Kent Academic Repository

Xie, Aijie (2012) *Changes in social characteristics of former council estates in the City of Canterbury since the introduction of the Right to Buy legislation.* **Doctor of Philosophy (PhD) thesis, University of Kent.**

UNIVERSITY OF KENT

KENT BUSINESS SCHOOL

THESIS FOR PHD IN MANAGEMENT SCIENCE

Changes in Social Characteristics of Former Council Estates in the City of Canterbury since the Introduction of the Right to Buy Legislation

By

Aijie Xie

Contents

Acknowledgements

My first and sincere gratitude goes to my supervisor, Professor Cecilio Mar Molinero, for his guidance, wisdom and encouragement which led me through all the difficulties I have encountered during the completion of this thesis. He has not only been a great supervisor, but also a wonderful mentor and friend.

I would also like to thank the academic and non-academic staff within and outside the Kent Business School, who have supported me in so many ways during the course of my study and research.

I must take this opportunity to thank my parents, Jianjun Xie, my father, and Fengxiao Hou, my mother. They have given me their greatest support and have helped me go through all the difficult times in life.

Finally, I would like to thank the following people who have contributed to this thesis with their greatest friendship, support, encouragement and understanding. The thesis cannot be completed without their contribution.

In alphabetic order of first names:

Bernardo Mendizabal Maric

Claire Baldock

Dr Feng-shuo Chang

Prof John Crawford

Prof John Mingers

Laura Spencer

Nattira Nondhichakorn

Dr Ulrike Richter

Abstract

The aim of this thesis is to explore changes in social characteristics of former council estates in the City of Canterbury, since the introduction of the Right to Buy legislation.

Research on social changes related to the Right to Buy has centred on a series of issues, however, a complete account of the evolution of social characteristics in former council housing areas seems not to have been explored in the literature. For this reason, the thesis intends to trace social changes that have taken place in former council estates, and to examine the changes against the issues discussed in the literature.

Data has been collected from the 1981, 1991 and 2001 UK censuses, which delineate the social characteristics in former council estates before the changes (1981), during the changes (1991) and after the changes (2001). Fifty-one social indicators have been developed to represent the social characteristics being examined. Three data matrices, one for each census, have been constructed to study social change.

Multivariate analysis has been applied to the data. First of all, Principal Components Analysis (PCA) was performed to study the dimensionality of the data, which generated consistent results over the three data matrices. Secondly, Multidimensional Scaling (MDS) has been applied to study the similarities between areas in each data matrix. Property Fitting (ProFit) has been used to interpret the MDS configurations, and to help identify former council housing areas. Lastly and most importantly, Three-way Multidimensional Scaling has been adopted to study social change. The model used is INDSCAL by Carroll and Chang (1970), which generates a common space where the structure of social indicators remains constant. Areas have been represented into the common space by ProFit, in order to reveal the trend of social change over time. The results show that the changes in social characteristics of these former council housing areas are in line with the social changes discussed in the literature, i.e. the sale of council houses has resulted in the residualisation of the council housing sector, the growth of home ownership, social mix within former council estates, and gentrification-induced displacement.

Keywords: council housing, the Right to Buy, social change, multivariate analysis.

Chapter 1   Introduction

This chapter introduces the research background of this thesis, the research question that the study addresses, and outlines the structure of this thesis. It also provides a justification of this study, as well as a brief summary of the contributions that the study makes to the literature.

1.1 Research background

It has been over thirty years since the introduction of the Right to Buy legislation to all UK council tenants in 1980. The policy gave council tenants the right to buy their homes at a substantial discount on the market value, with a simple intention of encouraging home ownership throughout the nation (Jones and Murie, 2006). The scheme was adopted with enthusiasm; many tenants picked up mortgages and bought their houses. However, over time, the Right to Buy sales have had both positive and negative social impact in the UK. On the one hand, over 2.5 million council dwellings have been sold to sitting tenants (King, 2010). These new home owners acquired better opportunities for mobility and employment through tenure transfer, and social mix has been increased in former council housing neighbourhoods (McNabb and Wass, 1999; Munro, 2007). On the other hand, however, large-scale sales of council homes have resulted in a serious social housing shortage, and consequently a growth in homelessness and overcrowding (Jones and Murie, 2006). Privatisation of council housing has also caused the residualisation of the sector (Wilson, 1999), and the subsequent commodification of previous council properties has contributed to the process of gentrification, displacement and social exclusion within and outside previous council housing neighbourhoods (Murie, 1991; Forrest and Murie, 1995).

1.2 Research question

The Coalition Government came into office in 2010 and started a review to look for ways to increase available social housing stock (Stratton, 2010). A consultation addressing this issue was publicised in December 2011 and suggested a raise of the maximum discount provided in the Right to Buy to £75,000 in England, from the current levels of £16,000 – £38,000 (Soady, 2012). The Government announced the aims of this proposal as to promote council house sales which had seen a dramatic decline during the global financial crisis, and to construct more affordable social housing using the money gained from more Right to Buy sales (Insley, 2011; Wintour, 2012).

However, concerns have been expressed in response to this rebooting of the Right to Buy scheme. For example, a financial loss under the new level of discount has been estimated and which, according to the housing charity Shelter, risks diminishing the stock of genuinely affordable social housing for households on low incomes (Insley, 2011; Soady, 2012). Arguments have also been made upon the affordability of council tenants, since only 16% of them are in full-time employment and are likely to be eligible for a mortgage (Insley, 2011). The Shelter also argues that many tenants who exercised their Right to Buy in the past have run into financial difficulties, and some lost their homes; therefore, that it is vital to learn the lessons of the past and make sure that people can truly afford to buy their homes and maintain them into the future under the new scheme (Insley, 2011). This point of argument raises the necessity of taking into account past social impact of the scheme when revitalising the Right to Buy, which requires a complete account of the social changes associated with this scheme over time. Despite the importance of such a consideration, systematic attempt that addresses this matter appears not to have taken place in the current literature. For this reason, this study aims to fill the gap by addressing the following research question:

What is the complete picture of social changes that are associated with the implementation of the Right to Buy legislation?

1.3 Thesis outline

The thesis addresses the research question by following the structure below.

Chapter 2 provides a systematic review on the council housing sector and the Right to Buy scheme. The review begins with the history of council housing in the UK, including its origins, development, and the debate on council house sales before the Right to Buy. This sets out the historical root for understanding the policy, thus is fundamental to this research. The review then goes on to introduce the terms of the Right to Buy published in 1980, its modifications over time, and the social consequences it has had on council housing, owner occupation and residential communities. The research question is derived here in association with the social impact of the Right to Buy and with the revitalising of the scheme under new government proposals. Extant studies on social changes associated with the implementation of the Right to Buy are reviewed in the third section of this chapter. Strands of literature are linked to the research question by discussing their relevance and limitation in the context of this research. Methodological approaches adopted in the extant studies are reviewed and discussed in relation to the methodology applied in this study. Overall, the extensive studies on social changes associated with the Right to Buy provide a comprehensive understanding to the debates around the issue; however, a complete picture of the social changes in urban former council estates associated with the Right to Buy appears not to have been produced in the literature. The thesis therefore aims to fill this gap.

Social change is an abstract and complex concept that cannot be measured directly, therefore in Chapter 3, the concept of social change and the approach to its measurement are discussed. The chapter begins with an introduction to the theory of social change, including

its definition, key characteristics and main causes. It then goes on to elaborate the measurement of social change, i.e. social indicators, from a wider theoretical background involving issues such as operational definition, reliability and validity, to an in-depth review addressing the historical background, the social indicators movement, and the definitions as well as theoretical debates of social indicators. These theoretical foundations of social indicators explain the necessity and extensive use of this approach in studying social change and assessing social policies, therefore this tool has been adopted in this research. To further elaborate the use of social indicators in studies upon social changes associated with the Right to Buy, efforts have been made to summarise the choice of indicators in these studies. Results have been categorised and the relevance of each set of the social indicators to this study has been discussed. Social class is an important social characteristic to this research, thus is reviewed in a separate section.

Chapter 4 explains the work for data collection. First of all, it introduces the area of study, the City of Canterbury, its geographical features and demographic characteristics, and the considerations for choosing this District as the study site. Second of all, the UK census data has been adopted as the source of data. The second section of this chapter explains the reasons why census data has been preferred in this study, with an account of its limitations. Based on the aim of this research, it was decided to use the 1981, 1991 and 2001 census data to trace the evolution of social characteristics in previous council estates before, during, and after the reform. Social indicators were developed from the three censuses, with reference to the review of social indicators adopted in extant studies presented in Chapter 3. In total, 51 social indicators were developed, representing nine social characteristics of residents, households and dwellings. The choice of indicators is explained in regard to their relevance to this research. Data was collected from the three censuses via a web application, and the construction of databases involved a number of activities, e.g. area recoding and matching, data agg-

regation, transformation and cleaning, as well as dealing with missing data. Three databases, one for each census, were constructed for further data analysis.

Chapter 5 demonstrates the work of data analysis and interprets the findings. Based on the characteristics of the data in this study, it was decided to analyse the data in a multivariate analysis context. A number of techniques have been applied in this research with regard to their respective advantages and limitations. The first step of data analysis was to explore the dimensionality of the data, by performing Principal Components Analysis (PCA). PCA is a well-known statistical technique to study the dimensionality of multivariate data. The analysis was applied to each database individually, and the results revealed consistency over the 1981, 1991 and 2001 censuses. This implies a constant structure of the data existed between databases. Based on the PCA results, Multidimensional Scaling (MDS) was applied to study the similarities between areas in each database, in order to identify previous council housing estates from the data. Property Fitting (ProFit) technique was used to interpret the MDS configurations and to study the relationships between social indicators and areas in the configuration. In doing so, previous council housing areas were identified and to be studied for their evolution over time. This led to the last phase of data analysis, to apply Three-way Multidimensional Scaling, in particular the INDSCAL model of Carroll and Chang (1970), to study social change. INDSCAL produces a general model which explains each dataset as a particular case. This approach fits the structure of this study, therefore has been preferred. The model generates a common space which represents the constant structure of social indicators; and by plotting a particular area of successive years into the configuration, the evolution of this area can be traced. By investigating the relationships between this area and the indicators in the common space, the social characteristics of the area and their changes over time can be drawn. This was conducted in combination with area matching and grouping as well as ProFit. The results were investigated and two patterns of social change were found.

Examples of the two patterns are presented and interpreted in the chapter. The findings were found broadly consistent with the extant literature, which confirmed the findings in previous studies.

Chapter 6 concludes this thesis. Research findings are highlighted and linked to the extant literature. Contributions as well as limitations of the thesis are presented, and avenues for further research are introduced.

1.4 Justification of the study

This study is considered relevant for the following reasons. First of all, the Right to Buy has been a controversial scheme since its introduction due to the positive and negative social impact it has generated over time. This research contributes to the wider debate on the legislation an aggregate examination of social impact (both positive and negative) associated with the policy, which brings together evidences on different dimensions of social change to the evaluation of the legislation and its implications. Second, the new Coalition Government elected in 2010 has recently published its proposal on promoting council house sales (Soady, 2012) which experienced a serious decline during the global financial crisis. This proposal raised concerns regarding the loss of affordable social housing stock and the affordability of council tenants based on past experience of the Right to Buy, which brings out the need for a complete account of social changes associated with the scheme, so as to provide lessons of the past to the plans at present. Third, the limitations of certain methodological approaches adopted in investigating social changes and the Right to Buy indicate the need for a novel methodology which deals with three-way data, for example the INDSCAL model of Carroll and Chang (1970) introduced in this research. Finally, the methodologies and findings of this study are likely to be drawn implications to housing policies and (or) other social policies.

1.5 Contributions of the study

This thesis contributes to the literature in three ways. The first and main contribution is the introduction of Three-way Multidimensional Scaling, especially the INDSCAL model by Carroll and Chang (1970), to the investigation of social changes associated with the Right to Buy legislation. The study also contributes to the debate on social change by providing an aggregate account of social changes associated with the implementation of the Right to Buy. The last contribution of this study is made to the assessment and evaluation of social policy, in particular of the Right to Buy legislation, by providing evidences derived from a complete account of social changes associated with the policy.

Chapter 2   Council Housing and the Right to Buy

This chapter provides an understanding to the nature of council housing in the UK, the sale of council houses under the Right to Buy scheme, and more importantly, the social changes that have taken place since the introduction of the policy. The chapter begins with a review of the history of council housing in the UK, involving its origins, development, and the debate of council house sales before the Right to Buy. This section sets out the historical root for council house sales, and the long maturation of the Right to Buy policy. The chapter then goes on to demonstrate the main elements of the new legislation, its increasing complexity over time, and the major social impact it has had on housing tenure and communities. The research question is derived at the end of this section in regard to the discussion on the new government plan of revitalising the Right to Buy. A substantial literature has developed around the social changes associated with the implementation of the Right to Buy, which is summarised in the third section of the chapter. Overall, the Right to Buy has had both positive and negative social impact in the UK. On one hand, over 2.5 million council properties have been sold to sitting tenants (King, 2010); these new home owners gained better opportunities for mobility and employment, and social mix has been increased in former council housing neighbourhoods. On the other hand, massive sales of council houses have resulted in a serious social housing shortage, and consequently a growth in homelessness and overcrowding. Privatisation of council housing has resulted in the residualisation of this sector, and the subsequent resales of previous council properties have contributed to gentrification-induced displacement and social exclusion.

2.1 The history of council housing in the UK (mid-19th century – 1979)

This section briefly reviews the history of council housing in the United Kingdom, based on the summary given by Jones and Murie (2006). It covers the period from the mid-19th century, when state intervention in housing was first introduced in the UK, to 1979, the year before the Right to Buy scheme came into effect. It sets out the origins and development of council housing, as well as the sale of council houses through the period to 1979, with accounts for the housing policies prior to the Right to Buy, patterns of tenure change in the UK, and the debate on council house sales between major political parties. The review forms a fundamental background to the understanding and evaluation of the Right to Buy.

The start of state intervention in housing in the UK can be seen as one of the measures introduced to deal with urban squalor during industrial revolution. "Population growth, migration and rapid industrialisation were not sufficiently catered for by managed town expansion" (Jones and Murie, 2006). Migrants in search of better-paid work and their children born in urban areas formed the main source of population growth. These people had to cram into poor-quality, unsanitary accommodation as a result of a shortage in dwellings, drainage and sewerage supply (Lund, 2006). A threat to the general health soon became a social problem to the central government. Some earliest interventions in public health were introduced to solve the problem. The earliest housing legislation, the Lodging Houses Act 1851, was introduced to provide local authorities with very limited power in housing provision. Subsequent legislation allowed local authorities to clear and improve slums and unfit dwellings. However, without the support by Exchequer subsidies, local authorities could only meet the building cost by charging rents in excess of what poor households could afford. Local authorities did not respond enthusiastically to the legislation and public housing provision made little real impact. By 1914 only 24,000 council dwellings had been built (Jones and Murie, 2006).

The outbreak of the First World War changed the political environment of housing policy in the UK. Due to working-class protests on rent charge, rent control was introduced in 1915 in order to provide tenants with secure tenure and to prevent landlords from extracting higher rents (Lund, 2006). This policy further undermined the private renting sector, the then main provider of working-class housing in the country, which had already seen a tendency of decline. Private landlords had found better opportunities to invest in other markets, therefore reduced their investment in good quality housing. Fear of social unrest because of inadequate housing provision hence resulted in arguments in favour of building high quality, state owned housing.

In 1919, under the slogan of 'homes for heroes who have won the war' (Lloyd George quoted in Gilbert 1970), and to achieve the stability of the state, Exchequer subsidy for council housing was introduced to encourage local authorities' building activities. Local authorities were obliged to make plans to meet housing needs of the working classes and to carry such plans into effect within a set time limit. Council house building began in earnest (Liell, 1981). By 1938, 1.1 million council dwellings had been built, which represented 10% of the total housing stock (Jones and Murie, 2006). Although the policy was considered as transitional and temporary, the new homes were indeed built to high standards. Houses were built in suburban areas, at low densities, and with bathrooms and gardens. A new model of working-class life style had been disseminated throughout the country (Whitham, 1982).

Another social change of this period had been the transformation of the structure of housing tenure. Home ownership and council renting had started to rise while private renting had seen a dramatic decline (Liell, 1981). In 1915, 90% of households were living in private renting sector and the whole of the remainder were home owners. By 1938, only 58% of the total housing stock was owned by private landlords, 32% was owner-occupied (one million rented houses were sold to owner-occupiers between 1919 and 1938), and 10% was owned

by the state. It is noted that during this period the sale of council houses to owner-occupiers was permitted, and a small but significant amount of sales were completed (Jones and Murie, 2006).

The second boost of council housing development appeared after the Second World War. The war created a considerable housing shortage – 458,000 properties were destroyed, 250,000 were badly damaged and nearly 3 million houses were damaged to some extent. In the meantime, the number of households had increased by half a million (Cole and Furbey, 1994; Lund, 2006). The shortage was recorded as 500,000 more than in the period after the First World War (Holmans, 1987). In this context, housing policies were driven by a single objective – to meet the housing shortage. The Labour Government elected in 1945 carried out a large-scale council housing development plan, the housebuilding drive (1946 – 1951), and increased the subsidies for council housing to three times more than in the late 1930s (Cole and Furbey, 1994; Lund, 2006). At the same time, council house sales were prohibited on the grounds that as many houses as possible should be kept available for letting to those most in need of them. In the six years after the War, 1,017,000 dwellings were completed, in comparison with 475,000 after the First World War. Although a greater housing target (4 to 5 million declared by the Government) was not achieved due to economic conditions, higher building costs, and the shortage of materials and skilled labour; the housebuilding drive from 1946 to 1951 did raise the council housing stock by a great amount (Cole and Furbey, 1994).

Besides a relatively high housing output, the promotion of socially mixed communities was another significant advance made by the 1945-1951 Labour Government in its housing plan. The Minister of Health, Aneurin Bevan, raised the issue of segregated communities – where lower income people lived in council houses, while higher income groups lived in houses provided by private builders. He suggested that council estates should contain mixed neighbourhoods with neither class nor income barriers (Cole and Furbey, 1994; Jones and

Murie, 2006). Bevan's vision was reflected in the 1949 Housing Act, which removed the term "working classes" from the purpose of council housing supply, indicating that council housing was to be built to meet general needs, not those of working classes only (Cole and Furbey, 1994). Local authorities were required to build houses to higher standards, with increased space and improved amenities, and to adopt diversified designs to meet the needs of different types of households.

After 1945, the Conservative Party adopted the slogan 'a property owning democracy'. In contrast to Labour's position, they argued that people found satisfaction and stability in owning their properties, and home ownership was the most beneficial form of ownership to the nation (Jones and Murie, 2006). On taking office in 1951, the Conservative Government introduced a series of housing policies to increase home ownership; of which a *general consent*, issued in 1952, enabled local authorities to sell council houses to tenants, and provided them with a clear framework to do so. However, the policy did not obtain much response. Although in 1953, 60% of local authorities were estimated to be willing to sell their properties and 20% were undecided, the number of actual sales completed was negligible (Jones and Murie, 2006). The *general consent* remained unchanged until 1960 with a progress of council house sales much slower than what the Government had expected. Thus in the Housing Act 1961, the *general consent* was revised with some important modifications being made to encourage sales. Between 1957 and 1964, some 16,000 council homes were sold (Murie, 1975).

Despite the promotion of home ownership, due to population growth and the urgent need for more housing, large-scale council housing construction was still carried forward in the early years of the Conservative Government, although with reduced standards and costs. From 1952 to 1956, 939,000 council dwellings were constructed (Cole and Furbey, 1994). From the mid-1950s, public housing policy shifted the emphasis towards slum clearance;

subsidies for local authorities to build houses for 'general needs' were withdrawn, and private building activities were encouraged. The Government was tentative to apply free market principles to housing and to stimulate the private rented sector, thus council house rents were increased and state housing was mainly built for the urban poor. However, this policy did not achieve its aim while worsening the already tarnished reputation of the private rented sector[1]. In order to help solve the housing problem, 'general needs' subsidies were restored in 1961 (Lund, 2006).

Another housing experiment performed by the Conservative Government after 1956 was the construction of high-rise buildings. Although the building of council houses for 'general needs' was reduced by the Government, high-rise housing was encouraged as it was regarded as a way to build housing units quickly. The enthusiasm for high-rise buildings lasted until 1968 when seven people were killed in the collapse of Ronan Point – a high-rise block of flats in London (Lund, 2006). This housing experiment was thus seen as damaging to the council housing sector.

In order to achieve social and economic balance, the Labour Party at this stage had started to establish their support for home ownership. The new Labour Government (1964 – 1970) identified its 'primary job' as building houses to let, while in the meantime promised to offer certain amount of new buildings for sale. "The balance between building for letting and building for owner-occupation was based on 'acute social need' and consideration of demand for purchase." (Jones and Murie, 2006) Houses were built to better space and amenity standards in this period. In order to stimulate home ownership, the Government reduced the

---

[1] In 1957 the Conservative Government relaxed rent controls in private rented sector. Rent decontrol failed to increase private renting, but generated a political storm, as a small number of private landlords attempted to secure vacant possession via vicious tactics and abuses. – See 'Rachmanism' in Lund (2006), p32.

interest rate on mortgages and modified tax relief subsidy to benefit owner-occupiers. The *general consent* issued in 1961 was also maintained.

Although Labour was actively in favour of selling council houses at this point, sales were restrained to the situation that local authorities must meet the demand for council house renting first. However, due to increased Conservative influence, local enthusiasm for council house sales shot up[2], and the rate of completed sales "had reached a point incompatible with the stated position of the Government" (Jones and Murie, 2006). As a result, a Circular was issued in 1968 limiting council house sales, and observing that massive sales would seriously affect local authorities' ability to meet housing needs. The *general consent* in 1961 was revised as well, with a quota system limiting the amount of council dwellings to be sold per year in major urban areas.

During its years in opposition the Conservative Party had developed a new social and economic policy package. The main purposes were to reduce state intervention, and to apply demand and supply mechanisms in an open market. On its return to office in 1970, the Conservative Government immediately removed the restrictions on council house sales introduced in 1968. Council house sales were designed as part of the new policy package to increase owner-occupation. The Government believed that by selling council houses to the tenants who were willing and able to buy them, more housing resources would be released; they believed that because of the forces of supply and demand, people on housing waiting lists would benefit more from the sales than "by waiting for existing tenants to vacate their homes" (House of Commons Debates 1970). Consistent with this, the Government increased the discount for purchasers from 20% to 30% of the market price, so that to increase opportunities for council tenants to purchase their homes (Murie, 1975). To further enforce coun-

---

[2] Council house sales went from 4,867 in 1967 to 9,979 in 1968 (Jones and Murie, 2006, p23, Table 2.3).

cil house sales, any local authority which refused to sell council properties were compelled to do so.

However, the policy did not achieve the effects it intended. Instead of freeing the market and releasing the forces of supply and demand, a general rise in house prices and increase in interest rates had taken the value of dwellings beyond a level which many tenants could afford to buy. The demand for purchase had declined and "local authority house waiting lists had lengthened alarmingly" (Murie, 1975).

In the 1974 general election, the Conservative spokesman, Margaret Thatcher, promoted a bill to enforce council house sales. The legislation was to give council tenants three or more years of standing the right to buy their homes at one-third less than market values. However, at a time when 30,000 newly built council houses were still unsold (Murie, 1975), it was hard to believe that tenants would like to buy even with a considerable discount. The policy was deemed as decreasing rather than increasing tenants' demand for buying council dwellings. "The Right to Buy as offered in 1974 failed to appeal sufficiently to the electorate and Labour won the election." (Jones and Murie, 2006)

The new Labour Government elected in 1974 carried out a series of measures to increase council house output. They abandoned the Conservative Government's approach, took development land as public owned, and provided additional funds for council house building. Their support for owner-occupation was extended and embodied in the Housing Act 1974, which represented a consensus between the two parties. However, the particular elements in Labour's policy, especially over the expansion of council housing, were in contrast with the fundamental opinion of the Conservative Party. In the first year of the Labour government, local authorities bought over 9,000 new dwellings from private developers. Municipalisation of older dwellings was another important extension of the public housing sector (Jones and

Murie, 2006). In the early stage of the Labour Government, these actions resulted in a significant increase in housing expenditure.

In late 1976, big cuts in public expenditure were performed due to the agreement made with the International Monetary Fund and a stricter system of expenditure control. A government housing review published in 1977 concluded the growing popularity of owner-occupation, and Labour's traditional faith in council housing being completely transformed to the support for home ownership. Thus, "the council building programme was cut back … Improvement grants were scaled back and the policy of bringing private landlords into the social sector was curtailed." (Lund, 2006) Council house building fell from 110,000 in 1975 to 47,000 in 1979 (Newton, 1994).

The growth of council housing since 1919 had greatly changed the social and political environment in the UK. The collapse of private landlordism and the destruction caused by two world wars enlarged the role of the council housing sector. Meanwhile, the growth of council housing had also contributed to the growth of home ownership, since a significant amount of council dwellings were sold to owner-occupiers and sitting tenants over the years. Between 1938 and 1960 the council housing sector saw its highest growth, but by 1980, low rates of building and high rates of council house sales resulted in a decline in council renting for the first time since 1919 (Jones and Murie, 2006).

Over sixty years of council housing development, a variety of dwellings has been produced. Council building adopted non-traditional building techniques and different planning layouts. Dwellings built to higher and lower standards, slum clearance buildings, high-rise buildings, converted or improved buildings, non-traditional dwellings with design faults, and dwellings in isolated locations, all formed the council housing sector and influenced its public image. Except high-rise buildings in metropolitan areas, "in most towns council hous-

ing consisted of traditional houses with gardens and the image of council housing was not that of the ghetto for the poor and the newcomer" (Jones and Murie, 2006).

By the 1970s, the expansion of owner-occupation could no longer be accomplished via new buildings and transfers from the private rented sector. "For the first time support for the expansion of home ownership and council housing were in conflict." (Jones and Murie, 2006) The economic and political environment fostered proposals for the privatisation of council housing in order to encourage home ownership, which continued to be the major tenure, therefore a major feature of social policy.

2.2 The Right to Buy

On coming into power in 1979, the Conservative Government introduced, in the *Housing Acts of 1980*[3], a statutory Right to Buy to council tenants. The legislation gave tenants the right to buy their homes at a substantial discount on the market value. Many took up mortgages and bought their houses. Over time, there have been a number of changes made to the Right to Buy, with the purpose of increasing council house sales and later on limiting the negative impact caused by the scheme. However, these changes have also introduced complexity to the policy and added confusion to tenants' rights. This section reviews the aims, elements and changes of the Right to Buy, as well as the impact the policy has had on British society.

2.2.1 The new legislation

The statutory Right to Buy did not introduce council house sales in Britain; instead it was a pursuit of legislative action to introduce a new framework for the sale of council houses in the state, and to replace the previous *general consent* with more generous terms

---

[3] The Housing Act 1980 in England and Wales and the Housing Tenants Rights Etc. (Scotland) Act 1980 (Balchin and Rhoden, 2002, p188)

for purchasers. The aims of the legislation were rather simple: it was designed to increase home ownership, and to increase the opportunities for council tenants to buy the homes they lived in. When issues were raised regarding "an estimated long-term financial loss", "a detriment to the total housing stock", "a deprivation of homeless people from getting suitable accommodation" (Balchin and Rhoden, 2002) and so on, the Government's response was to dismiss these concerns. They believed that the simple intent of the policy would not have adverse impact on other sectors. In consequence, the Conservative Government adopted the Right to Buy scheme with enthusiasm.

Jones and Murie (2006) summarised the main elements and innovations of the new policy as follows:

- *A statutory Right to Buy replaced local discretion and applied to almost all secure tenants with three years' tenancy and to almost all properties where the landlord was a council, new town, non-charitable housing association or other public sector body (with the exception of some dwellings for the elderly or disabled and some other lesser categories).*

- *A statutory procedure for sale was laid down to limit local variation over implementation of the Right to Buy.*

- *Strong powers were established for the Secretary of State to monitor and intervene in local administration of the scheme.*

- *A new basis for establishing the price at which sales would occur was established. This was based, as under discretionary policies, on valuation less fixed rates of discount. These were now to be linked to the number of years of tenancy in any council or other relevant dwelling. The discounts were those introduced in the general consent of 1979 and rose from 33% (for three*

years' tenancy) by 1% for each additional year of tenancy up to a maximum of 50%.

- *Discounts were to apply even where no pre-emption clause or other restriction existed. The only disincentive to early resale related to repayment of discount (reduced by 20% of the total for every complete year of residence) if resale occurred within five years.*

- *Detailed procedures in relation to valuation, appeal against valuation, cost floors[4] and maximum discounts were generally regarded to have been very favourable to the potential purchaser rather than the landlord.*

- *The scheme included the legal right to a mortgage and the powers of the Secretary of State to determine procedures (for example multiples of income and age limits for mortgage qualification) to govern local implementation; and the freezing of valuations and a deferred purchase scheme under which the Right to Buy could be carried out at the current price for up to two years.*

- *In designated rural areas a locality condition or pre-emption clause could be adopted and purpose-built elderly persons' housing was excluded from the Right to Buy.*

The policy package was designed to be uniform. It applied to houses as well as flats. It was highly publicised, and the expectation of increases in rents made the policy more attractive. Between 1980 and 1982, 290,874 council dwellings were sold to sitting tenants in Great Britain; by 2007, over 2.5 million council homes had been sold, accounting for 40% of the total council housing stock (King, 2010). Financially, a new subsidy system was introduced, in which the funds for council estates building programmes were substantially reduced.

---

[4] The cost floor rule, limits the discount one tenant can get when purchasing a council property under the Right to Buy. Broadly it means the discount cannot reduce the purchase price below the set cost floor. (Wilson, 1999, p18)

Consequently, the decline of council housing stock was accelerated. The planned increase in rents was also an encouragement to council house sales.

2.2.2 The changing face of the Right to Buy

Since 1980, there have been a number of modifications made to the Right to Buy by subsequent Governments. From 1980 to 1997 under the Conservative Government, amendments were mainly made to extend the system with more generous terms in order to increase council house sales. However, changes between 1997 and 2010 under the Labour Government were more restrictive, featuring a substantial reduction in the maximum discount available to tenants who would like to exercise their Right to Buy. What set off as a simple and uniform policy has become complex and selective. Principal changes made by the Governments are summarised below (Malpass and Murie, 1994; Wilson, 1999; Jones and Murie, 2006; King, 2010; Stratton, 2010).

The *Housing and Building Control Act 1984* extended the scope of the Right to Buy to 50,000 additional tenants of properties held on a long lease by public authorities (Wilson, 1999; Jones and Murie, 2006). The residence qualification period was reduced from three years to two years; and the maximum discount was increased from 50% to 60% (Wilson, 1999). Tenants gained the right to purchase a shared ownership lease; and the powers of the Secretary of State to intervene were improved (Wilson, 1999). The *Housing Act 1985* consolidated the Right to Buy legislation. The *Housing and Planning Act 1986* introduced more generous terms on the purchase of flats, with an increased discount starting from 44%, rising by 2% per year to a maximum of 70% (Jones and Murie, 2006).

The *Housing Act 1988* changed the cost floor provision so that it only applied to dwellings provided less than eight years before the date of sale (Wilson, 1999). Restrictions on the sale of properties for the disabled were removed (sheltered schemes remained exempt),

and a compensation scheme was introduced to the tenants whose landlords unreasonably delayed in implementing the Right to Buy (Wilson, 1999). One restriction came with the *Housing Act 1988*, which removed the Right to Buy for all new housing association tenants. The reason for doing so was largely to ensure the use of private finance would be viable, as some private financiers had concerns about lending money for housing association development, whilst the tenants could buy the assets after a short period (King, 2010).

The *Local Government and Housing Act 1989* removed restrictions on the sale of dwellings for the elderly, where these dwellings were first let after January 1990 (sheltered housing remained exempt) (Wilson, 1999). The *Leasehold Reform, Housing and Urban Development Act 1993* introduced the Rent to Mortgage scheme to tenants who wished to buy but could not obtain appropriate finance (Wilson, 1999; Jones and Murie, 2006). This scheme allowed them to buy their homes on a mortgage with repayments at around the same level as their rents (Wilson, 1999). Instead, the right to a mortgage from a local authority, the right to acquire on shared ownership terms, and the right to defer completion for up to two years while the price payable for the property remained fixed, were all abolished (Wilson, 1999). The *Housing Act 1996* provided a statutory right to buy (the Right to Acquire) to assured tenants of housing associations, subject to certain exclusions (Wilson, 1999).

A new Labour Government came into office in 1997 confirmed its support for promoting home ownership, and was committed to maintaining the Right to Buy scheme (Jones and Murie, 2006). However, over time, the Government did seek to modify the policy by introducing more restrictive terms. The Government was concerned with improving value-for-money, which resulted in modifications to the cost floor rules to include repair and maintenance costs as well as other expenses incurred over a ten year period (Jones and Murie, 2006). Moreover, changes to the maximum discount rules for the Right to Buy were also introduced. The maximum discount available to tenants was reduced from £50,000 to a range between

£22,000 (in the North-East) and £38,000 (in London) (Jones and Murie, 2006). In 2003, a further selective reduction in the maximum discount was implemented, so that in all but the most expensive areas of South-East of England and London (where the discount of £38,000 was kept), discounts were reduced to a maximum of £16,000 (Jones and Murie, 2006).

The *Housing Act 2004* introduced further restrictions to the Right to Buy, including an extension of the qualifying period from two to five years, an extension of the discount re-payment period after sale from three to five years, and additional measures related to sales (Jones and Murie, 2006). In June 2009, the Government announced that it would consult on whether local authorities should keep all the capital receipts from Right to Buy sales (King, 2010). In September 2010, the Coalition Government started a review of the Right to Buy scheme, in order to look for ways to increase available social housing stock (Stratton, 2010). A consultation addressing this issue was then published in December 2011, suggesting a rai-se of the maximum discount provided in the Right to Buy to £50,000 in England; and a fur-ther increase to £75,000 has been under consideration since March 2012 (Soady, 2012). The main purpose of this new government plan was stated to be building more affordable social housing by using the money gained from more Right to Buy sales (Wintour, 2012).

All these policy changes presented above have incrementally created a much more complex situation to the Right to Buy. Instead of a simple and uniform system introduced in 1980, the Right to Buy has now become more complicated, with different rules and regula-tions regarding discount levels for houses and flats, maximum discounts for different regions, and arrangements for taking into account the cost floor. Tenants' rights have therefore be-come fragmented and confusing, with considerations of the type of property a tenant lives in, who the landlord is, which country and region (and the type of the region) this tenant lives in, what history of ownership this property has been, and so on.

The purpose of the restrictions made to the Right to Buy has been to limit the negative impact of the policy, especially on the social housing sector. However, the majority of council house sales took place in the 1980s – before these restrictions were introduced. The aim of the Right to Buy is about encouraging working-class households to become owner-occupiers, however, problems with affordability (where low-income households could not cope with increasing interest rates and falling house values during economic recessions) and homelessness (where social housing waiting lists have been growing) have brought certain groups, such as the National Housing Federation and some politicians, to question such an aim (Beattie, 2008; King, 2010). They argue that the state should be providing more social housing instead of allowing it to be reduced by the Right to Buy; that the programme can be seen as privileging to some households who were once in serious housing need, but now are receiving a reasonable income (King, 2010). In retrospect, the implementation of the Right to Buy over the last thirty years has had profound impact upon British society. Below is a review of the major issues.

2.2.3 The social impact of the Right to Buy

Social changes have taken place since the introduction of the scheme, in the council housing sector, the home ownership sector and residential communities in the UK. On one hand, over 2.5 million council dwellings had been sold between 1980 and 2010 (Wilcox and Pawson, 2011), which resulted in a significant decline in council housing stock. The social housing sector has therefore changed its role from housing working-class families, to accommodating the economically-inactive households (Jones and Murie, 2006). On the other hand, home ownership has experienced a rapid growth simultaneously. Subsequent resales of former council dwellings have introduced new social characteristics to previous council estates (Forrest et al., 1995). However, in the meantime, influxes of middle-class households into these areas (gentrification) have also resulted in a number of social problems, among which

gentrification-induced displacement has been identified as the most significant one (Lyons, 1996).

Numbers of dwellings sold

Between 1980 and 2010, there were over 2.5 million Right to Buy sales in the UK. Numbers of such sales in Great Britain are presented in Table 2.1.

Table 2.1 shows that council house sales rose dramatically in the early years of the Right to Buy policy, with a peak of 204,329 in Great Britain in 1982. Numbers did then fall to a relatively low figure in 1986 but started to rise again from 1987, and reached a second peak in 1989, which was slightly lower than that of 1982. This was consistent with the increase in discounts and reduction in qualifying periods introduced by the Conservative Government between 1984 and 1986. The economic recession in the late 1980s and early 1990s and the increase in interest rates over this period resulted in a serious decline in sales, which fell to a rate of 49,277 in 1996. The following election of the Labour Government in 1997 caused some fears of the restriction or even termination of the Right to Buy (King, 2010), which resulted in an increase in council house sales. However, due to the reduction in discounts and more restrictive terms introduced in 2004, Right to Buy sales started to decrease; by 2006 the number of council houses sold per year went even lower than that in 1996. The global financial crisis started in 2007 and the related changes in interest rates has had a great impact on the housing market, which can be reflected through the dramatic decline in council house sales between 2007 and 2009. The number of sales slightly rose in 2010, but was still considerably low under the continuing impact of this great recession.

Table 2.1: The Right to Buy sales

Year	England	Scotland	Wales	Great Britain
1980	55	2,157	0	2,212
1981	66,321	10,096	7,196	84,333
1982	174,697	13,544	16,088	204,329
1983	120,659	17,321	9,088	147,208
1984	86,315	15,248	5,650	107,213
1985	78,433	14,473	5,622	98,328
1986	77,144	13,322	5,420	95,856
1987	86,845	18,594	5,609	111,048
1988	132,980	31,480	9,605	174,065
1989	144,754	38,443	12,753	195,950
1990	96,729	32,535	6,487	135,751
1991	53,462	22,694	3,503	79,659
1992	42,280	23,521	3,823	68,624
1993	42,034	19,787	2,814	63,635
1994	45,875	21,128	3,132	70,135
1995	34,553	16,636	2,369	53,558
1996	34,161	13,023	2,093	49,277
1997	44,375	17,369	2,632	64,376
1998	44,256	14,948	2,614	61,818
1999	58,462	14,227	3,466	76,155
2000	61,956	14,935	3,522	80,413
2001	58,955	14,095	3,446	76,496
2002	68,996	17,343	4,288	90,627
2003	85,934	20,698	6,924	113,556
2004	67,160	15,203	5,063	87,427
2005	36,353	13,033	2,090	51,369
2006	24,190	10,471	1,366	36,028
2007	16,410	8,790	1,017	26,217
2008	5,590	5,784	331	11,705
2009	2,410	2,151	110	4,671
2010	3,690	2,134	182	6,006
Total	**1,895,904**	**494,983**	**138,163**	**2,529,045**

Source: Wilcox (1999; 2008); Wilcox and Pawson (2011)

Council housing stock

The combination of the Right to Buy and a wider policy package (such as the reduction in council housing investment and real increases in rents) led to a dramatic decline in council housing stock in the 1980s, both numerically and proportionately. As council house sales have disproportionately been of better-quality dwellings and of family houses with gardens, the remaining stock has become considerably smaller, consisting of a higher proportion of flats, acquired older properties and other non-traditional dwellings. The standards of these dwellings also differ, including some with severe design faults and (or) with little consumer appeal (Jones and Murie, 1998). The council housing stock has now a significantly different image than in the past.

A most obvious impact of the smaller council housing stock is on the ability of local authorities to house the homeless and those registered on housing waiting lists. Initially the impact on access to council housing was minimal, as the Right to Buy purchasers tended to be older tenants who expected to stay in their homes for the rest of their lives. However, the subsequent resale of former council houses on the open market resulted in these properties being occupied by home owners, instead of those who would have been allocated such housing had they remained as council stock (Wilson, 1999). In the long term, there has been a shortage of social rented housing during the implementation of the Right to Buy. On the one hand, the number of lettings to existing council tenants has fallen more than half since the early 1980s; on the other hand, a growth of one person, multi-person and lone parent households since the 1970s resulted in increasing demand for council housing (Jones and Murie, 2006). By 2010 there were 4.5 million people (1.8 million households) on council housing waiting lists (Stratton, 2010). Meanwhile, a rising number of homelessness has also suggested an increasing difficulty to access social housing. Consequently, local authorities have to

seek private renting to house the homeless. These temporary accommodation units are very often over-crowded and with poor housing conditions (Jones and Murie, 2006).

Residualisation

Another significant impact of the Right to Buy policy on the council housing sector is the process of 'residualisation', a social change where substantial numbers of economically active households have been removed from the sector and the stock of desirable housing has been diminished (Wilson, 1999). Residualisation is reflected from the changed profile of council tenants. Before the introduction of the Right to Buy, the majority of council tenants were middle-aged, skilled manual workers in full-time employment; twenty-five years later, it was found that the predominant council tenants were the elderly and the young on low incomes (Jones and Murie, 2006). An increasing amount of tenants who were homeless have also contributed to the residualisation of the sector. In *Reviewing the Right to Buy* (1999) Jones and Murie conclude:

> *As more affluent tenants have bought properties and left the sector, so the sector which remains has a narrower social base with a higher proportion of low-income households and those dependent on welfare benefits. It has become more strikingly a tenure of younger households and older people. The traditional role of council housing in housing families with children has become less evident. The social rented sector as a whole is now smaller and has a different geography than in the past. Regionally and locally, social rented housing is most plentiful in areas where there has been a loss of employment and where demand for labour is low.*

The residualisation of council housing has changed people's view towards the sector. In the long term, council housing areas have tended to become transitional neighbourhoods. Council tenants often move on after a short period and the turnover of properties is high.

Home ownership

Right to Buy sales have not only affected the public housing sector, but also have generated a great impact on the home ownership sector. Between 1980 and 2010-11, owner-occupied households increased from 9.7 million to 14.5 million in the UK (Figure 2.1). Analyses have shown that most of this growth was attributed to Right to Buy sales (Jones and Murie, 2006). In some localities such as new towns, the contemporary owner-occupied sector is actually composed of previous council estates. Whereas, it is worth mentioning that the transfer of ownership under the Right to Buy only changes the tenure of a property; it does not affect the social characteristics of the neighbourhood as it is the same households living in the same dwellings. It is in the next phase, at resale, when social changes in former council estates start to take place.

Figure 2.1: Housing tenure in the UK, 1980 to 2010-11
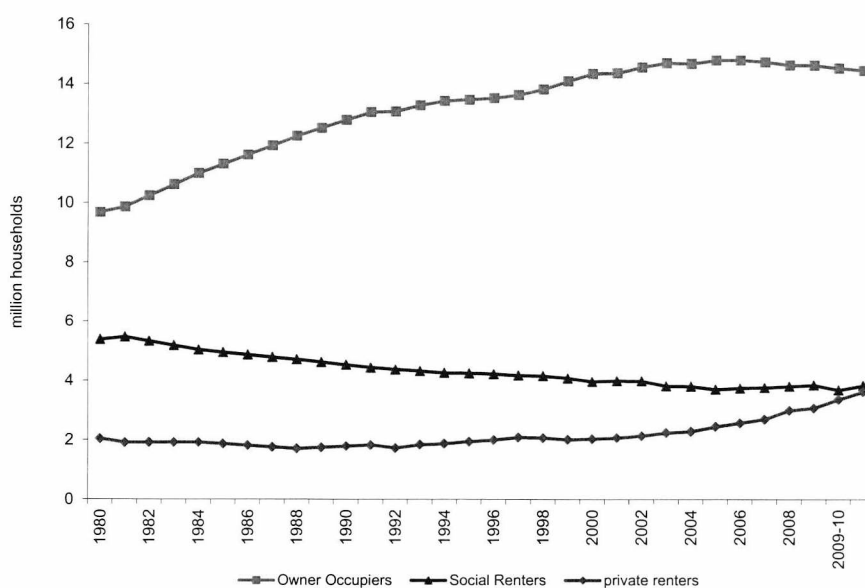
Source: Communities and Local Government (2012)

Resale

Resales of previous council houses started to appear in the mid-1980s (Pawson and Forrest, 1998). Some better-off households seeking to move up the housing ladder (in terms of a better property and a more attractive area) began to trade their former council houses on the open market (Pawson and Forrest, 1998). The study done by Pawson and Forrest (1998) found that the majority of vendors were older people and their main reason for moving was to live in a larger property; a relatively small proportion of vendors wished to move to a smaller dwelling; and that discounting households forming for the first time, most resale purchasers were also interested in moving to a better home, who tended to be younger families and many of them were already home owners. In general, resales of former council properties consisted of better value houses in the most desirable locations (Pawson and Forrest, 1998).

The differences between the characteristics of sellers and those of buyers in resales have impact on the social and demographic mix at the neighbourhood level. Forrest *et al.* (1995) found that the typical resale purchasers were younger couples with or without children, with at least one person in full-time employment (skilled manual, professional or managerial), and about half of them were home owners already. This shifting structure of neighbourhoods has contributed to the increased rates of economic activity, employment and social mix in previous council estates.

As former council dwellings became more and more popular on the market, along with employment and income growth, prices of earlier council houses began to increase in the late 1980s. The Government introduced a deregulated financial system which offered a greater availability of mortgages against the enhanced value of former council properties. As a result, as Stephens *et al.* (2008) argue, significant amounts of cash were released into the economy, which built up inflationary pressure; when the inflation became apparent, the Go-

vernment responded by rapidly increasing interest rates, which generated the recession from the late 1980s to the mid-1990s in the UK. The recession resulted in an affordability crisis, particularly in the higher house price areas such as South of England (Pawson and Forrest, 1998; Stephens *et al.*, 2008). Some households who had owned their homes under the Right to Buy or through the resales, could not afford their mortgage repayments, and therefore had to sell the properties they had just bought. During this period, dual income professional families were more often the purchasers of former council houses.

Research in England (Forrest *et al.*, 1995) shows that in the first decade of the Right to Buy, 14% of former council dwellings were resold on average; higher resale rates (around 30%) were found in southern England where demand and house prices were higher. The transformation of previous council estates has thus gradually moved from privatisation (from state-owned to owner-occupied) to commodification (trading on the open market).

Gentrification and displacement

The term 'gentrification' was first introduced in the 1960s, referring to a new phenomenon of upper middle-class households buying properties in the traditionally deprived urban areas in the UK. A proper definition of 'gentrification' is given by Smith and Williams (1986): "the rehabilitation of working-class and derelict housing and the consequent transformation of an area into a middle-class neighbourhood". Gentrification formed a part of the British urban regeneration policy, with the encouragement of professional and managerial households moving back to the city, in order to improve social mix and desirability of poor urban areas. Since 1980, Right to Buy sales have generated a rapid growth of home ownership in cities; the subsequent resale of former council houses has introduced a large number of middle-class households to live in previous public housing areas. These movements formed part of the gentrification process (Murie, 1991), which has brought a series of social problems into these neighbourhoods.

Gentrification-induced displacement has been seen as the most significant problem (Lyons, 1996). Displacement occurs when affluent social groups in the neighbourhood create inflated rents and prices, which push out the low paid or unpaid households over time. In other words, large influxes of wealthy households may change the social characteristics and services of an area, so that residents' social networks change and the cost of living increases, as service provision caters for higher income groups (Atkinson, 1998; 2000). Displacees often move to locations nearby, where they pay more for worse accommodation. Many move to a friend's or relative's home, which accounts for much of the overcrowding they have experienced since. Residents who have been displaced mainly involve the elderly, people living in multiple occupied houses, people with mental health problems, low income families, single people and ethnic minority groups. A significant number of them end up being homeless (Atkinson, 2000). In terms of the communities, gentrification has also caused problems such as the loss of public services (the richer the neighbourhood becomes, the less necessary it is to provide public services), risen crime levels (the turnover of residents breaks down the social fabric in the community), and increased cost of living (shops and services have developed around wealthy new residents, which poor residents cannot afford). In a word, gentrification has gradually reduced both the ability and the desire of indigenous residents to remain in the area, since social, physical, economic and environmental changes that have taken place are no longer related to their lifestyles and resources of living.

Studies on gentrification in the UK have identified both positive and negative impact on deprived urban areas. Atkinson's review (2002) on this literature shows that the negative impact cover a wide range of issues; however, the positive effects are much smaller, with some of them having identifiable downsides. Table 2.2 is a summary of both costs and benefits associated with gentrification from Atkinson's review (2002). Evidence and demonstration on each of the topics can be found in the original paper.

Table 2.2: Summary of neighbourhood impact of gentrification

Positive	Negative
	Displacement through rent/price increases
	Secondary psychological costs of displacement
Stabilisation of declining areas	Community resentment and conflict
Increased property values	Loss of affordable housing
	Unsustainable speculative property price increases
Reduced vacancy rates	Homelessness
Increased local fiscal revenues	Greater take of local spending through lobbying/articulacy
Encouragement and increased viability of further development	Commercial/industrial displacement
Reduction of suburban sprawl	Increased cost and changes to local services
	Displacement and housing demand pressures on surrounding poor areas
Increased social mix	Loss of social diversity (from socially disparate to rich ghettos)
Decreased crime	Increased crime
Rehabilitation of property both with and without state sponsorship	Under-occupancy and population loss to gentrified areas
Even if gentrification is a problem it is small compared to the issue of: - Urban decline - Abandonment of inner cities	Gentrification has been a destructive and divisive process that has been aided by capital disinvestment to the detriment of poorer groups in cities

Source: Atkinson (2002)

2.2.4 The research question

The consultation on "reinvigorating" the Right to Buy published in December 2011 by the Coalition Government has suggested a raise of the maximum discount in England to £75,000 from the current levels of between £16,000 and £38,000 (Soady, 2012). This plan will offer families renting council houses a 35% discount after five years of residency, with an extra 1% for each additional year up to the maximum of £75,000; council tenants in flats

will receive 50% off after five years' residency with 2% added yearly (Wintour, 2012). The Government stated the aim of this proposal as to build more social housing, as every council dwelling sold under the scheme would be replaced by another one newly built for renting (Insley, 2011). The Government also addressed that the increase in discount would encourage council house sales (Insley, 2011) which had seen a dramatic decline during the global financial crisis, and help to build "strong families and stable communities" (Wintour, 2012).

Concerns have been raised in regard to the rebooting of the Right to Buy. For example, according to Hometrack, a property analytics business, although the raise in discounts means that more council tenants could afford to buy their homes, few of them are likely to be eligible for a mortgage since only 16% of the tenants are in full-time jobs (Insley, 2011). It also estimated the average capital gained from each Right to Buy sale under the new discount to be much lower than the cost of building and fitting out a new home (Insley, 2011), which, as the housing charity Shelter concerns, risks diminishing the stock of genuinely affordable social housing for households on low incomes (Soady, 2012). The Shelter also argues that many tenants who exercised their Right to Buy in the past have run into financial difficulties, and some lost their homes; therefore, it is vital to learn the lessons of the past and make sure that people can truly afford to buy their homes and maintain them into the future under the new scheme (Insley, 2011). These concerns reflect the social impact the Right to Buy has had over the past thirty years, such as the decline in council housing stock and the affordability issues within low-income families, and raise the necessity of taking into account such consequences when revitalising the policy, so as to prevent negative impact during the implementation of the new plan. This requires an understanding as well as an examination of the Right to Buy through a complete account of the social changes associated with the policy, so as to provide "lessons of the past" for the plan at present. Despite the importance of this consideration, however, systematic attempt that addresses this issue appears not

to have taken place in the current literature (see Section 2.3). For this reason, this study aims

to make a contribution by answering the following research question:

What is the complete picture of social changes that are associated with the

implementation of the Right to Buy legislation?

2.3 Social change and the Right to Buy

Previous section reviewed the contents and modifications of the Right to Buy legislation and its social impact on different sectors in the UK; and derived the research question from such review. The social impact has both positive and negative features, thus the evaluation of the policy has never stopped attracting controversy. Supporters consider the Right to Buy as a runaway success, providing access to home ownership and opening up opportunities for mobility and choice. Resisters, on the other hand, argue that the policy has weakened the ability of Government to meet housing needs, has resulted in affordability crises and rising levels of homelessness, thus is a damaging policy (Jones and Murie, 2006). Over time, a substantial body of research has been carried out around the evaluation of the Right to Buy. This section reviews the extant studies on social changes associated with the implementation of the scheme, and the methodological approaches they have adopted in investigating these matters. It has been found that these studies (and their research approaches) set out the background to this study, but with limitations.

2.3.1 Extant research on social change and the Right to Buy

Jones and Murie (2006) provide a complete account of the Right to Buy over a 25-year time period (1980 – 2005). Evaluation of the scheme involves a wide range of matters, including tenure (social renting, owner-occupation and private renting), communities in previous council neighbourhoods, former council properties, financial considerations, and benefits as well as costs from executing the policy. Based on the numerous empirical studies they

have carried out on the subject (Malpass, 2006), they summarise the social changes associated with the Right to Buy as follows:

- *Social housing*: Properties lost to the Right to Buy have resulted in a social housing shortage, thus homeless people have to stay long term in private rented accommodations. Lost lettings have also affected the availability of larger and better council homes to new tenants, therefore overcrowding is on the increase. The role of council housing has become a staging post for many tenants on the way to buying on the open market, and the sector has arguably become almost the exclusive domain of the elderly and the young on low incomes.

- *Owner-occupation*: Resales of previous council houses have been integrated into local housing markets, mainly as starter homes and affordable housing for low income households. Many have realised the investment potential of council houses, therefore the Right to Buy sales are encouraged by the resale market. Resale purchasers tend to be younger people starting a family and pensioners. Young households intend to move on as their families expand. Where affordability issues are the greatest, dual income professional families are often the purchasers of former council properties.

- *Private renting*: The promotion of the private rented sector is an unexpected outcome of the Right to Buy. Due to a reduced social housing supply, local authorities had to turn to private sector leasing to house the homeless. Some previous council dwellings have become the new supply to this sector, and some previous council tenants have become the new landlords. Their tenants are predominantly young adults with low incomes, however, the rents they are charged are higher than those for equivalent council housing.

- *Communities*: The resale of Right to Buy dwellings attracts households with no local connections to move into the area, especially into poor urban areas, and push out the deprived residents into the least desirable locations. The changed characteristics of council tenants represent a higher turnover with council housing, thus the Right to Buy has destabilised the remaining council housing areas, and increased social exclusion and economic marginalisation.

Jones and Murie (2006) provide a comprehensive evaluation of the Right to Buy and summarise the sectors where social changes associated with the policy have taken place. These sectors form a conceptual framework to the understanding of the research question, i.e. how each of these sectors has evolved in a complete account of the social changes associated with the Right to Buy. Jones and Murie (2006) offer a separate but extensive consideration to each of the sectors, while this research aims to examine and aggregate such considerations in a complete picture.

Besides Jones and Murie (2006), there have been extensive studies on social changes associated with the Right to Buy policy. These studies concentrate on social issues appeared in two phases of the impact of the policy, namely, the initial privatisation of council houses, and the subsequent commodification (or resale) of former council dwellings on the open market. In general, there are four dimensions of social change that can be identified:

- *Residualisation, marginalisation and social exclusion*: Early research performed on social impact of the Right to Buy recognises residualisation as a significant problem (Forrest, 1982; Malpass and Murie, 1982; Forrest and Murie, 1983; Malpass, 1983; Forrest and Murie, 1984a, 1984b; Foulis, 1985; Dunn *et al.*, 1987; Forrest and Murie, 1988). Malpass and Murie (1982) refer to residualisation as

the process whereby public housing moves towards a position in which it provides only a 'safety net' for those who for reasons of poverty, age or infirmity cannot obtain suitable accommodation in the private sector. It almost certainly involves lowering the status and increasing the stigma attached to public housing.

Characteristics of the residualised council housing sector can be reflected through the dwelling types that remain in council housing stock, and a different profile of tenants. Forrest and Murie (1984a, 1984b) summarise the dwellings remaining in the sector as "not traditionally built, with design defects, flats (especially high-rise flats) and maisonettes". These dwellings are mainly located in less attractive areas. In terms of the sold dwellings, they tend to be better quality properties (typically three-bedroom and semi-detached houses) in more attractive locations. As for council tenants, those who bought their houses are featured as middle-aged, affluent working class, and married with adult children; whereas the remaining council tenants are predominantly semi-skilled and unskilled workers, the unemployed, single parents, and others on low incomes or dependent on welfare benefits. In other words, council housing is now serving the vulnerable, the low paid, and those who are marginalised in the labour market.

More research evidence on residualisation has been provided in the later years (Malpass and Murie, 1994; Peach and Byron, 1994; Burrows, 1997; Field, 1997; Lowe *et al.*, 1998; Burrows, 1999; Lee and Murie, 1999; Wilson, 1999; Goodlad and Atkinson, 2004; Munro, 2007). Although these studies recognise the Right to Buy as being a success in its own terms, they argue that marginalisation and residualisation in housing have contributed to the process of social exclusion. Malpass and Murie (1994) conclude that it is the interaction between these factors and others, such as la-

bour market processes, education, discrimination on grounds of race or gender, social benefit systems and a range of social resources and services, which combine to trap people in disadvantaged situations.

This strand of literature highlights a direct and significant impact of the Right to Buy – the residualisation of the council housing sector during privatisation. This social change is associated with issues such as unemployment and social exclusion (Malpass and Murie, 1994; Brown and Sessions, 1997), therefore is a crucial dimension forming the aggregate consideration of social change and the Right to Buy addressed in the research question.

- *Right to Buy purchasers, council tenants, mobility and employment*: A broad range of empirical studies have been done to investigate socio-economic characteristics of Right to Buy purchasers and those of council tenants. More specifically, research involves actual Right to Buy buyers, prospective Right to Buy buyers, remaining council tenants and new council tenants. Results show that actual and prospective Right to Buy purchasers share very similar characteristics, as do remaining and new council tenants (James *et al.*, 1991; Peach and Byron, 1994; Forrest and Murie, 1995; Brown and Sessions, 1997; Forrest and Leather, 1998; Munro and Littlewood, 1998; Burrows, 1999; McNabb and Wass, 1999; Wilson, 1999; Watt, 2005; Munro, 2007). In general, people who bought or are going to buy their council properties are educated, in full-time employment, skilled workers, more affluent, middle-aged or elderly, married with no dependent children. In contrast, people who are unemployed, in semi-skilled or unskilled occupations, on low incomes or welfare benefits, young or elderly, single parents with dependent children, are more likely to stay in, or enter, the council renting sector.

Some studies point out the importance of housing tenure to people's mobility and employment. In other words, the transfer from council renting to owner-occupation increases the propensity of mobility among Right to Buy buyers, therefore increases their opportunities to meet employment needs. However, council renting has been found to be the least mobile tenure, which results in a higher unemployment in such areas. Detailed discussions on these issues can be referred to, for example, Minford *et al.* (1987), Brown and Sessions (1997), Burrows (1999), McNabb and Wass (1999).

This strand of literature focuses on the comparison of socio-economic characteristics between Right to Buy purchasers and council tenants, and highlights the advantages of home ownership and disadvantages of council renting. This dimension of social change addresses the transfer of tenure under the Right to Buy, which is crucial to the study of evolution in previous council estates in a complete account as raised in the research question.

- *Resale buyers, resale sellers, and social mix*: During the process of commodification, much of the research interest has been concentrated on the examination of socio-economic characteristics of those who buy and sell former council properties on the open market, and the subsequent changes in social composition in former council neighbourhoods (Murie, 1991; Williams and Twine, 1992, 1993; Forrest and Murie, 1995; Forrest *et al.*, 1996; Pawson and Forrest, 1998; Pawson and Watkins, 1998a, 1998b; Chaney and Sherwood, 2000; Kennett and Forrest, 2003; Munro, 2007). Empirical studies describe resale purchasers as affluent employed young households with or without children, and young single persons from white-collar jobs; resale sellers are most likely to be older people or young small families with higher incomes, in professional, managerial or other non-manual occupations.

The initial privatisation of council housing does not have immediate impact on the social composition of communities (Pawson and Watkins, 1998a); it is in the next phase, at commodification, when original purchasers trade their homes on the open market, and new households gain access to former council estates through market exchange, that social change in these communities starts to take place. At that point, what were exclusively council renting areas becomes a mixture of three tenures: council renting, owner-occupation and private renting (some previous council properties exchanged on the market become privately rented) (Forrest and Murie, 1995). A positive impact of commodification is an increased social mix in former council housing estates; however, "in other circumstances, owners in such estates are seen as rather problematic, especially where they may contribute to increased turnover and instability, or where low income or reluctance impedes participation in, and the progress of, landlord led physical refurbishment." (Munro, 2007)

This strand of literature considers the resale of previous council properties on the open market, and the subsequent changes in social composition in former council estates. Such changes are reflected through an increased mix of social characteristics within these areas, which is a major dimension to be examined in the complete account of social changes addressed in the research question.

- *Gentrification and displacement*: Some empirical studies further examine the transformation of former public housing neighbourhoods in the context of the gentrification debate (see for example, Murie, 1991; Forrest and Murie, 1995; Lyons, 1996; Atkinson, 2000, 2002; Atkinson and Kintrea, 2000; Balchin and Rhoden, 2002; Watt, 2005). The process of gentrification "involves a movement of middle-class families into inner-city areas previously occupied by working class or lower income households." (Murie, 1991) Although it has mainly been concerned with the conversion of

deprived private renting neighbourhoods (Hamnett and Williams, 1980; Atkinson, 1998), as the resale of former council properties grew, and poor working-class households were gradually replaced by affluent middle-class groups, this transformation fits with the model of gentrification, but with different features (Murie, 1991).

Gentrification does improve social mix in previous council neighbourhoods, however, those "who are only able to rent (including the homeless and those with lowest incomes relative to household needs) will be channelled towards the less saleable and less desirable concentrations of public rental housing and effectively displaced from areas to which they previously had access by home owners with higher incomes and social status." (Forrest and Murie, 1995) Gentrification-induced displacement also transfers some displacees from private renting to council renting, thus contributes to the residualisation of the council housing sector. Therefore, residualisation can be seen partly as a product of gentrification (Murie, 1991).

This strand of literature considers the social impact of council house resales from a different perspective, i.e. the model of gentrification and displacement. This dimension of social change provides an important feature to the study of changes in former urban council estates, therefore requires examination in the construction of answers to the research question.

Overall, the extant studies reviewed above have addressed different issues in relation to the research question; however, an aggregate account of the changes over time appears not to have been carried out in the current literature. For this reason, the thesis attempts to delineate a complete picture of social changes associated with the Right to Buy, by studying the evolution of social characteristics in previous council estates since the Right to Buy scheme came into effect. The reason for choosing such an approach is that the evolution re-

flects the social changes that are most associated with the implementation of the policy, since former council estates have experienced both phases (privatisation and commodification) of the impact of the Right to Buy. Research results will then be examined against the arguments in the extant literature.

Among the social changes addressed above, the issue of social exclusion has become significant over time, especially under the impact of the economic recessions (Cameron, 2009). Social exclusion has been researched in relation to various issues in the wider context and debates upon social change, such as urban and rural poverty (Musterd *et al.*, 2006; Phillimore and Goodson, 2006; Moffatt and Glasgow, 2009), mobility (Preston and Raje, 2007; Kenyon, 2011), and housing policy (Pawson and Kintrea, 2002; Watkins, 2008). In terms of the association between social exclusion and social housing policy, Pawson and Kintrea (2002) explain that the social housing allocation contributes to social exclusion in three main ways. First, a large proportion of social landlords restrict eligibility for social housing, which directly contributes to social exclusion. Second, social housing allocation systems continue to segregate the most excluded to the worst residential areas. Third, the increasingly coercive policies in social housing allocation reduce tenants' choice over housing in distinct contrast to the choice available in the private market. On the other hand, Watkins (2008) links the impact of housing policy interventions to neighbourhood segmentation under a microeconomic perspective, and emphasises the role of neighbourhood segmentation in economic analysis of local housing markets. The literature on social exclusion and its association with issues in the social change debate suggests that it is an important feature to be considered in addressing the research question.

2.3.2 Methodological approaches of extant studies

In addition to the above discussion on social issues associated with the implementation of the Right to Buy scheme, this subsection explores the methodological approaches

that have been employed by extant studies in their examination of these issues. A selective summary of these methodologies is presented in Table 2.3 below.

Table 2.3: Summary of methodological approaches of the extant studies

Author(s)	Year	Method(s)	Social issue(s)
Dunn *et al.*	1987	Exploratory data analysis; Correlation analysis; Regression.	Residualisation
Field	1997	Regression	Residualisation
Burrows	1999	Secondary analysis of official survey data; Logistic regression.	Residualisation; Social exclusion; Mobility; Employment.
Lee and Murie	1999	Review of evidence	Residualisation; Marginalisation; Social exclusion.
Wilson	1999	Summary of literature	Residualisation; Right to Buy puchasers.
Goodlad and Atkinson	2004	Historical institutionalist aproach; Summary of literature; Interviews.	Residualisation
Munro	2007	Review of evidence	Residualisation; Marginalisation; Social exclusion; Right to Buy purchasers; Council tenants; Mobility; Resales; Social mix.
James *et al.*	1991	Sampling; Interviews.	Residualisation; Marginalisation; Right to Buy purchasers; Council tenants; Mobility; Employment.

