

John Stillwell
Paul Norman
Claudia Thomas
Paula Surridge
Editors

Spatial and Social Disparities

Understanding Population Trends
and Processes – Volume 2

 Springer

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Understanding Population Trends and Processes

Volume 2

Series Editor

J. Stillwell

In western Europe and other developed parts of the world, there are some very significant demographic processes taking place at the individual, household, community and national scales including the ageing of the population, the delay in childbearing, the rise in childlessness, the increase in divorce, the fall in marriage rates, the increase in cohabitation, the increase in mixed marriages, the change in household structures, the rise in step-parenting, and the appearance of new streams of migration taking place both within and between countries. The relationships between demographic change, international migration, labour and housing market dynamics, care provision and intergenerational attitudes are complex to understand and yet it is vital to quantify the trends and to understand the processes. Similarly, it is critical to appreciate what the policy consequences are for the trends and processes that have become apparent. This series has its roots in understanding and analyzing these trends and processes.

This series will be of interest to a wide range of individuals with interests in demographic and social change, including demographers, population geographers, sociologists, economists, political scientists, epidemiologists and health researchers and well as practitioners and commentators across the social sciences.

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Understanding Population Trends and Processes – Volume 2

Edited by

John Stillwell

University of Leeds, UK

Paul Norman

University of Leeds, UK

Claudia Thomas

University College London, UK

and

Paula Surridge

University of Bristol, UK

 Springer

Editors

Professor John Stillwell
University of Leeds
School of Geography
Faculty of Environment
Woodhouse Lane
Leeds
United Kingdom LS2 9JT
j.c.h.stillwell@leeds.ac.uk

Dr. Paul Norman
University of Leeds
School of Geography
Faculty of Environment
Woodhouse Lane
Leeds
United Kingdom LS2 9JT
p.d.norman@leeds.ac.uk

Dr. Claudia Thomas
Centre for Paediatric Epidemiology
and Biostatistics
UCL Institute of Child Health
30 Guilford Street
London
United Kingdom WC1N 1EH
clthomas@sgul.ac.uk

Dr. Paula Surridge
Department of Sociology
12 Woodland Road
University of Bristol
Bristol
United Kingdom BS8 1UQ
p.surridge@bristol.ac.uk

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Foreword

Understanding Population Trends and Processes is a groundbreaking initiative funded by the Economic and Social Research Council. It has built capacity through a range of projects undertaken by early and mid career academics and has creatively matched experienced academics with user fellows to explore issues that are of critical importance to the evolution of our society.

This volume on *Spatial and Social Disparities* shows the full richness of the contribution that this innovative programme has made to our understanding of questions that go to the heart of how communities across the UK function. It also provides a clever introduction to the use of a wide range of datasets that are available as a resource to researchers in many disciplines and for inter-disciplinary analysis.

As Chair of the programme's Advisory Committee, I have seen the various contributors to this book shape their ideas and bring them to realisation. It has been a wonderfully fulfilling experience. All of us who have been privileged to be associated with the programme owe a great debt to John Stillwell who has directed the programme with great distinction over the last four years and who has edited this book with Paul Norman, Claudia Thomas and Paula Surridge, three early career researchers whose contribution to the programme has been exemplary. I hope that in studying this book you too will benefit from the many insights it offers and be inspired yourself to contribute further to our understanding of the topics covered.

Library, House of Commons
June 2009

John Pullinger

Preface

Inequality continues to be one of the major problems of our time, whether it be in the form of spatial disparities between locations across the surface of the earth or socio-economic differences between the individuals who populate our planet. Many organizations seek to reduce the harmful affects of inequality whilst practitioners and policy makers strive to remove the obstacles to a fairer world in the various contexts in which they operate.

This book brings together a suite of population studies examining disparities that exist both between different places and different groups of individuals distinguished by having certain demographic characteristics in common, such as their age, gender or ethnicity, or particular socio-economic characteristics such as their position in the labour force, education, religion, health and well-being. Collectively, the studies provide a plethora of new insights into spatial and social disparities and the trends which have emerged over time that provide an enhanced understanding of socio-demographic behaviour and important evidence for those seeking to ensure that people have equal access to goods and services.

The volume is the second in a series on “Understanding Population Trends and Processes”, all of which are based on research contributions to our knowledge of different aspects of population structure and distribution, all of which involve the analysis of secondary data from censuses, surveys or administrative records, and all of which report results for Britain (and elsewhere in Europe in some cases).

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John Stillwell
Paul Norman
Claudia Thomas
Paula Surridge

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Many thanks also to Lisa Youngman, the UPTAP administrator since July 2008, for proofreading the final manuscript, and to David Appleyard from the Graphics Unit in the School of Geography at the University of Leeds for redrawing the original graphs and maps supplied by contributors so that they are consistent with the house style.

Contents

1	Spatial and Social Disparities	1
	John Stillwell, Paul Norman, Claudia Thomas and Paula Surridge	
2	Demographic and Deprivation Change in the UK	17
	Paul Norman	
3	England's Changing Social Geology	37
	Daniel Vickers	
4	Geographical Modelling of Happiness and Well-Being	53
	Dimitris Ballas	
5	Geographic Analysis of Cultural Consumption	67
	Orian Brook, Paul Boyle and Robin Flowerdew	
6	Struggling onto the Ladder, Climbing the Rungs: Employment and Class Position of Minority Ethnic Groups in Britain	83
	Yaojun Li and Anthony Heath	
7	Occupational Segregation and Concentration: An Analysis by Sex, Employment Status and Ethnic Group in England and Wales	99
	Daniel Guinea-Martin, Louisa Blackwell and Jane Elliott	
8	Effects of Employment on Cardiovascular Risk	113
	Claudia Thomas	
9	Employment and Health Trajectories	129
	Gopalakrishnan Netuveli	
10	The Circumstances and Attitudes of Different Muslim Groups in England and Europe	143
	Saffron Karlsen and James Y. Nazroo	
11	Investigating Inequalities in Educational Attainment	163
	Michelle Jackson	

12	The Making of Social Values: Education and Social Class	179
	Paula Surridge	
13	Re-evaluating the Links Between Social Trust, Institutional Trust and Civic Association	199
	Nick Allum, Roger Patulny, Sanna Read and Patrick Sturgis	
14	Sacralisation by Stealth? The Demography of De-secularisation	217
	Eric Kaufmann	
Index	233

Contributors

Nick Allum Department of Sociology, University of Essex, Colchester CO4 3SQ, UK, nallum@essex.ac.uk

Dimitris Ballas Department of Geography, University of Sheffield, Sheffield S10 2TN, UK, D.Ballas@sheffield.ac.uk

Louisa Blackwell Office for National Statistics, London, UK, Louisa.Blackwell@ons.gov.uk

Paul Boyle School of Geography and Geosciences, University of St Andrews, St Andrews, Scotland KY16 9AL, UK; Longitudinal Studies Centre – Scotland, University of St Andrews, St Andrews, Scotland KY16 9AL, UK, p.boyle@st-andrews.ac.uk

Orian Brook School of Geography and Geosciences, University of St Andrews, St Andrews, Scotland KY16 9AL, UK, orian.brook@st-andrews.ac.uk

Jane Elliott Centre for Longitudinal Studies, Institute of Education, London WC1H 0AL, UK, j.elliott@ioe.ac.uk

Robin Flowerdew School of Geography and Geosciences, University of St Andrews, St Andrews, Scotland KY16 9AL, UK, r.flowerdew@st-andrews.ac.uk

Daniel Guinea-Martin Department of Sociology I, Universidad de Educación a Distancia, Madrid, Spain, daniel.guinea@ieasm.csic.es

Anthony Heath Department of Sociology, Oxford University, Oxford OX1 3UQ, UK, anthony.heath@sociology.ox.ac.uk

Michelle Jackson Centre for Research Methods in the Social Sciences and Nuffield College, University of Oxford, Oxford, UK, Michelle.Jackson@nuffield.ox.ac.uk

Eric Kaufmann Birkbeck College, University of London, London, UK; Kennedy School of Government, Harvard University, Cambridge, MA 02138, USA, e.kaufmann@bkk.ac.uk

Saffron Karlsen Department of Epidemiology and Public health, University College London, London, UK, s.karlsen@ucl.ac.uk

Yaojun Li Institute for Social Change, Manchester University, Manchester M13 9PL, UK, yaojun.li@manchester.ac.uk

James Y. Nazroo School of Social Sciences, Arthur Lewis Building, University of Manchester, Manchester, UK, james.nazroo@manchester.ac.uk

Gopalakrishnan Netuveli Department of Primary Care and Social Medicine, Imperial College London, International Centre for Life Course Studies in Society and Health, London, UK, g.netuveli@imperial.ac.uk

Paul Norman School of Geography, University of Leeds, Leeds LS2 9JT, UK, p.d.norman@leeds.ac.uk

Roger Patulny Social Policy Research Centre, University of New South Wales, Sydney 2052, Australia, r.patulny@unsw.edu.au

Sanna Read Department of Epidemiology and Population Health, London School of Hygiene and Tropical Medicine, London WC1B 3DP, UK, sanna.read@lshtm.ac.uk

John Stillwell School of Geography, University of Leeds, Leeds LS2 9JT, UK, j.c.h.stillwell@leeds.ac.uk

Patrick Sturgis School of Social Sciences, University of Southampton, Southampton SO17 1BJ, UK

Paula Surridge Department of Sociology, University of Bristol, Bristol BS8 1UQ, UK, p.surridge@bristol.ac.uk

Claudia Thomas Centre for Paediatric Epidemiology and Biostatistics, University College London Institute of Child Health, London WC1N 1EH, UK, clthomas@sgul.ac.uk

Daniel Vickers Department of Geography, University of Sheffield, Sheffield S10 2TN, UK, d.vickers@sheffield.ac.uk

Chapter 1

Spatial and Social Disparities

John Stillwell, Paul Norman, Claudia Thomas and Paula SurrIDGE

Introduction

The concept of inequality is one that we use frequently to refer to the diversity of the individual, place or object. But, following Amartya Sen (1992), the central question in any analysis or assessment is “inequality of what?”. The social sciences “system of interest” is more closely circumscribed although the range of relevant subject matter is still enormous. It encompasses the traditional fields of regional development and regional science in which, like human geography, differences across physical space are of paramount importance, as well as fields such as health studies and social policy where the focus on difference is less spatial and more oriented towards the age, gender and physical and mental condition of aggregate populations as well as towards difference in material advantage and social background. *Spatial inequality* is commonly identified with a measure of the unequal distribution of income, wealth, power and resources between peoples in different locations whereas *social inequality* refers to the ways in which categories of persons defined according to characteristics such as age, gender, class and ethnicity are differentially positioned with regard to access to a variety of social goods and services, such as the labour market and other sources of income, the housing market, education and healthcare systems, and forms of political representation and participation. Forms of social inequality are shaped by a range of structural factors, such as geographical location or citizenship status, and are often underpinned by cultural discourses and identities defining, for example, whether the poor are worthy or unworthy.

The word *disparity* that we use here is synonymous with the word inequality, both conveying the essence of difference as measured through some nominal, ordinal, interval or ratio scale. In the case of health, for example, disparities or inequalities refer to the population-specific differences in the presence of disease,

J. Stillwell (✉)
School of Geography, University of Leeds, Leeds LS2 9JT, UK
e-mail: j.c.h.stillwell@leeds.ac.uk

health outcomes, life expectancy or access to health care. In contrast, the word *inequity* means something slightly different, conveying the need for some value judgement in the health context, i.e. geographical inequalities may exist in access to health services but these only become inequities if our subjective view about justice is that everyone should have equal rights to health care wherever they are located and this happens not to be the case in reality.

Many commentators across the social sciences have written about the processes of globalisation, technological change and post-Fordist economic restructuring that have been associated with occupational transformation and growth in international, inter-regional, inter-urban and intra-urban disparity and, in some instances, economic polarisation. Considerable attention has been paid to the wealth or income gaps that exist between different sections of the population or different parts of the country. One of the most convincing analyses in recent times by Wilkinson and Pickett (2009) draws together evidence from a range of sources to provide a convincing demonstration of the significant positive correlation in relatively rich countries between income inequalities and indices of health and social problems based on variables including the level of trust, mental illness, life expectancy, obesity, educational performance, teenage births, homicides, imprisonment rates and social mobility. Across whole populations, the cumulative index, together with its component variables, is much higher in societies which are more unequal in terms of income or wealth. Moreover, death rates in rich countries, for example, are shown to be closely related to differences in income with more affluent areas having significantly lower mortality rates but, paradoxically, life expectancy is unrelated to differences in average income between rich countries (Wilkinson and Pickett, 2009, p. 12). It also seems clear that disparities are increasing. In the UK, research comparing data from the 1991 and 2001 Censuses (Dorling and Thomas, 2004) has shown how the poor are getting poorer while the north-south divide is getting wider.

Population geographers have studied the processes of demographic restructuring and the influences determining the growth of the population by natural increase and its redistribution through international and internal migration, particularly the concentration and expansion of ethnic minorities in cities and regions in the USA (Frey, 1996; Ellis and Wright, 1998) and in the UK (Peach, 1996; Peach and Rossiter, 1996; Champion, 1996; Rees and Phillips, 1996; Rees and Butt, 2004; Phillips, 2006; Stillwell and Phillips, 2006; Johnston et al., 2002, 2007; Finney and Simpson, 2008). The ethnic dimension has been a particular focus of attention and researchers in several social science disciplines have been concerned with systematic differences in the outcomes that men and women from different ethnic groups achieve in the labour market. Gender and ethnic gaps are observed in the percentages of men and women in different ethnic groups in the labour force, the types of occupations they choose, and their relative incomes or hourly wages.

Tackling health inequalities is an international issue and was a key health theme for the UK Presidency of the European Union in 2005 (Mackenbach, 2006). It is well-known that almost all important health problems, and the major causes of premature death such as cardiovascular disease and cancer, are more common

among people with lower levels of education, income and occupational status. The health gap in life expectancy is typically 5 years or more between those at the top and bottom of the social scale and narrowing this health gap has become imperative in Britain with the Department of Health (2003) setting targets to reduce inequalities in health outcomes.

The selected examples that we have mentioned above testify to the importance of identifying and, where possible, quantifying the spatial and social disparities that exist, and then attempting to understand the processes that underpin the patterns identified. This is the aim of the Understanding Population Trends and Processes (UPTAP) programme and is the focus of the chapters that appear later in this book which cover a wide range of different themes including: area classification; population and socioeconomic change; happiness and well-being; use of cultural leisure facilities; ethnic employment and occupational segregation; educational attainment; work and health; the social position of religious groups; Muslim disadvantage; education and social values; trust and civic participation; and religiosity, fertility and immigration.

There is a clear geographical focus on the United Kingdom or parts thereof in each of the chapters and many of the themes mentioned above have a temporal dimension and endeavour to capture some of the important changes taking place in recent years. The structure and contents of the book are outlined later in this chapter together with a summary of the data sets that have been used since the UPTAP initiative was designed to support the analysis of secondary data rather than the collection and analysis of primary data. Before this, however, we present a very short introductory section on spatial and social disparities in the UK by way of context for the chapters that follow.

Disparities in the UK

In this volume, the characteristics of individuals or groups that are used in the analyses include: the socio-demographic attributes of age, gender and ethnicity; the socio-economic characteristics of employment status, occupation and consumption (of entertainment); and a range of social variables that include social class, education, health and well-being, happiness, religion and religiosity, identity, attitudes, social values, political values, civic participation and trust.

Since they tend to be geographic in nature, census and administrative data usually enable more spatial disaggregation and analysis of sub-national spatial disparities than do survey data sets where sample size constraints prevent detailed spatial analysis. We use data from the 2001 Census in Fig. 1.1, by way of introduction, to illustrate district level variations in four selected dimensions, each of which appears in several of the chapters later in this volume: health, employment, ethnicity and educational qualifications. Health is measured here using standardised limiting long-term illness ratios. The South East is shown in the health map in Fig. 1.1 to have better health in comparison with the traditional industrial areas which suffer the effects of the legacy of coal mining on health.

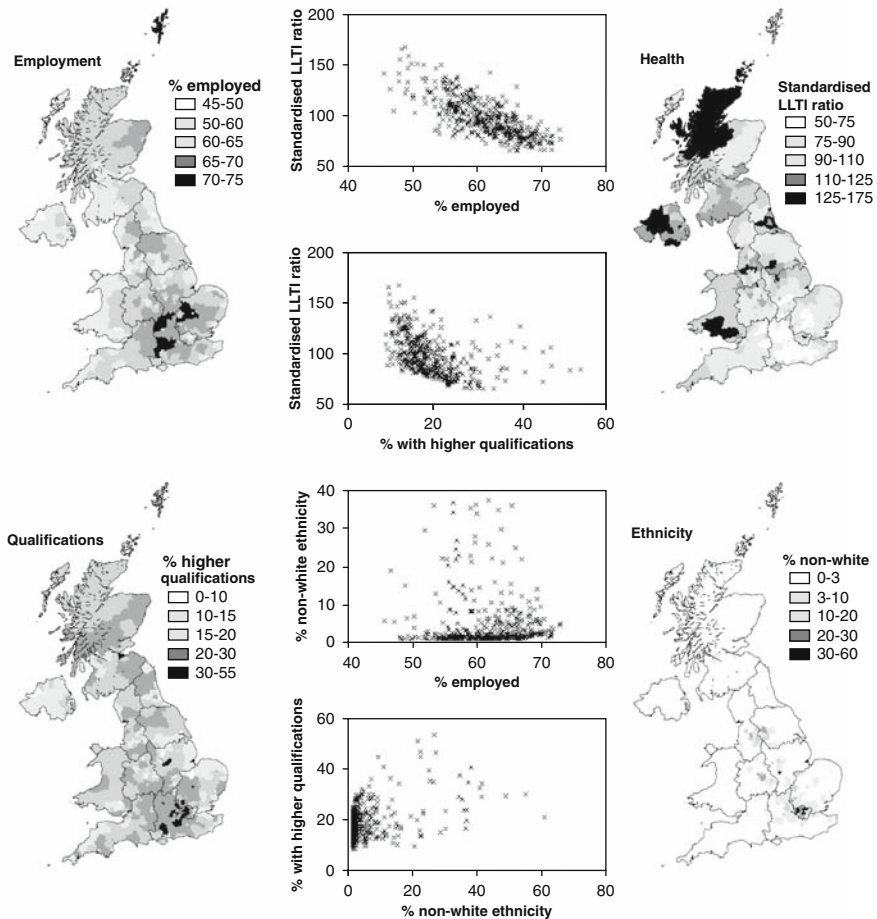


Fig. 1.1 Local authority district distributions of health, employment, ethnicity and qualifications and their relationships, 2001 (Source: UK 2001 Census)

Some rural areas in Scotland and Northern Ireland also have relatively poor health. The geography of employment, on the other hand, is almost a mirror image of the health map with the highest activity rates in a crescent running from the south-west of London clockwise to the north of London. The relationship between the health indicator and the percentage employed is a strong negative significant correlation ($r = -0.75$) indicating that higher employment rates are related to better health.

The ethnicity map in Fig. 1.1 shows that the distribution of non-white ethnic groups is strongly concentrated in London and the other main urban areas which tended to be the original destinations of immigrants although there is recent evidence of movement away from these locations (Stillwell et al., 2008; Finney and Simpson, 2009). The scatterplot of the relationship between non-white ethnicity

and employment rates is dominated by the large number of local authorities which have very low proportions of non-white persons. In the locations with over 5% non-white persons, there is a negative correlation (-0.38) suggesting that activity rates for minorities might be relatively low.

The relationship between ethnicity and the percentage existing for higher educational qualifications is also weak (-0.36) and the spatial distribution of those with higher qualifications (degree and above) as mapped in Fig. 1.1 tends to show lower rates in the most urban and far rural locations with near rural (e.g. commuter belt) locations having an apparently better educated population. There is, however, a stronger negative correlation between higher qualifications and health (-0.45), indicating that healthier populations are those with higher education qualifications.

Whilst the maps and scatterplots in Fig. 1.1 are useful to indicate spatial distributions, we can only draw tentative conclusions about the relationships between variables, otherwise we risk the “ecological fallacy”. Exploring social disparities for the population sample as a whole such as whether employment participation is influenced by ethnicity, qualifications and health can best be determined using individual level data and techniques such as logistic regression.

Thus, the Labour Force Survey (LFS) in 2001 has been used to provide data for modelling the odds of employment controlling for these factors. For a study population of those aged 16–59, Table 1.1 shows that non-white persons are less likely (odds ratio = 0.46) to be employed than the white ethnic group but those persons who have higher qualifications are over 3.5 times more likely than those without higher qualifications to be employed. Having a limiting illness is a constraining factor with those reporting illness less likely (odds ratio = 0.24) than the healthy to be in employment. All relationships here are significant. Although social disparities can be determined, a drawback is that despite a large sample size (nearly 90,000 individuals in the model reported here), sources like the LFS do not necessarily enable sub-national analyses to be undertaken with statistical confidence.

Table 1.1 Modelled odds of employment

	Odds ratio	Significance
White	1.00	
Non-white	0.46 (0.44–0.49)	0.0000
No higher qualifications	1.00	
Higher qualifications	3.54 (3.34–3.76)	0.0000
No limiting illness	1.00	
Limiting illness	0.24 (0.23–0.25)	0.0000
Constant	2.72	0.0000

Note: 95% confidence intervals in brackets
 Source: Labour Force Survey (2001)

Structure and Content of the Book

Following this chapter, there are a further 13 chapters reporting the results of different UPTAP projects. The chapter order reflects a progression through various dimensions of spatial and social disparity introduced in the previous section. Chapters 2, 3, 4, and 5 consider spatial variations across the UK and how these have changed between 1991 and 2001. Chapters 6, 7, 8, and 9 examine some social disparities through analyses of the relationships between ethnicity, employment and health, whereas Chapters 10, 11, 12, 13, and 14 introduce analyses involving further dimensions of social disparity such as religion, education, social values, trust and civic participation.

Spatial Disparities: Demographic Change, Deprivation, Social Patterns, Happiness and Cultural Consumption

Virtually all research on spatio-temporal change is fraught with problems for the researcher. These challenges include changes in boundary definitions of geographical units, alterations in the definitions of key variables, variations in the questions that are asked in censuses and the ways in which the results are categorised. *Paul Norman* documents in Chapter 2 the challenges that have to be confronted in quantifying and mapping changes in population size, age structure and social characteristics occurring in small areas across the UK between the 1991 and 2001 Censuses and in calculating deprivation scores which are also comparable over time. The results of estimating harmonised data indicate that whilst the most urban and more deprived areas of the UK were maintained because of natural change gain, a large number of older people migrated out of these more urban and more deprived areas to less urban and less deprived locations with the result that the less deprived and more rural areas have been ageing most. In addition to comparing population dynamics, Norman also uses the Townsend index as a measure of ward level deprivation in a manner that is comparable between 1991 and 2001. The analysis suggests that deprivation eased during the 1990s, largely because unemployment was substantially lower in 2001 but also because household overcrowding was lower, and there were falls in the lack of access to a car and non-home ownership.

In Chapter 3, *Dan Vickers* reports on the changing nature of social patterns in England, or what he calls “social geology”, by comparing area classifications derived for 1991 and 2001 using census variables. Cluster analysis methods are employed to classify 165,665 small areas (output areas) used for reporting the results of the 2001 Census and to show that, for the majority of areas, both their position in the social hierarchy and their geodemographic class remain unchanged over the 1990s. However, changes are apparent and patterns are discernable for certain areas that suggest a polarisation of society, with increases in the wealthiest and poorest groups, and with a decline in the more mixed areas of the UK.

In recent years, there have been numerous attempts to define and measure happiness in various contexts and pertaining to a wide range of disciplines, ranging from neuroscience and psychology to philosophy, economics and social policy. Richard Layard, the economist, for example, points out that like health, happiness rises in the early stages of economic growth but then levels off in rich countries as they get richer (Layard, 2005), i.e. there comes a point where additional income cannot further improve health, happiness and wellbeing. Despite there being a considerable number of happiness studies from various disciplinary perspectives, there is a relative paucity of geographical work in this area. In Chapter 4, *Dimitris Ballas* presents some results of geographical models that are capable of providing information on the different degrees of happiness and well-being attained by people in different regions and localities, under alternative scenarios and happiness definitions. The model outputs are the product of analysis of secondary socioeconomic data, such as household panel surveys and censuses of population. Ballas initially uses a multi-level model to establish the importance of individual-level variables compared with household-level or district-level variables in explaining happiness and well-being in the UK. However, one of the problems with analysis at the micro level is the lack of available data on individuals. Ballas demonstrates how spatial microsimulation modelling techniques can be used to generate data at the individual level before aggregating these data to show spatio-temporal variations in happiness (the percentage of the population who are happy more than usual) in Wales and Scotland.

Happiness is, of course, a multi-faceted concept, one dimension of which is the satisfaction gained from the opportunity to consume cultural goods and services. Those with higher incomes have the opportunity to take advantage of the entertainment facilities provided by the arts industry, some of which have a relatively expensive admission fee. In Chapter 5, *Orian Brook*, *Paul Boyle* and *Robin Flowerdew* make use of a large database on ticket sales relating to the performing arts in London to investigate the propensities at which different sociodemographic groups use cultural provision and to develop an ecological model of attendance which includes derived variables relating to the geographical accessibility of purchasing addresses and commuting patterns. They find that the level of higher education qualifications predicts attendance better than other variables, with income and socioeconomic factors relatively insignificant but there is substantial variation in the importance of higher education by venue. Geographical accessibility and commuting patterns are found to be strongly predictive of attendance. The model results were also compared with deprivation indices and geodemographic classifications, demonstrating that the model provided a much better prediction of attendance levels.

Social Disparities: Ethnicity, Gender, Employment and Health

Whilst the previous chapters have all considered spatial disparities, and comparisons between 1991 and 2001 have been made in certain cases, the focus of Chapter

6 is on the analysis of a much longer time series of data for one particular sub-section of the population, ethnic minorities. *Yaojun Li* and *Anthony Heath* address issues of discrimination in the labour market by using pooled data from the General Household Survey (GHS) and the Labour Force Survey (LFS) to conduct a systematic study from 1972 to 2005 to see how far equal opportunity has been achieved in British society. They consider the labour market position of ethnic minorities in general, but look in particular at access to the professional and managerial salariat position by first and second generation members of ethnic populations and by the two gender groups over the course of the last three decades. Their evidence shows that men and women in both first and second generation minority ethnic groups were disadvantaged in comparison with their white British peers in terms of getting employment throughout the time period, and that, for those who did manage to get a job, the first generation men and both generations of women from the minority groups lagged behind whites in gaining access to the salariat.

Occupational segregation by ethnicity in England and Wales during the twentieth century was consistently high, but declining in the 1980s. This dimension of social segregation at a national level is developed further in Chapter 7 where *Daniel Guinea-Martin*, *Louisa Blackwell* and *Jane Elliott* show a steeper fall during the 1990s. Longitudinal analysis of patterns of population change and economic activity suggests that the decline in segregation across all ethnic groups over the 1990s was fuelled by structural change in the labour market. The authors use Theil's H, a decomposable index of segregation, to study the impact of gender and employment status on the levels of occupational segregation. The calculation of Theil's H is applied to each of seven main ethnic groups of England and Wales in 1991 and 2001. Using data from the 1991 and 2001 Censuses, the ONS Longitudinal Study (LS) and the Labour Force Survey (LFS), they show that by 2001, workers of both sexes and all ethnic groups were less likely to be concentrated in manual and manufacturing occupations and more likely to be concentrated in service sector jobs. Analysis of women's occupational concentration explains why segregation between full-timers and part-timers does not contribute significantly to overall levels of segregation: most occupational unit groups where female full-time and part-time jobs are most concentrated are the same. What differentiates both types of workers is the higher concentration of part-time jobs in fewer occupations.

The last two chapters have considered, in different ways, the interplay between ethnicity, gender and employment. In the next two chapters, findings are reported of the relationship between employment and health, a relationship that is difficult to pin down. Some people thrive in working and their health is affected negatively if they are out of work or unemployed; others find work stressful and believe that it causes their health to deteriorate. Whilst unemployment is often associated with ill-health, it may sometimes be the case that those with health problems are less able to work – they are selected out of employment.

There is little doubt that there are considerable variations in the risk of incapacity, ill-health and premature death that result from the type of work that an individual undertakes. Breathing in coal dust obviously puts miners at risk of developing respiratory diseases like pneumoconiosis and emphysema whereas it has been

known for many years that workers in iron and steel foundries are prone to develop silicosis. Moreover, some jobs are considered to be more stressful than others and those who undertake these jobs are prone to cardiovascular disease, for example. Consequently, this leads to the assumption that there are social inequalities in the risk of disease due to the different types of work that individuals carry out. However, as *Claudia Thomas* points out in Chapter 8, the situation is not quite as simple as this because the impact of employment on health depends on the different hours spent at the workplace and the history of work types and behaviour that individuals have experienced over their lives as well as the type of work that they are doing at one point in time. Thomas uses data from the 1958 British birth cohort, the National Child Development Study (NCDS) to gain a better understanding of whether shift work is associated with increased risk of cardiovascular disease (CVD). She demonstrates a relationship in which a change in the amount or duration of exposure to night and early morning shift work is associated with a change in risk of CVD but recognises that there may be other factors that make these shift workers susceptible to CVD such as the circadian disruption of the metabolic system associated with night work. In a second analysis, Thomas shows that night workers with low job control are particularly at risk of cortisol dysregulation over and above that seen for night work or low job control alone. Cortisol is a stress hormone that can be measured in saliva or blood. Its release is triggered by the brain and serves to prepare the body for stressful situations. The results of this work suggest that is too simplistic to consider one type of work as being the cause of CVD when the health outcome is likely to be the result of a complex set of factors that include previous types of employment and circadian effects as well as stress responses.

In Chapter 9, *Gopalakrishnan Netuveli* considers a number of hypotheses relating to the pathways or “trajectories” of individuals in terms of their labour force participation and health status. He uses data from adjacent waves of the British Household Panel Survey (BHPS) to determine answers to questions about whether past experience affects current employment participation and health status, whether labour force participation and health status patterns cluster into groups, and whether labour force participation and health status run in parallel.

Social Disparities: Religion, Education and Social Values

Chapters 5, 6, 7, 8, and 9 have focused on the impact of ethnicity on outcomes related to employment and health. In this section, we broaden the focus to consider the way in which ethnicity, alongside other social disparities, impacts on other aspects of the lifestyles and life chances of the population. The social position of different religious groups in Britain has recently been the subject of much discussion. The cross-classification of ethnicity and religion is the starting point for the work presented in Chapter 10 by *Saffron Karlsen* and *James Nazroo* which uses census and survey data to develop a picture of the characteristics and attitudes of different Muslim groups in Britain. Although Muslims in general are shown to experience socioeconomic disadvantage which has a significant health impact,

Indian Muslims, for example, often experience less disadvantage than Muslims of other ethnicities. Experiences of racism and perceptions that employers discriminate against minority groups, also translate into poorer health outcomes for religious minority groups. Stereotypes based on race, ethnicity and religion appear to justify the marginalisation of certain minority groups.

Using data from the Muslims in Europe (ME) study, Karlsen and Nazroo show that many from the minority groups in London consider themselves able to access a form of flexible British identity acceptable for individuals of minority groups with widely differing demands. This sense of Britishness, and of being “at home” in Britain, is much stronger than similar feelings of certain minorities in Madrid and Berlin and is regarded as important in counteracting the negative views of Islamophobia that so often appear in the popular press. It is this inclusive form of British identity which the authors feel is likely to provide the best potential for the future.

The ethnic dimension of social disparity is continued in Chapter 11, where *Michelle Jackson* uses data from the Youth Cohort Study to examine educational inequalities for a cohort of English and Welsh students who were aged 16 in 2004. Jackson contends that in trying to understand how inequalities in educational attainment are created, it is important to take into account the distinction between “primary” effects that are due to differences in performance between children of different groups, and “secondary” effects that describe the different choices made by children from different groups, conditional on performance. The chapter uses a “counterfactual” method to estimate the relative importance of primary and secondary effects for different social groups, by using transition rates and the performance distribution for each group. Jackson examines class, ethnic and gender differences in educational outcomes. She finds that young people from ethnic minority groups are more likely than those from White groups to stay on to A level study, once differences in performance (primary effects) are removed; in other words differences between ethnic groups are largely produced by primary effects. In contrast, Jackson finds that around a quarter of the disparities between social class groups would be removed if secondary effects were not present.

Social disparities not only affect the concrete life chances of individuals but also play an important role in the social values held by the population. Unlike employment, health and educational outcomes, social values are abstract concepts of what may be desirable both for individuals and for society as a whole. These abstract notions are less easily accessible to researchers than concrete outcomes and can often only be measured indirectly. What might these values involve? Trustworthiness, good citizenship, the absence of racism, freedom of speech and equality are all examples of such abstract social values. It is possible to list other social, political and educational values that are relevant to individuals or to the systems in which individuals operate in their daily lives yet empirical measurement of these values is often difficult. Chapters 12 and Chapter 13 both use indirect measures of social values and social trust which combine a number of survey items in order to measure abstract underlying concepts.

In Chapter 12, *Paula Surridge* uses two scales developed by Heath et al. (1994) – the economically orientated “socialist-laissez faire” (or “left-right”) scale, and

the politically orientated “liberal-authoritarian” scale – to consider the effects of education on values. Britain’s education system, valued highly by many throughout the world, has seen profound change in the last two decades with more students staying on at school beyond age 16 and many more attending higher education. Surridge uses data from the “British Social Attitudes Surveys” to address the issue of how education influences social values. Evidence is presented that education and social class both show clear links with social values with education being more closely linked to the liberal-authoritarian scale and social class being more closely linked to the left-right value scale. However, it is also the case that education and social class are linked: higher social classes tend to contain those with higher education qualifications, for example. By using pooled cross-sectional data, Surridge is able to provide a mapping of values within social space as defined by education and social class. The impact of the interaction between education and social class analysis on social values is formally tested using multivariate models. These models show that for “left-right” values there is an interaction between social class and education– with those holding degree level qualifications within higher social classes more likely to hold “left wing” positions than those with other educational qualifications. The chapter also considers the impact of educational expansion on social values by considering “educational generations”, that is groups who experienced the education system at different points in its transition towards a mass higher education system and finds evidence that as the educational system expands the impact of education on liberalism is reduced.

The *sine qua non* of a well-functioning social system is the existence of trust: trust in the institutions of state; trust in one’s neighbours, friends and professional associates. It has been noted in much scholarly work that trust and what has come to be referred to as social capital (Coleman, 1990) tend to go together, both in theoretical discussions and in at least some empirical investigations. Theoretically, if social capital is a resource that is available to individuals or communities for mutual benefit, it can only be realised or “spent” via relationships between trusting individuals or groups. Some studies using survey data, and taking as indicators of social capital the membership of civic associations, have also brought this to light as an empirical observation (e.g. Brehm and Rahn, 1997; Claibourn and Martin, 2000; Paxton, 1999; Putnam, 2000).

However, whilst these studies have in general shown positive associations between trust and membership at the individual and aggregate level, the issue of causality has been a much more difficult nut to crack. Does trust in one’s proximal community (neighbourhood, family, friends) lead to trusting in more distant institutions of state such as legislatures, government, judiciary, police forces? Or is it that well functioning, credible institutions have a trickle-down effect on individuals, making them more likely to trust other citizens when confidence in the state apparatus is high? Does joining civic organisations or increasing the scope and depth of friendship or other informal networks lead to individuals “learning” to trust more, or is it that trusting individuals “select into” such organisations or networks? Or could the empirical observation that social trust, institutional trust and civic association are positively correlated mean that some unobserved social or psychological variable is acting as a common cause? In the penultimate chapter

of the book, *Nick Allum, Roger Patulny, Sanna Read and Patrick Sturgis* focus on the latter hypothesis and examine data from the European Social Survey (ESS). Using structural equation modelling techniques, they develop measures for three elements of social capital; social trust, institutional trust and civic association. They examine how these three elements are related after controlling for a range of social and psychological factors, including age, gender, income and personality type. They find that the relationship between social trust and institutional trust is resistant to controlling for sociodemographic variables and to controlling for life satisfaction. This resistance suggests that these forms of trust are akin to value systems held by individuals and most likely developed during early experiences, socialisation and learning. Allum et al. find the link between trust and civic association is rather different, and is substantially reduced by the introduction of sociodemographic and personality variables. The finding calls into question the idea that trust can be “learnt” via participating in civic activities and the idea that those who are more trusting are more likely to participate. Rather they find that the “kind of person” who tends to be trusting is also the kind of person who tends to participate in civic activities (that is those who are more highly educated and who occupy higher social positions).

The first four chapters in the section have focused on existing social disparities and their impact of life chances, life styles and social values. The final chapter moves from the examination of existing social disparities to consider how one particular social difference may develop in the future. Secularisation generally refers to the process of transformation by which a society moves from close identification with religious institutions to one in which these institutions are in a position of lesser authority. The developed world has witnessed a process of secularisation over several decades, resulting in falling church membership and smaller congregations across the range of religious denominations. A key question is whether this process will continue in Europe or whether it will be reversed in future decades. *Eric Kaufmann* argues in Chapter 14 that components of demographic change will have an important role to play in future. Using data from the “European Values Survey” and the “European Social Survey”, Kaufmann examines how demography may impact on religiosity in Europe. He argues that religiosity may grow through demographic advantage such that Europe may grow more religious after 2050 due to continuing immigration trends and a gap in fertility rates between religious and secular populations. He suggests that the rate of secularisation is already slowing in parts of north western Europe and that religious revival is likely to be prominent in major cities that are the focal points for large-scale immigration.

Conclusions

The projects that we have introduced in the previous sections and which are reported in the chapters which follow represent a suite of state-of-the-art population studies of social and spatial disparities. In summary, Table 1.2 contains the keywords

Table 1.2 Main data sets used in forthcoming chapters

Chapters	Author(s)	Keywords	Data sources
2	Norman	Population change; deprivation change; boundary change	Censuses 1991 and 2001; mid-year populations 1991 and 2001; vital statistics
3	Vickers	Geodemographics; social change; polarisation; social geology	Censuses 1991 and 2001
4	Ballas	Subjective well-being, happiness	British household panel survey (BHPS); Censuses 1991 and 2001
5	Brook, Boyle and Flowerdew	Cultural consumption; performing arts accessibility index; commuting patterns; education	Audiences London ticket sales data; 2001 Census; 2004 index of multiple deprivation (IMD); Experian's Mosaic area classification; National statistics output area classification (NS OAC)
6	Li and Heath	Ethnicity; gender; employment status; class position	General household survey (GHS); Labour force survey (LFS)
7	Guinea-Martin, Blackwell and Elliott	Segregation; concentration; occupational classification; employment status; ethnicity; gender	1991 and 2001 censuses, ONS longitudinal study (LS) and the labour force survey (LFS)
8	Thomas	Health; cardiovascular disease; socioeconomic groups; employment; exposure combinations	1958 British birth cohort or national child development study (NCDS)
9	Netuveli	Employment; health; pathways	British household panel survey (BHPS); English longitudinal study of ageing (ELSA)
10	Karlsen and Nazroo	Muslim groups; economic position; health; social position, identity; attitudes	Census 2001; health survey for England (HSE); EMPIRIC; Muslims in Europe (ME) study

Table 1.2 (continued)

Chapters	Author(s)	Keywords	Data sources
11	Jackson	Educational attainment; inequality; transition to A-level; primary effects; secondary effects	Youth cohort studies (YCS 12)
12	Surridge	Social values; political values; education; qualifications; social class	British social attitudes (BSA) surveys
13	Allum, Patulny, Read and Sturgis	Social trust, political trust; civic participation	European social survey (ESS)
14	Kaufmann	Religiosity; secularisation; demography; fertility; immigration	European values survey (EVS) 1981, 1990 and 1999–2000; European social survey (ESS) 2004; fourth national survey of ethnic minorities 1993–1994; citizenship survey 2001 and 2003; ONS longitudinal survey (ONS-LS) 2001

associated with each chapter together with the main sources from which data are extracted. It is perhaps not surprising that whereas censuses of population provide the key information for the analysis of spatial disparities, cohort studies and surveys are the main sources of data on social disparity.

Excluded from Table 1.2 is any reference to the methods that have been adopted to perform the analyses of the secondary data sets. The chapters that follow will provide this guidance, covering a range of techniques from area classification and time series demographic analysis to various modelling methods including grouped logistic regression modelling, multi-level modelling and spatial microsimulation.

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Chapter 2

Demographic and Deprivation Change in the UK

Paul Norman

Introduction

Changes in an area's population size and composition occur through ageing and through births and deaths. Population change also occurs through migration between areas, with different migration patterns for people of different ages. In some locations, the tendency is for people to age in situ; others have more transient populations (Norman et al., 2008a). Since international and subnational migrants may differ in their sociodemographic characteristics from the populations they leave and join, the composition of communities can change (Norman et al., 2005; Clark, 2008) especially since different types of people may be attracted to different types of areas (Walters, 2000; Champion and Fisher, 2003).

The UK has strong traditions in sociodemographic applications with the analysis of subnational population change over time (see for example, Marsh, 1965; Champion et al., 1987; Champion and Townsend, 1994). Tracking changes in population size and age structure informs on the demand for housing, schooling, employment, services and pensions, for example (Norman et al., 2008a). Until recently, national coverage analyses have tended to be for rather coarse geographies such as region and custom defined zones such as "local labour market areas" (Champion et al., 1987), largely because census and administrative boundary systems are liable to change (Norman et al., 2003). There is a need to understand population change at a more local level though (Simpson et al., 1996; Simpson, 1998; Rees et al., 2004).

Alongside models of population change, to identify the UK's relatively deprived areas various indices have been devised such as: the Jarman Underprivileged Area index (1983); the Townsend index (1987); the Carstairs index (Carstairs, 1981; Carstairs and Morris, 1989); Breadline Britain (Gordon, 1995); Index of Local Conditions (Do, 1983, 1994); Index of Local Deprivation (Noble et al., 2000); and the Index of Multiple Deprivation 2004 (Noble et al., 2006) which are usefully

P. Norman (✉)
School of Geography, University of Leeds, Leeds LS2 9JT, UK
e-mail: p.d.norman@leeds.ac.uk

reviewed by Senior (2002). These deprivation measures influence the allocation of public resources (Simpson, 1996; Brennan et al., 1999; Chatterton and Bradley, 2000; Blackman, 2006) and are used as explanatory variables in models of various outcomes including health (e.g. Townsend et al., 1988; Senior et al., 2000; Boyle et al., 2002; Dibben et al., 2006; Norman et al., 2005). Deprivation scores tend to be time-point specific but we might want to identify whether areas have changed their level of deprivation over time (Dolan et al., 1995). This could relate to the monitoring of the level of deprivation itself in relation to the impact of industry closure or the success of area-based regeneration initiatives (Smith et al., 2001) or determining whether a change in the level of deprivation is associated with a change in health (Boyle et al., 2004; Curtis et al., 2002).

This chapter reports on a project (Norman, 2005–2007) which quantified and mapped changes in population size, age structure and social characteristics which occurred in small areas across the UK between the 1991 and 2001 Censuses. For population change during the decade, this involved computing the relative contributions of natural change and migration and, to identify areas becoming more or less deprived over time, calculating deprivation scores comparable in both 1991 and 2001. The next section of this chapter explains how these components of demographic change and deprivation measures have been calculated. This is followed by analytical sections, first on population change and then about area deprivation change.

Methodology

To monitor trends or identify differences in the size and characteristics of sub-national populations, analysis of change over time between the UK's decennial censuses is needed. On the face of it, calculating whether the population of a small area changed between census time points would appear to be straightforward. Unfortunately, there are many inherent problems which mean that successive censuses are not necessarily comparable (Norris and Mounsey, 1983; Norman, 2006). Direct comparisons of 1991 and 2001 demographic characteristics are severely hampered because:

- the small area geographies of the 1991 and 2001 Censuses are markedly different;
- population definitions, attributes and variable information may vary over time in their consistency and availability;
- social area classifications such as deprivation indexes are time-point specific; and
- the UK's census data are high quality but adjustments were made to counts from both the 1991 and 2001 Censuses following their initial release.

To achieve the project's aims, population-related data were needed for small areas across the UK. "Small areas" are usually taken to be areas smaller than local authority (LA) districts (Rees et al., 2004) and here are the electoral wards in England, Wales and Northern Ireland and postal sectors in Scotland. These will be

referred to as wards. Across England, Wales, Scotland and Northern Ireland there are 10,442 Census Areas Statistics (CAS) wards (and equivalents) in 2001 but to avoid small numbers, in the City of London and the Isles of Scilly, wards have been combined to provide district level data. Thus, there are 10,431 zones in both 1991 and 2001 in the work reported here. The time-points of the population estimates are the mid-years (30 June) in both 1991 and 2001 and for the area deprivation are the census dates in those years (21 and 29 April respectively).

The data requirements for this project are:

- 1991 and 2001 populations by age and sex to inform the size and age-structure of the time period start and end populations;
- counts of births and deaths over the decade so that natural change can be calculated; and
- 1991 and 2001 deprivation-related variables so that area deprivation can be calculated.

However, at the project outset for the reasons given above, these population-related data were either not available or not directly comparable for areas smaller than local authority districts in both 1991 and 2001. The sections following outline methods used to: harmonise data released for different geographies; re-estimate 1991 mid-year populations; and calculate deprivation scores.

Harmonising Geographical Information

The UK experiences more boundary changes over time than the rest of Europe put together with ward boundaries regularly adjusted in response to population change and with the structure of local government periodically revised (Norman et al., 2007; Norman et al., 2008b). Unless a consistent geographical approach is taken with time-series data, it is not possible to know whether changes for areas are real or due to boundary change. To have currency, this research requires data originally disseminated for areas used for the 1991 Census to be compatible with the 2001 Census geography.

To achieve the geographical harmonisation, directories linking postcodes to other geographical areas inform “geographical conversion tables” which are used to apportion population-related data from the “source” geography in which data pre-exist to the “target” geography, the zonal system for which data are needed (Simpson, 2002; Norman et al., 2003). An assumption of this process is that distributions of residential postcodes proxy population distributions. Counts of address-weighted postcodes in the overlaps between source and target geographies are used to calculate conversion weights. Norman (2006) describes and illustrates this geographic data conversion method. Whilst the vital statistics on births and deaths occurring during the 1990s were re-allocated at source to the 2001 Census geography by the UK’s national statistics offices, the Office for National Statistics (ONS), the General Register Office for Scotland (GROS) and the Northern Ireland

Statistics and Research Agency (NISRA), all other 1991 small area data have been apportioned to the 2001 geography.

Re-estimating 1991 Mid-year Populations

Even after imputation of missing households, the UK's 1991 Census counts were lower than expected. In the 1990s, the "Estimating with Confidence" (EwC) project distributed official non-response data for local authority (LA) districts on a small area-specific basis as a set of components to allow for underenumeration, timing changes between census day and mid-year and student address and armed forces adjustments (Simpson et al., 1997).

The EwC-enhanced 1991 Census counts were accepted as the "gold standard" for mid-1991 small area populations and were widely used in research. Following the 2001 Census, evidence suggested that previous official upward adjustments to 1991 populations were too large. Revisions were retrospectively made by ONS and GROS to 1991 non-response and to the official annual time-series of subnational mid-year population estimates but only 1992 onwards by NISRA.

These revisions to estimated non-response in LA districts implied that the 1991 non-response component previously estimated by EwC for sub-district areas in England, Wales and Scotland should also be revised. Norman et al. (2008a) determined that the non-response revisions should not be achieved by a simple scaling of each 1991 small area EwC population estimate because the original EwC estimates distributed non-response information differentially with more allocated to areas where census enumeration was less successful. A revision of small area populations should therefore re-distribute the non-response allowances, scaling the EwC original allowance on a small area-specific basis by the proportion which the 1991 district allowance was altered post-2001. The method used to revise the original EwC 1991 small area populations and adjustment components is specified in detail by Norman et al. (2008a) but comprised the following broad steps:

- (i) The EwC demographic components including age-sex detail were converted to the 2001 Census geography.
- (ii) The EwC components were summed to districts to provide an "original" 1991 LA estimate.
- (iii) The difference between the official original and revised estimates was used to indicate the size of the undercount revision at district level.
- (iv) Each small area's non-response component was scaled by the LA non-response revised: original ratio.
- (v) The revised non-response figure was combined with the other EwC components to provide revised 1991 small area mid-year estimates.

The 1991 small area mid-year populations estimated during this work are directly comparable with 2001 small area estimates by population definition and geography thereby enabling ward level population change over the decade to be calculated.

These small area estimates are consistent with official, larger area population counts provided by ONS, GROS and NISRA.

Calculating Deprivation Scores

A deprivation score, along with other data derived from the decennial census, offers an insight into local sociodemographic conditions at the time of the census. However, a deprivation score computed for an electoral ward for one census is not directly comparable with a score calculated for another census. A ward may have the same score at successive censuses but may have become more or less deprived over time relative to other wards. The Index of Multiple Deprivation (IMD) (Noble et al., 2006) is the Government's preferred indicator of deprivation in England. Similar, but not directly comparable, IMDs have been developed for the UK's constituent countries and, together with a lack of equivalent data over time, indicates that constructing a UK-wide IMD time series is not feasible. Thus, assessments of deprivation trends are impractical (Morelli and Seaman, 2007). Dorling et al. (2007) present a time series of poverty measures. Whilst these are for a consistently defined subdistrict geography, in comparison with wards, the units are somewhat coarse and do not include Northern Ireland.

After reviewing different schemes, the availability of input variables and their applicability over time, the deprivation scheme developed here was the Townsend index (Townsend, 1987). This is a composite score comprising four census variables: percentages of unemployment; overcrowding (more than one person per room); non-car access; and non-home ownership. To calculate comparable scores for all wards in England, Wales, Scotland and Northern Ireland for both 1991 and 2001, the raw data were harmonised in terms of variable detail. The appropriate numerators and denominators for 1991 were converted to the 2001 geography.

Townsend scores and other area measures are time-point specific conventionally. Observations for wards for each variable are expressed relative to that variable's national rate (using z scores), e.g. a ward's non-home ownership rate is relative to the UK's non-home ownership rate. This work aimed to identify change between time-points. To achieve this, numerators and denominators of the four input variables for the UK's 10,431 wards in both 1991 and 2001 were stacked in one file. Thus, when calculating deprivation, for each ward, rates in both 1991 and 2001 for each variable were expressed relative to the UK 1991–2001 average of that variable. The resulting Townsend scores are then comparable so that if an area changed from a (relatively deprived) score of +6 in 1991 to +4 in 2001 then, according to the composite of the input variables, the area became less deprived over time by 2 Townsend scores. In the Townsend index, higher positive scores indicate greater levels of area deprivation; more negative scores indicate lower deprivation.

The next section of this chapter will describe population change which occurred in small areas across the UK during 1991–2001 with changes stratified by deprivation quintile. Quintiles may be equal numbers of areas in each fifth of

the total number of areas or equal numbers of population in each fifth of the total population. Here population-weighted quintiles have been calculated. In addition to deprivation quintile, it is useful to summarise results across area types. Here, the National Statistics Area Classification of Local Authorities (ONS, 2004; Vickers and Rees, 2006) will also be used. Thus, it is possible to investigate whether population change occurred in the same way at local level within a slightly simplified version of the “supergroup” types: “Cities and Services”; “London” (combining suburbs, centre and cosmopolitan); “Prospering UK”; “Coastal and Countryside” (including Northern Ireland’s equivalent); and “Mining and Manufacturing”.

Population Change in Small Areas

Between 1991 and 2001, the UK’s population grew by around 1.6 million persons from 57.4 million to just over 59.1 million (Dunnell, 2007). This change was accounted for by natural change gain of over 1.5 million (the excess of births over deaths). The rest of the population change was a net migration gain of over 115,000 persons. At national level, this net migration is the balance of people entering and leaving the UK but we do not have direct evidence on the size of the gross flows into and out of the country.

In terms of national age structure, the dependency ratio for young persons (age 0–19: working age \times 100) reduced from 45.8 to 44.1%. Although the number of elderly (males aged 65+, females aged 60+) rose by nearly 290,000, their dependency ratio fell slightly from 32.8 to 32.4% since during this period the working age population grew by 1.3 million. These changes relate to the size of previous cohorts, trends of falling fertility and increased life expectancy as well as the balance between immigration and emigration (see Dunnell, 2007; Tromans et al., 2008).

For wards across the UK, we want to know the size of the population change and to determine whether change is accounted for by natural change and/or by migration. Figure 2.1 maps the population change during the 1990s and the demographic components. It is not possible to derive the gross migration flows in and out of each ward through the decade; the net migration reported here is the residual of total population change less the natural change gain (loss). This net migration figure comprises both subnational and international migration. Population growth areas (dark grey in Fig. 2.1) are largely found in urban and in semi-rural locations. The far rural areas tend towards either little change (medium grey) or population loss (light grey). Former mining areas in south Wales and the North East appear to be losing population. Locations of natural change gain are predominately urban and include the traditional industrial areas. Far rural and coastal areas have experienced natural change loss with an excess of deaths over births. Locations experiencing net migration gain are mainly the semi-rural areas surrounding the urban centres whereas the more urban areas show a net migration loss with more people moving away than moving in.

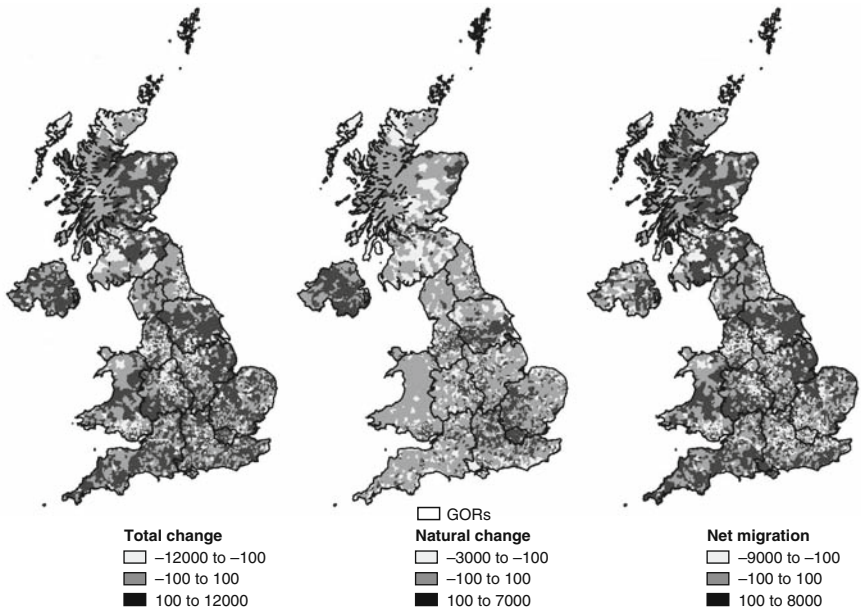


Fig. 2.1 Population change and components of change, 1991–2001, wards and equivalents in the UK (Source: Author’s analysis based on estimates)

The relationships between the components are illustrated in Fig. 2.2. This reveals a weak relationship between natural change and population change (correlation 0.18) but a much stronger relationship between net migration and population change (correlation 0.83). Of the UK’s 10,431 wards, 62% grew in population during the 1990s. Slightly more wards experienced natural change gain (64%) than net migration gain (55%) with 50% of wards having both positive natural change and net migration change. Net migration is the more telling component because the size of this effect is larger. Natural change varies between $-2,836$ to $+6,623$ (mean $+149.58$) but the net migration range is from $-7,827$ to $+8.875$ (mean 10.99).

The maps of 1991–2001 change at ward level are complex. Since the geographies of natural change and migration may well be different, to summarise these changes it is useful to explore whether there are patterns across different types of areas. Table 2.1 shows a marked difference between the local authority supergroup types in both population change and in the balance of the components which account for that change. Local authorities classified as “Cities and Services” effectively show no change in population size over the decade since the levels of natural change and net migration are almost identical. In these areas, both the young and elderly dependency ratios have decreased as the working age population increased (Fig. 2.3). The “Coastal and Countryside” areas have increased in population size since a natural change loss has been more than offset by substantial net migration gains. In terms of structure, the young dependency has fallen with the elderly ratio at the same level. The population of “London” grew by nearly 460,000 but this

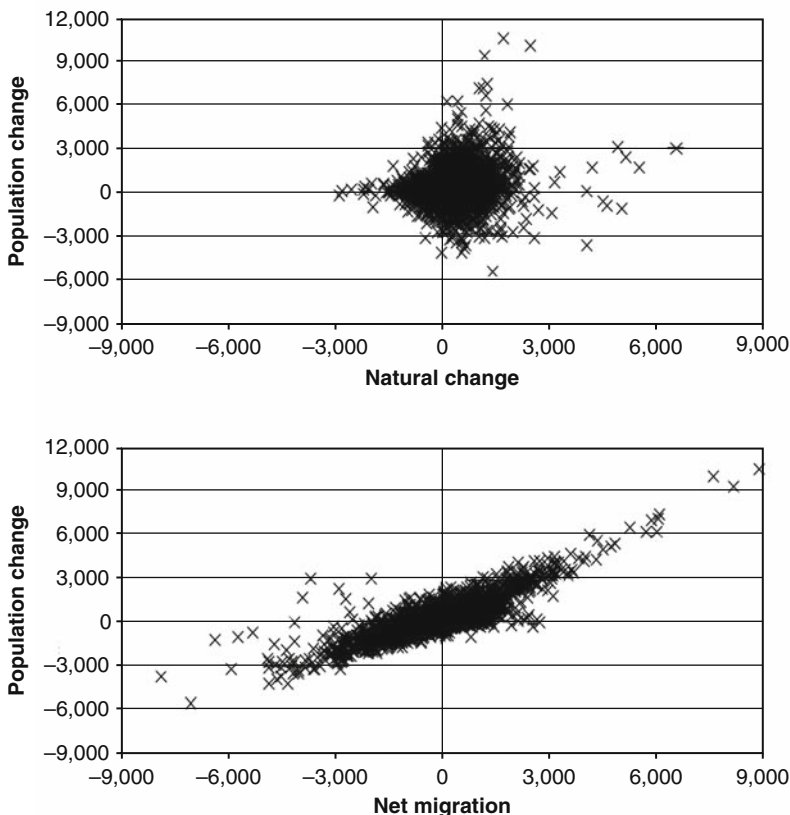


Fig. 2.2 Relationship between population change and components of change, 1991–2001, wards and equivalents in the UK (Source: Author’s analysis based on estimates)

is almost all accounted for by natural change gain. During the 1990s, London’s working age population grew by over 400,000 and, whilst the young dependency ratio fell slightly, the elderly ratio reduced sharply from 26 to 21%, the lowest in the UK. “Mining and Manufacturing” areas were the only types of places to lose population. Whilst there was a substantial natural change gain, this was more than offset by a net migration loss. There was a fall in the size of the working age population in these areas with a decrease in the young, but an increase in the elderly dependency ratio. LAs classified as “Prospering UK” experienced the largest levels of population growth accounted for by both substantial natural change and net migration gain. The young dependency ratio fell but the proportion of elderly increased.

