



**The ethnic density effect on the health of
ethnic minority people in the United
Kingdom: a study of hypothesised pathways**

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Declaration

I, Laia Bécares, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

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Abstract

This thesis contributes to our understanding of the individual and community assets available to ethnic minority people living in areas characterised by high concentrations of co-ethnics. It has been hypothesized that positive attributes found in areas of greater concentration of ethnic minority people, or ethnic density, might provide ethnic minority residents with health promoting, or protective effects.

This study explored the effect of ethnic density on the health of ethnic minority people in the UK. It proposed and tested three pathways by which ethnic density is hypothesised to operate: through a change in racism-related social norms; through buffering the detrimental effects of racism on health; and through an increase in civic-political activity.

Multilevel methods were applied to three nationally representative cross-sectional studies, the 1999 and 2004 Health Survey for England; the Fourth National Survey of Ethnic Minorities; and the 2005 and 2007 Citizenship Survey. Results showed a stronger ethnic density effect on psychological outcomes, as compared to that found for physical health outcomes. Effect sizes were larger when the ethnic density of specific groups was analysed, but more likely to be significant when the density of all minority groups combined was considered.

Analyses conducted to test the social norms model reported a significant reduction in experienced racism among ethnic minority people living in areas of high ethnic density, as compared to their counterparts who live in areas of reduced ethnic density.

Examinations of the buffering effects of ethnic density indicated a tendency for a weaker association between racism and health as ethnic density increased, although interactions were mostly non-significant.

Finally, ethnic minority people were not found to report higher civic engagement as ethnic density increased, but they were found to be more satisfied with local services and to report greater community cohesion.

Table of Contents

Declaration.....	1
Acknowledgments.....	2
Abstract.....	3
Table of Contents.....	4
List of Figures.....	8
List of Tables.....	9
List of Abbreviations.....	14
CHAPTER 1. INTRODUCTION	15
1.1 Thesis structure.....	17
CHAPTER 2. BACKGROUND AND LITERATURE REVIEW.....	19
2.1 Ethnic minority groups in the UK	19
2.1.1 Reasons for migration and settlement patterns	20
2.1.2 Age differences between ethnic groups	24
2.2 Ethnic inequalities in health	26
2.3 Racial discrimination and health	28
2.4 Racial residential segregation.....	30
2.4.1 Residential segregation in the United Kingdom	32
2.5 Ethnic density	35
2.5.1 Theoretical approaches to ethnic density	36
2.5.2 Does ethnic diversity erode social capital?.....	38
2.5.3 Studies of the ethnic density effect: a review of the UK literature	40
CHAPTER 3. HYPOTHESISED PATHWAYS.....	62
3.1 Social norms model	63
3.2 Buffering effects model.....	64
3.3 Civic-political participation model.....	68
CHAPTER 4. AIMS AND STUDY HYPOTHESES.....	69
4.1 Aims	69

4.2	Study hypotheses	70
CHAPTER 5. DATASETS AND METHODS		72
5.1	Ethnic Density	72
5.1.1	Operationalising ethnic density	72
5.1.2	Ethnic density data from the 1991 and 2001 census	73
5.2	1999 and 2004 Health Survey for England	81
5.2.1	HSE Variables and Health Measures	82
5.2.2	HSE Participants	86
5.3	Fourth National Survey of Ethnic Minorities	92
5.3.1	FNS Variables and Health Measures	92
5.3.2	FNS Racism Measures	94
5.3.3	FNS Participants	96
5.4	2005 and 2007 Citizenship Survey	100
5.4.1	CS Variables and Health Measures	101
5.4.2	CS Racism Measures	102
5.4.3	CS Civic-Political Participation Measures	103
5.4.4	CS Participants	108
5.5	Statistical Analyses	115
5.5.1	Overall association between ethnic density and health	115
5.5.2	Social norms model	117
5.5.3	Buffering effects model	117
5.5.4	Civic-political participation model	119
CHAPTER 6. ETHNIC DENSITY EFFECT		120
6.1	Tests for Linearity	120
6.2	Ethnic Density Effect on Physical Health	121
6.2.1	Self-rated health	123
6.2.2	Biomarkers	126
6.3	Ethnic Density Effect on Mental Health	131
6.4	Ethnic Density Effect on Health Behaviour	134
6.4.1	Current Alcohol Consumption	134

6.4.2	Sensible Drinking.....	137
6.5	Conclusions	139
CHAPTER 7.	SOCIAL NORMS MODEL	143
7.1	Racism in the UK	143
7.2	Experiences of racism in areas of high ethnic density	150
7.2.1	Fear of racism.....	150
7.2.2	Experienced racial attacks.....	150
7.2.3	Experiences of employment discrimination.....	151
7.3	Social norms	153
7.3.1	Engaging in racism-related social norms	154
7.3.2	The social norms model: The ethnic density effect on racism-related social norms	156
7.4	Conclusions	158
CHAPTER 8.	BUFFERING EFFECTS MODEL	160
8.1	Effect of racism on health	161
8.1.1	Mental health.....	162
8.1.2	Overall self-rated health.....	165
8.2	Social Support	168
8.2.1	Sociodemographic characteristics of perceived social support.....	168
8.2.2	The ethnic density effect on perceived social support	169
8.3	Buffering effect of ethnic density.....	172
8.3.1	Buffering effect of ethnic density on mental health.....	172
8.3.2	Buffering effect of ethnic density on overall self-rated health	175
8.4	Conclusions	182
CHAPTER 9.	CIVIC-POLITICAL PARTICIPATION MODEL.....	184
9.1	Defining Civic-Political Participation	184
9.2	Association between civic-political participation and health.....	189
9.3	The ethnic density effect on civic-political participation	190
9.3.1	Civic engagement.....	191

9.3.2	Perceptions of community cohesion	193
9.3.3	Satisfaction with local services	196
9.4	Conclusions	198
CHAPTER 10. CONCLUSIONS		199
10.1	Summary and discussion of findings	199
10.1.1	Ethnic density effect.....	199
10.1.2	Social norms model.....	204
10.1.3	Buffering effects model.....	207
10.1.4	Civic-political participation model	209
10.1.5	Black Caribbean ethnic density.....	213
10.2	Study Limitations.....	217
10.3	Recommendations for future research	219
10.4	Conclusions.....	219
References.....		224
Appendix 1: Peer Reviewed Publications.....		242

List of Figures

Figure 2.1. Percentage of ethnic minority residents in Local Authorities, England and Wales, Census 2001	33
Figure 3.1. Associations between residential segregation, ethnic density and health...	63
Figure 3.2. Social norms model	64
Figure 3.3. Cohen and Wills (1985) social support and buffering hypothesis model...	65
Figure 3.4. Buffering effects model	66
Figure 3.5. Hypothesised ethnic density pathways counteracting the impact of racism on health	66
Figure 3.6. Civic-political participation model	69
Figure 8.1. Odds ratios of reporting psychotic symptomatology with increasing own ethnic density among Indian people who reported employment discrimination, relative to those who did not	179
Figure 8.2. Odds ratios of fair, poor or very poor self-rated health with increasing overall ethnic minority density among Pakistani people who reported fear of racism, relative to those who did not	180
Figure 8.3. Odds ratios of fair, poor or very poor self-rated health with increasing overall ethnic minority density among Pakistani people who reported any racist attack, relative to those who did not	181

List of Tables

Table 2.1. Age structure by ethnic group, as of the 2001 UK Census	26
Table 2.2. Summary of studies exploring the effect of ethnic density on health in the UK.....	53
Table 5.1. Ethnic density data from the 1991 Census (n=9509 wards in England).....	74
Table 5.2. Ethnic density data from the 2001 census (n=6780 MSOAs in England) ...	74
Table 5.3. Black Caribbean density in the 1991 and 2001 Census (England).....	76
Table 5.4. Indian density in the 1991 and 2001 Census (England).....	77
Table 5.5. Pakistani density in the 1991 and 2001 Census (England).....	78
Table 5.6. Bangladeshi density in the 1991 and 2001 Census (England).....	79
Table 5.7. Black African density in the 2001 Census (England).....	80
Table 5.8. Items in the GHQ12	84
Table 5.9. Questions in the Multidimensional Scale of Perceived Social Support.....	85
Table 5.10. HSE Sociodemographic Variables.....	86
Table 5.11. Characteristics of the HSE sample.....	88
Table 5.12 Distribution of MSOA ethnic density by ethnic group of the HSE sample	89
Table 5.13. Prevalence and age and sex adjusted odds ratios of reporting poor health among the adult ethnic minority population of the HSE, as compared to White people	91
Table 5.14. FNS Individual and area-level variables.....	94
Table 5.15. Variables used to create 'avoidance of racism' variable	95
Table 5.16. Sociodemographic characteristics of the FNS sample.....	96
Table 5.17. Distribution of ward ethnic density by ethnic group in the FNS sample...	97
Table 5.18. Health Characteristics of the FNS sample	98
Table 5.19. Prevalence of racism measures among the ethnic minority population of the FNS sample	99
Table 5.20. CS Individual and area-level variables	102
Table 5.21. CS Formal and Informal volunteering variables.....	104
Table 5.22. CS Political activity variables	106
Table 5.23. CS Perception of community cohesion variables	107
Table 5.24. Characteristics of CS Participants.....	109

Table 5.25. CS Distribution of ethnic density by MSOA in the CS sample.....	110
Table 5.26. Health characteristics of the CS sample.....	111
Table 5.27. Experiences of racial discrimination among the ethnic minority sample of the CS	112
Table 5.28. Prevalence of civic engagement in the CS survey, by ethnic group	113
Table 5.29. Prevalence of community cohesion in the CS survey, by ethnic group...	113
Table 5.30. Prevalence of satisfaction with local services in the CS survey, by ethnic group	114
Table 6.1. Mutually adjusted odds ratios of reporting poor health by different sociodemographic characteristics among the ethnic minority sample of the HSE	122
Table 6.2. Effect of own ethnic density (10% increase) on reports of fair, bad or very bad overall self-rated health by ethnic minority group	125
Table 6.3. Effect of overall ethnic minority density (10% increase) on reports of fair, bad or very bad overall self-rated health by ethnic minority group	125
Table 6.4. Effect of own ethnic minority density (10% increase) on waist to hip ratio by ethnic minority group	128
Table 6.5. Effect of overall ethnic minority density (10% increase) on waist to hip ratio by ethnic minority group	128
Table 6.6. Effect of own ethnic density (10% increase) on cardiovascular disease by ethnic minority group	131
Table 6.7. Effect of overall ethnic minority density (10% increase) on cardiovascular disease by ethnic minority group	131
Table 6.8. Effect of own ethnic density (10% increase) on poor mental health (GHQ score of 4 or more) by ethnic minority group	133
Table 6.9. Effect of overall ethnic minority density (10% increase) on poor mental health (GHQ score of 4 or more) by ethnic minority group	134
Table 6.10. Effect of own ethnic density (10% increase) on current alcohol consumption by ethnic minority group	136
Table 6.11. Effect of overall ethnic minority density (10% increase) on current alcohol consumption by ethnic minority group	137

Table 6.12. Effect of own ethnic density (10% increase) on exceeding sensible drinking guidelines by ethnic minority group.....	139
Table 6.13. Effect of overall ethnic minority density (10% increase) on exceeding sensible drinking guidelines by ethnic minority group.....	139
Table 6.14. Summary table of the effect of own ethnic density on the health of ethnic minority people	142
Table 6.15. Summary table of the effect of overall ethnic minority density on the health of ethnic minority people	142
Table 7.1. Standardised prevalences of experienced racism in the FNS Sample (1993/1994).....	145
Table 7.2. Standardised prevalences of experienced racism in the CS Sample (2005/2007).....	146
Table 7.3. Mutually adjusted odds ratios of reporting experienced racism by different sociodemographic groups in the FNS ethnic minority sample	148
Table 7.4. Mutually adjusted odds ratios of reporting experienced racism by different sociodemographic groups in the CS ethnic minority sample.....	149
Table 7.5. Association between experienced racism and own ethnic density (10% increase)	152
Table 7.6. Association between experienced racism and overall ethnic minority density (10% increase).....	152
Table 7.7. Mutually adjusted odds ratios of engaging in racism-related social norms by different sociodemographic characteristics of ethnic minority people in the FNS sample	156
Table 7.8. Association between racism-related social norms constructs and own ethnic density (10% increase)	158
Table 7.9. Association between racism-related social norms constructs and overall ethnic minority density (10% increase).....	158
Table 8.1. Mutually adjusted odds ratios of reporting poor health by different sociodemographic characteristics among the ethnic minority sample of the FNS	162
Table 8.2. Association between experienced racism and psychotic symptomatology among ethnic minority people in the FNS	164

Table 8.3. Association between experienced racism and poor self-rated health among ethnic minority people in the FNS	167
Table 8.4. Results of the multinomial logistic regression assessing the associations between reports of perceived social support and different sociodemographic characteristics in the HSE sample	169
Table 8.5. Association between perceived social support and own ethnic density (10% increase) among ethnic minority people	171
Table 8.6. Association between perceived social support and overall ethnic minority density (10% increase) among ethnic minority people	171
Table 8.7. Association between own ethnic density (10% increase), racism and psychotic symptomatology (PSQ) among ethnic minority people in the FNS	174
Table 8.8. Association between overall ethnic minority density (10% increase), racism and psychotic symptomatology (PSQ) among ethnic minority people in the FNS	174
Table 8.9. Association between own ethnic density (10% increase), racism and poor self-rated health among ethnic minority people in the FNS	177
Table 8.10. Association between overall ethnic minority density (10% increase), racism and poor self-rated health among ethnic minority people in the FNS.....	177
Table 9.1. Mutually adjusted odds ratios of reporting civic and political engagement by different sociodemographic characteristics among the ethnic minority sample of the CS	186
Table 9.2. Mutually adjusted odds ratios of perceptions of community cohesion by different sociodemographic characteristics among the ethnic minority sample of the CS	187
Table 9.3. Mutually adjusted odds ratios of satisfaction with local services by different sociodemographic characteristics among the ethnic minority sample of the CS.....	188
Table 9.4. Association between reporting a limiting longstanding illness and variables of the civic-political participation model among the ethnic minority sample of the CS	190
Table 9.5. Association between 10% increase in own ethnic density and participating in civic engagement.....	192

Table 9.6. Association between 10% increase in overall ethnic minority density and participating in civic engagement 192

Table 9.7. Association between 10% increase in own ethnic density and perceptions of community cohesion 194

Table 9.8. Association between 10% increase in overall ethnic minority density and perceptions of community cohesion 195

Table 9.9. Association between 10% increase in own ethnic density and satisfaction with local services 197

Table 9.10. Association between 10% increase in overall ethnic minority density and satisfaction with local services 197

Table 10.1 Comparison of ethnic density in Fagg et al., 2006 and in the HSE 203

List of Abbreviations

CS	Citizenship Survey
CVD	Cardiovascular Disease
FNS	Fourth National Survey of Ethnic Minorities
GHQ	General Health Questionnaire
HSE	Health Survey for England
MSOA	Middle Super Output Area
PSQ	Psychosis Screening Questionnaire
UK	United Kingdom
US	United States

Chapter 1. Introduction

Inequalities in health among ethnic groups in the United Kingdom (UK) have been extensively documented, with studies on health disparities showing a consistent discrepancy between the health of Black Caribbean, Black African, Pakistani, Bangladeshi, and to some extent, Indian people, compared to that of Chinese and White British people (Davey Smith et al., 2000; Erens et al., 2001; Nazroo, 1997; Nazroo, 2001; Nazroo, 2003a). The poorer health of some ethnic minority groups has been partly attributed to their lower socioeconomic resources and poorer standard of living (Nazroo, 2001; Williams, 1999), as well as to experiences of interpersonal racism and discrimination, which have been associated with higher levels of stress, anxiety, onset of psychotic symptoms, hypertension, and detrimental health-related behaviours, among other health outcomes (Harris et al., 2006; Karlsen & Nazroo, 2002b; Karlsen & Nazroo, 2004; Karlsen et al., 2007; Krieger & Sidney, 1996; Krieger, 2000; Nazroo, 1998; Nazroo, 2001; Nazroo, 2003a; Williams et al., 1997; Williams, 1999; Williams & Williams-Morris, 2000; Williams & Neighbors, 2001).

Besides the direct influence that experienced racism has been found to have on health, racial discrimination also impacts on health indirectly through the spatial separation, into deprived areas, of ethnic minority people from the majority population (Williams & Collins, 2001). The development of ethnically concentrated neighbourhoods can be explained by a wide range of factors, including a need for security against racially-driven harassment and discrimination; a desire to share cultural, linguistic and religious qualities; existent interpersonal connections and employment opportunities in an area; as well as housing tenure adopted by early migrants, as private landlords and public housing allocation have restricted ethnic minority groups to areas of low-quality housing (Peach & Byron, 1994).

The geographical separation of relatively affluent whites and deprived ethnic minority people means that ethnic minority groups are more likely to live in more deprived areas, a factor that is associated with increased risk of all-cause mortality, poor infant and child health, chronic disease among adults, and adverse health behaviour (Pickett & Pearl, 2001).

In addition, the residential segregation of new migrants and established ethnic minority groups has become a highly politicised and sensitive issue (Phillips, 2007). Current political and academic discourses in the UK represent ethnic minority segregation as a sign of failure (Phillips, 2007), and it has been suggested that ethnic diversity undermines a sense of community and social cohesion (Alesina & Ferrara, 2000; Costa & Khan, 2003; Glaser, 1994; Putnam, 2007).