Forrest and Murie	1995	A national survey	Right to Buy purchasers; Resale buyers; Gentrification and displacement; Social exclusion.
Brown and Sessions	1997	Econometric analysis; Logit regressions.	Right to Buy purchasers; Council tenants; Mobility; Employment.
Forrest and Leather	1998	Longitudinal approach; Forecasting.	Right to Buy purchasers; Mobility.
McNabb and Wass	1999	Rosen (1979)'s probit model	Right to Buy purchasers; Council tenants; Mobility; Employment.
Watt	2005	Sampling; Semi-structured interviews.	Council tenants; Marginalisation; Employment; Gentrification.
Murie	1991	Review of evidence	Resale buyers; Gentrification and displacement.
Williams and Twine	1993	Questionnaire survey	Resale sellers
Forrest _et al_.	1996	A national survey; Interviews.	Resale of former council properties; Resale buyers; Resale sellers.
Pawson and Forrest	1998	Systematic review of literature	Resale of former council properties; Resale buyers; Resale sellers.
Pawson and Watkins	1998a	A national survey	Resale of former council properties; Resale sellers; Mobility; Social composition.
Pawson and Watkins	1998b	National surveys	Resale of former council

			properties; Resale buyers; Resale sellers.
Chaney and Sherwood	2000	Questionnaire surveys	Resale buyers; Resale sellers; Social composition.
Kennett and Forrest	2003	Unstructured interviews; Archival work on administrative files; A postal survey.	Resale of former council properties; Social mix.
Lyons	1996	Longitudinal study; Interviews.	Gentrification and displacement
Atkinson	2000	Synthesis of past research efforts (i.e. census; ONS longitudinal study; interviews; etc.)	Gentrification and displacement
Atkinson	2002	Systematic review of evidence	Gentrification and displacement
Atkinson and Kintrea	2000	Interviews; Diaries.	Gentrification and displacement
Atkinson	1998	Review of literature	Gentrification and displacement
Phillimore and Good-son	2006	Questionnaire surveys; Interviews; Focus groups.	Social exclusion; Poverty; Unemployment.
Preston and Raje	2007	Questionnaires; Interviews; Focus groups; Exploratory Q-method study; Principal components analysis.	Social exclusion; Mobility.
Kenyon	2011	Focus groups	Social exclusion; Mobility.
Pawson and Kintrea	2002	Postal surveys; Interviews.	Social housing; Social exclusion.
Watkins	2008	Review of literature	Social exclusion; Housing markets.

Table 2.3 summarises diverse research methods that have been employed in studies on social changes associated with council house sales. These methodologies were proved effective in investigating major issues in debates around social change, and some of them (for example, regression and interviews) have been widely used by researchers. However, the aim of this study is to delineate a complete picture of the evolution of social characteristics in former council estates since the introduction of the Right to Buy, which indicates a three-way data matrix to be analysed, with components being areas, social characteristics, and years. Such analysis requires a multivariate technique which takes into account the element of time, to which the methods reviewed in Table 2.3 do not apply. For this reason, the thesis aims to make a contribution by introducing the INDSCAL model of Carroll and Chang (1970) to research social change. The model is one of the three-way multivariate data analysis methods and is based on graphical representations of data, therefore has been preferred in this study. The model will be further explained in Chapter 5.

2.4 Conclusions

This chapter reviewed the origins and development of council housing in the UK, the political debate around council house sales, and specifically, the Right to Buy legislation and its profound impact upon social changes in different housing tenures and in former council housing areas. Evaluation and analyses of the policy agree that council house sales have massively increased home ownership in the UK, have introduced social mix to previous council housing areas, and have improved opportunities for mobility and employment changes. However, the Right to Buy sales have also resulted in a severe social housing shortage in the UK, therefore local authorities have been given a serious challenge of meeting housing needs. Moreover, disproportionate sales of council dwellings have left council housing with a strong 'residual' image, together with a changed profile of council tenants which largely consists of marginalised social groups. The resale of former council houses on

the open market has changed the social characteristics of former council housing estates, by introducing affluent middle-class households into the community and pushing out the low paid or unpaid social groups into the least desirable estates. Gentrification and displacement have therefore destabilised former council house communities and increased social exclusion. The latest government plan on rebooting the Right to Buy has caused concerns on the potential negative social impact of the scheme based on its past experience. In response to these concerns, the thesis attempts to address this issue by tracing in previous urban council estates the social changes associated with the Right to Buy in a complete picture. Extant studies on social change and the Right to Buy as well as their methodological approaches have been reviewed. In order to investigate the research question, it is necessary to understand the concept of social change and its measurements. These are to be discussed in the next chapter.

Chapter 3   Social Change and Social Indicators

This chapter explains the crucial concepts and their theoretical backgrounds related to the research of social changes associated with the Right to Buy policy. First of all, the chapter introduces the concept of social change, its key characteristics and main causes. The abstract and complex features of social change require the development of social indicators – a set of concrete instruments – to make the concept directly measurable. Therefore, the chapter goes on to introduce the theories of concepts and their indicators, issues of reliability and validity, and in particular the theoretical background and definition of social indicators. In the last part of the second section, a systematic review is provided for the social indicators used in empirical studies of social changes associated with the Right to Buy. These indicators are summarised according to the social characteristics they measure, and one of the characteristics, social class, is reviewed separately due to its conceptual importance in this research. The third section introduces the concept of social class, and the main British government social classifications used both in the past and at present. The continuity issue between the old and new social classifications is associated with the data collection work in this research, thus is carefully examined. It should be pointed out that, although the content of this chapter involves a number of social scientific topics, no attempt has been made to explain each of them comprehensively; the literature on each of the topics has been thoroughly reviewed, however, only theories relevant to this research are briefly presented, considering it will be sufficient for the purpose of this research. References and resources that are noted in this chapter can be referred to for further elaboration.

3.1 Social change

Social change is a dynamic social pattern that refers to a wide range of transformations and alterations in human societies over time (Macionis and Plummer, 1998). Generally, it includes changes in social institutions, social behaviours, socio-economic structures, social characteristics (i.e. demographic and socioeconomic characteristics) and so on (Haralambos and Holborn, 2004; Giddens, 2006). G. A. Theodorson and A. G. Theodorson (1969) define social change as the following, and this is the definition that is adopted in this study:

Any modification in the social organisation of a society in any of its social institutions or patterns of social roles. Usually social change refers to a significant change in social behaviour or a change in some larger social system rather than to minor changes within a small group. Thus social change refers to changes in the established patterns of social relationships – for example, in family, religious, or economic life.

Social change involves numerous dimensions. It may refer to the innovations in technology, the expansion of cities, air and water pollution, the growth of bureaucracy, or the transformation of social composition between households and communities (Sheldon and Moore, 1968; Macionis and Plummer, 1998). In general, there are four key characteristics of social change, summarised by Macionis and Plummer (1998):

1. *Social change happens everywhere, although the rate of change varies from place to place.* Changes in some societies take place faster than in others, and even in a given society, changes in some sectors or locations occur more quickly than in other sectors or locations.

2. *Social change is sometimes intentional but often unplanned.* Many kinds of change are actively promoted by science, technology or political agenda in modern societies, however, not all consequences of these changes can be foreseen by the promoters.

3. *Social change often generates controversy.* Most social change results in both positive and negative consequences, therefore, research and evaluation of the change usually raise controversial arguments.

4. *Some changes matter more than others.* Some social changes have only passing significance (such as clothing fads among young people), whereas others may be influential for generations (such as political decisions or technological advances).

Besides the four key characteristics, social scientists have also tried to identify the causes of social change. Although human social development is a diverse and complex process, the factors that influence social change in the modern period can be summarised into three main categories, as given by Giddens (2006):

- *Cultural influences*: Among the cultural factors affecting the process of social change in modern times, the development of science and the secularisation of thought have both contributed to a critical and innovative way of living (Giddens, 2006). People no longer assume the customs or habits are accept-able only because they have "the age-old authority of tradition"; instead, our lives are more and more based on a rational way of thinking (Giddens, 2006). Increasing exchanges of goods and information, and increasing conflicts between belief and value systems, have resulted in greater cultural diversity and promoted dynamics of social change (Abel and Kohlmann, 2007). Besides, ideals of self-betterment, freedom, equality and democratic participation created in the past two or three centuries have also mobilised the process of social and political change (Giddens, 2006).

- *Economic influences*: The most profound economic influence is the impact of modern industry. Unlike the traditional production systems where levels of production were fairly static, modern industry promotes the constant revision of the technology of production, a process into which science is increasingly drawn (Giddens, 2006). The rate of technological innovation developed in modern industry is remarkably greater than in any former type of economic order (Giddens, 2006). Technology and social change are viewed as mutually intertwined and reciprocally related (Lacy, 1985). The impact of science and technology on modern social change is largely driven by economic factors, however, in the meantime, it also influences and is influenced by cultural and political factors (Giddens, 2006).

- *Political influences*: Modern political developments are the third major type of influence on social change. In modern political systems, the activities and decisions of political leaders and government officials continually affect the lives of the population (Giddens, 2006). Both externally and internally, political decision-making promotes and directs social change far more than in previous times. In terms of economic change, governments nowadays play a major role in influencing (stimulating or retarding) rates of economic growth, and a high level of state intervention in economic development is broadly applied in industrial societies (Giddens, 2006). In addition, military power and war have also been of far-reaching importance. For example, the effects of the two world wars have resulted in profound changes in the UK society i.e. population migration induced by enemy's invasion, the adaption of social policies during and after the war, social reform encouraged by the war, and so on (Smith, 1986).

In the UK, the two world wars created a serious housing shortage. Governments then carried out large-scale house building plans to meet housing needs. By the 1970s, near-

ly one-third of all dwellings were state-owned (Jones and Murie, 2006). The Conservative Party after 1945, adopted the slogan 'a property owning democracy', and started promoting the sale of council houses. On coming into office in 1979, the Conservative Government introduced the Right to Buy legislation, which gave council tenants the right to buy their homes at very generous terms. The implementation of the policy over the last thirty years has generated profound social changes (Section 2.3). In general, massive sales of council houses have marginalised the social housing sector; however, home ownership has grown and become the predominant tenure. Although the rate of tenure transfer varies between areas, almost all former council estates have experienced a certain level of conversion. Beyond the simple intention of promoting owner-occupation set out by the Government, the subsequent resale of former council houses has resulted in unforeseen social changes, including gentrification-induced displacement and social exclusion. Over the years, the evaluation of the Right to Buy has always been controversial due to its positive and negative social impact. Nevertheless, the policy has changed the way housing system works in the UK, therefore its influences will last for generations.

3.2 Social indicators

In social research, concepts such as social change are difficult to be examined because of their abstract and complex features. As it is not easy to devise direct measurement for them, social scientists have developed approaches to operationalise these concepts, that is, to construct indicators for them so that they can be measured directly. This section introduces the theoretical background of concepts and their measurement, as well as indicators and their reliability and validity. In particular, this section explains a specific type of indicator for measuring social change, which is referred to as social indicators. Their historical roots date back to at least the 17th century and their rapid growth was induced by the social indicators movement raised in the 1960s. Numerous definitions of social indicators appeared

during the movement, among which the one given by Carlisle (1972) is regarded as a very complete one (Carley, 1981). Carlisle (1972)'s definition and the social indicators movement explain a wide usage of this approach in studies of social change. A summary of the social indicators used in research of social changes associated with the Right to Buy is provided at the end of this section, with examples of the empirical studies in which these indicators have been employed.

3.2.1 Concepts and their measurement

Concepts are the abstractions of observations and ideas in the social world that seem to possess common features (Judd *et al.*, 1991; Bryman, 2008). Social scientists use them as the building blocks of theory and conduct social research around them (Bryman, 2008). As concepts are abstract features of social phenomena, it is usually difficult to develop direct yardsticks or scales for their measurement. A widely accepted approach in social research is to translate the concepts into some measuring instruments, or concrete representations, which are directly measurable (Judd *et al.*, 1991; Haralambos and Holborn, 2004). The process of specifying how to measure a concept and what to be measured is known as an operational definition (Judd *et al.*, 1991; Haralambos and Holborn, 2004). In Bryman (2008), three main reasons are summarised to indicate why measurement of concepts is necessary in social research:

1. *Measurement allows us to delineate fine differences between people in terms of the characteristic in question.* In general, it is often easy to detect clear variations between people, but finer distinctions are much more difficult to be recognised.

2. *Measurement gives us a consistent device or yardstick for making such distinctions.* The consistency of a measurement device has two meanings: the ability to be consistent over time and the ability to be consistent with other researchers.

53

Although the readings of a measurement are inevitably influenced by the process of social change, the measure should generate consistent results over time. The quality of measurement is related to the issue of reliability, which will be examined in the next part.

3. *Measurement provides the basis for more precise estimates of the degree of relationship between concepts.* It helps reveal how closely one concept is related to the other concept(s) in social research.

A concept can have different aspects or dimensions, thus it can be measured in various ways. When developing measures for a concept, its various dimensions need to be taken into account. Each of the measures provides a certain indication of that concept, and although the measures are distinct from each other, they are all related to the concept (Judd *et al.*, 1991).

3.2.2 Indicators

The measures of a concept discussed above are usually known as indicators. An indicator is a means of measurement that aims to measure the concept accurately, by gathering and analysing empirical data (Gilbert, 2008). According to Haralambos and Holborn (2004), measuring a concept using indicators involves the following steps. First, operationalise the concept by breaking it down into various dimensions, in order to specify what is to be measured (i.e. establishing an operational definition); second, select or develop indicators for each dimension of the concept; and third, collect quantifiable data for each indicator in order to measure each dimension of the concept.

In social research, there are a number of ways in which indicators can be devised. Bryman (2008) summarises them as follows:

- *through a question (or series of questions) that is part of a structured inter-view schedule or self-completion questionnaire; the question(s) could be concerned with the respondents' report of an attitude (e.g. job satisfaction) or their social situation (e.g. poverty) or a report of their behaviour (e.g. lei-sure pursuits);*

- *through the recording of individuals' behaviour using a structured observa-tion schedule (e.g. pupil behaviour in a classroom);*

- *through official statistics, such as the use of Home Office crime statistics to measure criminal behaviour;*

- *through an examination of mass media content through content analysis[5] – for example, to determine changes in the salience of an issue, such as AIDS, in the mass media (Beharrell 1993).*

The development of indicators requires the consideration of reliability and validity, that is, whether indicators are the reliable and valid representations of the concept they are supposed to be capturing. Reliability and validity are two important issues in the evaluation of the measurement of social scientific concepts, and it is crucial that only when a measure is both reliable and valid, can it be confidently used in research (Judd *et al.*, 1991; Bryman, 2008).

Reliability is concerned with the consistency of an indicator devised for a concept (Aldridge and Levine, 2001). Bryman (2008) outlines three prominent factors involved when considering if an indicator is reliable:

---

[5] Content analysis is an approach to the analysis of documents and texts, that seeks to quantify content in terms of predetermined categories and in a systematic and replicable manner (Bryman, 2008, p692).

- *Stability*. This factor requires that an indicator is stable over time; so that it can be applied in different time periods and that the results obtained from the indicator do not fluctuate.

- *Internal reliability*. This factor concerns that whether the indicators that measure the same concept are related to each other. This meaning of reliability applies to multiple-indicator measures where results of each indicator are aggregated to form an overall outcome, thus it is important that all indicators are related to the same concept.

- *Inter-observer consistency*. This factor considers the situation where more than one 'observer' is involved in a research activity (such as the recording of observations or the translation of data into categories), and where a great deal of subjective judgement is needed to be made. In this case, the development of indicators needs to consider the consistency in observers' decisions.

Validity is concerned with the issue of whether an indicator, or a group of indicators, devised for a concept gives a true measurement, description or explanation of that concept (Haralambos and Holborn, 2004; Bryman, 2008). There are different types of validity that reflect different ways of examining if an indicator is valid:

- *Face validity*. This is evaluated by a group of experts who act as judges and decide if in their opinion an indicator measures what its name suggests (Judd *et al*., 1991). It is the crudest version of validity, therefore in most cases it is regarded as an insufficient justification (Procter, 2008).

- *Concurrent validity*. This method measures an indicator's validity against a reliable standard, which is usually another form of measurement with demonstrable validity, but may be complex, expensive or have other restrictions on its use (Aldridge and Levine, 2001).

- *Predictive validity*. This approach employs a future criterion measure, rather than a contemporary one as in the case of concurrent validity, to test if a new indicator is a valid measure of a concept (Bryman, 2008).

- *Construct validity*. This requires that the indicators being evaluated should represent a hypothetical concept, which is deduced from a theory relevant to the concept those indicators stand for; by analysing the statistical relationships between the indicators, and by comparing these relationships with the corresponding theoretical relationships, the validity of the indicators can be assessed (Procter, 2008).

- *Convergent validity*. This method evaluates the validity of an indicator by comparing it to measures of the same concept devised through other methods; however, the problem with this approach is that it is not always easy to establish which measure(s) (the indicator being evaluated or the measures developed through other methods) represent(s) the more accurate picture of the concept (Bryman, 2008).

Reliability and validity are not dissociated but related to each other – validity requires reliability as a prerequisite (Judd *et al.*, 1991). In other words, if an indicator is not reliable, it cannot be valid. This relationship applies to each of the three factors of reliability that have been discussed above. If an indicator is not stable over time, it may be measuring different objects on different occasions, therefore it cannot be providing a valid measure of the concept it is intended to be measuring; if a multiple-indicator measure lacks internal reliability, it is in fact measuring two or more different concepts, therefore the measure cannot be valid; if there is a lack of inter-observer consistency, observers cannot agree on the meaning of the concept they are observing, which again indicates that the measurement they are using is not valid (Bryman, 2008).

3.2.3 Social indicators

Historical background

The collection of statistical information on social topics can be dated back to at least the 17th century, when governments in England started to use statistical data in devising and assessing social and military policies (Carley, 1981). This movement towards collecting and organising social, economic and demographic data continued in the 18th and 19th centuries, and in 1924, the British economist Arthur C. Pigou argued in *The Economics of Welfare* that the concept of social costs[6] should be taken notice by economists and policy makers, and that this concept should be quantified in order to determine its impact on the society (Carley, 1981). In the same time period, a more influential and widely recognised work on the quantification of social scientific concepts was given by sociologist William. F. Ogburn and his associates at the University of Chicago (Carley, 1981). In *Social Change* (1922) Ogburn argued that social change was best explained by the development and evolution of culture, which could be studied by developing reliable measures of change (Carley, 1981); he argued that the best measures of social change were to be actual quantitative descriptions in the form of statistical time series, or carefully described observations (Land, 1975).

The social indicators movement (1960s – 1980s)

Pigou's and Ogburn's ideas of devising organised data system for monitoring social scientific concepts contributed to the rise of the 'social indicators movement' in the 1960s, termed by Otis D. Duncan (1969). Cazes (1972) and Carley (1981) provide elaborate re-

---

[6] The costs that exceed the private costs of production therefore lessen the overall public welfare. For example, "the lessening of the amenity of residential neighbourhoods by factory construction, or the cost of police services related to liquor sales, neither of which would be the concern of factory-owners or distillers in their corporate balance sheets" (Carley, 1981, p15).

views of the major activities carried out during the early stages of the movement, of which a brief summary is given below:

- The rise of interest in social indicators originated from the task given by the National Aeronautics and Space Administration (NASA) in the US to the American Academy of Arts and Sciences in 1962. The task was to examine the possible effects of the space exploration programme on American society. It was soon found that many of these were unintended or indirect social effects, and these effects were difficult to analyse as the existing quantitative data were wholly inadequate for the task. This caused the research team to investigate the more general issue of monitoring social change, and to devise suitable instruments, the complementary indicators of a social character, for identifying and forecasting social effects. A result of this project was the influential book *Social Indicators*, edited by Raymond A. Bauer (1966), "which discussed the development of social indicators, their relationship to social goals and policy-making, and the need for systematic social accounts and improved statistical information" (Carley, 1981).

- In the meantime as the NASA project, another American institution, the Russell Sage Foundation, supported sociologists Eleanor B. Sheldon and Wilbert E. Moore for their research on exploring the conceptual and methodological problems of monitoring large-scale social change, which was first proposed in 1965. In their studies social change was to be monitored in five major areas: (1) demographic base, including distribution of population, (2) structural components, including production of goods and services, the labour force and the family, (3) distributive features including health, education, recreation and leisure, (4) aggregative features such as social stratification, mobility and cultural diversity and (5) measurements of welfare (Land, 1975). This work is summarised in two publications: the first is *Indicators of*

Social Change: Concepts and Measurements edited by Sheldon and Moore (1968), which is concerned with socio-structural and objective indicators, and the second is *The Human Meaning of Social Change* by Campbell and Converse (1972), which is a companion piece to the first book, and is concerned with psychological or subjective indicators of attitudes, expectations, aspirations and values.

- The third major contribution in the social indicators movement was the Report of the National Commission on Technology, Automation, and Economic Progress in the US, published in 1966. In the report Daniel Bell recommended creating a system of 'social accounts', which would measure the use of human resources in four fields: '(1) the measurement of social costs and net returns of economic innovations, (2) the measurement of social ills (e.g. crime, family disruption), (3) the creation of "performance budgets" in areas of defined social needs (e.g. housing, education) and (4) indicators of economic opportunity and social mobility' (Cazes, 1972).

- In 1969, the Department of Health, Education and Welfare in the US published *Toward a Social Report*. It is a collection of essays which considered a wide variety of measures for monitoring changing social conditions, in areas such as health, family life, environment, public safety, race relations and social cohesion.

- Efforts on the development of social indicators were also made outside the US. In the UK in 1970, the Central Statistical Office published the first in its new series *Social Trends*, which is a selective collection of key statistical series relating to questions of social policy. In France, the importance of social indicators for development planning was reaffirmed and emphasised by the government in three forms: the preparation of social indicators for social planning (especially housing and social welfare), contracts made with research institutes, and participation in international research activities. In 1969, the United Nations Economic Commission for Europe decided to launch a joint research programme, which aimed to identify social variables

for social forecasting, and for other social topics such as the living conditions of elderly people, housing, working conditions and mobility.

The efforts made to the social indicators movement in the 1960s, such as *Social Indicators* (1966), *Indicators of Social Change: Concepts and Measurements* (1968), and *Toward a Social Report* (1969), aimed at gathering descriptive data, developing categories that would allow meaningful generalisation, and eventually working towards analysis of social change and guiding public policy (Cobb and Rixford, 1998). The movement bloomed in the 1970s by the foundations of relevant institutions and publications (Sharpe, 1999). However, over time, the movement has been heavily influenced by political pressure and government decisions that turned it into neutral chart books and a collection of numbers, providing only facts but no interpretation (Cobb and Rixford, 1998). Social indicator activities therefore slowed considerably in the 1980s (Sharpe, 1999). There have been extensive discussions that address this issue, such as Straussman (1978), Horn (1978) and Cobb and Rixford (1998). They argue that the political intervention in social indicators movement has resulted in a loss of potential solutions to social problems.

The history of social indicators explicates the extensive use of this approach in measuring "change over time in a broad range of social phenomena" (Sharpe, 1999), such as family, health, housing, social stratification, and many other subjects. Although the social indicators movement was significantly restricted in the 1980s due to political limitations, the development and use of this measurement in studying social change and evaluating social policies has continued comprehensively (Sharpe, 1999). It can be seen that the approach of social indicators has been accepted widely as an effective tool of measuring and describing social change. Therefore in this research, the approach has been adopted and social indicators that measure changes in social characteristics in former council estates have been developed (see Chapter 4).

The definitions of social indicators

Numerous definitions of social indicators appeared during the progress of the social indicators movement, among which the one given by Carlisle (1972) is regarded as a very complete one (Carley, 1981).[7] Carlisle (1972)'s definition of a social indicator is:

> *the operational definition or part of the operational definition of any one of*
>
> *the concepts central to the generation of an information system descriptive of*
>
> *the social system.*

This definition contains two important elements: first, social indicators are devised as the result of operationalising abstract concepts, by translating them into measurable instruments; and second, social indicators are part of an information system which is used to understand and evaluate the social system (Carley, 1981).

Carlisle (1972) categorises the central concepts in her definition as follows:

- *System components*. The social system is seen as a complex of components, and the established interrelationships between the components constitute the structure of the system. System components after being operationalised will provide the structural background against which to consider the achievement of system goals.

- *System goals*. When a component has been identified, its performance is measured in terms of its goal-achievement. A system goal is a state of affairs considered desirable by the members of a system and towards which action is directed. System goals after being operationalised will provide measures of a system's performance.

- *Social problem areas*. The operationalisation of social problem areas will provide 'comprehensive' data on problems appearing at any one time and demanding urgent attention, for example 'the aged' and 'poverty'.

---

[7] For a comprehensive review on definitions of social indicators see Chapter 2 of Carley (1981).

- *Policy goals*. The operationalisation of policy goals will provide measures of the performance of social policies aimed at their achievement.

Carlisle (1972) then classifies social indicators arising out of the operationalisation of these concepts into four types, according to their use:

1. *Informative indicators* are operationalised system components and system goals. They are intended primarily to describe the social system and changes taking place within it.

2. *Predictive indicators* are those operationalised system components and goals that fit into explicit models of the social system or its components. In other words, they are informative indicators, with the additional criterion of belonging to a formal model.

3. *Problem-oriented indicators* are operationalised social problem areas. They are intended to be directly helpful in providing the basis for policy solutions and should ideally point towards required action or the need for further investigation.

4. *Programme evaluation indicators* are operationalised policy goals. Where meaningful they represent policy 'targets' and are intended to lead to the development of methods of monitoring the progress and effectiveness of policy.

Carley (1981) adds a fifth type of indicators to the above classification:

5. *Target delineation indicators* are variables describing demographic, environmental, pathological, or service provision characteristics, and are useful for identifying geographical areas or population subgroups towards which policy is directed (Edwards, 1975).

In addition to Carlisle (1972)'s definition of social indicators, there has been a theoretical debate on the meaning of such indicators, and the necessity for them in assessing the effectiveness of social policies that address important social issues. For example, Atkinson

et al. (2002) define social indicators as "a parsimonious set of specific indices covering a broad range of social concerns". They argue that social indicators are an important tool for evaluating the level of social development and for assessing the impact of social policy. Specifically, they are concerned with the use of social indicators in investigating poverty and social exclusion. Marlier and Atkinson (2010) point out that statistical measures of poverty and social exclusion are crucial for governments to assess their performance according to an explicit set of criteria. In particular, they state that social indicators are necessary to determine whether or not progress is being made in reducing poverty and social exclusion, and to improve the comparison of different policy measures and mutual learning within and across countries. Atkinson et al. (2004) also point out that social indicators are useful for illustrating areas where more policy action is needed. Another example in line with the promotion of adopting social indicators in assessing social policies and social progress is the studies done by the Organisation for Economic Co-operation and Development (OECD). The OECD is an organisation aims at promoting policies that will improve the economic and social well-being of people around the world[8]. They define social indicators as a direct and valid statistical measure which monitors levels and changes over time in a fundamental social concern (OECD, 1976). They also argue that social indicators are necessary in providing a broad picture of social outcomes and social responses, to the progress countries have made in their social development (OECD, 2011). It is thus not surprising that social indicators are widely constructed and employed, especially for the purpose of assessing social policies.

Social indicators in research of social changes associated with the Right to Buy

The definition of social indicators and the social indicators movement explain a broad use of this measurement in investigating social issues and evaluating social policies in the entire social system. Research on social changes associated with the Right to Buy sch-

---

[8] OECD - http://www.oecd.org

eme over the last thirty years (see Section 2.3) shows that social indicators have been extensively used as a means of exploring and describing different dimensions of social change. In these studies, social indicators are employed to represent social characteristics of previous and remaining council housing areas where social changes have taken place. Specifically, these indicators are obtained to measure three types of characteristics: residents, households and dwellings. These characteristics and their social indicators are summarised in Appendices 3.1, 3.2 and 3.3, with examples of empirical studies in which these characteristics are examined. It is worth mentioning that in each study, the social indicators employed to measure the same characteristic may not be identical due to various research purposes[9]; however, they represent the same concept and therefore are aggregated into the same group as shown in Appendices 3.1, 3.2 and 3.3.

Appendix 3.1 outlines characteristics of residents and their social indicators. It can be seen that of all characteristics, 'Age structure', 'Social class' and 'Employment status' are the mostly considered ones in empirical studies. They represent the primary features of various residents (i.e. Right to Buy purchasers, council tenants, resale sellers, and resale buyers). This can be reflected through the review provided in Section 2.3 – for example, the typical council tenants are described as young or elderly people, semi-skilled or unskilled working class, or in unemployment; the most likely resale buyers are to be young people, affluent middle class, and in full-time employment. These three social characteristics and their social indicators describe the primary features of residents, therefore have been analysed in this research. 'Ethnic origin' is mostly examined in research of council house sales in big cities, especially in large metropolitan areas like London and Birmingham (Peach and Byron, 1994), where a great proportion of council tenants are ethnic minorities. However, since the

---

[9] For example, 'Age structure' is measured with different scales in Forrest and Murie (1984b, p81) and in Munro and Littlewood (1998, p653).

area of study, the City of Canterbury, is a non-metropolitan district housing few ethnic minorities (see Section 4.1), this social characteristic has not been considered relevant here. 'Marital status', 'Annual income' and 'Gender' indicators are often combined with 'Household type' indicators (see Appendix 3.2) to characterise residents and households. For example, again as presented in Section 2.3, people who bought their council homes are usually married couples with non-dependent children, and with higher incomes; whereas a large proportion of people who stay in, or enter, the council renting sector are single parents, in particular female single parents, with dependent children, and living on welfare benefits or low incomes. These characteristics and their indicators also depict the primary feature(s) of residents and households; therefore have been considered relevant in this research. 'Marital status', 'Gender' and 'Household type' have been involved in data analysis, however, due to lack of data, 'Annual income' has not been examined in this case (see Section 4.3). Indicators of 'Education', 'Industry' and 'Occupation' are in most cases contributed to the development of 'Social class' indicators[10], therefore, they are not commonly adopted by these studies. For this reason and for the difficulties encountered when deriving indicators for 'Education' (see Section 4.3), these social characteristics ('Education', 'Industry' and 'Occupation') have not been included in this study.

Appendix 3.2 lays out characteristics of households and their indicators. 'Tenure' is a significant characteristic of households therefore has been examined frequently. Most studies on tenure transfer (mainly from council renting to owner-occupation under Right to Buy sales) have contributed to the investigation of social mobility and social exclusion (see Section 2.3). In this research of social change in former council estates, 'Tenure' is a crucial social characteristic to examine, thus has been included in data analysis. Another important

---

[10] The operational definition of social class is based on elaborate consideration of a number of associated factors, such as occupation, industry, income and education (Reid, 1989).

characteristic is 'Household type' which has been discussed earlier. The integration of 'Household type' and 'Employment status' indicators form the representations of 'Economic household type', which is studied by Murie (1991). This social characteristic is relevant to this research in describing households, however, due to lack of information in the data source applied (see Chapter 4), this characteristic has not been included in this study. Although 'Car access' has only two indicators, and has not been assessed in many studies; it is worth being considered as a means of representing the wealth of a household. For this purpose, (since 'Annual income', another wealth-related social characteristic, lacked data in this study,) 'Car access' has been included in this case. 'Number of earners in household' and 'Length of tenancy' relate to the purchase of a former or existing council dwelling by a household. The former characteristic shows the affordability of the household, and the latter implies the level of discount the household can receive when purchasing their council home under the Right to Buy. The former conveys the information of the employment status in a household but very less descriptive, and the latter is less relevant to the purpose of this study, thus neither of them has been considered here.

Appendix 3.3 summarises characteristics of dwellings and their indicators. 'Dwelling type' appears to be the most important characteristic and has been examined in many studies. It is sometimes inspected with 'Area type' to compare council dwellings that have been sold or resold, to those remain in the council renting sector. For example, as introduced in Chapter 2, sold or resold council dwellings tend to be semi-detached houses in more attractive areas (i.e. suburban and rural areas – Chaney and Sherwood, (2000)), while the remaining council housing stock has become a concentration of not traditionally built flats and maisonettes in urban areas. Both social characteristics have been considered relevant to this study of evolution in previous council renting communities; however, due to lack of data for 'Area type', only 'Dwelling type' has been examined in this case. Indicators of 'Age of

dwelling', 'Number of bedrooms', 'Private garden' and so on are all related to the compari-
son between dwellings. In general, the most popular former council houses on the market are
those built before 1945, have three bedrooms and private gardens. These characteristics of
dwellings are less relevant to the purpose of this research (as buildings tend to remain un-
changed over time, but this study concentrates on social change); therefore they have not
been considered here.

3.3 Social class

Among the social characteristics reviewed in the previous section, social class is a
key concept in both classical and contemporary social theory (Aldridge and Levine, 2001). It
is a form of social stratification, refers not only to the system of social ranking characteris-
tics of advanced industrial societies, but also to the very way of life, the attitudes, values,
and life-chances experienced by different groups of people; it refers not only to objective
factors such as income, power, status, and education, but also to subjective feelings and im-
ages (Slattery, 1986). It helps to understand social structure and the dynamics of society
(Scase, 1992). The latest official socio-economic classification in the UK, the National Sta-
tistics Socio-economic Classification, was published in 2005 (see Rose *et al.* (2005)). It will
be further introduced in this section. However, before that, it is worth visiting the history and
origins of government social classifications in the UK, as these former classifications have
been used in innumerable political and academic research studies, and they have formed the
basis of the construction of the current classification.

3.3.1 Social Class based on Occupation (SC)

The earliest British government socio-economic classification, the *Registrar Gen-
eral's Scale of Social Class* (the RG Scale), was first published in the 74th Annual Report of
the Registrar General in 1911. It was devised by T. H. C. Stevenson, a medical statistician at

the Register Office, to examine differentials in mortality and fertility rates related to social class, based on industrial group, occupation and levels of skill (Slattery, 1986; Aldridge and Levine, 2001). It has been widely used in the UK as one of the principal empirical indicators of social class, and was renamed as *Social Class based on Occupation* (SC) in 1990 (Aldridge and Levine, 2001). The final version of SC can be found in Appendix 3.4.

Over time, SC has received extensive criticism for lacking a coherent theoretical basis. For example, as Marshall *et al.* (1988) and Saunders (1990) point out, in 1971 the Office of Population Censuses and Surveys (OPCS) recognised the scheme as a classification of occupations according to their 'standing within the community'; however, in 1981, the OPCS claimed that the scheme was to reflect 'levels of occupational skill'. Sociologists have therefore frequently criticised such ambiguity in what the scheme is actually meant to refer to (Saunders, 1990). Besides, SC has also been blamed for lacking reliability and validity. Criticisms on reliability centre round the accuracy of this classification. First, SC was created in a time before serious theoretical social science had emerged in the UK (Szreter, 1984), thus its conceptual basis – a hierarchy in relation to social standing or occupational skill – in fact reflected an outmoded 19th century view of social structure (Rose *et al.*, 2005). Second, with revisions only every ten years, it is difficult for this scheme to keep up-to-date with the changing status of many jobs and occupational groups (Slattery, 1986). Third, by relying on occupational data for sorting people into classes, the majority of the population who are not in paid work get left out, such as the class of wealthy people who live solely from income from property (the 'upper class'), and certain groups for example housewives, students, the self-employed, unemployed and pensioners (Slattery, 1986; Saunders, 1990). Criticisms on validity are more fundamental and theoretical, and centred on the very basis of the official classification and its underlying assumptions (Slattery, 1986). Some researchers argue that SC only identifies objective factors, leaving out in their view the crucial dimension of class

'consciousness'[11]; some have highlighted that in this classification women are rendered invisible and dependent on men for any form of social status[12] (Slattery, 1986). After all, as Slattery (1986) describes, this scheme was only intended to be descriptive and was never devised as a tool of social analysis.

3.3.2 Socio-economic Groups (SEG)

Dissatisfaction with SC on its theoretical, conceptual and technical grounds led social researchers to look for alternatives to this scheme. In 1951 a new government socio-economic classification was introduced alongside SC: *Socio-economic Groups* (SEG, see Appendix 3.5) (Rose *et al.*, 2005). "Although much less discussed in the literature than SC, SEG was a more social scientific measure; ... SEG had an operational requirement to take into account employment status and size of employing organisation as well as occupation. In that sense it came closer than SC to sociological measures of social class" (Rose *et al.*, 2005). SEG has also been extensively used in government analyses and reports, as well as in many academic studies.

According to Rose *et al.* (2005), SEG was considered by many sociologists as a better measure than SC for social scientific purposes (for example, see Rose *et al.* (2005, p10-11)). However, "there was no explanation available of the conceptual basis of SEG; and there were no rules to guide researchers on how SEGs might best be collapsed for analysis, hence the many and varied (and often incoherent) ways in which this was done. Like SC, it also relied on outmoded distinctions – skill and the manual/non-manual divide. Partly as a

---

[11] For example, having a non-manual job is only one step to being middle class – you have to feel part of it too (Slattery, 1986, p50). Studies have shown how class consciousness fragments as well as unites social class groupings (see Slattery (1986, p50)).

[12] Traditionally it was officially assumed that the husband or father was the head of the household and that his wife (and children) should be classified according to his occupation (Slattery, 1986, p50).

consequence of this, it reflected women's positions in the social structure very inadequately"
(Rose *et al.*, 2005).

3.3.3 National Statistics Socio-economic Classification (NS-SEC)

The weaknesses of the former government socio-economic classifications brought the need for a single, theoretically and conceptually clear classification to replace the former ones. In 1994, the Office for National Statistics commissioned the Economic and Social Research Council to organise a review of government social classifications, and thus a development of a new scheme – the *National Statistics Socio-economic Classification* (NS-SEC) (Rose *et al.*, 2005). The new classification would require a clear conceptual basis and therefore be capable of validation both initially and in the future (i.e. it was necessary to be clear about what the new classification was measuring and how in the future it would allocate occupations as society and labour market change); it should also be 'hierarchical' in the sense that a larger number of nominal categories (attribute of SEG) could be collapsed into a smaller number of categories (attribute of SC) for analytic purposes (Rose *et al.*, 2005).

The conceptual rationale of NS-SEC follows that of the *Goldthorpe class schema* (see Appendix 3.6), which was developed by John Goldthorpe over his study of social mobility in England and Wales (Marshall *et al.*, 1988). While operationally similar to SC and SEG (that is, requiring information on occupation and employment status, and in some cases size of the establishment), the Goldthorpe schema allocates people to social classes on explicit criteria of their work and market situations; in other words, it is to identify clusters of people who share similar amounts of authority and autonomy in their workplaces (the work situation), and who also share roughly common life chances and economic interests by virtue of their situation in the labour market (Saunders, 1990; Rose *et al.*, 2005). Although, like the previous approaches, this schema still fails to consider the classes distinguished by property (the 'upper classes'), and it also shares the same problem as how to analyse the class

position of women; the final result is more systematic and theoretically meaningful than those achieved by using previous schemes (Saunders, 1990). Therefore, class analysts regard the Goldthorpe schema as having a far more satisfactory theoretical and conceptual basis (Rose *et al.*, 2005).

NS-SEC was created on the basis of the Goldthorpe schema, using data collected from the Labour Force Survey (LFS), and applied to the Standard Occupational Classification (SOC)[13]. Each class brings together combinations of occupational groups and employment statuses that share similar employment relations, but are different in these terms from those in the other classes (Rose *et al.*, 2005). The interim version of NS-SEC, based on the Standard Occupational Classification 1990 (SOC90), was released in Rose and O'Reilly (1998); the revised and final version of the scheme, rebased on the Standard Occupational Classification 2000 (SOC2000), was published in Rose *et al.* (2005). Appendix 3.7 shows the final and full version of NS-SEC. Detailed discussions on each of the categories are provided in Chapter 5 of Rose *et al.* (2005). For research purposes and measurement issues, the classification can be collapsed into a number of different analytic classes: the principal version of the simplified NS-SECs contains eight basic classes, with one of which being able to be sub-divided (see Appendices 3.8A and 3.8B).

A major issue when constructing NS-SEC was the bridging and continuity to SC and SEG. All the sub-categories in the full version of NS-SEC are devised to aid this matter. For example, L3 is sub-divided into 'traditional professionals' (recognised by both SC and SEG) and 'new professionals' (recognised by NS-SEC); L4 is equivalently treated in terms of lower professional and higher technical positions (Rose *et al.*, 2005). It is worth mentioning that the category names in NS-SEC make no reference to the 'skill' or 'manual/non-manual' divides. The concept of skill was not employed in the conceptual basis of NS-SEC, thus to use

---

[13] Details of LFS and SOC are presented in Rose *et al.* (2005, p63-98).

it in category names would be inconsistent with the employment relations approach; as for the manual/ non-manual divide, changed nature and structure of both industry and occupations have shown this distinction both outmoded and misleading (Rose *et al.*, 2005). Consequently,

what were previously referred to in SEG as 'intermediate', 'junior' or 'skilled' non-manual occupations now become, respectively, 'lower professionals' or 'higher supervisors', and 'intermediate' or 'semi-routine' occupations. 'Skilled', 'partly skilled' and 'unskilled' manual occupations in SC become respectively 'lower technical', 'semi-routine' and 'routine' occupations. (Rose *et al.*, 2005)

The ESRC Review Committee has developed the linkages between SC, SEG and NS-SEC to address continuity issues. The results are provided in Appendices 3.9A, 3.9B and 3.9C. The Committee has also undertaken various forms of validation study to NS-SEC, including face validity, criterion validity (i.e. concurrent and predictive validity), and construct validity. Detailed explanations of these issues (both continuity and validity) are presented in Chapters 5 and 6 of Rose *et al.* (2005).

Finally, compared with the former government socio-economic classifications, NS-SEC has the following features:

(a) it is conceptually clear;

(b) it is simple to operationalise and flexible to use;

(c) it unites the most important features and advantages of SC and SEG, and offers a high degree of continuity with both schemes;

(d) it provides an improved classification of women's employment positions; and

(e) it provides both government and academia with a standardised tool, which lends itself to both clearer policy recommendations and a better understanding of social processes (Rose *et al*., 2005).

Based on the above discussion of government social classifications in the UK, it was decided to employ the NS-SEC scheme to study social classes in this research. Details on this part of the work will be introduced in the next chapter.

3.4 Conclusions

This chapter summarised the main concepts and their theoretical background involved in researching social changes associated with the Right to Buy. Social change is an abstract concept which cannot be measured directly, thus social scientists have developed a series of concrete representations to measure the concept, which are known as social indicators. Developing social indicators requires the consideration of reliability and validity. Over time, there have been extensive social indicators devised to measure different dimensions of social change, among which the ones employed in studies of social changes associated with the Right to Buy are aggregated and summarised in Section 3.2. These indicators are grouped to examine different social characteristics of residents, households and dwellings. One characteristic, the social class of residents, is introduced separately due to its conceptual importance. Social class is a key concept in understanding social structure and the dynamics of society. Over time, British government has devised a series of scales to measure this social characteristic. The first two classifications, SC and SEG, have been extensively adopted in social research. However, due to their conceptual and operational deficiencies as well as a changing society, the government introduced the latest scheme, NS-SEC, which is a conceptually clear and standardised social classification. More importantly, NS-SEC provides a high degree of continuity with both SC and SEG, which aids social change studies to a great extent, and will be further discussed in Chapter 4.

Chapter 4   The Data

The previous chapter introduced the theories of social change and social indicators; in this chapter, the practical work of developing social indicators and collecting data for this research are explained. According to Haralambos and Holborn (2004), a concept needs to be operationalised into a number of dimensions, so as to specify what is to be measured; a group of social indicators will then be developed to measure each dimension of the concept; and third, quantifiable data for each social indicator will be collected. In line with this process, the chapter describes the dimensions of social change (social characteristics) examined in this research, the social indicators derived for the measurement of these social characteristics, and the approach to data collection. However, before getting into these stages, the chapter begins with an introduction of the area of study and the source of data. The City of Canterbury has been chosen as the area of study due to its geographic characteristics; and the UK census data have been considered as the most appropriate source of data based on the requirements of this study. Census data have also played an important role in the development of social indicators.

4.1 Area of study – the City of Canterbury[14]

The City of Canterbury is a non-metropolitan and local government district, located in Kent, the South-East of England. It is selected as the area of study based on two considerations. First, the South-East of England has experienced high rates of council house sales and resales during the implementation of the Right to Buy (Jones and Murie, 2006), as one

---

[14] Information and resources were found from Canterbury City Council Online (http://www.canterbury.gov.uk), Visit Canterbury (http://www.canterbury.co.uk), and Casweb (http://casweb.mimas.ac.uk), a web application providing aggregate 1971-2001 UK census data.

of the major economic and residential areas in this region, the City of Canterbury should reflect the typical patterns of social change that took place in previous urban council housing neighbourhoods. The second consideration is to acquire a convenient access to the research sites, given that the University of Kent is located within this area.

The district was formed in 1974 by the merger of the existing city of Canterbury (a historic English cathedral city located at the centre of the district), the Whitstable and Herne Bay Urban Districts (the northern coastal areas), and the Bridge-Blean Rural District (the area surrounding the central city of Canterbury). The district consists of 24 electoral wards, which are listed in Figure 4.1. According to the 2001 census[15], the total population of the district was 135,278. The average age of usual residents was 40.2 years, older than the 38.6 average for England. Of the 55,584 households, 30% were one-person households, 54% were married or cohabiting couples, 8% were lone parents with or without dependent children, and 8% were other types of households. Of those aged 16-74 in the district, 20% had a higher education qualification, which was the same as the national average. Ninety-seven per cent of residents were recorded as white, and the largest minority group was recorded as Asian, at 1.6% of the total population.

---

[15] The 2011 census outputs were not available at the time of writing this thesis.

Figure 4.1: Ward map of the City of Canterbury

Chestfield and Swalecliffe	West Bay
Tankerton	Heron
Harbour	Reculver
Seasalter	Greenhill and Eddington
Gorrell	Herne and Broomfield
Blean Forest	Marshside
St Stephens	Sturry North
Harbledown	Sturry South
Westgate	Northgate
Wincheap	Little Stour
Chartham and Stone Street	Barham Downs
Barton	North Nailbourne
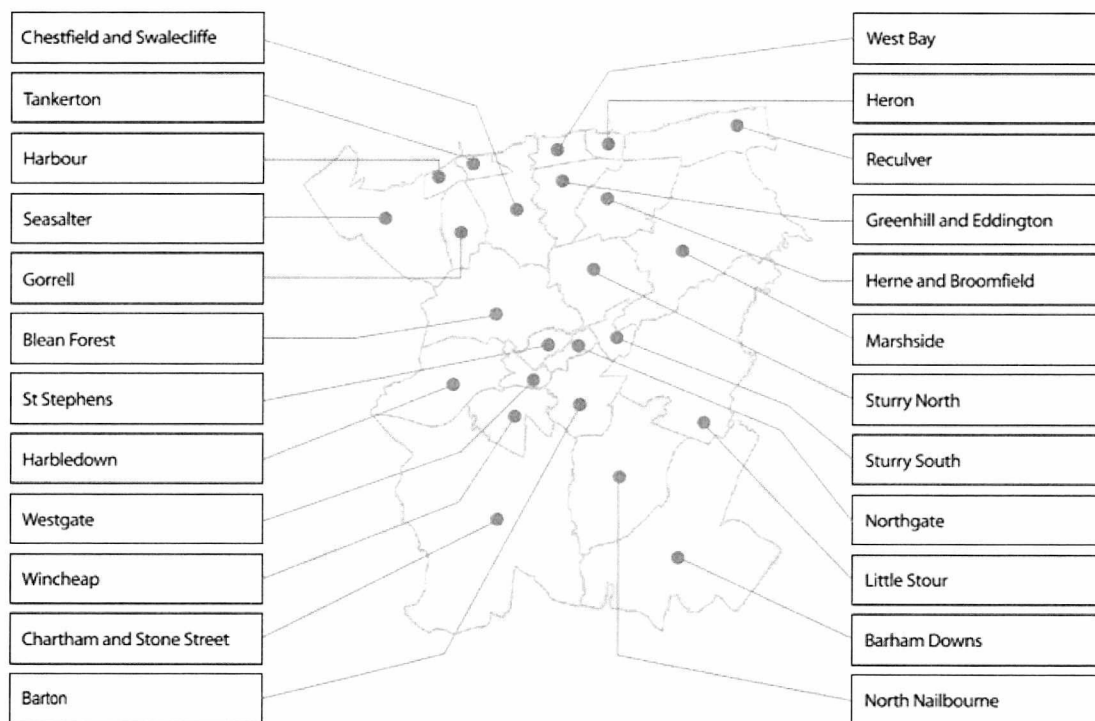
Source: Canterbury City Council Online (2011)

4.2 Source of data – the UK census data

The aim of this research is to trace the evolution of the social characteristics in former council estates in the City of Canterbury, since the Right to Buy legislation was introduced in 1980. This outlines three requirements for the data to be gathered. First of all, the data should reflect the social characteristics of previous council housing areas. Specifically, as the review of relevant studies in Section 3.2 suggests, the data should explain the characteristics of residents, households and dwellings in these areas. Second of all, the data should indicate the dynamics of change. In other words, the data should be able to reveal how these areas have evolved over time. And third, the data should delineate a complete picture of the area of study. In this case, complete demographic and socio-economic information on the population of the City of Canterbury, as well as their housing information, are required for

the identification of all previous and existing council housing estates in the district, and for the examination of the social characteristics in these estates. Taking into account these requirements, the UK census data have been considered as appropriate for this research, given that the data have the following characteristics:

- Census data provide a complete picture of the demographic, socio-economic and housing characteristics of the population. They provide official statistics of all people and households in a country, from a national to neighbourhood level (Office for National Statistics, 2011). They provide benchmark data of the social characteristics of the population, the extent of geographical migration, and housing conditions in local areas (Rees *et al.*, 2002). The importance of censuses lies in their universal coverage, the well-tested and well-documented nature of the classifications used, and the wide range of possibilities for cross-classification analyses according to geography and selected population characteristics (United Nations, 1989). Although the variables included in a census involve a fairly narrow range, being limited to basic characteristics of people (such as age, gender, marital status, ethnic origin, social class, education and occupation) and housing units (such as dwelling type, tenure, number of rooms, and inclusion of amenities); Judd *et al.* (1991) argue that for whole fields within the social sciences, including the study of fertility, educational differences, and characteristics of different areas within cities, the census is still regarded as the single most valuable data source.

- Census data are historical as well as up to date, thus the data can be analysed with the dimension of time. In the UK, census data are collected once every ten years. The first census was held in 1801 with government concerns over the growth of the population exceeding its available resources (May, 1997). The most recent census was conducted on 27 March 2011, which introduced new features and an option to

complete the form online (Census.ac.uk, 2011). This continual approach of data collection brings useful resources to studies spanning long periods of time, especially those ranging back over decades of time. For this research, the timing of census data helps to acquire snapshots of social characteristics in time, where the impact of the Right to Buy scheme on former council housing estates can be reflected and the social changes can be delineated. For example, the 1981 census reflects the social characteristics before the Right to Buy came into effect, the 1991 census indicates different social characteristics during the reform, and the 2001 census describes a new social composition being established after the changes had taken place.

- Census data can be accessed online. Census records from 1841 to 1911 are available through The National Archives[16]. The 1971-2001 census data can be obtained via Casweb, a web interface which provides access to the aggregate statistics from the 1971-2001 censuses. As for the 1921-1961 census data, they will be released by the Office for National Statistics one hundred years after the date they were conducted (The National Archives, 2011).

- Although there have been criticisms around official statistics, such as their accuracy and theoretical background issues[17]; being a main type of official statistics, census data have been widely accepted as a reliable and valid source of information (Haralambos and Holborn, 2004). Statistics from the census have been employed to examine a wide range of social issues, very often spatially and temporally, such as unemployment (see, for example, Bradshaw *et al.*, 1996; Sloggett and Joshi, 1998), health care (Thunhurst, 1985; Gold, 1992; Haynes and Gale, 2000), and housing (Bretz and Wedel, 1987; Boyle, 1998; Sinai and Waldfogel, 2005). In particular,

---

[16] http://www.nationalarchives.gov.uk

[17] See, for example, Chapter 4 of May (1997) and Chapter 13 of Bryman (2008), for a systematic review of the criticisms on official statistics.

census data have also been extensively used in studies of social change; examples include Forrest and Murie (1984b, 1995), Lyons (1996), Field (1997), Atkinson (2000, 2002) and Watt (2005). These studies were reviewed in Chapters 2 and 3.

However, there are also limitations with using the census data in this research. First of all, the data ends in 2001, as the 2011 census results were not available at the time of writing the thesis. Second of all, the data is only collected once every decade rather than annually, as it would have been the case with the British Household Panel Survey[18]. These limitations imply that the evolution of former council estates cannot be traced up to date in this study, and that only the snapshots of social characteristics in time can be acquired.

The characteristics of census data explain that they meet the requirements of this research. Based on the research aim, it was decided to use the 1981, 1991 and 2001 census data as the source for data collection. The 1981 census data casts the social characteristics in former council estates in the City of Canterbury before the Right to Buy legislation came into effect; the 1991 census data describes different social characteristics appeared in these estates during the process of council house sales and resales; and the 2001 census data indicates a new social composition being established after the changes in these areas had taken place. In this way, the evolution of previous council housing neighbourhoods can be reflected, and changes in social characteristics in these areas can be identified.

As mentioned earlier, data for the 1981, 1991 and 2001 censuses can be obtained from Casweb, an online application designed for the access to aggregate census data. Information is generated for local areas (such as enumeration districts, electoral wards, and local authority districts), and displayed by means of numerous univariate tables and cross-

---

[18] The British Household Panel Survey (BHPS) began in 1991, and the main objective is to further understanding of social and economic change at the individual and household level in Britain and the UK.
(http://www.iser.essex.ac.uk/bhps)

tabulations[19] based on all enumerated people in these censuses. These tabulations are re-ferred to a range of topics, including age, gender, occupation, education, ethnicity, social class, employment status, family structure, amenities, housing tenure, and so on (Gilbert, 2008). These statistics are aggregated into a hierarchy of geographical units, of which a graphic representation, named the 'Geography Selection Diagram', is presented in Appendix 4.2. Data can be extracted and downloaded from Casweb by first following the diagram to define areas of interest, and then selecting tables on specific topics from the datasets.

Census statistics on Casweb comprise a wide range of themes and numerous varia-bles, among which the data relevant to this research was to be identified and collected. This data reflects the social characteristics of former council estates during different time periods, thus a set of social indicators needed to be developed to represent the social characteristics in these areas, and to specify which data from the censuses should be gathered. For this pur-pose, the following section demonstrates how the social indicators have been developed, as well as the considerations and issues involved in this process.

4.3 Developing social indicators

According to the aim of the research and the source of data, a number of considera-tions have been raised when devising the social indicators. First of all, the indicators should measure the social characteristics, including the housing characteristics, of previous council estates. Second of all, in order to trace the changes that have taken place in these neighbour-hoods, the indicators should remain constant over time. That is to say, by examining values of the same indicators over successive years (1981, 1991 and 2001), social changes in these estates can be identified. This requires data for each indicator can be collected from each census. And third, social indicators that have been used in censuses and other empirical stud-

---

[19] See Appendices 4.1A and 4.1B for examples of univariate tables and cross-tabulations presented on Casweb.

ies of social changes associated with the Right to Buy, can be treated as sound resources, given that their reliability and validity have been widely accepted.

In line with these three considerations, it was decided to develop social indicators from the 1981, 1991 and 2001 census data, with reference to the relevant empirical studies where indicators of social characteristics in former council estates have been employed. The process began with an overview of the census statistics on Casweb. As previously described, this web application holds large and complex datasets for each census between 1971 and 2001. These datasets contain aggregate table outputs for counts of persons and households, with particular social characteristics at various geographical levels. Each table represents a specific topic, for example 'Car availability', or 'Private households with dependent children'. In this research, three datasets have been chosen for data gathering, namely the '*1981 Great Britain SAS*'[20], the '*1991 Great Britain SAS and LBS*'[21], and the '*2001 Aggregate Statistics Datasets*'. The reason is that they provide data summarised into the level of Neighbourhood Statistics Geography[22], which is considered as a suitable geographical level for the aim of this research. Each dataset lists a number of topics (tables): the 1981 dataset lists 53 topics, the 1991 dataset involves 99 topics, and 23 topics are presented in the 2001 dataset. Details of these topics can be found in Appendix 4.3.

Although the number of topics in each dataset varies largely, it can be perceived, from Appendix 4.3, that the topics in every dataset appear to examine some social characteristics in common (for example, 'Marital status', 'Tenure' and 'Social class' are mentioned in all three datasets). To further elaborate, efforts have been made to derive all the social characteristics from each dataset, by inspecting the content of each table (topic). For example,

---

[20] SAS – Small Area Statistics for census data (Census Dissemination Unit, 2011).

[21] LBS – Local Base Statistics for census data (Census Dissemination Unit, 2011).

[22] This level of census geography includes Enumeration Districts (EDs) and Output Areas (OAs) (Office for National Statistics, 2011), which will be further introduced in the next section.

table 23 in the 1981 dataset, '*Married women in households*', provides information on 'Age', 'Employment status' and 'Economic activity' of all married women; table 22 in the 1991 dataset, '*Rooms and household size*', concerns 'Tenure', 'Number of persons in households' and 'Number of rooms in households'. In this way, social characteristic(s) in each table has (have) been listed, and a summary of the total characteristics considered in each dataset has been produced (see Appendix 4.4). In this summary, characteristics are listed in the same order as they appear in the datasets; and some of them, as can be seen, are examined by every dataset, such as 'Usual residence', 'Gender' and 'Age structure', the first three characteristics of all datasets. These characteristics in common have been identified and summarised into Appendix 4.5A.

Appendix 4.5A shows that out of the 88 characteristics listed by the three datasets (27 are derived from the 1981 dataset, 33 are extracted from the 1991 dataset, and 28 are acquired from the 2001 dataset – see Appendix 4.4), 17 characteristics in common have been identified. These characteristics are constantly investigated over time, which implies their importance in understanding the population and the households. By tracing their evolution through the 1981, 1991 and 2001 censuses, social changes in former council housing estates can be delineated. This requires a set of social indicators to be devised in order to measure these social characteristics in different years, and as discussed earlier, these indicators should remain constant over time. Since each of these social characteristics is examined by a group of variables in each census, it was decided to derive their social indicators by aggregating the variables. For example, 'Car availability' is categorised as "No car, 1 car, 2 cars, 3 or more cars" in the 1981 and 1991 datasets, while in the 2001 dataset, it is measured as "None, One, Two, Three, Four or more". In order to make sure that exact data for its social indicators can be found from each census, the last two variables in the 2001 census ("Three, Four or more") have been merged into one ("Three or more"). In doing so, social indicators

for 'Car availability' can be derived as "No car, 1 car, 2 cars, 3 or more cars". Indicators for the other social characteristics have been developed in the same way, and the results are presented in Appendix 4.5B. (For a better understanding of each social characteristic listed in Appendix 4.5A, this table also includes indicators derived for those characteristics not in common.)

On investigating the social indicators provided in Appendix 4.5B, the census data, and the review of social indicators employed in the research of social changes associated with the Right to Buy (see Appendices 3.1, 3.2 and 3.3), 9 social characteristics have been derived out of the 17 common social characteristics to study social changes in former council estates in the City of Canterbury. They are:

- Characteristics of residents: 'Usual residence', 'Age structure', 'Marital status', 'Economic activity and employment status', and 'Social class'.

- Characteristics of households: 'Car availability', 'Lone parents with dependent children', and 'Tenure'.

- Characteristics of dwellings: 'Dwelling type'[23].

In the three censuses, 'Economic activity' and 'Employment status' are examined together by the same variables (for example "EA full-time employed", "EA part-time employed", and "EI retired"), therefore in this research, the two characteristics are merged into one in accordance with the census data. 'Social class' is measured under different schemes in the three censuses – the 1981 and 1991 censuses adopted SC and SEG, whereas the interim version of NS-SEC, published in 1998, was used in the 2001 census (Appendix 4.3). As intro-

---

[23] Indicators of 'Dwelling type' are derived from the three censuses; however, the 1981 census only provides data for certain types of dwellings. In this case, data that are missing from the 1981 dataset have been dealt with. This part of the work is introduced in the next section.

duced in Section 3.3, NS-SEC is the most up-to-date and conceptually clearest scheme for social classification, and it provides a high degree of continuity with both SC and SEG; therefore, it was decided to use this scheme to measure 'Social class' in this research. Issues upon data collection (linking both SC and SEG to NS-SEC) will be further discussed in the next section. It should be noted that 'Annual income' has been considered as an important social characteristic in some empirical studies (see Appendix 3.1), however, due to issues of privacy and concerns of the accuracy of answers (Bulmer, 1979; Census.ac.uk, 2011), questions on income have not been included in the UK censuses. In this situation, 'Car availability' has been chosen to be studied, given that it is a social characteristic reflecting the wealth of a household.

As for the other common social characteristics, 'Gender' is considered together with other social characteristics in all three censuses, such as gender and marital status, or gender and social class. In this research, it is examined with 'Lone parents with dependent children', as the literature suggests that a large proportion of council tenants have been female single parents (see Section 2.3). Appendix 3.1 shows that 'Ethnic origin' is a social characteristic that has been examined by some researchers, however, the common social characteristic that relates to it, 'Country of birth', has not been considered in this research. These two social characteristics are mostly involved in research of large metropolitan districts such as London and Birmingham, where a great proportion of residents are ethnic minority groups. However, the City of Canterbury, as described in Section 4.1, is a non-metropolitan district with few ethnic minorities, thereby 'Country of birth' is considered as not important here. 'Amenities', 'Household composition' and 'Education' are not included in this research due to difficulties in deriving their social indicators; however, it can be presumed that the level of amenities can be implied by the type of the dwelling (for example, a detached house provides exclusive use of bath, shower or toilet, while a converted flat from a shared house may indicate

shared use of these amenities). 'Household composition' involves various types of house-holds in general; being a particular type of composition, 'Lone parents with dependent children' is investigated separately in each census. Given its relevance to council renting, this social characteristic has been included in this research. The difficulties for deriving 'Education' indicators were due to the different scaling approaches adopted by each census – see Appendix 4.5B for detailed explanation. Whereas both 'Education' and 'Industry' are elements of 'Social class' (see Section 3.2), they are not included in this research. 'Travel to work' is considered a less relevant characteristic in this case.

The development of social indicators was also referred to the review of relevant empirical studies where indicators of social characteristics in previous council estates have been employed (Section 3.2). This review provides the background for the choice of indicators in this research, and explains the relevance of each social characteristic (that has been investigated in these studies) to the aim of this research. Some characteristics and their indicators discussed in the review have been excluded in this case due to various reasons. 'Annual income' is a relevant social characteristic; however, due to lack of data caused by privacy and accuracy issues discussed above (Bulmer, 1979; Census.ac.uk, 2011), it has not been included in this study. Indicators of 'Industry' and 'Occupation' are rarely examined and are mostly contributed to the development of 'Social class' indicators (Reid, 1989), therefore have also been excluded. 'Number of earners in household' and 'Length of tenancy' indicators are less descriptive and less relevant to this research, thus have not been considered here. Some indicators of dwellings that tend to remain stable over time (e.g. 'Number of bedrooms', 'Garage', 'Private garden', etc.) have not been included considering their lack of relevance to this study. It should be noted that indicators of health (e.g. Sick and disabled, Long-term illness) have also been examined by many studies, however, in most cases they have been considered as indicators for 'Employment status' (see Appendix 3.1). Information on health

is also provided in the 1981, 1991 and 2001 censuses but with different forms. In the 1981 census, health indicators (Temporarily sick, Permanently sick) are used to represent 'Economic activity'; in the 1991 census, Permanently sick is still used to indicate 'Economic activity', but Long-term illness, a very similar indicator to Permanently sick, is examined separately with age, gender, household composition, etc.; the 2001 census investigates 'Health' as an independent topic (social characteristic) and indicators adopted are General health ("good, fairly good, not good") and Long-term illness. In aggregating such information across the three censuses, and with reference to the health indicators presented in Appendix 3.1, it was decided to adopt only Permanently sick as one of the indicators for 'Economic activity and employment status' in this research, to make sure that precise data can be found from each census for the same indicator (Long-term illness has been treated equally to Permanently sick in this case, due to the high similarity between the two).

Overall, a full list of 9 social characteristics and their 51 social indicators (extracted from Appendix 4.5B) is presented in Appendix 4.6[24]. They represent the most important social features of former council housing estates; they are consistent through the three censuses; and the indicators are the reliable and valid measurements of the characteristics. At last, because of the limitations given by computer package SPSS on variable names, social indicator names presented in Appendix 4.6 have been adapted into a more applicable form to aid data analysis. This analytical version of indicator names is given in Appendix 4.7.

4.4 Constructing databases

Based on the source of data and the 51 social indicators explained in the previous sections, it was decided to construct three databases, one for each census, to study changes in social characteristics in former council estates. The layout of each database is a matrix of

---

[24] There may be an overlap between the social indicators reflecting the age of 0-4 and 5-15 and the social indicator representing lone parents with dependent children.

51 columns (social indicators) by a number of rows (areas/ geographical units), ensuring that each area is described by the same set of 51 social indicators. Data was firstly collected from the 1981, 1991 and 2001 datasets, and then processed for further analyses. This section introduces the construction of the databases in detail, including the two types of geographical units, re-coding area names, data extraction from Casweb, data aggregation and data linkage, dealing with missing data, as well as data transformation and cleaning.

