These are the settlements located in the urban fringe, near Kyoto-city, where enumeration districts have to be constantly revised because of rapidly increasing populations. They include 9 settlements in the various wards of Kyoto-city itself, and 16 in the surrounding cities (shi), such as Muko-shi, Oyamazaki-shi, Uji-shi, and Joyo-shi, and in nearby built up areas including Kameoka-shi, and Moriyama-shi, Ritto-chō, and Chuo-chō, in Shiga prefecture. Clearly, the removal of such a coherent group of settlements constitutes a serious threat of sample bias.

An alternative viewpoint, however, would be to justify the exclusion of these settlements from the sample on the basis that they no longer constitute 'rural areas'. For the purposes of the present research, the 'rural area' has been accepted to be synonymous with those areas defined by the Ministry of Agriculture and Forestry as 'agricultural settlements'. These were first defined in 1960, and since then, despite considerable encroachment of 'urban' and built up areas, very few have lost that status (Nōgyō Shūraku Kenkyūkai, 1977). Certainly, no attempt has been made to re-define 'agricultural settlements' to take account of urban expansion which occurred throughout the 1960s and 1970s. In Muko-shi, for example, just to the south of Kyoto-city, there were 327 hectares of cultivated land in 1970. By 1975, almost one-quarter of this had been sold for non-agricultural use, with half being used for building private dwellings (Kyoto-fu, 1978; Nōrinshō Nōrinkeizaikyoku, 1976). The population increased by 9,000 people in this period, reaching just under 46,000 in 1975. This is almost four times the level it had been in 1960. Moreover, the proportion of the working population employed in agriculture in 1975 was only 2.6%. The most crucial point, perhaps, is that by 1975 virtually the whole of Muko-shi was classified as a Densely Inhabited District. Yet, the whole area was still divided into six agricultural settlements (Kyoto-fu, 1978).

Muko-shi is by no means an isolated example, and similar sets of figures can be found for Kyoto-city and all the surrounding townships. It is also interesting tc note that more than half of the 25 settlements presently under consideration are located in Densely Inhabited Districts (Bureau of Statistics, 1970).

In the light of this, it would seem reasonable to exclude all such settlements from the sample anyway, on the basis that Densely Inhabited Districts are generally indicative of urban rather than rural environments. This would present a large number of additional problems, however, not the least of which is the fact that some settlements incorporated in Densely Inhabited Districts in 1970 or 1975 were outside the DID area in 1965. Furthermore, settlements like Joraku, which is located within the Kyoto-city limits - just a few minutes walk from the city centre, are also in the DID area but are presently included in the sample because enumeration district boundaries have remained unchanged since 1965. In this particular instance, agriculture, in the form of market gardening, still plays an important role in the local economy, and the landscape is still characterized by cultivated fields, interspersed among modern, tall apartment blocks.

In reality, the whole area immediately surrounding the central business districts of Kyoto and its satellite towns should be described as 'rurban', being neither truly urban in character, nor truly rural. Any attempt to distinguish areas according to whether they are 'more urban' or 'more rural' would be extremely difficult and, in many respects, merely tautological. Nevertheless, it is essential that some sort of positive criteria are adopted in this research for a distinction to be drawn between rural and urban areas. Whilst 'agricultural settlements' on the urban fringe maintain at least some vestige of rurality, it does seem unwise to adhere rigidly to the present definition when the purpose of this research is to study rural depopulation, and some of the agricultural settlements in the sample are apparently experiencing rates of population increase which are amongst the highest anywhere in Japan. Given the lack of any other suitable criteria, therefore, it would seem reasonable to adjust the present definition so that any settlement experiencing such a high rate of population increase that enumeration district boundaries have to be altered between each Census is excluded from the sample.

Whilst this is by no means entirely satisfactory, it is really no more or less arbitrary than the present definition, or any other than might be used in this situation. The crucial point it does illustrate, however, is that the possible effect of 'sample bias', arising from the exclusion of settlements on the urban fringe because suitable population data cannot be collected, need not be considered as such a serious threat to the successful outcome of this research.

7.5 NET MIGRATION RATES IN SAMPLE SETTLEMENTS

Using the procedures outlined previously in this chapter, it is now possible to collate and present population figures and simulated net migration rates for each of the 133 sample settlements where suitable population data are available. Whilst the ultimate aim is to consider spatial variations in net-migration rates between individual settlements, the fact that these rates are estimated using random processes means considerable care must be exercised in their interpretation. For this reason, it is useful, first of all, to draw relevant observations where possible from less detailed, but more reliable, sources of information. These include overall figures for population change in the sample settlements, and aggregate rather than individual migration estimates.

In 1965, the population of the 56 sample settlements in Kyoto prefecture was 14,270, representing just 0.68% of the total population for the whole prefecture. By contrast, the 1965 population of the 77 agricultural settlements in Shiga prefecture was 33,893, equivalent to 3.97% of the total population of Shiga prefecture. This disparity is partly explained by the fact that Kyoto contains a higher proportion of sample settlements for which data are not available, but is also generally indicative of the fact that a greater percentage of the population in Kyoto prefecture lives in urban areas (Population Census of Japan).

Figures for overall population change for each prefecture in the period 1965 to 1975 are recorded in Table 7.2. It is seen that whilst the total population of Kyoto prefecture increased by about 15%

TABLE 7.2. Five year change rates for total populations and sample populations in Kyoto and Shiga prefectures, 1965 to 1975

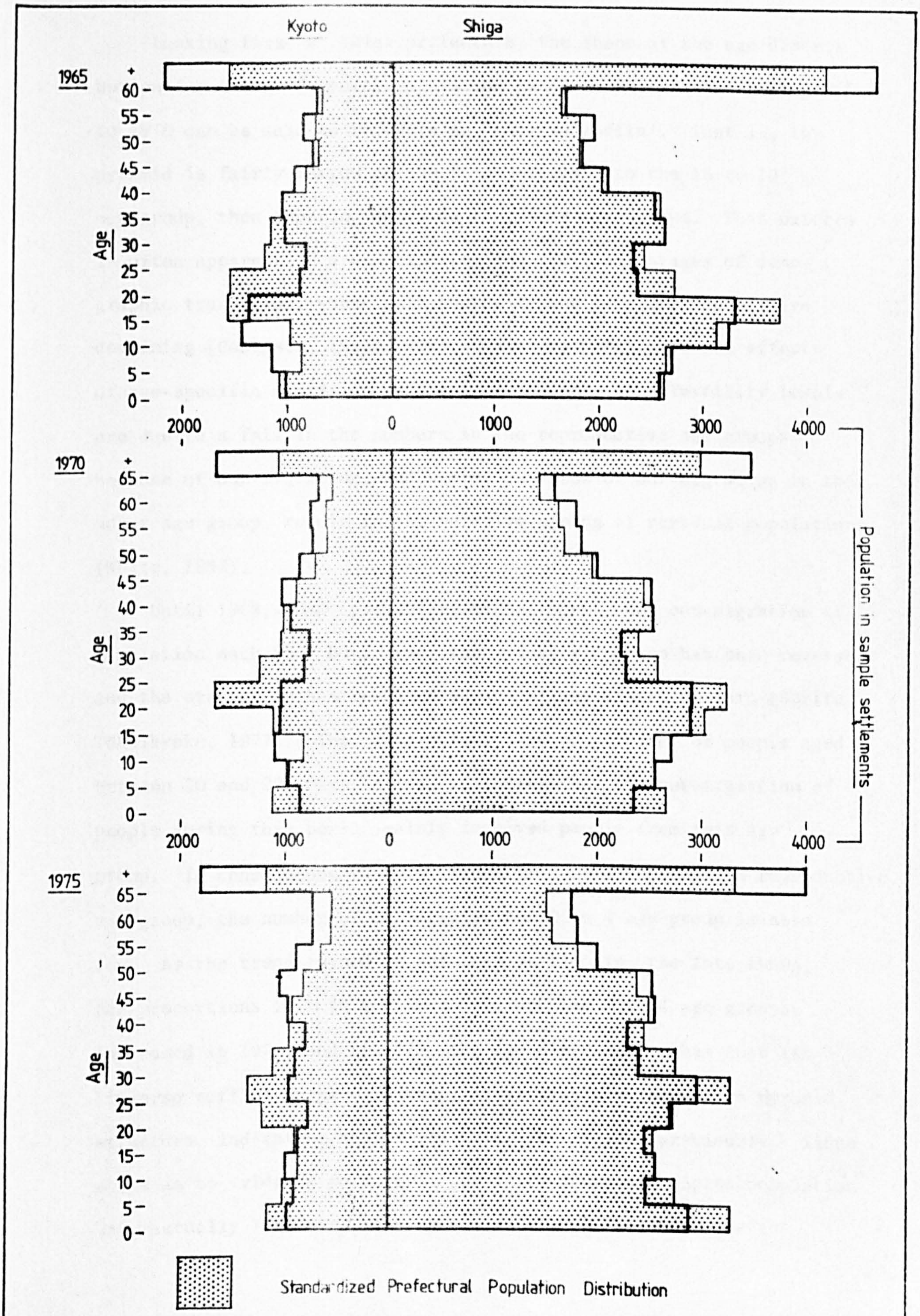
Year	Kyoto Prefecture				Shiga Prefecture			
	Total Population	% Change	Sample Population	% Change	Total Population	% Change	Sample Population	% Change
1965	2102808		14270		853385		33893	
		+7.00		-4.70		+4.26		-0.87
1970	2270087		13599		889768		33598	
		+7.77		-2.05		+10.77		+5.46
1975	2424856		13320		985621		35433	

during this period, the population in the sample settlements experienced a decline of just under 7%. In Shiga prefecture, the overall increase in total population was at a similar rate to Kyoto, although it accelerated more rapidly during the latter half of the period. In much greater contrast, however, was the population change experienced by the sample settlements in Shiga. After a small decline in the first five year period, the population increased between 1970 and 1975 to such an extent that the overall rate of change for the whole ten year period was an increase of 4.54%.

Looking in more detail at changes in population age distributions for sample settlements during this period, the increase in population in settlements in Shiga prefecture between 1970 and 1975 is seen to be largely accounted for in the 0 to 4 and 25 to 34 age groups (Figure 7.4). Whilst higher fertility may be the reason for some of this increase, the overall picture suggests increased population is due to in-migration, involving principally young family groups. A clearer view emerges, however, when these figures are seen in the context of population distributions for the whole prefecture.

The comparison between prefectural and settlement age distributions is best achieved by standardizing prefectural age distributions according to total population levels for the sample settlements in each prefecture. Thus, the age distribution for Shiga prefecture is represented by making the total prefectural population equivalent to the total population of the sample settlements in Shiga prefecture, and then constructing population pyramids in the normal manner. The only difference is that only 'half' a pyramid is drawn here, since the standard breakdown into male and female populations is not possible (Figure 7.4).

Figure 7.4 Age distributions of sample village populations, and Kyoto and Shiga prefectural populations, 1965-1975.



Looking first at Shiga prefecture, the shape of the age distribution for the prefectural population (shaded area) in the years 1965 to 1970 can be said to resemble an 'inverse coffin'. That is, the pyramid is fairly narrow at the base, widening to the 15 to 19 age group, then tapering again to the upper age groups. This pattern is often apparent in areas experiencing the final stages of demographic transition, where both mortality and fertility levels are declining (Robinson, 1981). It can also be related to the effects of age-specific migration, where, for instance, low fertility levels are due to a fall in the numbers in the reproductive age groups because of out-migration, and where low rates of out-migration in the upper age group result in the relative ageing of residual populations (White, 1982).

Until 1968, Shiga prefecture experienced a net out-migration of population each year but, since then, this situation has been reversed and the prefecture has received an annual net-migration gain (Sōrifu Tōkeikyoku, 1977). The comparatively low proportion of people aged between 20 and 29 years in 1965 indicates that the out-migration of people during this period mainly involved people from this age group. In consequence to this, since this is also the main reproductive age group, the number of children in the 0 to 4 age group is also low. As the trend turned to net in-migration in the late 1960s, the proportions in both the 20 to 29, and the 0 to 4 age groups increased in 1970, and by 1975, the age distribution has lost its 'inverse coffin' shape. Instead, it assumes a more uniform pyramid structure, indicating higher fertility levels than previously. Since there is no evidence to suggest fertility rates per capita population have actually increased, the most likely explanation is net in-migration in the reproductive age groups, or by young families with children. This, to a large extent, confirms the earlier observation of net in-migration in these age groups in the sample settlements in Shiga prefecture during this period. However, closer examination of the two sets of age distributions does reveal some important differences between the prefectural and sample populations.

Whilst the age distribution patterns develop in a roughly similar manner over time, it is apparent that a trend exists in the sample settlements for increased over-representation of people aged 40 or more, and for increased under-representation of people less than 40 years old. In other words, the spatial redistribution of age groups is not equal throughout the prefecture, and rural areas have a greater tendency for ageing populations. The latter point might suggest an underlying trend for younger age groups to be moving out of the rural area, but care must be taken to note that this is not a closed system, and that the overall patterns will be strongly influenced by young people entering Shiga from other prefectures. The important point is that these people are not moving to destinations distributed equally throughout the whole prefecture, but tend instead to concentrate in non-rural (i.e. urban) areas, with the result that younger age groups in agricultural settlement areas appear to be under-represented. Given this is so, it would seem reasonable to suggest that the in-migration of young family groups to the sample settlements after 1970 is also likely to show a degree of spatial concentration, possibly in suburban settlements on the urban fringe. This suggestion allows for the possibility that more isolated rural settlements are still losing population through out-migration, despite the overall increase in total population of the sample settlements.

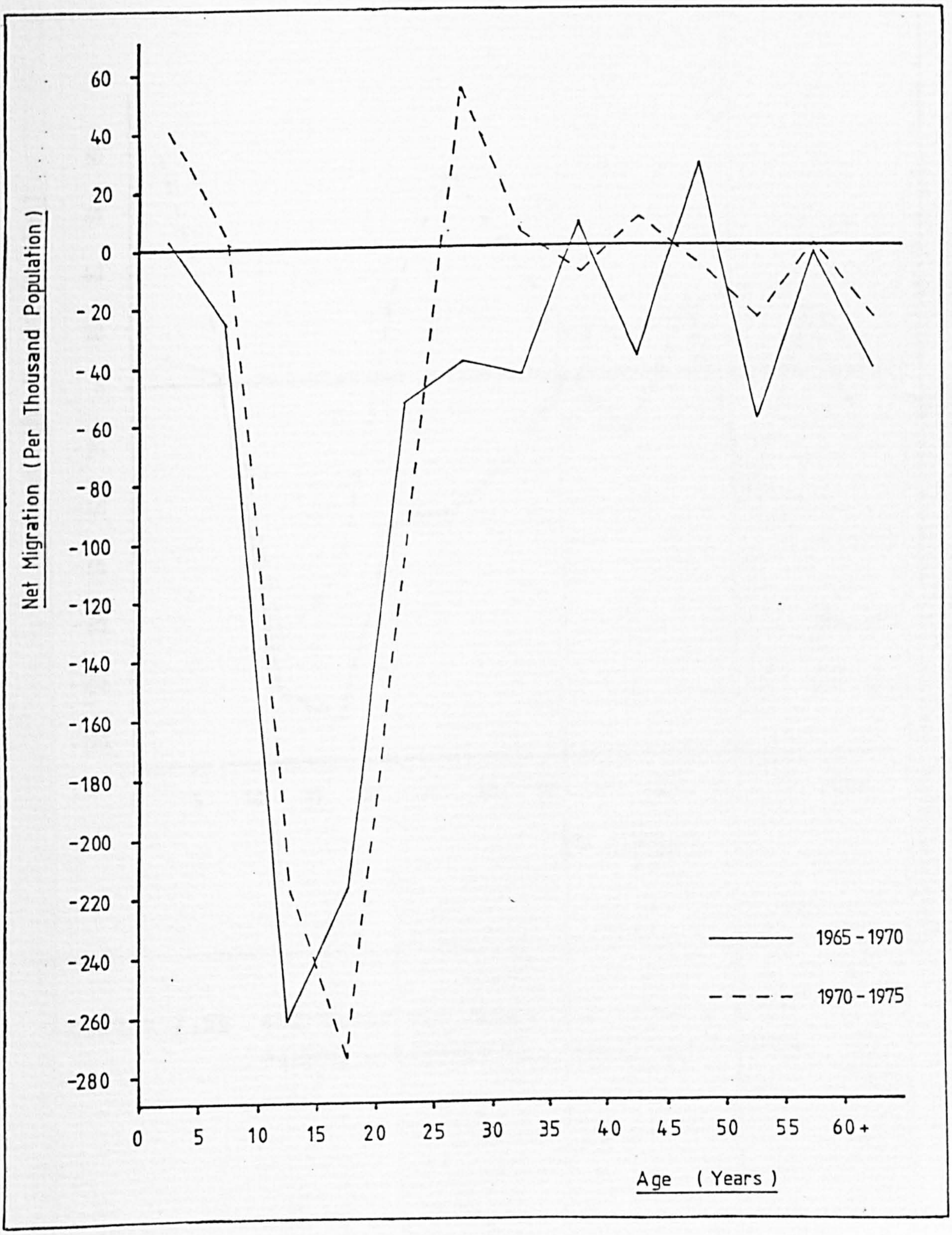
In Kyoto prefecture, the prefectural age distribution for each year is characterised by a distinct 'bulge' in the 15 to 34 age groups, and a smaller, but no less significant bulge in the 0 to 4 age group. This pattern is typical of other prefectures containing large metropolitan areas, including Tokyo and Osaka, and reflects high levels of net in-migration by people in the 15 to 30 age group, and the resultant high fertility levels (Bureau of Statistics, 1975). The pattern of age distributions in the sample settlements again shows a distinctive 'inverse coffin' shape. There is some proportional increase in the number of 0 to 4 year olds in 1975 but not to such a great extent as in the sample settlements in Shiga prefecture. The overall picture is still one of increasing over-representation of the older age groups, and under-representation of the younger age groups, suggesting a gradual shift in the balance of young people away from the rural area. The decline in population in the sample settlements after 1965 is particularly marked in the 10 to 19 age groups, suggesting this is mainly due to age selective net out-migration. Whilst the population pyramids suggest the redistribution of people in these age groups is towards the non-rural area, it must be remembered they do not distinguish people moving within the prefecture from those who move to other prefectures, or those who enter from other prefectures.

Up to this point, attention has focused on patterns of population change rather than, more specifically, migration. Whilst figures for population change are known to be much more reliable than simulated estimates for migration, the relative importance of migration in accounting for changes in population size can only be assumed at this stage. It is essential, therefore, to isolate specific net migration rates in order to gain a much clearer picture of the trends already outlined. This can be achieved by estimating age-specific net migration levels in individual settlements, and aggregating the results for the whole sample settlement area (Figure 7.5).

Looking at Kyoto and Shiga prefectures separately, the most remarkable feature is the similarity in the shapes of the two sets of curves. The 1965 to 1970 pattern is characterized by low rates of in-migration in the 0 to 4 age group; very high rates of net out-migration in the 10 to 19 age groups; a lower rate of out-migration in the 20-34 age groups; and a considerable variation ranging from net in-migration to net out-migration in the upper age groups. The most noticeable contrast with the 1970 to 1975 pattern is the much higher rate of in-migration for the 0 to 4 age group in the latter period, accompanied by high rates of in-migration in the 25 to 34 age groups. Levels of out-migration in the 10 to 14 age groups remain very high, however, particularly in Kyoto prefecture.

Although the shapes of the curves are very similar, an important difference between the two areas is that levels of out-migration in Shiga tend to be much lower than in Kyoto prefecture, whilst rates of in-migration are rather higher. This applies particularly in the case of the 1970 to 1975 curves. As a result, the overall migration rate for sample settlements in Shiga prefecture turned from a net loss of 33.75/'000 in the period 1965 to 1970 to a net gain of

Figure 7.5a Aggregate net migration rates for all sample settlements : Kyoto prefecture.



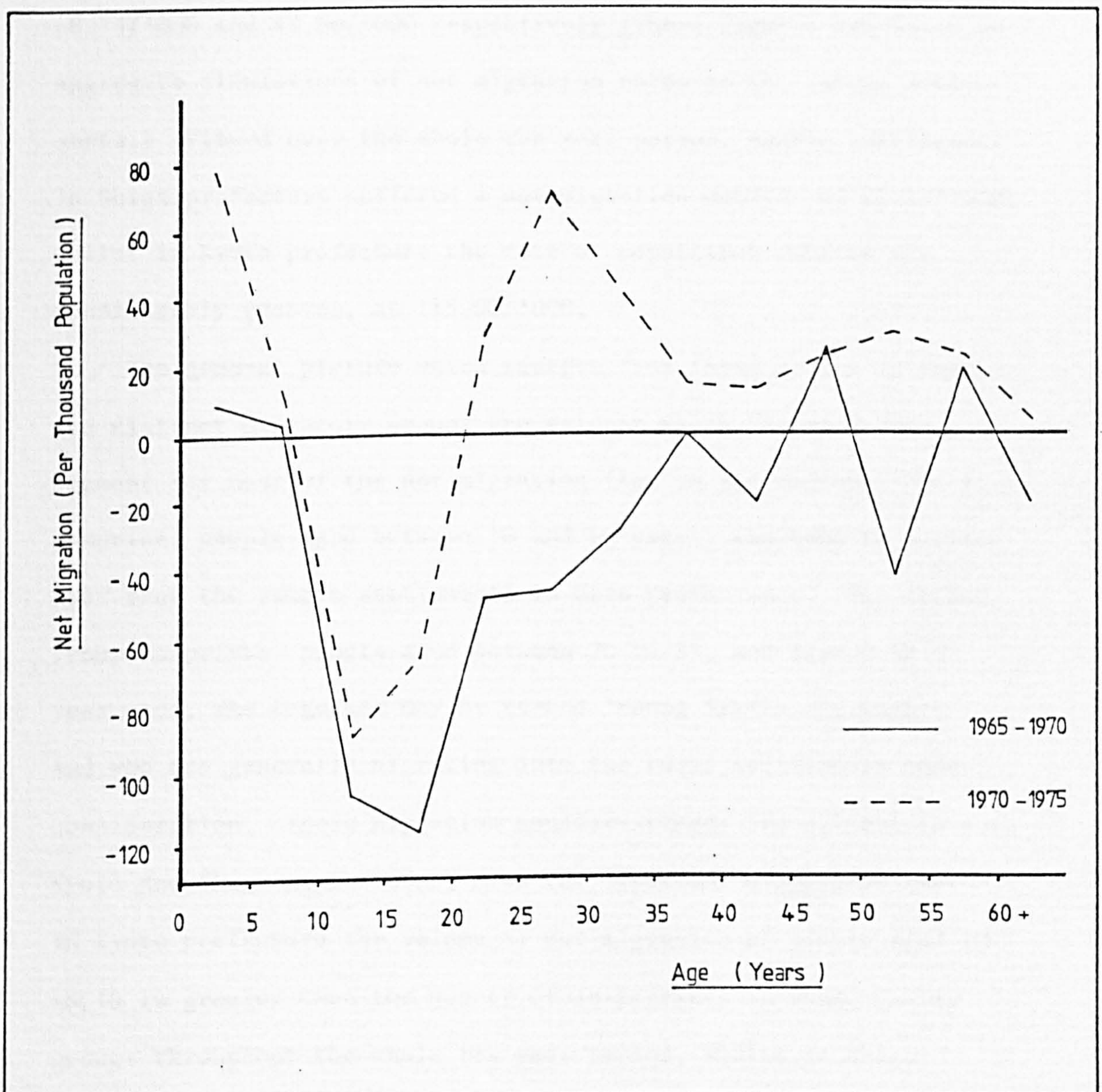


Figure 7.5b Aggregate net migration rates for all sample settlements : Shiga prefecture.

10.77/'000 during the years 1970 to 1975, whilst in Kyoto prefecture a net migration loss was experienced over both periods, being 68.74/'000 and 49.56/'000 respectively (These figures are based on aggregate simulations of net migration rates in the sample settlements.) Viewed over the whole ten year period, sample settlements in Shiga prefecture suffered a net migration outflow of 22.19/'000, whilst in Kyoto prefecture the rate of population outflow was considerably greater, at 115.98/'000.

The general picture which emerges from these graphs is that two distinct migratory groups are evident which, between them, account for most of the net-migration flow in the region. The first comprises people aged between 10 and 19 years, who tend to migrate away from the sample settlements in both prefectures. The second group comprises people aged between 20 to 34, and also 0 to 4 year olds, who together may be termed 'young family migrants', and who are generally migrating into the rural settlements under consideration. These migration counter-streams are evident in both Kyoto and Shiga prefectures, with the important difference that in Kyoto prefecture the volume of out-migration of people aged 10 to 19 is greater than the number of in-migrants in young family groups throughout the whole ten year period, whilst in Shiga prefecture this situation is reversed after 1970. It is worth remarking also that these apparent trends confirm the interpretation of changes in population structures outlined earlier.

Viewed in a much wider context, it is apparent that the migration curves represented here are very similar to patterns of age-specific migration found in other parts of the developed world, including Britain (Craig, 1970), and France (White, 1982). In a study of the evolution of population structures in rural settlements in Normandy, White shows that the greatest propensity for out-migration occurs in the 15 to 35 age groups, and also in the 70 and over age group. This latter group is particularly evident in isolated farm communities, and appears to be related to a form of retirement migration (White, 1982; 64). In Japan, evidence for a similar type of migration was discovered during the course of field surveys for this research, notably in the village of Tanotani, in Kyoto prefecture (see Chapter 9). If such a form of migration is more widespread than this, the fact that no definite trend is apparent on the aggregate net migration curves for Kyoto and Shiga prefectures may be because such moves are made enitrely within the rural area, and will merely cancel each other out in the aggregated results. Alternatively, it is possible that the method of estimating the number of deaths, and therefore migrants, in these upper age groups is so unreliable that actual patterns of migration may be obscured by erroneous results.

It will be recalled that the method of estimation of the number of deaths in the 60 and over age group was considered unreliable because detailed age breakdowns of population for this group cannot be obtained. A further source of potential error is highlighted in Table 7.3, which compares the expected and simulated death rates for the whole sample settlement area in Kyoto and Shiga prefectures. Whilst there is generally a close correspondence between the two sets of rates, there is by no means a perfect match. Discrepancies in the two rates are referred to as 'random error', and they arise in the

Table 7.3 Comparison between simulated and expected number of deaths in Kyoto and Shiga prefectures, 1965 to 1975.

KYOTO Age Group	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-59	40-44	45-49	50-54	55-59	60-64 (60+)	65+
1965-70	20.75 23	0.87 2	0.69 2	4.39 3	3.36 5	6.00 6	7.82 7	10.40 10	14.76 14	11.87 20	30.23 31	36.89 51	202.37 275	
1970-75	20.32 16	2.01 2	2.69 2	0.94 2	1.88 4	8.31 6	2.51 6	7.21 8	14.22 12	10.33 17	18.21 25	56.19 43	83.93 70	260.27 256
1965-75	22.76 25	3.56 4	1.63 4	6.27 7	11.67 11	8,51 12	15,03 15	24.62 22	25.09 31	30.08 45	86.42 74	20.82 121	462.64 531	

SHIGA Age Group	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64 (60+)	65+
1965-70	29.73 31	2.22 2	0.31 2	3.64 4	3.77 6	6.82 8	7.24 8	9,85 11	18.33 14	25.70 2o	32.11 31	58.86 58	232.86 239	
1970-75	20.03 21	0.79 2	0.37 1	3.11 3	6.89 5	3.54 5	7.65 7	7.51 9	9.16 11	16.56 18	31.73 32	36.93 46	80.73 84	279.85 281
1965-75	30.52 33	2.59 3	3.42 5	10.53 9	7.31 11	14.47 15	14.75 17	19.01 22	34.89 32	57.43 53	69.04 77	139.59 142	512.71 520	

Figures on top show simulated death rates.
Figures below show expected death rates.

random simulation process for estimating death rates in settlements with small populations. Because the true death rates in individual settlements are not known, the existence of random error cannot be said to make estimated net migration rates any less accurate, or wrong. However, on the premise that expected death rates accurately reflect the number of deaths in the whole agricultural settlement area, probability theory suggests that the greater the margin of random error (i.e. difference from the mean value), the lower the probability that the simulated values reflect the true situation. For this reason, it is desirable to have random error as small as possible.

It can be seen in Table 7.3 that in Kyoto prefecture, the random error for death rates for the 60+ age group in the period 1965 to 1975 is just under 70/'000. This figure is far greater than for any other age group, in either prefecture, and since it can be directly related to estimates of the net migration rate, the potential scale and effect of this error is readily seen on the net-migration curves for Kyoto prefecture (Figure 7.5). Although the suggestion that 'error' actually exists must be made with extreme caution, it does seem, on balance, that simulated net-migration rates for this age group have a high chance of being mis-representative of real net-migration rates. It would be unwise, therefore, on the basis of these simulated estimates, to attempt to isolate this age group for more detailed migration analysis in an attempt to identify possible patterns of retirement migration. Instead, this could be undertaken during detailed examinations of individual case-studies, where more reliable migration data are available.

Turning back to the younger age groups, and the 10 to 19 and 20 to 34 year olds in particular, it is likely that the counter migration streams which exist between these groups reflect different aspirations and different concepts of place utility. It is important, therefore, that net migration rates for these two groups should be looked at in isolation from one another, both in terms of spatial variation of net migration rates for individual settlements, and in terms of correlations with level of living scores. With regard to the potential effects of random error, it can be seen in Table 7.3 that for all age groups under the age of 40 years, random error for the period 1965 to 1975 does not exceed 5/'000, and is normally much smaller than this. Looking again at the migration curves in Figure 7.5, it can be seen that such a low margin of potential error has little effect on overall net-migration rates, and certainly does not effect the shape and general pattern of the graphs. There is every reason to suppose then, that net migration estimates for these age groups are as reliable as they possibly can be.

Nevertheless, it is important to ensure that the degree of reliability is maintained to an absolute maximum, and because of this, it is important to consider net-migration rates for individual settlements over a single ten pear period rather than over two separate five year periods. By combining the rates for two five year periods,random error can be reduced or even removed altogether and this is also illustrated in Table 7.3. In Kyoto prefecture for instance, the simulated death rate for the 55 to 59 age group is approximately 14/'000 under the expected rate in the period 1965 to 1970, and 14/'000 over the expected rate for the years 1970 to 1975. (The latter figure is derived from death rates for the 60 to 64 age group for that period.) Aggregation of the two rates, providing a figure for the whole ten year period, results in a perfect match between simulated and expected death rates, with no substantial random error at all.

Whilst random error in the younger age groups appears to have little effect on migration patterns which are expressed for the whole sample settlement area, the effect on individual settlements with small populations can be considerable. Here, if there are only five people in a given age group, for instance, falling to four in the subsequent five year period, the distinction between whether or not this reduction is due to a death, or out-migration has a profound effect on the respective rates. In other words, if a simulation process produces a result which suggests no deaths occur, then the out-migration rate is calculated at 20%. If, however, the result is one death, the net-migration rate becomes zero; if there are two deaths, then there is an in-migration rate of 20%; with three deaths the in-migration rate increases to 40%, and so on. By taking the average rate for two five year periods, wild fluctuations of this type can be smoothed out to some extent, and the possibility of 'extreme' results is minimized.

A problem which relates to taking single net-migration estimates based over a ten year period is that it becomes more difficult to isolate specific age cohorts, such as 10 to 19 year olds. It is apparent, for instance, that people who are aged between 10 and 19 years in 1965 comprise a different age cohort to people of the same age range in 1970. Since it is wished to include both groups of people in the net-migration rate for this age range, it becomes necessary to enlarge the 1965 'base population' group to include people between the ages of 5 to 19 years. In 1970 this cohort has an age range of 10 to 24 years, and by 1975, these people are aged between 15 and 29 years. This means an overlap now exists with the other group on which interest is focused, namely people in the 20 to 34 age range.

It may be argued, however, that not all people in the 20 to 34 age group belong to 'young families'. In terms of migrant characteristics, for example, it is likely that many people in this age group, such as university and college graduates, will be unmarried, and will share similar sets of aspirations to school leavers in the 10 to 19 age group. This is to some extent illustrated in the net-migration curves for the period 1965 to 1970, shown in Figure 7.5. Here it can be seen that in both prefectures during this period, people in the 20 to 34 age group had a general tendency to migrate away from the rural area. Children aged between 0 and 4 years, on the other hand, had an overall balance of in-migration to the rural area. Since children migrating into the area must have been accompanied by their parents, it is clear that migration counterstreams must exist actually within the 20 to 34 age group. At the most simple level, the breakdown of these counterstreams must include young families who are entering the rural area, and individual migrants who, in common with people in the 10 to 19 age groups, are leaving the rural area. In order to isolate 'young family' migrants therefore, the easiest and most practicable solution is to look at migration rates for just the 0 to 4 age group. Whilst this group does not actually comprise people involved in the migration decision making process, the spatial variations in the net migration rates for this age group should reflect the decisions of the parents who migrated with them. The only problem here is that if net migration rates are taken for the whole ten year period, the children aged between 0 and 4 years in 1970 cannot be included for consideration, since none of these had been born in 1965. Unfortunately, there is no means to overcome this problem.

Spatial variations in net-migration rates between individual sample settlements are therefore considered for the following different age ranges. First, net-migration rates for the total population in each settlement; second, net-migration rates for people aged between 5 and 19 years in 1965 in each settlement; and third, net-migration rates for children aged between 0 and 4 years in 1965 in each settlement. Since it seems inappropriate to measure migration rates in terms of per thousand population at this level, migration rates for individual settlements are expressed as a percentage, and averaged out for each year of the ten year period. Whilst this is equivalent to expressing rates per ten population, it also enables an approximate comparison with kaso (severely depopulating) areas, where the official definition is an overall population loss of more than 2% each year.

Looking first of all at net-migration rates for total populations (Figure 7.6), it can be seen that in Kyoto prefecture all but five settlements for which data are available experienced net-migration outflow. The highest rates of net out-migration tend to occur in the central and northern areas of the prefecture, and in settlements on the Tamba and Tango highlands in particular. The most interesting area appears to be the lowland plain around Kyoto-city, where most of the settlements with net in-migration are concentrated. Rather surprisingly, rates of in-migration here are not particularly high, even for settlements on the fringe of the built-up area of the city and these settlements are interspersed with other settlements with net out-migration. Perhaps not too much emphasis should be placed on this pattern however, since this is the area where most settlements for which data are not available are concentrated.

Figure 7.6a Net migration rates 1965-1975 for total population : Kyoto prefecture.

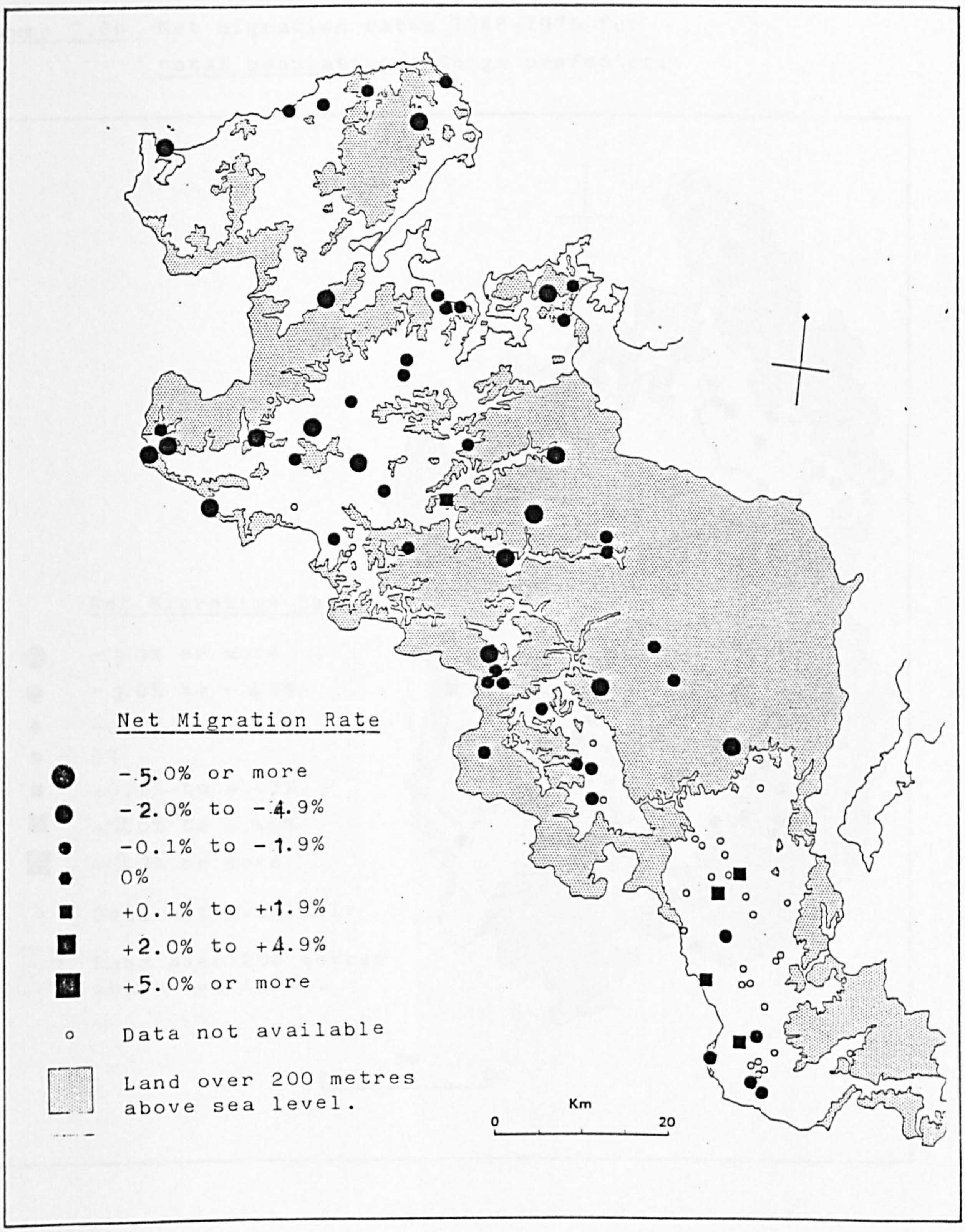
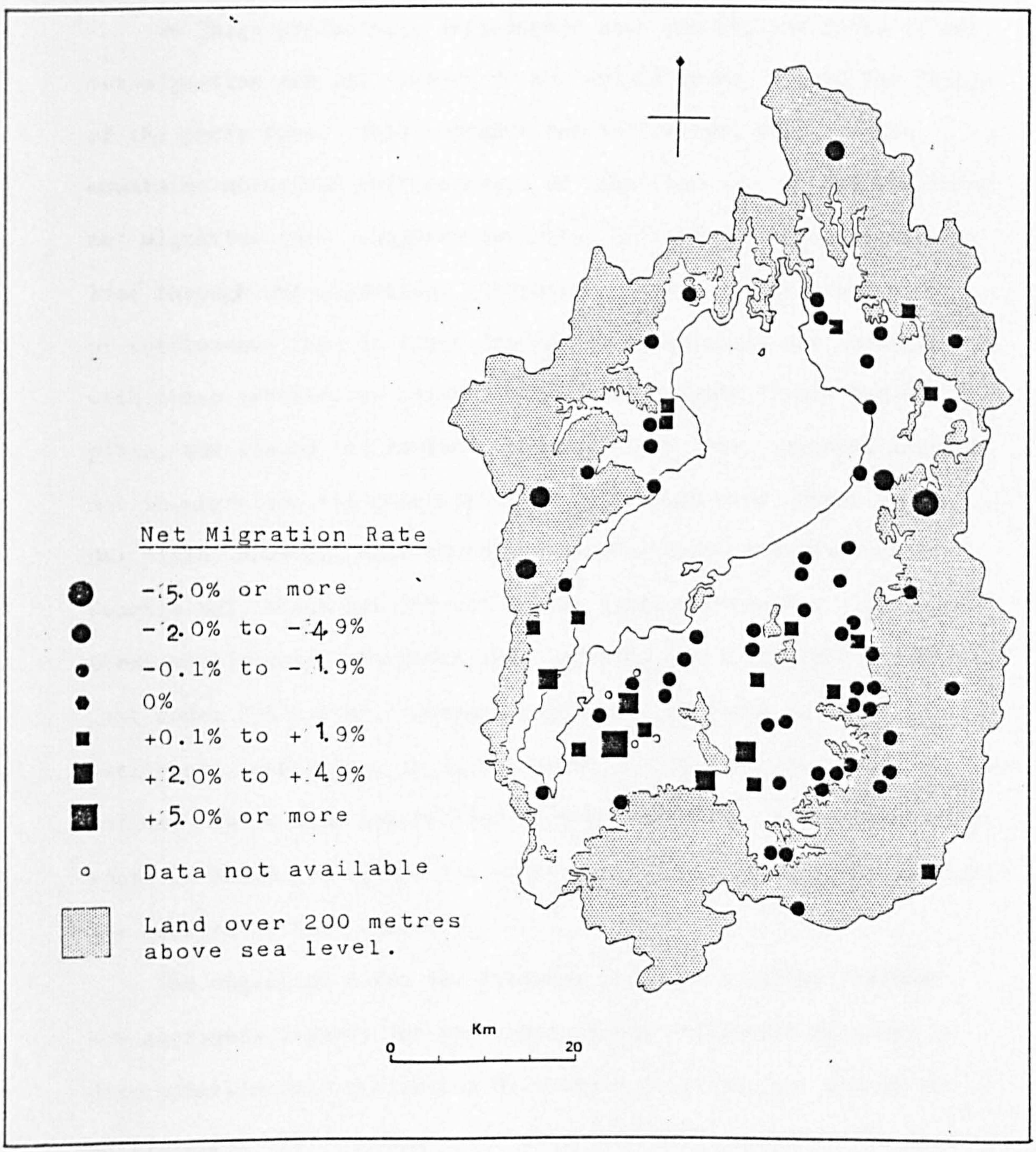


Figure 7.6b Net migration rates 1965-1975 for total population : Shiga prefecture.



The likelihood in these cases is that high rates of net in-migration are experienced, and if so, the pattern here would be changed considerably.

In Shiga prefecture, settlements with the highest rates of net out-migration are all located in the upland areas, around the fringe of the prefecture. This includes one settlement, Buna, in the mountains above the eastern shore of Lake Biwa, where the simulated net migration rate suggests more than half the 1965 population was lost through out-migration. Overall, a rather higher proportion of settlements than in Kyoto prefecture experienced net in-migration, with these settlements being fairly evenly spread across the Omi plain, and around the lowland fringe of Lake Biwa. Highest rates of net in-migration are concentrated in the south-west corner of the Omi plain, however, near rapidly expanding urban centres such as Kusatsu-shi, which are closest to the Kyoto metropolis. In one of these settlements, Nakazawa, the simulated net in-migration rate is just under 20% a year. Overall population increase in this settlement, meanwhile, is in the order of 350% over the whole ten year period. It is also interesting to note that four of the five settlements in Shiga prefecture for which population data are not available are located in this vicinity.

The migration rates for Nakazawa serve as a useful reminder how aggregate figures for the whole sample settlement area may be disproportionately influenced by extreme rates in just one or two settlements. The aggregate net migration rates suggest, for instance, that settlements in Shiga prefecture experienced, on the whole, very much lower rates of out-migration than in Kyoto prefecture. Whilst it is true that fewer settlements in Shiga prefecture experienced high rates of out-migration, and rather more experienced net in-migration the overall distribution of net migration rates in these two prefectures can nevertheless be described as broadly very similar. That is, settlements in the upland areas in both prefectures tend to have fairly high rates of out-migration, and settlements in the lowland plain areas tend to experience either low rates of out-migration, or net in-migration.