However, despite the evidence on the negative association between area deprivation and health, and the social problems that ethnic diversity has been suggested to bring about, areas with high levels of ethnic density have also been hypothesised to provide ethnic minority residents with health promoting and protective effects on health. It is argued that as the proportion of an ethnic minority group in an area increases, their health complications will decrease, a so-called ethnic density effect (Faris & Dunham, 1939; Halpern, 1993; Halpern & Nazroo, 1999). Ethnic density has been suggested to aid in the development of positive roles (Smaje, 1995), and to facilitate increased political mobilisation and material opportunities, as well as to encourage healthy behaviour (Karlsen & Nazroo, 2002b).

Studies that have explored the ethnic density effect have reported inconsistent results, and whereas some studies have found a protective ethnic density effect on health (Boydell et al., 2001; Fagg et al., 2006; Halpern & Nazroo, 1999; Neeleman & Wessely, 1999; Neeleman et al., 2001), others have not found significant effects (Karlsen et al., 2002). This discrepancy in the findings may arise because studies have analysed areas with different ranges of ethnic density, have used different ethnic groups, different national and migration contexts, different levels of geographical measurement, adjusted for different demographic and socioeconomic confounding factors, and many have lacked statistical power. Further, the possible pathways by which ethnic density impacts on health have not yet been explored, leaving the relationship between ethnic density and health poorly understood.

This study aims to fill these gaps in the literature by exploring the effect of ethnic density on several objective and subjective health indicators, as well as on health behaviours. In addition, this study proposes, and empirically examines, three different mechanisms that are hypothesised to explain the association between ethnic density

and health: 1) through an increase in racism-related social norms, which will translate into a decreased likelihood that an ethnic minority person will experience racism; 2) through buffering the detrimental effects of racism on health; and 3) through an increase in civic-political activity, which is expected to lead to improved community services. More specifically, the aims of this study are to:

1. Examine the effect of ethnic density on health, for a range of physical and mental health outcomes.
2. Explore if the ethnic density effect differs depending on whether ethnic density is operationalised as own-ethnic group or overall ethnic minority density.
3. Examine the assumption of linearity in the relationship between ethnic density and health.
4. Explore whether the ethnic density effect differs by ethnic group.
5. Explore whether ethnic density is associated with social norms and experienced interpersonal racism.
6. Explore whether ethnic density is associated with social support, and whether this buffers the association between racism and health.
7. Explore whether ethnic minority people living in areas of higher ethnic density report greater civic-political participation, relative to ethnic minority people living in areas of lower ethnic density.

To achieve the aforementioned aims, this study used multilevel methods that modelled data from three large nationally representative datasets: the 1999 and 2004 Health Survey for England (HSE), the Fourth National Survey of Ethnic Minorities (FNS), and the 2005 and 2007 Citizenship Survey (CS).

1.1 Thesis structure

This thesis is organised in ten chapters. The second chapter describes the characteristics of ethnic minority groups in the UK, including their reasons for migration to Great Britain and their settlement patterns. It also provides an overview of their current milieu, characterised by ethnic inequalities in health and experiences of racism and discrimination. In addition, Chapter 2 delves into the concept of ethnic

density in detail, and reviews the existent literature on the ethnic density effect on health.

Chapter 3 describes the hypothesised pathways and conceptual framework of this study, and Chapter 4 delineates its aims and hypotheses.

The fifth chapter describes the three datasets analysed, as well as the methodology conducted to test the ethnic density effect and its hypothesised pathways.

Findings of this study are described in Chapters 6 to 9. Chapter 6 presents the results of the examinations conducted to test the assumption of linearity between ethnic density and health, as well as the results of the explorations of the direct association between ethnic density and several health outcomes.

Chapter 7 presents the findings of the examination of the first hypothesised pathway, the social norms model, which analyses FNS data to explore whether ethnic minority people living in areas of greater ethnic density experience less racial harassment than their counterparts who live in areas of reduced ethnic density.

The second hypothesised pathway, the buffering effects model, is empirically explored in Chapter 8, where data from the HSE and the FNS are analysed to examine whether an increase in social support, expected to be found in areas of high ethnic density, buffers ethnic minority people from the potentially pathogenic influence of experiences of racial harassment and discrimination.

Chapter 9 examines the last hypothesised pathway, the civic-political participation model, which analyses, using data from the 2005 and 2007 CS, additional dimensions by which ethnic density is hypothesised to impact on the health of ethnic minority people.

This thesis concludes with Chapter 10, which provides a summary and discussion of study findings, a description of the study's limitations, and recommendations for future research.

Chapter 2. Background and Literature Review

Chapter 2 provides an introductory background on the conditions of ethnic minority groups in the UK, as well as a review of the literature on ethnic density. The chapter is structured as follows: section 2.1 describes the ethnic minority groups explored in this study, including their reasons for migration, settlement patterns, and age structure; section 2.2 provides an overview of ethnic inequalities in health; and section 2.3 focuses on the association between racial discrimination and health. Section 2.4 defines racial residential segregation and its impact on health, as well as the patterns of residential segregation in the UK. Finally, section 2.5 provides a description and critical discussion of the existent literature on the ethnic density effect.

2.1 Ethnic minority groups in the UK

Although the transformation of Great Britain into the multi-ethnic society of today began in the 1550's with the arrival of a small number of Black African people as Britain became involved in the slave trade, notable migration didn't start until the early nineteenth century, with an influx and efflux of Irish people who came to either settle permanently, or worked temporarily and eventually returned back to Ireland. The latter part of the nineteenth century greeted an initial wave of Eastern European Jews, who migrated to Britain escaping poverty or persecution, with a second wave migrating during World War II. Ethnic minority populations in the UK increased significantly during the second half of the 20th century as a result of high rates of migration in the 1950's and 1960's. It was during that time that people from the West Indies were recruited to fill low paying jobs in urban areas, which were of low appeal to local residents. Around that same time the peak of Indian migration occurred, with people from the Indian subcontinent settling in Britain for educational and economic purposes – by 1981, the Indian population had become the largest ethnic minority group in the UK (excluding the Irish). About a decade later, Britain welcomed Ugandan refugees from the Idi Amin's government, and in the 1980's open entrance to the United Kingdom started to close, with a change in migration laws limiting the numbers of people allowed to migrate (Spencer, 1997).

A more recent wave of European migration has been occurring since Britain decided to join the European Union (EU) in 1973. With the entrance of new countries to the EU, and the employment and social benefits that membership entails, the UK has seen a particular increase in migration from Eastern European nations.

Despite the commonality of arriving to the same host country, ethnic minority groups residing in the UK differ greatly by their reasons for migration, residential clustering patterns, and age structure, among other factors. The following section provides a description of the ethnic minority groups examined in this study, and how their migration history and settlement patterns affected their current socioeconomic situation and geographic location.

2.1.1 Reasons for migration and settlement patterns

Black Caribbean people

The movement of Black Caribbean migration to the UK started in the second World War, when many people from the West Indies came to Britain as volunteers in the armed services, or technicians in industry (Peach, 1967). However, it was not until the post-war era when, due to labour shortages in Great Britain, the largest bulk of Caribbean migration occurred. This migratory wave ended around 1974, with the great majority arriving in the period between 1955 and 1964 (Peach, 1998).

The Black Caribbean population have concentrated in urban areas, and the majority are currently located in four main metropolitan clusters: Greater London, which alone accounts for over half of the Black Caribbean population, Birmingham, Greater Manchester, and West Yorkshire (Peach, 1998).

Although migrants arrived to fill semi-skilled and unskilled employment gaps, Black Caribbean people have been able to experience occupational mobility since the 1950's, with significant numbers of their population working in a managerial or professional occupations (Connolly & White, 2006).

Black African people

Although the first official recognition of their existence in the UK was the inclusion of the 'Black African' category in the 1991 Census (Daley, 1998), the Black

African presence in Britain is long-standing, rooted in the settlements established by Nigerian and Somali ex-seamen in ports such as London, Liverpool, Cardiff and South Shields, starting in the late nineteenth century. These initial settlements were subsequently replaced by the arrival of well-educated young migrants from Nigeria, Sierra Leone and Ghana, who came to Britain for educational purposes. The latest wave of Black African migration consisted of refugees seeking asylum, and started with the political instability of the 1970's and 1980's from countries like Eritrea, Uganda, Somalia, Ethiopia, Angola, Congo, and Nigeria (Daley, 1998). Early waves of migrants received better benefits, including refugee status and education and economic welfare benefits, as compared to later waves, who suffered from changes in immigration and asylum laws that left many new migrant homeless reliant on charitable organisations (Daley, 1998).

These different reasons for migration are represented in the settlement patterns of Black Africans in the UK. For example, migrants who came to the UK for educational purposes, and thus hold a high socioeconomic status, reside in middle-class neighbourhoods. In contrast, recent migration characterised by political asylum is reflected through patterns of concentration in highly segregated and deprived neighbourhoods (Daley, 1998). As a group, Black Africans are disproportionately concentrated in social housing, with high levels of overcrowding, and with similar settlement patterns as those of Black Caribbean people (Daley, 1998). Eighty percent of Black Africans live in metropolitan areas of Great Britain, including Greater London, Leeds, Sheffield, Liverpool and Cardiff. Within greater London, the boroughs of Southwark, Lambeth and Haringey have been identified as having Black African clusters, representing, in some cases, over 26% of the local population (Daley, 1998).

Indian people

The first initial phase of Indian mass migration took place in the late 1950's and early 1960's with the arrival of Sikhs and Hindus from the Punjab region and the Gujarat area. In 1970, a second wave of Indian migrants from Uganda, Kenya and Tanzania made its way to the UK, following their first migration from India to East Africa.

The majority of Gujarati Hindus have settled in north-west London and in Leicester, whereas Sikhs have settled especially in west London, Birmingham, Coventry and the town of Gravesend on the Thames estuary. Among those living in London, Indian people are geographically distributed in outer (79%), rather than inner London, living mostly in owner-occupied houses (Peach, 1998).

The current Indian population is that of professional and white-collar employment, with over 10% of men aged 16 and over in the top professional class (Peach, 1998). As compared to Bangladeshi or Pakistani women, a considerable proportion of Indian women are in the labour force, increasing the overall socioeconomic standing of Indian households.

Pakistani people

Mass migration from Pakistan started in the early 1960's with a wave of unskilled migrants that came to the UK to fill textile jobs. Although the 1962 Immigration Act was designed to curb migrant inflow by excluding all those who did not have pre-arranged employment to go to, established Pakistani migrants, mostly working in the textile mills, successfully obtained employment vouchers on behalf of acquaintances back home (Amin, 2002). The influx of Pakistani migrants increased immediately after the introduction of the 1962 Immigration Act, and decreased when voucher issuing was stopped in 1965 (Amin, 2002).

Upon arrival, Pakistani people sought employment in engineering factories in the West Midlands, and in the textile towns on both sides of the Pennines. New technologies and cheaper textiles from developing countries brought about the closure of the mills in the 1960's, which resulted in employment loss and subsequent economic hardship, creating ethnic resentment due to the competition for scarce local opportunities. During the 1970's and 1980's, wives and children came to the UK to join their family members, creating another wave of increased migration (Amin, 2002).

At present, the largest presence of Pakistani people is found in the West Midlands, the Greater London area, particularly in east London, in Yorkshire and the Humber, and the North West. The majority of Pakistani people are predominantly in manual and blue-collar employment. Despite their economic situation, Pakistani

people are mostly owner-occupiers, although their properties tend to be old terraced houses in inner cities (Peach, 1998).

Bangladeshi people

The first wave of Bangladeshi migrants arrived at the end of the 18th century to work as seamen in major port cities such as Cardiff, Liverpool, and London. Although several of these seamen ended up staying in Britain, their main objective was not to settle down, but to accumulate enough money to lead better lives in their home villages.

The second and largest wave of Bangladeshi migration started in the 1960's, and peaked after 1971 following the partition of greater Pakistan, which turned the province of old East Bengal into Bangladesh. The initial bulk of migration consisted of male economic migrants, and increased thereafter with the arrival of wives and dependants who came to join them (Peach, 1998).

Upon arrival, Bangladeshi migrants concentrated in inner London, more specifically in the borough of Tower Hamlets. Although accommodation in that area was restricted, jobs were abundant, and this attracted young Bengali men. Bangladeshi migrants reunited their families in the UK later than did other South Asian groups, which has translated into the present youthful characteristic of the Bangladeshi group. Currently, Bangladeshi people are found mainly in manual, blue-collar employment, and have settled in east London and Birmingham, areas characterised by high degrees of residential concentration and overcrowding (Peach, 1998).

As expected, individuals' reasons for migration as explained above have affected their settlement patterns and have produced distinctive areas of residence, differing between and within ethnic groups. For example, whereas nearly two thirds of people from the two Black ethnic minority groups live in Greater London, only just over one third of South Asian people reside there (Owen, 2003). Moreover, differences exist between the three South Asian groups: Indian people are more concentrated in London and the West Midlands, Pakistani people are more concentrated in West Yorkshire, Greater Manchester and the West Midlands, and Bangladeshi people are strongly

concentrated in London, Birmingham, and Greater Manchester (Owen, 1994). Within greater London, which contains 45% of the ethnic minority population, and only 10.3% of the overall population, several residential areas have been associated with specific ethnic minority groups. For example, Ugandans, Ghanaians and Nigerians are usually clustered in south London, and most Somalis reside in east London (Daley, 1998). Bangladeshi people, who account for 0.55% of the general UK population, constitute more than a third of the residents of the London borough of Tower Hamlets (Clark & Drinkwater, 2004).

As mentioned before, migrants' material conditions upon arrival reflected their migratory purposes in terms of jobs and housing (Phillips, 1998). For example, migrants who arrived to the UK in order to fill semi-skilled and unskilled employment gaps were forced, through poverty and hostility, into poor private rental accommodation and precarious owner-occupied housing located in inner cities (Phillips, 1998). By the 1960's, the product of the racialised division of labour, the segmented housing market and white suburbanisation resulted in the reinforcement of racial residential segregation. This pattern of inner city clustering, overcrowding and housing deprivation became a characteristic of migrants' life in the UK (Phillips, 1998).

This clustering of ethnic groups in deprived areas has produced long-term repercussion on the conditions of ethnic minorities through the years, impacting on employment opportunities and housing conditions. In addition, different migration histories of ethnic minority groups, including time and reasons for migrating, as well as family reuniting timeframes, have produced distinct age differences among ethnic groups, which in conjunction with other factors, such as socioeconomic position, have a significant impact on their health profiles.

2.1.2 Age differences between ethnic groups

As shown in table 2.1, which describes age data by ethnic group from the 2001 census, ethnic minority groups are, on average, younger than the White population. The youngest ethnic group is that comprised of people from mixed ethnic backgrounds, with half of all Mixed people in the 0-15 age category, and only 4% in

retirement age. White people, in comparison, comprise the oldest group, with the highest percentage of individuals in the ages of 50-59 and 60 and over (13.2% and 22.1% respectively). Chinese people have the highest percentage of individuals in the ages of 18 to 24, whereas Black people dominate the labour force age bracket of 25 to 49 years, with one fifth in the 15-34 category and over one quarter in the 35-49 age category.

These age differences have important implications for health and policy, since ethnic differences in health have been shown to emerge after age 35, with minimal differences found among populations aged 16 to 34 (Nazroo, 2001). This could mean that disease rates are low in all ethnic groups until middle adulthood, or that the detrimental results of 'weathering' discriminatory insults, experienced by ethnic minorities throughout their lives, do not become apparent until their mid-thirties (Geronimus, 1992; Nazroo, 2001). Nonetheless, ethnic minority groups comprising a younger population in the 2001 census will, in fact, grow old to represent a majority in the labour force age cohort, and in subsequent years, a majority in the retirement age.

Although as a group ethnic minorities are younger than White people, age differences exist within ethnic minority groups. For example, among the South Asian group, Bangladeshi people are younger than Indian people and other Asians, but similar in age to Pakistani people. Indian people are the oldest subgroup among South Asians, with the highest percentage in retirement and the pre-retirement age brackets. In the Black ethnic group, Other Blacks represent the youngest group, whereas Black Caribbean people represent the highest percentage of individuals in the labour force and retirement age brackets. Similarly, great heterogeneity can be found among the White group, which has historically been treated as a homogeneous ethnic group, and whose ethnicity has been left unquestioned (Nazroo, 2001). For example, White Irish people are the oldest, and other White people have the lowest percentage of individuals in the retirement and pre-retirement age bracket, and the highest percentage in the 22-49 age group. White British people, in turn, represent the highest percentage in the 0 to 15 years category.

Table 2.1. Age structure by ethnic group, as of the 2001 UK Census

Ethnic Group	Age Group, %						
	0-15	16-17	18-24	25-34	35-49	50-59	60+
All Ethnic Groups	20	3	8	14	21	13	21
White	19	2	8	14	21	13	22
White British	20	2	8	14	21	13	22
White Irish	6	1	5	13	22	18	34
White Other	14	2	13	25	23	10	14
Black	26	3	10	19	26	6	10
Black Caribbean	20	3	8	16	28	8	16
Black African	30	3	11	23	27	5	4
Black Other	38	4	12	17	21	3	5
South Asian	29	4	14	19	20	7	8
Indian	23	4	12	18	24	9	10
Pakistani	35	4	15	18	16	5	7
Bangladeshi	38	5	15	19	14	4	6
Asian Other	24	3	12	20	24	10	8
Chinese	18	4	19	18	25	9	8
Mixed	50	5	12	14	13	4	4
White & Black Caribbean	58	5	11	12	10	2	3
White & Black African	46	4	12	16	16	4	3
White & Asian	48	4	12	14	13	4	5
Mixed Other	44	4	13	15	14	5	5
Other Ethnic Group	19	3	13	25	26	10	5

Source: Office for National Statistics (ONS), All people Part 1: Census 2001, National Report for England and Wales - Part 2, Table S101

2.2 Ethnic inequalities in health

Although the collection of ethnic data in the United Kingdom began in the late 1970's, the 1991 Census was the first to classify the British population by ethnic group (Bhugra & Becker, 2005), reporting that approximately 5.5% of people residing in the UK (over 3 million) were from an ethnic minority background. By the 2001 census, the percentage of ethnic minority people had grown to 7.9%, an increase of 53% from

1991. As of the latest census, Indians were the largest UK ethnic minority group (22.7%), followed by Pakistani people (16.1%), individuals of mixed ethnic backgrounds (14.6%), Black Caribbean people (12.2%), Black African people (10.5%), and Bangladeshi people (6.1%).