4.4.1 Enumeration Districts (EDs) and Output Areas (OAs)

The 1981, 1991 and 2001 census datasets employed in this research present two kinds of geographical units for statistical analysis at neighbourhood level: the Enumeration Districts (EDs, used in the 1981 and 1991 census data) and the Output Areas (OAs, used in the 2001 census data). Prior to 2001, EDs were delineated before the census was conducted, and were used as organisational units for census data collection; the Office for National Statistics created OAs after the 2001 census data was available, to support the publication of census outputs (Office for National Statistics, 2011). An ED contains less than 1,000 persons on average, and an OA contains at least 40 households (or 100 persons) to a target number of 125 house-holds, aiming at standardising the population size, geographical shape and social homogeneity (in terms of dwelling types and housing tenure) (Office for National Statistics, 2011).

In census geography, a district consists of a number of electoral wards, and each ward comprises a number of EDs or OAs. In the 1981 census, the City of Canterbury contains 26 wards and 276 EDs; the 1991 census presents the same 26 wards but 287 EDs; in the 2001 dataset, 24 wards and 451 OAs are presented. Names of these wards and the number of EDs/OAs each ward contains are listed in Appendix 4.8. Differences in the numbers of areas included in the City are due to boundary changes over time. Boundaries of census areas need to be reviewed and altered from time to time as population patterns shift (Judd *et*

al., 1991). That is to say, as people are constantly moving, to keep the population sizes approximately equal for each ward and each area unit (Office for National Statistics, 2011), it is necessary to change area boundaries according to the population flow. This also includes new wards being introduced. Boundary changes can make studies of social changes in a particular area difficult, due to the inexact comparisons it may cause. In this research efforts have been made to tackle this issue, which will be explained in Chapter 5.

In census data, EDs and OAs are recorded as a series of codes. For example, an ED in Little Stour in the 1981 census is recorded as 30LDAL02; an OA in the same ward in the 2001 census is named as 29UCGP0005. According to the Office for National Statistics, area codes are constructed on the basis of the geographical hierarchy. Take 29UCGP0005 as an example, the first two digits (29) represent the county (Kent), the following two letters (UC) stand for the district (the City of Canterbury), the ward (Little Stour) is given the next two letters (GP), and the last four numbers (or two in the 1981 and 1991 ED codes) represent the OA (or ED). As can be seen, areas codes make it difficult to identify their locations, and therefore increase the complexity in comparing one area between different years. This can be slightly improved by re-coding the areas into a more straightforward form. To be specific, as all areas are within the same district, thus the same county, the first four characters (two digits and two letters) of a code can be removed; instead, the ward name (or the abbreviation of the name if it is too long) can be added to indicate the location. All area units have been re-coded in this way. Appendix 4.9 lists the abbreviations of ward names used in re-coding, and provides examples of re-coded areas from the three datasets. (Attempts have also been made to convert area codes into postcodes or to match them with street names. However, for the 1981 census, the converting of EDs to postcodes was based on the proximity of two grid reference systems, which created serious inaccuracies (Gatreil, 1989). As for replacing area

codes with street names, after having matched census boundary maps with street map[25], it was found that most areas include a number of streets, and more for some larger areas (in particular EDs). In this situation, it was found unfeasible to name EDs and OAs with street names.)

As a start, the layout of the three databases for this research has been established as a matrix of 51 social indicators by 276 EDs (1981 database), 287 EDs (1991 database), or 451 OAs (2001 database).

4.4.2 Data collection

Extracting census data from Casweb involves four steps. First, select one dataset from the main page to start the extraction process. Second, define study areas by following the area selection hierarchy (for this research, England, Kent, the City of Canterbury, and the wards were selected), and setting data output level to ED/ OA. Third, from a list of topics, choose the one of interest and select relevant data from the table layout. And finally, add selected data to the Casweb data engine and send the request for extraction. Data acquired can be downloaded as an Excel file.

Following the above process, census data for each social indicator and each area has been extracted[26]. As many tables in census datasets give more detailed data (for example, '*Age structure*' in the 2001 dataset provides 16 age groups, while only 8 age categories (in-dicators) have been used in this research), after extraction, some simple aggregation of the data has been performed. Data aggregation also involved linking the social class data in the 1981 and 1991 censuses with the NS-SEC scheme. As introduced earlier, both SC and SEG have been used in the two censuses; since SEG is a more social scientific measure of social

---

[25] Details of this work will be introduced in the next part of this section.

[26] The treatment of missing data is introduced below.

90

class compared to SC (see Section 3.3), it was decided to link SEG data to NS-SEC. This has been done by first matching the 17 SEG groups with the 17 NS-SEC categories, in accordance with the linkages provided by the ESRC Review Committee (see Appendices 3.9B and 3.9C), then aggregating the data into 9 analytic classes of NS-SEC (see Appendix 3.8B). In doing so, social class data in the three censuses became consistent with the 9 'Social class' indicators in this research.

The 1981 census data only provides information for three types of dwellings ("purpose built flat, maisonette or apartment", "converted flat, maisonette or apartment from a shared house" and "non-permanent accommodation"), therefore, data that are missing from the other types of dwellings – "detached house or bungalow", "semi-detached house or bungalow", "terraced house or bungalow", and "flat, maisonette or apartment in a commercial building" – needed to be dealt with. Considering that most buildings stay constant over the years, it can be assumed that within the same residential community, the number of each type of dwellings also stays consistent over time. This implies, that the count of a particular type of dwelling (for example, 'detached house or bungalow') in an ED in 1981 should be the same, or very similar, with that in the same area in 1991. If matching areas for the 1981 EDs can be found in the 1991 dataset, missing values for 'Dwelling type' indicators can then be filled with 1991 data. This has been done by consulting two types of digital maps – the census boundary maps and the OS raster map[27] for the City of Canterbury. The census boundary maps provide UK boundary data from county to ED/OA level, available at UKBORDERS, (http://edina.ac.uk/ukborders), an online application providing access to digitised boundary data for the UK in common Geographical Information System (GIS) formats. Maps can be extracted and downloaded via the Boundary Data Selector, and then viewed on ArcGIS software. In this research, maps for the 1981 and 1991 census ED boundaries for the

---

[27] Ordnance Survey 1:10,000 scale raster map with street names marked (Digimap, 2011).

City of Canterbury have been downloaded (see Appendix 4.10, where the 2001 census OA boundary map is also presented, which will be referred to in the next chapter). In order to compare and match the areas, an OS 1:10,000 scale raster map has also been adopted, since it contains street names which were considered useful with area matching. The OS raster maps are available at Digimap[28], which is an on-line collection of the digital maps and spatial data of the UK. The map for the City of Canterbury has been downloaded into ArcGIS as a base map. To compare the areas, the 1981 and 1991 boundary maps have been placed on top of the base map, and set to be transparent so that only boundary lines and area names appear visible on the base map. In this way, when an area is selected, its highlighted boundary lines can indicate which streets and buildings are located within this area. Each ED in 1981 has been examined and compared to the areas in 1991; and out of 276 EDs, 195 have been found having matching areas from the 1991 data (see Appendix 4.11 for an example of the matching areas). For the rest 81 EDs, as a result of boundary changes discussed above, matching areas from the 1991 data could not be found. These EDs have been broken down into several parts, and each part has become a new ED, or a section of a new ED, in 1991 (see for example, Appendix 4.12). In this case, the average number of dwellings in each type between relevant EDs in 1991 have been obtained, and filled into the 1981 database. For example in Appendix 4.12, missing data from area 30LDAR05 (the 1981 ED), have been filled with the average values acquired from the 1991 EDs 30LDFR05 and 30LDFR13. This procedure introduces an element of error, but as will be seen in the next chapter, scaling methods are robust to errors in the data, and it was preferred to work with a small amount of estimated data, than to lose observations (Mar Molinero, 2002).

---

[28] http://edina.ac.uk/digimap

4.4.3 Data transformation and cleaning

Data collected from the three censuses are counts of persons and households; before statistical analyses could be applied, it was necessary to compute them into proportions, so as to make the data comparable. This has been done by dividing the counts by the total number of persons or households in that area. For example, in area BartonFB05 there were 162 full-time employees in 1991, the total population was 476, thus the proportion of those who were in full-time employment was 162 divided by 476, 34%. Some areas in census datasets are recorded with a population of zero (they are mainly areas of fields, for example HerneAJ22 and BlnFrtFC07), hence were considered as invalid for the purpose of this research, and have been removed from the databases. In total, 14 invalid areas have been removed from the 1981 database, and 19 have been taken away from the 1991 database. There is no invalid area in the 2001 data.

After having deleted the invalid areas, Exploratory Data Analysis (EDA) has been applied to identify outliers from the data. Outliers have been specifically considered as areas where large proportions of residents were living in communal establishments, such as hospitals, hostels, schools, etc. These areas have been concerned as not relevant to this research, thus needed to be excluded from the databases. Identifying outliers adopted two methods – standardising the data and producing the box-and-whisker plots. Data standardisation generates numeric results for identifying extreme values, and boxplots provide visual representations of these values to facilitate the identification of outliers (Hartwig and Dearing, 1979). In this research, data for each social indicator in each database have been standardised to zero mean and unit variance, and values that fell outside the -2.5 and +2.5 range have been noted. The results show that in the 1981 database, 9 EDs have been found having standardised values for the indicator Hcommunal (people living in communal establishments) higher than +2.5, and (or) those for the indicator Hholds (people living in households) lower than -

2.5; similarly, 10 EDs have been found holding such values from the 1991 data, and 8 OAs found from the 2001 data. These areas and their standardised values for the two indicators are summarised in Appendix 4.13. Efforts have been made to identify what types of communal establishments are contained within these areas, by examining the standardised data for every indicator, the boxplots, census boundary maps and the OS raster map, and by visiting the actual sites when necessary. The results are shown in Appendix 4.14. In this table, social indicators holding discordant standardised values are listed for each of the areas, and the communal establishments identified within these areas are given. For example, in WgateHB16, a very large proportion of the population were living in communal establishments (the standardised value for Hcommunal was 9.70), aged 5-15 (4.32), and were students (5.12); very little were found living in households (-9.81), in full-time (-2.62) or part-time (-3.38) employment. It can be suspected that a school is located within this area. By looking up the maps, the communal establishment was found to be the King's School next to the Canterbury Cathedral (see Appendix 4.15 for the boxplots of these social indicators (the area is numbered 412 in the boxplots) and the map of this area). Overall, these areas have been identified as outliers and excluded from the databases. By far, the final 1981, 1991 and 2001 databases have been completed, and the total number of areas for data analysis is 954 (253 EDs in the 1981 database, 258 EDs in the 1991 database, and 443 OAs in the 2001 database). A segment of the 1981 database is presented in Appendix 4.16 as an example.

4.5 Conclusions

This chapter introduced the preparation of the data for this research, including the area of study, the source of data, developing social indicators, and constructing the databases. The City of Canterbury has been selected as the area of study due to its geographic characteristics. Based on the requirements of this research and the characteristics of the UK census data, the 1981, 1991 and 2001 census statistics have been chosen as the source of data for

this research. These datasets chart the evolution of the City by examining the demographic, socio-economic and housing characteristics of the population and the households over time, among which 9 social characteristics and 51 social indicators have been derived to be studied in this research. Data has been firstly collected through Casweb, and followed by a series of data processing activities, including re-coding area names, data aggregation and linkage, dealing with missing data, data transformation, and data cleaning. In the end, three databases, one for each census, have been completed for further statistical analyses being conducted.

Chapter 5   Data Analysis and the Findings

This chapter demonstrates the work of data analysis and presents the findings. The aims of the analysis were to explore the structure of the data, to find similarities between areas, to identify former council estates and to trace the evolution in former council estates. The analysis began with the study of the dimensionality of the data by applying Principal Components Analysis (PCA) to each database. The results showed a consistent structure over the three databases. Multidimensional Scaling (MDS) was then performed to study the similarities between areas in each data matrix individually, and Property Fitting (ProFit) was applied to explore the relationships between social indicators and areas in the MDS configuration. Former council housing areas in the 1981 census were identified by looking up the original data and the ProFit outputs, and Three-way Multidimensional Scaling, in particular the INDSCAL model of Carroll and Chang (1970), together with ProFit, were applied to study the social changes that have taken place in former council estates in the City of Canterbury since the introduction of the Right to Buy scheme.

Based on the characteristics of the data used in this research (see Chapter 4), it was desirable to analyse the data in a multivariate analysis context. Therefore in this chapter, social indicators have been treated as variables and areas as observations. Multivariate analysis involves a variety of techniques, such as Principal Components Analysis, Factor Analysis, Cluster Analysis, regression, Multidimensional Scaling, etc. Principal Components Analysis (PCA) is a well-known method used to explore the hidden structure underlying multivariate data. It highlights the most important features of the data by generating geometrical representations, therefore is a commonly adopted tool to acquire first insights to the data. In this research, PCA has been applied to study the dimensionality of the data. In order to study the

similarities between areas, so as to identify previous council estates, Multidimensional Scaling (MDS) has been performed. MDS has an advantage of communicating its results via geometrical representations, where two points are located next to each other if they share very similar characteristics, or they appear far apart if their characteristics are very different. This is advantageous to the identification of previous council estates, thus the technique has been preferred in this research. MDS is often carried out with Property Fitting (ProFit), a regression-based technique that represents the regression results within a scaling configuration (Schiffman et al., 1981). It helps to explore the relationships between variables and observations, and represents the results graphically, therefore is a desirable technique for interpreting MDS results. In this research, ProFit has been conducted to help identify former council estates. Finally, in order to trace the social changes that took place in these areas over time, which requires the analysis of a set of three-way data (social indicators, areas and years), the INDSCAL model of Carroll and Chang (1970) has been implemented. INDSCAL is a method of Three-way Multidimensional Scaling that produces a general model which explains each dataset as a particular case. This approach fits the study involving an element of time and using a number of datasets, therefore has been adopted in this research. The general model is called a common structure and is presented graphically. ProFit has been conducted to fit each former council estate in different years into the common structure, so that the "movement", i.e. changes in social characteristics over time, of each estate can be presented in the graphical representation of the common structure. The multivariate methods employed in this research all produce graphical representations which are beneficial to the interpretation of results, and are all available in the computer package SPSS.

However, each of these techniques has certain limitations besides advantages. PCA is based on multivariate normal distribution and uses correlations as a measure of distance, therefore is weak to non-parametric data. For this reason, MDS has been applied as it is a

more general model than PCA and is based on relationships of order. Being non-parametric, it is also less affected by the presence of extreme observations. However, in this case, there is a lack of statistical significance tests in MDS analysis – there are some measures of fit such as Stress, but they are only descriptive of how well the recovered data fits the input matrix (Bravo, 2002). Both PCA and MDS are data reduction tools, which may result in a loss of useful information. When attach meanings to the dimensions generated by both techniques, different researchers may have different opinions, as it is a subjective process rather than objective. ProFit is a graphical representation of the results of regression analysis which adopts standard linear methods, whilst MDS is based on relationships of order. It might be better to use ordinal regression with MDS, but the problem with this method is that it does not have an equivalent graphical representation, which is yet crucial in the interpretation of results in this study. The INDSCAL model of Carroll and Chang (1970) has been preferred to analyse three-way data in this research. Its algorithm has a condition that data is measured on an interval or ratio scale; and its calculations are based on actual values of dissimilarities, not on relationships of order (Mar Molinero, 2002). Data in this research is measured on a ratio scale (see Chapter 4), thus the INDSCAL model is an appropriate approach to the study of social changes in former council estates.

5.1 Dimensionality of the data

The first step of data analysis was to study the dimensionality of the data by applying Principal Components Analysis (PCA). PCA is a widely used statistical technique to explore the structure of multivariate data. It is often carried out in the studies of local authorities and for the purposes of local decision making, such as Wong (2002), McCrone et al. (2006), and Campanera and Higgins (2011). This analysis has its advantages for data reduction, as well as for visualising the most important features of the data, therefore has been adopted by many as an exploratory tool. Since the technique has been well established in the

literature, it will not be discussed in detail here. Introductions to PCA can be referred to in Chatfield and Collins (1980), and Dunteman (1989).

PCA exercise has been performed on the 1981, 1991 and 2001 databases individually. The limit for extraction has been set to be based on Eigenvalues greater than 0.7^{29} as Jolliffe (1972) has recommended, since setting the limit to 1 may lose too much information. The results are presented as follows.

5.1.1 The 1981 data

Twenty components were found to have associated Eigenvalues greater than 0.7. The first principal component accounted for 16.8% of the total variance of the data; the second component accounted for 15.0%, and the third one for 8.4%. In total, over 85% of the total variance of the data was explained by the 20 components. See Appendix 5.1 for the summary of these results.

The matrix of component loadings has been studied to attach meanings to the principal components. Varimax rotated component loadings were also extracted from the data, and some differences have been found with respect to the original loadings. These matrices (and their simplified tables in which loadings with absolute values below 0.4 have been suppressed) are presented in Appendices 5.2A – 5.2D, and are discussed below.

The first principal component was highly correlated with Zero_4 (aged 0 to 4), Five_15 (aged 5 to 15), Sixteen_24 (aged 16 to 24), Twentyfive_44 (aged 25 to 44), Sixty_64 (aged 60 to 64), Sixtyfive_84 (aged 65 to 84), Eightyfive_plus (aged 85+), EAFT.empl (economically active and in full-time employment), EAPT.empl (economically active and in part-time employment), EIretired (economically inactive and retired),

---

[29] PCA based on Eigenvalues greater than 1 was also carried out, but an analysis based on Eigenvalues greater than 0.7 was preferred, as not to lose too much information.

LnPrnt_deChd (total lone parents with dependent children), Ttl.FLnPrnt (total female lone parents), PT.FLnPrnt (female lone parents in part-time employment), Own.Occupied (owner occupied), Council.Rnt (rented from council) and Detached (detached house). The rotated component loadings conveyed very similar information. In summary, this component can be seen as associated with "Age", with one direction representing the elderly who were retired, home owners, and living in detached houses; and the other direction the young and the middle-aged who were in employment, with children, living in council houses, and a significant group of them appeared to be single mothers with dependent children.

The second principal component was highly correlated with Married, S.W.D (single, widowed or divorced), NoCar (no car or van in household), OneCar (1 car or van in household), TwoCars (2 cars or vans in household), ThreeplusCars (3+ cars or vans in household), Own.Occupied (owner occupied) and Detached (detached house). The rotated component matrix added a few more social indicators that loaded high on this component; they were Sixteen_24 (aged 16 to 24), Priv.Rnt (rented from private landlord) and Conv.Flat (converted flat from a shared house). Overall, the second principal component can be interpreted as "Social status", which discriminates between people who were married, owner-occupiers, living in detached houses and owning one or more cars, and those who were young, single, widowed or divorced, living in privately rented and (or) converted flats, and not having a car.

Indicators that loaded high on the third principal component (both un-rotated and rotated) were Sixteen_24 (aged 16 to 24), EAselfempl (economically active and self-employed), Students, Priv.Rnt (rented from private landlord), LnPrnt_deChd (total lone parents with dependent children), Ttl.FLnPrnt (total female lone parents), PT.FLnPrnt (female lone parents in part-time employment), and Council.Rnt (rented from council). It is clear that this component characterises those social groups who were less stable – the self-employed, students, lone parents with dependent children, and especially those single mothers who

were not working full-time. These groups were renting their homes either from the council, or from private landlords. Thus this component can be described as "Social stability".

The fourth principal component is difficult to interpret. It appears to represent people who were middle-aged, in routine occupations or self-employed, and wealthy. However, no clear pattern can be found for this component.

It is difficult to interpret the remaining principal components. Although, it is possible that they may have a meaning, but it is not apparent from the data; or that they reflect only random variations (Mar Molinero, 2002).

5.1.2 The 1991 data

Nineteen components were calculated with associated Eigenvalues exceeding the 0.7 limit. The first principal component accounted for 19.6% of the variability in the data; the second one accounted for a further 12.9%, and the third one for 9.9%. In total, the 19 components accounted for over 86% of the variability in the data. These results are summarised in Appendix 5.3.

The un-rotated and rotated component matrices (and their simplified tables in which loadings with absolute values below 0.4 were suppressed) have been extracted, and are given in Appendices 5.4A – 5.4D. Component loadings have been studied to give meanings to the principal components.

Social indicators loaded high on the first principal component were Zero_4 (aged 0 to 4), Sixteen_24 (aged 16 to 24), Fortyfive_59 (aged 45 to 59), Married, S.W.D (single, widowed or divorced), EAunempl (economically active and un-employed), NoCar (no car or van in household), TwoCars (2 cars or vans in house-hold), ThreeplusCars (3+ cars or vans in household), LnPrnt_deChd (total lone parents with dependent children), Ttl.FLnPrnt (total

female lone parents), PT.FLnPrnt (female lone parents in part-time employment), Own.Occupied (owner occupied), Council.Rnt (rented from council), Detached (detached house), Terraced (terraced house) and Purp.Flat (purpose-built flat). This component was also highly correlated with EAselfempl (economically active and self-employed) in the rotated component matrix. These social indicators imply that this component is a measure of "Social status", since at one direction there were middle-aged, married couples who owned two cars or more, and lived in their owned detached houses, while oppositely there were those who were young, unemployed, single, widowed or divorced, living in council homes (mainly terraced or purpose-built dwellings), not having a car, and a lot of them appeared to be female lone parents with dependent children.

The second principal component was highly correlated with, aggregated from both rotated and un-rotated matrices, Five_15 (aged 5 to 15), Sixteen_24 (aged 16 to 24), Twentyfive_44 (aged 25 to 44), Sixty_64 (aged 60 to 64), Sixtyfive_84 (aged 65 to 84), Eightyfive_plus (aged 85+), EAFT.empl (economically active and in full-time employment), EAPT.empl (economically active and in part-time employment), EIretired (economically inactive and retired), NoCar (no car or van in household) and TwoCars (2 cars or vans in household). Clearly this component can be labelled "Age", which differentiates between the elderly/retired and those who were young or in their forties, with children, having a full-time or part-time job, and some of them were affluent.

The third principal component had high correlations with Sixteen_24 (aged 16 to 24), Students, Priv.Rnt (rented from private landlord) and Conv.Flat (converted flat from a shared house). The rotated component matrix highlighted Zero_4 (aged 0 to 4), EAunempl (economically active and unemployed), LnPrnt_deChd (total lone parents with dependent children), Ttl.FLnPrnt (total female lone parents), PT.FLnPrnt (female lone parents in part-time employment) and Council.Rnt (rented from council). These indicators describe those

who had less social stability, such as the unemployed, single parents with dependent children, in particular single mothers, and students. These groups usually lived in council dwellings, or rented from private landlords. Therefore, this component can be interpreted as "Social stability".

Same as the 1981 data, it has been proved difficult to interpret the remaining principal components, as no clear meanings can be found for them.

5.1.3 The 2001 data

PCA extracted 17 components whose associated Eigenvalues were over 0.7. The first principal component accounted for 23.7% of the total variance; the second principal component accounted for a further 12.8%, and the third one accounted for 10.4%. In total, the variance explained by the 17 components was over 85%. Results are given in Appendix 5.5.

The un-rotated and rotated component matrices (and their simplified tables where loadings with absolute values below 0.4 were suppressed) have been derived and can be seen in Appendices 5.6A – 5.6D. Meanings have been attached to some of the principal components, which are demonstrated below.

The first principal component was highly correlated with Sixteen_24 (aged 16 to 24), Fortyfive_59 (aged 45 to 59), Sixty_64 (aged 60 to 64), Married, S.W.D (single, widowed or divorced), EAselfempl (economically active and self-employed), EAunempl (economically active and unemployed), LgeEmpl_HiMng (large employers and higher managerial occupations), LoMng_Prof (lower managerial and professional occupations), SmlEmpl_OwnAcct (small employers and own account workers), Routine (routine occupations), NoCar (no car or van in household), TwoCars (2 cars or vans in household), ThreeplusCars (3+ cars or vans in house-hold), LnPrnt_deChd (total lone parents with dependent children), Ttl.FLnPrnt (to-

tal female lone parents), Own.Occupied (owner occupied), Council.Rnt (rented from coun-

cil), Detached (detached house), Terraced (terraced house) and Purp.Flat (purpose-built flat).

The rotated component loadings provided consistent information. It can be seen that this

component is an account of "Social status" between different social groups. It represents a

contrast between those who were married, middle-aged and over, in managerial or profes-

sional occupations, wealthy (owning properties and cars), and living in detached houses, and

those who were young, unemployed, single, widowed or divorced, routine workers, renting

council homes and having no car. It is noticeable that lone parents with dependent children,

especially female single parents, were again salient among the latter group.

The second principal component correlated highly with Zero_4 (aged 0 to 4),

Five_15 (aged 5 to 15), Twentyfive_44 (aged 25 to 44), Sixtyfive_84 (aged 65 to 84),

EAFT.empl (economically active and in full-time employment), EAPT.empl (economically

active and in part-time employment), EIretired (economically inactive and retired), Lo-

Supv_Tech (lower supervisory and technical occupations), SemiRtine (semi-routine occupa-

tions), NonClassifbl (not classifiable for other reasons), LnPrnt_deChd (total lone parents

with dependent children), and Ttl.FLnPrnt (total female lone parents). The rotated compo-

nent matrix did not show any other social indicator which was highly correlated with this

component. It can be seen that this component is associated with "Age", ranging from the

elderly/retired, to the young and the middle-aged who were working full-time or part-time,

in semi-routine or technical occupations, among which lone parents with dependent children,

especially female lone parents, again played an important part.

Social indicators that loaded highly on the third principal component were Twen-

tyfive_44 (aged 25 to 44), Sixtyfive_84 (aged 65 to 84), EIretired (economically inactive and

retired), HiProf (higher professional occupations), LoMng_Prof (lower managerial and pro-

fessional occupations) and Priv.Rnt (rented from private landlord). Some differences ap-

peared on this component in the rotated matrix, where Sixteen_24 (aged 16 to 24), Married, S.W.D (single, widowed or divorced), Students and NonClassifbl (not classifiable for other reasons) loaded highly. These indicators feature social groups with more or less stability – those who were married, middle-aged, and in managerial or professional occupations, were expected to be more stable than those who were young (students) or elderly, as well as those single, widowed or divorced. It is noticeable that Priv.Rnt (rented from private landlord) appeared in the more stable social group. It is possible that these people may rent accommodations from private landlords, in order to acquire convenient access to their work. Therefore, the third principal component can be interpreted as "Social stability".

Attempts have been made to attach meanings to the remaining components, however, no clear patterns could be found for them.

5.1.4 Summary

PCA results were consistent over the 1981, 1991 and 2001 data. In total, 20, 19 and 17 components were identified in each database respectively; however, only every first three components appeared relevant to this research. They are interpreted as "Social status", "Age" and "Social stability". They form the first three dimensions of each database. Projections of the 1981, 1991 and 2001 data onto each pair of the three components have been produced, and are presented in Appendices 5.7A – 5.9C.

5.2 Similarities between areas

Principal Components Analysis provided insights to the structure of the data; however, in order to trace the evolution of former council estates, it was necessary to explore the similarities between areas in each year (1981, 1991 and 2001), so as to characterise and identify former council estates. For this purpose, a representation, or configuration, of the universe of areas in each database has been constructed using Multidimensional Scaling

(MDS). The model illustrated in this section is a two-way scaling model, in comparison with the three-way multidimensional scaling technique which will be demonstrated in the next section.

5.2.1 Multidimensional Scaling (MDS)

MDS has often been compared with PCA, since they are both data reduction techniques, and they both produce geometrical representations in data analysis. MDS generates very similar results to PCA, when the data is multivariate normal and correlations are used as a measure of distance. However, MDS is a more general model than PCA as it is based on relationships of order, while PCA is based on multivariate normal distribution; and as being non-parametric, it is less affected by the presence of extreme observations. An introduction to the methodology is provided by Kruskal and Wish (1978), and some discussions on the advantages of MDS as compared with PCA can be found in Lingoes (1971) and MacCallum (1974).

MDS has another advantage as in visualising the main characteristics of the data. The methodology communicates its results via a set of maps, which present the main characteristics of the data in a graphical form, and are intuitively interpretable.

The results of PCA on the 1981, 1991 and 2001 data suggest that an MDS configuration for each database should contain at least three dimensions, and that the representation should contain data on "Social status", "Age" and "Social stability". Following the examination of the remaining dimensions, it was decided to represent each database on a five dimensional space, since the fourth dimension may represent a pattern that is not apparent from the data, and the fifth dimension can be treated as random variation. Although many dimensions were identified in each database, it has long been observed that the aspects of the data that are relevant to the research theme can be revealed on a low dimensional representation

(Thom, 1989). Among all the dimensions, the first one is always the most important from a statistical point of view, as it explains the highest proportion of variance in the data (Mar Molinero, 2002).

An MDS analysis has been performed on the three databases individually. A measure of proximity between areas was calculated based on the 51 social indicators, and the measure chosen was Euclidean distance. It was noted that each indicator was measured in a different unit, therefore indicators were standardised to zero mean and unit variance. Data was analysed using the PROXSCAL algorithm in the computer package SPSS. The software provides both ALSCAL and PROXSCAL programmes for MDS. ALSCAL assumes the input is a dissimilarity matrix, while PROXSCAL allows one to specify whether the proximities are similarity or dissimilarity measures (Leydesdorff and Vaughan, 2006). In this case, similarities between areas were to be studied, therefore the PROXSCAL algorithm was chosen to be applied.

In this study, a point in an MDS representation is associated with a particular area in a certain year (1981, 1991 or 2001). Areas are located in a five dimensional space in such a way that if two areas have very similar social characteristics, they are located next to each other in the space; and if their social characteristics are very different, they appear far apart. It was expected to see that areas with large amount of council housing appear next to each other in the configuration.

The quality of the MDS representation is assessed by Stress 1, a standardised measure of goodness of fit. The value for Stress 1 was found to be 0.096 in the 1981 MDS, 0.083 in the 1991 MDS, and 0.078 in the 2001 MDS (results are summarised in Appendix 5.10). According to Kruskal's (1964) verbal classification, these values are described between "good" and "fair".

Outputs from the PROXSCAL programme each contained a five dimensional configuration. Each area was represented by a point in the space, and its position was given by a set of five coordinates. It is clear that a five dimensional configuration cannot be comprehended other than mathematically, but it is possible to project it on to pairs of two dimensions, in order to acquire visual representations. Projections of the 1981, 1991 and 2001 MDS configurations on to dimensions 1 and 2, dimensions 2 and 3, as well as dimensions 1 and 3, are shown in Appendices 5.11A – 5.13C. Due to the close relationship between MDS and PCA, it was expected that the dimensions in MDS configuration would take similar meanings as principal components in PCA. Interpretation of the dimensions will be given below.

5.2.2 Property Fitting (ProFit)

A first attempt at interpreting the MDS results was by visual inspection of the projections. However, mere observation was not sufficient to grasp the main features of the data – although areas that share similar social characteristics were located next to each other on the maps, it was not clear that what social characteristics they had in common. In order to explore the relationships between social indicators and the areas, so as to acquire a full understanding of the configuration, the Property Fitting (ProFit) technique has been performed. ProFit is a regression-based technique that represents the regression results within a scaling configuration (Schiffman et al., 1981). Since it represents the results graphically, it is a desirable tool for interpreting MDS outputs. A "property" is a variable that characterises each data point in the configuration. The relationship between the position (i.e. the coordinates) of a point and the value of the property is assumed to be linear, and a regression is run to estimate its exact form (Mar Molinero, 2002). The results of this regression are then represented in the space graphically, as described above.

In this case, each social indicator was treated as a property, i.e. the dependent variable in the regression, with the coordinates of the area in the configuration being the independent variables. A regression was run for each indicator in each year (1981, 1991 and 2001), and regression coefficients were calculated. The results are given in Appendices 5.14A – 5.14C. Indicators were to be represented as vectors in the space, however, only when the regression results were good enough were the vectors drawn. The quality of regression results is measured by R^2, the coefficient of determination. In this case, only vectors with associated R^2 higher than 0.5 were represented. These are the indicators highlighted in Appendices 5.14A – 5.14C. In total, 19 vectors were represented in the 1981 configuration, 24 were represented in the 1991 configuration, and 31 in the 2001 configuration. Oriented vectors were standardised to unit length ($\beta^2_1 + \beta^2_2 + \beta^2_3 + \beta^2_4 + \beta^2_5 = 1$), so that if a vector appears to be long in a particular projection, it indicates that this social indicator has a strong relationship with the dimensions on which it is represented.

The projections of vectors in each MDS configuration, on dimensions 1 and 2, dimensions 2 and 3, and dimensions 1 and 3 are given in Appendices 5.11A – 5.13C. Each map is situated below the matching projection of areas on the same dimensions and in the same configuration. It can be seen from Appendix 5.11A that Sixtyfive_84 (aged 65 to 84), Eightyfive_plus (aged 85+), EIretired (economically inactive and retired), Own.Occupied (owner occupied) and Detached (detached house) point on the right hand side of dimension 1, while Zero_4 (aged 0 to 4), Five_15 (aged 5 to 15), Sixteen_24 (aged 16 to 24), Twentyfive_44 (aged 25 to 44), EAFT.empl (economically active and in full-time employment), LnPrnt_deChd (total lone parents with dependent children), Ttl.FLnPrnt (total female lone parents) and Council.Rnt (rented from council) point towards the left hand side of this dimension. These social indicators also loaded high on the first principal component in the

1981 PCA, which implies that the same meaning of principal component 1 can be attached to dimension 1, that is, "Age".

On the same map, indicators that point towards the positive side of dimension 2 are Married, OneCar (1 car or van in household), TwoCars (2 cars or vans in household), Own.Occupied (owner occupied), Detached (detached house), Five_15 (aged 5 to 15), Twentyfive_44 (aged 25 to 44) and EAFT.empl (economically active and in full-time employment). Indicators that point towards the negative side of this dimension are Zero_4 (aged 0 to 4), Sixteen_24 (aged 16 to 24), LnPrnt_deChd (total lone parents with dependent children), Ttl.FLnPrnt (total female lone parents), Council.Rnt (rented from council), NoCar (no car or van in household), S.W.D (single, widowed or divorced), Priv.Rnt (rented from private landlord), Sixtyfive_84 (aged 65 to 84), Eightyfive_plus (aged 85+) and EIretired (economically inactive and retired). Clearly this dimension is a measure of "Social status", which coincides with the second principal component in the 1981 PCA.

Some indicators describing "Social stability" are projected on both maps that contain dimension 3 (Appendices 5.11B and 5.11C), such as Sixteen_24 (aged 16 to 24), Priv.Rnt (rented from private landlord), Council.Rnt (rented from council), Ttl.FLnPrnt (total female lone parents) and LnPrnt_deChd (total lone parents with dependent children). Married and S.W.D (single, widowed or divorced) are features of the stability of different social groups, even though they did not load high on the third principal component in the 1981 PCA. They both appear to be important on the third dimension (their vectors appear to be long on both projections), and they point towards opposite directions of this dimension. Council.Rnt (rented from council), Ttl.FLnPrnt (total female lone parents) and LnPrnt_deChd (total lone parents with dependent children) are located towards the centre of this dimension, which implies that the majority of single parents with dependent children,

especially single mothers, were living in council dwellings; and that renting from council was more stable than renting from private landlords.

The same approach has been applied to identify the meanings of dimensions 1, 2 and 3 in the 1991 and 2001 MDS configurations. The results have been found to be very much in line with the meanings attached to the principal components in the 1991 and 2001 PCA.

Social characteristics of the areas can now be interpreted by using the ProFit outputs. For example in Appendix 5.11A, by looking at both maps, it is clear that areas situated at the top-right of the projection (such as BhmDnsAA04, ChfldAE05, SStphnAR04 and HblDwn-AG02) can be characterised by detached (Detached) and owner-occupied (Own.Occupied) housing. It can be suspected that residents within these areas tended to be affluent, married and middle-aged (vectors point in the positive directions of dimensions 1 and 2). On the opposite side, the bottom-left of the projection, areas are featured with large amount of council housing (Council.Rnt) as well as single parents, especially female, with dependent children (LnPrnt_deChd and Ttl.FLnPrnt). In fact, these three indicators appear to be near each other on most projections; which implies that lone parents (mainly female) with dependent children have been a significant group of council tenants over time. Other social indicators that appear near Council.Rnt on the other representations include Sixteen_24 (aged 16 to 24), NoCar (no car or van in household) and EAunempl (economically active and un-employed).

In order to study the evolution of previous council estates, areas with council housing in 1981, 1991 and 2001 were identified with the help of ProFit. Council.Rnt (rented from council) was superimposed into each configuration, and projected on to each pair of the first three dimensions together with the areas. In this way, the vector of the property shown on each projection indicates which areas contained large-scale council housing in that particular year. The projections are given in Appendices 5.15 – 5.17. The areas that appear close to the

end point of the vector on every projection were proved to have high proportions of council housing in the original data.

5.3 The evolution of former council estates

Previous data analysis explored the dimensionality of the data and the social characteristics of areas in each individual year. However, the aim of this research is to trace how social characteristics in former council housing areas have evolved over time. This required a data matrix whose components were areas, indicators and years. This is known as three-way data. There are various methods in which three-way data can be analysed. Kiers (1998) provides a review of these models, which includes the extension of Factor Analysis by Tucker (1966), the PARAFAC model of Harshman (1970), and Ramsay's (1982) MULTISCALE. In this research, the INDSCAL model of Carroll and Chang (1970) has been applied. INDSCAL produces a general model which explains each dataset as a particular case; this approach fits the study of social change using different censuses, therefore has been preferred. The model is available in the computer package SPSS, and its results are intuitively interpretable.

The Individual Differences Scaling model (INDSCAL) is a weighted multi-dimensional scaling model, which generates a common structure from all similarity matrices derived from the datasets, and the common structure is modified in order to represent individual matrices. The common structure is represented in the form of a "common space", which is a set of points in k dimensions. The position of a point in the space is described by its k coordinates. The common space represents similarity matrices in such a way that its various dimensions are modified (stretched or shrunk) according to their individual importance in a specific matrix. In other words, weights are attached to individual dimensions to represent the differences of the matrix. The illustration of the technique can be found in Kruskal and Wish (1978).

The data in this research consists of three matrices, one for each census year. The columns of a matrix contain the values of social indicators, and each row being a unit area, ED or OA. A similarity matrix was generated from each data matrix, and distances were calculated between social indicators. Euclidean distance was used as the measure. As each social indicator was measured in a different unit, values of all indicators were standardised to zero mean and unit variance. Calculations were run using the PROXSCAL algorithm in SPSS.

The analysis includes three steps. First of all, the INDSCAL model was used to derive the common space and the weights from the three similarity matrices. The common space summarised the structure of the social indicators that remained stable over time; and a set of weights captured how the relative importance, or salience, of each dimension had evolved over the years. Secondly, EDs with council housing in the 1981 census were identified; in order to study how social characteristics in these areas had changed due to the Right to Buy sales, attempts were made to find their matching areas in the 1991 and 2001 censuses. Due to the issue of boundary change demonstrated in Chapter 4, it was found difficult to match some of the EDs with the 1991 and 2001 areas, and to further exhibit the trend of social change in the common space. For this reason, area grouping was performed and a focus point for each group of areas was defined to represent the group in the common space. In this way, in the last step of the analysis, each focus point in 1981 was fitted into the common space together with its matching focus points in 1991 and 2001 by means of ProFit. As the structure of the social indicators remained constant in the common space, the various positions these points took delineated the "movement" of the same area in the space, which indicated the changes in social characteristics in this area over time.

5.3.1 The common space and the weights

Previous PCA results showed that the first three dimensions in each database appeared very similar, which suggested that there was a common structure of social indicators between these matrices. An INDSCAL analysis was performed with five dimensions in accordance with the previous analysis. The common space coordinates are shown in Appendix 5.18. A five-dimensional configuration cannot be represented graphically, thus projections onto two-dimensional subspaces have been generated, and the ones on the first three dimensions are presented in Appendix 5.19.

Attempts have been made to interpret the common space by visual inspection. It can be seen from Appendix 5.19 that, Own.Occupied (owner occupied), Detached (detached house), Married, TwoCars (2 cars or vans in household), ThreeplusCars (3+ cars or vans in household), Fortyfive_59 (aged 45 to 59), LgeEmpl_HiMng (large employers and higher managerial occupations) and HiProf (higher professional occupations) always appear on the same sides of the maps (the positive side of dimension 1 and dimension 2 on the first map, the right hand side of dimension 2 on the second map, and the upper half of the third map). These indicators represent those social groups who were wealthy, middle-aged and stable, and had higher social status. Conversely, at the exact opposite direction, social indicators can be found are Council.Rnt (rented from council), EAunempl (economically active and unemployed), NoCar (no car or van in household), S.W.D (single, widowed or divorced), LnPrnt_deChd (total lone parents with dependent children), Ttl.FLnPrnt (total female lone parents), PT.FLnPrnt (female lone parents in part-time employment), EIperm.sick (economically inactive and permanently sick) and Sixteen_24 (aged 16 to 24). These indicators represent those social groups who were poor, young and less stable, and normally had lower social status. This pattern was reflected from former PCA and MDS as constant over the years. It is also clear that LnPrnt_deChd (total lone parents with dependent children), Ttl.FLnPrnt

114

(total female lone parents) and PT.FLnPrnt (female lone parents in part-time employment) always appear around Council.Rnt (rented from council), which indicates that female lone parents who had dependent children and no full-time job have been a major group of council tenants consistently.

The common space is a representation of the common behaviour of indicators over time. It was also interesting to know how the structure of indicators had varied in each year, i.e. the different relative importance, or salience, each dimension of the common space took in each year. These differences are reflected through the values of the weights that associated to each dimension. These weights have been calculated and presented in Appendix 5.20. It can be seen clearly that dimensions 1, 2, and 3 were more salient than dimensions 4 and 5 throughout the years, which is obviously true since they are more relevant to the purpose of this study. The weights associated with the first three dimensions were roughly equal from year to year, which indicates that the three dimensions took roughly the same importance in every year. However, it still can be learned that in the 1981 data, the most important dimension was dimension 3, "Social stability"; the most salient dimension in the 1991 data was dimension 2, "Age"; and in the 2001 data, dimension 1, "Social status", was the most important one.

5.3.2 Area matching and grouping

Areas (EDs) containing council estates were identified from the 1981 census by consulting the original data and the ProFit results (Appendix 5.15 – 5.17). In this study, a 1981 ED was classified as a council housing area if its value for Council.Rnt was greater than 0.1, i.e. if more than 10% of the total households living in this area were renting from council. In total, 98 EDs were found to be council housing areas in the 1981 census. In order to trace the evolution of these areas over time, matching areas in the 1991 and 2001 censuses needed to be identified. However, this has been proved difficult for some EDs due to boundary chang-

es, as introduced in Chapter 4. In this case, area grouping has been performed to solve this issue. If a 1981 ED could not be matched with a 1991 ED or a 2001 OA, this area was grouped with a neighbour ED (a council housing area); more areas can be added into the group until matching areas (EDs or OAs) for the entire group can be found from the 1991 and 2001 data. In this way, 49 groups (including single EDs) of former council housing areas were found in each database. These are given in Appendix 5.21 together with their values for Council.Rnt.

However, if all the areas (1981, 1991 and 2001) in one group were plotted in to the common space, they might not always delineate a clear trend for social change. For example, Group 1 contains 20 areas (6 EDs in 1981, 6 EDs in 1991, and 8 OAs in 2001); since each had different social characteristics from the others, when plotted they appeared scattered in the space, and therefore the evolution of the 1981 council estates was difficult to trace. In this case, a focus point, which represents all the areas in one year within one group, was created. That is to say, instead of fitting a number of areas into the common space, for each group, three focus points (one for each year) were plotted in order to delineate a clear trend for social change. Before representing the points into the common space, it was necessary to calculate their values for each social indicator. The calculation was the sum of the counts held by each area (which this focus point represented) divided by the sum of the total held by each area. In this way, a dataset of 51 social indicators by 147 focus points (49 groups, 3 points in one group) was created. This dataset was used to generate ProFit results for the study of social changes in former council estates, which will be demonstrated in the next part. A summary of all focus points is given in Appendix 5.22.

5.3.3 Property Fitting (ProFit)

Focus points were represented in the common space by applying ProFit. Each focus point was treated as a property (by transposing the dataset of focus points, each point be-

came a variable, and social indicators became cases), i.e. the dependent variable in the regression, with the coordinates of the indicator in the configuration being the independent variables. A regression was run for each focus point, and regression coefficients were calculated. Focus points were represented in the common space as vectors, which were standardised to unit length.

Forty-nine groups of focus points were fitted into the common space individually. Each group represented the "movement" of a particular council housing area in the configuration, which delineated the social changes that had taken place in that area over time. Projections of the ProFit results on each pair of dimensions 1, 2 and 3 have been produced for each group of focus points, and two patterns of "movement" of former council estates in the common space have been found.

Most areas with large proportions of council housing in 1981 showed a clear pattern of moving away from Council.Rnt and moving towards Own.Occupied. This coincides with the decline of council housing stock and the growth of home owner-ship due to large-scale council house sales under the Right to Buy scheme. In general, changes in social characteristics in these areas from 1981 to 1991 reflected the first phase of the impact of the Right to Buy, the privatisation of council housing; and the second phase of the impact, the resale of former council houses, was reflected from the social changes took place between 1991 and 2001. Five examples are given here to demonstrate this pattern of social change, as well as the various features each area had during its evolution.

- *Group 1*: Appendix 5.23A shows the projection of the "movement" of Ngate1_1981 in the common space. It can be seen that the amount of council housing in this estate did not vary much from 1981 to 1991, but was significantly reduced in 2001 – the vector of Ngate1_2001 moved away from Council.Rnt and moved towards Own.Occupied. This change reflected that large amount of

117

council houses were sold to council tenants between 1991 and 2001. Social indicators that are close to Ngate1_1981 include EAFT.empl and OneCar, indicating the characteristics of council tenants in this neighbourhood in 1981 being economically active, in full-time employment, and owning a car. This is consistent with what have been discussed in the literature in terms of the council tenants before the Right to Buy scheme came into effect. While in 1991, the estate moved close to indicators EAunempl, LnPrnt_deChd and PT.FLnPrnt, implying that the profile of council tenants changed from full-time working classes to mainly the unemployed and the single parents with dependent children, in particular female lone parents in part-time employment. This can be explained as associated with the residualisation process of the profile of council tenants during privatisation; that is, as affluent working classes bought their council homes and left the sector, those remained council renting mainly involved social groups who were living on low incomes or welfare benefits, as well as those who were marginalised in the labour market. Characteristics of residents in this estate in 2001 showed a mixture of social characteristics in 1981 and 1991, i.e. Ngate1_2001 is close to EAFT.empl, OneCar, EAunempl, LnPrnt_deChd and PT.FLnPrnt. As large amount of council houses were sold to sitting tenants between 1991 and 2001, residents in this estate contained both new home owners (economically active and full-time working classes who owned a car) and remaining council tenants (the unemployed and single (mainly female) parents with dependent children). Over all, the evolution of this area highlighted the residualisation of the characteristics of council tenants under the Right to Buy sales.

- *Group 10*: Appendix 5.23B shows a clearer evolution from council renting towards owner-occupation in previous council estate SStphn2_1981 from 1981 to

2001. The directions of SStphn2_1981, SStphn1_1991 and SStphn2_2001 delineate the pattern of moving away from Council.Rnt and moving towards Own.Occupied, showing a steady decline in council housing stock due to Right to Buy sales. The position of SStphn2_1981 in the common space is very close to that of Ngate1_1981 in Group 1, indicating very similar social characteristics in this community in 1981, i.e. residents mainly consisted of council tenants who were economically active, in full-time employment, and having a car. A decade later, this neighbourhood moved close to social indicators EAunempl, EIperm.sick, FT.FLnPrnt, Interm and Twentyfive_44. This change of social composition indicated the impact of council house sales and resales within this estate, where residualised social groups (such as the unemployed, people with permanent illness, and female lone parents with dependent children) were sharing the same community with home owners who were middle-aged, stable, in intermediate occupations and alike. The movement from 1991 to 2001 further reflected the impact of the resale of former council houses, in particular the gentrification process and social mix. The area in 2001 in the common space is situated in between two types of social characteristics, with one side being the affluent home owners who were in managerial and (or) professional occupations or retired, owning two cars or more, and living in detached houses (Own.Occupied, EIretired, Sixtyfive_84, Sixty_64, LgeEmpl_HiMng, HiProf, LoMng_Prof, TwoCars, ThreeplusCars and Detached), and the other side the poor, the young, those with permanent sickness, lone parents, and the unemployed, who did not have a car, and were living in residualised dwellings (NoCar, Sixteen_24, EIperm.sick, PT.MLnPrnt, FT.FLnPrnt, Purp.Flat, Terraced, and EAunempl). This reflected the fact that those middle-class gentrifiers moved into this neighbourhood by purchasing former council houses on the

open market, thus resulted in a mixture of different social groups in the same community. However, a hint of social exclusion was exposed as the vulnerable social groups tended to be displaced into poor quality housing. Over all, social changes in this area highlighted social mix and social exclusion associated with the Right to Buy sales.

- *Group 15*: The "movement" of Wgate1_1981 in Appendix 5.23C shows a different trend of social change compared to Ngate1_1981 in Group 1 and SStphn2_1981 in Group 10. From 1981 to 1991, large-scale council houses were sold and resold to home owners (Gorrell2_1991 significantly moved away from Council.Rnt and towards Own.Occupied), however, from 1991 to 2001, council renting in this area was on the increase, i.e. the direction of Wgate1_2001 points towards Council.Rnt. Accordingly, the evolution of social characteristics in this estate also showed a different trend. Social indicators that are close to Wgate1_1981 include OneCar, EAFT.empl, Routine and Council.Rnt, indicating that the main residents in this estate in 1981 consisted of council tenants who were full-time working classes and owning a car. In 1991, the profile of residents appeared to be middle-aged and over, married and wealthy (owning houses and two or more cars) (Fortyfive_59, Sixty_64, Married, Own.Occupied, TwoCars, and ThreeplusCars). This can be attributed to affluent council tenants bought their homes under the Right to Buy and their long-term tenancy. However, in the following decade, social com-position in this area changed to a mixture of different social groups, such as the residualised groups renting council houses (the unemployed, those with permanent illness, and single parents with dependent children) and those relatively stable (in full-time employment, young and middle-aged, and having a car) (EAunempl, Council.Rnt, FT.MLnPrnt, PT.FLnPrnt, EIperm.sick, Twentyfive_44,

EAFT.empl and OneCar). These changes can be explained as affluent house-holds moving out of the area during the resale of former council houses on the open market, leaving the less affluent and deprived households remained in the area, and new council houses being built to meet housing needs. This reflected the advantage of council house sales and resales as increasing mobility and choices. It is worth mentioning that council renting has been found to be the least mobile tenure, thus results in a higher unemployment rate in such areas (see Section 2.3). Over all, the evolution of this community highlighted the increase of mobility associated with the Right to Buy scheme.

- *Group 20*: Appendix 5.23D presents the "movement" of Heron2_1981 in the common space. Social characteristics within this area did not change much in the first decade (1981 – 1991). Residents were mainly the young, the elderly, and some single parents with dependent children, living in residualised dwellings (such as flats converted from a shared house or located in a commercial building) (Five_15, Sixteen_24, Eightyfive_plus, Ttl.MLnPrnt, Com.Flat and Conv.Flat). However, the slightly drift of the area towards the left hand side of the projection in 1991 shows that there was an increase in private renting within this community (Heron1_1991 moved towards Priv.Rnt). As having been discussed in the literature (see Section 2.3), the increase of private renting is an unexpected outcome of the Right to Buy. Due to a reduced council housing supply, many had to seek homes in the private rented sector. Local authorities had to turn to private renting to house those in need of housing. Young people (aged 16 to 24) appeared to have increased in this area in 1991, indicating that the majority of private tenants were young adults on low incomes, which is consistent with the argument in the literature (see Section 2.3). Social characteristics of this area significantly changed between 1991 and 2001, from a de-

prived council renting and private renting estate to a gentrified owner-occupied area. Residents were featured with retired middle-class households (EIretired, Sixty_64, Sixtyfive_84, Eightyfive_plus, HiProf, LgeEmpl_HiMng and LoMng_Prof). This reflects the gentrification process associated with the resale of previous council dwellings on the open market, where affluent elderly households purchased these properties and moved into the neighbourhood. Over all, the evolution of this community highlighted the increase of private renting and the gentrification process associated with the Right to Buy.

- *Group 43*: The projection in Appendix 5.23E presents a steady evolution of NNlbrn1_1981 from a council renting estate towards a neighbourhood with significant amount of owner-occupation. As it shows in the graph, council housing stock was sold quickly between 1981 and 2001, which indicates that the location of this area was fairly popular, and that many of the council tenants who bought their homes under the Right to Buy were relatively affluent. The latter can be reflected from the position of NNlbrn1_1981 in the common space, where the closest social indicator is SemiRtine (semi-routine occupations). Council housing stock was on the decline from 1981 to 1991, and the estate was evolving towards a mixed-tenure community, i.e. lone parents with dependent children who remained council renting, were sharing the estate with the young and the middle-aged that were wealthy and in non-routine occupations. This is reflected through the social indicators that are close to Sslter_1991 in the common map, for example Ttl.MLnPrnt, Zero_4, Five_15, Twentyfive_44, LoSupv_Tech and ThreeplusCars. From 1991 to 2001, social characteristics in this estate further developed to mainly involve affluent middle-class households, who were middle-aged, working full-time, and in non-routine occupations (ThreeplusCars, Twentyfive_44, Fortyfive_59, EAFT.empl and LoSupv_Tech).

It is worth mentioning that male single parents working full-time (FT.MLnPrnt) also appeared among the social group described above, however, female single parents remained as the majority in council renting (Ttl.FLnPrnt and Council.Rnt appear next to each other in the graph). This hints at a possibility of social inequality which is worth further elaboration. It can be suspected from the social characteristics of this area in 2001 that the neighbourhood was attractive to affluent middle-class households, therefore, many of them moved into this area by purchasing former council properties, and pushed out the vulnerable social groups who were living on low incomes and welfare benefits (NNlbrn1_2001 appears far away from EAunempl, EIperm.sick, NoCar and LnPrnt_deChd). Over all, social changes in this community highlighted social mix, gentrification and displacement associated with the implementation of the Right to Buy.

Another pattern of "movement" of previous council estates in the common space was less represented but significant. In this pattern, council renting firstly considerably reduced from 1981 to 1991, along with an equivalent increase in home ownership; however, from 1991 to 2001, the position of the estate moved back towards 1981, although to a various extent. Two examples (Appendices 5.24A and 5.24B) are given below to explain such a pattern. This can be associated with the impact of the economic recession in the late 1980s. Since 1981, large amount of council houses were sold to sitting tenants, however, these new home owners could not cope with increasing interest rates and falling house values during the recession, therefore, they had to sell the houses they had just bought. During the recession, affordability and homelessness issues led the government to produce more council housing for the poor.

- *Group 17*: The "movement" of Barton1_1981 in Appendix 5.24A shows the impact of the economic recession on the social characteristics of this estate. In 1981, the estate was a typical council renting community housing working-class tenants who were economically stable and in full-time employment (Routine, OneCar, EAFT.empl). A great proportion of these tenants purchased their homes under the Right to Buy between 1981 and 1991, as reflected through the "movement" of the area away from council renting and towards owner-occupation. However, as can be seen from the projection, these new home owners did not possess strong affordability to sustain their houses during the recession (the direction of Wgate2_1991 is still towards the low-income social groups, who lived in flats or terraced houses and did not have a car – Purp.Flat, Terraced and NoCar). As a result, some of these new home owners had to sell the houses they had purchased under the Right to Buy, and went back to public renting. The movement of the estate towards Council.Rnt from 1991 to 2001 reflected this change.

- *Group 36*: The evolution of Mside1_1981 provided in Appendix 5.24B presents a stronger reaction to the economic recession within the previous council estate. As it is shown in the projection, council renting was firstly significantly reduced during the first decade of the Right to Buy, however, between 1991 and 2001, the level of council housing in this estate grew back to nearly the level in 1981. This can be explained as many council tenants picked up mortgages and bought their houses after the Right to Buy scheme was introduced, however, as the majority of these new home owners were on relatively low incomes (Mside1_1981 appears very close to SemiRtine in the projection), their affordability could not cope with the economic recession, and therefore had to sell the houses they had

bought. Affordability crisis led the government to build more houses to meet the housing need, thus council renting was on the increase in this neighbourhood between 1991 and 2001. Characteristics of residents in 2001 were similar with those in 1981, mainly involved male single parents with dependent children, and in semi-routine occupations (Ttl.MLnPrnt, Zero_4 and SemiRtine).

Because of a relatively low proportion of council housing, the ProFit outputs for some estates did not reveal any pattern of social change. In general, there was a tendency of council housing decline between 1981 and 2001; however, social characteristics in these areas remained stable during this time period. Appendices 5.25A and 5.25B present two examples of such estates. In Appendix 5.25A, LStour3_1981 slightly moved away from Council.Rnt in 1991 due to the sale of council houses, but remained almost unchanged in 2001. Characteristics of residents also remained consistent as predominantly the elderly and the retired (Sixtyfive_84, Eightyfive_plus and EIretired). In Appendix 5.25B, the "movement" of Rclver_1981 also reflected the impact of council house sales, but again the social characteristics in this estate kept stable as housing large employers, people in higher managerial occupations, and the retired (LgeEmpl_HiMng and EIretired), and most of them were home owners (Own.Occupied). Although not all former council estates investigated in this study revealed a certain pattern of social change, most of them did show a clear decline in council housing stock. This is best represented by means of the focus points and their standardised values for Council.Rnt (see Appendix 5.26).

The results of ProFit were examined against the review of social changes associated with the Right to Buy presented in Section 2.3, and were found to be in line with the literature. However, the empirical studies reviewed in Section 2.3 have mostly focused only on one or several issues of social change; this research provides a complete account of the evo-

lution of social characteristics in former council estates since the introduction of the Right to Buy.

5.4 Conclusions

This chapter demonstrated the techniques applied in data analysis and interpreted the results of each part of the work. First of all, Principal Components Analysis (PCA) was performed to study the dimensionality of the data. Results were consistent over the 1981, 1991 and 2001 databases; that is, the first three principal components appeared to be relevant to this research, and they were interpreted as "Social status", "Age" and "Social stability". The second part of data analysis was to apply Multidimensional Scaling (MDS) individually to study the similarities between areas in a five dimensional configuration. Property Fitting (ProFit) was used to explore the relationships between social indicators and areas, and to help identify former council housing areas in the 1981 census. At last, INDSCAL model was applied to study the three-way data (social indicators, areas and years) in order to trace the social changes in previous council estates since the implementation of the Right to Buy. A common space was derived from the three similarity matrices, and ProFit was used to plot the areas into the common space, so as to trace social changes in a particular area over time. The results showed consistency with the literature in the subject, but provided an aggregate picture of the changes in social characteristics of previous council housing estates since the introduction of the Right to Buy legislation in the UK.

Chapter 6   Conclusions

This chapter concludes the research findings and compares them to the extant literature to represent a high consistency with the findings of previous research. The chapter then summarises the contributions of this study made to the literature. Issues upon the limitations of this study and avenues for further research are also presented.

6.1 Summary of findings

Research findings showed consistency with the findings of previous studies to a great extent. Two patterns of social change in former council estates were found from the "movement" of study areas in the configuration. The first and major pattern showed a clear decline in council renting and a clear increase in owner-occupation, which indicated that large-scale council dwellings were sold under the Right to Buy. In general, the evolution of social characteristics in these areas presented features of privatisation from 1981 to 1991, and those of commodification from 1991 to 2001. However, each of these areas reflected distinct features during its evolution. The five examples given in Section 5.3 are revisited here to demonstrate five typical social changes undergone by former council estates.

- *Group 1*: This area reflected the residualisation of council tenants during the privatisation of council housing. In 1981, the profile of council tenants was featured as working classes and in full-time employment; however, in 1991, the profile of council tenants changed towards the unemployed, lone parents with dependent children, and in particular female single parents in part-time jobs. This change is in line with the findings on residualisation provided by Forrest and Murie (1984a, 1984b), Peach and Byron (1994), Jones and Murie (1999), Munro (2007) and many others. Charac-

127

teristics of residents in 2001 showed a mixture of new home owners and remaining council tenants.

- *Group 10*: This area reflected the process of gentrification and displacement during the commodification of previous council properties. From 1981 to 2001, the estate evolved steadily from council renting towards owner occupation, and characteristics of residents shifted from mainly working-class council tenants to a mixture of middle-class home owners and the residualised social groups. On one hand, this change improved social mix within the area; however, on the other hand, social exclusion was exposed as the vulnerable social groups tended to be displaced into poor quality housing. This is consistent with the results presented in Murie (1991), Lyons (1996), Atkinson (2002), Balchin and Rhoden (2002).

- *Group 15*: This area reflected the increase of residential mobility and social exclusion during the privatisation and commodification of council housing. In this estate, large-scale council houses were sold to sitting tenants between 1981 and 1991. New home owners gained from tenure transfer the opportunities to trade their homes on the open market and effectively move out of the area, and those remained in the community were mainly residualised social groups (as shown in 2001). More council housing were built within this area between 1991 and 2001, which increased social exclusion of this area, since the council tenants were mainly deprived households. On one hand, council house sales and resales open up opportunities for moving; on the other hand, the less attractive areas see a growth in social exclusion because of the increased residential mobility. This finding is in line with the research carried out by James *et al.* (1991) Burrows (1999), Lee and Murie (1999), and Munro (2007).

- *Group 20*: This area reflected an increase in private renting during the first decade of its evolution. Jones and Murie (2006) conclude that the promotion of private renting is an unexpected outcome of the Right to Buy: due to a reduced social housing supply, local authorities had to turn to private renting to house the homeless. Some former council dwellings have become the new supply to this sector, and some previous council tenants have become the new landlords. They describe these private tenants as predominantly young adults with low incomes, which was reflected in this study area, as young people (aged 16 to 24) appeared to increase together with private renting in 1991.

- *Group 43*: This area, in contrast to the area in Group 15, reflected social mix, gentrification and displacement within an attractive neighbourhood. A significant amount of council houses was sold in this area between 1981 and 2001. Due to the popularity of the location, many middle-class households moved into this neighbourhood via council house resales, and inevitably pushed out the vulnerable social groups who were living on low incomes and welfare benefits. Over time, this estate has become gentrified and has reached a high degree of social mix. This is also consistent with the findings in the extant literature, for example Atkinson (2000, 2002), Kennett and Forrest (2003).

Another pattern of social change within former council estates is associated with the impact of the economic recession in the late 1980s. Two examples (Group 17 and Group 36) were given in Section 5.3 to address such pattern, but with very similar features. In general, estates evolved under this pattern experienced a considerable decline in council renting and an equivalent increase in owner occupation between 1981 and 1991. However, during the economic recession, many new home owners (who were on relatively low incomes) suffered from affordability crisis (they could not cope with increasing interest rates and falling house

values), therefore had to sell the houses they had just bought, and went back to public renting. As reflected from the evolution of social characteristics in such areas, council renting was seen an increase in 2001. This pattern of social change is described by Stephens et al. (2008).

Overall, the research findings confirm the findings of previous studies upon social changes associated with the implementation of the Right to Buy. Whereas previous analyses were based on two-way data which from the analysis point of view is rather limited; this research provides the first panel data analysis in this area which looks at a place over time, with many social indicators, and based on a comprehensive analysis with sophisticated statistical tools.

6.2 Contributions

The thesis makes three contributions to the literature.

The first and main contribution is the introduction of Three-way Multidimensional Scaling approach, in particular the INDSCAL model by Carroll and Chang (1970), to the study of social changes associated with the Right to Buy scheme. The method addresses the research question adequately, by taking into account the 'time' element, generating a common space which involves all dimensions of social change, and producing an actual "complete picture" of social change as stated in the research question. The method uses graphical representations to deliver its findings, therefore allows to trace social changes by examining snapshots and projections, which brings new facets to the research in this area. The method is also easy to be accessed in the computer package SPSS, which is a commonly used tool in social research.

The thesis also contributes to the debate on social change by providing an aggregate examination of social changes associated with the Right to Buy legislation. The findings

confirm that the privatisation of council housing has resulted in the residualisation of the sector, including council dwellings and council tenants, which has contributed to the process of social exclusion. In the meantime, however, the findings also agree that the privatisation has brought opportunities for mobility and employment for some Right to Buy purchasers. Research results have also proved that the commodification of previous council properties has introduced gentrification to former council estates, which on the one hand increased social mix within these areas, on the other hand resulted in displacement of remaining council tenants from these areas, thus again increased social exclusion. These findings are consistent with the extant studies on social changes associated with the Right to Buy, for example Malpass and Murie (1982, 1994), Forrest and Murie (1984a, 1984b, 1995), Minford *et al.* (1987), Lyons (1996), Atkinson (2000, 2002), and Watt (2005).

The third contribution of this thesis is made to the assessment and evaluation of social policy, in particular of the Right to Buy scheme, by establishing the social consequences of its past implementation. The thesis suggests that there is not a general policy of "coffee for all", as the consequences of actions depend on the context. The research has shown that council houses in better conditions and more attractive areas experience large-scale sales and resales, but council flats in high-rise buildings do not; that gentrification increases not only social mix in previous council estates, but also social exclusion. The thesis recommends that policy makers take into account in each social context the potential consequences when devising and evaluating new government proposals.

6.3 Limitations

There are a few limitations of this study. First of all, the focus on the City of Canterbury only raises the issue of generalisability. The City of Canterbury is a non-metropolitan district with few minority groups, which implies that the findings drawn from this study cannot be applied to metropolitan districts or areas with large number of minorities. Second,

the data used in this research is not up to date. The 2011 census data was not available at the time of writing this thesis; other more up to date data sources have not been included in this study.