Spatial variations in net-migration rates for the 5 to 19 year age group are shown in Figure 7.7. In Kyoto prefecture, the pattern of variation in these rates is very similar to the pattern of net migration rates for the total population. The important difference is that the magnitude of variation is much greater for the 5 to 19 age range. Well over a third of the settlements in Kyoto prefecture, for example, experienced a net migration loss in excess of 5% a year. This is equivalent to losing more than half the people in that age group, over the ten year period, through out-migration. The settlements with highest rates of net out-migration again tend to be concentrated in the Tamba and Tango uplands, but an even more apparent distinction can be made between settlements in the north and south of the prefecture. If a line is drawn across the northern end of the Kameoka basin, roughly across the centre of the prefecture, all the settlements on the northern side of this line experienced net out-migration in the 5 to 19 age group, at a rate exceeding 2% a year. Admittedly, this area includes most of the upland in the prefecture, but it also incorporates a fairly large lowland basin stretching between Fukuchiyama and Maizuru. South of this line, all settlements are within commuting distance of Kyoto-city, and rates of out-migration tend to be much lower. The four settlements experiencing

Figure 7.7a Net migration rates 1965-1975 for the 5 to 19 year age group : Kyoto prefecture.

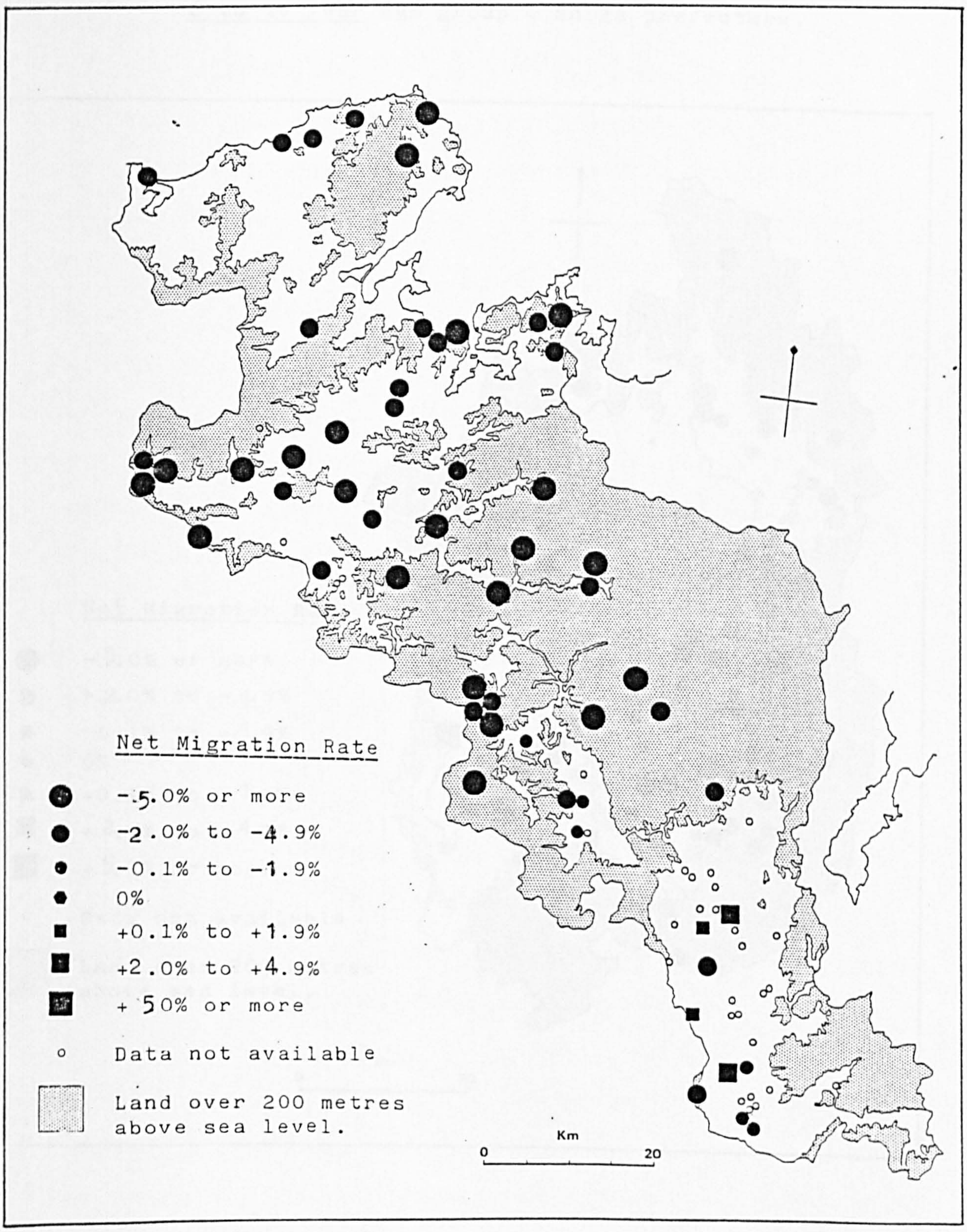
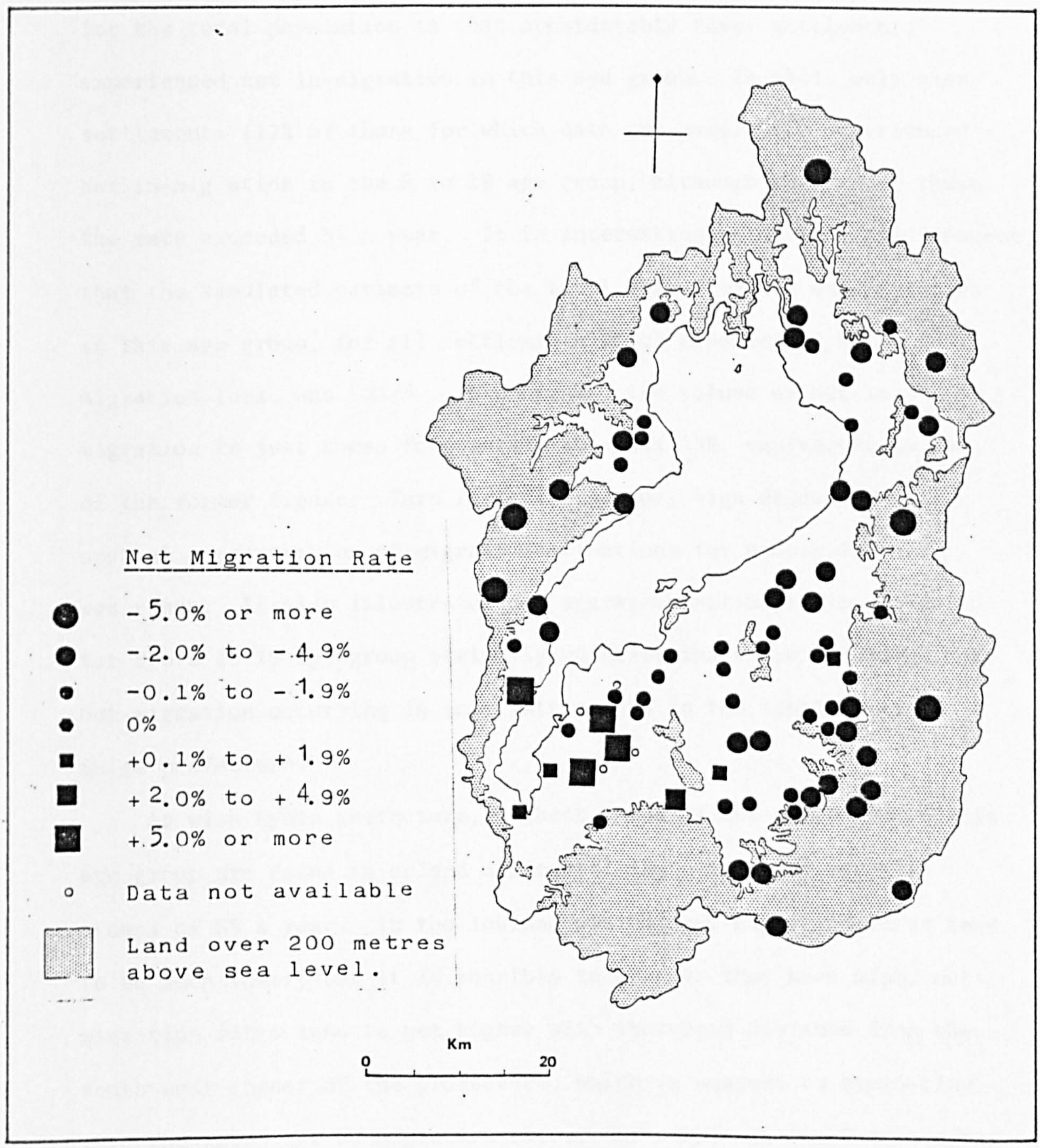


Figure 7.7b Net migration rates 1965-1975 for the 5 to 19 year age group : Shiga prefecture.



net migration in this age group are all located here, and two of these have rates exceeding 2% a year.

In Shiga prefecture, the main difference with migration rates for the total population is that considerably fewer settlements experienced net in-migration in this age group. In fact, only nine settlements (12% of those for which data are available) experienced net in-migration in the 5 to 19 age group, although in four of these the rate exceeded 5% a year. It is interesting to note in this respect, that the simulated estimate of the total volume of net out-migration in this age group, for all settlements which experienced net migration loss, was 2145. In contrast, the volume of net in-migration to just these four settlements was 538, equivalent to 25% of the former figure. This reflects the very high degree of spatial concentration of migrant destinations for people in this age range. It also illustrates how aggregate net-migration rates for the 5 to 19 age group seriously under-estimate the volume of net out-migration occurring in most settlements in the sample area in Shiga prefecture.

As with Kyoto prefecture, highest rates of out-migration in this age group are found in upland districts, where they may reach in excess of 5% a year. In the lowland plains, out-migration rates tend to be much lower, but it is possible to observe that here also, out-migration rates tend to get higher with increased distance from the south-west corner of the prefecture, which is nearest to Kyoto-city.

The third set of migration rates, for people in the 0 to 4 age group, distinguishes settlements with zero net migration (Figure 7.8).

This is because the base population in this age group tends to be very much smaller than for the other two groups, and the likelihood of no migration, or an exact balance in the number of in and out-migrants is therefore much greater. It should also be noted in this context that the effect of a single migration has a disproportionately greater effect on net-migration rates, and that variation between individual settlements is liable to be accentuated. Nevertheless, maps of the distributions of net-migration rates for this age group reveal some extremely interesting patterns.

In Kyoto prefecture, the immediate contrast to be drawn with the distributions for the other age groups is that settlements experiencing net in-migration in the 0 to 4 age range are distributed throughout the whole area, in upland as well as lowland districts. Only for settlements in the vicinity of Kyoto-city is there any marked similarity with previous patterns, where settlements with low rates of in-migration are interspersed with settlements with low levels of out-migration. Elsewhere, it may be said that the settlements with the highest rates of out-migration tend to be in upland areas, or on the lowland-upland fringe, but it is equally true that other upland settlements are amongst those experiencing the highest rates of net in-migration.

In Shiga, the highest rates of net in-migration are again found in the south-west corner of the prefecture, whilst settlements with the highest out-migration rates are fairly evenly distributed between the upland areas and the lowland plains in the north of the prefecture. Elsewhere in the lowland plain area, however, the dominant trend is for net in-migration of 0 to 4 year old children.

Figure 7.8a Net migration rates 1965-1975 for the 0 to 4 year age group : Kyoto prefecture.

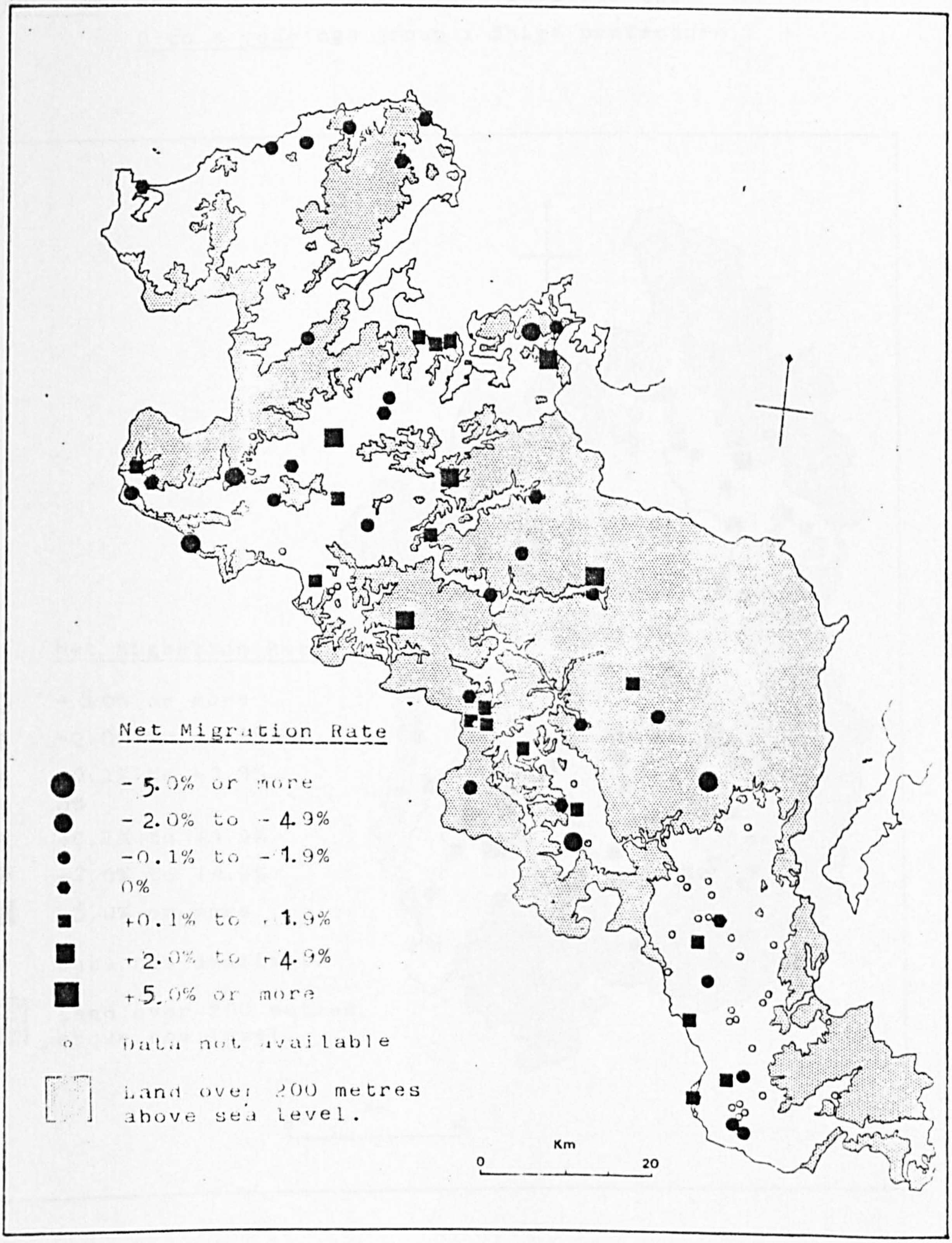
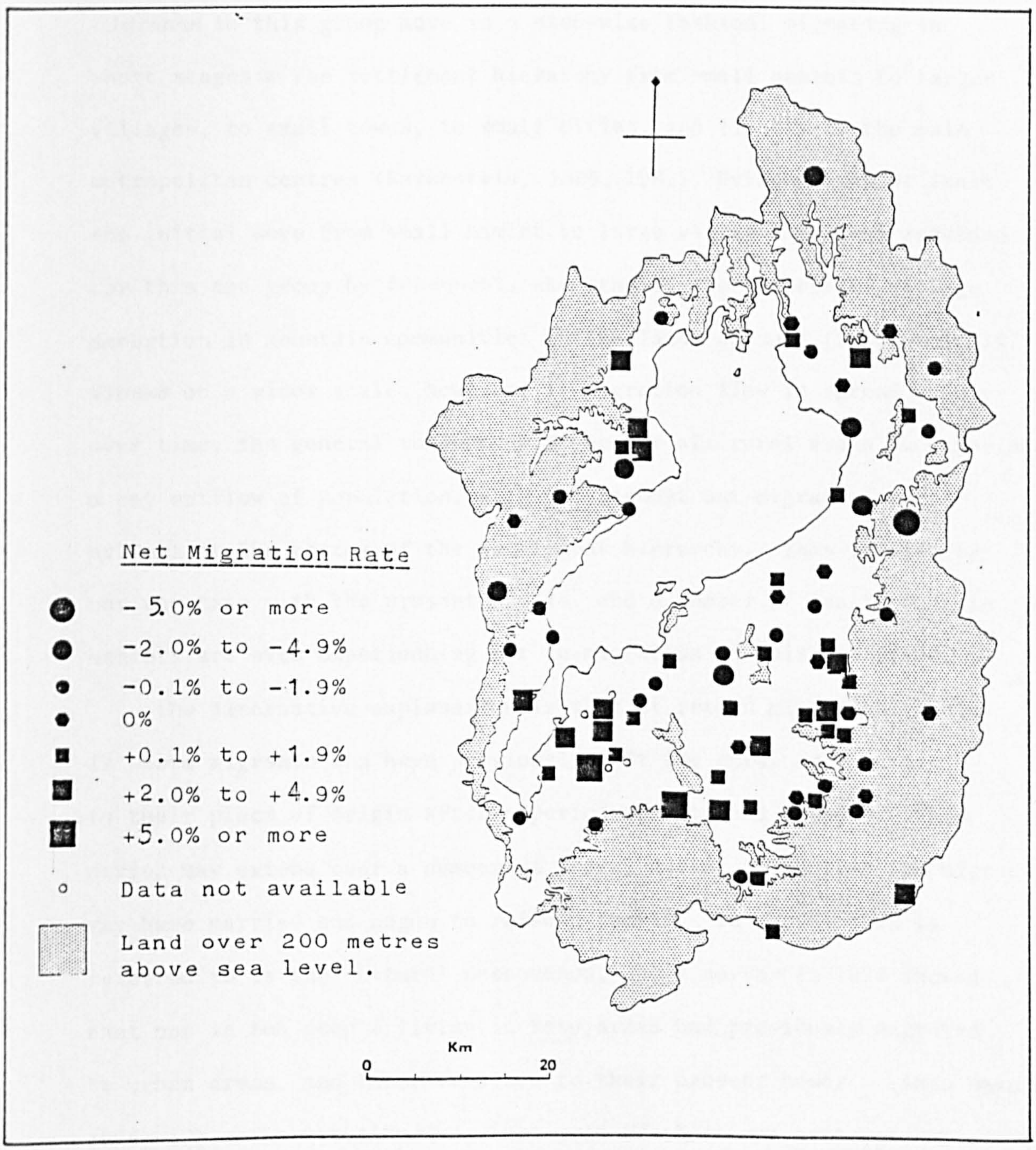


Figure 7.8b Net migration rates 1965-1975 for the 0 to 4 year age group : Shiga prefecture.



These rather complex patterns, which show considerable diversity in the migrant destinations for people in 'young family' groups, can probably be explained in one of two ways. First, it may be that migrants in this group move in a step-wise fashion, migrating in short stagesup the settlement hierarchy from small hamlets to larger villages, to small towns, to small cities, and finally to the main metropolitan centres (Ravenstein, 1885, 198.) Evidence for at least the initial move from small hamlet to large village has been provided for this age group by Sakaguchi, who studied the process of village desertion in mountain communities in the Tamba uplands (Sakaguchi, 1974). Viewed on a wider scale, however, if migration flow is spread evenly over time, the general tendency will be for all rural areas to experience a net outflow of population, with the highest out-migration rates evident at the bottom of the settlement hierarchy. This is clearly not the case with the present sample, and a number of small mountain hamlets are even experiencing net in-migration in this age group.

The alternative explanation is that of return migration. This is where migrants who have previously left the rural area return to their place of origin after a period of time has elapsed. This period may extend over a number of years, during which time the migrant may have married and begun to raise a family. In Japan, this is referred to as the 'U-turn' phenomenon, and a survey in 1974 showed that one in ten people living in <u>kaso</u> areas had previously migrated to urban areas, and later returned to their present homes. (Kaso Hakusho, 1975; 10). The likelihood is that most of these are <u>atotsugi</u>, or inheritors, who go back to their ancestral homes when it is time to take over succession of the farm (Smith, 1978; 187).

If this is the case in Kyoto and Shiga prefectures, it would seem that not all villages offer equal attraction to return migrants. Many are still experiencing net out-migration in the 'young family' age groups, and if these moves also involve atotsugi, then such settlements may be heading for ultimate village desertion (see Chapter Nine). The migration patterns of this age group therefore appear to be a crucial determinant of the future demographic viability of many settlements, and it is clearly important that spatial variations in these net-migration rates are adequately explained.

One explanation is that instead of making a 'U-turn', back to their original homes, most return migrants describe a 'J-turn' (Kaino and Ōnishi, 1975). That is, migrants who go back to the same municipality they originally came from do not necessarily return to their original homes. Rather, they find a new home in the main municipal town, where the prospects of finding employment are better, and where they are close enough to their original farms to tend the ancestral graves, and even help with agriculture in the fields.

Continuing with the alphabetical terminology, 'S-turn' migrations have also been recognized (Op. cit., 158). This is where migrants move originally from the rural area to cities, and then move back out towards the rural area, though not necessarily in the direction of their original home. In other words, migrants are merely moving out of the urban centres to the suburban periphery.

It is difficult to determine the relative extent to which these kind of movements are evident in Kyoto and Shiga prefectures during the period 1965 to 1975 without much more detailed information on individual migration flows. However, these processes can certainly be fitted to the patterns which are evident on the maps. High rates of in-migration in the settlements in the south-west of the Omi Plain, for instance, seem to accord with the 'S-turn' explanation, and this is backed by evidence that as much as 40% of the total volume of net in-migration to sample settlements in Shiga prefecture, over the whole ten year period, is accounted for by just four of the settlements in this area. The sheer volume of migrants involved here indicates it cannot possibly be all explained by 'U-turn' type return migration. Elsewhere, the rather patchy distribution of places with net in-migration in the 0 to 4 age group could certainly support the argument for 'J-turn' type migration. A much clearer picture may emerge, however, when these patterns are correlated with levels of living, in the next chapter.

CHAPTER EIGHT

LEVELS OF LIVING AND NET MIGRATION

8.1 INTRODUCTION

In this chapter, the relationship between levels of living and net migration is tested by means of the product-moment (Pearson's) correlation coefficient. If level of living is represented as the independent variable (x axis), and net migration as the dependent variable (y axis), the anticipated result will be a strong positive correlation indicating that as the level of living scores for settlements become greater, rates of net out-migration will decrease and rates of net in-migration will increase.

Net migration rates are estimated for two population sub-groups, namely: children in the 0 to 4 year age cohort in 1965 (representing young family migrants), and people in the 5 to 19 year age cohort in 1965 (representing young individual migrants). The first task, therefore, is to identify appropriate domain weightings for these two sub-groups, based on responses made in the questionnaire survey, so that relevant sets of level of living scores may be calculated. The responses must be from people in two mutually exclusive age groups, and there must be sufficient numbers of people in each age group so that the weightings can be considered 'representative'. On the basis of these and other relevant criteria, average priority preference scores (weightings) are taken for 71 respondents in the 25 to 39 year age group, representing 'young families', and for 30 respondents in the 0 to 24 year age group, representing 'young individuals'. These weightings are presented in Table 8.1.

It will be noted that weightings expressed by 'young individuals' have a higher value than those for 'young families', with the single exception of the agriculture domain. Rankings are broadly similar,

TABLE 8.1 DOMAIN WEIGHTINGS FOR 'YOUNG INDIVIDUALS' AND 'YOUNG FAMILIES'

DOMAIN	'YOUNG INDIVIDUALS' (0-24 YEAR AGE GROUP)	'YOUNG FAMILIES' (25-39 YEAR AGE GROUP)	ALL AGE GROUPS
AGRICULTURE	58.0	58.3	59.6
OTHER EMPLOYMENT	65.7	61.9	64.1
NATURAL ENVIRONMENT	67.0	60.2	62.4
EDUCATION	72.2	69.5	68.3
MEDICAL	77.3	72.6	71.2
LEISURE	53.9	48.3	49.6
LOCAL ACCESS	70.3	65.2	64.8
URBAN ACCESS	72.2	68.7	66.8
POPULATION	59.2	58.8	61.4
TOTAL RESPONDENTS	30	71	203

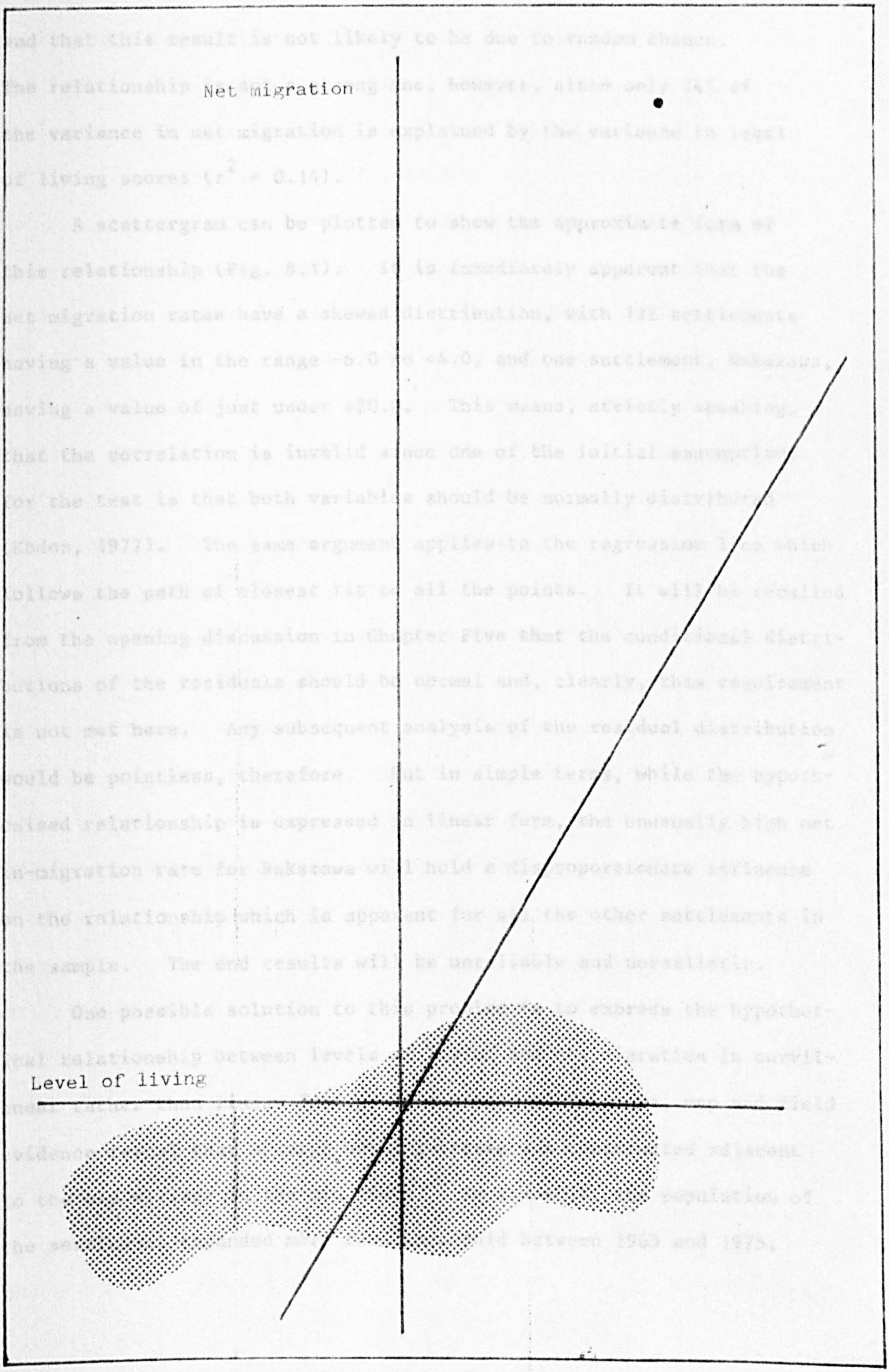
however, except the 'urban access' domain (ranked 2nd equal for young individuals and 3rd for young families), the 'natural environment' domain (ranked 5th by young individuals and 6th by young families), and the 'opportunities for non-agricultural employment' domain (ranked 6th by young individuals and 5th by young families). It is also interesting to note that in the case of three domains ('non-agricultural employment', 'natural environment', and 'leisure') priority preference scores expressed by young individuals are higher than the average score for the total respondent population, whilst scores expressed by the young family age group are lower than average.

Although the primary intention is for correlation tests to be carried out on these different population sub-groups, it is useful, first of all, to consider the relationship which exists for the whole sample population. This will provide a control against which the effectiveness of the questionnaire derived weighting procedure may be assessed. It also provides for an important preliminary check on the reliability of the simulated net migration rates used in this analysis.

8.2 Levels of living and net migration - Total population

Level of living scores have been calculated for 138 settlements whilst net migration rates can only be estimated for 133 settlements. Since correlation requires 'matched' observations on both variables, this means only 133 pairs of observations may be incorporated in the test. The correlation coefficient (r) between level of living and net migration for the total population in these 133 sample settlements is 0.38. This value is positive and is significant at the 95% level of confidence, indicating that the hypothesised relationship is true

Figure 8.1 Approximate form of relationship between levels of living and net migration for total population.



and that this result is not likely to be due to random chance. The relationship is not a strong one, however, since only 14% of the variance in net migration is explained by the variance in level of living scores ($r^2 = 0.14$).

A scattergram can be plotted to show the approximate form of this relationship (Fig. 8.1). It is immediately apparent that the net migration rates have a skewed distribution, with 132 settlements having a value in the range -6.0 to +4.0, and one settlement, Nakazawa, having a value of just under +20.0. This means, strictly speaking, that the correlation is invalid since one of the initial assumptions for the test is that both variables should be normally distributed (Ebdon, 1977). The same argument applies to the regression line which follows the path of closest fit to all the points. It will be recalled from the opening discussion in Chapter Five that the conditional distributions of the residuals should be normal and, clearly, this requirement is not met here. Any subsequent analysis of the residual distribution would be pointless, therefore. Put in simple terms, while the hypothesised relationship is expressed in linear form, the unusually high net in-migration rate for Nakazawa will hold a disproportionate influence on the relationship which is apparent for all the other settlements in the sample. The end results will be unreliable and unrealistic.

One possible solution to this problem is to express the hypothetical relationship between levels of living and net migration in curvilinear rather than linear form. In the case of Nakazawa, map and field evidence reveal that a large housing estate was constructed adjacent to the old village in the mid 1960s. As a result, the population of the settlement expanded more than threefold between 1965 and 1975, with in-migration accounting for a large proportion of this increase. Similar housing developments, often financed on a speculative basis by local landowners, are common throughout Japan, particularly on the fringe of large cities. It is reasonable to speculate that they are built in areas where the level of living is already quite good, and where large numbers of in-migrants willing to buy or rent the new accommodation can be anticipated. Depending on the number of houses built relative to the size of the original settlement, rates of in-migration are liable to reach very high levels indeed. Thus, a wide range of values for net in-migration can be expected in places with a high level of living score. A curvilinear path appears likely to offer the best description of this relationship, with the slope becoming progressively steeper as level of living increases.

Unfortunately, the settlements where such housing developments occur tend to be those where accurate population data are not available due to changes in enumeration district boundaries over time. In fact, Nakazawa is exceptional not because of its high in-migration rate, but because population data are actually available for the settlement. Notwithstanding this, it is difficult to justify fitting a curvilinear relationship in this analysis on the basis of only one 'extreme' result. Moreover, in the light of the reasons proposed here for such a high rate of in-migration, much more information would be required on factors relating to new building, such as 'Green Belt' policy, capital availability and so on, before an alternative hypothesis could be formulated to take account of all this. Stronger emphasis on this aspect would also shift attention from settlements suffering rural depopulation, with which this research is primarily concerned. In view of these arguments, it is proposed to adopt the only alternative approach which is to discount Nakazawa from further consideration and concentrate on fitting a linear relationship to the remaining 132 settlements. This is not to say that the case of Nakazawa is judged unimportant, rather, that adequate consideration of this case is beyond the aims and scope of the present research.

A detailed scattergram of all the observations for the remainder of the settlements in the sample is shown in Fig. 8.2. Here the assumptions for linear regression and correlation appear to be met, and a new coefficient of correlation can be calculated. This time the result is $r = 0.50$ which is again positive, and significant at the 95% level of confidence. The strength of the relationship is still not very high, however, with only 25% of the variance in net migration rates being accounted for by the variance in level of living scores ($r^2 = 0.25$). It is worth noting, on the other hand, that the regression line plotted in Fig. 8.2 closely follows the path traced by the hypothesised relationship between levels of living (aggregate place utility) and net migration which was proposed in Chapter Five (Fig. 5.4).

Before moving on to look at the correlation coefficients for population sub-groups, it is necessary at this stage to carry out a check on the 'reliability' of the simulated net migration rates which have been used in this analysis. Because simulation techniques are probabilistic in nature they will tend to produce slightly different results each time a simulation is run. It follows that if net migration rates were simulated for a second, or a third, or fourth time, the correlation coefficient between net migration and levels of living would change accordingly. Furthermore, probability theory suggests that if the simulation was repeated a large number of times, and the resulting

Figure 8

RELATIONSHIP BETWEEN LEVELS OF LIVING AND NET MIGRATION (1965-1975) BY SAMPLE SETTLEMENTS IN KYOTO AND SHIGA PREFECTURES

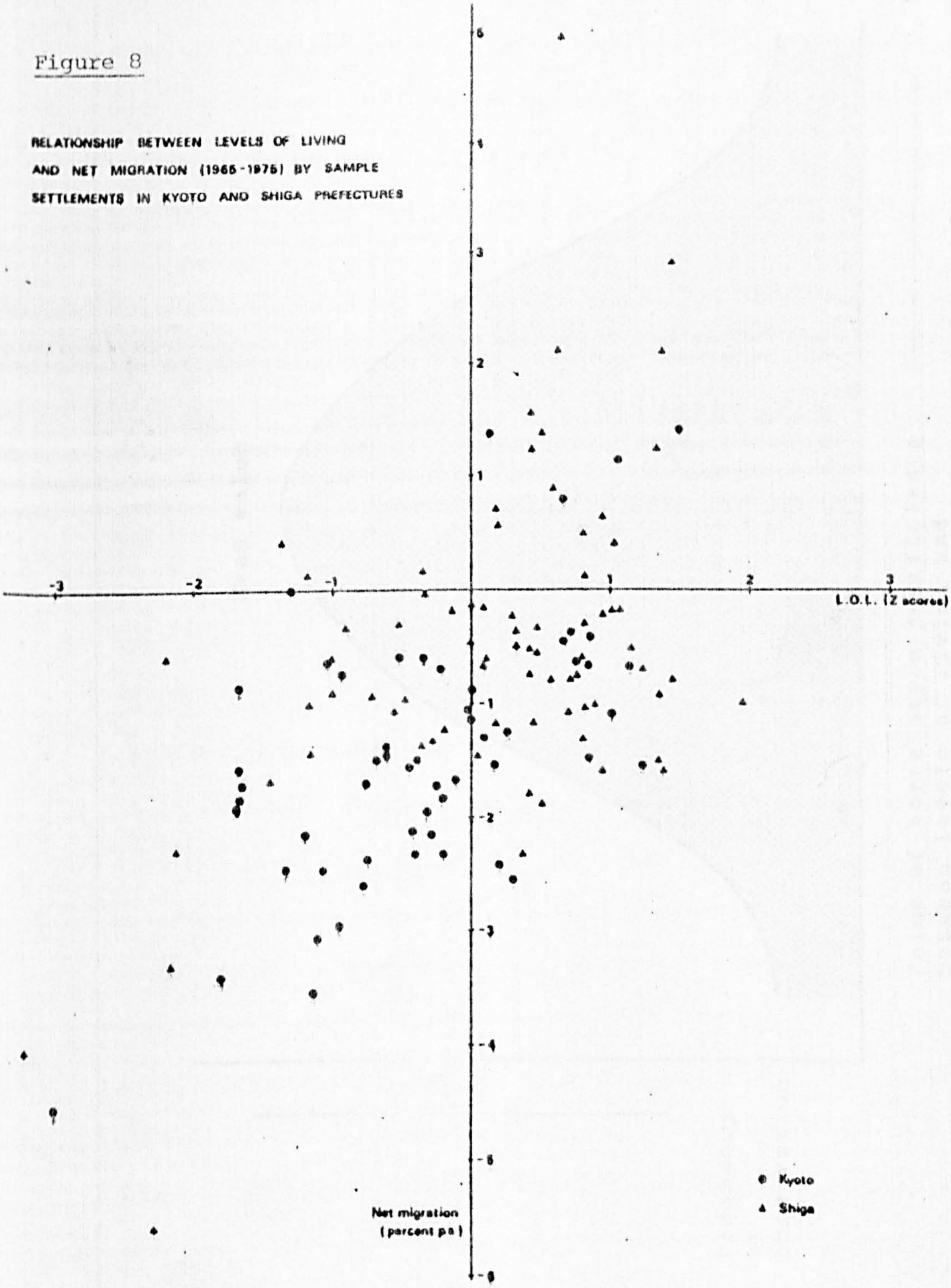
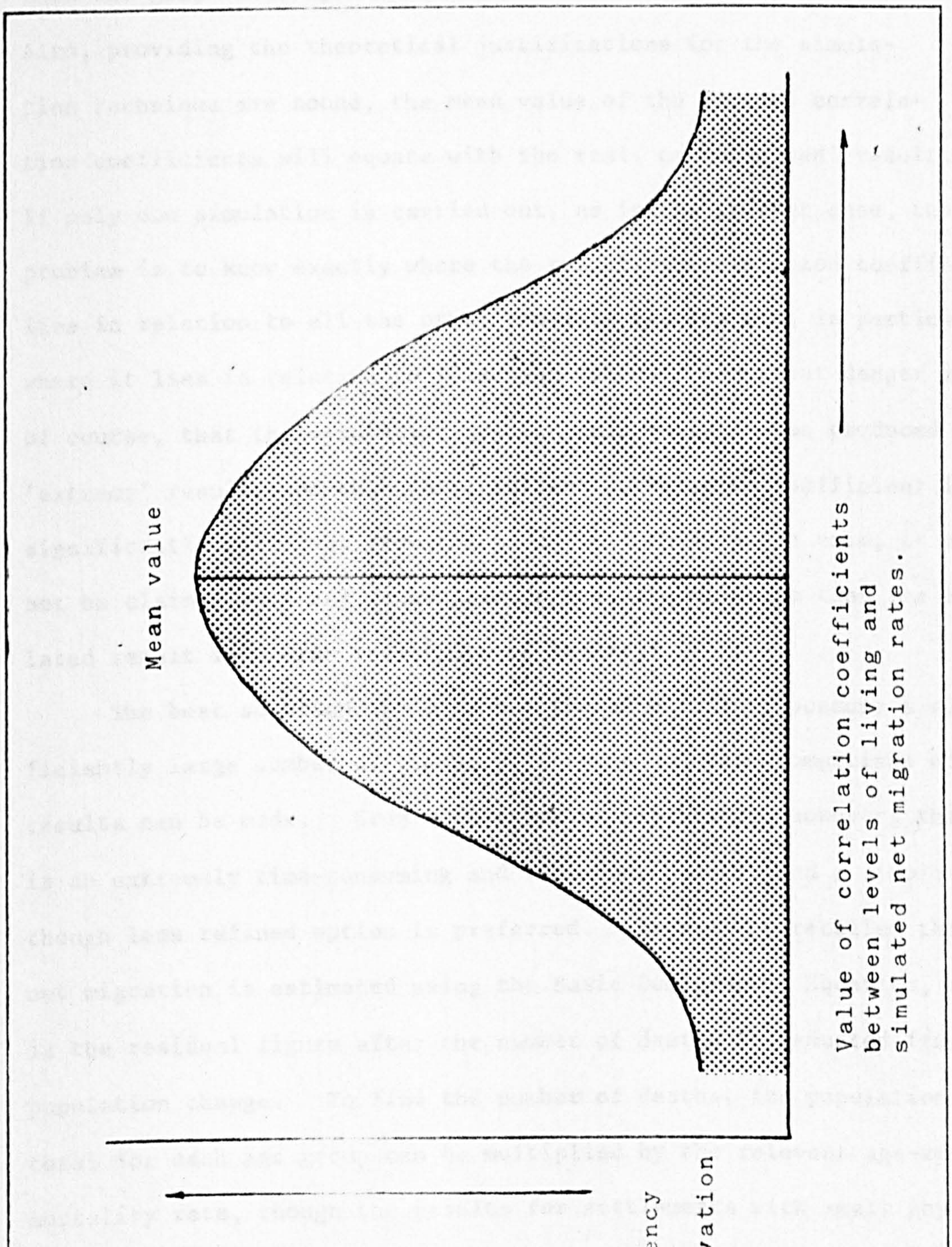


Figure 8.3 Hypothetical frequency distribution of values for repeated correlations between levels of living and simulated net migration rates.



correlation coefficients were plotted in a frequency distribution, then the graph will approximate to a normal curve (Fig. 8.3). Also, providing the theoretical justifications for the simulation technique are sound, the mean value of the plotted correlation coefficients will equate with the real, or 'observed' result. If only one simulation is carried out, as in the present case, the problem is to know exactly where the resultant correlation coefficient lies in relation to all the other possible results and, in particular, where it lies in relation to this mean value. The great danger is, of course, that the simulation used in this research has produced an 'extreme' result, and that the resultant correlation coefficient is significantly different from the mean. If this is the case, it cannot be claimed with any reasonable degree of confidence that the simulated result is a true reflection of reality.

The best solution is to repeat the simulation procedure a sufficiently large number of times, so that an accurate comparison of results can be made. Even with computer assistance, however, this is an extremely time-consuming and laborious process and a simpler, though less refined option is preferred. It will be recalled that net migration is estimated using the Basic Demographic Equation, and is the residual figure after the number of deaths is deducted from population change. To find the number of deaths, the population total for each age group can be multiplied by the relevant age-specific mortality rate, though the results for settlements with small populations often appear meaningless since fractions rather than whole numbers are produced. Simulation techniques are used, therefore, to provide the nearest realistic equivalent to these estimates. If, for any given age-group in a settlement, the simulation was repeated a large number of times, and the results were averaged, the resultant figure would be the same as that produced when the number of people in the age-group is multiplied by the relevant mortality rate. Carrying this argument a stage further, it follows that the mean value of the correlation coefficients represented in Fig. 8.3 is exactly the same as the correlation coefficient between levels of living and net migration when net migration is estimated on the basis of simply multiplying population totals on age-specific mortality rates.

If this procedure is carried out, the mean correlation coefficient is found to have the value r = 0.52. Although no indication is given of the potential range of coefficients which might be produced by different simulations, this figure is seen to compare closely with the value of r = 0.50 obtained by the simulation of net migration rates in the present analysis. The difference is judged to be so small, in fact, that the simulated net-migration rates which are used in this analysis can be accepted as reliable.