Figure 2.4 demonstrates a clear gradient of population change in relation to ward level deprivation. The more deprived areas have marginally reduced in population size during the 1990s. There is progressively larger population growth through quintiles 3 up to the least deprived wards in quintile 1. Breaking these population

Table 2.1 Population change, 1991–2001 by supergroup area type

Supergroups	Change	Natural change	Net migration
Cities and services	88	404,387	−404,294
Coastal and countryside	261,927	−80,843	342,780
London	457,661	452,043	5,618
Mining and manufacturing	−67,427	229,862	−297,290
Prospering UK	1,022,605	554,826	467,785

Source: Author's calculations based on estimates

changes down into the demographic components, Fig. 2.4 shows that quintiles 3, 4 and 5 experience natural change gain but this is offset to differing degrees by net migration loss. Births exceed deaths, but people are moving away from these locations. The less deprived wards also experience natural change gain but these areas are in net receipt of migrants. This suggests that the net movement of migrants is from more to less deprived areas.

There are clear gradients of dependency ratios across the deprivation quintiles (Fig. 2.5). The young dependency ratio increases with the level of deprivation

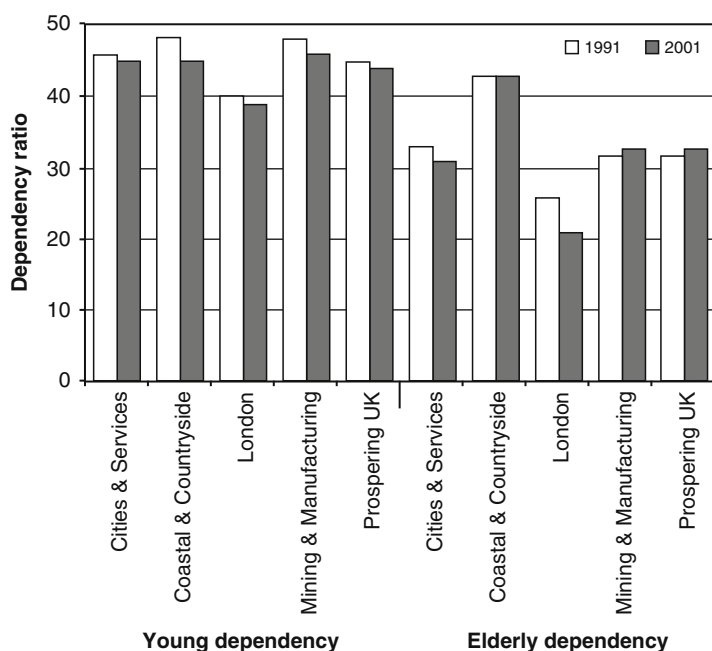


Fig. 2.3 Dependency ratios, 1991–2001, by supergroup area type (Source: Author's analysis based on estimates)

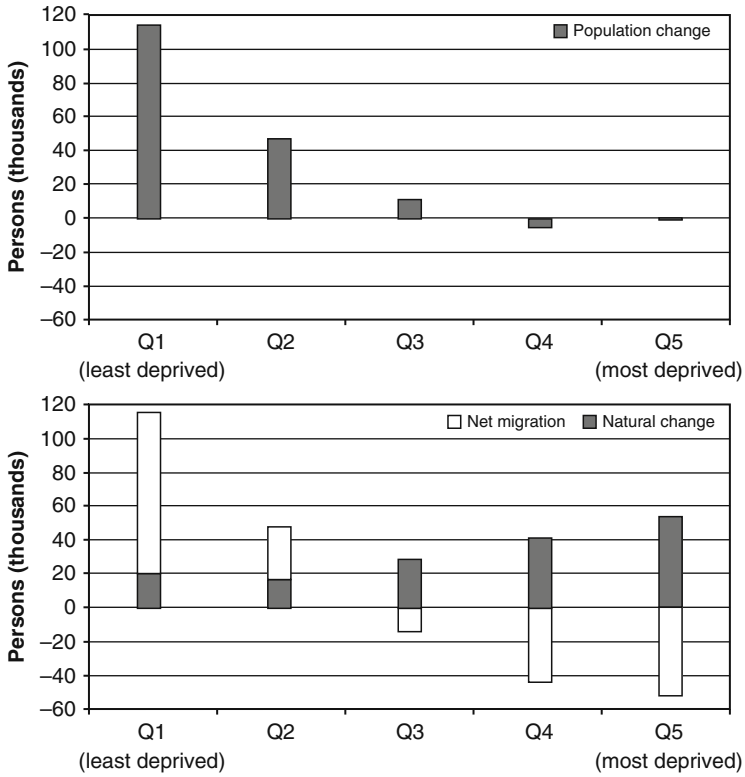


Fig. 2.4 UK population change, 1991–2001, by deprivation quintile (Source: Author’s analysis based on estimates)

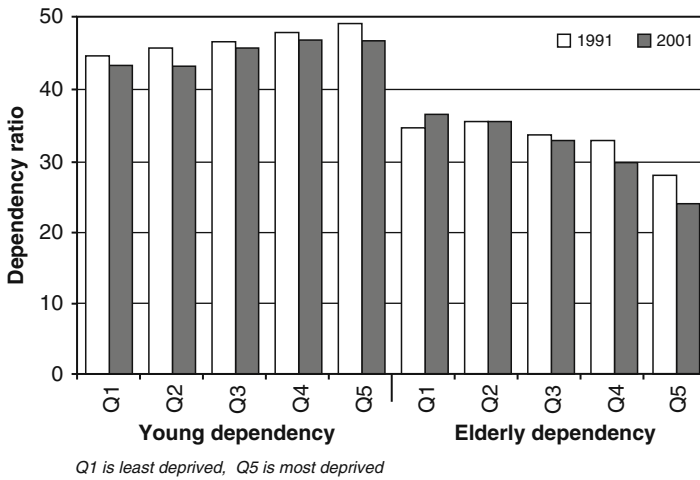


Fig. 2.5 Dependency ratios, 1991–2001, by deprivation quintile (Source: Author’s analysis based on estimates)

but the elderly ratio decreases. This is the case in both 1991 and 2001. Over the decade, the young ratio reduced by a similar amount in every quintile. The elderly dependency ratio increased in the least deprived wards, stayed the same in quintile 2 but decreased with increasing deprivation during the decade, especially in the most deprived wards.

We would expect small areas within each supergroup local authority classification to vary in their socio-demographic characteristics; even in “Prospering UK” there are wards which are deprived. Figure 2.6 shows the population change during the 1990s by the deprivation quintiles of the wards within each supergroup. Within “Cities and Services”, “Coastal and Countryside”, “Mining and Manufacturing” and “Prospering UK”, population increased more with decreasing deprivation. In the more deprived wards within these supergroups, population showed either no change or reduced. In “London”, the opposite occurred with the population level almost unchanged in the least deprived wards but increasing with each successive deprivation quintile.

The components of change vary by supergroup type. There are strong similarities between “Cities and Services” and “Mining and Manufacturing” areas with the more deprived wards experiencing natural change gain whilst net migration loss occurred; the result being little change in overall population size. The less deprived wards in these LA types increased population through both natural change and net migration gain. In “Countryside and Coastal” LAs, the more deprived wards also have natural change gain and net migration loss which effectively balance each other. The less deprived wards show substantial net migration gain but this is offset slightly by natural change loss. The national picture is dominated by the large population increase in the least deprived wards in “Prospering UK” which comprises both natural change and net migration gains. The more deprived wards, as in other supergroups, show natural change gain but net migration loss. “London”

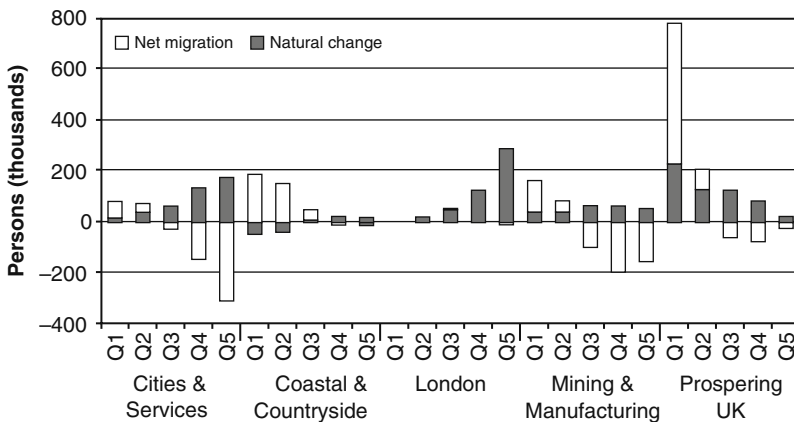


Fig. 2.6 UK population change, 1991–2001, by deprivation quintile within each supergroup (Source: Author’s analysis based on estimates)

shows a very different pattern. During the 1990s, London’s population grew due to natural change gain and this growth was mainly in relatively deprived wards. Overall, there was a net migration loss, effectively all from quintile 5.

Apart from less deprived wards in “Cities and Services”, in both 1991 and 2001, the young dependency ratios increased with deprivation in all supergroups except “London”, with the proportion of persons aged 0–19 reducing over the decade (Fig. 2.7). In “London”, the young dependency ratio falls with increasing ward deprivation but reduces in each quintile during the 1990s as in other areas. The elderly dependency ratios reduce with increasing ward deprivation in all supergroups except “Mining and Manufacturing” where the relationship is “flat”. Generally, in the less deprived wards the elderly dependency increased between 1991 and 2001 but decreased in more deprived quintiles.

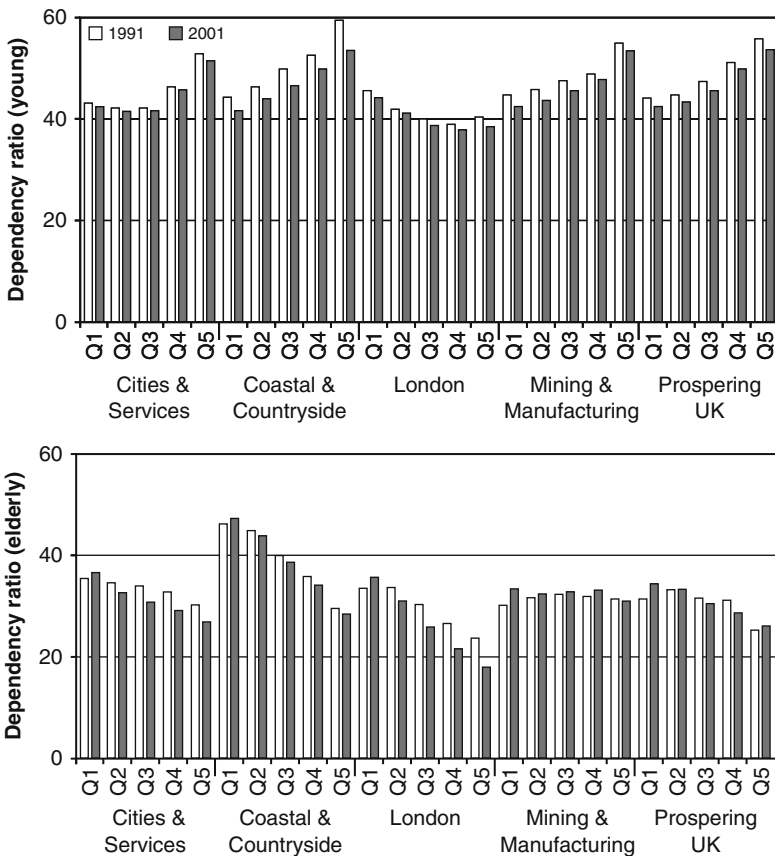


Fig. 2.7 Dependency ratios, 1991–2001, by deprivation quintile within each supergroup (Source: Author’s analysis based on estimates)

Deprivation Change in the UK’s Small Areas

To identify whether areas have changed their level of deprivation over time Townsend scores have been calculated for all wards across the UK in both 1991 and 2001. For each ward in both years the level of an input variable is expressed relative to the 1991–2001 average of the national level. Higher positive Townsend scores indicate greater levels of deprivation and more negative scores indicate less deprived areas. In 1991, the average across all wards in the UK was 0.36. In 2001, the average was –1.87 indicating that in general, deprivation eased during the decade. Table 2.2 shows the national rates of each input variable in both census years and the average with which ward levels have been compared. The percentage of each variable reduced between 1991 and 2001. Unemployment was relatively high in 1991 but was low in 2001. Even though some population groups may still choose to live with “extended family”, trends towards smaller households means that household overcrowding fell. Levels of car ownership have risen over time so that fewer households did not have access to a car in 2001 than in 1991. Similarly, there are trends towards home ownership so levels of people renting their home,

Table 2.2 National levels of Townsend score input variables, 1991–2001

Year	Unemployment (%)	Household overcrowding (%)	No access to car (%)	Non-home ownership (%)
1991	8.73	2.04	28.41	31.25
2001	3.13	1.53	22.97	28.90
1991–2001 average	5.93	1.78	25.69	30.08

Source: Author’s calculations based on 1991 and 2001 Census data

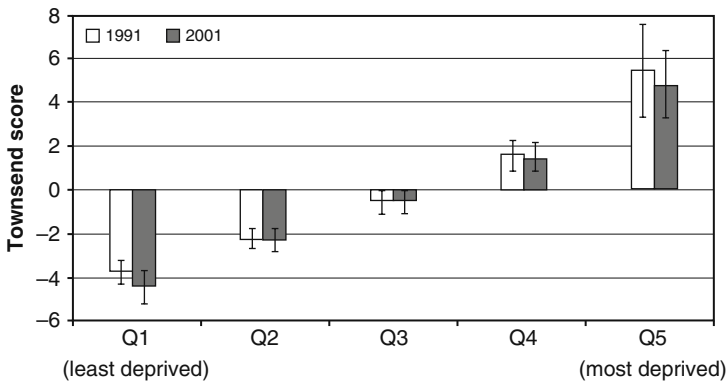


Fig. 2.8 Average Townsend scores by deprivation quintile, 1991–2001 (Source: Author’s analysis based on estimates) Note: Error bars are standard deviations of deprivation scores within each quintile

Table 2.3 Average Townsend scores for wards within supergroup area types, 1991–2001

Supergroups	1991	2001	1991–2001 change
Cities and services	2.59	0.22	–2.37
Coastal and countryside	0.32	–2.10	–2.42
London	4.45	3.04	–1.41
Mining and manufacturing	1.76	–0.90	–2.66
Prospering UK	–1.37	–3.37	–2.00

Source: Author's calculations

whether in the public or private sector, have fallen. Measured in this way, deprivation has reduced between 1991 and 2001 by an average of 2.23 Townsend scores.

Figure 2.8 shows the average Townsend scores for wards within each deprivation quintile in 1991 and 2001. Whilst there is little difference in the levels of deprivation in quintiles 2–4, compared with 1991, in both quintiles 1 and 5 the levels of deprivation improved. Across each of the supergroup area types, wards improve their level of deprivation. Table 2.3 shows that the largest improvement was for wards in the “Mining and Manufacturing” areas which improved on average by 2.66 Townsend Scores. London experienced the lowest level of improvement, 1.41 Townsend scores. Wards in those LAs classified as “Prospering UK” have on average the lowest levels of deprivation.

Case Study: Deprivation Change in Leeds

Leeds is a major regional city which includes locations characterised by prosperity and renewal but with some areas of poverty, social exclusion and multiple deprivation (Unsworth and Stillwell, 2004). This cosmopolitan, service-based city has aimed to tackle problem areas and encouraged investment in both established neighbourhoods and in prime sites for economic growth. Away from the city's urban area, Leeds Metropolitan District includes towns such as Otley and Wetherby and many villages. Sixty-two percent of the district is designated as “green belt”.

Here, the Townsend scores for wards in Leeds are presented for 1991 and 2001. In 1991, the average deprivation score for wards in Leeds district was 1.98. By 2001 this reduced by 2.01 Townsend scores to –0.03. Despite this improvement, compared with the rest of the UK, Leeds as a whole is more deprived in both years and did not improve as much over the decade. The range of Townsend scores reduces over the decade a little, though. In 1991, the difference between the most and least deprived wards was 12 Townsend scores and in 2001 was 10.7, but large disparities remain.

Figure 2.9 illustrates the ward distribution of deprivation. In 1991, there were fourteen wards in the district in quintile 5, the most deprived wards. Although nine

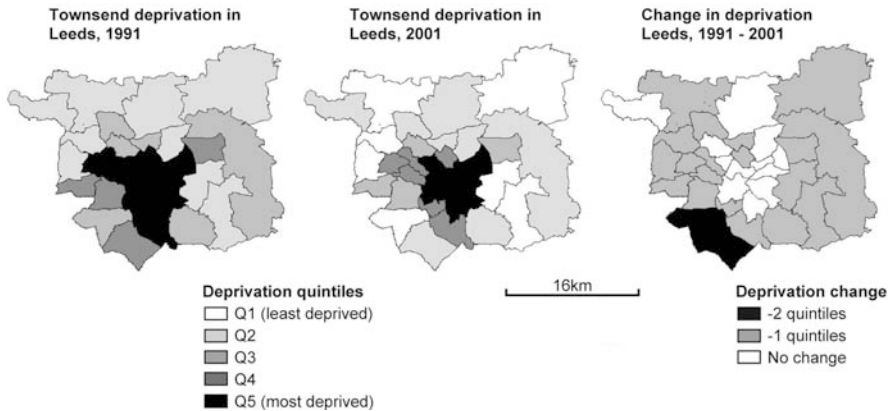


Fig. 2.9 Townsend deprivation for wards in Leeds, 1991–2001 (Source: Author’s analysis based on estimates)

wards were in quintile 2 in 1991, there were no wards in quintile 1, the least deprived wards. The most deprived wards were concentrated in the city centre and in the south of the district. The less deprived wards were in the less urban areas, particularly to the north. By 2001, the number of wards in quintile 5 had reduced to eight but seven wards were classified into quintile 1, the least deprived wards. Whilst twelve wards remained in the same quintile, nineteen wards had advanced their position relative to the UK by 1 quintile and two wards had improved by two quintiles. Despite some improvements, the same broad pattern remains, with deprivation concentrated in and around the city centre with the less urban wards experiencing lower levels of deprivation. Throughout Leeds, the indicator which showed the largest change was unemployment; a measure which is likely to be more volatile than the others used in the Townsend index.

University ward remains the most deprived ward in Leeds even though the level of deprivation eased. In 1991, the Townsend score in University ward was 8.99 and this reduced to 6.12 in 2001 (Table 2.4). The improvement was largely because unemployment rate fell from nearly 21% in 1991 to 5% in 2001. Levels of household overcrowding are relatively high (3.9% in 1991; 2.8% in 2001), mainly because of large numbers of shared households for the student community. Households with no access to a car reduced from 70.5 to 67% though levels of non-home ownership increased from 82 to 84%. All of these indicators are substantially above the UK averages, hence the high, positive Townsend score here. The two wards that improved by two deprivation quintiles were Morley North and Morley South, which are situated in the south-west of the district. Unemployment is below the 1991–2001 national average in Morley North in both years and moves to below UK average by 2001 in Morley South. All other indicators improved between the censuses in these two wards, with only the level of lack of access to a car above average in 2001 in Morley South.

Table 2.4 Townsend scores for example wards within Leeds, 1991–2001

1991	Townsend score	Quintile			
University	9.00	5			
Morley North	−0.70	3			
Morley South	0.66	4			
2001					
University	6.12	5			
Morley North	−3.11	1			
Morley South	−1.53	2			
	Unemployment	Household overcrowding	No access to car	Non-home ownership	
1991					
University	20.96	3.88	70.47	82.15	
Morley North	5.25	1.45	31.15	22.36	
Morley South	6.33	1.62	35.69	33.20	
2001					
University	5.03	2.76	66.59	83.64	
Morley North	1.99	0.89	23.39	20.14	
Morley South	2.51	1.38	28.18	29.11	

Source: Author's calculations

Conclusions

There is a need to understand population change at local level so that, for example, appropriate goods and services can be provided (Simpson et al., 1996; Simpson, 1998; Rees et al., 2004). If deprivation can be measured over time, the success of regeneration schemes can be assessed. There are, however, a variety of issues to be overcome before even a rudimentary analysis of subnational sociodemographic change over time can be carried out, especially at small area level (Norman et al., 2008a). In terms of geography, challenges include differences in the scale and types of areas for which data are disseminated and changes in the boundaries of census and administrative areas for which data are available. Regarding population counts and attributes, issues include changes in the population definitions and differences in the census questions asked and categorisations of answers used. Composite indices measuring area level deprivation tend to be cross-sectional snapshots so that change in area characteristics is hard to assess.

The work reported here quantified and mapped changes in population size, age structure and deprivation characteristics occurring in small areas across the UK between 1991 and 2001. Compiling the database to support this work involved: harmonising data released for different geographies since the small area zone definitions for which the 1991 and 2001 Censuses were released were different; re-estimating 1991 mid-year populations since larger area data for 1991 were revised

following the 2001 Census; and calculating deprivation scores comparable over time.

In the UK's small areas, for population change between 1991–2001, the major demographic changes were that populations in the most urban and more deprived areas were maintained through natural change gain. Large numbers of people migrated away from these areas to less deprived locations. This is consistent with previous research showing counterurbanisation with movements of people to less deprived urban fringes (Champion, 1989; Champion and Townsend, 1994). Thus, the more urban and deprived areas retain younger age populations than less urban and non-deprived areas. As a result, relative to other areas, the more rural and less deprived areas have been ageing most. Further investigations of population change during the 1990s would extend this work to express the impact as percentages of ward populations and to add in age dimensions to the net migration estimates to determine the impact between different area types and levels of deprivation.

Using the Townsend index to measure ward level deprivation in a comparable way in both 1991 and 2001 shows that deprivation eased during the 1990s. This was largely because unemployment was substantially lower in 2001 than in 1991, but also because levels of household overcrowding reduced as did lack of access to a car and non-home ownership. The least deprived areas tend to be located within the supergroups "Coastal and Countryside" and "Prospering UK", but even these areas include deprived locations. Whilst a case study for Leeds has been presented here, it would be useful to identify local authorities in which specific measures have been put in place to alleviate deprivation and to assess the impact of these regeneration schemes. Also, since there are strong relationships between health and deprivation, to investigate whether wards in which deprivation has eased experience improvements in health.

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Chapter 3

England's Changing Social Geology

Daniel Vickers

Introduction

Every area has an identity that comes from its people and built environment. It is clear that these identities are not static and that, over time, changes can take place which alter the identity of an area. Anyone who revisits an area after a decade away will be familiar with this feeling. In human terms, this would be equivalent to meeting an old friend who had aged significantly; this is felt especially with areas of recent regeneration in our cities. However, does our social landscape change with this regeneration – after all, its purpose is to improve the lives of the people. Can we see any real change in the social landscape of the country? Is England's social geology changing?

The change in England's social geology will be examined via two comparable small-scale area classifications using data from the 1991 and 2001 Censuses. Area classifications are an excellent way of simplifying complex data sets into a manageable set of indicators (Voas and Williamson, 2001). They have powerful predictive powers that can be used to explain any number of demographic trends and socio-economic processes (Harris et al., 2005; Sleight, 2004). They can give valuable insights into how the population is socio-spatially sorted by residential location. The purpose of this analysis is not to produce a perfect representation of the world, but to simplify a complex pattern enough to make it easy to interpret and understand. This form of analysis is particularly useful as it replicates the way in which our own minds understand and interpret data. The human mind classifies objects into groups without conscious thought, and simplifying information in this way helps us understand the world around us. No two things are ever identical, but by grouping similar things together, our mind's understanding of objects is

D. Vickers (✉)

Department of Geography, University of Sheffield, Sheffield S10 2TN, UK
e-mail: d.vickers@sheffield.ac.uk

increased, such that the next time we see a similar object, we know what it is and what to do with it having learnt from our experiences of a similar object (Pinker, 2004).

Classification is fundamental to most branches of science. For example, the periodic table in chemistry groups elements with similar properties (for example, magnesium, potassium and lithium) together to aid understanding. In biology, species of animals are put into taxonomic classes based on their physical features, e.g. mammals, birds, fish, reptiles, *et cetera*. These groups are then broken down in a number of levels ending in each individual species being named (Everitt et al., 2001). Classifying social areas works in the same way. By grouping areas together into similar types, our understanding of them can be greatly enhanced. The complexities of 165,665 individual and different census output areas present too much information for the human mind to process. However, by clustering these areas into a handful of groups which share similar properties, our brains can more easily interpret the information; we can begin to see patterns in the distribution of the different types of areas, and infer what processes are taking place.

Classifying Areas

The idea of classifying areas based on the social characteristics of their residents is not a new one, and can be traced back to Charles Booth's social map of London at the end of the nineteenth century (Harris et al., 2005). More recently, such analysis has been central to commercial location and market analysts, but is now enjoying something of a renaissance within social research (Longley, 2005). Ashby and Longley (2005), Farr and Evans (2005), Vickers and Rees (2007) and Webber (2005) have reintroduced geodemographics into the academic sphere.

This study builds on the ideas and methods developed by Vickers and Rees (2007) who outline the methods and theoretical framework used in the creation of the Office for National Statistics' Output Area Classification (OAC). The OAC splits the UK into a hierarchy of 7, 21 and 52 groups, clustering areas that share similar socio-economic characteristics. By mapping the classification using digitized output area boundaries and Ordnance Survey background mapping, clear residential patterns can be seen throughout the UK, in patterns resembling that of a geology map. Distinctions can be made between neighbourhoods, for example, on the basis of affluence, rurality or multiculturalism. The classification can answer many questions about the residential patterns of the UK at the start of the twenty-first century.

However, the classification cannot tell us how, if at all, these residential patterns have changed over time and how these changes are affecting current socioeconomic processes and demographic trends. To find out if, and how, residential patterns have changed, a means of comparison needs to be created from an earlier data source and the resulting classifications for both 1991 and 2001 can then be compared in terms of the number of areas within each social cluster and their geographic distributions.

Data Selection

The process of creating a social area classification is predominantly data driven in that it is the data which are input to the classification which dictate the pattern produced rather than the methodology. Therefore, the data selected to be part of the classification are vital and this decision must be given full consideration. The data used in this investigation are a subset of those used to create the UK OAC. A full justification of the selection of each variable can be found in Vickers et al. (2005). There are several reasons why only a subset was used. For instance, some of the variables were newly derived for the 2001 Census and did not have a comparator available for 1991. As the idea of looking at change over time with the use of a geodemographic classification is at this stage an experimental one, a reduction in the number of variables would make the clustering process more stable and easier to interpret. A list of 22 variables was compiled, on which the classification would be based. The list reads as follows:

- age 0–4;
- age 5–14;
- age 25–44;
- age 45–64;
- age 65+;
- Indian, Pakistani and Bangladeshi;
- Black African, Black Caribbean and Black Other;
- born outside the UK;
- unemployed;
- working part-time;
- economically inactive looking after family;
- no central heating;
- rent (private);
- rent (public);
- 2+ car households;
- flats;
- detached;
- terraced;
- lone parent household;
- single pensioner household;
- single person (not pensioner) household;
- Population density.

Methodology

The methodology can be split into two main sections. Firstly, the small area census geographies for 1991 and 2001 need to be matched to allow the created classification(s) to be compared for the same geography. Secondly, the data needs

to be clustered, which will put the areas into groups based on the similarity of the social characteristics of their residents.

To match the geographies of the two census years, the methodology developed by Simpson (2002) and Norman et al. (2003) was adopted. This method uses address count-weighted postcode distributions to calculate intersection weights between the 1991 enumeration district (ED) and 2001 output area (OA) geographies. Norman et al. (2008) give a worked example of how the conversion process works. The method is fairly robust, although there is the possibility that it could account for, or at least influence, the change seen for any individual area. It should not, however, have any discernable effect upon national trends.

The clustering process follows the methodology developed by Vickers and Rees (2007). Before the data can be clustered, outliers and unusual distributions within the data need to be identified and amended. Several of the variables (population density being the classic example) have a small number of extreme values and/or a skewed distribution which can adversely affect the clustering process. To resolve this issue, the data were transformed to a logarithmic scale which has the effect of squashing together data points at the ends of the distribution and stretching out the middle. This process significantly reduces the effect of extreme values upon the data set whilst keeping the relative positions of each area unchanged.

In addition to the logarithmic transform, each variable needs to be standardised over the same range. This is essential so that each variable has the same weighting on the classification. This is especially important when there are different types of data e.g. population density gives a number of people per area whereas detached housing is a percentage of all households. The range of the population density is only limited by the number of people who can fit into a specified area, whereas a percentage value cannot exceed one hundred. The range standardisation method is used here being defined as:

$$R_i = \frac{x_i - x_{\min}}{x_{\max} - x_{\min}} \quad (3.1)$$

where x_{\max} is the maximum value of x and x_{\min} the minimum value of x and R_i is the range standard variate. After the data have been standardised as above, each variable has a range of 1 with the maximum value being 1 and minimum value being 0. Once the data has been standardised across the range, they can then be clustered into groups of social similarity (Vickers and Rees, 2007).

The method used for clustering is a “k-means” algorithm. This is a simple non-parametric clustering method. “k-means” is one of the most commonly used methods in the geodemographics industry and is particularly suitable for use on large data sets as it is extremely robust and comparatively computational undemanding (Harris et al., 2005). It is an iterative relocation algorithm based on an error sum of squares measure. The basic premise of the algorithm is to move iteratively cluster centres from their initial seeding points, reducing the distance between each of the cluster centres and its associated data points (in this case OAs), and to maximise variation between cluster centres. During the process, each of the

OAs will change the cluster that it is associated with as the centres move. Each OA is assigned or re-allocated to the cluster centre to which it brings the greatest improvement. The next iteration occurs when all the cases have been processed. A stable classification is therefore reached when no moves occur during a complete iteration of the data. Each of the OAs is now assigned to the cluster centre to which they are most similar (Aldenderfer and Blashfield, 1984). After clustering is complete, it is then possible to examine the means of each cluster for each dimension (variable) in order to assess the distinctiveness of the clusters (Everitt et al., 2001; Gordon, 1999). The “k-means” clustering algorithm is comparatively simple and works as follows (Everitt et al., 2001, pp. 99–100).

The clustering criterion is to minimize the Euclidean sums of squared deviations of objects from the cluster mean, E_c which is defined as:

$$E_c = \sum_{i=1}^{n_c} \sum_{j=1}^m (Z_{ij} - Z_{cj})^2 \quad (3.2)$$

where Z_{cj} is the mean value for cluster c of variable j and Z_{ij} is the value for object i of variable j .

To enable the creation of comparable classifications over time each area will be assigned a cluster twice, once for each year. The change will be assessed from the movement of areas between clusters over the period. The clusters will be based on the 2001 data, as it has not had to go through any geographic conversion. Based on their characteristics as they were in 1991, each area will then be assigned to the nearest cluster centre that has been created from the 2001 data. Each OA will then have a double record of cluster membership – one for 2001 and one for 1991. The two memberships may or may not be the same depending upon whether the nature of the area has changed over the decade.

The 22 variables were clustered into seven groups. It was felt appropriate that seven should be used as it was for the creation of OAC. This would therefore provide an element of intuitive comparability between the research presented here and that within Vickers and Rees (2007), although not a statistical one.

The best way to understand the clusters that have been produced is by an examination of their cluster centres. These are the average values for each variable for the areas within each cluster. For any individual area, the average variable value for its cluster may not be representative, but when the variables are taken in combination the cluster centres give a simple and broadly accurate picture of each grouping. Table 3.1 shows the final cluster centres for each of the seven clusters where the standardised values range from 1 being the maximum value to 0 being the minimum value for any individual output area.

The highest and lowest values for each variable are highlighted. Some variables such as “Indian, Pakistani and Bangladeshi” have a wide range between their cluster centre values while others such as “age 65+” show less of a difference. The cluster centres provide a simple, but detailed picture of the nature of each cluster. For example, cluster 4 contains areas with large migrant populations who are also likely

Table 3.1 Final cluster centres based on 2001 data

Variable	Cluster						
	1	2	3	4	5	6	7
Age 0–4	0.17	0.24	0.18	0.31	0.19	0.24	0.26
Age 5–14	0.13	0.23	0.23	0.29	0.22	0.20	0.29
Age 25–44	0.47	0.41	0.30	0.38	0.34	0.36	0.33
Age 45–64	0.31	0.34	0.50	0.28	0.43	0.31	0.33
Age 65+	0.15	0.13	0.18	0.10	0.18	0.21	0.18
Indian, Pakistani and Bangladeshi	0.05	0.03	0.01	0.44	0.02	0.06	0.02
Black African/Caribbean/Other	0.07	0.02	0.00	0.14	0.01	0.16	0.02
Born outside the UK	0.23	0.08	0.06	0.39	0.06	0.21	0.05
Unemployed	0.14	0.12	0.06	0.20	0.08	0.24	0.18
Working part-time	0.18	0.30	0.32	0.22	0.33	0.21	0.30
Looking after family	0.15	0.18	0.19	0.34	0.16	0.25	0.29
No central heating	0.13	0.15	0.04	0.19	0.07	0.08	0.12
Rent (private)	0.30	0.13	0.06	0.17	0.06	0.08	0.04
Rent (public)	0.14	0.11	0.03	0.18	0.08	0.67	0.52
2+ car households	0.17	0.25	0.57	0.18	0.38	0.08	0.16
Flats	0.68	0.10	0.03	0.17	0.08	0.77	0.17
Detached	0.05	0.06	0.67	0.05	0.21	0.02	0.06
Terraced	0.17	0.66	0.06	0.57	0.15	0.12	0.36
Lone parent household	0.11	0.18	0.08	0.21	0.12	0.23	0.28
Single pensioner household	0.16	0.13	0.12	0.10	0.16	0.25	0.19
Single person (not pensioner) hhold	0.33	0.19	0.09	0.16	0.12	0.28	0.15
Population density	0.17	0.14	0.04	0.21	0.08	0.23	0.10

Source: Author's calculations based on 2001 Census data

to be fairly young in age. In contrast, cluster 3 is evidently an older and almost exclusively white population who tend to live in larger homes.

The cluster centres are a useful summary of the nature of each cluster, but they still require some deciphering. To give more meaning to the seven clusters, each was given a simple indicative name suggesting a flavour of both the geography and social make-up of that cluster. This is not to say that the areas within each cluster are all the same or the names describe all areas equally as well. The names are indicative and should be taken with a pinch of salt, and are in some cases intentionally provocative. However, they are of great value when trying to understand the make-up of each cluster, as they very quickly and simply point towards some of the most descriptive aspects of each cluster. The clusters were named as follows:

1. Urban Melting Pot;
2. Mixed Communities;
3. Out in the Sticks;
4. Asian Influence;
5. Middle Class Achievers;
6. Down and Out; and
7. Working Class Endeavour.

Results

This section outlines the results of the clustering process and examines the changes that have taken place between 1991 and 2001. National trends will be examined first before looking at how the trends differ at a local level. Table 3.2 shows how the frequency of each group has changed. These are the basic numbers which show how many areas of each cluster type there are in each year. Four of the groups show an expansion in the number of areas they contain; two clusters show a contraction; the other group, “Asian Influence”, shows a very small contraction in numbers. However, in national terms, their proportion appears to be fairly static over the period.

It is possible to start to discern some patterns from these initial results. The contracting groups, “Middle Class Achievers” and “Working Class Endeavour”, can be seen as representative of traditional understandings of British social groupings as white and blue collar workers respectively. They are the two largest groups in 1991, with 52% of areas being in one of these two types. By 2001, “Working Class Endeavour” has dropped to being the third most prevalent type, and these two groups contained only 44% of all areas.

Of the groups which have shown expansion, three – “Urban Melting Pot”, “Out in the Sticks” and “Down and Out” – are what could be termed disparate groups, which represent a more individual or less community-connected type of area. People within these areas are likely to share a small number of key demographic features with their neighbours, but are less likely to be living close to other generations of their own family. These are areas where people live almost through necessity of the functionality and image which that type of area possesses.

Table 3.2 The change in prevalence of cluster types, 1991–2001

	1991 Frequency	1991 Percent	2001 Frequency	2001 Percent	Change frequency	Change percent
1. Urban melting pot	11,350	6.9	15,392	9.3	4,042	2.4
2. Mixed communities	21,949	13.2	25,910	15.6	3,961	2.4
3. Out in the sticks	32,915	19.9	35,704	21.6	2,789	1.7
4. Asian influence	5,039	3.0	4,930	3.0	-109	0.0
5. Middle class achievers	50,578	30.5	46,791	28.2	-3,787	-2.3
6. Down and out	8,257	5.0	10,878	6.6	2,621	1.6
7. Working class endeavour	35,577	21.5	26,060	15.7	-9,517	-5.8
Total	165,665	100.0	165,665	100.0	0.0	0.0

Source: Author's calculations based on 1991 and 2001 Census data

Those living in the “Urban Melting Pot” are young, often students or young professionals who live in or close to the centre of larger cities for work, study and entertainment. Those who live in “Out in the Sticks” almost certainly enjoy the rural life, although some semblance of original rural communities can still be seen, and it is almost certain that the increase in the number of areas of this type suggests the outer suburbs and formerly mixed villages are increasingly becoming the preserve of the elite, those who are seeking the good life away from the towns and cities. The people who live in the “Down and Out” cluster are the least fortunate in society, and the increase in the number of areas of this type suggests that the most able in the least desirable neighbourhoods are moving up and out leaving an increasing number of areas defined by their lack of hope and opportunity. This pattern is akin to that found by Dorling et al. (2007) who argued that there is a process of greater polarisation taking place within Britain. They observed a reduction in the number of areas they termed “average” and an expansion of the groups at both ends of the wealth distribution. To gain a greater understanding of how and why these changes have occurred, it is essential to look at which cluster types areas have moved between.

Table 3.3 outlines how these changes have come about by looking at how areas have changed from one type to another. Concentrating on change and movement, it is easy to miss the biggest trend within the data which is that 116,062 (70%) of the 165,665 areas have not changed in terms of which group they are in over the 10 year period. This is an important point to repeat as wholesale changes in the social hierarchy are unlikely without considerable redevelopment of areas (Orford et al., 2002).

Of the 49,603 areas that have changed from one cluster to another, the most common change (8,444; 17% of changes) is for an area to change from “Middle Class Achievers” to “Out in the Sticks”. This broadly supports the thesis that there is evidence of increasing polarisation through the increase in the number of areas of a more disparate nature.

Table 3.3 Change in cluster membership of areas, 1991–2001

		1991							
		1	2	3	4	5	6	7	Total
2001	1	9,200	1,318	195	467	2,245	1,116	851	15,392
	2	779	15,991	237	432	3,445	76	4,950	25,910
	3	23	206	2,6561	6	8,444	8	456	35,704
	4	153	519	3	3,699	117	129	310	4,930
	5	482	2,628	5,658	103	33,044	27	4,849	46,791
	6	618	126	29	204	505	6,401	2,995	10,878
	7	95	1,161	232	128	2,778	500	21,166	26,060
Total		11,350	21,949	32,915	5,039	50,578	8,257	35,577	165,665

No change 116,062; Change 49,603: 1 Urban Melting Pot; 2 Mixed Communities; 3 Out in the Sticks; 4 Asian Influence; 5 Middle Class Achievers; 6 Down and Out; 7 Working Class Endeavour

Source: Author’s calculations based on 1991 and 2001 Census data

There are examples of areas of every type changing to every other type. Socially this is quite surprising as for an area to change from the poorest type to the richest type is likely to take large amounts of investment. However, both the method and the small-sized areas used can make the process very sensitive so even small change in the social make-up of an area can produce what is statistically a very unlikely change in the group to which an area is assigned. For example, three areas have changed status from “Out in the Sticks” (3) to “Asian Influence” (4). One is in the north east of the city of Leicester, the second is in the south of Watford and the third is in Wiltshire, just north of Swindon. This, on the face of it, seems an unlikely change, but digging into the data it can be easily explained. These three areas were all positioned towards the edge of their cluster in 1991, and during the intervening period they have seen a small number of Indians, Pakistanis or Bangladeshis move in. This has been enough to move them from cluster 3 and into cluster 4. Although these areas far from perfectly match the average values of cluster 4, it is that cluster centre which now most accurately depicts the areas.

There is a breakdown of traditional working class areas, these areas are changing in both directions. Some areas are improving which is likely to be due to increased investment and gentrification that characterised areas of “Working Class Endeavour” in 1991 which have become “Mixed Communities” by 2001. In contrast, other areas which were “Working Class Endeavour” in 1991 were classified as “Down and Out” in 2001, suggesting that these areas have not done well over the period. These changes are, on the whole, likely to have been due to differing levels of investment which have led to the socially mobile either moving in or out of these areas. There are many ways in which an area's social profile can change. These may be complex but can be simplified to the following four types of area:

- areas whose social profile rises if the poor move out;
- areas whose social profile rises if the well off move in;
- areas whose social profile falls if the well off move out; and
- areas whose social profile falls if the poor move in.

These movements of people cause a shift in the social profile of the area. These can be termed as “upscaling” when the social profile of an area is raised (Schor, 1998) and “downshifting” when the social profile of an area is reduced (Goldberg, 1995). The changes seen can be intuitively labelled in either way, 10,980 areas can be said to have experienced a significant “downshifting” based on their change between area types, with 6,185 areas experiencing an “upscaling”.

Table 3.4 shows the balance of movements between areas. The raw figures of how many areas are changing types can be misleading as changes can happen in both directions. By looking at the balance between the changes, it becomes more apparent which changes are responsible for the headline figures seen in Table 3.2. The largest balance change between cluster types is between “Mixed Communities” (2) and “Working Class Endeavour” (7); 3,789 more areas have changed from “Working

Table 3.4 The change in the balance of cluster membership of areas, 1991–2001

		1991							
		1	2	3	4	5	6	7	Loss
2001	1	0	-539	-172	-314	-1,763	-498	-756	-4,042
	2	539	0	-31	87	-817	50	-3,789	-3,961
	3	172	31	0	-3	-2,786	21	-224	-2,789
	4	314	-87	3	0	-14	75	-182	109
	5	1,763	817	2,786	14	0	478	-2,071	3,787
	6	498	-50	-21	-75	-478	0	-2,495	-2,621
	7	756	3,789	224	182	2,071	2,495	0	9,517
Gain		4,042	3,961	2,789	-109	-3,787	2,621	-9,517	

1 Urban Melting Pot; 2 Mixed Communities; 3 Out in the Sticks; 4 Asian Influence; 5 Middle Class Achievers; 6 Down and Out; 7 Working Class Endeavour.

Class Endeavour” to “Mixed Communities” than *vice versa*, accounting for almost all the increase in the prevalence of “Mixed Communities”.

“Working Class Endeavour” (7) is an interesting case as it loses areas to all other cluster types. This, however, does not show a general overall pattern of development of these areas across the country, but the breakdown of traditional working class areas in both directions some improving and moving up; others falling down into the poorest group. This process will create more polarised areas of residence with some former working class areas losing their most able people to other areas while others will start to gentrify. These changes in the social profiles of areas are almost

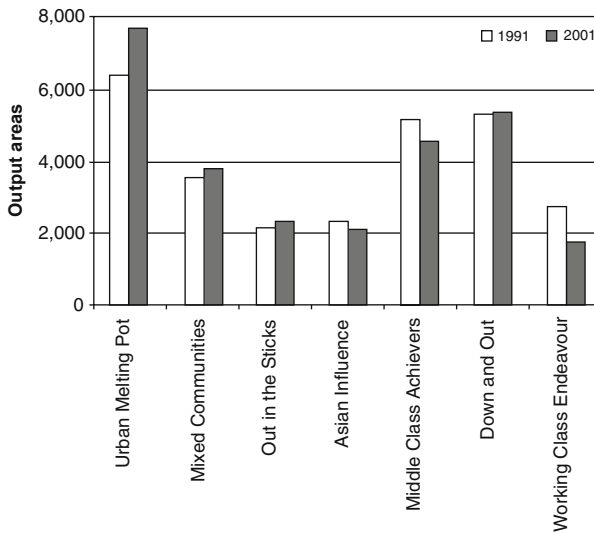


Fig. 3.1 Change in the prevalence of cluster types in London (Source: Author’s analysis based on 1991 and 2001 Census data)

certainly caused by patterns of migration rather than changes to the circumstances of the populations in situ.

The pattern of how the areas are changing between cluster types is not uniform across the country, with some regions and cities the inverse pattern with the clusters that are gaining nationally, losing and *vice versa*. Figure 3.1 shows the changes within London.

The pattern displayed by London matches that of England fairly closely; this is perhaps unsurprising as London accounts for one in six of the output areas within England so will have a big effect on the national picture, although there are differences. At 4.8%, the increase in “Urban Melting Pot” within London is double the rate for England as a whole, suggesting that London is responsible for much of the rise in prevalence of this group nationally. In contrast, with a rise of just 0.2% in London, the increase in the “Down and Out” group is eight times less than the national figure, suggesting that these movements, which represent areas falling to the bottom of the social scale, are largely taking place outside London.

Figure 3.2 shows that Sheffield has a contrasting distribution of groups to London, with “Out in the Sticks”, “Middle Class Achievers” and “Working Class Endeavour”. Sheffield’s pattern relates pretty much to that of England as a whole, although it has treble the rate of increase for “Out in the Sticks” and, related to this, Sheffield experienced a large proportional reduction in “Middle Class Achievers” and only a comparatively small increase in “Urban Melting Pot”.

Figure 3.3 show that Tyneside’s distribution is different to the national pattern with on over-representation of “Working Class Endeavour”. The rate of change of the clusters also differs significantly. The rate of increase shown in the number of

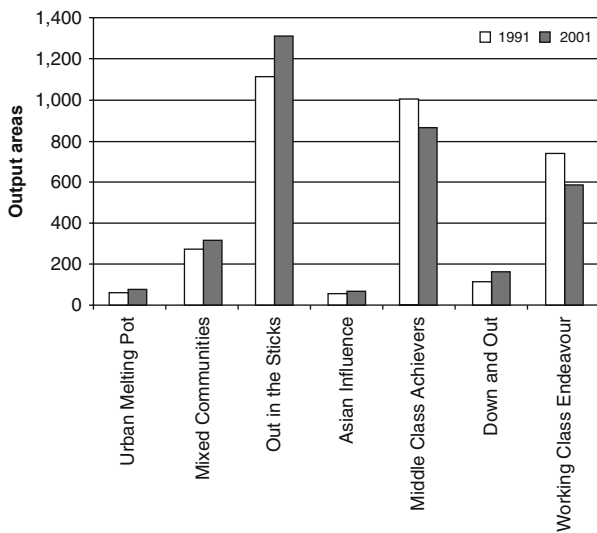


Fig. 3.2 Change in the prevalence of cluster types in Sheffield (Source: Author’s analysis based on 1991 and 2001 Census data)

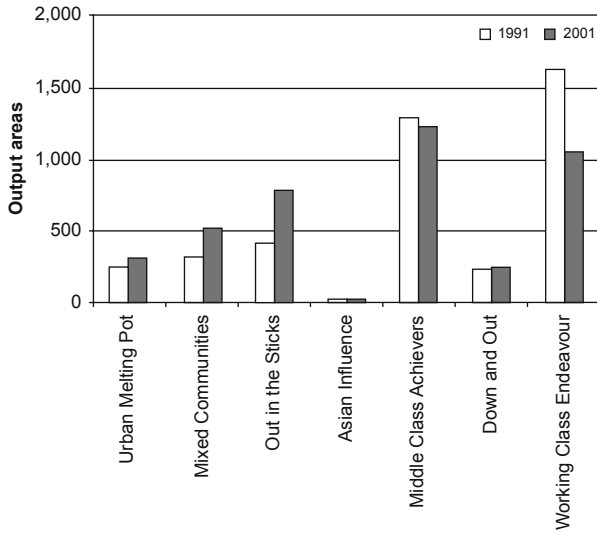


Fig. 3.3 Change in the prevalence of cluster types in Tyneside
 (Source: Author’s analysis based on 1991 and 2001 Census data)

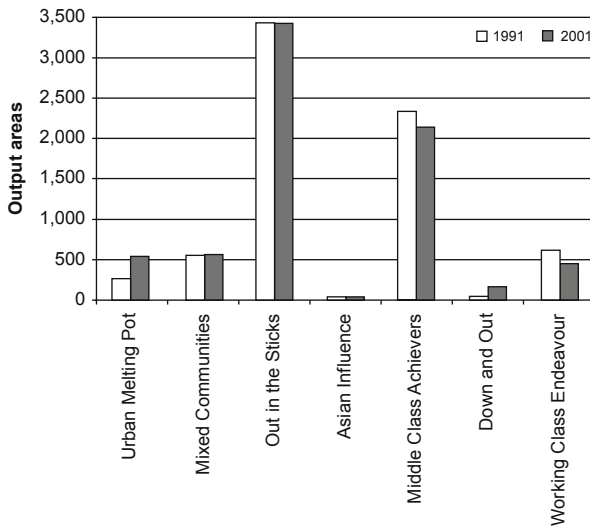


Fig. 3.4 Change in the prevalence of cluster types in Surrey
 (Source: Author’s analysis based on 1991 and 2001 Census data)

areas classified as “Out in the Sticks” is almost 9%, five times more than the national average. In contrast, “Working Class Endeavour” has fallen by over 14%, two and a half times faster than England as a whole. The extreme nature of the changes of these groups could be linked to the fact that the distribution of the groups within the

area was significantly different to the national pattern in 1991. The extreme nature of the change not only shows that Tyneside is following the national pattern, but perhaps catching up through some changes which had not taken place earlier.

Of all the areas examined, Surrey has the most polarised distribution of groups within it. Figure 3.4 shows that Surrey is dominated by two cluster types “Out in the Sticks” and “Middle Class Achievers” which account for approximately 80% of the output areas within the county. The changes are comparatively small here – “Out in the Sticks” has remained virtually static with a small drop in “Middle Class Achievers” which mirrors the national pattern. The reduction in “Working Class Endeavour” is only about half the national rate, whilst the increase in “Urban Melting Pot” is greater than the national average.

Conclusions

This project provides an overview of how the social geography of England is changing. Overall the biggest story is that the majority areas do not change in terms of the group they belong to over the period, with their relative position in the social hierarchy unchanged. However, movement of areas between cluster types can be seen, with changes suggesting an increasing polarisation within society. The number of areas within the worst-off group, “Down and Out”, increased by 2001 despite also some areas moving up and out of this type. An increase can also be seen in the “Out in the Sticks” group which is the most geographically separated and areas which are increasingly becoming economically separated as it becomes more difficult for anyone but the well off to live in a rural setting. This process of the country splitting with increasing polarisation at both ends of the socioeconomic spectrum is supported by Dorling and Rees (2003) and Dorling et al. (2007) who found a similar polarisation taking place over a longer time period.

The suggestion which the research makes is that the social change that is taking place within England is one of separation, which in turn reduces the choice of everybody as to where they can live. The least fortunate in society are kept at arms length in increasingly separated areas, with the neighbourhoods in which they live being treated as areas of “the other” by the people who have the choice not to live there (Byrne, 2005). The better off who have the illusion of choice are also hemmed into their ghettos of affluence, which their own perceptions of “other” areas prevent them from leaving (Clapson, 2003).

There is a lot more that can be done with the classification than can be covered within this short overview both in terms of what it can tell us about social change and the development of new methodological approaches for examining the changing nature of place over time.

On the whole, the experimental methodology seems to have been successful. Although obviously hampered by the different geography at the two time points. It is expected that the geography of the 2011 Census will experience less change than has been seen in the past so a comparison of 2001 and 2011 could be a real possibility

for future research. Areas that have changed clusters on average are further from a cluster centre than those which have not moved, suggesting that some of the changes that have been seen are not significant as many of these areas were on the edge of clusters to begin with. It is difficult to assess to what extent the matching of the 1991 enumeration district and 2001 output area geographies affected the group to which the 1991 areas were assigned. Experiments using larger geographic units, which are more comparable over time, may help to reveal more about the strength of using clustering over time methodologies to assess social change. However, much of the detail that using small geographic units gives, will be lost if these larger areas were to be used.

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Chapter 4

Geographical Modelling of Happiness and Well-Being

Dimitris Ballas

Introduction

Human perceptions of happiness vary and depend on a wide range of factors. Efforts to define and understand happiness date back to the work of Socrates, Plato and in particular, Aristotle, who in his work *Nicomachean Ethics*, attempted to give an answer to the question: *what is the good life?* (Lear, 1988; Ross, 1923). For Aristotle, happiness is the highest good achieved by human action and he suggested that the attainment of happiness involves the satisfaction of the human desires that are necessary to live a full and rich life. However, Aristotle believed that the question of what is a full and rich life cannot be answered for an individual in abstraction from the society in which he lives (Lear, 1988). The meaning of happiness varies through space and time.

There have been numerous attempts to understand and define happiness since the original work of Aristotle. Attempting to determine the factors that make individuals happy has long represented a great research challenge. There have been numerous studies of happiness and well-being issues across academic disciplines and from different perspectives. Sumner (1996) pointed out that happiness is subjective and that no objective theory about the ordinary concept of happiness has the slightest plausibility. Nevertheless, there have been several researchers who suggested that happiness can be measured (e.g. Griffin, 1986; Broome, 1999) and there has been on-going debate (Little, 1957; Sen, 1982; 1987) and a rapidly growing body of interdisciplinary research on the determinants of happiness and well-being (e.g. Blanchflower and Oswald, 2004; Dolan et al., 2007; Huppert et al., 2005; Layard, 2005; Oswald, 1997; Frey and Stutzer, 2002). It is also interesting to highlight the policy relevance of this research area. For instance, the UK Prime Minister's Strategy Unit published a report on what makes people satisfied with their lives (Strategy Unit, 2003). It can be argued that there is a need to critically review

D. Ballas (✉)

Department of Geography, University of Sheffield, Sheffield S10 2TN, UK
e-mail: d.ballas@sheffield.ac.uk

this kind of work and evaluate it under different conceptions of well-being and definitions of happiness over a person's lifetime. Further, it would be interesting to add a geographical dimension to the measurement of perceived levels of happiness (Dorling, 1996).

This chapter presents the application of multilevel modelling and spatial microsimulation that can be employed to explore the determinants of subjective happiness and well-being and to estimate happiness levels at different geographical scales. The data that have been used to build the models are discussed in the next section whilst the multilevel model used to explore the key determinants of subjective happiness and well-being is introduced thereafter. A spatial microsimulation model of happiness that builds upon the multilevel analysis is then presented and the final section offers some concluding comments.

Data

Although there are on-going efforts to build comprehensive databases of happiness worldwide (Veenhoven, 2007), there are currently very few sources of happiness data at small geographical levels in most countries. In Britain, the finest geographical level for which happiness survey data are available is the metropolitan district as defined for the release of the 1991 Census Samples of Anonymised Records (SARs).¹ In particular, the British Household Panel Survey (BHPS) includes a number of questions pertaining to subjective happiness and well-being available at the national, regional and SAR district level. The BHPS is a national annual survey of the adult population of the UK, drawn from a representative sample of over 5,000 households. The latter is a multistage sample with a similar design and sample frame to that used by large government surveys in Britain (Taylor et al., 2001). The survey collects information on a wide range of variables covering most aspects of life in Britain, including subjective well-being and happiness questions. For instance, the BHPS includes the subjective well-being questions (AHLGHWQ1, AHLGHWQ2) that were based on the responses to 12 questions that make up the General Health Questionnaire (GHQ), which was originally developed as a screening instrument for psychiatric illness, but are also commonly used as an indicator of subjective well-being (Cox et al., 1987). The way these questions were asked and recorded in the BHPS is described in Table 4.1. Responses are made on a four-point frequency scale of feeling in relation to a person's usual state (Taylor et al., 2001).

In the context of the project presented here, the BHPS was combined with data from the UK census of population in order to examine the determinants of well-being at different levels and to also estimate the geographical distribution of happiness and well-being at the small area level at which there is no data available from published sources. The UK census has been and still remains the

¹ SARs districts are individual 1991 local authority districts or amalgamations of districts so that no area has a population of less than 120,000 (Marsh and Teague, 1992).

Table 4.1 Measuring subjective well-being in the BHPS – the GHQ set of questions as they appear on the BHPS questionnaire

Here are some questions regarding the way you have been feeling over the last few weeks. For each question please ring the number next to the answer that best suits the way you have felt. Have you recently

GHQ questions/responses	1	2	3	4
1. Been able to concentrate on whatever you are doing?	Better than usual	Same as usual	Less than usual	Much less than usual
2. Lost much sleep over worry?	Not at all	No more than usual	Rather more than usual	Much more than usual
3. Felt that you are playing a useful part in things?	More than usual	Same as usual	Less so than usual	Much less than usual
4. Felt capable of making decisions about things?	More so than usual	Same as usual	Less so than usual	Much less capable
5. Felt constantly under strain?	Not at all	No more than usual	Rather more than usual	Much more than usual
6. Felt you could not overcome your difficulties?	Not at all	No more than usual	Rather more than usual	Much more than usual
7. Been able to enjoy your normal day-to-day activities?	Much more than usual	Same as usual	Less so than usual	Much less than usual
8. Been able to face up to your problems?	More so than usual	Same as usual	Less able than usual	Much less able
9. Been feeling unhappy and depressed?	Not at all	No more than usual	Rather more than usual	Much more than usual
10. Been losing confidence in yourself?	Not at all	Not more than usual	Rather more than usual	Much more than usual
11. Been thinking of yourself as a worthless person?	Not at all	No more than usual	Rather more than usual	Much more than usual
12. Been feeling reasonably happy all things considered?	More so than usual	About same as usual	less so than usual	Much less than usual

Source: BHPS

most authoritative social accounting of people and housing in Britain and is a unique source of data for the social sciences (Dale and Marsh, 1993; Rees et al., 2002). The census records demographic and socioeconomic information at a single point in time and is normally carried out every 10 years. Census datasets describe the

state of the whole national population and are extremely relevant for the analysis of a wide range of socioeconomic issues and related policies. The topics covered by the census are determined, amongst other factors, by the necessity to preserve comparability over time and the need for timeliness (Dale and Marsh, 1993). The next sections describe how census data were combined with the BHPS to model the determinants of well-being as well as to simulate happiness at the small area level.

Building Multilevel Models of Happiness

Most of the statistical models of happiness that have been developed to date have been built using individual-level micro data to make inferences about an individual-level relationship between happiness and a wide range of socioeconomic and demographic characteristics. There are also several studies comparing aggregate happiness levels between countries (e.g. Veenhoven, 1993, 2000). In particular, such studies were largely based on single-level multivariate regression models which have been very successful in identifying what are the key socioeconomic and demographic determinants of subjective happiness. Most of these models were built using individual-level microdata to make inferences about an individual level relationship between happiness and a wide range of explanatory variables.

The research project described in this chapter built upon such single-level modelling analysis by developing a multilevel model of happiness and well-being (Ballas and Tranmer, 2008). Multilevel modelling can account for the interdependence of happiness observations at different levels by partitioning the total variance into different components of variation due to various levels in the data (Goldstein, 2003; Snijders and Bosker, 1999; Hox, 1995). In particular, this approach can be used to determine whether levels of happiness among individuals in Britain reflect different characteristics of residents in different districts, regions and areas (compositional effects) or whether there are environmental or other factors (e.g. social capital and cohesion, socioeconomic inequality) of places that cause their inhabitants to be happy or unhappy (contextual effects). Table 4.2 shows the results of one of the multilevel models (for more details on this and other similar models see Ballas and Tranmer, 2008).