6.4 Approaches for further research

Further research could be carried out in a few ways. First of all, data from the British Household Panel Survey could be adopted in this study. The data is collected annually, more up to date, and provides a wide range of information on individuals and households. Second, further research could focus on other local government districts in the UK, or compare the City of Canterbury with other Districts, a metropolitan district, for example, to explore the differences in the evolution of previous council estates between two districts. Finally, more social indicators, such as health, income and education indicators, could be involved in the analysis.

Appendices to Chapter 3

Appendix 3.1: Social indicators for characteristics of residents

Characteristic	Social indicators	Empirical studies
Age structure	0 – 4	Forrest and Murie, 1984a
	5 – 10	Forrest and Murie, 1984b
	11 – 15	Murie, 1991
	16 – 24	Williams and Twine, 1992
	25 – 34	Williams and Twine, 1993
	35 – 44	Forrest and Murie, 1995
	45 – 54	Brown and Sessions, 1997
	55 – 64	Forrest and Leather, 1998
	65 – 74	Munro and Littlewood, 1998
	75 – 80	Burrows, 1999
	81 and over	McNabb and Wass, 1999
		Atkinson, 2000
		Chaney and Sherwood, 2000
Social class	*Different scales of social classification have been employed in the academic research in the UK, such as Social Class based on Occupation (SC), Socio-economic Groups (SEG), and National Statistics Socio-economic Classification (NS-SEC). These schemes are introduced in Section 3.3.*	Forrest and Murie, 1984a
		Forrest and Murie, 1984b
		Murie, 1991
		Williams and Twine, 1992
		Williams and Twine, 1993
		Peach and Byron, 1994
		Forrest and Murie, 1995
		Forrest *et al.*, 1996
		Lyons, 1996
		Field, 1997
		Burrows, 1999
		McNabb and Wass, 1999
		Atkinson, 2000
		Chaney and Sherwood, 2000
		Watt, 2005
Employment status	Full time employed	Forrest and Murie, 1983
	Part time employed	Forrest and Murie, 1984a
	Self-employed	Forrest and Murie, 1984b
	Seeking work/Waiting to start job	Murie, 1991
	Looking after home	Williams and Twine, 1993
	Never had a job	Peach and Byron, 1994
	Unemployed	Brown and Sessions, 1997
	Sick and disabled	Field, 1997
	Long-term illness	Munro and Littlewood, 1998
	Retired	Burrows, 1999
	Student	Lee and Murie, 1999
		Atkinson, 2000
		Atkinson and Kintrea, 2000
Ethnic origin	White	Forrest and Murie, 1984a
	West Indian	Peach and Byron, 1994
	Indian	Forrest and Murie, 1995
	Guyanese	Brown and Sessions, 1997
	Pakistani	Burrows, 1999
	Bangladeshi	Lee and Murie, 1999
	Caribbean	McNabb and Wass, 1999
	Black	
	Asian	
	Other	
Marital status	Single	Forrest and Murie, 1984a
	Married	Forrest and Murie, 1984b

	Cohabiting	Brown and Sessions, 1997
	Divorced	Forrest and Leather, 1998
	Widowed	Burrows, 1999
	Separated	
Annual income	Less than £5,000	Forrest and Murie, 1984b
	£5,000 – £ 12,999	Forrest and Murie, 1995
	£13,000 – £ 17,500	Forrest et al., 1996
	Over £17,500	Munro and Littlewood, 1998
	Not known	Lee and Murie, 1999
	Or	
	Low	
	Medium	
	High	
Gender	Male	Forrest and Murie, 1984b
	Female	Brown and Sessions, 1997
		Munro and Littlewood, 1998
		McNabb and Wass, 1999
		Chaney and Sherwood, 2000
Satisfaction with accommodation	Very satisfied	Forrest and Murie, 1984a
	Satisfied	Munro and Littlewood, 1998
	Neutral	
	Dissatisfied	
	Very dissatisfied	
Satisfaction with neighbourhood	Very satisfied	Munro and Littlewood, 1998
	Satisfied	
	Neutral	
	Dissatisfied	
	Very dissatisfied	
Local social contacts	Relatives	Atkinson and Kintrea, 2000
	Neighbours (owners)	
	Neighbours (renters)	
Use of local facilities	Never	Atkinson and Kintrea, 2000
	Moderate	
	Extensive	
	All the time	
Feels part of community	Definitely	Atkinson and Kintrea, 2000
	Sometimes	
	Not much	
Education	CSEs	Brown and Sessions, 1997
	'O' levels	
	'A' levels	
	Apprenticeship	
	Secretarial	
	Technical/Business	
	Other qualification	
	Teacher training	
	Nursing	
	Degree	
	BTEC higher	
	No education qualifications	
Industry	Agriculture	Brown and Sessions, 1997
	Energy	
	Metal extraction	
	Engineering	
	Other manufacture	
	Construction	

	Distribution	
	Transport/Communications	
	Banking/Finance	
	Other services	
Occupation	Professional	Brown and Sessions, 1997
	Clerical	
	Other non-manual	
	Skilled manual	
	Unskilled manual	

Appendix 3.2: Social indicators for characteristics of households

Characteristic	Social indicators	Empirical studies
Tenure	Rented from council	Forrest and Murie, 1983
	Rented from housing association	Forrest and Murie, 1984a
		Forrest and Murie, 1984b
	Owner occupied	Murie, 1991
	Owned outright	Williams and Twine, 1992
	Owned with mortgage	Peach and Byron, 1994
	Rented from private landlord	Forrest and Murie, 1995
		Brown and Sessions, 1997
		Field, 1997
		Pawson and Forrest, 1998
		Pawson and Watkins, 1998a
		Pawson and Watkins, 1998b
		Burrows, 1999
		Lee and Murie, 1999
		McNabb and Wass, 1999
		Atkinson, 2000
		Chaney and Sherwood, 2000
		Goodlad and Atkinson, 2004
		Watt, 2005
		Murie, 2009
Household type	Single adult	Forrest and Murie, 1983
(i.e. Structure of household)	Few adults	Forrest and Murie, 1984a
	Small family	Forrest and Murie, 1984b
	Large family	Murie, 1991
	Large adult household	Williams and Twine, 1992
	Small elderly household	Williams and Twine, 1993
	Lone parent and 1 or more dependent child(ren)	Forrest and Murie, 1995
		Brown and Sessions, 1997
	Two parents and 1 or more dependent child(ren)	Munro and Littlewood, 1998
		Burrows, 1999
	Three or more adults with or without dependent child(ren)	McNabb and Wass, 1999
		Atkinson and Kintrea, 2000
		Chaney and Sherwood, 2000
Household size	1	Forrest and Murie, 1984a
	2	Forrest and Murie, 1984b
	3	Murie, 1991
	4	
	5	
	6 or more	
Car access	Yes	Lee and Murie, 1999
	No	Atkinson and Kintrea, 2000
Number of earners in household	0	Murie, 1991
	1	Forrest and Murie, 1995
	2	
	3 or more	
Length of tenancy	Up to 10	Forrest and Murie, 1984a
(i.e. Years of tenancy)	11 – 20	Forrest and Murie, 1984b
	Over 20	
Number of tenancies held	1	Forrest and Murie, 1984a
	2	
	3 or more	
Economic household type	Only 1 person in employment	Murie, 1991

(full time) None retired

More than 1 person in
employment (full or part
time) None retired

Only 1 person in employment
(full time) At least one
retired

No person in employment (or
only 1 person part time)
None retired

No person in employment (or
only 1 person part time) At
least one retired

Don't know

Appendix 3.3: Social indicators for characteristics of dwellings

Characteristic	Social indicators	Empirical studies

Dwelling type	Detached house
	Semi-detached house
	Inner-terraced house
	End-terraced house
	Bungalow
	Cottage
	Flat
	   Purpose-built flat
	   Non purpose-built flat
	   Non-traditional flat
	Maisonette
	Bedsit
	Mobile home
	Caravan
		Forrest and Murie, 1984a
		Forrest and Murie, 1984b
		Murie, 1991
		Williams and Twine, 1993
		Peach and Byron, 1994
		Forrest and Leather, 1998
		Munro and Littlewood, 1998
		Pawson and Watkins, 1998b
		McNabb and Wass, 1999
		Chaney and Sherwood, 2000
		Kennett and Forrest, 2003

Age of dwelling **(i.e. Year of construction)**	Before 1945 1945 – 1964 After 1964	Forrest and Murie, 1984a Forrest and Murie, 1984b Forrest and Leather, 1998 Munro and Littlewood, 1998 McNabb and Wass, 1999

Area type
(i.e. Type of area where the
dwelling is located)
	Urban areas
	Suburban and growth areas
	Rural and resort areas
	Traditional industry and mining
	   areas
	Service centres
	Areas with much local
	   authority housing
		Forrest and Murie, 1984b
		Munro and Littlewood, 1998
		Pawson and Watkins, 1998a
		McNabb and Wass, 1999
		Chaney and Sherwood, 2000

Number of bedrooms	1 2 3 4 or more	Forrest and Murie, 1984a Forrest and Murie, 1984b Williams and Twine, 1993 Peach and Byron, 1994 Pawson and Watkins, 1998b
Number of rooms	1 2 3 4 5 6 or more	Williams and Twine, 1993 Munro and Littlewood, 1998
Private garden	Yes No	Williams and Twine, 1993
Garage	Garage within curtilage Garage elsewhere Off street parking No parking facilities	Williams and Twine, 1993

Appendix 3.4: Social Class based on Occupation

I	Professional, etc, occupations
II	Managerial and technical occupations
III	Skilled occupations
(N)	Non-manual
(M)	Manual
IV	Partly skilled occupations
V	Unskilled occupations

The occupation groups included in each of these categories were selected in such a way as to bring together, as far as possible, people with similar levels of occupational skill. In general, each occupation group was assigned as a whole to one or other social class and no account was taken of differences between individuals in the same occupation group, for example, differences in education. However, for persons having the employment status of foreman or manager the following additional rules applied:

(a) each occupation was given a basic social class;

(b) persons of foreman status whose basic social class was IV or V were allocated to Social Class III;

(c) persons of manager status were allocated to Social Class II with certain exceptions.

Source: Rose *et al.* (2005)

Appendix 3.5: Socio-economic Groups

1	Employers and managers in central and local government, industry, commerce, etc. – large establishments
	1.1 Employers in industry, commerce, etc. – large establishments
	1.2 Managers in central and local government, industry, commerce, etc. – large establishments
2	Employers and managers in industry, commerce, etc. – small establishments
	2.1 Employers in industry, commerce, etc. – small establishments
	2.2 Managers in industry, commerce, etc. – small establishments
3	Professional workers – self-employed
4	Professional workers – employees
5	Intermediate non-manual workers
	5.1 Ancillary workers and artists
	5.2 Foremen and supervisors non-manual
6	Junior non-manual workers
7	Personal service workers
8	Foremen and supervisors – manual
9	Skilled manual workers
10	Semi-skilled manual workers
11	Unskilled manual workers
12	Own account workers (other than professional)
13	Farmers – employers and managers
14	Farmers – own account
15	Agricultural workers
16	Members of armed forces
17	Inadequately described and not stated occupations

Classification by Socio-economic Groups (SEG) was introduced in 1951 and extensively amended in 1961. The classification aimed to bring together people with jobs of similar social and economic status. The allocation of occupied persons to SEG was determined by considering their employment status and occupation (and industry, though for practical purposes no direct reference was made since it was possible in Great Britain to use classification by occupation as a means of distinguishing effectively those engaged in agriculture).

Source: Rose *et al.* (2005)

Appendix 3.6: Goldthorpe class schema

Service class	I	Higher-grade professionals, administrators, and officials; managers in large establishments; large proprietors.
	II	Lower-grade professionals, administrators, and officials; higher-grade technicians; managers in small business and industrial establishments; supervisors of non-manual employees.
Intermediate class	IIIa	Routine non-manual employees in administration and commerce
	IIIb	Personal service workers
	IVa	Small proprietors, artisans, etc., with employees
	IVb	Small proprietors, artisans, etc., without employees
	IVc	Farmers and smallholders; self-employed fishermen
	V	Lower-grade technicians, supervisors of manual workers
Working class	VI	Skilled manual workers
	VIIa	Semi-skilled and unskilled manual workers (not in agriculture)
	VIIb	Agricultural workers

Source: Marshall et al. (1988)

Appendix 3.7: National Statistics Socio-economic Classification

L1 Employers in Large Organisations	**L10 Lower Supervisory Occupations**
L2 Higher Managerial Occupations	**L11 Lower Technical Occupations** L11.1 Lower technical craft occupations
L3 Higher Professional Occupations L3.1 'Traditional' employees L3.2 'New' employees L3.3 'Traditional' self-employed L3.4 'New' self-employed	L11.2 Lower technical process operative occupations **L12 Semi-routine Occupations** L12.1 Semi-routine sales occupations L12.2 Semi-routine service occupations
L4 Lower Professional and Higher Technical Occupations L4.1 'Traditional' employees L4.2 'New' employees L4.3 'Traditional' self-employed L4.4 'New' self-employed	L12.3 Semi-routine technical occupations L12.4 Semi-routine operative occupations L12.5 Semi-routine agricultural occupations L12.6 Semi-routine clerical occupations L12.7 Semi-routine childcare occupations
L5 Lower Managerial Occupations	**L13 Routine Occupations** L13.1 Routine sales and service occupations
L6 Higher Supervisory Occupations	L13.2 Routine production occupations L13.3 Routine technical occupations L13.4 Routine operative occupations
L7 Intermediate Occupations L7.1 Intermediate clerical and administrative occupations	L13.5 Routine agricultural occupations
L7.2 Intermediate service occupations L7.3 Intermediate technical and auxiliary occupations L7.4 Intermediate engineering occupations	**L14 Never Worked and Long-term Unemployed** L14.1 Never worked L14.2 Long-term unemployed
L8 Employers in Small Organisations L8.1 Employers in small organisations in industry, commerce, services, etc. L8.2 Employers in small organisations in agriculture	**L15 Full-time Students** **L16 Occupations not stated or inadequately described** **L17 Not classifiable for other reasons**
L9 Own-account Workers L9.1 Own-account workers (non-professional) L9.2 Own-account workers in agriculture	

Source: Rose *et al*. (2005)

Appendix 3.8A: National Statistics Socio-economic Classification (simplified)

1	Higher managerial and professional occupations
	1.1 Large employers and higher managerial occupations
	1.2 Higher professional occupations
2	Lower managerial and professional occupations
3	Intermediate occupations
4	Small employers and own-account workers
5	Lower supervisory and technical occupations
6	Semi-routine occupations
7	Routine occupations
8	Never worked and long-term unemployed

Source: Rose *et al.* (2005)

Appendix 3.8B: NS-SEC's eight analytic classes, categories and sub-categories

Analytic classes	NS-SEC categories and sub-categories	
1.1	L1	**Employers in Large Organisations**
	L2	**Higher Managerial Occupations**
1.2	L3	**Higher Professional Occupations**
		L3.1 'Traditional' employees
		L3.2 'New' employees
		L3.3 'Traditional' self-employed
		L3.4 'New' self-employed
2	L4	**Lower Professional and Higher Technical Occupations**
		L4.1 'Traditional' employees
		L4.2 'New' employees
		L4.3 'Traditional' self-employed
		L4.4 'New' self-employed
	L5	**Lower Managerial Occupations**
	L6	**Higher Supervisory Occupations**
3	L7	**Intermediate Occupations**
		L7.1 Intermediate clerical and administrative occupations
		L7.2 Intermediate service occupations
		L7.3 Intermediate technical and auxiliary occupations
		L7.4 Intermediate engineering occupations
4	L8	**Employers in Small Organisations**
		L8.1 Employers in small organisations in industry, commerce, services, etc.
		L8.2 Employers in small organisations in agriculture
	L9	**Own-account Workers**
		L9.1 Own-account workers (non-professional)
		L9.2 Own-account workers in agriculture
5	L10	**Lower Supervisory Occupations**
	L11	**Lower Technical Occupations**
		L11.1 Lower technical craft occupations
		L11.2 Lower technical process operative occupations
6	L12	**Semi-routine Occupations**
		L12.1 Semi-routine sales occupations
		L12.2 Semi-routine service occupations
		L12.3 Semi-routine technical occupations
		L12.4 Semi-routine operative occupations
		L12.5 Semi-routine agricultural occupations
		L12.6 Semi-routine clerical occupations

		L12.7 Semi-routine childcare occupations
7	**L13**	**Routine Occupations**
		L13.1 Routine sales and service occupations
		L13.2 Routine production occupations
		L13.3 Routine technical occupations
		L13.4 Routine operative occupations
		L13.5 Routine agricultural occupations
8	**L14**	**Never Worked and Long-term Unemployed**
		L14.1 Never worked
		L14.2 Long-term unemployed
*	**L15**	**Full-time Students**
*	**L16**	**Occupations not stated or inadequately described**
*	**L17**	**Not classifiable for other reasons**

Source: Office for National Statistics (2005)

Appendix 3.9A: NS-SEC categories linked to SC

	SC	NS-SEC categories
I	Professionals, etc. occupations	3.1, 3.3
II	Managerial and technical occupations	1, 2, 3.2, 3.4, 4.1, 4.3, 5, 7.3, 8.1, 8.2, 9.2
III N	Skilled occupations – non-manual	4.2, 4.4, 6, 7.1, 7.2, 12.1, 12.6
III M	Skilled occupations – manual	7.4, 9.1, 10, 11.1, 12.3, 13.3
IV	Partly skilled occupations	11.2, 12.2, 12.4, 12.5, 12.7, 13.1, 13.2, 13.5
V	Unskilled occupations	13.4

Source: Rose *et al*. (2005)

Appendix 3.9B: NS-SEC categories linked to SEG

	SEG	NS-SEC categories
1	Employers and managers in central and local government, industry, commerce, etc. – large establishments	
	1.1 Employers in industry, commerce, etc. – large establishments	1
	1.2 Managers in central and local government, industry, commerce, etc. – large establishments	2
2	Employers and managers in industry, commerce, etc. – small establishments	
	2.1 Employers in industry, commerce, etc. – small establishments	8.1
	2.2 Managers in industry, commerce, etc. – small establishments	5
3	Professional workers – self-employed	3.3
4	Professional workers – employees	3.1
5	Intermediate non-manual workers	
	5.1 Ancillary workers and artists	3.2, 3.4, 4.1, 4.3, 7.3
	5.2 Foremen and supervisors non-manual	6
6	Junior non-manual workers	4.2, 7.1, 7.2, 12.1, 12.6
7	Personal service workers	12.7, 13.1
8	Foremen and supervisors – manual	10
9	Skilled manual workers	7.4, 11.1, 12.3, 13.3
10	Semi-skilled manual workers	11.2, 12.2, 12.4, 13.2
11	Unskilled manual workers	13.4
12	Own account workers (other than professional)	4.4, 9.1
13	Farmers – employers and managers	8.2
14	Farmers – own account	9.2
15	Agricultural workers	12.5, 13.5
16	Members of armed forces	-
17	Inadequately described and not stated occupations	16

Source: Rose *et al*. (2005)

Appendix 3.9C: SC and SEG linked to NS-SEC categories

	NS-SEC categories	Approx. SC	Approx. SEG
L1	Employers in large organisations	II	1.1
L2	Higher managerial	II	1.2
L3.1	Higher professionals (traditional) – employees	I	4
L3.2	Higher professionals (new) – employees	II	5.1
L3.3	Higher professionals (traditional) – self-employed	I	3
L3.4	Higher professionals (new) – self-employed	II	5.1
L4.1	Lower professionals and higher technical (traditional) – employees	II	5.1
L4.2	Lower professionals and higher technical (new) – employees	IIIN	6
L4.3	Lower professionals and higher technical (traditional) – self-employed	II	5.1
L4.4	Lower professionals and higher technical (new) – self-employed	IIIN	12
L5	Lower managerial	II	2.2
L6	Higher supervisory	IIIN	5.2
L7.1	Intermediate clerical and administrative	IIIN	6
L7.2	Intermediate sales and service	IIIN	6
L7.3	Intermediate technical and auxiliary	II	5.1
L7.4	Intermediate engineering	IIIM	9
L8.1	Employers in small organisations (non-professional)	II	2.1
L8.2	Employers in small organisations (agriculture)	II	13
L9.1	Own account workers (non- professional)	IIIM	12
L9.2	Own account workers (agriculture)	II	14
L10	Lower supervisory	IIIM	8
L11.1	Lower technical craft	IIIM	9
L11.2	Lower technical process operative	IV	10
L12.1	Semi-routine sales	IIIN	6
L12.2	Semi-routine service	IV	10
L12.3	Semi-routine technical	IIIM	9
L12.4	Semi-routine operative	IV	10
L12.5	Semi-routine agriculture	IV	15
L12.6	Semi-routine clerical	IIIN	6
L12.7	Semi-routine childcare	IV	7
L13.1	Routine sales and service	IV	7
L13.2	Routine production	IV	10
L13.3	Routine technical	IIIM	9
L13.4	Routine operative	V	11
L13.5	Routine agricultural	IV	15
L14.1	Never worked	-	-
L14.2	Long-term unemployed	-	-
L15	Full-time students	-	-
L16	Occupations not stated or inadequately described	-	17
L17	Not classifiable for other reasons	-	-

Source: Rose *et al*. (2005)

Appendices to Chapter 4

Appendix 4.1A: A univariate table on Casweb

		People stating religion as ☐								
	All people	Christian	Buddhist	Hindu	Jewish	Muslim	Sikh	Other religions	No religion	Religion not stated
Select all ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	8 ☐	9 ☐	10 ☐

Religion: All people
NB: This table contains counts of Persons
[Add variables to data selection] [Select all] [Clear all]

Source: Table KS007 'Religion' in the '2001 Aggregate Statistics Datasets ' database, Casweb (2011).

Appendix 4.1B: A cross-tabulation on Casweb

Children 0 - 15 in households:
Households with residents; residents in households
NB: This table contains counts of Persons
[Add variables to data selection] [Select all] [Clear all]

Age		Total ☐	Males ☐	Females ☐
TOTAL	☐	2008 ☐	2009 ☐	2010 ☐
0	☐	2011 ☐	2012 ☐	2013 ☐
1	☐	2014 ☐	2015 ☐	2016 ☐
2	☐	2017 ☐	2018 ☐	2019 ☐
3	☐	2020 ☐	2021 ☐	2022 ☐
4	☐	2023 ☐	2024 ☐	2025 ☐
5	☐	2026 ☐	2027 ☐	2028 ☐
6	☐	2029 ☐	2030 ☐	2031 ☐
7	☐	2032 ☐	2033 ☐	2034 ☐
8	☐	2035 ☐	2036 ☐	2037 ☐
9	☐	2038 ☐	2039 ☐	2040 ☐
10	☐	2041 ☐	2042 ☐	2043 ☐
11	☐	2044 ☐	2045 ☐	2046 ☐
12	☐	2047 ☐	2048 ☐	2049 ☐
13	☐	2050 ☐	2051 ☐	2052 ☐
14	☐	2053 ☐	2054 ☐	2055 ☐
15	☐	2056 ☐	2057 ☐	2058 ☐

Source: Table 25 'Children 0 – 15 in households' in the '1981 Great Britain

SAS' database, Casweb (2011).

Appendix 4.2: Geography Selection Diagram on Casweb

1 Select Government Office Regions from the list below

- [ ] A North East
- [ ] B North West
- [ ] D Yorkshire and The Humber
- [ ] E East Midlands
- [ ] F West Midlands
- [ ] G East of England
- [ ] H London
- [ ] J South East
- [ ] K South West

2 To display and select lower level zones:

[Select Counties]

or

[Select Unitary Authorities]

[Start Again]

3 When you've made your final selection proceed to:

[Select output level]

Geography Selection Diagram

"This stage of the process enables you to define the geographical region(s) for which you require data from Casweb. Follow steps *1* and *2* until you have defined your regions of interest, then step *3* to progress to the next stage in which you will select the level of geography at which you require data from within these regions."

Source: 'Define Regions of Interest' in '2001 Aggregate Statistics Datasets', Casweb (2011).

Appendix 4.3: Topics listed in the 1981, 1991 and 2001 census datasets

(A) 1981 Great Britain SAS	
01 Population bases	**28** Shared accommodation
02 All residents	**29** Household dwelling type; household composition
03 Communal establishments	**30** Migrants (Amenities)
04 Country of birth	**31** Private households with dependent children
05 All residents aged 16 or over	**32** Private households with 1 or more residents of pensionable age
06 All persons present	**33** Household spaces
07 All residents aged 16 or over in employment	**34** Resident household spaces, rooms (Residents in private households)
08 Migrants (Age, gender and marital status)	**35** Resident household spaces, rooms (Amenities and tenure)
09 All economically active (EA) residents	**36** Private households with resident heads born in the New Commonwealth or Pakistan
10 Tenure and amenities	**37** Residents in private households
11 Household dwelling type and occupancy	**38** Households with residents, rooms
12 Private households	**39** Welsh speakers (*Data available for Wales*)
13 Private households tenure	**40** Gaelic speakers (*Data available for Scotland*)
14 Private households: residents/rooms	**41** Scottish household type in permanent buildings by age of residents (*Data available for Scotland*)
15 Private households with residents	**42** Scottish households in permanent buildings (*Data available for Scotland*)
16 Private households with persons present	**43** Scottish households with persons aged 16 or over (*Data available for Scotland*)
17 Households: 1971/1981 bases	**44** SEG of residents aged 16 or over in employment (10% Sample)
18 Dependants in households	**45** Residents, private households with residents (100% and 10% Sample)
19 Women in 'couples'; economic position	**46** Industry of persons in employment (10% Sample)
20 Residents aged 16 or over	**47** Travel to work and SEG (10% Sample)
21 Age and marital status of household residents	**48** Qualified manpower (10% Sample)
22 Earners and dependent children	**49** SEG of households and persons (10% Sample)
23 Married women in households	**50** SEG and economic position (10% Sample)
24 Young adults	**51** Industry and employment status (10% Sample)
25 Children 0 - 15 in households	**52** Social class of households and persons (10% Sample)
26 Headship	**53** Former industry of unemployed (10% Sample)
27 Lone 'parents'	

Source: Casweb (2011)

(B) 1991 Great Britain SAS and LBS	
01 Population bases	**51** Country of birth and ethnic group
02 Age and marital status	**52** Language indicators (*Data not available for ED level*)
03 Communal establishments	**53** Lifestages
04 Medical and care establishments	**54** Occupancy (Occupied; vacant; other accommodation)
05 Hotels and other establishments	**55** Household spaces and occupancy
06 Ethnic group	**56** Household space type and occupancy
07 Country of birth	**57** Household space type; rooms and household size
08 Economic position	**58** Household space type; tenure and amenities
09 Economic position and ethnic group	**59** Household space type; household composition
10 Term-time address	**60** Dwellings and household spaces
11 Persons present	**61** Dwelling type and occupancy
12 Long-term illness in households	**62** Occupancy and tenure of dwellings
13 Long-term illness in communal establishments	**63** Dwelling type and tenure
14 Long-term illness and economic position	**64** Tenure of dwellings and household spaces (*Data not available for ED level*)
15 Migrants	**65** Occupancy of dwellings and household spaces (*Data not available for ED level*)
16 Wholly moving households	**66** Shared dwellings
17 Ethnic group of migrants	**67** Welsh Language (Wales only)/Gaelic Language (Scotland only) (*Data available for Wales and Scotland*)
18 Imputed residents (*Data not available for ED level*)	**68** Floor level of accommodation (*Data not available for ED level*)
19 Imputed households	**69** Occupancy norm: households (*Data not available for ED level*)
20 Tenure and amenities	**70** Occupancy norm: residents (*Data not available for ED level*)
21 Car availability	**71** Comparison of 100% and 10% counts
22 Rooms and household size	**72** Economic and employment status (10% Sample) (*Data not available for ED level*)
23 Persons per room	**73** Industry (10% Sample)
24 Residents 18 and over	**74** Occupation (10% Sample)
25 Visitor households	**75** Hours worked (10% Sample)
26 Students in households	**76** Occupation and Industry (10% Sample)
27 Households: 1971/'81/'91 bases	**77** Industry and hours worked (10% Sample)
28 Dependants in households	**78** Occupation and hours worked (10% Sample)
29 Dependants and long-term illness	**79** Industry and employment status (10% Sample)
30 Carers	**80** Working parents; hours worked (10% Sample)
31 Dependent children in households	**81** Occupation and employment status (10% Sample)
32 Households with children aged 0 - 15	**82** Travel to work and SEG (10% Sample)

33 Women in couples: economic position	**83** Travel to work and car availability (10% Sample)
34 Economic position of household residents	**84** Qualified manpower (10% Sample)
35 Age & marital status of household residents	**85** Ethnic group of qualified manpower (10% Sample) (*Data not available for ED level*)
36 Earners and dependent children	**86** SEG of households, persons and families (10% Sample)
37 Young adults	**87** Family type and tenure (10% Sample)
38 Single years of age	**88** Concealed families (10% Sample) (*Data not available for ED level*)
39 Headship	**89** Family composition (10% Sample)
40 Lone 'parents'	**90** Social class of households and persons (10% Sample)
41 Shared accommodation	**91** Social class and economic position (10% Sample)
42 Household composition and housing	**92** SEG and economic position (10% Sample)
43 Household composition and ethnic group	**93** SEG; social class and ethnic group (10% Sample) (*Data not available for ED level*)
44 Household composition and long-term illness	**94** Former industry of unemployed (10% Sample)
45 Migrant household heads (*Data not available for ED level*)	**95** Former occupation of unemployed (10% Sample)
46 Households with dependent children; housing	**96** Armed forces (10% Sample) (*Data not available for ED level*)
47 Households with pensioners; housing	**97** Armed forces; households (10% Sample) (*Data not available for ED level*)
48 Households with dependants; housing	**98** Occupation orders; 1980 classification (10% Sample) (*Data not available for ED level*)
49 Ethnic group; housing	**99** Occupations; Standard Occupational Classification (10% Sample) (*Data not available for ED level*)
50 Country of birth; hold heads and residents	

Source: Casweb (2011)

(C) 2001 Aggregate Statistics Datasets
01 Usual resident population
02 Age structure
03 Living arrangements
04 Marital status
05 Country of birth
06 Ethnic group
07 Religion
08 Health and provision of unpaid care
09a Economic activity - all persons
09b Economic activity - males
09c Economic activity - females
10 Hours worked
11a Industry of employment - all persons
11b Industry of employment - males
11c Industry of employment - females
12a Occupation groups - all persons
12b Occupation groups - males
12c Occupation groups - females
13 Qualifications and students
14a National Statistics - Socio Economic Classification - all persons
14b National Statistics - Socio Economic Classification - males
14c National Statistics - Socio Economic Classification - females
15 Travel to work
16 Household spaces and accommodation type
17 Cars or vans
18 Tenure
19 Rooms, amenities, central heating and lowest floor level
20 Household composition
21 Households with limiting long-term illness and dependent children
22 Lone parent households with dependent children
23 Communal establishment residents

Source: Casweb (2011)

Comments for Appendix 4.3: "Household spaces" in census data refers to the types of dwellings in permanent buildings, therefore is categorised into the 'Dwelling type' characteristic.

Appendix 4.4: Social characteristics derived from the 1981, 1991 and 2001 census datasets

1981 (27)	1991 (33)	2001 (28)
Usual residence	Usual residence	Usual residence
Gender	Gender	Gender
Age structure	Age structure	Age structure
Marital status	Marital status	Living arrangements
Country of birth	Ethnic group	Marital status
Economic activity	Country of birth	Country of birth
Employment status	Economic activity	Ethnic group
Tenure	Term-time address	Religion
Amenities	Limiting long-term illness	Limiting long-term illness
Occupancy type	Migrants	General health
Number of rooms in households	Household composition	Provision of unpaid care (hours weekly)
Car availability	Types of household moving	Economic activity
Number of persons in households	Number of persons in households	Employment status
Number of adults in households	Amenities	Hours worked weekly
Number of dependent children in households	Tenure	Industry
Lone parents with dependent children	Car availability	Occupation
Number of persons per room	Number of rooms in households	Education (Qualifications)
Household composition	Number of persons per room	Social class (NS-SEC)
Migrants	Households with students	Travel to work
Number of pensioners in households	Number of dependants in households	Dwelling type
Dwelling type	Dependants	Car availability
New commonwealth or Pakistani headed households	Households with dependent children	Tenure
Social class (SEG, SC)	Employment status	Amenities
Industry	Lone parents with dependent children	Lowest floor level
Travel to work	Occupancy type	Household composition
Education (Qualified manpower)	Dwelling type	Households with limiting long-term illness
Number of families in households	Shared dwellings	Households with dependent children
	Industry	Lone parents with dependent children
	Occupation	
	Hours worked weekly	
	Social class (SEG, SC)	
	Travel to work	
	Education (Qualified manpower)	

Appendix 4.5A: Social characteristics in common derived from the 1981, 1991 and 2001 census datasets

Characteristics in common (17)	Characteristics not in common		
	1981 (10)	1991 (16)	2001 (11)
Usual residence	Occupancy type	Ethnic group	Living arrangements
Gender	Number of rooms in households	Term-time address	Ethnic group
Age structure	Number of persons in households	Limiting long-term illness	Religion
Marital status	Number of adults in households	Migrants	Limiting long-term illness
Country of birth	Number of dependent children in households	Types of household moving	General health
Economic activity	Number of persons per room	Number of persons in households	Provision of unpaid care (hours weekly)
Employment status	Migrants	Number of rooms in households	Hours worked weekly
Tenure	Number of pensioners in households	Number of persons per room	Occupation
Amenities	New commonwealth or Pakistani headed households	Households with students	Lowest floor level
Car availability	Number of families in households	Number of dependants in households	Households with limiting long-term illness
Lone parents with dependent children		Dependants	Households with dependent children
Household composition		Households with dependent children	
Dwelling type		Occupancy type	
Social class		Shared dwellings	
Industry		Occupation	
Travel to work		Hours worked weekly	
Education			

Appendix 4.5B: Social indicators of the social characteristics derived from the 1981, 1991 and 2001 census datasets

Social characteristic	Social Indicators
Age structure	▪ 0 – 4 ▪ 5 – 15 ▪ 16 – 24 ▪ 25 – 44 ▪ 45 – 59 ▪ 60 – 64 ▪ 65 – 84 ▪ 85 and over
Amenities	This characteristic concerns 'central heating (with or without)', 'use of bath/shower (exclusive, sharing or lacking)', and 'use of toilet (exclusive, sharing or lacking)'. However, the variables in each dataset examine a different combination of these measures; therefore aggregate indicators cannot be derived in this case.
Car availability	▪ No car ▪ 1 car ▪ 2 cars ▪ 3 or more cars
Country of birth	▪ England ▪ Scotland ▪ Wales ▪ Northern Ireland ▪ Republic of Ireland ▪ Old Commonwealth ▪ New Commonwealth – eastern Africa ▪ New Commonwealth – other Africa ▪ New Commonwealth – Caribbean ▪ New Commonwealth – India ▪ New Commonwealth – Bangladesh ▪ New Commonwealth – Pakistan ▪ New Commonwealth – south east Asia ▪ New Commonwealth – Cyprus ▪ New Commonwealth – other ▪ Other Europe ▪ China ▪ Rest of the world
Dependants (*Mixed characteristics*)	▪ Age ▪ Marital status ▪ Economic activity ▪ Employment status ▪ Long-term illness
Dwelling type	▪ Detached house or bungalow ▪ Semi-detached house or bungalow ▪ Terraced house or bungalow ▪ Purpose built flat, maisonette or apartment ▪ Converted flat, maisonette or apartment from a shared house ▪ Flat, maisonette or apartment in a commercial

	building
	▪ Non-permanent accommodation
Economic activity	▪ Economically active (EA)
	▪ Economically inactive (EI)
Education	This characteristic involves the levels of qualification attained. Since the ranking of qualifications in each census is based on a different scale, aggregate indicators cannot be derived in this case: ▪ 1981 – Persons aged 18 and over with degrees, professional and vocational qualifications (male/female) ▪ 1991 – Persons aged 18 and over with highest qualification at level a (higher degree), level b (degree) and level c (diploma etc.) ▪ 2001 – Persons aged 16-74 with no qualifications, highest qualification at level 1 (1+ 'O' level passes, 1+ CSE/GCSE any grades, NVQ level 1, Foundation GNVQ), level 2 (5+ 'O' level passes, 5+ CSEs (grade 1), 5+ GCSEs (grades A-C), School Certificate, 1+ 'A' levels/'AS' levels, NVQ level 2, Intermediate GNVQ), level 3 (2+ 'A' levels, 4+ 'AS' levels, Higher School Certificate, NVQ level 3, Advanced GNVQ), and level 4/5 (First degree, Higher degree, NVQ levels 4 and 5, HNC, HND, Qualified Teacher Status, Qualified Medical Doctor, Qualified Dentist, Qualified Nurse, Midwife, Heath Visitor).
Employment status	▪ Full-time employed ▪ Part-time employed ▪ Self-employed ▪ Unemployed ▪ Retired ▪ Permanently sick ▪ Students
Ethnic group	▪ White – white British ▪ White – white Irish ▪ White – other ▪ Mixed – white and black Caribbean ▪ Mixed – white and black African ▪ Mixed – white and Asian ▪ Mixed – other ▪ Asian or Asian British – Indian ▪ Asian or Asian British – Pakistani ▪ Asian or Asian British – Bangladeshi ▪ Asian or Asian British – other ▪ Black or Black British – Caribbean ▪ Black or Black British – African ▪ Black or Black British – other ▪ Chinese ▪ Other ethnic group
Gender	▪ Male ▪ Female
General health	▪ Good ▪ Fairly good ▪ Not good
Hours worked weekly	▪ Part-time (1 – 5) ▪ Part-time (6 – 15)

	• Part-time (16 – 30) • Full-time (31 – 37) • Full-time (38 – 48) • Full-time (49 or more)
Household composition	This characteristic considers households comprising adults and dependants (in particular dependent children). Specifically, it involves the number of adults, the age (pensionable age or under), gender and living arrangement of each adult, the number of dependants, as well as the number and age of dependent children in each household. As the variables in each dataset examine a different combination of these matters, aggregate indicators cannot be derived in this case.
Households with depend-ent children	• With one dependent child (aged 0 – 4) • With one dependent child (aged 5 and over) • With two or more dependent children (all aged 0 – 4) • With two or more dependent children (all aged 5 and over) • With two or more dependent children (1 or more aged 0 – 4 and 1 or more aged 5 and over)
Households with limiting long-term illness	• With one or more people with a limiting long-term • illness
Households with students	• Student resident(s) aged 18+ and others in household • Student resident(s) only • Student visitor(s) aged 18+ and others in household • Student visitor(s) only
Industry	• Agriculture, hunting and forestry • Fishing • Mining and quarrying • Electricity, gas and water supply • Manufacturing • Construction • Wholesale and retail trade, repair of motor vehicles • Hotels and catering • Transport, storage and communication • Financial intermediation • Real estate, renting and business activities • Public administration and defence • Education • Health and social work • Other
Limiting long-term illness (*Mixed characteristics*)	• Age • Gender • Economic activity • Employment status
Living arrangements	"Living arrangements is different to Marital status. It combines information from both marital status and the relationship matrix. Therefore a person living as part of a 'cohabiting couple' could in fact be married (to someone else) but will not appear as married or separated in this classification. A person not living in a couple can be classified married (or re-married) if they denote their marital status as married (or re-married) but have no spouse or partner resident in the household." (Table KS003, 2001 Aggregate Statistics Datasets)

	▪ Living in a couple – married or re-married ▪ Living in a couple – cohabiting ▪ Not living in a couple – single (never married) ▪ Not living in a couple – married or re-married ▪ Not living in a couple – separated (but still legally married) ▪ Not living in a couple – divorced ▪ Not living in a couple – widowed
Lone-parent households with dependent child(ren)	▪ All lone parents with dependent children ▪ Total male lone parents ▪ Male lone parents in full-time employment ▪ Male lone parents in part-time employment ▪ Total female lone parents ▪ Female lone parents in full-time employment ▪ Female lone parents in part-time employment
Lowest floor level	▪ Basement or semi-basement ▪ Ground level (street level) ▪ 1st/2nd/3rd or 4th floor ▪ 5th floor or higher
Marital status	▪ Married ▪ Single, widowed or divorced
Migrants (*Mixed characteristics*)	▪ Age ▪ Gender ▪ Marital status ▪ 1 or more persons per room ▪ Exclusive use of inside bath & WC ▪ Lack bath ▪ Lack inside WC ▪ Not self-contained accommodation ▪ No Car ▪ Type of household moving
New commonwealth or Pakistani headed households (*Mixed characteristics*)	▪ 1 or more persons per room ▪ Exclusive use of bath + inside WC ▪ Lack bath ▪ Lack inside WC ▪ Not in self-contained accommodation ▪ No car
Number of adults in households (*Mixed characteristics*)	▪ 1 male ▪ 1 female ▪ 2 (married male + married female) ▪ 2 (other) ▪ 3 or more (married male(s) + married female(s) with or without others) ▪ 3 or more (other)
Number of dependants in households (*Mixed characteristics*)	▪ 1 dependant (0 – 15 years) ▪ 1 dependant (16 years up to pensionable age) ▪ 1 dependant (pensionable age and over) ▪ 2 or more dependants (0 – 15 years) ▪ 2 or more dependants (16 years up to pensionable age) ▪ 2 or more dependants (pensionable age and over)

Number of dependent children in households	▪ 0 ▪ 1 ▪ 2 ▪ 3 or more
Number of families in households	▪ 0 ▪ 1 ▪ 2 or more
Number of pensioners in households	▪ 1 ▪ 2 or more
Number of persons in households	▪ 1 ▪ 2 ▪ 3 ▪ 4 ▪ 5 ▪ 6 ▪ 7 or more
Number of persons per room	▪ Up to 0.5 ▪ Over 1 and up to 1.5 ▪ Over 1.5
Number of rooms in households	▪ 1 ▪ 2 ▪ 3 ▪ 4 ▪ 5 ▪ 6 ▪ 7 or more
Occupancy type	▪ Households with residents ▪ Vacant accommodation – new, never occupied ▪ Vacant accommodation – under improvement ▪ Vacant accommodation – other ▪ Second residence ▪ Holiday accommodation ▪ Hotels and boarding houses
Occupation	▪ Managers and administrators ▪ Professional occupations ▪ Associate professional and technical occupations ▪ Administrative and secretarial occupations ▪ Skilled trades occupations ▪ Personal service occupations ▪ Sales and customer service occupations ▪ Process, plant and machine operatives ▪ Elementary occupations ▪ Occupation not stated or inadequately described
Provision of unpaid care (hours weekly)	▪ 1 – 19 hours ▪ 20 – 49 hours ▪ 50 or more hours
Religion	▪ Christian ▪ Buddhist ▪ Hindu ▪ Jewish ▪ Muslim

	▪ Sikh
	▪ Other religions
	▪ No religion
	▪ Religion not stated
Shared dwellings	Type of none-self-contained household space in shared dwellings:
	▪ Not self-contained flat
	▪ Not self-contained 'rooms'
	▪ Bedsit
	▪ Not self-contained unoccupied
Social class	▪ Social Class based on Occupation (see Appendix 3.4)
	▪ Socio-economic Groups (see Appendix 3.5)
	▪ National Statistics Socio-economic Classification (see Appendix 3.8A)
Tenure	▪ Owner occupied
	▪ Rented from council
	▪ Rented from registered social landlord or housing association
	▪ Rented from private landlord
	▪ Other
Term-time address	▪ Present residents, term-time address – this address
	▪ Present residents, term-time address – elsewhere
	▪ Absent residents, term-time address – this address
	▪ Absent residents, term-time address – elsewhere
	▪ Non-residents, term-time address – this address
	▪ Non-residents, term-time address – elsewhere
Travel to work	▪ Car driver
	▪ Car Passenger
	▪ Taxi or minicab
	▪ Bus, minibus or coach
	▪ Train
	▪ Underground, metro, light rail, tram
	▪ Motorcycle, scooter or moped
	▪ Bicycle
	▪ On foot
	▪ Work at or from home
Types of household moving	▪ Moved within wards
	▪ Between wards but within district
	▪ Between districts but within county
	▪ Between counties but within region
	▪ Between regions or from Scotland
	▪ From outside Great Britain
	▪ Between neighbouring districts
	▪ Between neighbouring counties/Scottish regions
Usual residence	▪ People living in households
	▪ People living in communal establishments (hospitals, nursing homes, children's homes, schools, hotels, boarding houses, barracks, prisons, etc.)

Source: '1981 Great Britain SAS', '1991 Great Britain SAS and LBS', and '2001 Aggregate Statistics Datasets', Casweb (2011).

Appendix 4.6: List of 9 social characteristics and 51 social indicators

Characteristics of residents

Usual residence

(1)   People living in households

(2)   People living in communal establishments

Age structure

(3)   0 – 4 years

(4)   5 – 15 years

(5)   16 – 24 years

(6)   25 – 44 years

(7)   45 – 59 years

(8)   60 – 64 years

(9)   65 – 84 years

(10)   85+ years

Marital status

(11)   Married

(12)   Single, widowed or divorced

Economic activity and employment status

(EA – economically active; EI – economically inactive)

(13)   EA full-time employed

(14)   EA part-time employed

(15)   EA self-employed

(16)   EA unemployed

(17)   EI retired

(18)   EI permanently sick

(19)   EA or EI students

Social class

(20)   Large employers and higher managerial occupations

(21)   Higher professional occupations

(22)   Lower managerial and professional occupations

(23)   Intermediate occupations

(24)   Small employers and own account workers

(25)   Lower supervisory and technical occupations

(26) Semi-routine occupations

(27) Routine occupations

(28) Not classifiable for other reasons

Characteristics of households

Car availability
(29) No car

(30) 1 car

(31) 2 cars

(32) 3 or more cars

Lone parents with dependent children
(33) All lone parents with dependent children

(34) Total male lone parents

(35) Male lone parents in full-time employment

(36) Male lone parents in part-time employment

(37) Total female lone parents

(38) Female lone parents in full-time employment

(39) Female lone parents in part-time employment

Tenure
(40) Owner occupied

(41) Rented from council

(42) Rented from registered social landlord or housing association

(43) Rented from private landlord

(44) Other

Characteristics of dwellings

Dwelling type
(45) Detached house or bungalow

(46) Semi-detached house or bungalow

(47) Terraced house or bungalow

(48) Purpose built flat, maisonette or apartment

(49) Converted flat, maisonette or apartment from a shared house

(50) Flat, maisonette or apartment in a commercial building

(51) Non-permanent accommodation

Appendix 4.7: Adapted social indicator names for SPSS

(1) **Hholds** [People living in households]

(2) **Hcommunal** [People living in communal establishments]

(3) **Zero_4** [0 – 4 years]

(4) **Five_15** [5 – 15 years]

(5) **Sixteen_24** [16 – 24 years]

(6) **Twentyfive_44** [25 – 44 years]

(7) **Fortyfive_59** [45 – 59 years]

(8) **Sixty_64** [60 – 64 years]

(9) **Sixtyfive_84** [65 – 84 years]

(10) **Eightyfive_plus** [85+ years]

(11) **Married** [Married]

(12) **S.W.D** [Single, widowed or divorced]

(13) **EAFT.empl** [EA full-time employed]

(14) **EAPT.empl** [EA part-time employed]

(15) **EAselfempl** [EA self-employed]

(16) **EAunempl** [EA unemployed]

(17) **EIretired** [EI retired]

(18) **EIperm.sick** [EI permanently sick]

(19) **Students** [EA or EI students]

(20) **LgeEmpl_HiMng** [Large employers and higher managerial occupations]

(21) **HiProf** [Higher professional occupations]

(22) **LoMng_Prof** [Lower managerial and professional occupations]

(23) **Interm** [Intermediate occupations]

(24) **SmlEmpl_OwnAcct** [Small employers and own account workers]

(25) **LoSupv_Tech** [Lower supervisory and technical occupations]

(26) **SemiRtine** [Semi-routine occupations]

(27) **Routine** [Routine occupations]

(28) **NonClassifbl** [Not classifiable for other reasons]

(29) **NoCar** [No car]

(30) **OneCar** [1 car]

(31) **TwoCars** [2 cars]

(32) **ThreeplusCars** [3 or more cars]

(33) **LnPrnt_deChd** [All lone parents with dependent children]

(34) **Ttl.MLnPrnt** [Total male lone parents]

(35) **FT.MLnPrnt** [Male lone parents in full-time employment]

(36) **PT.MLnPrnt** [Male lone parents in part-time employment]

(37) **Ttl.FLnPrnt** [Total female lone parents]

(38) **FT.FLnPrnt** [Female lone parents in full-time employment]

(39) **PT.FLnPrnt** [Female lone parents in part-time employment]

(40) **Own.Occupied** [Owner occupied]

(41) **Council.Rnt** [Rented from council]

(42) **Social.Rnt** [Rented from registered social landlord or housing association]

(43) **Priv.Rnt** [Rented from private landlord]

(44) **Other** [Other]

(45) **Detached** [Detached house or bungalow]

(46) **SemiDtch** [Semi-detached house or bungalow]

(47) **Terraced** [Terraced house or bungalow]

(48) **Purp.Flat** [Purpose built flat, maisonette or apartment]

(49) **Conv.Flat** [Converted flat, maisonette or apartment from a shared house]

(50) **Com.Flat** [Flat, maisonette or apartment in a commercial building]

(51) **Nonperm.Accm** [Non-permanent accommodation]

Appendix 4.8: Wards and numbers of EDs/OAs in the City of Canterbury

1981 & 1991			2001	
Ward	EDs ('81)	EDs ('91)	Ward	OAs
Barham Downs	7	8	Barham Downs	10
Barton	17	17	Barton	28
Blean Forest	6	9	Blean Forest	10
Chartham	7	7	Chartham and Stone Street	17
Chestfield	9	11	Chestfield and Swalecliffe	28
Gorrell	11	11	Gorrell	19
Harbledown	6	5	Greenhill and Eddington	16
Harbour	10	10	Harbledown	9
Herne	22	23	Harbour	21
Heron	17	16	Herne and Broomfield	23
Little Stour	5	6	Heron	32
Marshside	7	6	Little Stour	9
Northgate	17	18	Marshside	9
North Nailbourne	8	6	North Nailbourne	9
Reculver	18	17	Northgate	19
St.Stephens	16	21	Reculver	27
Seasalter	13	13	St Stephens	29
Stone Street	5	6	Seasalter	24
Sturry North	5	5	Sturry North	10
Sturry South	6	7	Sturry South	9
Swalecliffe	9	9	Tankerton	16
Tankerton	8	8	West Bay	22
West Bay	13	14	Westgate	29
Westgate	18	19	Wincheap	26
Wincheap	15	14		
Shipping	1	1		
Total	276	287	*Total*	451

Source: Casweb (2011)

Appendix 4.9: Re-coding area names with ward names and abbreviations

1981 & 1991			2001		
Ward	**Abbrev.**	**Example (ED)**	**Ward**	**Abbrev.**	**Example (OA)**
Barham Downs	BhmDns	BhmDnsAA05	Barham Downs	BhmDns	BhmDnsGC03
Barton		BartonFB08	Barton		BartonGD21
Blean Forest	BlnFrt	BlnFrtFC08	Blean Forest	BlnFrt	BlnFrtGE05
Chartham	Chthm	ChthmAD02	Chartham and Stone Street	ChmSSt	ChmSStGF12
Chestfield	Chfld	ChfldAE06	Chestfield and Swalecliffe	ChfSwc	ChfSwcGG09
Gorrell		GorrellAF11	Gorrell		GorrellGH11
Harbledown	HblDwn	HblDwnFG04	Greenhill and Eddington	GhlEdt	GhlEdtGJ08
Harbour		HarbourFH05	Harbledown	HblDwn	HblDwnGK01
Herne		HerneAJ22	Harbour		HarbourGL18
Heron		HeronAK12	Herne and Broomfield	HnBrmf	HnBrmfGM06
Little Stour	LStour	LStourFL06	Heron		HeronGN30
Marshside	Mside	MsideFM05	Little Stour	LStour	LStourGP07
Northgate	Ngate	NgateFN09	Marshside	Mside	MsideGQ04
North Nailbourne	NNlbrn	NNlbrnAP01	North Nailbourne	NNlbrn	NNlbrnGR08
Reculver	Rclver	RclverAQ03	Northgate	Ngate	NgateGS11
St.Stephens	SStphn	SStphnAR07	Reculver	Rclver	RclverGT27
Seasalter	Sslter	SslterFS10	St Stephens	SStphn	SStphnGU25
Stone Street	StnSt	StnStFT04	Seasalter	Sslter	SslterGW12
Sturry North	NSturry	NSturryFU03	Sturry North	NSturry	NSturryGX02
Sturry South	SSturry	SSturryFW06	Sturry South	SSturry	SSturryGY09
Swalecliffe	Swlclf	SwlclfAX02	Tankerton	Tkton	TktonGZ10
Tankerton	Tkton	TktonAY08	West Bay	WBay	WBayHA07
West Bay	WBay	WBayFZ06	Westgate	Wgate	WgateHB23
Westgate	Wgate	WgateGA12	Wincheap	Wchp	WchpHC17
Wincheap	Wchp	WchpBB07			
Shipping	Shp	ShpSS01			

Appendix 4.10: Census boundaries for the City of Canterbury

(A) The 1981 ED boundaries

Source: UKBORDERS (2011)

(B) The 1991 ED boundaries
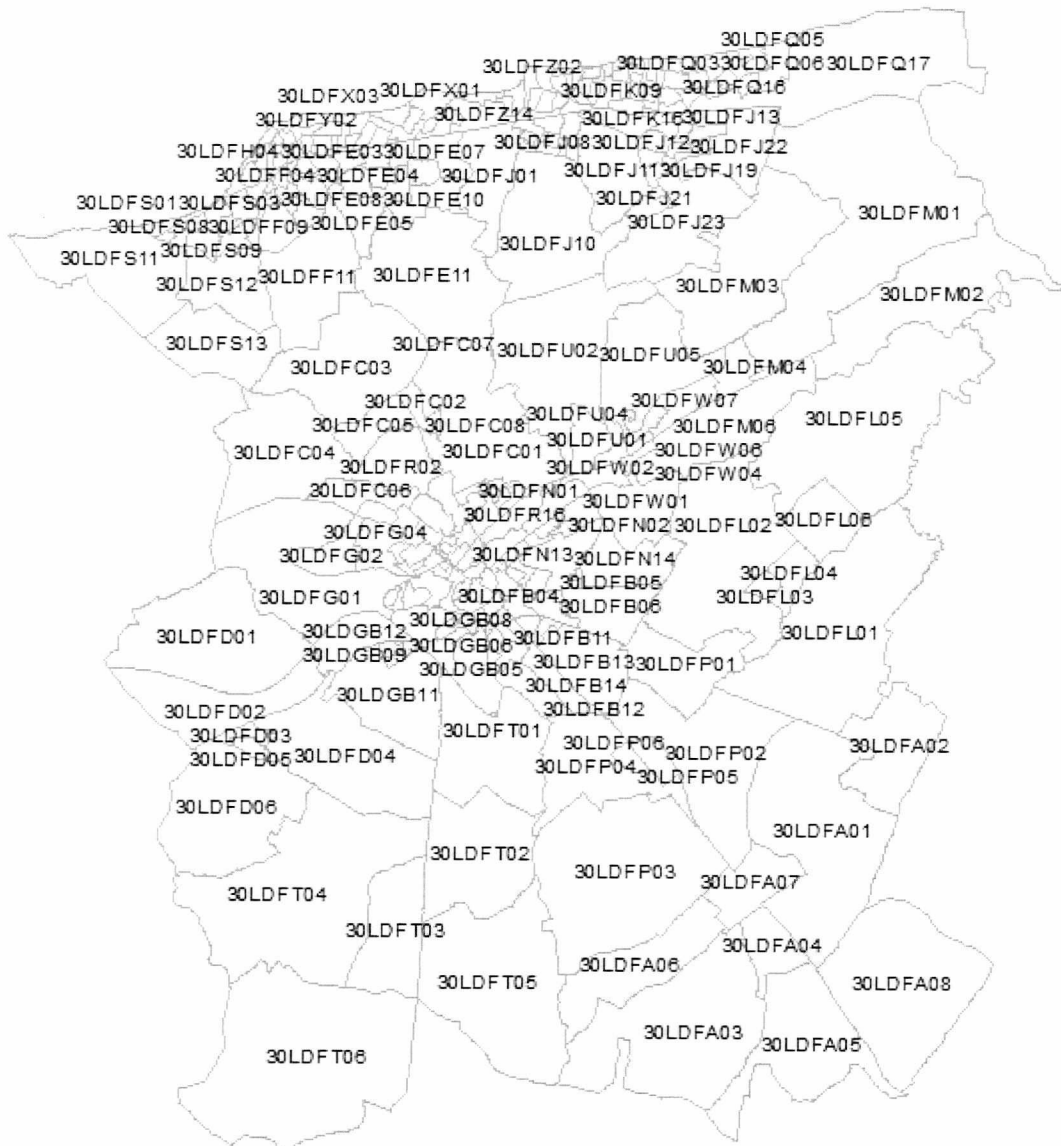
Source: UKBORDERS (2011)

(C) The 2001 OA boundaries

Source: UKBORDERS (2011)

Appendix 4.11: Matching areas in the 1981 and 1991 census data
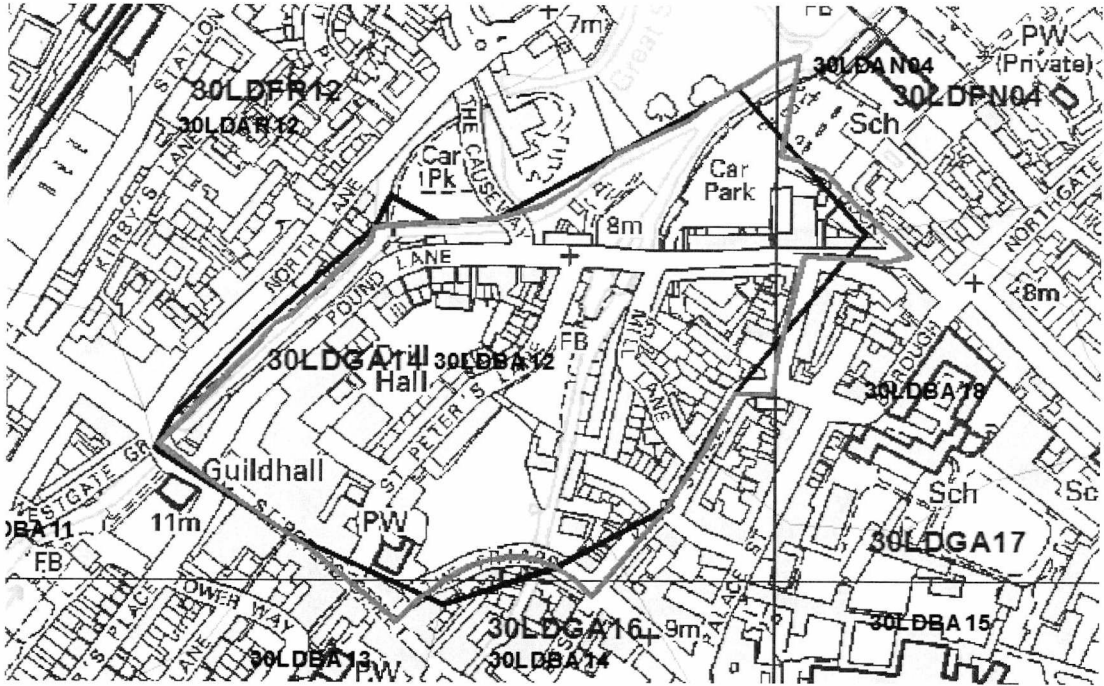
This map shows an example of matching EDs in the 1981 and 1991 census data. On the map, the black boundary lines indicate the 1981 ED '30LDBA12'; the green boundary lines highlight the 1991 ED '30LDGA14'. It can be seen that the two areas almost completely overlap each other.

Appendix 4.12: Boundary changes from 1981 to 1991
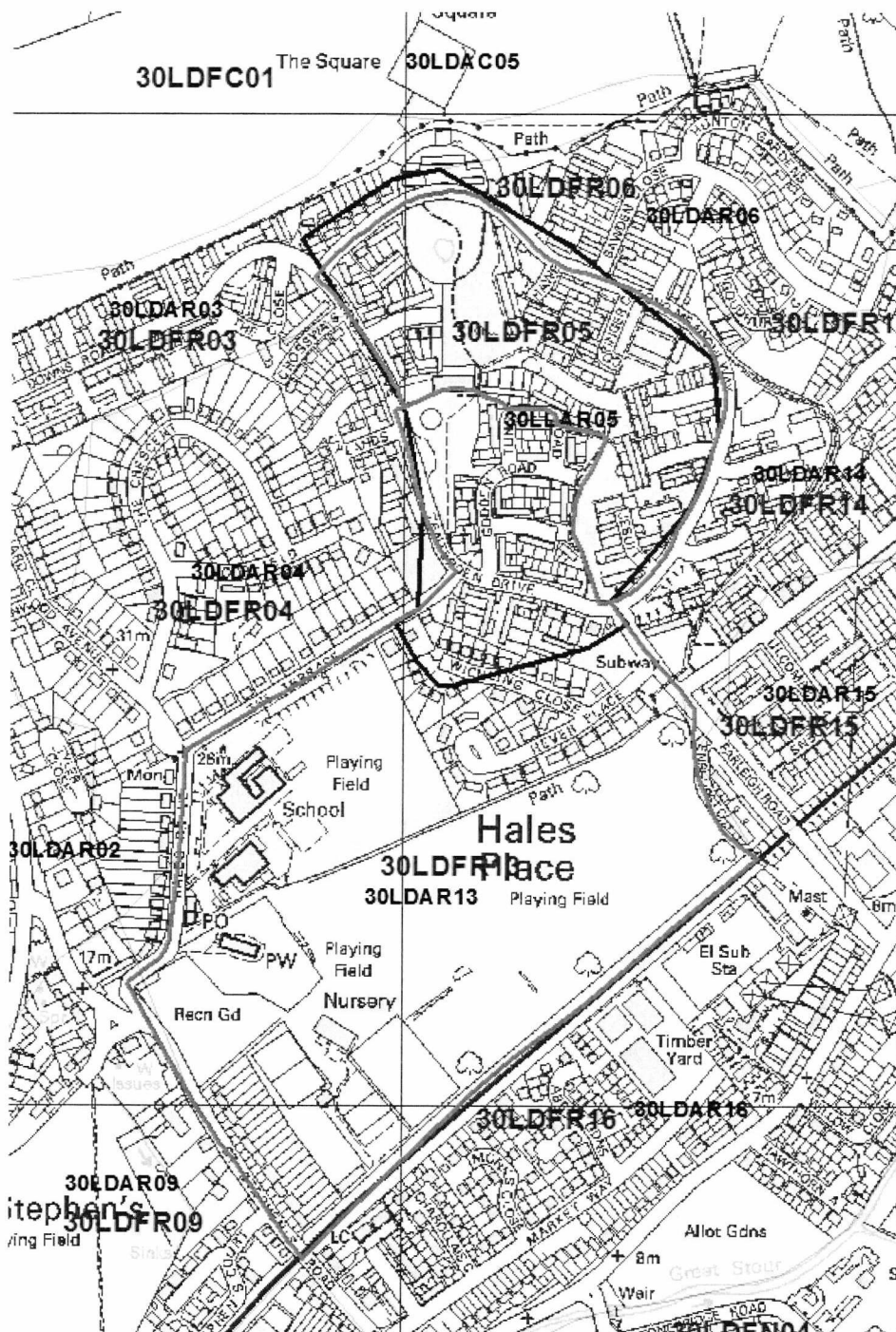
This map gives an example of census boundary changes from 1981 to 1991. On the map, the black boundary lines show the 1981 ED '30LDAR05'; the green boundary lines indicate the 1991 EDs '30LDFR05' and '30LDFR13'. It can be seen that '30LDAR05' is divided into two parts and each part falls into a separate 1991 ED.