8.3 Levels of living and net migration : Young family groups

Migration of 'young family groups' is measured in terms of net migration rates for the population cohort aged between 0 and 4 years in 1965. At first glance, the relationship between levels of living and young family net migration rates appears extremely weak (Fig. 8.4), with a correlation coefficient of r = 0.169. This is only just significant at the 95% level of confidence, although the regression line does follow the path of the hypothesised relationship and, in very general terms, it is possible to say that areas with low levels of living tend to experience net out-migration of people in this age-group, whilst areas with high levels of living experience net in-migration.

Figure 8.4 Relationship between levels of living and net migration for the 0 to 4 year age cohort.

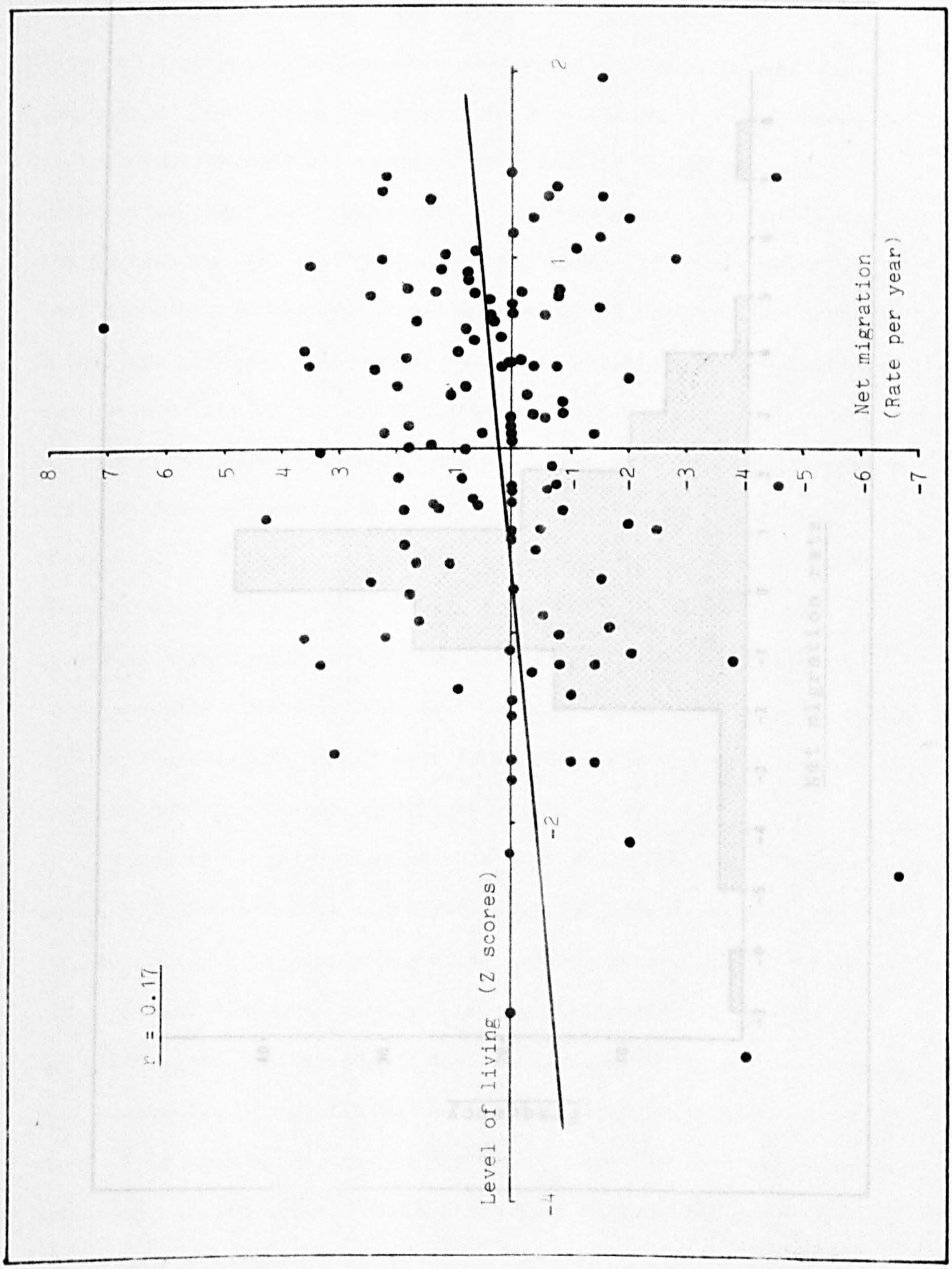
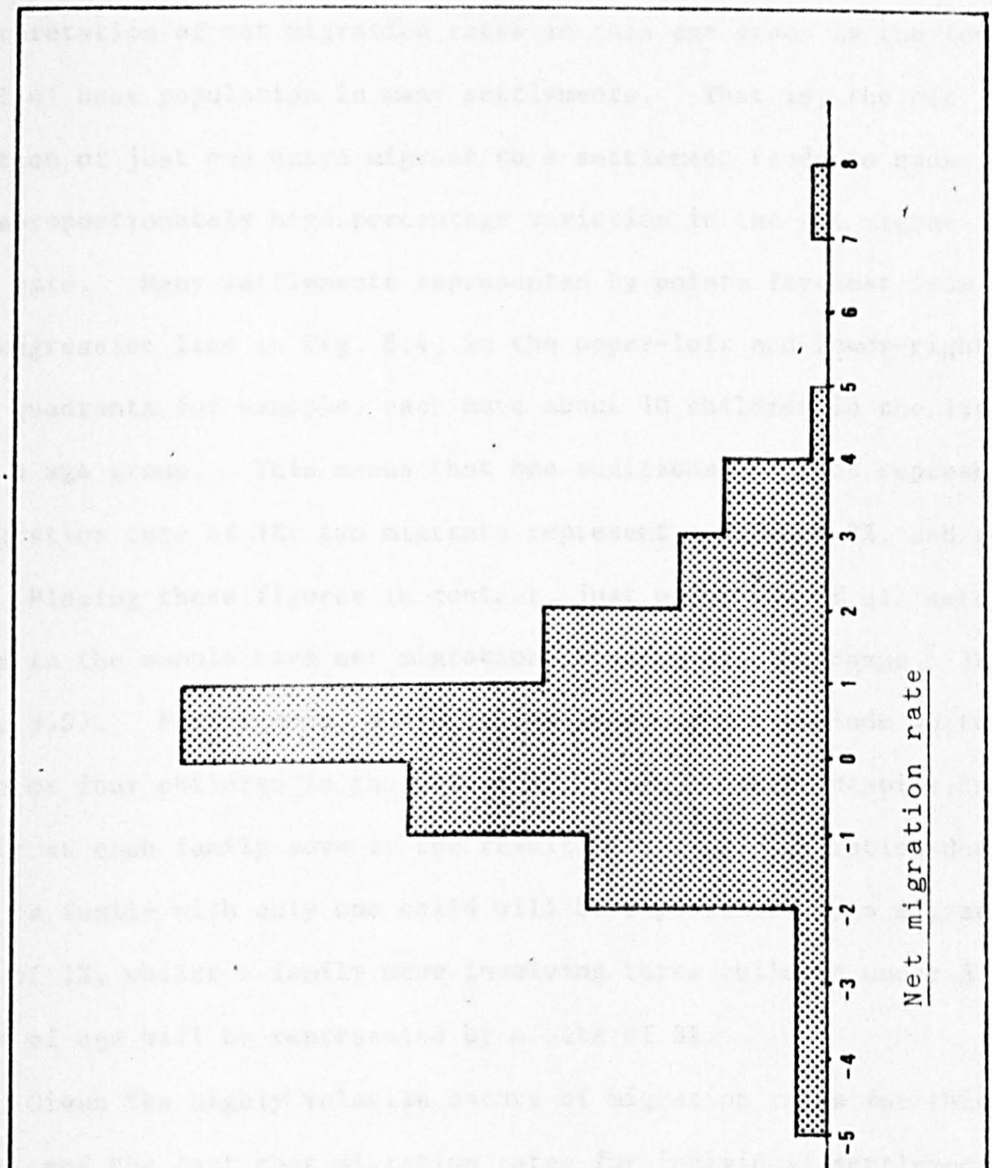


Figure 8.5 Frequency distribution of net migration rates for 'young family' migrants.



The main problem relating to the estimation, and subsequent interpretation of net migration rates in this age group is the low level of base population in many settlements. That is, the net addition of just one extra migrant to a settlement tends to cause a disproportionately high percentage variation in the net migration rate. Many settlements represented by points furthest from the regression line in Fig. 8.4, in the upper-left and lower-right hand quadrants for example, each have about 10 children in the 1965 0 to 4 age group. This means that one additional migrant represents a migration rate of 1%, two migrants represent a rate of 2%, and so on. Placing these figures in context, just under 90% of all settlements in the sample have net migration rates within the range $\pm$ 3% (Fig. 8.5). Furthermore, a single family group may include up to three or four children in the 0 to 4 age range. Thus, despite the fact that each family move is the result of a single migration decision, a family with only one child will be represented by a migration rate of 1%, whilst a family move involving three children under 5 years of age will be represented by a rate of 3%.

Given the highly volatile nature of migration rates for this age group, and the fact that migration rates for individual settlements are generated using random processes anyway, it is difficult to make any more than tentative comments on the distribution of points in the scattergram in Fig. 8.4. Nevertheless, by referring to the original breakdowns of population for each settlement, by age group and year, it is possible to assess the likely direction and volume of migration in certain cases. This means that some useful observations can be made concerning the specific nature of the relationship between 'young family' migration and levels of living in these areas.

One of the most notable features in Fig. 8.4 is the incidence of settlements with high levels of living which appear to have experienced comparatively high rates of net out-migration of children in the 0 to 4 age group. Clearly, this situation is contrary to the hypothesised relationship between levels of living and net migration. In some cases, such as Shimosakahama (1.44, -4.55) and Tomosada (1.23, -2.0), the population base levels are low and evidence from population age breakdowns is not strong enough to show that high rates of net out-migration are not the result of random anomalies in the simulation process (Table 8.2). In three other settlements, however, population base levels are sufficiently large to suggest that out-migration of young family groups is a definite trend rather than the result of a chance random generation (Table 8.3).

Kitaoji (1.97, -1.58), Amagawa (1.01, -2.83), and Jorakuji (1.35, -1.56) all have population totals in excess of 700 people. Moreover, they all experienced substantial increases in the number of households between 1965 and 1975, although population levels remained comparatively stable during this time. The explanation for this appears to be that out-migration of young family groups is balanced by net in-migration of individuals in the 15 to 24 age range, suggesting that residence in these villages tends to be of a transitory nature. The settlements are all within daily commuting distance from the Kyoto metropolis, and it may be surmised that young individuals, who are initially attracted to these places from elsewhere in the rural area, find accommodation in small bed-sit apartments which are to be found in increasing numbers in the metropolitan suburbs. After a few years, when young in-migrants have married and begun to raise families, it is necessary to move again to find more suitable housing. If none is

TABLE 8.2 POPULATION BREAKDOWNS BY 5 YEAR AGE GROUPS FOR 1965, 1970, AND 1975:

SHIMOSAKAHAMA, TOMASADA

		TOTAL POPULATION	TOTAL HOUSEHOLDS	AGE GROUPS												
				0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60+
SHIMOSAKAHAMA	1965	188	45	11	17	22	21	7	7	12	19	19	14	11	7	21
	1970	200	47	11	12	17	20	23	19	9	9	16	19	12	10	23
	1975	183	48	19	8	5	17	16	22	13	7	9	13	14	13	27
TOMOSADA	1965	230	55	15	20	19	18	13	17	16	21	16	16	12	11	36
	1970	212	49	16	13	19	18	16	8	18	13	19	12	13	10	37
	1975	231	53	24	18	11	17	17	19	14	16	13	16	12	14	40

SOURCE: For Tables 8.2 - 8.6: Population Census of Japan, but refer to Chapter Seven for the derivation of 5 year age groups for people aged 30 years or more in the 1965 population breakdowns.

TABLE 8.3 POPULATION BREAKDOWNS BY 5 YEAR AGE GROUPS FOR 1965, 1970, AND 1975: KITAOJI, AMAGAWA, JORAKUJI

		TOTAL POPULATION	TOTAL HOUSEHOLDS	AGE GROUPS												
				0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60+
KITAOJI	1965	1,909	498	221	159	111	171	178	203	208	158	107	82	93	81	137
	1970	1,813	513	151	199	139	110	177	151	156	171	133	93	73	81	179
	1975	1,919	572	161	141	183	135	133	194	152	151	162	122	89	68	228
AMAGAWA	1965	712	168	81	60	52	65	55	69	97	46	38	21	26	31	71
	1970	742	180	67	74	51	53	77	58	64	83	39	42	24	23	87
	1975	727	193	70	70	56	35	53	67	67	55	65	33	38	22	96
JORAKUJI	1965	3,034	669	256	219	300	298	217	215	242	227	216	147	149	158	390
	1970	2,922	679	219	220	220	264	237	194	197	227	209	216	146	140	433
	1975	2,969	710	243	214	210	205	228	221	197	187	221	212	210	144	477

available within the same locality, young family migrants will inevitably move out of the settlement to areas where suitable accommodation can be found. Perhaps this may take the form of a 'U-turn' or 'J-turn' migration towards their original homes, or it may be a so-called 'S-turn' move to places higher up the settlement hierarchy (Kaino and Ōnishi, 1975). It is conceivable, therefore, that a number of these moves are made over a relatively short distance only, to places such as Hari (0.65, 7.08), Kawaraichi (0.51, 3.57), or even Nakazawa (where the rate of net in-migration of 0 to 4 year old children was estimated at 12.9%), which appear in the upper right-hand quadrant of the scattergram in Fig. 8.4. Although these places may have slightly lower level of living scores, this consideration is over-ridden by the fact that new homes have been built here which apparently are suitable for young family migrants (Table 8.4).

Actual evidence for the type and quality of new housing in agricultural settlements is hard to find from published statistics, and this synopsis must be regarded as speculative until detailed supporting data are provided by intensive local fieldwork surveys. It seems apparent, however, that the availability of certain types of housing is a crucial consideration in the migration decision, and that if this factor was incorporated in the level of living score, or introduced as a second explanatory variable, then the value of the correlation coefficient could be substantially increased.

Turning to look at settlements with low level of living scores, Table 8.5 shows population breakdowns for three villages which appear at the extreme left-hand edge of the scattergram: Ashitani (-3.01, 0.0), Tado (-3.23, -4.0), and Buna (-2.27, -6.67). Ashitani has the second lowest level of living score in the whole sample and experienced a population loss of just under two-thirds between 1965 and 1975. Even in

TABLE 8.4 POPULATION BREAKDOWNS BY 5 YEAR AGE GROUPS FOR 1965, 1970, AND 1975: HARI, KAWARAICHI, NAKAZAWA

		TOTAL POPULATION	TOTAL HOUSEHOLDS	AGE GROUPS 0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60+
HARI	1965	404	81	24	34	45	45	36	25	23	34	23	25	19	21	50
	1970	454	105	30	32	37	42	43	44	38	21	37	23	30	18	59
	1975	626	150	69	46	41	46	51	58	57	45	33	46	32	31	71
KAWARAICHI	1965	295	65	28	25	23	31	25	17	31	26	10	9	12	14	44
	1970	346	79	37	33	27	22	27	33	23	32	30	9	10	13	50
	1975	386	87	43	41	36	21	15	32	30	26	35	28	11	11	57
NAKAZAWA	1965	202	54	17	11	19	28	19	21	15	14	14	9	8	5	22
	1970	300	87	27	19	16	28	47	37	22	23	21	16	10	10	24
	1975	719	207	110	72	39	24	58	97	92	66	38	36	23	18	46

TABLE 8.5 POPULATION BREAKDOWNS BY 5 YEAR AGE GROUPS FOR 1965, 1970, AND 1975: ASHITANI, BUNA, TADO

		TOTAL POPULATION	TOTAL HOUSEHOLDS	AGE GROUPS 0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60+
ASHITANI	1965	35	10	0	2	8	2	0	0	1	0	6	2	4	3	7
	1970	20	7	0	0	1	3	0	1	0	0	0	4	2	2	7
	1975	12	4	0	0	0	0	1	1	0	0	0	0	3	2	5
BUNA	1965	59	15	9	7	7	1	0	2	6	8	1	1	4	2	11
	1970	56	14	3	8	6	5	1	3	2	5	7	1	1	4	10
	1975	24	7	0	0	3	4	1	0	0	0	4	6	0	0	6
TADO	1965	37	10	5	6	4	2	0	1	2	5	2	4	1	1	4
	1970	23	8	1	5	1	0	2	0	0	1	3	1	3	1	5
	1975	19	7	0	1	2	1	1	2	0	0	1	3	1	4	3

1965, however, the relatively small proportion of people in the younger age groups suggests the settlement had suffered age-selective depopulation during the years preceding this. In fact, depopulation had already occurred to such an extent that there were virtually no people left in the 'young parent' generation (i.e. the 20 to 39 age group) in 1965 and, in consequence, there were no children aged between 0 and 4 years. With no apparent change in this situation in subsequent years, the reason why the simulated net migration rate for young family migrants in Ashitani has a value of zero becomes obvious. Furthermore, it seems reasonable to suggest that if this state of affairs continues unchanged, and no families migrate into the village to restore the demographic balance, the settlement of Ashitani must face the prospect of eventual total abandonment.

A similar demographic imbalance, with relatively large proportions of elderly people compared to only a few in the younger age groups, is evident in the 1975 age breakdowns for Tado and Buna. The figures show that population loss since 1965 has occurred in young family age groups (including adults as well as children) to such an extent that the high levels of simulated out-migration rates for these settlements seem truly justified. Certainly, it can be seen that no net in-migration of young family groups occurred. As in the case of Ashitani, there were virtually no people in the reproductive age groups by 1975, and no children in the 0 to 4 age group. Additionally, in all three settlements, the number of households fell during the period 1965 to 1975, suggesting a steady reduction in the number of family groups in each village. If these trends continue, Buna and Tado will also enter a stage where there is no migration recorded for certain age groups, simply because there are no people left in these age groups in these villages.

In contrast, there are five settlements in the sample which have level of living scores less than -1.0, where it is known that net in-migration of young family migrants did occur between 1965 and 1975. All of them have fairly small population levels, with numbers in the 1965 0 to 4 age group ranging from six to fourteen. Migration rates for these settlements tend to be fairly volatile, therefore, although evidence from population breakdowns suggests that in each case there was net in-migration of just one or two family groups (Table 8.6). Four of these settlements; Daigashira (-1.64, 3.08), Hashinoue (-1.30, 0.91), Akebihara (-1.17, 3.33), and Shimomura (-1.03, 3.57), are located in the Tamba uplands, or in the mountain-fringe along the borders of Shiga prefecture, beyond daily commuting distance from the Kyoto metropolis. This indicates that the in-migration of young family groups is either a 'U-turn' type return migration, or 'step migration' from places deeper in the mountain zone. Whichever the case, the fact that young family migrants are attracted to these settlements not only results in the maintenance of balanced population structures there, but also indicates a local belief in their future demographic viability. Taking this argument a stage further and comparing level of living scores for these settlements with those for Ashitani, Tado and Buna, it may appear that a 'cut-off' point exists, below which the quality of life was considered so poor between 1965 and 1975 that young families were encouraged to move out and eventual village abandonment seems likely, and above which the quality of life is sufficient to hold, or even attract young families and ensure future village continuance. On the basis of evidence from settlements in the present sample, this cut-off point seems to be a level of living score of around -2.0.

Of course, this suggestion is based on a very limited number of observations which, in terms of the village desertion process, have been

TABLE 8.6 POPULATION BREAKDOWNS BY 5 YEAR AGE GROUPS FOR 1965, 1970, AND 1975: DAIGASHIRA, HASHINOUE, AKEBIHARA, SHIMOMURA, LI

		TOTAL POPULATION	TOTAL HOUSEHOLDS	AGE GROUPS												
				0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60+
DAIGASHIRA	1965	260	55	13	25	39	17	6	10	10	34	14	15	17	12	48
	1970	226	55	6	16	26	27	4	4	10	10	34	12	14	14	49
	1975	202	55	7	8	16	16	8	6	5	11	9	36	12	13	55
HASHINOUE	1965	107	24	11	9	4	12	3	7	10	7	4	6	5	9	20
	1970	104	23	4	11	10	4	6	1	6	10	9	4	8	5	26
	1975	102	23	3	8	12	7	0	4	3	9	11	8	4	8	25
AKEBIHARA	1965	144	31	6	11	15	12	6	9	9	13	8	10	11	6	28
	1970	135	29	7	6	12	12	8	4	9	8	13	8	9	11	28
	1975	142	30	8	11	6	10	10	10	7	9	8	14	8	9	32
SHIMOMURA	1965	162	38	14	10	18	12	5	6	11	8	10	9	11	10	38
	1970	161	38	6	17	12	8	12	5	5	11	10	9	9	11	46
	1975	144	35	9	6	18	9	3	10	3	5	12	10	9	9	41
LI	1965	245	49	18	29	26	10	15	17	21	30	7	8	14	7	43
	1970	244	50	20	21	26	19	7	17	13	22	31	6	9	14	39
	1975	241	53	19	20	22	16	16	7	16	12	22	32	7	8	44

taken over a comparatively brief period of time. Also, very little is known of the nature of individual migration streams in these cases, or of the precise reasons for each migration decision. Nevertheless, the suggestion does point to a close relationship between levels of living and village abandonment, and is clearly a matter requiring further detailed investigation. This is a subject which is returned to in the next chapter, in fact, when evidence is drawn from a number of intensive local field surveys.

8.4 Levels of living and net migration - Young individual migrants

Young individual migrants comprise people in the 5 to 19 age cohort in 1965. This age range is three times greater than that taken for young family migrants, so problems associated with low base populations should be lessened, and a much narrower spread of points around the regression line may be anticipated. In fact, the scattergram of points for 132 settlements shows a very good fit, indicating a strong positive relationship between levels of living and net migration for people in this age group (Fig. 8.6). The coefficient of correlation is $r = 0.67$, which means that just under 45% of the variance in net migration rates is accounted for by the variation in level of living scores ($r^2 = 0.44$). Although more than half the variance is still unexplained, this result compares favourably with other studies which have attempted to describe migration in simple linear terms (Abler, Adams, and Gould, 1972; Goddard, Gould, and Masser, 1975). This is especially so when it is remembered that the present research is concerned with a large number of comparatively very small settlements, where small variations in the numbers of individual migrants tend to be greatly accentuated in relative terms.

Nevertheless, it should still be possible to consider at least one way in which the relationship might be improved. A factor which

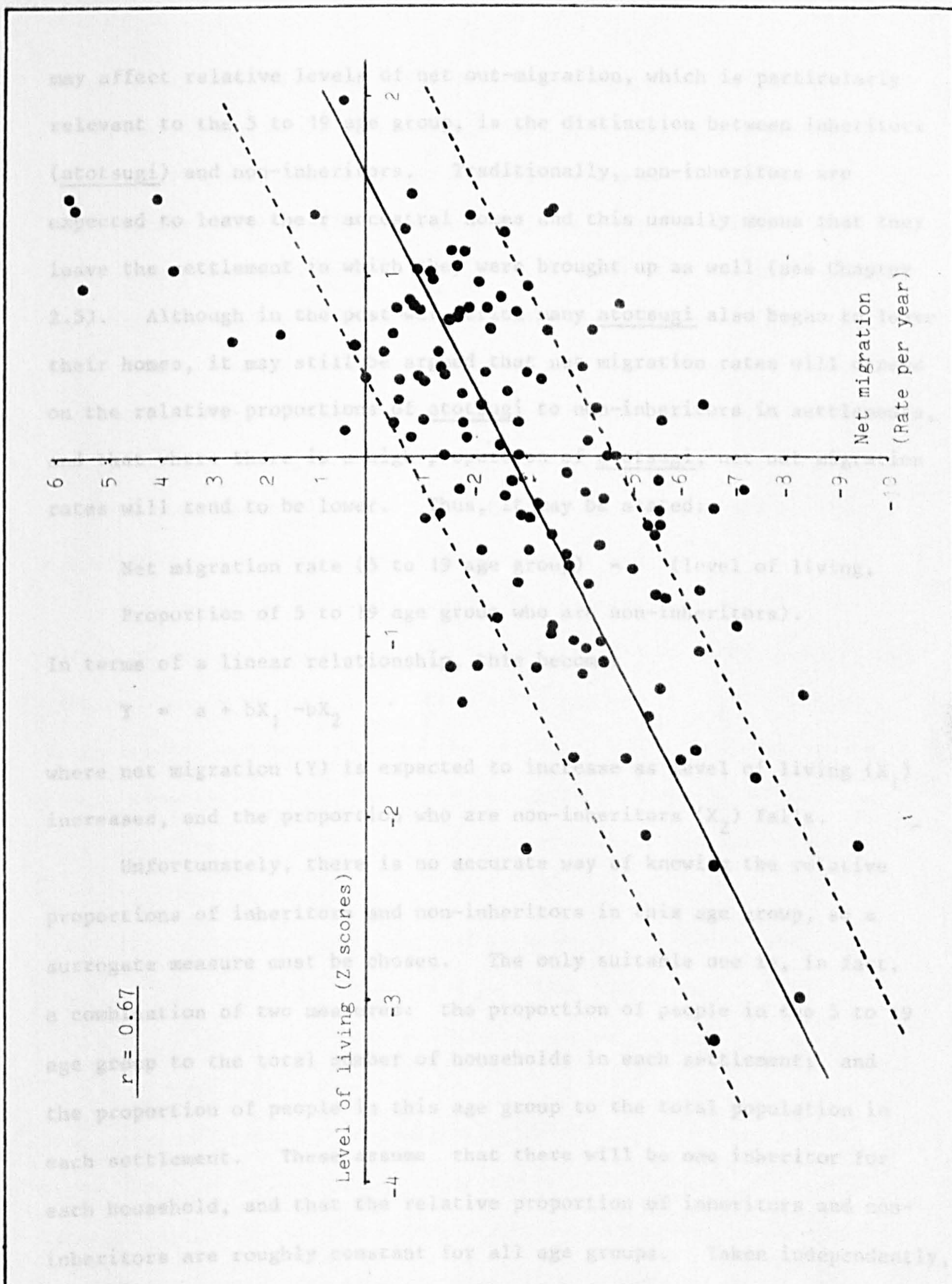


Figure 8.6 Relationship between levels of living and net migration for the 5 to 19 year age cohort.

may affect relative levels of net out-migration, which is particularly relevant to the 5 to 19 age group, is the distinction between inheritors (_atotsugi_) and non-inheritors. Traditionally, non-inheritors are expected to leave their ancestral homes and this usually means that they leave the settlement in which they were brought up as well (see Chapter 2.5). Although in the post-war period many _atotsugi_ also began to leave their homes, it may still be argued that net migration rates will depend on the relative proportions of _atotsugi_ to non-inheritors in settlements, and that where there is a high proportion of _atotsugi_, net out-migration rates will tend to be lower. Thus, it may be stated:

Net migration rate (5 to 19 age group) = (level of living, Proportion of 5 to 19 age group who are non-inheritors).

In terms of a linear relationship, this becomes

$$Y = a + bX_1 - bX_2$$

where net migration (Y) is expected to increase as level of living (X_1) increases, and the proportion who are non-inheritors (X_2) falls.

Unfortunately, there is no accurate way of knowing the relative proportions of inheritors and non-inheritors in this age group, so a surrogate measure must be chosen. The only suitable one is, in fact, a combination of two measures: the proportion of people in the 5 to 19 age group to the total number of households in each settlement; and the proportion of people in this age group to the total population in each settlement. These assume that there will be one inheritor for each household, and that the relative proportion of inheritors and non-inheritors are roughly constant for all age groups. Taken independently, neither measure significantly improves the value of r, but taken together, in a step-wise multiple regression, the multiple correlation coefficient increases to r = 0.72. This suggests that more than half the variance in net migration rates for the 5 to 19 age group can be accounted for by variations in level of living and the two surrogate variables ($r^2 = 0.52$), indicating that net migration rates are influenced by the relative proportion of non-inheritors in this age group. However, a cautionary note must be made of the fact that the two surrogate variables are highly correlated ($r = 0.82$), and that this may have a distorting effect on the final value for multiple r (Johnston, 1978). Once again, these findings require evidence from intensive local field surveys before more positive conclusions can be reached concerning the relative importance of traditional inheritance systems with regard to comparative net migration rates in settlements.

Turning aside from this aspect, it is useful to consider the distribution of residual points in the original regression between net migration and levels of living for the 5 to 19 age cohort. By plotting lines for the standard error of the estimate, three groups of residuals can be clearly identified in the scattergram (Fig. 8.6). These are:

i) Five settlements where net out-migration rates are lower than expected.

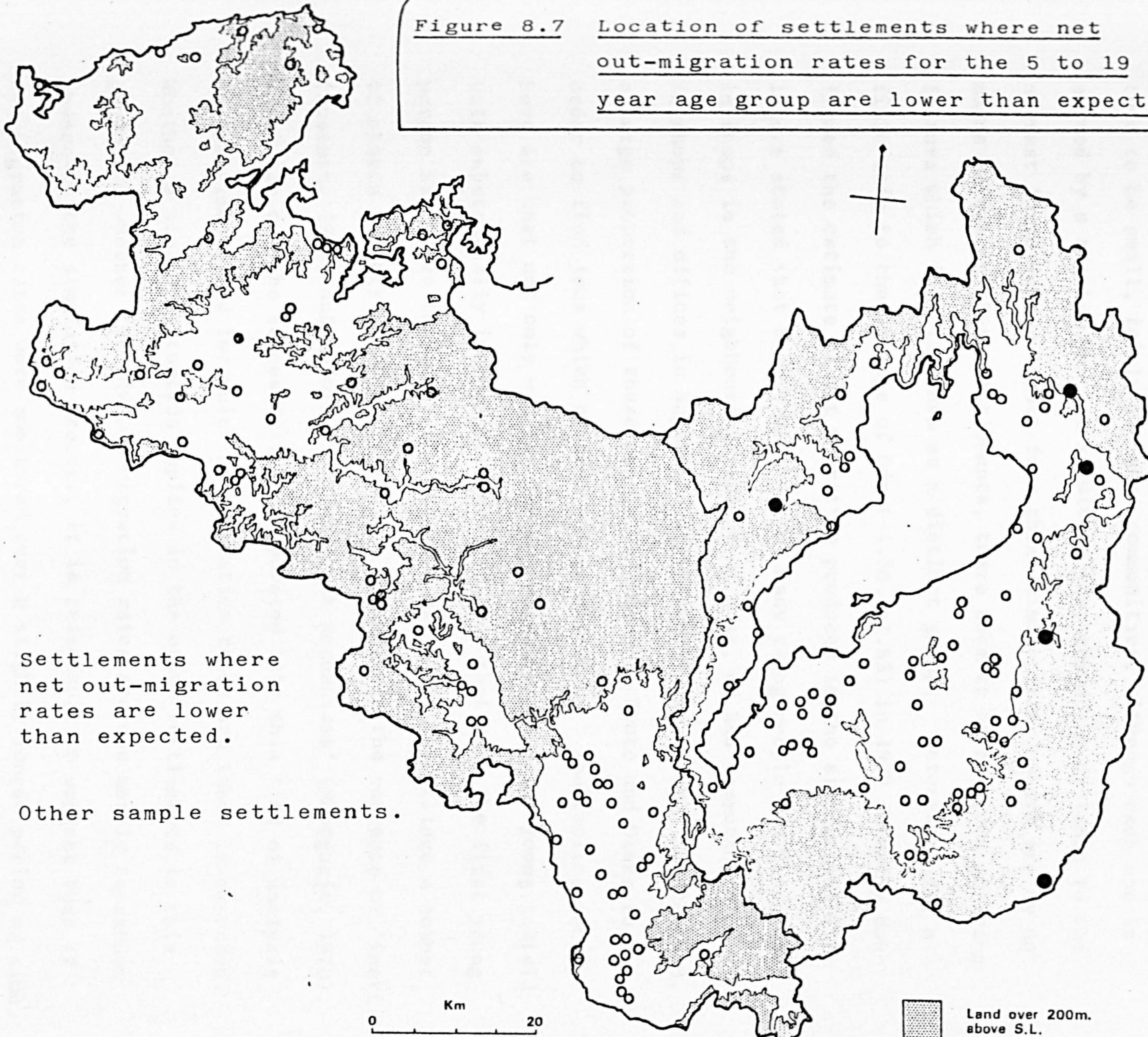
ii) Eight settlements (nine if Nakazawa is included) where net in-migration rates are higher than expected.

iii) Nineteen settlements where net out-migration rates are higher than expected.

The danger of looking at net-migration rates for individual settlements, because of the random chance factor introduced in the simulation process, must be reiterated. With care, however, certain general observations about these residuals can be made which may help understanding of the migration process for this age group.

The five settlements in the first group, where net out-migration rates are lower than anticipated, are all located in Shiga prefecture,

Figure 8.7 Location of settlements where net out-migration rates for the 5 to 19 year age group are lower than expected.



● Settlements where net out-migration rates are lower than expected.

○ Other sample settlements.

in or on the edge of the peripheral mountain zone which surrounds Lake Biwa and the Omi Plain (Fig. 8.7). With the exception of Asahi (-0.35, -1.11), which has a population of more than 600, they tend to be small, fairly isolated communities, although each one is served by a regular bus and is within easy commuting distance to the nearest large town. Apart from these similarities, which are by no means unique to these settlements, there seem to be no other unifying factors which identify them as a distinct group. Interestingly, a field trip to the village of Oda (-1.36, -1.85) in 1977 actually confirmed the estimate of net migration produced in the simulation. Villagers stated that before 1975 or so, many young people had found work in shops in the neighbouring village of Nose, or had commuted to work in shops and offices in Nagahama-city, about 12 km. away. Since then, a large proportion of these people had moved to Kyoto and Osaka in order to find jobs which offered better salaries. The implications here are that not only was the net out-migration rate for young individuals substantially increased after 1975, but that once the first young person had taken the initiative to move away from the village a number of others rapidly followed. This in turn raises the concepts of 'inertia' (Roseman, 1971) and 'information feed-back mechanisms' (Mabogunje, 1970), which can only be successfully incorporated into this kind of analysis if the time period for which net migration rates are taken is extended. Whether a similar situation applies in the other settlements in this group, or whether the low out-migration rates are due merely to random chance in the simulation process, it is reasonable to suggest that if net migration rates were monitored over a slightly longer period of time, they might move closer to those for other settlements in the sample which share a similar level of living score.

The distribution of points for the 27 (28) settlements in the remaining two residual groups are sufficiently distinctive to suggest, once again, that a curvilinear rather than simple linear regression might provide a better fit. That is, as level of living increases, rates of net in-migration appear to get increasingly higher, and as level of living decreases, rates of net out-migration appear to become increasingly greater. Such a path could be described by the hyperbolic function:

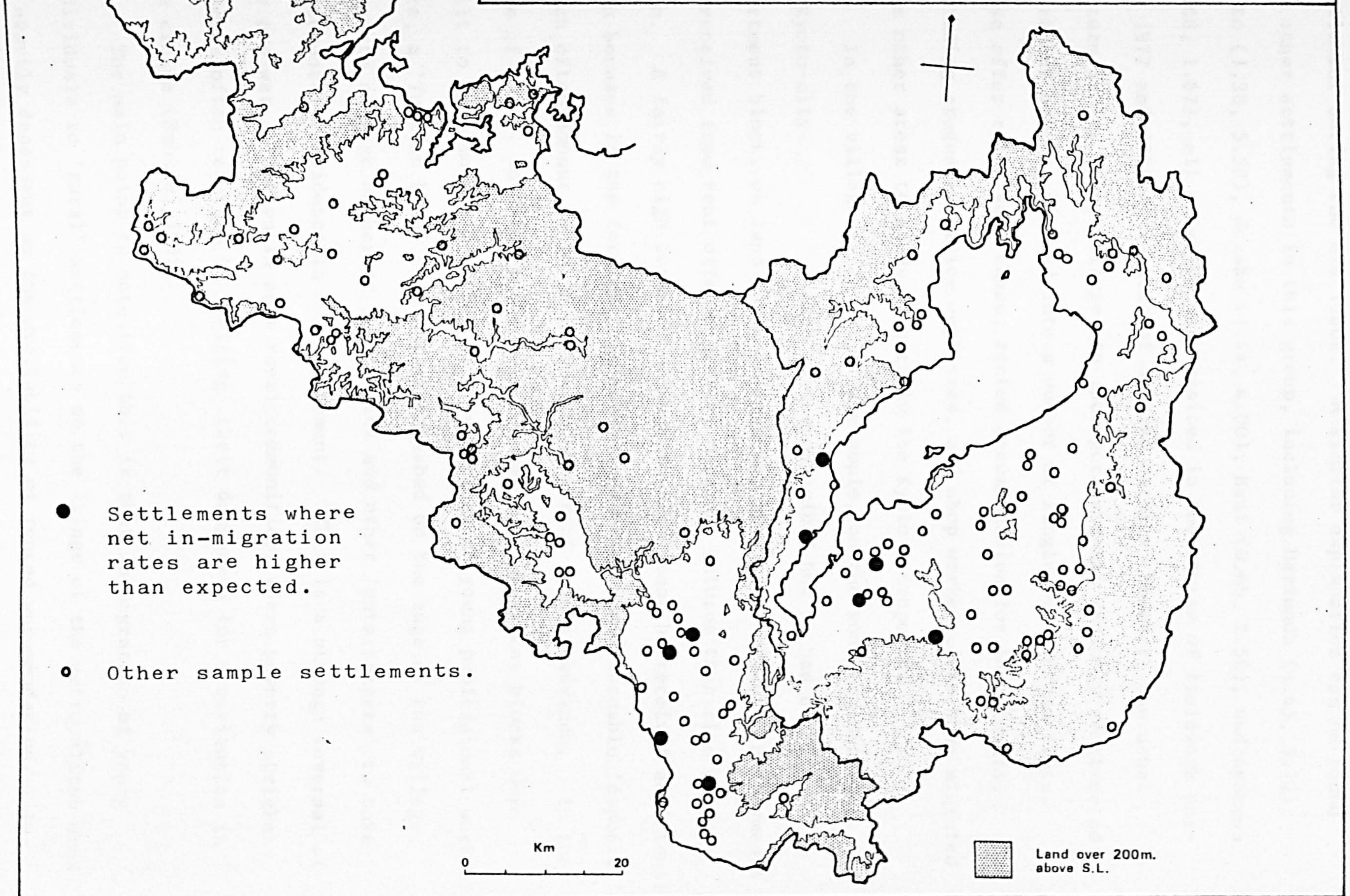
$$y = a + b\ (\sinh x), \text{ where } \sinh x = \frac{e^{x} - e^{-x}}{2}$$

where y is the net migration rate and x is the level of living score.

One of the main dangers associated with attempting to fit this kind of curve, however, is that of post hoc rationalization. In other words, theoretical justification must be provided before any attempt to test this relationship, rather than simply seeking to increase the value of r without any real notion of why it might be improved. In fact, evidence from the scattergram in Fig. 8.5 clearly shows that most settlements with a high level of living have rates of net migration which are close to the values anticipated by simple linear regression, and a similar situation exists for most settlements with low levels of living. It seems more reasonable, therefore, to consider ways in which the residuals may be explained in terms of the linear model, where theoretical justification has already been provided, rather than a complex curvilinear one.

In the case of the second group of residuals, where net in-migration rates are higher than anticipated, a map of their distribution shows that all the settlements in this group are located in the area of suburban growth around the Kyoto metropolis (Fig. 8.8). In Nakazawa, it has already been suggested that the high rate of in-migration (21.2%) is largely explained by the fact that a housing estate was built within the

Figure 8.8 Location of settlements where net in-migration rates for the 5 to 19 year age group are higher than expected.



settlement during the mid 1960s. A similar explanation can be found for other settlements in this group, including Harimada (1.45, 5.72), Ogoto (1.38, 5.58), Joraku (1.44, 4.00), Hari (0.65, 2.58), and Ayakawa (0.68, 1.67), all of which were visited in the course of fieldwork during 1977 and 1978. Instead of housing estates, however, the usual pattern is for these villages to incorporate small recently constructed apartment blocks, divided into a number of single or two-room flats. These offer relatively cheap, rented accommodation for individuals, including students, office employees, and shop workers, who have migrated from other areas to study or work in the Kyoto metropolis.

In the village of Joraku, for example, on the southern outskirts of Kyoto-city, one farmer described how he had built such an apartment block, on land where he formerly grew rice, because the payments he received from rent offered greater marginal returns than rice production. A fairly high turnover of tenants also meant he received additional cash bonuses in the form of 'key money' and other non-returnable 'deposits', which often amount to three or four months rent paid in advance. In the case of Ogoto, in Shiga prefecture, a number of apartment blocks were built to accommodate a rather different class of young professional workers. Here, a 'Turkish bath' complex, established on the edge of the village, attracts a large number of prostitutes and other 'entertainers' to take up temporary residence in the settlement. This is a strange reversal of the pre-war situation in some rural communities, where poverty stricken farmers often resorted to 'selling' their daughters for prostitution in the cities (Embree, 1939).