Inequalities in health among ethnic groups in the United Kingdom have been extensively documented, with studies showing a consistent discrepancy between the health of Bangladeshi, Pakistani, Black Caribbean and Black African people, compared to that of White and Chinese people (Davey Smith et al., 2000; Erens et al., 2001; Nazroo, 1997; Nazroo, 2001; Nazroo, 2003a). Analyses on the Fourth National Survey of Ethnic Minorities indicate that Black Caribbean people are more likely than Whites to describe their health as fair, poor or very poor, and that Pakistani and Bangladeshi people, who fare worse than all other ethnic groups, are 50% more likely than White people to report fair, poor, or very poor health (Nazroo, 2001). Similar patterns of health disparities have been observed in other health outcomes, including long-standing illness limiting ability to work, heart disease, and hypertension, where ethnic minorities report higher rates of disease than those reported by White people. In some cases, as in diabetes amongst Pakistani and Bangladeshi people, rates of ill health are over five times that of Whites (Nazroo, 2001).

Possible explanations of health disparities have fallen on socio-economic inequalities among ethnic groups (Nazroo, 2003a). However, despite sound and replicated studies on ethnic inequalities in health, several problems on the quality of data remain. Studies often use broad categories of ethnicity (merging South Asians together, for example), or crude levels of socioeconomic data, which do not reflect actual income gradients between ethnic groups. Moreover, the majority of studies are cross-sectional and collect socioeconomic data on current position, rather than across the life course (Nazroo, 2003a). Despite these methodological flaws, important socio-economic effects have been found, accounting for a large proportion of ethnic inequalities in health. However, after accounting for socio-economic status significant differences remain among ethnic groups, providing evidence for the possibility that socio-economic factors are not the sole explanation behind ethnic disparities in health (Bécares et al., 2009f; Nazroo, 2001). The impact of socioeconomic disadvantages

experienced by ethnic minority people must be studied within a wider framework, encompassing their migrant history and disadvantaged place in society. More importantly, the explanation of ethnic inequalities in health must take into consideration health-shaping daily experiences of ethnic minorities in the UK, such as events of racial harassment and discrimination experienced by ethnic minority groups (Nazroo, 2003b).

2.3 Racial discrimination and health

Racism or racial discrimination, defined by the United Nations as “any distinction, exclusion, restriction or preference based on race, colour, descent, or national or ethnic origin which has the purpose or effect of nullifying or impairing the recognition, enjoyment or exercise, on an equal footing, of human rights and fundamental freedoms in the political, economic, social, cultural or any other field of public life” (International Convention on the Elimination of All Forms of Racial Discrimination 1965, Part I, Article I, p.2), has been examined by recent studies as a possible cause of the health gap among ethnic minority groups, reporting associations between interpersonal ethnic discrimination and higher levels of stress, anxiety, and high blood pressure, among other health outcomes (Karlsen & Nazroo, 2002b; Karlsen & Nazroo, 2004; Karlsen et al., 2007; Krieger, 1990; Krieger & Sidney, 1996; Krieger, 1999; Paradies, 2006; Williams et al., 1997; Williams, 1999; Williams & Williams-Morris, 2000; Williams & Neighbors, 2001; Williams & Mohammed, 2009).

Racial discrimination can be enacted through two different, although not mutually exclusive paths: interpersonally and/or institutionally. Interpersonal or personally mediated discrimination refers to discriminatory interactions between individuals, either intentionally or by omission (Jones, 2000; Karlsen & Nazroo, 2002b). Institutionalised discrimination, on the other hand, is embodied in discriminatory policies embedded in organizational structures (Jones, 2000; Karlsen & Nazroo, 2002b), and can discern itself as inherited disadvantage.

Prevalence of racial discrimination in the UK has been clearly established in several studies. Analyses of the Fourth National Survey of Ethnic Minorities have shown that in the year previous to the survey, 3% of the respondents believed that they

or their property had been physically attacked for reasons to do with their ethnicity; 12% reported experiencing racially motivated verbal abuse; and 64% believed that some British employers would refuse someone a job on the grounds of race, colour, religion, or cultural background (Virdee, 1997). Differences in the experiences of racial victimisation have been reported by socio-demographic indicators such as areas of residence, social class, age and gender, among others. For example, men under 45 years of age and Indian, Pakistani, Bangladeshi and Chinese non-manual workers reported higher prevalence of racial harassment in the last 12 months as compared to their counterparts (Virdee, 1997). Regarding tenure and council housing accommodation, Virdee (1997) states that whereas no difference was found in the experiences of racial harassment among Black Caribbean, African Asian and Chinese people living in owner-occupied or council-rented housing, Indian and Pakistani people living in council-rented accommodation were found to be one and a half times more likely than their owner-occupier counterparts to report racial discrimination. The opposite was found for Bangladeshi people, who were less likely to be victimised if living in council property than in owner-occupied accommodation (Virdee, 1997). Variations in the experiences of racial harassment among ethnic minority people were found by area of residence as well, whereby ethnic minority people living in the South East were one and a half times more likely to experience racial harassment than their counterparts living in the West Midlands region (Virdee, 1997).

More recent analyses of racism in the UK have found that variations currently exist within sociodemographic characteristics. For example, ethnic minority females are more likely to report experiencing fear of interpersonal racism than males, but less likely to report expected organisational discrimination or employment discrimination (Bécares et al., 2009e). In terms of age differences, older people report less organisational and employment discrimination than younger ethnic minority people. Examinations of social class variations show that whereas people in lower grades report greater odds of experiencing fear of interpersonal racism relative to people in higher socioeconomic position, they are less likely to report expected organisational and employment discrimination (Bécares et al., 2009d).

Several studies have linked experiences of discrimination to poor health of UK ethnic minority people. In their 2002 study, Karlsen and Nazroo found that respondents who reported experiences of verbal abuse were approximately 50% more likely than those who did not report such events to describe their health as fair, poor or very poor. Respondents who reported being physically attacked or having their property vandalized were found to be over 100% more likely than those who did not to report fair, poor or very poor health. Furthermore, people who believed the majority of British employers to be racist were approximately 40% more likely to report fair, poor or very poor health compared to those who believed that fewer than half of employers were racist (Karlsen & Nazroo, 2002b). Other studies have found that, after controlling for socioeconomic factors, fear of interpersonal racism and expected organisational racism are significantly associated with reports of limiting longstanding illness, additionally contributing to ethnic inequalities in health (Bécares et al., 2009c).

Discrimination has been suggested to impact on health through different mechanisms, including leading to economic and social deprivation (Williams, 1999); through socially inflicted trauma (Karlsen & Nazroo, 2002b; Krieger & Sidney, 1996; Krieger, 2000; Williams, 1999; Williams & Neighbors, 2001; Williams & Mohammed, 2009); by leading to affective reactions such as sadness (Harrell, 2000); through shaping an individual's appraisal of the world (Harrell, 2000); by reinforcing secondary status and impacting on one's self esteem (DuBois et al., 2002); and by internalising negative stereotypes (Williams & Williams-Morris, 2000). In addition, racism has been stated to be one of the leading pathways of residential segregation, which has been deemed to be a fundamental cause of ethnic inequalities in health (Williams & Collins, 2001).

2.4 Racial residential segregation

Residential segregation has been defined as the spatial differentiation and distribution of majority and minority ethnic groups across a metropolitan area and its neighbourhoods (Acevedo, 2000; Acevedo et al., 2003), and has been referred to as a social manifestation of individual prejudices and institutional discrimination, and as one of the mechanisms by which racism operates (Acevedo, 2000; Collins & Williams,

1999; Grady, 2006; Pettigrew & Meertens, 1995). Processes shaping residential segregation include inwardness caused by deprivation and inequality, the distrust and fear caused by generalised racism, and the experience of continuous discrimination of exclusion along ethnic lines (Amin, 2002). Moreover, discrimination in housing markets has been stated to limit the urban space that members of certain racial or ethnic groups can occupy, preventing upwardly mobile members of ethnic minority groups from becoming more spatially integrated with White people (Acevedo, 2000). In the UK, studies have suggested that racism is a major factor affecting the residential choices and housing tenure adopted by early migrants, as private landlords and public housing allocation have restricted ethnic minority groups to areas of low-quality housing (Peach & Byron, 1994).

Segregation has been stated to concentrate poverty, dilapidation, and social problems in ethnic minority neighbourhoods (Farley & Frey, 2007; Massey & Denton, 1993), resulting in under-funded and ineffective institutions in these communities (Massey & Denton, 1993). Wards with high proportions of ethnic minority residents have been shown to be more densely populated, with more social housing, lower proportion of households with cars and central heating, higher proportions of unemployment, and lower proportions of individuals in professional and managerial occupations (Clark & Drinkwater, 2002).

Residential segregation has been hypothesised to impact on employment opportunities by isolating ethnic minority people in segregated communities from social networks that could provide leads about potential jobs (Wilson, 1987). The social isolation created by these structural conditions in segregated residential communities can then induce cultural responses that weaken the commitment to norms and values, which may be critical for socioeconomic mobility. For example, long-term exposure to conditions of concentrated poverty can undermine a strong work ethic, devalue academic success, and remove the social stigma of imprisonment and educational and economic failure (Shihadeh & Flynn, 1996; Williams & Collins, 2001).

Residential segregation can impact on health either directly, if the mere fact of living in a deprived neighbourhood is deleterious to health, or indirectly, through a

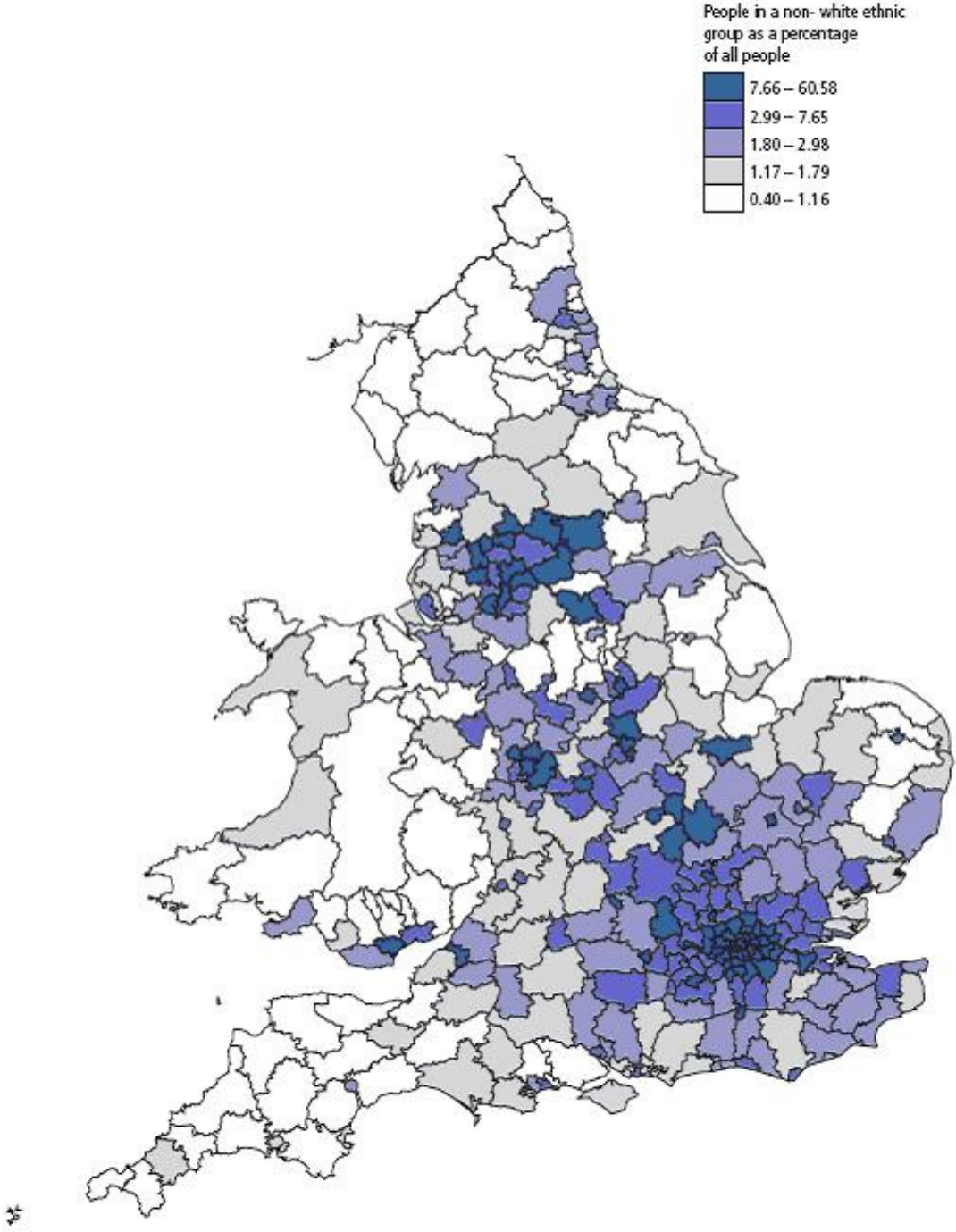
broad range of pathogenic residential conditions, such as the availability and accessibility of health services, lack of healthy foods and recreational facilities, environmental pollution, access to transportation, normative attitudes towards health, and social support (Acevedo, 2000; Cummins et al., 2004; Pickett & Pearl, 2001; Polednak, 1997; Williams & Collins, 2001). A recent review of the literature found negative neighbourhood effects to be associated with an increased risk of all-cause mortality, infant and child health, chronic disease among adults, and detrimental health behaviour (Pickett & Pearl, 2001). Additional studies have found that perceptions of severe problems in the community, such as drug, gang, and crime activity, number of grocery stores, and garbage collection, among others, are associated with greater odds of depression, anxiety and stress (Gary et al., 2007).

2.4.1 Residential segregation in the United Kingdom

Previous sections in this chapter provided an overview of the migratory histories of ethnic minority people in the UK, producing residential patterns that developed over time for several reasons, including a need for security against racially-driven harassment and discrimination; a desire to share cultural, linguistic and religious qualities; existent interpersonal connections and employment opportunities in an area; as well as housing tenure adopted by early migrants, as private landlords and public housing allocation restricted ethnic minority groups to areas of low-quality housing (Peach & Byron, 1994).

Despite comprising a numerical minority of the overall UK population, ethnic minority groups are over-represented in specific geographic areas, accounting for a majority of the neighbourhood resident population. This is exemplified in figure 2.2, which presents a map of the distribution of ethnic minority residents in local authorities of England and Wales. Ethnic minority residential concentration ranges from 0.40% to 60.58%, with the majority located in the London area, which holds 45% of all ethnic minority people, comprising 29% of all residents in the region. The second largest area of ethnic minority residential concentration is the West Midlands (13%), followed by the South East (8%), the North West (8%), and Yorkshire and the Humber (7%).

Figure 2.1. Percentage of ethnic minority residents in Local Authorities, England and Wales, Census 2001



Source: Office of National Statistics. © Crown Copyright (ONS. GD272183. 2003).
Available at: <http://www.statistics.gov.uk/census2001/maps.asp>

It is important to note that the increase in ethnic minority people from the 1991 to the 2001 census did not result in an increase in the number of localities dominated by one single ethnic minority group, but in a growth of mixed areas and greater diversity (Simpson, 2006). Moreover, a migratory movement has been reported for both White and non-White individuals from areas of higher ethnic density towards predominantly White areas (Simpson, 2006). The increase in ethnic minority people has neither brought about an additional uneven distribution of ethnic minority groups across neighbourhoods, or an increase in self-segregation per part of ethnic minority people moving towards majority non-White localities (Simpson, 2006). Nonetheless, existing neighbourhood studies show that Black Caribbean, Pakistani, Bangladeshi, and to some extent Indian people are more likely than White people to reside in disadvantaged wards (Karlsen et al., 2002), which are characterised by poor social and material infrastructure, including low quality and quantity of leisure facilities, transport, housing, physical environment, food shopping opportunities, and primary and secondary health services (Cummins et al., 2004). Moreover, living in a deprived neighbourhood has been associated with an increased risk of poor-rated physical and mental health (Cummins et al., 2004; Stafford & Marmot, 2002), and given that UK ethnic minorities have been found to reside in deprived areas, it is possible that they are being disproportionately affected by detrimental area effects on health.

Despite the evidence on the deleterious effect that residential segregation has on socioeconomic standing and health, areas with high levels of ethnic minority concentration have been hypothesised to provide its residents with an information network highly valuable in social interactions and economic activities, such as expenditures and employment opportunities (Chiswick & Miller, 2005). In the case of new migrants, living in areas with high concentrations of co-ethnics provides them with location-specific human capital acquired by neighbourhood residents (longer term migrants or natives of the same origin), including information obtained directly and indirectly through established networks (Chiswick & Miller, 2005). In addition, regional and national associations fostering social networks are closely linked with the clustered settlement process (Daley, 1998), possibly reflecting their investment in the facilities, either commercial or civic, established for their communities. For example,

ethnic minority people have been found to perceive the amenities in their neighbourhood in a more favourable manner than White people, even though these areas are more deprived (Karlsen et al., 2002). Furthermore, it has been hypothesized that the concentration of ethnic minorities in a particular geographical area, or **ethnic density**, might provide its residents with protective effects on health, through the **ethnic density effect**.