Appendix 4.13: Outliers and their standardised values for Hholds and Hcommunal

Year	Area	Hholds	Hcommunal
1981	HeronAK01	-4.68	3.72
	HeronAK03	-5.27	3.85
	RclverAQ01	-5.48	4.05
	RclverAQ09	-3.25	3.84
	RclverAQ13	-3.38	2.46
	TktonAY02	-3.83	2.86
	WgateBA04	-3.60	3.91
	WgateBA05	-3.17	2.21
	WgateBA14	-1.95	7.26
1991	BartonFB07	-1.28	6.31
	BartonFB11	-3.97	3.67
	BlnFrtFC06	-3.39	4.85
	HerneFJ11	-2.99	2.17
	HeronFK01	-4.17	2.93
	HeronFK03	-3.75	2.56
	RclverFQ01	-5.30	3.72
	SSturryFW02	0.23	3.01
	TktonFY02	-5.51	4.02
	WgateGA16	-0.87	4.96
2001	BartonGD04	-3.11	3.20
	BartonGD06	-6.14	6.29
	BlnFrtGE03	-10.11	10.23
	HblDwnGK05	-4.23	4.19
	HeronGN13	-2.95	3.04
	NgateGS14	-4.80	4.86
	WgateHB01	-2.90	2.76
	WgateHB16	-9.81	9.70

Appendix 4.14: Outliers, their social characteristics, and the communal establishments contained in these areas

Year	Area	Social indicators & standardised values	Communal establishments
1981	HeronAK01	Hholds (-4.68) Hcommunal (3.72) Married (-2.50) S.W.D (2.50) Priv.Rnt (3.46)	Chislet Court (sheltered housing for older people)
	HeronAK03	Hholds (-5.27) Hcommunal (3.85) Eightyfive_plus (2.99) Married (-2.71) S.W.D (2.71) Priv.Rnt (3.98)	The Laleham Care Home
	RclverAQ01	Hholds (-5.48) Hcommunal (4.05) Eightyfive_plus (4.63) Married (-3.02) EAFT.empl (-2.46) Elretired (2.70) Elperm.sick (4.94)	All About Care (care home)
	RclverAQ09	Hholds (-3.25) Hcommunal (3.84)	For Us 2 (children's home)
	RclverAQ13	Hholds (-3.38) Eightyfive_plus (3.06)	Castle Gay Care Home
	TktonAY02	Hholds (-3.83) Eightyfive_plus (3.61) Married (-2.91) S.W.D (2.91) Priv.Rnt (3.92)	Tralee Rest Home
	WgateBA04	Hholds (-3.60) Hcommunal (3.91) Eightyfive_plus (2.92) Elretired (3.29)	Pilgrims Hospices
	WgateBA05	Hholds (-3.17) S.W.D (2.68) HiProf (4.35)	Oriel Lodge Holiday Apartments
	WgateBA14	Hcommunal (7.26) Sixteen_24 (3.22) EAFT.empl (2.99) EAselfempl (4.02)	Hotels, holiday lets
1991	BartonFB07	Hcommunal (6.31) LoMng_Prof (3.32) Social.Rnt (5.81) Purp.Flat (3.17)	Hotels, hostels
	BartonFB11	Hholds (-3.97) Hcommunal (3.67) Eightyfive_plus (3.13)	Kent and Canterbury Hospital

		LoMng_Prof (3.14)	
	BlnFrtFC06	Hholds (-3.39) Hcommunal (4.85) Students (4.59) LoMng_Prof (3.67)	Park Wood Courts (student residence)
	HerneFJ11	Hholds (-2.99)	Herne Bay Golf Club
	HeronFK01	Hholds (-4.17) Hcommunal (2.93) Elperm.sick (5.89) Priv.Rnt (3.85) Conv.Flat (4.33)	Chislet Court (sheltered housing for older people)
	HeronFK03	Hholds (-3.75) Eightyfive_plus (3.50) Married (-2.87) S.W.D (2.87) Elperm.sick (3.52) Priv.Rnt (2.90) Conv.Flat (4.35) Com.Flat (4.46)	The Laleham Care Home
	RclverFQ01	Hholds (-5.30) Hcommunal (3.72) Eightyfive_plus (4.75) Elperm.sick (3.54)	All About Care (care home)
	SSturryFW02	Hcommunal (3.01)	Junior King's School, hotels
	TktonFY02	Hholds (-5.51) Hcommunal (4.02) Eightyfive_plus (5.22) Conv.Flat (2.98)	Lyndhurst Rest Home
	WgateGA16	Hcommunal (4.96) **Com.Flat** (3.46)	Hotels, holiday lets
2001	BartonGD04	Hholds (-3.11) Hcommunal (3.20) Sixteen_24 (4.08) Students (4.15) NonClassifbl (3.33)	Canterbury Christ Church University
	BartonGD06	Hholds (-6.14) Hcommunal (6.29) EAFT.empl (3.60)	Howe Barracks (military residence)
	BlnFrtGE03	Hholds (-10.11) Hcommunal (10.23) Sixteen_24 (7.12) Married (-3.24) S.W.D (3.24) EAFT.empl (-3.86) EAPT.empl (-3.39) Students (6.59) NonClassifbl (5.30) PT.MLnPrnt (6.87) Other (4.18)	University of Kent
	HblDwnGK05	Hholds (-4.23)	Kent College

		Hcommunal (4.19)	
	HeronGN13	Hholds (-2.95) Hcommunal (3.04) Elperm.sick (3.55) Conv.Flat (4.31)	All About Care (care home)
	NgateGS14	Hholds (-4.80) Hcommunal (4.86) Sixteen_24 (4.46) EAPT.empl (-2.80) Students (3.93) Priv.Rnt (3.03) Com.Flat (3.61)	Lanfranc (student residence)
	WgateHB01	Hholds (-2.90) Hcommunal (2.76)	St Edmund's School
	WgateHB16	Hholds (-9.81) Hcommunal (9.70) Five_15 (4.32) EAFT.empl (-2.62) EAPT.empl (-3.38) Students (5.12)	The King's School

Appendix 4.15: Boxplots and the map for area 'WgateHB16'

(A) People living in households
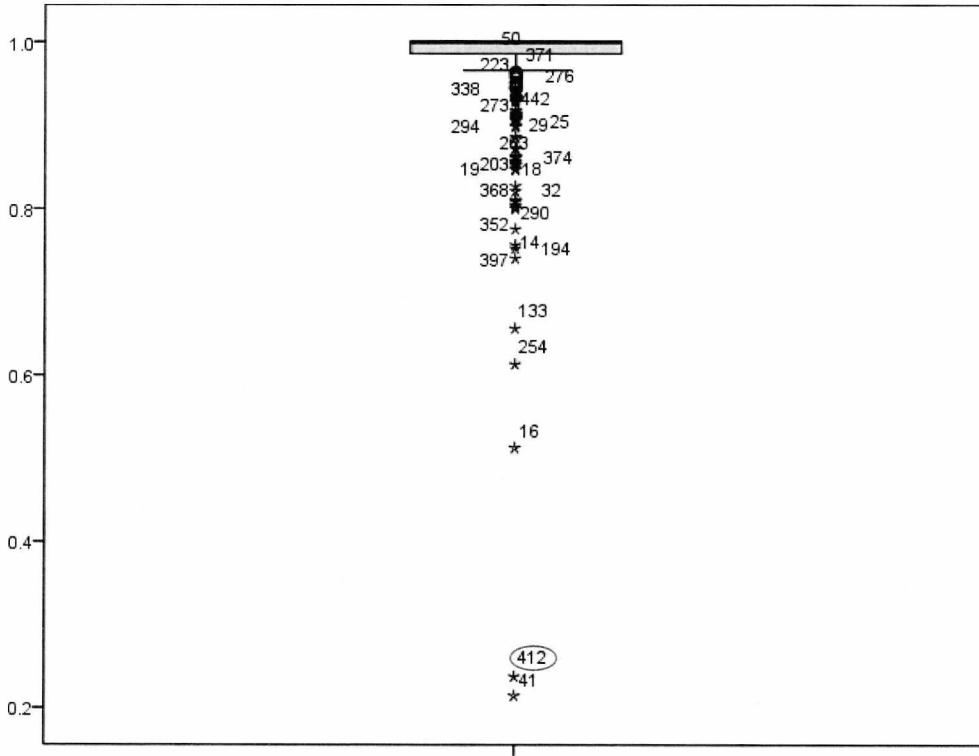
(B) People living in communal establishments
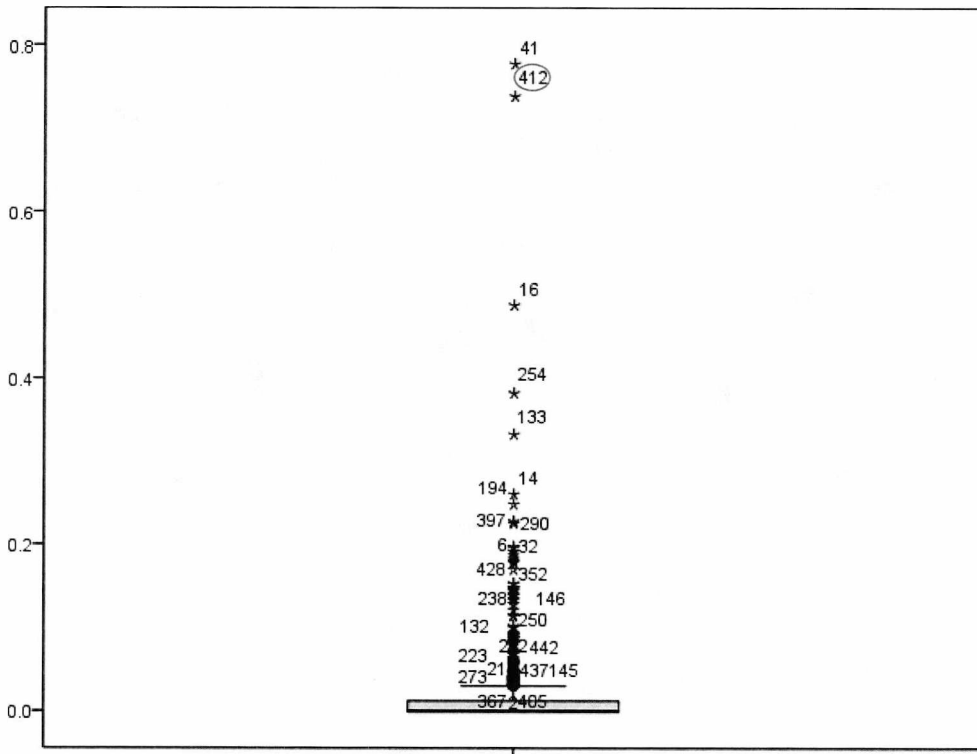
(C) 5 – 15 years
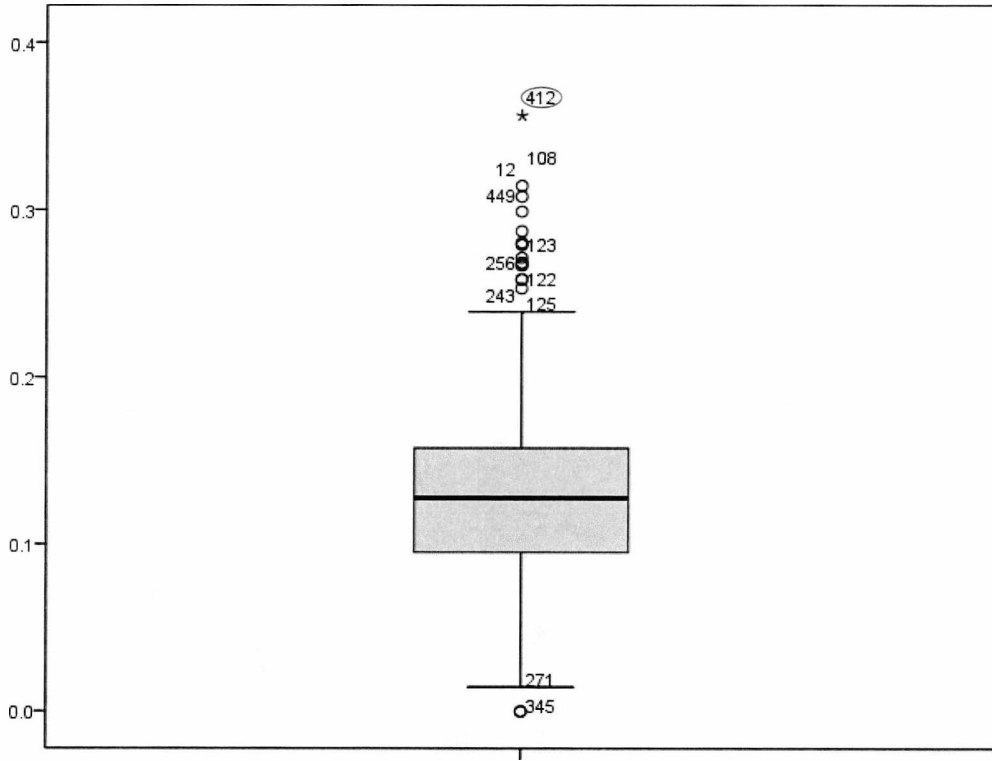
(D) EA full-time employed
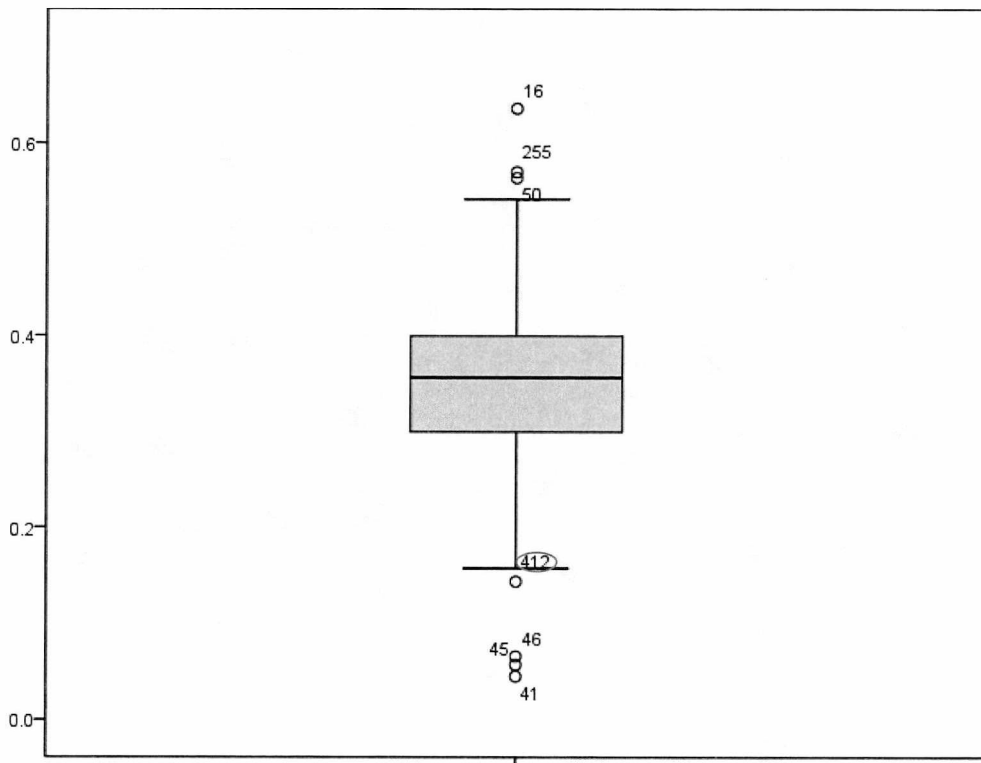
(E) EA part-time employed
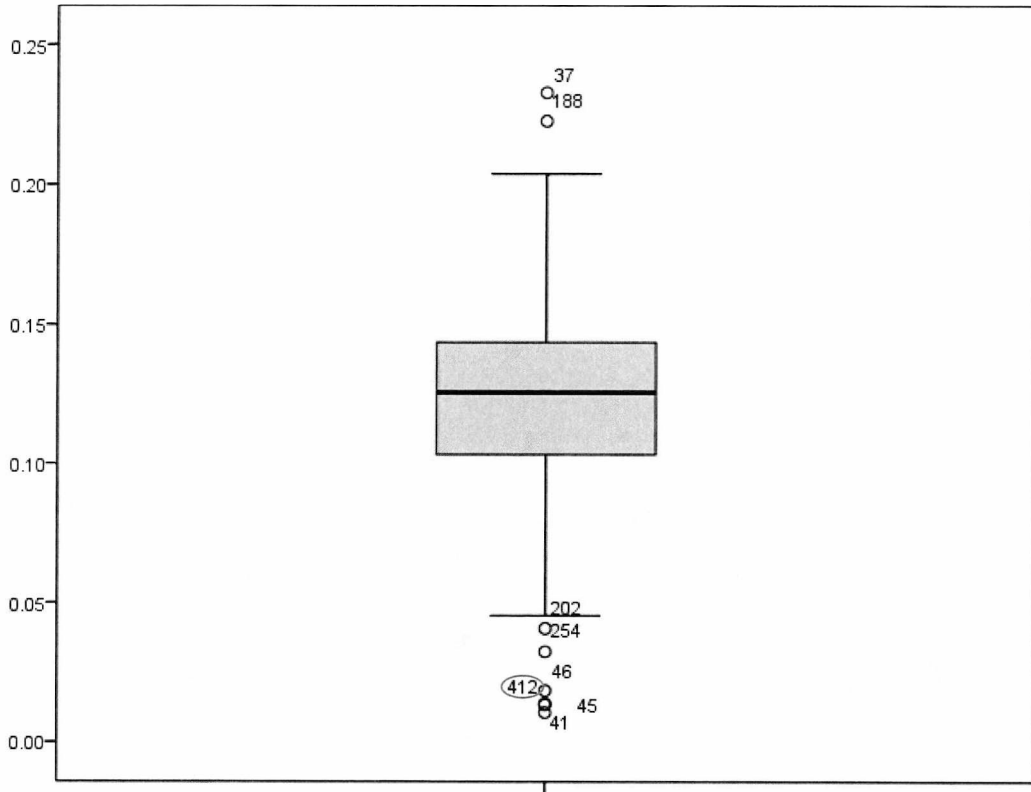
(F) EA or EI students
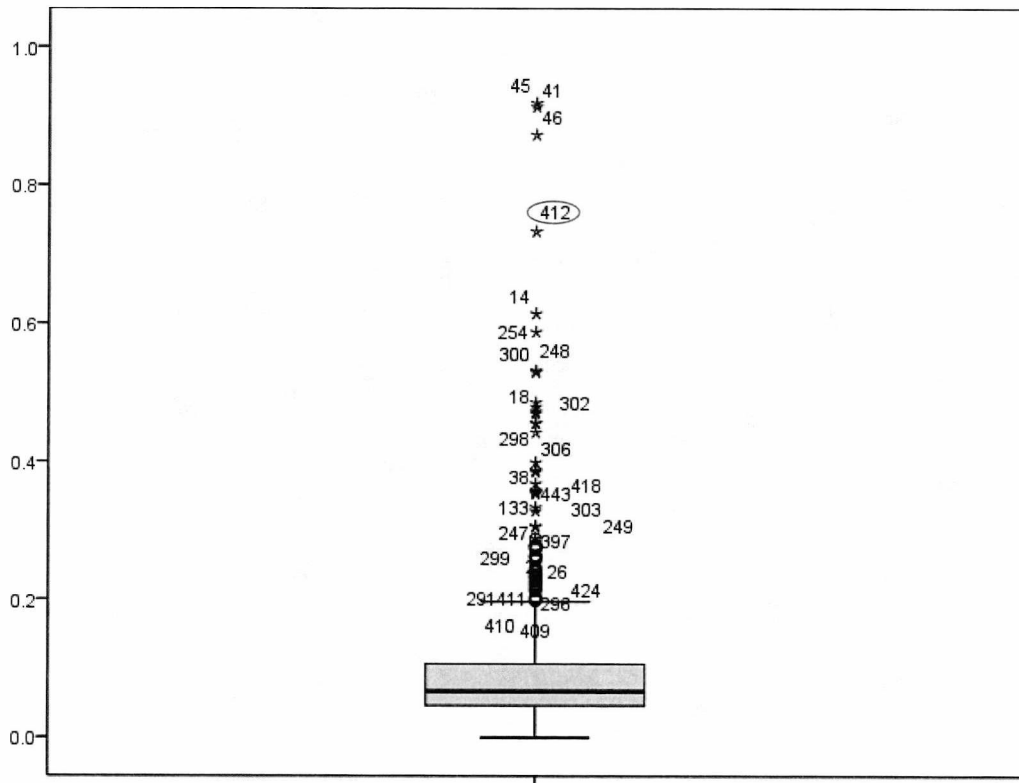
(G) Area 'WgateHB16' on the map
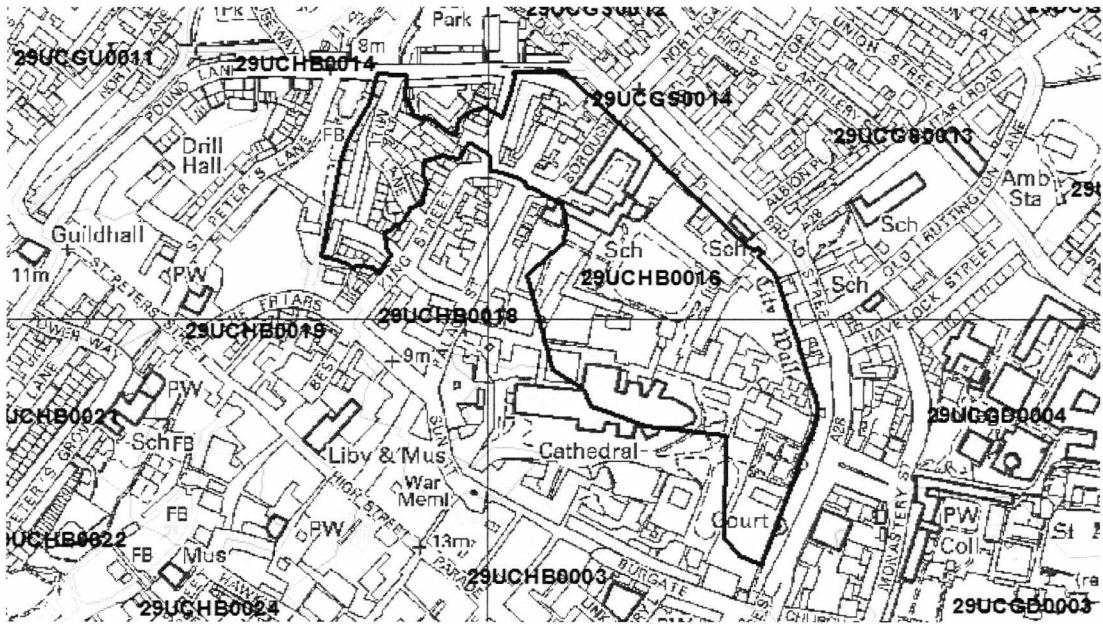
The map shows the 2001 census boundaries for OA 'WgateHB16'. It can be seen that the school takes the majority of the area.

Appendix 4.16: A segment of the 1981 database

	A	B	C	D	E	F	G	H	I	J	
1	Area	Hholds	Hcommunal	Zero_4	Five_15	Sixteen_24	Twentyfive_44	Fortyfive_59	Sixty_64	Sixtyfive_84	Eiဠ
2	BhmDnsAA01	1.0000	0.0000	0.0867	0.1733	0.0988	0.3016	0.1577	0.0399	0.1334	
3	BhmDnsAA02	1.0000	0.0000	0.0691	0.1862	0.0940	0.2726	0.1939	0.0461	0.1344	
4	BhmDnsAA03	0.9349	0.0651	0.0450	0.1450	0.1200	0.2067	0.1767	0.0717	0.2000	
5	BhmDnsAA04	1.0000	0.0000	0.0000	0.0882	0.0588	0.1176	0.2647	0.1471	0.3235	
6	BhmDnsAA05	1.0000	0.0000	0.0520	0.1584	0.0973	0.2511	0.2172	0.0724	0.1448	
7	BhmDnsAA06	1.0000	0.0061	0.0301	0.1506	0.1205	0.2169	0.2590	0.0723	0.1386	
8	BhmDnsAA07	0.9899	0.0337	0.0973	0.1409	0.1174	0.2953	0.2047	0.0336	0.1107	
9	BartonAB01	0.9789	0.2281	0.0348	0.0906	0.1394	0.2753	0.1463	0.0488	0.2404	
10	BartonAB02	0.9969	0.0435	0.0372	0.0743	0.1393	0.2539	0.1424	0.0557	0.2477	
11	BartonAB03	0.9912	0.0088	0.0374	0.1121	0.1956	0.2088	0.1495	0.0791	0.2066	
12	BartonAB04	1.0000	0.0000	0.0390	0.1607	0.1656	0.1688	0.2338	0.0990	0.1234	
13	BartonAB05	1.0000	0.0000	0.0174	0.1660	0.1525	0.2124	0.1969	0.0792	0.1737	
14	BartonAB06	1.0000	0.0000	0.0347	0.2027	0.1390	0.2259	0.1815	0.0811	0.1351	
15	BartonAB07	0.9928	0.1055	0.0311	0.0766	0.1316	0.2010	0.1388	0.0335	0.3589	
16	BartonAB08	0.9794	0.0441	0.0352	0.2082	0.1554	0.2522	0.2229	0.0323	0.0821	
17	BartonAB09	1.0000	0.0000	0.0286	0.1814	0.1313	0.2005	0.2076	0.0525	0.1838	
18	BartonAB10	1.0000	0.0000	0.0535	0.1314	0.1158	0.2294	0.1514	0.0757	0.2160	
19	BartonAB11	0.9644	0.0356	0.0200	0.1109	0.2018	0.1818	0.2151	0.0732	0.1574	
20	BartonAB12	0.9500	0.0525	0.0076	0.1726	0.1294	0.2132	0.1954	0.0711	0.1980	
21	BartonAB13	1.0000	0.0000	0.0341	0.1411	0.1071	0.1752	0.2287	0.0876	0.2190	
22	BartonAB14	1.0000	0.0000	0.0511	0.1477	0.0938	0.2017	0.1903	0.0597	0.2386	
23	BlnFrtAC01	1.0000	0.0000	0.0479	0.1598	0.1187	0.2237	0.2032	0.0731	0.1667	
24	BlnFrtAC02	1.0000	0.0000	0.0457	0.1210	0.0780	0.2124	0.1532	0.0511	0.3253	
25	BlnFrtAC03	1.0000	0.0000	0.0482	0.1506	0.1345	0.2510	0.1988	0.0622	0.1446	
26	BlnFrtAC04	0.9660	0.0378	0.0431	0.2266	0.0974	0.3071	0.1723	0.0524	0.0899	
27	BlnFrtAC05	1.0000	0.0000	0.0299	0.1761	0.1582	0.2209	0.2239	0.0328	0.1522	
28	ChthmAD01	1.0000	0.0000	0.0751	0.1785	0.1278	0.2982	0.1704	0.0527	0.0892	
29	ChthmAD02	1.0000	0.0000	0.0413	0.1761	0.1478	0.2391	0.2000	0.0522	0.1370	
30	ChthmAD03	0.9766	0.0234	0.0848	0.1769	0.1228	0.2573	0.1652	0.0556	0.1301	
31	ChthmAD04	1.0000	0.0000	0.0692	0.1321	0.1572	0.2579	0.1918	0.0786	0.1069	
32	ChthmAD05	1.0000	0.0000	0.0687	0.2015	0.1955	0.2358	0.1716	0.0328	0.0925	
33	ChthmAD06	1.0000	0.0000	0.0458	0.1509	0.1321	0.2615	0.1563	0.0539	0.1725	
34	ChfldAE01	1.0000	0.0000	0.0326	0.1435	0.1043	0.2304	0.1761	0.0739	0.2174	
35	ChfldAE02	1.0000	0.0000	0.0552	0.1436	0.1013	0.2118	0.1860	0.0663	0.2192	
36	ChfldAE03	1.0000	0.0000	0.1006	0.1834	0.1026	0.3314	0.0927	0.0237	0.1598	
37	ChfldAE04	1.0000	0.0000	0.0249	0.1183	0.0726	0.2033	0.1971	0.0954	0.2822	
38	ChfldAE05	1.0000	0.0000	0.0372	0.1292	0.1331	0.2250	0.2133	0.0705	0.1800	
39	ChfldAE06	1.0000	0.0000	0.0388	0.1343	0.1036	0.2346	0.2120	0.0793	0.1909	

Appendices to Chapter 5

Appendix 5.1: PCA results for the 1981 data

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8.582	16.827	16.827	8.582	16.827	16.827
2	7.664	15.027	31.854	7.664	15.027	31.854
3	4.288	8.409	40.263	4.288	8.409	40.263
4	2.956	5.795	46.058	2.956	5.795	46.058
5	2.210	4.334	50.392	2.210	4.334	50.392
6	1.938	3.799	54.191	1.938	3.799	54.191
7	1.834	3.596	57.787	1.834	3.596	57.787
8	1.700	3.333	61.120	1.700	3.333	61.120
9	1.642	3.219	64.339	1.642	3.219	64.339
10	1.273	2.496	66.835	1.273	2.496	66.835
11	1.216	2.385	69.220	1.216	2.385	69.220
12	1.151	2.257	71.476	1.151	2.257	71.476
13	1.119	2.194	73.671	1.119	2.194	73.671
14	1.077	2.111	75.782	1.077	2.111	75.782
15	.982	1.925	77.706	.982	1.925	77.706
16	.920	1.804	79.510	.920	1.804	79.510
17	.873	1.711	81.222	.873	1.711	81.222
18	.773	1.515	82.737	.773	1.515	82.737
19	.767	1.505	84.242	.767	1.505	84.242
20	.732	1.435	85.677	.732	1.435	85.677
21	.697	1.367	87.044			
22	.632	1.238	88.282			
23	.602	1.180	89.462			
24	.600	1.176	90.638			
25	.493	.967	91.605			
26	.391	.767	92.372			
27	.381	.746	93.119			
28	.342	.671	93.789			
29	.328	.643	94.433			
30	.313	.613	95.046			
31	.299	.586	95.632			
32	.268	.526	96.158			
33	.262	.513	96.672			
34	.252	.493	97.165			
35	.224	.440	97.605			
36	.190	.373	97.977			
37	.169	.332	98.310			
38	.151	.296	98.606			
39	.139	.274	98.879			
40	.121	.237	99.116			
41	.114	.223	99.339			
42	.104	.204	99.543			
43	.090	.176	99.719			
44	.078	.152	99.871			
45	.036	.070	99.941			
46	.030	.059	100.000			
47	3.988E-7	7.819E-7	100.000			
48	3.287E-7	6.446E-7	100.000			
49	7.883E-8	1.546E-7	100.000			
50	1.660E-8	3.254E-8	100.000			
51	-5.795E-16	-1.136E-15	100.000			

Extraction Method: Principal Component Analysis.

Appendix 5.2A: Component matrix for the 1981 data

	Component							
	1	2	3	4	5	6	7	8
Hholds	.258	-.238	-.466	.163	-.047	.235	-.275	-.225
Hcommunal	-.249	.263	.487	-.214	-.001	-.173	.260	.282
Zero_4	.687	-.048	-.182	-.262	.399	-.092	.019	.072
Five_15	.764	-.308	.049	-.108	.032	-.133	.191	-.062
Sixteen_24	.500	.324	.530	.102	-.241	-.070	-.166	-.013
Twentyfive_44	.644	-.324	.218	-.422	.184	.045	-.200	.078
Fortyfive_59	-.101	-.312	.253	.562	-.452	.078	.015	-.015
Sixty_64	-.541	.071	-.236	.471	-.156	.103	-.069	-.023
Sixtyfive_84	-.852	.279	-.357	.037	.065	.043	.063	-.010
Eightyfive_plus	-.712	.355	.042	-.224	.060	-.047	.205	-.056
Married	.249	-.780	-.424	-.020	.207	.023	-.065	.035
S.W.D	-.249	.780	.424	.020	-.207	-.023	.065	-.035
EAFT.empl	.692	-.321	.435	-.033	-.116	.063	-.255	-.032
EAPT.empl	.622	-.188	.157	.181	-.431	.002	-.093	.029
EAselfempl	-.215	-.177	.532	.230	.444	.073	-.032	-.300
EAunempl	.464	.421	.059	.210	.354	-.130	-.034	.015
Elretired	-.782	.224	-.331	-.036	.040	.009	.091	-.007
Elperm.sick	-.155	.345	-.147	.154	-.062	-.158	.080	.164
Students	.089	-.212	.621	-.180	-.428	.054	.125	.106
LgeEmpl_HiMng	-.112	-.290	-.041	-.158	-.167	.046	.072	.010
HiProf	-.092	-.278	.308	-.186	-.221	.118	.312	.115
LoMng_Prof	-.344	-.295	.244	-.207	-.189	-.095	.028	.065
Interm	-.075	-.080	-.243	-.336	-.099	-.022	-.142	.070
SmlEmpl_OwnAcct	-.030	-.038	.262	.421	.468	-.086	-.006	-.302
LoSupv_Tech	.384	.172	-.353	-.031	.080	-.008	-.338	.052
SemiRtine	.232	.382	-.240	.022	-.181	-.050	-.080	.025
Routine	.200	-.016	.158	.599	.059	.006	.059	-.112
NonClassifbl	.089	.078	.073	-.119	.258	.286	.114	-.009
NoCar	-.119	.929	-.202	-.018	-.012	-.011	-.046	-.009
OneCar	.245	-.713	-.056	-.181	-.013	-.004	-.137	.128
TwoCars	-.023	-.799	.348	.127	-.006	-.001	.188	-.060
ThreeplusCars	-.087	-.546	.327	.390	.161	.095	.168	-.234
LnPrnt_deChd	.714	.355	-.121	.020	.141	-.032	.418	-.052
Ttl.MLnPrnt	.289	.219	-.090	-.145	-.041	.718	.172	-.235
FT.MLnPrnt	.210	.166	-.066	-.178	-.054	.762	.126	-.233
PT.MLnPrnt	-.066	.075	.042	-.037	.015	.146	-.079	-.113
Ttl.FLnPrnt	.698	.334	-.110	.047	.155	-.164	.408	-.011
FT.FLnPrnt	.361	.011	-.025	-.168	.028	.044	.426	.088
PT.FLnPrnt	.508	.207	-.043	.073	.031	-.213	.230	-.027
Own.Occupied	-.542	-.601	-.074	-.396	.062	-.053	-.075	-.143
Council.Rnt	.572	.452	-.199	.408	-.199	-.126	.101	-.086
Social.Rnt	.170	.173	-.038	-.231	.030	.206	.303	.143
Priv.Rnt	-.202	.433	.636	-.206	.165	.054	-.270	-.025
Other	.018	-.151	.180	.425	.227	.347	-.025	.666
Detached	-.504	-.645	-.060	.101	.105	-.041	.335	-.065
SemiDtch	.264	-.246	-.379	.023	-.237	-.236	-.070	-.135
Terraced	.436	.487	.167	-.140	.031	.077	-.276	.062
Purp.Flat	.115	.434	-.147	.072	-.311	.225	.063	-.059
Conv.Flat	-.208	.439	.474	-.137	.181	-.144	-.076	-.030
Com.Flat	-.196	.372	.345	-.044	.161	.171	-.243	-.144
Nonperm.Accm	-.089	-.043	-.095	.350	.224	.277	-.075	.732

Appendix 5.2B: Suppressed component matrix for the 1981 data

	Component							
	1	2	3	4	5	6	7	8
Hholds			-.466					
Hcommunal			.487					
Zero_4	.687							
Five_15	.764							
Sixteen_24	.500		.530					
Twentyfive_44	.644			-.422				
Fortyfive_59				.562	-.452			
Sixty_64	-.541			.471				
Sixtyfive_84	-.852							
Eightyfive_plus	-.712							
Married		-.780	-.424					
S.W.D		.780	.424					
EAFT.empl	.692		.435					
EAPT.empl	.622				-.431			
EAselfempl			.532		.444			
EAunempl	.464	.421						
EIretired	-.782							
EIperm.sick								
Students			.621		-.428			
LgeEmpl_HiMng								
HiProf								
LoMng_Prof								
Interm								
SmlEmpl_OwnAcct				.421	.468			
LoSupv_Tech								
SemiRtine								
Routine				.599				
NonClassifbl								
NoCar		.929						
OneCar		-.713						
TwoCars		-.799						
ThreeplusCars		-.546						
LnPrnt_deChd	.714						.418	
Ttl.MLnPrnt						.718		
FT.MLnPrnt						.762		
PT.MLnPrnt								
Ttl.FLnPrnt	.698						.408	
FT.FLnPrnt							.426	
PT.FLnPrnt	.508							
Own.Occupied	-.542	-.601						
Council.Rnt	.572	.452		.408				
Social.Rnt								
Priv.Rnt		.433	.636					
Other				.425				.666
Detached	-.504	-.645						
SemiDtch								
Terraced	.436	.487						
Purp.Flat		.434						
Conv.Flat		.439	.474					
Com.Flat								
Nonperm.Accm								.732

Appendix 5.2C: Rotated component matrix for the 1981 data

	Component							
	1	2	3	4	5	6	7	8
Hholds	.089	-.243	.003	-.064	.023	-.009	-.918	.026
Hcommunal	-.070	.229	-.063	-.056	-.016	-.015	.901	-.028
Zero_4	.414	-.289	.333	-.152	.000	-.569	-.036	.031
Five_15	.646	-.233	.388	.173	.028	-.289	.002	.069
Sixteen_24	.598	.522	.191	-.220	.049	.209	.032	-.036
Twentyfive_44	.748	-.163	-.032	-.009	-.122	-.510	-.030	.058
Fortyfive_59	.174	-.043	-.099	.285	.040	.815	.005	-.044
Sixty_64	-.524	-.117	-.117	-.032	.054	.640	-.058	-.020
Sixtyfive_84	-.934	.077	-.240	-.059	.022	.057	-.019	-.043
Eightyfive_plus	-.691	.343	-.174	.012	-.073	-.070	.295	.017
Married	.223	-.780	-.033	.265	-.222	-.109	-.234	-.026
S.W.D	-.223	.780	.033	-.265	.222	.109	.234	.026
EAFT.empl	.923	-.002	-.047	.072	-.081	.002	-.042	.031
EAPT.empl	.680	-.132	.188	-.082	.065	.288	-.085	.040
EAselfempl	.035	.244	-.094	.575	-.164	.065	.024	-.046
EAunempl	.203	.224	.459	-.206	.139	-.101	.007	-.026
Elretired	-.861	.037	-.206	-.083	-.080	.062	.044	-.043
Elperm.sick	-.218	-.026	-.017	-.110	.588	.017	.281	-.060
Students	.416	.229	-.058	.060	-.198	.240	.139	-.017
LgeEmpl_HiMng	-.007	-.107	-.091	.077	-.106	.020	-.047	.007
HiProf	.071	-.035	-.136	.108	-.041	-.024	.105	.075
LoMng_Prof	-.042	.019	-.167	.177	-.092	.054	.020	-.181
Interm	-.035	-.077	-.072	-.084	-.025	-.026	.006	-.012
SmlEmpl_OwnAcct	-.023	-.009	.090	.313	-.073	.021	-.006	-.193
LoSupv_Tech	.196	-.067	.081	-.314	.002	.012	-.103	.176
SemiRtine	.019	.061	.135	-.240	.153	-.052	.010	.063
Routine	.149	-.001	.094	.132	.016	.147	.020	.010
NonClassifbl	.036	.042	.028	.027	-.019	-.095	.020	.166
NoCar	-.436	.495	.188	-.533	.357	-.123	-.052	.079
OneCar	.404	-.608	-.118	.030	-.443	.092	.068	-.049
TwoCars	.327	-.241	-.181	.746	-.157	.094	.035	-.088
ThreeplusCars	.153	-.050	-.147	.782	-.083	.128	-.045	-.020
LnPrnt_deChd	.217	.009	.846	-.163	.099	-.119	-.034	.208
Ttl.MLnPrnt	.067	.010	.154	-.085	.069	-.031	-.028	.919
FT.MLnPrnt	.052	.003	.028	-.064	.024	-.028	-.022	.938
PT.MLnPrnt	-.056	.049	-.025	-.003	-.009	-.026	-.016	.054
Ttl.FLnPrnt	.216	.008	.861	-.155	.092	-.119	-.031	.052
FT.FLnPrnt	.149	-.019	.289	.047	.083	-.166	-.052	.023
PT.FLnPrnt	.184	.031	.757	-.069	-.061	-.034	-.012	.006
Own.Occupied	-.276	-.279	-.462	.241	-.563	-.091	.010	-.048
Council.Rnt	.229	.025	.515	-.232	.632	.102	-.116	.012
Social.Rnt	.010	-.039	.054	-.131	.029	-.010	.059	.051
Priv.Rnt	.043	.769	-.139	-.056	-.186	-.075	.199	.052
Other	.107	-.033	-.038	.143	-.004	.066	.059	.015
Detached	-.338	-.338	-.158	.691	-.160	.088	.000	-.128
SemiDtch	.147	-.289	.045	-.121	-.059	-.007	-.066	.012
Terraced	.340	.211	.122	-.557	-.001	-.104	-.004	.083
Purp.Flat	-.010	.084	-.029	-.166	.748	.047	-.112	.145
Conv.Flat	-.082	.770	.063	.080	-.097	-.046	.165	-.086
Com.Flat	-.068	.328	-.095	-.114	.136	-.014	.125	.106
Nonperm.Accm	-.122	-.054	-.010	-.045	-.023	.031	-.059	-.043

Appendix 5.2D: Rotated and suppressed component matrix for the 1981 data

	Component							
	1	2	3	4	5	6	7	8
Hholds							-.918	
Hcommunal							.901	
Zero_4	.414					-.569		
Five_15	.646							
Sixteen_24	.598	.522						
Twentyfive_44	.748					-.510		
Fortyfive_59						.815		
Sixty_64	-.524					.640		
Sixtyfive_84	-.934							
Eightyfive_plus	-.691							
Married		-.780						
S.W.D		.780						
EAFT.empl	.923							
EAPT.empl	.680							
EAselfempl				.575				
EAunempl			.459					
EIretired	-.861							
EIperm.sick					.588			
Students	.416							
LgeEmpl_HiMng								
HiProf								
LoMng_Prof								
Interm								
SmlEmpl_OwnAcct								
LoSupv_Tech								
SemiRtine								
Routine								
NonClassifbl								
NoCar	-.436	.495		-.533				
OneCar	.404	-.608			-.443			
TwoCars				.746				
ThreeplusCars				.782				
LnPrnt_deChd			.846					
Ttl.MLnPrnt								.919
FT.MLnPrnt								.938
PT.MLnPrnt								
Ttl.FLnPrnt			.861					
FT.FLnPrnt								
PT.FLnPrnt			.757					
Own.Occupied			-.462		-.563			
Council.Rnt			.515		.632			
Social.Rnt								
Priv.Rnt		.769						
Other								
Detached				.691				
SemiDtch								
Terraced				-.557				
Purp.Flat					.748			
Conv.Flat		.770						
Com.Flat								
Nonperm.Accm								

Appendix 5.3: PCA results for the 1991 data

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	9.997	19.601	19.601	9.997	19.601	19.601
2	6.559	12.860	32.461	6.559	12.860	32.461
3	5.068	9.937	42.398	5.068	9.937	42.398
4	2.546	4.992	47.390	2.546	4.992	47.390
5	2.356	4.621	52.010	2.356	4.621	52.010
6	2.210	4.333	56.343	2.210	4.333	56.343
7	2.040	4.000	60.343	2.040	4.000	60.343
8	1.779	3.489	63.832	1.779	3.489	63.832
9	1.475	2.892	66.723	1.475	2.892	66.723
10	1.310	2.569	69.292	1.310	2.569	69.292
11	1.207	2.366	71.658	1.207	2.366	71.658
12	1.156	2.266	73.925	1.156	2.266	73.925
13	1.020	2.000	75.925	1.020	2.000	75.925
14	.976	1.914	77.839	.976	1.914	77.839
15	.953	1.870	79.708	.953	1.870	79.708
16	.908	1.781	81.489	.908	1.781	81.489
17	.853	1.673	83.162	.853	1.673	83.162
18	.808	1.584	84.746	.808	1.584	84.746
19	.723	1.418	86.164	.723	1.418	86.164
20	.695	1.362	87.526			
21	.671	1.316	88.842			
22	.621	1.218	90.060			
23	.563	1.104	91.164			
24	.517	1.013	92.177			
25	.418	.819	92.997			
26	.411	.807	93.803			
27	.398	.780	94.583			
28	.335	.658	95.241			
29	.316	.620	95.861			
30	.289	.567	96.428			
31	.242	.475	96.903			
32	.234	.459	97.361			
33	.215	.421	97.783			
34	.195	.382	98.165			
35	.167	.327	98.492			
36	.160	.313	98.805			
37	.135	.264	99.070			
38	.111	.217	99.287			
39	.092	.181	99.467			
40	.077	.150	99.618			
41	.071	.140	99.758			
42	.045	.089	99.847			
43	.037	.073	99.920			
44	.022	.043	99.963			
45	.016	.032	99.994			
46	.002	.005	99.999			
47	.000	.001	100.000			
48	3.154E-7	6.184E-7	100.000			
49	2.786E-7	5.463E-7	100.000			
50	8.123E-8	1.593E-7	100.000			
51	1.828E-9	3.584E-9	100.000			

Extraction Method: Principal Component Analysis.

Appendix 5.4A: Component matrix for the 1991 data

	Component							
	1	2	3	4	5	6	7	8
Hholds	.058	.388	-.419	.052	-.593	-.261	-.187	.293
Hcommunal	-.053	-.380	.482	-.071	.515	.217	.215	-.312
Zero_4	.641	.411	-.154	-.027	.121	.354	.028	.058
Five_15	.204	.714	-.230	.036	.317	-.001	.117	-.113
Sixteen_24	.512	.207	.602	-.002	-.113	-.164	-.150	-.066
Twentyfive_44	.460	.588	.306	-.271	-.054	.226	-.172	.165
Fortyfive_59	-.579	.163	.220	.440	.023	-.290	-.010	-.094
Sixty_64	-.471	-.309	-.375	.135	-.221	-.120	.061	-.035
Sixtyfive_84	-.354	-.820	-.352	-.066	-.137	-.037	.085	.042
Eightyfive_plus	-.225	-.718	.042	-.149	.322	.135	.099	-.121
Married	-.659	.471	-.461	-.013	.006	.188	.065	-.044
S.W.D	.659	-.471	.461	.013	-.006	-.188	-.065	.044
EAFT.empl	.242	.694	.343	-.309	-.126	.015	-.128	-.043
EAPT.empl	.032	.640	.059	-.045	.015	-.303	-.006	-.203
EAselfempl	-.398	.163	.462	.497	.078	.168	-.193	.226
EAunempl	.739	.089	-.107	.238	.122	.131	-.113	.160
EIretired	-.339	-.810	-.400	-.074	-.032	-.012	.069	-.011
EIperm.sick	.384	-.244	-.132	.108	.297	.041	.054	.008
Students	-.002	.219	.642	-.089	-.223	-.379	.157	-.214
LgeEmpl_HiMng	-.251	.181	.190	-.060	-.013	-.125	.291	-.049
HiProf	-.221	.004	.389	.077	-.212	-.236	.219	-.221
LoMng_Prof	-.272	-.027	.490	-.190	-.070	-.112	.363	.016
Interm	-.224	-.034	-.138	-.320	.053	-.043	-.078	-.001
SmlEmpl_OwnAcct	-.233	-.074	.031	.439	-.040	.106	-.289	.169
LoSupv_Tech	.220	.063	-.343	-.187	.126	.127	-.248	.078
SemiRtine	.416	-.153	-.226	.223	.183	-.040	-.221	.027
Routine	.373	.086	-.318	.184	.088	-.008	-.192	-.058
NonClassifbl	.161	.170	-.098	-.070	-.267	.488	.224	-.186
NoCar	.718	-.588	-.117	-.001	-.134	-.124	-.021	.081
OneCar	-.180	.196	-.264	-.506	-.166	.297	.048	-.238
TwoCars	-.665	.518	.257	.223	.237	-.034	.018	.052
ThreeplusCars	-.552	.430	.256	.394	.185	-.015	-.068	.014
LnPrnt_deChd	.763	.231	-.240	.170	.248	-.003	.302	.006
Ttl.MLnPrnt	.113	.164	-.060	-.033	.017	-.044	.596	.623
FT.MLnPrnt	-.060	.219	-.073	-.190	.051	-.027	.537	.610
PT.MLnPrnt	.074	-.015	.063	-.091	-.138	.118	-.118	.213
Ttl.FLnPrnt	.772	.213	-.239	.182	.255	.004	.214	-.096
FT.FLnPrnt	.300	.086	-.015	-.076	-.040	.029	.138	-.186
PT.FLnPrnt	.510	.198	-.206	.157	.310	-.069	.183	-.123
Own.Occupied	-.795	.060	.038	-.373	.211	.000	-.165	.166
Council.Rnt	.667	.002	-.357	.301	.023	-.333	.054	-.033
Social.Rnt	.313	-.001	-.056	-.074	.003	-.132	.225	-.239
Priv.Rnt	.321	-.295	.711	-.028	-.048	.255	-.139	.123
Other	-.033	.122	-.018	.391	-.493	.583	.246	-.231
Detached	-.823	.038	-.032	.204	.200	.006	.193	.068
SemiDtch	-.128	.287	-.463	-.264	.171	-.124	-.335	-.079
Terraced	.699	.118	.251	-.162	-.291	.059	.016	.001
Purp.Flat	.563	-.357	-.010	.091	-.202	-.372	.110	-.076
Conv.Flat	.280	-.376	.518	-.049	.238	.301	-.062	.075
Com.Flat	.225	-.342	.367	.113	-.081	.146	-.059	.302
Nonperm.Accm	-.101	-.050	-.145	.429	-.383	.372	.165	-.167

Appendix 5.4B: Suppressed component matrix for the 1991 data

	Component							
	1	2	3	4	5	6	7	8
Hholds			-.419		-.593			
Hcommunal			.482		.515			
Zero_4	.641	.411						
Five_15		.714						
Sixteen_24	.512		.602					
Twentyfive_44	.460	.588						
Fortyfive_59	-.579			.440				
Sixty_64	-.471							
Sixtyfive_84		-.820						
Eightyfive_plus		-.718						
Married	-.659	.471	-.461					
S.W.D	.659	-.471	.461					
EAFT.empl		.694						
EAPT.empl		.640						
EAselfempl			.462	.497				
EAunempl	.739							
Elretired		-.810	-.400					
Elperm.sick								
Students			.642					
LgeEmpl_HiMng								
HiProf								
LoMng_Prof			.490					
Interm								
SmlEmpl_OwnAcct				.439				
LoSupv_Tech								
SemiRtine	.416							
Routine								
NonClassifbl						.488		
NoCar	.718	-.588						
OneCar				-.506				
TwoCars	-.665	.518						
ThreeplusCars	-.552	.430						
LnPrnt_deChd	.763							
Ttl.MLnPrnt							.596	.623
FT.MLnPrnt							.537	.610
PT.MLnPrnt								
Ttl.FLnPrnt	.772							
FT.FLnPrnt								
PT.FLnPrnt	.510							
Own.Occupied	-.795							
Council.Rnt	.667							
Social.Rnt								
Priv.Rnt			.711					
Other					-.493	.583		
Detached	-.823							
SemiDtch			-.463					
Terraced	.699							
Purp.Flat	.563							
Conv.Flat			.518					
Com.Flat								
Nonperm.Accm				.429				

Appendix 5.4C: Rotated component matrix for the 1991 data

| | Component | | | | | | | |
	1	2	3	4	5	6	7	8
Hholds	.066	.085	.009	-.192	-.930	.003	.027	-.042
Hcommunal	-.032	-.058	-.035	.211	.906	-.001	-.008	.106
Zero_4	.263	.499	.530	-.032	-.029	-.079	.025	-.320
Five_15	-.208	.476	.473	-.438	.002	.016	-.049	-.087
Sixteen_24	.180	.596	.075	.417	-.017	.218	-.044	.361
Twentyfive_44	.156	.874	.048	.110	-.071	-.084	-.042	-.194
Fortyfive_59	-.702	-.116	-.154	-.048	-.101	.085	.088	.358
Sixty_64	-.092	-.634	-.163	-.143	-.232	-.259	.176	.074
Sixtyfive_84	.212	-.902	-.295	.008	.031	-.022	-.007	-.076
Eightyfive_plus	.131	-.553	-.198	.080	.640	.089	-.104	-.097
Married	-.558	-.117	-.054	-.526	-.218	-.396	.057	-.185
S.W.D	.558	.117	.054	.526	.218	.396	-.057	.185
EAFT.empl	.011	.871	-.083	-.033	-.118	-.110	-.022	.049
EAPT.empl	-.145	.512	.110	-.402	-.073	-.008	-.039	.197
EAselfempl	-.679	.119	-.113	.348	-.020	.136	.116	-.040
EAunempl	.273	.247	.549	.213	-.109	.202	.046	-.160
EIretired	.207	-.906	-.219	-.045	.111	-.023	-.029	-.120
EIperm.sick	.208	-.058	.167	.070	.195	.042	-.021	-.100
Students	-.045	.375	-.179	.144	.048	.085	-.040	.631
LgeEmpl_HiMng	-.186	.039	-.063	-.031	.031	-.063	-.030	.038
HiProf	-.087	.006	-.090	.005	.082	-.075	.028	.783
LoMng_Prof	-.178	.030	-.204	.154	.162	.007	-.066	.112
Interm	-.025	-.052	-.111	-.137	-.007	-.037	-.011	-.091
SmlEmpl_OwnAcct	-.187	-.118	-.073	.028	-.045	.023	.056	.051
LoSupv_Tech	.147	.046	.100	-.039	-.075	-.069	.037	-.198
SemiRtine	.171	-.075	.197	.117	-.076	.153	-.135	-.146
Routine	.203	.112	.186	-.172	-.059	.007	.117	-.359
NonClassifbl	.104	.117	.054	-.020	-.032	-.092	.147	-.033
NoCar	.779	-.203	.171	.251	-.003	.392	-.011	-.091
OneCar	.133	.018	-.034	-.196	-.078	-.860	.015	.079
TwoCars	-.881	.203	-.165	-.163	.045	.012	-.020	.058
ThreeplusCars	-.811	.179	-.130	-.124	.040	.169	.069	.029
LnPrnt_deChd	.284	.214	.833	-.030	-.025	.105	.005	-.059
Ttl.MLnPrnt	.021	.031	.154	.010	-.073	.044	.040	.043
FT.MLnPrnt	-.046	.078	-.048	-.083	-.045	-.049	-.044	-.052
PT.MLnPrnt	.050	.028	-.036	.016	-.033	.014	-.038	-.060
Ttl.FLnPrnt	.291	.217	.838	-.033	-.013	.102	-.002	-.069
FT.FLnPrnt	.139	.149	.119	-.032	-.021	-.042	.068	-.019
PT.FLnPrnt	.104	.073	.867	.013	-.018	-.028	-.052	-.006
Own.Occupied	-.481	-.171	-.422	-.110	.074	-.473	-.344	-.011
Council.Rnt	.439	.041	.502	-.260	-.162	.516	-.004	-.024
Social.Rnt	.171	.054	.169	-.025	-.012	.068	-.041	-.017
Priv.Rnt	.175	.213	-.103	.828	.225	.055	-.001	.065
Other	-.066	.051	-.026	.024	-.039	-.027	.884	.008
Detached	-.772	-.412	-.160	-.129	.040	-.122	-.069	.069
SemiDtch	.041	.126	-.067	-.539	-.080	-.197	-.164	-.220
Terraced	.543	.476	.168	.220	-.073	-.005	.053	.074
Purp.Flat	.561	-.092	.141	.055	-.096	.595	-.078	.156
Conv.Flat	.104	.037	.033	.751	.384	.009	-.041	-.056
Com.Flat	.148	-.035	.029	.672	-.053	.085	-.034	-.027
Nonperm.Accm	-.044	-.138	-.010	-.039	-.037	-.008	.928	-.005

Appendix 5.4D: Rotated and suppressed component matrix for the 1991 data

	Component							
	1	2	3	4	5	6	7	8
Hholds					-.930			
Hcommunal					.906			
Zero_4		.499	.530					
Five_15		.476	.473	-.438				
Sixteen_24		.596		.417				
Twentyfive_44		.874						
Fortyfive_59	-.702							
Sixty_64		-.634						
Sixtyfive_84		-.902						
Eightyfive_plus		-.553			.640			
Married	-.558			-.526				
S.W.D	.558			.526				
EAFT.empl		.871						
EAPT.empl		.512		-.402				
EAselfempl	-.679							
EAunempl			.549					
EIretired		-.906						
EIperm.sick								
Students								.631
LgeEmpl_HiMng								
HiProf								.783
LoMng_Prof								
Interm								
SmlEmpl_OwnAcct								
LoSupv_Tech								
SemiRtine								
Routine								
NonClassifbl								
NoCar	.779							
OneCar						-.860		
TwoCars	-.881							
ThreeplusCars	-.811							
LnPrnt_deChd			.833					
Ttl.MLnPrnt								
FT.MLnPrnt								
PT.MLnPrnt								
Ttl.FLnPrnt			.838					
FT.FLnPrnt								
PT.FLnPrnt			.867					
Own.Occupied	-.481		-.422			-.473		
Council.Rnt	.439		.502			.516		
Social.Rnt								
Priv.Rnt				.828				
Other							.884	
Detached	-.772	-.412						
SemiDtch				-.539				
Terraced	.543	.476						
Purp.Flat	.561					.595		
Conv.Flat				.751				
Com.Flat				.672				
Nonperm.Accm							.928	

Appendix 5.5: PCA results for the 2001 data

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	12.070	23.667	23.667	12.070	23.667	23.667
2	6.520	12.785	36.452	6.520	12.785	36.452
3	5.323	10.437	46.889	5.323	10.437	46.889
4	3.121	6.121	53.009	3.121	6.121	53.009
5	2.549	4.998	58.007	2.549	4.998	58.007
6	2.009	3.939	61.946	2.009	3.939	61.946
7	1.683	3.300	65.246	1.683	3.300	65.246
8	1.510	2.962	68.208	1.510	2.962	68.208
9	1.322	2.593	70.801	1.322	2.593	70.801
10	1.256	2.463	73.264	1.256	2.463	73.264
11	1.048	2.055	75.319	1.048	2.055	75.319
12	.996	1.953	77.273	.996	1.953	77.273
13	.947	1.856	79.129	.947	1.856	79.129
14	.920	1.804	80.933	.920	1.804	80.933
15	.815	1.598	82.531	.815	1.598	82.531
16	.770	1.511	84.042	.770	1.511	84.042
17	.711	1.394	85.436	.711	1.394	85.436
18	.680	1.334	86.770			
19	.639	1.253	88.023			
20	.598	1.172	89.195			
21	.534	1.048	90.243			
22	.505	.991	91.233			
23	.466	.913	92.147			
24	.418	.819	92.966			
25	.378	.742	93.708			
26	.376	.738	94.446			
27	.331	.650	95.095			
28	.304	.595	95.691			
29	.283	.555	96.246			
30	.269	.527	96.773			
31	.258	.505	97.278			
32	.244	.478	97.756			
33	.194	.380	98.136			
34	.178	.348	98.484			
35	.174	.340	98.824			
36	.145	.284	99.109			
37	.132	.260	99.368			
38	.090	.176	99.545			
39	.083	.163	99.708			
40	.055	.107	99.815			
41	.033	.065	99.880			
42	.027	.054	99.934			
43	.013	.025	99.958			
44	.011	.022	99.980			
45	.009	.018	99.998			
46	.001	.002	100.000			
47	3.611E-7	7.080E-7	100.000			
48	2.449E-7	4.801E-7	100.000			
49	7.634E-8	1.497E-7	100.000			
50	2.437E-8	4.779E-8	100.000			
51	1.033E-9	2.025E-9	100.000			

Extraction Method: Principal Component Analysis.