The main point to note from this is that in-migration of young individuals to 'rural' settlements on the fringe of the metropolitan area is heavily dependent on the availability of rented accommodation. In particular, construction of housing estates (<u>danchi</u>), or apartment blocks, is not evenly distributed throughout settlements which are close to, and equidistant from, the urban centres. Many such areas retain their traditional, closely nucleated appearance and remain virtually 'closed' to newcomers, whilst in others, enterprising farmers or speculative developers actively encourage in-migration for profit. In terms of the criteria presently used to measure levels of living, there are no factors which readily differentiate these two types of settlement. Any attempt to include the relevant variables, however, would not only make the index more complex than it already is, but would be hard to justify in terms of the definition of levels of living used here. In other words, the availability of capital for building apartment blocks, the lack of 'green-belt' planning controls, and so on, are not necessarily factors which enhance the quality of life in a settlement for most people living in that settlement. A better solution, therefore, would be to include a measure of housing availability into the regression analysis as an independent explanatory variable so that:

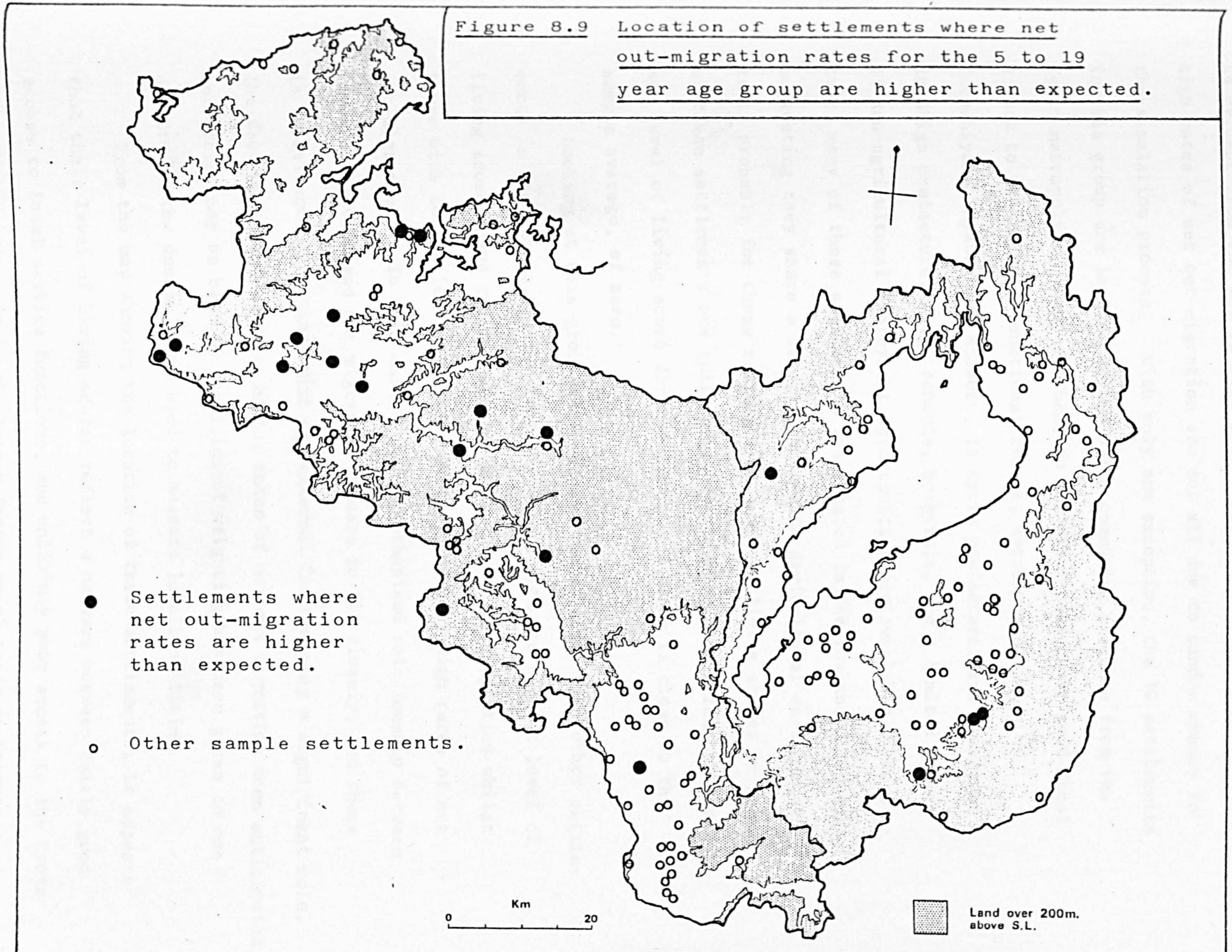
Net migration rate (5 to 19 age group) = f (Level of living, Proportion who are non-inheritors, Availability of rented accommodation)

where the net migration rate increases with greater levels of living and greater availability of rented accommodation, and decreases with a greater proportion who are non-inheritors.

Unfortunately, the statistics required for this analysis are not available at this level of data aggregation, and no suitable surrogate measures can be found. It must therefore be left to more detailed evidence from intensive fieldwork before any definite conclusions can be drawn.

Turning to the third group of residuals, where rates of net out-migration are higher than expected, a clearly defined spatial distribution

Figure 8.9 Location of settlements where net out-migration rates for the 5 to 19 year age group are higher than expected.



is evident from the map in Fig. 8.9. This fact alone suggests that high rates of net out-migration are not all due to random chance in the simulation process. With only one exception, the 19 settlements in this group are located beyond daily commuting distance from the Kyoto metropolis. Many of them, on the other hand, have good local access to the nearest functional centre, notably the cities of Fukuchiyama, Ayabe, and Maizuru, in Kyoto prefecture, and Hino town in Shiga prefecture, where schools, hospitals, and a limited number of non-agricultural employment opportunities are available. Moreover, many of these settlements are located in the lowland plain area, suggesting they share a comparatively good agricultural environment. It is probably for these reasons that level of living scores in some of these settlements are quite high, reaching +1.4, and that the average level of living score for the group as a whole is close to the sample average, of zero.

Looking at this group of residuals in isolation from other settlements in the sample, it is clear that those with the highest level of living scores have relatively low levels of net out-migration whilst those with lowest level of living scores have very high rates of net out-migration. To this extent, the hypothesised relationship between levels of living and net migration appears to fit closely, and there is no evidence to suggest that any external factors play a significant role. The fact that they all have higher rates of net out migration then anticipated, therefore, may be because insufficient weighting has been given to one or more of the domain items used to measure levels of living.

From the map showing the location of these settlements, it appears that their level of living scores reflect a balance between fairly good access to local service functions, and uniformly poor access to the Kyoto metropolis. Since it is the latter factor which tends to encourage higher rates of out-migration, it may be argued that not enough weight has been given to the 'urban access' domain in the calculation of level of living scores or, conversely, too much weight has been allocated to access to local service functions. Either way, the effect of these kind of weighting adjustments would be to lower the level of living score and, depending on how other settlements would be affected by this procedure, this might improve the fit between levels of living and net migration in the linear regression.

In fact, the results of the questionnaire survey (Table 6.17) reveal that people in the young age group (0 to 29 years) allocate a much higher priority to urban access than any other age group. Whereas it is ranked second in importance by people aged between 0 and 29 years, it is ranked third by people in the 30 to 59 age group, and only fourth by people more than 60 years old. Given that an expressed priority preference does exist in the younger age group for the 'urban access' domain over most local service functions, this naturally leads on to a discussion of the general effectiveness of the weighting procedures used to incorporate priority preferences in the calculation of level of living scores.

8.5 The effectiveness of questionnaire derived weightings

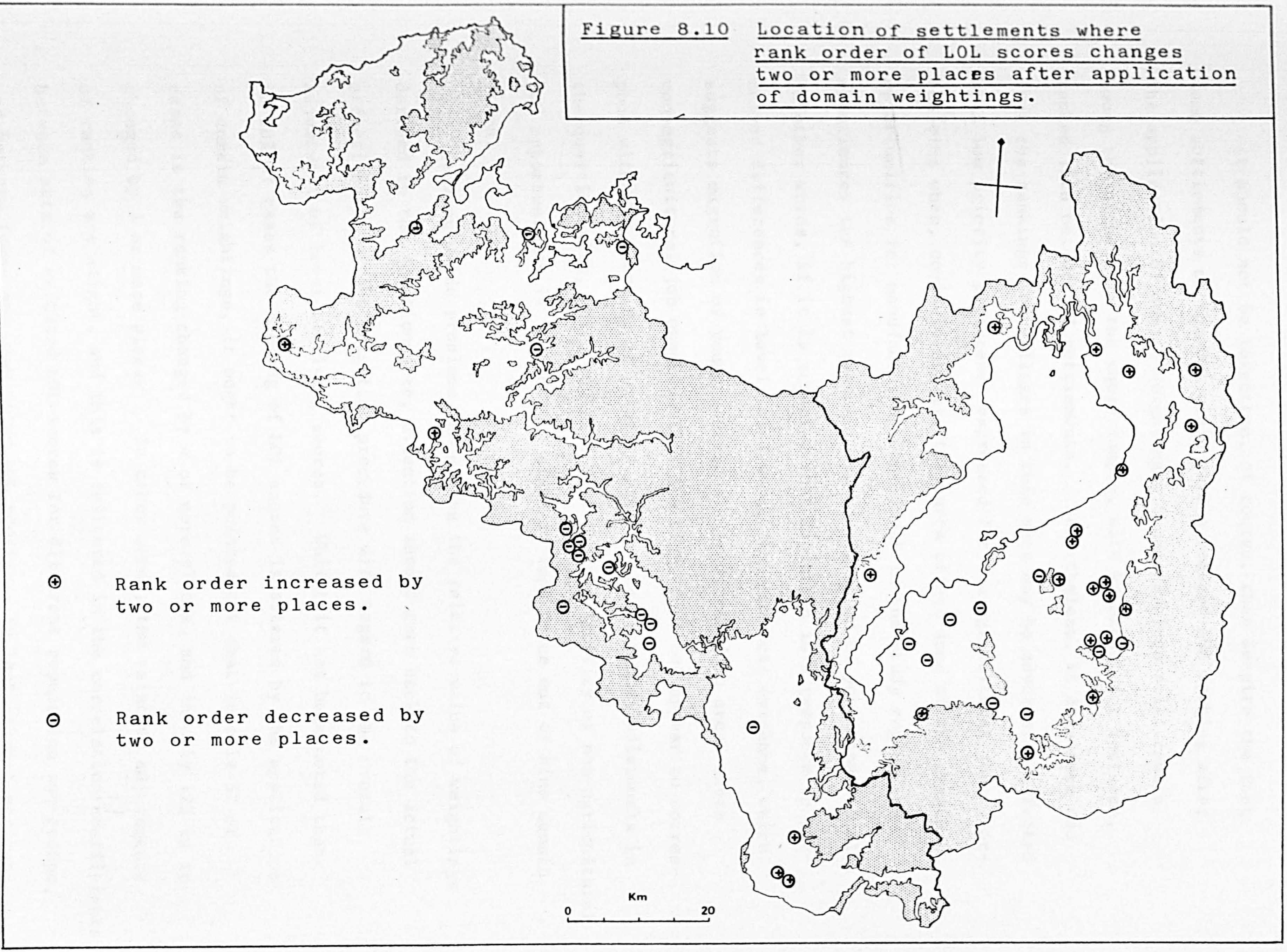
The effectiveness of the weighting procedure can be tested by comparing level of living scores which have been calculated using different sets of domain weightings, according to the priority preferences expressed by different population sub-groups, and level of living scores derived from equally weighted (i.e. unweighted) domain scores. First of all, settlements may be ranked according to their weighted, and to their unweighted LOL scores. A comparison of the two sets of rankings, when weighted scores are based on priority preferences expressed by the 0 to 24 age group, shows that the rank order changes in 62%

of cases (83 settlements), and that in just over half of these, in 46 settlements, the rank order changes by two or more places.

A map showing the distribution of these 46 settlements, and the direction of change in rank order, reveals some very distinctive spatial patterns (Fig. 8.10). With only one or two exceptions, the settlements where LOL rankings are improved after the application of domain weightings are located in the lowland plan surrounding the north-western shores of Lake Biwa, or in the southern extremity of the Kyoto basin. A possible reason for this is that, despite only moderately good urban access facilities, these settlements share good local access facilities, including access to medical and educational services, to the many small towns and cities which are located in these areas. These items received the highest priority preferences, and weighted level of living scores are improved as a result.

With regard to settlements where LOL ratings are reduced after the application of domain weightings, a combination of poor local and urban access would seem the most likely explanation for the distribution of villages in the Tamba uplands and the northern areas of Kyoto prefecture. However, somewhat surprisingly, approximately half of the settlements in this group are located in lowland areas, within daily commuting distance from the Kyoto metropolis. Moreover, they include settlements such as Nakazawa, and Hari, which experienced some of the highest rates of net in-migration of both young individuals and young family groups. The most likely explanation for this is that these settlements score highly on the agricultural environment, natural environment, and access to non-agricultural job opportunity domains, all of which are 'penalised' in relative terms by having low priority preferences attached to them.

Figure 8.10 Location of settlements where rank order of LOL scores changes two or more places after application of domain weightings.



It should not be forgotten, of course, that despite the fact some settlements on the Omi plain have a reduced LOL ranking after the application of domain weightings, these rankings still remain among the highest in the whole sample, with Nakazawa, for instance, ranked 16th out of 133 settlements. Nevertheless, it does seem odd that the rankings for villages in this area may be adverseley affected by a low priority preference expressed for non-agricultural job opportunities when, co-incidentally, this area offers some of the greatest opportunities for manufacturing employment in the study region and experiences the highest rates of net in-migration of young individuals. In other words, if it is accepted that migration is a response to perceived differences in levels of living, the empirical evidence, which suggests migration of young individuals is directed to areas where non-agricultural job opportunities are high, does not appear to correspond with the ordering of priority preferences by young individuals in the questionnaire, which suggests that the availability of non-agricultural job opportunities is ranked only sixth in importance out of nine domain items.

Leaving aside problems concerning the relative value of weightings derived in the questionnaire, attention should turn back to the actual effectiveness of the weighting procedure with regard to the overall adjustment of level of living scores. Whilst it has been noted that in 68% of cases the ranking of LOL scores is altered by the application of domain weightings, it ought to be pointed out that in only 5% of cases is the ranking changed by 4 or more places, and in only 12% is it changed by 3 or more places. In other words, the relative adjustments of ranking are slight, and this is reflected in the correlation coefficients between sets of weighted LOL scores for different population sub-groups, and between these and unweighted LOL scores. In fact, almost perfect correlations exist, with values of r ranging between 0.99 and 1.0. This in turn means that the correlation coefficients between levels of living and net migration are no different when levels of living are represented by weighted, or unweighted domain scores. Thus, as Smith (1977) and Knox and Maclaran (1978) have also found, it appears that the application of questionnaire derived weightings has a negligible effect on adjustment of the relative values of level of living scores. As Knox and Maclaran have concluded:

> ". . . weighted description, although it is arguably more sensitive to variations in well-being as well as being more acceptable in terms of theory and equity, produces much the same picture, ecologically, as the conventional unweighted approach." (1978, 224).

8.6 Summary and Conclusions

In general terms, it can be said that an association does exist between levels of living and net migration rates and that, for both 'young individuals' and 'young family groups', areas with lowest levels of living tend to experience highest rates of out-migration, whereas areas with highest levels of living tend to experience highest rates of net in-migration.

Subsequent discussion on the relationships expressed for these two population sub-groups highlighted a number of problems. Firstly, the low level of base populations in many settlements, particularly in the case of 'young family' migrants, means that net migration rates tend to be extremely volatile and, in consequence, a wide scatter of points around the regression line is to be anticipated. Secondly, the time period over which migration rates are measured is rather short. This means that random anomalies produced in the simulation process have a reduced chance of being 'evened out', and that important concepts such as migrant 'inertia' and 'information feed-back mechanisms' cannot be successfully incorporated into the analysis. All of these factors will tend to retard the level of explanation of variations in net migration rates provided by variations in level of living scores. Unfortunately, they are problems which cannot be overcome within the specific spatial and temporal parameters imposed on this research, due to the nature of available data sources.

In addition, suggestions have been made for the incorporation of other explanatory variables into the analysis. Firstly, with regard to young individual migrants, it was considered that an account should be taken of the ratio of inheritors to non-inheritors, particularly in villages experiencing net out-migration. A surrogate measure was used to reflect this ratio, and the level of explanation of variations in net-migration rates was found to improve accordingly. Secondly, evidence from scattergrams showing the relationships between levels of living and net migration rates for both population sub-groups indicated that account should be taken of the type and amount of accommodation available in areas with high levels of living, where net in-migration is anticipated to occur. Spatial variations in the availability of suitable accommodation are known to exist, independent of level of living considerations, and the incorporation of this crucial factor into the analysis would undoubtedly raise the level of explanation of variations in net migration rates. Unfortunately, intensive field work is required in order to obtain suitable data, and this is beyond the immediate scope and aims of the present research.

Finally, doubts were raised concerning the 'accuracy' of some of the priority preferences expressed in the questionnaire survey, notably on the 'access to urban area' and the 'availability of non-agricultural employment' domains. Of course, the motives of the respondents who answered the questionnaire cannot be called to question, but a careful review of the wording of the descriptions of these domain items, particularly the latter, would be worthwhile. In the end, however, discussion concerning these doubts proves merely tautological, since it is shown conclusively that the incorporation of domain weightings does not substantially alter the relative value of level of living scores, and has a negligible effect in terms of explaining variations in net migration rates.

These findings carry a number of important implications. In the first place, it is apparent that although variations in priority preferences are found to exist, the mathematical ratios which differentiate them are apparently lost, or at least severely reduced, in the conversion of these preferences to numerical weightings. Future questionnaire surveys, therefore, which are attempting similar objectives, may find it necessary to adopt an entirely different method of recording value preferences whereby a relatively greater range of scores (hence weightings) can be achieved. On the other hand, strict theoretical justification for such procedures must be applied, and in this respect it is worth placing the priority preferences obtained in the present research in their true perspective. That is, respondents were asked to record their preferences on a scale of 0 to 100 so that, in theory, the difference between the highest and lowest scores could reach a maximum 100 points. In practice, however, the average lowest score (Leisure) was 53.9 compared to the average highest score (medical services) of 77.3 for people in the 0 to 24 age group, representing a range of less than 25 points. An even lower spread of values was evident for the preferences expressed by other age groups. Moreover, average values for seven of the domain items expressed by the 60+ age group were all within a range of just 5 points, from 63.5 to 68.5. In other words, given the potential range of values, the value preferences recorded in the questionnaire survey can be judged to be broadly the same as one another, producing 'equal' weightings. This observation becomes even more apparent when it is recalled that according to Students T-tests carried out on these scores, significant differences in priority preferences between age groups were evident in only 3 out of 27 matched pairs (Table 6.17).

Secondly, if it is assumed that the production of 'equal' weightings is the result of an inherent fault in the questionnaire or in the translation of expressed preferences into numerical weightings, then the weighting procedure is effectively transferred to the initial choice of domain items and indicator variables. This argument becomes clear if the correlation coefficients between levels of living and net migration are compared for different population sub-groups. Despite the fact that net migration rates for young family groups are considerably more volatile than for young individuals, the difference in correlation coefficients for the two sets of migrants - where r = 0.17 for young family groups, and r = 0.67 for young individuals - is so great that additional influences must be considered to play a part. This is confirmed, in fact, if the coefficient for young individuals is contrasted with the correlation coefficient for total population, where r = 0.50. In this case, population base levels are large enough to ensure the effect of volatile net migration rates is removed entirely. The point is, therefore, that the range of domain items and indicator variables used to construct level of living scores in the present analysis seems to offer a better explanation of variations in net migration rates for the 'young individuals' group than for any other age group. Thus, in order to improve the level of explanation of variations in net migration rates for 'young family groups', for instance, a rather different range of domain items ought to be considered perhaps.

The problems of assigning the correct weightings, or of choosing a more suitable set of domain items in order to provide a better explanation of differences in rates of rural out-migration cannot be fully overcome until a more detailed understanding is gained of actual migration flows and the precise reasons for individual migration decisions. As it has been frequently noted in this chapter already, this can only be achieved by conducting a number of intensive village surveys, using evidence from the Basic Register of Residents and personal interviews. Clearly, in view of the time constraints imposed on this research, the potential number of surveys which may be carried out is restricted, and it is not possible to extend the scope of this kind of fieldwork beyond a few, limited objectives. In the next chapter, therefore, the findings of three intensive village surveys are reported. The aims of these surveys were:

1. to plot all individual migrations to and from these villages, and to discover the reasons for individual migration decisions.
2. to isolate migrations involving farm inheritors (atotsugi), including return migrations, and to discover the process by which village abandonment occurs.

In view of the nature of these aims, which are in close accord with the stated objective of the present research, it is necessary to select villages with comparatively low levels of living for study. This means that attempts to survey housing availability, for instance, in areas with high levels of living, must be left for future research.

CHAPTER NINE

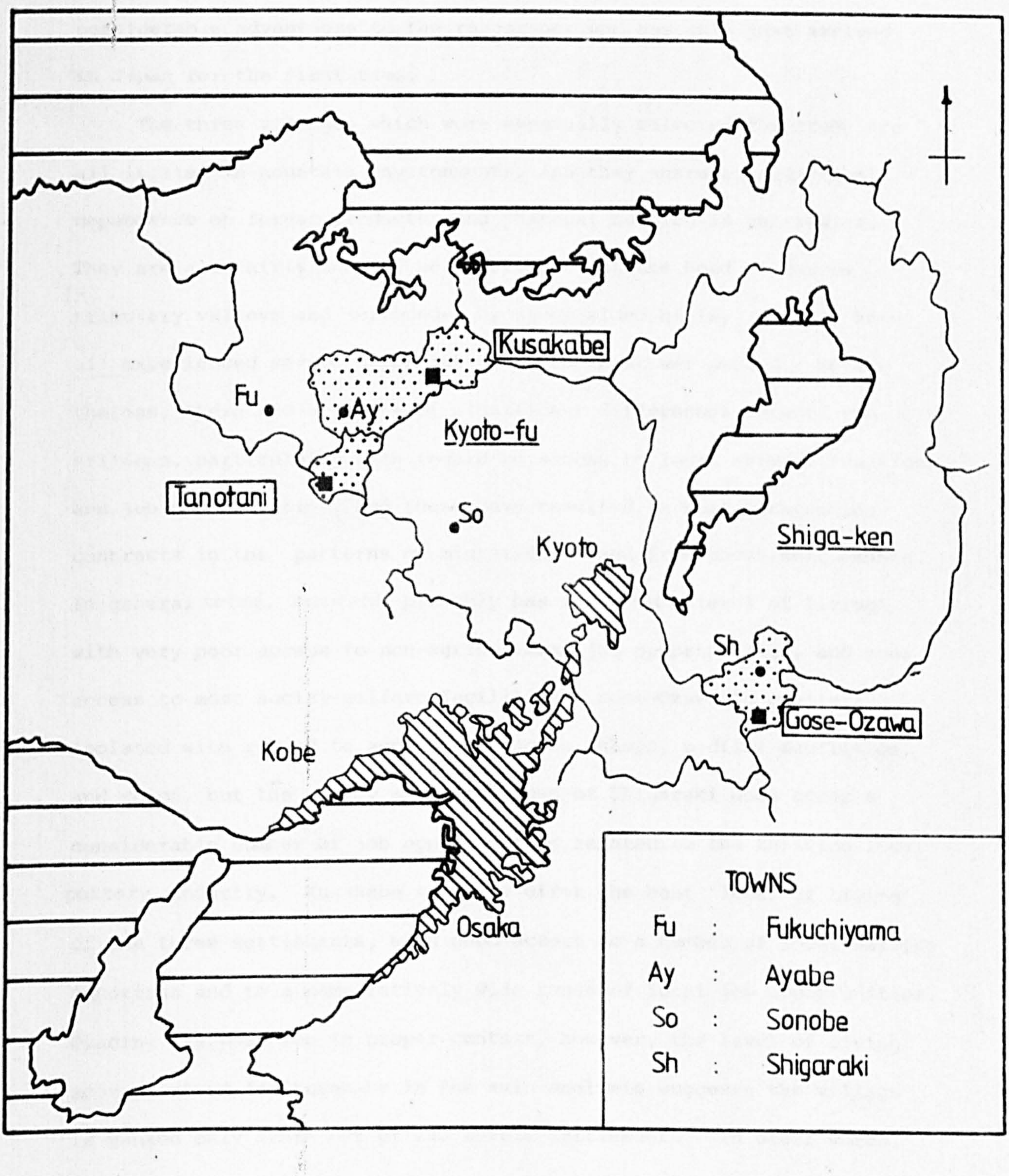
THREE VILLAGE SURVEYS

9.1 INTRODUCTION

Three intensive village surveys were carried out in Kyoto and Shiga prefectures during the course of two separate periods of fieldwork in Japan, between 1977 and 1979. The villages selected for study (Fig. 9.1) were Tanotani, in Miwa-cho (Kyoto); Gose-Ozawa, in Shigaraki-cho (Shiga); and Kusakabe, in Ayabe-shi (Kyoto). The surveys of Tanotani and Gose-Ozawa formed part of a preliminary investigation into the problems of rural depopulation in Japan and, consequently, they are not included in the sample of settlements used in the main level of living analysis. The survey of Kusakabe, carried out later, was based on settlements which are included in this sample, and the village appears in the correlations between levels of living and net migration described in the previous chapter.

The method of selecting these settlements for intensive survey was determined more by force of circumstance than by any strict systematic sampling procedure. In view of the various time and financial restraints imposed on this research it was only possible to allocate about two weeks fieldwork in each village. In order to make optimum use of the resources available, therefore, it was necessary to choose fairly small settlements, comprising around 25 or 30 households. Also, with regard to the choice of administrative districts in which the settlements are situated, it was necessary to ensure full and willing cooperation from the various officials employed at the town and village offices. Whilst this assistance is usually given freely, it is preferable in Japan to rely on introductions from professional acquaintances rather than to 'arrive unannounced' to conduct research. This may mean that the choice of district rests with the professional acquaintance rather than the researcher himself,

Figure 9.1 General location of three village surveys.



depending on the range of contacts he possesses. Although this may seem a somewhat haphazard arrangement, it does offer a number of considerable advantages to the researcher who has only just arrived in Japan for the first time.

The three villages which were eventually selected for study are all located in mountain environments, and they share a traditional dependence on forest products, and charcoal burning in particular. They are all fairly remote, being situated at the head of narrow tributary valleys and surrounded by steep sided hills, and they have all experienced severe depopulation in the post war period. Nevertheless, there are a number of significant differences between the villages, particularly with regard to access to local service functions and job opportunities, and these have resulted in some interesting contrasts in the patterns of migration to and from these settlements. In general terms, Tanotani probably has the worst 'level of living', with very poor access to non-agricultural job opportunities, and poor access to most social-welfare facilities. Gose-Ozawa is similarly isolated with regard to access to schools, shops, medical facilities, and so on, but the nearby municipal town of Shigaraki does offer a considerable number of job opportunities related to the thriving local pottery industry. Kusakabe seems to offer the best 'level of living' of the three settlements, with good access to a number of local service functions and to a comparatively wide range of local job opportunities. Placing its position in proper context, however, the level of living score derived for Kusakabe in the main analysis suggests the village is ranked only 126th out of 132 sample settlements. In other words, all three villages have very low levels of living compared to other agricultural settlements in the region, and they must all be considered liable to the threat of eventual village desertion.

This chapter is concerned, therefore, with a detailed investigation into not only the reasons for individual migration decisions, and the relationship between these and local environmental considerations, but also the way in which whole communities have reacted to the threat of village desertion. By implication, the study focuses on the attitudes of individuals, notably farm inheritors, or atotsugi, with regard to the conflict between wanting to secure better personal circumstances by moving to an area with a better level of living, and the responsibilities they hold to their families, and communities, which require that they should stay in the village to ensure future continuance. Ultimately it is a study of the way villages strive to maintain demographic viability despite an adverse social and economic environment. Whilst this objective may seem rather narrow, in terms of the wide range of village types which were studied in the main analysis, these surveys will also provide a useful insight into various phenomena, such as 'family migration' and 'return migration', which could not be understood fully in previous chapters because of the lack of sufficiently detailed information. In this manner, the three village surveys undertaken here, whilst limited in their scope and immediate objectives, should aid and improve understanding of the general relationship between rural depopulation and levels of living in Japanese agricultural settlements.

9.2 DATA COLLECTION

The primary data source for these surveys is the Basic Residential Register (Kihon Jūminhyō) which is kept at municipal offices. The register is essentially a list of all households in the municipality, and records certain details of the individuals living in these households. These details include the individual's name, sex, date of birth, relationship to the household head, date of registration, and information concerning any changes of residence to or from the household. Residential Registers have been continuously maintained since 1951, when the Resident Registration Law was promulgated. The Law was modified in 1967 to become the Basic Resident Registration Law, and under its stipulations the head of a household is required to report a change of residence of any household member within 14 days of moving. Normally, the date of moving, and the name of the municipality to or from which the individual has moved is subsequently entered in the register.

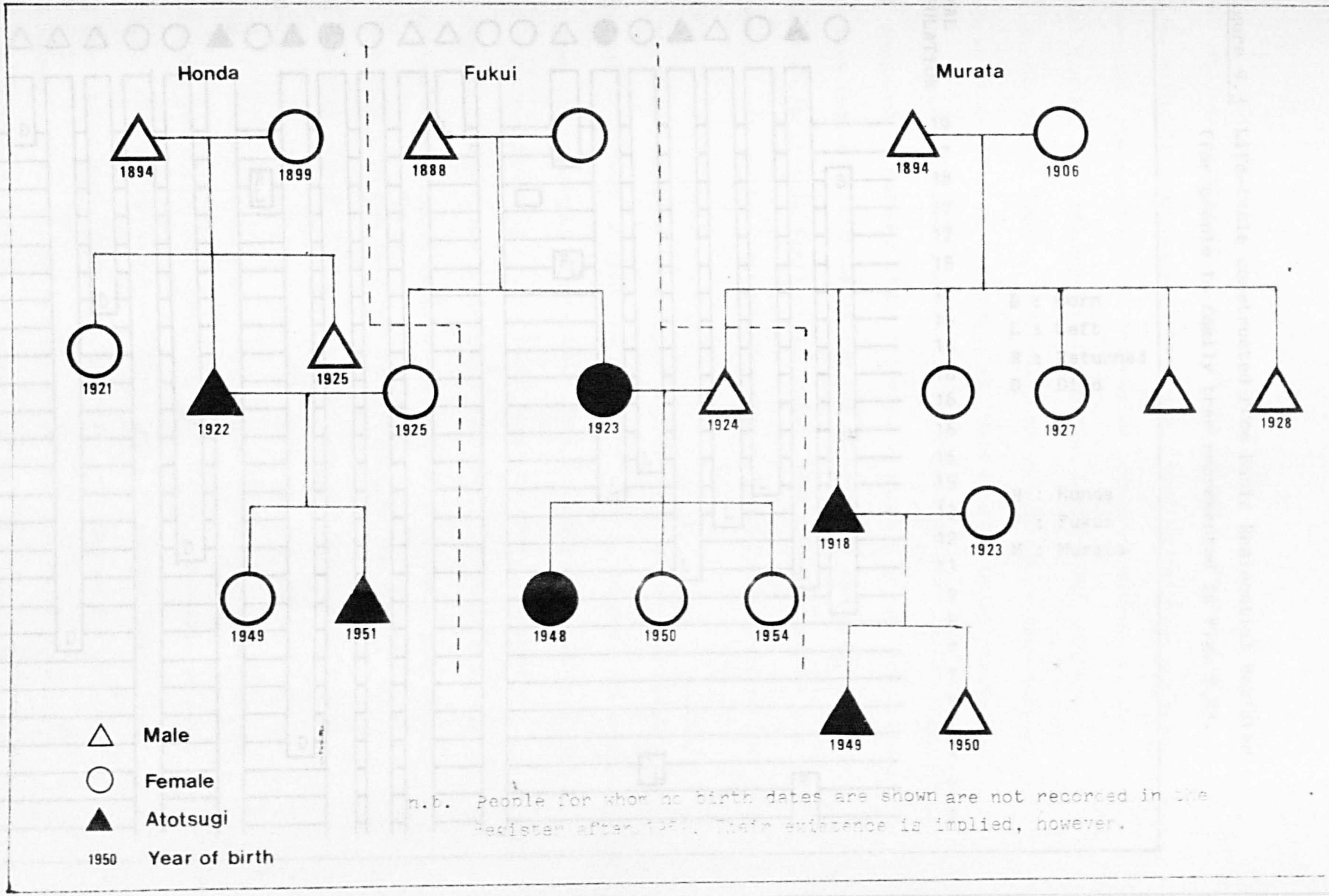
A second, and more detailed register known as the <u>koseki</u> is also kept at municipal offices. This is the official family register which, unlike the Residential Register, maintains a record of all the changes of residence of any individual, and not just those involving moves to or from the municipality in which the register is kept. The <u>koseki</u> is maintained in the municipality which the individual regards as his 'family home', or '<u>furusato</u>', and not necessarily in the area where he happens to be living. It is possible, however, upon specific application, to change the official family residence, or to set up a new family register. Unfortunately, the <u>koseki</u> is not available for public inspection, but requests for information from it can be made to officials at the municipal office. This is a useful facility when information in the Residential Register is either missing, or unclear.

There are also other documents held at municipal offices, such as the land register (Tōchi Daichō), which contains information on land holding and the local economy, and the Jūtaku Annaizu: a street map which shows all the households and the names of their occupiers. These are available for public inspection and may be consulted freely on request.

Working principally from the Residential Register, the most effective way to extract relevant data is to compile a family tree for each household (Fig.9.2). This helps to clarify relationships to the household head, and means that eldest sons, or atotsugi, can be readily identified. Constructing family trees also has another important advantage since it means individuals can be identified without the need to use their names. This is relevant to the next stage of data collection, which is to go to households in the village for personal interviews. By showing that individual names are not essential to the research, people are generally more trusting, and therefore more willing to give information.

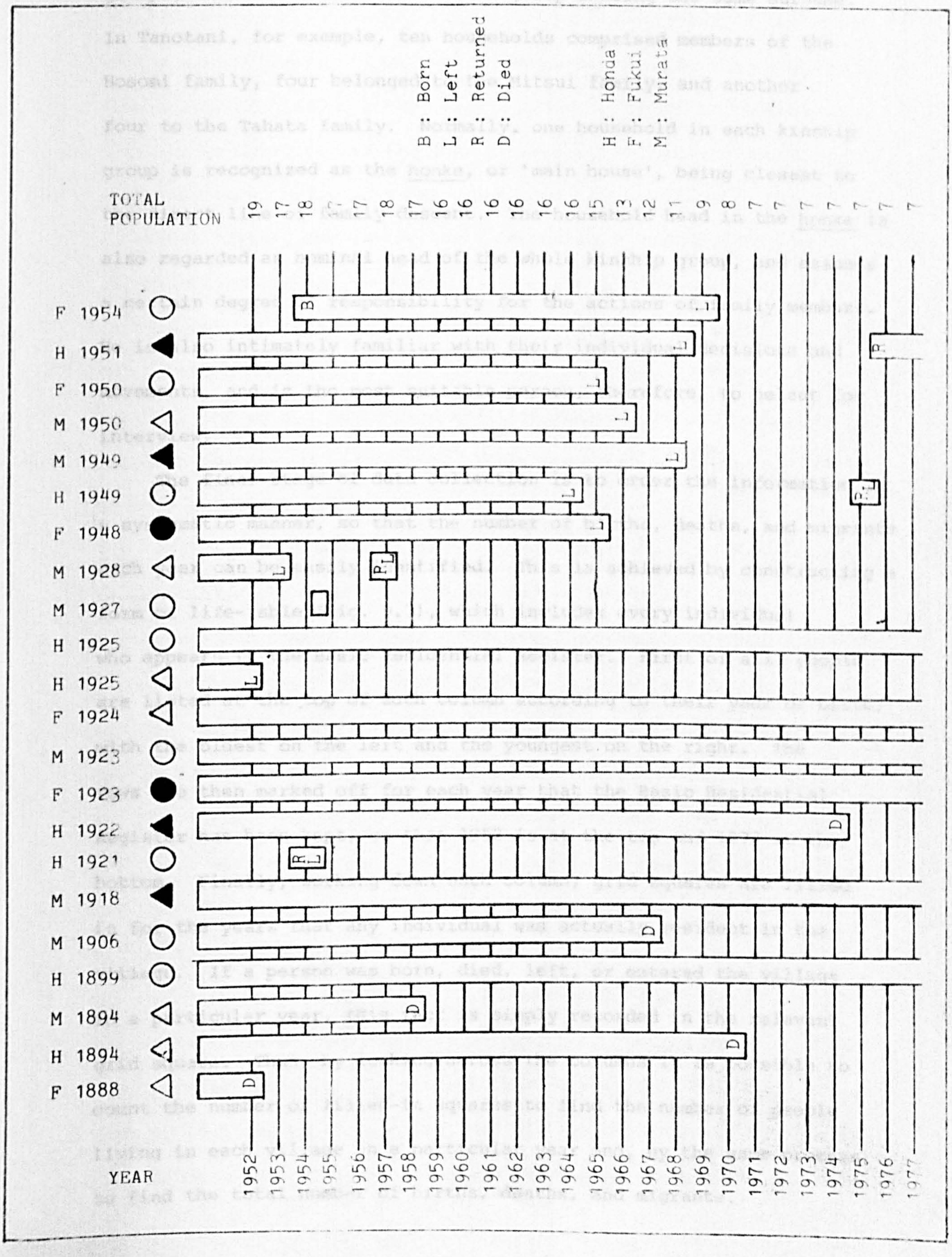
Personal interviews enabled data to be collected on individual's occupations, migration histories, and their reasons for entering or leaving the villages. Unfortunately, shortage of time meant it was not possible to interview all village inhabitants, so meetings were arranged with selected village representatives. From both courteous and practical considerations, the first interview in any village was with the elected 'head-man'. He would generally be aware of the personal circumstances of most members of his community, and he would also be able to offer introductions to household heads representing different kinship groups within the village. Close kinship bonds between households are a common feature of Japanese rural communities, and are referred to as the dozoku, or 'same-family' system (Beardsley, Hall, and Ward; 1959; 269-275; Yoshida, 1964).

Figure 9.2 Family reconstructions from the Basic Residential Register.



n.b. People for whom no birth dates are shown are not recorded in the Register after 195?. Their existence is implied, however.

Figure 9.3 Life-table constructed from Basic Residential Register (for people in family tree represented in Fig. 9.2).



Often, villages may comprise no more than three or four kinship groups, with all households in each group sharing the same surname. In Tanotani, for example, ten households comprised members of the Hosomi family, four belonged to the Mitsui family, and another four to the Tahata family. Normally, one household in each kinship group is recognized as the honke, or 'main house', being closest to the direct line of family descent. The household head in the honke is also regarded as nominal head of the whole kinship group, and assumes a certain degree of responsibility for the actions of family members. He is also intimately familiar with their individual decisions and movements, and is the most suitable person, therefore, to select for interview.

The final stage of data collection is to order the information in a systematic manner, so that the number of births, deaths, and migrants each year can be easily identified. This is achieved by constructing a form of life-table (Fig. 9.3), which includes every individual who appears in the Basic Residential Register. First of all, people are listed at the top of each column according to their year of birth; with the oldest on the left and the youngest on the right. The rows are then marked off for each year that the Basic Residential Register has been kept, so that 1952 is at the top and 1978 at the bottom. Finally, working down each column, grid squares are filled in for the years that any individual was actually resident in the village. If a person was born, died, left, or entered the village in a particular year, this fact is simply recorded in the relevant grid square. Thus, by looking across the columns it is possible to count the number of filled-in squares to find the number of people living in each village in a particular year and, by the same process, to find the total number of births, deaths, and migrants.

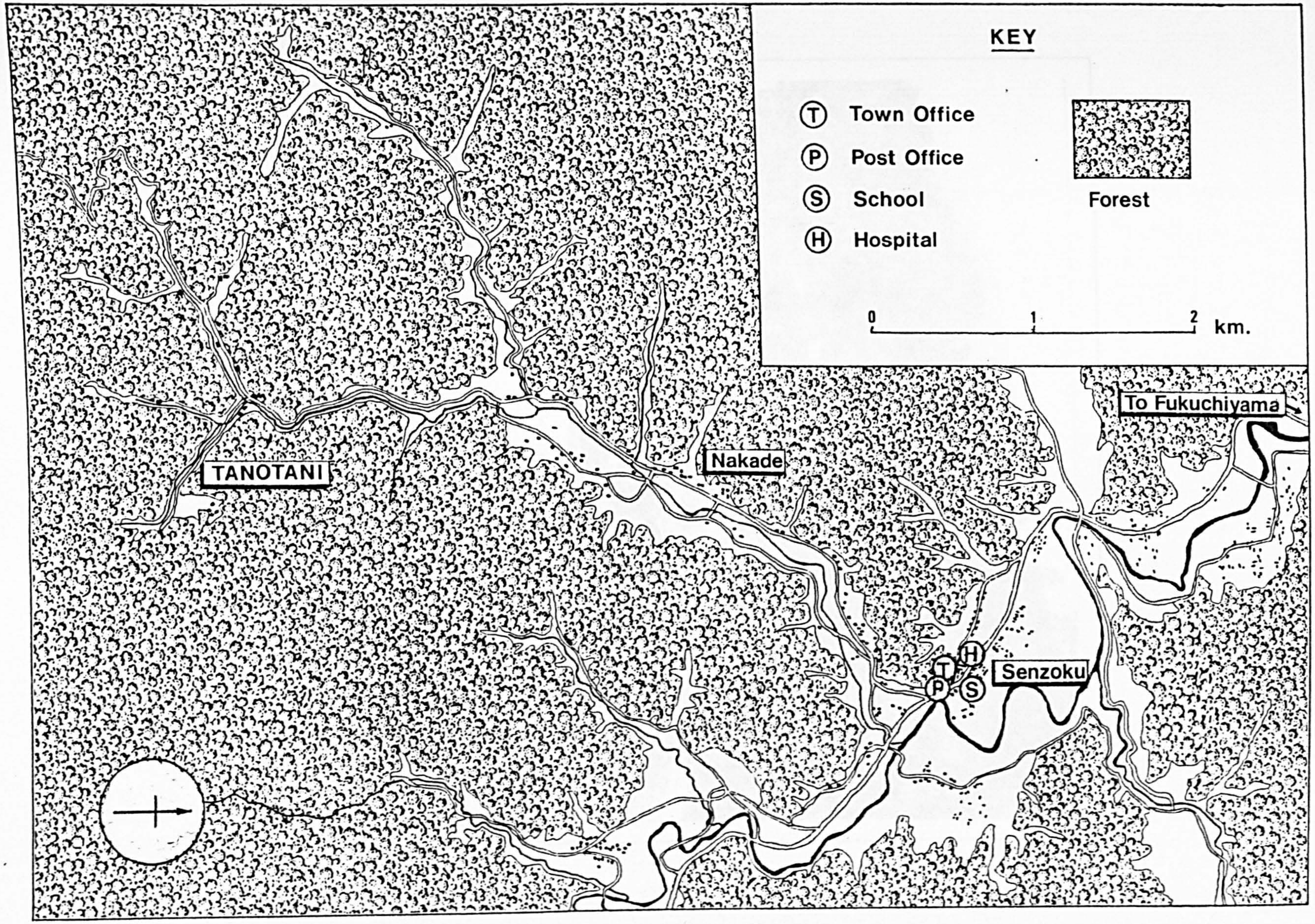
9.3 TANOTANI

9.3.1. Tanotani: Location

The small hamlet of Tanotani lies in Miwa-cho, in the Tamba uplands of Kyoto prefecture (Fig. 9.4). It is situated at the head of the narrow Hosomi River valley 200m above sea level, about 2½ km from the prefectural boundary with Hyogo-ken. Seven Kilometres to the north of Tanotani, where the Hosomi River flows into the considerably wider Hiji-gawa valley, is the small town of Senzoku where the municipal offices and agricultural co-operative are located. The towns of Fukuchiyama, Ayabe, and Sonobe offer the nearest major shopping facilities, but these are all located in neighbouring municipalities. Only Fukuchiyama-city is readily accessible by public transport, however, and to get there requires a 30 minute walk to the bus-stop, before a further 30 minute ride on the bus which operates only three times a day.