2.5 Ethnic density

Researchers in several disciplines have investigated the properties of the ethnic density effect on different outcomes, including education, health, and economic mobility. Hypotheses of the ethnic density effect in health research stipulate that as the size of an ethnic minority group increases, their health complications will decrease (Faris & Dunham, 1939; Halpern, 1993). It has been stated that ethnic density may aid in the development of positive roles (Smaje, 1995), and it may facilitate increased political mobilisation and material opportunities, as well as encourage healthy behaviour (Karlsen et al., 2002). Moreover, explanations behind the ethnic density effect articulate that positive health outcomes are attributed to the protective and buffering effects that enhanced social cohesion, mutual social support and a stronger sense of community and belongingness provide from the direct or indirect consequences discrimination and racial harassment (Bhugra & Becker, 2005; Daley, 1998; Halpern & Nazroo, 1999; Smaje, 1995), as well as from the detrimental effects of low status stigma (Pickett & Wilkinson, 2008).

Despite several studies analysing the ethnic density effect on health, which will be summarised and discussed later on, the mechanisms by which the ethnic density effect operates have not yet been examined, and although some hypothesised causes have been posited (Halpern & Nazroo, 1999; Pickett & Wilkinson, 2008; Smaje, 1995), specific pathways have not. While the understanding and discussion of the ethnic density effect in the health research arena is still in its infancy, several debates have taken place in other disciplines.

2.5.1 Theoretical approaches to ethnic density

This section aims to provide a description of different theoretical explanations that have emerged in an effort to rationalise the consequences of ethnic minority concentration. Although not directly related to health, they are an interesting example of the diverging processes and consequences expected to occur from the same phenomena.

One of the earliest theories on the outcomes of ethnic minority concentration, the competition hypothesis (Blalock, 1956; Blalock, 1957), explains the influence that competition for economic and/or political resources exerts in forcing individuals to organise themselves into groups, developing stereotyping or denigrating ideologies of opposing groups, and therefore engaging in inter-group conflict. One of the most powerful factors generating inter-group competition is migration, which organises resource competition along ethnic lines. According to the competition hypothesis, the White majority will react negatively towards a spatial increase of ethnic minority people, as an attempt to protect their privileged position from the perceived threats of an increasing ethnic minority group. This negative reaction as a consequence to the 'power-threat' experienced by White people will bring about economic and/or political competition, which is expected to result in an increased socioeconomic success by the White majority, and a subsequent worsening of socioeconomic position by ethnic minority groups (Albrecht et al., 2005; Blalock, 1956; Blalock, 1957; Tomaskovic-Devey & Roscigno, 1996). In summary, according to the competition hypothesis, ethnic density will result in detrimental outcomes for ethnic minority people.

In the 1960's, Norval Glenn coined the exploitation hypothesis, which posits that contrary to White people reacting as a consequence of perception of threat, as in the competition hypothesis, White people will discriminate towards ethnic minority groups in response to the potential benefits they can gain from exploitation. As a result of an increase in ethnic minority concentration, White people's socioeconomic position will improve and that of ethnic minority people will worsen, due to the economic gains that White people will obtain from discrimination (Glenn, 1963). Other theories, however, have hypothesized discrimination to be less prevalent in areas of high ethnic density, due to the co-ethnic similarity of potential customers and

employers (Clark & Drinkwater, 2002). For example, Holzer and Inlandfeldt (1998) report that in firms with a higher proportion of ethnic minority customers, there is a higher probability that an ethnic minority worker will be hired.

A decade after the exploitation hypothesis, Thurow drafted the queuing model (Thurow, 1975), in which a rank is created relative to the attractiveness of jobs in a community, and to the qualifications of individuals seeking those jobs. Due to either discrimination or to the social capital advantages of White people, Whites will get most of the preferred jobs, and ethnic minority residents will end up with low-wage jobs, underemployment, and unemployment (Lieberson, 1980; Thurow, 1975). However, contrasting with the competition and exploitation hypotheses, an increase in the proportion of ethnic minority population will benefit ethnic minority residents, since as the amount of ethnic minority residents increases, so will their chances of obtaining preferred jobs, due to the shortage of qualified White people to hold all preferred positions. Thus, in the queuing model, minority disadvantage will decrease as the numbers of ethnic minority people increases.

A contrary view to the negative outcomes of the competition and exploitation hypotheses is presented by the contact hypothesis (Allport, 1954), which posits that inter-group contact leads to reduced prejudice. However, in order for a reduction in prejudicial affect to occur, four conditions must be met, including equal group status within the situation (for example, similar socioeconomic status), common goals, inter-group cooperation, and authority support (Allport, 1954). It is expected that in areas of medium and high ethnic density, individuals will have a greater chance for inter-group interaction, and therefore, a greater likelihood of attitude modification. However, it is also possible that in areas of large ethnic density inter-group contact is less frequent due to increased segregation, which might lead to a decreased likelihood of encountering individuals from other ethnic groups (Farley & Frey, 2007; Taylor et al., 1990). Although Allport's intergroup contact hypothesis has been widely tested and supported (see Pettigrew, 1998 for a review of the literature), several problems have been found with the theory's premises, including the necessary conditions, the lack of generalisation to other situations, and the failure to assess process (Pettigrew, 1998).

Albeit important and perhaps predictive of the interactions between ethnic density and socioeconomic outcomes, existent theoretical models fail to recognise the impact that living among other co-ethnics has on other aspects, including health.

The impact of ethnic density has also been the focus of a debate occurring in the social and/or public policy discipline, where discussions have taken place around the question of whether ethnic density (or diversity, as it is used in this literature) promotes or undermines social cohesion and social capital.

2.5.2 Does ethnic diversity erode social capital?

Debates of ethnic density in the public policy discipline have revolved around the notion of social capital, a key domain of social cohesion (Forrest & Kearns, 2001). Social capital has been defined as the “features of social life such as networks, norms and trust, that enable participants to act together more effectively to pursue shared objectives” (Putnam, 1996; p.56). It has been linked to several health outcomes and measures of well-being (Kawachi et al., 2004), and has been argued to generate positive social outcomes (Putnam, 1993).

Social capital has been characterised to be either bonding (inward looking) or bridging (outward looking), so whereas bridging social capital includes people across diverse social divisions, bonding social capital is centred on relationships and networks of trust and reciprocity that reinforce bonds and connections within groups (Putnam, 2000). Ethnicity has been referred to as a form or cause of social capital because ethnic group membership is often a basis for networks of social relations (Bankston & Zhou, 2002), and because social capital obtained through resources found in ethnic minority networks is considered the leading factor in improving the chances of upward mobility among ethnic minority people, and a source of economic and moral support for second generations (Portes & Zhou, 1993).

However, a wave of recent theoretical and empirical works maintain that ethnic diversity undermines a sense of community and social cohesion, positing that individuals prefer to interact with others that are similar to themselves, and so as ethnic concentration increases in an area, social capital decreases (Alesina & Ferrara, 2000; Costa & Khan, 2003; Glaeser et al., 2000; Putnam, 2007). However, the bulk of this literature has been conducted in the US, and the association between ethnic diversity,

social capital and social cohesion is not yet clear in the UK. When disentangling the relationship between ethnic diversity and social capital, studies in Britain have found that ethnic diversity impacts negatively only on neighbourhood attitudes (including enjoying living in the neighbourhood, feeling that neighbours can be trusted, and that a wallet will be returned if lost), but that it does not impact on interaction or socialisation with other residents (Letki, 2006). More importantly, studies have found area deprivation to have a stronger impact on social capital than ethnic diversity (Laurence & Heath, 2008; Letki, 2006), and have reported that it is disadvantage, and not diversity, which erodes social cohesion. In addition, studies have shown that once other factors are adjusted for, a positive association exists between ethnic diversity and most indicators of social cohesion (Laurence & Heath, 2008). Examinations of voter turnout have also shown positive findings of ethnic diversity, reporting that turnout of British Asian and British Muslim groups improves as the size of the ethnic minority population increases (Fieldhouse & Cutts, 2008). Other UK studies, however, have not found any significant association between ethnic diversity and other related measures of social capital, including civic participation or formal volunteering (Pennant, 2005).

Despite these findings, discussions of integration and social cohesion are commonplace in the UK. Fuelled by the riots that occurred during the summer of 2001 in the northern cities of Oldham, Burnley and Bradford, and the 2005 London bombings, current debates and policy initiatives in Britain have focused on assimilationist and monoculturalist tendencies, rather than on multiculturalist values (Cheong et al., 2007). These ideologies are underlined by a concern that increased ethnic and cultural diversity is an antagonist of unity and solidarity (Cheong et al., 2007), which highlights the perceived dangerous association between increased migration and the likelihood of a decrease in British welfare (Goodhart, 2004), as well as the fear that multiculturalism has gone too far and is endangering social cohesion and national identity (Cheong et al., 2007). This has led to a promotion of social cohesion through the integration of ethnic minority groups and new migrants into the mainstream society, in order to reduce the risk of social and political disruption (Zetter et al., 2006). This explicit encouragement of social cohesion in Britain has been delineated by three factors: the adoption of an assimilationist perspective on migrant

integration, as explained above; the relative reduction in policies on material welfare for migrant communities; and the shift in institutional responsibility, which moved from the Environment Department, concerned with housing conditions and neighbourhood resources, to the Home Office, focused on its community cohesion agenda (Zetter et al., 2006).

These efforts to promote social cohesion through integration and communitarism have been criticised because they fail to recognise the importance of the wider social and economic inequalities they produce (Franklin, 2001), and have been blamed to direct attention away from the institutional structures and practices of racism that have created existent health and socioeconomic inequalities in the first place (Cheong et al., 2007). Prior to engaging in building bonding social capital as suggested by political bodies, ethnic minority people living in deprived neighbourhoods are often more concerned about access to jobs, housing and public services (Salmon, 2002). These schemes, thus, should not oversee the findings that highlight the importance of area deprivation over diversity on the erosion of social cohesion, given that initiatives that seek to enhance social cohesion while ignoring the structural factors that are responsible for material deprivation, are unlikely to have a major impact on health (Stafford et al., 2004).

Ethnic density, perhaps perceived by some as eroding social capital, can become the source of a great psychosocial benefit for ethnic minority groups (Goulbourne & Solomos, 2003). For example, Black Caribbean youth have been stated to use bonding social capital built through the resources of family relationships, kin membership and civic participation, to express their sense of self and ethnic identity (Reynolds, 2006), and social capital among refugees and asylum seekers in Britain is used to take on a protective role against the hostile environment of immigration policy (Zetter et al., 2006).

2.5.3 Studies of the ethnic density effect: a review of the UK literature

Studies have explored the existence of an ethnic density effect on health in several countries, although most of the literature is based on data from the US and the UK. Given the different countries of origin of the predominant minority groups in different host countries, their differing reasons for migration, differing timing of

migration throughout the last three centuries, and differing cultural, economic and demographic profiles, this literature review, as this thesis in general, will specifically focus on quantitative studies conducted in the UK (summarised in table 2.2).

The first study to note an ethnic density effect on health dates back to 1939, when Robert Faris and Warren Dunham found that although White Chicago residents had generally lower first psychiatric admission rates than Black residents, this was not the case in the areas of highest Black ethnic density (Faris & Dunham, 1939). A set of ecological US studies followed Faris & Dunham's classic study finding similar results (Levy & Rowitz, 1973; Mintz & Schwartz, 1964; Muhlin, 1979; Rabkin, 1979), and it was not until 1988 when Raymond Cochrane and Sukhwant Bal explored the ethnic density effect in the UK. Using data from the Mental Health Enquiry for all psychiatric admissions in 1981, Cochrane and Bal (1988) examined psychiatric admissions of the main foreign-born groups in England. Basing their ecological analyses on country of birth, not ethnicity, the researchers conducted ecological correlations between group size and admission rates within geographical areas, as well as correlations between admission rates and the size of ethnic groups across areas (Cochrane & Bal, 1988). Analyses, which were conducted for the whole of England and for the different regional health authorities, did not show an ethnic density effect between groups. However, small non-significant effects of ethnic density were found within ethnic minority groups. Besides its ecological design and the limitations that this entails in terms of associations found at the ecological level dubiously reflecting individual-level associations (Robinson, 1950), Cochrane and Bal analysed ethnic density at areas too large to detect an effect. Given the clustering of ethnic minority people in Britain, and the restricted range of ethnic density, analyses conducted at the national, or even regional health authority level, were unlikely to detect an ethnic density effect.

The second study to note an ethnic density effect in the UK was conducted in 1991 by Ecob and Williams, whose purpose was not to test the ethnic density effect, but to create a sampling methodology that provided proper representation of ethnic minority people living in areas of low concentration (Ecob & Williams, 1991). Ecob and Williams divided Glasgow postcode sectors into areas of high (>6%), medium (3% to 6%), and low South Asian ethnic density (<3%), and after correcting for

undersampling and nonresponse, examined the blood pressure, body mass index, lung function, health behaviour (smoking, drinking and exercise), self-reported overall health, limiting longstanding illness, number of accidents since age 15, chronic conditions, feelings of sadness in the past year, and mental health (measured with the General Health Questionnaire; GHQ) of their sample. Whereas results showed a negative effect of ethnic density on blood pressure, number of accidents in the past year, and chronic conditions, a protective effect of ethnic density was found for GHQ and feelings of sadness.

It was not until 1995 that another study purposely examined the ethnic density effect in the UK. Analysing data from the 1985-86 Survey of Londoner's Living Standards (SLLS), Chris Smaje explored the effect of ethnic density on self-rated general health, acute illness, and health as a major problem among 2703 White, Black and South Asian adults living in 30 London wards. As a measure of ethnic density, Smaje created a location quotient, which measured a deficit or surplus of a given ethnic minority population residing in a sub-area, relative to their overall ethnic representation in Greater London (Smaje, 1995). Results of logistic regressions adjusting for age, gender, individual socioeconomic status, ethnicity, and area-level deprivation showed that people living in areas with lower concentrations of their own ethnic group were significantly more likely to report poor health and acute illness relative to those living in areas of medium concentration. Although this study improved the methodological limitations of its predecessors, it failed to use multilevel models to allow for the clustering of individuals in the different wards, which tend to be more similar to each other than to individuals living in a different location. In addition, it lumped Black African and Black Caribbean people into one group (Black), and African Asian, Indian, Pakistani and Bangladeshi people into another (South Asian), ignoring the heterogeneity found within ethnic minority groups (Senior & Bhopal, 1994). Finally, although the location quotient was calculated for Black and South Asian people separately, which created a measure of own ethnic density, Smaje conducted all his analyses using pooled models, failing to identify between-group differences in ethnic density.

In a later study, Neeleman and Wessely (1999) investigated the relationship between ethnicity and suicide risk in the south London boroughs of Lewisham, Lambeth, Southwark and Greenwich (Neeleman & Wessely, 1999). The researchers calculated relative risk rates of suicide among ethnic minority people as compared to those of Whites, per one standard deviation (SD) increase in overall ethnic minority density. Examinations of the effect of own ethnic density were conducted by testing for an interaction between ethnicity and ethnic density. Results showed that after adjusting for deprivation, age, gender, and the deceased's minority status, suicide rates in areas with greater proportions of ethnic minority residents were higher among Whites (RR per SD increase in overall ethnic minority density: 1.18; 95% CI: 1.02-1.37) but lower among all ethnic minority groups (RR: 0.75; 95% CI: 0.59-0.96). A similar effect was found for Afro-Caribbean and Asian people separately, although results of the interaction were not significant. This study was the first in the UK to account for the multilevel structure of the data, using random effects Poisson regression models that adjusted for clustering rates at ward level. Despite this methodological improvement, several limitations remained: first, individuals' ethnicity was assigned by searches of coroners' inquests, police records and post-mortem photographs, and grouped into White, Afro-Caribbean, Asian and other. This method of ethnic group classification poses a considerable methodological flaw, due to the hybrid (Modood et al., 1997) and highly contextual (Karlsen & Nazroo, 2002a) nature of ethnicity. Observer assigned ethnicity has been deemed subjective, imprecise, and unreliable (Senior & Bhopal, 1994), and so it provides a weak variable for the study on the impact of ethnic density on health outcomes, since individuals might have been misclassified by phenotypic characteristics, rather than by the personal experience of ethnicity. In addition, a large heterogeneous group of 'Asians' was used in the analyses, replicating Smaje's limitation. Second, although area deprivation was adjusted for, this study did not control for individual socioeconomic status; and lastly, the study did not account for other psychological factors linked to suicide, such as social cohesion and social support. Although the difficulty in obtaining such information in a retrospective manner is obvious, these social support variables have been associated with both the exposure and the outcome variables (Faris & Dunham,

1939), and thus not controlling for their mediating effects might be distorting our understanding between ethnic density and health.