Appendix 5.6A: Component matrix for the 2001 data

	Component							
	1	2	3	4	5	6	7	8
Hholds	.004	.221	-.205	-.564	-.186	.614	-.338	-.112
Hcommunal	-.004	-.219	.195	.546	.198	-.632	.332	.113
Zero_4	.328	.681	.044	.076	.018	-.035	-.205	.042
Five_15	.132	.769	-.182	.000	.340	-.078	-.067	.092
Sixteen_24	.532	-.297	.477	-.510	.133	.000	.199	-.050
Twentyfive_44	.283	.601	.556	.089	-.199	.009	-.088	-.001
Fortyfive_59	-.756	.068	-.049	.064	.188	.177	.155	.111
Sixty_64	-.539	-.313	-.416	-.036	-.081	.093	.078	.249
Sixtyfive_84	-.267	-.602	-.599	.175	-.248	.004	-.118	-.056
Eightyfive_plus	-.001	-.492	-.170	.581	-.061	-.289	-.090	-.294
Married	-.833	.274	-.339	-.092	.023	-.028	-.085	.072
S.W.D	.833	-.274	.339	.092	-.023	.028	.085	-.072
EAFT.empl	-.264	.564	.466	.145	-.408	-.123	-.121	-.140
EAPT.empl	-.291	.577	-.265	-.043	-.120	-.221	-.105	-.109
EAselfempl	-.612	.070	.210	.385	.254	.416	.101	-.030
EAunempl	.596	.200	-.132	.233	.112	.154	-.011	.084
Elretired	-.400	-.506	-.651	.084	-.210	.035	-.093	.072
Elperm.sick	.421	-.025	-.449	.310	.198	-.083	.098	.171
Students	.464	-.398	.461	-.539	.184	-.066	.171	-.031
LgeEmpl_HiMng	-.568	.017	.422	.108	.194	-.101	-.235	.040
HiProf	-.332	-.158	.590	.044	.118	-.138	-.250	.178
LoMng_Prof	-.531	.091	.603	.130	-.128	-.088	-.282	.016
Interm	-.499	.302	.071	.003	-.277	-.177	-.134	-.240
SmlEmpl_OwnAcct	-.523	.158	.010	.407	.198	.502	.211	-.057
LoSupv_Tech	.135	.553	-.280	.145	-.254	.077	.219	-.218
SemiRtine	.332	.588	-.427	.078	-.199	.004	.131	-.059
Routine	.559	.470	-.443	.097	-.068	.093	.132	.020
NonClassifbl	.461	-.706	-.250	-.360	.184	-.062	.101	.079
NoCar	.838	-.309	-.186	.182	-.085	.085	-.159	-.155
OneCar	-.017	.159	.011	-.215	-.615	-.204	.240	.395
TwoCars	-.806	.247	.182	-.069	.318	-.025	.003	-.022
ThreeplusCars	-.628	.102	.120	-.040	.514	.130	.088	-.120
LnPrnt_deChd	.653	.516	-.173	.072	.312	-.019	.021	.207
Ttl.MLnPrnt	.058	.178	-.011	-.068	.222	.034	.329	-.302
FT.MLnPrnt	-.020	.106	.046	-.072	.124	-.008	.366	-.459
PT.MLnPrnt	.042	.063	.012	-.091	.115	.009	-.135	-.066
Ttl.FLnPrnt	.659	.507	-.171	.070	.285	-.021	-.015	.263
FT.FLnPrnt	.146	.250	.199	.028	.029	-.051	.019	.220
PT.FLnPrnt	.378	.398	-.056	.049	.159	-.109	-.117	.174
Own.Occupied	-.889	.072	.005	-.099	-.185	-.087	.134	.059
Council.Rnt	.654	.072	-.364	-.001	.282	.015	-.142	-.057
Social.Rnt	.377	-.040	-.172	.134	.188	-.105	-.286	-.098
Priv.Rnt	.446	-.190	.605	.230	-.236	.271	.204	.096
Other	.288	-.093	.235	-.220	.042	.001	-.022	-.081
Detached	-.790	-.144	-.106	.008	.316	.015	-.068	.141
SemiDtch	-.151	.400	-.297	-.323	-.147	-.268	.325	-.279
Terraced	.615	.164	.404	-.146	-.097	.045	-.089	.136
Purp.Flat	.602	-.370	-.076	.244	.033	.000	-.399	-.262
Conv.Flat	.298	-.095	.315	.530	-.219	.178	.171	.082
Com.Flat	.179	-.064	.251	.377	-.209	.433	.132	.006
Nonperm.Accm	-.065	-.180	-.275	-.069	-.174	.138	.101	.394

Appendix 5.6B: Suppressed component matrix for the 2001 data

	Component							
	1	2	3	4	5	6	7	8
Hholds				-.564		.614		
Hcommunal				.546		-.632		
Zero_4		.681						
Five_15		.769						
Sixteen_24	.532		.477	-.510				
Twentyfive_44		.601	.556					
Fortyfive_59	-.756							
Sixty_64	-.539		-.416					
Sixtyfive_84		-.602	-.599					
Eightyfive_plus		-.492		.581				
Married	-.833							
S.W.D	.833							
EAFT.empl		.564	.466		-.408			
EAPT.empl		.577						
EAselfempl	-.612					.416		
EAunempl	.596							
Elretired	-.400	-.506	-.651					
Elperm.sick	.421		-.449					
Students	.464		.461	-.539				
LgeEmpl_HiMng	-.568		.422					
HiProf			.590					
LoMng_Prof	-.531		.603					
Interm	-.499							
SmlEmpl_OwnAcct	-.523			.407		.502		
LoSupv_Tech		.553						
SemiRtine		.588	-.427					
Routine	.559	.470	-.443					
NonClassifbl	.461	-.706						
NoCar	.838							
OneCar					-.615			
TwoCars	-.806							
ThreeplusCars	-.628				.514			
LnPrnt_deChd	.653	.516						
Ttl.MLnPrnt								
FT.MLnPrnt								-.459
PT.MLnPrnt								
Ttl.FLnPrnt	.659	.507						
FT.FLnPrnt								
PT.FLnPrnt								
Own.Occupied	-.889							
Council.Rnt	.654							
Social.Rnt								
Priv.Rnt	.446		.605					
Other								
Detached	-.790							
SemiDtch		.400						
Terraced	.615		.404					
Purp.Flat	.602							
Conv.Flat				.530				
Com.Flat						.433		
Nonperm.Accm								

Appendix 5.6C: Rotated component matrix for the 2001 data

	Component							
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Hholds	.003	-.007	.014	.024	.109	-.976	-.065	-.079
Hcommunal	-.005	.002	-.017	-.013	-.114	.976	.067	.062
Zero_4	.102	.573	.259	.420	.205	-.082	.066	.060
Five_15	-.211	.288	.199	.694	.245	-.064	.077	-.136
Sixteen_24	.266	.121	-.904	-.037	-.064	-.053	-.023	.042
Twentyfive_44	.173	.892	.035	.130	.004	-.026	-.034	.084
Fortyfive_59	-.727	-.119	.172	-.158	-.147	-.045	.115	-.075
Sixty_64	-.386	-.463	.248	-.307	-.092	-.068	.239	-.112
Sixtyfive_84	.147	-.783	.377	-.333	.004	.008	-.069	.000
Eightyfive_plus	.374	-.447	.303	-.173	-.067	.508	-.252	.098
Married	-.749	-.152	.500	-.070	-.021	-.142	-.086	-.220
S.W.D	.749	.152	-.500	.070	.021	.142	.086	.220
EAFT.empl	-.125	.736	.324	-.129	-.072	-.002	-.357	-.036
EAPT.empl	-.339	.092	.398	.297	.247	-.050	-.328	-.275
EAselfempl	-.448	.044	.231	-.090	-.238	.037	-.027	.087
EAunempl	.281	.122	.030	.332	.275	-.047	.363	.381
Elretired	-.060	-.781	.400	-.279	.001	-.064	-.018	-.012
Elperm.sick	.285	-.109	.135	.150	.291	.260	.680	-.079
Students	.254	.012	-.910	-.038	-.175	-.020	-.042	-.003
LgeEmpl_HiMng	-.394	.205	.211	-.105	-.601	.096	-.097	.090
HiProf	-.163	.208	.003	-.101	-.819	.087	.002	.018
LoMng_Prof	-.240	.378	.238	-.209	-.609	.047	-.303	.026
Interm	-.345	.234	.307	-.169	.048	.004	-.474	-.157
SmlEmpl_OwnAcct	-.430	.008	.255	-.071	.055	.000	.021	.089
LoSupv_Tech	-.011	.283	.230	.051	.729	-.038	-.059	-.024
SemiRtine	.070	.195	.230	.304	.707	-.084	.036	-.037
Routine	.267	.126	.145	.402	.653	-.083	.241	.001
NonClassifbl	.381	-.608	-.561	-.043	-.004	-.001	.226	-.004
NoCar	.863	-.173	-.097	.091	.192	-.021	.175	.159
OneCar	-.015	.077	.055	-.022	.054	-.020	-.067	-.069
TwoCars	-.803	.166	.121	-.087	-.238	.026	-.145	-.123
ThreeplusCars	-.716	.011	-.079	-.037	-.114	.034	-.084	-.081
LnPrnt_deChd	.262	.174	-.037	.796	.263	-.021	.241	.056
Ttl.MLnPrnt	-.008	.000	.010	.135	.008	-.025	.081	-.005
FT.MLnPrnt	-.026	.087	-.050	-.052	.034	.020	-.081	-.093
PT.MLnPrnt	.005	.025	-.017	.033	-.006	-.044	.001	.003
Ttl.FLnPrnt	.268	.175	-.045	.805	.262	-.027	.229	.061
FT.FLnPrnt	.027	.178	-.044	.131	.002	.006	-.008	.025
PT.FLnPrnt	.176	.114	-.071	.789	.074	.021	-.161	-.054
Own.Occupied	-.689	-.078	.210	-.285	-.121	.003	-.329	-.116
Council.Rnt	.521	-.063	.014	.387	.200	-.084	.468	-.164
Social.Rnt	.276	-.059	.017	.159	.051	.033	.062	.019
Priv.Rnt	.374	.266	-.378	-.086	-.089	.092	-.068	.522
Other	.162	.122	-.240	-.074	-.013	.013	.000	-.015
Detached	-.753	-.358	.187	-.108	-.269	.020	-.032	.143
SemiDtch	-.187	.070	.052	.006	.356	-.032	-.075	-.720
Terraced	.504	.496	-.322	.193	-.037	-.109	.077	.161
Purp.Flat	.746	-.139	.014	-.015	-.052	.026	.092	.077
Conv.Flat	.232	.127	-.026	-.052	.111	.241	-.073	.682
Com.Flat	.209	.087	.021	-.032	-.031	-.003	.017	.172
Nonperm.Accm	-.017	-.188	.052	-.044	.054	-.033	.019	.021

Appendix 5.6D: Rotated and suppressed component matrix for the 2001 data

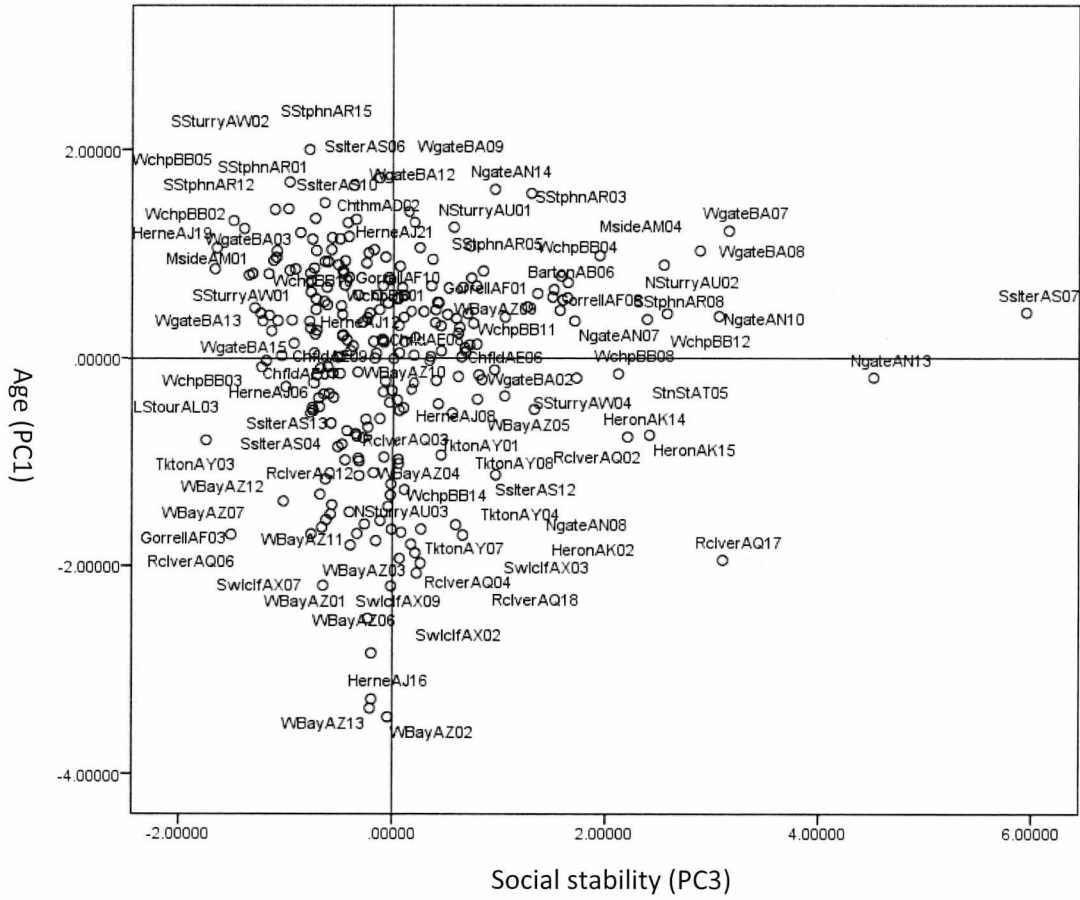|	Component							
	1	2	3	4	5	6	7	8
Hholds						-.976		
Hcommunal						.976		
Zero_4		.573		.420				
Five_15				.694				
Sixteen_24			-.904					
Twentyfive_44		.892						
Fortyfive_59	-.727							
Sixty_64		-.463						
Sixtyfive_84		-.783						
Eightyfive_plus		-.447				.508		
Married	-.749		.500					
S.W.D	.749		-.500					
EAFT.empl		.736						
EAPT.empl								
EAselfempl	-.448							
EAunempl								
EIretired		-.781	.400					
EIperm.sick							.680	
Students			-.910					
LgeEmpl_HiMng					-.601			
HiProf					-.819			
LoMng_Prof					-.609			
Interm							-.474	
SmlEmpl_OwnAcct	-.430							
LoSupv_Tech					.729			
SemiRtine					.707			
Routine				.402	.653			
NonClassifbl		-.608	-.561					
NoCar	.863							
OneCar								
TwoCars	-.803							
ThreeplusCars	-.716							
LnPrnt_deChd				.796				
Ttl.MLnPrnt								
FT.MLnPrnt								
PT.MLnPrnt								
Ttl.FLnPrnt				.805				
FT.FLnPrnt								
PT.FLnPrnt				.789				
Own.Occupied	-.689							
Council.Rnt	.521						.468	
Social.Rnt								
Priv.Rnt								.522
Other								
Detached	-.753							
SemiDtch								-.720
Terraced	.504	.496						
Purp.Flat	.746							
Conv.Flat								.682
Com.Flat								
Nonperm.Accm								

Appendix 5.7A: Projection on principal components 1 and 2 (1981)
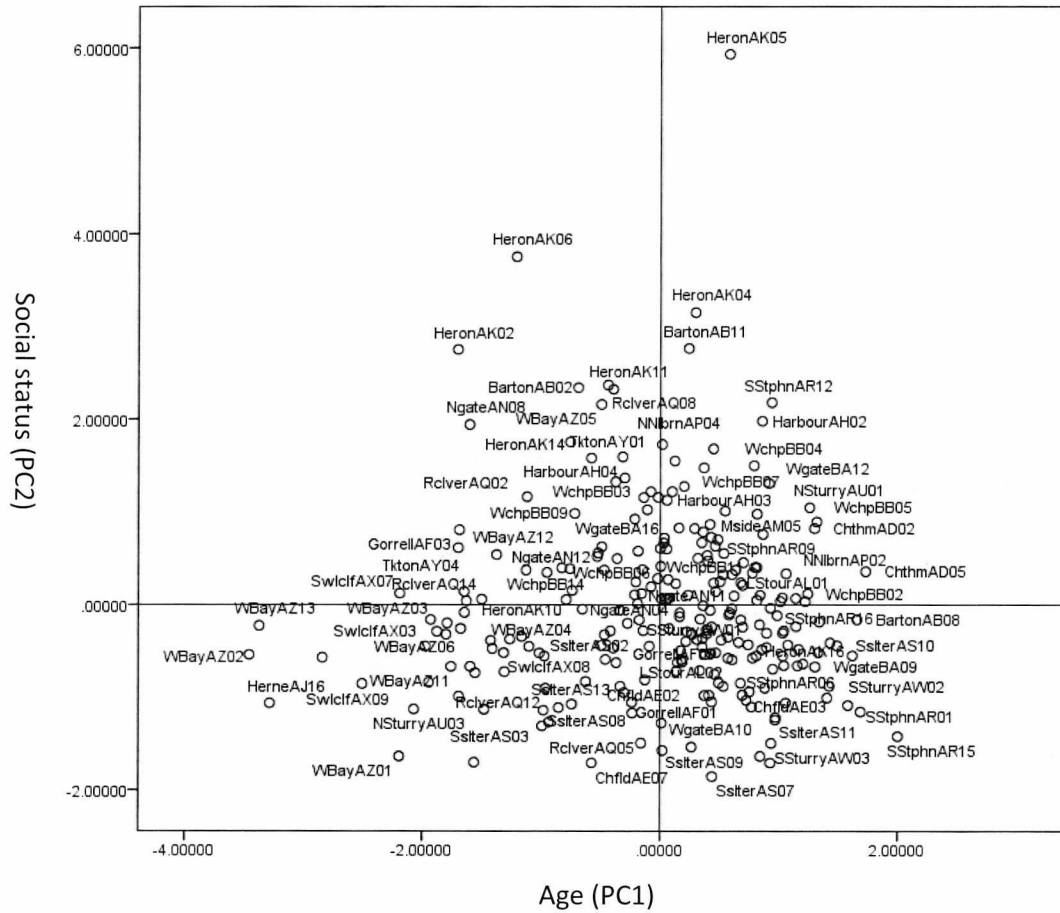
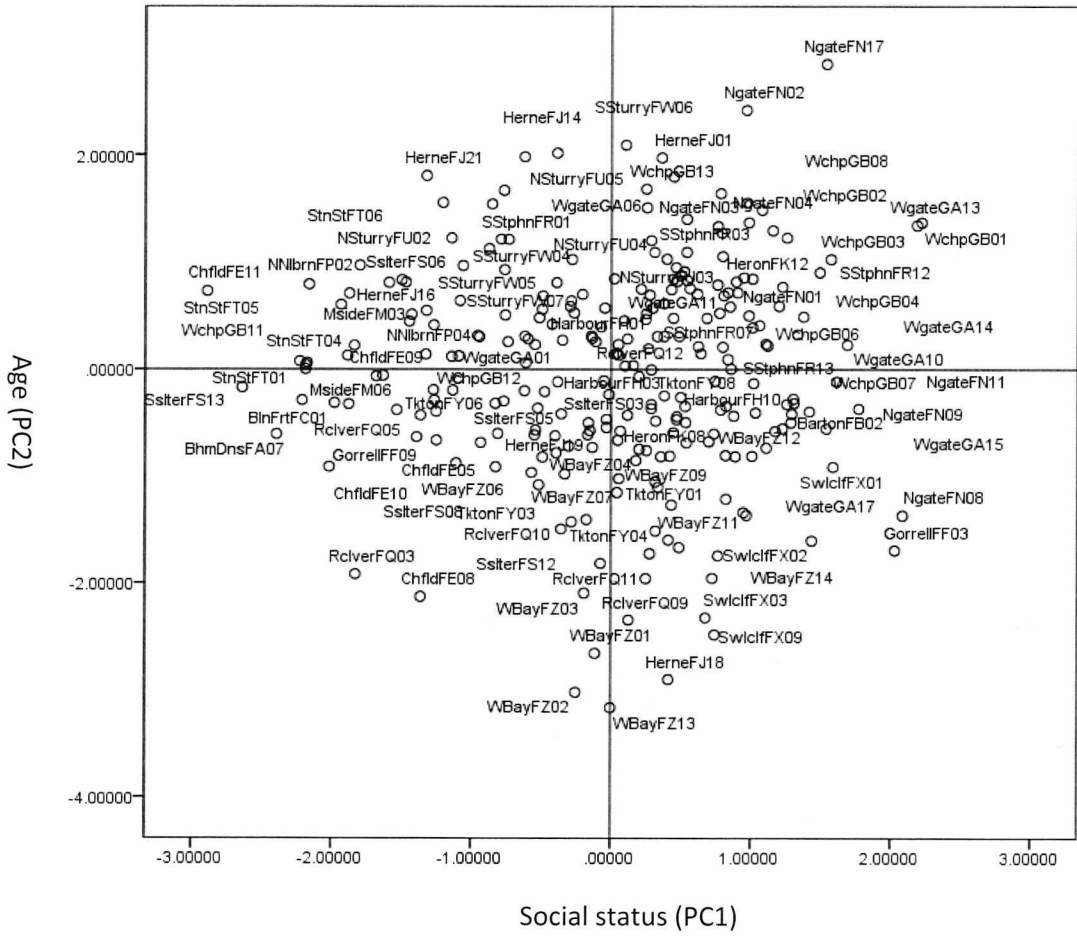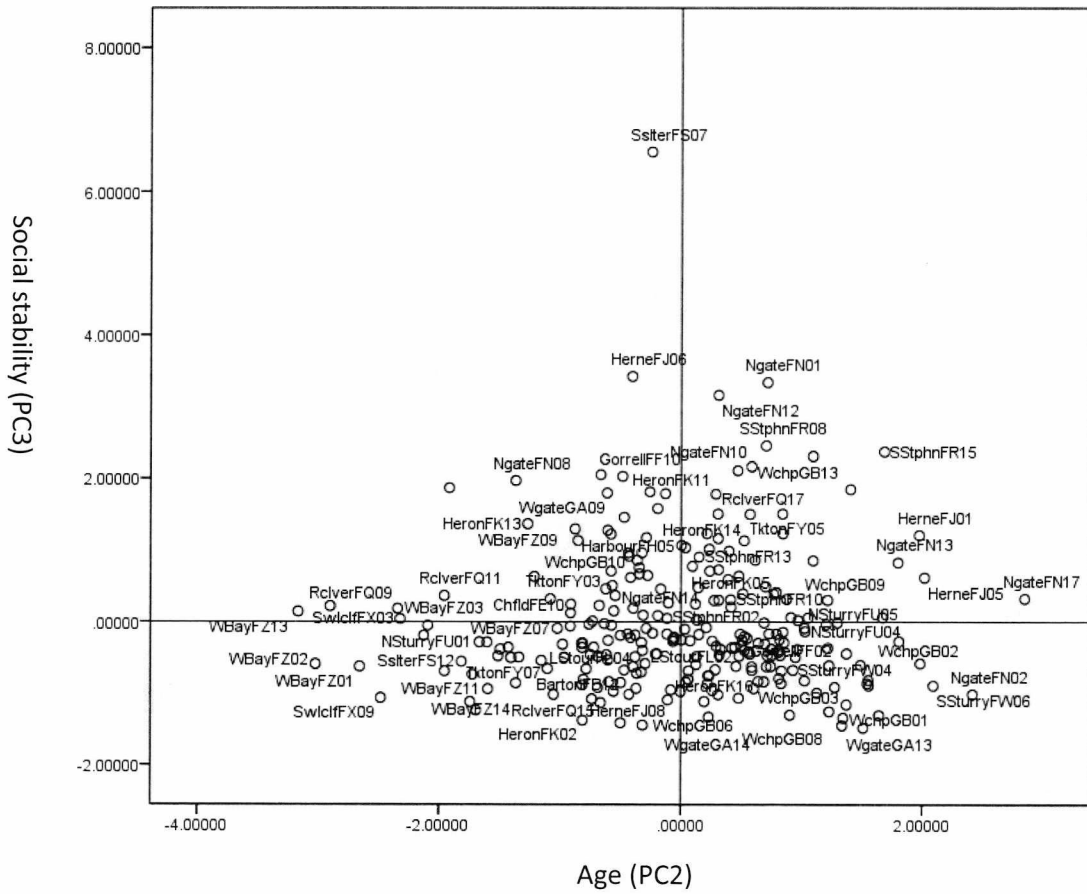**Appendix 5.7B: Projection on principal components 2 and 3 (1981)**
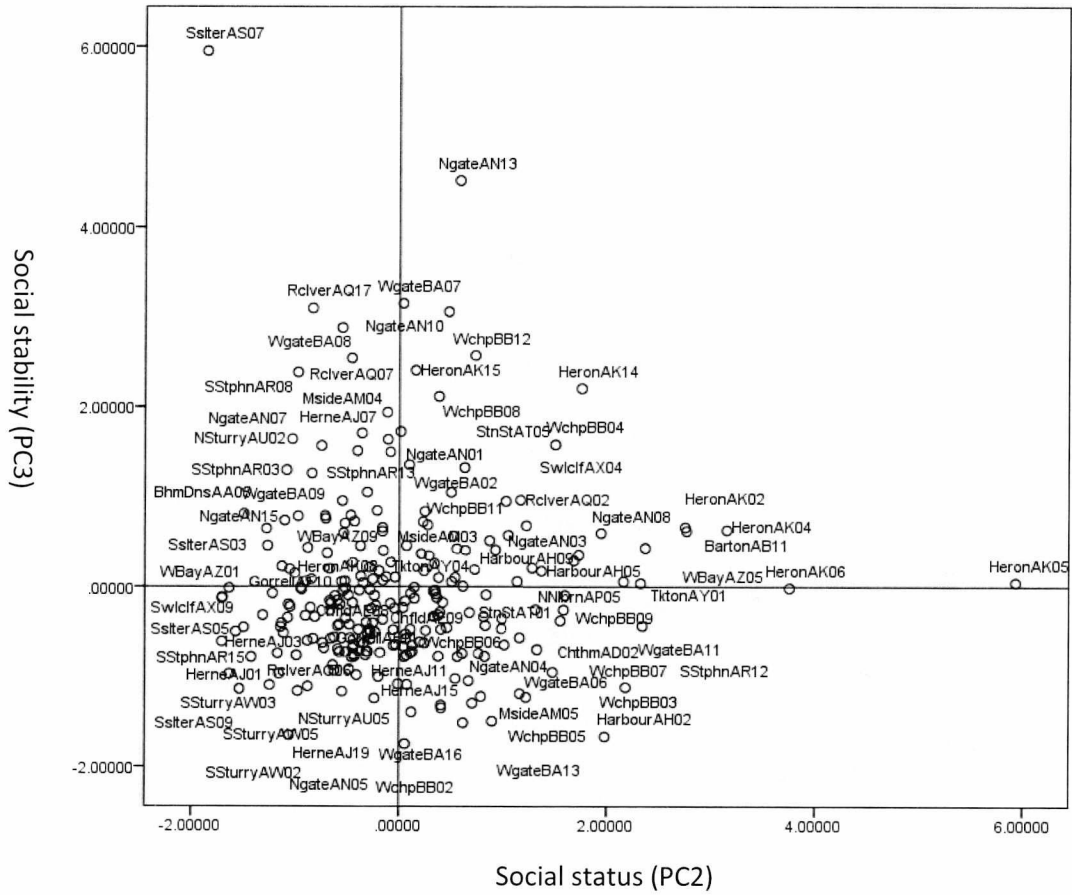
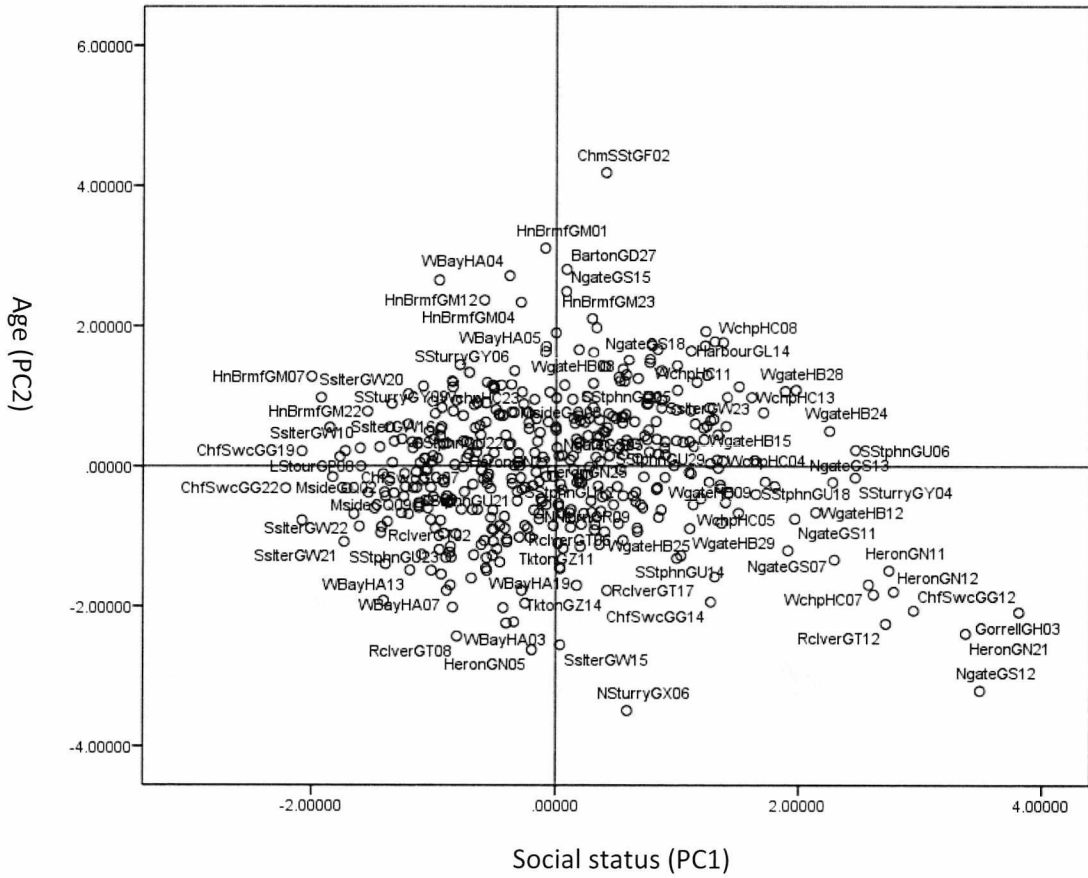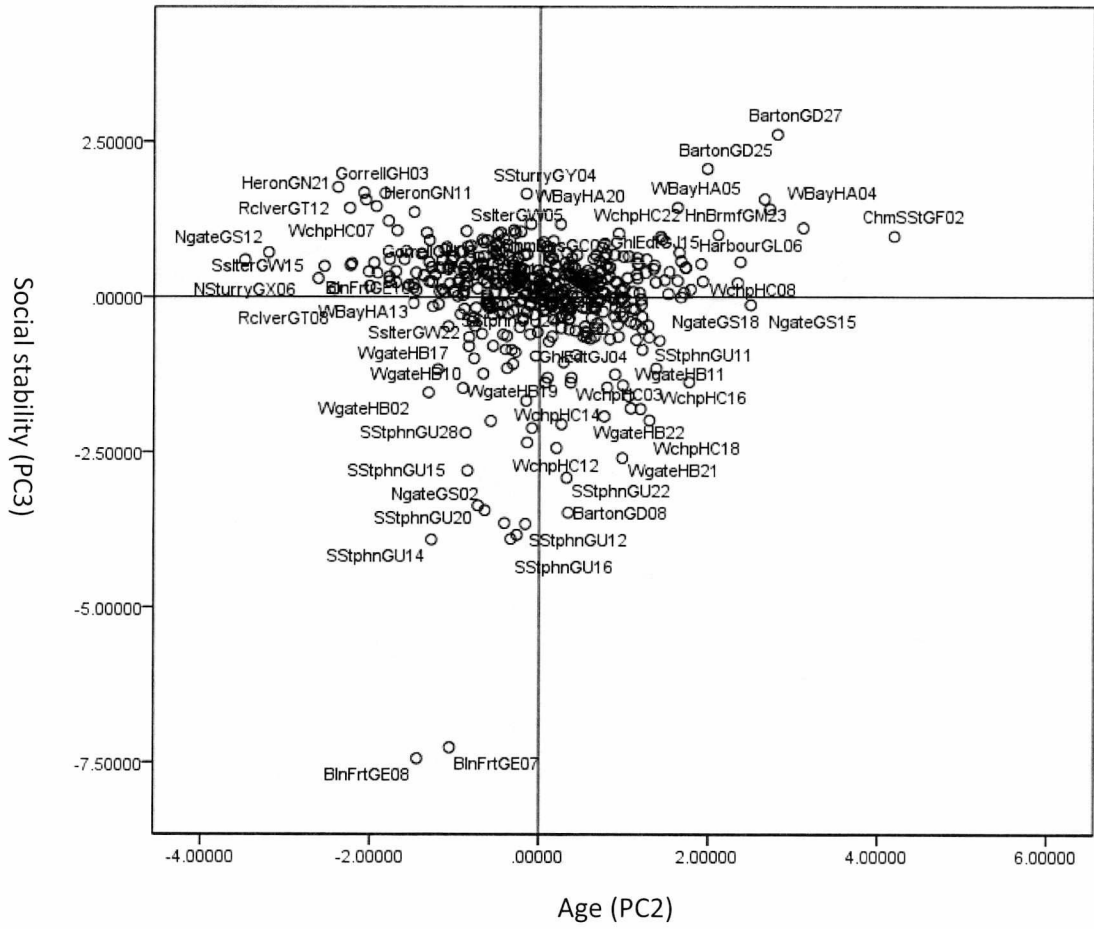# Appendix 5.7C: Projection on principal components 1 and 3 (1981)

Age (PC1)

Social stability (PC3)

Appendix 5.8A: Projection on principal components 1 and 2 (1991)

**Appendix 5.8B: Projection on principal components 2 and 3 (1991)**

Appendix 5.8C: Projection on principal components 1 and 3 (1991)

Social status (PC1)

Social stability (PC3)

Appendix 5.9A: Projection on principal components 1 and 2 (2001)

Appendix 5.9B: Projection on principal components 2 and 3 (2001)

Appendix 5.9C: Projection on principal components 1 and 3 (2001)

Social status (PC1)

Social stability (PC3)
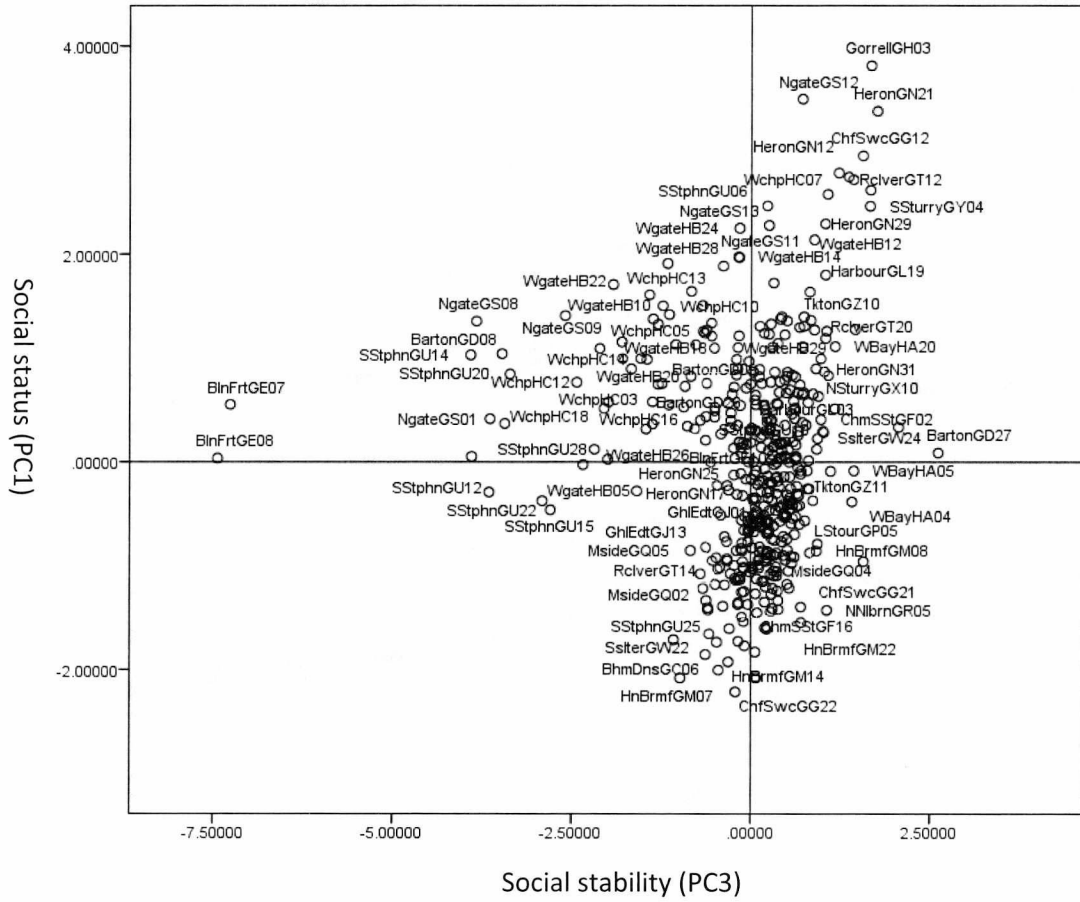
Appendix 5.10: Goodness of fit (MDS)

1981

Stress and Fit Measures

Normalized Raw Stress	.009281
Stress-I	.096338[a]
Stress-II	.224581[a]
S-Stress	.024794[b]
Dispersion Accounted For (D.A.F.)	.990719
Tucker's Coefficient of Congruence	.995349

PROXSCAL minimizes Normalized Raw Stress.

a. Optimal scaling factor = 1.009.
b. Optimal scaling factor = .994.

1991

Stress and Fit Measures

|	
Normalized Raw Stress	.006899
Stress-I	.083062[a]
Stress-II	.160093[a]
S-Stress	.013832[b]
Dispersion Accounted For (D.A.F.)	.993101
Tucker's Coefficient of Congruence	.996544

PROXSCAL minimizes Normalized Raw Stress.

a. Optimal scaling factor = 1.007.
b. Optimal scaling factor = .998.

2001

Stress and Fit Measures

|	
Normalized Raw Stress	.006085
Stress-I	.078009[a]
Stress-II	.173034[a]
S-Stress	.014274[b]
Dispersion Accounted For (D.A.F.)	.993915
Tucker's Coefficient of Congruence	.996953

PROXSCAL minimizes Normalized Raw Stress.

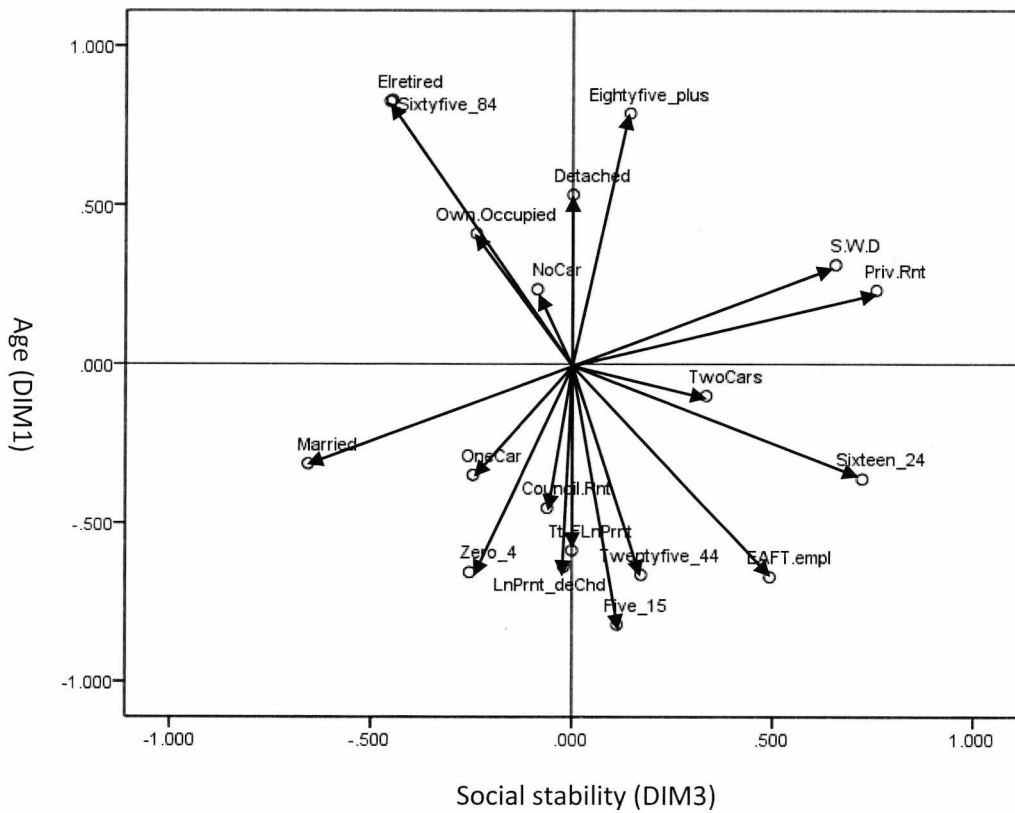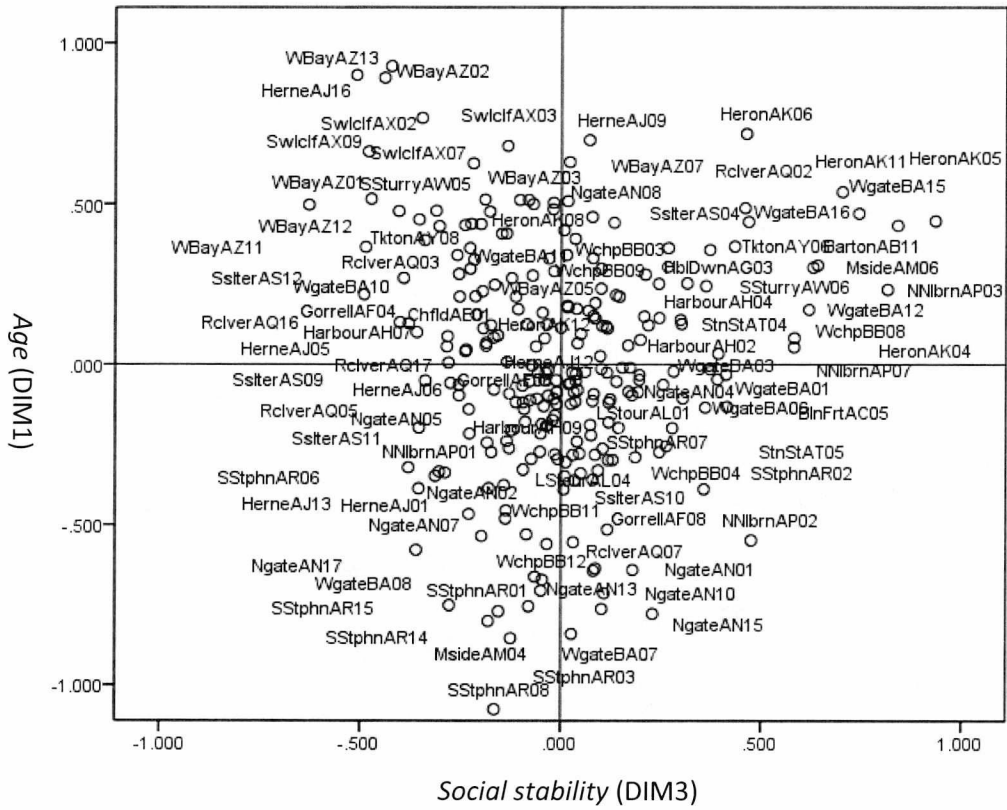a. Optimal scaling factor = 1.006.
b. Optimal scaling factor = .997.

Appendix 5.11A: MDS configuration & ProFit: projections on dimensions 1 and 2 (1981)
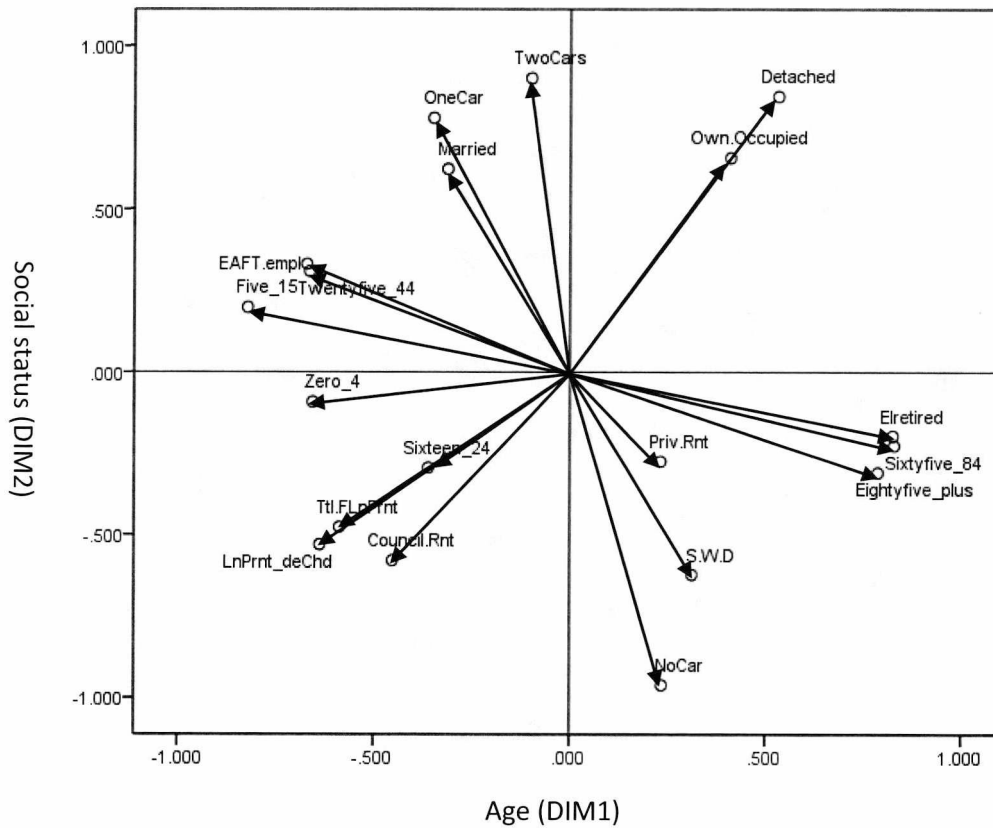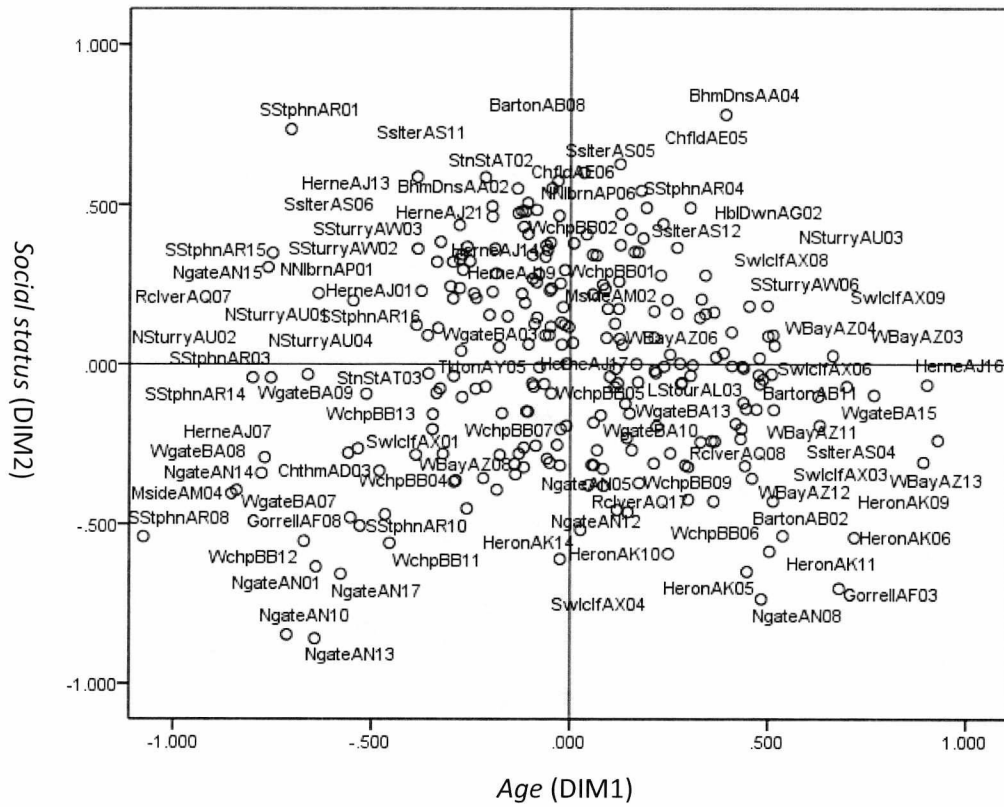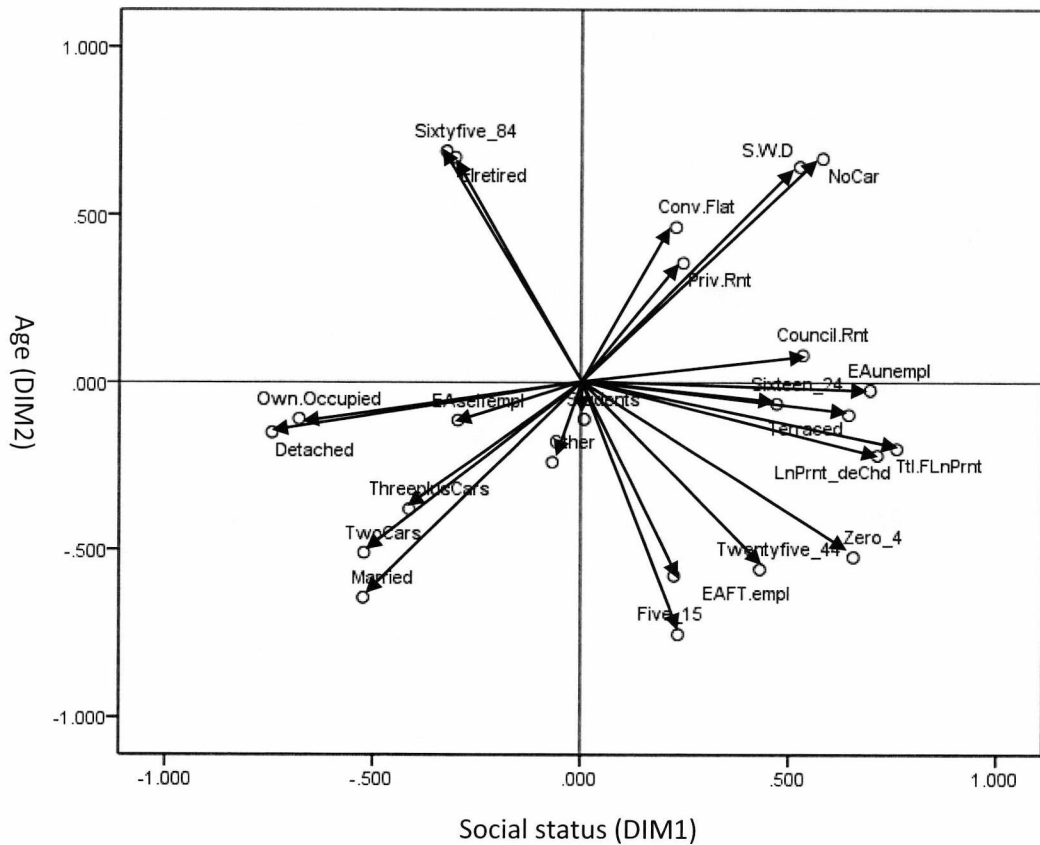
Appendix 5.11B: MDS configuration & ProFit: projections on dimensions 2 and 3 (1981)
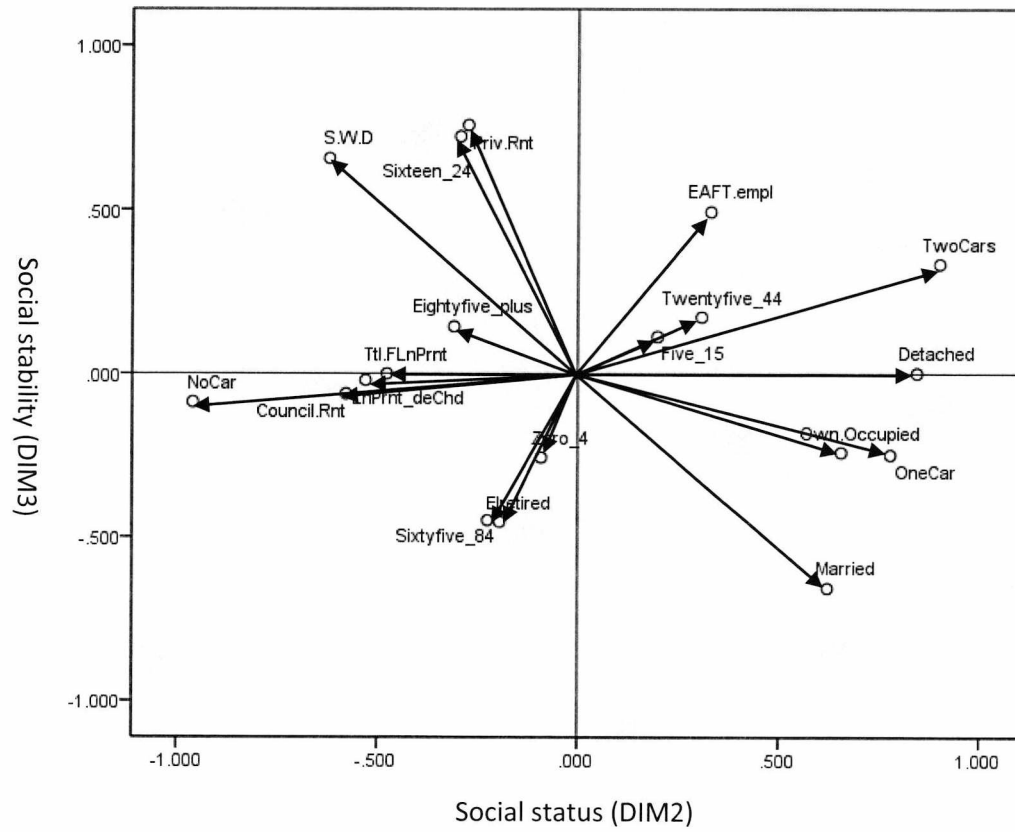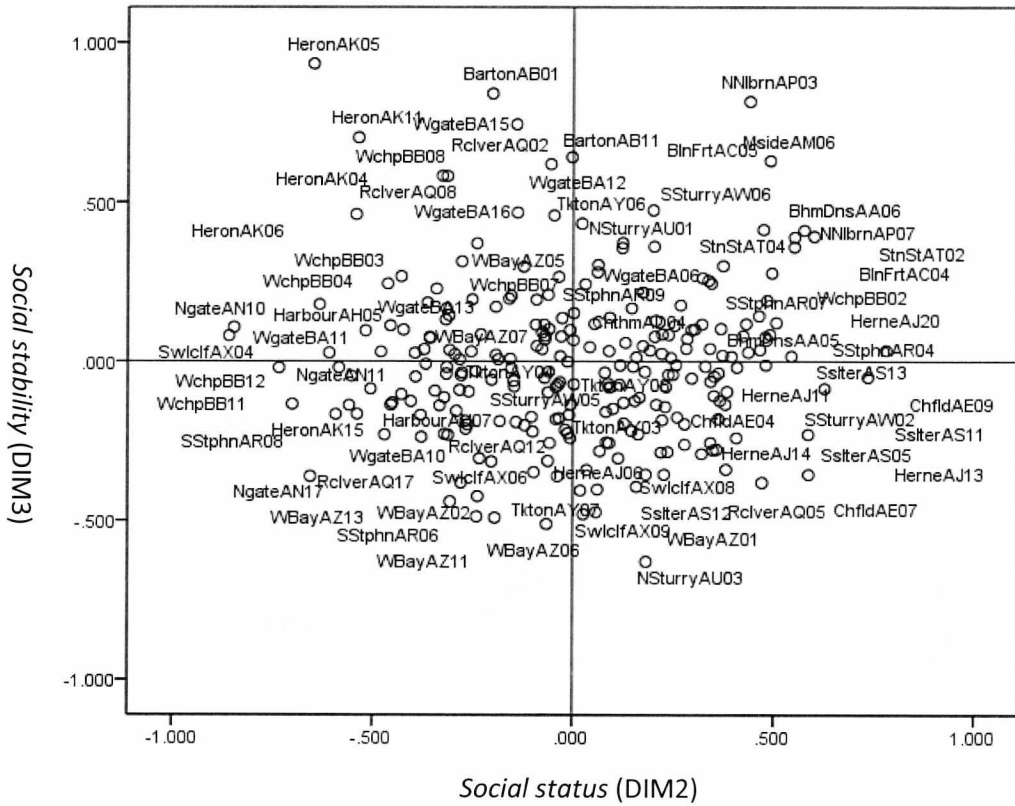
Appendix 5.11C: MDS configuration & ProFit: projections on dimensions 1 and 3 (1981)

Appendix 5.12A: MDS configuration & ProFit: projections on dimensions 1 and 2 (1991)

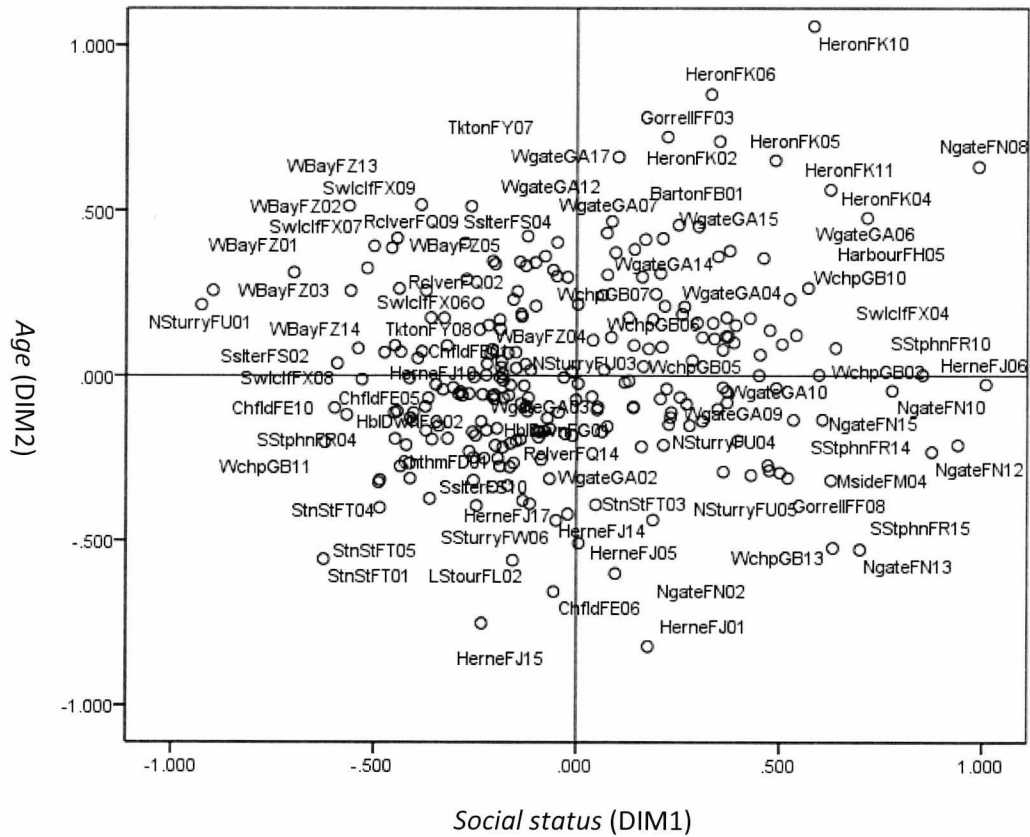Social status (DIM1)

Social status (DIM1)

Appendix 5.12B: MDS configuration & ProFit: projections on dimensions 2 and 3 (1991)

Appendix 5.12C: MDS configuration & ProFit: projections on dimensions 1 and 3 (1991)

Appendix 5.13A: MDS configuration & ProFit: projections on dimensions 1 and 2 (2001)

Social status (DIM1)

Social status (DIM1)