Table 4.2 Multilevel model of subjective well-being (HLGHQ1) and happiness (GHQL)

Model 2 variables, variance component estimates and coefficients (standard error in brackets)	Subjective well-being	General happiness
Intercept	0.766 (0.074)	0.607 (0.084)
<i>Individual-level variables</i>		
Age	-0.016 (0.003)	-0.022 (0.003)
Age squared	0.000 (0.000)	0.000 (0.000)
Female	-0.177 (0.021)	-0.068 (0.023)
Individual income	-0.012 (0.013)	0.007 (0.015)
Health good (reference = health excellent)	-0.200 (0.022)	-0.085 (0.024)

Table 4.2 (continued)

Model 2 variables, variance component estimates and coefficients (standard error in brackets)	Subjective well-being	General happiness
Health fair (reference = health excellent)	-0.510 (0.028)	-0.249 (0.031)
Health poor (reference = health excellent)	-0.963 (0.043)	-0.465 (0.047)
Health very poor (reference = health excellent)	-1.471 (0.073)	-0.790 (0.078)
University degree	-0.030 (0.038)	0.079 (0.040)
Employment status: unemployed (reference = employed or self employed)	-0.451 (0.043)	-0.384 (0.047)
Employment status: retired (reference = employed or self employed)	0.038 (0.041)	0.030 (0.044)
Employment status: family care (reference = employed or self employed)	-0.126 (0.035)	-0.078 (0.038)
Employment status: student (reference = employed or self employed)	0.048 (0.054)	0.022(0.059)
Employment status: sick/disabled (reference = employed or self employed)	-0.458 (0.063)	-0.158 (0.069)
Employment status: on maternity leave (reference = employed or self employed)	0.023 (0.258)	0.492 (0.281)
Employment status: on a government scheme (reference = employed or self employed)	-0.045 (0.153)	-0.274 (0.167)
Employment status: other job status (reference = employed or self employed)	0.082 (0.161)	0.163 (0.176)
Commuting time: up to 40 min	0.012 (0.032)	0.040 (0.034)
Commuting time: between 40 and 60 min	-0.048 (0.044)	0.024 (0.047)
Commuting time: over an hour	-0.087 (0.072)	-0.051(0.078)
Has lived at current address for between 1 and 5 years (reference = lived at current address for less than 1 year)	0.027 (0.032)	-0.010 (0.034)
Has lived at current address for more than 5 years (reference = lived at current address for less than 1 year)	0.120 (0.031)	0.030 (0.033)
<i>Household level variables</i>		
Household type: couple no children (reference = single)	0.117 (0.034)	0.144 (0.036)
Household type: couple with dependent children (reference = single)	-0.030 (0.034)	0.047 (0.041)
Household type: couple with children but not dependent (reference = single)	0.037 (0.046)	0.078 (0.049)
Household type: lone parent with dependent child(ren)	-0.281 (0.058)	-0.092 (0.062)
Household type: lone parent with non dependent child(ren)	-0.051(0.060)	0.067(0.063)
Household type: other	0.098 (0.059)	0.176 (0.064)
Household tenure: private renting (reference = owner occupier)	-0.054 (0.038)	0.055(0.040)
Household tenure: LA/HA renting (reference = owner occupier)	-0.068 (0.028)	-0.011(0.029)

Table 4.2 (continued)

Model 2 variables, variance component estimates and coefficients (standard error in brackets)	Subjective well-being	General happiness
Number of cars	-0.010 (0.016)	0.003 (0.016)
Household income	0.028 (0.015)	0.002 (0.016)

Note: Bold are variable coefficients where $p < 0.05$

Source: BHPS wave 1 (after Ballas and Tranmer, 2008)

As can be seen, the following variables have significant negative main effects on happiness and well-being: age, gender (females tend to be on average less happy than males), health status, unemployment, being a family carer, and being sick or disabled. Also, commuting times seem to have a negative but not significant effect on well-being and happiness in this model. On the other hand, being in a relationship without children seems to have a positive significant effect on both measures (when compared with being single).

It is interesting to note that, according to this model, sample respondents who lived in their current address for more than 5 years reported higher than average well-being compared with individuals who lived in their current address for less than a year. In particular, this variable has a positive significant coefficient for the well-being measure and a positive but not significant value for general happiness. This result suggests that a person may feel better about themselves when they have lived at their current address for a relatively long time and have perhaps developed good local social networks. In addition, living in a “lone parent household with dependent children” seems to have a significant negative main effect on the well-being measure but not on happiness. In contrast, being in any “other household type” seems to have a significant positive effect on the happiness score, but not on well-being. Individuals who live in households that rent their accommodation privately or from a local authority or housing association report lower well-being compared to owner occupiers. However, this variable does not have a significant impact on the general happiness measure.

The results described in Table 4.2 are generally consistent with the findings of previous single level studies in this field (for more details and additional similar models see Ballas and Tranmer, 2008). However, it should be noted that the multilevel modelling estimates for the happiness coefficient are less likely to be biased due to population clustering effects when compared to single-level regression analysis results. In particular, one of the key advantages of multilevel modelling techniques is that they take into account the effects of clustering in the population. For instance, in the context of the research presented in this chapter, we had a population of individuals clustered into households which in turn were clustered into geographical areas. Therefore, the distribution of happiness and well-being as well as that of their correlates at different levels may be subject to the influences of population grouping and such influences are taken into account in a multilevel modelling framework.

It is also interesting to note that, according to the multilevel models fitted in the context of this project, most of the variation in the measures of “subjective well-being” and “general happiness” is attributable to the individual level (Ballas and Tranmer, 2008). Some of the variation in both measures is attributable to the household level and a very small proportion of the variation of the “subjective well-being” measure is attributable to the district level (whereas the variation in the “subjective happiness” measure attributable to the district level is zero, according to the data and analysis presented here). Moreover, the variation of “subjective well-being” that is attributable to district and household levels is reduced with the introduction of a number of explanatory and control variables.

Multilevel models are very powerful tools for the analysis of variation of happiness and well-being at different levels, as well as for the identification of the socioeconomic, demographic and other variables that have the highest impact. Nevertheless, they are still constrained by the lack of availability of data at the small area level. The following section presents how such data are estimated by using microsimulation models that can be built on the basis of multilevel model findings.

Building Spatial Microsimulation Models of Happiness

“Simulation is a critical concept in the future development of modelling because it provides a way of handling complexity that cannot be handled analytically. Microsimulation is a valuable example of a technique that may have increasing prominence in future research” (Wilson, 2000, p. 98). Simulation-based spatial modelling is an expanding area of research, which has enormous potential for the evaluation of the socio-economic and spatial effects of major developments in the regional or local economy. Spatial microsimulation methodologies involve the merging of census and survey data to simulate a population of individuals within households, whose characteristics are as close to the real population as it is possible to estimate. Dynamic spatial microsimulation involves forecasting past changes forward to produce as best an estimate as possible of individual’s circumstances in the future – were current trends to continue – or under different policy scenarios.

The research presented here builds on past and on-going spatial microsimulation work (Ballas, 2004; Ballas and Clarke, 2001; Ballas et al., 2005a, b) by developing and using a spatial microsimulation methodology to define personal happiness and quantify and estimate its degree for different types of individuals, living in different areas. As Sen (1987) points out, “A person who has had a life of misfortune, with very little opportunities, and rather little hope, may be more easily reconciled to deprivations than others reared in more fortunate and affluent circumstances. The metric of happiness may, therefore, distort the extent of deprivation in a specific and biased way” (Sen, 1987, p. 45).

It can be argued that since the degrees of well-being vary significantly between different individuals (different people are made happy by different things,

life-courses *et cetera*), microsimulation is an ideal methodology to study and quantify happiness at the individual level. Further, one of the main advantages of microsimulation is the ability to link data sets from different sources. For the purposes of this study the microsimulation method has been used to link the BHPS discussed earlier to census small area outputs (building on ongoing work on how this link can be satisfactorily achieved). In this manner, a geographical dimension can be added to the existing BHPS research (such as the research on happiness by Clark and Oswald, 2002; Blanchflower and Oswald, 2004; Layard, 2005). In particular, in the context of the research presented here, a spatial microsimulation model has been developed in order to estimate the geographical distribution of individual contentment through the 1990s. The model links the first wave of the BHPS (1991) briefly discussed in the previous section to census small area statistics on the basis of socioeconomic variables such as those used in the multilevel models briefly described in the previous section. In the context of this chapter, the re-weighting methodology described in Ballas (2004) and Ballas et al. (2005a) has been employed to re-adjust the weights of the records of the BHPS households so that they would fit census small area statistics tables in 1991 and 2001. The simulated database was then used to estimate subjective happiness at different geographical levels.

It should be noted that all the households in the BHPS are given a weight that compensates for error, bias, refusals *et cetera*. These weights can be readjusted in order to fit small area descriptions, such as census small area data (the weights can be readjusted so that they would add up to these small area descriptions). An example of how such a readjustment can be carried out is described in Tables 4.3, 4.4, 4.5, and 4.6 (after Ballas et al., 2005a). In particular, Table 4.3 gives a hypothetical individual microdata set comprising five individuals, which fall within two age categories. Further, Table 4.4 depicts a small area statistics table for a hypothetical area, whereas Table 4.5 depicts a cross-tabulation of the hypothetical microdata set, so that it can be comparable to Table 4.4. Using these data it is possible to readjust the weights of the hypothetical individuals, so that their sum would add up to the totals given in Table 4.4. In particular, the weights can be readjusted by multiplying them by the value of the cell in Table 4.4, which denotes the category in which they belong over the respective cell in Table 4.5. This can be expressed as follows:

$$n_i = w_i x s_{jk} / m_{jk} \tag{4.1}$$

Table 4.3 Hypothetical microdata set (original weights: table *w*)

Individual	Sex	Age group	Weight
1st	Male	Over-50	1
2nd	Male	Over-50	1
3rd	Male	Under-50	1
4th	Female	Over-50	1
5th	Female	Under-50	1

Table 4.4 Hypothetical small area data tabulation (table *s*)

Age/sex	Male	Female
Under-50	3	5
Over-50	3	1

Table 4.5 Hypothetical microdata set, cross-tabulated by age and sex (table *m*)

Age/sex	Male	Female
Under-50	1	1
Over-50	2	1

Table 4.6 Re-weighting the hypothetical microdata set to fit Table 4.2

Individual	Sex	Age group	Weight	New weight
1st	Male	Over-50	1	$1 \times 3/2 = 1.5$
2nd	Male	Over-50	1	$1 \times 3/2 = 1.5$
3rd	Male	Under-50	1	$1 \times 3/1 = 3$
4th	Female	Over-50	1	$1 \times 1/1 = 1$
5th	Female	Under-50	1	$1 \times 5/1 = 5$

where n_i is the new household weight for household i , w_i is the original weight for household i , s_{jk} is element jk of table s (small area statistics table, which is the equivalent of Table 4.3) and m_{jk} is element jk of table m (reproduced table using the household microdata original weights, which is the equivalent of Table 4.5 in the example). Table 4.6 depicts how this simple formula is used to readjust the weights of the individuals in the example.

The above process can then be used to re-weight the individuals to fit another table. This re-weighting procedure was adopted iteratively to readjust the BHPS household weights so that they would fit the electoral wards of areas in Wales on the basis of the following statistics tables from the 1991 Census:

1. household tenure status;
2. occupation of head of household;
3. number of cars; and
4. household type (single, married, lone parent).

The generated weights for each household represent the probabilities of BHPS households to “live” in a given area.

After generating BHPS household weights for each small area, the next step was to convert the decimal BHPS weights into integer weights. This conversion was carried out with the implementation of an algorithm that maximised the likelihood of households with the highest decimal weights to be represented in a small area (for more details, see Ballas et al., 2005a).

The next step in the modelling exercise was to re-weight the BHPS to fit projected small area distributions of household tenure, occupation, number of cars and household type. In particular, the small area projection method developed by

Ballas et al. (2005b) has been applied upon data from the Censuses of 1971, 1981 and 1991 in order to produce projected electoral ward area tables for 2001, 2011 and 2021. The first wave (1991) of the BHPS was then re-weighted using the method described above to generate a microdata set at the ward level for Britain, which contained a number of non-census variables, including happiness questions such as these described in Table 4.1.

It should be noted that the accuracy of the estimation of these variables depends on the degree of their correlation with the census variables which were used as constraints in the simulation. For instance, assuming that subjective happiness is to an extent correlated to the “constraint” small area statistics tables described above, it is possible to estimate the geographical distribution of happiness. For example, Fig. 4.1 shows the estimated geographical distribution of happiness in Wales and Scotland respectively in the first simulation year of 1991 (aggregated to parliamentary constituency level) on the basis of such assumptions.

In addition, Figs. 4.2 and 4.3 show the projected spatial distributions of happiness and well-being in Wales and Scotland in 2001 and 2011, which are based on the implementation of the modelling approaches discussed by Ballas et al. (2005b). It should be noted that the model outputs presented in this section are implicitly based on the assumption that subjective well-being and happiness is largely determined by individual and household variables that have been used as constraints in the simulations and not by environmental and other geographical factors.

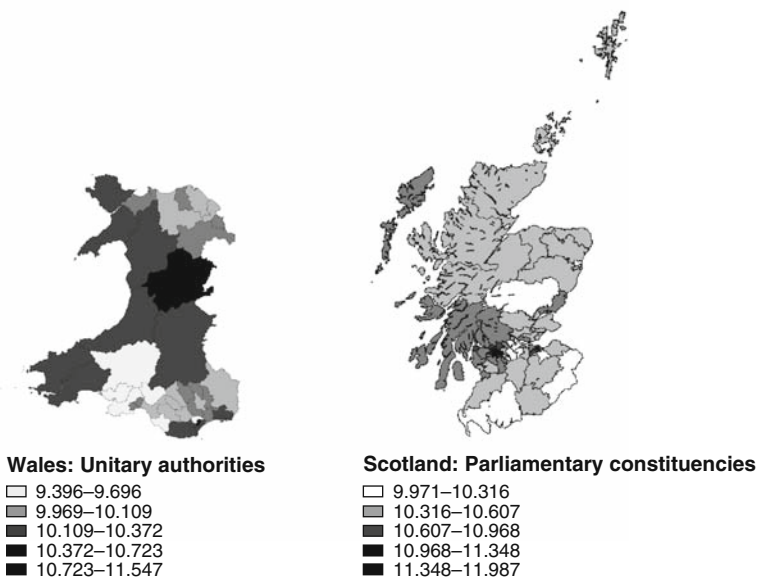


Fig. 4.1 Estimated geographical distribution of happiness (% happy more than usual) in Wales and Scotland, 1991 (Source: Author’s analysis)

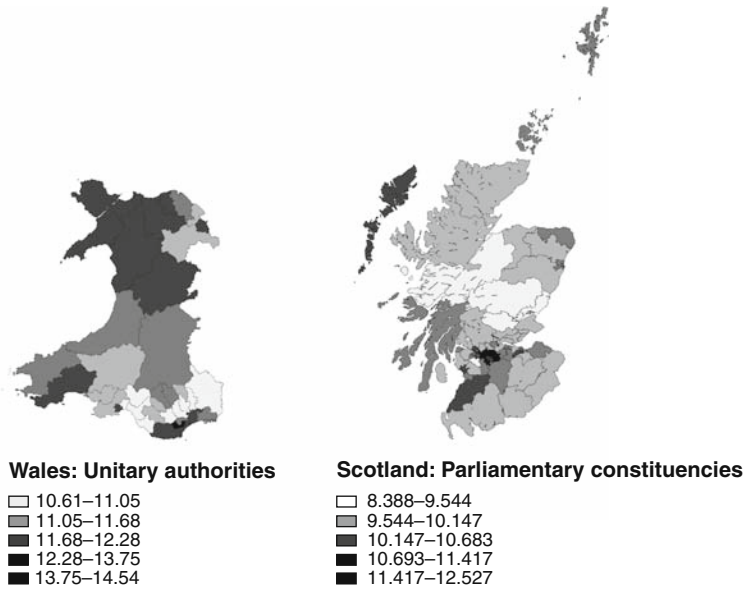


Fig. 4.2 Estimated geography of happiness (% happy more than usual) in Wales and Scotland, 2001 (Source: Author’s analysis)

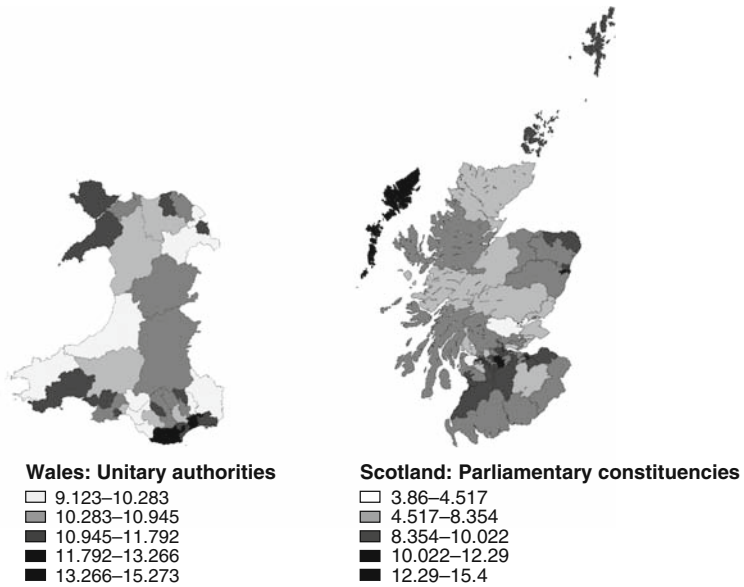


Fig. 4.3 Estimated geography of happiness (% happy more than usual) in Wales and Scotland, 2011 (Source: Author’s analysis)

Conclusions

This chapter demonstrated how multilevel modelling techniques and spatial microsimulation have been used for the analysis of happiness and well-being on data from different sources. In particular, geographical data from the UK census of population were combined with BHPS data in order to build a data set that contained information on happiness and well-being at the individual level as well as a wide range of socioeconomic and demographic variables at the individual, household, district and regional level.

The chapter has given a flavour of ongoing research efforts to add a geographical dimension to existing happiness research by combining different secondary data sets in order to provide a powerful database for the geographical analysis of subjective happiness and well-being. It should be noted that such a framework can potentially provide very interesting insights into the local factors that may be affecting happiness and well-being. It may also be very useful for the analysis of local policy outcomes and it could also inform local debates on issues such as green spaces and the geographical allocation and extent of geographical features that may be affecting happiness and local well-being.

One of the major advantages of the models that were developed and presented here is that they can be used to investigate the possible impact on happiness of alternative government policies. The models are currently being used to explore the impact upon happiness of basic income policies which could increase the economic independence of all individuals in society (Van Parijs, 1997; 2001). They can also be used to examine the possible impact of innovative progressive consumption tax policies such as those suggested by Frank (1999, 2005) and to further investigate the degree to which the source of happiness or unhappiness is personal or it has more to do with inequalities in the distribution of income, wealth, skills and capability.

Also, as it has strongly been argued elsewhere (see Ballas et al., 2007), spatial microsimulation frameworks have great potential for the enhancement of local policy decision making, especially when combined with planning support systems. It can be argued that such frameworks can become even more powerful and policy-relevant if applied to the very important themes of happiness and local well-being.

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Chapter 5

Geographic Analysis of Cultural Consumption

Orian Brook, Paul Boyle and Robin Flowerdew

Introduction

Social inequality and patterns of cultural taste and consumption are the subject of a large and complex debate. Recent work has focused on the theories of Bourdieu (cultural capital, cultural consumption) and Weber (social class, social status) in explaining cultural consumption, with some favouring the former (Gayo-Cal et al., 2006), and others the latter (Chan and Goldthorpe, 2005: see also Brook, 2007). From a policy perspective, there is great interest in the extent to which those that attend subsidised arts venues resemble the population: certain groups are thought to be under-represented, and there has been a strong focus on venues increasing their audiences from Black and minority ethnic groups. There is also a pervasive assumption that arts attendance is strongly affected by income/affordability, although interestingly this does not seem to be supported by research. Keaney (2008), for example, finds that affordability is a major reason for attenders not going more often, but a weak reason for non-attenders not going at all. On this basis, the Department for Culture, Media and Sport (DCMS) set the Arts Council of England targets to increase levels of arts attendance and participation among “priority groups”: disabled people, Black and minority ethnic groups, and lower socioeconomic groups.

Much of the literature that explores the socioeconomic and demographic characteristics of arts audiences is based on a number of surveys commissioned by the Arts Councils and DCMS (Skelton et al., 2002; Bridgewood et al., 2003; Bunting et al., 2007), most recently the *Taking Part* survey. However, there are problems with the use of survey data for understanding cultural consumption. First, the research supposes that all demographic groups have equal opportunities to attend, but we

O. Brook (✉)
School of Geography and Geosciences, University of St Andrews, St Andrews,
Scotland KY16 9AL, UK
e-mail: orian.brook@st-andrews.ac.uk

know that different communities are geographically concentrated in certain areas, which vary in cultural provision. Second, the surveys lack detail about the events and venues which are attended, as well as elements of attendance behaviour, such as frequency and venue crossover. Third, self-reported attendance at cultural events is strongly linked to the respondent's identity: research by arts practitioners finds that individuals identify as audience members of certain venues even if it is many years since they have attended there, and will deny actual attendances if they do not see them as characterising "who they really are". Peterson (2007, p. 302) describes *Taking Part* as "studying the relationship between the respondents' construction of their cultural practices and their statements about their occupation, income, and education".

An alternative approach is to conduct geodemographic analyses of routinely collected attendance data. This allows analyses of how attendance co-varies with population characteristics, and other characteristics of small areas including their proximity to performing arts venues. While the potential danger of succumbing to the ecological fallacy cannot be ignored, it can be minimised by the use of the smallest census areal units available (output areas, which comprise 125 households on average). While geodemographic studies of administrative data have been conducted for certain public services, such as education (Singleton, 2004) and health (Webber, 2004), this approach has yet to be adopted in the arts, despite the collection of large and high quality databases by the major performing arts venues. Arts Council England uses geodemographic segmentations both to understand demographic profiles of attenders, using ACORN profiling of responses to the Target Group Index survey run by BMRB (British Market Research Bureau) and to predict levels of attendance, but these analyses are based on survey data.

This chapter describes the first robust and sophisticated analysis of cultural attendance in London using routinely collected data free from the bias introduced by survey data. Audiences London and other regional agencies have been combining very large data sets of customers collected when tickets are booked at performing arts venues. The database enables comparison of the distribution of attenders to the population characteristics of the small geographical areas in which they reside. It is also possible to consider geographical factors in a way that is simply not possible with existing survey data. The research objectives were to uncover the best geodemographic and socioeconomic predictors of arts attendance and how these vary geographically and for different artforms and venues. In addition, there was interest in whether our census-based model of arts attendance could provide better discrimination than that provided using any of the existing geodemographic classifications.

The Data

The data were taken from 28 venues in London, covering a range of venue sizes, locations and artforms (mainly in Central London and the subsidised sector).

Table 5.1 Venues in London

Albany Deptford	Open Air Theatre
Almeida	Peacock Theatre
ArtsDepot	Polka Theatre
Barbican Centre	Queen's Theatre, Hornchurch
Battersea Arts Centre	Royal Court
Broadway Barking	Royal Opera House
Bush Theatre	Sadler's Wells
Croydon Clocktower	Shakespeare's Globe
English National Opera	Soho Theatre
Greenwich Theatre	Southbank Centre
Hackney Empire Theatre	The Drill Hall
Hampstead Theatre	The Place
Lyric Theatre, Hammersmith	Theatre Royal Stratford East
National Theatre	Watermans Arts Centre

These included most of London's regularly-funded clients of Arts Council England, providing a good representation of the city's centrally-subsidised performing arts sector (Table 5.1).

A drawback of using box office data is that it represents purchasers rather than attenders, although Neill and Orme (2006) found that the two groups are similar. In order to exclude the majority of those purchasing on behalf of others, group bookings were filtered out, as were free tickets and tickets purchased from business postcodes. Data from calendar year 2005 were chosen, and limited to exclude the 30% of addresses which were outside London, since previous research found that these attenders had different demographic profiles (Brook, 2005). Artforms such as film and visual arts were excluded as they had low rates of customer data capture, which left a range of music (classical, popular, jazz, folk and world), staged work (plays, music theatre, opera, ballet and other dance), children's events, talks and workshops.

The data were matched using an algorithm to identify unique addresses across the venue databases. Postcodes were then matched to Census "output area" geography and aggregated in order to match the arts attender data with variables from the 2001 Census. We constructed a single variable counting the number of addresses attending any venue/artform, and separate counts for each venue and artform. A count of the total number of residential addresses in each output area was taken from Experian's postcode directory and used as the denominator. This resulted in a file of 24,128 OAs, representing over 930,000 transactions from around 350,000 addresses.

Variables derived from the 2001 Census were added, the choice of which was based on the existing theories about the drivers for, and barriers to, arts attendance including: ethnic group, qualifications, National Statistics Socio-Economic Classification (NS-SEC), limiting long-term illness and age bands. In addition, the income score for the lower layer super output area (LSOA) geography was included from the 2004 Indices of Deprivation.

Accessibility and Commuting Indices

One factor missing from previous analysis of arts attendance is the influence of geographic access to arts venues. An accessibility index was calculated (Plane and Rogerson, 1994):

$$A_i = \sum_j (W_j/d_{ij}) \quad (5.1)$$

where A_i is the accessibility index for output area (OA) i , d_{ij} is the distance from the population centroid of OA i to the postcode of venue j , and W_j is a weighting for venue j , based on the number of tickets sold by the venue (which met the criteria mentioned above). The index was then logged (which was found to be more effective than scaling the distance within the calculation). Accessibility to all venues was included, not just accessibility to the closest or those within a particular radius, as attenders often “pass over” nearby venues to visit one with the event that interests them. The resulting accessibility index for all venues and artforms in London is shown in Fig. 5.1.

The map for all artforms reflects the concentration of venues in central London: however, the accessibility index provided much greater discrimination than a simple measure of distance from the centre of London. The index was also calculated separately for each artform, and the index for children’s events (Fig. 5.2) shows how programming is distributed more in outer London venues than artforms overall.

An additional innovation used in this analysis was the creation of a commuting index. It is known that commuting varies between demographic groups in London, with White adults being much more likely to commute to central London, compared to members of other ethnic groups. Commuting has not been taken into account in previous analyses of arts attendance, and it was hypothesised that high levels of commuting from an area to other areas with good access to performing arts

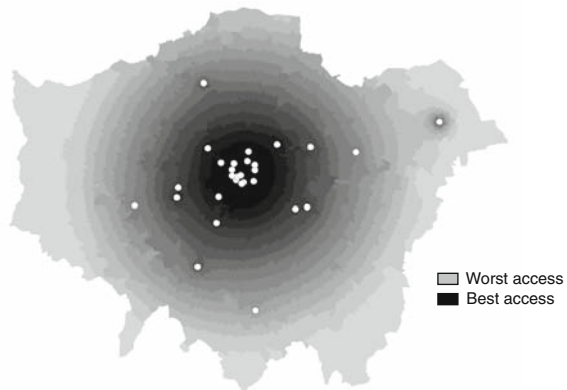


Fig. 5.1 Venue locations and accessibility index, all artforms, London (Source: Authors’ analysis) In all figures *dark areas* have best access, *pale areas* have worst

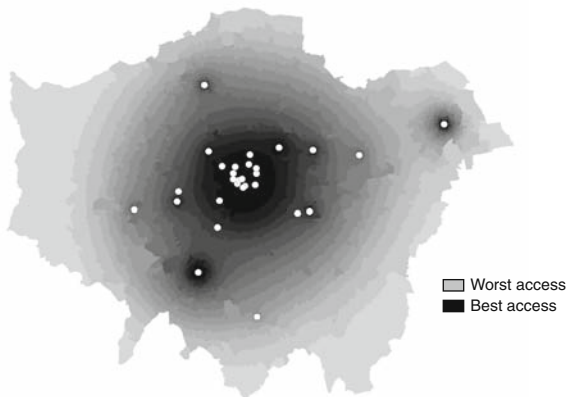


Fig. 5.2 Venue locations and accessibility index, children’s events, London (Source: Authors’ analysis)

venues would increase the rates of attendance from that area: as such, it should be considered a measure of how commuting enhances accessibility to venues, rather than a measure of commuting itself. The commuting index was calculated using OA to OA 2001 Census flow data supplied by the Centre for Interaction Data and Research (CIDER) according to the following formula:

$$C_i = \sum_j (A_j(M_{ij}/P_i)) \tag{5.2}$$

Where C_i is the commuting index for $O A_i$, A_j is the accessibility measure for $O A_j$, M_{ij} is the number of people commuting from $O A_i$ to $O A_j$ and P_i is the number of adults in $O A_i$.

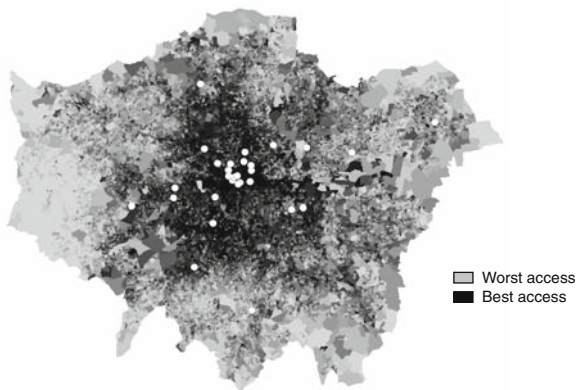


Fig. 5.3 Venue locations and commuting index, all artforms and venues, London (Source: Authors’ modelling based on 2001 Census Special Workplace Statistics)

Fig. 5.4 Commuting index, Theatre Royal Stratford East (Source: Authors' modelling based on 2001 Census Special Workplace Statistics)



Figure 5.3 illustrates that commuting behaviour as a component of access to arts venues contributes considerable additional geographic variation, as many adjacent areas have quite different levels for the commuting index. The commuting index can also be derived separately for each venue and Fig. 5.4 shows the commuting index for the Theatre Royal Stratford East in deprived Stratford, 9.9 km east of the centre of London. This shows a distinctly different pattern of commuting compared to the overall index, and helps us to understand that the potential audience for this venue is different not only because of the nearby residential population but also because of the people who commute to workplaces nearby.

Modelling Arts Attendance

Our outcome variable was the number of addresses in an OA attending at least one of the venues at least once during 2005. Figure 5.5 maps this as a rate of attendance by dividing it by the number of residential addresses in the OA. It shows higher rates

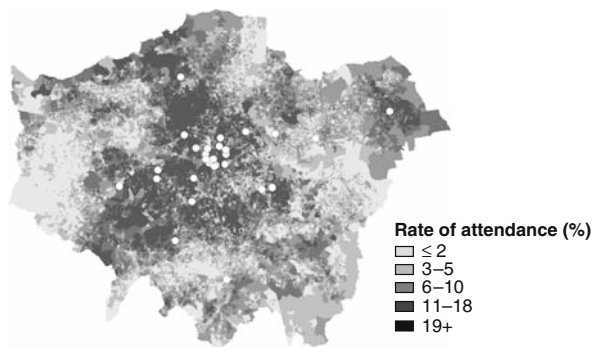


Fig. 5.5 Quintiles of rate of attendance with venue locations, London (Source: Authors' analysis)

of attendance closer to the centre, with some notable exceptions such as around Elephant and Castle in inner south London, and greater variation in outer London, with particularly low rates in Bexley and Newham to the east, and Hounslow and Hillingdon to the West.

Regression Modelling

A common approach used to model such data is a standard Ordinary Least Squares (OLS) regression model of the percentage of addresses attending. However, percentage data are bounded at 0 and 100% and this causes problems when analysing predicted values and residuals (which could be <0% or >100%). A more appropriate grouped logistic regression model, corrected for over-dispersion by setting the scale parameter to the deviance divided by the residual degrees of freedom, was used to model the number of unique addresses in an OA from which attenders had visited any venue in 2005. This enables the analysis of, essentially, a rate of attendance (Fig. 5.5), without the problems created by an OLS model. Model fit was estimated by dividing the model deviance by the deviance from the null model.

A range of explanatory variables relating to ethnicity, socioeconomic status, health, education and income were selected on the basis of previous research and the Arts Council priority groups, and additional variables for accessibility, commuting behaviour, car ownership, age and religion were chosen for theoretical relevance. We started by creating models using explanatory variables according to their group: one using only ethnicity variables, one using NS-SEC (the socioeconomic classification), one using qualifications and one using the derived variables (accessibility and commuting). In each case, the variables were highly significant, although the model fit was rather better for qualifications and NS-SEC (which explained 58.5 and 57.3% of deviance respectively) than for ethnicity, religion or the derived variables (34, 33.6 and 34%). A further model based on the Arts Councils' priority groups (Black and minority ethnic groups, the lower NS-SEC groups, and having a limiting long-term illness) explained 54.8% of deviance: all variables were significant, and in the expected direction.

We then built a fuller model including all the explanatory census variables selected (but not the derived variables): the deviance explained rose to 70%, and many of the initially important predictors became insignificant, or reduced in significance substantially. Including the accessibility and commuting indices further increased the model fit to 73.7%, and they were highly significant.

While a large number of variables are significant in predicting arts attendance, a parsimonious model was developed by sequentially removing the less significant variables, until the remaining variables were all outstandingly significant compared to those that were removed (all the variables in the parsimonious model have a z score greater than 20, whereas those that removed had z scores of no more than 10). In reality this was an heuristic process, observing the different effect of

variables according to the order in which others were removed, and noting variables which became more significant only because they were correlated with others that had been removed. All variables in the parsimonious model were consistently strongly significant throughout this process; moreover, they were in fact the most significant variables in the full model (although this was not the guiding principle in developing the parsimonious model). The resulting parsimonious model, shown in Table 5.2, had eight variables which explained as much as 69.8% of the deviance. All variables are significant at the 99.9% level and the effect of each is illustrated using odds ratios, which show the change in the rate of attendance predicted for an OA given a 10% increase in this variable, assuming all others are held constant.

The results show that the proportion of adults with a degree or equivalent qualification is the most significant predictor of attendance. Indeed, a model with this variable fitted alone explains 57.6% of deviance. However, the accessibility index has the strongest effect of all variables, with a 10% increase in the accessibility score being associated with a 60% increase in levels of attendance – which is of course only to be expected, but has never been taken into account in modelling arts attendance. Commuting behaviour is also very strongly significant, and has an effect almost as strong as that of higher education qualifications. The percentage of people with no religion, and the percentage Jewish, are both strongly positive. The percentage of the population aged 16–29 is negative but the percentage of adults in full time education is positive. It should be emphasised that the incorporation of the derived accessibility and commuting indices did not substantively change the significance or direction of the other variables of interest.

Strikingly, none of the factors included in the Arts Councils' priority groups, are significant enough to be included in the parsimonious model. The percentage of adults in NS-SEC groups 1–4, the percentage in Black and minority ethnic groups and the percentage with a limiting long-term illness were significant in the fuller model, but with substantially lower significance

Table 5.2 Coefficients, parsimonious model

Variable	Coefficient	Std error	Z	Odds (%)
Adults with degree (%)	2.90	0.03	87.49	134
Log accessibility index	4.67	0.11	43.00	160
Population with no religion (%)	2.68	0.06	43.20	131
Households without access to car (%)	-1.58	0.03	-48.42	85
Population age 16-29 (%)	-2.14	0.06	-38.18	81
Population religion Jewish (%)	1.67	0.06	29.92	118
Adults in full-time education (%)	2.20	0.08	28.05	125
Log commuting index	2.87	0.11	25.15	133
Constant	-7.59	0.06	-120.51	

Source: Authors' analysis

and weaker effects compared to other variables. Income deprivation was not significant.

It should be emphasised that, while there is some relationship between the accessibility and commuting indices and the other variables of interest, such as qualifications, NS-SEC and ethnic groups, the incorporation of the derived indices did not substantively change the significance or direction of the other variables of interest – in other words, it is not the case that there are strong effects found for the variables of interest which are being explained, and therefore arguably obscured, by a correlation with accessibility or commuting behaviour.

In summary, ethnicity and socioeconomic group are significant in predicting attendance, but other population characteristics, chiefly levels of higher education qualifications, are much more significant, and seem to explain much of the apparent significance of ethnicity and socio-economic status. And the accessibility and commuting variables, which are not accounted for in studies which utilise survey data, are highly predictive of attendance.

Comparing Models for Specific Artforms

While analysing overall predictors of attendance was of interest in terms of understanding who benefits from public investment, looking at audiences for specific artforms has a number of benefits: it enables the testing of how generalisable the modelling approach is; it allows us to understand the effects of the variables in more detail by examining how they vary; and it informs our understanding of artform audiences, and whether modelling attendance overall is hiding differences between them. We therefore calculated the number of unique addresses in an OA attending each artform at least once in 2005 (allowing addresses that attend more than one artform to be counted for each).

Looking at variations in the model results for different artforms, many of the key effects found in the main model were consistent. The model for “plays” audiences is closest to that for all artforms (plays represent the highest proportion of all attendances). The model for opera audiences is a little more distinct, though not as differentiated as might be expected, given the reputation the artform has as a socially elite pursuit: income deprivation and socioeconomic status are no more significant than for the overall model, but age becomes more so: for all artforms the proportion of young adults (aged 16–29) has a negative effect, but for opera the percentage aged 20–49 is also significant and negative. Qualifications are more influential than in the overall model, with the percentage of adults with higher education qualifications having an even stronger impact, and percentage of adults with A levels now being significant.

A bigger difference, however, is found in the model for children’s events. As expected, the percentage of households with children is significant and more strongly positive than in the general model. The percentage of the population with no access to a car is more negative, and having a degree is only marginally significant. The accessibility index is strongly significant, though less so than for

other models, and the same is true of the commuting index. Given that this is a model of children’s events this may suggest that it is the familiarity and convenience of a route which is the important aspect in commuting influencing attendance, rather than the commuting placing someone near a venue in order to attend after work.

Comparing Models for Specific Venues

Comparing models for attendance to individual venues allows us to take advantage of the geographic specificity of the administrative data, and to explore whether factors such as higher education qualifications and access to venues are equally important in predicting attendance for different types and locations of venues.

The outcome variable is now, therefore, the number of unique addresses within each OA that attended a particular venue in 2005, again allowing those that attended more than one venue to be counted for each. All of the artforms used in the main model were included. In order to allow for maximum comparability between results for each venue, a model was fitted for each that included all the variables from the full model. The results were cross-tabulated to be analysed for patterns in the significance and effect of variables.

The results of modelling attendance to individual venues provide a varied picture. Whilst having a degree is the most significant predictor by some way in the overall model, and has the strongest effect of the population variables, Fig. 5.6 shows how it is strongly positive for the majority of venues but not significant, or even negative, for others.

Two venues have been named in Fig. 5.6: for the Royal Court Theatre, which specialises in new writing and is based just west of Central London, the proportion with higher education qualifications has a powerful positive effect on attendance levels (more than any other variable) whereas for the Theatre Royal Stratford East (whose commuting patters were mapped in Fig. 5.4), this variable is not significant. Figure 5.7 maps the proportion of adults with a degree and shows how this reflects differences in the population surrounding the venues, with clearly lower levels of people with higher education qualifications in east London.

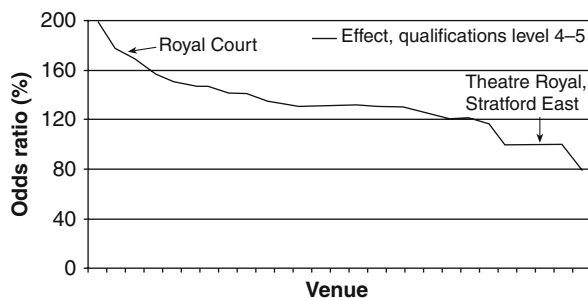


Fig. 5.6 Odds ratios for effect of 10% increase in adults with a degree on attendance at each venue (Source: Authors’ modelling based on 2001 Census Special Workplace Statistics)

Fig. 5.7 Quartiles of the percentage of adults with a degree or equivalent qualification
(Source: 2001 Census)

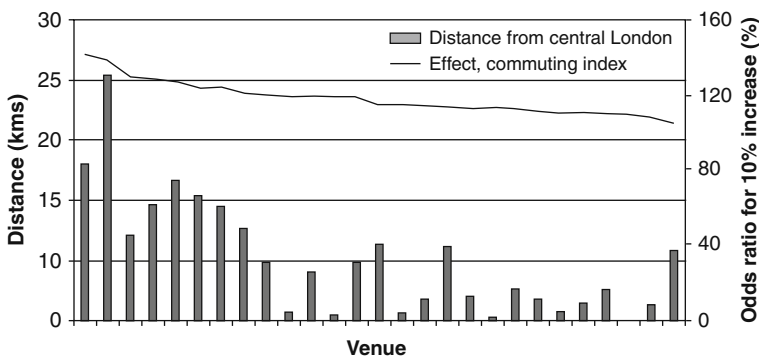
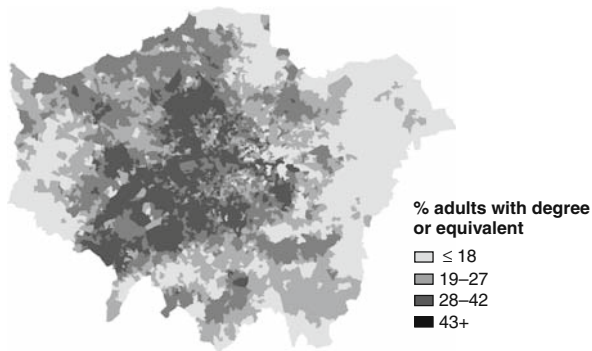


Fig. 5.8 Odds ratios, effect of 10% increase in the commuting index on attendance at each venue
(Source: Authors’ modelling based on 2001 Census Special Workplace Statistics)

Commuting is a moderately important variable in the overall model. However, in the models for each venue it is the only variable which is significant and positive for all venues. Moreover, Fig. 5.8 illustrates an unexpected finding: commuting was *more* influential for venues in outer London.

Accessibility is also strongly significant and positive for all but one venue. The effect and significance for each venue of many of the other independent variables, compared to their effect in the overall model, is fairly consistent – for example, income deprivation is not significant, or has only very weak effects, in all but two venues. The coefficients for ethnic groups varied between venues, but there were few where the White British percentage population was significant.

Manchester

Administrative data are also available from arts venues in other regions around the country. There was interest in modelling data from other regions, both to test further the generalisability of the modelling approach, and also to explore whether

there seemed to be substantive differences in attender profiles in different regions. Previous unpublished analysis of administrative data (Brook, 2008) had found some evidence for what many arts practitioners had thought anecdotally; that performing arts attenders in London are different to those encountered elsewhere in the country. For example, geodemographic profiling using Experian's Mosaic groups found that the "Suburban Comfort" group was over-represented in arts audiences in most of the country (with an index over 130% in each region) except in London, where it is underrepresented with an index of 59%.

Manchester was chosen as an appropriate comparison for London, because of its status as a major urban centre (especially because the data analysed here combined Manchester with Oldham, Bolton and Bury), and because Arts About Manchester collect data from a number of major venues in the city, namely:

Bolton Octagon	Oldham Coliseum
Bury Met	Royal Exchange
Bridgewater Hall	Royal Northern College of Music
Contact Theatre	Tameside Hippodrome
Green Room	The Lowry
Library Theatre	

A comparable dataset of arts attender data and Census variables was constructed, including accessibility and commuting indices created in the same way as for London. A definition of an area for analysis comparable to the Government Office Region of London was required, as the GOR North West was too large and varied in land use to provide a reasonable equivalent. An area with a 27 km radius from the centre of Manchester provided a similar size to London, and encompassed the conurbation and suburbs, with a more rural fringe.

The outcome variable was, as before, the number of unique addresses attending any venue or artform at least once in the calendar year 2005. This is mapped as a rate of attendance in Fig. 5.9, which illustrates that the areas with highest rates of attendance tend to be further from the centre of the conurbation, and are perhaps less contiguous, compared to London.

A full grouped logistic regression model using Census variables, accessibility and commuting indices explained 75.5% of deviance, and the parsimonious model 72.1%, both similar to the London models (although proxy R^2 values cannot be directly compared for different datasets). The performance of explanatory variables in the Manchester model had a great deal in common with the London model: in the parsimonious model the proportion of adults with higher education qualifications had the highest z score and a strong effect, accessibility and commuting were likewise important, although less strong, and having no religion, no access to a car, and the proportion of full time students also had a similar effect to the London model. Differences in the explanatory variables included: the population aged 50–65 was more strongly positive, and having no qualifications more strongly negative, so that both qualified for inclusion in the parsimonious model. Income deprivation and socio-economic status were more significant than was the case in London, with all NS-SEC groups being significant in the fuller model, but not sufficiently so for them to be included in the parsimonious model.

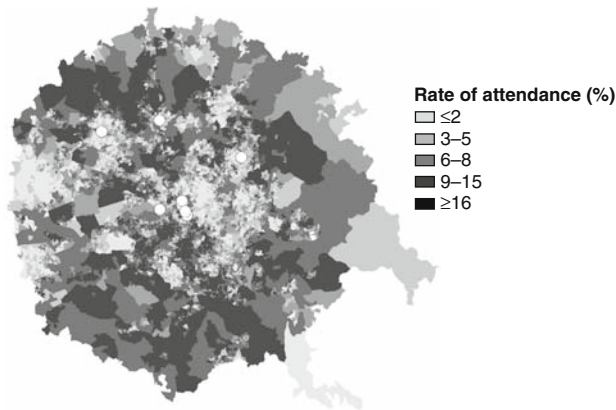


Fig. 5.9 Quintiles of rate of attendance with venue locations, Manchester
(Source: Authors' analysis)

These results suggest that the strength of the modelling approach is broadly reliable and generalisable, but that the areas generating audiences in Manchester are a little more middle aged and slightly more socio-economically stratified than in London (though note that the proportion of full-time students is also more positive than in London).

Comparing Our Model to Existing Geodemographic Classifications

Another aim of the project was to consider how existing geodemographic classifications, which are currently widely used within arts policy and marketing contexts, compared in predicting levels of attendance. For this analysis we returned to our dataset for London, and used attendance at all venues and artforms.

A geodemographic segmentation which is popularly used in profiling attenders is the UK Mosaic classification from Experian. The data were modelled using the same approach as that used for the census variables: a grouped logistic regression, with the number of attending addresses as the outcome and the total number of residential addresses as the grouping variable. The proportion of addresses in each OA that were coded at postcode level to each of the 62 Mosaic types comprised the independent variables (so if two postcodes were assigned to Mosaic type 27, which contained 10% of addresses in their OA, then type 27 had a value of 0.1 for that OA). This model explained 58.6% of deviance.

The Area Classification (Vickers and Rees, 2007) is an alternative, free geodemographic classification. Using the same grouped logistic regression as before, but with the subgroup of Area Classification (of which there are 38) as a categorical variable the model explained only 22.9% of variance. Deprivation

is also, and increasingly, an area of interest for understanding variations in arts attendance, particularly as culture has become an important measure of successful performance for local authorities. The 2004 Indices of Multiple Deprivation were used to model attendance, with the scores for each of the seven domains as the independent variables, but this time analysing the data at LSOA (the smallest area unit for which the 2004 indices were available). This explained 47.4% of deviance. Finally, a Townsend deprivation score (calculated from four Census variables: unemployment, overcrowding, non car ownership and non home ownership) was modelled at Output Area level, and this explained only 2.6% of variance.

In summary, our model of attendance which included a variety of Census variables and derived accessibility and commuting indices provides a considerably better prediction of arts attendance than the other existing segmentations and indices. Indeed, although both Mosaic and the IMD 2004 provide quite strong models for attendance, only Mosaic performs as well as a single-variable model that includes only the percentage of those with higher education qualifications.

Conclusions

This chapter examines the applicability of administrative data in ecological modelling of arts attendance. We found that using census and derived variables to model attendance can result in reductions in model deviance of as much as 73.7%. The model results challenge some previous research findings and received wisdom about drivers for arts attendance. Previous concerns have focused on the lower attendance levels found among Black and minority ethnic groups, lower socioeconomic groups and those on low incomes. However, of greatest importance in our model was the proportion of people with higher qualifications and variables relating to ethnicity, socio-economic status and income were much less important. The derived variables relating to commuting and accessibility, not previously considered in survey-based analyses of arts attendance, were found to be highly predictive, demonstrating the importance of a geographical perspective.

Comparing models for different artforms, and in Manchester as well as London, we found sufficient consistency to consider that the model results are generalisable, but with some differences in the characteristics of attenders. We found even greater differences for specific venues, and this has potential application for cultural planning (Evans and Foord, 2008).

The potential for falling into the ecological fallacy in interpreting these results cannot be ignored, although the very small areal units used in the analysis will minimise this danger. Even so, for many planning applications, identifying the characteristics of small areas which are related to attendance may be as useful as identifying individual characteristics, as it is easier to target areas than specific individuals. Nevertheless, we should be careful about how the various relationships are interpreted. The strong association between attendance and

commuting behaviour may relate to the commuting itself (people attending venues close to work), but it may also be the case that people tend to make other types of journeys to similar destination areas as those they work in because of familiarity with the place, and convenience of the route: the commuter is more likely to see information about the venue's events, know the location of nearby places to eat and drink, and be comfortable in the area. Thus, the commuting variable was significant in predicting attendance to children's events.

The fact that this new model, including the 2001 Census and derived accessibility and commuting variables, was a better fit than existing geodemographic indices has some implications for the arts sector's current reliance on the latter to explain attendance. These indices have some great strengths in characterising and comparing arts attenders – both because they allow an analysis of attendance according to combinations of neighbourhood characteristics that typically occur in the population (and are easily related to by practitioners), and also because the supporting material provides a range of additional information about the segments. However, our model identifies the relative importance of individual variables, whereas this information is obscured by a segmentation approach. Furthermore, segmentations are widely used to model and predict levels of arts attendance for different areas, and it seems that a model such as the one created here would be substantially more accurate for these purposes. The existing segmentations are in effect a simplification of the complex variations in population variables and our analysis suggests that it is more effective to use individual variables as a basis for modelling.

The extent to which deprivation measures were less effective in predicting attendance suggests that, while local authorities and others are interested in targeting resources in areas suffering from higher deprivation levels, it should be remembered that it is not deprivation which is the key influence in explaining arts attendance.

The analysis found that a similar range of population and spatial indicators predicted levels of attendance relatively consistently across the two geographical areas examined, which reinforces both the importance of these population variables as predictors of arts attendance, and also the value of the application of these techniques and of this new, administrative source of data.

Perhaps the facet of the research with the greatest potential for future exploration is how the effects of the independent variables vary between venues. Our results indicate that a "one size fits all" approach to profiling performing arts audiences can be misleading in understanding what influences attendance at individual venues. Additionally, exploring how attendance is influenced by the proximity and nature of alternative, "competing" venues, and how this might play out for different demographic groups, has a great deal to offer to both policy makers and practitioners.

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and data for modelling using the Townsend deprivation score. Special Workplace Statistics were supplied by the Centre for Interaction Data and Research, based at the Universities of Leeds and St Andrews. Census output is Crown Copyright and is reproduced with the permission of the Controller of HMSO and the Queen's Printer for Scotland. Census boundary data, 2001 were supplied by The Office for National Statistics.

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Chapter 6

Struggling onto the Ladder, Climbing the Rungs: Employment and Class Position of Minority Ethnic Groups in Britain

Yaojun Li and Anthony Heath

Introduction

The principle of social justice and equal opportunity is enshrined in the law in Great Britain just as in many other developed countries. This principle applies to social relations covering not only class, but also ethnicity, gender, disability and sexuality. With regard to ethnicity, a series of acts were passed by successive governments in Britain in the past 50 years which, while setting stricter constraints on immigration, aimed to ensure that for those legally settled in the country, no members of the minority ethnic groups should suffer direct or indirect discrimination with respect to housing, employment, schooling and other important areas of socioeconomic life. However, legislation on the statute book is one thing; experiences in everyday life may be quite different. Our concern in this chapter is whether, in practice, ethnic minorities have experienced equality of opportunity. Do members of minority ethnic groups enjoy the same chances of upward social mobility into the advantaged professional and managerial salariat as do the White British? Have they benefited from the continually improving occupational structure in the last four decades to the same extent as the White British? Most importantly, do minority ethnic members born, reared and educated in Britain compete on equal terms with their White peers? These are the research questions we seek to address in this chapter.

As large numbers of immigrants began to arrive in Britain from the end of the Second World War, so did the academic interest in their socioeconomic fortunes (Daniel, 1968). A growing body of research on ethnicity has been conducted, especially since 1991 when the Census of the Population included, for the first time, a question on ethnicity. Academic and government surveys also began to regularly collect ethnic data from that time onwards (although such data were already available in some surveys before then but were little utilised). The samples of anonymised records (SARs) for the 1991 and the 2001 Censuses did a great

Y. Li (✉)

Institute for Social Change, Manchester University, Manchester M13 9PL, UK
e-mail: yaojun.li@manchester.ac.uk

deal to promote research on ethnicity. Using the SARs and government surveys, an impressive amount of research is accruing on ethnic disadvantage in education, housing, health, economic activity and occupational status (Karn, 1997; Iganski and Payne, 1999; Model, 1999; Berthoud, 2000; Carmichael and Woods, 2000; White, 2002; Rethon and Heath, 2003; Dustmann and Fabbri, 2003; Dustmann and Theodoropoulos, 2006; Li, 2004, 2007; Lindley et al., 2006; Cheung and Heath, 2007; Heath and Li, 2007, 2008; Li and Heath, 2008; Li et al., 2008). These studies have greatly enhanced our understanding of the difficulties faced by minority ethnic members, especially in gaining access to schooling, housing and employment. However, most of the existing studies are faced with a common problem – data shortage: they give us either a detailed but snapshot picture at a single point in time, or a limited time span but insufficient detail on ethnicity.

More recently, there have been efforts at extending the time span whilst trying to ensure adequate data coverage. One recent study by Cheung and Heath (2007) pooled the General Household Survey (GHS) from 1991 to 2001 to analyse the employment and class position of the minority ethnic groups in Britain. They managed to get an impressive sample of 119,327 respondents covering 10 years but even this dataset failed to allow any analysis of the employment and class situation of Chinese in the first and the second generation and Black Africans in the second generation. What is more, even Pakistani and Bangladeshi women were dropped in the analysis of class positions due to data limitations. The few remaining minority ethnic groups in the second generation were found to fare poorly in gaining access to the labour market as compared with the White British, but not so badly in acquiring a foothold in the advantaged salariat position if they were lucky enough to have a job. In other words, they found that ethnic disadvantage exists primarily at the level of entry to employment. Once individuals cross this threshold, the playing field is more or less level. Cheung and Heath suggested that their research confirmed existing findings such as those of Berthoud (2000) and Carmichael and Woods (2000), but they also give a cautionary note that their conclusion might be “overly optimistic” (Cheung and Heath, 2007: 541).

Three other caveats also follow. First, as Cheung and Heath’s time covariate is entered as a main rather than as an interaction effect with ethnicity (pp. 532–533), their conclusion actually refers to the situation in 2001 rather than covering the whole period of 1991–2001. Secondly, even within this limitation, there are no data for some ethnic groups as earlier noted and it is not clear whether the conclusion would apply equally well to the omitted groups such as those of Black African and Pakistani/Bangladeshi heritage, who are known to be more disadvantaged than Indians. Thirdly, the time span is rather short and we do not know whether there has been any deterioration or amelioration in the fortunes of the minority ethnic groups over a longer time scale. The research in this chapter is therefore aimed at enriching their research by extending the time horizon threefold, and at complementing our previous research on minorities’ employment situation in Britain in the last three decades (Li and Heath, 2008) by adding the class perspective (Heath and Li, 2008).

The need to conduct this temporal analysis is readily seen in Fig. 6.1. The occupational structure in Britain has, in the last three decades, enjoyed a continual

Fig. 6.1 The salariat and unemployment profiles in Britain (Source: The pooled GHS/LFS, 1972–2005)



upgrading with increasing proportions of the working-age population occupying the professional and managerial occupations of what we can term the “salariat” class, with a growing convergence between men and women in their access to the salariat. This has happened despite the turbulence in the labour market which as we can see was accompanied by major peaks of unemployment in the mid-1980s and the early 1990s. A key question, therefore, is whether members of minority ethnic groups, especially the second-generation, have been able to share in the opportunities provided by the expanding salariat.

Social scientists have offered a range of reasons why first-generation migrants may initially experience major socioeconomic disadvantages on their arrival in Britain and have suggested various reasons for expecting change across the life cycle, generations and historical time (for a detailed discussion, see Heath and Chung, 2007; Heath and Li, 2008). The main points are summarised here.

The human capital theory (Becker, 1964) places great emphasis on the relevance of education and skills for labour market position (such as employment, occupational class and earnings). This is particularly relevant for migrants from developing countries who tend to have low levels of education. Their qualifications obtained in the home countries may be devalued or not recognised by employers in the host society. Many lack English fluency or have scant knowledge of the workings of the local labour market. Some may have a short-term, “sojourner”, orientation to their stay in Britain which makes them unwilling to invest in their human capital for the long-term benefit, and their financial plight also makes them unable to make such investments. In contrast, the second generation may have greater access to the human capital that is relevant in the British labour market although even the second generation, born and brought up in run-down inner-city areas rife with crime and poverty, may still suffer from the “drag effects” (Darity and Mason, 1998) and be vulnerable to sinking into permanent deprivation.

The social capital theory (Granovetter, 1973; Lin et al., 1981; Putnam, 2000), while acknowledging the importance of human capital, focuses on social relationships and community structure. The information shared among family and

friends may be of limited use in finding a job whereas that offered by friends of friends may provide access to a more extensive range of opportunities (particularly if the friends of friends are in different or higher level occupations). Migrants, however, are likely to have a restricted social circle largely consisting of co-ethnics and their circles of friends may be equally disadvantaged and restricted to the ethnic community. This is important since, whilst the information provided by ties with co-ethnics may be useful in finding a menial job such as a cleaner, to get a good job needs the help of people already situated in such positions. In this regard, the migrants and their children may be particularly hampered. As most of the good positions in the mainstream labour market are already occupied by the majority group, how could poor immigrants get to know about them? In sum, while the “bonding” social capital in culturally-bounded minority ethnic communities may help the members get by in their daily struggles, lack of “bridging” social ties with the mainstream society may leave them permanently behind and unable to access higher-level jobs.

Apart from these two social advantage and disadvantage (SAD) theories, a third theory of reference groups and acculturation processes (Gordon, 1964; Runciman, 1966; Li and Heath, 2008) may also help to explain the minority ethnic situation. The first-generation migrants may be poorly educated, down-trodden and multiply-handicapped, but they may also have drive, tenacity and perseverance. They may be willing to do the poorly-paid menial jobs shunned by the majority group. They may even feel that they are doing equally “well” as other minority groups and better than their compatriots in the home country. But, as they stay longer in Britain, particularly their sons and daughters in the second generation, their horizons may grow broader. They may develop frames of reference similar to those of the majority group and expect the same treatment. They may become increasingly unwilling to take up jobs incommensurate with their improved skills and qualifications. Thus, the slow and steady revolution of aspirations, coupled perhaps with weakening levels of discrimination by the majority group as a result of contact and understanding with the passage of time, may lead to generational and temporal change. We may therefore expect the first generation to have lower unemployment rates than the second generation (since the former are more willing to accept menial work) but we would also expect the second generation to compete on equal terms with the majority group. Even if differences existed in the early period, one might hope that the gaps would close in the later period as members of the majority group become more accepting of ethnic diversity.