In a subsequent study on the topic of ethnic density, Neeleman and colleagues (2001) analysed the association between ethnic density and deliberate self-harm in White, Afro-Caribbean and Asian residents living in the south London boroughs of Lambeth, Southwark and Lewisham (Neeleman et al., 2001). The researchers obtained accident and emergency attendance data on deliberate self-harm from King's College Hospital and Lewisham Hospital, and assigned individuals to either the White, African-Caribbean or Asian ethnic group. In contrast with their previous article (Neeleman & Wessely, 1999), in this study ethnicity was obtained as self-assignment, although individuals were still lumped into large ethnic groups. Following with the same methodology, the researchers used again relative ratios (those of ethnic minority people versus those of White people) to examine whether the risk of deliberate self-harm varied depending on the area's ethnic density; did not control for the effect of individual socioeconomic status; analysed the effect of own ethnic density by introducing an interaction term between respondents' ethnicity and ethnic density; and employed analytical methods that allowed for the clustering of individuals within areas. In this article, however, the researchers added a novel squared and cubed ethnic density term, which permitted to test the assumption of linearity between ethnic density and health, assumed by previous studies. After conducting negative binomial regressions adjusting for area deprivation, age, ethnicity, gender and catchment area, the authors found a linear relationship between an increase in ethnic minorities in the area and a reduction in the relative rates of deliberate self-harm (RR per SD increase in Afro-Caribbean density: 0.76; 95% CI: 0.64 – 0.90 for Afro-Caribbean people, and RR per SD increase in Asian density: 0.59; 95% CI: 0.36 to 0.97 for Asian people). However, the authors found that a squared and cubed density term fitted the data better, and reported a curvilinear inverted U-shaped relationship between ethnic density and the relative risk of deliberate self-harm for ethnic minority residents, whereby risks of self-harm were lowest in areas with both the lowest and highest ethnic density. Results of this study suggested a complicated process of the interaction

between the protective effects of ethnic density and health outcomes (Neeleman et al., 2001).

The first study to analyse the effect of ethnic density on a national community survey was conducted by Halpern and Nazroo, who analysed data from the Fourth National Survey of Ethnic Minorities (FNS) linked to the 1991 census to explore the effect of ethnic density on neurotic and psychotic symptoms (Halpern & Nazroo, 1999). Ethnic groups were combined into one ethnic minority group, as well as divided into Indian, Pakistani, Bangladeshi, African Asian, Chinese, Black Caribbean and White. This allowed for the possibility of conducting two different analytical models, one with all ethnic groups combined, to explore between and within group effects, and one stratified by ethnic group, which only allowed for within groups exploration. Ethnic density was measured as the percentage of the residents in the respondent's ward belonging to his/her same ethnic group. Regression models were controlled for age, sex, and economic hardship, as well as for language ability, age at migration and experiences of victimisation. Results showed a consistent relationship for all ethnic groups (including White people) between living in areas with high density of co-ethnics, and lower symptoms of mental distress. Moreover, when controls for age, sex and hardship were applied, the association between ethnic density and lower levels of neurotic and psychotic symptoms was strengthened for all ethnic minority people combined. Further analyses exploring the effects of ethnic density on experiences of victimisation and social support found that, as the authors had hypothesised, ethnic minority people living in areas of high ethnic density reported lower levels of victimisation and higher levels of social support. Moreover, analyses on social support variables such as providing help to people outside the household, and sending and receiving money to dependants outside the household, were found to be significantly associated with higher ethnic density. Within-group correlations between ethnic density and mental health yielded that, except for the Pakistani group, all other ethnic minority groups showed lower mental health symptoms when residing in areas of higher own ethnic density. This study was the first in the UK to conduct analysis at the census ward level using national data, to use distinctive ethnic minority groups, and to explore both pooled and stratified models of ethnic density. However, this study did

not use multilevel modelling, failing to account for the clustering effects of individuals nested in neighbourhoods. In addition, it is possible that given the stratified analyses conducted, the researchers encountered insufficient statistical power to detect significant effects.

Another study on the effects of ethnic density on mental health in south London was conducted by Boydell and colleagues (2001), who analysed data from all individuals residing in the south London borough of Camberwell who attended psychiatric services at the Bethlem Royal and Maudsley NHS Trust with a presentation of psychosis (Boydell et al., 2001). The study population was divided into two ethnic groups, White and non-White, which consisted mainly of Black Caribbean and Black African people. Multilevel Poisson regression analysis tested for the ethnic density effect by using an interaction term of the individual's ethnic minority status (White vs non-White) and ethnic density. After adjusting for age, sex and ward level of deprivation, results showed that as ethnic density decreased, the rate of schizophrenia among ethnic minorities increased (Boydell et al., 2001). Moreover, the authors found a 'dose-response' relationship between increased incidence of schizophrenia and decreased ethnic density, so that the incidence rate ratio went from 2.38 (95% CI: 1.49 - 3.79) in the wards with the largest percentage of ethnic density (28% to 57%) to 4.40 (95% CI: 2.49 to 7.75) in the wards with the smallest percentage (8% to 22%). Similar to previous studies (e.g., Neeleman and Wessely, 1999, Neeleman et al., 2001), this study did not adjust for individual socioeconomic position. In addition, it used a largely heterogeneous 'non-White' ethnic group, and it analysed psychiatric admission rates, introducing sampling bias since it only examined treated populations (Halpern, 1993; Halpern & Nazroo, 1999).

The second study that analysed a community-based national dataset was conducted in 2002 by Karlsen, Nazroo and Stephenson, who applied multilevel regressions to data from the FNS linked to the 1991 Census to explore ethnic minority people's perceptions of their areas of residence, and to examine the effect of ethnic density on overall self-rated health (Karlsen et al., 2002). Ethnic density was measured as percentage of residents living in the respondent's ward belonging to his/her same ethnic group, and was categorised as fewer than 5%, between 5% and 15%, and more

than 15%. Results showed that the only group for which there was an association between ethnic density and self-rated health was for Whites, for whom living in a neighbourhood with less than 5% overall ethnic minority density was significantly associated with increased odds of reporting fair or poor health. The authors argued that for White people, living among larger groups of ethnic minorities created a protective effect through an improved comparative social status, which could be beneficial to health (Karlsen et al., 2002). This study, which did not support the ethnic density hypothesis, addressed some of the previous limitations of ethnic density research (e.g., poor definition of ethnic groups, collecting data from regional areas, measuring ethnic density with a 'non-White' variable, failing to measure the impact of mediating variables, and weak analytical approaches). Despite these improvements, this study still had two major limitations: first, similar to the limitation encountered by Halpern and Nazroo (1999), who used the same dataset, it is possible that the authors encountered low statistical power. Second, the use of a rigid, categorical variable employed by the authors hinders the examination of ethnic density at higher levels than those specified in these analyses. It is possible that due to these limitations, effects of ethnic density on the self-rated health of ethnic minority people were not detected.

The FNS was used again for a study exploring the determinants of unhappiness of ethnic minority men in Britain (Shields & Wailoo, 2002). Although examining the ethnic density effect was not the main purpose of the study, the authors explored the impact of own ethnic density on the unhappiness of White, Black Caribbean and Asian men. Ethnic density was divided into low (<5%), medium (5% - 32%), and high (>32%) categories, and was analysed using probit regression models that adjusted for age, marital status, number of children, ethnicity, caring responsibilities outside the household, long-term illness, currently being on prescribed medication, limited physical ability in the past two weeks, education, region, urbanisation, satisfaction with area, season of interview, having had a major accident, having been a victim of burglary, and having been attacked. Ethnicity-stratified models did not show a significant association between ethnic density and unhappiness, although South Asian men tended to suffer from a reduction in unhappiness at low densities. Similar to the

previous study using the FNS (Karlsen et al., 2002), this study did not support the ethnic density effect, although results were somewhat limited by an over-adjustment of covariates, and by the omission to use multilevel modelling to analyse the data.

In 2005, Propper and colleagues conducted the first analyses exploring the ethnic density effect using longitudinal data (Propper et al., 2005). Up to then, studies had analysed cross-sectional datasets, which did not allow to discern whether living in a low ethnic density area preceded poor health of ethnic minority people, or vice versa. Using the first five waves of the British Household Panel Survey (1991 to 1995) linked to the 1991 Census, the researchers estimated 5-year changes of common mental disorders among Whites and non-Whites, measured with the 12-item version of the GHQ. ‘Bespoke’ neighbourhoods were constructed containing the nearest 500-800 people to each individual in the sample, which created areas 1/5 the size of UK wards used in previous studies. Effects of ethnic density were examined with an interaction between ethnicity (White, non-White) and a factor that measured to what extent the bespoke neighbourhood was ‘non-White,’ which was created using principal component analysis, and contained high loadings on proportion of Pakistani, Bangladeshi, Indian or Black residents. Multilevel regression models were adjusted for age, gender, education, income, number of people in household, tenure, social class, area deprivation, urban-ness, age structure of the neighbourhood, and spatial mobility. Results showed a protective effect for change in GHQ among non-White respondents, who experienced a less negative poor mental health trajectory when living in more ethnically mixed areas. Despite defining neighbourhood at a smaller scale than previously analysed, employing multilevel modelling, and analysing a longitudinal dataset, the contribution of this study to the ethnic density literature is somewhat limited, since it only provided information about overall ethnic minority density for all ethnic minority people combined, without distinguishing whether the effect of overall ethnic minority differed between ethnic groups.

After the last studies on ethnic density had analysed national data, James Fagg and colleagues returned to analyses restricted to local areas, examining psychological distress among adolescents in the east London boroughs of Newham, Tower Hamlets and Hackney (Fagg et al., 2006). The study linked data from the Research with East

London Adolescents: Community Health Survey (RELACHS) to Middle Layer Super Output Area (MSOA) data from the 2001 census, and used the Strengths and Difficulties Questionnaire (SDQ) as a measure of psychological distress. After respondents were classified into four broad ethnic groups (White, South Asian, Black African/Caribbean, and Other), Bayesian regression analysis were conducted to examine whether SDQ scores varied at the individual and area levels, and whether variables at the different levels (including area deprivation, social fragmentation and ethnic density) predicted SDQ scores. Examinations of the ethnic density effect were conducted with analyses of an interaction term between own ethnic density and ethnicity. Results showed a curvilinear effect of ethnic density, which only held for South Asian adolescents. Whereas South Asian adolescents had good psychosocial health compared to other ethnic groups, this advantage was not significant for South Asian adolescents living in areas with very high concentrations of co-ethnics. This study replicated limitations from preceding articles, including analyses using local-level data and heterogeneous ethnic groups.

In another study set in London, Kirkbride and colleagues (2007) explored socioenvironmental risk factors of schizophrenia across 33 wards in southeast London using data from the Aetiology and Ethnicity in Schizophrenia and Other Psychoses (AESOP) study (Kirkbride et al., 2007). Multilevel Poisson regressions adjusted for age, sex, ethnicity, population density, area deprivation, voter turnout, ethnic fragmentation and ethnic density were used to model the incidence of schizophrenia and other non-affective psychosis between wards. Ethnic density was measured as the percentage of any ethnic minority resident in the ward, and was divided into three categories (low: 24.8% - 48.1%, medium: 48.2% - 56.1%, and high: 56.4% - 74.3%). The ethnic density effect was tested by considering two interactions: one between ethnicity (White vs non-White) and ethnic density, and the other between ethnic minority group (White, Black Caribbean, Black African, Asian, Mixed, White other, and Other ethnic group) and ethnic density. Results showed that whereas there was no evidence that the association between schizophrenia and ethnic minority group (seven-category variable) was modified by ethnic density, a marginal effect of ethnic density was found when ethnicity was entered as a dichotomous variable ($p = 0.07$). An ethnic

density effect was not found for other non-affective psychoses. This study provides interesting findings on the difference between analysing the ethnic density effect for individual ethnic minority groups, or all combined, likely to be due to increased statistical power.

In a successive study using the same dataset and similar methodology, including same outcomes, same definition and categorisation of ethnic density, and same analytical models, Kirkbride and colleagues (2008) found a weak association in the cross-level interaction between ethnicity (White British vs Other) and ethnic density, whereby compared with the White British population, the risk of schizophrenia was greatest for ethnic minority residents of wards with the lowest ethnic density (IRR: 6.6; 95% CI: 3.0 – 14.2), and although remained high, decreased as ethnic density categorically increased (IRR in the highest group: 3.8; 95% CI: 1.4 – 10.9) (Kirkbride et al., 2008).

In conclusion, a substantial amount of research has shown a protective ethnic density effect on health in the UK, although studies have been more supportive of a protective effect on mental health, rather than on physical health. Of the 13 studies conducted in the UK, 10 have found a protective effect, and only one of those explored the ethnic density effect on physical health (Smaje, 1995). Among studies that did not find an ethnic density effect, two focused on mental health (Cochrane & Bal., 1998; Shields & Wailoo, 2002), one on physical health (Ecob & Williams, 2001), and one on overall self-rated health (Karlsen, Nazroo & Stephenson, 2002).

Ethnic density studies conducted elsewhere have also found this incongruity in their results, and whereas several studies have been able to demonstrate a protective effect of ethnic density in the US (Fang et al., 1998; Franzini & Spears, 2003; Pickett et al., 2005; Rabkin, 1979; Wickrama et al., 2005), others have not (Baker & Hellerstedt, 2006; Cooper et al., 1999; Ellen, 2000; Jackson et al., 2000; LeClere et al., 1998; Mason et al., 2009; Yankauer, 1950). To further add to this discrepancy, studies in the US have shown that ethnic density is more consistent for Hispanic people, but less clear for African Americans, who sometimes report protective effects in terms of mental health (Levy & Rowitz, 1973; Rabkin, 1979; Wickrama et al., 2005), but

adverse effects otherwise (Yankauer, 1950; 1958; LeClere, 1997; Jackson, 2000; Ellen, 2000; Cooper, 2001; Baker, 2006; Mason, 2009).

This discrepancy in the findings can be attributed to the fact that studies have used different health outcomes, different definitions of ethnic groups, different levels of geographical measurement, and weak methodological approaches (see table 2.3 for a summary of the limitations in the existent UK literature). It is also possible that other variables in the relationship between ethnicity, neighbourhood and health are overshadowing the effect of ethnic density, masking its protective effect on health. For example, Karlsen and colleagues refer to the interplay between socio-economic status and health, indicating that the concentration of ethnic minority people in socio-economically deprived neighbourhoods might disguise the protective effects of ethnic density through the negative health impact of living in deprived areas (Karlsen et al., 2002).

Despite an increase in the past few years in the number of studies exploring the ethnic density effect, either directly or as a covariate, and two theoretical papers having been published to date (Halpern, 1993; Pickett & Wilkinson, 2008), the field of ethnic density is still in its infancy. No explanations have yet been given to why ethnic density impacts on mental health more strongly than on physical health, why it affects some ethnic groups more than others, or why in some instances own ethnic density is protective, and in others overall ethnic minority density shows an effect. In addition, the majority of studies examining the ethnic density effect have modelled its association with health in a linear manner, but have not purposely tested for an assumption of linearity. This contributes to the current lack of understanding of ethnic density, for it is not clear whether the hypothesised mediating effect of ethnic density increments/diminishes in power, or changes direction as ethnic density increases. Moreover, the pathways by which ethnic density impacts on health have not yet been explored.

This study aims to shed some light on the ethnic density effect by exploring, in Chapter 6, the effect of ethnic density on several health indicators and health behaviours, and by testing the assumption of linearity in the association between ethnic density and health. In addition, this study proposes, in Chapter 3, and empirically tests

in Chapters 7 to 9, three different mechanisms that are hypothesised to explain the association between ethnic density and health.

Table 2.2. Summary of studies exploring the effect of ethnic density on health in the UK

Reference	Sample	Health outcome	Ethnic density measurement	Area measurement	Methodology	Results
<i>EVIDENCE OF ETHNIC DENSITY EFFECT FOUND</i>						
Ecob, R., & Williams, R. (1991)	Self-collected data in 1986 to 1987. N= 173 Asians aged 30 – 40 years old	Blood pressure, body mass index, lung function, smoking, drinking exercise, self-reported overall health, limiting longstanding illness, number of accidents since age 15, chronic conditions, feelings of sadness in the past year, and mental health (12-item GHQ)	Proportion of Asian born. Three categories, high (>6%), medium (3 <6%), and low (<3%)	Glasgow postcode sectors	Single-level regressions adjusted for age, sex, religion, household size, car ownership, house needing repair, number of household durables	Protective effect of ethnic density found for mental health (GHQ) and feeling sad or low.
Smaje, C. (1995)	N=2703 adults from the Londoner's Living Standards Survey (1985-86)	Overall self-rated health, health as a major problem, acute illness	High location quotient (>1.71), medium location quotient (0.58-1.71) or low location quotient (<0.58) LQ: deficit or surplus of a given	London electoral wards	Logistic regression controlling for age, gender, individual SES, ethnicity, concentration and area-level deprivation	- People living in areas where their own ethnic group has a low relative concentration are 52% more likely to report poor health than in the medium category. - When including area variables, and omitting

Reference	Sample	Health outcome	Ethnic density measurement	Area measurement	Methodology	Results
			ethnic minority population residing in a sub-area relative to the overall ethnic composition of larger area.			ethnicity, low LQ was positively associated with reporting health as a major problem (OR: 1.81, p<.01). - Both high and low concentration were positively and significantly associated with reporting poor health.
Neeleman, J., & Wessely, S. (1999)	- N= 902,008 residents of the London boroughs of Lewisham, Lambeth, Southwark and Greenwich -11% Afro-Caribbean; 6% Asian	Suicide	Proportion of all ethnic minority residents; proportion of Afro-Caribbean and Asian residents.	Electoral wards	Random effects Poisson regression controlling for age, gender and area deprivation.	Suicide rates in areas with greater proportions of ethnic density were higher among Whites (RR 1.18; 95% CI 1.02-1.37) but lower among minority groups (RR 0.75; 95% CI 0.59-0.96; p=0.003).
Neeleman, J., Wilson-Jones, C., & Wessely, S. (2001)	- N=1643 people attending the accident and emergency department of two hospitals in south London after	Deliberate self-harm	Proportion of all ethnic minority residents; proportion of Afro-Caribbean and Asian residents.	Electoral wards	Negative binomial regressions controlling for ward deprivation levels and attenders' ethnicity, gender, age and	In the linear model, as local minority and ethnic population sizes increased, White rates rose more or declined less than those of ethnic minorities. With fully