Appendix 5.13B: MDS configuration & ProFit: projections on dimensions 2 and 3 (2001)
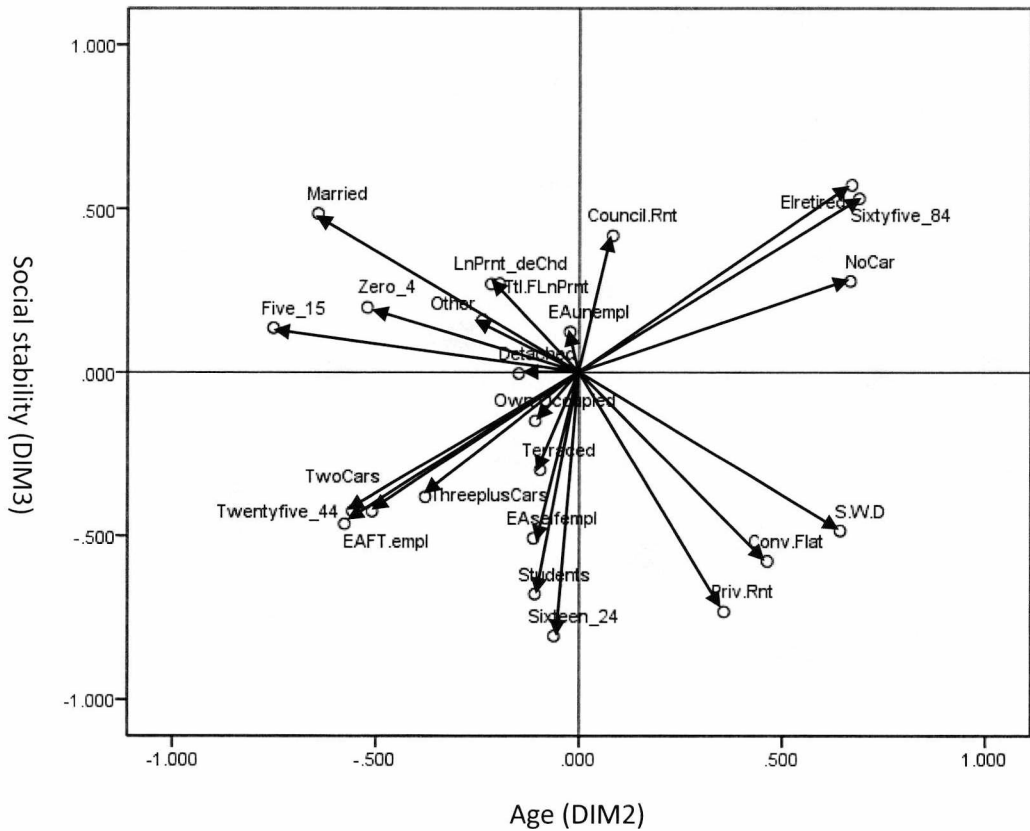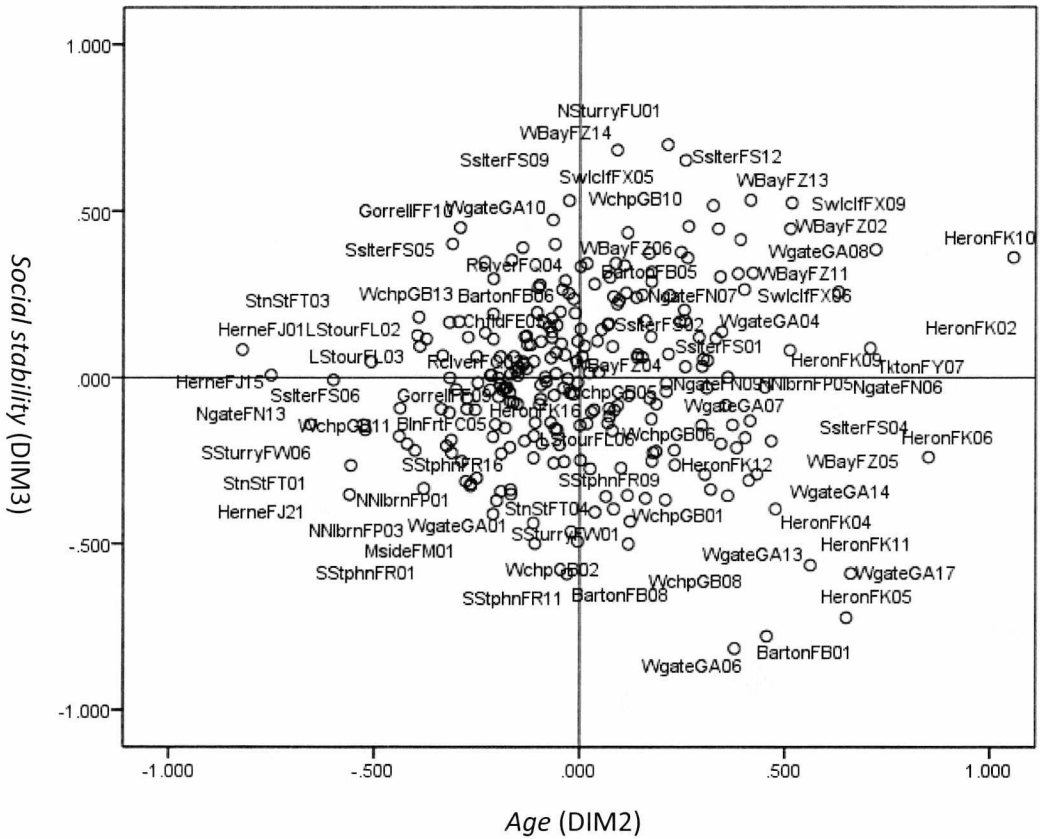
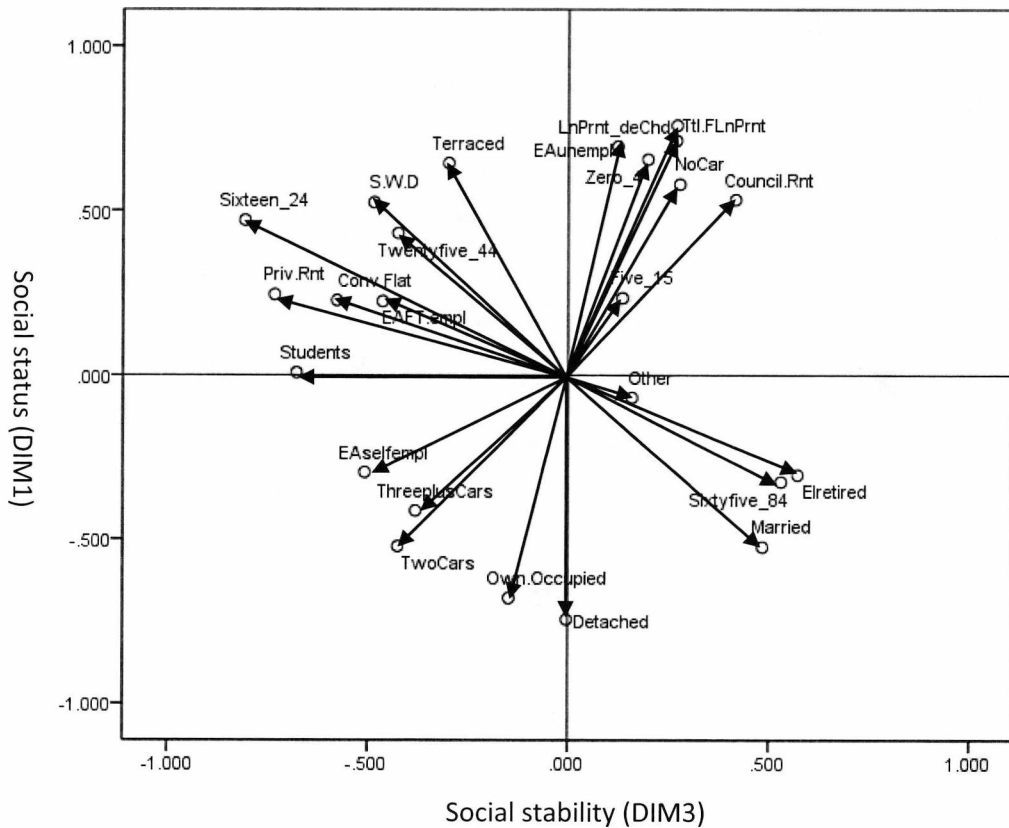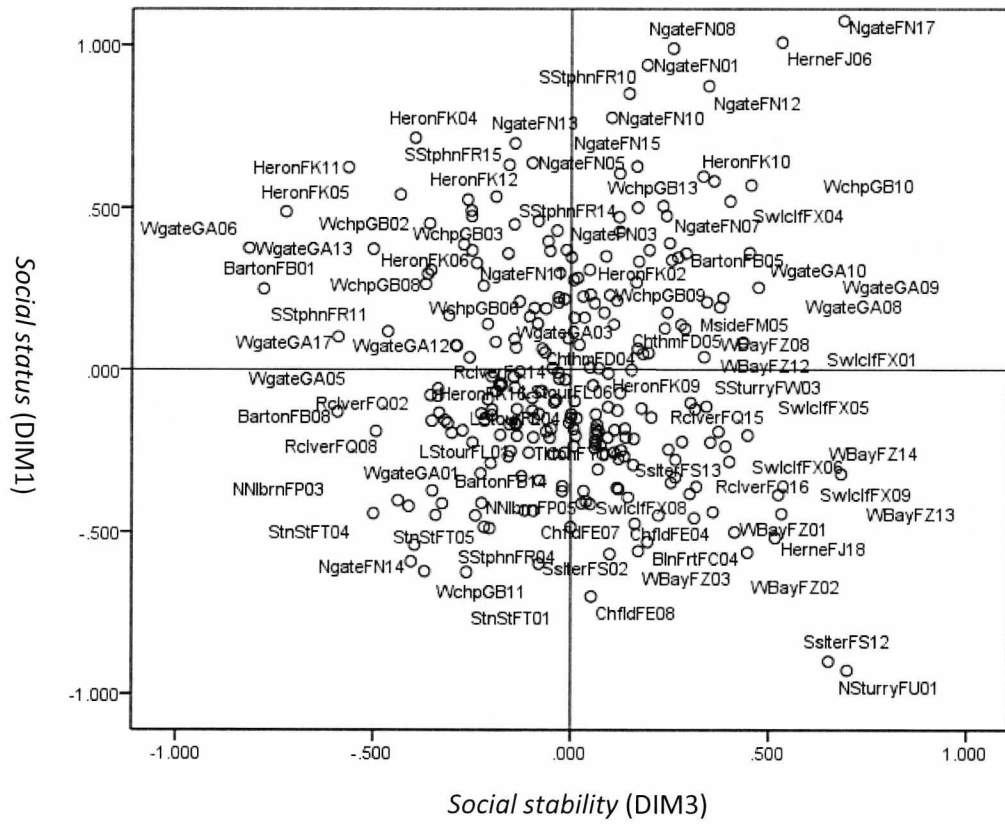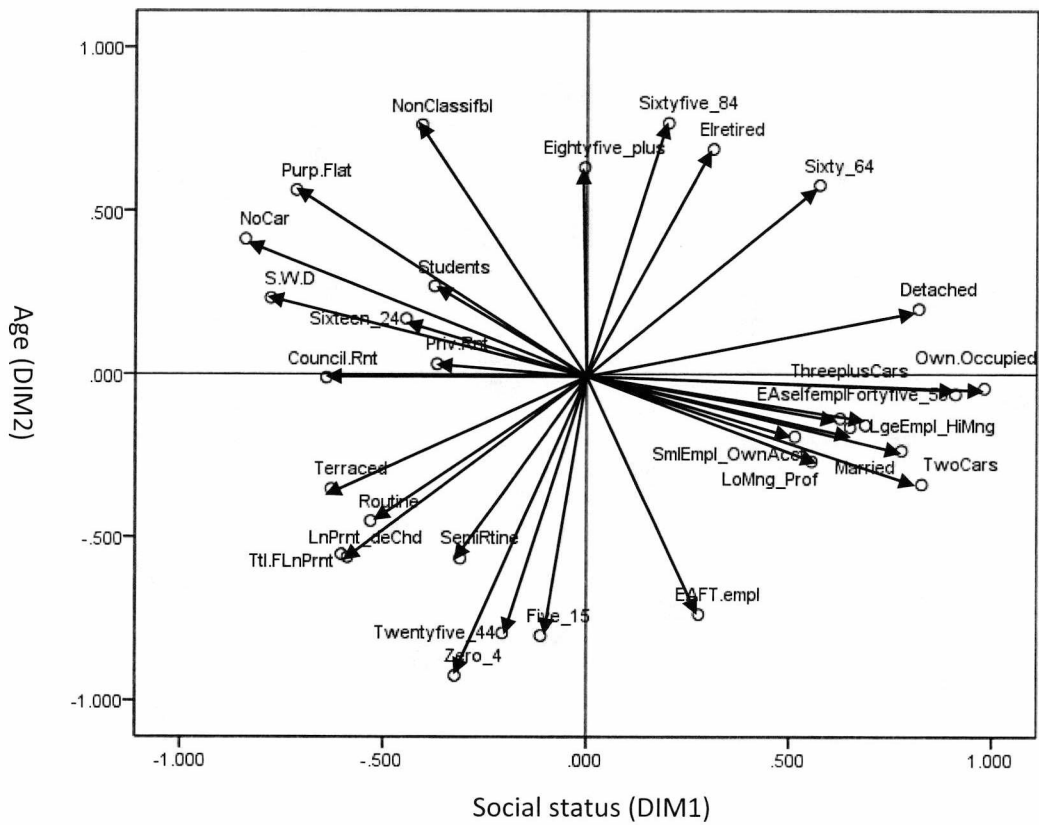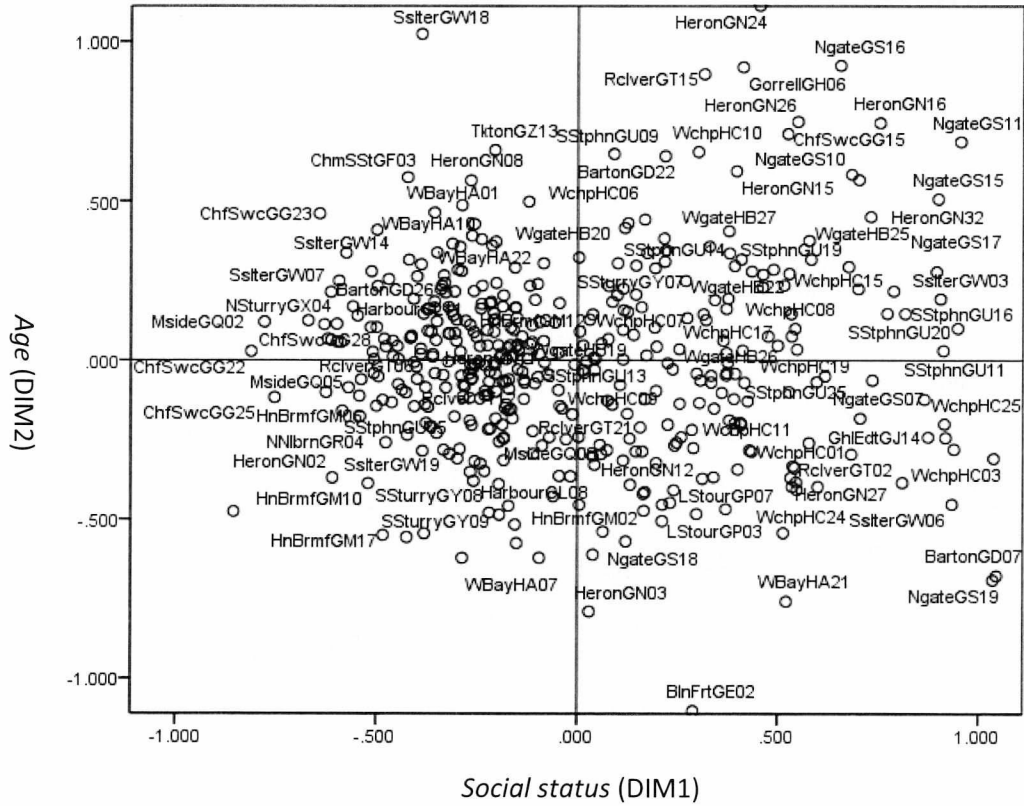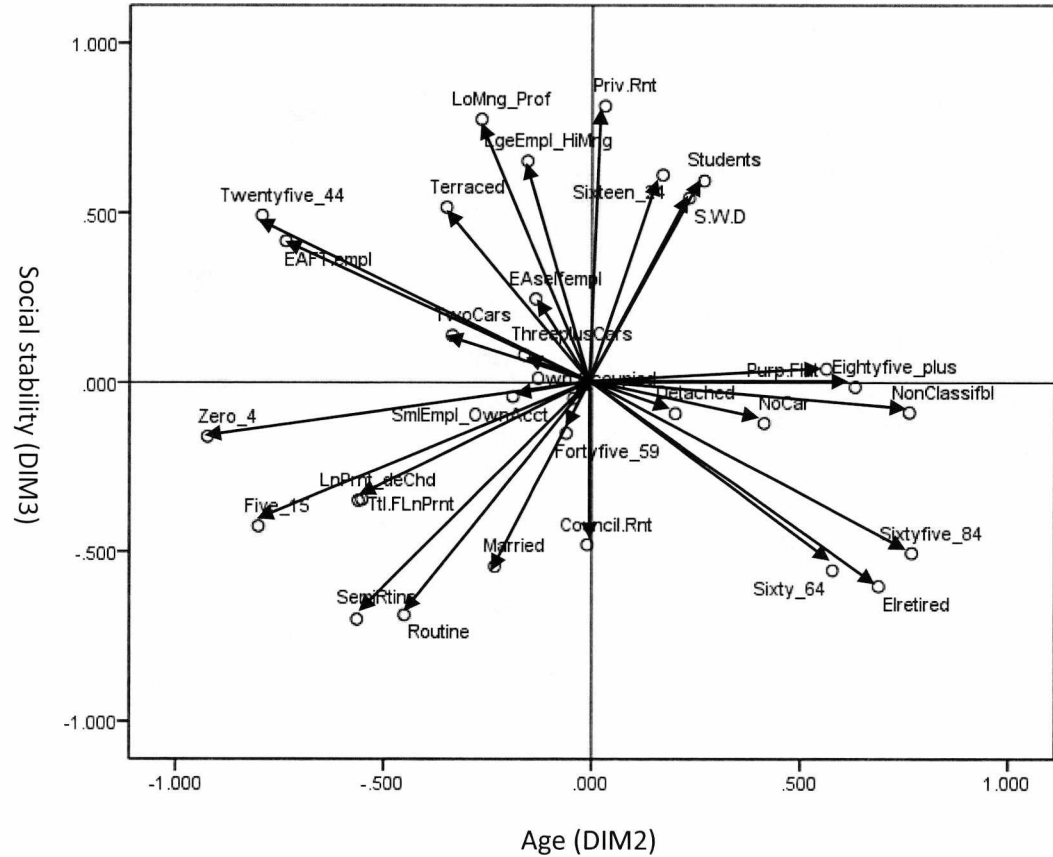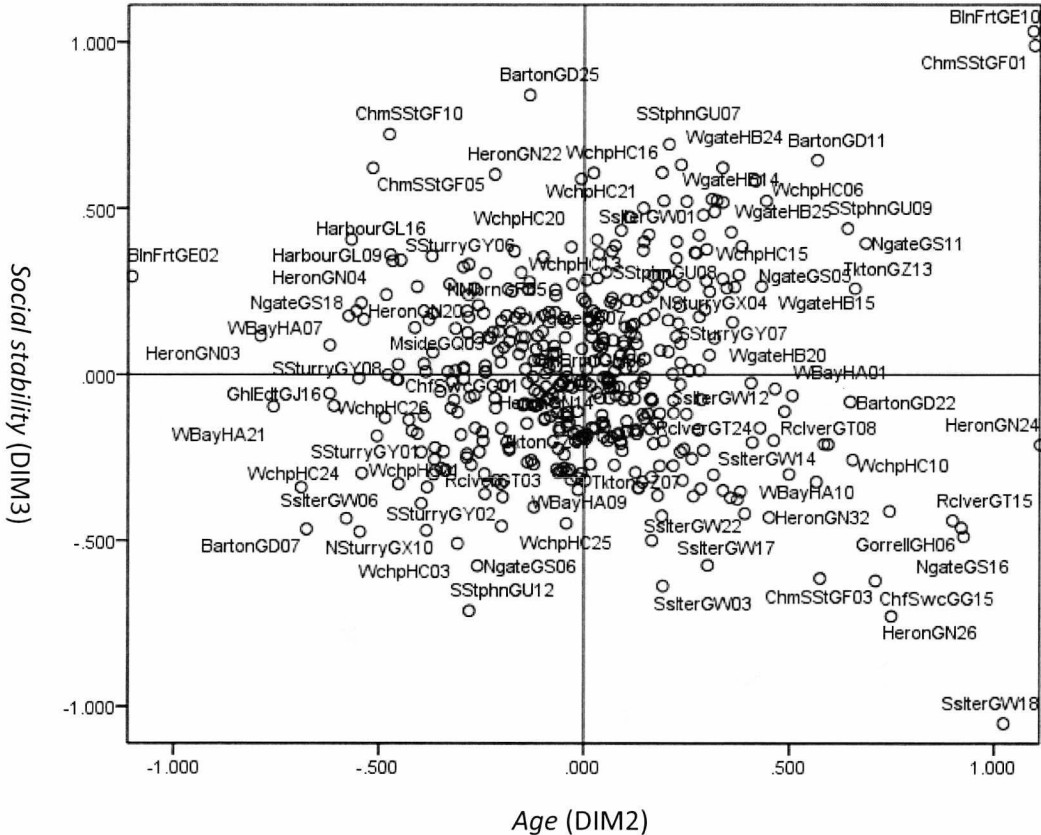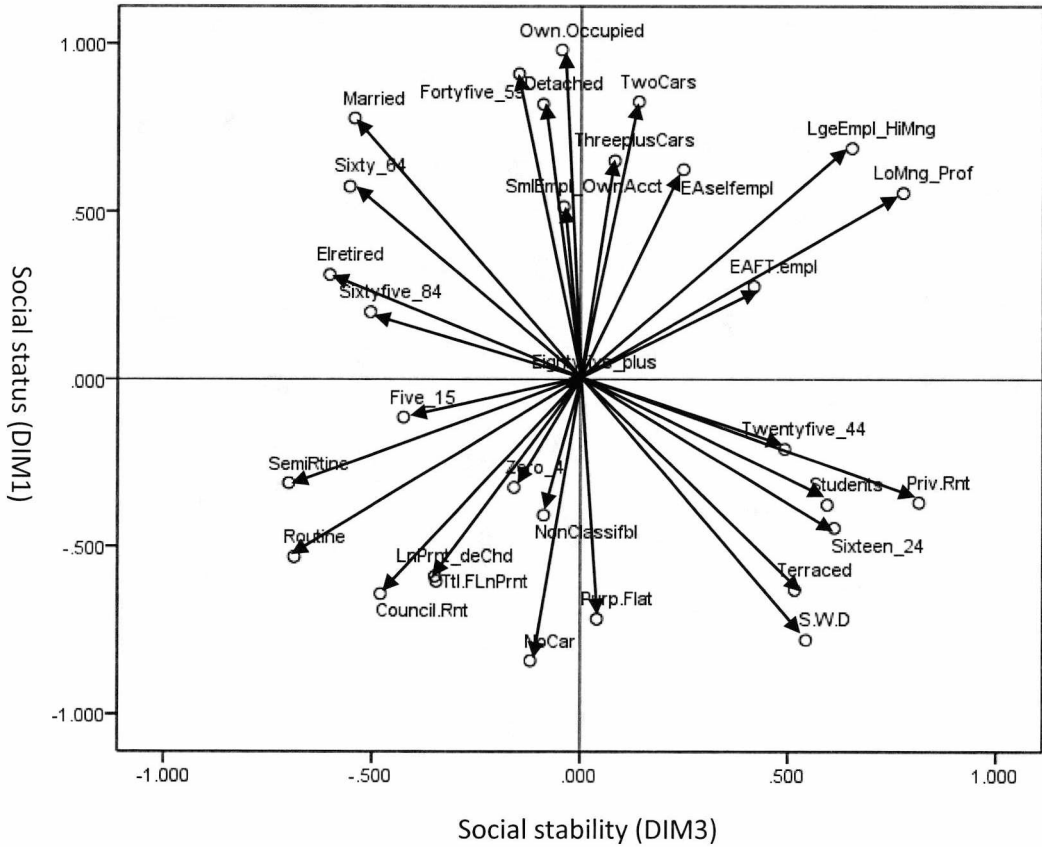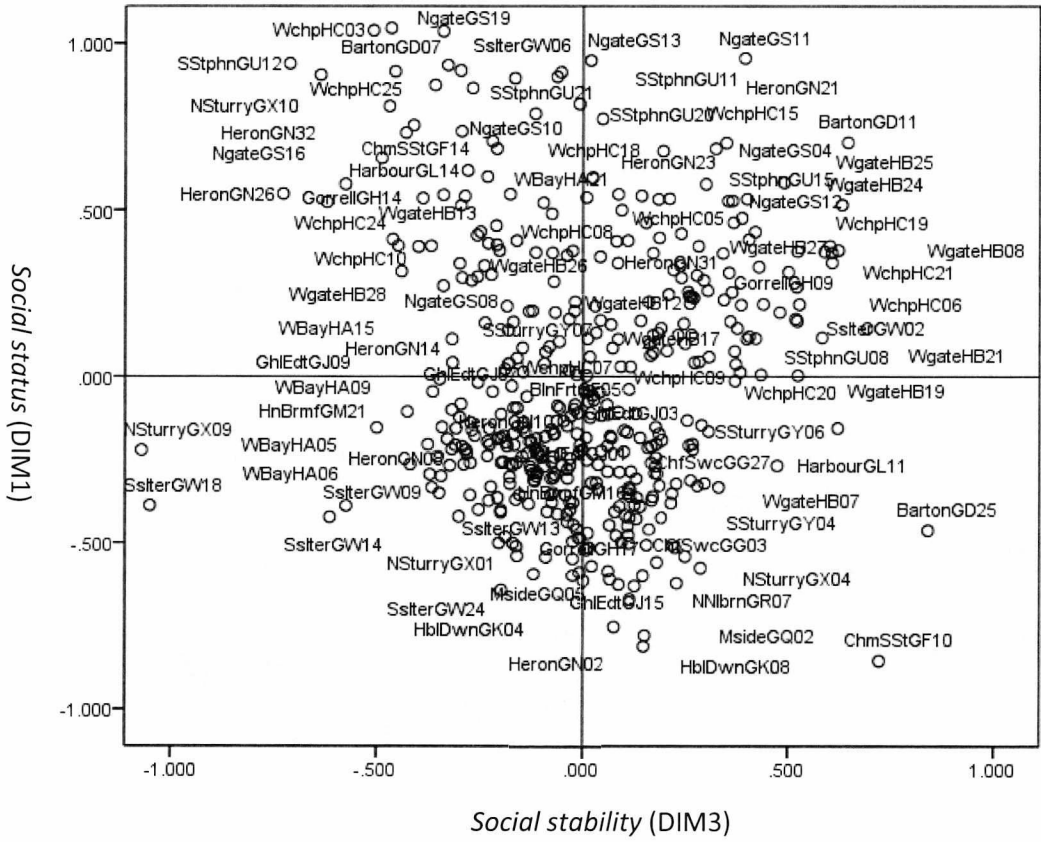# Appendix 5.13C: MDS configuration & ProFit: projections on dimensions 1 and 3 (2001)

Appendix 5.14A: Regression results for ProFit (1981)

	Regression coefficients (βs)					Adjusted R^2
	DIM_1	DIM_2	DIM_3	DIM_4	DIM_5	
Hholds	-0.812	0.629	-1.530	0.297	0.020	0.358
Hcommunal	0.781	-0.723	1.599	-0.427	0.494	0.406
Zero_4	-1.796	0.067	-0.298	-0.719	0.143	0.538
Five_15	-1.895	0.697	0.668	-0.467	-0.513	0.683
Sixteen_24	-1.100	-1.013	1.502	0.767	-0.437	0.567
Twentyfive_44	-1.563	0.631	1.032	-0.793	0.400	0.571
Fortyfive_59	0.341	0.943	0.442	1.420	-0.162	0.283
Sixty_64	1.289	0.038	-1.205	1.202	-0.151	0.483
Sixtyfive_84	2.041	-0.567	-1.331	-0.189	0.168	0.849
Eightyfive_plus	1.759	-0.968	0.081	-0.352	0.476	0.615
Married	-0.802	2.158	-0.941	-0.476	-0.052	0.798
S.W.D	0.802	-2.158	0.941	0.476	0.052	0.798
EAFT.empl	-1.617	0.645	1.480	0.500	0.049	0.669
EAPT.empl	-1.473	0.438	0.637	0.279	-0.234	0.395
EAselfempl	0.611	0.452	1.238	1.794	-0.060	0.442
EAunempl	-1.109	-1.053	-0.204	0.999	-0.527	0.412
EIretired	1.870	-0.479	-1.174	-0.497	0.188	0.710
EIperm.sick	0.474	-0.696	-0.497	-0.047	-0.214	0.105
Students	-0.102	0.385	2.153	-0.581	0.405	0.459
LgeEmpl_HiMng	0.227	0.698	-0.015	-0.626	0.574	0.098
HiProf	0.302	0.698	1.367	-0.867	0.363	0.292
LoMng_Prof	0.862	0.669	0.803	-0.368	1.188	0.296
Interm	0.146	0.103	-0.527	-1.179	0.018	0.112
SmlEmpl_OwnAcct	0.093	0.198	0.431	1.683	-1.175	0.278
LoSupv_Tech	-0.967	-0.472	-1.090	-0.239	-0.389	0.278
SemiRtine	-0.559	-1.015	-0.666	-0.205	-0.437	0.219
Routine	-0.408	0.262	0.204	1.582	-1.138	0.266
NonClassifbl	-0.326	-0.176	0.250	0.603	0.549	0.048
NoCar	0.312	-2.443	-0.961	0.103	-0.007	0.873
OneCar	-0.671	1.852	0.287	-0.776	-0.003	0.558
TwoCars	0.089	2.104	1.264	0.283	0.066	0.721
ThreeplusCars	0.234	1.528	0.759	1.395	-0.189	0.495
LnPrnt_deChd	-1.828	-0.953	-0.242	-0.045	0.387	0.643
Ttl.MLnPrnt	-0.744	-0.630	-0.066	-0.226	-0.809	0.157
FT.MLnPrnt	-0.538	-0.481	0.005	-0.153	-0.431	0.067
PT.MLnPrnt	0.275	-0.366	-0.099	-1.309	-1.729	0.284
Ttl.FLnPrnt	-1.786	-0.887	-0.242	-0.006	0.554	0.610
FT.FLnPrnt	-0.934	-0.071	0.019	-0.463	2.468	0.436
PT.FLnPrnt	-1.313	-0.562	0.078	0.033	-0.818	0.328
Own.Occupied	1.284	1.477	0.329	-1.349	-0.054	0.674
Council.Rnt	-1.410	-1.131	-0.820	0.943	-0.635	0.611
Social.Rnt	-0.526	-0.520	-0.105	-0.776	2.494	0.413
Priv.Rnt	0.700	-1.332	1.674	0.581	-0.133	0.575
Other	-0.019	0.836	-0.299	1.373	0.264	0.222
Detached	1.142	1.811	0.002	-0.092	0.106	0.623
SemiDtch	-0.685	0.655	-0.720	-0.544	-1.281	0.261
Terraced	-1.033	-1.410	0.484	-0.125	0.147	0.436
Purp.Flat	-0.241	-1.197	-0.739	0.337	1.175	0.306
Conv.Flat	0.673	-1.279	1.166	0.683	0.231	0.430
Com.Flat	0.594	-1.141	0.711	1.105	0.356	0.350
Nonperm.Accm	0.268	0.563	-1.452	0.743	0.443	0.276

Appendix 5.14B: Regression results for ProFit (1991)

	Regression coefficients (βs)					Adjusted R^2
	DIM_1	DIM_2	DIM_3	DIM_4	DIM_5	
Hholds	-0.717	-0.663	1.469	0.350	1.916	0.455
Hcommunal	0.714	0.666	-1.669	-0.370	-1.498	0.446
Zero_4	-1.824	0.300	0.395	0.408	-0.788	0.626
Five_15	-1.173	-0.547	0.301	2.093	-1.247	0.642
Sixteen_24	-1.035	0.775	-2.106	-0.076	0.199	0.595
Twentyfive_44	-1.603	-0.045	-1.342	0.647	0.386	0.604
Fortyfive_59	0.976	-1.087	-0.848	0.198	-0.666	0.393
Sixty_64	1.212	-0.497	1.538	-0.484	0.713	0.491
Sixtyfive_84	1.568	0.424	1.640	-1.337	0.884	0.800
Eightyfive_plus	1.290	0.696	0.080	-0.888	-0.806	0.424
Married	0.258	-2.174	1.166	1.007	-0.373	0.854
S.W.D	-0.258	2.174	-1.166	-1.007	0.373	0.854
EAFT.empl	-1.263	-0.511	-1.551	1.184	0.904	0.613
EAPT.empl	-0.726	-0.647	-0.569	1.732	0.325	0.373
EAselfempl	0.480	-0.954	-1.604	-0.810	-1.789	0.523
EAunempl	-1.421	1.095	0.432	-0.281	-1.121	0.578
EIretired	1.551	0.485	1.786	-1.178	0.473	0.786
EIperm.sick	-0.212	1.137	0.574	-0.134	-1.212	0.260
Students	-0.074	-0.036	-2.342	0.556	1.450	0.506
LgeEmpl_HiMng	0.394	-0.504	-0.906	1.005	0.476	0.187
HiProf	0.434	-0.345	-1.269	-0.332	1.279	0.227
LoMng_Prof	0.662	-0.273	-1.822	0.181	1.728	0.443
Interm	0.566	-0.152	0.334	0.854	0.189	0.101
SmlEmpl_OwnAcct	0.368	-0.400	0.069	-1.074	-1.549	0.205
LoSupv_Tech	-0.386	0.318	1.144	0.485	-0.368	0.143
SemiRtine	-0.533	0.986	1.030	-0.507	-1.364	0.344
Routine	-0.743	0.441	1.148	0.073	-0.814	0.233
NonClassifbl	-1.293	-0.829	0.295	-0.855	0.132	0.432
NoCar	-0.473	2.065	0.951	-1.240	0.710	0.831
OneCar	-0.214	-0.853	0.576	0.426	1.367	0.206
TwoCars	0.626	-1.718	-1.293	1.180	-1.328	0.771
ThreeplusCars	0.497	-1.470	-1.200	0.628	-1.760	0.597
LnPrnt_deChd	-1.480	1.148	0.766	1.013	-0.752	0.694
Ttl.MLnPrnt	-0.203	0.034	0.212	1.117	1.030	0.121
FT.MLnPrnt	0.017	-0.308	0.139	1.606	1.144	0.229
PT.MLnPrnt	-0.294	0.001	-0.306	-0.984	1.664	0.182
Ttl.FLnPrnt	-1.500	1.184	0.760	0.866	-0.949	0.711
FT.FLnPrnt	-0.631	0.339	0.076	-0.036	0.942	0.103
PT.FLnPrnt	-0.992	0.780	0.578	1.017	-1.182	0.395
Own.Occupied	1.363	-1.183	-0.525	0.811	0.014	0.575
Council.Rnt	-0.995	1.237	1.469	0.276	-0.279	0.547
Social.Rnt	-0.432	0.811	0.077	1.006	0.677	0.198
Priv.Rnt	-0.264	0.948	-2.234	-1.718	-0.162	0.711
Other	-0.614	-1.303	0.398	-1.758	0.012	0.520
Detached	1.323	-1.476	-0.147	0.388	-1.087	0.661
SemiDtch	-0.022	-0.459	1.357	1.415	-0.364	0.297
Terraced	-1.497	0.881	-0.843	-0.412	1.587	0.653
Purp.Flat	-0.419	1.663	0.485	-0.522	1.079	0.493
Conv.Flat	0.036	1.126	-1.624	-1.188	-1.113	0.513
Com.Flat	-0.032	0.858	-0.898	-1.734	-0.046	0.359
Nonperm.Accm	0.302	-0.676	1.004	-1.221	0.095	0.244

Appendix 5.14C: Regression results for ProFit (2001)

	Regression coefficients (βs)					Adjusted R^2
	DIM_1	DIM_2	DIM_3	DIM_4	DIM_5	
Hholds	-0.067	-0.500	-0.958	1.924	1.059	0.390
Hcommunal	0.068	0.506	0.925	-1.863	-1.125	0.375
Zero_4	-0.704	-2.010	-0.347	0.055	0.270	0.564
Five_15	-0.295	-2.093	-1.109	-0.304	-1.014	0.670
Sixteen_24	-1.232	0.470	1.697	1.567	-0.786	0.756
Twentyfive_44	-0.544	-2.080	1.290	-0.014	0.764	0.721
Fortyfive_59	1.707	-0.114	-0.280	-0.490	-0.522	0.580
Sixty_64	1.191	1.198	-1.151	0.236	0.257	0.554
Sixtyfive_84	0.557	2.137	-1.404	-0.458	0.827	0.797
Eightyfive_plus	-0.014	1.567	-0.033	-1.899	0.283	0.513
Married	1.866	-0.559	-1.304	0.512	0.036	0.864
S.W.D	-1.866	0.559	1.304	-0.512	-0.036	0.864
EAFT.empl	0.673	-1.791	1.014	-0.068	1.106	0.587
EAPT.empl	0.631	-1.414	-1.281	0.268	-0.113	0.453
EAselfempl	1.452	-0.313	0.573	-1.619	0.482	0.615
EAunempl	-1.350	-0.558	-0.473	-0.974	-0.184	0.457
EIretired	0.858	1.895	-1.658	-0.145	0.692	0.818
EIperm.sick	-0.957	0.334	-1.320	-1.260	-0.857	0.470
Students	-1.081	0.775	1.715	1.637	-0.961	0.765
LgeEmpl_HiMng	1.365	-0.307	1.294	-0.140	-0.530	0.522
HiProf	0.835	0.082	1.954	0.045	-0.653	0.492
LoMng_Prof	1.245	-0.596	1.738	0.038	0.309	0.609
Interm	1.114	-0.810	-0.063	0.323	0.587	0.321
SmlEmpl_OwnAcct	1.231	-0.454	-0.099	-1.805	0.860	0.546
LoSupv_Tech	-0.295	-1.327	-1.256	-0.620	0.994	0.417
SemiRtine	-0.767	-1.392	-1.724	-0.319	0.689	0.624
Routine	-1.279	-1.084	-1.652	-0.449	0.223	0.704
NonClassifbl	-1.116	2.096	-0.242	0.984	-0.943	0.836
NoCar	-1.921	0.944	-0.274	-0.656	0.370	0.837
OneCar	0.029	-0.459	-0.048	1.315	1.684	0.234
TwoCars	1.853	-0.752	0.311	0.056	-0.959	0.753
ThreeplusCars	1.447	-0.359	0.180	-0.276	-1.616	0.510
LnPrnt_deChd	-1.466	-1.400	-0.870	-0.606	-0.990	0.756
Ttl.MLnPrnt	-0.095	-0.559	-0.260	-0.259	0.201	0.039
FT.MLnPrnt	0.094	-0.318	0.016	-0.101	0.986	0.039
PT.MLnPrnt	-0.055	-0.317	-0.161	0.106	-1.851	0.133
Ttl.FLnPrnt	-1.487	-1.362	-0.853	-0.535	-0.999	0.749
FT.FLnPrnt	-0.286	-0.802	0.459	-0.180	-0.638	0.116
PT.FLnPrnt	-0.836	-1.023	-0.450	-0.419	-1.204	0.328
Own.Occupied	2.022	-0.089	-0.096	0.332	0.180	0.779
Council.Rnt	-1.471	-0.025	-1.101	-0.123	-1.370	0.585
Social.Rnt	-0.944	0.205	-0.635	-0.643	0.626	0.243
Priv.Rnt	-0.947	0.079	2.093	-0.747	0.873	0.631
Other	-0.685	-0.049	0.881	1.377	0.636	0.291
Detached	1.751	0.427	-0.194	-0.188	-1.114	0.647
SemiDtch	0.311	-0.874	-1.246	0.850	0.126	0.287
Terraced	-1.344	-0.748	1.104	0.762	0.637	0.565
Purp.Flat	-1.386	1.090	0.077	-0.748	-0.285	0.533
Conv.Flat	-0.649	0.040	1.189	-1.772	0.659	0.424
Com.Flat	-0.381	-0.065	0.949	-1.462	1.822	0.366
Nonperm.Accm	0.259	0.850	-1.010	0.789	0.792	0.244

Appendix 5.15: Identify council housing areas using ProFit (1981)

Age (DIM1)

1.000

HerneAJ16 ○ ○WBayAZ02
WBayAZ13 ○ SwlclfAX02
SwlclfAX09 GorrellAF03 ○ HerneAJ09 HeronAK06 ○
WBayAZ01 ○ SwlclfAX07 ○ ○ WBayAZ07 ○
WBayAZ03 ○ ○NgateAN09 RclverAQ02 ○ HeronAK11

.500

NSturryAU03 ○ TktonAY07 ○ TktonAY03 ○ BartonAB02 ○WgateBA15○ BartonAB01
WBayAZ12 ○ ○ ○ WgateBA16 ○ HeronAK05
WBayAZ11 ○ WchpBB09 ○ WchpBB03 ○ ○ ○
SslterAS01 ○ WBayAZ05 ○ RclverAQ08 ○ BartonAB11
HerneAJ03 ○ WgateBA ○ ○WgateBA11 ○ WchpBB06 ○ SSturryAW06 ○ NNlbrnAP03
RclverAQ16 ○ ChfldAE ○ Chfld ○ ○ ○ ○WgateBA12
NgateAN1 ○ ○ StnStAT04 HeronAK04
.000 ○ ○ HeronAK14 ○ NNlbrnAP07 WchpBB08
SslterAS09 ○HerneAJ ○ ○ WgateBA ○
SslterAS08 ○ ○ WgateBA06 StnStAT02
HerneAJ19 ○ NgateAN05 ○ StourAL01
SslterAS11 ○ NNlbrnAP01 ○ ChthmAD06
SStphnAR06 ○ GorrellAR ○ ○ StnStAT05
HerneAJ13 ○ SslterAS10 ○ NgateAN03 ○ WchpBB04
NgateAN07 ○ ○ Council.Rnt ○ NNlbrnAP02
-.500 ChthmAD05 ○
NgateAN17 ○ WchpBB12 ○ RclverAQ07
WgateBA08 ○ ○NgateAN10
SStphnAR15 ○ ○ SStphnAR03 ○ NgateAN14
MsideAM04 ○ WgateBA07

SStphnAR08 ○
-1.000

-1.000   -.500   .000   .500   1.000
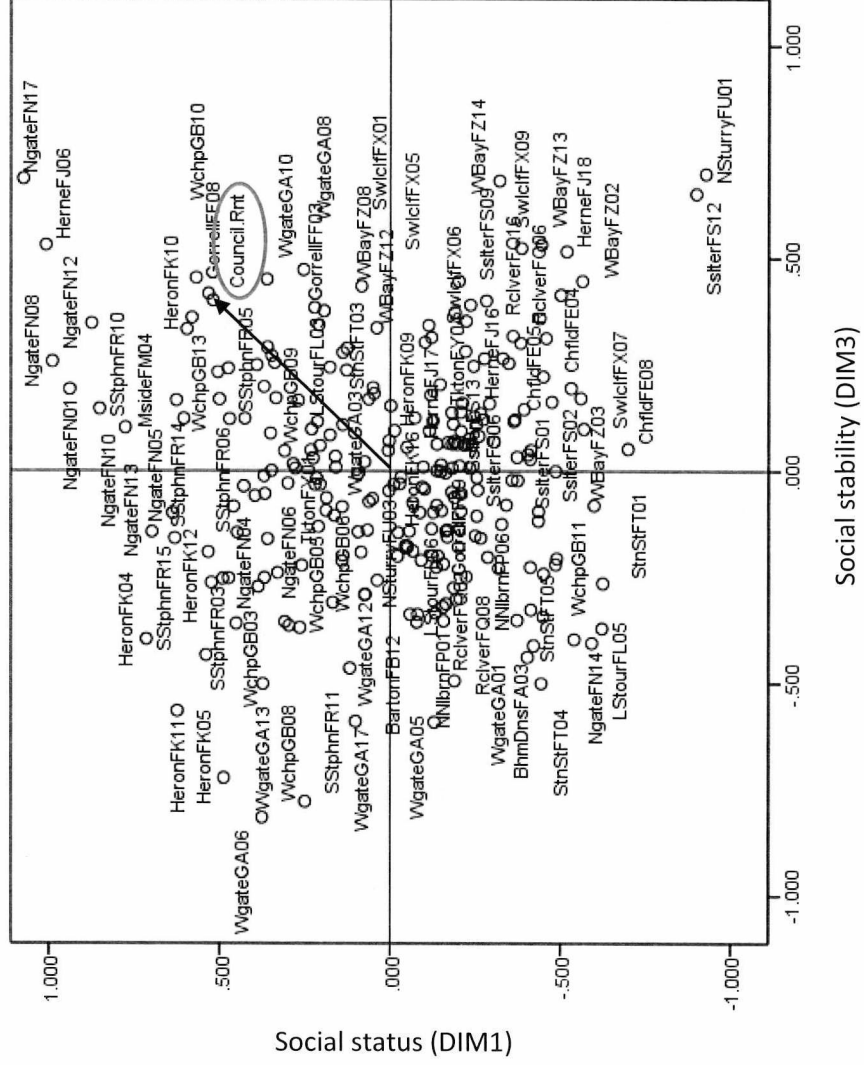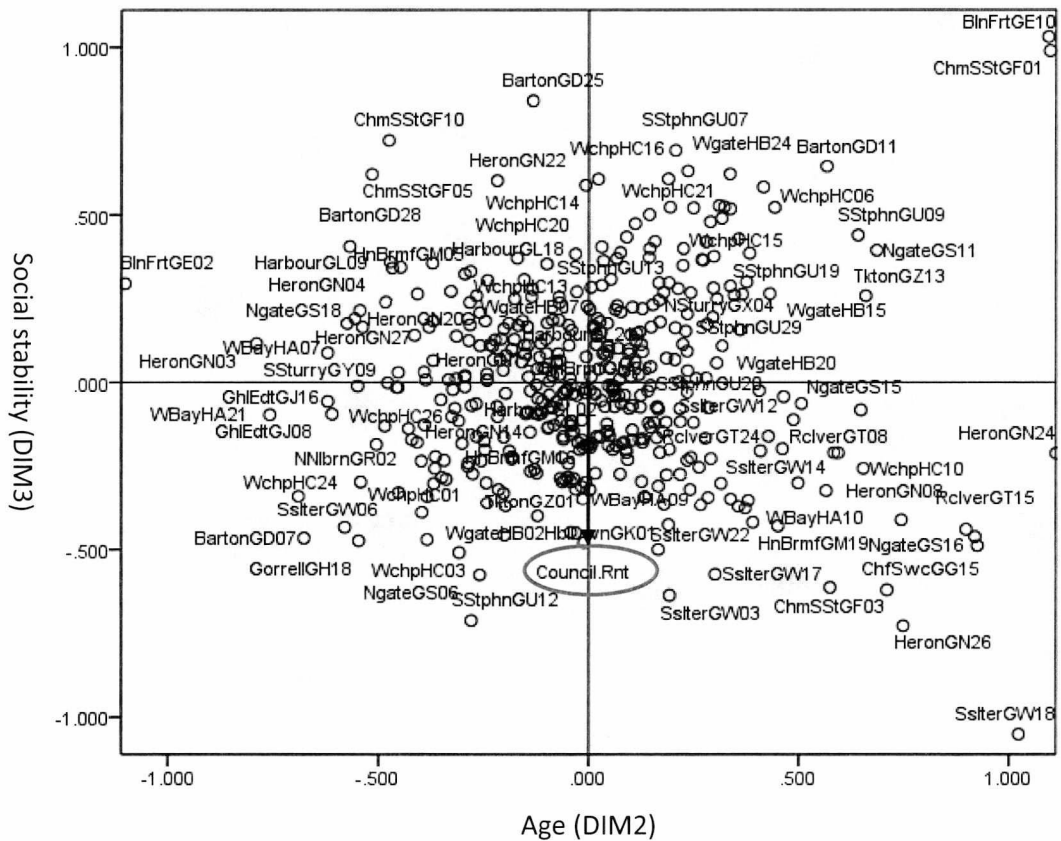
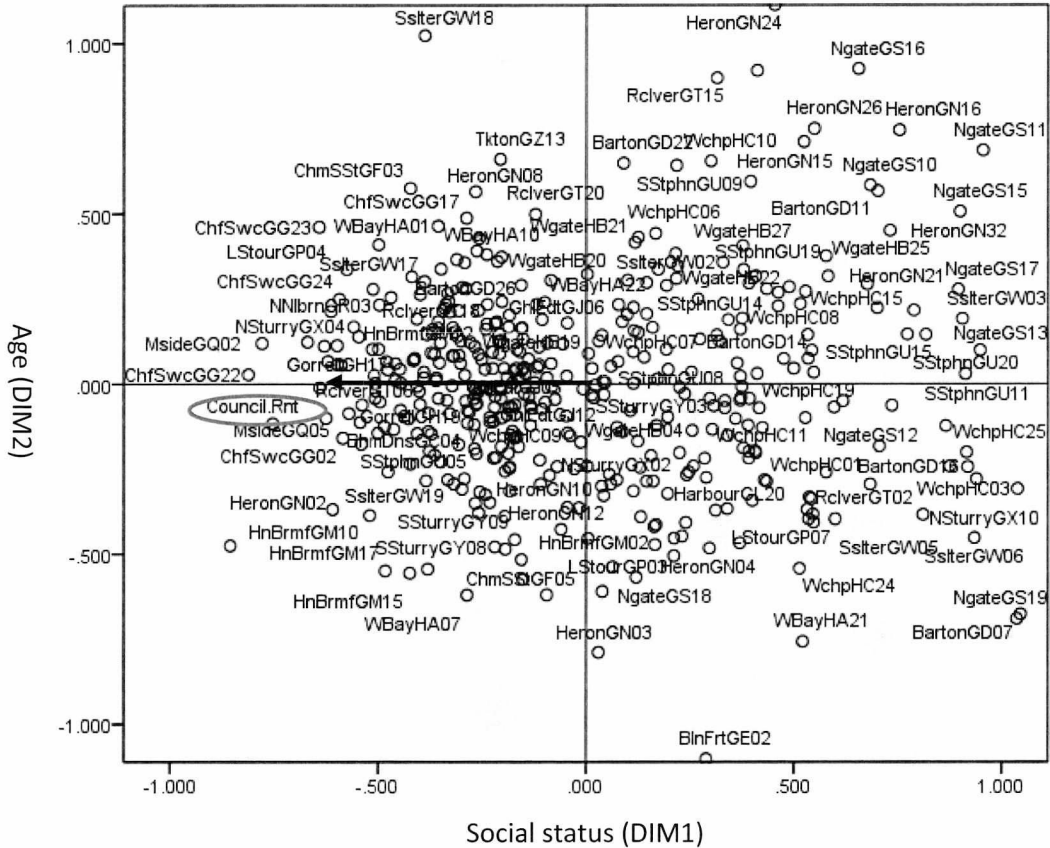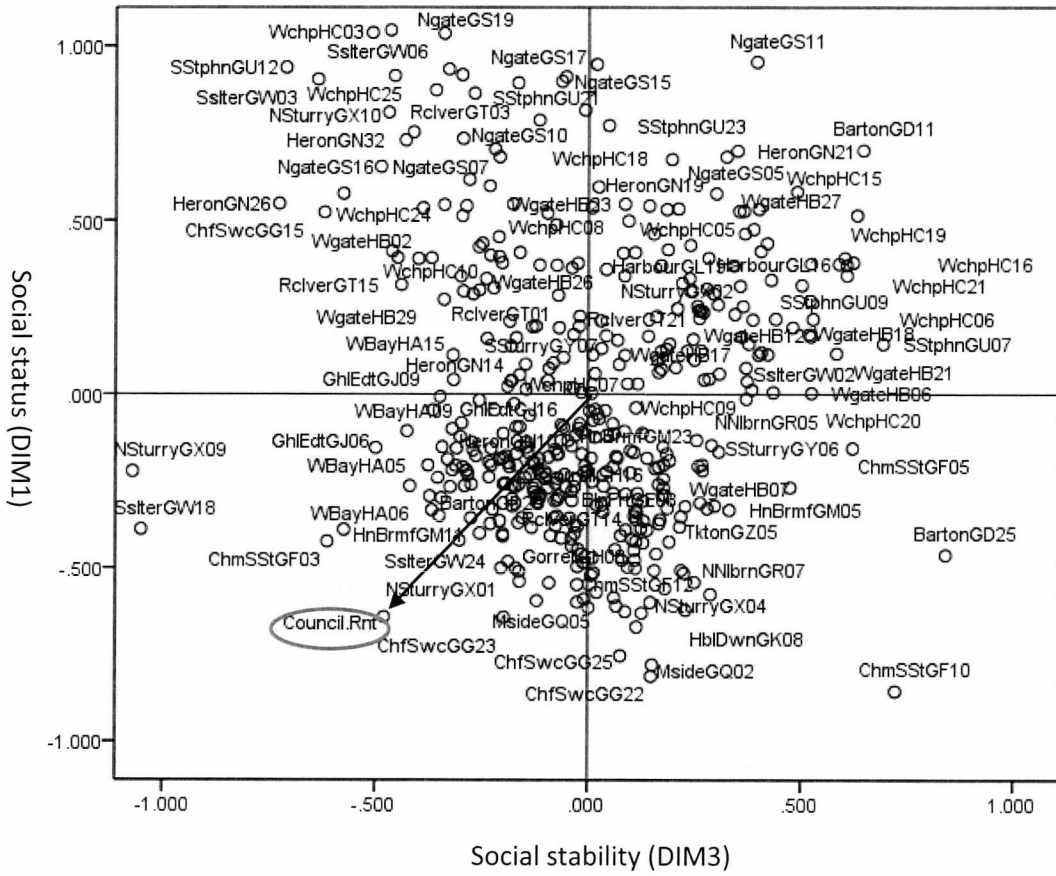Social stability (DIM3)

223

Appendix 5.16: Identify council housing areas using ProFit (1991)
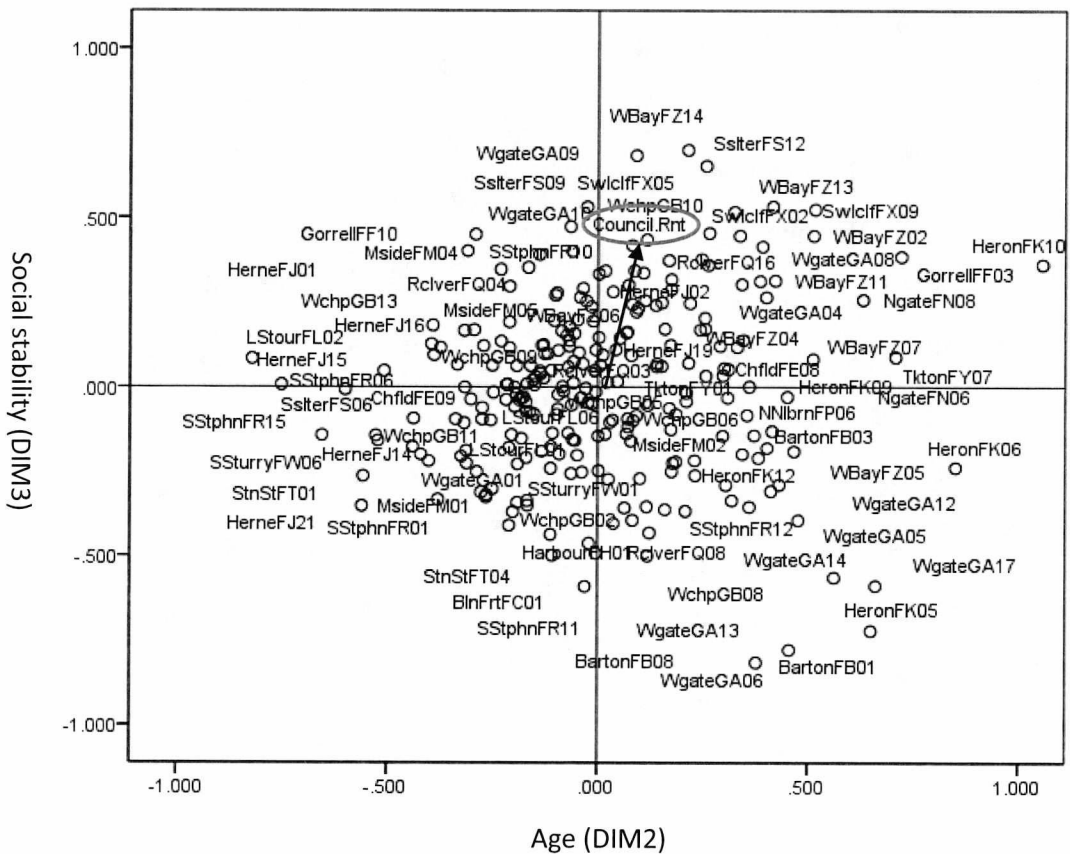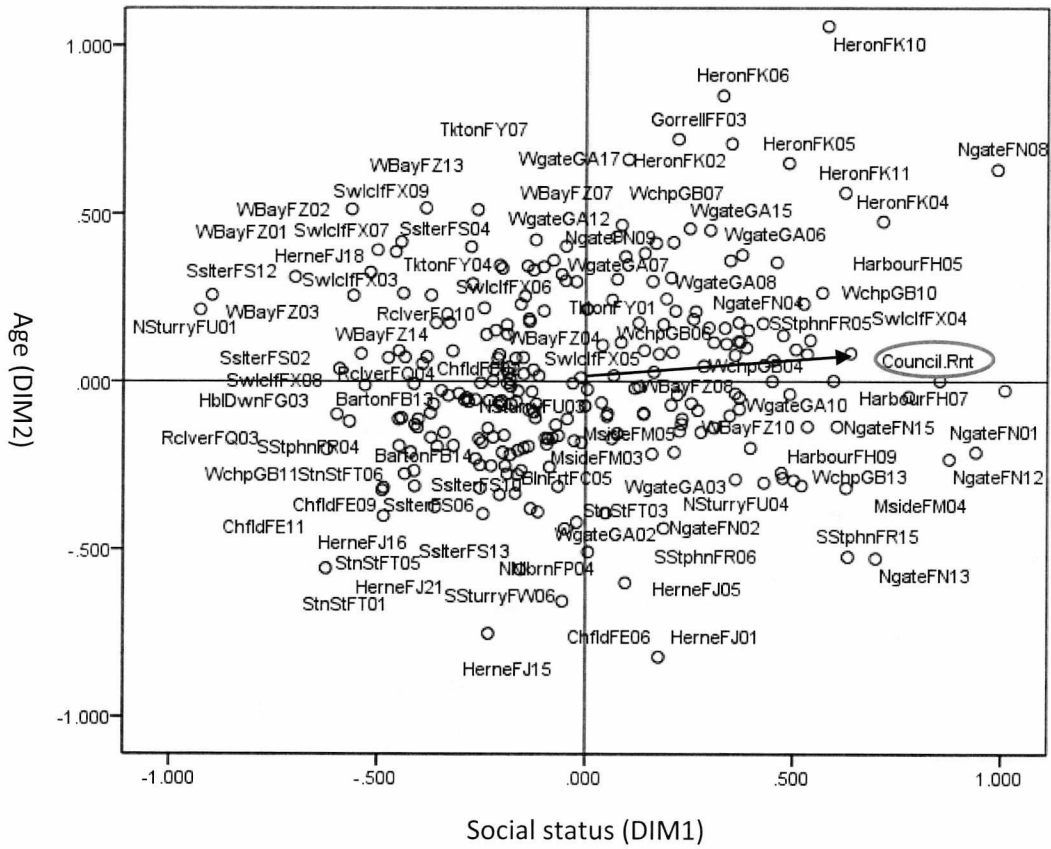
Appendix 5.17: Identify council housing areas using ProFit (2001)

Social status (DIM1)

Social stability (DIM3)

Appendix 5.18: Common space coordinates

Final Coordinates

	Dimension				
	1	2	3	4	5
Hholds	.071	.244	-1.855	-.346	1.024
Hcommunal	-.018	.300	1.912	.762	-.644
Zero_4	-.338	-1.204	-1.260	-.868	-.691
Five_15	-.102	-.257	-1.582	-.201	-1.393
Sixteen_24	-1.244	-.191	.532	-1.439	-1.045
Twentyfive_44	.170	-.725	-.471	-1.653	-1.250
Fortyfive_59	1.007	1.812	-.411	-.407	.509
Sixty_64	.661	1.052	-.004	1.409	1.843
Sixtyfive_84	.366	.359	.996	1.671	1.937
Eightyfive_plus	.134	.091	1.856	1.398	1.009
Married	1.328	1.035	-1.289	.794	-.211
S.W.D	-1.298	-.766	1.395	-.391	.304
EAFT.empl	.761	-.171	-.591	-1.518	-1.272
EAPT.empl	.565	.267	-1.537	-.662	-1.129
EAselfempl	.419	1.906	.758	-.401	-.123
EAunempl	-1.719	-.785	-.328	-.342	-.109
Elretired	.508	.389	.886	2.146	1.405
Elperm.sick	-1.097	-.635	.211	1.382	1.383
Students	-.460	.591	.930	-1.356	-1.626
LgeEmpl_HiMng	1.476	.609	.574	.388	-1.511
HiProf	.889	.972	1.034	-1.457	-.659
LoMng_Prof	1.546	.508	1.318	-.773	-.169
Interm	1.853	-.526	-.026	.961	.581
SmlEmpl_OwnAcct	-.143	1.829	.086	-.279	1.161
LoSupv_Tech	.368	-1.453	-1.242	.439	.684
SemiRtine	-.471	-1.546	-.624	1.090	.703
Routine	-1.327	-.002	-1.400	.507	.159
NonClassifbl	-1.478	.548	.322	1.075	-1.099
NoCar	-1.340	-1.144	.841	.492	.910
OneCar	1.594	-.477	-.840	.509	-.986
TwoCars	1.356	1.538	-.431	-.208	-.853
ThreeplusCars	.708	1.914	-.324	-.002	-.875
LnPrnt_deChd	-1.098	-1.269	-.845	-.306	-.544
Ttl.MLnPrnt	-.137	-.152	-.627	-1.747	1.229
FT.MLnPrnt	.662	-.249	-.498	-1.631	1.289
PT.MLnPrnt	.983	-1.144	.695	-.626	1.000
Ttl.FLnPrnt	-1.122	-1.272	-.806	-.171	-.628
FT.FLnPrnt	.360	-1.298	.192	.063	-1.630
PT.FLnPrnt	-.887	-.959	-.772	.579	-1.359
Own.Occupied	1.983	1.006	.218	.673	.420
Council.Rnt	-1.452	-.912	-.909	-.122	.775
Social.Rnt	-.530	-.991	.457	1.460	-1.189
Priv.Rnt	-.628	-.230	1.774	-1.153	-.063
Other	-1.268	1.449	-.309	-.413	-.353
Detached	1.304	1.690	.240	1.128	.049
SemiDtch	.880	-.292	-1.843	.954	.134
Terraced	-.848	-1.273	.312	-1.424	-.484
Purp.Flat	-1.140	-1.024	.532	-.246	1.533
Conv.Flat	-.448	-.579	1.937	-.154	-.163
Com.Flat	-.619	.153	1.355	-1.095	1.304
Nonperm.Accm	-.740	1.263	-.542	1.509	.716

Appendix 5.19: Projections of the common space (dimensions 1, 2 and 3)
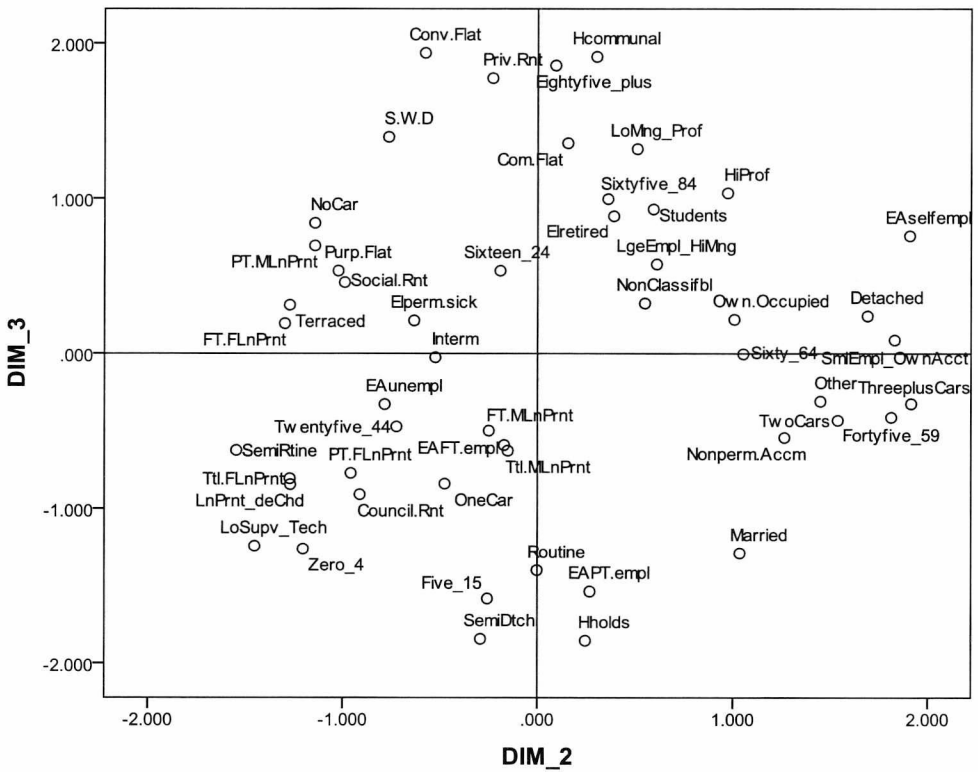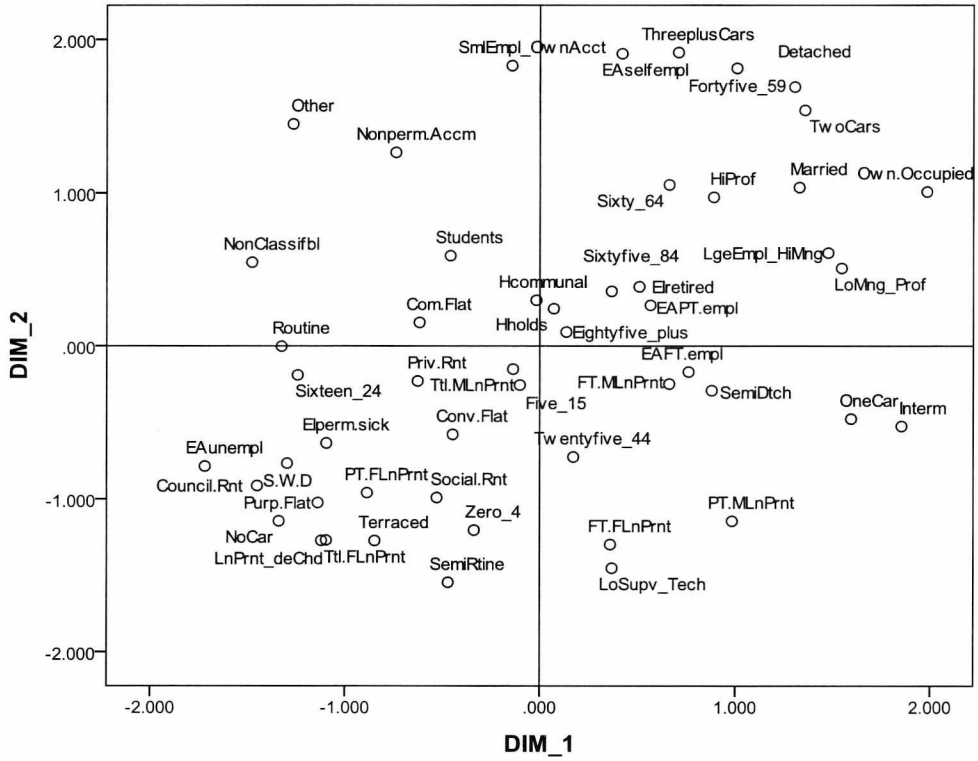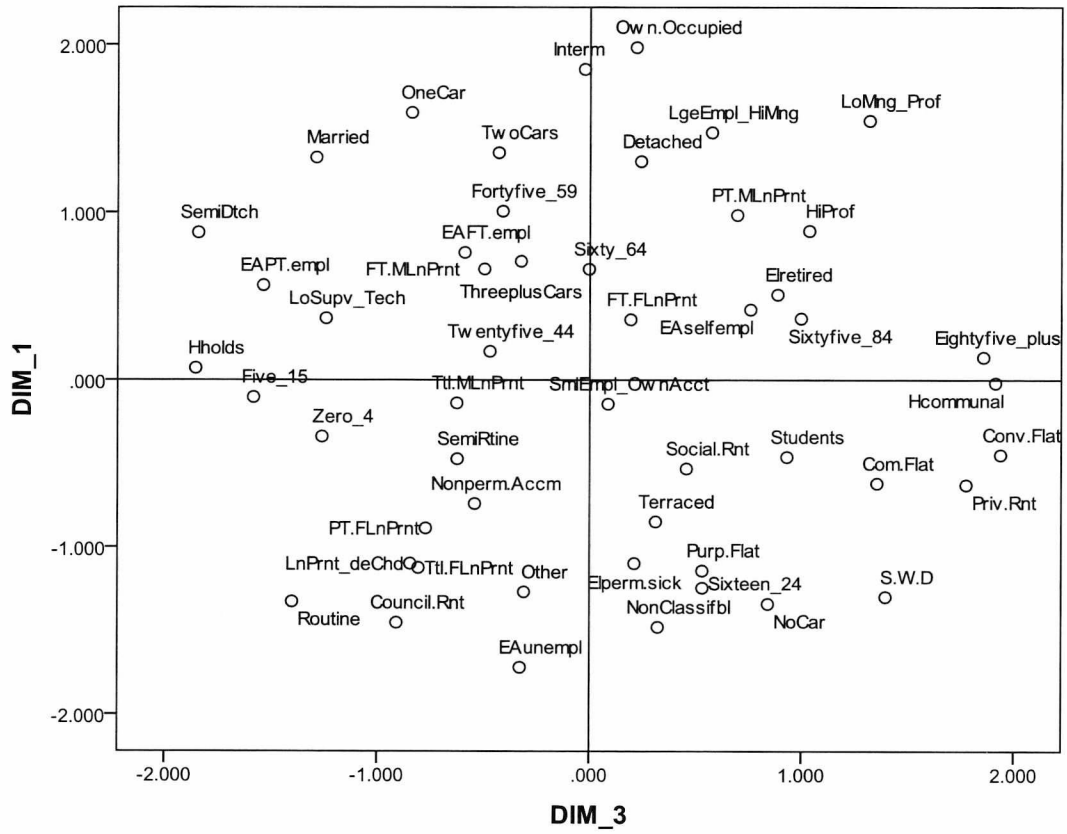
Appendix 5.20: The weights for individual year

Dimension Weights

Year	Dimension				
	1	2	3	4	5
1981	.319	.325	.344	.265	.293
1991	.331	.347	.324	.274	.270
2001	.365	.327	.310	.282	.255

Appendix 5.21: Area matching and grouping & value for Council.Rnt

Group	1981 (ED)	1991 (ED)	2001 (OA)
1	NgateAN01 (.73) NgateAN02 (.34) NgateAN03(.44) NgateAN07(.74) NgateAN14(.72) NgateAN17(.90)	NgateFN01 (.56) NgateFN02 (.08) NgateFN03 (.30) NgateFN07(.44) NgateFN13(.34) NgateFN15(.51)	NgateGS03 (.54) NgateGS04 (.58) NgateGS05 (.14) NgateGS15 (.02) NgateGS16 (.65) NgateGS17 (.28) NgateGS18 (.18) NgateGS19 (.62)
2	NgateAN09 (.46) NgateAN10 (.77) NgateAN11 (.52)	NgateFN09 (.33) NgateFN10 (.48) NgateFN11 (.48)	BartonGD03 (.03) BartonGD26 (.78) NgateGS10 (.54)
3	NgateAN04 (.13) NgateAN05 (.44) NgateAN06 (.53) NgateAN08 (.75)	NgateFN04 (.11) NgateFN05 (.28) NgateFN06 (.47) NgateFN08 (.67)	NgateGS01 (.03) NgateGS02 (.12) NgateGS06 (.34) NgateGS07 (.42) NgateGS09 (.18) NgateGS11 (.66) NgateGS12 (.04) NgateGS13 (.64)
4	NgateAN13 (.72)	NgateFN12 (.54)	BartonGD02 (.74) BartonGD25 (.03)
5	WchpBB04 (.43) WchpBB11 (.79) WchpBB12 (.78)	WchpGB09 (.33) WchpGB10 (.69) WchpGB13 (.57)	WchpHC21 (.50) WchpHC22 (.57) WchpHC23 (.05) WchpHC24 (.72) WchpHC25 (.19)
6	WchpBB09 (.48) WchpBB13 (.25)	WchpGB06 (.12) WchpGB07 (.32) WchpGB08 (.10)	WchpHC04 (.15) WchpHC07 (.46) WchpHC08 (.16) WchpHC16 (.03)
7	WchpBB05 (.16) WchpBB06 (.11) WchpBB07 (.43) WchpBB08 (.25)	WchpGB02 (.09) WchpGB03 (.08) WchpGB04 (.27) WchpGB05 (.18)	WchpHC02 (.24) WchpHC05 (.41) WchpHC10 (.12) WchpHC11 (.00) WchpHC12 (.14) WchpHC14 (.04) WchpHC15 (.11) WchpHC17 (.02)
8	WchpBB14 (.19)	StnStFT01 (.05)	ChmSStGF12 (.03)
9	SStphnAR05 (.78) SStphnAR06 (.86) SStphnAR13 (.62) SStphnAR14 (.39)	SStphnFR05 (.49) SStphnFR06 (.41) SStphnFR13 (.39) SStphnFR14 (.24) SStphnFR15 (.00)	SStphnGU12 (.03) SStphnGU13 (.52) SStphnGU16 (.00) SStphnGU17 (.44) SStphnGU18 (.51) SStphnGU20 (.33) SStphnGU23 (.02)
10	SStphnAR03 (.63)	SStphnFR03 (.29)	SStphnGU14 (.37) SStphnGU15 (.06)
11	SStphnAR16 (.14)	SStphnFR16 (.05)	SStphnGU01 (.03) SStphnGU19 (.00) SStphnGU24 (.08)
12	GorrellAF06 (.19) GorrellAF08 (.87)	GorrellFF06 (.05) GorrellFF08 (.50)	GorrellGH04 (.19) GorrellGH07 (.09) GorrellGH10 (.47) GorrellGH11 (.55)

13	GorrellAF03 (.62)	GorrellFF03 (.58)	GorrellGH02 (.00)
		GorrellFF05 (.00)	GorrellGH03 (.70)
		HarbourFH09 (.11)	GorrellGH19 (.00)
			HarbourGL04 (.07)
14	GorrellAF09 (.16)	GorrellFF09 (.12)	GorrellGH05 (.00)
	GorrellAF10 (.39)	GorrellFF10 (.36)	GorrellGH08 (.02)
	GorrellAF11 (.13)	GorrellFF11 (.09)	GorrellGH09 (.00)
			GorrellGH12 (.09)
			GorrellGH13 (.00)
			GorrellGH14 (.00)
			GorrellGH15 (.49)
			GorrellGH16 (.00)
15	WgateBA07 (.82)	WgateGA08 (.45)	WgateHB20 (.25)
	WgateBA08 (.83)	WgateGA09 (.50)	WgateHB23 (.39)
	WgateBA09 (.86)	WgateGA10 (.44)	WgateHB25 (.31)
	WgateBA10 (.73)	WgateGA11 (.40)	WgateHB26 (.27)
			WgateHB27 (.42)
			WgateHB29 (.24)
16	WgateBA02 (.18)	WgateGA03 (.10)	WgateHB06 (.03)
			WgateHB08 (.02)
			WgateHB10 (.43)
17	BartonAB04 (.79)	BartonFB04 (.53)	BartonGD05 (.13)
	BartonAB05 (.89)	BartonFB05 (.57)	BartonGD09 (.31)
	BartonAB06 (.76)	BartonFB06 (.42)	BartonGD11 (.33)
			BartonGD13 (.40)
			BartonGD24 (.29)
18	BartonAB02 (.21)	BartonFB02 (.11)	BartonGD03 (.03)
	BartonAB03 (.17)	BartonFB03 (.12)	BartonGD07 (.00)
			BartonGD12 (.00)
			BartonGD14 (.00)
			BartonGD15 (.15)
			BartonGD16 (.02)
19	HeronAK10 (.64)	HeronFK10 (.58)	HeronGN11 (.00)
			HeronGN17 (.00)
			HeronGN19 (.02)
			HeronGN20 (.02)
			HeronGN23 (.76)
20	HeronAK02 (.47)	HeronFK02 (.25)	HeronGN03 (.02)
		HeronFK08 (.00)	HeronGN07 (.00)
			HeronGN28 (.14)
21	HeronAK15 (.44)	HeronFK13 (.26)	HeronGN02 (.00)
			HeronGN04 (.34)
			HeronGN05 (.00)
			HeronGN09 (.03)
			HeronGN12 (.22)
22	HeronAK12 (.32)	HeronFK12 (.22)	HeronGN01 (.04)
			HeronGN27 (.24)
23	HeronAK17 (.13)	HeronFK16 (.08)	GhlEdtGJ01 (.11)
			GhlEdtGJ15 (.00)
			GhlEdtGJ16 (.00)
24	HerneAJ04 (.19)	HerneFJ04 (.04)	GhlEdtGJ02 (.00)
	HerneAJ07 (.57)	HerneFJ07 (.30)	GhlEdtGJ04 (.00)
			GhlEdtGJ07 (.28)
			GhlEdtGJ10 (.38)
			GhlEdtGJ14 (.00)
25	HerneAJ01 (.18)	HerneFJ01 (.00)	GhlEdtGJ05 (.00)
		HerneFJ05 (.00)	GhlEdtGJ08 (.02)
		HerneFJ06 (.74)	GhlEdtGJ10 (.38)