Data and Methods

We explore these issues using the pooled cross-sectional data of the General Household Survey (GHS) and the Labour Force Survey (LFS) from 1972 to 2005. As noted earlier, we build on work by Heath and Li (2008) and conduct the analysis in terms of life-cycle, generation and period changes but focus on access to the professional and managerial salariat by the different ethnic groups in Britain.

The pooled data-set has around 4.7 million records with nearly 420,000 minority ethnic members. In this chapter, we confine our analysis to men aged 16–64 and women aged 16–59 and resident in Great Britain at the time of interview. Even with this restriction, there are still over 2.3 million records. To our knowledge, this is the largest, most systematic, and most carefully-constructed data source ever assembled covering a period of 34 consecutive years, with all the key variables coded to be consistent over time. The standardised variables include ethnicity, country of birth, time of arrival, age, marital status, educational qualifications, employment status, class, earnings from the labour market, number of children in the family unit, limiting long-term illness, hours of work and the probability weight. Our earlier work (Li and Heath, 2008) has shown little difference between White British and White Others from Canada, USA, Australia and New Zealand and thus, in this chapter, we only differentiate seven main groups: White British (including White Other, hereafter for simplicity called “White British”), White Irish, Black Caribbean, Black African, Indian, Pakistani/Bangladeshi and Chinese. The Pakistani and Bangladeshi groups are grouped together because of small sample sizes and because of the fact that they belonged to the same state before Bangladesh became independent in 1971. We do not present the data for the “Other/Mixed” group as the group is so heterogeneous. While not ideal, this differentiation is more detailed than available in most existing research on ethnic relations and it enables us to conduct a thorough investigation of access to the salariat by the main minority ethnic groups in Britain in the period covered. In particular, we can investigate the situation of one of the longest-standing and largest immigrant groups to Britain, namely, the Irish (from the Republic of Ireland rather than from Northern Ireland) and compare their experience with that of newer migrant waves from more distant and less developed countries.

With regard to generation status, we differentiate first and second generations for the minority ethnic groups, the former referring to people coming to the UK after the beginning of compulsory schooling (age 5) and the latter to those who were either born in the UK or arrived at or before the age of five. The second generation will thus have received all of their education in Britain and will have native-level English proficiency. A small proportion, 2.2%, of the White British and White Other groups were born overseas but were grouped into the native born peers as further analysis showed little difference between them.

With regard to historical time, we distinguish three periods corresponding to the low unemployment period up till 1980, the high unemployment period from 1981 to 1996, and the second low unemployment period from 1997 onwards, as shown in Fig. 6.1. Our interest is in whether the minority groups, particularly the second-generation, ameliorated their situation over time with respect to salariat access, and whether the high unemployment rates in the middle period had any deleterious effects on their access to the salariat.

We assess life cycle effects by an indicator of potential years in the labour market (divided by 10 for stability of modelling results) and similarly for years squared, with the potential years defined by age minus time leaving full time education (16 for O Level or below, 18 for A Level, 21 for first degree and 25

for higher degree). Together with levels of educational qualifications and potential labour market experience, we use marital status to indicate human capital as there is research to show that, at least for men, being married is seen as a signal of commitment and drive by employers (Chun and Lee, 2001).

We use a range of techniques appropriate for the tasks at hand. Most importantly, we use Heckman selection models (Heckman, 1979) to investigate the two key related processes of finding a job and, for those fortunate enough to have a job, of reaching the salariat. The empirical evidence for this will be detailed in the following section. All analyses are based on weighted data. Owing to space limitations, we do not present standard errors, confidence intervals or coefficients for the selection models but all such results are available on request.

Analysis

Most class analysis indexes class via current job for the employed and last main job for the unemployed or economically inactive, and this is what we too have done in Fig. 6.1. This practice is reasonable with regard to analysing the overall distributions of class and tracing the changing class structure over time, but is less desirable for our task at hand, namely, whether ethnic fortunes are changing over time and across generations. As we shall see, members of ethnic minorities are particularly disadvantaged in their high levels of worklessness and we therefore argue that it is important to include “unemployment” and “inactivity” as separate states alongside the class positions of those actually in paid employment.

Table 6.1 crosstabulates class and employment status by ethnicity, gender and period. The three periods are differentiated according to their unemployment rates as discussed above.

For the employed, we differentiate three broad classes: the professional and managerial salariat; the intermediate class of routine non-manual, petty bourgeoisie, forepersons and supervisors, lower technicians, and skilled manual workers; and the lower working class of semi and unskilled manual workers including agricultural labourers and lower-grade personal service workers. (We group skilled manual workers with the other intermediate classes as they are similarly advantaged in terms of pay and working conditions whereas the semi and unskilled manual jobs are more disadvantaged.) In addition, we add categories for the unemployed and economically inactive. Note that we have not put the marginal *N*s in the table. This is because, apart from the Chinese women in the earliest period ($N=87$), the sample sizes for every ethnic group in every period and for both gender groups alike are well over 100.

The data in Table 6.1 show several salient patterns of social change in Britain in the last three decades. Firstly, men are increasingly withdrawing from, and women increasingly joining, the labour market. In the earliest period, women were over 30 percentage points more likely to be inactive than were men, but the figure dropped to just over 10 points in the third period. In this regard, we also find that women of

Table 6.1 Class and employment status by ethnicity, gender and period (row percent)

	Men (<i>N</i> =982,605)					Women (<i>N</i> =957,495)				
	SAL	INT	WC	UN	IN	SAL	INT	WC	UN	IN
1972–1980										
WB	21.6	50.9	16.8	4.2	6.3	10.3	29.2	20.8	2.7	36.9
WI	12.6	49.2	25.8	6.5	5.9	13.3	18.3	30.9	1.7	35.8
BC	7.6	49.3	29.2	8.2	5.8	17.2	18.7	35.8	5.8	22.6
BA	32.1	31.3	14.6	2.4	19.5	20.8	24.2	12.7	4.9	37.4
IN	22.4	42.3	19.6	6.1	9.6	8.9	23.1	18.1	2.8	46.9
PB	9.3	33.1	42.5	5.7	9.5	3.9	8.7	10.9	2.3	74.2
CH	27.0	36.0	12.0	3.0	22.0	14.9	24.1	10.3	0.0	50.6
(<i>All</i>)	21.4	50.5	17.3	4.3	6.5	10.5	28.7	21.1	2.8	37.1
1981–1996										
WB	26.4	39.0	12.9	9.2	12.5	19.4	27.3	16.7	6.1	30.6
WI	19.1	36.4	15.6	13.2	15.7	22.4	18.7	21.8	5.8	31.3
BC	11.3	34.8	17.9	19.6	16.4	21.4	19.9	18.8	12.6	27.3
BA	22.2	18.6	11.6	18.9	28.7	14.6	14.7	14.3	13.1	43.4
IN	22.8	35.5	13.3	11.5	16.9	11.7	22.5	15.4	8.4	42.0
PB	9.2	26.8	17.7	21.8	24.4	3.9	7.6	4.3	6.5	77.7
CH	21.1	27.7	16.7	7.4	27.2	17.5	22.6	11.3	4.7	44.0
(<i>All</i>)	25.9	38.7	13.1	9.6	12.8	19.2	26.8	16.6	6.2	31.3
1997–2005										
WB	31.7	35.5	11.6	4.7	16.5	26.2	32.8	10.5	3.3	27.2
WI	28.7	30.2	11.4	4.6	25.0	32.8	22.9	10.5	2.8	31.0
BC	20.7	33.3	12.0	11.3	22.7	26.1	28.4	8.6	7.3	29.7
BA	25.6	24.6	10.2	11.7	27.9	18.4	18.9	7.7	8.3	46.7
IN	31.8	30.9	9.9	5.9	21.5	20.7	26.2	9.2	4.6	39.3
PB	13.3	32.8	11.7	10.9	31.2	6.4	11.4	3.2	4.8	74.3
CH	26.3	24.3	7.1	5.7	36.6	21.5	22.3	6.4	4.0	45.8
(<i>All</i>)	31.2	35.1	11.6	4.9	17.2	25.7	31.9	10.2	3.4	28.7

Notes: 1. SAL = Salarial, INT = Intermediate, WC = Working class, UN = Unemployed, IN = Inactive

2. WB = White British, WI = White Irish, BC = Black Caribbean, BA = Black African, IN = Indian, PB = Pakistani/Bangladeshi, CH = Chinese

Source: Authors' analysis

Pakistani/Bangladeshi origins were consistently and most strikingly inactive in all three periods: 74.2, 77.7 and 74.3% respectively. Secondly, we find a convergence between men and women in their rates of gaining access to salariat positions. In the earliest period, men were twice as likely to find themselves in the salariat as women (21.4% for men and 10.5% for women). As time went on, the rates were drawing closer to each other: 25.9 and 19.2% in the middle period, and 31.2 and 25.7% in the last period.

Thirdly, the distinction between unemployment and inactivity is not as clear-cut as economists in the human capital tradition tend to think. When the economic situation was bad, minority ethnic groups, especially the more “visible” ones, were not only more likely to bear the brunt of unemployment, but were also more likely to

be inactive, sometimes twice as likely as their peers in the majority group. This kind of inactivity may, for our sample of the working-age population with the exception of Pakistani and Bangladeshi women whose cultural tradition and family caring responsibility may prevent them from paid employment, be better seen as “hidden unemployment”. Many people, especially those from visible minority ethnic groups, may decide not to look for work because past frustrations and failures may have convinced them that “there is no job for me”. Such “discouraged workers” may be a product of overt or covert discrimination by employers. Even higher rates of staying in education among some minority ethnic groups may be viewed as a strategic step on their part to delay entry into the labour market due to perceived obstacles to getting a job (Leslie and Drinkwater, 1999). In view of this, it makes sense, at least in the case of men and, we believe, for a great majority of women, to combine unemployment and inactivity as “worklessness”. Fourthly, and related to the above, we find that except in the first period where men in most of the minority ethnic groups were more likely than their White peers to be found in semi and unskilled manual working-class positions, in the succeeding periods, men and women in most ethnic groups were similarly distributed between the working and the intermediate classes. The major inequalities were thus in relation to the salariat.

In sum, with the exception of Irish and Black women in the earliest period, in all other periods, for both men and women alike, minority ethnic groups were more likely to be “workless” than their White peers, and all groups tended to converge in their distributions between intermediate and working-class positions. The end result of this is that, for most of the working-age population as covered in our samples, access to the salariat becomes the battlefield for those lucky enough to break away from worklessness.

While the data in Table 6.1 give an overall picture of the patterns of ethnic distribution to the different class and employment positions, they do not show the relative social advantages or disadvantages for people with similar levels of human capital. For example, existing research has shown that large numbers of Black Africans in the earlier periods were “students who stayed” (Daley, 1996). Further analysis of our data shows that Black African men were around twice as likely as their overall male population to have a degree in the earlier periods (25.8% vs. 11.7% in the first period, and 30.2% vs. 16.6% in the second period). Thus, to gain a good understanding of the SAD story, we need to see whether people with similar human capital and personal attributes would be similarly likely to find themselves in the salariat. In other words, in comparison with equally-qualified members of the majority group do ethnic minorities suffer “ethnic penalties” or experience “inequality of opportunity” and, if so, to what extent?

To answer this question, we conduct a multivariate Heckman selection model. Essentially, this model does two things. First, we estimate who, given similar attributes, are more likely to be in employment and, secondly who, amongst those in employment and again with the same attributes, are more likely to be in the salariat. (In the selection model, we code employment as 1 and worklessness as 0, and in the outcome model we code the salariat as 1 and other classes as 0.) In this way, we can find, given the unequal chances in gaining access to employment, whether and to

what extent “ethnic penalties” exist, for which groups, and whether there are signs of progress over time and across the generations.

Space limitations do not allow us to discuss in detail the patterns for employment. Briefly, all things being equal, Black African, Pakistani/Bangladeshi and Chinese men in the first generation were some 20–30 percentage points behind White British men in all three periods in gaining access to paid employment and that the second generation had even lower employment rates than their first-generation counterparts. However differences between women in the minority and the majority groups were smaller than those between men. The greatest generational improvement was shown by Pakistani and Bangladeshi women: the first generation were only one fourth as likely as their White British peers to be in employment in all three periods, but the rates for the second generation doubled (the findings for the last period confirm those by Lindley et al., 2006).

We now focus on access to the salariat. Table 6.2 shows three models for men and women separately. In model 1, we include ethnicity and use White British as the reference group so that all minority ethnic groups in the second generation are in direct comparison with them who will of course typically be native-born. Model 1 also includes the length of residence for the first generation (in order to test the thesis of acculturation over the life cycle as discussed earlier), period and region (the data for region are not presented due to space limit but are available on request).

Table 6.2 Heckman probit models of access to the salariat

	Men			Women		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Ethnicity						
White British (ref)						
WI (G2)	0.083***	0.079***	-0.513***	0.169***	0.122***	-0.484***
BC (G2)	-0.235***	-0.307***	-0.118	0.079***	-0.030	0.413***
BA (G2)	0.477***	0.213***	0.706***	0.165***	0.211***	-0.090
IN (G2)	0.281***	0.104***	0.179*	-0.037*	-0.116***	-0.186*
P/B (G2)	-0.058**	-0.150***	0.238*	0.181***	0.145***	0.940***
CH (G2)	0.471***	0.356***	-0.053	0.262***	0.164***	-0.343
G1	-0.233***	0.948***	1.188***	-0.058***	1.858***	2.168***
G1's years in UK	0.009***	0.058***	0.060***	0.002***	0.096***	0.097***
Period	0.207***	0.013***	0.010**	0.212***	-0.028***	-0.034***
Education		0.772***	0.773***		0.544***	0.542***
Years in labour market		-0.218***	-0.231***		-0.644***	-0.662***
Years squared		-0.055***	-0.054***		-0.057***	-0.056***
Non-partnered		-0.120***	-0.118***		0.004	0.005
WI*G1			-0.118			-0.249*
BC*G1			-0.520***			-0.390***
BA*G1			0.092			0.153
IN*G1			-0.203*			-0.477***
PB*G1			-0.400***			-0.443***
CH*G1			-			-
WI*education			0.013			0.049*

Table 6.2 (continued)

	Men			Women		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
BC*education			-0.093**			-0.029
BA*education			-0.264***			-0.245***
IN*education			-0.108***			-0.064*
PB*education			-0.075***			-0.300***
CH*education			-0.092			-0.180***
WI*period			0.230***			0.233***
BC*period			0.054			-0.147***
BA*period			-0.056			0.204***
IN*period			0.056*			0.134***
PB*period			-0.051			-0.072
CH*period			0.172*			0.274***
Constant	-0.756***	-2.988***	-3.001***	-0.572***	-2.997***	-3.005***
N	973,276	973,276	973,276	947,409	947,409	947,409

Notes: 1. Region is controlled for in the models, with London as the reference category. The coefficients for the region in the outcome models are not presented, nor are coefficients in the selection models (all available on request). The Rho are -0.505, -0.256, -0.261 for men, and -0.438, -0.531 and -0.539 for women respectively, all significant at the 0.000 level

2. WB = White British, WI = White Irish, BC = Black Caribbean, BA = Black African, IN = Indian, PB = Pakistani/Bangladeshi, CH = Chinese; G1 = first generation; G2 = second generation

* $p < 0.05$, ** $p < 0.01$ and *** $p < 0.001$

Source: Authors' analysis

In model 2, we add human capital indicators for education with three levels (primary or none, A–O Levels, and degree or above) used as a continuous covariate, potential experience in the labour market and its square to capture the curvilinear nature of life-course effects on career development, and marital status.

In model 3, we add interaction terms between ethnicity and generation, ethnicity and education, and ethnicity and period in order to test whether ethnic penalties vary across generations, educational levels or periods. As at least one variable is required to be in the selection but not in the outcome models, we use health status and number of dependent children in the family as such identifying variables. Due to space limits, we do not report the coefficients of the selection models. The correlation between the variances in the outcome and the selection models (Rho) is reported in the notes to the table.

As models 1 and 2 in Table 6.2 are main effects models while model 3 is an interaction model, the coefficients need to be interpreted accordingly. With regard to the data for men, model 1 shows that, before controlling for human capital, first generation minority ethnic groups were on the whole disadvantaged, but that those with longer stay in Britain were more likely to reach the salariat. With regard to ethnic differences amongst the second generation, we find that White Irish, Black African, Indian and Chinese men were more likely to be in the salariat than their White British peers whereas Black Caribbean and Pakistani/Bangladeshi men were less likely to be in salariat.

As earlier noted, this overall pattern may mask the real disadvantages faced by some groups with higher qualifications than their White peers. In model 2 where human capital is controlled for, we find that the greatest determinant for access to the salariat is education. A strong curvilinear effect of the life cycle is found in the chances for employment (selection models, not shown) but only weakly shown in the outcome model for access to the salariat. As this is a main effects model, the coefficients pertain to the earlier period where the poorly educated White British men would have a decreasing chance to find themselves in the salariat the older they were. With regard to ethnicity, we find that the coefficients for all minority ethnic groups decreased in model 2 as compared with those in model 1, supporting our contention that high levels of education may have masked the true disadvantage experienced by minorities. We should remind the reader that as education is entered as a main effect, the data in this model does not tell us whether ethnic minorities suffer decreasing returns to their education as they climb up the educational ladder. However, model 3 does investigate differential returns to education by including interaction terms between ethnicity and educational level. It shows that, except for the White Irish, all men in the visible ethnic groups had lower returns to their education than the comparison group. The interaction terms between ethnicity and period in model 3 show that Indian and Chinese men showed significant advances up the ladder over the three periods although it was the White Irish men who showed the greatest improvement over historical time. Finally, the interaction terms between ethnicity and generation show that there were particularly large and significant generational improvements for the second-generation Black Caribbeans and Pakistanis/Bangladeshis. These two groups were, to be sure, particularly disadvantaged in the first generation. (Note that there are negative signs for these interaction terms since the reference category is the second generation; the interaction terms thus tell us about the size of the disadvantages experienced by the first generation.)

Turning to the data for women in the last three columns of Table 6.2, we find the same basic patterns as for men, except that the coefficients are smaller, indicating smaller ethnic differences among women than among men. There are a few notable differences, however. Model 1 shows that, overall, Black Caribbean women were more likely to be in the salariat than White British women, reflecting the historical context of their migration. Yet when educational qualifications are controlled for in model 2, this advantage disappears. Indian women are less likely to be in the salariat than White British women and appear, in relative terms, to be less successful than Indian men. In contrast Pakistani/Bangladeshi women seem to have more favourable chances of gaining access to the salariat, providing of course that they were in employment. We must remember, however, that as four fifths of them were workless, those in employment were a highly self-selected lot, no doubt full of determination and drive. Looking next at the results for model 3, we find that first generation members of the Indian group were especially disadvantaged.

Given the complexity of the data in the models, it is hard to get a bird's eye view of what is really going on. In Fig. 6.2, we present predicted probabilities of access to

the salariat for married respondents with degrees and with 10–15 years of potential experience in the labour market, for the first and the second generations, and for men and women separately. The y axes show the probabilities for the White British in each of the three periods. The data are based on model 3 for men and women in

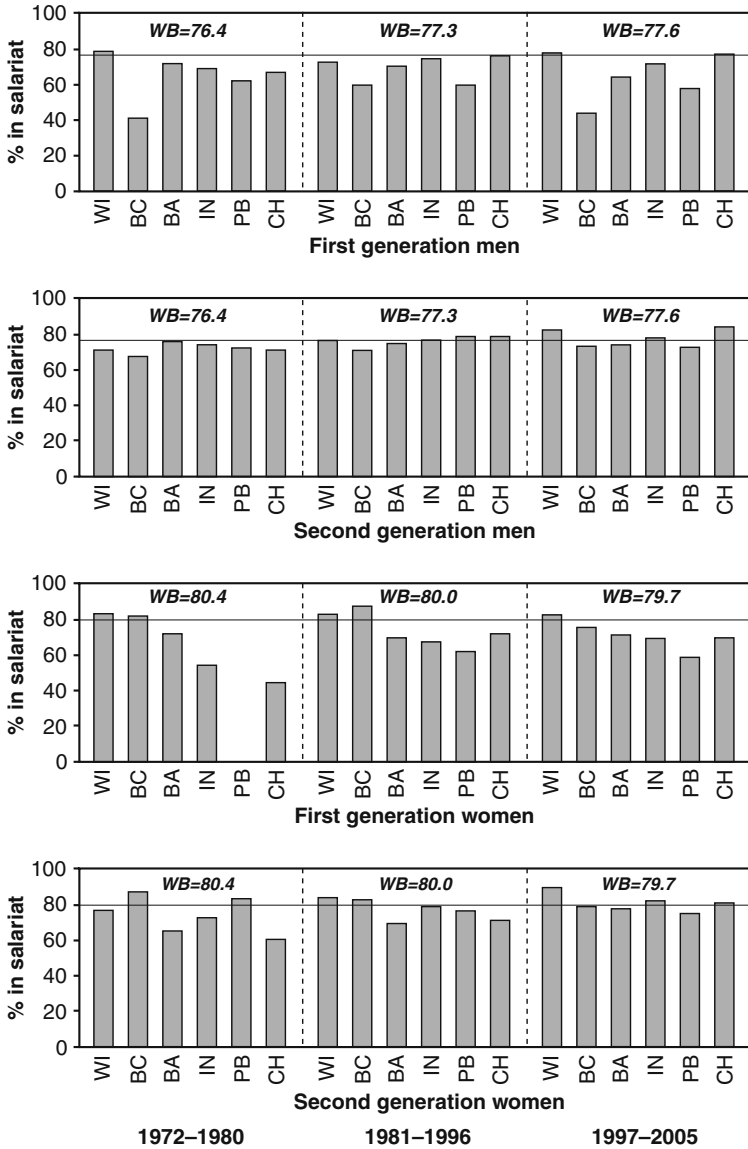


Fig. 6.2 Predicted probabilities of access to the salariat for married respondents with degree and 10–15 years' experience in the labour market (Source: Authors' analysis)

Table 6.2. Note that we have selected the most advantaged members in each group for comparison.

The data in Fig. 6.2 show that for both generations and for both sexes alike, the White Irish experienced little penalty. With regard to the visible groups, we can see that most members in the first generation (except Black Caribbean women) were way behind their White British peers, with Black Caribbean men only slightly over half as likely as their White British peers to gain a foothold in the salariat. Furthermore there is not much catching up over time for the first generation, at least for men, and further analysis shows that overseas qualifications were of much less value in helping minorities gain access to the salariat than were British qualifications.

With regard to the second generation where the key interest lies, we find less marked difference than for the first generation. Our data in the third period confirm some of the more optimistic findings by Cheung and Heath (2007). It is also notable that while men in every other ethnic group increased their probability of access to the salariat from the second to the third period, most notably the White Irish by 7.6 percentage points, Pakistani/Bangladeshi men actually saw their rates fall by the same amount. This is possibly due to anti-Muslim sentiment on the part of employers and in the wider society generally in the wake of the 9/11 terrorist attack, which may have adversely affected Muslims' promotion chances. As for second generation women, we do find clear signs of overtime progress by Black African, Indian and Chinese groups.

Discussion and Conclusion

We have, in this chapter, looked at the occupational and employment profiles of the different ethnic groups in Britain in the first and second generations and by both gender groups. We found that in terms of access to the privileged salariat class, there is increasing convergence between men and women. We also found that apart from the first period where minority ethnic groups tended to find themselves in semi- and un-skilled working class positions, in the second and the third period the ethnic distribution to the intermediate and the working-class positions became quite similar. As large numbers of minority ethnic groups were either unemployed or discouraged, access to the salariat and avoidance of worklessness became the main battlefields for most people.

Given this, we focused on the dual process of gaining access to employment and, for those in work, to the salariat. Our evidence shows that men and women in the minority ethnic groups, both first and second generations alike, were much behind their White British peers in employment in all three periods, and that, for those in employment, even the cream of the first generation men and both generations of women lagged behind in access to the salariat. With regard to second generation men, in contrast, the differences were fairly small. However, while rapid progress was made by White Irish, Indian and Chinese men, Pakistani and Bangladeshi men were moving in the opposite direction. Thus Pakistani/Bangladeshi men had the

highest rates of worklessness to start with, and their occupational progress even among the elite was hesitant. This, we note, is on top of the female worklessness in this group which stayed at about 80% throughout the period.

The main political parties in the country, the EHRC, and various other policy-making bodies are committed to social (including ethnic) justice and social equality. While some progress has been made by the second generation men in clambering up the ladder, it is clear that getting on to the ladder remains as much a struggle now for the second generation as it was in the past. There is still much work to be done. The minorities themselves have made great strides in the acquisition of educational qualifications, but we believe that more must be done by employers to ensure that everyone has an equal chance of getting onto the ladder and progressing up the rungs. We cannot rule out continuing discrimination and prejudice as a major explanation for this lack of progress. We therefore need to redouble our efforts, particularly at helping the most disadvantaged such as the Pakistani/Bangladeshi and Black groups to make sure that they are not excluded from effective participation in the labour market.

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Chapter 7

Occupational Segregation and Concentration: An Analysis by Sex, Employment Status and Ethnic Group in England and Wales

Daniel Guinea-Martin, Louisa Blackwell and Jane Elliott

Introduction

The research reported in this chapter focuses on the contribution that sex and employment status have on occupational segregation within seven major ethnic groups of England and Wales: the White, Indian, Pakistani, Bangladeshi, Black Caribbean, Black African and Chinese groups. The chapter includes an analysis of the five most common occupations for workers of each sex, employment status and ethnic group. The study of occupational segregation and concentration between 1991 and 2001 provides a measure of inequality in society.

The analysis focuses on the population in work. Previous research has argued that characteristics of the overall female labour force in Great Britain (GB) cannot be generalised to the experience of ethnic minorities (see, for example, Dale and Holdsworth, 1998). Part-time work defines the experience of White women at some point of their careers, typically while childrearing. By contrast, ethnic minority women are better characterised by other statuses; for example, inactivity for Pakistani and Bangladeshi women and full-time employment for Black Caribbean women.

The focus on women in work highlights that, in all ethnic groups, part-timers are a large proportion of all females in employment. Segregation research in the 1980s and 1990s attributed high levels of occupational sex segregation in GB (in comparison with other countries) to high rates of female part-time work. For example, Hakim (1993) concludes that full- and part-time workers are taking diverging paths with full-timers increasingly integrated and similar to men in their orientation to work, while part-timers are increasingly more segregated from men and full-timers and more similar to housewives in their worldview than other women in work. We test Hakim's claims in two ways. First, we use an additively decomposable index of segregation called Theil's H . Second, we compare the five

D. Guinea-Martin (✉)

Department of Sociology I, Universidad de Educación a Distancia, Madrid, Spain
e-mail: daniel.guinea@ieasm.csic.es

most common occupations of full- and part-time employment by sex and ethnic group.

Theil's H was recently introduced to the study of occupational segregation in GB by Elliott (2005). Whereas Elliott compared GB and the US in 1991, this chapter compares seven ethnic groups in England and Wales in 1991 and 2001. Overall segregation is conceptualised as the sum of two terms. The first measures the segregation between men and women (of a given ethnic group in this chapter; of a given country in Elliott's original work). The second differentiates within women in work (of a given ethnicity) between full time and part time. Because the overall index is the sum of these two terms, we can identify the relative contribution of each as percentages.

Elliott found out that even though rates of part-time work among women with dependent children were higher in GB than in the US (34.9% vs. 17.7% respectively in 1991), segregation due to employment status was similar in both countries at 14% (GB) and 11% (US). This chapter asks how female segregation by employment status contributes to overall segregation for different ethnic groups in England and Wales.

The Theil Index for Measuring Multigroup Segregation

Like other indices of segregation, Theil's H measures how evenly the social groups of interest (in this case men and women and, among women, full-timers and part-timers in each ethnic group) are distributed across organisational units (the minor groups of the Standard Occupational Classification – SOC). Theil's H varies between 0, complete integration, and 1, complete segregation. What differentiates Theil's H from other segregation measures is that we can decompose it into additive terms.

The building block of Theil's H is the notion of diversity or entropy (E) in the social system as a whole (different ethnic labour forces: White people in work, equivalent Indian people, *et cetera*) and in each occupational group:

$$E = \sum_{r=1}^n Q_r \ln \frac{1}{Q_r} \quad (7.1)$$

Q_r is the proportion of the labour force, or of a given occupation, made up of the minority group (women when compared with men; women part-timers compared with women full-timers). The maximum value, E , is obtained when each group has an equal share of the labour market; in that case E is equal to the logarithm of n . We use the E for the labour force as a whole and for each occupation to derive Theil's H :

$$H = \frac{\sum_{i=1}^k \frac{t_i}{T}(E - E_i)}{E} \quad (7.2)$$

The key arithmetic procedure in H 's formula is the difference between the entropy of the whole social system (E) and of each organisational unit (E_i). When this difference is small, H is low, meaning there is little segregation, and *vice versa*. Large occupations contribute to H more than small ones because occupations are weighted according to their relative size (t_i is the number of individuals in occupation i , and T is the total number of workers).

The two components of H are derived from the whole labour force of a given ethnic group, and from the female part of that labour force only. The between-group component measures the occupational segregation of men and women of each ethnic group while the within-group component measures the occupational segregation between female full-time and part-time workers within each ethnic group. This is represented by the following formula where the subscript m stands for men, f for women full-timers and p for women part-timers:

$$H_{m\setminus f\setminus p} = \left(\frac{E_{m\setminus fp}}{E_{m\setminus f\setminus p}} \right) H_{m\setminus fp} + Q_{fp} \left(\frac{E_{f\setminus p}}{E_{m\setminus f\setminus p}} \right) H_{f\setminus p} \quad (7.3)$$

The indices for the between-term ($H_{m\setminus fp}$) and for the within-term ($H_{f\setminus p}$) are weighted by their relative entropy. In addition, the within-term measuring segregation among women by employment status is weighted by the proportion of women in the overall ethnic labour force (Q_{fp}). (For a more detailed exposition of Theil's H , see Bourguignon, 1979, and Reardon et al., 2000).

Data

We use England and Wales 1991 and 2001 Census data for men aged 16–64 and women aged 16–59. In the 2001 Census, data were 100% coded. In 1991, only 10% of “hard-to-code” items (which included occupations) were fully coded. The 1991 partial coding has an impact on the degree of occupational detail used for deriving Theil's H . Using the finest occupational classification available in the census (the unit group level) would skew the index by inflating the number of empty cells, which could arise through lack of coverage. Using the intermediate, minor group level mitigates sample variation. There are 77 minor groups in the 1990 version of the SOC and 81 in the 2000 version (OPCS, 1990; ONS, 2000). When analysing occupational concentration, we revert to the most detailed level of SOC (371 unit groups in 1990 and 353 in 2000).

Demography and Patterns of Work Participation by Ethnic Group, 1991–2001

Since the end of World War II, non-White overseas workers have come in significant numbers to live and work in England and Wales. Some arrived in response to demand; for example, Black Caribbean nurses soon after the National Health Service (NHS) was founded in 1948, and Black African women later on. Other groups, like the Chinese, have created their own occupational niches in the catering sector. Whatever their reasons for migrating, these and other minority ethnic groups have changed, and are changing, the landscape of the reception society, particularly in urban areas. And yet, 60 years after this trend started, the ethnic diversity of the labour force of England and Wales is small: 95% of the labour force in 1991, and 93% in 2001, was White.¹ Of the six ethnic minority groups that can consistently be identified in both the 1991 and 2001 censuses (Simpson and Akinwale, 2007),² the largest in the female workforce were Indian and Black Caribbean (together accounting for just over 3% in each year). Within the male labour force, Indian workers were the largest minority group in both years with 1.5 and 2.1% respectively. Work rates vary by sex and ethnic group, as do unemployment and inactivity rates, reflecting different degrees of accessibility to the labour market and different cultural expectations for women.

While the study of occupational segregation is restricted to people in work only, there is an “unevenness” in the distribution of men and women across the various forms in which a person can engage with the labour market (in work, unemployed, inactive). This is a form of inequality that exists over and above inequalities in access to occupations (Mora and Ruiz-Castillo, 2003). Numerous works dwell in detail on the differences in work, self employment, unemployment and inactivity rates by ethnic group (among others Blackaby et al., 1999; Blackburn et al., 1997; Clark and Drinkwater, 2007; Lindley et al., 2004; Owen, 1997). Here it suffices to point out the greater incidence of unemployment among ethnic minorities than among White people, and of economic inactivity among women of all ethnic groups as compared with co-ethnic men. These relative positions were in place both when the economy was stagnant, as in 1991, and when the economy was booming as in 2001. In other words, people from minority ethnic groups face greater barriers to employment than White people, and likewise do women as compared with men, regardless of the ethnic group.

Consequently, there is great variation in rates of people in work by sex and ethnic group. These can be a minority of the overall group, as in the case of Pakistani and Bangladeshi women (the former were only 29% of the Pakistani labour force;

¹See Census tables L09 for 1991 and S108 for 2001, available at www.nomisweb.co.uk; population considered are all people in work aged 16–74 in 2001 and over 16 in 1991.

² Simpson and Akinwale studied responses to the Census question on ethnicity in 1991 and in 2001 by using the ONS Longitudinal Study; the higher rates of consistent responses in both years corresponded to the following seven groups: White, Indian, Pakistani, Bangladeshi, Black Caribbean, Black African and Chinese.

Table 7.1 Female economic activity, 1991 and 2001

	In work	Unemployed	Inactive	% in work in ethnic group*
White 91	8,707,488	706,071	4,340,389	
%	63.3	5.1	31.6	43.3
White 01	9,646,659	430,845	3,953,470	
%	68.8	3.1	28.2	45.2
Indian 91	136,674	23,505	104,504	
%	51.6	8.9	39.5	41.5
Indian 01	205,453	16,603	130,491	
%	58.3	4.7	37.0	44.3
Pakistani 91	21,993	11,788	85,792	
%	18.4	9.9	71.7	24.7
Pakistani 01	51,987	11,653	145,702	
%	24.8	5.6	69.6	29.1
Bangladeshi 91	4,980	3,712	30,506	
%	12.7	9.5	77.8	18.7
Bangladeshi 01	16,601	4,719	58,857	
%	20.7	5.9	73.4	27.1
Caribbean 91	110,374	21,368	47,770	
%	61.5	11.9	26.6	51.1
Caribbean 01	131,854	13,872	54,437	
%	65.9	6.9	27.2	54.2
African 91	30,471	12,704	26,939	
%	43.5	18.1	38.4	47.9
African 01	84,421	16,319	66,675	
%	50.4	9.7	39.8	48.8
Chinese 91	27,419	3,068	22,828	
%	51.4	5.8	42.8	44.9
Chinese 01	46,087	3,847	38,215	
%	52.3	4.4	43.4	48.3

Note: People of working age (men aged 16–64; women aged 16–59)

*This is percentage female in work over all co-ethnic people of working age and in work

Source: 100% 1991 and 2001 Censuses, England and Wales

the latter were 27% of all Bangladeshi people in work (Table 7.1)), or a majority, as in the case of Black Caribbean women (54% of all Black Caribbean people in work in 2001 were women). Despite these differences, the percentage female in work increased for all ethnic groups during the 1990s, and particularly so among the ethnic groups with the lowest percentage female: it grew by 8 percentage points for Bangladeshi women and by 4 percentage points for Pakistani women (Table 7.1). Changes for males are shown in Table 7.2.

Figures 7.1, 7.2, 7.3, and 7.4 provide a different perspective on economic activity compared to the procedure of basing rates on the whole population of working age. For example, Pakistani and Bangladeshi women have the lowest work rates, be they part-time or full-time. However, focusing on female members of these ethnicities who work reveals that their rates of part-time work were among the highest in 1991 and 2001. Figures 7.2 and 7.4 demonstrate

Table 7.2 Male economic activity, 1991 and 2001

	In work	Unemployed	Inactive
White 91	11,399,238	1,552,553	1,912,019
%	76.7	10.4	12.9
White 01	11,676,196	722,214	2,650,557
%	77.6	4.8	17.6
Indian 91	192,671	34,297	48,828
%	69.9	12.4	17.7
Indian 01	258,807	20,737	80,498
%	71.9	5.8	22.4
Pakistani 91	66,885	30,998	31,638
%	51.6	23.9	24.4
Pakistani 01	126,698	24,502	66,886
%	58.1	11.2	30.7
Bangladeshi 91	21,706	10,580	11,178
%	49.9	24.3	25.7
Bangladeshi 01	44,683	10,207	25,920
%	55.3	12.6	32.1
Caribbean 91	105,569	37,867	22,444
%	63.6	22.8	13.5
Caribbean 01	111,221	22,165	39,702
%	64.3	12.8	22.9
African 91	33,193	16,775	20,856
%	46.9	23.7	29.4
African 01	88,724	20,115	43,506
%	58.2	13.2	28.6
Chinese 91	33,580	4,596	14,381
%	63.9	8.7	27.4
Chinese 01	49,249	4,171	29,114
%	59.7	5.1	35.3

Note: People of working age (men aged 16–64; women aged 16–59)

Source: 100% 1991 and 2001 Censuses, England and Wales

that even though rates of part-time employment are highest among White women, they are of relevance to women of other ethnicities too.

Between 1991 and 2001 female rates of part-time work remained stable for White, Black African and Chinese women, and increased for the rest. The highest rise took place among South Asian women, while, at the same time, their rates in self employment dropped. Among men, part-time rates in 1991 were tiny for all groups except Black Africans (10%), but they increased over the decade. The increase was substantial for Pakistani men and spectacular for Bangladeshi men: their rates of part-time work grew by 8 and a 28 percentage points respectively. In 2001, 33.8% of Bangladeshi men in work were part-timers.³

³ This fact merits special attention that exceeds the aims of this chapter. Current work is ongoing on the reasons why the 2001 Census recorded such a spectacular increase in male Bangladeshi rates of part-time work.

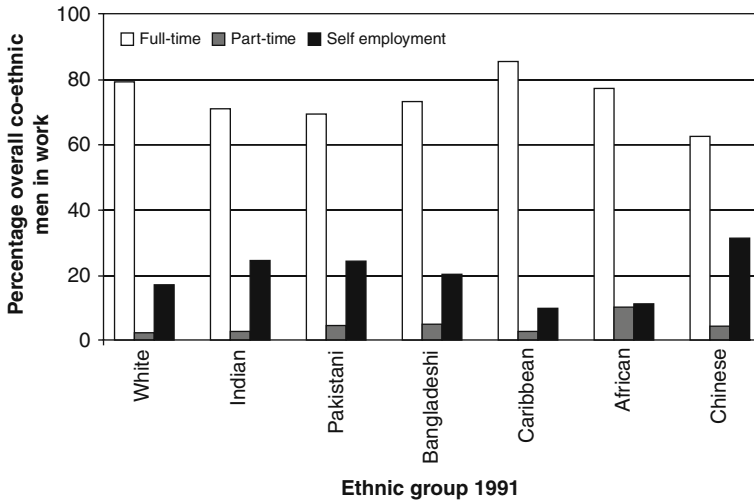


Fig. 7.1 Men in work by employment status, England and Wales, 1991 (Source: 100% 1991 Census, England and Wales) Note: Only men aged 16–64 included

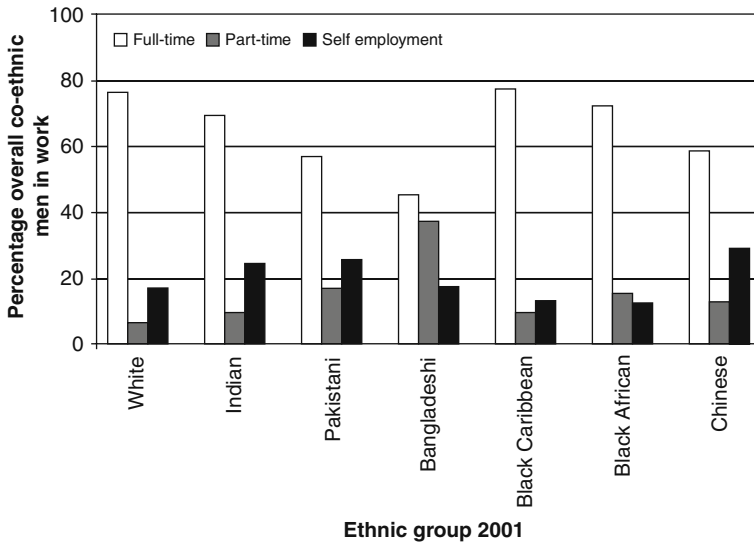


Fig. 7.2 Men in work by employment status, England and Wales, 2001 (Source: 100% 2001 Census, England and Wales) Note: Only men aged 16–64 included

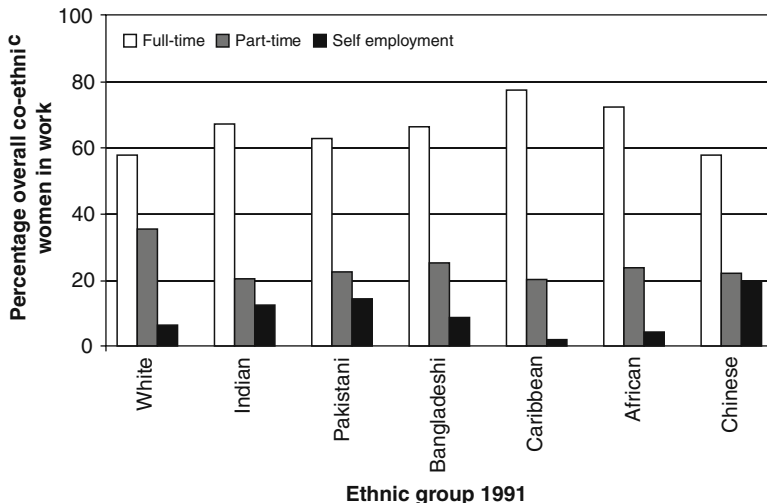


Fig. 7.3 Women in work by employment status, England and Wales, 1991 (Source: 100% 1991 Census, England and Wales) Note: Only women aged 16–59 included

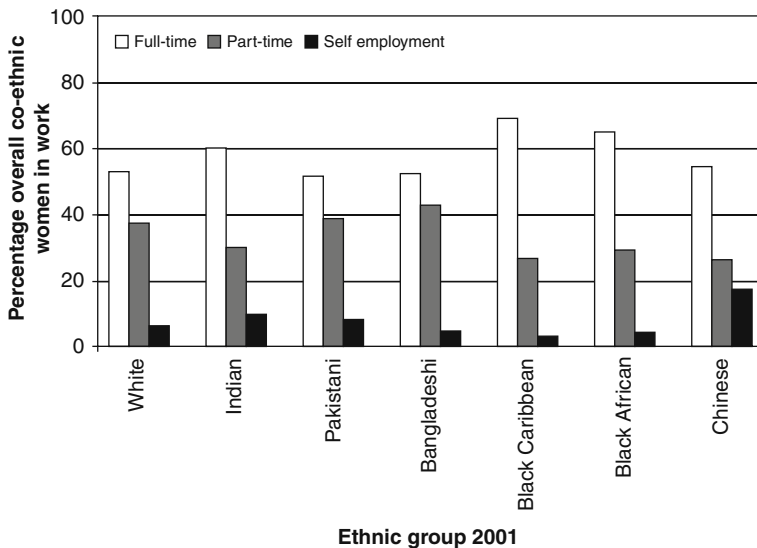


Fig. 7.4 Women in work by employment status, England and Wales, 2001 (Source: 100% 2001 Census, England and Wales) Note: Only women aged 16–59 included

Segregation Indices and Patterns of Occupational Concentration

With the aid of the segregation index Theil's H , we operationalise the hypothesis that the main distinction among workers in relation to occupational segregation is their sex, rather than their employment status. We fail to reject this hypothesis if the between-group term of Theil's H (corresponding to the distinction between male and female workers) is higher than the within-group term (which measures how far female full-timers are segregated from female part-timers). Table 7.3 presents the results for 1991 and 2001.

In 1991 and 2001, the highest segregation by sex and employment status was found among Bangladeshi, Black Caribbean and White people. The least segregated

Table 7.3 Theil's index of multigroup segregation considering men, women in full-time work and women in part-time work, 1991 and 2001

	1991	%	2001	%	Absolute change	Percentage change
White						
Theil	0.302		0.240		-0.063	
Between	0.258	85.3	0.201	83.8	-0.057	
Within	0.044	14.7	0.039	16.2	-0.005	1.6
Indian						
Theil	0.199		0.159		-0.040	
Between	0.171	86.2	0.124	78.1	-0.047	
Within	0.027	13.8	0.035	21.9	0.007	8.1
Pakistani						
Theil	0.236		0.201		-0.035	
Between	0.209	88.7	0.170	84.8	-0.039	
Within	0.027	11.3	0.031	15.2	0.004	4.0
Bangladeshi						
Theil	0.323		0.245		-0.078	
Between	0.279	86.2	0.208	84.9	-0.071	
Within	0.044	13.8	0.037	15.1	-0.007	1.3
Black Caribbean						
Theil	0.323		0.237		-0.086	
Between	0.283	87.6	0.199	84.3	-0.083	
Within	0.040	12.4	0.037	15.7	-0.003	3.3
Black African						
Theil	0.213		0.154		-0.059	
Between	0.165	77.5	0.117	75.5	-0.049	
Within	0.048	22.5	0.038	24.5	-0.010	2.1
Chinese						
Theil	0.155		0.129		-0.026	
Between	0.121	77.8	0.092	71.4	-0.028	
Within	0.034	22.2	0.037	28.6	0.003	6.4

Note: People of working age (men aged 16–64; women aged 16–59) and in work

Index based on the 77 occupational minor groups of SOC90 in 1991, and on the 81 occupational minor groups of SOC 2000 in 2001

Source: 10% sample of the 1991 Census, England and Wales; 100% 2001 Census, England and Wales

were Chinese and Indian people, joined in 2001 by Black African people. In terms of trends over the 1990s, both the overall Theil index and its between-group component decreased for all ethnic groups. In other words, segregation between men and women declined in the 1990s. This confirms previous results that examined trends since 1971 using the Gini coefficient; they established that during the 1990s there was the largest decrease in occupational sex segregation ever recorded in England and Wales (Blackwell and Guinea-Martin, 2005).⁴

Trends regarding the within-group term, that is, the segregation between women in full-time and part-time employment, are not so harmonious; they reflect diversity among ethnic groups. Following Hakim's findings on trends in the 1980s, we expected segregation by employment status to either increase or remain stable. However, among White, Bangladeshi, and Black people, this type of segregation declined in absolute terms from 1991 to 2001.⁵ On the other hand, for Indian, Pakistani and Chinese women, segregation by employment status increased in absolute terms from 1991 to 2001.

Previously we mentioned Elliott's results for GB in 1991 (2005): only 14% of occupational segregation was due to differences in employment status among women. In Table 7.3 we see that most ethnic groups had values near that figure in 1991. In particular, for the group with the highest rate of part-time working, White people, the employment status of women in work was responsible for only 14.7% of occupational segregation.

This figure was only higher among the Black African and Chinese groups, with 22% of their occupational segregation explained by the employment status of their women. In 2001, they were joined by Indian people. However, for these groups the absolute magnitude of their within-group component was in line with the rest of groups in 2001 (ranging between 0.031 and 0.038). The relatively large contribution of segregation by employment status to overall segregation was due to the extremely low segregation by sex that these groups had.

The case of Black African, Chinese and Indian people shows the need for caution in the interpretation of segregation indices that summarise large matrices in a few figures. This condensation of information highlights levels and trends in segregation. However, it is convenient to substantiate this abstract knowledge. One way of doing so involves classifying occupations into sex types, either two (male and female occupations – see Corcoran et al., 1984), three (adding integrated occupations,

⁴Theil's H has not been standardised to a set number of occupations as other indices have. Given that the classification changed from 77 minor groups in 1991 to 81 in 2001, this fact could affect the results here discussed (as said earlier, the more occupations, the more segregation unveiled). However, the change of classification should push the indices up rather than down. It is significant, thus, that sex segregation declined in spite of the increase in the number of minor groups. Segregation by employment status suffered much smaller changes over the decade than sex segregation.

⁵And yet, the relative contribution of the within-group term to the overall segregation increased for these groups because for them segregation by sex declined even more than segregation by employment status.

see Jacobs, 1989) or four (differentiating “heavily female” occupations from other female occupations, see Chan, 1999). But the labour market experience of women and ethnic minorities is largely characterised by their employment niches. This information is lost in a broad aggregation of data such as a table of sex types.

A more focused picture of the occupational landscape is provided by the five most common occupations of workers classified by ethnic group, sex and employment status.⁶ These differing levels of concentration are intimately related to segregation, the latter being the outcome of “all the separate levels of concentration in individual occupations” (Blackburn and Jarman, 2005). Women in full- and part-time employment have distinctive, but not opposite, occupational landscapes. In general, clerical occupations are more typical of full-timers than part-timers while a higher proportion of the latter are sales assistants. But full- and part-timers are far from being separate workforces, as suggested by Hakim (1993). Sales assistant is one of the most common occupations among full-timers too and there are many instances of clerical occupations among part-timers. These occupations shape the labour market experience of women in England and Wales, regardless of their ethnic origin or employment status.

What better distinguishes female full- and part-timers is not their particular occupations but the differing degree of concentration in them. Part-timers are much more concentrated in the five most common occupations than full-timers. Although Great Britain has twice the rate of women (with dependent children) in part-time work than the US, segregation between women in full and part-time work accounts for only a little more of overall occupational segregation than it does in the US (14 vs. 11% in 1991) (Elliott, 2005).⁷

Interestingly, the relative contribution of employment status to overall segregation was only high (between 20 and 30% of overall segregation) for Black African and Chinese people in 1991, joined by Indian people in 2001. However these groups were similar to the rest in the absolute magnitude of their female segregation by employment status. The relative greater importance of the latter was due to their low levels of sex segregation. Workers from these ethnicities concentrated in occupational niches that crossed sex boundaries: shop-keeping, sales assistants and medical practitioners among Indian people; nursing and cleaning among Black African people; catering occupations among Chinese people.

Most occupational segregation is due to the segregation of men from women. There are two factors of importance here. First, women are more concentrated

⁶ The occupation tables are too large to be included in the chapter but are available from the first named author on request.

⁷ This finding does not imply that part-time and full-time posts are equal. Women in full- and part-time employment may share the same occupational unit group of the classification, and in this sense they are not segregated from one another. But differences in the quality of their employment are related to hours worked. For example, part-time posts pay lower wages and have poorer promotion prospects than the full-time jobs, among other disadvantages (see, for example, Manning and Petrongolo, 2004; Francesconi and Gosling, 2005).

in fewer occupations than men. Second, in all ethnic groups the most common occupations of men differ from women's. However, there were exceptions to the opposing occupational profiles of men and women. One key occupational group in the 1990s for all women, sales assistants, was also defining for male part-timers in 2001. Although part-time working is of lesser importance to men than to women, over the 1990s male part-time work rates grew (to 4.2% among White men, for example), whereas full-time work rates shrunk (to 78% of White men) (Figs. 7.1 and 7.3).

Apart from Asian groups, self-employment rates were low among women (analogous to male rates of part-time). Nonetheless, this form of work followed a characteristic pattern with gender similarities. In particular shop-keeping was a key occupation for all ethnic groups. So were professional occupations, notably medical practitioners or solicitors, among self employed women. Differences by hours worked among the self employed have proved to be not as meaningful as they are among employees.

Conclusions

In future research Theil's H could be used to study the evolution of occupational ethnic segregation over the 1990s. It could reveal what proportion of overall ethnic segregation is due to the separation of White workers from ethnic minority workers, and what is due to the segregation within minorities. Also, the study of the occupational distributions of each subgroup of interest could be refined through statistical techniques such as correspondence analysis. This would determine, with chi-squared-based statistics of association, which occupations better characterise each subgroup of the labour force.

Finally, future work will take into consideration sources of heterogeneity within ethnic groups other than sex and employment status; for example, different migration histories. Blackwell (2000) noted that Chinese migration is split between a first arrival before the 1980s which originated in rural Hong Kong and established around the catering industry. Later Chinese migrants had more variegated origins in South East Asia; generally, they were better-educated people seeking career advancement in the UK. The split concentration patterns of the Chinese between catering and other occupations reflects in part these two types of migrants, as well as second-generation, UK-educated Chinese. Likewise, Robinson (1996, quoted in Dale and Holdsworth, 1998) has noted that entry criteria post 1973 "professionalised" Indian migration. Country of birth may be shown to be significant in explaining ethnic differences in occupational attainment.

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Chapter 8

Effects of Employment on Cardiovascular Risk

Claudia Thomas

Introduction

The organisation of work and associated working conditions are regarded as highly influential for adult health. Being in work and experiencing good working conditions are thought to be beneficial for health, thereby the workplace is a key location for the promotion of health and well-being (Black, 2008; Coats and Max, 2005). In contrast, being unemployed or experiencing unfavourable working conditions can be detrimental for health.

Many studies show that unemployment and psychosocial work conditions are associated with a range of health outcomes, including mortality (Kivimaki et al., 2002; Kivimaki et al., 2003; Pensola and Martikainen, 2004), mental health (Stansfeld and Candy, 2006; Murphy and Athanasou, 1999; Thomas et al., 2005) and cardiovascular disease (CVD) (Weber and Lehnert, 1997; Kivimaki et al., 2006; Agardh et al., 2003; Kuper and Marmot, 2003). However, there are fewer studies examining the health effects of the organisation of work, such as shift work and length of working hours. As seen for health and well-being, there is a socioeconomic gradient for working patterns: professionals tend to work long hours while less-educated workers are more likely to work irregular hours (Johnson and Lipscomb, 2006). These work patterns may play a role in the development of health inequalities.

There is a general lack of substantive research on other aspects of atypical working hours, such as evenings and weekends. Given that 20% of industrialised populations work outside the standard 8 am–5 pm working day, a figure set to increase as demand grows for the provision of goods and services around the clock, it is important to understand the implications for health and well-being (Rajaratnam and Arendt, 2001). Greater clarity is needed and gaps in the evidence base need to be bridged to understand how working patterns influence health outcomes such as CVD.

C. Thomas (✉)

Centre for Paediatric Epidemiology and Biostatistics, University College London Institute of Child Health, London WC1N 1EH, UK
e-mail: clthomas@sgul.ac.uk

The availability of life-course data from British cohort studies allows the links between the underlying social, behavioural and biological processes that occur across an individual's life-course to be identified and related to health or disease in later life (Kuh and Ben-Shlomo, 2004). Thus, this research has the potential to study the direct relationships between employment and adult health outcomes, as well as the more indirect pathways, for example through diet, physical activity and weight gain. Importantly, studies of employment and health conducted in birth cohorts can also take into account social processes occurring in earlier life, such as education, that determine how individuals arrive in their occupational destinations.

The 1958 British birth cohort (National Child Development Study) enables timely analyses of aspects of social processes that contribute to CVD because participants in the study are still at an economically active age and have information available for several points through the life course. This enables greater insights into the role of labour market participation in the development of socioeconomic differences in cardiovascular disease. The cohort entered the labour market during the mid 1970s and early 1980s at a time when unemployment had begun to rise, with subsequent periods of boom and recession during their working lives. Also of note, this was a period when women's participation in the labour market began to rise, albeit in part-time, low-level and low paying jobs (Ward et al., 2005). During the cohort member's working lives, a reorganisation and restructuring of work has occurred, most notably in areas of technological development that require computing skills (Woods et al., 2003). Therefore, the relationships between employment experiences and CVD in this cohort are in the context of the changing social roles of men and women in Britain as the economic climate has changed.

The aims of this research were: (i) to investigate how aspects of labour market participation and non-participation are related to CVD risk; (ii) determine whether health behaviours (e.g. diet, physical activity) mediate the associations between labour market participation and CVD; (iii) determine to what extent associations between labour market participation and CVD are explained by characteristics from early life stages; and (iv) understand how the relationships differ for women who experience more complex patterns of labour market participation.

Methodology

This research uses data from the 1958 British birth cohort to analyse links between paid employment and risk for CVD. The 1958 cohort consists of approximately 17,000 individuals born 1 week in March 1958 in England, Scotland and Wales, with follow-up interviews at ages 7, 11, 23, 33, 42 and 45 years. Due to attrition, the sample at 45 years was approximately half the original birth cohort, which has led to an under-representation of participants from disadvantaged backgrounds in terms of socioeconomic position (SEP), cognitive and behavioural problems (Atherton et al., 2008).

This research makes use of information on biomedical risk factors collected at 45 years of age including blood pressure (systolic and diastolic), blood glucose (glycated haemoglobin), blood lipids (triglycerides, total cholesterol, HDL-cholesterol), adiposity (waist and hip circumferences, body mass index), inflammatory factors (fibrinogen, C-reactive protein) and the stress marker, cortisol.

For the work presented in this chapter, information on work hours and psychosocial work characteristics collected at 45 years was analysed and, for shift work, information collected at 42 years was used (as shift work data was not obtained at 45 years). Participants reported frequency of working nights (22:00–04:00), early mornings (04:00–07:00), evenings (18:00–22:00) and weekends (Saturday or Sunday) in their main job, as never, <1/month, ≥ 1 /month, ≥ 1 /week. Participants also reported the total hours worked/week (including overtime) in their main job. Psychosocial work characteristics, i.e. job control and demand, were measured at 45 years based on Karasek's Job Content Instrument as previously used by the Whitehall II Study (North et al., 1996). Job control was measured by six questions (learning new things; monotony; level of skill; choice in how to do work; choice in what work to do; say in decisions) and job demands by four questions (work fast; work intensively; time to do everything; conflicting demands). Job strain was defined as low control (score above the median) and high demands (score below the median).

Findings

This section describes findings from the first stage of the project that consists of two components: (i) analysis of the associations between shift work (regular work outside the standard 8 am–5 pm day, including night work and work in the evenings or on weekends) and risk factors for CVD and whether such relationships are explained by health behaviours; and (ii) an examination of how different combinations of adverse workplace factors (nights, long hours, low job control, high job demands) influence cortisol levels.

Shift Work and Risk of Cardiovascular Disease

According to the Health and Safety Executive, more than 3.5 million people are employed as shift workers in the UK (Health and Safety Executive, 2007). Most research on the health consequences of shift work focuses on night or rotating shift work. However, by definition, shift work includes employment outside of standard working hours such as evening and weekend work (Monk and Folkard, 1992). The most commonly reported health problems associated with shift work include sleep disturbances and digestive problems (Knutsson, 2003). There is some evidence that prolonged exposure to shift work is related to more serious disease, particularly CVD, with night working estimated to increase the risk of coronary heart disease (CHD) by 40% (Bøggild and Knutsson, 1999). Yet findings for

metabolic disturbances have been inconsistent, possibly due to differences between the populations studied, cross-sectional designs, small study samples and variation in shift work definitions (Di Lorenzo et al., 2003; Karlsson et al., 2001; Lasfargues et al., 1996; Morikawa et al., 2007; Niedhammer et al., 1996; Parkes, 2002; van Amelsvoort et al., 1999; Nagaya et al., 2002; Morikawa et al., 1999; Fialho et al., 2006; Romon et al., 1992; Mikuni et al., 1983).