Reference	Sample	Health outcome	Ethnic density measurement	Area measurement	Methodology	Results
	deliberate self-harm.				catchment area.	adjusted linear models a curvilinear association between ethnic/minority density and RR of DSH was shown.
Halpern, D., & Nazroo, J. (1999)	4 th National Survey of Ethnic Minorities: 5196 people of Caribbean, Indian, Pakistani, Bangladeshi, and Chinese ethnic background, and a comparison sample of 2867 White people.	- Neurotic symptomatology (CIS-R) - Psychotic symptoms (PSQ)	Percent of residents of same ethnic group.	Census wards	Multivariate regressions controlling for age, sex, hardship, language ability, age at migration, and experiences of victimisation.	- For all ethnic minority groups combined, living in areas of higher own-group concentration was associated with significantly lower neurotic and psychotic symptom levels. - Within-group analysis found small effect sizes, only for Indian, Caribbean (CIS-R and PSQ) and Bangladeshi (PSQ).
Boydell, J., van Os, J., McKenzie, K., Allardyce, J., Goel, R., McCreadie, G., & Murria, M. (2001)	- All individuals aged 16+ residing in Camberwell, south London, who had contact with psychiatric services during 1988-1997 -N=222 people	Schizophrenia (Research Diagnostic Criteria)	Thirds of distribution: -highest: 28.2%-57% -middle: 23%-28.1% -lowest: 8%-22.8%	15 Electoral wards	Multilevel Poisson regressions controlling for age, sex and ward deprivation	-Incidence of schizophrenia in non-Whites increased significantly as the proportion of minorities in the local population fell. - Adjusted incidence rate ratios for the lowest third

Reference	Sample	Health outcome	Ethnic density measurement	Area measurement	Methodology	Results
	<p>identified with schizophrenia.</p> <ul style="list-style-type: none"> - 57% men - Mean age: 35.4 yrs. -Whites: 43% -non-Whites: 57% 					<p>proportion of ethnic minorities in the neighbourhood were of 4.4 (95% CI: 2.49-7.75); for the middle third were of 3.63 (95% CI: 2.38 to 5.54), and for the highest third were of 2.38 (95% CI: 1.49-3.79).</p>
<p>Propper, C., Jones, K., Bolster, A., Burgess, S., Johnston, R., & Sarker, R. (2005).</p>	<p>First 10 waves of the British Household Panel Survey (1991-2000).</p> <ul style="list-style-type: none"> - For cross-sectional analysis: N=8184 - For longitudinal analysis: N=7047 	Mental health (12-item GHQ)	Factor measuring to what extent bespoke neighbourhood was 'non-White'	'Bespoke' neighbourhoods which contain the nearest 500-800 people to each individual in the sample	Multilevel regression models adjusted for age, gender, education, income, number of people in household, tenure, social class, area deprivation, urbanness, age structure of the neighbourhood, and spatial mobility	<ul style="list-style-type: none"> - Cross-sectional: No interaction between area and individual ethnicity. - Longitudinal: a protective effect found for change in GHQ among non-White respondents, who experienced a less negative poor mental health trajectory when living in more ethnically mixed areas
<p>Fagg, J., Curtis, S., Stansfeld, S., & Congdon, P. (2006)</p>	<ul style="list-style-type: none"> - N= 2790 adolescents sampled from east London schools. -49% female -21% White; 45% 	Mental health (Strengths and Difficulties Questionnaire; SDQ)	Proportion of population of same ethnic group as respondent.	Middle layer standard output areas (aggregations of output areas).	Bayesian regression controlling for parental unemployment, eligibility for free school meals and	Curvilinear relationship between SDQ and ethnic density was found only for South Asians.

Reference	Sample	Health outcome	Ethnic density measurement	Area measurement	Methodology	Results
	South Asian; 20% Black African/Caribbean; 14% Other				family size.	
Kirkbride, J., Morgan, C., Fearon, P., Dazzan, P., Murray, R., & Jones, P (2007)	- Data from Aetiology and Ethnicity in Schizophrenia and Other Psychoses (AESOP) Study (1997-1999) - All incident cases aged 16-64 across 33 wards in southeast London	Schizophrenia (ICD-10) and other non-affective psychoses	Percent non-white British, divided into three categories (low: 24.8% - 48.1%, medium: 47.2% - 56.1%, and high: 56.4% - 74.3%).	Census ward	Multilevel Poisson regression adjusted for age, sex, ethnicity, area deprivation, voter turnout, population density, ethnic density, and social fragmentation	- A marginal effect of ethnic density was found when ethnicity was entered as a dichotomous variable (p = 0.07). - An ethnic density effect was not found for other non-affective psychoses.
Kirkbride, J., Boydell, J., Ploubidis, G., Morgan, C., Dazzan, P., McKenzie, K., Murray, R., & Jones, P. (2008)	- Data from Aetiology and Ethnicity in Schizophrenia and Other Psychoses (AESOP) Study (1997-1999) - N=16459 across 33 wards in southeast London	Schizophrenia (ICD-10)	Percent non-White British, divided into three categories (low: 24.8% - 48.1%, medium: 47.2% - 56.1%, and high: 56.4% - 74.3%).	Census ward	Multilevel Poisson regression adjusted for age, sex, ethnicity, area deprivation, population density, ethnic density, social capital and social fragmentation	Compared with the White British population the risk of schizophrenia was greatest for ethnic minority residents of wards with the lowest ethnic density (IRR: 3.8; 95% CI: 3.0 – 14.2), and although remained high, decreased as ethnic density categorically

Reference	Sample	Health outcome	Ethnic density measurement	Area measurement	Methodology	Results
						increased (IRR in the highest group: 3.8; 95% CI: 1.4 – 10.9).
<i>NO EVIDENCE OF ETHNIC DENSITY EFFECT FOUND</i>						
Ecob, R., & Williams, R. (1991)	Self-collected data in 1986-1987. N= 173 Asians aged 30 – 40 years old	Blood pressure, body mass index, lung function, smoking, drinking exercise, self-reported overall health, limiting longstanding illness, number of accidents since age 15, chronic conditions, feelings of sadness in the past year, and mental health (12-item GHQ)	Proportion of Asian born. Three categories, high (>6%), medium (3 <6%), and low (<3%)	Glasgow postcode sectors	Single-level regressions adjusted for age, sex, religion, household size, car ownership, house needing repair, number of household durables	<ul style="list-style-type: none"> - Higher blood pressure found in areas of high density - Higher number of accidents and chronic conditions in areas of high density - No association between ethnic density and BMI, lung function, health behaviours, self rated health, number of days in bed or limiting illness - Protective effect of ethnic density found for mental health (GHQ) and feeling sad or low.
Cochrane, R., & Bal, S. (1988)	Mental Health Inquiry for 1981 (186000 admissions)	Schizophrenia (first admission)	Percent foreign-born	National and West Midlands regional Health Authority	Ecological correlations between group size and admission rates within geographical areas, and	<ul style="list-style-type: none"> - England: Ethnic groups that had higher numbers were more likely to have high rates of male schizophrenia. - Regional level: Ethnic

Reference	Sample	Health outcome	Ethnic density measurement	Area measurement	Methodology	Results
					correlations between admission rates and the size of ethnic groups across areas.	groups that had higher numbers in the West Midlands were more likely to have high rates of schizophrenia among females.
Karlsen, S., Nazroo, J., & Stephenson, R. (2002).	- 4 th National Survey of Ethnic Minorities: (N=5196 ethnic minorities, and a comparison sample of 2867) White people. -Whites: 35.6% -Caribbeans: 14.9% - Indians: 28.4% - Bangladeshis and Pakistanis: 22%	Overall self-rated health	For ethnic minorities: percentage of residents living in the respondent's ward of the same ethnic group (<5%; 5-15%; >15%) For whites: percentage of residents from any ethnic minority group living in same ward as respondent (<2%; 2-5%; >5%)	Electoral wards	Multilevel analysis controlling for age, gender and occupational class	- For white respondents, coming from a neighbourhood with less than 5% overall ethnic minority density was significantly associated increased odds of reporting fair or poor health. - No other ethnic density effects were found
Shields, M. & Wailoo, A. (2002)	- Male sample (aged 22 to 64) from the 4 th	Unhappiness (items from GHQ)	Percent Black Caribbean, Percent South	Census ward	Probit regression models adjusted for age, marital status,	A significant association was not found between ethnic density and

Reference	Sample	Health outcome	Ethnic density measurement	Area measurement	Methodology	Results
	National Survey of Ethnic Minorities.		Asian, divided into low (<5%), medium (5-32%), and high (>32%) categories.		number of children, ethnicity, caring responsibilities outside the household, long-term illness, currently being on prescribed medication, limited physical ability in the past two weeks, education, region, urbanisation, satisfaction with area, season of interview, having had a major accident, having been a victim of burglary, and having been attacked	unhappiness, although South Asian men tended to suffer from a reduction in unhappiness at low densities.

Table 2.3. Summary of limitations in the UK ethnic density literature

1. The combination of ethnic groups into one ‘non-White’ group or several large heterogeneous ethnic groups, such as the classification of ‘South Asians’ for Bangladeshis, Pakistanis and Indians (e.g., Neeleman and Wessely, 1999; Neeleman et al., 2001; Boydell et al., 2001; Fagg et al., 2006).
 2. The measurement of ethnic density as either ‘own-group’ residential concentration or ‘overall minority’ concentration, failing to test whether the ethnic density effect is group-specific or the result of living among other ethnic minorities, regardless of specific ethnic group. Moreover, several studies have been inconsistent in the definition of ethnicity, measuring ethnic group specifically (e.g., Black) but defining ethnic density as general minority concentration (e.g., non-White) (e.g., Boydell et al., 2001; Fagg et al., 2006).
 3. The use of statistical analyses that do not account for the nested nature of the data, underestimating variation in area-level estimates (e.g., Cochrane & Bal., 1988; Halpern & Nazroo, 1999).
 4. The use of data collected in few and similar areas in close proximity (e.g., boroughs in south east London), which does not allow for generalisation of the effects of ethnic density to other areas and/or ethnic groups (e.g., Neeleman and Wessely, 1999; Neeleman et al., 2001; Fagg et al., 2006).
 5. The failure to test and control for confounders and mediators in the relationship between ethnic density and health, concealing possible effects of ethnic density, and failing to provide insight into pathways linking the ethnic density effect to health outcomes (e.g., Neeleman and Wessely, 1999; Neeleman et al., 2001; Boydell et al., 2001).
 6. The use of inappropriate categories of ethnic density, making difficult the detection of an ethnic density effect, a possible threshold, and/or testing the linearity of the association between ethnic density and health (e.g., Boydell et al., 2001; Karlsen, Nazroo and Stephenson, 2002).
 7. Low statistical power hindering the detection of possible effects (e.g., Karlsen, Nazroo & Stephenson, 2002).
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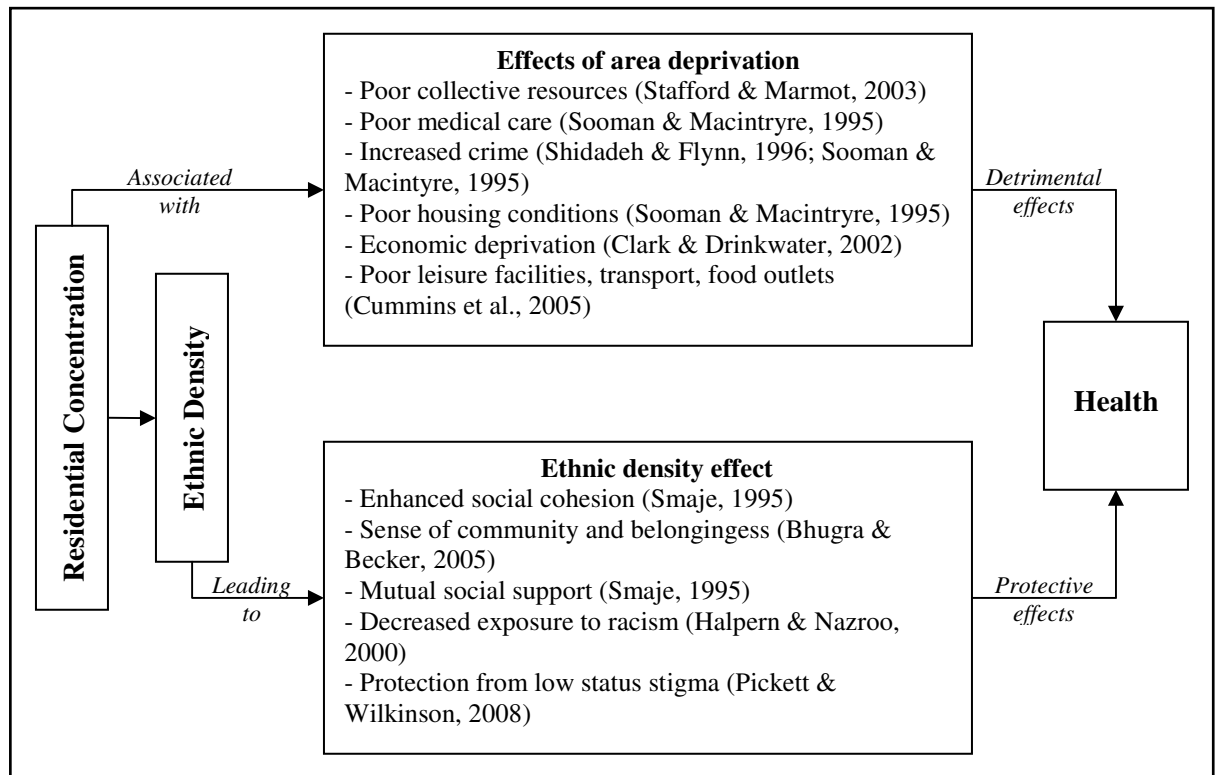
Chapter 3. Hypothesised Pathways

Chapter 2 provided an overview of the migration histories of Black Caribbean, Black African, Indian, Pakistani and Bangladeshi people to the UK, as well a description of their current situation, which is characterised by experienced racism and inequities in health and socioeconomic status. These factors, together with housing tenure adopted by early migrants, a desire to share cultural, linguistic and religious characteristics, existent interpersonal connections, and a need for security against racially-driven harassment and discrimination, have over time produced, and been in turn affected by, residential patterns that have forced a majority of ethnic minority people to live in the most deprived areas of the country. These deprived areas tend to be more densely populated, with more social housing, a lower proportion of households with cars and central heating, higher proportions of unemployment, and lower proportions of individuals in professional and managerial occupations (Clark & Drinkwater, 2002). In addition, they are also more likely to have lower quality and quantity of leisure facilities, transport, housing, physical environment, food shopping opportunities, and primary and secondary health services (Cummins et al., 2005). It is of no surprise, then, that residence in a more deprived area has been found to be associated with poorer health across a whole range of health outcomes (Pickett & Pearl, 2001).

It is against this backdrop that ethnic density is hypothesised to protect the health of ethnic minority people. Figure 3.1 presents the harmful aforementioned neighbourhood effects on health that are associated with area deprivation (top text box), as well as the protective benefits of ethnic density on health (bottom text box), which are associated with residential concentration. Both detrimental area deprivation effects and protective ethnic density effects are mechanisms at the neighbourhood level which impact on health. Given this interplay of protecting and detrimental mechanisms impacting on health, it is possible that injurious consequences of area deprivation are concealing the ethnic density effect. Nonetheless, several studies in the UK and in the US have found protective effects of ethnic density on health. Although evidence for an ethnic density effect has been indeed reported, the mechanisms by

which ethnic density impacts on health are not yet understood, and although possible causes of this protective effect have been posited, including those listed in the ethnic density box in figure 3.1, theoretical frameworks have not yet been empirically examined.

Figure 3.1. Associations between residential segregation, ethnic density and health



This study proposes three pathways by which ethnic density impacts on the health of ethnic minority people: 1) through an increase in racism-related **social norms**, which will translate into a decreased likelihood that an ethnic minority person will experience racism; 2) through **buffering** the detrimental effects of racism on health; and 3) through an increase in **civic-political activity**, which is expected to lead to improved community services.

3.1 Social norms model

The social norms model hypothesises that the existence of racism-related social norms in areas of high ethnic density will reduce the likelihood that an ethnic minority

person will experience racism or discrimination. Figure 3.2 is a graphic representation of the social norms model, which is based on reports that ethnic minority people living in areas of greater ethnic density experience less racial harassment than their counterparts living in areas of reduced ethnic density (Halpern & Nazroo, 1999).

Decreased incidence of racism is hypothesised to be the result of the enforcement of informal social control exerted over deviant behaviour (Sampson et al., 1997), produced by low tolerance against discrimination. The social norms model proposes that an increase in ethnic minority residents in an area will be associated with an increase in racism-related social norms, such as low tolerance against racist victimisation. This, in turn, is hypothesised to translate into informal social control against interpersonal racial harassment. As shown in figure 3.2, the social norms model also takes into consideration the fact that due to an increase in ethnic minority residents, the likelihood of encountering a perpetrator will be decreased. This will not only be due to a decrease in the proportion of possible perpetrators, but also to the results of increased racism-related social norms.

Figure 3.2. Social norms model

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3.2 Buffering effects model

The buffering effects model posits that ethnic density will buffer, or protect, ethnic minority people from the detrimental impact of racism on health. The buffering effects model is based on Cohen and Wills' buffering hypothesis (Cohen & Wills, 1985), which is then extended and applied to experiences of racism and discrimination. In their '*Stress, social support, and the buffering hypothesis*' article, Sheldon Cohen and Thomas Wills proposed a buffering model by which social support interferes in the association between a stressful event and poor health. Cohen and Wills' model, presented in figure 3.3, specifies that social support buffers a stressful event from producing ill health by first altering the appraisal of a potentially stressful event, attenuating or preventing a situation from being appraised as highly stressful, and second, by reducing or eliminating the physiological reaction to the stressor (Cohen & Wills, 1985; p. 312).