		HerneFJ09 (.00)	GhlEdtGJ11 (.72)
			GhlEdtGJ13 (.00)
26	HerneAJ17 (.18)	HerneFJ19 (.11)	HnBrmfGM13 (.00)
			HnBrmfGM17 (.00)
			HnBrmfGM18 (.00)
			HnBrmfGM19 (.18)
			HnBrmfGM20 (.00)
27	HerneAJ12 (.11)	HerneFJ14 (.00)	HnBrmfGM01 (.00)
		HerneFJ15 (.04)	HnBrmfGM04 (.02)
		HerneFJ22 (.00)	HnBrmfGM06 (.03)
			HnBrmfGM07 (.00)
			HnBrmfGM10 (.00)
			HnBrmfGM11 (.00)
			HnBrmfGM12 (.00)
28	LStourAL02 (.23)	LStourFL02 (.05)	LStourGP04 (.30)
	LStourAL03 (.17)	LStourFL03 (.26)	LStourGP05 (.04)
	LStourAL04 (.42)	LStourFL04 (.14)	LStourGP06 (.00)
			LStourGP07 (.25)
29	LStourAL05 (.14)	LStourFL01 (.11)	LStourGP02 (.08)
30	LStourAL01 (.13)	LStourFL05 (.03)	LStourGP08 (.00)
		LStourFL06 (.12)	LStourGP09 (.12)
31	NSturryAU02 (.51)	NSturryFU03 (.21)	NSturryGX02 (.11)
	NSturryAU04 (.37)	NSturryFU04 (.38)	NSturryGX05 (.04)
	NSturryAU05 (.63)	NSturryFU05 (.35)	NSturryGX07 (.73)
			NSturryGX08 (.00)
			NSturryGX09 (.22)
			NSturryGX10 (.27)
32	NSturryAU01 (.25)	NSturryFU02 (.10)	NSturryGX02 (.11)
			NSturryGX03 (.00)
33	RclverAQ07 (.30)	RclverFQ08 (.01)	RclverGT01 (.02)
	RclverAQ10 (.22)	RclverFQ09 (.23)	RclverGT06 (.10)
	RclverAQ12 (.15)	RclverFQ11 (.29)	RclverGT10 (.00)
	RclverAQ17 (.22)	RclverFQ16 (.00)	RclverGT11 (.00)
		RclverFQ17 (.05)	RclverGT12 (.63)
			RclverGT15 (.00)
			RclverGT17 (.00)
			RclverGT19 (.00)
			RclverGT20 (.32)
			RclverGT21 (.00)
34	SwlclfAX01 (.38)	SwlclfFX01 (.20)	ChfSwcGG09 (.00)
	SwlclfAX04 (.90)	SwlclfFX04 (.59)	ChfSwcGG12 (.75)
	SwlclfAX05 (.41)	SwlclfFX05 (.12)	ChfSwcGG13 (.49)
			ChfSwcGG15 (.37)
			ChfSwcGG16 (.00)
			ChfSwcGG17 (.00)
			TktonGZ01 (.00)
			TktonGZ12 (.02)
35	WBayAZ08 (.51)	WBayFZ08 (.27)	WBayHA12 (.30)
	WBayAZ09 (.70)	WBayFZ09 (.41)	WBayHA14 (.11)
	WBayAZ10 (.32)	WBayFZ10 (.18)	WBayHA15 (.00)
			WBayHA16 (.06)
			WBayHA17 (.00)
			WBayHA18 (.23)
			WBayHA20 (.54)
			WBayHA21 (.09)
36	MsideAM04 (.87)	MsideFM04 (.48)	MsideGQ07 (.13)
			MsideGQ08 (.41)
37	MsideAM03 (.32)	MsideFM03 (.18)	MsideGQ04 (.12)

			MsideGQ05 (.25)
38	MsideAM02 (.14)	MsideFM02 (.08)	MsideGQ01 (.00)
			MsideGQ03 (.13)
39	ChthmAD03 (.37)	ChthmFD03 (.27)	ChmSStGF01 (.00)
	ChthmAD05 (.57)	ChthmFD04 (.03)	ChmSStGF02 (.00)
	ChthmAD06 (.32)	ChthmFD05 (.37)	ChmSStGF03 (.00)
		ChthmFD06 (.24)	ChmSStGF04 (.04)
			ChmSStGF05 (.46)
			ChmSStGF06 (.39)
			ChmSStGF07 (.00)
			ChmSStGF09 (.00)
40	HarbourAH03 (.28)	HarbourFH03 (.15)	HarbourGL10 (.03)
	HarbourAH09 (.19)	HarbourFH09 (.11)	HarbourGL11 (.13)
			HarbourGL12 (.00)
			HarbourGL17 (.06)
			HarbourGL21 (.15)
41	HarbourAH05 (.12)	HarbourFH05 (.21)	HarbourGL01 (.00)
			HarbourGL05 (.02)
			HarbourGL19 (.38)
42	SslterAS07 (.91)	SslterFS07 (.79)	SslterGW02 (.54)
	SslterAS08 (.15)	SslterFS08 (.08)	SslterGW03 (.73)
			SslterGW08 (.00)
			SslterGW11 (.00)
			SslterGW13 (.00)
			SslterGW14 (.00)
			SslterGW19 (.00)
43	NNlbrnAP02 (.51)	NNlbrnFP01 (.06)	NNlbrnGR03 (.04)
44	NNlbrnAP04 (.41)	NNlbrnFP03 (.00)	NNlbrnGR04 (.00)
		NNlbrnFP04 (.04)	NNlbrnGR08 (.23)
45	BhmDnsAA01 (.25)	BhmDnsFA01 (.00)	BhmDnsGC01 (.08)
	BhmDnsAA03 (.36)	BhmDnsFA02 (.22)	BhmDnsGC02 (.17)
		BhmDnsFA04 (.00)	BhmDnsGC04 (.06)
		BhmDnsFA05 (.25)	BhmDnsGC05 (.45)
			BhmDnsGC07 (.00)
46	StnStAT01 (.21)	StnStFT01 (.05)	ChmSStGF12 (.03)
	StnStAT03 (.36)	StnStFT02 (.15)	ChmSStGF13 (.12)
		StnStFT03 (.31)	ChmSStGF15 (.22)
47	BlnFrtAC01 (.28)	BlnFrtFC02 (.22)	BlnFrtGE01 (.23)
	BlnFrtAC03 (.17)	BlnFrtFC03 (.00)	BlnFrtGE04 (.00)
		BlnFrtFC04 (.00)	BlnFrtGE05 (.02)
		BlnFrtFC05 (.06)	BlnFrtGE06 (.09)
			BlnFrtGE07 (.03)
			BlnFrtGE08 (.09)
			BlnFrtGE09 (.00)
			BlnFrtGE10 (.00)
48	SSturryAW04 (.18)	SSturryFW03 (.00)	SSturryGY03 (.02)
	SSturryAW05 (.19)		SSturryGY04 (.29)
			SSturryGY06 (.00)
49	HblDwnAG05 (.16)	HblDwnFG01 (.00)	HblDwnGK06 (.28)
	HblDwnAG06 (.11)	HblDwnFG04 (.15)	HblDwnGK07 (.00)
		WgateGA02 (.00)	HblDwnGK08 (.03)
		WgateGA04 (.24)	HblDwnGK09 (.00)
			WgateHB07 (.00)
			WgateHB10 (.43)
			WgateHB13 (.06)
			WgateHB20 (.25)

Appendix 5.22: Focus points for former council housing areas

| Group	1981	1991	2001
1	Ngate1_1981	Ngate1_1991	Ngate1_2001
2	Ngate2_1981	Ngate1_1991	BartonNgate_2001
3	Ngate3_1981	Ngate2_1991	Ngate2_2001
4	Ngate4_1981	Ngate3_1991	Barton1_2001
5	Wchp1_1981	Ngate4_1991	Wchp1_2001
6	Wchp2_1981	Wchp1_1991	Wchp2_2001
7	Wchp3_1981	Wchp2_1991	Wchp3_2001
8	Wchp4_1981	Wchp3_1991	ChmSSt1_2001
9	SStphn1_1981	StnSt1_1991	SStphn1_2001
10	SStphn2_1981	SStphn1_1991	SStphn2_2001
11	SStphn3_1981	SStphn2_1991	SStphn3_2001
12	Gorrell1_1981	SStphn3_1991	Gorrell1_2001
13	Gorrell2_1981	Gorrell1_1991	GorrellHarbour_2001
14	Gorrell3_1981	GorrellHarbour_1991	Gorrell2_2001
15	Wgate1_1981	Gorrell2_1991	Wgate1_2001
16	Wgate2_1981	Wgate1_1991	Wgate2_2001
17	Barton1_1981	Wgate2_1991	Barton2_2001
18	Barton2_1981	Barton1_1991	Barton3_2001
19	Heron1_1981	Barton2_1991	Heron1_2001
20	Heron2_1981	Heron1_1991	Heron2_2001
21	Heron3_1981	Heron2_1991	Heron3_2001
22	Heron4_1981	Heron3_1991	Heron4_2001
23	Heron5_1981	Heron4_1991	GhlEdt1_2001
24	Herne1_1981	Heron5_1991	GhlEdt2_2001
25	Herne2_1981	Herne1_1991	GhlEdt3_2001
26	Herne3_1981	Herne2_1991	HnBrmf1_2001
27	Herne4_1981	Herne3_1991	HnBrmf2_2001
28	LStour1_1981	Herne4_1991	LStour1_2001
29	LStour2_1981	LStour1_1991	LStour2_2001
30	LStour3_1981	LStour2_1991	LStour3_2001
31	NSturry1_1981	LStour3_1991	NSturry1_2001
32	NSturry2_1981	NSturry1_1991	NSturry2_2001
33	Rclver_1981	NSturry2_1991	Rclver_2001
34	Swlclf_1981	Rclver_1991	ChfSwcTkton_2001
35	Wbay_1981	Swlclf_1991	Wbay_2001
36	Mside1_1981	Wbay_1991	Mside1_2001
37	Mside2_1981	Mside1_1991	Mside2_2001
38	Mside3_1981	Mside2_1991	Mside3_2001
39	Chthm_1981	Mside3_1991	ChmSSt2_2001
40	Harbour1_1981	Chthm_1991	Harbour1_2001
41	Harbour2_1981	Harbour1_1991	Harbour2_2001
42	Sslter_1981	Harbour2_1991	Sslter_2001
43	NNlbrn1_1981	Sslter_1991	NNlbrn1_2001
44	NNlbrn2_1981	NNlbrn1_1991	NNlbrn2_2001
45	BhmDns_1981	NNlbrn2_1991	BhmDns_2001
46	StnSt_1981	BhmDns_1991	ChmSSt3_2001
47	BlnFrt_1981	StnSt2_1991	BlnFrt_2001
48	Ssturry_1981	BlnFrt_1991	Ssturry_2001
49	HblDwn_1981	Ssturry_1991	HblDwnWgate_2001

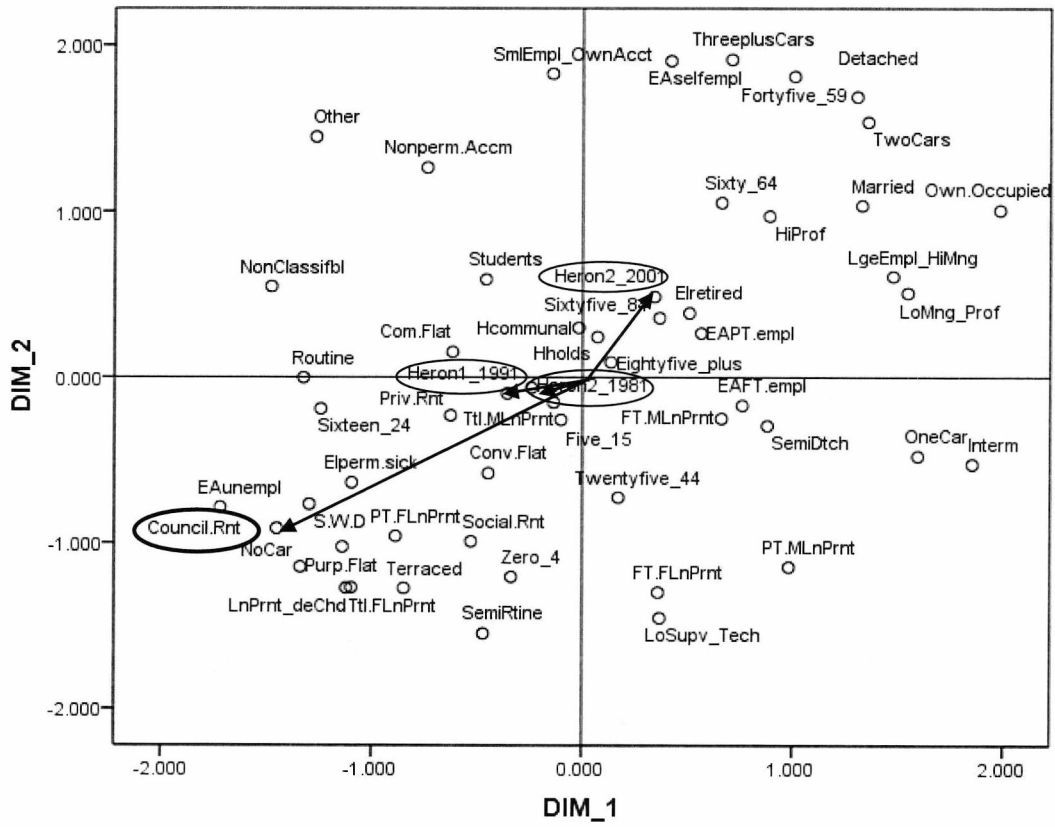# Appendix 5.23A: Evolution of former council estate Ngate1_1981
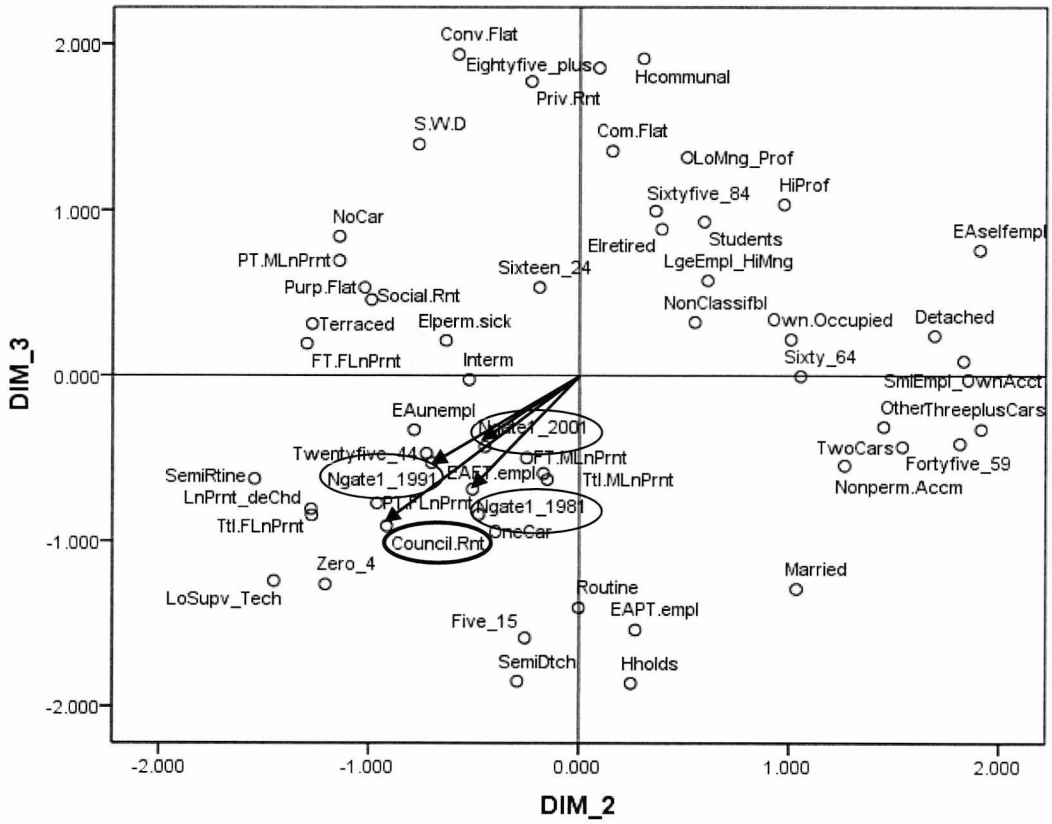
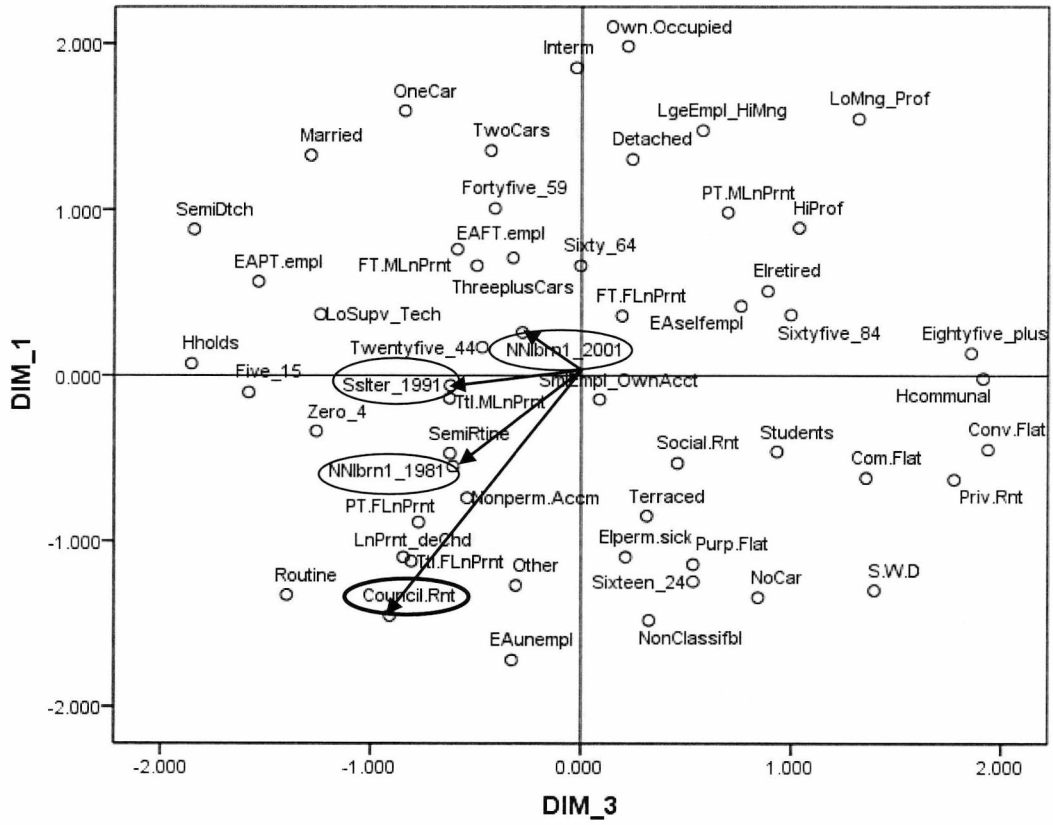# Appendix 5.23B: Evolution of former council estate SStphn2_1981
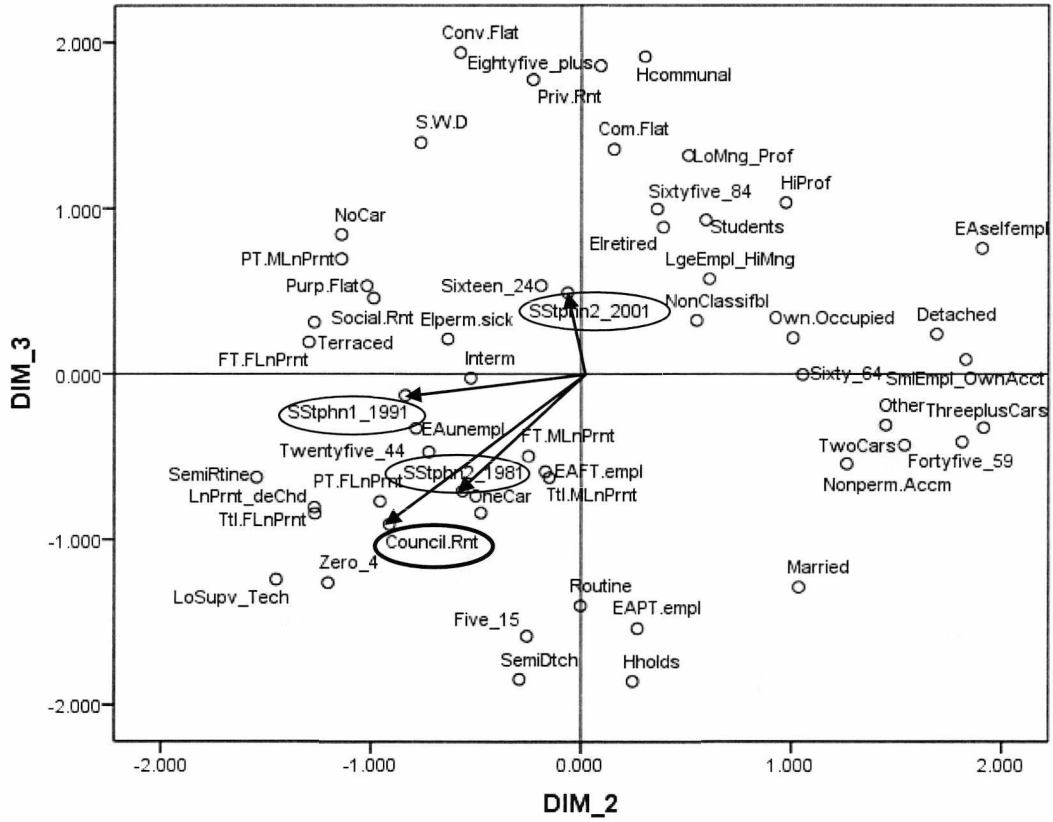
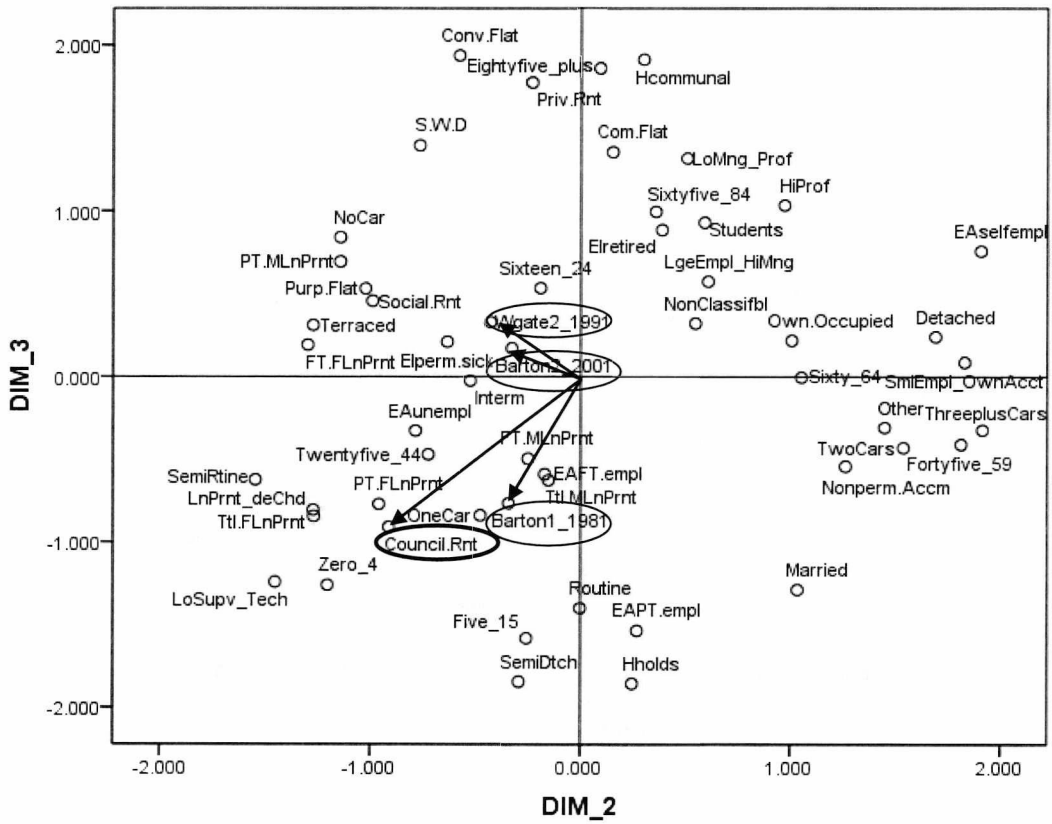# Appendix 5.23C: Evolution of former council estate Wgate1_1981
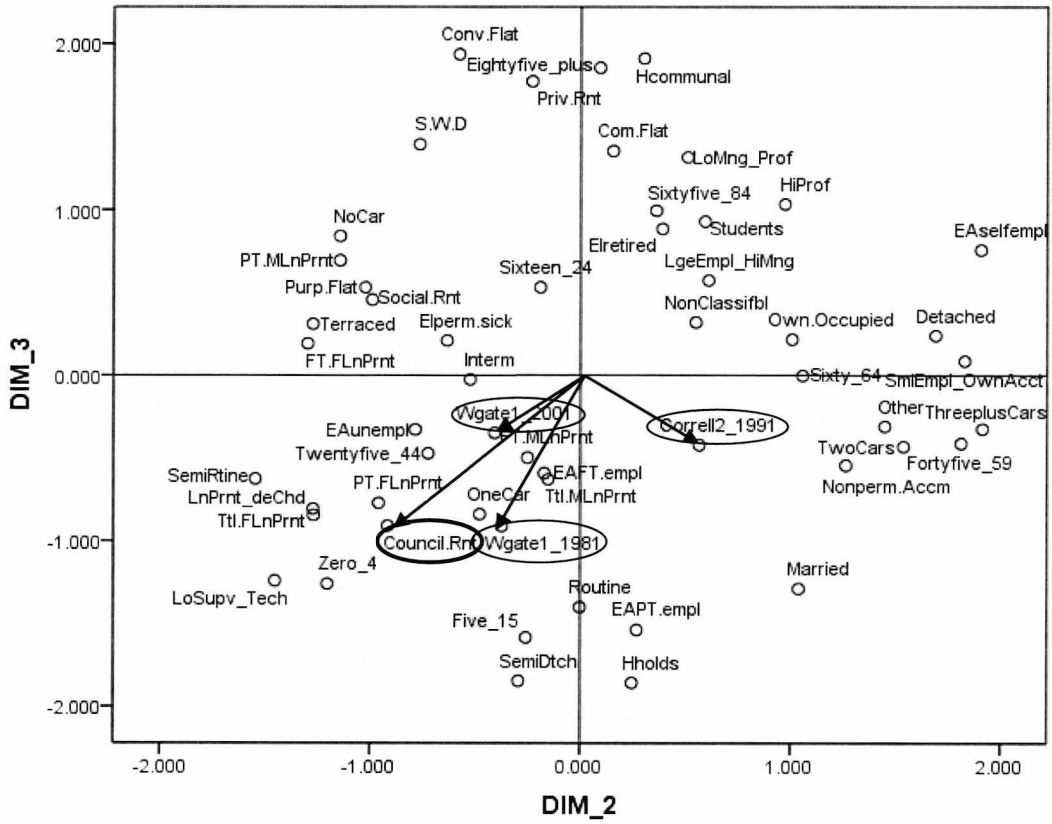
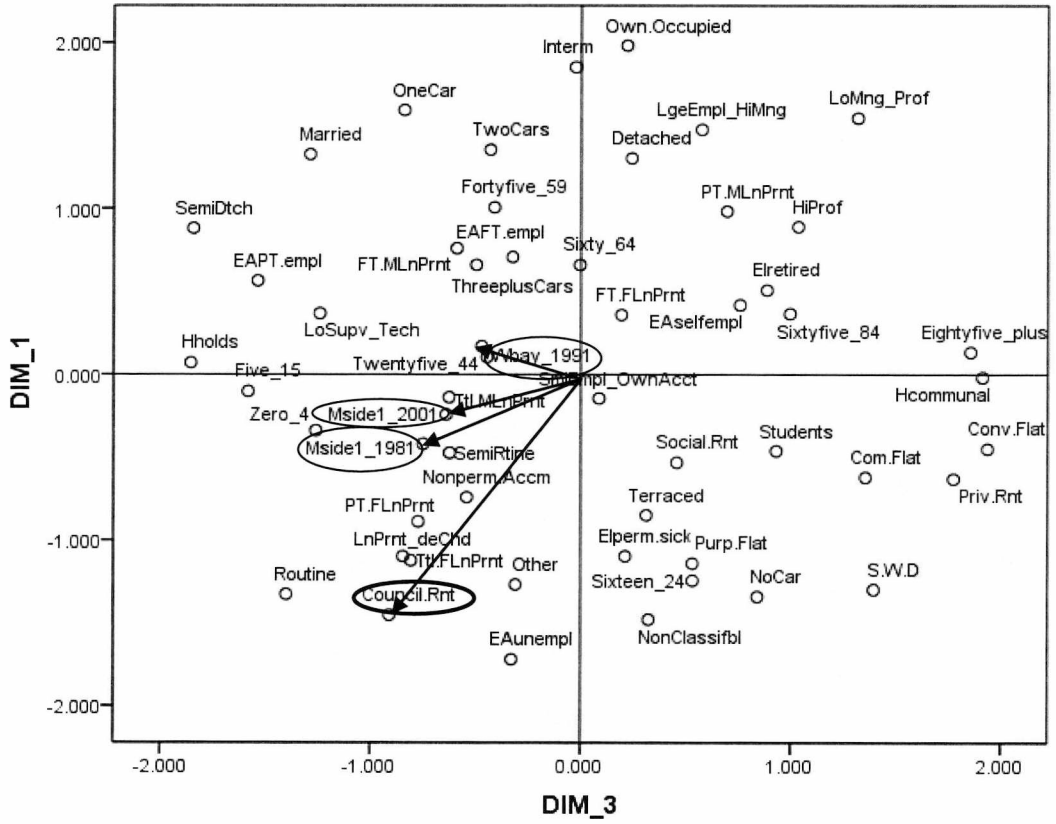# Appendix 5.23D: Evolution of former council estate Heron2_1981

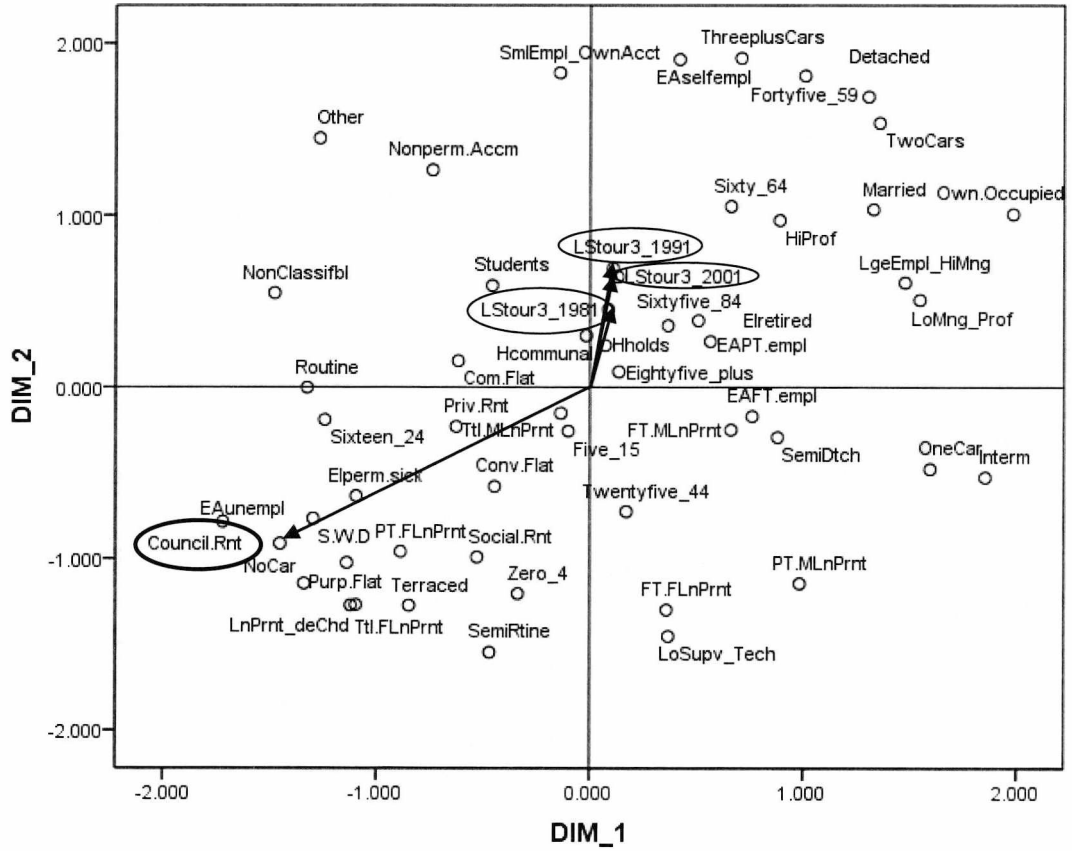# Appendix 5.23E: Evolution of former council estate NNIbrn1_1981

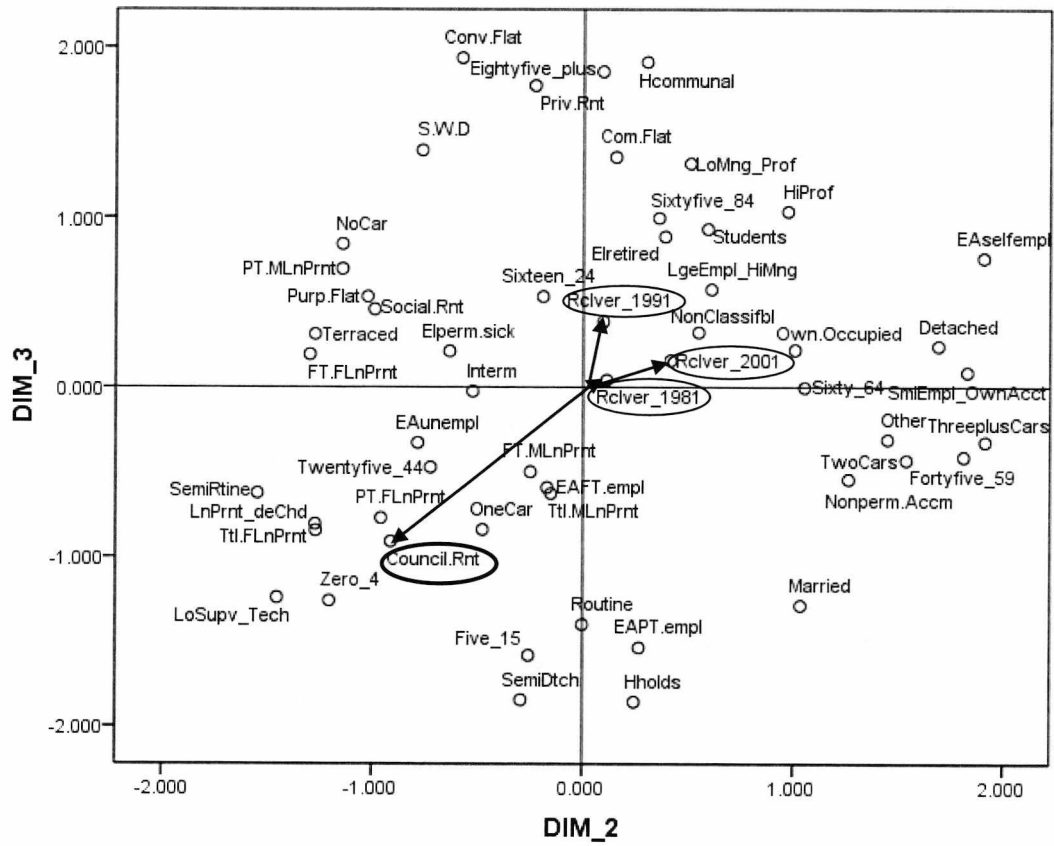## Appendix 5.24A: Evolution of former council estate Barton1_1981

Appendix 5.24B: Evolution of former council estate Mside1_1981

Appendix 5.25A: Evolution of former council estate LStour3_1981

Appendix 5.25B: Evolution of former council estate Rclver_1981

Appendix 5.26: Focus points and their standardised values for Council.Rnt

1981	Std. value	1991	Std. value	2001	Std. value
Ngate1_1981	2.204	Ngate1_1991	0.711	Ngate1_2001	0.667
Ngate2_1981	1.728	Ngate2_1991	0.939	BartonNgate_2001	0.813
Ngate3_1981	1.226	Ngate3_1991	0.764	Ngate2_2001	0.125
Ngate4_1981	2.448	Ngate4_1991	1.492	Barton1_2001	0.721
Wchp1_1981	2.299	Wchp1_1991	1.318	Wchp1_2001	0.803
Wchp2_1981	0.562	Wchp2_1991	-0.388	Wchp2_2001	-0.266
Wchp3_1981	-0.072	Wchp3_1991	-0.494	Wchp3_2001	-0.624
Wchp4_1981	-0.368	StnSt1_1991	-1.081	ChmSSt1_2001	-1.211
SStphn1_1981	2.125	SStphn1_1991	0.218	SStphn1_2001	-0.097
SStphn2_1981	2.003	SStphn2_1991	0.181	SStphn2_2001	-0.332
SStphn3_1981	-0.613	SStphn3_1991	-1.103	SStphn3_2001	-1.120
Gorrell1_1981	1.761	Gorrell1_1991	0.085	Gorrell1_2001	0.404
Gorrell2_1981	1.934	GorrellHarbour_1991	0.064	GorrellHarbour_2001	-0.350
Gorrell3_1981	-0.142	Gorrell2_1991	-0.318	Gorrell2_2001	-0.979
Wgate1_1981	2.942	Wgate1_1991	1.000	Wgate1_2001	0.302
Wgate2_1981	-0.412	Wgate2_1991	-0.817	Wgate2_2001	-0.481
Barton1_1981	2.947	Barton1_1991	1.396	Barton2_2001	0.206
Barton2_1981	-0.337	Barton2_1991	-0.739	Barton3_2001	-1.159
Heron1_1981	2.042	Heron1_1991	1.690	Heron1_2001	-0.516
Heron2_1981	1.133	Heron2_1991	-0.698	Heron2_2001	-1.043
Heron3_1981	0.976	Heron3_1991	0.028	Heron3_2001	-0.709
Heron4_1981	0.325	Heron4_1991	-0.186	Heron4_2001	-0.609
Heron5_1981	-0.637	Heron5_1991	-0.935	GhlEdt1_2001	-1.153
Herne1_1981	0.634	Herne1_1991	-0.435	GhlEdt2_2001	-0.633
Herne2_1981	-0.372	Herne2_1991	-0.212	GhlEdt3_2001	-0.253
Herne3_1981	-0.395	Herne3_1991	-0.767	HnBrmf1_2001	-1.166
Herne4_1981	-0.758	Herne4_1991	-1.280	HnBrmf2_2001	-1.302
LStour1_1981	0.131	LStour1_1991	-0.479	LStour1_2001	-0.559
LStour2_1981	-0.591	LStour2_1991	-0.766	LStour2_2001	-0.918
LStour3_1981	-0.663	LStour3_1991	-0.884	LStour3_2001	-1.015
NSturry1_1981	1.324	NSturry1_1991	0.326	NSturry1_2001	-0.161
NSturry2_1981	-0.016	NSturry2_1991	-0.792	NSturry2_2001	-1.048
Rclver_1981	-0.239	Rclver_1991	-0.751	Rclver_2001	-0.844
Swlclf_1981	1.726	Swlclf_1991	0.216	ChfSwcTkton_2001	-0.324
Wbay_1981	1.396	Wbay_1991	0.183	Wbay_2001	-0.467
Mside1_1981	0.234	Mside1_1991	1.176	Mside1_2001	0.092
Mside2_1981	0.337	Mside2_1991	-0.385	Mside2_2001	-0.515
Mside3_1981	-0.598	Mside3_1991	-0.936	Mside3_2001	-0.983
Chthm_1981	0.908	Chthm_1991	-0.115	ChmSSt2_2001	-0.742
Harbour1_1981	-0.089	Harbour1_1991	-0.640	Harbour1_2001	-0.953
Harbour2_1981	-0.722	Harbour2_1991	-0.225	Harbour2_2001	-0.676
Sslter_1981	1.089	Sslter_1991	0.590	Sslter_2001	-0.371
NNlbrn1_1981	1.361	NNlbrn1_1991	-1.044	NNlbrn1_2001	-1.140
NNlbrn2_1981	0.820	NNlbrn2_1991	-1.199	NNlbrn2_2001	-0.650
BhmDns_1981	0.260	BhmDns_1991	-0.591	BhmDns_2001	-0.627
StnSt_1981	0.147	StnSt2_1991	-0.408	ChmSSt3_2001	-0.683
BlnFrt_1981	-0.164	BlnFrt_1991	-1.018	BlnFrt_2001	-1.059
Ssturry_1981	-0.379	Ssturry_1991	-0.719	Ssturry_2001	-0.796
HblDwn_1981	-0.619	HblDwnWgate_1991	-0.757	HblDwnWgate_2001	-0.651

List of abbreviations

ED   Enumeration District

EDA   Exploratory Data Analysis

GIS   Geographical Information System

INDSCAL   The Individual Differences Scaling

LBS   Local Base Statistics

LFS   Labour Force Survey

MDS   Multidimensional Scaling

NS-SEC   National Statistics Socio-economic Classification

OA   Output Area

OPCS   Office of Population Censuses and Surveys

PCA   Principal Components Analysis

ProFit   Property Fitting

SAS   Small Area Statistics

SC   Social Class based on Occupation

SEG   Socio-economic Groups

SOC   Standard Occupational Classification

SOC90   Standard Occupational Classification 1990

SOC2000   Standard Occupational Classification 2000

References

Abel, T. and T. Kohlmann (2007). "Social change and Cultural diversity - current and future topics in IJPH." International Journal of Public Health 52(4): 191-192.

Aldridge, A. and K. Levine (2001). Surveying the Social World: Principles and Practice in Survey Research. Buckingham, Open University Press.

Atkinson, A. B. et al. (2002). Social Indicators: The EU and Social Inclusion. Oxford, Oxford University Press.

Atkinson, A. B. et al. (2004). "Indicators and Targets for Social Inclusion in the European Union." Journal of Common Market Studies 42(1): 47-75.

Atkinson, R. (1998). "Displacement through gentrification: How big a problem?" Radical Statistics 69.

Atkinson, R. (2000). "The hidden costs of gentrification: Displacement in central London." Journal of Housing and the Built Environment 15: 307-326.

Atkinson, R. (2002). Does Gentrification Help or Harm Urban Neighbourhoods? An Assessment of the Evidence-Base in the Context of the New Urban Agenda, ESRC Centre for Neighbourhood Research. CNR Paper 5.

Atkinson, R. and K. Kintrea (2000). "Owner-Occupation, Social Mix and Neighbourhood Impacts." Policy and Politics 28(1): 93-108.

Balchin, P. and M. Rhoden (2002). Housing Policy: An Introduction. London, Routledge.

Bauer, R. A. (1966). Social Indicators. London, The M.I.T. Press.

Beattie, J. (2008) 'Maggie Thatcher's council house scheme must go say MPs', *Daily Mirror*, 29 November 2008.

Beharrell, P. (1993), 'AIDS and the British Press', in J. Eldridge (ed.), *Getting the Message: News, Truth and Power* (London: Routledge).

Boyle, P. (1998). "Migration and housing tenure in South East England." Environment and Planning A 30: 855-866.

Bradshaw, N., J. Bradshaw, et al. (1996). "Area Variations in the Prevalence of Lone Parent Families in England and Wales: A Research Note." Regional Studies 30(8): 811-815.

Bravo, M. E. (2002). A Simulation to Evaluate the Ability of Nonmetric Multidimensional Scaling to Recover the Underlying Structure of Data under Conditions of Error, Method of Selection, and Percent of Missing Pairs. Austin, The University of Texas at Austin.

Bretz, M. and E. Wedel (1987). "The Purpose and Significance of the Census of Population, Employment, and Housing." Wirtschaft und Statistik(3): 195-206.

Brown, S. and J. G. Sessions (1997). "Housing, Privatization and the 'Right to Buy'." Applied Economics 29(5): 581-590.

Bryman, A. (2008). Social Research Methods. New York, Oxford University Press.

Bulmer, M. (1979). Censuses, Surveys and Privacy. London and Basingstoke, The Macmillan Press Ltd.

Burrows, R. (1997) Contemporary Patterns of Residential Mobility in Relation to Social Rented Housing in England (York, the University of York).

Burrows, R. (1999). "Residential Mobility and Residualisation in Social Housing in England." Journal of Social Policy 28(1): 27-52.

Cameron, A. (2009). "Spaces of social exclusion." Progress in Human Geography 33(3): 429-431.

Campanera, J. and P. Higgins (2011). "The Quality of Life in English Local Authority Areas." Local Government Studies 37(2): 145–169.

Campbell, A. and P. E. Converse (1972). The Human Meaning of Social Change. New York, Russell Sage Foundation.

Carley, M. (1981). Social Measurement and Social Indicators: Issues of Policy and Theory. London, George Allen & Unwin.

Carlisle, E. (1972). The Conceptual Structure of Social Indicators. Social Indicators and Social Policy. A. Shonfield and S. Shaw. London, Heinemann Educational Books.

Carroll, J. D. and J. J. Chang (1970). "Analysis of Individual Differences in Multidimensional Scaling via an N-way Generalization of "Eckart-Young" Decomposition." Psychometrika 35(3): 283-319.

Cazes, B. (1972). The Development of Social Indicators: A Survey. Social Indicators and Social Policy. A. Shonfield and S. Shaw. London, Heinemann Educational Books.

Central Statistical Office (1970), *Social Trends 1*, London, HMSO.

Chaney, P. and K. Sherwood (2000). "The Resale of Right to Buy Dwellings: A Case Study of Migration and Social Change in Rural England." Journal of Rural Studies 16: 79-94.

Chatfield, C. and A. J. Collins (1980). Introduction to Multivariate Analysis. London, Chapman and Hall.

Cobb, C. W. and C. Rixford (1998). Lessons Learned from the History of Social Indicators. San Francisco, Redefining Progress.

Cole, I. and R. Furbey (1994). The Eclipse of Council Housing. London, Routledge.

Department for Communities and Local Government (2012), 'English Housing Survey: Headline Report 2010-11', www.communities.gov.uk/ehs, London.

Department of Health, Education and Welfare (1969), Toward a Social Report, Washington, US Government Printing Office.

Duncan, O. D. (1969). Towards Social Reporting: Next Steps. New York, Russell Sage Foundation.

Dunn, R., R. Forrest, et al. (1987). "The Geography of Council House Sales in England 1979 - 85." Urban Studies 24: 47-59.

Dunteman, G. H. (1989). Principal Component Analysis. London, Sage Publications Ltd.

Edwards, J. (1975). "Social Indicators, Urban Deprivation and Positive Discrimination." Journal of Social Policy 4: 275-287.

Field, W. H. (1997). "Policy and the British Voter: Council Housing, Social Change, and Party Preference in the 1980s." Electoral Studies 16(2): 195-202.

Forrest, R. (1982). The Social Implications of Council House Sales. The Future of Council Housing. J. English. London, Croom Helm.

Forrest, R., D. Gordon, et al. (1996). "The Position of Former Council Homes in the Housing Market." Urban Studies 33(1): 125-136.

Forrest, R. and P. Leather (1998). "The Ageing of the Property Owning Democracy." Ageing and Society 18: 35-63.

Forrest, R. and A. Murie (1983). "Residualization and Council Housing: Aspects of the Changing Social Relations of Housing Tenure." Journal of Social Policy 12(4): 453-468.

Forrest, R. and A. Murie (1984a). Right to Buy? Issues of Need, Equity and Polarisation in the Sale of Council Houses, School for Advanced Urban Studies, University of Bristol. Working Paper 39.

Forrest, R. and A. Murie (1984b). Monitoring the Right to Buy 1980 - 1982, School for Advanced Urban Studies, University of Bristol. Working Paper No.40.

Forrest, R. and A. Murie (1988). Selling the Welfare State. London, Routledge.

Forrest, R. and A. Murie (1995). "From Privatization to Commodification: Tenure Conversion and New Zones of Transition in the City." International Journal of Urban and Regional Research 19(3): 407-422.

Forrest, R., A. Murie, et al. (1995). The Resale of Former Council Dwellings in England. London, HMSO.

Foulis, M. (1985) Council House Sales in Scotland 1979 – 1983 (Edinburgh: Scottish Office)

Gatreil, A. C. (1989). "On the spatial representation and accuracy of addressed-based data in the UK." Internanional Journal of Geographical Information Systems 3: 335-348.

Giddens, A. (2006). Sociology. Cambridge, Polity Press.

Gilbert, B. B. (1970). British Social Policy 1914-1939. London, Batsford.

Gilbert, N. (2008). Research, Theory and Method. Researching Social Life. N. Gilbert. London, SAGE Publications Ltd.

Gold, S. D. (1992). "One Approach to Tracking State and Local Health Spending." Health Affairs 11(4): 135-144.

Goodlad, R. and R. Atkinson (2004). "Sacred Cows, Rational Debates and the Politics of the Right to Buy after Devolution." Housing Studies 19(3): 447-463.

Hamnett, C. and P. Williams (1980) Social Change in London: a Study of Gentrification, *Urban Affairs Quarterly* 15: 469-487.

Haralambos, M. and M. Holborn (2004). Sociology: Themes and Perspectives. London, HarperCollins Publishers Limited.

Harshman, R. A. (1970). "Foundations of the PARAFAC procedure: Models and conditions for an "explanatory" multi-modal factor analysis." UCLA Working Papers in Phonetics 16: 1-84.

Hartwig, F. and B. E. Dearing (1979) *Exploratory Data Analysis*. Sage University Paper Series on Quantitative Research Methods, Vol. 16. Newbury Park, CA: Sage.

Haynes, R. and S. Gale (2000). "Deprivation and Poor Health in Rural Areas: Inequalities Hidden by Averages." Health & Place 6(4): 275-285.

Holmans, A. (1987). Housing Policy in Britain: a History. London, Croom Helm Ltd.

Horn, R. V. (1978). "Government Take-over of the Social Indicators Movement?" Social Indicators Research 5(1-4): 365-367.

House of Commons Debates 1970, vol. 803, col. 1340-1.

Insley, J. (2011). 'Council house 'right to buy' discount increases to £50, 000'. *The Guardian*, 22 December 2011.

James, S., B. Jordan, et al. (1991). "Poor People, Council Housing and the Right to Buy." Journal of Social Policy 20(1): 27-40.

Jolliffe, I. T. (1972). "Discarding Variables in a Principal Component Analysis. I: Artificial Data." Journal of the Royal Statistical Society. Series C (Applied Statistics) 21(2): 160-173.

Jones, C. and A. Murie (1998). "The Right to Buy: Impacts and Issues." Housing Finance 40: 16-23.

Jones, C. and A. Murie (1999). Reviewing the Right to Buy. University of Birmingham, Centre For Urban And Regional Studies.

Jones, C. and A. Murie (2006). The Right to Buy: Analysis & Evaluation of a Housing Policy. Oxford, Blackwell Publishing Ltd.

Judd, C. M., E. R. Smith, et al. (1991). Research Methods in Social Relations. New York, Ted Buchholz.

Kennett, P. and R. Forrest (2003). "From Planned Communities to Deregulated Spaces: Social and Tenurial Change in High Quality State Housing." Housing Studies 18(1): 47-63.

Kenyon, S. (2011). "Transport and social exclusion: access to higher education in the UK policy context." Journal of Transport Geography 19(4): 763-771.

Kiers, H. A. L. (1998). An overview of three-way analysis and some recent developments. Advances in Data Science and Classification. A. Rizzi, Vichi and B. H. H. Berlin, Springer: 592-602.

King, P. (2010). Housing Policy Transformed: the Right to Buy and the Desire to Own. Bristol, The Policy Press.

Kruskal, J. B. (1964). "Multidimensional Scaling by optimizing goodness of fit to a nonmetric hypothesis." Psychometrika 29: 1-27.

Kruskal, J. B. and M. Wish (1978). Multidimensional Scaling. London, Sage Publications Ltd.

Lacy, W. (1985). "Technology and Social Change in Rural Areas: A Festschrift for Eugene A. Wilkening." Social Forces 64(1): 240-241.

Land, K. C. (1975). "Theories, Models, and Indicators of Social Change." International Social Science Journal 27: 7-37.

Lee, P. and A. Murie (1999). "Spatial and Social Divisions within British Cities: Beyond Residualisation." Housing Studies 14(5): 625-640.

Leydesdorff, L. and L. Vaughan (2006). "Co-occurrence Matrices and their Applications in Information Science: Extending ACA to the Web Environment." Journal of the American Society for Information Science and Technology 57(12): 1616-1628.

Liell, P. (1981). Council Houses and the Housing Act 1980. London, Butterworth & Co (Publishers) Ltd.

Lingoes, J. C. (1971). "Some boundary conditions for a monotone analysis of symmetric matrices." Psychometrika 36: 195-203.

Lowe, S., Spencer, S. and Keenan, P. (1998) Housing Abandonment in Britain: Studies in the Causes and Effects of Low Demand Housing (Centre for Housing Policy, the University of York).

Lund, B. (2006). Understanding Housing Policy. Bristol, The Policy Press.

Lyons, M. (1996). "Gentrification, Socioeconomic Change, and the Geography of Displacement." Journal of Urban Affairs 18(1): 39-62.

MacCallum, R. C. (1974). "Relationships between Factor Analysis and Multidimensional Scaling." Psychological Bulletin 81: 505-516.

Macionis, J. J. and K. Plummer (1998). Sociology: A Global Introduction. London, Prentice Hall Europe.

Malpass, P. (1983) Residualisation and the Restructuring of Housing Tenure, *Housing Review*, March-April, 44-5.

Malpass, P. (2006). "The Right to Buy: Analysis and Evaluation of a Housing Policy." Housing Studies 21(5): 795-797.

Malpass, P. and A. Murie (1982). Housing Policy and Practice. London, Macmillan.

Malpass, P. and A. Murie (1994). Housing Policy and Practice. London, Macmillan.

Marlier, E. and A. B. Atkinson (2010). "Indicators of Poverty and Social Exclusion in a Global Context." Journal of Policy Analysis and Management 29(2): 285-304.

Mar Molinero, C. (2002). Pictures Worth One Thousand Equations. Departamento de Matematicas e Investigacion Operativa, Universitat Politecnica de Catalunya. PhD: 268.

Marshall, G., H. Newby, et al. (1988). Social Class in Modern Britain. London, Hutchinson.

May, T. (1997). Social Research: Issues, Methods and Process. Buckingham, Open University Press.

McCrone, P., G. Thornicroft, et al. (2006). "The development of a Local Index of Need (LIN) and its use to explain variations in social services expenditure on mental health care in England." Health and Social Care in the Community 14(3): 254–263.

McNabb, R. and V. Wass (1999). "Owner-occupation at the Margin?: Tenure Choice among Public Sector Tenants since 1980." The Manchester School 67(6): 661-683.

Minford, P., Peel, M. and Ashton, P. (1987) The Housing Morass, London, Institute of Economic Affairs.

Moffatt, S. and N. Glasgow (2009). "How Useful is the Concept of Social Exclusion When Applied to Rural Older People in the United Kingdom and the United States?" Regional Studies 43(10): 1291-1303.

Munro, M. (2007). "Evaluating Policy Towards Increasing Owner Occupation." Housing Studies 22(2): 243-260.

Munro, M. and A. Littlewood (1998). "What Future for the Right to Buy?" Environment and Planning A 30: 647-664.

Murie, A. (1975). The Sale of Council Houses: A Study in Social Policy. Birmingham, Centre for Urban and Regional Studies, University of Birmingham. Occasional Paper No. 35.

Murie, A. (1991). Tenure Conversion and Social Change: New Elements in British Cities. Urban Housing for the Better-Off: Gentrification in Europe. J. Van Weesep and S. Musterd. Utrecht, Stedelijke Netwerken.

Murie, A. (2009). "The Modernisation of Housing in England." Tijdschrift voor Economische en Sociale Geografie 100(4): 535-548.

Musterd, S., Murie, A. and Kesteloot, C. (2006) Neighbourhoods of Poverty: Urban Social Exclusion and Integration in Europe. London, Palgrave Macmillan.

National Commission on Technology, Automation, and Economic Progress (1966), Technology and the American Economy: Report of the National Commission on Technology, Automation, and Economic Progress Vol. 1, Washington, US Government Printing Office.

Newton, J. (1994). All In One Place: The British Housing Story 1973-1993. London, Catholic Housing Aid Society.

OECD. (1976). Measuring Social Well-Being: A Progress Report on the Development of Social Indicators. Paris, OECD.

OECD. (2011). Society at a Glance 2011: OECD Social Indicators. OECD publishing.

Office for National Statistics (2005), *The National Statistics Socio-economic Classification: User Manual*. Basingstoke, Palgrave Macmillan.

Pawson, H. and R. Forrest (1998). "The Underlying Impact of the Right to Buy: Changing the Face of Home-Ownership?" Housing Finance(40): 24-28.

Pawson, H. and K. Kintrea (2002). "Part of the Problem or Part of the Solution? Social Housing Allocation Policies and Social Exclusion in Britain." Journal of Social Policy 31(4): 643–667.

Pawson, H. and C. Watkins (1998a). "Examining Spatial Patterns in the Pace of Housing Commodification." Tijdschrift voor Economische en Sociale Geografie 89(4): 416-430.

Pawson, H. and C. Watkins (1998b). "The Position and Role of Former Public Sector Homes in the Owner-occupied Sector: New Evidence from the Scottish Housing Market." Urban Studies 35(8): 1291-1309.

Peach, C. and M. Byron (1994). "Council House Sales, Residualisation and Afro Caribbean Tenants." Journal of Social Policy 23(3): 363-383.

Phillimore, J. and L. Goodson (2006). "Problem or opportunity? Asylum seekers, refugees, employment and social exclusion in deprived urban areas." Urban Studies 43(10): 1715-1736.

Pigou, A. C. (1924). The Economics of Welfare. London, Macmillan.

Preston, J. and F. Raje (2007). "Accessibility, mobility and transport-related social exclusion." Journal of Transport Geography 15(3): 151-160.

Procter, M. (2008). Measuring Attitudes. Researching Social Life. N. Gilbert. London, SAGE Publications Ltd.

Ramsay, J. O. (1982). "Some statistical approaches to Multidimensional Scaling data." Journal of the Royal Statistical Society. Series A 145: 285-312.

Rees, P., D. J. Martin, et al. (2002). The Census Data System. Chichester, John Wiley & Sons.

Reid, I. (1989). Social Class Differences in Britain: Life-Chances and Life-Styles. Glasgow, Fontana Press.

Rose, D. and K. O'Reilly (1998). The ESRC Review of Government Social Classifications. London and Swindon, ONS and ESRC.

Rose, D., D. J. Pevalin, et al. (2005). The National Statistics Socio-economic Classification: Origins, Development and Use. Basingstoke, Palgrave Macmillan.

Rosen, S. (1979). "Housing Decisions and the US Income Tax: an Econometric Analysis." Journal of Public Economics 11: 1-23.

Saunders, P. (1990). Social Class and Stratification. London, Routledge.

Scase, R. (1992). Class. Buckingham, Open University Press.

Schiffman, S. S., M. L. Reynolds, et al. (1981). Introduction to Multidimensional Scaling: Theory, Methods and Applications. London, Academic Press.

Sharpe, A. (1999). A Survey of Indicators of Economic and Social Well-being. Ottawa, Centre for the Study of Living Standards.

Sheldon, E. B. and W. E. Moore (1968). Indicators of Social Change: Concepts and Measurements. New York, Russell Sage Foundation.

Sinai, T. and J. Waldfogel (2005). "Do Low-income Housing Subsidies Increase the Occupied Housing Stock?" Journal of Public Economics 89(11-12): 2137-2164.

Slattery, M. (1986). Official Statistics. London, Tavistock Publications.

Sloggett, A. and H. Joshi (1998). "Indicators of Deprivation in People and Places: Longitudinal Perspectives." Environment and Planning A 30: 1055-1076.

Smith, H. L. (1986). War and Social Change: British Society in the Second World War. Manchester, Manchester University Press.

Smith, N. and P. Williams (1986). Gentrification of the City. London, Unwin Hyman.

Soady, A. (2012) ''Right to buy' discount could be increased for tenants.' *BBC News*, 11 March 2012.

Stephens, M., J. Ford, et al. (2008). Housing Market Recessions and Sustainable Home-ownership, Centre for Housing Policy and Department of Economics & Related Studies, University of York.

Stratton, A. (2010) ''Right-to-buy' council house policy reviewed to appease Lib Dems', *The Guardian*, 16 September 2010.

Straussman, J. D. (1978). The Limits of Technocratic Politics. New Brunswick, Transaction, Inc.

Szreter, S. (1984). "The Genesis of the Registrar General's Social Classification of Occupations." British Journal of Sociology 35(4): 522-546.

Theodorson, G. A. and A. G. Theodorson (1969). A Modern Dictionary of Sociology. New York, Thomas Y. Crowell Company.

Thom, R. (1989). Structural stability and morphogenesis. Redwood City, Calif: Addison Wesley.

Thunhurst, C. (1985). "The Analysis of Small Area Statistics and Planning for Health." The Statistician 34(1): 93-106.

Tucker, L. R. (1966). "Some mathematical notes on three-mode factor analysis." Psychometrika 31: 279-311.

Watkins C. (2008). "Microeconomic Perspectives on the Structure and Operation of Local Housing Markets." Housing Studies 23(2): 163–177.

Watt, P. (2005). "Housing Histories and Fragmented Middle-class Careers: The Case of Marginal Professionals in London Council Housing." Housing Studies 20(3): 359-381.

Whitham, D. (1982). The First Sixty Years of Council Housing. The Future of Council Housing. J. English. London, Croom Helm Ltd: 9-33.

Wilcox, S. (1999). Housing Finance Review, 1999 / 2000. York, Joseph Rowntree Foundation.

Wilcox, S. (2008). UK Housing Review, 2007 / 2008. York, Chartered Institute of Housing / Council for Mortgage Lenders.

Wilcox, S. and H. Pawson (2011). UK Housing Review, 2011 / 2012. York, Chartered Institute of Housing.

Williams, N. J. and F. E. Twine (1992). "Increasing Access or Widening Choice: The Role of Resold Public-Sector Dwellings in the Housing Market." Environment and Planning A 24(11): 1585-1598.

Williams, N. J. and F. E. Twine (1993). "Moving on and Moving up: The Experience of Households Who Resell Public Sector Dwellings." Housing Studies 8(1): 60-69.

Wilson, W. (1999) The Right to Buy. Research Paper 99/36 (London: House of Commons).

Wintour, P. (2012) 'Council tenants offered £75,000 discount in right-to-buy scheme', *The Guardian*, 12 March 2012.

Wong, C. (2002). "Developing Indicators to Inform Local Economic Development in England." Urban Studies 39(10): 1833–1863.

Online resources:
British Household Panel Survey (BHPS) - http://www.iser.essex.ac.uk/bhps
Canterbury City Council Online - http://www.canterbury.gov.uk
Casweb - http://casweb.mimas.ac.uk
Census.ac.uk - https://www.census.ac.uk/
Census Dissemination Unit - http://cdu.mimas.ac.uk/
Digimap - http://edina.ac.uk/digimap/
Office for National Statistics - http://www.ons.gov.uk
The National Archives - http://www.nationalarchives.gov.uk
UKBORDERS - http://edina.ac.uk/ukborders
Visit Canterbury - http://www.canterbury.co.uk