At the end of the 19th century there were about 50 households in Tanotani, but by 1952 the number had fallen to 28. When this survey was undertaken in April 1978 there were just 18 households, with a population of 41. Apart from the post war period, household decline was also particulalry marked around 1910 when a severe storm destroyed six farms. Rice growing is the chief agricultural activity in the village, and in 1970 this accounted for a little under 80% of the cultivated land area. Only five farms sold their rice produce, however, and in only one of these did the income derived from rice exceed ¥300,000 (Norinshō, 1970). Land holdings are small, with only two farms cultivating more than 0.4 hectares of paddy field. A few farms own comparatively large areas of forest, on the other hand, and one of these has a holding of just over 50 hectares. Rice productivity is low, at 2,400 kg per hectare, and one reason given for this is that wild animals, particularly boars and monkeys which roam the forest,

Figure 9.4 Map showing location of Tanotani



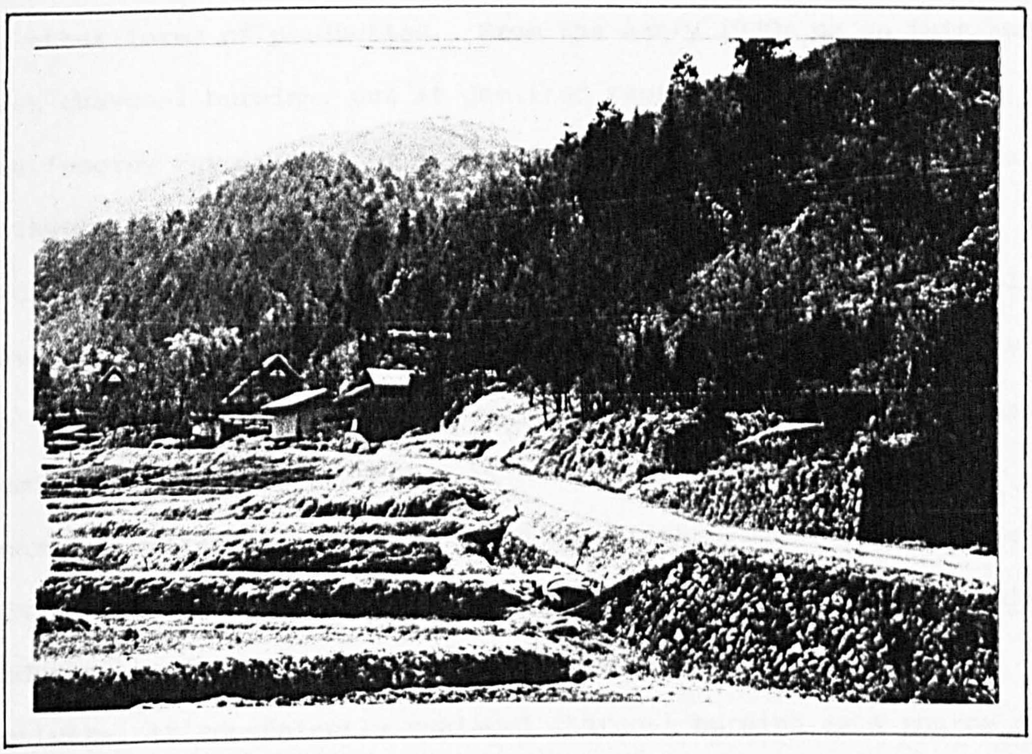


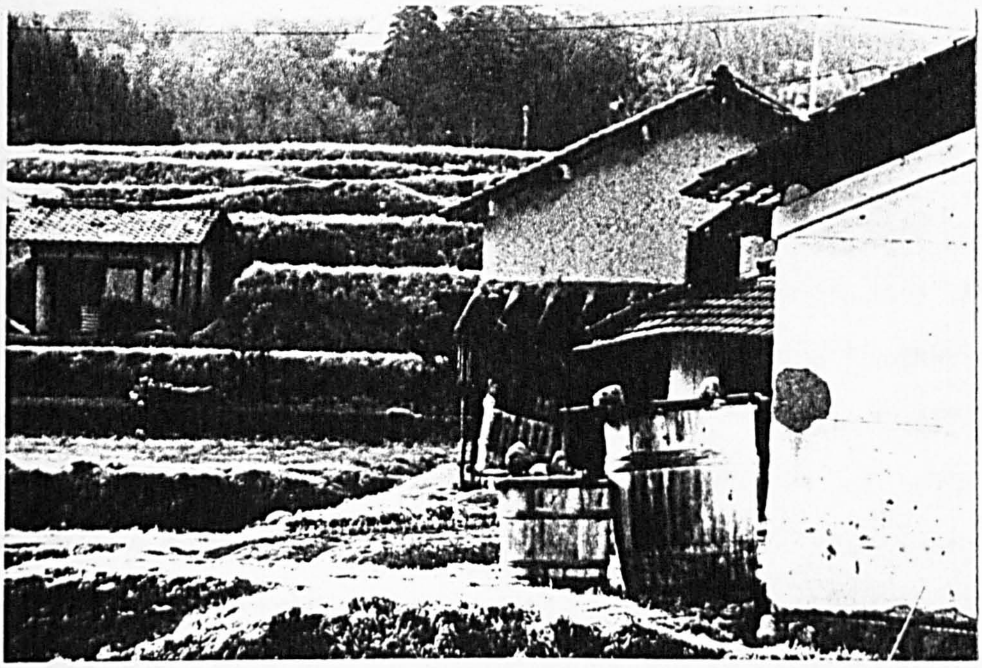
Plate 9.1 The village of Tanotani, in Miwa-cho, Kyoto prefecture.

trample the young rice seedlings when crossing the valley floor. A group of between 30 and 40 monkeys is said to regularly appear in the vicinity and, despite some ingenious attempts to stop them, the villagers believe they pose a real threat to any form of livelihood based on agriculture alone.

In the past, therefore, the main economic activity has centred on other forms of production. From the early 1930s or so this had been charcoal burning, but it declined rapidly with the onset of the 'energy revolution' of the early 1960s. Another activity was silkworm cultivation and six farms were engaged in this in 1960. Increased exports into Japan of cheap silk, principally from China, have brought about the decline of this activity too in this region, so that by 1970 only one farm was still raising silkworms. Following the demise of charcoal production as the main activity, dekasegi or seasonal migration, which had been important before the war, regained its former prominence. This was traditionally centred on the sake industry in Fushimi (Kyoto) and Nada (Kobe) and, being a winter activity, it conveniently replaced charcoal burning as a source of income, since this too had only been carried out in the winter months. By 1970, eight households relied on dekasegi to provide additional income, although it meant that household heads had to leave their farms for six months from the beginning of October to the end of March every year.

The development in the early 1970s of an industrial estate at Osada, about 15 km away along the road to Fukuchiyama, provided sufficient opportunity for local employment in manufacturing to bring about a decline in the rather inconvenient way of life associated with dekasegi. Thus, in 1978 only four households were still reliant on the income derived from yearly _dekasegi_, whilst three household heads went to work every day in Osada. Of the other male household heads in the village, three were engaged in farming only in 1978, although the son of one of these also commuted to Osada. Two combined agriculture with part-time forestry work, one was self-employed as a carpenter, and two were retired, having done _dekasegi_ until 1977. Three remaining households had no male head of the family left alive.

It was the tradition in prewar years, for women in the village to leave after finishing school, and go to work in spinning factories in Fukuchiyama and Ayabe. After seven or eight years they would return to the village for an arranged marriage and settle down as the young wife in a farm household in a neighbouring village. Many of these marriages would be arranged across the border with Hyogo prefecture, and there has been a considerable flow of marriage partners to villages just the other side of the mountain pass forming the watershed of the Hosomi River. This pattern still continued to some extent after 1950, although shop and office employment had replaced spinning as the main activity. Also there was also a growing tendency for the women not to come back, but to move further up the urban hierarchy to Kyoto and Osaka. Nearer to the village itself a few employment opportunities opened up for women in the 1970s, and a number of the wives of household heads began to commute to work each day. Four factories; two making clothes, one making covers for bedding quilts, and one manufacturing sewing machines, all located in the vicinity of Senzoku, employed the women of nine households in 1978. One other woman had found work in the municipal office, also in Senzoku, whilst the women of the remaining households were engaged only in agriculture, or had retired due to illness or old age.



<u>Plate 9.2</u> A closed-down <u>sake</u> brewing enterprise in Fukuchiyama-shi, 4 km. from Senzoku.

<u>Plate 9.3</u> A sewing-machine manufacturing establishment near Senzoku.

9.3.2. Tanotani: Population Change, 1952-1977

Population and household figures are presented for each year between 1952 and 1977 in Table 9.1. Over the whole period, the number of people living in Tanotani fell by just over 70%, from 144 to 41, whilst the number of households fell by 36%, from 28 to 18. Between 1952 and 1958 the number of people changed very little, but after then a continuous state of decline existed. In particular, the years between 1968 and 1975 marked a period of very severe depopulation, reaching levels in excess of 10% a year. Household decline was most marked in the period 1966 to 1974, with eight of the ten deserted households becoming empty during these years.

The five components of population change are listed in Table 9.2. These are births, deaths, in-migrants, return migrants, and out-migrants. Throughout the whole period there was a constant stream of out-migrants, averaging five or six each year. Similarly, the number of deaths remained fairly constant throughout. The numbers of births and in-migrants show a marked decrease after 1963, however, so that in all subsequent years the number of people dying or leaving the village exceeded the number of new arrivals. Thus, although the number of deaths and leavers each year remained relatively unchanged, percentage decline of the total population tended to increase each year as the base population gradually diminished.

Clearly, the high rates of depopulation in Tanotani after 1965 are strongly linked to the fall in the number of in-comers, and it is to the columns showing births, in-migrants, and return-migrants that special attention should be paid. Return migrants, first of all, chiefly involved young people who came back to the village during

Table 9.1. Tanotani : Population and Household Change 1952 - 1977

YEAR	HOUSEHOLDS	POPULATION	% POPN CHANGE
1952	28	144	
1953	28	144	0
1954	28	139	-3.47
1955	28	138	-0.72
1956	28	138	0
1957	28	144	+4.35
1958	28	140	-2.78
1959	28	137	-2.14
1960	26	127	-7.30
1961	26	125	-1.57
1962	26	122	-2.40
1963	26	122	0
1964	26	115	-5.74
1965	26	110	-4.35
1966	26	102	-7.27
1967	25	95	-6.86
1968	24	93	-2.11
1969	22	80	-13.98
1970	22	77	-3.75
1971	22	71	-7.79
1972	21	62	-12.68
1973	20	59	-4.84
1974	18	50	-15.25
1975	18	47	-6.00
1976	18	43	-8.51
1977	18	41	-4.65

Table 9.2

Tanotani: Components of population change 1952-1977

Year	Population	Births	Deaths	In-migrants	Return migrants	out-migrants
1952	144	-	-	-	-	-
1953	144	3	2	2	1	4
1954	139	3	1	-	-	7
1955	138	2	1	3	2	7
1956	138	3	2	1	1	3
1957	144	4	1	1	3	1
1958	140	2	-	-	-	6
1959	137	4	1	-	-	6
1960	127	1	2	-	-	9
1961	125	1	1	1	7	10
1962	122	1	1	-	-	3
1963	122			1	3	4
1964	115	1	1	-	-	7
1965	110	-	3	-	-	2
1966	102		-	-	-	8
1967	95					8
1968	93	-	1	-	2	3
1969	80	-	1	-	1	13
1970	77	-	1	-	-	2
1971	71		3	-	1	4
1972	62	-	-	-	1	10
1973	59	-	2	-	-	1
1974	50	-	2	-	1	8
1975	47	-	1	-	-	2
1976	43	-	1	-	-	3
1977	41	-	-	-	-	2

N.B. In tables 9.2, 9.7 and 9.11, population totals are for December 31st, each year.

periods of temporary unemployment, or who returned to get married. Those temporarily out of work included college leavers, and others who had previously left the village to find work in the nearby cities of Fukuchiyama and Ayabe. The period spent in Tanotani after returning usually amounted to no more than two or three months, following which time they left again, usually to find work in either Kyoto or Osaka. Of the people who returned to get married, two were eldest sons who subsequently remained in the village. In most other cases it was a daughter who returned, prior to an arranged marriage, after which she would leave Tanotani permanently. Until the early 1960s this usually meant a move to a neighbouring village but after then there was a growing tendency to marry a local man, and then settle in one of the major cities far away from the village. Thus, the time spent back in Tanotani by nearly all return migrants was generally limited to a few months, and often resulted in a move further up the urban hierarchy rather than constituting a U-turn away from the cities.

Without exception, all the in-migrants to Tanotani after 1952 entered the village specifically for the purpose of marriage. The columns showing 'in-coming marital partners' and births are closely related, therefore. In total, nine people entered the village to marry and settle in Tanotani; seven coming before 1957, and the remaining two in 1960 and 1963. Endogamous marriages within the community were uncommon, and none took place during the period surveyed. The 1963 marriage was therefore the last to occur and, as a natural consequence, the number of births rapidly declined in subsequent years. In the seven year period before 1959 there were 21 births recorded, and only five after then. The last time a new born baby was registered as a member of Tanotani's population was in 1967.

The fall in the number of births, the rapid rate of depopulation, and the decline in the number of households during the 1960s all indicate that a breakdown occurred at this time in the traditional pattern of farm inheritance. That is, eldest sons, or atotsugi, had joined the rural exodus rather than staying in the village to ensure continuance of the households. In previous years, between 1918 and 1952, 25 of the 28 households in Tanotani had ensured succession by the marriage of an appointed heir. In the remaining three households, the atotsugi all duly married soon after 1952. (Of these 28 marriages, 24 involved eldest surviving sons, two were between 'adopted' atotsugi and eldest daughters, one atotsugi had been adopted as a child, and one was a younger son since the eldest had been disinherited.) The last marriage within this 'parent generation' was in 1957, whilst the first of the 'second generation' marriages took place in 1953. It is the 'second generation' marriages which need to be studied in particular, since it is here that the breakdown in the traditional pattern seems to have occurred.

By ranking the households according to the date of marriage of the 'parent generation' it is possible to draw a clear picture of the actions of atotsugi in each household at the time when they 'came of age'. In the first 12 households the 'parent generation' were married between 1918 and 1934, which means that by about 1955 all should have had an appointed heir ready for marriage. In fact, in only five households did the first son marry and settle down in Tanotani. In one household there is no record of the married couple having any children at all, and they moved out of the village in 1960. In the remaining six households, the atotsugi all left the village without returning to marry. Two of these had left shortly before 1952, two in 1954, and the others in 1964 and 1965. In the

Table 9.3

Tanotani: Years of actual or expected dates of marriages of atotsugi.

Year	Actual dates of marriage within Tanotani	Actual dates of marriage outside Tanotani	expected dates of marriage
1953	√ √		
1954			
1955	√ √ √		
1956			
1957	√		
1958			
1959			
1960			
1961	√		
1962			
1963	√	√	
1964			
1965		√	
1966			
1967		√	
1968			
1969			
1970		√	
1971		√	
1972			√
1973			
1974		√	√
1975		√	
1976			√
1977			
1978			√ √ √ √
1979			
1980			√
1981			
1982			√
1983			√

N.B. Atotsugi whose parents left the village before the actual or expected date of marriage are not included in this table.

other 16 households, whose 'parent generation' married between 1934 and 1957, none of the atotsugi remained in the village, most of them moving away during the 1960s after graduating from school.

From this it may appear that the trend for population decline and, ultimately, household decline began in the early 1950s. However, this ignores the fact that appointed heirs were often free to leave the village for a few years after finishing school, either to continue their studies at college or to find non-agricultural employment to earn additional income for the household. At least two atotsugi in Tanotani, for instance, are known to have done this before returning to marry and settle down in the village. Thus, it is the time an atotsugi marries that is significant, rather than the time they leave the village.

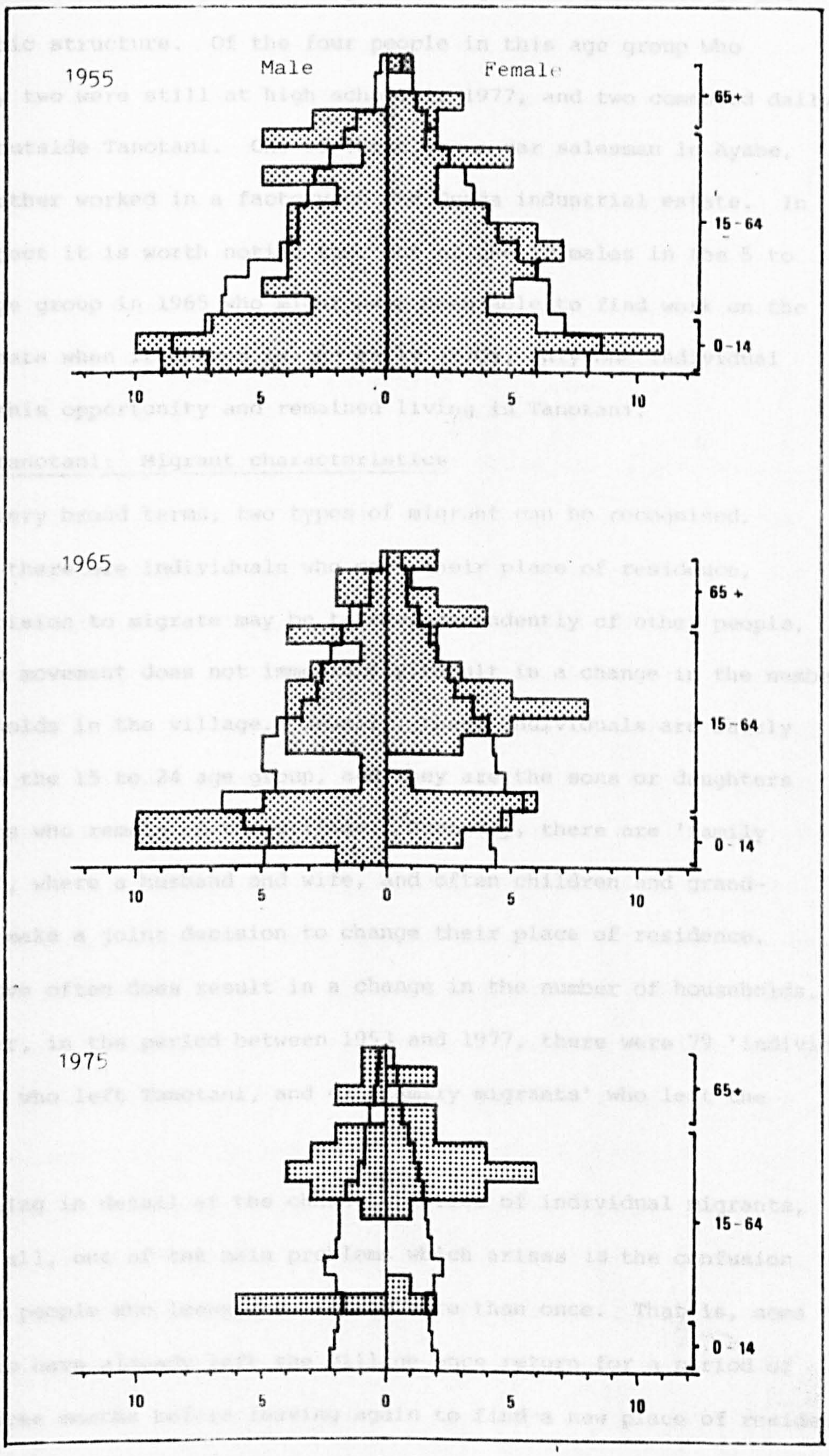
Actual and expected dates of marriage of atotsugi are recorded in Table 9.3. In order to estimate the expected year of marriage, known marriage dates of 11 male atotsugi after 1952 were taken. Their average age at the time of marriage was 26.8 years, so the times when male atotsugi reached the age of 27 years were taken to be the years of expected marriage. Table 9.3 clearly shows that no break in the traditional pattern occured until 1963, when the first marriage of an atotsugi outside the village took place. Since then, six more are known to have married and settled down outside Tanotani, whilst no record of marriage could be found for the remaining eleven. What is clear is that apart from the five who married and settled in Tanotani no other 'second generation' atotsugi were living in the village in 1978, and neither were there any 'third generation' atotsugi born to those families who married in the 1950s.

The effects of all this on the population structure of Tanotani is shown in Figure 9.5. Population pyramids for Tanotani are presented for 1955, 1965, and 1975, and they may be compared to national population structures for those years which have been adjusted to Tanotani's population levels. It can be seen, first of all, that no major deviations from the national norm were apparent in 1955. Only the 15 to 24 age group has a slightly smaller population than expected, but this is easily explained by temporary out-migration, before returning to marry and settle in the village. Thus, return migrants and incoming marriage partners caused the 25 to 29 age group to increase to a level which conforms to the national age distribution pattern.

The 1965 population pyramid, on the other hand, clearly shows the beginnings of a trend towards population decline as a result of age-selective out-migration. The permanent migration of young people away from the village after 1955 or so, including many atotsugi as well as non-inheritors, meant that by 1965 there were only a few people in the 20 to 29 age group left in the village. This was inevitably accompanied by a decline in the number of incoming marriage partners, resulting in a fall in the birth rate. Thus, in 1965, there were seven fewer children in the 0 to 4 age group than might have been expected according to national trends.

The continuation of this trend through the late 1960s and 1970s had a profound effect on the 1975 population structure. Only nine people of child-bearing age remained in Tanotani, and eight of these were in the 15 to 19 age group. There were no children less than 14 years of age in the village. Furthermore, during the following two years, in 1976 and 1977, five of the nine people under the age of 40 years

Figure 9.5 Population pyramids 1955-1975 for TANOTANI by 5 year age groups.



N.B. Shaded area represents settlement age distributions.

migrated from the village, creating an evan greater imbalance in the demographic structure. Of the four people in this age group who remained, two were still at high school in 1977, and two commuted daily to work outside Tanotani. One of these was a car salesman in Ayabe, and the other worked in a factory on the Osada industrial estate. In this respect it is worth noting that out of the 10 males in the 5 to 9 year age group in 1965 who might have been able to find work on the Osada estate when it opened in the early 1970s, only one individual took up this opportunity and remained living in Tanotani.

9.3.3. Tanotani: Migrant characteristics

In very broad terms, two types of migrant can be recognised. Firstly, there are individuals who move their place of residence, whose decision to migrate may be taken independently of other people, and whose movement does not immediately result in a change in the number of households in the village. Usually, these individuals are fairly young, in the 15 to 24 age group, and they are the sons or daughters of parents who remain in the village. Secondly, there are 'family migrants', where a husband and wife, and often children and grand-parents, make a joint decision to change their place of residence. Such a move often does result in a change in the number of households. Altogether, in the period between 1953 and 1977, there were 79 'individual migrants' who left Tanotani, and 42 'family migrants' who left the village.

Looking in detail at the characteristics of individual migrants, first of all, one of the main problems which arises is the confusion caused by people who leave the village more than once. That is, some people who have already left the village once return for a period of two or three months before leaving again to find a new place of residence. In some cases, this process was repeated several times. To avoid 'double counting', therefore, only the characteristics of migrants at the time they first left the village are considered. The age, sex, family status, and destinations of all 'first time individual leavers' are recorded in Table 9.4. The exception is a group of eight people who left the village as marital partners. They are all either eldest daughters, or second sons who were 'adopted' by other families. and for at least four of this group the move was not a first time one. All the migrations associated with this traditional marriage arrangement occurred before 1960, and were made over a short distance only, to neighbouring villages.

One of the first features to note from Table 9.4 is the median age of individual first time leavers. It confirms that most of those people were young, usually under 20 years old. Also, there is a slight change in the median age between the periods 1956 to 1965 and 1966 to 1975. For people of both sexes, the median age was 16 years in the first period, rising to 18/19 years in the second. This suggests that after 1965 or so, most individual migrants remained in the village until they had completed their senior-high school education. This being so, the chances of migrants obtaining permanent professional or salaried employment in the cities may have been increased, by virtue of the fact they have received a longer, and fuller education. In contrast, the only type of jobs open to junior-high school graduates tends to be unskilled or semi-skilled work in shops or small scale manufacturing industries, which is often less permanent in nature. Migrants who take this kind of occupation, therefore, may have greater freedom to leave their work and return to live in the village. It is possible then, that the trend towards completing senior-high school education after 1965, and securing permanent salaried employment, may explain the subsequent fall in the number of return migrants to Tanotani (Table 9.2). It also goes without saying that the possibility of atotsugi returning to the village to assume their responsibilities as household heads is lessened.

Turning to look at the destinations of individual first time leavers, three categories are distinguished in Table 9.4. These are: short distance moves to the town of Senzoku, or to neighbouring villages; medium distance moves to the nearby cities of Fukuchyama, Ayabe, or Sonobe; and long distance moves to the major metropolitan districts such as Kyoto, Osaka, Kobe, or further afield to Nagoya, or Tokyo. Looking first at the destinations of male leavers, virtually all the moves made during the period 1953 to 1977 were over a long distance. Of a total of 36 male first time moves, only four were to medium distance and one to short distance destinations. Female migrants, on the other hand, showed a slightly different pattern. Between 1953 and 1965 only nine out of 24 first time moves were to long distance destinations. Of the remaining 15, all but two were medium distance moves. After 1965, however, five out of nine moves were long distance, and only four were to medium distance destinations.

For both male and female individual migrants, it seems clear that the primary motive for leaving Tanotani was to secure better employment prospects and higher income levels. This was confirmed during the course of interviews with family members who remained in the village, who pointed out the almost complete lack of well-paid employment opportunities in the local area - at least before the opening of the Osada industrial estate. Furthermore, the period when population decline really began in Tanotani, in the late 1950s and early 1960s, coincided both with the decline in the local charcoal burning industry and with a rapid increase in demand for labour in the metropolitan

Table 9.4 Tanotani : Characteristics of individual first time leavers.

Period	Total Leavers	Individual First Time Leavers	Sex	Median Age	Atotsugi	Distance Moved
1953 | 1955	18	11	Male 3	20	3	Short - Medium 1 Long 2
			Female 8	16-19	-	Short 1 Medium 2 Long 5
1956 | 1965	51	30	Male 13	16	6	Short 1 Medium 1 Long 11
			Female 17	16	-	Short - Medium 12 Long 5
1966 | 1975	59	25	Male 17	19	12	Short - Medium 2 Long 15
			Female 8	16-19	2	Short - Medium 4 Long 4
1976 | 1977	5	5	Male 4	19	1	Short - Medium - Long 4
			Female 1	23	-	Short - Medium - Long 1

districts. Thus, migrant destinations for males tended to be the major cities, such as Kyoto and Osaka, where the greatest opportunities for secondary and tertiary industrial employment existed, and where wage levels were highest. Female migrants, on the other hand, were initially attracted to nearby cities such as Fukuchiyama and Ayabe in accordance with the pre war tradition for women to find employment in spinning factories in these places. Later in the 1960s, the skills acquired in textile production were transferred to better paid jobs in the expanding electronics industry, located around Kyoto and Osaka. Hence, there was a gradual shift in emphasis by female migrants from medium to long distance destinations during this period.

The main characteristics of 'family migrants' are shown in Table 9.5. Included in these are three family moves which involved only part, and not the whole household. The first of these, in 1955, was to Senzoku, where the family already owned some property. This group returned to their original family home in the village in 1961, and their place in the branch household was taken by the head's younger brother's family who, until then, had remained in Tanotani. The third move by a nuclear family group occurred in 1964. In this case the family moved to Tokyo, where the father had already lived for some time in the late 1950s, and had met and married his wife. This leaves a total of eight family moves which actually brought about a decline in the number of households in Tanotani, since they involved the movement of all family members. Of these, four made short distance moves to Senzoku, three were to medium distance destinations, and only one was to a long distance destination (Osaka). The predominance of short distance moves for family migrants is also noted by Sakaguchi (1966; 1974) who made a special study of

Table 9.5

Tanotani: Characteristics of family migrants.

Year	Family Status	Age	Whole or part of household	Destination
1955	Head	37	Part	Short
	Wife	32		
	Son	4		
	Son	3		
1960	Head	51	Whole	Short
	Wife	45		
	Head	41	Whole	Short
	Wife	34		
	Son	9		
	Daughter	7		
1961	Head	26	Part	Short
	Wife	27		
	Son	4		
1964	Head	30	Part	Long
	Wife	28		
	Son	3		
1967	Head	37	Whole	Medium
	Wife	36		
	Son	9		
	Son	9		
1968	Head	67	Whole	Short
	Wife	51		
1969	Head	53	Whole	Short
	Mother	86		
	Wife	48		
	Son	15		
	Head	41	Whole	Medium
	Mother	67		
	Wife	38		
	Daughter	15		
	Son	11		
	Daughter	9		
1972	Head	37	Whole	Long
	grandmother	85		
	Mother	69		
	Wife	37		
	Brother	37		
	Brother	26		
	Son	8		
	Son	5		
1974	Head	60	Whole	Medium
	Wife	53		

household desertion (Kyōkarison) in the Tango peninsula, and in Wachi-cho, in the Tamba uplands. In Wachi, which shares similar environmental characteristics to the area around Tanotani, he found that out of a total of 29 family moves, 21 were made over a short distance only, 4 were made over a medium distance, and 4 were made to long distance destinations (Sakaguchi, 1974; 26).

This pattern clearly differs from that of individual migrants, where the emphasis was almost entirely on long and medium distance moves. Moreover, during the course of interviews with some of the family groups who had left Tanotani, it became apparent that the reasons behind the decision to migrate were quite different from those which governed the decisions of individual migrants. In the first place, it appears that all of the household heads involved in short distance family moves had occupations within the local area, and that migration was not accompanied by any change of workplace. Instead, the moves were made simply for 'convenience', so that people could live nearer their place of work and, more importantly, so that they could have better access to shops, schools, and medical facilities. Secondly, there was a strong desire expressed by some families not to move too far away from their ancestral homes in Tanotani. The family graves, for instance, are still carefully and regularly tended, and they remain the focal point of spiritual ceremonies at various times throughout the year. In more practical terms, at least four of the families who have left the village return to Tanotani at weekends to cultivate their plots of land there. Thus, despite a reduction of more than one-third of all the households in Tanotani since 1953, there was no appreciable abandonment of the cultivated land area in 1978, when this survey was undertaken.

9.4 GOSE-OZAWA

9.4.1. Gose-Ozawa: Location

The agricultural settlement of Gose-Ozawa actually comprises three separate hamlets, known as Kamiari, Gose, and Ozawa. They are located in the municipality of Shigaraki-cho, in the extreme south-west corner of Shiga-ken, near the border with Mie prefecture. At 500 metres above s ea-level, they are deep within the mountain zone which surrounds Lake Biwa and the Omi plain, situated atop a steep sided granite plateau which extends over the whole of Shigaraki-cho. The plateau is highest at its southernmost edge, in the vicinity of Gose-Ozawa, where the surface is deeply dissected by the headwaters of the Odo River and its various tributaries. The river flows northwards, descending to a shallow basin in which the town of Shigaraki is located, at 250 metres above sea-level. From there, the river makes a rapid descent to the west, joining the Seta River just south of Otsu-city. The main line of communication, however, is the railway line which starts at Shigaraki and runs north-east, descending the steep eastern slope of the plateau to a junction with the Kyoto line near the town of Minakuchi, on the Omi plain.

Just over 90% of the land area in Shigaraki-cho is covered with forest, but its southerly location, and the relatively gentle slopes over most of the summit of the plateau, means the area is well-suited to tea cultivation. This provides the main basis for the agricultural economy in the summer months, although rice is also grown by most farmers for subsistence. Whilst Shigaraki is well-known as a minor centre of tea production, the town is principally renowned for pottery and ceramics. The granite alluvial soils in the area are used to manufacture a hard, and distinctive style of table-ware and, not surprisingly perhaps, the area became particularly famous in medieval times for the production of utensils used in the tea ceremony. It is even reported that during the Tokugawa era (1600-1868), the terms 'Shigaraki-ware' and 'tea-ware' were virtually synonymous (Kōbayashi, 1974; 97). Now, however, apart from a few master potters who still specialise in tea-ware, most Shigaraki potteries seem to concentrate on production of more commercial items such as clay charcoal braziers (hibachi), wall-tiles, and a figurine known as Tanuki-san - a mythical racoon character - who is said to bring good fortune (Plate 9.7).

The potteries and kilns are all concentrated in the town of Shigaraki but, almost without exception, the surrounding villages have strong links with the industry (Sanson Shinkō Chōsakai, 1968). In addition to providing labour for work in the potteries, most agricultural settlements in the municipality also provide essential materials for the ceramic industry such as clay, and wood for firing the kilns. In Gose-Ozawa, near the headwaters of the Odo River, suitable clay is not available, so the mainstay of the village economy has traditionally been the supply of firewood to Shigaraki potteries, supplemented by charcoal production in the winter months. In the early 1960s, however, this reliance on forest products was destroyed by the so-called 'energy revolution'. Not only was charcoal production affected by the switch in the domestic market from charcoal to propane gas, but demand for firewood also ceased when the pottery kilns in Shigaraki were converted to oil or gas. Until this time, all the households in Gose-Ozawa had been engaged full-time in agriculture and forestry, but with no other skills or resources to fall back upon following the collapse of their

Plate 9.4 The hamlet of Kamiari.

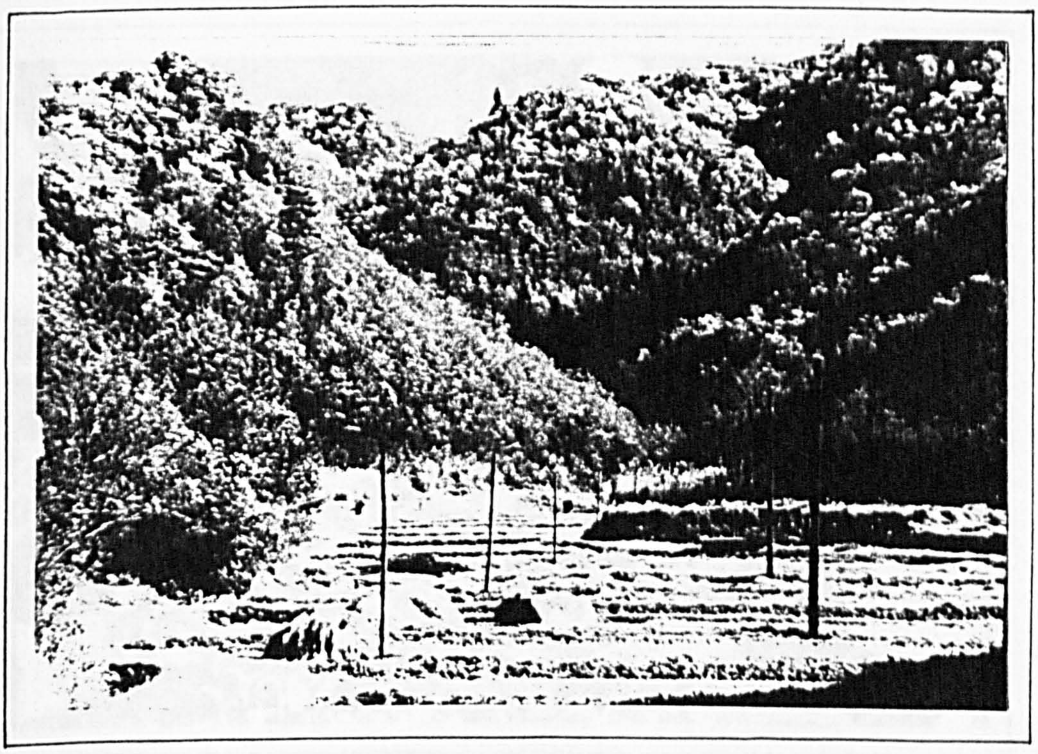


Plate 9.5 The track leading to Ozawa, now abandoned and overgrown.

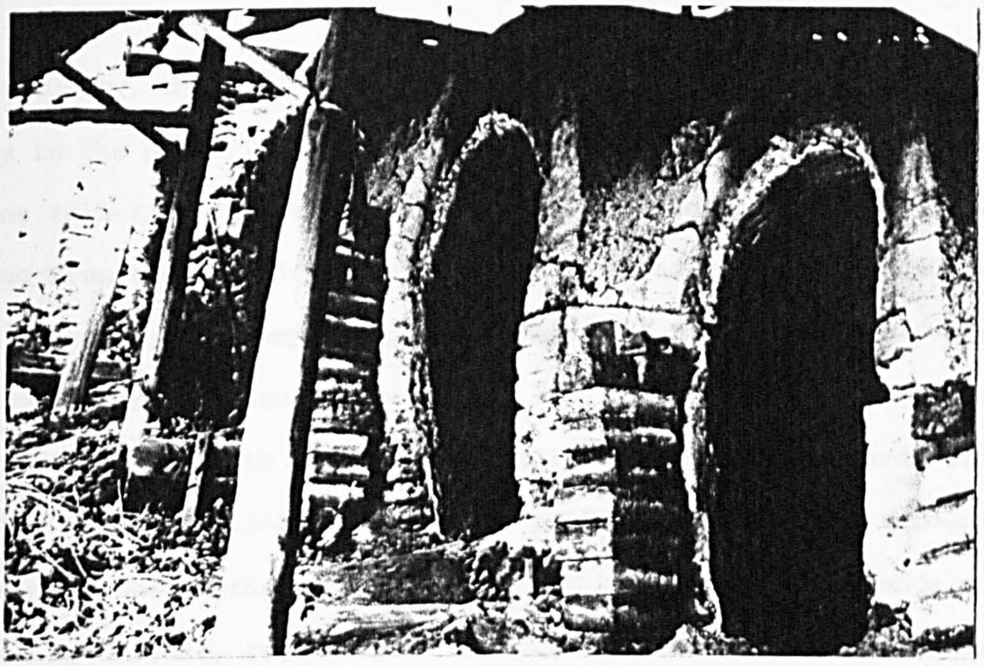


Plate 9.6 A disused wood fired pottery kiln in Shigaraki.

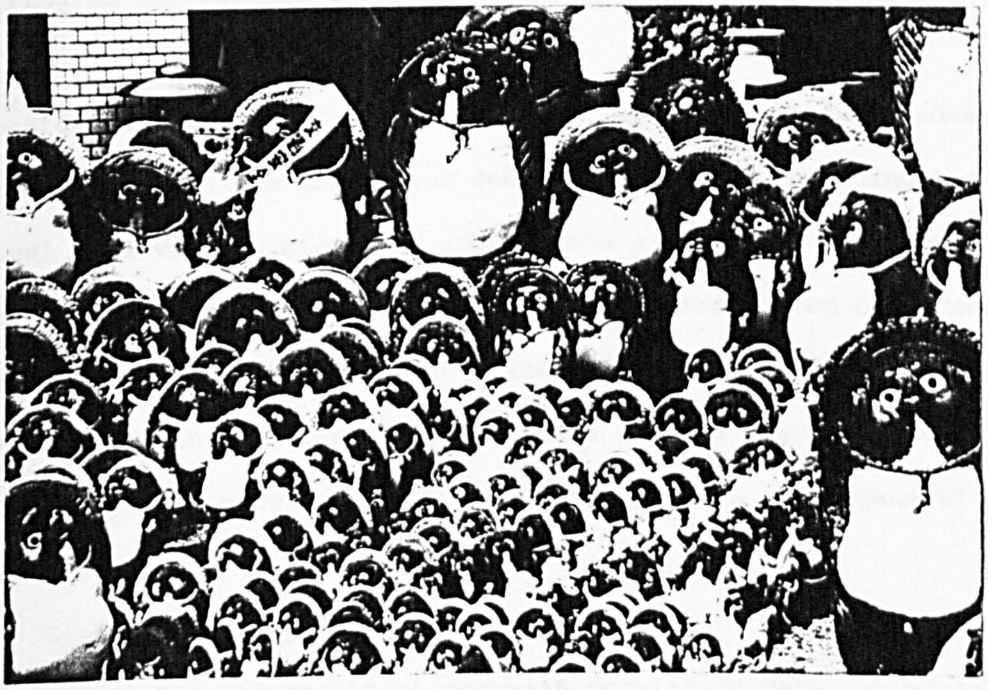


Plate 9.7 'Tanuki-san', a popular Shigaraki ceramic product.

local industry, they had no option but to seek work outside the village, notably in the potteries of Shigaraki. As a result, by 1978 there was only one full-time farmer left in the village, who managed to secure a living from tea and rice cultivation. He lived in Kamiari which, of the three hamlets comprising Gose-Ozawa, has the most extensive area of paddy and arable land (Plate 9.4).

Commuting daily to work in the Shigaraki potteries was made considerably easier in 1967, when a paved road was constructed through Gose-Ozawa. Before then, the journey to Shigaraki had to be made on foot, or by bicycle, requiring at least 45 minutes of travelling time from Kamiari, and more than one hour from Gose or Ozawa. Beyond there, Shigaraki is well served by bus to Ishiyama (Otsu), and by train to Minakuchi and thence to Kyoto. Despite the fact that, even by car, the journey to Kyoto takes at least one hour from Gose-Ozawa, there was one man living in the village in 1978 who commuted daily to employment there.

Besides offering employment opportunities in the pottery industry, Shigaraki also provides most other central functions, including the municipal offices, a junior-high school, and a number of shops and general stores. There is no bus service to Shigaraki from Gose-Ozawa, however, so to get there by public transport requires a 25 minute walk to the neighbouring village of Tarao. Here also is the agricultural co-op office, a primary school, a post office, and a small general store.

9.4.2. Gose-Ozawa: Population change, 1952-1977

During the period for which accurate population data are available the population of Gose-Ozawa declined by almost four-fifths, from 99 people in 1952 to 22 people in 1977. In addition, the number of households fell dramatically, from 17 to only 5, and the hamlets of Gose and Ozawa became completely abandoned.

Table 9.6 shows population and household change for the combined area of Kamiari, Gose, and Ozawa. It can be seen that during the 1950s there was a period of demographic stability, with the popula tion hardly moving around a level of 100 people or so. After 1960, the number of people living in Gose-Ozawa began to decline rapidly, with the peak years of population loss occurring in 1963, 1964, and in the period between 1967 and 1970. In 1970 alone, the population fell by 14 people, representing a decline of more than 25%. Not surprisingly, such heavy depopulation was accompanied by a fall in the number of households in the settlement, and a total of 12 became abandoned between 1965 and 1977. This represents 70% of the original number of households in Gose-Ozawa.

Looking at changes in each of the individual hamlets, a clear pattern of household desertion emerges. In Ozawa, the most remote hamlet, there were 5 households in 1955, with a population of just 30 people. The first household to become abandoned was in 1965, when a family of five people moved out of the area. This was followed in 1967 by the abandonment of a second household, and two years later by a third. The remaining two households became deserted the following year, in 1970, when both families also migrated away from the village. The process of desertion then seemed to move down the valley to the next hamlet, Gose. In 1955 Gose only contained four households, with a population of 29 people. The first instance of household desertion did not occur until 1973, however, after Ozawa had already become abandoned. The remaining households became empty in 1974, 1975, and 1977, and in all four cases the cause was migration of people out of the village. In Kamiari, the largest and least

Table 9.6. Gose-Ozawa : Population and Household Change, 1952-1977

YEAR	HOUSEHOLDS	POPULATION	% POPN CHANGE
1952	17	99	
1953	17	100	+1.01
1954	17	102	+2.00
1955	17	102	0
1956	17	103	+0.98
1957	17	101	-1.94
1958	17	101	0
1959	17	100	-0.99
1960	17	100	0
1961	17	95	-5.00
1962	17	93	-2.10
1963	17	90	-3.72
1964	17	81	-10.00
1965	16	72	-9.88
1966	16	71	-1.39
1967	15	68	-4.23
1968	15	60	-11.76
1969	14	53	-11.67
1970	11	39	-26.42
1971	11	38	-2.56
1972	11	38	0
1973	9	32	-15.79
1974	8	28	-12.50
1975	7	26	-7.14
1976	6	25	-3.85
1977	5	22	-12.00

isolated of all the hamlets, there were 8 households in 1955 and a population of 43 people. Three of the households became deserted since then, in 1970, 1973, and 1976, and the population in 1977 had fallen to only 22 people.