Several pathways linking shift work to adverse health outcomes have been suggested, but there is a lack of supporting evidence. Direct effects such as insufficient recovery due to sleep loss, and/or disruption of the 24-h cycle (circadian rhythm), could lead to metabolic disturbances. There is a growing literature relating sleep loss to weight gain and obesity, but whether it is a causal effect is unknown (Willyard, 2008). Furthermore, levels of blood lipids and glucose are reported to be higher following consumption of a meal during the biological night compared to the same meal eaten during the biological day, indicating circadian disruption of metabolic processes which could increase the risk of CVD (Hampton et al., 1996). Associations could also be due to behavioural changes (e.g. diet, physical activity) either as a consequence of working conditions (e.g. night work may be a barrier to obtaining physical exercise) or because of increased stress associated with poor working conditions (Knutsson and Bøggild, 2000). Other pre-employment factors associated with CVD may also underlie the associations, with some role also for selection processes of individuals into particular occupational destinations, for example socioeconomic background and pre-existing health status. The pathways involved may depend on the type of shift work undertaken, for example, night work may be more strongly related to circadian disruption and/or direct effects on health behaviours, whereas evening and weekend work may be related to stress and/or behaviour changes.

Table 8.1 describes the characteristics of the employed sample used in the analyses. Men had less favourable levels of all risk factors for CVD compared to women, except for CRP where there was no difference in mean levels, and were also more likely to undertake shift work. Evening work was most common for both men and women (54 and 37% respectively) while 13% worked at night or early in the morning. There was a substantial overlap of night and early morning shift work: about 50% of those working nights also worked mornings, while 94 and 75% of night and morning workers respectively also worked evenings (data not shown).

Associations between risk factors for CVD and shift work exposure were analysed using multiple linear regression. For regression models, all CVD risk factors were converted to standard deviation (SD) scores (mean=0, SD=1) in order to facilitate comparison across outcomes. Shift work categories (nights, early mornings, evenings, weekends) were analysed separately. Shift work variables were modelled as categorical variables, thus coefficients represent the difference in mean levels of the outcome for each level of shift work frequency relative to the reference category (never or <1/month). A linear trend from the reference to the most frequent category (>1/week) was tested treating shift work as a continuous rather than categorical variable.

Table 8.1 Characteristics of cohort members who were in paid employment at 42 year

	Mean (SD) or n (%)		<i>p</i> -value ^b
	Men	Women	
Shift work, ≥ 1 /week ^a			
Any shift work	2,710 (65.5)	1,665 (45.0)	<0.001
Night (22:00–04:00)	662 (16.0)	368 (10.0)	<0.001
Morning (04:00–07:00)	776 (18.7)	300 (8.1)	<0.001
Evening (18:00–22:00)	2,226 (53.8)	1,357 (36.7)	<0.001
Weekend	1,358 (32.8)	864 (23.4)	<0.001
Total hours worked/week	47.60 (11.69)	31.95 (14.07)	<0.001
Self-employed	796 (19.2)	351 (9.5)	<0.001
Risk factors for cardiovascular disease			
BMI (kg/m ²)	27.82 (4.22)	26.92 (5.47)	<0.001
WC (cm)	98.38 (10.94)	85.26 (12.56)	<0.001
SBP (mmHg)	132.91 (14.95)	120.32 (15.50)	<0.001
DBP (mmHg)	82.08 (10.39)	75.59 (10.24)	<0.001
Trig (mmol/l) ^c	2.08 (1.22)	1.34 (0.71)	<0.001
Chol (mmol/l)	6.07 (1.13)	5.68 (0.99)	<0.001
HDL (mmol/l)	1.44 (0.33)	1.70 (0.40)	<0.001
HbA1c (%) ^c	5.27 (0.57)	5.15 (0.47)	<0.001
CRP (mg/l) ^{b,d}	0.91 (0.95)	0.94 (1.13)	0.19
Fibrinogen (g/l) ^e	2.86 (0.56)	3.00 (0.61)	<0.001

^aOutside the hours of 07:00 and 18:00 or on weekends

^bFrom t-test or chi² test of sex difference as appropriate

^cGeometric mean (SD)

^dCRP excludes values >10 mg/l, *n*=154

^eFib excludes values >5.62 g/l, *n*=9

Abbreviations: SBP (systolic blood pressure), DBP (diastolic blood pressure), BMI (body mass index), WC (waist circumference), HbA1c (glycated hemoglobin), Trig (triglycerides), Chol (total cholesterol), HDL (high-density lipoprotein cholesterol), CRP (C-reactive protein), Fib (fibrinogen)

Source: Author's calculations

Figure 8.1 presents the estimated differences in average levels of each CVD risk factor outcome for working nights at least 1/week.

Linear trends, as indicated with an asterisk, were seen for increasing frequency of night work (i.e. from never, ≥ 1 /month, ≥ 1 /week) and higher BMI, WC, triglycerides and CRP and lower HDL. For those undertaking night work at least once/week, the effect sizes were about 0.1 SD for each outcome, translating to a 0.44 kg/m² increase for BMI and 1.07 mmol/l for triglycerides, respectively (Note: actual changes for each outcome can be approximated from Table 8.1). Associations were reduced by about 50% and were no longer statistically significant for BMI, WC, and CRP following adjustment for confounding factors. Additional adjustment for health behaviours had little impact on the associations, except for HDL which was reduced and no longer statistically significant.

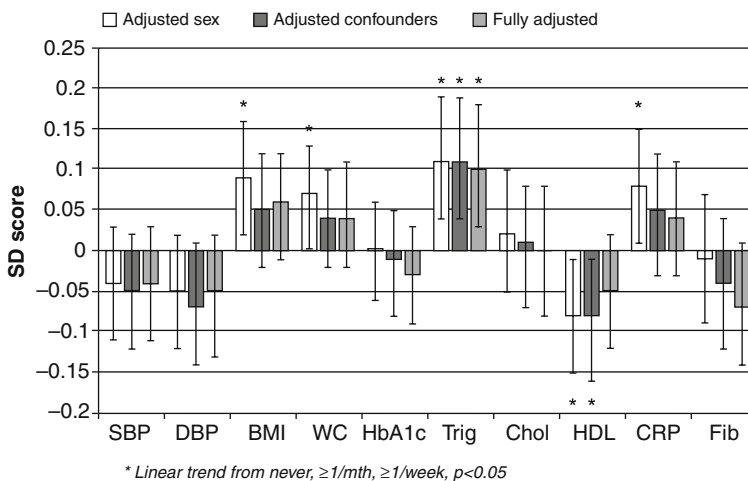


Fig. 8.1 Changes in SD scores of CVD risk factors associated with working at night at least 1/week (Source: Author's analysis)

Notes: Adjusted confounders = sex, socio-economic position, hours worked/week, self-employed. Fully adjusted = confounders plus smoking, diet, physical activity, alcohol. Models are weighted for attrition.

Abbreviations: SBP, systolic blood pressure; DBP, diastolic blood pressure; BMI, body mass index; WC, waist circumference; HbA1c, glycated hemoglobin; Trig, triglycerides; Chol, total cholesterol; HDL, high-density lipoprotein cholesterol; CRP, C-reactive protein; Fib, fibrinogen

As seen for night work, linear relationships were found between frequency of morning work and adverse levels of BMI, WC, HDL, triglycerides (Fig. 8.2). HbA1c levels were also higher for morning workers.

Inflammatory factors were elevated for men only: CRP was raised by 0.15 SD (95% Confidence Interval [CI] 0.07, 0.23) and fibrinogen by 0.18 SD (95% CI 0.09, 0.27). For individuals working mornings $\geq 1/week$, the effect sizes were almost twice those seen for night work for BMI (0.17 SD; 0.83 kg/m²) and WC (0.13 SD; 1.84 cm). Adjustment for confounding factors had little impact on the effect sizes, and for BMI, WC and inflammatory factors, additional adjustment for health behaviours did not explain the associations. Associations with HDL, triglycerides and HbA1c attenuated by 25% following adjustment for confounding factors with some additional attenuation following adjustment for health behaviours, particularly for HDL.

There were few findings for evening and weekend work (data not shown). Statistically significant linear trends were seen for increasing frequency of weekend work for BMI ($p < 0.01$) and WC ($p = 0.02$) resulting in 0.08 SD (95% CI 0.03, 0.14) and 0.05 SD (95% CI 0.004, 0.10) increase in BMI and WC respectively for those working every weekend. The trends for BMI and WC were attenuated following adjustment for confounding factors. A linear trend found for evening work and total cholesterol (0.09 SD, 95% CI 0.01, 0.018 for $\geq 1/week$) for men was attenuated

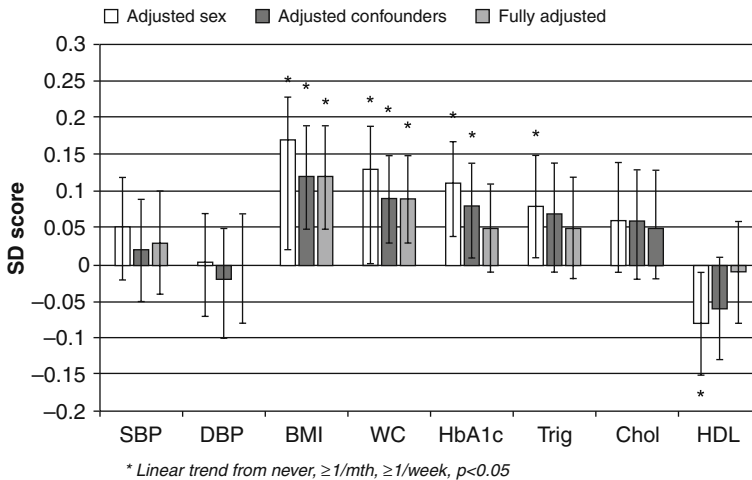


Fig. 8.2 Changes in SD scores of CVD risk factors associated with working early mornings at least 1/week (Source: Author's analysis)

Notes: Adjusted confounders = sex, socio-economic position, hours worked/week, self-employed. Fully adjusted = confounders plus smoking, diet, physical activity, alcohol. Models are weighted for attrition.

Abbreviations: SBP, systolic blood pressure; DBP, diastolic blood pressure; BMI, body mass index; WC, waist circumference; HbA1c, glycated hemoglobin; Trig, triglycerides; Chol, total cholesterol; HDL, high-density lipoprotein cholesterol; CRP, C-reactive protein; Fib, fibrinogen

following adjustment for confounding factors ($p=0.20$). A weak association with BMI was found for those working evenings $\geq 1/week$ (0.05 SD, 95% CI -0.004, 0.10). Adjustment for health behaviours had no effect on the relationships.

To summarise, adverse changes in the levels of a number of risk factors for CVD were observed most commonly in association with increasing levels of night or early morning work rather than evening or weekend work. To some extent, associations reflected socioeconomic and other occupational factors. It was hypothesised that associations between shift work and risk markers for CVD would be due to health behaviours such as diet, physical activity, smoking and alcohol consumption as previous studies have found that night workers smoke more and have a poorer diet compared to day workers (van Amelsvoort et al., 2006; Kivimaki et al., 2001; Lasfargues et al., 1996). However, we found little evidence in support of this.

The results presented essentially reflect cross-sectional associations and it is possible that the number of years spent doing shift work may well influence the extent to which current health behaviours affect future disease risk. Other explanations for the relationship between shift work and risk for CVD include other pathways such as circadian disruption of metabolic processes (Rajaratnam and Arendt, 2001). Alternatively, individuals who work at nights and early mornings may differ with respect to risk factors for CVD before they become shift workers. For example, night or morning work is associated with lower socio-economic position, which could reflect social and health disadvantage originating earlier in life.

Night-Work, Long Working Hours, Job Control and Cortisol Secretion in Mid-life

In the previous section, strong relationships between working at night and a range of biological risk factors for CVD were found to exist for the 1958 British birth cohort. The relationships were not simply explained by concurrent health behaviours.

Potentially, workplace factors such as night work could increase the risk of CVD through effects on neuroendocrine responses to stress (Knutsson and Bøggild, 2000; Kristenson et al., 2004). The hypothalamic-pituitary-adrenal (HPA) axis is highly relevant because of its role in perception of, and response to, stressful circumstances (Hertzman, 1999). HPA stimulation regulates cortisol secretion, which, in turn, has metabolic effects on the brain, immune, gastrointestinal, cardiovascular, and reproductive systems. These effects may be adaptive in the acute stress-response phase, but, over the long-term, have the capacity to damage these same organ systems. If abnormal cortisol secretion patterns are involved in the development of the metabolic syndrome and CVD as suggested (Bjorntorp and Rosmond, 2000), it is plausible that workplace stressors could influence CVD through dysregulation of the HPA axis.

In addition to night work, studies have also reported associations for long work hours and poor psychosocial work conditions (e.g. low job control) with several CVD related outcomes (van der Hulst, 2003; Knutsson and Bøggild, 2000; Kivimaki et al., 2006; Brunner et al., 2007; Ostry et al., 2006; Vrijkotte et al., 1999; Chandola et al., 2006). Furthermore, several studies have reported dysregulation of cortisol secretion in association with job strain, night-work and to a lesser extent long work hours, but usually for a single occupational group and exposure (Alderling et al., 2006; Kunz Ebrecht et al., 2004; Steptoe et al., 2004; Weibel et al., 1996; Motohashi, 1992; Munakata et al., 2001; Dahlgren et al., 2006; Persson et al., 2006; Persson et al., 2003; Garde et al., 2007). The effects of combinations of different workplace factors in relation to cortisol secretion have not been previously examined. Combinations of workplace factors may have greater effects than exposure to one factor since workplace factors such as work hours, night work and psychosocial work stress are related (Harma, 2006). The 1958 British birth cohort provides an opportunity to address this issue in a large, unselected population, i.e. spanning the whole working population and not just particular occupations. This section investigates how cortisol levels vary in relation to the inter-relationships between night work, long working hours and low job control.

Two cortisol measures were obtained at 45 years: 45 min after awakening (T1 cortisol) and 3 h later on the same day (T2 cortisol). Secretion patterns were examined using a range of indicators to reflect the diurnal rhythm of cortisol secretion which is characterised by a peak soon after waking in the morning and a gradual decline throughout the day (Stone et al., 2001). There is evidence of a U-shaped relationship such that health risks have been found for both hyper- and hypo-cortisolism.

Multiple linear regression was used to analyse the relationship between workplace factors and continuous cortisol measures. T1, T2 and 3 h cortisol were log₁₀ transformed, therefore relative change (in percent) in these measures was calculated from the regression coefficient (β) as $100 \times (10^\beta - 1)$. For example, T1 cortisol changes from value X1 to $10^\beta X1$ when the work place exposure changes by one level, e.g. from none to night-work. The modelling strategy consisted of testing (i) main effects of the work variables on each cortisol outcome; (ii) gender interactions with the work variables; (iii) interactions between work variables; and (iv) adjustment for potential confounding factors in final models. Where interactions were found, stratum specific estimates were calculated. Job control and demands were modelled simultaneously and compared with a second model using job strain, which combines both demand and control in one variable. Job strain was used in subsequent models unless the models of job control and demands indicated either of these components to be significant.

Exposure patterns for workplace factors were considerably different for men and women (Table 8.2). Men were more likely to work nights and long hours but women were more likely to have low control and job strain, while similar proportions reported high demands. Approximately 25% of men compared to 8% of women were exposed to >1 work stressor. Men had lower T1 cortisol but higher T2 cortisol than women.

For work hours the only effect seen was among men working extended hours, who had 4% lower 3 h cortisol, which was not explained by confounding factors

Table 8.2 Characteristics of cohort members in paid employment at 45 year

	N (%) or mean (SD)		
	Men	Women	<i>p</i> -value ^a
Workplace factors			
Night-work (10:00–7:00), 42 years	1,584 (41.0)	620 (18.7)	< 0.01
Working >48 h/week	1,305 (34.7)	323 (9.2)	< 0.01
Low job control	1,389 (37.0)	1,698 (48.4)	< 0.01
High job demands	2,187 (58.6)	1,986 (57.0)	0.18
Job strain ^b	683 (18.4)	804 (23.4)	< 0.01
Cortisol			
T1 cortisol (mmol/l)	21.02 (11.94)	21.88 (12.15)	< 0.01
Median	18.80	19.60	
T2 cortisol (mmol/l)	9.20 (9.02)	8.24 (7.63)	< 0.01
Median	7.10	6.60	
3 h cortisol (nmol/l) ^c	44.84 (24.80)	44.75 (22.58)	0.87
Median	40.12	40.68	

^aFrom t-test or χ^2 test of sex difference as appropriate

^bJob strain is the combination of low control and high demands

^cDerived by summing T1 and T2, multiplying the results by 3 and dividing by 2

Source: Author's calculations

Table 8.3 Relative change in cortisol (%) associated with workplace factors^a

	Model I	Model II	Model III
T1 cortisol ^b			
Works >48 h/week	-3.59 (-7.58, 0.57)	-3.14 (-7.29, 1.20)	-3.23 (-7.43, 1.17)
Night-work	3.22 (-0.52, 7.10)	-	-
Job strain	-0.39 (-4.50, 3.90)	-	-
Nights (not strain)	-	5.81 (1.61, 10.19)*	5.84 (1.63, 10.22)*
Strain (not nights)	-	2.79 (-2.29, 8.14)	2.91 (-2.19, 8.26)
Nights + strain	-	-2.14 (-9.27, 5.55)	-2.28 (-9.44, 5.44)
Interaction <i>p</i> -value	-	0.03	0.03
T2 cortisol			
Works >48 h/week	-2.89 (-7.48, 1.93)	-2.60 (-7.25, 2.29)	-2.72 (-7.32, 2.11)
Night-work	5.99 (1.44, 10.75)*	-	-
Low job control	0.67 (-2.86, 4.32)	-	-
High job demands	0.30 (-3.16, 3.90)	-0.09 (-3.63, 3.58)	1.16 (-2.49, 4.95)
Nights (not low control)	-	2.87 (-2.56, 8.60)	2.58 (-2.81, 8.26)
Low control (not nights)	-	-1.89 (-6.02, 2.43)	-3.28 (-7.37, 0.99)
Nights + low control	-	8.31 (1.90, 15.13)*	5.12 (-1.13, 11.77)
Interaction <i>p</i> -value	-	0.10	0.17
3 h cortisol ^b			
Works >48 h/week	-3.24 (-6.48, 0.10)	-	-
Night-work	4.28 (1.21, 7.45)*	4.33 (1.03, 7.73)*	3.92 (0.67, 7.27)*
Job strain	-0.33 (-3.65, 3.10)	0.08 (-3.12, 3.40)	-0.29 (-3.49, 3.00)
Work>48 h (men)	-	-4.55 (-8.43, -0.50)*	-4.24 (-8.14, -0.18)*
Work>48 h (women)	-	2.17 (-3.81, 8.52)	2.63 (-3.43, 9.07)
Interaction <i>p</i> -value	-	0.08	0.09

Notes: Model I: main effects adjusted for sex. Model II: model I with interaction terms. Model III: model II adjusted for socio-economic position at birth, socio-economic position at 42 year, smoking at 42 year, qualifications gained by 42 year, marital status at 45 year, dependent children at 45 year **p*<0.05

^aResults based on imputed and weighted regression models

^bJob strain (high demands and low control) used in models as no separate effect of control or demands. Relative change was calculated from the regression coefficient (β) as $100 \times (10 \beta - 1)$
Source: Author's calculations

(Table 8.3). For night-work, T1 cortisol was higher but only for those without job strain and was not attenuated following adjustment. Night-work was independently associated with higher T2 and 3 h levels, with some weak indication that the effect for T2 existed in the sub-group exposed to low job control. Associations for T2 and 3 h cortisol attenuated slightly after adjustment for potential confounding factors. There were no independent findings for psychosocial work stress.

The findings implicate night-work as a likely influence on cortisol dysregulation, which could be related to circadian disruption. The associations that emerged were not explained by other factors such as family circumstances, education or socio-economic position, which is surprising given that socio-economic position

and workplace factors would be closely linked, and that an association for less advantaged socio-economic position with extreme post-waking cortisol levels was reported previously for the 1958 cohort (Li et al., 2007).

The findings for cortisol dysregulation, in a large sample representative of middle aged, working adults, implied that night-work, in the absence of work stress and independent of the number of hours worked, is associated with post-waking cortisol hyper-secretion which could be due to circadian disruption (Knutsson and Bøggild, 2000). This is an important finding because of the substantial size of the employed population who work at night ($\geq 1/\text{month}$): more than a third of men and 16% of women, of which 79% did not experience job strain. There was some suggestion that night-work in combination with work stress may be associated with higher cortisol later in the day. This is a tentative finding requiring confirmation in other studies but if true, would have important policy relevance as organisations can influence workplace factors, for example, through the introduction of shift design practices that incorporate aspects of job satisfaction e.g. varied work load and a work environment comparable to that provided for day workers (Health and Safety Executive, 2006).

Conclusions

The two sets of analyses presented examined different outcomes and asked slightly different questions. The first, focused on gaining a clearer understanding on whether shift work was associated with increased risk of CVD, using a range of biological markers, and examined whether the associations were explained by health behaviours. The analyses demonstrated a dose-response relationship with increasing exposures to night and particularly early morning work, which was partly related to socioeconomic and other work factors and was not fully explained by health behaviours as was expected. This raises questions about other potential explanations, such as, the pre-existence of risk factors for CVD that select individuals into night work, or whether the circadian disruption associated with night work has direct metabolic or neuro-endocrine effects that could increase night workers susceptibility to CVD risk. The second set of analyses examined neuro-endocrine effects, measured by cortisol levels, of different work exposures. Again, night workers were particularly at risk of cortisol dysregulation. Taken together, these two sets of analyses suggest a complex causal pathway, involving pre-employment circumstances, circadian effects, stress responses and health behaviours that give rise to an increased risk of CVD in night workers.

The second phase of this work will expand on the current findings to the more complex longitudinal and life-course relationships. The remaining research will aim to address questions such as: What are the long-term, or cumulative, effects of exposure to adverse work place factors (e.g. night work) on CVD risk? Are associations between workplace factors explained by pre-employment

characteristics related to childhood development e.g. BMI and cognitive function in late adolescence? Up to now, the work has focused solely on those who are in paid employment rather than the relationships with non-participation in the labour market. To complete the work, a study of the effects of life-course employment trajectories on CVD risk will be undertaken.

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Chapter 9

Employment and Health Trajectories

Gopalakrishnan Netuveli

Introduction

One of the major events in the life course is exit from the labour force. Sometimes this transition is the defining event of old age (Thane, 2003). Exit from the labour force might be dictated by health problems or it might be due to personal choice (Laslett, 1996). The trend in early retirement has increased in the UK (Office of National Statistics, 2003), encouraged by attractive financial incentives (Banks and Blundell, 2005). Both lay persons and physicians perceive health to decline with age (Sarkisian et al., 2001) and the deterioration in health with ageing had been shown to be linked to the distribution of income, with those in the lower end of the distribution showing greater decline (Case and Deaton, 2003).

The premise that employment is good for health, especially psychological health, has been supported by arguments that work imposes a structure on daily behaviour, allows social interactions and provides social status (Jahoda, 1982). There are analogies that work provides essential “vitamins” (e.g. opportunity to use one’s skills, earn money, achieve a valued social position) for psychological well-being (Warr, 1994) and there are sociological perspectives that work allows people to find meaning in life (Ezzy, 1993). Bartley (1994) suggested four mechanisms to explain the relationship between unemployment and ill-health: poverty, stress, health related behaviour, and the after-effect on employment of a spell of unemployment. A fifth, eliciting a bereavement-like reaction, can be added to this list (Fortin, 1984).

The impact of unemployment on mortality has been shown in studies from different countries. In all these studies, the standardised mortality rate (SMR) was higher for unemployed persons and even showed dose-response to the length of unemployment (Moser et al., 1987; Costa and Segman, 1987; Iversen et al., 1987; Martikainen, 1990). Although the type of occupation and the worker’s perception about length of work might modify this (Tarumi et al., 2003), a “longer hours of work” variable was positively correlated with symptoms of poorer physical and

G. Netuveli (✉)

Department of Primary Care and Social Medicine, Imperial College London,
International Centre for Life Course Studies in Society and Health, London, UK
e-mail: g.netuveli@imperial.ac.uk

mental health (Sparks et al., 1997; van der Hulst, 2003). Job insecurity affects health and some sub-populations, including ethnic minorities and older workers, are particularly vulnerable (Ferrie, 1999; 2001). Use of health care services was greater among the unemployed (Linn et al., 1985; Beale and Nethercott, 1988, b; Yuen and Balarajan, 1989).

For women, employment adds the additional dimension of an extra role and potential stress from working. However, evidence, especially from methodologically sound longitudinal studies, suggests that paid employment had no adverse effect on women (Klumb and Lampert, 2004). The impact of multiple roles on women's health is not very clear (Bartley et al., 1999).

Conversely, economic studies have shown that poor health can impact economic activity through reduced capacity to work, reduced productivity, and reduced choices about leaving the labour force (Chirikos, 1993). It might even impinge on the economic activity of other members of the family. Between employment and unemployment, there might be a continuum of states where the person may not be involved in adequately paid employment – underemployment – the health effects of which are not completely understood (Dooley, 2003).

A crucial question is whether the relationship between unemployment and health is causal. There is still no conclusive answer to this. Applying Bradford Hill's criteria of causation to a systematic review of studies looking at unemployment and health, Jin and colleagues (1995) found that many of the criteria could not be applied. However, there was a weak suggestion that unemployment might cause ill-health. A competing view is that of health selection: people with poorer health get selected out of employment (Blane, 1985; Blane et al., 1993; Bartley and Plewis, 1997; Blane et al., 1999). Some studies looking for the health selection effect have failed to find any strong evidence that it exists (Chandola et al., 2003). McDonough and Amick (2001) suggested that we drop the dualism of looking at causation and selection as separate processes and consider them together as social processes.

As the last two papers cited have shown, a longitudinal approach often challenges the paradigm. The present chapter is based on the results of a longitudinal study of relationships between employment and health trajectories in the British Household Panel Survey. Whilst words such as "trajectory", "path" and "course" have similar meaning and are used interchangeably in the literature, we prefer to use "trajectory" since we use longitudinal data where trajectories are represented as an array of time indexed variables. Every point in the trajectory contains information about the current value at the point of measurement, and also information about the direction of how that point was reached and indication of where it might go. Longitudinal data are underused if only the magnitude of the time-indexed variables is used without taking into account the possible interrelationships between them.

Four research questions are addressed in this chapter:

- (i) In the labour force participation trajectory, how do past patterns of participation influence the current status of participation?
- (ii) In the health status trajectory, how do past patterns of health status influence the current health status?

- (iii) Are labour force participation and health status patterns clustered into groups?
- (iv) Do labour force participation trajectories and health status run in parallel?

Following a discussion of the data in the next section, the chapter addresses each question and draws some conclusions at the end.

Data

A commonly-used British data set which will allow us to answer these research questions is the British Household Panel Survey (BHPS), an annual interview survey of a representative sample of more than 5,000 households (Taylor, 2004). There are many examples where these data were used to look at employment and health relationships (Jones and Nicolas, 2004; Hauck and Rice, 2004; Wiggins et al., 2004; Disney et al., 2006; Thomas et al., 2005). Our methods differed from them in attempting to look at the trajectories in toto.

We selected a sample so that everyone was employed and healthy at the first point of the trajectory (1991, Wave 1). There were 2,582 people aged 16–50 years who reported they were employed, reported no health problems and rated their health as good or better. We excluded Waves 9 and 14 from the health trajectory because the self-rated question for these waves was different from that in other waves.

In addition to BHPS we used data from English Longitudinal Study of Ageing (ELSA) (Marmot et al., 2003; Banks et al., 2006), which contained objective measures of health such as inflammatory markers.

Do Past Patterns Influence Current Status of Labour Force Participation and of Health?

To answer this question we looked at how participants move from one state of employment or health to another in adjacent waves of BHPS. We used the Markov assumption that current state is dependent only on the previous one which simplified this analysis.

The results of this analysis are presented as a matrix of probabilities of moving from one state to another. Four transitions each were possible for employment status and for health. For employment, they are from employment to employment, employment to unemployment, unemployment to employment, and unemployment to unemployment. For health the transitions are good health to good health, good health to poor health, poor health to good health, and poor health to poor health. The results for both employment and health are shown together in Table 9.1. Everybody in the sample is in employment and good health at Wave 1.

Table 9.1 reports the probabilities of change in status (e.g. from employed to unemployed or from good health to poor health) in adjacent pairs of waves. Between the first and second waves, a person in employment in wave 1 had a 20% chance to

Table 9.1 Transition probabilities for employment and health states in adjacent waves of the BHPS

Waves	Transitions							
	Employment				Health*			
	Unemp→ Unemp	Unemp→ Emp	Emp→ Unemp	Emp→ Emp	Poor→ Poor	Poor→ Good	Good→ Poor	Good→ Good
1–2	†	†	0.20	0.80	†	†	0.19	0.81
2–3	0.77	0.23	0.12	0.88	0.65	0.35	0.15	0.85
3–4	0.83	0.17	0.11	0.89	0.73	0.27	0.14	0.86
4–5	0.85	0.15	0.12	0.88	0.81	0.19	0.15	0.85
5–6	0.86	0.14	0.08	0.92	0.78	0.22	0.14	0.86
6–7	0.91	0.09	0.08	0.92	0.83	0.17	0.13	0.87
7–8	0.92	0.08	0.08	0.92	0.84	0.16	0.12	0.88
8–9	0.93	0.07	0.09	0.91	na	na	na	na
9–10	0.95	0.05	0.08	0.92	na	na	na	na
10–11	0.95	0.05	0.08	0.92	0.85	0.15	0.14	0.86
11–12	0.93	0.07	0.08	0.92	0.86	0.14	0.15	0.85
12–13	0.96	0.04	0.09	0.91	0.87	0.13	0.15	0.85
13–14	0.94	0.06	0.09	0.91	na	na	na	na

*Waves 9 and 14 excluded health trajectories

†These transitions are not possible as everyone was employed and healthy in wave 1

na = data not available

Source: BHPS

become unemployed in wave 2 and a person in good health in wave 1 had a 19% chance to be in poor health in wave 2. Thereafter, the probabilities of remaining in the same state as in the previous wave increased with each pair of waves, while probabilities of moving to a worse state or to a better state decreased. These results suggested that between adjacent waves members in the panel tended to remain in the same status of employment and health with a high level of probability. However, it is the smaller probabilities of changing employment and health statuses between waves that will determine how the composition of the panel changes over time. This is clear when we examine the numbers of those who are employed and healthy in each wave (Table 9.2). Compared to wave 1 when everyone was employed and healthy, almost half of the sample wave 14 were out of employment and/or in poor health. The tendency to change employment and health statuses between waves was more evident in the manual social classes, for women and for those aged 16–30 years in 1991.

To answer the question at the head of this section, employment and health status in the immediate past seem to persist in the present. However, the small uncertainties attached to this make it difficult to predict long-term influences. It is in this context that longitudinal analyses of trajectories of employment and health become important.

Table 9.2 Proportion in employment and reporting good health in each year

Year	Employed	Health
1991	100	100
1992	80	81
1993	75	76
1994	71	72
1995	67	66
1996	66	64
1997	64	62
1998	62	61
1999	59	*
2000	56	55
2001	54	54
2002	53	52
2003	50	51
2004	48	*

*Not included
Source: BHPS

Employment and Health Trajectories: Do They Cluster?

The employment trajectory was built by coding for each wave whether the participants reported they are employed or not. “In employment” was coded as 1 and anything else as 0. Similarly, health trajectories were built by coding “good or better self-rated health” as 1 and other responses as 0.

The trajectories were studied using latent class growth analysis (Singer and Willett, 2003). In latent class growth analysis, the aim is to describe the probabilities of group membership based on different growth curves for an outcome measured at different points in time. Here we are assuming the trajectory to be an underlying, unmeasured growth curve. The model used in this study is presented in Fig. 9.1. The observed variables are in rectangles while the latent variables are in circles, a normal convention in specifying such models. The rectangles with labels W2–W14 represent the employment or health outcomes for each wave of BHPS (some are omitted for clarity). The latent variables marked I and S stand for intercept and slope respectively. The intercept is constrained to be constant within each wave (1s on the arrows) while the slopes are allowed to vary with time. By default, the first time point is 0. The latent class variable is represented by the circle labelled C. The two covariates used to adjust the model, age and sex, are also shown. Since everyone is employed and healthy in wave 1, there is no variation in the wave 1 outcomes and they are omitted. The statistical programme used does not identify the number of latent classes. This is done by starting with a single class, and then adding more classes until a new class does not significantly improve the fit of the model. We used a Bayesian Information Criterion and Likelihood Ratio Test for this purpose. Each individual trajectory was associated with the latent class with the largest probability. W2–W14 represent employment or health status for wave 2 to wave 14.

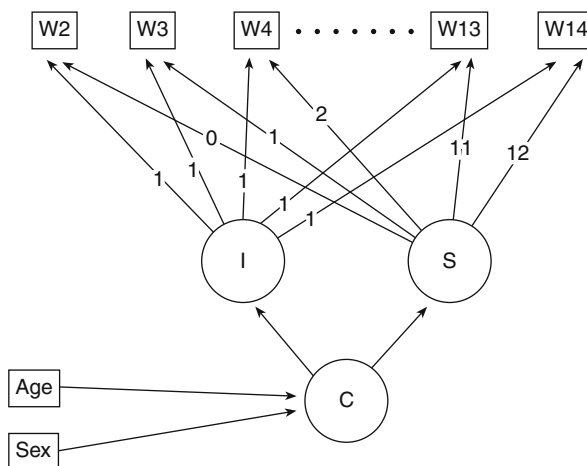


Fig. 9.1 The model used for latent class growth analysis of employment and health trajectories

To describe each class, the proportion of employed or of healthy people at each time point was calculated. In addition to descriptive analysis of age, sex and social class distribution of the latent classes, multinomial logistic regression using the class variable as the outcome was undertaken. Finally, the association between employment and health trajectories was measured by Chi-square test after cross-tabulation.

There were seven classes of employment trajectory. The trajectories include a straight line trajectory (“persisting”) involving those who persist in employment for the whole duration, and two classes of those who dropped out early: one of these started to recover back to employment (“early drop – recovery”) while the other declined further (“early drop – slow decline”). Four rectangular trajectories are so named because of their shape: those who start to dropout of employment immediately (“immediate drop”); after 3 years (“early rectangle”); after 6 years (“middle rectangle”); and after 10 years (“late rectangle”). The most common class was “persisting” (42%), followed by “immediate dropout” (15%) and “early rectangle” (12%). The smallest proportion (5%) was for “early drop – slow decline”. Other classes had similar proportions. The health trajectories were similar in shape to those of employment except for “middle rectangle” which was missing. The proportions of health trajectory classes were also similar to those of employment trajectories with the notable exception of “early drop – recovery” (16%) (Fig. 9.2).

The results of the multinomial logistic regression of trajectory class on age, sex and social class at the beginning of the period are given in Table 9.3. The results are relative risk ratios with the “persisting” trajectory acting as reference for both employment and health. The explanatory variables were not very strong predictors and explained less than 2% of the variations in trajectories. However, there were some significant associations. Again, the patterns of influence on employment and

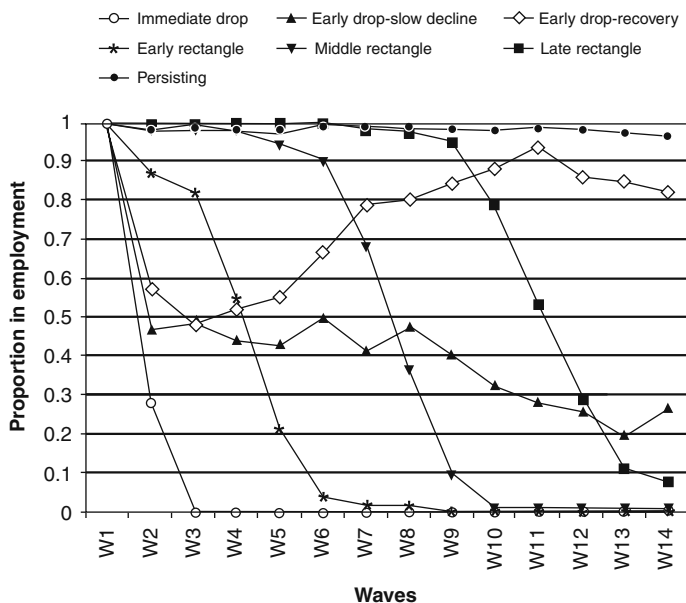


Fig. 9.2 Proportion in employment in waves 1–14 in BHPS according to the classes of employment trajectories (Source: BHPS)

health trajectories were very similar and unless specified the following comments pertain to both. Those who were in the manual class had a greater relative risk for being in trajectories that show immediate or early drop from employment or health statuses. They were about two times more prone to be in these trajectories than in “persisting”. Similarly, women were significantly more associated with trajectories showing “early drop and slow decline or recovery”. Those who were in the 31–40 years of age range had greater probability in “persisting” than the youngest age group. In employment trajectories, those in the oldest age group had a greater relative risk for “immediate drop” and “late rectangle” trajectories.

Cross-tabulating employment and health trajectories revealed that participants in the sample tended to have similar trajectories in employment and health (Table 9.4). Major contribution to the Chi-square came from the diagonal cells. In addition, the employment and health trajectories were highly correlated ($r = 0.8$).

We can thus conclude that the trajectories of employment and health can be grouped into different classes, thus answering our third research question. More often than not, people have similarly shaped employment and health trajectories although health was more variable in this period than employment. Age, sex and social class at the beginning of the period had little power to predict the trajectories. However, we did find that women and those in the manual social class had a greater risk of being in less advantageous trajectories.

Table 9.3 Relative risk ratios from multinomial logistic regression of employment and health trajectories on age, sex, and social class

Trajectories	Age group (Re: 16–30 years)		Sex (Re: Women)		Social class (Re: Non-manual)
	31–40 years	41–50 years	Men		Manual
Employment (Re: Persisting)					
Immediate drop	0.64 (0.48, 0.86)	1.40 (1.08, 1.80)	1.06 (0.84, 1.33)		1.63 (1.30, 2.05)
Early rectangle	0.49 (0.35, 0.68)	1.16 (0.89, 1.53)	0.98 (0.76, 1.26)		1.24 (0.96, 1.59)
Early drop – slow decline	0.40 (0.25, 0.65)	0.77 (0.52, 1.16)	1.58 (1.09, 2.30)		2.24 (1.54, 3.25)
Middle rectangle	0.73 (0.49, 1.08)	1.76 (1.26, 2.44)	1.19 (0.89, 1.59)		1.02 (0.75, 1.38)
Early drop – recovery	0.75 (0.55, 1.03)	0.59 (0.42, 0.82)	1.50 (1.14, 1.98)		1.37 (1.03, 1.82)
Late rectangle	0.67 (0.45, 1.00)	2.07 (1.50, 2.86)	1.07 (0.80, 1.42)		1.06 (0.79, 1.42)
Health (Re: Persisting)					
Immediate drop	0.71 (0.53, 0.94)	0.78 (0.58, 1.04)	0.99 (0.77, 1.27)		2.06 (1.61, 2.64)
Early rectangle	0.69 (0.49, 0.96)	0.72 (0.51, 1.01)	0.96 (0.72, 1.28)		1.18 (0.88, 1.59)
Early drop – slow decline	1.10 (0.73, 1.64)	1.44 (0.97, 2.13)	1.46 (1.05, 2.03)		2.09 (1.50, 2.93)
Late rectangle	0.74 (0.53, 1.03)	0.89 (0.64, 1.24)	1.04 (0.78, 1.39)		1.33 (0.99, 1.78)
Early drop – recovery	0.70 (0.53, 0.94)	0.84 (0.63, 1.11)	1.45 (1.14, 1.85)		2.10 (1.65, 2.68)

Trajectories are the dependent variables and age, sex and social class are the explanatory variables which are mutually adjusted

Re = Reference category

Significant results are emboldened

Source: Author's calculations based on BHPS

Table 9.4 Cross-tabulation of classes of employment and health trajectories (figures are sample size within each cell)

Employment	Health						All
	Immediate drop	Early rectangle	Early drop – slow decline	Early drop – recovery	Late rectangle	Persisting	
Immediate drop	307	12	4	3	8	3	337
Early rectangle	50	191	9	10	4	8	272
Early drop – slow decline	2	1	37	24	28	19	111
Middle rectangle	6	30	23	81	12	22	174
Early drop – recovery	1	1	24	12	90	121	249
Late rectangle	3	3	23	70	32	73	204
Persisting	7	9	53	48	228	805	1,150
All	376	247	173	248	402	1,051	2,497

$\chi^2 = 3994$; degree of freedom= 30; p -value: <0.0001

Correlation between trajectories: 0.8

Source: Author’s calculations based on BHPS

Are Employment and Health Trajectories Similar?

While the above analysis showed the relationship between employment and health trajectories at the group level, we can also compare the trajectories at individual level. The research question used here is whether the employment and health trajectories are similar within each individual class.

Trajectories should be coded similarly and be of similar length to ensure that dissimilarity between trajectories is not due to such differences. Each outcome was coded 0 or 1 and in both cases 1 represented the more positive outcomes (no health problems, employed). With each individual, the trajectories of employment and health were tested for similarity using Kolmogorov-Smirnov D-statistic, which is a commonly used statistical test to compare distributions. If the trajectories are different the D-statistic will be statistically significant with a P -value equal to or less than 0.05. The P -values for each individual can be combined through meta-analysis to give an overall measure of similarity or for measures of similarity within sub-groups.

The results from comparing the trajectories within each individual revealed that 81% had no significant differences in their trajectories. Meta-analyses to combine individual results also did not reveal any significant difference. At the sub-group level only the group of men aged 41–50 years in manual social class had a significant difference between employment and health trajectories ($P=0.03$). We examined

the distribution of this group over the trajectory classes and discovered that the dissimilarity came from those who “drop out” of good health early but still remain in employment trajectories to a later age.

The answer to our fourth research question is in the affirmative with both employment and health trajectories being similar for 80% of panel members. The fact that in this sample almost all the dissimilarities between the trajectories were caused by people who had health problems earlier on in the study period but who still continued to work may challenge the health selection model used to explain the relationship between health and employment. However this is a weak challenge, since we were using self reported health which tends to exaggerate the impact of health on labour force exit (Bound, 1991). It is important to look at the relationship between employment and health using both self-reported as well as the objective measures.

Employment and Objective Health Measures

Using data from waves 0 and 2 of the English Longitudinal Study of Ageing (ELSA), we could look at the relationship between employment and health using objective measures of health. Commonly used health measures for this purpose are the levels of bio-markers of inflammation – C-reactive protein (CRP) and fibrinogen. They are considered as good indicators of underlying vascular diseases and can predict both vascular and non-vascular mortality (Pearson et al., 2003; Libby and Ridker, 2006). We found that while in men the levels of CRP and fibrinogen in 1998/1989 had no effect on their employment status in 2004, women had less than 50% chance of being employed in 2004 if they had a high CRP level in 1998/1989. The same relationship was not there for fibrinogen. In those who were not working, CRP not fibrinogen levels were significantly higher and above the clinical risk level. The common influence seen in all models was the level of the biomarker in wave 0. Every mg/l CRP in 1998/1989 increases CRP levels in 2004 by 0.2–0.25 mg/l; for fibrinogen, every g/l in wave 0 contributes to 0.5 g/l increase in wave 2. Other influences were not significant for fibrinogen. But for CRP, the strongest influence was from the current employment status. A working man in 2004 had 2 mg/l less CRP than one who was unemployed. For women, this effect was a modest 0.4 mg/l with only borderline significance. These results are from models that adjusted for both social class and employment status in wave 0.

There was also some indication that the relationship between employment and health trajectories might be moderated by social class differences. Looking at reasons for exiting from the labour force in 2004, the most common reason given was reaching retirement age (46%) and the next most common reason was ill-health, either one's own (21%) or that of a relative or friend (5%). However, when we compare those in manual social classes with those in non-manual social classes, those in manual classes were less likely to reach retirement age but had a 60% greater chance of reporting ill-health as the reason for quitting.

Having a longstanding illness and likelihood of being employed was also different between the social classes. Based on social class in 1998/1989, among those who had no longstanding illness there were no class differences with 70–80% remaining in employment in 2004. On the other hand, among those with longstanding illness, a regular gradient, with each lower class having a lower proportion of employed, was observed. In social class I, there was no difference in the proportion of employed between those with limiting longstanding illness or not. In social class V, 75% less people were employed if they had limiting longstanding illness.

Conclusions

This chapter set out to answer four research questions regarding employment and health trajectories. It was possible to answer these questions using longitudinal data. We found that employment and health status in the immediate past could influence the present status, in the long run those influences will be attenuated. Both employment and health trajectories could be classified according to duration of stay in and mode of exit from their initial status. In most individuals the trajectories tend to be similar. In answering these questions we demonstrated the strong relationship between employment and health trajectories. We favour the view that employment is good for health and such benefits can be seen in those who in early years left the labour force and then returned to it. There was a gender difference also: while employment benefits men's health, women are more vulnerable to poor health and dropping out of the labour force. These results suggest that we need policies that allow people to retain employment and return to employment after spells of sickness. Younger women who tend to drop out of employment should be treated as a special target group for such policies.

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Chapter 10

The Circumstances and Attitudes of Different Muslim Groups in England and Europe

Saffron Karlsen and James Y. Nazroo

Introduction

The social position of different religious groups in Britain has recently been the subject of much discussion. There are concerns regarding the ability of different religiously or ethnically defined groups to live alongside one another. In particular, debates continue around whether or not Muslims can and are willing to be integrated into European society, with a focus on their supposed lack of support for “the core European values of freedom, tolerance, democracy, sexual equality and secularism” and their perceived cultural separatism (Modood, 2003, p. 101). There are also concerns that some religious groups, again particularly Muslims, experience severe socioeconomic disadvantage compared with others in the UK (Peach, 2006). There is a view that this, combined with the sense of isolation resulting from religious victimisation and (most recently) responses to the British involvement in the US “war on terror”, will produce problems for the development of a “British” identity and an integrated lifestyle in the UK.

Modood describes “an anti-Muslim wind blowing across the European continent” (Modood, 2003, p. 100). The Islamic background of the perpetrators of recent terrorist incidents has produced a rise in the discriminatory experiences of Muslim people (Modood, 2003). Such actions could be seen to find sympathy in media and government rhetoric which focuses on a perceived threat from a radicalised and violent Islamic community: what Beinin calls “the current campaign of vilification, guilt by association, guilt by ethnic or religious affiliation and delegitimisation of dissenting opinions” (Beinin, 2004, p. 102), or, as Fekete puts it, “tough on mosques, tough on the causes of mosques” (Fekete, 2004, p. 25).

There is evidence that these attitudes correspond with those of the wider population. Two-fifths of both British Muslims and members of the British general public responding to the Pew Global Attitudes Survey in 2006 reported that people in Britain are hostile to Muslims (Pew Global Attitudes Project, 2006). Respondents

S. Karlsen (✉)

Department of Epidemiology and Public health, University College London, London, UK
e-mail: s.karlsen@ucl.ac.uk

to Abrams and Houston's (2006) study were more likely to report being prejudiced against Muslims than any other group, and were least likely to be concerned about publicly displaying this prejudice than that against any other group except gay and lesbian people, suggesting a sense of social acceptability regarding prejudice towards "Muslim" (and "gay and lesbian") people. It has been suggested that the exclusion and victimisation evidenced in these negative experiences has led to the racialisation and politicisation of the Muslim identity, particularly among Muslim youth, in a way not seen before (Hussain and Bagguley, 2005; Poynting and Mason, 2007).

But despite appearances, this exclusion is not a new development (Miles, 1989). In 1994, respondents to the Fourth National Survey of Ethnic Minorities were more likely to admit to prejudice against Muslims than any other group mentioned (Modood et al., 1997). Miles (1989) places the development of a coherent form of anti-Muslim racism in Europe in the twelfth and thirteenth centuries, or even before. It may be related to the more longstanding nature of this exclusion that explains other disadvantages faced by the Muslim community in Britain and elsewhere (Peach, 2006).

While Muslim groups may be considered diverse, many experience socioeconomic and educational disadvantage, social stress and social exclusion. As the principal victims of the conflicts which have produced Europe's asylum seekers (Modood, 2003), Muslim groups are likely to bear the brunt of any negative attitudes towards immigration, with research in Australia suggesting a link between "asylum seekers" and "Muslims" in the imaginations of the general population (Dunn et al., 2007). This disadvantage may be compounded by exclusion based on "race" and religion. Indeed, Bangladeshi and Pakistani Muslim groups have been found to experience a particular penalty compared with others (Lindley, 2002). Non-white Muslim groups could then be considered at particular disadvantage – as members of ethnic minority groups, recent migrants and as members of a religious group seemingly singled out for discrimination.

Yet, exploration of social variations in demographic and socioeconomic circumstances has focused on issues relating to social class, gender and ethnic group, often with an underlying assumption that each subgroup is in some respect homogeneous. However, the experience of being a member of any particular ethnic group varies by, for example, age, gender and social class. This work also fails to consider in any depth the extent of the diversity in experiences and circumstances among different religious groups and how this relates to "ethnicity". As Beckford et al. (2006, p. 8) state: "[While] there are often clear areas of overlap between aspects of religion and aspects of ethnicity... it is important that the dimension of 'religion' should not be completely collapsed into that of 'ethnicity' nor vice versa". But research methods often relegate religion to a characteristic which contributes to ethnic identification rather than recognising it as a subject for independent enquiry (and despite many people choosing to label themselves as members of a religiously – rather than ethnically – identified group when asked about their "ethnic background" (Modood et al., 1994)). Where they consider religion at all, approaches also fail to account for variations in the meaning of religion in people's lives. There is,

therefore, a need for a comprehensive exploration of the impact of religion on people's lives. Moreover, a focus on the heterogeneity underlying "ethnic" and "religious" categories can enable us to unpack the processes underlying the social patterning of, for example, illhealth or socioeconomic disadvantage, while avoiding explanations based on stereotyped or reified categories.

This chapter aims to examine the relationship between religion, religiosity and ethnicity, and how they may influence the experiences and attitudes of people living in England and Europe. In particular, we will explore the attitudes and experiences of British Muslims (specifically those reporting Indian, Bangladeshi or Pakistani heritage), how these vary from those of other ethnic and religious groups and how this compares with Muslim groups elsewhere in Europe. Exploration of the attitudes and experiences of Muslims in different geographical, socioeconomic, racial and ethnic contexts will allow important insight into the influence of religious identity on the lives of people in minority groups in Europe.

Methods

The findings presented here employ data from a number of different quantitative data sources.

Data Sources

Data from the 1999 and 2004 Health Surveys for England (HSE) are used to examine differences in demographic, socioeconomic and health circumstances across ethnic/religious groups (Erens et al., 2001; Sproston and Mindell, 2006). We use data from EMPIRIC, a follow-up survey of the HSE 1999, to explore experiences and perceptions of racism and discrimination, ethnic identity, religiosity and attitudes towards life as a member of a minority group in Britain (Sproston and Nazroo, 2002). Finally, we include data from the Muslims in Europe (ME) study, which was conducted in England, Berlin and Madrid, to compare the attitudes and experiences of Muslims in different ethnic, social and geographical locations: specifically those with Bangladeshi heritage in the UK, Turkish heritage in Germany and Moroccan heritage in Spain (Brüss, 2008).

The HSE is a series of nationally representative surveys about the health of people in England, conducted annually since 1991. In 1999 and 2004, the focus of the HSE was on the health of ethnic minority people, with boosted samples of Irish, Black Caribbean, Indian, Pakistani, Bangladeshi and Chinese respondents. Respondents were allocated into ethnic categories on the basis of their response to a question asking about family origins. Respondents were recruited from addresses selected from within a sample of postcode sectors that were stratified (using 1991 (for the 1999 survey) and 2001 (for the 2004 survey) Census data) to cover different regions and socioeconomic profiles. For the ethnic minority samples, postcode

sectors were also stratified and selected on the basis of their ethnic composition. Areas with low concentrations of ethnic minority people were identified and included, but in these areas screening for respondents used the focused enumeration technique, which has been shown to produce unbiased samples (Brown and Richie, 1981). Sample sizes for the ethnic minority groups included in the surveys are: Caribbean 2,362; Indian 2,467; Bangladeshi 1,985; Pakistani 2,204; Chinese 1,385; and Irish 2,398. Full details of the sample design can be found in the survey reports (Erens et al., 2001; Sproston and Mindell, 2006).

EMPIRIC involved a follow up survey of respondents to the HSE 1999. It included those who were Caribbean, Indian, Pakistani, Bangladeshi, Irish, or white British, aged 16–74 years, and had agreed to be re-contacted (92% of those eligible). Sample sizes for the EMPIRIC survey are: Caribbean 695; Indian 641; Bangladeshi 650; Pakistani 724; Irish 733; and white British 838. Full details of the sample design can be found in Sproston and Nazroo (2002).

In 2004, Bangladeshi Muslim people living in England, Turkish Muslim people living in Berlin, Germany, and Moroccan Muslim people in Madrid, Spain, were interviewed as part of the ME study, to explore differences in their residential, citizenship, employment and socioeconomic characteristics, political attitudes and how far they described their life to be ethnically and/or religiously specified. There were different methodologies employed and different sample sizes achieved in the three centres. In England, Bangladeshi people who had been involved in the HSE 1999 (Erens et al., 2001) were contacted for inclusion. The Berlin sample was randomly drawn from a list of Turkish names selected from telephone directories. And the Madrid sample was contacted using a random sample of names from a list of Moroccan nationals living in Madrid, provided by the City Council. The achieved samples were: England 141; Spain 205; and Germany 225 (Brüss, 2008). These data have been used to explore the relative importance of respondents' ethnic, national and religious identities and the importance of religion in their lives. The interviews also explored how far respondents felt "at home" in Britain, Germany or Spain and whether this had been affected by the terrorist incidents in New York in 2001 and Madrid in 2004.

Sample Weights

Both the 1999 and 2004 HSE samples had a boosted ethnic minority component, which meant that the sample had to be weighted to correct for the unequal probabilities of selection for different classes of respondents. Three sets of weights were used to correct for sample clustering, specifically (i) the unequal probabilities of selection for postcode sectors; (ii) the unequal probability of household selection within sectors; and (iii) the varying probabilities of selection of adults within participating households. As the EMPIRIC sample was drawn from the HSE 1999, these weightings were retained for analysis of those data and, in addition, weights were applied to adjust for the non-response to the EMPIRIC survey, using regression modelling of HSE data (Sproston and Nazroo, 2002).

Measures

The analyses we present examine the intersection of ethnic and religious categories: comparing different religious groups, different ethnic groups within religious categories, and different religions within ethnic categories. We focus on the attitudes and experiences of Muslims with different ethnicities (Bangladeshi, Indian and Pakistani) in comparison with Indian Hindus and Indian Sikhs. We also include some information on White English and Caribbean Christians for comparative purposes. At times, however, small sample sizes mean that groups are combined. Religion was categorised using responses to a question that asked “What is your religion or church?” Ethnicity was categorised using responses to a question on family origins, which has a strong correlation with Census ethnic identity categories (Nazroo, 2001).

Socioeconomic and Migration Status

Information on the socioeconomic position of the different groups is provided in relation to employment status (currently employed, unemployed, sick, retired or looking after the home) and household income (collected in categories using a showcard), which was equivalised using the McClements scoring system to take account of the number of people in the household (McClements, 1977) and categorised into population-specific quintiles.

Age at migration was coded “born in the UK”, “migrated aged 11 or younger”, or “migrated aged older than 11 years”.

Racial Harassment and Discrimination

The EMPIRIC study contained three measures of exposure to racist victimisation over the previous year, covering verbal abuse, a physical attack, or damage to property. These were combined to represent those who had been racially victimised and those who had not. There is evidence that racism can influence an individual’s wellbeing even in the absence of personal experiences of racist victimisation (Karlsen and Nazroo, 2004). To explore this, we included responses to a question asking what proportion of British employers the respondent believed would discriminate when recruiting. This indicator was dichotomised to distinguish between those who perceived no or a few, and those who perceived half or more, British employers would discriminate.

Religiosity and Ethnic/National Identity

EMPIRIC respondents were asked about the strength of their religious belief and how frequently they attended religious services. People from ethnic minority groups were also asked to what extent they agreed with the following statements:

- “In many ways I think of myself as being British”;
- “In many ways I think of myself as being Bangladeshi/Indian/Pakistani/Irish/Caribbean”;
- “Bangladeshi/Indian/Pakistani/Irish/Caribbean people should try and preserve as much as possible of their culture and way of life”;
- “Bangladeshi/Indian/Pakistani/Irish/Caribbean people should adopt more the culture and way of life of white people”; and
- “Bangladeshi/Indian/Pakistani/Irish/Caribbean people are seeing their way of life and culture replaced by that of white people”.

Responses have been coded strongly agreed or agreed, neither agreed nor disagreed, or disagreed or strongly disagreed. Additionally, responses to the statements asking about thinking of yourself as “British” and being Indian/Pakistani/Bangladeshi have been combined and coded to reflect whether respondents thought of themselves more as being “British”, Indian/Pakistani/Bangladeshi, or was a combination or neither of these. Response codes for this indicator are: “think of self as both British and Indian/Pakistani/Bangladeshi (agree with both statements)”; “think of self as British more than Indian/ Pakistani/Bangladeshi”; “think of self as Indian/Pakistani/Bangladeshi more than British”; and “other” which includes those who “neither agreed nor disagreed” or disagreed with both statements (and neither thought of themselves as “British” nor as “Indian”, “Pakistani” or “Bangladeshi”) or that they “neither agreed nor disagreed” with one, and disagreed with the other statement.

The ME study similarly asked respondents whether they thought of themselves as British/German/Spanish and explored attitudes towards their life in their country of residence, including whether they felt “at home” and how this had been affected by the terrorist incidents in 2001 and 2004. We also present data from the ME study on whether or not respondents felt they were a member of a group which experiences discrimination in their country of residence, the importance of religion to the way they lived their life, their residency status (temporary or permanent), whether they held citizenship of their country of residence and the strength of their Muslim identity.