Figure 3.3. Cohen and Wills (1985) social support and buffering hypothesis model
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The buffering effects model proposes that ethnic density will diminish the detrimental effects of racism through two different, yet not mutually exclusive mechanisms: a) a change in the appraisal process of a stressful event, such as interpersonal racial harassment, and b) the recognition and discussion of experienced discrimination with others.

The first mechanism, a change in the appraisal process, is based on the premise that racial harassment is usually perceived and internalised by ethnic minority people as evidence of their own flaws and subordinate status (Krieger & Sidney, 1996), rather than as an act perpetrated from a discriminatory and prejudicial stance. However, it is hypothesised that increased social support found in areas of higher ethnic density will generate positive role models (Smaje, 1995), a stronger sense of community and belongingness (Bhugra & Becker, 2005), and enhanced social cohesion (Smaje, 1995), which will bestow upon the person subjected to interpersonal racial harassment a different perspective, based on the likelihood that the discriminatory event experienced is not due to an internalized individual flaw, but rather to an assault by an aberrant, racist perpetrator. This cognitive process, in turn, is hypothesised to decrease self-stigmatisation and stress, which have been related to physical and mental health (Anderson et al., 1989; Chakraborty & McKenzie, 2002; Williams, 1992).

The second mechanism, the recognition and discussion of experienced discrimination with other ethnic minority people, emerges from the indication that an individual's social support and social networks, expected to increase in areas of high ethnic density, may permit an ethnic minority individual to recognize and discuss experiences of racism with peers, which has been proposed to mediate the association between racism and health (Karlsen & Nazroo, 2002a). It has been shown that among people who report having experienced discrimination, those who do something about it, such as reporting the event, or talking to others about it, have better health outcomes than those who do not (Clark & Gochett, 2006; Krieger, 1990; Krieger & Sidney, 1996). It is thus hypothesised that ethnic minority people who have greater possibilities of discussing events of experienced discrimination with peers, through

greater contact with other co-ethnics and increased social support, will be less affected by the detrimental impact of racism, and will report better health.

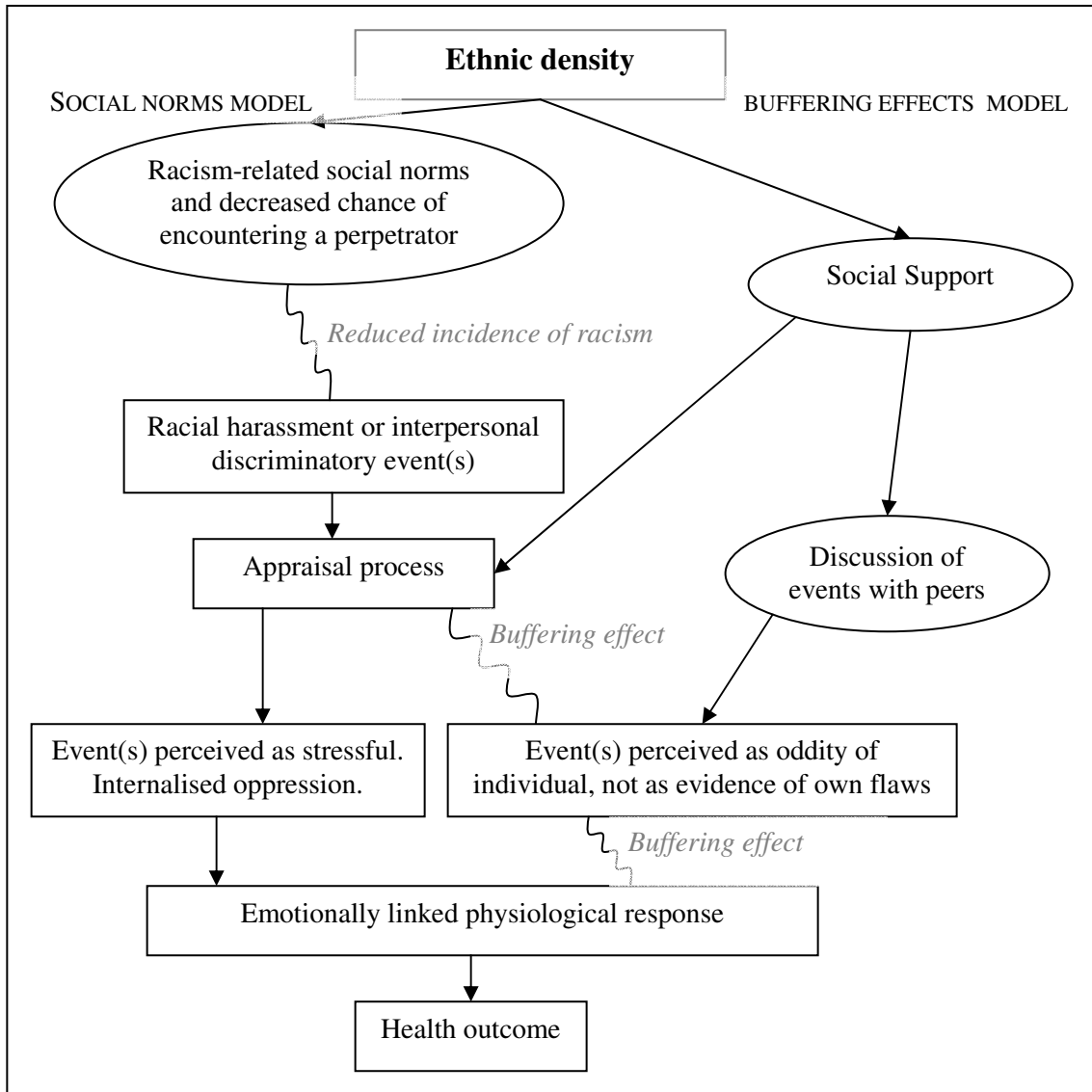
Figure 3.4 presents these two buffering pathways that emerge from increased social support in areas of higher ethnic density. Besides the indirect impact of social support through the two aforementioned mechanisms, the buffering effect model also takes into consideration the direct association that has been found to exist between increased social support and better health outcomes (Cohen & Wills, 1985; Kawachi & Berkman, 2001).

Figure 3.4. Buffering effects model

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The social norms model and the buffering effects model propose that ethnic density attenuates the detrimental impact of racism and discrimination on health by either reducing its prevalence, or by buffering its detrimental effect. Figure 3.5 illustrates the combined social norms and buffering effects pathways by which ethnic density is hypothesised to impact on health.

Figure 3.5. Hypothesised ethnic density pathways counteracting the impact of racism on health



As shown in figure 3.5 this study proposes that through a hypothesised decrease in tolerance against racism, ethnic density will reduce the likelihood that an ethnic minority person will experience racism or discrimination (social norms model). Among those who do experience racism, an increase in social support, expected to be found in areas of high ethnic density, will protect the health of ethnic minority people through a change in the appraisal process of the racist event, and/or through the opportunity to discuss the event with peers or report it to the authorities (buffering effects model). The combination of these mechanisms is expected to result in improved health among ethnic minority people living in areas of high ethnic density.

3.3 Civic-political participation model

The third hypothesised pathway proposes additional dimensions by which ethnic density impacts on the health of ethnic minority people. The civic-political participation model hypothesises that ethnic density will protect the health of ethnic minority people through increased civic and political engagement, which are expected to be fuelled by, and to produce, a stronger sense of community and belongingness. Figure 3.6 presents how this increase in civic-political participation is then expected to translate into better services for the community, such as an increased number of community centres and services for neighbourhood residents. Political empowerment and the subsequent provision of appropriate services are then hypothesised to result in better health for ethnic minority people.

The hypothesised mechanisms by which ethnic density operates in the civic-political participation model draw on the US literature, which suggests that in highly segregated areas, political empowerment attenuates the negative consequences of segregation on health (LaVeist, 1992; LaVeist, 1993). However, the US literature cannot be directly translated to the UK context for several reasons, including differing degrees of residential segregation, different countries of origin of the predominant minority groups, differing reasons for migration, and differing cultural, economic and demographic profiles of the ethnic groups represented, and in this particular context, different civic and political cultures in the two countries. In the UK, studies exploring the association between residential segregation, civic engagement and political participation have found mixed results: whereas some studies have found increased voter turnout in areas of high ethnic density (Fieldhouse & Cutts, 2008), others have found no statistically significant association between ethnic density and political participation (Pennant, 2005). This study will help resolve this debate, with a priori hypothesis that increased ethnic density will be associated with increased political participation.

Participation in community and voluntary organisations has been suggested to provide a sense of belonging and social identity argued to be relevant for the promotion of psychological well-being (Faris & Dunham, 1939), and the civic-political participation model further hypothesises that by engaging in community

volunteering and organisations, residents will develop increased community cohesion and sense of belonging (Hipp & Perrin, 2006), which will in turn incite greater participation (see figure 3.6). The civic-political participation model also accounts for the fact that ethnic density might also provide a critical mass of demand that will result in local service providers making greater effort to respond to the requirements of ethnic minority people more generally.

Figure 3.6. Civic-political participation model

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In conclusion, this study proposes, and will test in the subsequent chapters, three pathways by which ethnic density impacts on health: the social norms model (tested in Chapter 7), the buffering effects model (tested in Chapter 8), and the civic-political participation model (tested in Chapter 9).

Chapter 4. Aims and Study Hypotheses

4.1 Aims

Previous chapters have described the current literature on the ethnic density effect, and have delineated the hypothesised pathways to be explored in this study. Although consistent evidence has shown an ethnic density effect on mental health, results are mixed in terms of physical health and overall self-rated health. In addition, no study to date has explored the mechanisms by which ethnic density impacts on health, and so the ethnic density effect remains poorly understood.

The main aim of this study is to fill this empirical gap and to contribute to the evidence on the ethnic density effect by exploring its impact on several physical and mental health outcomes. In addition, this study aims to determine whether the effects of ethnic density depend on its definition (own versus overall ethnic minority density), or on the ethnic group and health outcome under investigation. More specifically, this study aims to:

1. Examine the effect of ethnic density on health, for a range of physical and mental health outcomes.

2. Explore if the ethnic density effect differs depending on whether ethnic density is operationalised as own ethnic density or overall ethnic minority density.
3. Examine the assumption of linearity in the relationship between ethnic density and health.
4. Explore whether the ethnic density effect differs by ethnic group.
5. Explore whether ethnic density is associated with social norms and experienced interpersonal racism.
6. Explore whether ethnic density is associated with social support, and whether this buffers the association between racism and health.
7. Explore whether ethnic minority people living in areas of higher ethnic density report greater civic-political participation, relative to ethnic minority people living in areas of lower ethnic density.

4.2 Study hypotheses

Based on the current literature on ethnic density, described in Chapter 2, and the proposed study pathways, detailed in Chapter 3, this thesis will test the following hypothesis:

Hypothesis 1: The health of ethnic minority people residing in areas of high ethnic density will be better than the health of ethnic minority people residing in less ethnically dense areas, after controlling for area deprivation and individual socio-demographic characteristics. In order to help resolve the debate over the existence of an ethnic density effect, this hypothesis will be tested on several physical and mental health outcomes, as well as on overall self-rated health and health behaviours. The ethnic density effect on these outcomes will be tested for each ethnic group separately, defining ethnic density as co-ethnic density and overall ethnic minority density. This will additionally contribute to the literature by clarifying whether the ethnic density effect is consistent across ethnic minority groups, and whether the effect differs depending on the definition of ethnic density used.

Hypothesis 2: Ethnic minority people living in areas of high ethnic density will report an increase in racism-related social norms, as compared to their counterparts living in areas of lower ethnic density. As outlined in the social norms model, lower incidence of experienced discrimination is expected to be the result of an increase in social norms and informal social control. Different measures of racism-related social norms will be analysed in Chapter 7 in order to test this hypothesis and the overall social norms model.

Hypothesis 3: Ethnic minority people living in areas of high ethnic density will report increased social support, relative to ethnic minority people living in areas of lower ethnic density.

Hypothesis 4: The impact of discrimination on health will be less among ethnic minority people living in areas of high ethnic density, as compared to their counterparts living areas of less ethnic density.

Hypotheses 3 and 4 test different aspects of the buffering effects model. Hypothesis 3 focuses on the first part of the model, which stipulates that an increase in social support will be reported by ethnic minority people living in areas of high ethnic density. Hypothesis 4 focuses on the overall protecting effect posited by the buffering effects model. Both hypotheses will be analysed in Chapter 8.

Hypothesis 5: Ethnic minority people living in areas of high ethnic density will report greater civic-political participation than their counterparts living in areas of low ethnic density. This hypothesis, which is the core of the civic-political participation model, will be tested in Chapter 9.

Data and analytical methods used to test achieve these aims and test the study hypotheses are presented in Chapter 5.

Chapter 5. Datasets and Methods

In order to examine the ethnic density effect on health and test the three hypothesised pathways, three different surveys were analysed in this thesis: a merged dataset of the 1999 and 2004 Health Survey for England (HSE), the Fourth National Survey of Ethnic Minorities (FNS), and a merged dataset of the 2005 and 2007 Citizenship Survey (CS). Chapter 5 thoroughly describes these datasets, as well as the methodology conducted to test the ethnic density effect and its hypothesised pathways. This chapter first operationalises ethnic density and describes its distribution in the 1991 and 2001 census (section 5.1); then it provides a rationale for using the datasets selected, describing each in detail (sections 5.2 to 5.4); and lastly, it describes the statistical analyses conducted in this study (section 5.5).

5.1 Ethnic Density

All datasets required to be geocoded to the census in order to examine the ethnic density effect. Ethnic density data from the 1991 census were used to analyse the ethnic density effect in the FNS, and data from the 2001 census were used to analyse ethnic density in the HSE and the CS. Section 5.1 first defines ethnic density and explains how it was calculated in this study, and then provides a description of ethnic density in both census years.

5.1.1 Operationalising ethnic density

Ethnic density was defined as both own-group density and overall ethnic minority density. Own ethnic density was calculated by dividing the number of residents from the respondent's ethnic group in an area, by the total population in that area. This was conducted separately for Black Caribbean, Black African, Indian, Pakistani, and Bangladeshi people. Residents of mixed ethnic background were excluded from the numerators.

Overall ethnic minority density was calculated by dividing the sum of residents from any ethnic minority background (including Chinese, other Asian, other Black, and Mixed, but excluding Irish), by the total population in that area.

5.1.2 Ethnic density data from the 1991 and 2001 census

Whereas the FNS was already linked to data from the 1991 census, a request for additional data was submitted to the National Centre for Social Research (NatCen), the data holder of the surveys, to link ethnic density data from the 2001 census to the HSE and the CS through participants' postcode. Permission to geocode the 2001 census data on ethnicity to the CS and the HSE was approved by NatCen with the constraint that 5% random error be added to each ethnic density variable. This additional random error reduced the precision of the estimates, but it did not bias them.

The smallest unit of geography available to analyse ethnic density in the FNS was the electoral ward, which is the spatial unit used to elect local government councillors. Although population counts vary considerably, the national average is about 5500 residents (Office for National Statistics, 2005).

The areal unit chosen to measure ethnic density in the 2001 census was Middle Super Output Area (MSOA). Although a request was made to obtain data at a smaller geographic level, concerns of confidentiality and respondent identification did not allow NatCen to disclose data at a level smaller than MSOA. Data at a larger geographical level were not requested because existent literature has argued that larger areas fail to capture local group concentration with accuracy (Franzini & Spears, 2003; Halpern, 1993). Super Output Areas (SOAs) are the Office for National Statistics (ONS) new geographic hierarchy designed to improve the reporting of small area statistics (Office for National Statistics, 2004). England and Wales have three layers of Super Output Areas (Lower, Middle and Upper) which, unlike wards, are of regular size and do not suffer from regular boundary change. There are 6780 MSOAs in England, and 413 in Wales. The minimum population of MSOAs is 5000, and the mean 7200 (Office for National Statistics, 2004).

An examination of ward ethnic density from the 1991 Census showed that Indian people had the largest range of ethnic density, followed by Bangladeshi, Pakistani, and Black Caribbean people (table 5.1). Bangladeshi ethnic density, despite having a wide range (0% to 60.70%), had the lowest average concentration, with a mean ethnic density of 0.19% (SD=1.39).

Table 5.1. Ethnic density data from the 1991 Census (n=9509 wards in England)

Ethnic Group	Mean (SD)	Median	Range
ethnic density			
Caribbean	0.57 (1.93)	0.07	0 – 30.12
Indian	0.96 (3.50)	0.16	0 – 67.02
Pakistani	0.46 (2.30)	0.00	0 – 52.77
Bangladeshi	0.19 (1.39)	0.00	0 – 60.70
Overall ethnic minority density	3.54 (8.09)	0.89	0 – 90.21

Ethnic density data from the 2001 census showed patterns similar to that of the 1991 census, with Black Caribbean ethnic density showing the smallest range of ethnic density, and Bangladeshi people being the least concentrated (Table 5.2). Interestingly, although Indian people were still the most concentrated group (Mean = 2.04, SD = 5.21), Pakistani people had the widest range of ethnic density (0% to 73.14%).

Table 5.2. Ethnic density data from the 2001 census (n=6780 MSOAs in England)

Ethnic Group	Mean (SD)	Median	Range
ethnic density			
Caribbean	1.14 (2.69)	0.16	0 – 24.14
African	0.97 (2.73)	0.11	0 – 41.11
Indian	2.04 (5.21)	0.45	0 – 71.29
Pakistani	1.38 (4.90)	0.15	0 – 73.14
Bangladeshi	0.56 (2.89)	0.06	0 – 60.99
Overall ethnic minority density	8.94 (14.31)	2.78	0 – 88.92

Tables 5.3 to 5.6 present the distribution of ethnic density for each ethnic group in the 1991 and 2001 census. Since Black African people were not sampled in the FNS, Black African density is presented only for the 2001 census (table 5.7).