The components of population change are shown in Table 9.7. In the nine year period between 1952 and 1960, there were 16 births and 7 in-migrants to Gose-Ozawa (including temporary as well as long-stay return migrants). Set against this, there were 7 deaths and 15 out-migrants, resulting in an overall population increase of one person. After 1960, only two people entered the village as marital partners and there was a substantial fall in the birth rate. Between 1961 and 1977 there were only 4 births in Gose-Ozawa, compared to 16 in the previous period. Thus, with 10 deaths occurring after 1960, the trend turned from a 'natural' population increase to one of 'natural' population loss in the latter period. This natural loss of 6 people is slight, however, compared to an overall population loss of 78 people between 1960 and 1977, and it is clear that the main factor explaining depopulation in this period is heavy net out-migration. In total, 81 people left the area after 1960, compared to just under nine people who entered Gose-Ozawa (only three of whom were still in the village in 1978).

In absolute terms, the 1950s were characterized by the net out-migration of just one or two people each year. Then, in the early 1960s, the annual loss of population resulting from migration increased rapidly, to around five or six people a year, and reached a peak in the period 1968 to 1970 when an average of just under nine people a year was recorded. After then, the actual number

Table 9.7

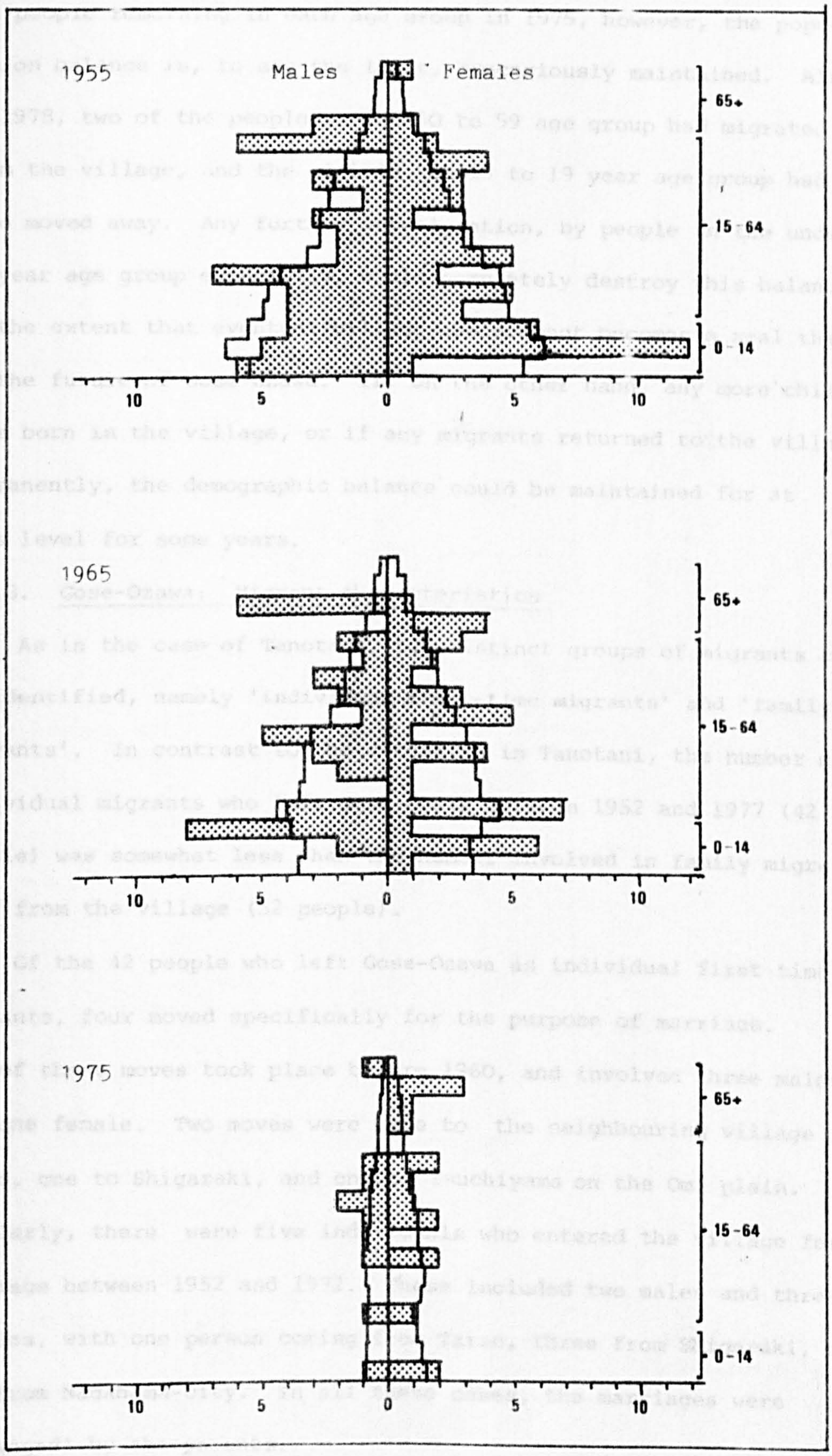
Gose-Ozawa: Components of population change, 1952-1977.

Year	Population	Births	Deaths	In-migrants	Return migrants	Out-migrants
1952	99	-	-	-	-	-
1953	100	1	1	1	1	1
1954	102	2	-	1	-	1
1955	102	2	-	-	-	2
1956	103	4	2	-	1	2
1957	101	1	1	-	1	3
1958	101	2	1	-	-	1
1959	100	1	1	-	-	1
1960	100	3	1	1	1	4
1961	95	-	-	-	-	5
1962	93	1	1	-	-	2
1963	90	-	1	-	2	4
1964	81	-	1	-	-	8
1965	72	-	1	-	-	8
1966	71	-	-	-	1	2
1967	68	-	-	-	2	5
1968	60	-	1	-	-	7
1969	53	-	2	-	-	5
1970	39	-	-	-	-	16
1971	38	1	1	1	-	2
1972	38	-	-	1	-	1
1973	32	1	-	-	-	7
1974	28	-	1	-	-	3
1975	26	1	-	-	-	3
1976	25	-	-	-	-	1
1977	22	-	1	-	-	2

of net out-migrants declined to an average of two people each year in the period 1975 to 1977. In relative terms, however, the proportion of out-migrants to total population remained very high in the 1970s, at around 10%, since the population base levels had fallen so low.

The effects of all this on the population structure of Gose-Ozawa can be seen in Figure 9.7. The population pyramids for 1955 and 1965 are almost the same as those for the village of Tanotani (Fig. 9.5), and seem to reflect a similar sequence of events. That is, the demographic structure of Gose-Ozawa closely approximated to the national age distribution of population in 1955, but by 1965 the population pyramid had assumed a 'dumb-bell' shape as a consequence of the net out-migration of people in the 15-24 age group, and a subsequent fall in the number of children born. The 1975 population pyramid, on the other hand, is rather different from that for Tanotani. Although net out-migration of people in the 15 to 24 year age groups continued in the late 1960s and early 1970s, with the result that there were no people in the 20 to 29 year and 5 to 14 year age groups by 1975, the overall appearance of the population pyramid for that year suggests a thinly populated, but fairly evenly balanced demographic structure. This effect has arisen firstly because two men in the 20 to 29 age group either returned to, or remained in the village, and married women who entered Gose-Ozawa in 1971 and 1972 respectively. One of these families subsequently had three children, who are recorded on the 1975 population pyramid. Secondly, it is apparent that not all out-migration was age-selective, since population decline was fairly evenly spread across all age groups between 1965 and 1975. This was the time when considerable

Figure 9./ Population pyramids 1955-1975 for GOSE-OZAWA by 5 year age groups.



N.B. Shaded area represents settlement age distribution.

household decline occurred in Gose-Ozawa, and suggests that family migration' was represented by people of all ages. With only one or two people remaining in each age group in 1975, however, the population balance is, to say the least, precariously maintained. Already, by 1978, two of the people in the 50 to 59 age group had migrated from the village, and the girl in the 15 to 19 year age group had also moved away. Any further out-migration, by people in the under 40 year age group especially, would completely destroy this balance, to the extent that eventual village abandonment becomes a real threat to the future of Gose-Ozawa. If, on the other hand, any more children were born in the village, or if any migrants returned to the village permanently, the demographic balance could be maintained for at this level for some years.

9.4.3. Gose-Ozawa: Migrant characteristics

As in the case of Tanotani, two distinct groups of migrants can be identified, namely 'individual first-time migrants' and 'family migrants'. In contrast to the situation in Tanotani, the number of individual migrants who left Gose-Ozawa between 1952 and 1977 (42 people) was somewhat less than the number involved in family migration away from the village (52 people).

Of the 42 people who left Gose-Ozawa as individual first time migrants, four moved specifically for the purpose of marriage. All of these moves took place before 1960, and involved three males and one female. Two moves were made to the neighbouring village of Tarao, one to Shigaraki, and one to Tsuchiyama on the Omi plain. Similarly, there were five individuals who entered the village for marriage between 1952 and 1972. These included two males and three females, with one person coming from Tarao, three from Shigaraki, and one from Nagahama-city. In all these cases, the marriages were 'arranged' by the parents.

Table 9.8: Gose-Ozawa: Characteristics of individual first time leavers

Period	Total Leavers	Individual First Time Leavers (except for marriage)	Sex	Median Age	Atotsugi	Distance Moved
1952 1 1965	28	24	Male 7	19	3	Short – Medium – Long 7
			Female 17	16	1	Short 1 Medium 4 Long 12
1966 1 1977	14	14	Male 7	19	3	Short - Medium - Long 7
			Female 7	18	-	Short - Medium 1 Long 6

The characteristics of the remaining 38 individual first time leavers are presented in Table 9.8. Broken down into two time periods, it can be seen that 24 people left the village between 1952 and 1965, and 14 left between 1966 and 1977. The median age of the migrants suggests they were mostly school-leavers, under 20 years old. As in the case of Tanotani, there is the suggestion that for female migrants at least, most individuals who first left the village in the period before 1966 were junior-high school graduates, whereas in the second period they were mostly high school graduates. In other words, there was a rise in the median age from 16 to 18/19 years.

For both periods, the moves made by all male individual leavers were to long-distance destinations, usually Kyoto or Otsu cities. In the case of female migrants, just over two-thirds of all moves in the period 1952 to 1966 were made to similar long-distance destinations. Four moves were made to medium-distance destinations, to find jobs in spinning factories in towns on the Omi plain such as Tsuchiyama and Minakuchi, and one move was made over a short distance, to Shigaraki. In the period after 1965, all but one move were to long-distance destinations in Kyoto, Otsu, or Osaka. The exception was a medium-distance move to Minami Yamashiro, in Kyoto prefecture, which was possibly for the purpose of marriage. This pattern, whereby male out-migrants have consistently gone to long-distance destinations, and females have gradually switched from traditional medium-distance destinations (i.e. textile towns on the Omi Plain) to metropolitan long-distance destinations, is remarkably similar to that noted for individual first time leavers in Tanotani. Again, it clearly suggests that the motives behind the decision to migrate were economic in nature, and were primarily aimed at securing well-paid employment. Further weight to this argument is provided by the fact that whereas only seven individuals left Gose-Ozawa between 1952 and 1959, averaging one person per year, as many as 20 individuals left the village between 1960 and 1969, at an average of two people each year, including five atotsugi. In other words, the rapid increase in the number of individual out-migrants, and the first participation of farm inheritors in the village exodus, coincided with the collapse of the local economy in Gose Ozawa based on firewood and charcoal production.

In Tanotani, it was noted that none of the individuals who left the village after 1960 or so had returned to live in the municipality where they were born. In total contrast, a considerable proportion of individual migrants from Gose-Ozawa are known to have made a 'U-turn' back to Gose-Ozawa, or a 'J-turn' to other towns and villages in Shigaraki-cho, particularly in the early 1970s. The first instance is of one of the male atotsugi who left Gose-Ozawa in 1963, who returned to his parent's farm in Kamiari in 1971 to marry. He was still in the village in 1978, commuting to work daily in one of the potteries in Shigaraki-town. Another atotsugi, who left Kamiari in 1969 and who has since qualified as a teacher, has also expressed a strong desire to return to the village as soon as a suitable teaching post becomes available locally. In addition, 11 of the 38 individual out-migrants represented in Table 9.8 have since returned to live in Shigaraki municipality, including two of the seven atotsugi who were in this group. Six of these people are male, one of whom (a non-inheritor) went to live in the neighbouring village of Tarao in 1976, whilst the remainder all went to Shigaraki-town. Similarly, the five females who returned all went to live in Shigaraki-town. In most cases, the return coincided with the marriage of the migrant, usually to a local partner in an 'arranged' agreement. Perhaps even more significantly, in at least four cases, including the two cases where an atotsugi returned, the move to Shigaraki coincided with a 'family move' away from Gose-Ozawa. In other words, the individual migrants have re-united with their families, although the family home is no longer in its original location.

The details relating to family migrants are presented in Table 9.9. In all but three instances, family moves were made over a short-distance only, to destinations either in the neighbouring village of Tarao, or to the town of Shigaraki. Of the three exceptions, one move was made by an elderly couple to join their daughter's family in Osaka-fu, in 1973, and two moves were brought about by the divorce of the household head and his wife and the subsequent break-up of the family. One of these divorces, in 1965, resulted in the first desertion of any household in Gose-Ozawa in the period under consideration. The other two moves also resulted in household desertion since, in the case of the elderly couple, the atotsugi had already moved out of Gose-Ozawa with his wife and children in 1961, to live in Shigaraki.

In similar fashion, there were three other instances where household desertion occurred in two phases. In one of these cases, the atotsugi left Kamiari in 1969 with his wife and two children to live in Tarao. Seven years later, after the death of the household head, the widowed mother abandoned her home to join her eldest son's family. In the second instance, a second son moved to Tarao

Table 9.9 Goze-Ozawa : Characteristics of family migrants

Year	Family Status	Age	Whole or part household	Hamlet of origin	Distance of move
(1961	Atotsugi	33)	Part	Gose	Short
(	wife	30)			
(	daughter	4)			
(	daughter	1)			
(1973	Head	68)	Whole	Gose	Long
	wife	63)			
(1964	2nd son	30)	Part	Kamiari	Short
(	son	4)			
(1973	Head	54)	Whole	Kamiari	Short
(	wife	58)			
(	son	23)			
(	daughter	19)			
(	mother	70)			
1965	Head	33)	Whole	Ozawa	Long
	wife	33)			
	daughter	15)			
	son	10)			
	daughter	6)			
1967	Head	56)	Whole	Ozawa	Short
	wife	55)			
	daughter	23)			
	son	19)			
(1969	Atotsugi	33)	Part	Kamiari	Short
(	wife	35)			
(	son	9)			
(	daughter	7)			
(1976	Mother	60	Whole	Kamiari	Short
1969	Head	52)	Whole	Ozawa	Short
	wife	48)			
	atotsugi	14)			
	son	11)			
	mother	70)			

Table 9.9 (cont'd)

Year	Family Status	Age	Whole or part household	Hamlet of origin	Distance of move
1970	Head	45	Whole	Ozawa	Short
	wife	46			
	daughter	24			
	daughter	14			
	father	65			
	mother	65			
1970	Head	58	Whole	Kamiari	Long
	wife	48			
1970	Head	42	Whole	Ozawa	Short
	wife	39			
	sister	20			
	daughter	23			
	atotsugi	18			
	father	60			
1974	2 son	27	Part	Gose	Short
	wife	25			
1977	Head	53	Whole	Gose	Short
	wife	61			
1974	Head	23	Whole	Gose	Short
	mother	45			
1975	Head	50	Whole	Gose	Short
	wife	45			
	daughter	23			
	mother	72			

with his own son, in 1964, whilst the household head and the rest of his family abandoned their home in Kamiari in 1973 and went to live in Shigaraki. There, they were joined by the atotsugi, who had previously migrated to Kyoto. In the final instance, a second son moved out of his parents house in Gose in 1974, shortly after he had married, to live in Shigaraki. The atotsugi had previously left the village in 1964 and, having married in 1973, showed no intentions of returning to the area. Thus, when the household head and his wife finally deserted their home in 1977, and went to live with the family of their second son in Shigaraki, they effectively transferred atotsugi status to him.

In the six remaining cases, household desertion occurred when whole families left their ancestral homes together. Four of these family moves were from the hamlet of Ozawa, between 1967 and 1970, and the other two were from Gose, in 1974 and 1975. In all of these instances, the migrants included the atotsugi (i.e. four eldest sons and two eldest daughters) and, by 1978, all of the atotsugi involved in these moves still lived with their families. Furthermore, four of the atotsugi had married by 1978, and were thus continuing the traditional extended family system in their new homes. All but one of these moves were made to Shigaraki-town and, in all cases, the household heads or atotsugi had found work in the Shigaraki potteries or local service industries by 1978.

The predominance of short-distance family moves is very similar to the situation observed in Tanotani. Again, the reasons behind the decision to migrate seem to have been governed by considerations of accessibility, to work-places, schools, shops, hospitals, and so on, rather than any specific desire to find better job opportunities or improved income levels. As one of the atotsugi involved in a family move from Kamiari to Shigaraki put it:

> We did not wish to stay in Kamiari in consideration of our children. We did not want them to have to walk long distances to school in Tarao or Shigaraki, as we had to do ourselves when we were young.
>
> (Interview with S. Inone, of Shigaraki; 1978)

The desire not to move too far away from the ancestral home and family graves also seems to have been a major influence, and one or two of the families who left Kamiari and Gose still continue to farm their land there at weekends. For most other families, however, the cost of the move to a new house could only be met by selling their agricultural and forest land. In Kamiari, this land was bought by farmers who chose to remain in the village so that, apart from a few derelict farm buildings, the general appearance of the area does not reflect a feeling of abandonment and desertion. In contrast, most of the land in Ozawa was sold to a private development corporation who, in 1978, were content to let the area become overgrown and gradually revert to forest. Gose, situated between Kamiari and Ozawa, also has the appearance of a 'ghost' village, with much of the valley floor overgrown and abandoned in 1978. Only one farm building there was still maintained in a habitable state, for use by family members who return at weekends to tend their small tea plantation.

9.5 KUSAKABE

9.5.1. Kusakabe: Location

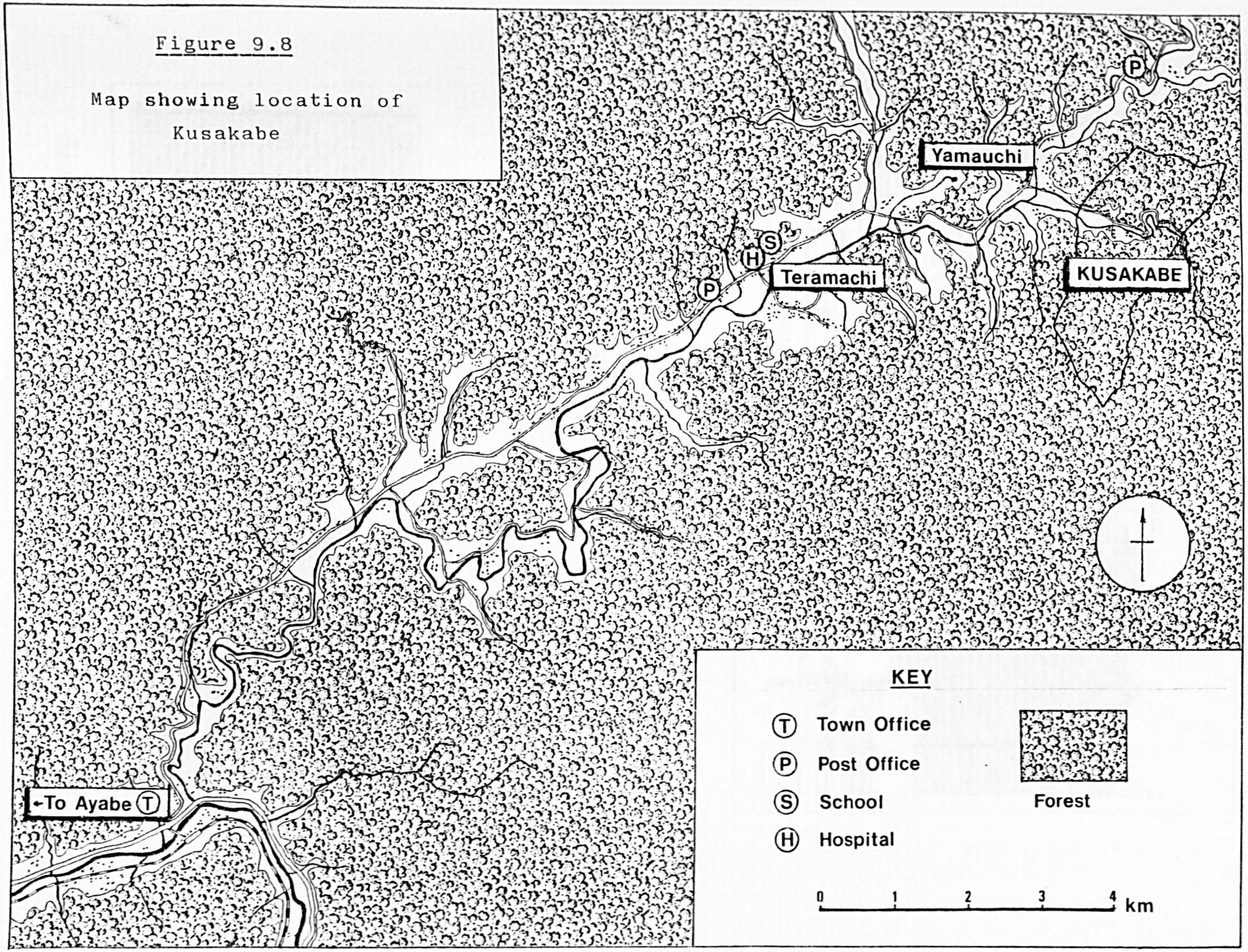
The village of Kusakabe is situated in Ayabe-shi, in the heart of the Tamba uplands in central Kyoto prefecture. It lies near the headwaters of the Kambayashi River, which flows in a fairly straight, south-westerly direction for about 12 kilometres, until it meets the much larger Yura River. About six kilometres further downstream from the confluence, on the west bank of the river, is Ayabe city: the functional and administrative centre of the municipality (Fig. 9.8).

The valley floor at Kusakabe is much wider than at Tanotani or Gose-Ozawa, and much more suited to rice cultivation. Rice productivity levels are comparatively high, therefore, at 4,000 kg. per hectare (Norinsho, 1970). Despite the fact that land holdings are quite small, the production of rice has traditionally provided the mainstay of the local agricultural economy in Kusakabe and in 1979, seven of the household heads in the village, (25% of the total), were engaged full-time in agriculture. Typically, in the Tamba uplands, the valley sides are steep and forest covered. All the farms own some forest land and, before 1960, charcoal burning provided a major source of income in the winter months. Alternatively, as in Tanotani, one or two farmers preferred seasonal migration (dekasegi) in winter, to the sake factories in Kyoto and Kobe. Both these activities had ceased by 1979, but one 'farmer' continued to make a living from forestry, and the sale of timber, whilst another utilized his forest holding for the full-time production of mushrooms. In addition, a further five households have occupations within the village; mostly based on 'cottage' craft industries such as silk weaving (for Nishijin, in Kyoto), and machine knitting.

Compared to many other mountain environments, the Kamibayashi valley is quite densely settled, with numerous small villages situated on either side of the river, about one kilmetre apart from each other. A number of job opportunities are available in these villages, either in the administrative and service sectors (e.g. in the agricultural co-operative office, schools, or local shops), or in a

Figure 9.8

Map showing location of Kusakabe



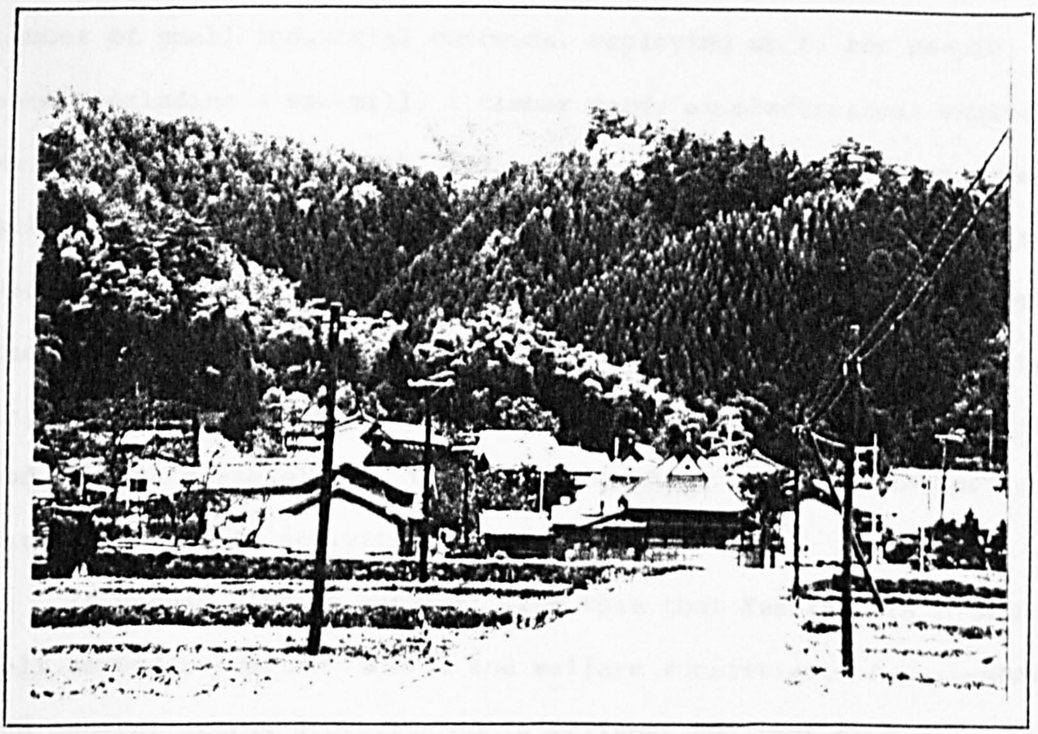


Plate 9.8 The village of Kusakabe.

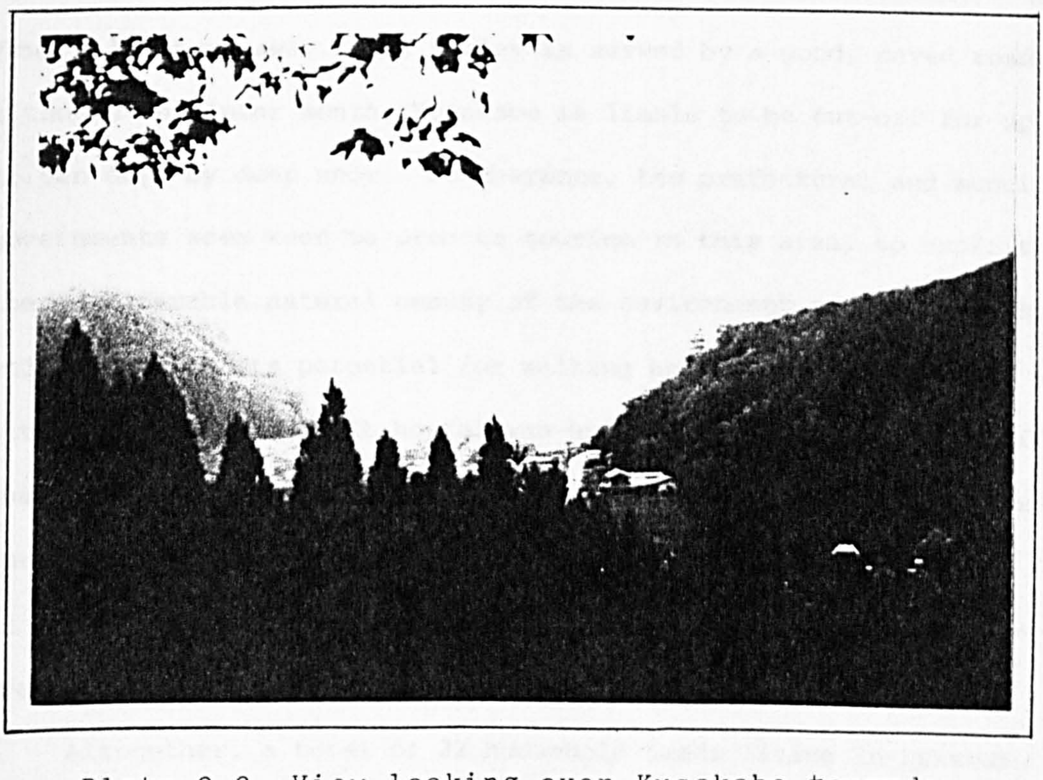


Plate 9.9 View looking over Kusakabe towards the Kambayashi River valley.

number of small industrial concerns, employing up to ten people each, including a saw-mill, a timber yard, an electronical engineering factory (Matsushita Denki), and a sheet-metal working establishment. All of these work places are within comparatively easy walking distance from Kusakabe and, in 1979, a total of eight household heads from the village had employment in one or other of these establishments in the valley. Additionally, at least three women from the village had jobs in these places, to supplement their household income from farming, or other activities.

It should also be apparent from this that Kusakabe is relatively well served by various social and welfare facilities. A post-office and general stores are situated in villages adjacent to Kusakabe, whilst elementary and junior-high schools, a small hospital, and the agricultural co-operative office are all located at Teramachi, just four kilometres away. The valley is served by a good, paved road, although in winter months Kusakabe is liable to be cut-off for up to ten days by deep snow. Furthermore, the prefectural and muncipal governments seem keen to promote tourism in this area, to exploit the considerable natural beauty of the environment around Kusakabe and to develop its potential for walking holidays. To this end, an attractive purpose built hostel was built in Yamauchi in 1978, offering cheap accommodation to hikers. This may provide the stimulus for further capital investment in the valley, eventually leading to an increased number of job opportunities for local people, and an even stronger social-welfare infrastructure.

Altogether, a total of 22 household heads living in Kusakabe are employed either within the village itself, or in other nearby settlements in the Kambayashi Valley. This represents just under 80% of all the household heads in Kusakabe who are eligible or fit for work. The remaining six people, together with seven women in the village, commute daily to work in Ayabe-city, 20 km away. Nearly all of them are employed in textile factories there, which are traditionally based on the silk spinning industry (Nihon Jishi Kenkyūjo, 1977 (14); 197). As in the case of Tanotani, it was formerly common practice for young women in the village to work for a few years in spinning factories there, before an arranged marriage to a local man. Despite the fact that Ayabe is in the same municipality, however, and despite the good, modern roads, it still takes more than one hour by public transport to get there, so the traditional pattern was for people to actually live in the city, often in factory dormitories. By 1979 this situation had changed and, in order to make life more convenient for the workforce, (and, presumably, to attract more labour from a dwindling rural population), the larger textile companies such as Gunze, and Ayabo, provided a mini-bus to transport people to work from the village. It was reported by one inhabitant of Kusakabe that the ease with which people can now commute to work in Ayabe was the main reason for the decline of dekasegi in the village. Nevertheless, the same villager also pointed out that he considered Kusakabe to be a remote settlement, and that shopping for major items, or visiting the city-office in Ayabe presented considerable problems to many of the more elderly inhabitants of the village.

9.5.2. Kusakabe: Population Change, 1961-1978

Unfortunately, the Basic Residential Register for Kusakabe is incomplete, and population data are only available for the period 1961 to 1978. During that time, the number of people living in the village fell from 155 to 106, representing a decline of 31.6%. To compare population change in Kusakabe with Tanotani and Gose-Ozawa, rates of change should really be measured over the period 1961 to 1977. Thus, for Kusakabe, the rate of decline becomes 33.5%, and for Tanotani and Gose-Ozawa the rates are 67.2% and 76.8% respectively. Clearly, depopulation was considerably less severe in Kusakabe than in the other two settlements, although the rate of population decline in Kusakabe still exceeded the cut-off level used to determine officially designated areas of severe depopulation (Kaso chitai).

Table 9.10 shows that population loss in Kusakabe was fairly evenly spread over time and that, in contrast to the situation in Tanotani and Gose-Ozawa, there were even some years when population increased slightly. The most readily apparant difference with the other two settlements, however, is that the number of households in Kusakabe hardly changed at all during the period under consideration. Between 1961 and 1972 the number remained constant, at 32 households, falling to 31 in 1973 when a family migrated away from the village. Then, in 1978, a couple of professional puppeteers moved into Kusakabe from Kyoto, to bring the number of households back to 32. During the course of the following year, 1979, when this survey was undertaken, the puppeteers moved away to a neighbouring village, whilst another family moved in from Kyoto to convert one of the derelict properties in Kusakabe into a second home for themselves, to use at weekends. Thus, at that time, there were still 32 households in the village.

The components of population change are shown in Table 9.11. One of the main differences with Tanotani and Gose-Ozawa is the much greater number of in-migrants to Kusakabe after 1961. Altogether,

Table 9.10 Kusakabe : Population and Household Change, 1961 - 1978.

Year	Population	Households	% pop'n change
1961	155	32	
1962	158	32	+ 1.94
1963	153	32	- 3.16
1964	150	32	- 1.96
1965	143	32	- 4.67
1966	140	32	- 2.10
1967	138	32	- 1.43
1968	132	32	- 4.35
1969	128	32	- 3.03
1970	125	32	- 2.34
1971	120	32	- 4.00
1972	116	32	- 3.33
1973	112	31	- 3.45
1974	109	31	- 2.68
1975	110	31	+ 0.92
1976	107	31	- 2.73
1977	103	31	- 3.74
1978	106	32	+ 2.91

Table 9.11 Kusakabe : Components of Population Change, 1961 - 1978.

Year	Population	Births	Deaths	In-migrants	Return migrants	Out-migrants
1961	155					
1962	158	2	.	2	.	1
1963	153	2	3	2	1	7
1964	150	.	1	.	1	3
1965	143	1	1	1	2	10
1966	140	3	0	1	.	7
1967	138	2	1	.	2	5
1968	132	1	3	.	2	6
1969	128	.	2	.	1	3
1970	125	.	3	.	.	.
1971	120	.	3	.	2	4
1972	116	2	1	.	.	5
1973	112	.	.	.	.	4
1974	109	1	.	1	1	6
1975	110	.	3	5	1	2
1976	107	1	1	1	2	6
1977	103	1	1	.	.	4
1978	106	1	.	3	1	2

there were 16 return migrants, of whom nine were still in the village in 1979; there were nine people who entered the village for reasons other than marriage, of whom three remained in 1979; and seven people who entered Kusakabe as marital partners. The lack of incoming marital partners to Tanotani and Gose-Ozawa after 1963 or so has been shown as one of the main reasons why population declined so rapidly in those villages and why population structures there were so unevenly balanced in the 1970s. In Kusakabe, on the other hand, it is known that compared to only three people who entered the village to marry in the 1950s, there were exactly twice this number in the 1960s decade, and a further two people in the 1970s. In addition, there was one instance in 1957 when two people already living in the village became married, and were still in the parental home by 1979.

In consequence to this, the number of births each year in Kusakabe remained fairly constant, with a total of 17 births in the village between 1961 and 1978. Over the same period there were slightly more deaths, so that 'natural' population loss in the village amounted to six people, representing just 3.9% of the 1961 total population. As in the case of Tanotani and Gose-Ozawa, therefore, the most important factor explaining population decline in the village after 1961 was net out-migration of people. Between 1961 and 1978 there was a net loss of 43 people through migration, representing 27.7% of the 1961 population. In absolute terms, the periods of greatest population loss through net out-migration were the years 1965 and 1966, when there was a decline of 13 people, and the years 1972 to 1974, when again there was a net loss of 13 people. In the four year period after 1974, however, it is noticeable that the net loss through migration amounted to no more than just one person.

9.5.3. Kusakabe: Migrant Characteristics

Kusakabe appears to differ from Tanotani and Gose-Ozawa in that there were many more in-migrants, and rather fewer family migrants than in those two villages. For the sake of easy comparison, however, it is still best to concentrate on the characteristics of 'individual first-time leavers' and 'family leavers', in addition to considering the characteristics of the various in-migrants to Kusakabe after 1961.

Looking at the in-migrants to Kusakabe first of all, three distinct groups have been identified. These are return migrants, in-migrants for marriage, and in-migrants for reasons other than marriage. Approximately two-thirds of all the return migrants to the village were young people, aged between 20 and 28 years, who came back to Kusakabe for a short time only before leaving the village again. Usually, the return coincided with the marriage of the migrant to someone living outside the village. Seven return migrants in this age group stayed in Kusakabe, however, including three atotsugi. Two of these people had already married, and returned to the village with their marital partners at the time of their parents' death. One other atotsugi also returned to the village when his father died, but he was unmarried at that time. The remaining four people were all non-inheritors, who had not yet married by 1978. In addition, there were two return migrants, who subsequently stayed in Kusakabe, who were aged more than fifty years old at the time they returned. One of these was a household head who had been working on a long term contract in the forest industry near Kyoto. In effect this was a kind of dekasegi, or 'seasonal' migration. The other person was also a household head, who had spent a considerable time in hospital before returning.

Of the seven people who entered the village for marriage after 1961, five came from places within Ayabe municipality, including at least one from a neighbouring village to Kusakabe, and two came from further afield. All the marriages involved an _atotsugi_, although in one of these cases the couple subsequently left the village. There were also nine people who entered Kusakabe for reasons other than marriage after 1961, but in all except two of these cases the people involved were closely related to families already living in the village. They included a son who entered Kusakabe with parents who were returning to the village, a daughter-in-law who came to stay in Kusakabe for seven months with her three children whilst her husband (the eldest son of the household head) was engaged in seasonal migration, and a father-in-law who came to Kusakabe in 1963, to live in his daughter's household, shortly before he died. The two exceptions were the puppeteers, both aged about 30 years, who came to Kusakabe in 1978 from Kyoto-city. They were apparently disenchanted with living conditions in the urban area and wanted to live in a more peaceful rural environment. They chose to live in Kusakabe even though they had no previous connections with the area. Similarly, the married couple who established a second home in Kusakabe in 1979 had no family links in this area. They were professional people, the husband being a university lecturer, aged about 50 years old. Their main home was in Takatsuki-shi, situated between Osaka and Kyoto cities.

Turning to consider the people who migrated away from Kusakabe, Table 9.12 shows that there was a total of 55 individual first time leavers between 1961 and 1978. Their main characteristics were almost exactly the same as for first time migrants from Tanotani and Gose-Ozawa, with the great majority being school leavers in the 16 to 20 age range.

Table 9.12: Characteristics of individual first time leavers.

Period	Total Individual First Time Leavers	Sex	Median Age	Atotsugi	Distance Moved	
1961 - 1965	13	Male 5	19	2	Short	-
					Medium	1
					Long	4
		Female 8	16	-	Short	1
					Medium	5
					Long	2
1966 - 1970	14	Male 7	20	3	Short	-
					Medium	1
					Long	6
		Female 7	19	-	Short	-
					Medium	3
					Long	4
1971 - 1975	17	Male 6	21	4	Short	1
					Medium	-
					Long	5
		Female 11	19	2	Short	-
					Medium	6
					Long	5
1976 - 1979	10	Male 6	20/23	4	Short	-
					Medium	1
					Long	4
		Female 4	18	1	Short	-
					Medium	-
					Long	4

As in the case of the other two villages, the median age of the migrants appears to increase over time, suggesting that before 1965 most female leavers, if not male leavers, were junior-high school graduates, whilst after then the migrants were old enough to have completed senior-high school education before leaving the village.

With regard to the classification of migrant destinations, 'short distance' moves from Kusakabe are taken as those to neighbouring villages and settlements in the Kambayashi valley, 'medium distance' moves are to the nearest urban districts such as Ayabe, Fukuchiyama, and Maizuru, all of which are at least 20 km from Kusakabe, and 'long distance' moves are those to the metropolitan centres such as Kyoto and Osaka, or further afield. From Table 9.12 it can be seen that, as in Tanotani and Gose-Ozawa, the dominant trend for male migrants throughout the whole period under consideration was to move to long distance destinations. For female migrants on the other hand, the usual pattern until 1975 or so was to go to medium distance destinations, principally to work in the textile factories of Ayabe city and, to a lesser extent, Maizuru. Over time, however, more females began to go to long distance destinations and, between 1975 and 1979, all four female migrants in that period went to Kyoto city or to Osaka.

In contrast to the number of individual first time leavers, the number of people involved in family moves out of Kusakabe is comparatively small. Altogether, there were only 12 people, from three different households, who left the village in family groups (Table 9.13). The first, in 1965, involved a family of five, including a household head, his wife, and three sons. They went to live in Ayabe, and were followed eight years later by their elderly, widowed mother. This final move resulted in the abandonment of the

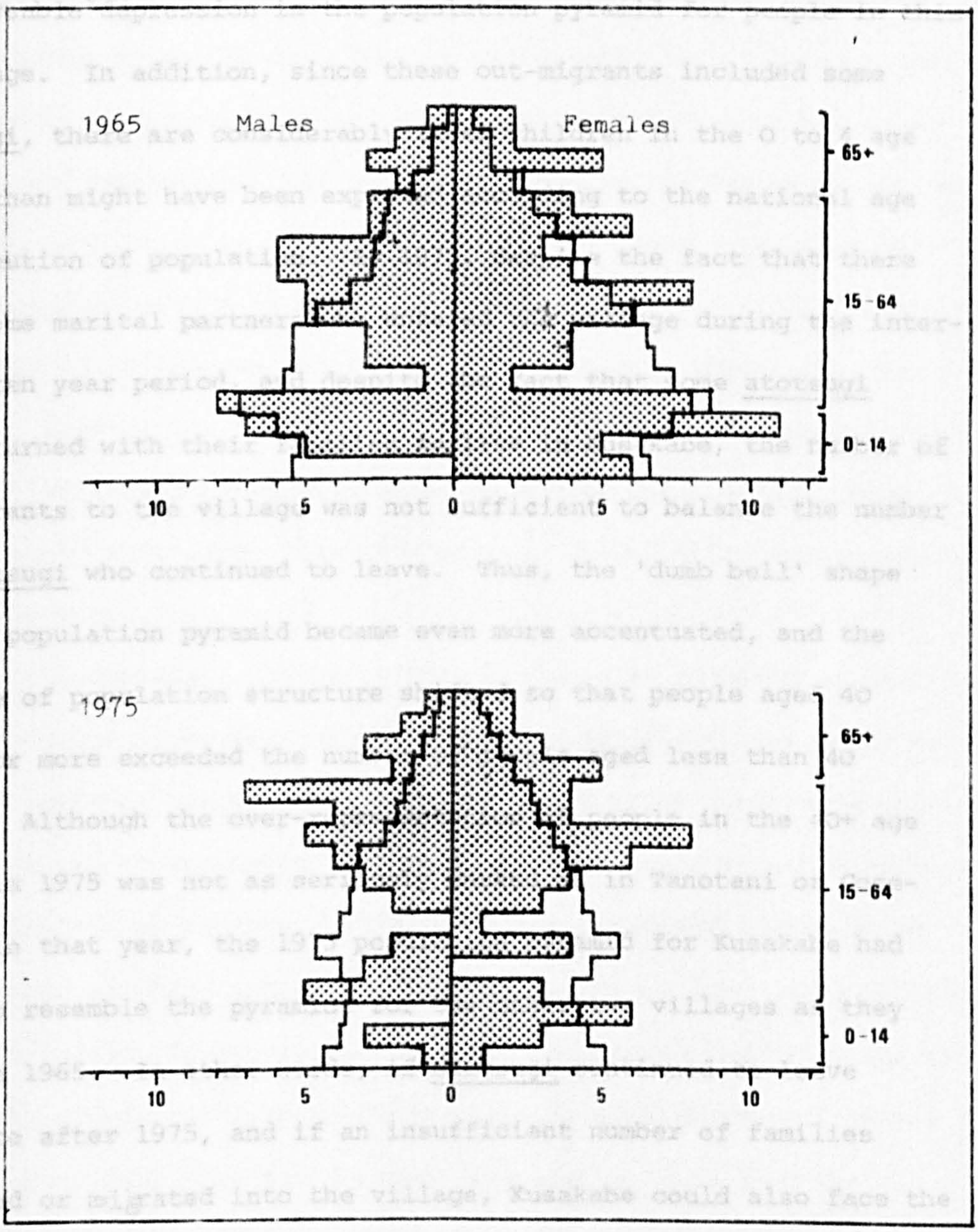
Table 9.13 Kusakabe: Characteristics of family migrants.