Research Findings

At the 2001 Census, 7.9% of the UK population (just over 4.6 million people) identified themselves as members of a non-white ethnic minority group, with an additional 1.2% identifying as White Irish and 2.5% as “Other White” in Great Britain. Of the non-white minority groups, 23% described themselves as Indian, 16% as Pakistani, 6% as Bangladeshi, 12% as Black Caribbean, 10% as Black African, 5% as Chinese, 15% as “mixed”, and the rest as a member of one of the “other” categories. A similarly small proportion of the population described themselves as having a religion other than Christian. Around 72% of the population described themselves as Christian, 15% said they had no religion, 8% did not answer this question (it was voluntary), and 5.4% chose a non-Christian religion. Of the

Table 10.1 Ethnic breakdown of religious groups

	No religion (%)	Christian (%)	Buddhist (%)	Muslim (%)	Hindu (%)	Sikh (%)
White British	96	94	65	8	2	0
Irish	2	4	4	0	0	0
Black Caribbean	1	1	1	0	0	0
Chinese	1	0	28	0	0	0
Indian	0	0	2	12	97	100
Pakistani	0	0	0	50	0	0
Bangladeshi	0	0	0	20	0	0
<i>Base</i>	<i>3,776</i>	<i>15,463</i>	<i>266</i>	<i>4,651</i>	<i>1,162</i>	<i>651</i>

Source: Health Survey for England

non-Christian religious categories, Muslim was the most commonly chosen, with 52% of this population, 18% described themselves as Hindu, 11% as Sikh, 9% as Jewish and 5% as Buddhist, with 5% choosing another religion.

The intersection between ethnicity and religion in the data used here (from the Health Survey for England), is shown in Table 10.1. Some of the religious categories used in the census map reasonably clearly onto ethnic categories, but an examination of the ethnic make-up of the Muslim category suggests the obvious potential for diversity within religious categories. Similarly, while some ethnic categories map reasonably clearly onto religious categories, an examination of the religious make-up of the Indian population – including a significant proportion of each of Hindu, Muslim, Sikh (and Christian) – indicates the potential for diversity within ethnic categories. It is this diversity which we explore here.

In general, this work suggests that there are commonalities in sociodemographic, socioeconomic and health circumstances by religion (across ethnicity) and also differences within religion (by ethnicity): Muslim groups often experience considerable disadvantage compared with Christians and Hindus, but Indian Muslims are frequently in an improved position relative to other Muslim groups, reflecting the generally advantaged position associated with Indian ethnicity relative to other ethnic minority groups.

There are statistically significant differences between the groups in age, marital status, household composition, migration status and age at migration (Karlsen and Nazroo, 2009a). There is also a general picture of Muslim disadvantage in terms of socioeconomic status, but again there are important variations by ethnicity and commonalities across religions (Karlsen and Nazroo, 2009a, b). There are statistically significant differences by educational qualification, household social class, household income, housing tenure and employment (Table 10.2). Three quarters of Bangladeshi Muslim, half of Indian and Pakistani Muslim and two-fifths of Sikh households were in the bottom fifth of incomes in the sample, compared with a fifth of Hindus and Indian Christians. Our findings suggest that much of the health disadvantage faced by some Muslim groups may be explained by this socioeconomic inequality (Karlsen and Nazroo, 2009b, c).

Table 10.2 Ethnic and religious differences in socioeconomic position

	White British Christian	Indian Christian	Indian Muslim	Bangladeshi Muslim	Pakistani Muslim	Hindu	Sikh
Highest educational qualification							
Higher %	24	49	27	14	20	41	26
A level %	10	12	8	12	12	14	12
Compulsory %	29	19	25	21	21	18	22
None %	33	15	38	52	45	25	38
Foreign/other %	4	5	3	1	2	2	2
<i>Unweighted bases</i>	10,931	125	270	1,943	2,120	1,194	656
Household social class							
I/II %	38	56	31	16	23	49	28
III _n %	15	14	15	10	16	20	8
III _m %	30	12	26	33	33	13	33
IV/V %	18	18	27	40	29	19	32
<i>Unweighted bases</i>	10,742	121	251	1,613	1,865	1,149	639
Equivalentised household income (quintiles)							
Highest %	20	24	7	1	6	17	10
2% %	21	26	7	4	5	18	9
3% %	22	10	22	5	12	23	19
4% %	20	22	24	17	24	19	23
Lowest %	18	18	51	73	52	22	38
Mean equivalentised household income (SE)	23,781 (423)	25,403 (2,860)	12,290 (1,234)	8,084 (400)	12,467 (685)	21,976 (1,158)	15,686 (1,401)
<i>Unweighted bases</i>	9,382	100	232	1,395	1,562	919	457
Housing tenure							
Owner occupier %	76	67	70	35	72	77	84
Renting %	22	33	29	64	26	22	15
Other %	1	0	1	1	2	1	2
<i>Unweighted bases</i>	10,919	124	268	1,964	2,145	1,199	650
Men only							
Has ever been in paid employment	98	96	89	86	85	93	94
<i>Unweighted bases</i>	4,647	55	127	932	1,020	588	310
Current economic activity							
Employed %	88	85	83	68	80	88	82
Unemployed %	4	8	6	15	9	4	4
Sick %	8	5	8	9	9	7	6

Table 10.2 (continued)

	White British Christian	Indian Christian	Indian Muslim	Bangladeshi Muslim	Pakistani Muslim	Hindu	Sikh
Looking after home %	1	2	3	8	2	1	8
<i>Unweighted bases</i>	3,374	47	107	839	932	515	273
Women only							
Has ever been in paid employment	96	84	67	33	44	79	81
<i>Unweighted bases</i>	6,301	106	206	344	855	895	450
Current economic activity							
Employed %	71	81	42	30	32	65	63
Unemployed %	2	0	4	4	3	3	1
Sick %	5	2	3	2	4	1	5
Looking after home %	23	18	51	64	60	31	30
<i>Unweighted bases</i>	4,591	57	134	992	1,048	558	317

Source: Health Survey for England.

There were no differences in reports of racist exclusion among the different South Asian groups, however (Fig. 10.1), with reports of victimisation lower than those of Caribbean but higher than those of Irish people (Karlsen and Nazroo, 2009d): differences which were not affected by socioeconomic or migration status, age or gender. There is evidence that racist victimisation might also have important implications for the health of these different groups (Karlsen and Nazroo, 2009b).

This chapter focuses on our work exploring ethnic and religious differences in religiosity, attitudes towards your religion and religious and ethnic identity, including attitudes towards life as a member of a migrant group. These findings, initially using the EMPIRIC study, provide insight into how people from Muslim and other minority groups perceive their relationship with the wider community.

Around nine in every ten Muslims (86% of Pakistani, 90% of Indian and 92% of Bangladeshi Muslims) and two-thirds of Hindus (65%) and Sikhs (69%) reported that their religious belief was very strong, compared with just over half (52%) of White Christians. Service attendance was more varied between the groups, with a quarter of White Christians (28%) and Hindus (26%), two-fifths of Sikhs (41%), half (49%) of Pakistani Muslims, and almost three-quarters of Indian (69%) and Bangladeshi (74%) Muslims attending services at least once a week.

But these differences did not translate to differences in a sense of identity: 60% of Muslims (61% of Pakistani, 65% of Indian and 62% of Bangladeshi Muslims), Hindus (60%) and Sikhs (58%) in the EMPIRIC sample said that they thought of themselves as being both British and Bangladeshi, Pakistani or Indian.

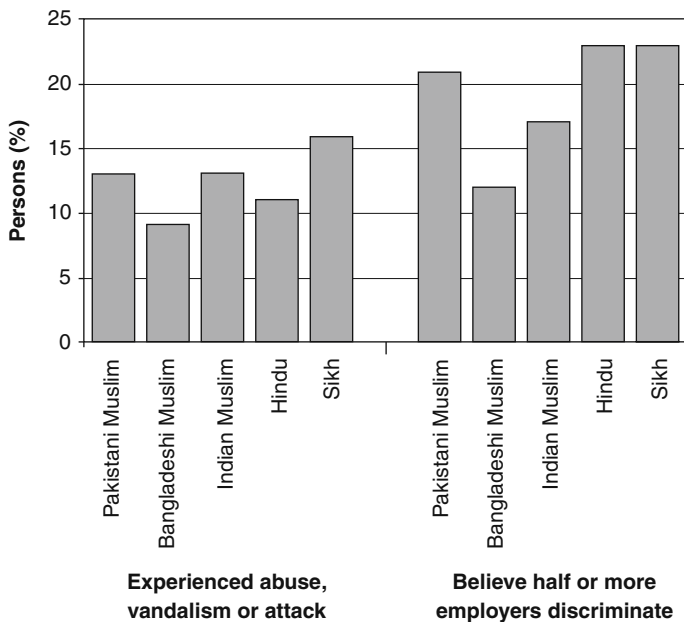


Fig. 10.1 Experience and perceptions of racism and discrimination, South Asian people (Source: EMPIRIC)

Muslim respondents were more likely to say that they thought of themselves *only* as British (and not as Bangladeshi (9%), Pakistani (9%) or Indian (10%)) than Sikhs (7%) and, particularly, Hindus (5%). More Hindus and Sikhs agreed that they thought of themselves only in terms of their ethnic minority affiliation than Muslim respondents: 30% of Hindus and Sikhs compared with 26% of Bangladeshi and Pakistani and 21% of Indian Muslims. Thinking of yourself as being in some way “British” did not conflict with a sense of the importance of maintaining a cultural way of life which reflected your Bangladeshi/Indian/Pakistani heritage, however. Over 80% of people in each group agreed that their cultural way of life should be preserved, with Muslims (Bangladeshi (88%), Pakistani (83%), Indian (87%)) being slightly more likely to endorse this than Hindus (81%) and Sikhs (80%). Nor did a sense of Britishness encourage a feeling that people should adopt a “White” lifestyle, with fewer than 40% of respondents from any group concurring (Bangladeshi 30%, Pakistani 28% and Indian 22% Muslim, Hindu 37%, Sikhs 34%). Again there were ethnic and, particularly, religious differences in responses with Indian Muslims the least likely and Hindus the most likely to agree (and Pakistani Muslims most likely to disagree) with this statement. It is interesting that while the findings for identity would suggest that the Muslim groups explored here hold more “acculturative” attitudes (in the sense that they feel themselves more British, and more able to combine a sense of Britishness and Indian/Bangladeshi/Pakistani-ness), those exploring attitudes towards a particular

cultural way of life suggest the opposite: that Hindus and Sikhs are less concerned about the maintenance of “traditional” customs and more open to the possibilities of adaptation.

Table 10.3 presents statistical associations between influences on the likelihood of thinking of yourself as being “British”. This model uses logistic regression analyses to explore the impact of age, gender, age at migration, perceived societal racism, economic activity and equivalised average annual household income quintile on the odds of agreeing (versus neither agreeing nor disagreeing or disagreeing) to the statement that “in many ways I think of myself as being British” among Pakistani, Bangladeshi and Indian Muslims, Hindus and Sikhs, compared with Caribbean Christians.

In contrast to the figures described above, in the partial model (which includes religious/ethnic group, age and gender), we can see that Bangladeshi Muslims and Sikhs both have significantly lower odds of agreeing that they think of themselves as British compared with Caribbean Christians. After adjusting (in the full model) for socioeconomic position, age at migration and a sense of societal racism, however, these statistical differences disappear. Migrating (at any age) and perceiving half or more of British employers to be discriminatory, along with being female and not being employed, significantly reduced the odds of thinking yourself (or feeling able to think of yourself) as British and appear more important for a sense of “Britishness” than other factors associated with religion/ethnicity. Analysis not shown suggested that it is generational effects which explain the ethnic/religious difference in the sense of Britishness seen in the partial model.

Table 10.3 Influences on thinking of yourself as British

Ethnic/religious group	Partial model	Full model*
	Odds (95% confidence intervals)	
Caribbean Christian	1	1
Pakistani Muslim	0.82 (0.62–1.09)	1.00 (0.72–1.39)
Bangladeshi Muslim	0.72 (0.54–0.98)	1.00 (0.68–1.45)
Indian Muslim	1.17 (0.57–2.40)	1.34 (0.61–2.95)
Hindu	0.74 (0.51–1.06)	0.97 (0.66–1.42)
Sikh	0.67 (0.46–0.98)	0.78 (0.53–1.15)
Age	0.92 (0.89–0.96)	0.96 (0.92–1.01)
Female	0.59 (0.48–0.72)	0.53 (0.42–0.67)
Born in UK	–	1
Migrated age 11 or younger	–	0.49 (0.34–0.69)
Migrated aged over 11	–	0.28 (0.20–0.39)
Thinks most employers discriminate	–	0.70 (0.55–0.89)

*Full model adjusted for current economic activity and income quintile

Source: EMPIRIC

The question of national identity is also interesting when explored internationally. Here, we use data from the ME study to present similarities and differences in indicators of feeling British/Spanish/German and feeling at home in your country of residence for Bangladeshi Muslims living in England, Moroccan Muslims living in Madrid, Spain and Turkish Muslims living in Berlin, Germany.

There are a number of differences between the groups which are likely to impact on these indicators. The groups migrated at different times, and for different reasons. Turkish Muslims migrated to Germany as guest workers from the late 1950s, with Bangladeshi migration to Britain, which was similarly economically motivated but also affected by the conflict with (the then West) Pakistan, peaking in the 1960s and 1970s. Moroccan Muslims, in contrast, began migrating to Spain as asylum seekers only recently. While their position as illegal immigrants may place Moroccan migrants to Spain in a particularly precarious position, the recent amnesty for undocumented Spanish immigrants, which coincided with a tightening of immigration controls elsewhere in Europe, might also support an argument that, at least in relation to Government, Moroccan Muslims migrating to Spain are not under greater threat than migrant populations elsewhere.

Partly as a consequence of these variations in timing, the Bangladeshi and Turkish communities (in England and Germany respectively) are larger and longer established than the Moroccan community in Spain. It is estimated that there are around 119,000 registered Muslims with a Turkish passport in Berlin, 156,000 Bangladeshi Muslims in London (and 283,000 in the UK as a whole) and 20,000 Moroccan Muslims in Madrid. None of the Moroccan respondents in the ME study were born in Spain, while 9% of the Bangladeshi sample were born in Britain and 26% of the Turkish sample were born in Germany (Table 10.4). The Bangladeshi community in the UK are also considerably more likely to have citizenship of their country of residence compared with the other groups, particularly those from Morocco. The Commonwealth membership of Bangladesh allows Bangladeshi Muslims in the UK improved economic and political rights compared with Moroccan Muslims in Spain and Turkish Muslims in Germany, neither of whom are granted political rights before acquiring citizenship.

The three groups also appear to differ in terms of their religiosity: almost all Bangladeshi Muslims saying that religion was important to the way they lived their life, compared with two-thirds (or fewer) of the Turkish and Moroccan Muslim samples. More than four-fifths of Bangladeshi Muslims also agreed that their Muslim identity was important to how they saw themselves, compared with seven-in-ten Moroccan Muslims and just over a quarter of Turkish Muslims. Turkish Muslims were more likely to perceive themselves to be part of a group which is singled out for discrimination, although there were smaller differences in reported experience of racist attacks. There appears, then, to be no simple trajectory between a personal sense of "muslim-ness" and a sense of exclusion. Greater proportions of respondents in each group agreed that they thought of themselves as Bengali/Moroccan/Turkish than reported that their Muslim identity was important to their sense of self.

Bangladeshi Muslims agreed that they thought of themselves as being British more frequently than Moroccan Muslims agreed that they thought of themselves as

Table 10.4 The Muslims in Europe study: sample characteristics

	Bangladeshi Muslim (England)		Moroccan Muslim (Madrid)		Turkish Muslim (Berlin)	
	%	n	%	n	%	n
Was born in country of residence	9	12	0	0	26	58
Has citizenship of country of residence	85	119	8	16	42	94
Religion is important to way of life	99	138	63	124	66	148
Believes they are a member of group experiencing discrimination	24	31	36	71	46	103
Has experienced racist victimisation in past year (abuse, assault or vandalism)	21	29	25	55	27	56
Proportion of respondents agreeing or strongly agreeing with the statements:						
“For others to know me as I am, it is important that they know I am Muslim”	81	111	71	140	27	60
“I think of myself as Bengali/Moroccan/Turkish”	97	134	95	188	82	184
“I think of myself as British/Spanish/German”	91	120	33	64	81	177
“I feel at home in Britain/Spain/Germany”	96	132	74	144	73	164
“I feel less at home as a result of events since March 11 2004”	18	24	48	91	13	28
“I feel less at home as a result of events since September 11 2001”	40	56	35	64	15	33

Source: Muslims in Europe study

Spanish and Turkish Muslims felt themselves to be German. Bangladeshi Muslims were also more likely to report feeling “at home” in their country of residence compared with Moroccan Muslims living in Madrid and Turkish Muslims living in Germany, although at least 70% of respondents reported feeling at home in each group. Almost all of the Bangladeshi sample reported both a sense of Britishness and of being at home in Britain, yet over three-fifths of those respondents who reported feeling at home in Spain and Germany said they did not think of themselves as Spanish or German. We have already outlined differences in the relationships between these groups and their “host” societies – such as differences in social and political rights – which could be important for a sense of British-, Spanish- or Germanness. And it is interesting that the differences between the Turkish and Moroccan migration patterns and motivations (and the consequences of these for population size *et cetera*) do not seem to have led to variations in a sense of feeling “at home” in your country of residence. Indeed, Turkish Muslims in Berlin were more likely to disagree and disagree strongly with the statement exploring whether they thought of themselves as German (24 and 55% respectively), than Moroccan

Table 10.5 Characteristics of the population reporting feeling at home in their country of residence, by country of residence

	Bangladeshi Muslim (England)		Moroccan Muslim (Madrid)		Turkish Muslim (Berlin)	
	%	n	%	n	%	n
Citizenship of country of residence						
Yes	97	114	71	10	81	76
No	100	17	74	134	67	88
Current immigration status						
Permanent	100	14	76	74	69	75
Temporary	–	0	65	36	42	5
Other	–	0	86	24	83	5
Perceptions and experiences of racism						
None	97	86	80	55	79	23
Group treated with less respect	0	0	76	29	79	60
Group experiences discrimination	95	19	77	27	66	42
Personal experience of discrimination	96	27	61	33	70	39
Born in country of residence						
Yes	92	11	–	0	79	46
No	97	116	73	143	71	116
How important is religion to the way you live your life?						
Very important	96	81	62	32	64	44
Important	96	50	77	54	76	60
Not very important	100	1	74	35	85	40
Not important	0	0	92	22	67	20
For others to know me as I really am it is important for them to know that I am a Muslim						
Agree	96	105	72	100	68	41
Disagree	96	25	78	43	74	122
I think of myself as Bengali/Moroccan/Turkish						
Agree	96	127	74	136	73	134
Disagree	100	4	55	5	71	30

Source: Muslims in Europe study

Muslims in Madrid did when asked about their potential “Spanishness” (29 and 36% respectively).

Table 10.5 presents findings from analyses exploring possible influences on not feeling at home in your country of residence, again using data from the ME study, although the almost universal sense of feeling “at home” in Britain described by Bangladeshi Muslims makes this comparison somewhat problematic, as do the

Table 10.6 Influences on the impact of 11 September 2001 on reports of feeling less at home in your country of residence, by country of residence

	Bangladeshi Muslim (England)		Moroccan Muslim (Madrid)		Turkish Muslim (Berlin)	
	%	n	%	n	%	n
Citizenship of country of residence						
Yes	42	50	33	5	13	12
No	32	6	35	59	16	21
Current immigration status						
Permanent	27	4	35	33	15	17
Temporary	–	0	29	15	33	4
Other	–	0	48	11	0	0
Perceptions and experiences of racism						
None	33	30	39	26	0	0
Group treated with less respect	–	0	24	9	9	7
Group experiences discrimination	45	9	34	11	13	8
Personal experience of discrimination	59	17	37	18	32	18
Born in country of residence						
Yes	50	6	–	0	14	8
No	38	46	34	63	15	25
How important is religion to the way you live your life?						
Very important	39	33	33	14	21	14
Important	42	22	36	24	14	11
Not very important	100	1	31	15	9	4
Not important	–	0	42	10	13	4
For others to know me as I really am it is important for them to know that I am a Muslim						
Agree	34	38	36	46	17	10
Disagree	65	17	31	17	14	23
I think of myself as Bengali/Moroccan/Turkish						
Agree	40	54	35	61	15	28
Disagree	25	1	29	2	12	5

Source: Muslims in Europe study

generally small sample sizes available. Turkish Muslims who did not have German citizenship reported feeling at home in Germany less frequently than those who did. Among Moroccan and Turkish Muslims without citizenship of their country of residence, those with temporary residency reported feeling at home less frequently than those with permanent residency. There was evidence of a gradient in feeling at home in your country of residence according to reports of experience or perceptions of racist victimisation: those reporting no victimisation more frequently, and those reporting racist personal attacks in the past year less frequently reporting feeling at home. Those agreeing that their identity as a Muslim was important to them

reported feeling at home in their country of residence less frequently than those who disagreed, while this pattern was reversed when respondents were asked about their Bengali/Moroccan/Turkish identity. The scale of these variations varied nationally, however. The effect of the importance of religion on feeling at home in your country of residence also varied nationally.

The ME study also gives us the opportunity to explore the impact of the terrorist incidents of 2001 and 2004 on these attitudes. Findings presented in Table 10.4 suggest that 40% of Bangladeshi, 35% of Moroccan and 15% of Turkish Muslims feel less at home in their country of residence since the terrorist incidents of 9/11, with smaller numbers affected by the events in Spain in 2004, with the exception of Moroccan Muslims in Madrid. Table 10.6 presents analyses similar to those described above, in relation to possible influences on feeling less at home since the events of 11th September 2001. Again, there appeared to be a gradient in the impact of experience or perceptions of racism on reports of feeling less at home since 9/11, for the Bangladeshi and Turkish, but not the Moroccan, samples. Respondents agreeing that they thought of themselves as Bengali/Moroccan/Turkish more frequently reported feeling less at home in Britain/Spain/Germany since 9/11 than those who disagreed with this statement. Twice as many Bangladeshi Muslims who disagreed with the statement suggesting the importance of their Muslim identity in their sense of self reported that they felt less at home since 9/11 compared with those who agreed, although this pattern was not apparent in Germany or Spain (where those who agreed felt less at home since 9/11 slightly more frequently than those who disagreed). Those reporting their religion to be unimportant to the way they lived their life, in Britain and Spain, more frequently reported feeling less at home since 9/11, but this situation was reversed in Germany.

Discussion and Conclusions

The work presented here makes an important contribution to our understanding of the experiences and attitudes of different Muslim groups, in comparison with other ethnic/religious groups in England, while exploring how far the experience of being “Muslim” may vary in different European contexts and for different ethnic groups. In England, we have found considerable diversity in the position of different Muslim groups defined by broad ethnicity, and also similarity across religious groups, amongst those who might be considered similarly minoritised. Muslims appear, for example, to experience particularly severe forms of socioeconomic disadvantage, but this is not exclusive to this group – Sikhs, for example, are also found to occupy a disproportionately low socioeconomic position. Nor is this Muslim disadvantage experienced uniformly across the different Muslim groups explored: with Indian Muslims often faring better than Muslims with other ethnicities.

Our analyses have shown the depth of socioeconomic and health inequalities faced by some religious/ethnic minorities. Addressing such inequalities cannot be achieved with a modest policy ambition, but addressing them is important. Further,

this work suggests that socioeconomic inequalities may have a significant impact on the health of religious minority groups (Karlsen and Nazroo, 2009b,c), supporting the strong body of evidence showing their significance for ethnic/racial inequalities in health (see Nazroo and Williams, 2005, for an overview).

However, a consideration of socioeconomic inequalities needs to move beyond the economic to also consider the social. We have examined experiences of racism and discrimination, and perceptions of living in a racist society (the belief that employers discriminate against minority groups) and have shown how these too may relate to health outcomes for religious minority groups (Karlsen and Nazroo 2009b, c). This connects with the growing evidence on the significance of experiences of racism for the health of ethnic/racial minority groups (see Paradies, 2006, for an overview) and indicates the need to consider how religious identities, as well as ethnic and racial identities, become racialised. Indeed, we need to consider the ways in which stereotypes that draw on notions of race, ethnicity and religion (often at the same time) are mobilised to produce and justify the marginalisation of minority groups. Here we suggest that the interest should not be on religion (or ethnicity) per se, but on how these social identities are racialised and the inequalities that are associated with them, as well as the ways in which such identities may operate as a site of support and resistance (Solomos, 1998). Finding yourself a member of both an ethnic and religious minority group is likely to produce particular forms of exclusion which require explicit investigation, however (Krieger, 2000).

This work is able to make clear comment on the attitudes of different religious minority groups in England and Europe. Importantly, we provide evidence that many people from the minority groups explored consider themselves able to access a form of British (or German or Spanish) identity encouraged by political rights, which is compatible with those aspects of identity that relate to religion or other forms of cultural heritage, and is supported by a sense of feeling “at home” in your country of residence. It appears that there is a flexibility in forms of Britishness which may enable sufficient hybridity of identity to ensure its continued relevance for individuals with widely differing demands, and also a potential point of common understanding and cooperation in society as a whole. This widespread sense of Britishness, and of being “at home” in Britain, offers important counterbalance to the governmental and media rhetoric on the “enemy within” described in the introduction. Indeed it has been argued that the political mobilisation of (in this case) young British Pakistani Muslims is in response to the sense of frustration at the lack of support for the rights associated with this strong “British” identity, rather than a result of their links with a “fanatical” Islam: “For the younger generation, their British citizenship is *central to their self-understandings and assertions of who they are*, and for them the threat from the BNP is just as much a threat to their Britishness as *citizens* as it is to their ethnic identities... They are expressing and defending a British multicultural, multi-ethnic citizenship identity” (Hussain and Bagguley, 2005, p. 411, authors’ italics).

Rather than being a threat to Britain, and Europe, then, this hybrid, inclusive form of British identity may offer its best potential. Yet there is also evidence, from numerous points in this chapter, of the consistent detrimental impact of victimisation

on thinking of yourself as part of a particular society: including thinking of yourself as British (or Spanish or German) and feeling at home in your country of residence, as well as mediating the impact of recent terrorist incidents on that sense of belonging. Increasingly empirical evidence supports the ubiquitous nature of the influence of victimisation in the lives of people from minority, and minoritised groups. Perhaps there is no more important focus for our efforts if we are seeking to improve, not only the lives and futures of our different minority communities, but also the hopes for a cohesive future for us all.

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Chapter 11

Investigating Inequalities in Educational Attainment

Michelle Jackson

Introduction

The twentieth century saw significant educational expansion and reform in all western societies. In Britain, we witnessed a movement from (almost) universal primary education at the beginning of the century, through universal secondary education, formalised in the 1944 Education Act, to a system of mass higher education by the end of the century. The development of educational systems can be seen as a response to the demands of changing economic and occupational structures, and as an attempt to create a greater equality of educational opportunity.

Within this context, sociological interest has focused on the determinants of educational attainment, and particularly on the influence of social background. Social class, ethnic origin and sex have all been found to affect educational attainment (e.g. Halsey et al., 1980; Shavit and Blossfeld, 1993; Jonsson et al., 1996; Breen and Jonsson, 2005). In recent years, increasing numbers of sociologists have recognised that in explaining inequalities in educational attainment, it is important to take into account the distinction made by Boudon (1974) between “primary” and “secondary” effects. In summary, “primary effects are all those that are expressed in the association that exists between children’s class origins and their average levels of demonstrated academic ability. Children of more advantaged backgrounds . . . perform better, on average, than children of less advantaged backgrounds in standard tests, examinations, and so on . . . Secondary effects . . . are effects that are expressed in the actual choices that children, together perhaps with their parents, make in the course of their careers within the educational system – including the choice of exit” (Breen and Goldthorpe, 1997, p. 277).

The implication of this distinction is that, even if previous educational performance is held constant, the possibility remains that children from more advantaged backgrounds will more often opt to stay on in full-time education, or to take more ambitious educational courses than will children from less advantaged

M. Jackson (✉)
Centre for Research Methods in the Social Sciences and Nuffield College,
University of Oxford, Oxford, UK
e-mail: Michelle.Jackson@nuffield.ox.ac.uk

backgrounds. In other words, factors apart from those affecting actual educational performance can come into play.

This chapter considers the inequalities in educational attainment in present-day England and Wales, concentrating on the important transition that students make at age 16, at the end of compulsory education. At this point, students can decide to continue to Advanced-level (A-level) education, to continue to vocational education (either in schools or vocational colleges) or to drop out of education altogether. The transition is consequential for future educational (and occupational) success, in that students usually require A-levels to take degree courses, particularly at the higher-level universities. The chapter assesses the extent of class, ethnic and sex inequalities in the chances of making the transition to A-level education, before using counterfactual methods to assess the relative importance of primary and secondary effects in creating inequalities in educational attainment.

Data

The data in this chapter are drawn from the Youth Cohort Studies (YCS), a series of nationally representative cohort surveys of young people in England and Wales. The first YCS was carried out in 1985, and to date, a total of twelve cohorts have been surveyed. The structure of each YCS is similar, with an initial survey of a sample of 16 year olds, and follow-up surveys of the same individuals in subsequent years. The primary mode of completion is a postal questionnaire, with computer-assisted telephone interviewing being used in more recent YCS to encourage non-responders to participate (TNS Social et al., 2005).

Here, an analysis is presented of the most recent YCS in the series, YCS12, which follows a cohort of students who turned 16 in 2004. Data have been drawn from the first sweep of the study; this takes place the year after the students have completed compulsory education. The final response rate for the first sweep of YCS12 was a rather disappointing 46.7%. Weights are included in the data set to allow for analysis of a “sample” more representative of the population of interest. All of the following analyses make use of the weighted data. Only cases with no missing values on any of the variables in the analyses are included in the analytic sample (10,740 cases).

Academic Performance

Academic performance at age 16 is measured as performance in the General Certificate of Secondary Education (GCSE) public examinations. These examinations are usually taken at the end of the period of compulsory schooling, and pass grades range from a high of A* to a low of G.

For the first time in the history of the YCS, information on students’ grades in public examinations was collected from databases held by the Department for Education and Skills (DfES) and subsequently matched to the students (TNS Social

et al., 2005), which is clearly a step forward when it comes to the reliability of the grade measures. However, it was only possible to match information on grades held by the DfES for students attending maintained schools in England. Students attending independent schools in England, or schools in Wales, were required to complete an additional section of the YCS questionnaire in which they reported their results in each public examination.

The grades achieved by students in their GCSE examinations were accumulated into a total points score (*s1gcsepts*) on the basis of a metric devised by the DfES.¹ Points were attached to each grade (8 points for an A*, 7 points for an A, down to 1 point for a G), and these were then summed across all of the grades achieved by the students. The points measure was standardized to have a mean of 0 and standard deviation of 1.

Transition to A-Level

The transition to A-level variable distinguishes between those students who continued their academic study after GCSEs to take A-level courses, and those students who instead chose to drop out of education, or to take vocational courses. In YCS12, a question in the first sweep identifies respondents who are currently studying for GCSE, AS- or A-levels (*s1q20*), with subsequent questions identifying which qualifications are being studied for. Those currently studying for AS- or A-levels (*s1q21b1* or *s1q21c1* respectively) are coded as making the transition to A-level, while those who are not currently studying for these qualifications are coded as not making the transition.

Class Background

Class of the respondent's father is used as a measure of social class background. The students are asked: "What are your parents (or step-parents) current jobs? If they are not employed at the moment, what were their most recent jobs?". Follow-up questions enquire about the type of work carried out, whether the parent is employed or self-employed, whether they have formal responsibility for supervising the work of other employees, and the size of the organization that they work for. Information from this set of questions is used to code each parent's occupation to the SOC2000 occupational classification (Office for National Statistics, 2000). The SOC2000 codes are subsequently coded into the operational categories of the National Statistics Socio-Economic Classification (NS-SEC).² The operational categories

¹ Note that both the name of the Department and the metric used to assign points to grades have changed since 2004.

² NS-SEC became Britain's official class schema in 2000, and is in effect an updated version of the Goldthorpe schema (see Rose and Pevalin, 2003; Rose et al., 2005 for more details).

for the fathers (sInsscprpa) were recoded into seven classes: I Higher managerial and professional occupations, II Lower managerial and professional occupations, III Intermediate occupations, IV Small employers and own-account workers, V Higher supervisory and technical occupations, VI Semi-routine occupations, and VII Routine occupations.

Given that the father's class variable is derived from information provided by the students, it is prudent to consider whether there may be problems of measurement. The distribution of respondents across the father's class categories (shown in Table 11.1) does suggest that there may be a problem of measurement, in that the percentage of respondents with a father in class IV (Small employers and own-account workers) is surprisingly high. However, the results presented below which are based on this measure are reassuringly close to other results obtained using alternative data sources (e.g. Jackson et al., 2007).

Although the NS-SEC is not designed to be strictly hierarchical due, *inter alia*, to the difficulty of where to place the self-employed in such a hierarchy, classes I and II (the "salaried") are generally understood to be higher in the class structure than classes III, IV and V (the "intermediate classes"), which, in turn, are understood to be higher in the class structure than classes VI and VII (the "working classes"). Students with fathers who have never worked are excluded from the analysis.

Table 11.1 Statistics describing inequalities in the transition to A-level education between classes I–VI and class VII

Class		Odds ratio	Log odds ratio	Proportion of log odds ratio attributable to primary effects
I	Higher managerial and professional	6.46	1.87	0.74
II	Lower managerial and professional	4.70	1.55	0.74
III	Intermediate	3.56	1.27	0.76
IV	Small employers and own-account	2.30	0.83	0.70
V	Higher supervisory and technical	1.71	0.54	0.62
VI	Semi-routine	1.53	0.42	0.54

Odds ratios all significant at $p < 0.001$ (ref. category class VII: Routine occupations)

Total $n = 10,740$, weighted data

Source: YCS12

Ethnic Background

Ethnic background is measured using the question: "Which of the following groups do you belong to? Ethnic groups: White, Black Caribbean, Black African, Other Black, Indian, Pakistani, Bangladeshi, Chinese, Other Asian, Mixed, Any other ethnic group". Respondents are asked to identify themselves as a member of the listed ethnic groups by ticking the appropriate box (s1eth1).

The Office for National Statistics estimates that just under 8% of the population of the United Kingdom are members of minority ethnic groups (Census, 2001). A relatively small number of ethnic minority students are therefore included in any survey which aims to take a representative sample of the population of the UK (or, indeed, England and Wales, as YCS12 relates to). As a consequence, in the following analyses, some of the smaller ethnic groups contain only a very small number of students. The findings in this chapter do in fact mesh well with previous work on much larger datasets which pool together several of the YCS (Jackson, 2008), and I will refer to this work when describing the analyses below.

Sex

Respondents were asked to indicate whether they were male or female.

Methodology

The methodology adopted is that described in Erikson et al. (2005) and applied in Jackson et al. (2007) to assess the relative importance of primary and secondary effects in creating inequalities in educational attainment. Erikson and Jonsson (1996) first noted that a transition rate for a particular group could be expressed as a function of the performance distribution of that group and the transition rate for that group *given* performance. More formally:

$$P_{jj} = \int f_j(x) g_j(x) dx \quad (11.1)$$

where p_{jj} represents the total transition rate for group j , $f_j(x)$ represents the distribution of the performance measure x for group j , and $g_j(x)$ represents group j 's probability of making the transition, conditional on x . If we extend this principle to a situation in which there are two groups, j and k , we can express the transition rates for these groups as p_{jj} and p_{kk} , but we can also generate counterfactual transition rates for a situation in which the performance distribution of group j is combined with the conditional transition rate of group k , and the performance distribution of group k is combined with the conditional transition rate of group j , thus:

$$P_{jk} = \int f_j(x) g_k(x) dx \quad (11.2)$$

and

$$P_{kj} = \int f_k(x) g_j(x) dx \quad (11.3)$$

Empirically, the performance distribution of any group can be described by a normal distribution, while the transition probabilities can be estimated using a logistic regression of transition on performance.

The odds for these transition rates can be calculated and, following the logic described above, we can calculate odds both for the actual and counterfactual transition rates. Subsequently, we can compare odds ratios based on actual and counterfactual transition rates, to determine the relative importance of primary and secondary effects. For example, we can contrast the odds ratio based on comparing the actual odds of transition for group j against those for group k , with a counterfactual case in which we compare the actual odds for group j with counterfactual odds where the performance distribution for group j is combined with the transition probabilities of group k :

Actual:

$$Q_{jj-kk} = (P_{jj}/(1 - P_{jj}))/ (P_{kk}/(1 - P_{kk})) \quad (11.4)$$

Counterfactual:

$$Q_{jj-jk} = (P_{jj}/(1 - P_{jj}))/ (P_{jk}/(1 - P_{jk})) \quad (11.5)$$

And finally, we can transform these odds ratios in to log odds ratios and isolate the relative importance of, say, secondary effects, by comparing the counterfactual to the actual log odds ratio, thus:

$$\log_{ij-jk} / \log_{jj-kk} \quad \text{or, alternatively} \quad \log_{kj-kk} / \log_{jj-kk}$$

The average of these two calculations gives us the proportion of the total inequality in transition rates between groups j and k that can be attributed to the operation of secondary effects (see Erikson et al., 2005). A Stata programme (*ldecomp*) has been developed by Buis (2008) to calculate these equations painlessly.

Results

Class Inequalities in the Transition to A-Level

Let us begin by examining social class inequalities in the chances of making the transition to A-level education after compulsory schooling. Figure 11.1 shows the transition rates to A-level education for each social class.

Figure 11.1 illustrates a very clear pattern: students from advantaged class backgrounds are very likely to make the transition to A-level education while students from less-advantaged class backgrounds are much less likely to make the transition. Indeed, there is an almost monotonic decline in the transition rate as we

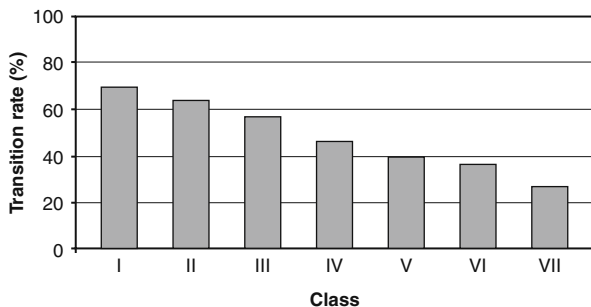


Fig. 11.1 Transition rates to A-level education after compulsory schooling for students from different class backgrounds (Source: YCS12)
Total $n=10,740$, weighted data

move from the top to the bottom of the class structure, with the 71% transition rate for students originating in class I: Higher managerial and professional occupations falling to 27% for students originating in class VII: Routine occupations. The odds ratios expressing inequalities between classes show that students originating in class I are almost six and a half times more likely than students originating in class VII to make the transition to A-level education rather than not (Table 11.1).

If class inequalities in transition rates were entirely a consequence of primary effects, we would expect class inequalities in previous academic performance to account for them. Figure 11.2 shows performance z-scores for each of the classes, derived from grades in GCSE examinations. The raw data have been transformed into a points score, subsequently transformed into a z-score.

A clear pattern is observed in the relationship between social class background and performance in GCSE examinations. The average performance score for the whole population is set at 0, with a standard deviation of 1. Students originating in Class I Higher managerial and professional occupations, have the highest average GCSE performance, with a z-score almost half a standard deviation above

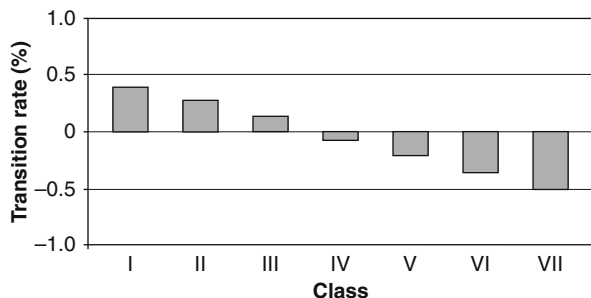


Fig. 11.2 Average performance in GCSE examinations for social classes (Source: YCS12)
Total $n=10,740$, weighted data

the population average. In contrast, the average GCSE performance of students originating in the lowest class, VII Routine occupations, is half a standard deviation below the population average. In a pattern reminiscent of that seen in Fig. 11.1, as we move down the class structure, a steady decrease in the average level of performance can be observed. The similarity between the two patterns suggests that differences in the level of GCSE performance achieved by students of different social class background may well be contributing to class differences in rates of transition to A-level. In other words, it seems likely that primary effects have an important part to play in creating class inequalities in the transition to A-level.

Let us now move on to establish the precise role of primary and secondary effects in creating class inequalities in the transition to A-level education. Figure 11.3 shows a graphical representation of the influence of primary and secondary effects on class inequalities in the transition to A-level; to simplify the presentation, only results relating to classes I and VII are displayed in the figure.

As noted above, the odds ratio describing the inequality between classes I and VII reveals that students from class I are almost 6.5 times more likely to make the transition to A-level rather than not than students from class VII. The primary and secondary effects creating this inequality are represented by the two separate sets of curves. To represent primary effects, for each social class, the mean and standard deviation of the GCSE performance scores were substituted into the equation for a normal distribution, and then plotted on the graph. To represent secondary effects, a binary logistic regression was estimated for each class separately, in which performance served to predict whether an individual enters A-level education or not. The coefficients from these regressions were then substituted into the predicted

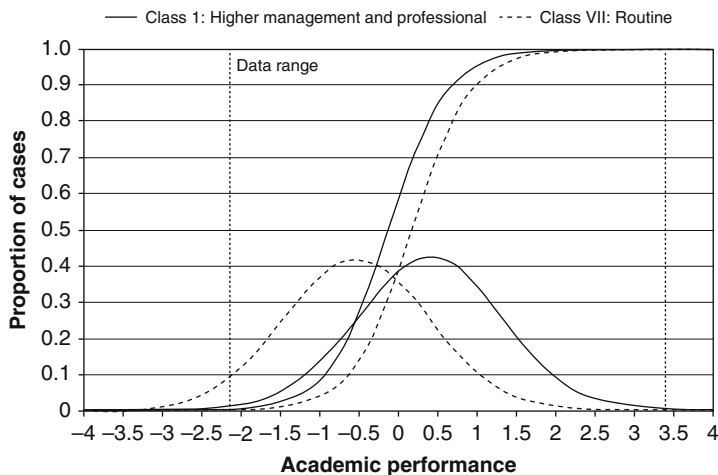


Fig. 11.3 Graphical representation of the transition to A-level education for students originating in class I Higher managerial and professional occupations and class VII Routine occupations (Source: YCS12)

Total $n=10,740$, weighted data

probability equation, producing the S-shaped curves. The darker lines represent the performance and transition curves for class I, while the lighter lines represent the curves for class VII.

From Fig. 11.3, it appears that both primary and secondary effects are at work in creating the inequality observed when comparing students originating in class I to those originating in class VII. The importance of primary effects suggested by Fig. 11.2 is confirmed in Fig. 11.3: the normal curves are differentiated along class lines with students from class I having higher average levels of performance at GCSE than students from class VII. But secondary effects are shown to be important too. At all levels of GCSE performance but the extremes, class I students are more likely to make the transition to A-level education than students from class VII. So, for example, at a GCSE performance score of 0, the overall average, class I students have a transition propensity of 57% whereas class VII students have a transition propensity of 36%.

Having thus distinguished primary and secondary effects, their relative importance can be established. Using the method described earlier, counterfactual analyses are carried out which interchange class-specific performance distributions and transition propensities. In this chapter, only the results are presented that relate to inequalities between class VII: Routine occupations and the other classes, although similar results are found when examining inequalities between other pairs of classes (full results are available from the author on request). Table 11.1 presents odds ratios describing inequalities between each class and class VII, log odds ratios,³ and the proportions of each log odds ratios which can be attributed to the operation of primary effects.

Table 11.1 shows that, for all odds ratios which describe inequalities between classes I–VI and class VII, primary effects generally account for a much larger proportion of the inequality than do secondary effects. In the case of the class I/class VII odds ratio, we see that almost three-quarters of the inequality expressed in the log odds ratio is attributable to the operation of primary effects. The results do, then, suggest that inequalities between classes in the transition to A-level education can largely be attributed to differences between classes in the level of previous academic performance in GCSE examinations. In contrast, secondary effects account for around a quarter of the inequality between class I and class VII (i.e. $1 - 0.74 = 0.26$). This is clearly a smaller effect than the effect of previous performance, but it is worth emphasizing that secondary effects are effects operating *after already taking account of the effects of previous academic performance*.

The results relating to class can be summed up as follows. In 2004, there are significant class inequalities in the transition to A-level education. To take the most extreme example, students originating in class I Higher managerial and professional occupations are almost 6.5 times more likely than students originating in class VII

³ In fact, the log odds ratios in the table are not simply the logged empirical odds ratios. The log odds ratios are derived from the transition rates estimated using the method described earlier. In most cases, these log odds ratios are rather close to the empirical log odds ratios (see also, Jackson et al., 2007).

Routine occupations to make the transition to A-level education rather than to drop out of education, or to take vocational courses. While differences between classes in levels of previous academic performance in GCSE examinations go some way to explaining why class inequalities in making the transition to A-level exist, even at the same level of previous performance, students from different class backgrounds have different propensities to continue to A-level education. On the basis of the analyses presented here, the inequality between class I and class VII would be reduced by around a quarter if secondary effects were eradicated.

Ethnic Inequalities in the Transition to A-Level

I now move on to consider ethnic inequalities in the transition to A-level education, primarily focusing on differences between the white majority population and ethnic minority groups.

Figure 11.4 shows transition rates to A-level education for each of the ethnic groups. The transition rate for white students is around 50%, and it is clear from Fig. 11.4 that white students are far from being the most advantaged ethnic group. While some ethnic minority groups have lower transition rates to A-level education than the white majority population, other minority groups have equivalent, or higher, transition rates. The most disadvantaged students appear to be those of Black Caribbean background; in this group, only around 38% of students make the transition to A-level education. Conversely, students of Chinese and Indian background are observed to have particularly high transition rates, with the transition rate for students of Chinese background 30 percentage points higher than that of the white majority population. Table 11.2 provides odds ratios calculated from the transition rates, again providing scant evidence for the argument

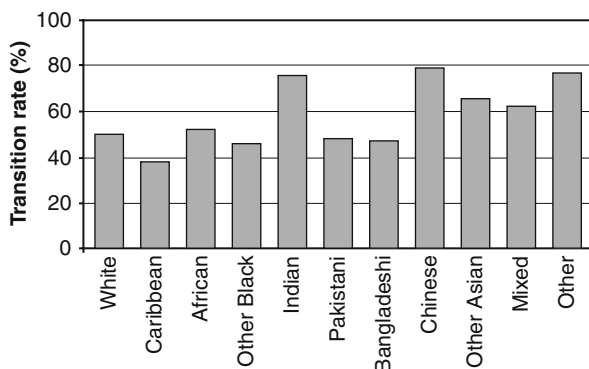


Fig. 11.4 Transition rates to A-level education after compulsory schooling for students from different ethnic groups (Source: YCS12)
Total $n=10,740$, weighted data

Table 11.2 Statistics describing inequalities in the transition to A-level education between ethnic minority groups and the white majority

	Odds ratios	Log odds ratios	Primary effects	Secondary effects
Caribbean	<i>0.63</i>	-0.27	-0.39	0.12
African	1.11	0.21	-0.25	0.48
Other black	0.87	-0.44	-0.45	0.01
Indian	3.22	1.18	0.72	0.47
Pakistani	0.92	-0.01	-0.33	0.33
Bangladeshi	0.91	0.17	-0.09	0.26
Chinese	3.88	1.27	0.91	0.36
Other Asian	1.95	0.55	0.17	0.37
Mixed	1.70	0.55	0.19	0.36
Other	3.39	1.34	0.40	0.94

Odds ratios: *Italics*: $p < 0.01$, **Bold**: $p < 0.05$ (ref. category white majority population)

Total $n = 10,740$, weighted data

Source: YCS12

that ethnic minority groups are systematically disadvantaged relative to the white majority population. While not all odds ratios in this table are highly statistically significant, this is most likely due to the relatively small number of cases in the analysis. In Jackson (2008), the odds ratios describing inequalities between the Black Caribbean, Pakistani and Bangladeshi groups and the white population are all found to be highly statistically significant ($p < 0.05$).

Having established that there are significant ethnic inequalities in the transition to A-level education, I can now examine whether there are ethnic inequalities in performance in GCSE examinations. Figure 11.5 shows average performance z-scores for each of the ethnic groups. As with social class, the differences in academic performance by ethnic group do not precisely mirror the transition rates (Fig. 11.4),

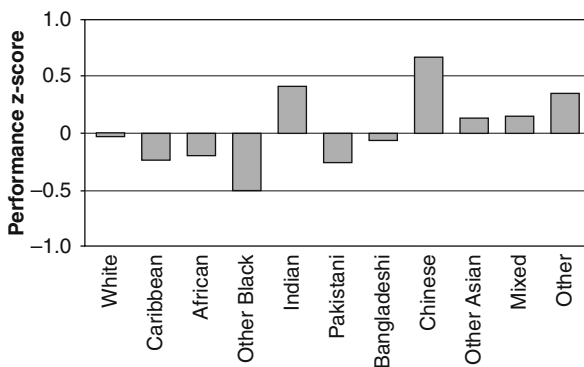


Fig. 11.5 Average performance in GCSE examinations for ethnic groups (Source: YCS12)

Total $n = 10,740$, weighted data

but there does appear to be a relationship between the two patterns. Students of Black Caribbean background perform particularly badly, with a performance z-score of only -0.26 in comparison to the overall average (note that the lowest average score, that of the “Other black” group, should be treated with great caution, as there are very few students in this ethnic group in YCS12). Students of Chinese and Indian background achieve the highest levels of GCSE performance; students of Chinese background in fact achieve a performance score over two-thirds of a standard deviation higher than the overall average.

To establish the contribution of primary and secondary effects to the creation of ethnic inequalities in rates of transition to A-level education, the same counterfactual method is used as before. In contrast, however, to the case of social class, it is not possible to take a simple ratio to work out the relative importance of primary and secondary effects in creating ethnic inequalities in transition rates. Table 11.2 makes it clear why. It shows odds ratios describing inequalities between ethnic minority groups and the white majority population and the associated log odds ratios. The next two columns of the table contain counterfactual log odds ratios describing the inequalities if, firstly, secondary effects were eliminated and thus only primary effects were in operation, and secondly, primary effects were eliminated and only secondary effects were in operation. As there are very few cases in some of the ethnic groups, the estimated log odds ratios are more divergent from the empirical log odds ratios than is normally the case.

One striking feature of Table 11.2 is that when all ethnic groups take the performance distribution of the white population, and primary effects are thus eliminated, all of the log odds ratios expressing ethnic inequalities relative to the white population are positive. Ethnic minority groups, therefore, are *more likely* than the white population to choose to make the transition to A-level education, once the effect of previous performance on the transition probability has been eliminated. Subsequently, the conclusion is that every total log odds ratio that is negative (second column) is negative because of the overwhelming influence of primary effects. This is perhaps most striking in the case of students of Black Caribbean background. If the primary effects are eliminated, students of Black Caribbean background would be around 1.13 times ($e^{0.12}=1.13$) more likely to make the transition to A-level education rather than leave academic education than white students, but if the secondary effects are eliminated, students of Black Caribbean background are only around two-thirds as likely ($e^{-0.39}=0.68$) to make the transition rather than not, compared to white students. The net result of these two effects working against one another is that students of Black Caribbean background are less likely to make the transition to A-level education rather than to leave in comparison to white students.

The results of the counterfactual analysis show, therefore, that on the whole, primary effects act to suppress the transition rate of ethnic minority groups in comparison to the white population, and that eliminating primary effects would lead to the white population being disadvantaged relative to every other ethnic group. Similar results to those shown here are found using a much larger dataset in Jackson (2008).

Sex Inequalities in the Transition to A-Level

Finally, I turn to examine inequalities between males and females in the transition to A-level education. Table 11.3 presents transition rates for males and females, average performance scores for GCSE examinations, and log odds ratios with counterfactual log odds ratios when secondary and primary effects are eliminated.

Females are 1.43 times more likely than males to make the transition to A-level education rather than not (this odds ratios is significant at the $p < 0.001$ level). The counterfactual analyses show that the difference in transition rates between males and females can be almost entirely attributed to sex differences in the level of GCSE performance. In other words, females are more likely to continue to A-level education rather than not in comparison to males because they achieve higher levels of GCSE performance: the average GCSE performance score for females is 0.13, while it is only -0.12 for males. Secondary effects work in the opposite direction, making males more likely to make the transition than females at the same level of academic performance, but this is a tiny effect in comparison to the overwhelming influence of primary effects.

Table 11.3 Transition probabilities, average performance scores and log odds ratio describing inequalities between males and females, and counterfactual log odds ratios in which secondary effects and primary effects are eliminated

	Transition rate	Performance score	Odds ratio	Log odds ratio	Primary effects	Secondary effects
Females	0.55	0.13	1.43	0.33	0.34	-0.01
Males	0.46	-0.12				

Odds ratio significant at $p < 0.001$ (ref. category males)

Total $n = 10,740$, weighted data

Source: YCS12

Conclusions

This chapter has examined the extent of inequalities in educational attainment in England and Wales today. It has focused on arguably the most important transition made in the English and Welsh educational system: the transition to A-level education and shown that there are significant inequalities in the propensity to make the transition for students of different social class and ethnic backgrounds, as well as for males and females.

As regards social class, the results show that there are significant inequalities in the transition to A-level education, with students originating in class I Higher managerial and professional occupations almost six and a half times more likely to make the transition than students originating in class VII Routine occupations. The results have also shown that there are significant ethnic inequalities in the transition

to A-level, and that the white majority population has a transition rate higher than some ethnic groups but lower than others. And finally, the results have shown that female students are almost one and a half times more likely to make the transition to A-level than male students.

Although these inequalities are of interest in and of themselves, an important question that this chapter has addressed is whether inequalities in the transition to A-level are due to inequalities in performance in GCSE examinations, or due to differences in the choices made by students from different groups with the same levels of GCSE performance. In other words, how far can inequalities be attributed to the operation of primary and secondary effects? Results show that both primary and secondary effects have a role to play. It is interesting to compare the role of secondary effects in creating inequalities in the transition to A-level for the different social groups studied here. In the case of class, secondary effects account for between around a quarter and a half of the inequalities between class VII and other classes; eliminating secondary effects could therefore substantially reduce these class inequalities. However, in the case of ethnic inequalities, the story is somewhat more complicated, as the role of primary and secondary effects in creating inequalities between ethnic minority groups and the white majority population differs depending on the ethnic group under consideration. But one conclusion is clear: if secondary effects were eliminated, all ethnic minority groups would be in a worse position relative to the white majority population than they are in currently. Turning to sex inequalities, it seems that the inequality between males and females in the transition to A-level education is mostly accounted for by primary effects, that is, by females achieving higher levels of GCSE performance than males. Once again, if secondary effects were eliminated, this would lead to an even worse outcome for males relative to females (although as the secondary effects are very small in comparison to the primary effects, the inequality would only be slightly increased).

Breaking down educational inequalities between social groups into inequalities attributable to previous academic performance and inequalities attributable to different choices being made by students at the same level of previous academic performance helps us towards a full sociological explanation of how educational inequalities are created (see Goldthorpe, 2007a, b). There are also important policy implications relating to the distinction between primary and secondary effects (Jackson et al., 2007). If inequalities between social groups are to be reduced by minimizing the primary effects of previous academic performance on transition propensities, rather different policies will need to be put in place than if the aim is to reduce inequalities by minimizing the secondary effects of the different choices made by members of different social groups at the same level of previous academic performance.

This chapter cannot explain why inequalities in educational attainment exist. But in identifying that both primary and secondary effects have a role in creating inequalities in educational attainment, and establishing their relative magnitude, it has pointed towards possible directions for future research.

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Chapter 12

The Making of Social Values: Education and Social Class

Paula Surridge

Introduction: Social, Political and Educational Values

In his work on human values, Rokeach (1979) defines “values” as core conceptions of the desirable within every individual and society. In other words, the values we hold are our ideas of how we would like things to be, rather than how we think things actually are. When considering the entirety of the human value system, a vast number of values may be identified, as Williams suggests the “value space of human life necessarily becomes filled with standards relating to all the significant types of objects of experience” (Williams, 1979, p. 22). In this chapter, our interest is restricted to a smaller subset of human values, in particular those values which are pertinent to the political sphere.

Drawing on his work on human values broadly defined, Rokeach looked directly at the British political sphere, arguing that the usual uni-dimensional approach to political values, which was popular both in the USA and the UK, was flawed and that a more sophisticated understanding of political values could be achieved by understanding political values as operating along two key dimensions of “equality” and “freedom”. Using Rokeach’s work as a starting point, Heath et al. (1994) designed a series of measures of these values, based on a series of attitudinal questions, which could be used as value scales in the British context. The first, a “socialist-laissez faire” (or “left-right”) scale, is based largely on economic power and economic equality, while the second “liberal-authoritarian” scale is based on issues of personal liberty and social equality.¹ Since the development of these scales in the mid 1990s, there has been a broad consensus that the political values of the British electorate may be represented by these two “core value” scales.²

P. Surridge (✉)

Department of Sociology, University of Bristol, Bristol BS8 1UQ, UK

e-mail: p.surridge@bristol.ac.uk

¹ Rokeach uses the labels “equality” and “freedom” to characterise the two dimensions; Heath et al.’s formulation is preferred here in order to distinguish between economic and social equality.

² Other scales have also been developed in the British context, most notably a “national-cosmopolitan” scale. However, this scale has not proved as important in understanding political values as the “left-right” and “liberal-authoritarian” scales (Heath et al., 1999).

Over the last 30 years, one of the most often replicated findings in social science research has been the link between education and “liberal” social values, with the general conclusion being that the more highly educated are also more “liberal”. This has led to research on the link between social values and education being primarily focused around the subset of values that are related to liberalism. Consequently, there has been very little research on educational effects on a broader range of social values, especially those related to “economic” issues (Weakliem, 2002). There are two main reasons why this has been the case. Firstly, it is usually assumed (and has been demonstrated empirically) that economic values – such as those measured by the left-right value scale – are strongly related to social class position and, whilst this does not rule out a relationship between education and economic issues, it has meant little attention has been focused on any potential link. Moreover, there has been a longstanding tendency to treat education as an element of social class rather than as an explanatory mechanism in its own right, when considering social attitudes and values (Lipset, 1959; see also Houtmann et al., 2008 on the need to separate social class and education as explanatory factors).

Whilst the link between education and liberalism is widely documented, the underlying mechanism which fosters this link remains elusive and contentious. In the case of social class and economic values, the link is most commonly perceived as one of self-interest, whereby those with less economic capital (the lower social classes) are more likely to favour policies on the “left” of the economic dimension as these are the groups most likely to benefit directly from such policies. However, in the case of education, there is little consensus as to how the link may operate, with no obvious link between education, self-interest and liberalism. Nonetheless, there is no shortage of proposed mechanisms through which the “education effect” on liberal social values may work.

It is useful, following Stubager (2008), to divide these education mechanisms into two types: “direct” effects and “allocation” effects. Proponents of the allocation effects model argue that different levels of educational attainment lead to different social locations and therefore social interests and values. This explanation operates in two parts: first, education is seen as leading to more secure labour market positions and higher earnings; in short, to a higher social location. Second, this higher social location leads to greater tolerance (or liberalism) as it is more secure and less threatened by minority groups in society. If this argument is correct, education per se does not impact on values, making them more liberal, rather the effect is mediated through other outcomes which themselves depend on educational success. This suggests that any consideration of the effects of education must also include appropriate measures of social location to ensure effects are not spuriously attributed to education.