Year	Family Status	Age	Whole or part of household	Destination
1965	Head	41		
	Wife	36		
	Son	14	Part	Medium
	Son	12		
	Son	9		
1973	Mother	65	Whole	Medium
1966	Atotsugi	30		
	Wife	24	Part	Medium
	Daughter	3		
	Son	1		
1967	Atotsugi	31	Part	Medium
	Wife	24		

ancestral home in Kusakabe, which was eventually sold to the couple from Osaka for use as a second home. In 1966 there was another 'part-family' move away from Kusakabe, involving an atotsugi and his young family. They also went to live in Ayabe city, as did the couple involved in the third of the family moves, in 1967. This final move was similarly made by an atotsugi and his wife, although they had no children at that time. In all three cases, the household head or atotsugi were already working in Ayabe and the moves were not associated with any change of workplace or any attempt to find better paid employment. Rather, as in the case of Tanotani and Gose-Ozawa, the moves were made for convenience, to be nearer to their places of work and to have better access to schools, shops, and so on. Furthermore, in the two cases of family moves involving an atotsugi, their attachment to their ancestral homes in Kusakabe appears to remain very strong. The couple who moved in 1967, for instance, returned to Kusakabe the following year when their parents became ill and incapable of looking after themselves. They eventually died in 1970, whereupon the atotsugi assumed the headship of the household and continued to live in the village with his family in 1979. Also, the atotsugi who moved with his wife and children in 1966 has expressed a strong desire to return to Kusakabe as soon as he feels the time is right to take over the duties of headship of the household there. Only in the case of the third family move, which eventually resulted in the whole family leaving the village, is there no likelihood of anyone returning to Kusakabe in future. In this instance, not only was the house sold, but also the rice fields were sold to other farmers who remained in the village.

Apart from the *atotsugi* who left the village in family moves, it may have been noted in Table 9.12 that a further 16 *atotsugi* were involved in individual first time moves out of Kusakabe. Additionally, there were seven *atotsugi* who migrated from Kusakabe in the period before 1961. Thus, a total of 26 farm inheritors left the village, whilst only six remained behind with their families. Furthermore, of the six *atotsugi* who had not been involved in any migration by 1979, three were still at high school. There seems a strong chance, therefore, that some of these people will have also joined the exodus after graduating from school in the early 1980s. Of the 26 *atotsugi* who had already left the village, it has been noted that one of those involved in a family move returned to Kusakabe in 1968, just prior to the death of his parents. In addition, two *atotsugi* returned to Kusakabe having married outside the village, and one returned in 1965 to marry in the village. All three *atotsugi* were still living in Kusakabe with their families in 1979. To summarise, out of 32 households in the village in 1961, there were only ten with *atotsugi* still living there in 1979. Six of these *atotsugi* were married, and continued to live in the traditional extended family system, one was still unmarried, and three were still at school. Of the 22 *atotsugi* living outside the village in 1979, one had moved permanently out of Kusakabe with his whole family, 15 had married outside the village and were living in 'nuclear family' households, and six were still unmarried. This means that for precisely half of the households in Kusakabe in 1961 the traditional extended family system had broken down, since the *atotsugi* in these households were living outside the village with their families.

Figure 9.9 Population pyramids 1965-1975 for KUSAKABE by 5 year age groups.



N.B. Shaded area represents settlement age distribution.

The effect of this on the population structure of Kusakabe can be seen in Figure 9.9. In 1965, following the age selective net out-migration of people in the 16 to 20 year age group, there is a noticeable depression in the population pyramid for people in this age range. In addition, since these out-migrants included some atotsugi, there are considerably fewer children in the 0 to 4 age group than might have been expected according to the national age distribution of population. By 1975, despite the fact that there were some marital partners who entered the village during the intervening ten year period, and despite the fact that some atotsugi had returned with their families to live in Kusakabe, the number of in-migrants to the village was not sufficient to balance the number of atotsugi who continued to leave. Thus, the 'dumb bell' shape of the population pyramid became even more accentuated, and the balance of population structure shifted so that people aged 40 years or more exceeded the number of people aged less than 40 years. Although the over-representation of people in the 40+ age group in 1975 was not as seriously marked as in Tanotani or Gose-Ozawa in that year, the 1975 population pyramid for Kusakabe had come to resemble the pyramids for the other two villages as they were in 1965. In other words, if atotsugi continued to leave Kusakabe after 1975, and if an insufficient number of families returned or migrated into the village, Kusakabe could also face the threat of eventual village abandonment.

9.6 FARM INHERITANCE, VILLAGE DESERTION, AND LEVELS OF LIVING

It has become clearly apparent during the course of these surveys that the process of village desertion is intricately linked with the system of farm inheritance in Japan. In the traditional pattern of farm inheritance, the inheritor (atotsugi) lived with his own wife and family in the same house as his parents, in an extended family arrangement. It was, perhaps, a usual custom for the atotsugi to leave the village for a while, prior to getting married and returning to settle down to live permanently in his parents household. In post war years, however, the increased life expectancy of the 'parent' generation, and the reduced demand for labour in agriculture, have meant it is no longer necessary, or indeed convenient, for atotsugi to return to their ancestral home at the time when they marry. Although many atotsugi do continue the traditional arrangement, most of the atotsugi in the farm households studied in these three village surveys have opted to remain outside their home villages, even after they have married and begun to raise families of their own.

The immediate effect of this has been to reduce the number of in-coming marital partners to the villages, and to seriously reduce the number of births. This quickly leads to an unbalanced population structure, to the extent that villages no longer have the capacity for self re-generation. This situation was clearly evident in Tanotani in 1975, and only slightly less so in Gose-Ozawa and Kusakabe. The situation is reversed, however, and village desertion averted, if the atotsugi return to their villages with their families at the time when their parents 'retire' and wish to pass down the responsibilities of the household headship.

At the time when these surveys were undertaken, in the late 1970s relatively few families had reached this stage of 'retirement'. It is not easy, therefore, to assess the intentions of atotsugi

regarding whether or not they will return, especially when so few of them were currently living in the villages when this research was carried out. In the cases where the time for transferral of the family headship had been reached, however, at least five possible courses of action were observed. Firstly, the _atotsugi_ had remained living in the village, with his parents, and transferral of the headship occurred in the traditional manner. Secondly, the _atotsugi_ returned to the village just prior to the death of one or both of his parents, and he continued to live in his ancestral home afterwards. Both of these options reflect the continuance of the traditional family system, whereas the final three options reflect a breakdown of this system, and introduce the threat of household desertion. The third option then, is simply for the parents to die, without the _atotsugi_ returning to live in the village. The fourth is when parents realise beforehand that the _atotsugi_ will not return, and leave the village themselves to live with their son. Finally, instead of moving a long distance to live in their son's household, the parents might move only a short distance to the nearest central-place, where access to social welfare facilities is improved and where they have a better chance of looking after themselves.
In all these cases where the _atotsugi_ does not return to the village, not only is the sense of village community gradually eroded by the ever more unbalanced demographic structure and the decline of population, but the traditional family system is also destroyed.

In addition to household decline occurring when _atotsugi_ fail to return to their ancestral homes, the desertion process may be accelerated by whole families leaving the village together. In such instances, the household head and _atotsugi_ may decide jointly that the interests of the family are best served if the household is relocated in a more convenient environment, where there is better access to schools, shops, medical facilities, workplaces, and so on. Another important consideration appears to be the responsibility held by the family to tend the ancestral graves regularly and, wherever practicable, to maintain the family land holdings. For this reason, family moves by the whole household are usually made over a short distance, to allow family members to return to the village, whenever necessary, with comparative ease. This kind of move can also be made after the atotsugi has already left the village. In Gose-Ozawa, for example, a number of family moves coincided with the 'return' of the atotsugi to the new family home in Shigaraki, and it is clear that the decision to move still involved close consultation between the atotsugi and household head. Finally, it is worthwhile noting that even though a move by a whole household will seriously weaken the residual village community structure, family unity within individual households remains completely unaffected.

By whichever means household decline in a village is brought about, village desertion should not be viewed as an inevitable consequence. Considered in purely economic terms, household decline in many mountain village communities may bring positive benefits to the families who remain behind, especially if land holdings are transferred in the process. The removal of surplus labour through out-migration, and the enlargement of land holdings by consolidation, through purchase or lease arrangements, is a form of economic rationalization which may make agriculture a profitable business again in some villages. In the hamlet of Kamiari, for instance, in Gose-Ozawa, one farmer had increased the size of his land holding to 1.5 hectares, and also farmed additional land which he leased, after other families had left the village. In 1978, he considered himself to be quite well-off as a result of this, and he expressed a strong desire to continue living in the village as a full-time farmer. This economic argument can be overemphasised, however, since it takes no account of the breakdown of social communities which inevitably accompanies depopulation, including the need to rationalize, and therefore reduce, the level of local services available to the people left behind in these villages. Also, in addition to the increased feeling of isolation, this system of agricultural rationalization requires that the atotsugi should remain on the farm in order to learn the skills of the profession. Otherwise, if the atotsugi leaves the farm, he will have little incentive to return to the village and eventual household desertion will occur anyway.

The only other possible way to prevent household decline in these areas is to attract 'newcomers', including second home owners, to live in the villages. This has already been witnessed, to a limited extent, in Kusakabe, although this may be an exceptional case since the area has been specifically selected for tourist promotion. In many other villages, including Tanotani and Gose-Ozawa, there is no indication that any major influx of disillusioned city dwellers will happen in future years and, in hamlets like Gose and Ozawa, which have already become abandoned, and overgrown, it is certainly too late for this to occur.

In the light of these arguments, it should be possible now to consider the likelihood of village desertion occurring in each of the three villages which have been surveyed here. In Tanotani, first of all, it is known that no atotsugi were living in the village in 1978, and that at least seven had already married and set up their own nuclear family households outside the village. In the case of two households, the parents knew that their sons would never return to the village and they were making definite plans to sell their land in Tanotani and live with their children in Osaka. In two other cases, the parents had also realised that the atotsugi had no intention of returning, but they did not wish to make a complete break with the ancestral home themselves. Instead, they moved to a more convenient location in nearby Senzoku, in 1968 and 1974 respectively. Finally, there were two households in the village where the parents died, in 1973 and 1974. In both cases the eldest son returned to Tanotani at the time of death, but moved away again immediately afterwards. Thus, there are four households in the village which have become abandoned due to the failure of the atotsugi to return, and to assume the traditional responsibilities of the household headship, and a further two where household decline seemed likely to occur for this reason. In addition, there were six households in the village which became abandoned after 1960, due to the migration of whole families.

In Gose-Ozawa, both population and household decline were much greater than in Tanotani during the period surveyed and already, by 1978, two of the three hamlets in the settlement had become completely abandoned. Nevertheless, even though three of the original eight households in the third hamlet, Kamiari, had also become abandoned, the occupiers of the remaining households expressed a firm intention to stay in the village. Moreover, one of the atotsugi in these households had never left the village, and was still there with his wife in 1978, whilst in another household the atotsugi had returned to his parents farm, married, and had three young children by 1978, all of whom were still in Kamiari.

If Tanotani and Gose-Ozawa are compared on this basis, it may be argued that the higher rates of household and population decline in Gose-Ozawa suggest that this village is rather more advanced in the village desertion process. The fact that household decline appeared to have stabilized by 1978, and that atotsugi had returned to live in the village, may indicate that from a purely economic viewpoint, the ratio between agricultural land and population had reached an optimum level. In Tanotani, on the other hand, whilst it seemed in 1978 that household decline was likely to continue, there was no evidence to show that at least one or two atotsugi would not return in future, once the population level had declined to such an extent that agriculture could become a viable proposition. This kind of argument rather ignores the fact that agricultural potential in Tanotani is extremely poor, however, and, more significantly, it seems to contradict the fact that the level of living in Tanotani is somewhat lower than in Gose-Ozawa. This being the case, it would normally be anticipated that Tanotani should have the higher rate of population and household decline.

An alternative consideration, therefore, is to concentrate on the actions of atotsugi who have already left these villages. In Gose-Ozawa it was noted that in addition to the two households in Kamiari where the atotsugi still live with their parents, six atotsugi had left the village in moves involving the whole family, and four _atotsugi_ had subsequently re-united with their families after they had abandoned their households in Gose-Ozawa. Moreover, every one of these _atotsugi_ were continuing to live in their parents households in 1978, and all were still living in the same municipality, only a short distance from their ancestral lands. In Tanotani, the only _atotsugi_ living in the same municipality (i.e. Miwa-cho) in 1978, were those who had left the village as children in moves involving the whole family. This means a possible total of four, assuming that none had moved again, out of an original total of 28 households. In almost all other cases, the _atotsugi_ lived in metropolitan districts, far away from their parental homes and ancestral lands.

For both Tanotani and Gose-Ozawa, it has been shown that _atotsugi_ who left the villages as young individual migrants went to long-distance destinations, probably in order to find well-paid employment in the cities. If it is accepted that _atotsugi_ are subsequently free to leave their employment, and return to live in their original villages at the time they are due to marry, or to assume the duties of the household headship, the factors determining the decision whether or not to return are likely to be two-fold. Firstly, they will need to be assured of employment when they return, either in agriculture or in non-agricultural occupations. Secondly, if they have families of their own, or intend to start a family, it is likely they will consider the various environmental factors such as accessibility to schools and shops. In the case of _atotsugi_ considering a return to Tanotani, it may be reasonably argued that the level of living there is so bad, with little agricultural potential, few opportunities for non-agricultural employment, and poor accessibility to all local services, that nobody wishes to go back to the village despite the pull of the family and ancestral lands. Meanwhile, their parents are reticent to leave the village to join their son's households because they do not wish to break the strong links with the _ie_ (ancestral home), nor move far away from the family graves. The result is that population and household decline continues to take place, albeit relatively slowly, as the parent generation either die, or are eventually forced to leave the village when they are no longer capable of looking after themselves. Inevitably, the final outcome will be total village desertion.

In Gose-Ozawa, the degree of isolation from shops, welfare, and educational facilities is about the same as Tanotani, whilst the agricultural potential is probably rather better. In addition, Shigaraki-cho offers considerably more non-agricultural employment opportunities than Miwa-chō, with 337 jobs per thousand population in manufacturing industries in 1972 compared to 221 per thousand population in the municipality where Tanotani is situated (Bureau of Statistics, 1972). The only drawback is that almost all the manufacturing industries in Shigaraki-chō are concentrated in the town of Shigaraki itself, some distance from the village of Gose-Ozawa (Shigaraki Town Guide, undated). The general feeling expressed during interviews with families from Gose-Ozawa was that _atotsugi_ wanted to return in order to assume their household responsibilities, but, as in the case of Tanotani, they were unwilling to go back to Gose-Ozawa itself, because the village was too isolated. A number were prepared to return to Shigaraki town, however, where access to all local service functions is quite good and, most importantly, where there are comparatively good opportunities for part time employment.

Faced with this compromise arrangement, the household heads in Gose-Ozawa were in a position to make a positive decision about their future. By moving to Shigaraki themselves, they would be able to ensure household succession whilst still keeping a close link with their ancestral homes and family lands. The desire to maintain family unity clearly outweighed the desire to remain in the ancestral home, and whole households began to desert the village. Then, the process was accelerated by the fact that community bonds in each hamlet rapidly weakened as a result of household decline, making Gose-Ozawa appear even more isolated and unattractive to live in. Thus, many remaining families also joined the exodus, and the hamlets of Ozawa and Gose became completely abandoned. With regard to the five households still in Kamiari in 1978, it is impossible to say at this stage whether or not this hamlet will end up the same way as the rest of the village. The fact that Kamiari has a relatively good agricultural potential, however, and that at least two atotsugi have expressed a desire to remain in the village, suggests that complete abandonment will not occur in the lifetime of their generation and that, ultimately, Gose-Ozawa may have a longer future than Tanotani.

Turning to consider the case of Kusakabe, it has been noted that in 1979 there were still ten atotsugi living in the village. Six of whom had married and continued living in the traditional extended family system, and 22 atotsugi lived outside the village, 16 of whom had already married. Only one family had actually deserted the village since 1961, to live in Ayabe, whilst two 'newcomer' families had entered Kusakabe, one of whom subsequently moved to live in a nearby settlement. Moreover, of the families with atotsugi living outside the village in 1979, it was anticipated that in five cases the atotsugi were unlikely to return to Kusakabe, but in at least eight cases the families were convinced that the atotsugi would return to the village in future, and assume the traditional responsibilities of household headship. It is difficult to know how much reliance to place on these figures, however, and in one case, where the atotsugi was said to be expected to return, household headship had already been passed down to him in 1976 when his father died, leaving only his aged mother in the family home. Despite this, he had still not returned to live in the village in 1979. In the other two instances where household headship had been transferred in the period between 1961 and 1979, one atotsugi returned to live in his parent's home with his own family, and one remained living outside the village, where his widowed mother eventually joined him.

It seems clear from this that some degree of household decline will occur in Kusakabe in future. On the other hand, it is reasonable to postulate on the basis of existing evidence that as many as one-third, or even one-half of all the households in the village will continue to exist there during the life-time of the present generation of atotsugi. There is also the possibility of more 'newcomers' moving into the village in future years. From this it is apparent that the threat of total village abandonment is much less severe than in Tanotani or Gose-Ozawa, and it is likely that the reasons for this are directly related to the better level of living conditions which exist in Kusakabe. In the first place, the agriculture and forestry potential seems comparatively good, especially if there is a likelihood of enlargement of land holdings as a result of limited household desertion. Secondly, there are greater opportunities for non-agricultural employment than in Shigaraki-cho or Miwa-cho, with 406 jobs in the manufacturing industry per thousand population in Ayabe-shi in 1972 (Bureau of Statistics, 1972). Although most of these are concentrated in Ayabe city itself, commuting is possible from Kusakabe and, additionally, some local non-agricultural work is available in neighbouring settlements. Finally, whilst Kusakabe may be judged remote, or isolated, compared to other agricultural settlements, access to social and welfare facilities was actually quite good there in 1979. The village is only 3 km. from the nearest elementary school, for instance, compared to Tanotani or Gose-Ozawa where the equivalent distance is 7 km. in both cases. The major threat, of course, is that declining school rolls, as a result of local depopulation, will force the school to close. In the immediate post war years the average size of each class was 40 pupils, but in 1979 there were only seven who enrolled in the first grade. Nevertheless, provided that services such as this can be maintained somehow, it seems likely that atotsugi, together with their families, will be attracted back to Kusakabe in future years.

9.7 SUMMARY

In the context of all the agricultural settlements included in the sample used in the main level of living analysis, the three villages surveyed here probably lie in the bottom five per cent in terms of relative level of living scores. Despite the fact they may be considered 'unrepresentative', however, and despite the very small number of intensive surveys which were carried out, they have produced some useful and interesting findings which ought to aid understanding of the general relationship which exists between levels of living and net migration throughout the whole rural area.

Concentrating, for the moment, on the specific objective of these surveys, the findings relate first and foremost to the relationship between levels of living, rural depopulation, and the village desertion process. Although none of the three villages had become completely abandoned by 1978, the results demonstrate how quickly village desertion can come about in response to changes in local environmental conditions. In Gose-Ozawa, for instance, both population and the number of households remained comparatively stable during the 1950s, but between 1960 and 1978 the number of people declined by just under 80%, whilst household decline was 70%, after the first farm became abandoned in 1965. Also, despite the fact that all three settlements have extremely low level of living scores, the threat of village desertion occurring in Kusakabe was thought to be considerably less than in Tanotani and Gose-Ozawa, even though depopulation of '<u>kaso</u>' proportions has happened there since the early 1960s. This suggests that the dividing line between settlements which have become, or are likely to become totally abandoned, and those which will continue to exist in the foreseeable future is very finely drawn indeed. Moreover, whilst it was found that the settlement with the lowest level of living (Tanotani) was more likely to become deserted than the settlement with the highest level of living (Kusakabe), the precise nature of the relationship between levels of living and village desertion was seen to be extremely complex. In particular, the findings demonstrate how Gose-Ozawa, which has better environmental conditions (hence 'level of living') than Tanotani, experienced a higher rate of depopulation and household desertion during the period surveyed.

Viewed in the context of all agricultural settlements, the question of whether or not Tanotani will become deserted before Gose-Ozawa may seem merely tautological. However, the differences in the process by which household desertion occurred in these two settlements carry significant implications for the understanding of the more general relationship which exists between levels of living in agricultural settlements and rural depopulation. That is, out-migration occurred to a greater extent, and at a faster pace, in Gose-Ozawa because the nearby town of Shigaraki offered a more convenient environment in which to live, for all household members, whilst being close enough to allow frequent visits back to the ancestral home. In Tanotani, on the other hand, there is no nearby town offering sufficient job opportunities to attract atotsugi to return there, and so other family members have a tendency to remain in the village. In other words, the rate of migration from these villages is not only dependent on the relative levels of living in the villages themselves, but also on the environmental conditions in neighbouring settlements. This is unlikely to affect the relationship expressed for young individual migrants, but may explain to some extent the reason why the correlation coefficient for 'young family' migrants and levels of living was so low in the main analysis.

Another important finding from these village surveys is that the process by which village desertion occurs is ultimately related to the failure of atotsugi to return to their ancestral homes. By implication, therefore, villages which are not threatened by desertion experience a steady in-migration of returning atotsugi, often accompanied by their wives and children. The only instances where this does not apply are villages where levels of living are high enough to encourage atotsugi not to leave in the first place. This produces even greater complexity in the relationship between 'young family' migrants and levels of living, especially when migration is measured over a comparatively short time period.

In addition to all this, a number of strong similarities were observed between the three villages surveyed, especially with regard to the characteristics of both individual and family migrants. Notably, individual first time leavers were found to be young, generally school-leavers in the 16 to 20 age range, whose migration destinations were almost invariably a 'medium' or 'long' distance away from their home villages. The reason for migration was found to be related primarily to the desire to find well-paid employment in contrast to 'family migrants' who tend to make relatively short distance moves for the purpose of finding a more convenient social environment. The implications of these results on the main analysis of levels of living and net migration are discussed in detail in the next, concluding, chapter.

CHAPTER TEN

SUMMARY AND CONCLUSIONS

Set within the context of the massive shift of population from rural to urban areas which occurred in Japan between 1950 and the late 1970s - the post war 'rural exodus' - this research has attempted to explain the considerable differences in out-migration rates which exist between the many thousands of small agricultural communities constituting Japan's rural area. Even for agricultural settlements within the same municipality, it has been shown that the relative contributions made by different villages to the overall size of the rural exodus were far from equal. In a few cases, whole communities migrated from their ancestral homes so that villages became completely abandoned. In others, out-migration, especially by people in the 16 to 24 year age group, was severe enough to destroy the demographic balance of communities so that village desertion is a likely consequence in future years, when the aged residual population literally 'dies off'. More commonly, out-migration by people in the younger age groups has affected the population structure of residual communities to the extent that, whilst some degree of household decline is likely to occur, villages will continue to exist in future, albeit with reduced population levels. At the other extreme, some rural settlements, particularly those on the edge of major urban or industrial areas, experienced a substantial inflow of migrants so that their population size doubled, or even trebled, during the post war period.

The model which has been proposed here to explain the variations in net migration rates between different agricultural settlements, during the period 1965 to 1975, attempts to incorporate both the normative and behavioural viewpoints. In its essential form, the model is stated in simple normative terms, whereby:

Net migration = f (Level of Living)

That is, migration is seen as an attempt to optimise overall level of living in terms of expected social, economic, and environmental conditions (Liu, 1975). If 'level of living' is substituted by the term 'place utility', which can be described as 'a measure of the attractiveness or unattractiveness of an area, relative to other areas' (Simmons, 1968), the model assumes a form proposed by Wolpert (1965) in his discussion of the behavioural aspects of the decision to migrate. The main difference between the two constructions is that the behavioural description of 'place utility' emphasises the unique perceptions and actions of individuals whereas the normative approach describes the whole migrant population, and its rational response to objectively measured differences in levels of living. In the strictest sense, therefore, the two terms are not directly interchangeable, although they can be viewed as compatible.

One of the main strengths of the behavioural approach, which cannot be successfully incorporated in normative explanations whilst the emphasis remains on total migrant populations, is that different individuals have different perceptions of their environment, and will react to these perceptions in a variety of different ways. Moreover, as each individual progresses through different stages in his life cycle - leaving school, marrying, raising a family, and so on - his needs and ambitions will change, and his perceptions of his environment also will change accordingly.

Good evidence of this was provided in the three village surveys described in the previous chapter. With regard to the decision to migrate, it was noted with remarkable consistency that, in all three villages, the màin stimulus acting on school leavers in the 16 to 20 year age range was the desire to find good, well-paid employment. Hence, almost without exception, people in this age group migrated over a medium or long distance, to cities or to major metropolitan areas. Then, at the time of marriage, it appears that many atotsugi, or farm inheritors, contemplated a return back to the villages. This time, the main considerations were based on the desire to maintain the ancestral tradition, embodied in the extended family system, weighed against the opportunities for finding suitable, well-paid employment. When atotsugi reached the stage of raising a family, the prime consideration seems to have centred on accessibility to various social and educational institutions, notably schools for their children. For many young families, perhaps leaving their village for the first time, migration generally took place over a short distance, in order to be nearer to this kind of welfare facility. In later life, around the time of retirement, a number of older people moved to short distance destinations to be closer to shops and medical facilities. Alternatively, some moved to places a long distance away where they could reunite with their children's families. In both sets of cases, the motive for migration had shifted away from considerations of employment, or education, towards the desire for better welfare and health provision.

Not only did the village surveys highlight the different migration patterns associated with different stages in the life-cycle, but they also confirmed the theoretical basis upon which behavioural aspects of the decision to migrate can be incorporated into the normative level of living model. In essence, whilst it is recognized that different individuals hold different perceptions of their environment, there will be broad groupings of individuals, based on shared personal characteristics, who have similar perceptions of comparative place utilities. In the case of 16 to 20 year old people who migrated away from Tanotani, Gose-Ozawa, and Kusakabe, individuality was expressed in the fact that some people went to Tokyo, or Osaka, whilst others went to Kyoto, or Otsu. However, they all shared the same experience of wishing to migrate to a metropolitan area in order to find better employment prospects. Similarly, a broad sub-group of young family migrants was identified who not only shared the same basic characteristics of age, number of children, and so on, but who also perceived their environment in the same way (that is, they recognized a lack of adequate educational facilities), and moved their place of residence accordingly, to similar destinations. Of course, in Gose-Ozawa, or Kusakabe, for instance, it was found that not all young families wished to move away from their village, because their perceptions of their needs and ambitions and, in consequence, their relative ordering of place utilities, were slightly different from that of those who did move. From the behavioural point of view, this dichotomy between mover or stayer presents a serious block to any subsequent attempt at systematic analysis, but from the normative viewpoint the process may be rationalized so that a continuum is recognized, ranging from high net out-migration, through low net out-migration and low net in-migration, to high net in-migration.

In other words, evidence from the village surveys suggests there is at least some basis for assuming that all young families living in the rural area, for instance, share broadly similar perceptions of their needs and ambitions, which differ slightly from the perceptions held by other population sub-groups. This evidence is supported by the findings of the questionnaire survey reported in Chapter Six. Viewed in the narrowest sense, the range of perceptions of place utility held by people in the 'young family' sub-group is sufficient to span the dividing line which marks whether or not a decision to migrate is reached. Proponents of the behavioural viewpoint may wish to seek in greater detail for the precise reasons and the full range of factors which influence the decisions of the 'movers' in contrast to those of the 'stayers'. Eventually, as more individual cases are studied, the potential range of factors increases enormously and any form of conventional systematic analysis becomes unworkable. Viewed within a broader, normative framework, however, it is argued here that the perceptions of all people in the 'young family' sub-group are sufficiently similar to justify construction of an average, or aggregate place utility function. In other words, a broad consensus of opinion exists within the sub-group to the extent that there is general recognition of places with low place utility, ranging through a continuum to places with high place utility. The effect of this on migration is that places with the lowest aggregate place utility function will experience high rates of net out-migration, those with a higher APU function will experience a lower rate of out-migration (that is, some families will leave the village whilst others stay), and so on.

Additional evidence from the three village surveys is able to support this notion. Taking the simplest example, of atotsugi in the 16 to 20 year age range, all the people in this sub-group from Tanotani, where there are fewest non-agricultural job opportunities, left the village after 1955 or so. In Gose-Ozawa, where there are rather more employment opportunities in the manufacturing and service sectors, there were two atotsugi who remained in, or returned to the village, whilst a number of others returned to the municipal town of Shigaraki. Finally, in Kusakabe, in Ayabe-shi, which has the highest ratio of manufacturing jobs to total population of all the villages surveyed, almost a third of all the atotsugi remained in the village in 1978.

Of course, this theory cannot be tested on the evidence of just three village surveys, and so it is on a much wider sample of settlements that the main analysis in this research is principally concerned. Having defined the A.P.U. function it is a relatively simple step to quantify this expression since, unlike comparative place utilities perceived by individuals, the term 'aggregate place utility' is directly interchangeable with the term 'level of living'. (see Chapter Five). A number of methods have been applied for the construction of level of living indices, but the 'standard score additive model' adopted by D.M. Smith (1973) is the method considered most appropriate here. Essentially, nine 'domains' have been selected on the basis that, taken together, they represent all the aspects which account for variations in the quality of life, or levels of living,in rural Japan. Domain scores can then be quantified, each being a function of the numerical value of a set of variable, or social indicators (Drewnowski, 1974). Then, the most crucial step is to attach weightings to the domain scores which reflect the priority preferences expressed by different population sub-groups. Thus, whilst the range of domains and social indicators is the same for all population sub-groups, the relative value of the final level of living score for a particular agricultural settlement should be different for each population sub-group. Gose-Ozawa would have a higher score than Tanotani, for instance, for the 16 to 24 year age group, since the availability of non-agricultural employment opportunities - a prime concern for this sub group - is rather better there. Scores expressed by the 'young family' sub-group would be approximately the same for both settlements, however, since access to educational facilities, and so on, are equally poor in both places. These examples assume that whilst the 'non-agricultural job opportunities' domain and the 'access to educational facilities' domain are both relevant to the overall level of living of young individuals and young families, the former domain will receive a higher weighting from 'young individuals' whilst the latter domain receives a higher weighting from 'young families'. Strictly speaking, the model should be re-written in a revised form, so that:

$$\text{Net migration}_j = f(\text{LOL}_j)$$

where the subscript j denotes net migration and level of living for specified population sub-groups.

The main analysis, which was based on 5% sample of all agricultural settlements in Kyoto and Shiga prefectures, sought to establish the existence of a direct relationship between net migration rates and level of living scores for different population sub-groups, for the period 1965 to 1975. A number of operational difficulties were encountered, however, with regard to the measurement of both levels of living and net migration rates. Mostly these arose from the lack of suitable data at this scale level, and the fact that many agricultural settlements have extremely small base populations, especially when they are broken down into sub-groups. To recapitulate some of these problems, firstly, a number of indicator variables could be measured only for the years 1975 to 1977, which marks the end of the period for which net migration rates are estimated. Whilst inclusion of these variables was justified on the basis that little or no relative change in value was likely to have occurred in the previous ten year period, the possibility arises that the ordering of 'cause' and 'effect' has been reversed.

Secondly, the inclusion of certain groups of variables, and the exclusion of others due to the lack of available data, leads to the question of bias, or unequal weighting, due to double counting of variables and to the fact that some variables are not counted at all. Efforts are made to overcome this problem by use of principal components and factor analysis to eliminate double-counting, and by using surrogate measures when required data are not available. The fact is, however, that some residual bias may remain in the analysis, as a result of both the reversal of cause and effect conditions, and because some degree of double counting still exists. This has to be borne in mind when the final results are analysed, and any subsequent interpretation must be made with some caution and qualification.

Even greater operational problems are encountered in the attempt to measure net migration rates for agricultural settlements. Since there are no reliable population data presented in the agricultural census, population totals can only be found by matching agricultural settlement territories with enumeration districts defined for the Census of Population. Unfortunately, enumeration districts are often changed for each census count, which means that population totals cannot be compared over time. This makes it impossible to estimate net-migration rates for the settlements affected in this way, and there is no alternative but to exclude them from subsequent analysis. This exclusion of settlements from the sample is inevitably undertaken on a non-random basis, and will introduce some degree of bias which affects the final results. Exclusion can be justified to a certain extent, however, on the grounds that areas where enumeration districts are changed over time tend to be situated on the urban fringe, where population growth is extremely rapid. It can be argued that these areas have lost their 'rural' status, and are no longer considered relevant to this research.

A further problem stems from the fact that no migration statistics are presented for enumeration districts, and net migration rates have to be estimated using the Basic Demographic Equation. In addition, the number of births and deaths have to be estimated for each agricultural settlement and, because population base levels are so low in many cases, random simulation techniques must be used. This places certain restrictions on the manner in which the final results can be interpreted, and requires that checks are carried out on the 'reliability' of the results. It ought to be stressed, however, that as far as the present research is concerned, no serious inconsistencies were revealed by the checking procedures.

Finally, the nature of the population data presented for enumeration districts places limitations on the number of sub-groups for which net migration rates can be estimated. That is, population breakdowns are only possible by age, and not by sex, occupation, family status, educational background, and so on. Whilst age is probably the most important criterion for the definition of population sub-groups, the potential relevance of other factors should not be forgotten. In terms of migration, for instance, it has been shown that the sex differential is important, since males have a slightly higher propensity to migrate than females (Bureau of Statistics, 1970). Also, although the village surveys showed that both male and female school leavers migrated in order to secure better employment opportunities, slightly different patterns of movement for males and females were noted in all three villages. That is, female migrants tended to go to medium distance destinations for work in 'traditional' occupations related to the textile industry, whilst males went to long distance destinations in the major metropolitan centres where there is a much wider variety of employment opportunities. This may be simply a reflection of the fact that more jobs were available in the textile industry for women than for men but, on the other hand, it may reflect a difference in the needs and aspirations of men and women, which is expressed as a difference in perceived place utilities. In relation to this, it may be recalled that significant differences existed between males and females in the priority scores attached to three domains in the questionnaire survey (Table 6.17). Furthermore, it has been argued that population sub-groups should be identified according to the stage people have reached in their individual life-cycles. In particular, the village surveys have highlighted the difference in attitude, and the difference in migration streams, between 'young individuals', and 'young families'. Whilst age is undoubtedly the major determinant of the stage reached in a person's life-cycle, there is nevertheless some overlap in the ages of people moving through different stages of the life-cycle, especially between the 'young individual' and the 'young family' stages. In other words, it is impossible to ascribe accurately a person to either of these sub-groups on the basis of age alone.

Notwithstanding this, a close scrutiny of the net migration estimates for each age group for the total sample population revealed the existence of two major migrant groups, namely: 'young individual migrants' and 'young family migrants'. Because of the difficulty of distinguishing adults in these two sub-groups, 'young family' migration was measured according to the number of children aged between 0 and 4 years in 1965 who entered or left the sample villages between 1965 and 1975. 'Young individual' migration was measured for the 5 to 19 year age cohort in 1965. In the village surveys, migrants were grouped into 'individual first time migrants' and 'family migrants', irrespective of age. Nevertheless, it was confirmed that individual migrants, who formed the largest migrant group, were overwhelmingly young people, being mostly school leavers in the 16 to 20 year age range. Of the family moves, involving whole or part of a household, exactly half included children under ten years of age and so may be termed 'young family migrations'. The remainder mostly involved people of retirement age, a sub-group which was not identified in the main analysis because of the unreliability of migration data for people aged more than 60 years.

From the results of the questionnaire survey, conducted amongst 203 respondents in 21 different agricultural settlements in Kyoto and Shiga prefectures, it is a relatively straightforward task to isolate the priority preferences expressed by people in the 'young individual' and 'young family' population sub-groups. For 'young individuals', responses by people in the 0 to 24 age group are taken. Since there were no respondents under the age of 15 years, however, the resultant weightings may be effectively ascribed to the 15 to 24 year age group. Weightings for people in the 'young family' sub-group are based on the responses of people aged between 25 and 39 years. The problem of overlap between 'individuals' aged more than 24 years, and married people aged less than 25 years cannot be overcome within the framework of the questionnaire used for this research. Unfortunately, it did not incorporate questions on family or marital status - an oversight which would require rectification in future research of this kind.

Having estimated net migration rates for these two population sub-groups for each of the remaining 132 settlements in the sample (133 if Nakazawa is included), and having calculated the appropriate level of living scores for these sub-groups for each village, it is possible to test the strength of the hypothesised relationship between net migration and levels of living by means of Pearson's correlation coefficient. For the 'young individual' sub-group, the coefficient is quite high, at r = 0.67 - a result which compares favourably with other attempts to explain net migration by simple linear regression, notwithstanding the various operational difficulties involved in formulating the level of living and net migration indices at this scale level. With regard to the 'young family' sub-group, the correlation test confirms the direction of the hypothesised relationship, but the correlation coefficient is disappointingly low, at r = 0.17, with a coefficient of determination of only 0.03 (i.e. only 3% of the variance in net migration rates is explained by variations in level of living score).

It is not so much the fact that the correlation coefficient for 'young family' migrants is low that fails to meet expectations, but the fact that such a wide difference exists between the coefficients for the two population sub-groups. Although it has been clearly shown in the village surveys that young individuals and young families have very different migration patterns, and that the considerations behind the decision to migrate stress different sets of factors, it was anticipated that these differences would be accounted for in the weighting procedure used to measure levels of living. In other words, even though the variables used to measure levels of living are the same for both population sub-groups, application of appropriate sets of weightings would adjust the value of the final index to the extent that correlation coefficients between levels of living and net migration would be the same for both sub-groups.

There are a number of possible explanations why such a result was not forthcoming. Firstly, it has been demonstrated that net migration rates measured for the 0 to 4 year age cohort in 1965 are extremely volatile because population base levels are so low. In other words, the net addition of just one extra migrant has a disproportionately high effect on changes in the net migration rate. The only ways to overcome this, at this particular scale level, are to take a broader population base, or to lengthen the period of time for which net migration is measured. For various reasons, neither of these options are possible within the context of the present research. Also, there is no real evidence yet to show that 'stabilization' of the net migration rates will improve the correlation coefficient with levels of living to any great extent.

Secondly, it has been suggested that whilst the choice of level of living domain items and variable indicators is suitable for the 'young individual' sub-group, there may be an insufficient range of domain items to represent levels of living perceived by the 'young family' sub-group. In other words, the inclusion of additional variables into the level of living index may improve the correlation with net migration for 'young families'. This kind of argument must be treated with great caution, however, for it carries the danger of introducing variables into the analysis in order to improve the correlation with net migration rather than to build up a more complete picture of the factors which contribute to general levels of well-being. Also, it should not be forgotten that the list of domain items and variable indicators is the same for all population sub-groups, and that amongst the criteria for the selection of additional domains or variables is one which requires these items to be relevant to the state of well-being of all people living in the rural area, irrespective of age, sex, occupation, and so on. This apart, a specific question was included in the questionnaire survey to verify whether or not the domain items presented in this research encompassed all aspects of social well-being. The answers were generally affirmative, suggesting that no extra domain items ought to be included. Moreover, the intensive village surveys revealed no omissions in the list of domain items used in the present analysis. The suggestion that additional variables ought to be included in the level of living index appears to hold little or no positive support, therefore.

A third possible explanation for the wide difference in correlation coefficients between level of living and net migration for 'young individuals' and 'young families' does appear to have a more sound theoretical grounding. That is, additional explanatory variables ought to be included in the analysis within a multivariate framework, rather than attempting to incorporate them within the single level of living index. In the case of 'young individuals', for instance, it seems very likely that the level of explanation of variations in net migration rates can be improved significantly by the addition of a second explanatory variable describing the proportion of people in each settlement who are non-inheritors (see Chapter Eight). In a sense, this variable is a reflection of the availability of housing within settlements, which is recognized as an important consideration in the decision to migrate for all population sub-groups. In other words, an individual or family group will constantly weigh up the place utility of their present environment with the place utilities of all other known environments. If it is considered that the place utility in the present environment is inferior to the place utilities elsewhere, a decision to move will be made. Ideally, the destination of the move is the area with the highest place utility, but a move can only be made there if some form of accommodation is available there. If this is not available, the move may be made to the area which offers the next best place utility, and so on. In general terms, therefore, net migration rates are affected not only by relative levels of living, but also the availability of accommodation (Hyman and Gleave, 1978). Furthermore, housing availability is likely to be a much more important explanatory factor for young families than young individuals, since family migrants have considerably more stringent housing requirements, and generally less flexibility than individual migrants. To this extent, the degree to which variations in net migration rates are accounted for by variations in the level of living scores for settlements may be anticipated to be slightly less for the 'young family' population sub-group than for 'young individual' migrants. Unfortunately, relevant data on housing availability is not readily available at this scale level, and time did not permit this kind of information to be collected during the intensive village surveys. It is only possible at this stage to propose the subject of housing availability, and its effect on differential net migration rates in the rural area, as a worthwhile project for future research.

Despite the potential relevance of adding other explanatory variables to the original model, the fourth and final reason proposed to account for the low correlation coefficient between levels of living and net migration for 'young family' migrants is undeniably the most crucial one. It has been shown by correlation tests between the different level of living scores for different population sub-groups that the net effect of questionnaire derived weightings on the analysis is negligible. In other words, the level of living scores for both the 'young individual' sub group, and for the 'young family' sub-group are virtually the same as each other and, moreover, they are almost the same as level of living scores which have been calculated on the basis of equally weighted, or unweighted domain scores. Since it is known from the village surveys that 'young individuals' and 'young families' do have different migration patterns as a result of differing concepts of aggregate place utility, any attempt to explain 'young individual' migration rates and 'young family' migration rates by what is effectively the same set of level of living scores is bound to produce widely different correlation coefficients. The fact that the correlation coefficient for 'young individuals' is much higher than for 'young families' is possibly fortuitous, but may be explained logically by the fact that the 'real' weightings assigned by young individuals have a closer approximation to equal weighting for all domain items than the 'real' weightings assigned by 'young families'.

The obvious implication to be drawn from this is that the 'real weightings which are assigned by potential migrants bear little or no relation to the questionnaire derived weightings used in the present research. Alternatively, the theoretical justification for the application of domain weightings and, in addition, for the hypothesised relationship between levels of living and net migration is shown to be groundless. In view of the fact that other researchers who have attempted to calculate level of living scores using questionnaire derived weightings have met with similar results (e.g. Knox and MacLaran, 1978), it may appear more reasonable to accept that the behavioural approach is inapplicable and that no form of weighting procedure is actually applied in real world situations. However, all the evidence collected in the course of this research, in the questionnaire survey itself and in the intensive village surveys, seems to refute this notion by indicating the definite existence of priority preferences and their active role in the migration decision making process. This leads back to the original suggestion - that the questionnaire has failed to assess or represent the true priority preferences which are applied by people in their decision whether or not to migrate. This may be accounted for possibly in one of two ways.