Direct effects explanations contend that there is something about education itself which influences social values. In other words, it is the actual experience of education which leads to more liberal social values among those with greater education. These direct effects models of education can themselves be further divided into two main types: “cognitive” (or “developmental”) effects and “socialisation” effects models. The cognitive effects model (see for example, Nunn et al., 1978) sees the effect of education as operating through cognitive

development; the greater educational experience a person has the more developed is the capacity for rational thinking. In addition, those with greater educational experience are more likely to have increased knowledge of democratic principles, civil rights and an increased awareness of different beliefs and experiences outside their own immediate influences. In contrast, the socialisation model (see for example, Hyman and Wright, 1979; Jacobsen, 2001), suggests that liberal values are transmitted directly through educational experiences (rather than via increased knowledge or rational thought), via the teaching of liberal values and via informal contacts with other students and members of staff who hold liberal values.

It is difficult, however, to test these two positions against each other empirically, as each predicts greater levels of liberalism among the more highly educated. Phelan et al. (1995) argue that one way to advance this area is to expand the range of values considered, to include both social and economic values. Phelan et al. go on to make a number of predictions about the way in which education and economic issues may be linked based on the proposed mechanisms which have been put forward to explain the link between education and liberalism. In particular, they suggest that the developmental model should “increase one’s inclination to see oneself and others as part of a common humanity and increase one’s empathy for the plight of less advantaged groups” (Phelan et al., 1995, p. 130). This would lead us to expect those with higher levels of education to be more egalitarian (in terms of economic distribution) and more willing to offer economic aid to those in need.

The socialisation model also predicts that higher education will lead to greater liberalism. However, in this model, this is not due to a change in the individual, as is the case with the developmental model, but rather the values are transmitted via contact with others holding those values. This model suggests that what is transmitted is some kind of official or ideal culture. Therefore, in order to make predictions about the impact of this on values, we must know the values of a specific society. Phelan et al.’s research is based on data from the USA, and suggests that the underlying values of that culture are individualism, meritocracy and laissez-faire anti-statism. Based on this, they suggest the socialisation model would predict positive perceptions of less advantaged groups and support for their rights and liberties but would undermine belief in systemic causes of disadvantage and reduce support for economic support for disadvantaged groups. By using both social and economic values, Phelan et al. are able to make empirical predictions based on the different mechanisms. This strategy proves useful to them in providing empirical support for some mechanisms but not others, and they find that the evidence supports the socialisation model over the developmental model when both sets of values are considered.

A further prediction which can be made based on the direct effects models is that increased educational participation should lead to changes in social values. Emler and Frazer (1999, p. 261) emphasise this point: “The most important implication of a direct effects model is that increasing the mean level or amount of education of the population will translate directly into effects on political outcomes”.

In this chapter we use the two core value scales to explore the relationship between education and social values. We focus on two key issues, how the interplay

of education and social class relates to social value positions and what the impact has been of the expansion of the education system in the UK. As Weakliem (2002, p. 142) suggests, this is not an area in which it is “possible to have a critical test based on a few sharply opposed hypotheses”. However, the data presented below offer insights into the way in which education and social values are linked in the UK and provide indications of the more likely explanations for this link.

Data

The chapter uses data from the British Social Attitudes (BSA) survey series, which began in 1983. The survey is undertaken annually and provides a unique source for considering changes in social and political attitudes of the British population over the last 25 years. Each of the surveys represents a nationally representative sample of the British public aged 18 and over. In each year, the survey was comprised of a face-to-face questionnaire interview, with an additional self-completion questionnaire left for respondents to complete and return at a later date, in each year the items which are used to measure the core value scales appeared on this “self-completion” questionnaire.³ Throughout the chapter, data are weighted to take into account differential probabilities of selection into the sample for those based in multi-person households.

Social Values

The two scales developed by Heath et al. (1994), discussed above, use attitudinal items as their constitutive measures. In this chapter we use a five item version of the scales.⁴ The items which make up the scales are as follows.

Left-right scale:

- ordinary working people do not get their fair share of the nation’s wealth;
- big business benefits owners at the expense of workers;
- government should redistribute income from the better-off to those who are less well off;
- there is one law for the rich and one for the poor; and
- management will always try to get the better of employees if it gets the chance.

³ For full details of sampling and methodology please refer to the technical reports for the BSA series.

⁴ The original versions of the scales had six items for the liberal-authoritarian scale, however one of the items, “The law should always be obeyed even if a particular law is wrong”, was not available on all the surveys in our time series. Moreover, factor analyses suggested it had a relatively weak relationship to the scale. Therefore, to include the widest number of surveys in the analysis, this scale has been reduced to five items. This also results in our two value scales having the same number of items.

Liberal-authoritarian scale:

- censorship of films and magazines is necessary to uphold moral standards;
- schools should teach children to obey authority;
- young people today do not have enough respect for traditional British values;
- people who break the law should be given stiffer sentences; and
- for some crimes, the death penalty is the most appropriate sentence.

In each case, respondents were asked to say if they agreed with the statement and to what extent, giving five response categories “strong agree”, “agree”, “neither agree nor disagree”, “disagree”, “strongly disagree”. The responses are allocated codes from -2 to $+2$ with negative values representing the “left” and “liberal” responses respectively. Responses to the individual items are summed together and divided by five to generate scales which may take values between -2 and $+2$ with 0 representing the notional mid-point of the scale. It is important to note this notional mid-point is distinct from the empirical mid-point for a given population.

Explanatory Variables

Education

Although it would be preferable to use multiple indicators of education experience, this is not possible with the data and space available here. Thus, we have chosen to use highest educational qualification achieved as our measure of educational experience which is coded into five groups: “Degree or higher level”; “Higher education below degree level”; “A levels (and equivalents)”; “O levels, CSEs (and equivalents)”; and “No Qualifications”.

Social Class

For the reasons discussed above, social class is also used as an explanatory variable in this chapter, as we are interested in how education interacts with social class in the production of social values. For data prior to 2001, we use the Goldthorpe schema in its five group form: “Salaried,” “Routine non-manual”, “Petty bourgeoisie”, “Manual foremen and technicians” and “Working class”. However, from 2001 onwards, official classifications in the UK were changed to produce a new social class classification used by official sources. This classification (known as the NS-SEC) is based on the Goldthorpe schema although with some amendments. For 2001 onwards, this schema is used and again there are five categories which are broadly comparable to those used for the period 1986–2000: “Employers, managers and professionals”, “Intermediate occupations”, “Small employers and own account workers”, “Lower supervisory and technical occupations” and “Semi-routine and routine occupations”.

Control Variables

Two additional variables are used in the analysis. First, wherever multi-variate techniques are used, we control for the gender of the respondent. Second, it has been often demonstrated that there is a strong link between values and age, especially with reference to liberal values (Tilley, 2005). We are also concerned to look at changes in values in the light of educational expansion in the UK. Clearly, educational experiences themselves may vary with age as a result of educational expansion. Therefore, we have used respondents' age to create "educational generations" which capture the educational context in which respondents achieved their educational qualifications. As this measure is heavily reliant on age, it is not possible to also include age directly in the models presented below.

Educational Generation

In order to take into account the educational context in which respondents achieved their educational qualifications, respondents were allocated to one of three educational generations, these are based on the year in which the respondent reached age 16. Three generations are used based on the broad changes in the educational system. First, there is a generation who were able to leave school before the age of 16 including respondents whose sixteenth birthday fell before 1972. Second, there is a generation for whom the school leaving age was raised to 16, but for whom there were not widely increased opportunities for post-compulsory education; this generation includes those whose sixteenth birthday fell between 1972 and 1985. Finally, the youngest generation are those who have experienced the widest educational opportunities, including a rapid increase in the opportunity to participate in higher education; this includes all respondents whose sixteenth birthday fell in 1986 or later.

This measure is used within the models discussed below to investigate whether different levels of educational attainment have the same relationship to social values when they are attained in differing educational contexts.

Samples and Pooled Data

The second part of this chapter looks in detail at combinations of educational attainment and social class position, as well as changes relating to educational generation. In order to ensure sufficient sample sizes in the combinations of interest, data from the 2004, 2005, and 2006 surveys are pooled together. In pooling the data, the value scales were first centred on the mean score for the individual year to remove the small differences between years. Data are weighted according to the original within year weights to take account of different selection probabilities but are otherwise treated as if they were a sample from a single larger population.

Although the BSA data includes all adults aged over 18, our interest in educational qualifications means this is not an appropriate age cut-off for the

purposes of analysis as respondents may still be in full-time education and likely to gain further educational qualifications. In order to take into account the typical point at which British students leave full-time education, the samples for analysis of educational trends and links have been restricted to those aged 22 or over only.

Trends in Political Values

The BSA surveys provide us with an almost unique data source for charting the values of the British electorate over the last 20 years. Whilst our primary concern in this chapter is the relationship between education and social values, the overall value positions of the British electorate provides the context in which this operates. Using the BSA data, Fig. 12.1 charts the average position of the British electorate on each of the two value scales over the period 1986–2006.

Figure 12.1 shows that for the left-right scale the British electorates’ average position was to the “left” of the notional mid-point of the scale (as represented by negative mean values), while for the liberal-authoritarian scale, the average position lies toward the authoritarian end of the scale (represented by positive mean values). In both cases, however, there has been relatively little change over time. On the left-right scale, there is a slight movement to the left during the early 1990s and a move to the right from 2004 to 2006, but these are relatively small changes and do not appear to indicate a trend in either direction. The liberal-authoritarian scale has been virtually constant between 1995 and 2006 (at a level in-line with values in the late 1980s), although a dip in the chart occurs between 1989 and 1991 with values becoming more liberal during this period. However, examination of the overall trend suggests that in this case the value for 1991 appears to be an outlier in an otherwise stable position.

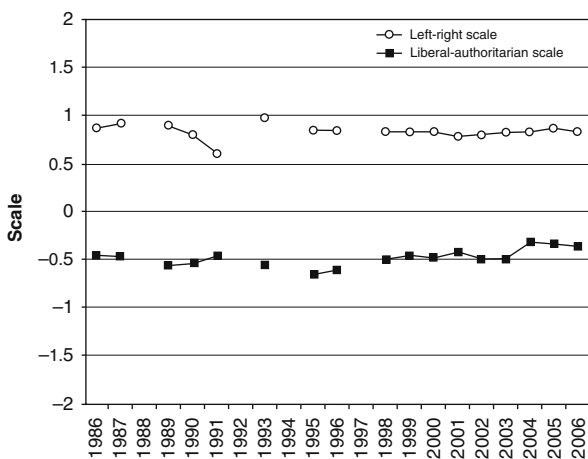


Fig. 12.1 Trends in core values, 1986–2006 (Source: BSA surveys)

Whilst we would expect these kinds of value measures to be relatively stable over time, after all one of the characteristics of values that distinguishes them from attitudes is their stability, such a high level of stability over a 20 year period is perhaps surprising, especially as this has been a period of rapid social change in areas associated with these political values, especially educational expansion. Whilst Fig. 12.1 has shown stability in value positions over the whole electorate, it is possible this is produced by changing value positions within specific groups as the composition of the electorate has been changing over time. Tables 12.1 and 12.2 show the value positions of the British electorate according to education and social class, over the period 1986–2006.

Table 12.1 shows the trends in left-right and liberal-authoritarian values within each of the five groups defined by educational attainment. Two issues are central here, first the positions of the groups relative to each other on each of the two core value scales. This tells us if there is indeed a relationship between education and values. The second issue is whether this relationship has changed over the period 1986–2006.

The left-right value scale shows only a relatively weak association with educational attainment. Four of the five educational groups have very similar value

Table 12.1 Left-right and liberal-authoritarian values by educational attainment, 1986–2006

	Left-right values					Liberal-authoritarian values				
	Degree	HE < degree	A level	O Level	None	Degree	HE < degree	A level	O level	None
1986	-0.11	-0.08	-0.44	-0.46	-0.67	0.29	0.89	0.50	0.92	1.10
1987	-0.41	-0.15	-0.34	-0.43	-0.70	0.34	0.87	0.81	0.91	1.13
1988										
1989	-0.35	-0.26	-0.38	-0.49	-0.78	0.30	0.76	0.74	0.92	1.09
1990	-0.40	-0.29	-0.37	-0.50	-0.76	0.22	0.74	0.66	0.84	1.04
1991										
1992										
1993	-0.32	-0.34	-0.32	-0.53	-0.84	0.50	0.91	0.90	1.00	1.19
1994										
1995	-0.53	-0.48	-0.56	-0.63	-0.81	0.14	0.76	0.83	0.95	1.09
1996	-0.45	-0.50	-0.51	-0.62	-0.79	0.27	0.79	0.74	0.98	1.05
1997										
1998	-0.32	-0.35	-0.46	-0.43	-0.71	0.31	0.74	0.73	0.86	1.07
1999	-0.23	-0.27	-0.44	-0.42	-0.65	0.24	0.74	0.75	0.93	1.05
2000	-0.35	-0.31	-0.43	-0.51	-0.67	0.39	0.75	0.75	0.89	1.10
2001	-0.32	-0.26	-0.36	-0.44	-0.68	0.30	0.73	0.75	0.88	1.10
2002	-0.37	-0.27	-0.41	-0.53	-0.77	0.27	0.77	0.82	0.97	1.05
2003	-0.31	-0.35	-0.42	-0.50	-0.74	0.35	0.75	0.77	0.96	1.12
2004	-0.13	-0.17	-0.24	-0.32	-0.59	0.40	0.85	0.82	0.92	1.12
2005	-0.17	-0.24	-0.22	-0.30	-0.55	0.39	0.86	0.87	1.00	1.12
2006	-0.22	-0.22	-0.27	-0.32	-0.56	0.38	0.80	0.84	0.96	1.07

Note: Data are restricted to include respondents aged 22 or over only

Source: BSA surveys

Table 12.2 Core values by social class group, 1986–2006

	Left-right values					Liberal-authoritarian values				
	Routine non-manual		Manual foremen	Petty Bourgeois	Working class	Salarial	Routine non-manual	Petty Bourgeois	Manual foremen	Working class
	Employers, managers and prof.	Inter-mediate occ.	Lower supervisory and technical	Small employers and own account	Semi-routine and routine	Employers, managers and prof.	Inter-mediate occ.	Small employers and own account	Lower supervisory and technical	Semi-routine and routine
Pre-2001										
2001–2006										
1986	-0.10	-0.31	-0.75	-0.26	-0.79	0.69	0.98	1.07	1.00	1.01
1987	-0.23	-0.36	-0.57	-0.27	-0.82	0.76	0.90	1.07	1.16	1.03
1988										
1989	-0.27	-0.40	-0.69	-0.28	-0.91	0.69	0.92	0.95	1.08	1.01
1990	-0.27	-0.45	-0.77	-0.36	-0.86	0.59	0.88	0.88	0.88	0.96
1991										
1992										
1993	-0.27	-0.50	-0.80	-0.46	-0.87	0.82	1.01	1.09	1.23	1.06
1994										
1995	-0.47	-0.57	-0.82	-0.44	-0.93	0.67	0.85	1.01	1.06	1.00
1996	-0.44	-0.53	-0.73	-0.55	-0.89	0.67	0.90	0.97	1.02	0.95
1997										
1998	-0.31	-0.45	-0.77	-0.50	-0.75	0.64	0.87	0.94	1.01	1.01
1999	-0.28	-0.42	-0.60	-0.33	-0.71	0.66	0.85	0.92	0.94	0.98
2000	-0.30	-0.44	-0.62	-0.35	-0.77	0.64	0.88	0.89	1.01	0.97
2001	-0.28	-0.34	-0.65	-0.24	-0.65	0.56	0.81	0.89	0.97	0.99
2002	-0.31	-0.44	-0.71	-0.28	-0.78	0.60	0.84	0.90	1.06	0.99
2003	-0.29	-0.45	-0.68	-0.39	-0.71	0.63	0.85	0.91	1.07	0.99
2004	-0.13	-0.28	-0.48	-0.15	-0.59	0.67	0.84	0.93	0.99	0.98
2005	-0.19	-0.32	-0.52	-0.21	-0.54	0.71	0.93	0.99	1.04	1.02
2006	-0.18	-0.34	-0.56	-0.24	-0.58	0.61	0.89	1.00	1.07	1.03

Note: Data are restricted to include respondents aged 22 or over only

Source: BSA surveys

positions on this scale, with those with no qualifications being the most distinct group and having value positions more to the left of this scale. Among the other educational groups, differences are relatively small, and in some years not linear (for example, in 2001 and 2002, those with degree level qualifications held values that were further to the left of the value scale than those with higher education qualification below degree level). It would be overstating things to suggest that education and left-right values are not related but the relationship is not simple and is mostly manifested around a distinction between those who have no formal qualifications and those with at least O levels and their equivalents.

The liberal-authoritarian scale shows a stronger and more consistent relationship with educational attainment, the general pattern being the one we would expect from other research findings; those with higher qualifications are more liberal in their values. However, on this scale, this distinction is seen most strongly for those with degree level qualifications. While there is a move towards less liberal values among the other education groups (as we move from the higher to the lower end of the qualifications scale), the differences between these four groups are much smaller than the difference between those with degrees and each of the other educational qualification groupings. This finding is consistent over the period 1986–2006. It is also consistent with the findings of Stubager (2008) in the Danish context. This difference is pursued further below; it is suggestive of something specific to the experience of degree level higher education which fosters substantially more liberal values than other levels of education.

Table 12.2 shows the mean values for the left-right and liberal-authoritarian scales for social class groups. As discussed above, the measure of social class changed slightly between 2000 and 2001, from the Goldthorpe schema, to the new NS-SEC analytical class groups. While these are broadly measured in the same way, there are slight differences between them as well as different category names. The top row of headings in Table 12.2 refer to the Goldthorpe groupings used 1986–2000, while the second row of headings in italics show the NS-Sec group names for 2001–2006.

Table 12.2 highlights the persistence of a relationship between social class and left-right values; in general, those in lower social classes hold value positions further to the left of this scale. This relationship appears to be most directly related to a manual/non-manual divide in terms of occupation type, where the Manual foreman and Working class groups (NS-SEC groups Lower supervisory and technical and Semi-routine and routine) have relatively similar value positions which are distinct from those held by the remaining three groups. This pattern persists throughout the period.

The relationship between liberal-authoritarian values and social class is less obvious than that for left-right values. However, those in the Salaried (Employers, managers and professionals) hold more liberal values than those in the other social class groups. Differences among the remaining class groups are broadly similar, though there is also clearly not a linear pattern here as in many of the years those in the Petty bourgeoisie (Small employers and own account workers) and the Manual foremen (Lower supervisory and technical) groups are less liberal than those in the Working class (Semi-routine and routine). Whilst these differences are

small, they suggest that there is no simple relationship between social class and liberal-authoritarian values.

Taking Tables 12.1 and 12.2 together it is clear that there is a stronger relationship between social class and left-right values and education with liberal-authoritarian values, in particular Table 12.2 appears to undermine the idea of an authoritarian working class, where class and education are not treated as synonymous. Tables 12.1 and 12.2 also suggest there is a good deal of stability in these relationships over time, and despite the much heralded “death” of social class, it remains strongly related to left-right values, whilst differences on the liberal-authoritarian scale relating to educational qualifications are not undermined by a general trend towards greater liberalism.

For reasons of space, the remainder of this chapter focuses exclusively on the more recent period, using pooled data from 2004 to 2006. However, as Tables 12.1 and 12.2 have shown, there is a good deal of stability in the relative positions of the different social groups overtime, even where there have been some changes in the absolute values positions for the British electorate as a whole.

Social Location and Social Values: An Education and Social Class Mapping

As shown above, both education and social class show clear links with social values, while education seems more closely linked to the liberal-authoritarian value scale and social class to the left-right value scale, there are some overlaps, with those in the highest social classes holding more liberal values whilst those with no formal educational qualifications are more likely to hold economic values on the left of the scale. Moreover, in Britain there is a strong relationship between educational attainment and social class position, such that any measure which looks at only one of these two is likely to also be drawing on the other. For example, when we consider the value positions of the highest social class group the Salariat, it will also be the case that a large proportion of this group have degree level qualifications. Thus, we are detecting not only a social class effect for this group but also potentially an education effect.

In order to try to disentangle this relationship we begin by looking at the value positions of “social locations” as defined by social class and education taken in combination. As we have five educational attainment groups and five social classes, this gives us a total of 25 “social locations”. By their nature many of these combinations are uncommon in society as a whole and therefore are represented by small samples on the surveys. Therefore, in this section we use pooled data from the BSA surveys, as described above.⁵ We begin by plotting the mean positions of these locations in social value space, defined with left-right position on the horizontal

⁵ This section uses only the most recent of the pooled cohorts, which uses data from 2004, 2005, and 2006. This is due to the limited space available for presentation of findings. The broad findings shown in this section are unchanged in the earlier cohorts.

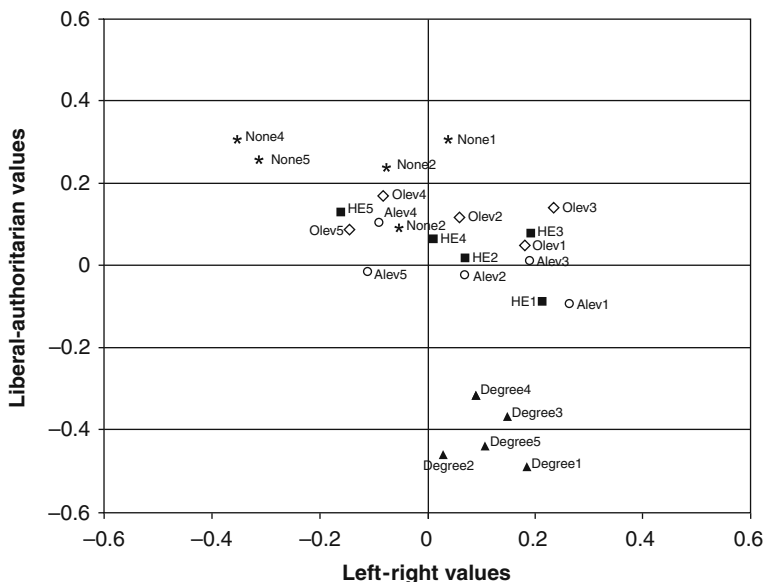


Fig. 12.2 25 groups plotted in the social value space defined by the two “core value” scales (Source: BSA surveys)

axis and liberal-authoritarian position on the vertical axis. In each case the mean position is measured as a deviation from the mean position of that scale in the British electorate overall.

Figure 12.2 plots each of the twenty-five groups in the social value space defined by the two core value scales. For ease of presentation each point is labelled according to the educational qualification level it represents followed by a number to represent the social class group. For example, degree 1 are respondents who held a degree level qualification and an occupation in the Employers, managers and professionals group while degree 5 are respondents who held a degree level qualification and an occupation in the Semi-routine and routine group. Figure 12.2 highlights key differences according to social location as defined by social class and educational attainment. Regardless of social class position, those with degree level qualifications occupy the bottom right quadrant of Fig. 12.2; that is, they have values which are more liberal than the mean position of the British public, although there is no clear modification of this according to social class, those in Lower supervisory and technical occupations and Small employers and own account workers being the least liberal of the social classes, within this attainment group. Differences within this group on the left-right value scale are small, and non-linear, with the greatest difference occurring between Employers, managers and professionals and those in Intermediate occupations.

At the other end of the educational attainment scale, those with no qualifications are on the whole the least liberal groups, with the exception of Employers, managers

and professionals within this qualification group. The remaining four groups are very similar in their values on the liberal-authoritarian scale but are distributed more widely along the left-right value scale. However, it is perhaps surprising to note that this does not follow a simple pattern of lower social classes having values more to the left of the scale or higher social classes being more to the right. In fact, it is Small employers and own account workers who have the values most to the right of this scale, within the no qualification group, whilst the Lower supervisory and technical occupation group have values most to the left on this scale.

The remaining three educational groupings form something of a cluster on the liberal-authoritarian scale, roughly at the overall mean position for the electorate as a whole. However, these groups are more widely spread along the left-right scale on the whole and this reflects class positions with those in Lower supervisory and technical occupations and those in Semi-routine and routine occupations holding values to the left of the overall mean and those in other social class groups holding values to the right of the overall mean.

Figure 12.2 allows us to see clearly which social locations may be viewed as outliers from the social norms relating to these two core value scales. Those with degree level qualifications are clearly the only groups which hold more liberal values than the public as a whole, while those in lower social classes, who also have no formal qualifications, tend to stand out in terms of holding values to the left of the public as a whole.

The Social Sources of Values in Britain

The mapping of social values by social location allows for an informal examination of the way in which social class and education interact in the production of social value positions. In this section, we formalise this exploration in a series of multi-variate models which allow us to explicitly examine the relative impact of class, education and their interaction on the value positions of the British public. All of the models are fitted using the data from the BSA 2000–2006 as a pooled sample. The sample is restricted to include only those over age 22. In each case, the dependent variables are the core value scales centred on the mean position.

The models test three key propositions. First, they test whether an allocation effects model is sufficient to explain the relationship between social values and education. Thus, we begin with a model which includes education as its key explanatory variable (while also controlling for gender and educational generation). In the next step, social class is added to this model. If the allocation effects model is a viable explanation of the education values link, the addition of social class to the model would be expected to reduce the education effects substantially and to a point at which they are no longer statistically significant.

The second set of models look at the interactions between education and social class (controlling for gender and educational generation). These models assess whether the effects of education differ among different social class groups. For

example, is the effect of degree level attainment smaller among the highest social groups than among lower social groups?

The final set of models look at whether the impact of educational attainment has changed over time; in particular whether it has changed in relation to the three educational generations discussed above. These models include interaction effects for educational generation with educational attainment with the key question being whether the effects of different levels of qualification are different in the three generations. For example, is the difference in social values between those with degrees and those with no formal qualifications smaller in the more recent generations, where degree attainment is more widespread.

Allocation Effects

Table 12.3 shows the results of linear regression models testing the impact of education on social values, before and after controlling for social class. Turning first to left-right values, there is a significant relationship between educational attainment and values before the introduction of the social class control measures. The introduction of the social class control measure does substantially reduce the size of these educational effects (as measured by the β parameters), as would be predicted by the allocation effects model. However, despite this reduction, the educational attainment coefficients remain both statistically significant and substantial in size, albeit that they are smaller than the coefficients for social class. This suggests that while some of the apparent relationship between education and left-right values is explained by allocation effects (as measured by social class), there remains an independent effect of education after social class has been taken into account. The coefficients suggest this effect is broadly similar in each of the educational attainment groups when compared to those with no formal qualifications, and in each case those with formal qualifications hold value positions to the right of those with no qualifications.

The liberal-authoritarian value scale shows a rather different pattern. Again before the addition of the social class control variable, there are substantial effects of educational attainment. However, in this case the introduction of the social class control measures does not substantially reduce these effects. Moreover, the social class effects are not themselves statistically significant on this value scale, with the exception of the Employers, managers and professionals group. The coefficients for the education effects suggest that, while each of the groups is more liberal than those with no qualifications, this effect is especially large for those with degree level qualifications, while for those with higher education qualification below degree level, A levels and O levels the effects are rather smaller and of a similar magnitude in each of these three groups.

The models in Table 12.3 suggest that the allocation effects model is not sufficient to explain the relationship between education and social values, while there is an element of this in effect on the left-right scale, it adds virtually nothing to the explanation of the education effects on the liberal-authoritarian scale.

Table 12.3 Core value regression model parameters

	Left-right values				Liberal-authoritarian values			
	β	St. error	β	St. error	β	St. error	β	St. error
Constant	-0.26	0.02	-0.38	0.02	0.25	0.02	0.26	0.02
Educational qualifications (none)								
Degree	0.38	0.02	0.21	0.03	-0.68	0.02	-0.60	0.02
HE < degree	0.35	0.03	0.21	0.03	-0.24	0.02	-0.20	0.02
A level	0.32	0.03	0.23	0.03	-0.22	0.02	-0.20	0.02
O level	0.24	0.02	0.19	0.02	-0.11	0.02	-0.10	0.02
Gender (Male)								
Female	0.06	0.02	0.09	0.02	0.02	0.01	0.02	0.01
Educational generation (Pre 1972)								
Post 1972	0.02	0.02	0.03	0.02	-0.08	0.02	-0.08	0.02
Post 1986	0.00	0.02	0.03	0.02	-0.08	0.02	-0.08	0.02
Social class (semi-routine and routine)								
Employers, managers and prof.			0.31	0.02			-0.11	0.02
Intermediate occupations			0.17	0.03			-0.02	0.02
Small employers and own account			0.35	0.03			0.04	0.03
Lower supervisory and technical			0.04	0.03			0.07	0.02

Note: Bold type indicates statistical significance at the 95% level

Source: Author’s analysis based on BSA surveys

Education and Social Class Interaction Effects

The model results in Table 12.3 have suggested that we cannot explain the relationship between education and social values solely by reference to the social class locations of those with particular educational experiences. However, in these models education and social class are treated as markers of social location which are independent of each other. This is clearly not the case, although it is by no means a perfect match there is a tendency for those with higher levels of qualifications to end up in higher social groups. In this section we present models which look at the way in which education may interact with social class in the production of social values. For example, whilst we have seen that those with degree level qualifications are more liberal than those with no qualifications, does this remain the case for those with degree level qualifications who are in occupations in lower social classes?

In order to test this proposition, a series of interaction effects between educational attainment and social class are added to the models already presented in Table 12.3. This formalises the education and social class mapping of Fig. 12.2, while also controlling for gender and educational generation.

The interaction effects between education and social class (Table 12.4) suggest that for left-right social values there is an additional effect of holding a degree

Table 12.4 Core value regression modes, including education and social class interactions

	Left-right values		Liberal-authoritarian values	
	β	St. error	β	St. error
Constant	-0.38	0.02	0.27	0.02
Educational qualifications (none)				
Degree	0.41	0.08	-0.65	0.07
HE < degree	0.14	0.07	-0.10	0.06
A level	0.18	0.05	-0.24	0.05
O level	0.15	0.04	-0.15	0.03
Social class (semi-routine and routine)				
Employers, managers and prof.	0.27	0.04	-0.17	0.04
Intermediate occupations	0.22	0.05	-0.03	0.04
Small employers and own account	0.38	0.05	0.05	0.04
Lower supervisory and technical	-0.02	0.04	0.05	0.03
Gender (male)				
Female	0.09	0.02	0.02	0.01
Educational generation (Pre 1972)				
Post 1972	0.03	0.02	-0.08	0.02
Post 1986	0.03	0.02	-0.08	0.02
Education \times Social class interactions				
Degree \times Emp.	-0.18	0.09	0.11	0.08
Degree \times Inter.	-0.31	0.11	0.01	0.09
Degree \times Small emp.	-0.32	0.12	0.00	0.10
Degree \times Lower Sup.	0.02	0.12	0.07	0.11
HE \times Emp.	0.11	0.09	-0.06	0.07
HE \times Inter.	0.01	0.11	-0.12	0.09
HE \times Small emp.	-0.01	0.11	-0.10	0.10
HE \times Lower Sup.	0.20	0.10	-0.11	0.09
A level \times Emp.	0.13	0.07	0.08	0.06
A level \times Inter.	-0.04	0.09	0.06	0.07
A level \times Small emp.	-0.05	0.09	-0.03	0.08
A level \times Lower Sup.	0.07	0.08	0.07	0.07
O level \times Emp.	0.08	0.06	0.12	0.05
O level \times Inter	-0.02	0.07	0.06	0.06
O level \times Small emp.	0.03	0.08	0.01	0.07
O level \times Lower Sup.	0.11	0.06	0.04	0.05

Note: Bold type indicates statistical significance at the 95% level

Source: Author's analysis based on BSA surveys

level qualification for those in the highest social class groups. This effect works to reduce the difference between those with no qualifications and those with degree level qualifications in these social classes; in particular those with degrees in these groups have social values more to the left than we would expect from their social class alone. Whilst this is an important finding, it cannot be used alone to help distinguish between developmental and socialisation accounts of the education-value link. While the developmental model would hold that those with higher level qualifications should be more sympathetic to disadvantaged groups and to

economic aid (redistribution) for these groups, the socialisation model would suggest that higher level qualifications would lead to greater agreement with the “official” or “ideal” position on these issues. Although we do not have evidence on the “official” or “ideal” culture of British society, it is possible that this culture also includes a commitment to economic redistribution rendering the two perspectives indistinguishable.

There are no significant interaction effects between education and social class on the liberal-authoritarian value scale. Moreover, as Table 12.3 showed, with the exception of Employers, managers and professionals, there are no significant effects of social class on this scale. This suggests that social (non-economic) values are not related to social class but are strongly related to education levels in the UK. Table 12.4 also highlights the distinctive profile of those with degree level qualifications, with this group being considerably more liberal than those with other levels of qualification. This finding lends some support to the socialisation model of the education – values link. If we follow the cognitive model, we might expect a more linear trend as additional time spent in education should add to cognitive development. In contrast, we find that those with higher education qualifications below degree level, those with A levels and those with O levels each occupy similar value positions on the liberal-authoritarian scale. This suggests there is something specific about degree level education in Britain which produces particularly liberal positions, however it does not conclusively undermine the cognitive model as there may also be features of the higher education system which produce particularly high levels of “rational thinking” compared with other levels of educational qualifications.

Educational Expansion and Education Effects

The interaction effects between education and educational generation shown in Table 12.5 test whether the effect of a specific level of educational qualification on values is the same regardless of when it was achieved. Both direct effects models would suggest that increased educational participation should lead to changes in social values at the aggregate level. However, this can only occur if educational expansion does not, in itself, change the relationship between education and values.

Table 12.5 indicates that there are no significant interaction effects between education level and educational generation on the left-right scale. Thus, we may conclude that the effect of left-right values of, for example, a degree level qualification is the same in each generation. There are, however, significant interaction effects on the liberal-authoritarian value scale. Each of the interaction effects for the post-1986 generation is significant. Whilst the general trend is for more highly educated groups to be more liberal than those with no qualifications, the interaction effects suggest that these differences are reduced. This implies that, as educational expansion occurs, the effects of educational qualifications on liberal-authoritarian values are reduced.

This again undermines the potential of the cognitive model to explain the educational effect on social values. Whilst failing to provide conclusive evidence

Table 12.5 Core value regression models, including education and generation interactions

	Left-right values		Liberal-authoritarian values	
	B	St. err	B	St. err
Constant	-0.38	0.02	0.29	0.02
Educational qualifications (none)				
Degree	0.17	0.04	-0.70	0.03
HE < degree	0.19	0.04	-0.30	0.03
A level	0.26	0.04	-0.24	0.04
O level	0.21	0.03	-0.12	0.03
Social class (Semi-routine and routine)				
Employers, managers and prof.	0.31	0.02	-0.10	0.02
Intermediate occupations	0.17	0.03	-0.03	0.02
Small employers and own account	0.35	0.03	0.04	0.03
Lower supervisory and technical	0.04	0.03	0.07	0.02
Gender (Male)				
Female	0.09	0.02	0.02	0.01
Educational generation (Pre 1972)				
Post 1972	0.03	0.04	-0.15	0.03
Post 1986	0.05	0.05	-0.31	0.04
Education × Education generation				
Degree × Post 1972	0.04	0.06	0.10	0.05
Degree × Post 1986	0.04	0.07	0.36	0.06
HE × Post 1972	0.04	0.06	0.19	0.05
HE × Post 1986	0.01	0.08	0.38	0.06
A level × Post 1972	-0.05	0.06	0.08	0.05
A level × Post 1986	-0.07	0.07	0.25	0.06
O level × Post 1972	-0.01	0.05	0.07	0.05
O level × Post 1986	-0.08	0.07	0.19	0.06

Note: Bold type indicates statistical significance at the 95% level

Source: Author's analysis based on BSA surveys

against the model, it suggests that the impact on values is smaller where the experience of education is wider. The cognitive model cannot easily incorporate this finding, unless it can be demonstrated that the expansion of education has led to changes in the nature of the education offered such that the development of rational thinking is reduced as education is expanded.

The socialisation model must also be modified to accommodate this finding but this is more easily achieved. It is clear that where education expansion occurs a wider cross-section of society are likely to be entering higher levels of education than before, this may mean that the base values and experiences with which students enter education are themselves diversifying, potentially creating a degree of resistance to the socialisation effects of education. This is highly speculative and cannot be empirically verified with the data available here. However, it indicates a further direction research may take in pursuing the education-value link.

Conclusions

This chapter did not aim to provide a comprehensive test of different mechanisms which might explain the relationship between education and social values. However, by examining in detail the way in which education interacts with social class and educational generation it has been possible to make some speculations as to the model most likely to explain this relationship.

First, by considering education level and social class as distinct explanatory variables, the allocation model is largely undermined. Whilst there is some reduction in the effect of education on the left-right value scale after controlling for social class, there is virtually no reduction in the effect on the liberal-authoritarian scale. This suggests that the link between education and liberal social values cannot be conceived simplistically as a result of the distribution of those with educational qualifications within the existing social class positions.

The direct effects models are particularly difficult to adjudicate between as they make largely the same predictions about the relationship between education and social values. The evidence presented here tends to favour the socialisation model over the cognitive model, although it is possible to make arguments for both. In particular, there is a break in the relationship between education and social values at degree level qualifications, with those holding degree level qualifications being considerably more liberal than those with other levels of qualification. This suggests there may be something about degree level education per se which produces liberal social values. Further investigation of differences within degree level qualifications (of the kind provided by Van de Werfhost and de Graaf, 2004) may prove to be of value in untangling the different direct effects models.

Finally, the effect of an expanded education system is worthy of further attention. The initial exploration of the impact of this provided here suggests that where educational expansion occurs the impact of different levels of qualifications is reduced. In order to pursue this in greater detail, longitudinal data should be used which allows the social locations from which students enter education to be controlled for as well as the social locations in which they find themselves after achieving their educational qualifications.

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Chapter 13

Re-evaluating the Links Between Social Trust, Institutional Trust and Civic Association

Nick Allum, Roger Patulny, Sanna Read and Patrick Sturgis

Introduction

A multitude of studies into the links between trust and membership of associations have arisen in the decade since Putnam popularised the study of social capital in the early to mid 1990s (Brehm and Rahn, 1997; Claibourn and Martin, 2000; Paxton, 1999; Putnam, 2000). Interest has been stimulated by Putnam's observations of declining social capital in the United States, as measured by falling memberships in several large traditional voluntary organisations, and also declining rates of social trust in the US as measured by the General Social Survey and political participation, as measured in National Election Surveys (Putnam, 2000). These observations are important because of the host of positive social outcomes reported to be associated with trust and membership at both an individual and country level: GDP per capita (Knack and Keefer, 1997; La Porta, 1997; Putnam, 2000), reduced crime (Putnam, 2000; Sampson et al., 1997) and improved health (Kawachi et al., 1999; Putnam, 2000).

The evidence concerning mechanisms explaining the relationships between trust and memberships is mixed, but the theoretical contentions themselves are neatly summed up by Newton and Norris (2000) who outline three theories to explain the relationship between trust and membership. The first of these is what they call the *social and cultural* theory, which suggests that "the ability to trust others and sustain cooperative relations is the product of social experiences and socialisation, especially those found in the sorts of voluntary association of modern society that bring different social types together to achieve a common goal" (Newton and Norris, 2000, p. 6).

This is the conventional view, supported in the ideas of Putnam (2000) and Paxton (1999), that people become socialised into caring and associating with strangers through their voluntary activities, and that the appearance of grass-roots voluntary organisations is the forerunner for social trust in society at large. Such a

N. Allum (✉)

Department of Sociology, University of Essex, Colchester CO4 3SQ, UK
e-mail: nallum@essex.ac.uk

view is not antithetical to the influence of government, and some authors advocate an important role for government in supporting social trust and organisations once they appear (Szreter, 2002), but still nonetheless assert that voluntary organisations appear *first* and social trust and political trust/good government *second*, as a consequence of grassroots organisation of civic activity. This social and cultural theory essentially suggests that trust appears “from the bottom up”.

The second of these theories is what they call the institutional performance theory, which says that “because all citizens are exposed to government actions, confidence in political institutions is likely to be randomly distributed amongst various personality types and different cultural and social types. Government institutions that perform well are likely to elicit the confidence of citizens; those that perform badly or ineffectively generate feelings of distrust and low confidence” (Newton and Norris, 2000, p. 7).

This is the view, advocated by political scientists such as Rothstein and Uslaner (2006), Delhey and Newton (2005), Newton (1997) and Newton and Norris (2000), that it is effective government that enables social trust and association membership to appear. They argue that good government is the most essential feature for generating citizen trust and a civil society capable of supporting civic participation. This institutional performance theory essentially suggests that trust appears “from the top down”.

The third view outlined by Newton and Norris is what they call the *social psychological* theory. “Feelings of inner goodness, trust in others and oneself, and optimism form a “basic trust” personality trait that is formed in the first stages of psychological development as a result of the mother-baby feeding experience. Basic personality traits, it is argued, are enduring and general, influencing many aspects of behaviour” (Newton and Norris, 2000, p. 5).

Uslaner’s perspective is close to this conception of trust (Uslaner, 2002): generalised trust in strangers is a *norm* inculcated at an early age – existing prior to membership – and should lead to those who trust self-selecting themselves into voluntary associations and practices rather than the reverse. The social psychological view essentially suggests that trust largely exists as an aspect of personality, with considerable resistance to short-term changes in circumstances over the lifecourse or in the external political climate.

In this chapter, using cross-national survey data, we explore the linkages between social trust, political trust and the propensity for civic participation. We go on to examine what these linkages look like when we take other relevant individual and group variables into account and derive some implications for theories of trust and civic participation.

Social Trust, Political Trust and Civic Participation

A number of empirical studies have examined the relationships between trust and civic participation. Putnam (2000) finds that both trust and membership are in decline in the US, and concludes the two are linked. A decline in volunteering and

civic participation membership leads to declining social (and political) trust. The idea that volunteering and membership drives trust is also true for Hall (1999) and Grenier and Wright (2003), who point to a similar decline in Britain.

A few studies using panel data have been used to examine the relationship between the propensity to trust and the probability of joining a civic or voluntary organisation. Claibourn and Martin (2000) fail to find a link, using panel data from the Michigan Socialization Studies whereas, using the same data, Stolle and Hooghe (2004) find that parental trust and the level of parental civic participation influences adult trust in children. Li et al. (2005), using the British Household Panel Survey (BHPS), find that lagged membership is a predictor of social trust, but this disappears once lagged trust is controlled. Sturgis et al. (forthcoming), also using the BHPS and a fixed effects model, find that only changes in educational status lead to changes in social trust. Joining does not lead to trusting.

Political trust has also been linked to social trust. Putnam (2000) notes that, alongside the decline in social capital in the US, the National Election Surveys register a decline in voting turnout, party identification, and campaign attendance, and from the General Social Survey, a decline in attendance at town meetings and petition signing. Patterson (1999) finds a positive relationship between trust and confidence in the executive branch of government. Brehm and Rahn (1997) analyse repeated cross-sections from the US General Social Survey (GSS). They find reciprocal relations between social and political trust and joining, but conclude that joining causes trusting more than the reverse. Using the same data, Paxton (1999) finds a positive association between social trust and political performance, noting how trust levels fluctuate with political scandals (i.e. Watergate, Iran-Contra). Keele (2004) uses a time series analysis of membership in associations, political trust and government performance in the US, and finds that increased levels of lagged membership predict subsequent trust in government. Congressional performance and political scandals also influence trust in government.

In addition to this work that has examined relationships between trust and joining largely at the individual level, other work has looked at the variation of trust and participation cross-nationally. In other words, these relationships have been mapped at the aggregate level. La Porta (1997), using the World Values Survey (WVS) and other international data sets, finds positive associations between generalised trust and governmental efficiency, measured on factors such as efficiency of the judiciary, bureaucratic quality, tax compliance, and corruption. Norris (2001) finds that across countries social trust too is related to the level of national socio-economic democratic development whilst civic participation is not. Newton and Norris (2000) examine relations between social trust and political trust using the WVS, finding that confidence in government is correlated with generalised social trust. The link between trust and the penetration of voluntary institutions is much weaker. Delhey and Newton (2005) also find that government matters, that quality of government is positively correlated with social trust, whilst membership levels in voluntary organisations is not. Rothstein and Uslaner (2006) also find that government corruption is negatively correlated with social trust. Their main focus is an analysis of the effect of inequality upon social trust, but central to this analysis is the idea that poorly functioning governments operating in highly unequal societies

cannot establish universal systems of welfare, which erodes the basis for widespread social trust.

Other Influences on Trusting and Joining

Most of the empirical work reviewed above has focused on the links between trusting and joining. However, there are clearly other factors that affect both trust and participation. In the analysis presented in this chapter, we examine the link between trust and joining while conditioning on a range of other individual level variables. We briefly review what is known about these variables and their links with trust and civic participation.

Age is generally reported to have an effect on social trust. Putnam (2000) argues in “Bowling Alone” that trust is declining as a “long civic” generation of people who are more trusting is being replaced by generations that are less trusting. Certainly, generalised social trust is found to increase with age, although it is not clear whether these are age, period or cohort effects (Glaeser et al., 1999; Patterson, 1999; Stone and Hughes, 2002; Pennant, 2005). Uslander (2002) uses GSS data to show that whilst initially the most trusting group, Putnam’s civic generation have become relatively *less* trusting in recent years.

Education is without doubt the most consistent and strongest predictor of generalised trust in the literature (Glaeser et al., 1999; Patterson, 1999; Temple, 2001; Li et al., 2005; Pennant, 2005; Hughes et al., 2000; Stone and Hughes, 2002; Inglehart, 1999; Leigh, 2006). In particular, those who are educated to degree level tend to have more trust in others. Income too is also commonly found to be associated with social trust (Inglehart, 1999; Glaeser et al., 1999).

Gender is sometimes found to be related to trust, although results tend to be mixed. Hogan and Owen (2000), Stone and Hughes (2002) and Leigh (2006) find that women experience more generalised trust, whilst Glaeser et al. (1999) and Patterson (1999) find that women in the US experience less generalised trust. Claibourn and Martin (2000) find that women are more trusting while Stolle and Hooghe (2004) find no relation between gender and trust.

Marital status is an individual level variable which may plausibly have an impact on social trust; the effects of divorce for example, may be quite significant on people’s capacity to trust. Equally, it may be that people with a certain disposition to trust select into marriage and/or divorce, so that marital status acts as signifier of certain personality types. For example, in the US, Patterson (1999) finds marriage to be a predictor of higher generalised trust.

Finally, it is important to look at whatever direct measures of personality exist in the survey data, and one of the few areas that has been investigated in some detail is that of well-being and happiness. Emotion-based survey measures of well-being – such as happiness and satisfaction – have many of the characteristics of stable personality traits. A number of authors have undertaken empirical investigations

into the links between happiness and satisfaction, and social trust. Putnam (2000) notes that significant happiness gains come from being a member of a voluntary association and from the act of volunteering, whilst significant satisfaction gains come from marriage. Internationally, Veenhoven (1996) notes that satisfaction appears to be higher in more trusting, richer countries and for private, stable, experiential domains (health, marriage, housing and work).

The Present Study

Although a wealth of research, then, has been carried out on social trust, political trust and civic association, the relationships between these factors are not clear. We address two aspects of the literature. Firstly, we present a measurement model of social trust, political trust and civic association using European data. The model is based on the same general principles as that of Brehm and Rahn (1997). The previous work of Rothstein and Stolle (2002) suggests that both at a macro and micro level, interpersonal trust is more strongly related to trust in law and order institutions than to trust in politics. We compare the correlations between these three factors of trust. Secondly, we examine the role of individual background and country in the relationship between social and political trust, and civic association. We fit models conditioning on a range of individual level characteristics that could be considered common causes of trust and joining. We also include fixed effects for country, so as to eliminate demographic compositional differences in national populations from our analysis of individual level measures of trust and joining.

Data and Methods

Sample

We have used data from the 2002 round of the European Social Survey (ESS), which carried out face to face interviews with citizens from 22 European countries and Israel (see www.europeansocialsurvey.org). In 2002, the ESS asked a series of questions about trust and social capital, including whether or not respondents had recently been members of a range of civic, professional and leisure associations. We have used data from only 19 of the countries due to some questions not being asked in interviews in all countries.

In each of the 19 nations, probability sampling designs of varying kinds were used that were designed to yield an effective sample size (after taking account of design effects) of at least 1,500 respondents per country. The total achieved sample size used for the following analyses, after listwise deletion of cases with data for one or more variables missing, is 38,959.

Measures

The key variables that we use are:

- Three measures of generalised social trust that have been used in previous surveys (e.g. World Values Survey, European Values Survey, General Social Survey):
 - Most people can be trusted or you can't be too careful?
 - Most people try to take advantage of you, or try to be fair?
 - Most of the time people are helpful or mostly looking out for themselves.

The items are measured on an 11-point Likert scale ranging between 0 and 10. A higher score indicates a stronger trust.
- Four indicators of trust in political and legal institutions:
 - trust in country's parliament;
 - trust in politicians;
 - trust in the legal system; and
 - trust in the police

The items are also measured on an 11-point Likert scale ranging between 0 and 10. A higher score again indicates stronger trust.
- Civic association was measured by the number of memberships that the respondent has of 11 different types of association in the last 12 months:
 - cultural or hobby activity;
 - religious or church organisation;
 - political party;
 - social club;
 - trade union;
 - business, professional or farmers' organisation;
 - consumer or automobile organisation;
 - science, education or teacher organisation;
 - humanitarian organisation;
 - environmental, peace or animal organisation; and
 - other voluntary organisation.

Additional Covariates

These include:

- Sociodemographic:
 - degree – respondent has a university degree;
 - high income – respondent is in the top quartile of national income distribution;
 - age of the respondent;
 - male – respondent is male; and
 - married – respondent is married.
- Happiness: A latent variable measured with two 11-point indicators:

- “How satisfied are you with life in general?”
- “How happy are you?”

Countries

The countries in this study are Austria, Belgium, Germany, Denmark, Spain, Finland, France, United Kingdom, Greece, Hungary, Ireland, Israel, Italy, Luxembourg, The Netherlands, Norway, Poland, Portugal and Sweden. Dummy variables for all countries except UK (reference category) were used.

Analysis

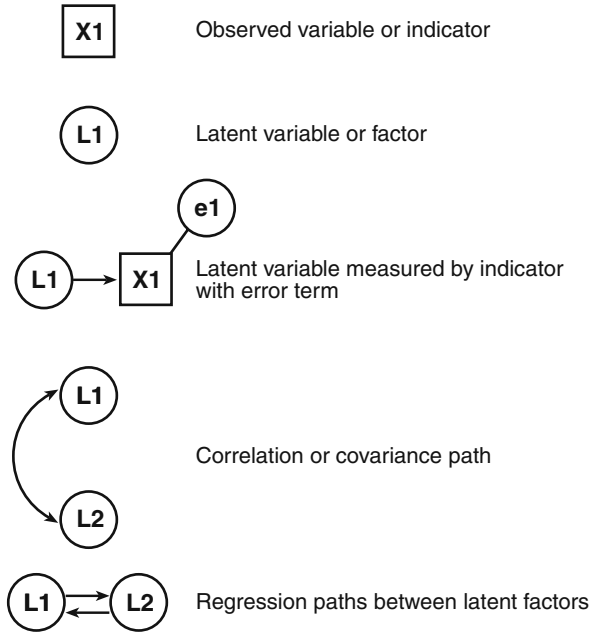
Structural Equation Modelling

Structural equation models (SEM) were fitted using Mplus software (Muthén and Muthén, 2007). SEM is based conceptually on path analysis (Wright, 1921). Both path analysis and SEM use graphical symbols to represent statistical models. The strength of SEM is that it allows the researcher to specify complex theoretical models and to test them explicitly. SEM can be thought of as incorporating factor analysis and regression under one general framework. It is, in common with these two techniques, primarily a linear method, although recent theoretical and computational advances are making it possible to use non-linear models in SEM. It is sometimes known as covariance structure analysis because of the basic principles that underpin it.

The graphical symbols used in SEM to represent the various elements of the model are shown in Fig. 13.1. Observed variables are represented by square or rectangular boxes. Unobserved or latent variables are shown as circles or ellipses. Regression paths between variables are shown as single headed arrows. Covariance or correlation paths are represented as double-headed arrows. A great advantage of SEM is that theoretical relationships between variables can be modelled at the latent level by using multiple indicators of the relevant constructs. Indicators are assumed to be composed of true score on the construct and residual “error” variance. Each indicator variable has an error term, usually estimated within the model or sometimes fixed or constrained by the researcher to some a priori value. Latent variables are assumed to cause the observed scores on the indicators. By using multiple indicators, one can obtain a much purer measure of the construct which is embodied in the latent variable, while an estimate of error variance is produced that corresponds to the variance left unexplained in each manifest variable by its latent variable(s).

In most situations where multiple manifest variables are used as indicators of a single latent construct, models will be “overidentified”. That is to say that there are more pieces of information available than are minimally required to estimate all the required parameters. Because of this, it is possible to assess a model for its

Fig. 13.1 Symbols used in SEM



overall fit with the data. This is different to most conventional regression models that are “just identified” – having as many data moments as unknown parameters (saturated models). In the latter case, there is only one unique set of parameters possible for any combination of model and sample data and these reproduce the observations perfectly. The upshot is that, in SEM, a single model, or several alternative explanatory models, can be proposed and evaluated empirically for their fit to the observed data.

The process of testing and developing models in SEM is often conceptualised as a two-step process. The first step is to test a measurement model. This is the stage at which one evaluates how well the indicators together measure the constructs that they are supposed to. This is also known as confirmatory factor analysis (CFA). In the second stage, theoretical relationships between latent constructs are modelled and can be tested. While there has recently been some debate around the usefulness of this step by step approach (Hayduk and Glaser, 2000; Mulaik and Millsap, 2000), it is widely recommended.

Testing for Model Fit

The discrepancy between observed and implied covariance matrices is distributed as chi square. This provides the basis for overall tests of model fit such that chi square is higher relative to its degrees of freedom as a function of increasing discrepancy. This means that a non-significant chi square (i.e. a low value, relative to degrees of

freedom) is indicative of good fit. In addition to testing the fit of a single model, the chi square test can be used to evaluate a series of nested models.

The greater the power of a test, the more sensitive it is to model misspecification. The chi square test becomes more sensitive as a function of sample size, to the effect that with large samples, even despite the observed data being reproduced closely by the model, a significant lack of fit will be reported according to the chi square statistic. If one shares Box's view that "all models are wrong but some are more useful than others" (Box, 1979), one needs some supplementary way of deciding on the fit of models that takes into account closeness of approximation, parsimony and so forth. Accordingly, various additional indices of approximate fit have been developed. We follow Hu and Bentler's recommendation (Hu and Bentler, 1999) in reporting two or three of these in addition to chi square.

The comparative fit index (CFI) assesses the fit of the model relative to another model – usually the null model or independence model where the implied covariance matrix is made up of 0 s. The idea is to compare the fit of the proposed model to another baseline model and see how much better the hypothesised model fits in comparison. Better fit is indicated by higher values tending to a maximum of 1.

The root mean square error of approximation (RMSEA) gives a measure of error per degree of freedom of the fit of the population covariance matrix implied by the model to the population covariance matrix itself (Steiger, 1990). It has a known sampling distribution and an associated confidence interval. It will favour models with more overidentifying restrictions, independent of sample size. The argument for its use rests on the presumption that models with many restrictions constitute stronger theoretical models in the sense that they are more easily falsified (they have more degrees of freedom). The temptation when faced with a poorly fitting model and a large sample size is over-fitting – freeing many parameters that were originally fixed. This runs the risk of capitalising on chance sampling variability and results in models that are unlikely to be replicated. A measure of misfit per degree of freedom is therefore useful as a heuristic for assessing closeness of fit. Mathematical derivations of these fit statistics can be found in Arbuckle and Wothke (1999).

The use of approximate fit statistics and the assessment of model fit in general are two of the most hotly debated areas of SEM. The latest Monte Carlo studies, widely considered as useful, have been carried out by Hu and Bentler (1999). They recommend reporting pairs of fit indices including RMSEA and CFI. A value at or below 0.08 for RMSEA and at or above 0.95 for CFI gave acceptable Type I and II error rates in their simulation study. This is the strategy that we employ here, in combination with reporting the Chi Square statistic.

Analytic Strategy

To estimate the latent variables for generalized, political and legal trust and civic association, a series of confirmatory factor analyses were undertaken. The measurement models for each of these constructs were then combined to analyse the associations between the latent factors. In a second stage, individual level

covariates were added to the model and in order to observe the effect on the between-factor correlations. In the final phase, the dummy variables representing European countries were added.

Results

Descriptive Results

Columns two and three of Table 13.1 present the distribution of the trust variables. The mean scores for the social trust variables show that Europeans are slightly more likely to think that people will be fair than that they can be trusted, while on average, people are believed to be mostly looking out for themselves. Levels of institutional trust tend to be lower than for social trust, with the country's parliament being seen as more trustworthy than politicians themselves. The police and legal system fare much better than the institutions of politics. The mean score for the police is higher than all other ratings of trustworthiness, with the legal system as a whole coming a close second.

Column one of Table 13.2 shows the percentage of Europeans who have in the 12 months prior to the survey participated in the various civic and professional organisations about which respondents were asked. They have been split into three

Table 13.1 Distributions and factor structure of trust

Key variables	Mean	SD	Standardised. loadings for a 3-factor model
Social trust			
Most people can be trusted or you can't be too careful	5.02	(2.49)	0.73
Most people try to take advantage of you, or try to be fair	5.59	(2.41)	0.78
Most of the time people helpful or mostly looking out for themselves	4.77	(2.41)	0.65
Trust in politics			
Trust in country's parliament	4.92	(2.44)	0.78
Trust in politicians	3.87	(2.32)	0.88
Trust in law			
Trust in the legal system	5.51	(2.59)	0.72
Trust in the police	6.22	(2.48)	0.83

Source: European Social Survey

Table 13.2 Distributions and factor structure of associational membership variables

	%	Stand. loadings for 1-factor solution	Stand. loadings for 3-factor solution
Cultural			
Cultural/hobby activity organisation, last 12 months: member	14.7	0.59	0.57
Religious/church organisation, last 12 months: member	13.1	0.42	0.45
Political party, last 12 months: member	5.1	0.48	0.53
Social club etc., last 12 months: member	11.4	0.48	0.57
Other voluntary organisation, last 12 months: member	6.5	0.46	0.55
Professional			
Trade union, last 12 months: member	21.5	0.46	0.58
Business/profession/farmers organisation, last 12 months: member	8.8	0.51	0.54
Consumer/automobile organisation, last 12 months: member	17.6	0.57	0.58
Science/education/teacher organisation, last 12 months: member	6.8	0.56	0.56
Campaigning			
Humanitarian organisation etc., last 12 months: member	5.8	0.64	0.76
Environmental/peace/animal organisation, last 12 months: member	6.0	0.60	0.71

Source: Authors' analysis based on European Social Survey

groups on the basis of the apparent similarity of function and/or topic area of each organisation. This a priori method of grouping is used later on in developing the most appropriate measurement model for the items. The most widespread membership is that of a trade union, with around one fifth of respondents reporting membership. Consumer organisations, cultural and religious organisations are the next most popular, with between 13 and 18% reporting having been a member over the previous 12 months.