Firstly, the phrasing or general design of question IIb in the questionnaire may have misled respondents to interpret the aims of the survey in a different manner to that intended for the purposes of this research. Whether or not this is the case cannot be accurately discovered, of course. However, the possibility that this might occur should have been foreseen, and greater emphasis should have been placed on a pilot survey to find out whether different ways of phrasing this crucial question produced different sets of responses. Secondly, and probably most significantly, the questionnaire survey was undertaken in rural settlements some time after the period when the volume of the rural exodus reached a peak. In other words, whilst a number of potential migrants may have been interviewed, the majority of respondents were people who had decided, consciously or otherwise, to remain in their ancestral villages at a time when many of their neighbours and relations were choosing to migrate to the cities. This applies particularly to people in 25 to 39 year age range, whose responses were taken as the basis for weightings for the 'young family' population sub-group. The point is that the priority preferences recorded in the questionnaire may show a bias towards the attitudes of 'stayers' who, by definition, are people who regard the place utility of their home environment as superior to place utilities elsewhere. In contrast, people who had already left the villages, who were not interviewed in the survey, are likely to have had a completely different ordering of priority preferences. Thus, a true picture of 'aggregate place utility' cannot be gained from the results of the questionnaire.

Unfortunately, it is not possible to check the validity of these arguments, and their likely effect on the final value of correlation coefficients between net migration and levels of living can only be surmised. The viewpoint of the present writer is that had a more stringent approach been adopted for the preparation and undertaking of the questionnaire survey, a rather different set of domain weightings might have been achieved which could be considered more appropriate to the priority preferences actually experienced by people in their evaluation of relative place utilities.

Whatever the relative importance or significance of these arguments, it is clear that the attempt to explain variations in net migration rates by variations in the level of living scores for different population sub-groups has met with only partial success. In conclusion, however, it is preferable to emphasise the positive contributions made by this research and the objectives which have been achieved. Firstly, this study recognizes the usefulness of behavioural concepts of the reasons why migration occurs, and has attempted to formulate a normative model to explain (or predict) aggregate migration flows on the basis of behaviouralist notions of comparative place utilities and levels of living. Theoretical justification for correlating net migration rates and levels of living has been evolved steadily over a number of years, by Simmons (1968), Spear (1970), Brown and Longbrake (1970), Cebula and Vedder (1973), Liu (1975), Hyman and Gleave (1978), and Jones (1980). Whilst some of these studies have given serious consideration to the problems of geographic scale, and the relevance of 'life-cycles' to the migration decision (e.g. Hyman and Gleave, 1978), others have utilized the 'level of living' or 'quality of life' concept merely to provide a composite dependent variable to overcome the problem of collinearity in the regression equation (e.g. Jones, 1980). In all cases, however, the results of empirical research have met with only limited success, largely because behaviouralist ideas are only fully applicable at the level of the individual decision-maker (White and Woods, 1980). The theoretical contribution made by the present research is not only to combine relevant aspects of these previous studies into a unified framework, but also to make a serious attempt to equate, as near as possible, perceptions of aggregate populations with the level of the individual decision-maker. That is, small population sub-groups are identified, comprising individuals with broadly similar shared personal characteristics. The relative ordering of levels of living perceived by each sub-group is equivalent to, and determined by the summed total of place utilities (the average place utility function) perceived by each individual in the sub-group.

The second contribution of this study has been to show how different research methods may be combined to provide a more complete picture of the migration process than is otherwise possible. In particular, the results of a systematic analysis of a large number of settlements, using published data sources, were supplemented by the findings of a number of intensive village surveys where data were drawn from interviews with individuals. Perhaps even more significant is the fact that whereas the results of the systematic analysis were only partially successful in proving the existence of a relationship between net migration and levels of living, the findings of the village surveys gave very strong indications that the theoretical link between the migration decision making process and concepts of comparative levels of living actually does exist in reality. This leads to the conclusion that poor results obtained in the main analysis were the product of operational difficulties of measuring levels of living and net migration rates at such a small level of data aggregation as the agricultural settlement, due to a lack of published information and insufficient time for adequate fieldwork, rather than the produce of a misconceived theoretical framework. On this basis, it is suggested that further research into the compatability of behavioural and normative techniques, and the relationship between migration and levels of living, would be worthwhile and productive.

Finally, reference should be made to a rather broader objective incorporated in this research. That is, the original funding for feldwork in Japan was provided by the Japanese Government with the aim of promoting understanding of Japanese culture and the Japanese way of life in the Western World. It is hoped, above all, that the completion of this research project is a suitable repayment for the generous help and assistance which the Japan Education Ministry provided, and that this study makes at least some contribution towards meeting this aim.. Whilst this work does not presume to match the spendid accounts already available in Western literature of the geography of Japan (Trewartha, 1965; Kornhauser, 1976) and of Japanese rural society (Beardsley, Hall, and Ward, 1959; Fukutake, 1967; Nakane, 1967; Dore, 1978), it is ventured that some new light is shed on the specific problems experienced in the rural area in Japan as a result of severe depopulation in the post war period. In this sense, it is hoped that this study complements the fine research carried out in remote rural districts of Japan by R.J. Smith (1978) and Palmer (1983), and that sufficient information has been presented on, for instance, the village desertion process, to enable comparisons to be drawn with other parts of the world experiencing rapid industrialization and urbanization.

GLOSSARY

Note on pronunciation

Japanese words can be broken into syllables of one, two, or sometimes three, letters. For correct pronunciation, each syllable should be given equal stress with no appreciable accents within words. Pronunciation of each letter or syllable is always the same with no changes of sound in different words, as in 'rough', 'bough', 'ghost', etc., in English.

Vowels sounds are pronounced in the following fashion:

a	:	cat, mat, bat
i	:	king, bit, sit
u	:	foot, soot, hoorah
e	:	get, met, shed
O	:	box, dock, mop

Vowels sounds are lenghened slightly when a long mark ($\bar{a}$) is written over them.

The following consonant sounds should also be mentioned:

y	:	yet, yak; not: my
g	:	get, got; not: Gerald, George

Glossary of Japanese terms:

Annaizu	:	a guide, a plan (e.g. Jūtaku annaizu: a plan of streets and homes.)
Atotsugi	:	a successor, an inheritor.
Bonchi	:	a hollow, a basin, a (round) valley.
Bunke	:	a branch family, a branch household (c.f. Honke)
Burakumin	:	a racially indistinct, minority group in Japan who were still subject to unofficial discrimination in the 1960s and 1970s.
Chirimen	:	silk crape.
Chitai	:	an area, a region (e.g. Kaso chitai: an area of severe rural depopulation.)
Chō	:	a street, a block, a town(municipality).
Chōsa-ku	:	an enumeration district (for the Population Census).
Daichō	:	a register.
Dekasegi	:	seasonal work in an area away from the home district.
Dōzoku	:	the same family, the same blood, consanguinity.
Furusato	:	one's birthplace, one's native home (espec. in rural areas).
Gun	:	a sub-prefectural district incorporating 'town' and 'village' municipalities.
Hakusho	:	a White Paper.
Heichi	:	a plain, flat land.
Hibachi	:	a brazier (usually charcoal).

<u>Honke</u> : a head house, a head family within the same <u>Dōzoku</u>.

<u>Honseki</u> : one's legal residence, one's permanent domicile.

<u>Ie</u> : a house, a home, one's ancestral family, one's family name.

<u>Jōri</u> : an ancient system of land sub-division, characterised by the rectangular pattern of fields.

<u>Jūmin</u> : inhabitants, residents.

<u>Jūtaku</u> : a house, a residence.

<u>Kamitsu</u> : lit. : 'excessively crowded', urban over-crowding.

<u>Kaso</u> : lit. : 'excessively sparse', severe rural depopulation.

<u>Keihanshin</u>: Kyoto-Osaka-Kobe metropolis.

<u>Kengyō</u> : a side business (espec. with respect to farming).

<u>Kimono</u> : lit. : 'a thing to wear', a traditional Japanese garment.

<u>Kinkō</u> : the suburbs, the outskirts, the <u>environs</u>.

<u>Kokudō-chō</u>: The National Land Agency.

<u>Koseki</u> : a family register, one's parentage.

<u>Kyōkarison</u>: lit. : 'a whole household leaves the village', <u>or</u> : 'all households leave the village'.

<u>Nishijin</u> : a district of Kyoto-city, a type of silk brocade.

<u>Nōgyō</u> : farming, agriculture.

<u>Nōka</u> : a farm household.

Nōrinka : a farm household combining forestry with agriculture.

Nōsanson : a village(municipality) where agriculture and forestry are the main economic activities, a municipality incorporating upland and lowland areas.

Nōson : an agricultural village, a rural community.

Ōaza : a pre-modern administrative unit, often equivalent to an agricultural settlement (espec. in the Kansai region).

Ringyō : forestry

Sanson : a village (municipality or community) in an upland area, where forestry is the main economic activity.

Sengyō : sole economic activity (espec. agriculture.)

Shi : a city(municipality), an urban area (c.f. gun).

Shigai : the inner city, central business district.

Shinden : lit. : 'new rice fields', reclaimed agricultural land.

Shinkansen: lit. : 'new trunk line', the 'Super express' train which runs between Kyushu, Osaka, Tokyo, and Hokkaido.

Son : a village (municipality).

Shūraku : a village (community), a settlement.

Tōchi Daichō : Land register.

Toshi : a city (community), c.f. shi (municipality).

Zaibatsu : lit. : 'a financial clique', a monopolistic, vertically and horizontally integrated trading company.

APPENDIX I

A list of sample settlements and a map of their location.

A 5% random sample of all 'agricultural settlements (nogyo shuraku) in Kyoto and Shiga prefectures was taken for the level of living and net migration analysis in this research. The 168 settlements thus selected are listed below, together with a map showing their location.

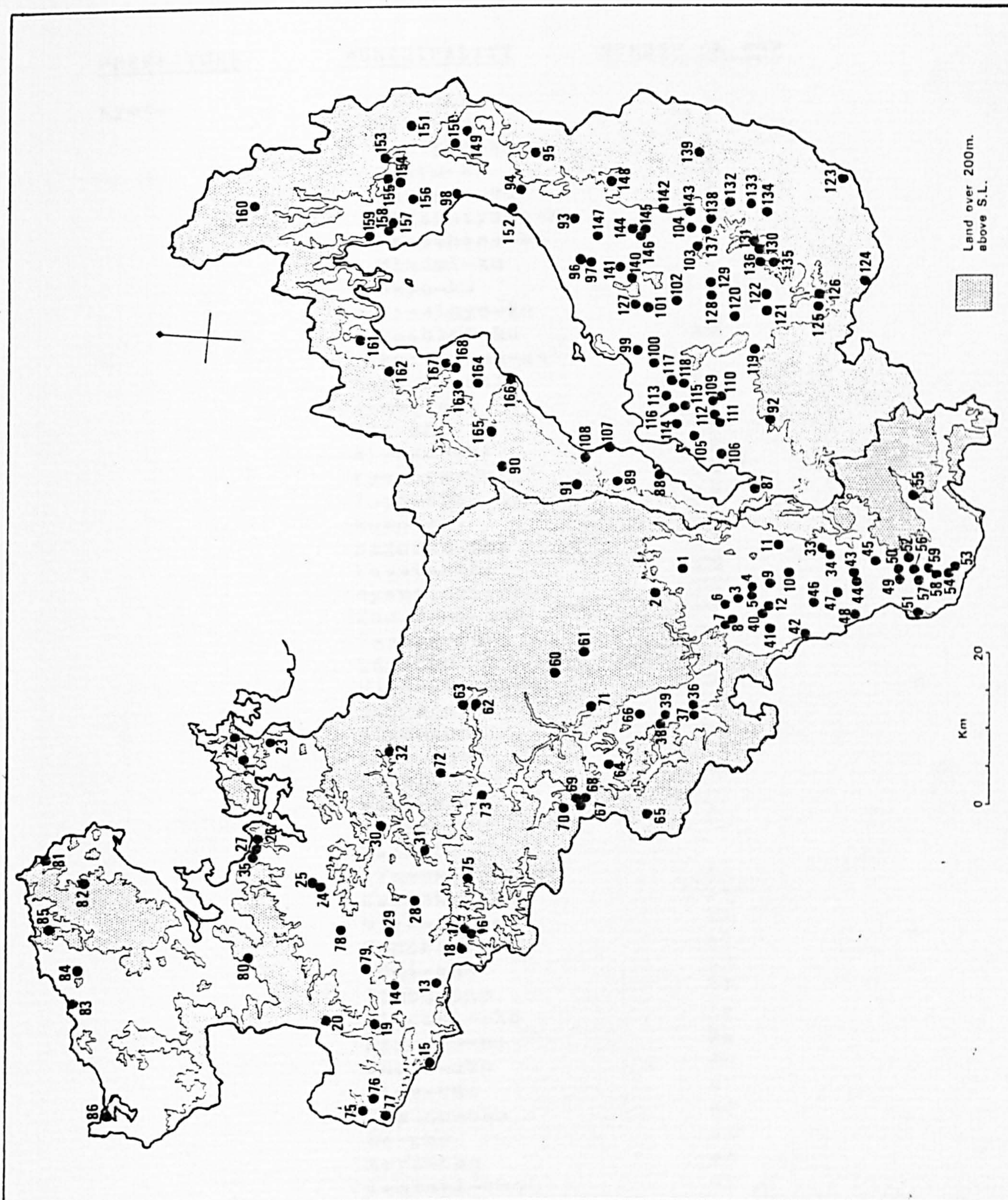
PREFECTURE	MUNICIPALITY	SETTLEMENT NAME	NO. ON MAP
Kyoto	Kita-ku	Ikedono	1
		Himuro	2
	Minami-ku	Shinden	3
		Joraku	4
		Kiyoi	5
	Sakyo-ku	Kori	6
		Matsumuro	7
		Nishi Katsura	8
	Fushimi-ku	Minamibe	9
		Tsuda cho	10
		Nanbu	11
		Amagawa	12
	Fukuchiyama-shi	Morigaki	13
		Ikebe	14
		Hoyo	15
		Ueno	16
		Ikuno	17
		Nakaji	18
		Hino	19
		Shimonojo	20
	Maizuru-shi	Kannonji	21
		Oyama	22
		Too	23
		Yoshinosato	24
		Tomimuro	25
		Higashi Kanzaki	26
		Nishi Kanzaki	27
	Ayabe-shi	Kami Ida	28
		Kajiya	29
		Shimomura	30
		Hashinoue	31
		Kusakabe	32
	Uji-shi	Kohata Hokubu	33
		Kohata	34
	Miyazu-shi	Hamanoji	35

PREFECTURE	MUNICIPALITY	SETTLEMENT NAME	NO. ON MAP
Kyoto	Kameoka-shi	Amarinobe	36
		Amagawa	37
		Haida	38
		Chihara	39
	Muko-shi	Kami Ueno	40
	Nagaoka-shi	Kuryu	41
	Oyamazaki-cho	Oyamazaki	42
	Joyo-shi	Kitato Higashi	43
		Kitato Nishi	44
		Kannondo	45
	Kumiyama-cho	Bonoike	46
		Hayashi	47
	Yawata-cho	Minoyama	48
	Tanabe-cho	Idegakiuchi	49
		Yamamoto	50
		Takafune	51
	Sanjo-cho	Kitamura	52
	Kizu-cho	Totoshi	53
		Seitoshi	54
	Wazuka-cho	Kamatsuka	55
	Seika-cho	Sato	56
		Tani	57
		Sugai	58
		Naka	59
	Keihoku-cho	Yashironaka	60
		Hashimuko	61
	Miyama-cho	Hase	62
		Kami Tsukasa	63
	Sonobe-cho	Jonan cho	64
		Kawachi	65
	Yagi-cho	Aoto	66
	Tamba-cho	Nakahata	67
		Nakamura	68
		Tsuji	69
		Shiodatani	70
	Hiyoshi-cho	Kami Amagawa	71
	Wachi-cho	Hosotani	72
		Kohata	73
	Miwa-cho	Daigashira	74
	Yukuno-cho	Nakata	75
		Oyushi	76
		Ogura	77
	Oe-cho	Itsukaichi	78
		Tsunetsu	79
	Kaya-cho	Kagawa	80
	Ine-cho	Gamairi	81
		Ashitani	82
	Amino-cho	Kaketsu	83
	Tango-cho	Tokumitsu	84
		Kami Ukawamura	85
	Kumihama-cho	Omu	86

PREFECTURE	MUNICIPALITY	SETTLEMENT NAME	NO. ON MAP
Shiga	Otsu-shi	Kitaoji	87
		Ogoto	88
		Shimozaichi	89
		Nukui	90
		Nakadaira	91
		Kiryu	92
	Hikone-shi	Hoze	93
		Kitakoda	94
		Buna	95
		Kanazawa	96
		Norada	97
	Nagahama-shi	Shimosakahama	98
	Omi Hachiman-shi	Obusa	99
		Juo	100
		Tomosada	101
	Yokaichi-shi	Shimohaneda	102
		Omori	103
		Imadai	104
	Kusatsu-shi	Kamidera	105
		Minami Yamada	106
	Shiga-cho	Imadai	107
		Kitafunaji	108
	Ritto-cho	Hachiya	109
		Kosaka	110
		Nakazawa	111
		Kuribara	112
	Chuo-cho	Ochikuboya	113
	Moriyama-cho	Akanoi	114
		Harimada	115
		Naka	116
	Yasu-cho	Nakakita	117
		Gonori	118
	Kosei-cho	Hari	119
		Shimoda	120
	Minakuchi-cho	Shimoyama	121
		Yama	122
	Tsuchiyama-cho	Akebihara	123
	Konan-cho	Kamimasugi	124
		Katsuragi	125
		Fukuwaichiba	126
	Azuchi-cho	Jorakuji	127
	Gamo-cho	Miyai	128
		Ichikodono	129
	Hino-cho	Kizu	130
		Okubo Minami	131
		Hara	132
		Kitabata	133
		Zao	134
		Shimohasama	135
		Nekoda	136
	Eigenji-cho	Ishitani	137
		Ichiharano	138
		Yuzurihao	139

PREFECTURE	MUNICIPALITY	SETTLEMENT NAME	NO. ON MAP
Shiga	Gokasho-cho	Kawanami	140
		Yanase	141
	Aito-cho	Hyakusaiji Bo	142
		Ogura	143
	Koto-cho	Koyagi	144
		Hiramatsu	145
		Shimozato	146
	Toyosato-cho	Yacho	147
	Taga-cho	Ichinose	148
	Santo-cho	Nishiyama	149
		Asahi	150
	Ibuki-cho	Kamitsunami	151
	Maibara-cho	Iso	152
	Asai-cho	Ota	153
		Yamanomae	154
		Ikeoku	155
	Torahime-cho	Oí	156
	Kohoku-cho	Gonotsúbo	157
	Takatsuki-cho	Shigenori	158
		Nishi Atsuji	159
	Yogo-cho	Tado	160
	Makino-cho	Shimo Kaide	161
	Imazu-cho	Ii	162
	Adogawa-cho	Tanaka	163
		Shozakai	164
	Takashima-cho	Hata	165
		Katsuno	166
	Shinasahi-cho	Kawaraichi	167
		Kumanomoto	168

(<u>Appendix I</u>) Map showing location of all sample settlements.



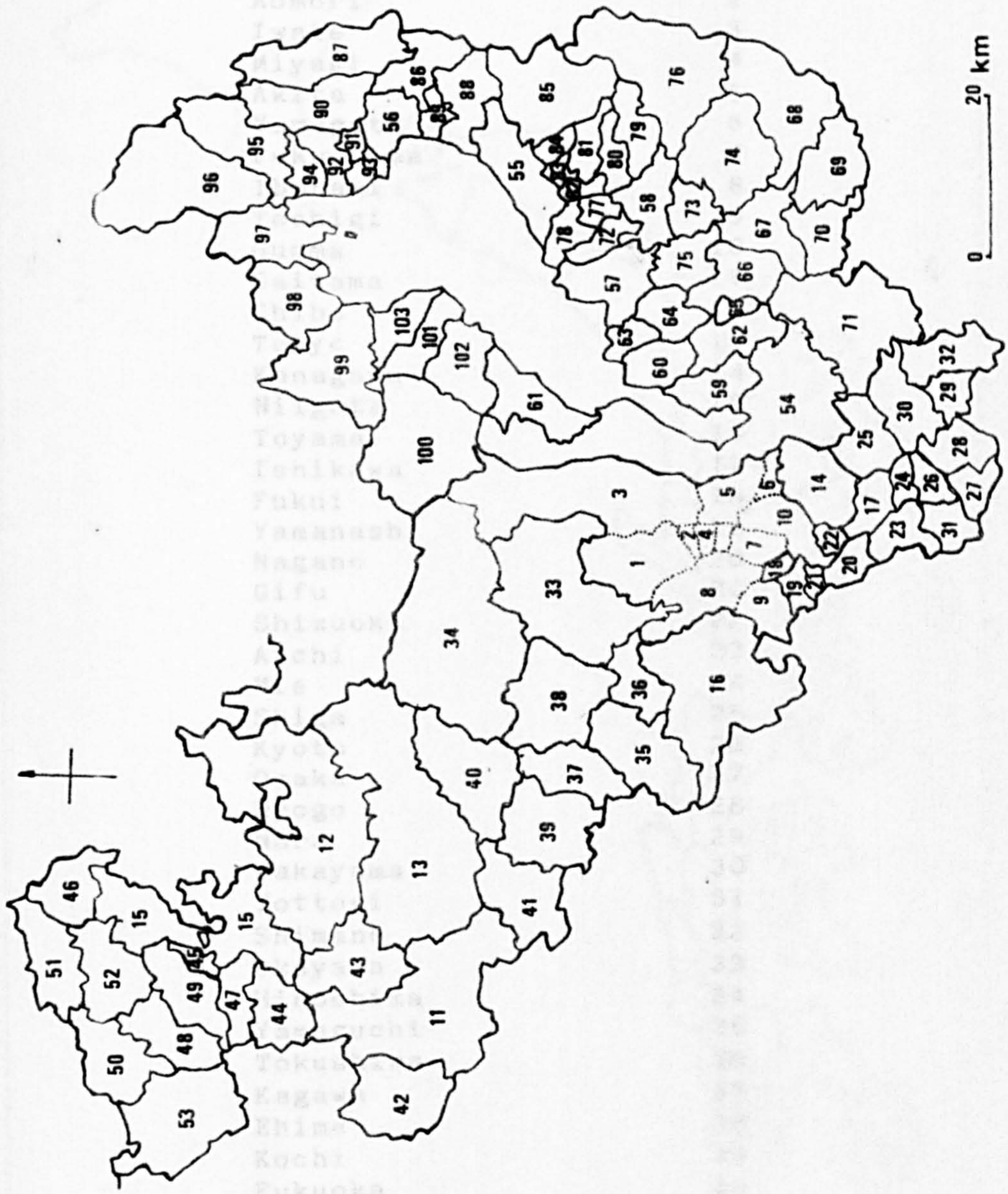
APPENDIX II

A list of all municipalities in Kyoto and Shiga prefectures, and a map showing their relative location.

PREFECTURE	MUNICIPALITY	NUMBER ON MAP
Kyoto	Kyoto-shi	
	Kita-ku	1
	Kamigyo-ku	2
	Sakyo-ku	3
	Nakagyo-ku	4
	Higashiyama-ku	5
	Yamashina-ku	6
	Minami-ku	7
	Ukyo-ku	8
	Nishigyo-ku	9
	Fushimi-ku	10
	Fukuchiyama-shi	11
	Maizuru-shi	12
	Ayabe-shi	13
	Uji-shi	14
	Miyazu-shi	15
	Kameoka-shi	16
	Joyo-shi	17
	Muko-shi	18
	Nagaoka-shi	19
	Yawata-shi	20
	Oyamazaki-cho	21
	Kumiyama-cho	22
	Tanabe-cho	23
	Ide-cho	24
	Ujitawara-cho	25
	Sanjo-cho	26
	Kizu-cho	27
	Kamo-cho	28
	Kasagi-cho	29
	Wazoku-cho	30
	Seika-cho	31
	Minami Yamashiro-cho	32
	Keihoku-cho	33
	Miyama-cho	34
	Sonobe-cho	35
	Yagi-cho	36
	Tamba-cho	37
	Hiyoshi-cho	38
	Mizuho-cho	39
	Wachi-cho	40
	Miwa-cho	41
	Yukuno-cho	42
	Oe-cho	43
	Kaya-cho	44
	Iwataki-cho	45

PREFECTURE	MUNICIPALITY	NUMBER ON MAP
Kyoto	Ine-cho	46
	Nodagawa-cho	47
	Mineyama-cho	48
	Omiya-cho	49
	Amino-cho	50
	Tango-cho	51
	Yasaka-cho	52
	Kumihama-cho	53
Shiga	Otsu-shi	54
	Hikone-shi	55
	Nagahama-shi	56
	Omi Hachiman-shi	57
	Yokaichi-shi	58
	Kusatsu-shi	59
	Moriyama-shi	60
	Shiga-cho	61
	Ritto-cho	62
	Chuo-cho	63
	Yasu-cho	64
	Ishibe-cho	65
	Kosei-cho	66
	Minakuchi-cho	67
	Tsuchiyama-cho	68
	Koga-cho	69
	Konan-cho	70
	Shigaraki-cho	71
	Azuchi-cho	72
	Gamo-cho	73
	Hino-cho	74
	Ryuo-cho	75
	Eigenji-cho	76
	Gokasho-cho	77
	Nodogawa-cho	78
	Aito-cho	79
	Koto-cho	80
	Hatasho-cho	81
	Echigawa-cho	82
	Toyosato-cho	83
	Kora-cho	84
	Taga-cho	85
	Santo-cho	86
	Ibuki-cho	87
	Maibara-cho	88
	Omi-cho	89
	Asai-cho	90
	Torahime-cho	91
	Kohoku-cho	92
	Biwa-cho	93
	Takatsuki-cho	94
	Kinomoto-cho	95
	Yogo-cho	96
	Nishi Asai-cho	97
	Makino-cho	98
	Imazu-cho	99
	Katsuragi-son	100
	Adogawa-cho	101
	Takashima-cho	102
	Shinasahi-cho	103

Appendix II Map showing location of municipalities in Kyoto and Shiga prefectures.

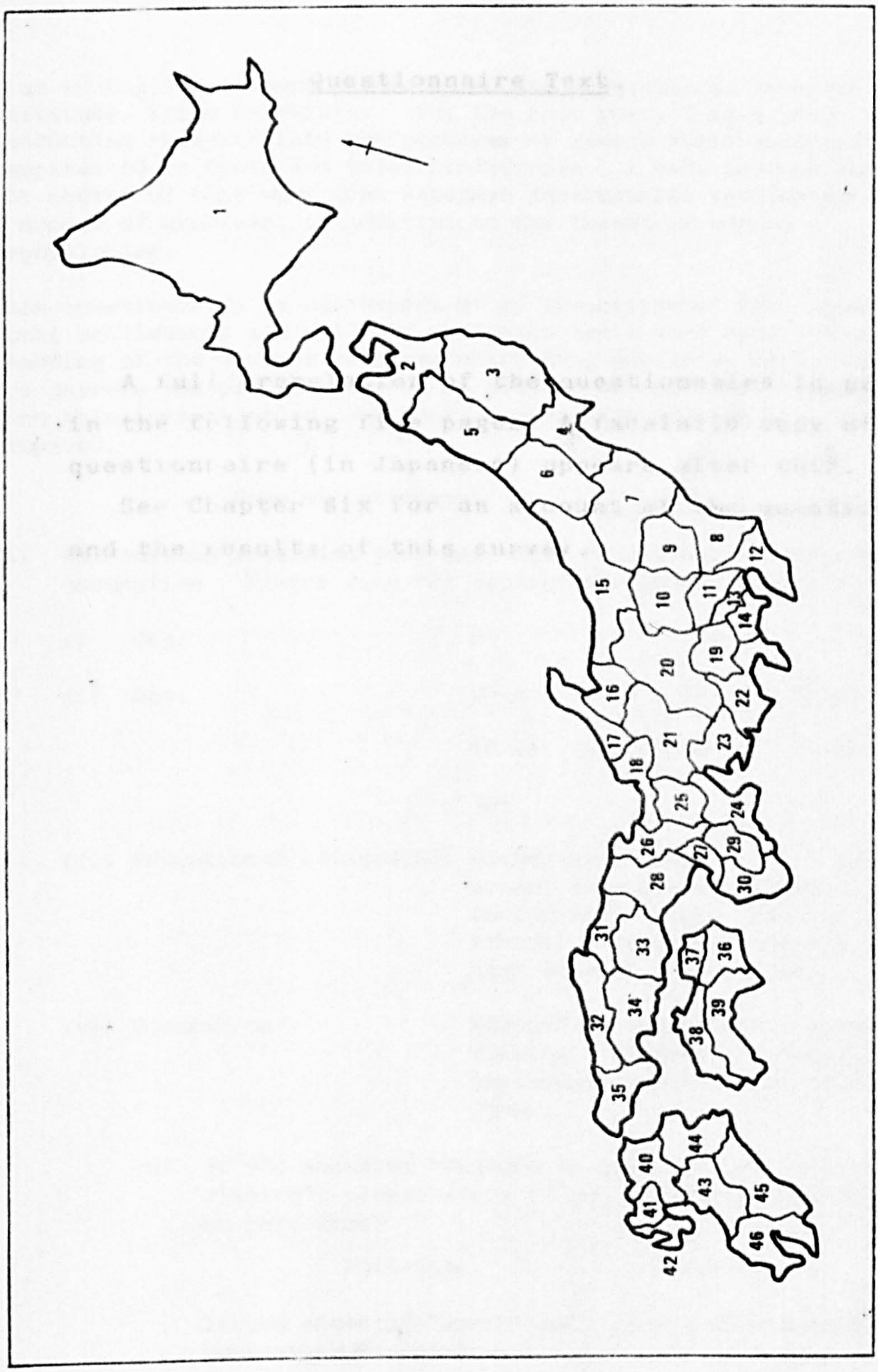


APPENDIX III

A list of all prefectures in Japan and a map showing their relative location.

PREFECTURE	NUMBER ON MAP
Hokkaido	1
Aomori	2
Iwate	3
Miyagi	4
Akita	5
Yamagata	6
Fukushima	7
Ibaraki	8
Tochigi	9
Gumma	10
Saitama	11
Chiba	12
Tokyo	13
Kanagawa	14
Niigata	15
Toyama	16
Ishikawa	17
Fukui	18
Yamanashi	19
Nagano	20
Gifu	21
Shizuoka	22
Aichi	23
Mie	24
Shiga	25
Kyoto	26
Osaka	27
Hyogo	28
Nara	29
Wakayama	30
Tottori	31
Shimane	32
Okayama	33
Hiroshima	34
Yamaguchi	35
Tokushima	36
Kagawa	37
Ehime	38
Kochi	39
Fukuoka	40
Saga	41
Nagasaki	42
Kumamoto	43
Oita	44
Miyazaki	45
Kagoshima	46

Appendix III Map showing location of prefectures in Japan.



APPENDIX IV

Questionnaire Text.

A full translation of the questionnaire is presented in the following five pages. A facsimile copy of the questionnaire (in Japanese) appears after this.

See Chapter Six for an account of the questionnaire and the results of this survey.

Questionnaire

I am an English student presently at the Geographical Research Institute, Kyoto University. For the past year, I have been conducting research into the problems of severe rural depopulation experienced in Kyoto and Shiga prefectures. I have learned during the course of this work that Japanese agricultural settlements face a number of problems, in addition to the threat of severe depopulation.

This questionnaire is one aspect of my investigation into Japanese rural settlements and will aid my search for a more detailed understanding of the various problems which they presently face. Of course, the answers you provide will on no account be used for purposes other than this investigation, and your co-operation will be most gratefully received.

Name of Settlement ______________________

(1) Information regarding your sex, age, educational background, and occupation. Please ring the appropriate answer with a circle

i) Sex: M F

ii) Age:

0-15	16-19	20-24	25-29	30-34	35-39
40-44	45.49	50-54	55-59	60-64	65-69
70+					

iii) Educational background: Elementary school - Junior high school (pre-war elementary school) - Senior high school (pre-war middle school) - Technical college (pre-war high school) - University

iv) Occupation: Engaged in agriculture, forestry, or fishing - Engaged in non-agricultural employment - Housewife - Unemployed - Other.

(a) If you answered "Engaged in agriculture, forestry, or fishing", please state if you undertake this full-time or part-time:

Full-time Part-time

If you answered "Part-time", please give details of your other occupation:

Self employed (running a shop or factory)

Employed by others (in a shop, factory, town office, school, etc.)

Employed by others (in road construction, forestry work etc. on a temporary basis)

(b) If you answered "Engaged in non-agricultural employment", please state if you run your own business:

YES NO

If you answered "YES", please describe the type of business

(e.g. please state whether it is, for instance, a general store, a clothes store, a textile factory, a paper-making business, etc.)

If you answered "NO", please give the following details about your work:

Name of employer

Address

Nature of work

If you are a craftsman, such as a carpenter or plasterer, please provide details about the nature of your work:

(c) If you answered "Other", please provide details about the type of work you do

(d) If you answered "Unemployed", please state which of the following applies to you. (Circle one of the answers with a ring).

Student, or at school

Cannot work due to illness

Wish to work, but cannot find suitable employment

Retired

Other - please specify:

v) Dekasegi (seasonal employment): Have you been engaged in seasonal employment away from home during the last three years?

YES NO

If you answered "YES", please state how many times

Please provide details in the box below about the nature of work you were engaged in, and the location.

Location	Name of firm	Nature of work	Length of time spent working (months)

(II) (a) The following nine items have been identified as features considered to be important with respect to everyday life in rural areas. For each of these items, I would like you to compare the situation in your own village with what you consider to be an ideal environment. Then, if you imagine the ideal environment to be represented by 100 points, how many points would your own village score? Please record these points in the spaces provided.

As an approximate guideline:

76 or more points = extremely good (or extremely convenient)

51 - 75 points = good (convenient)

26 - 50 points = fair (fairly convenient)

26 or less points = poor (inconvenient)

Please choose any value you wish, for example: 22, 47, 63, or 85 points.

(i) How many points would you award concerning the future potential of agriculture and forestry in your village?

(ii) How many points would you award for the availability of non-agricultural (or forestry) employment opportunities in the neighbourhood of your village?

(iii) How many points would you award with regard to the natural environment around your village, including climate, terrain, and the amount of flat land?

(iv) How many points would you award with regard to kindergarten, elementary, junior-high, and senior-high school provision in your village?

(v) How many points would you award for health service provision in your village, including doctor's surgeries, hospitals, and emergency medical facilities?

(vi) How many points would you award for leisure and recreation amenities in your village?

(vii) How many points would you award for your village with regard to convenience for daily shopping, and from the point of view of distance from the town office and agricultural co-operative office.

(viii) How many points would you award your village with regard to the convenience of public transport, such as buses and trains, for the purpose of travelling to a town or city for major shopping trips to supermarkets or department stores.

(ix) In many villages where the number of young people is declining, it is felt that the sense of community involvement also weakens. How does your village score with regard to the 'population question'.?

(II) (b) From the point of view of creating the kind of 'ideal environment' you have just been considering, how much importance do you think should be attached to each of the nine items. Please mark your scores out of 100 points, in the same manner as the previous question. Award high points to those items you consider are extremely important in creating an ideal environment, and low points to those items you believe are not so important.

For example:

76 or more points = extremely important

51 - 75 points = important

26 - 50 points = not so important

26 or less points = unimportant.

(i) The future potential of agriculture and forestry which is carried out in the village.

(ii) The availability of work which is not connected with agriculture or forestry.

(iii) The natural environment, including climate and terrain

(iv) Schools, and educational facilities

(v) Medical provision, including hospitals

(vi) Leisure and recreational facilities

(vii) Convenience for daily shopping, and getting to the town office or agricultural co-op.

(viii) Convenience of public transport for access to towns and cities.

(ix) Population structure.

III Please answer the following questions regarding life in your village.

a) In question II, nine items were listed which are thought to be important with regard to life in rural areas. With regard to the present conditions and future expectations of life in your own village, are there any other features, apart from these nine items, which you consider to be important?

Please write your answer in the space below.

b) In general terms, how do you think life has changed in your village during the past 15 years (i.e. compared to the time when the Tokyo Olympic Games were held)?

(i) Do you think things have:

improved : worsened : remained about the same?

(Please ring one of these with a circle)

(ii) If you answered "improved" or "worsened", please write your specific reasons in the space below.

1.

質問表

私は、京都大学文学部地理学研究室に留学中のイギリス人学生です。私は、これまで1年ばかりの間、主として京都府と滋賀県における過疎問題の研究にあたってきました。調査を通じて、日本の農村が過疎をはじめさまざまな問題をかかえていることを知りました。

この質問表は、こうした私の農村調査の1部をなすもので、日本の農村の諸問題をさらにくわしく知り、解決の途をさぐるためのものです。もちろん御回答いただきましたものは、調査の目的以外には決して使用いたしませんので、なにとぞ御協力くださいますようお願い申しあげます。

集落名：＿＿＿＿＿＿＿＿＿＿

(I)　あなたの性別・年令・学歴・職業についておたずねします。
あてはまるものを ○ でおかこみ下さい。

i) 性別：　男　女

ii) 年令：　0～15　16～19　20～24　25～29　30～34　35～39
40～44　45～49　50～54　55～59　60～64　65～69
70～

iii) 学歴：　小学校、高小・新制中学、旧制中学・新制高校、
旧制高校・専門学校・短大、旧制大学・新制大学

iv) 職業：　主として農林漁業に従事、主として農林漁業以外の業種に従事、
家事労働に従事、なし、その他

a) 〈主として農林漁業に従事〉とお答えいただいた方に、おたずねします。
専業・兼業のいずれでしょうか：　専業　兼業

〈兼業〉とお答えいただいた方に、おたずねします。
兼業の内容おきかせ下さい：
自営兼業　(商店・工場などを経営している)
雇われ兼業 A　(会社・工場・役場・学校などにつとめている)
雇われ兼業 B　(道路工事・山林労働などの臨時的な労働に雇われている)

2.

b)〈主として農林漁業以外の業種に従事〉とお答えいただいた方に、おたずねします。

あなたは、商店や工場などを自分で経営されていますか　：　はい　、いいえ

〈はい〉とお答えいただいた方に、おたずねします。

お店や工場の内容をおきかせ下さい [　　　　　　　]

（タバコ店・衣料店　、織布工場・和紙製造などと具体的にお書き下さい）

〈いいえ〉とお答えいただいた方に、おたずねします。

工場や事務所などに、お勤めの方に、お勤め先とそこでのお仕事の内容をおききします。

お勤め先 [　　　　　　　]（・・会社、・・工場、・・商店などと具体的にお書き下さい）

お勤め先の所在地 [　　　　　　　]（・・市、・・町；・・町大字・・などと具体的にお書き下さい）

お仕事の内容 [　　　　　　　]（印刷工、守衛、一般事務、運転手などと具体的にお書き下さい）

また、大工や左官などのいわゆる職人として働いておられる方は、職種を具体的におきかせ下さい [　　　　　　　]

c)〈その他〉とお答えいただいた方に、おたずねします。

お仕事の内容を具体的におきかせ下さい [　　　　　　　]

d)〈なし〉とお答えいただいた方に、おたずねします。

あなたは、つぎのいずれにあたりますか　（1つに○をつけて下さい）

学生・生徒　、病気のため働けない、働きたくても職がない、隠居　、

その他 [　　　　　　　]（具体的に）

v) 出稼ぎ：過去3年間に、出稼ぎにいったことが｛ある　、ありません｝

〈ある〉とお答えいただいた方に、おたずねします。

過去3年間に何回出稼ぎにいかれましたか　：　[　　] 回

これまでにいかれた出稼ぎ先とお仕事の内容をおきかせ下さい

出稼ぎ先	会社・工場名	お仕事の内容	出稼ぎ期間
府県　市町			カ月
〃　〃			〃
〃　〃			〃
〃　〃			〃
〃　〃			〃

3.

(Ⅱ) a) 農村での生活にとって重要と思われるものを、下の i)～ix) の9項目にまとめてみました。各項目についてあなたがこうなればいいと考えておられる理想的な姿と、お住みになっている集落の現状とをくらべていただきたいと思います。もし理想的な姿を100点満点とすると、あなたの集落の現状は何点にあたると考えられますか。□の中に、その点数を記入して下さい。

なお、一応、76点以上を優（あるいは非常に有望・便利）
51～75点を良（あるいは有望・便利）
26～50点を可（あるいはまあ有望・便利）
25点以下を不可（あるいは有望・便利でない）、
として 22, 47, 63, 85 とかの点数を自由におつけ下さい。

i) あなたの集落でおこなわれている農業や林業などの現状将来性は、何点にあたりますか。

ii) 農業や林業をのぞくと、あなたの集落（とその周辺）での働き口の有無は、何点にあたりますか。

iii) 気候、地形、平地の大きさなどの自然の条件からみると、あなたの集落は何点にあたりますか。

iv) 幼稚園・小学校・中学校・高等学校など学校の点からみると、あなたの集落は何点にあたりますか。

v) 各種の医者、病院、救急施設などの医療の点からみると、あなたの集落は何点にあたりますか。

vi) 娯楽やレジャーなどの点からみると、あなたの集落は何点にあたりますか。

vii) 役場や農協への距離、また日用品の買物などの点からみたあなたの集落の便利さは、何点にあたりますか。

viii) 百貨店や専門店で大きな買物をするときに出かけていく都市へのバス・鉄道など公共的な交通の便からみると、あなたの集落は何点にあたりますか。

ix) 若い人たちが少なくなって、むらの生活がなりたたなくなったり、また不便を感じている集落がありますが、人口の点からみるとあなたの集落は何点にあたりますか。

i)		点
ii)		点
iii)		点
iv)		点
v)		点
vi)		点
vii)		点
viii)		点
ix)		点

4.

b.) あなたのお考えになる理想的な村を作る上で、いまおききした9つはどのように重要性をもつと思われますか。上の質問と同じように、100点満点でお答え下さい。理想的な村を作る上で、非常に重要と思われるものには高い点を重要でないと思われるものには低い点数を記入して下さい。

一応、 76点以上を 非常に重要
51〜75点を 重要
26〜50点を まあ重要
25点以下を 重要でない として自由におつけ下さい。

i) 集落でおこなわれている農業や林業の将来性	i)		点
ii) 農業や林業以外の働き口の有無	ii)		点
iii) 気候や地形などの自然条件	iii)		点
iv) 学校・教育の施設	iv)		点
v) 病院などの医療施設	v)		点
vi) 娯楽やレジャー施設	vi)		点
vii) 役場や農協、日常品の買物の便利さ	vii)		点
viii) 都市への公共交通の便	viii)		点
ix) 人口の構成	ix)		点

5.

(Ⅲ) あなたの集落の生活について、さらにおたずねいたします。

a) (Ⅱ)で、農村での生活にとって重要と思われるものを9項目あげました。この9項目以外にあなたの集落の現状や将来にとって重要なものは何がありますでしょうか。御意見をおきかせ下さい。

b.) 15年ほど前、つまり東京オリンピックが開かれたころにくらべて、全体としてあなたの集落の生活は、どのように変ったでしょうか。

i) 全体として {よくなった、悪くなった、かわりがない} のいずれでしょうか。(1つを ○ でかこんで下さい)

ii) 〈よくなった〉あるいは〈悪くなった〉と答えいただいた方に、おたずねします。そのように判断される理由をおきかせ下さい。

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