Confirmatory Factor Analysis

Confirmatory factor analysis (CFA) was carried out to construct measurement models for the seven trust indicators and the eleven civic association variables. For the trust indicators, a model that specified three factors, social trust, trust in politics and trust in law, fitted fairly well (chi square = 1,267, df = 13, CFI = 0.99, RMSEA = 0.05). The correlation between social trust and political trust was estimated at 0.48, between social trust and legal trust at 0.43 and between political trust and legal trust at 0.76. The factor loadings for each of the indicators are shown in Table 13.1.

For civic association, two alternative models were tested. A one factor model included all items loading on one single latent factor “Joining”. An alternative, three factor, model divided indicators into the groupings shown in Table 13.2 – “cultural”, “professional” and “humanitarian”. Both models fitted acceptably well (one factor: chi square = 1,024, df = 43, 0.95, CFI = 0.95, RMSEA = 0.024; three factor: chi square = 703, df = 42, CFI = 0.97, RMSEA = 0.020). In the three factor model, cultural associations correlated 0.76 with professional associations, campaigning associations correlated 0.71 with cultural associations and 0.73 with professional associations. The factor loadings for the items in this model are presented in Table 13.2. Compared to the one factor model, the three factor model for civic association had a slightly better fit, and was chosen to be used in the further analyses for this reason, as well as the face validity of the distinction made between the three groups.

Having generated a set of latent variables to use as indicators, the next step was to study the relationships between the trust and joining. The first model specified single factors for social trust, trust in politics, trust in law, and three associational membership factors. This model fitted well to the data (chi square = 1,496, df = 80, CFI = 0.97, RMSEA = 0.022), but with indications that a second-order factor model might be a more parsimonious representation of the relationships. The model indicated that the relationship between social trust and trust in politics, and between social trust and trust in law were very similar (the path estimates were 0.48 and 0.44, respectively). A formal test of this in a model that constrained the two estimates to be equal indicated that the parameter estimates were not statistically significantly different from each other. Therefore, in another model, we specified a single second-order factor for “institutional trust” identified with two separate first order factors denoting trust in legal system and police and trust in politicians and parliament.

Along similar lines, a single second-order factor for joining was evaluated with three first-order factors measuring cultural, professional and campaign associations. This final measurement model also fitted well and captures the idea that the three elements of social capital – political trust, social trust and civic engagement – are empirically distinct but related concepts. Social trust and institutional trust are quite strongly correlated while joining is slightly less strongly related to both forms of trust. The model with estimates of factor loadings and between factor correlations is shown in Fig. 13.2.

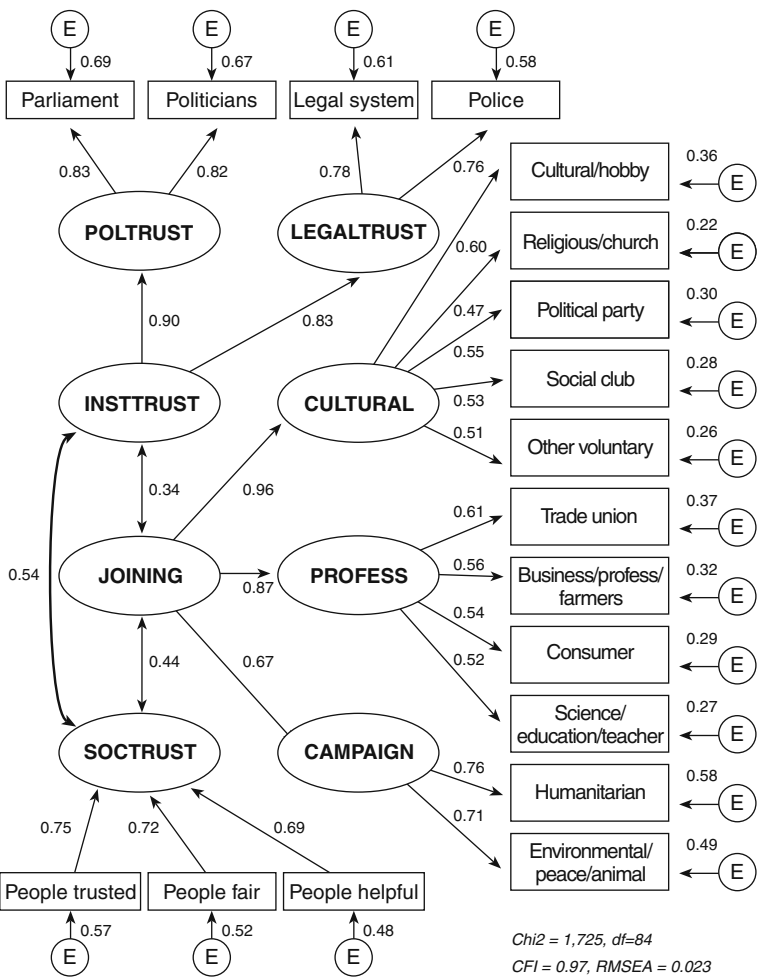


Fig. 13.2 Measurement model for trusting and joining (Source: Authors’ analysis based on European Social Survey)

Adjusting the CFA with Covariates

In the next phase of analysis we fitted a succession of models where we added a range of covariates to the basic CFA as predictors of all three latent trust and joining variables. The purpose was to examine what happens to the between-factor correlations when different background factors were controlled. If the link between, for instance, interpersonal trust and associational membership is a direct one, then controlling for another covariate, say gender, will not produce a lower partial correlation between trusting and joining. If, however, the zero-order correlation is

Table 13.3 Correlations between institutional trust, social trust and joining for three models

	Social trust with institutional trust	Social trust with joining	Institutional trust with joining
Model 0 (unadjusted)	0.54	0.44	0.34
Model 1 (+sociodemoms)	0.50	0.33	0.25
Model 2 (+happiness)	0.35	0.21	0.15
Model 3 (+countries)	0.29	0.08	0.07

Source: Authors' analysis based on European Social Survey

in fact due to a covariate being a common cause of both trusting and joining, we should see the partial correlation decline when controlling the covariate.

In model 1, we enter the sociodemographic variables into the equation. The model fitted well to the data (chi square = 3,882, df = 144, CFI = 0.92, RMSEA = 0.031). The correlation between trusting and joining declines for both types of trust but the relationship between social and institutional trust is highly resistant, falling only by a non-significant increment (see the estimates in Table 13.3). The relationships between the sociodemographic variables and trust and joining were significant. Because of the substantial number of variables in the model, the estimates for the covariates are not shown, but the relationships can be summarised as follows. Men, people with degrees, people with a higher income and older people were more likely to trust in institutions, while those who were married and from younger cohorts were less trusting. A similar pattern holds for social trust except that men were less likely to trust. In regard to joining, again higher levels of education and income were strongly predictive of being a member of more associations. Men were more likely to join, as were those who were married, and those who were older.

When we added happiness as a predictor in model 2, there was a modest decline in the correlation between the two forms of trust and similar falls in the link between trusting and joining (see the estimates in Table 13.3). The model fitted well (chi square =5,237, df=163, CFI = 0.91, RMSEA=0.034). People who report being more happy and satisfied with their life were more likely to trust both others in general and political institutions, and join more. The relationship between sociodemographic variables and trust and joining remained substantially the same after adding happiness to the model.

In model 3, dummy variables for country are added, omitting UK, which was the reference category. When we take account of country variation by adding these dummy variables, we see a sharp decline in the correlation between trust and joining, while the link between social and institutional trust barely moves at all (see the estimates in Table 13.3). This model also fitted well (chi square = 923, df = 26, CFI = 0.91, RMSEA = 0.035). The general pattern with respect to the sociodemographic variables in the model is that the coefficients are attenuated. This means that some of the variation in trust and joining that one might attribute to

individual and personality level factors may be due to compositional differences in these variables across countries.

Conclusion

In this analysis we have presented a set of plausible measurement models for examining three elements of social capital: social trust, institutional trust and civic association or joining. We have also investigated what happens to the correlation between these elements when we control for a range of social and psychological factors that could act as common causes of two or more of these elements. In other words, we have asked whether the debates about top-down or bottom-up models of trust generation could be confused by the omission of potential confounders and whether trusting and joining are really so closely linked empirically as they sometimes are in theoretical discussions of social capital.

We find that the link between social and institutional trust within individuals is resistant to controlling for a set of sociodemographic variables including age, income, gender. It is also resistant to conditioning on the single personality type variable available to us – life satisfaction or happiness, although this variable is itself a strong predictor of both types of trust. Controlling for country differences also fails to dent the association between the two domains of trust. Our provisional conclusion is that trusting fellow citizens and state institutions is something that is quite stable within individuals and is distributed amongst populations perhaps according to early experience, socialisation and learning. Neither top-down nor bottom-up theories of trust formation are particularly convincing here. Given the differences in political systems and social norms and expectations that exist between European countries, we would surely expect to see a good proportion of the correlation between social and institutional trust accounted for by this pan-European heterogeneity. That we do not seem to support the notion that both forms of trust as measured here are more akin to personality type variables, or value orientations, through which individual citizens view the world. In other words, it is the social psychological conception of trust that seems the more plausible, given the results presented here.

The link between trusting and civic engagement is quite different. Once we control for even our modest range of potential confounders, the partial correlation between trusting and joining drops substantially. In other words, if we compare citizens across Europe who are similar with respect to a set of sociodemographic and personality variables as well as taking account of national differences, the relationship between trusting and joining is little more than random. This finding challenges the notion that trust can be “learned” through exposure to civic participation and co-operation, as propounded by theorists such as Putnam. Equally, it calls into question the idea that being a “trusting kind of person” predisposes one to take part in civic activities. It may simply be that the kind of person who tends to trust (typically better educated, higher social class with higher income) is

also the kind of person who joins civic associations. That is to say, it is primarily socioeconomic status that is the cause of both trusting and joining.

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Chapter 14

Sacralisation by Stealth? The Demography of De-secularisation

Eric Kaufmann

Introduction

Is religion in decline? Will it fade as science advances and better human organisation conquers the deprivation to which biblical discourse has historically ministered? More concretely, at the national level, the balance between secular and religious subcultures has important repercussions for voting behaviour, party organisation, public policy (i.e. schooling, abortion, citizenship, law) and international relations (i.e. the “war on terror”). Broadly speaking, two forms of secularisation may be isolated, public and private. Many, but far from all, scholars, see the two as intertwined. *Public* secularisation refers to the relationship between religious institutions and this-worldly public functions like government, education, hospitals, the market and the media. *Private* secularisation is used here to denote individual piety, whether expressed through private belief, attendance at services, or both. This article is principally concerned with the latter.

The notion of secularisation – of both public and private life – has dominated scholarly discussions of religion since the Enlightenment in the mid-eighteenth century. Only in the late 1960s did a new strain of thinking come to question the inevitability of religious decline. Even here, secularisation arguments continue to be strongly advanced, whether empirically (Dobbelaere, 2000; Bruce, 2002) or normatively (Dawkins, 2006; Hitchens, 2007). This chapter enters this debate, but introduces a new wildcard: demography, arguing that while secularisation may occur at the micro level of individuals, demography plays a cardinal role in determining the vector of secularisation at the macro level. In fact, we shall find that one can have a situation in which secularisation is taking place at the level of the individual while society as a whole becomes more religious. But first, let us revisit the grand debate over secularisation and modernity which seems so compelling in our time.

E. Kaufmann (✉)

Birkbeck College, University of London, London, UK; Kennedy School of Government,
Harvard University, Cambridge, MA 02138, USA
e-mail: e.kaufmann@bbk.ac.uk

The Secularisation Argument

The singular event which historians use to demarcate the modern era, the French Revolution, was defined by its rejection of religious authority. Since then, secularisation and modernisation have been intimately linked in the minds of many. All three “founding fathers” of sociological theory – Marx, Weber and Durkheim – cast a narrative of modernisation in which religion was an inevitable casualty of advancing rationality. For Marx, under the pressure of industrial capitalism and science, “solid” religious certainties would “melt into air”, profaning the sacred public sphere (Marx, 1973, pp. 70–71). Emile Durkheim, drawing on classical and Spencerian thought, proposed a theory of structural differentiation and moral evolution whereby the role of religious expertise is confined to an ever shrinking sphere. Increasingly, as in France after the Revolution, society worships itself rather than a supernatural deity (Durkheim, 1995 [1893]).

More recently, Steve Bruce has synthesised the work of previous modernisation theorists like Ernest Gellner and David Martin to argue for the irreversibility of secularisation in modern society. Social differentiation drives a relativism that leads to a constricting sphere of influence for religion in both public and private (Bruce, 2002, pp. 2–43, 1998, pp. 5–7, 15). The work of Pippa Norris and Ron Inglehart dovetails with that of Bruce. They claim that rising material wealth and political stability reduce the ontological insecurities that drive religiosity (Norris and Inglehart, 2004). Meanwhile, recent analyses of European survey data find a consistent pattern of religious decline encompassing participation (attendance), belief and affiliation (Voas et al., 2002; Norris and Inglehart, 2004).

Demographic Aspects of Religion

Much of the research on the sociology of religion has focused on religion as a social phenomenon whose rise or decline depends upon the conscious choices of individuals within changing structural contexts. However, it is apparent that even in the absence of socially-inspired revivals/declines of religion, the degree of religiosity in a society can fluctuate. The chief non-social mechanism of change is demography. If we consider “the religious” as a population affected not only by assimilation/dissimilation into the secular population but by migration, fertility (number of surviving offspring per woman) and mortality, we arrive at a more multivalent picture. David Voas is one sociologist who has urged that greater attention be paid to the use of demographic methods in the study of religion. “People enter, exit, and move within religion”, he remarks, “just as they are born, will die, and migrate, in life” (Voas, 2003, p. 94). For Michael Hout, “demography helps shape the religious landscape . . . The combination of differing demography and stable intergenerational religious socialization would be sufficient to equalize or even reverse the relative sizes of the religions” (Hout, 2003, pp. 79–80). “Silent” demographic effects can be profound in the long term. For example, Rodney Stark

shows how early Christians' favourable fertility and mortality rates as compared to Hellenistic pagans helped to fuel a 40% growth rate in the Christian population of the Roman Empire over several centuries. This gave rise to a population increase from 40 converts in 30 A.D. to 6 million by the year 300 leading to a "tipping point" which helped Christianity become institutionalised within the Empire (Stark, 1996). Currently, many Islamic parts of what was once the Roman Empire have seen major declines in their Christian and Jewish populations due to emigration, lower fertility and mixed marriages (Fargues, 2001).

Those who study the religious marketplace in the United States have been impressed by the extent to which denominations have grown through migration and fertility advantage. Sherkat (2001), for example, finds that American Catholics have been able to offset large net losses to other denominations through gains arising from (largely) Hispanic-Catholic immigrants and their higher fertility. Fertility differentials can also play a key role – especially in the long term. Mormons, once a very small sect, now equal or surpass Jews among post-1945 birth cohorts due to their fertility advantage over Jews and other denominations (Sherkat, 2001, pp. 1472–1474). Conservative Protestants, a much larger group than the Mormons, also benefit from relatively high fertility. Using the General Social Survey, Roof and McKinney (1987) noted that Southern Baptists had roughly twice the fertility of Jews and secular (unaffiliated) Americans. A recent article extends this finding by showing that three-quarters of the growth of conservative Protestant denominations is due to fertility rather than conversion (Hout et al., 2001). This has powered the growth of the religious right and increased the base of the Republican party. Indeed, a recent article demonstrates the extremely significant and robust correlation between non-Hispanic white fertility patterns and the Republican vote – especially in 2004. States whose white population tends to be liberal and postmaterialist have lower fertility – as per "second demographic transition" theory (SDT) – and a lower pro-Bush vote share (Lesthaeghe and Neidert, 2006).

In Europe, there has been less attention paid to fertility differences between denominations. However, the growth of the European Muslim population through immigration is a trend that is widely acknowledged (Rath and Buijs, 2002). Several studies have discovered that immigrants to Europe tend to be more religious than the host population and – especially if Muslim – tend to retain their religiosity. Though some indicators point to religious decline toward the host society mean, other trends suggest that immigrants become more, rather than less, religious the longer they reside in the host society (Van Tubergen, 2006, 2007). Austria is one of the few European countries to collect religious data on their census. A recent attempt to project Austria's population to 2051 found that a combination of higher fertility and immigration will increase the proportion of Muslims (excluding apostates) in the country from 4.6% of the population in 2001 to between 14 and 26% by 2051. Certainly the secular/unaffiliated population increased from 4% in 1981 to 10% in 2001, and is projected to grow in the near future. However, the secular population in Austria has a total fertility rate (TFR) of just 0.86 children per couple, limiting its long-term growth potential. This means that in the event that secularisation ceases – to say nothing of religious revival – the secular population will peak

and begin to decline as early as 2021 (Goujon et al., 2006, p. 24). All of this suggests that secularisation may fail even if the secularisation thesis is correct. This chapter will thereby test the hypothesis that a combination of higher religious fertility and immigration will lead to a growth in the religious population (defined in terms of belief) that exceeds the net loss of communicants through religious apostasy.

The State of Current Research

Work in the sociology of religion, cultural demography and labour economics has uncovered an important relationship between religiosity and demographic indicators which can affect the size of religious and secular populations. For instance, one postulate of SDT is that secularisation is linked to lower fertility (Surkyn and Lesthaeghe, 2004; van de Kaa, 1987). Several studies examine the link between religiosity and fertility in Europe and the United States, and most have found a significant positive effect on fertility in at least some models (Norris and Inglehart, 2004: 110; Adsera, 2004: 23; Berman, et al., 2005; Frejka and Westoff, 2006; Berghammer et al., 2006).

What is lacking here, however, is some measure of the sociological side of the equation: in other words, are the children remaining with the faith of their parents, or succumbing to secularism? After all, even a strong fertility premium will be of little consequence if most children defect from their religious inheritance to secularism and pass a different tradition on to their offspring. One of the few works to encompass both religious fertility and secularisation is that of Norris and Inglehart (2004). These political scientists remark that: “One of the most central injunctions of virtually all traditional religions is to strengthen the family, to encourage people to have children, to encourage women to stay home and raise children, and to forbid abortion, divorce, or anything that interferes with high rates of reproduction. As a result of these two interlocking trends, rich nations are becoming more secular, *but the world as a whole is becoming more religious*” (Norris and Inglehart, 2004, pp. 22–23, emphasis added).

However, the authors view religious growth as a temporary phase. For them, sociology eventually overwhelms demography, allowing secularisation to eventually win out. As human development proceeds, religiosity survives mainly among those who experience lower levels of human security (Norris and Inglehart, 2004, p. 54). Unfortunately, the authors do not systematically test this bold claim with individual-level data – even in the developed world where time series are available. Moreover, research which uses inputs from models of past behaviour to make demographic projections of future secularisation scenarios is missing. Finally, we know almost nothing about the degree to which the children of immigrants retain their religiosity. This chapter attempts to fill these lacunae in the literature and map their theoretical significance. The primary focus is on western Europe, though some comparative attention will also be paid to the United States.

Data and Results

In order to test our religious demography hypothesis, we draw upon data from several sources. These include the European Values Surveys (EVS) of 1981, 1990 and 1999–2000 and the second wave European Social Survey (ESS) of 2004. We use these data sets because of their time-series dimension and the fact that they ask the same (or similar) questions on religiosity and fertility. The study is limited to ten west European countries, France, Britain, Holland, Ireland, Spain, Belgium, Denmark, Sweden, Norway and Iceland. This is because these are the only cases that were sampled across all specified waves of the EVS on our variables of interest. Germany, though also consistently sampled, was dropped because of the difficulties of pre and post-Unification data collation. The second wave ESS data was used because, unlike wave 1, this data set has a fertility measure and enabled us to match countries with the EVS. Rather than weighting our sample by relative country population size (i.e. weighting Britain at 180 times Iceland), we have opted to create a standardised west European data set with roughly 1,000 cases per country. This is to maximize case diversity by preventing large countries from dominating the results. We will also be using three surveys of ethnic minorities in the United Kingdom to probe the phenomenon of second-generation immigrant religiosity: the Fourth National Survey of Ethnic Minorities, 1993–1994 (Berthoud et al., 1997), and the 2001 and 2003 waves of the UK Citizenship Survey (Home Office, 2003; Office for National Statistics and Home Office, 2005). These are augmented by data from the ONS Longitudinal Survey (ONS-LS) of 2001 (Office for National Statistics, 2001).

Western Europe

We begin our story in western Europe, the historic home of secularisation.

Religious Attendance

The first trend to note (Fig. 14.1) is that the proportion of respondents attending religious services on a weekly basis has systematically declined across birth cohorts in these ten west European countries. Roughly 30–40% of the generation born 1915–1925 attends weekly, and this falls to 10% or less among those born in 1975–1985. This pattern holds across survey waves, demonstrating that the effect is a generational, i.e. secularising, one and not a life-cycle pattern in which younger people attend more frequently as they age.

However, when we narrow our focus to the societies which secularised earlier (Britain, France and four Scandinavian countries), we see a curious pattern. Attendance falls as expected across the generations, but then proceeds to flatten out among post-World War II (1945) cohorts. This trend is confirmed across survey waves, and seems to indicate that secularisation has hit a floor of around 5%

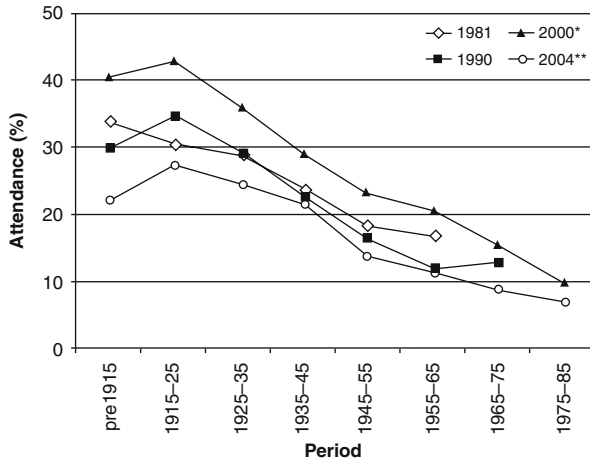


Fig. 14.1 Weekly attendance by cohort, 10 western European countries, 1981–2004 (Sources: EVS 1981, 1990, 1999–2000; ESS 2004)

*Data for 2000 uses Norway responses from 1997

**Data for 2004 from ESS which uses same question but different methodology
 N=10,860 (1981); 10,860 (1990); 7,336 (1999–2000); 10,860 (2004)

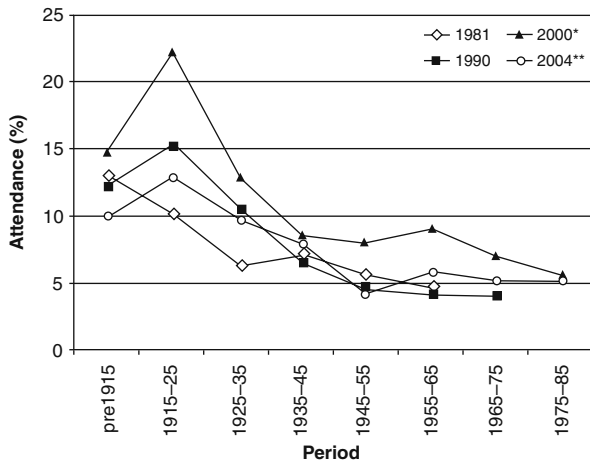


Fig. 14.2 Weekly attendance by cohort, early secularising societies (Sources: EVS 1981, 1990, 1999–2000; ESS 2004)

*Data for 2000 uses Norway responses from 1997

**Data for 2004 from ESS which uses same question but different methodology
 N=5,978 (1981); 6,002 (1990); 3,245 (1999–2000); 6,017 (2004)

attendance in these societies and is holding steady (Fig. 14.2). This is a lower level of attendance than in the ten country sample as a whole, but while attendance in the Catholic societies (Spain, Ireland, Belgium plus part-Catholic Holland) is higher, it continues to fall sharply in contrast to these six – mainly Protestant – societies.

Religious Belief

When we shift the focus of our attention from attendance to religious belief, we find that western Europeans suddenly appear to be five to ten times more religious (Fig. 14.3). This phenomenon reflects Davie’s insight that Europeans are “believing without belonging” (Davie, 1994). For instance, a majority of respondents from the six “early secularising” societies claim to believe in God. When asked whether they are “a religious person”, a majority say yes. Even among the most recent birth cohorts, 40–50% answer in the affirmative. We also find that – unlike attendance – religious belief seems to rise with age since each birth cohort tracks upward across survey waves. So, while the lines all trend downward, the starting point of each line seems to be rising or holding steady. This means that, in contrast to attendance, life cycle effects are at work which counteract cohort effects. The result, paradoxically, is therefore similar to what we find for attendance: a steady state in which there is no further evidence of secularisation among post-1945 birth cohorts.

Should trends in Catholic Europe follow those in the early-secularising countries, we may well see a future in which western European church attendance falls to very

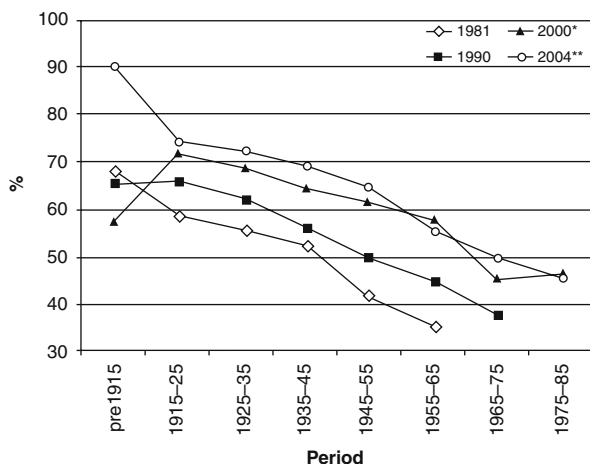


Fig. 14.3 Religiosity by cohort, early secularising societies (Sources: EVS 1981, 1990, 1999–2000; ESS 2004)

*Data for 2004 from ESS which uses same question but different methodology $N=5,581(1981); 5,711(1990); 3,053(1999-2000); 6,035(2004)$

low levels (i.e. 5%) even as society remains fairly evenly divided between religious and non-religious populations.

Recall that our thesis concerns the balance between secularising and demographic forces. We have examined secularisation in some detail. We found a historic pattern of secularisation which continues strongly in Catholic western Europe but appears to have exhausted itself in the six relatively “mature” societies which have a long history of private secularisation.

Religious Fertility

Let us now turn to the other, demographic, prong of our argument. Here the evidence corroborates current research. For instance, the fertility difference in terms of number of children ever born (among women aged 18 or over) between those who describe themselves as “religious” and those who describe themselves as “not religious” or “atheist” averages between 0.5 and 0.6 of a child (50–60 percentage points) depending on the wave of the EVS or ESS we consider. In 2000, for example, adult females in the EVS who were religious bore an average of 2.19 children over their lifetime as against 1.59 for the non-religious. These numbers are misleading since religious respondents tend to be older and thus are more likely to have completed their fertility and come from more fertile cohorts. However, when we control for cohort, age, and a series of background variables, we find that religiosity retains its significance for fertility. Its coefficient of 0.176 (Table 14.1) suggests that, all else being equal, a religious woman in these ten west European societies will bear 15–20% more children over her lifetime than her non-religious counterpart.

Table 14.1 Regression coefficients on number of children ever born, females aged 18+

	EVS 1981–2000		ESS 2004	
Marital status	0.353***	(0.007)	0.246***	(0.015)
Religiosity	0.176***	(0.028)	0.045***	(0.008)
Postmaterialism	–0.089***	(0.023)	–	–
Income	0.002	(0.007)	0.008	(0.012)
Education	–0.059***	(0.004)	–0.025***	(0.007)
Age	0.036***	(0.008)	0.035***	(0.005)
Cohort	–0.031	(0.046)	0.116	(0.080)
Wave year	–0.088	(0.039)	–	–
_cons	2.607***	(0.337)	73.072***	(15.230)
R ²	0.356		0.205	
N	12,046		3,980	

*** $p < 0.001$

Sources: 1981–2000 EVS; 2004 ESS

N.B. No data for Norway in 2000. Postmaterialism not asked in ESS. For cohort, higher values refer to most recent

Projections of Religiosity

Alone among the surveys considered here, the 1991 EVS asked respondents: “Were you brought up religiously at home?” Cross-tabulating this question with the “are you a religious person” question in the same survey gives us a picture of how many religious individuals have left the faith and how many of the secular have become religious. We find that women in the childbearing age ranges are much more likely to remain religious than men, which has implications for the transmission of religious orientations to the next generation since we assume that females are the conduit for inter-generational transfer of beliefs. Men tend to return to faith later in life, and if women had the same life cycle behaviour as men, we would find a reduced rate of religious socialisation of children and hence a faster rate of secularisation.

In the following analysis, we focus on the six countries which secularised earlier as they are arguably in the vanguard of religious apostasy and thus closest to the endpoint envisioned in secularisation theories. Apostasy/conversion rates by 5-year age group and sex for the two groups (secular and religious) come from the 1991 EVS (the only survey which asked about previous belief). Using the 2000 EVS, we derived assumptions regarding the age structure of the two base populations by sex. Age and sex-specific fertility rates for the groups come from the same survey. Thus we produce tables for total population, fertility, transitions between religion and secularism, and mortality for each 5-year age band. Using *People 3.0* software, these inputs enable us to produce a cohort component projection of the religious composition of these countries to 2100. Allowing our input assumptions – notably on fertility and conversion – to vary from their current values results in alternative projection scenarios. This is certainly a long-term projection, more suited to theoretical exploration than the concrete policy and planning objectives of many demographers who work with shorter-run data. We begin with an assumption that religious women will have a constant total fertility rate of 1.8, as against 1.6 for non-religious women. This represents an average intra-cohort fertility difference between religious and non-religious women in 1991 that is in the 10–15% range.¹ Next, we calculate a constant annual “net migration” flow of apostates/converts between the religious and non-religious populations for each 5-year age band. In practice, the fluctuations in migration by age that we see are only partly the result of life cycle effects, and most likely reflect period or cohort effects or statistical fluctuations in the data. Consequently, we opt to smooth out fluctuations by averaging the flows into three 20-year age bands.²

¹ Note that this figure is for the six most secular countries and is somewhat less than the 15–20% for all ten countries sampled.

² These grouping assumptions have important consequences for our projections because the unsmoothed data show a large influx of female converts in the 18–24 age group and a slow apostasy thereafter whereas the smoothed results assume a more modest influx of female converts into the childbearing age ranges. Smoothing substantially reduces the proportion of religious population in 2104, by around ten percentage points.

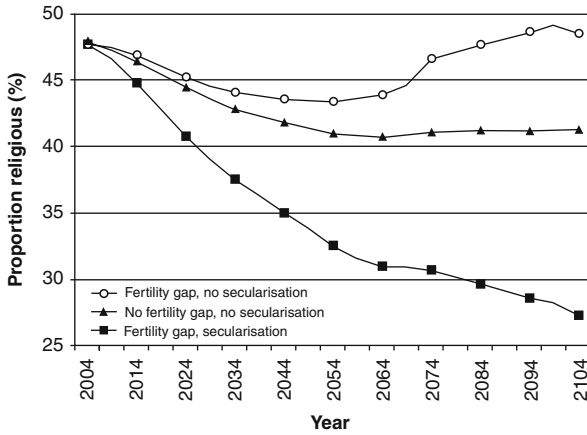


Fig. 14.4 Projected religious population, six early secularising societies, 2004–2104 (Sources: EVS 1990, 1999–2000) Base N=8,326

Figure 14.4 shows the results of our projection under three scenarios. First, as the highest line, is our expected scenario (1.8 vs. 1.6 religious-secular fertility gap, and six-country conversion/apostasy trend), labelled “fertility gap, no secularisation”. Next comes a projection, labelled “no fertility gap, no secularisation”, which assumes the same conversion/apostasy trend, but with no fertility gap (TFR 1.8 vs. 1.8). Finally, we consider a “fertility gap, secularisation” scenario in which there is a 1.8 vs. 1.6 religious-secular fertility gap, but with conversion/apostasy flows drawn from an average across all ten countries in this study (including fast-secularising Catholic ones). Figure 14.4 shows that secularisation has flattened out by around mid-century in the first two models, but continues strongly in the “fertility gap, secularisation” model since this postulates a reversion to rates of secularisation which are closer to what is now taking place in Catholic Europe but were last witnessed among pre-1945 cohorts in the six mainly Protestant countries in our sample.

Notice the trajectory of our expected model. It shows that for these six vanguard countries, secularisation will begin to move in reverse after mid-century, culminating in a slight return of religion by 2104 compared to 2004. This runs counter to much of what has been written about west European religious trends and, at the very least, should raise a question mark over the secularisation thesis. On their own, our projections largely point to long-term stability rather than religious increase. But, if we consider that these projections contain virtually no ethnic minorities and take no account of immigration, which will be the biggest demographic driver of religious growth in these countries, we must conclude that religious growth is in fact the most likely prognosis.

David Coleman (2006), for example, drawing on extant official estimates of the foreign-origin population, indicates that the proportion of non-European origin in the major western European countries in 2050 will range from a low of 5.1% in

Austria to a high of 24.5% in Britain, with many countries in the 10–15% range (Coleman, 2006, p. 414). There are several reasons to treat the non-UK projections as highly conservative, as Coleman rightly points out. Consider that the projections for countries outside the UK assume that the third generation is no longer of foreign origin and has been absorbed by the ethnic majority. This greatly underestimates the size of the ethnic minority population. These projections also assume no increase in immigration as a result of an aging population. In Austria, for instance, where Coleman's cited projections envision a 5% minority population in 2050, more precise projections work with the Austrian census finds that Muslims alone will comprise between 14 and 26% of the total population in 2050 (Goujon et al., 2006).

Most non-European immigrants come from highly religious developing countries, largely Christian or Muslim rather than secular. In many deprived London neighbourhoods, pious Muslims from the Indian subcontinent rub shoulders with Pentecostalist Christians from Africa or the Caribbean. A slight majority of London's practicing Christians are now of non-European origin and, across England, weekly Muslim worshippers outnumber those from the largest Christian denomination, the Church of England (Islamonline, 2005). Since Muslims have historically comprised a significant share of the European immigrant inflow and come from societies that are connected to Europe through family networks and are geographically quite close to Europe, they merit closer attention. Data from both the EVS (2000) and ESS (2004) confirm that young Muslims across Europe are as religious as their parents and grandparents (Fig. 14.5).

Indeed, Fig. 14.6, based on ethnic minority surveys, shows that there is little or no decline in religious observance between immigrant (solid bar) and British-born (bricked bar) Muslims. By contrast, East European and Afro-Caribbean Christians experience significant secularisation between the first and second generations. Ethnic minority surveys from Holland show similar patterns, this time between

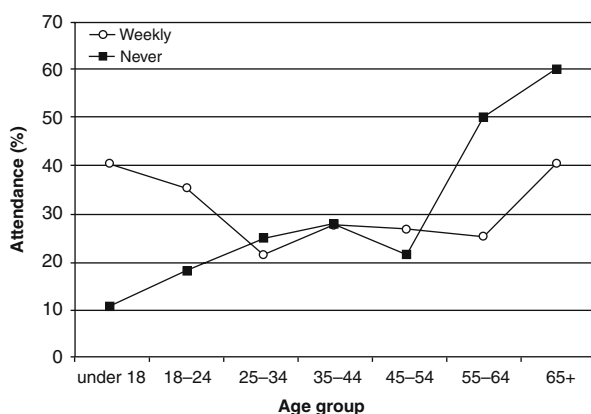


Fig. 14.5 European Muslims, attendance at religious services, by age, 2004 (Source: ESS, 2004)
 Note: Muslims comprise just over 3% of the sample, in this instance drawn from ten countries: Holland, Britain, Ireland, France, Denmark, Sweden, Norway, Iceland, Belgium, Spain
 N=173, or 3.17%

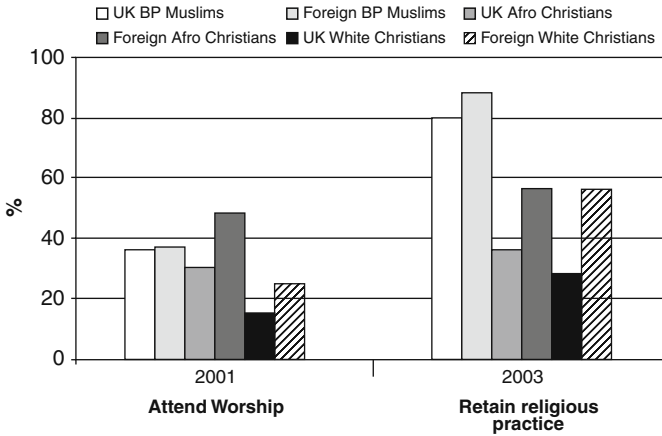


Fig. 14.6 Religious retention by faith and birthplace, UK, 2001–2003 (Sources: Office for National Statistics and Home Office, 2005; Home Office, 2003)
 For 2001, *N*=409 (UKBP), 936 (FBP), 1,071 (UKAC), 580 (FAC), 8,893 (UKWC), 400 (FWC)
 For 2003, *N*=277 (UKBP), 817 (FBP), 57 (UKAC), 39 (FAC), 6,304 (UKWC), 151 (FWC)
 Note: “BP” designates Bangladeshi and Pakistani, and “Afro” refers to African and Caribbean. Excludes non-identifiers. Practice is self-description

largely North African and Turkish (rather than Indian subcontinental) Dutch Muslims and the more assimilated Afro-Caribbean Christians from the Antilles (Van Tubergen, 2006).

The second generation appears to be holding the line against assimilation in other ways. Consider the high endogamy rates of Muslim ethnic groups (i.e. Bangladeshi, Pakistani) in the UK (Fig. 14.7). Inter-marriage between Muslims and non-Muslims

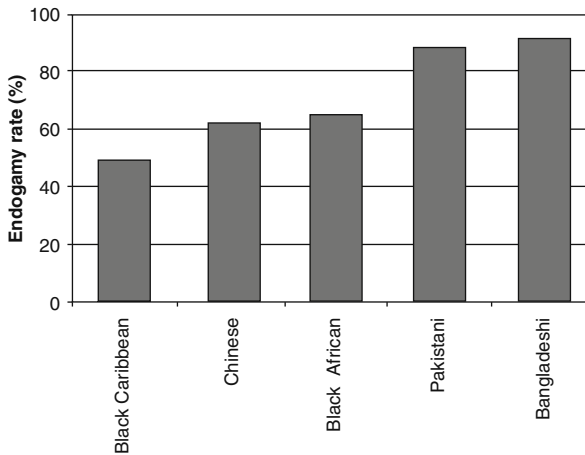


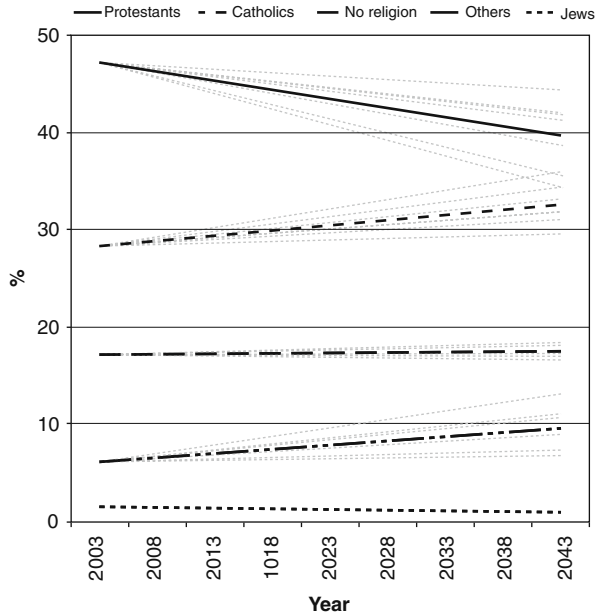
Fig. 14.7 Ethnic endogamy rates, couples, 2001 (Source: ONS Longitudinal Survey 2001)
N=3,558 B Caribbean, 2,061 Chinese, 2,710 B African, 8,798 Pakistani, 3,298 Bangladeshi

in Britain remains rare – less than 10% of couples which include a Muslim are religiously mixed, though it should be noted that Sikhs and Hindus (both from the Indian subcontinent) have similar endogamy rates (Office for National Statistics, 2001). This is reinforced by the Islamic practice of returning to the home country (i.e. Pakistan, Bangladesh, Turkey, Morocco) to find a spouse. These statistics on intermarriage and secularisation contrast sharply with the far more assimilationist behaviour of Black Caribbeans and East Asians in Holland and Britain. Black Africans, for instance, are a relatively recent, heavily foreign-born group, yet, already, one in three couples involving a Black African is a mixed marriage (largely with White British Christians). Thus we seem to have two paths emerging in Europe: an assimilationist one for Blacks and East Asians, and an ethnic retention one for most Muslim ethnic groups (as well as Sikhs and possibly Hindus), and one cannot simply assume that the all groups will converge toward assimilation.

Immigration is likely to continue at current levels into the foreseeable future due to Europe's aging population, strong migrant networks and escalating dependency ratios (Pedersen et al., 2006; Jackson and Howe, 2008). The largely religious immigrants, mainly Christian and Muslim, will eventually replace the ageing secular population in their host societies. From the limited evidence we possess on the immigrant second generation, it appears that Christian immigrants will begin to secularise while Muslim (and perhaps Hindu and Sikh) immigrants will largely retain their faith. In combination with a cessation of further religious decline among the European host populations, this picture points to a long term increase in European religiosity by the end of the twenty-first century.

Goujon and Skirbekk's work on Austria and Switzerland provide the only cohort component projections of religious affiliation available to date for Europe. These display an increase in the proportion of Muslims to around 10% in Switzerland and no less than 14% in Austria by 2051. Such projections also predict a rise in the religiously unaffiliated (i.e. "secular") population in both countries, but, tellingly, their trajectory hits its zenith by the middle of the twenty-first century. If secularisation were to slow down Europe-wide, as indicated by the evidence for the six early secularising northwest European societies reviewed above, then the proportion of seculars would peak and start to decline between 2020 and 2050.

These findings may be usefully compared to those from the United States in Fig. 14.8. Recent projections, based on General Social Survey (GSS) and U.S. Census immigration data, show the proportion of secular Americans – which grew markedly in the 1990s to 14% – peaking in 2030 and embarking upon a gentle decline thereafter. This is mainly because of low secular fertility (TFR of 1.66 among the religiously unaffiliated versus the national average of 2.08). Second demographic transition effects can also be seen in the fertility gulf between pro-choice (TFR of 1.83) and anti-abortion (TFR of 2.47) Americans. In addition, new immigrants to America are 83.2% religiously affiliated (close to the 85% rate found in the native population), which places yet a further impediment to the growth of the secular population within an increasingly diverse society (Skirbekk et al., forthcoming).



Base N=12,674

Fig. 14.8 Projected religious composition of the United States, 2003–2043, expected trend with variants (Source: Skirbekk et al., 2009)
Base N=12,674

Conclusion

Ever since the Enlightenment in the mid-eighteenth century, social thinkers have assumed that secularisation and modernisation proceeded hand in hand. Late twentieth century trends in west European church attendance and religious belief seemed to confirm these hypotheses. However, religious decline at the individual level need not imply religious decline at the national level. Strong demographic growth among the religious population can offset secularising processes within individuals. This chapter contends that just as the globe is becoming more religious because more people are being born in religious than in secular countries, so too Europe will become more religious in the twenty first century for demographic reasons. Already, a slowing rate of secularisation in northwestern Europe is combining with large-scale religious immigration to bring about religious “revival” – notably in major immigration gateways like London and Amsterdam.

Across western Europe, the United States and in the world as a whole, religious populations have significantly higher fertility than seculars (Kaufmann, 2008). Cohort component projections for western Europe and the United States presented here show that despite the young age structure of the current secular population and a continued net negative outflow from religion, religious fertility and immigration will contribute a growing counterweight to secularisation at the macro level. On

current trends, by the mid-twenty first century, Europe and America seem destined to enter a “post-secular” mode in which the proportion of secular people peaks while these societies embark upon a gradual path toward greater religiosity. This is a counterintuitive finding which raises searching questions about the future of the Enlightenment and the meaning of modernity. Perhaps the exhaustion of many of the potent “secular religions” of the past two centuries (nationalism, socialism, anarchism), which did so much to combat clerical influence, has opened the gates for religion to again play a lead role on the stage of history. If so, this is a story – much like the European conquest of the Americas or the rise of Christianity – in which demography plays a hidden, but central, mediating role.

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Index

A

Academic performance, 164–165, 169–173, 175
Accessibility, 70–75, 77–78, 80, 102
 index, 13, 70–71, 74–76
Acculturation, 86, 91
Activity rates, 4–5
Age structure, 6, 17–19, 22, 32, 225
A-level, 14, 164–166, 168–175
Allocation effects, 180, 191–193
Area classification, 3, 6, 13–14, 18, 22, 37–39, 79
Artforms, 68–71, 75–76, 79
Arts attendance, 67–70, 72–80
Associational membership, 209–211
Attendance, 7, 67–80, 151, 201, 217–218, 221–223, 227
Attitudes, 3, 9, 11, 13–14, 143–160, 180, 182, 186
Average
 income, 2
 performance, 169, 173, 175

B

Bayesian information criterion, 133
Berlin, 10, 145–146, 154–157
Black and minority ethnic groups, 67, 73–74
Body mass index (BMI), 115, 117–119
Boundary change, 13, 19
British Household Panel Survey (BHPS), 9, 13, 54, 130–131, 201
British identity, 10, 143, 159
Britishness, 10, 152–153, 155, 159
British social attitudes (BSA) survey, 11, 14, 182, 184–187, 189–191, 193–194, 196

C

Cardiovascular
 disease (CVD), 2–3, 9, 13, 113–120
 risk, 113–124

Car ownership, 29, 73, 80
Census, 3–4, 6, 9, 13, 17–21, 29, 38–40, 42–44, 46–49, 54–56, 59–62, 68–69, 71–73, 76–80, 83, 101–102, 104–107, 145, 147–149, 167, 219, 227, 229
Chi-square, 134–135
Church
 attendance, 223
 membership, 12
Circadian
 disruption, 9, 116, 119, 122–123
 effects, 9, 123
Civic
 association, 11–12, 199–213
 participation, 3, 6, 14, 200–202, 213
Cluster
 analysis, 6
 centre, 40–42, 45
 membership, 41, 44, 46
 types, 43–49
Clustering criterion, 41
Cognitive effects model, 180
Commuting
 index, 70–72, 74–77
 patterns, 7, 13
Comparative fit index (CFI), 207, 210–212
Components of change, 23–24, 27
Confirmatory factor analysis (CFA), 206, 210–211
Control variables, 59, 184, 192
Core values, 179, 181–182, 185–187, 190–191, 193–194, 196
Correlation, 2, 4–5, 23, 62, 75, 92, 137, 147, 203, 205–208, 210–213, 219
Cortisol
 dysregulation, 9, 122–123
 secretion, 120
Counterfactual
 transition rate, 167–168

- C-reactive protein (CRP), 115–119, 138
- Cultural
 consumption, 6–7, 13, 67–81
 leisure facilities, 3
- D**
- Demographic
 change, 6–7, 12, 18
 restructuring, 2
- Demography, 12, 14, 102–106, 217–231
- Dependency ratio, 22–28, 229
- Deprivation
 quintile, 21–22, 25–31
- Developmental model, 181, 194
- Diastolic blood pressure (DBP), 117–119
- Digestive problems, 115
- Disabled people, 67
- Discouraged worker, 90
- Discrimination, 8, 68, 70, 83, 86, 90, 144–145, 147–148, 152, 154–157, 159
- Disparity, 1–2, 6, 10, 14
- Downshifting, 45
- E**
- Economic activity, 8, 84, 103, 130, 150–151, 153
- Education
 generation, 196
- Educational
 attainment, 3, 10, 14, 163–176, 180, 184, 186, 188–190, 192–193
 disadvantage, 144
 expansion, 11, 163, 184, 186, 195, 197
 inequality, 14
 outcomes, 10
 participation, 181, 195
 qualifications, 3, 5, 11, 87–88, 93, 149–150, 183–185, 188–190, 193–197
- EMPIRIC, 13, 45, 146–147, 151–153
- Employment
 status, 3, 8, 13, 57, 87–89, 99–110, 131, 138, 147
 trajectory, 133–134
- English Longitudinal Study of Ageing (ELSA), 13, 131, 138
- Entropy, 100–101
- Equality, 10, 83, 143, 163, 179
- Ethnic
 employment, 3
 endogamy, 228
 group, 2, 4–5, 8, 10, 67, 69–70, 73–75, 77, 83–96, 99–110, 144, 147, 153, 158, 166–167, 172–174, 176, 228–229
 identity, 145, 147, 151
 minority, 10, 99, 102, 144–149, 152, 167, 172–174, 176, 227
 penalty, 95, 144
- Ethnicity, 1, 3–10, 13, 73, 75, 83–84, 87–89, 91–93, 100, 102, 144–145, 147, 149, 153, 158–159
- Europe, 10, 12–13, 19, 143–159, 213, 219–221, 223–224, 226–227, 229
- European Social Survey (ESS), 12, 14, 203, 208–209, 211–212, 221–224, 227
- European Values Survey (EVS), 12, 14, 204, 221–227
- Explanatory variables, 18, 56, 73, 78, 134, 136, 183, 191, 197
- Exposure
 combinations, 13
 patterns, 121
- F**
- Feeling at home, 154–158
- Fertility
 differentials, 219
- Fibrinogen (Fib), 115, 117–119, 138
- Freedom, 10, 73, 137, 143, 179, 206–207
- Full-time work, 107, 110
- G**
- GCSE examinations, 165, 169, 171–173, 175–176
- Gender, 1–3, 7–8, 10, 12–13, 58, 83, 88–89, 95, 110, 121, 144, 151, 153, 184, 191, 193–194, 196, 202, 211
- General happiness, 56–59
- General health questionnaire (GHQ), 54–56
- General Household Survey (GHS), 8, 13, 84–86
- Generalised trust, 200–202
- Geodemographic(s), 6, 13, 38–40, 78
 classification, 7, 39, 51, 68, 79–80
- Geographical
 accessibility, 7
 harmonisation, 19
- Glycated haemoglobin (HbA1c), 115
- Good citizenship, 10
- H**
- Happiness, 3, 6–7, 13, 53–64, 202–204, 212
- Health
 inequality, 1
 outcomes, 1–3, 10, 113–114, 116, 133, 159
 problems, 2–3, 8, 115, 129, 131, 137–138
 selection, 130, 138
 status, 9, 58, 92, 116, 130–133, 135
 trajectories, 129–139

- Health Survey for England (HSE), 13, 145–146, 149, 151
- Heckman selection, 88, 90
- Hidden unemployment, 90
- High density lipoprotein cholesterol (HDL), 115, 117–119
- Home ownership, 29
- Human
 - capital theory, 85
 - value system, 179
- I**
- Identity, 3, 10, 13, 37, 68, 143–145, 147–148, 151–152, 154, 157–159
- Immigration, 3, 12, 14, 22, 83, 144, 154, 156–157, 219–220, 226–227, 229
- Inactivity, 88–90, 99, 102
- Income gap, 2
- Index of multiple deprivation (IMD), 13, 17, 21, 80
- Inequality, 1, 14, 56, 67, 90, 99, 102, 149, 168, 170–172, 176, 201
- Inequity, 2
- Inflammatory factors, 115, 118
- Institutional
 - performance theory, 200
 - trust, 11–12, 199–213
- Interaction effects, 192–195
- Inter-marriage, 228
- Islamophobia, 10
- J**
- Job
 - control, 9, 115, 120–122
 - strain, 115, 120–123
- K**
- K-means, 40–41
- Kolmogorov-Smirnov D-statistic, 137
- L**
- Labour Force Survey (LFS), 5, 8, 13, 86
- Labour market
 - force participation, 9, 130–133
 - participation, 114
 - position, 8, 85, 180
- Ladder, 83–96
- Latent
 - class growth analysis, 133–134
 - variables, 133, 205, 207, 210
- Leeds, 30–32
- Left-right scale, 10–11, 179, 182, 185, 191–192, 195
- Liberal-authoritarian scale, 11, 183, 185, 188–189, 191–192
- Liberalism, 11, 180–181, 189
- Life cycle effects, 87, 223, 225
- Life expectancy, 2–3, 25
- Likelihood ratio test, 133
- Likert scale, 204
- Limiting long-term illness, 3, 69, 73–74, 87
- Logistic regression model, 14, 73, 78
- Log odds ratio, 166, 168, 171, 173–175
- London, 4, 7, 10, 13, 19, 22–25, 27–28, 30, 38, 46–47, 68–72, 76–79, 92, 154, 227
- Long working hours, 120
- Lower socioeconomic groups, 67
- M**
- Madrid, 10, 145–146, 154–158
- Manchester, 77–79
- Marital status, 87–88, 92, 122, 149, 202, 224
- Membership of associations, 199
- Metabolic disturbance, 116
- Microdata, 56, 60–62
- Mid-year population, 13, 19–20, 32
- Migration
 - histories, 110
- Mortality, 2, 113, 129, 138, 218–219, 225
- MOSAIC type, 79
- Multi-level model, 7, 14
- Multinomial logistic regression, 134, 136
- Multiple linear regression, 116, 121
- Multivariate model, 11
- Muslim
 - disadvantage, 3, 149, 158
 - groups, 9, 13, 143–160
 - identity, 144, 148, 154, 158
- Muslims in Europe (ME), 10, 13, 145, 155–157
- N**
- National Child Development Study (NCDS), 9, 13, 114
- National statistics socio-economic classification (NS-SEC), 69, 73–75, 78, 165–166, 183, 188
- Natural change, 6, 18–19, 22–28, 33
- Net migration, 22–28, 33, 225
- Night-work, 120–123
- O**
- Objective health measures, 138–139
- Occupational
 - classification, 13, 100–101, 165
 - segregation, 3, 8, 99–110
- Odds ratio, 5, 74, 76–77, 166, 168–175
- ONS Longitudinal Study (LS), 8, 13–14, 102

Output area classification (OAC), 13, 38–39, 41

Overcrowding, 6, 21, 29, 31–32, 80

P

Parsimonious model, 73–74, 78

Participation, 1, 3, 5–6, 9, 14, 67, 102–106, 114, 130–131, 181, 195, 199–202, 213, 218

Part-time work, 99–101, 103–104, 107–110

Perceptions of racism, 145, 152, 158

Performing arts, 7, 13, 68–70, 78, 81

Polarisation, 2, 6, 13, 44, 49

Political

trust, 14, 200–201, 203, 210

values, 3, 14, 179, 185–186

Population

change, 8, 13, 17–27

Primary effects, 10, 14, 163, 166, 169–171, 173–176

Priority groups, 67, 73–74

Private secularisation, 217, 224

Professional and managerial salariat, 8, 83, 86, 88

Projections of religiosity, 225–230

Psychological health, 129

Psychosocial work characteristics, 115

Public secularisation, 217

Q

Quartile, 77, 204

R

Racial

discrimination, 147

harassment, 147

Regression model, 56, 73, 78, 116, 122, 146, 192–193, 196, 206

Religion, 3, 6, 9–10, 73–74, 78, 144–149, 151, 153–159, 217–218, 220, 225–226, 230–231

Religiosity, 3, 12, 14, 145, 147, 151, 154, 218–221, 224–225, 229

Religious

attendance, 221–223

belief, 147, 157, 223

composition, 225

fertility, 220, 224, 230

group, 3, 9, 143–145, 147, 149, 153, 158

Residential patterns, 38

Reweighting, 60–61, 101, 118–119, 182, 184

Root mean square error of approximation (RMSEA), 207

S

Salariat, 8, 83–95, 166, 183, 187–189

Samples of anonymised records (SAR), 54, 83

Sample weights, 146

Scotland, 4, 7, 18–21, 62–63, 114

Secondary effects, 10, 14, 163–164, 170–176, 167–168

Secularisation, 12, 14, 217–221, 223–227, 229–230

Self-employment

rates, 110

Sense of Britishness, 10, 152–153, 155, 159

Sex

inequality, 164, 175–176

segregation, 99, 107–109

Sheffield, 47

Shift work, 9, 113, 115–117, 119

Sleep disturbance, 115

Small area, 6, 18, 20–22, 29, 32–33, 39, 54, 56, 60–62, 68, 80

Social

capital, 11–12, 56, 85–86, 199, 201, 203, 210, 213

theory, 85

change, 13, 49, 50, 88, 186

class, 3, 10–11, 14, 67, 132, 134–139, 144, 149, 163, 165, 168–169, 170, 173–175, 179–180, 182–184, 186, 188–197, 213

inequality, 168

position, 180, 184, 189–190, 197

disparity, 6, 10, 14

exclusion, 30, 144

geology, 6, 13, 37–49

inequality, 9

location, 180, 189–191, 193, 197

patterns, 6

position, 3, 9, 12–13, 129, 143

profile, 45–46

psychological theory, 200

stress, 144

trust, 10–12, 14, 199–205, 208–210, 212, 214

values, 3, 6, 9–12, 14, 179–185, 189, 191–197

value space, 189–190

Socialisation model, 181, 195–197

Socioeconomic

change, 3

position, 1, 3, 6, 8, 9, 11–13, 17, 31, 40, 49, 56, 83–90, 95, 101–102, 114, 118–119, 122–123, 129, 132, 143, 146, 149–150, 153–154, 158, 176, 180–186, 188–193, 195, 197, 202–203, 213, 225

- Sociology of religion, 218, 220
- Spatial
- disparities, 3, 6, 7, 12, 14
 - inequality, 232
 - microsimulation, 7, 14, 54, 59, 60, 64
- Standardisation, 40
- Standard occupational classification (SOC), 100–101, 107
- Structural equation modelling, 12, 205
- Subjective well-being, 13, 54–59, 62
- Supergroup, 22–23, 25, 27–28, 30, 33
- Surrey, 48–49
- Systolic blood pressure (SBP), 117–119
- T**
- Taking part survey, 67
- Terrorist incidents, 143, 146, 148, 158, 160
- Theil's H, 8, 99–101, 107
- Total cholesterol (Chol), 115, 117–119
- Townsend index, 6, 17, 21, 31, 33
- Transition
- to A-level, 14, 164–166, 168–176
 - rate, 10, 167–169, 171–176
- Triglycerides (Trig), 115, 117–119
- Trust, 2–3, 6, 10–12, 14, 199–213
- Trustworthiness, 10, 208
- Tyneside, 47–49
- U**
- Unemployment, 6, 8, 21, 29, 31–33, 58, 80, 85–90, 102, 113–114, 129–131
- Upscaling, 45
- V**
- Victimisation, 143–144, 147, 151, 155, 157, 159
- W**
- Waist circumference (WC), 89, 117–119
- Wales, 7, 18–21, 61–63, 99–108, 114, 164–167
- Weekend work, 115–116, 118–119
- Well-being, 3, 7, 13, 53–64, 113, 129, 202
- Work
- participation, 102
 - stress, 120–123
- Working conditions, 88, 113, 116
- Worklessness, 88, 90, 95–96
- Y**
- Youth Cohort Study (YCS), 10, 14, 164–167, 169–170, 172–175