In 1991, over half of the Black Caribbean, Indian, and Pakistani populations lived in areas with less than 10% own ethnic density, while the Bangladeshi group had over 50% of their population living in areas with up to 5% own ethnic density. All

ethnic minority groups were most concentrated in areas of more than 1%, but less than 5% own ethnic density. As compared to other ethnic minority groups, Bangladeshi people had the largest proportion of people living in areas of very low density (0% to 1%), and Indian and Pakistani people had the largest proportions living in areas with more than 20% own ethnic density (29.7% and 26.9% respectively). In the 2001 census, around 50% of Black Caribbean, Indian and Bangladeshi people resided in areas with up to 10% of residents of their own ethnic density. Pakistani people, with the largest range of ethnic density, had 50% of their population living in areas with up to 15% own ethnic density. Only 4% of Black Caribbean people lived in areas with over 20% own ethnic density. The proportion of people living in areas with over 20% ethnic density was greater for Pakistani people, followed by Indian and Bangladeshi people.

Comparisons of ethnic density across the 1991 and 2001 census show a similar distribution of ethnic density for most ethnic minority groups. Some groups, like Black Caribbean people, seem to have dispersed (see table 5.3), whereas others, such as Pakistani and Bangladeshi, tend to show greater concentration (tables 5.5 and 5.6). Studies that have conducted detailed examinations of residential mobility amongst ethnic minority from the 1991 to the 2001 census have shown that all ethnic minority groups, except Chinese people, have migrated away from areas of minority ethnic concentration from one census year to the other (Simpson & Finney, 2009).

Table 5.3. Black Caribbean density in the 1991 and 2001 Census (England)

Categories of Ethnic Density	Black Caribbean Population in Areas of Black Caribbean Density			
	1991 Census		2001 Census	
	N	%	N	%
1 (0%-1%)	68525	13.7%	72837	13%
2 (>1%-5%)	142936	28.6%	167467	29.8%
3 (>5%-10%)	127913	25.6%	142858	25.5%
4 (>10%-15%)	85414	17.1%	99064	17.6%
5 (>15%-20%)	54349	10.9%	58531	10.4%
6 (>20%-25%)	15378	3.1%	20566	3.7%
7 (>25%-30%)	2768	0.6%	0	0%
8 (>30%-35%)	2043	0.4%	0	0%
9 (>35%-40%)	0	0%	0	0%
10 (>40%-50%)	0	0%	0	0%
11 (>50%-60%)	0	0%	0	0%
12 (>60%-75%)	0	0%	0	0%
13 (>75%-90%)	0	0%	0	0%
14 (>90%-95%)	0	0%	0	0%
15 (>95%-100%)	0	0%	0	0%
Total	499326	100%	561323	100%

Table 5.4. Indian density in the 1991 and 2001 Census (England)

Categories of Ethnic Density	Indian Population in Areas of Indian Ethnic Density			
	1991 Census		2001 Census	
	N	%	N	%
1 (0%-1%)	94458	11.4%	97920	9.5%
2 (>1%-5%)	203564	24.5%	277878	27%
3 (>5%-10%)	139104	16.8%	141541	13.8%
4 (>10%-15%)	83223	10%	103454	10.1%
5 (>15%-20%)	63429	7.6%	82365	8%
6 (>20%-25%)	46020	5.5%	84034	8.2%
7 (>25%-30%)	43197	5.2%	40712	4%
8 (>30%-35%)	65236	7.9%	58221	5.7%
9 (>35%-40%)	22174	2.7%	38465	3.7%
10 (>40%-50%)	22686	2.7%	42594	4.1%
11 (>50%-60%)	14747	1.8%	39556	3.8%
12 (>60%-75%)	32134	3.9%	21774	2.1%
13 (>75%-90%)	0	0%	0	0%
14 (>90%-95%)	0	0%	0	0%
15 (>95%-100%)	0	0%	0	0%
Total	829972	100%	1028515	100%

Table 5.5. Pakistani density in the 1991 and 2001 Census (England)

Categories of Ethnic Density	Pakistani Population in Areas of Pakistani Ethnic Density			
	1991 Census		2001 Census	
	N	%	N	%
1 (0%-1%)	56891	12.5%	76604	10.8%
2 (>1%-5%)	96292	21.1%	135585	19.2%
3 (>5%-10%)	80764	17.7%	104674	14.8%
4 (>10%-15%)	62586	13.7%	61648	8.7%
5 (>15%-20%)	36517	8%	54275	7.7%
6 (>20%-25%)	24419	5.4%	43804	6.2%
7 (>25%-30%)	28837	6.3%	48281	6.8%
8 (>30%-35%)	26036	5.7%	32297	4.6%
9 (>35%-40%)	19476	4.3%	33480	4.7%
10 (>40%-50%)	11262	2.5%	48010	6.8%
11 (>50%-60%)	12365	2.7%	44742	6.3%
12 (>60%-75%)	0	0%	23207	3.3%
13 (>75%-90%)	0	0%	0	0%
14 (>90%-95%)	0	0%	0	0%
15 (>95%-100%)	0	0%	0	0%
Total	455445	100%	706607	100%

Table 5.6. Bangladeshi density in the 1991 and 2001 Census (England)

Categories of Ethnic Density	Bangladeshi Population in Areas of Bangladeshi Ethnic Density			
	1991 Census		2001 Census	
	N	%	N	%
1 (0%-1%)	41756	25.8%	60575	22%
2 (>1%-5%)	46940	29%	65620	23.8%
3 (>5%-10%)	21860	13.5%	34472	12.5%
4 (>10%-15%)	11236	7%	23807	8.6%
5 (>15%-20%)	4130	2.6%	19131	6.9%
6 (>20%-25%)	9452	5.8%	6605	2.4%
7 (>25%-30%)	2718	1.7%	9369	3.4%
8 (>30%-35%)	8482	5.2%	9746	3.5%
9 (>35%-40%)	7322	4.5%	7761	2.8%
10 (>40%-50%)	2351	1.2%	17917	6.5%
11 (>50%-60%)	0	0%	11185	4.1%
12 (>60%-75%)	5379	3.3%	9229	3.4%
13 (>75%-90%)	0	0%	0	0%
14 (>90%-95%)	0	0%	0	0%
15 (>95%-100%)	0	0%	0	0%
Total	161626	100%	275417	100%

Table 5.7. Black African density in the 2001 Census (England)

Categories of Ethnic Density	Black African Population in Areas of Black African Ethnic Density	
	N	%
1 (0%-1%)	68264	14.3%
2 (>1%-5%)	119789	25.2%
3 (>5%-10%)	124376	26.1%
4 (>10%-15%)	67838	14.3%
5 (>15%-20%)	57878	12.2%
6 (>20%-25%)	24405	5.1%
7 (>25%-30%)	7772	1.6%
8 (>30%-35%)	2544	0.5%
9 (>35%-40%)	0	0%
10 (>40%-50%)	2997	0.6%
11 (>50%-60%)	0	0%
12 (>60%-75%)	0	0%
13 (>75%-90%)	0	0%
14 (>90%-95%)	0	0%
15 (>95%-100%)	0	0%
Total	475863	100%

As mentioned in the beginning of the chapter, three large national surveys were used to investigate the relationship between ethnic density and health: the 1999 and 2004 Health Survey for England, the Fourth National Survey of Ethnic Minorities, and the 2005 and 2007 Citizenship Survey. Each of these datasets, described below, was analysed separately to test a specific hypothesised model/pathway in the relationship between ethnic density and health.

5.2 1999 and 2004 Health Survey for England

The main use of the merged 1999 and 2004 HSE dataset was to test the overall association between ethnic density and health on an objective physical health outcome, a cardiac risk factor, self-reported overall health, mental health, and health behaviours. In addition, perceived social support was used to test one of the main hypotheses of the buffering effects model. The analyses of the HSE as the first dataset allowed the exploration of the association between ethnic density and different health measures, prior to more detailed examination of the hypothesised pathways, which was explored with the FNS and the CS.

The HSE is an annual survey commissioned by the UK Department of Health since 1991, designed to provide regular information on various aspects of the nation's health which cannot be obtained from other sources (Erens et al., 2001). The 1999 survey was the first to increase the representation of ethnic minority adults and children from Black Caribbean, Indian, Pakistani, Bangladeshi, Chinese and Irish communities, followed by the 2004 survey, which also focused on ethnic minority people. With the aim of achieving a larger sample and greater analytical power, this study used a merged file with the 1999 and 2004 HSE datasets.

The 1999 HSE was comprised of a general population sample of 7798 respondents, selected from about 6500 addresses in 312 postcodes. All adults in the selected households were surveyed, as well as children older than two. If there were more than two children in the household, two were randomly selected for inclusion. Respondents from the core sample who did not belong to an ethnic minority group were given a short version of the questionnaire covering only the core topics (Erens et al., 2001). The ethnic minority boost sample, comprised of 5487 respondents, was

selected from over 64000 addresses in 340 postal sectors. Among all eligible ethnic minority informants at an address, a maximum of four adults and three children were selected to be interviewed, using a random selection procedure. Ethnic minority respondents completed the whole questionnaire, with topics including cardiovascular disease for adults, asthma for children, physical activity, eating habits, psychosocial health, social support, religion and cultural identity, smoking, alcohol consumption, general health, prescribed medication, and use of services (Erens et al., 2001).

The 2004 HSE, the focus of which was also on ethnic minority people with particular attention to cardiovascular disease, included the same ethnic minority groups that were included in 1999, with an increase in the representation of Black African informants. The general population sample included face-to-face interviews with 6704 adults selected from 6552 addresses in 312 wards from the Postcode Address File (PAF). For the ethnic minority boost sample, which consisted of 6816 adults, 41436 addresses within another 483 wards randomly selected from the PAF. Among those eligible informants at a household, up to four adults and three children were selected to be interviewed, randomly selecting them if there was more than this number in the household. Ethnic minority informants (whether identified in the general population sample or the minority ethnic sample), completed a face-to-face structured interview followed by a nurse visit.

5.2.1 HSE Variables and Health Measures

For the present study, analyses were restricted to the adult sample of the HSE (respondents aged 16 and older). Three different types of health measures were selected to examine the ethnic density effect in the HSE: a direct measure of overall health (self-reported health status), a measure of diagnosed disease (cardiovascular disease), a cardiac risk factor (waist:hip ratio), a measure of mental health (the General Health Questionnaire-12), and two measures of health behaviour (current and sensible drinking).

Self-reported health status was measured by asking respondents “How is your health in general? Would you say it was... very good, good, fair, bad or very bad?” Responses were dichotomised into Good or Very Good health, and Fair, Bad or Very

Bad health. Self-rated overall health has been shown to be a valid indicator of health status, and reports of poor health have been associated with higher mortality, psychological distress, and poor functioning (Farmer & Ferraro, 1997; Idler & Benyamini, 1997; Miilunpalo et al., 1997; Wannamethee & Shaper, 1991).

Cardiovascular disease was chosen as an objective measure of health. Having a cardiovascular condition was measured by deriving whether the respondent had been diagnosed by a doctor as having had either angina, heart attack, stroke, irregular heart rhythm, or another other heart condition, including diabetes and high blood pressure (Erens et al., 2001).

The waist relative to hip measurement was used as a cardiac risk factor, and was captured by using the valid mean of up to three waist and hip circumference measurements conducted by a nurse. The third measurement was taken only if difference between first two measurements was greater than 3cm.

To measure mental health, the 12-item version of the General Health Questionnaire, the GHQ12 (Goldberg & Blackwell, 1970), was used. The GHQ is a measure of current mental health used to detect the presence of non-psychotic psychiatric morbidity in community and non-psychiatry clinical settings. The GHQ12 asks respondents about problems sleeping, experiences of depressive and anxiety symptoms, and about their general level of happiness in the last four weeks (full list of items in table 5.8). Interpretation of the answers is based on a four point response scale scored using a bimodal method (symptom present: 'not at all' = 0, 'same as usual' = 0, 'more than usual' = 1 and 'much more than usual' = 1) (Erens et al., 2001). A threshold score of 4 or more is usually referred to as having a high GHQ12 score.

Table 5.8. Items in the GHQ12

Have you recently...

1. ... been able to concentrate on whatever you're doing?
 2. ... lost much sleep over worry?
 3. ... felt you were playing a useful part in things?
 4. ... felt capable of making decisions about things?
 5. ... felt constantly under strain?
 6. ... felt you couldn't overcome your difficulties?
 7. ... been able to enjoy your normal day-to-day activities?
 8. ... been able to face up to your problems?
 9. ... been feeling unhappy and depressed?
 10. ... been losing confidence in yourself?
 11. ... been thinking of yourself as a worthless person?
 12. ... been feeling reasonably happy, all things considered?
-

Alcohol use was self-reported, and was measured using two variables: current alcohol consumption, and engaging in sensible drinking. Although it is well known that alcohol drinking rates of ethnic minorities (excluding Irish) are lower than those of the White majority, and that variations in alcohol intake exist between ethnic groups (Cochrane & Howell, 1995; Denscombe & Drucquer, 2000; Karlsen et al., 1998; McKeigue & Kami, 1993; Nazroo, 1997; Primatesta et al., 2000), alcohol consumption was chosen due to its relevance to the ethnic density effect and to the pathways hypothesised in this thesis, since increased levels of alcohol consumption have been associated with experiences of racial discrimination (Gibbons et al., 2004; Martin et al., 2003; Yen et al., 2008).

Current alcohol consumption was measured by asking respondents whether they ever drank alcohol nowadays, including drinks brewed or made at home. Engaging in sensible drinking was measured by the number of units drunk in the heaviest day of the last week. Sensible drinking, defined by the Department of Health as “drinking in a way that is unlikely to cause oneself or others significant risk or harm” (Department of Health, 2007) stipulates that men should not drink more than 3-4 units per day,

whereas women should not exceed 2-3 units per day. For the purpose of this study, exceeding sensible drinking guidelines was defined as drinking over 4 units per day for men, and more than 3 units per day for women.

In order to measure whether social support increases in areas of ethnic density, the Multidimensional Scale of Perceived Social Support (MSPSS) was used. The MSPSS (Zimet et al., 2009) asks respondents about the amount of support and encouragement received from family and friends. The scale is based on seven items about physical and emotional aspects of social support, including questions like ‘people I know do things to make me feel happy’ or ‘people I know give me support and encouragement’ (complete scale presented in table 5.9). Respondents are asked to select how far each item is true: ‘not true,’ ‘partly true,’ ‘certainly true.’ The sum of these items produces a scale that ranges from 7 (very low social support) to 21 (very high social support). In the analysis conducted, social support was categorised into tertiles on the social support score, which are referred to as ‘low social support’, ‘medium social support’ and ‘high social support’.

Table 5.9. Questions in the Multidimensional Scale of Perceived Social Support

There are people I know – amongst my family or friends –...

1. ... who do things to make me happy
 2. ... who make me feel loved
 3. ... who can be relied on no matter what happens
 4. ... who would see that I am taken care of if I needed to be
 5. ... who accept me just as I am
 6. ... who make me feel an important part of their lives
 7. ... who give me support and encouragement
-

Individual and area-level variables included in the HSE analyses are summarised in table 5.10. Ethnic groups analysed included Black Caribbean, Black African, Indian, Pakistani, Bangladeshi, and White. Due to their small numbers, Chinese and ethnic minority groups categorised as ‘other,’ were not included in the analyses.

To measure area deprivation, a categorical variable of the Index of Multiple Deprivation (IMD) summary score was used. The IMD variable contained six categories of area deprivation, ranging from 1 (most deprived wards in the country), to 6 (least deprived wards in the country).

Table 5.10. HSE Sociodemographic Variables

Variable	Type	Categories/Description
Ethnicity	Categorical	1: Black Caribbean 2: Black African 3: Indian 4: Pakistani 5: Bangladeshi 6: White
Sex	Binary	Male or female
Age	Continuous	
Socioeconomic position (Registrar's class)	Categorical	1: I & II - (Professional & Managerial technical) 2: IIN - Skilled non-manual 3: IIM - Skilled manual 4: IV & V - (Semi-skilled & unskilled manual) 5: IV - Other
Nativity	Binary	UK or Abroad
Index of Multiple Deprivation overall score	Categorical	1: Most Deprived 2: 3: 4: 5: 6: Least Deprived
Perceived social support	Categorical	1: High social support 2: Medium social support 3: Low social support

5.2.2 HSE Participants

The merging of the 1999 and 2004 HSE surveys produced a total adult sample of 26705 observations. Characteristics of the merged sample are summarised in table 5.11. Bangladeshi and Pakistani respondents tended to be younger, and together with Black Caribbean people, to occupy lower socioeconomic positions and live in the most deprived areas. White people tended to be older and have higher socioeconomic status.

Amongst ethnic minority groups, Indian people reported the highest socioeconomic status. Black African people had the largest number of respondents who had been born abroad. In terms of social support, White people reported the highest social support, whereas Pakistani and Bangladeshi people reported the lowest social support.

Table 5.12 is a summary of the distribution of ethnic density at the MSOA level by ethnic group among HSE participants. Pakistani and Bangladeshi people were the most concentrated, with 44% and 57% of respondents, respectively, living in areas where 20% or more of the residents were of their own ethnic group. In contrast, Black African and Black Caribbean were the least concentrated groups, with over half of their populations living in areas with less than 10% own ethnic density. Indian people were the most evenly distributed, with over 50% of respondents living in areas of less than 10% ethnic density, 17% living in areas of 10% to 20% ethnic density, and over a quarter of their population living in areas of more than 20% own ethnic density.

Table 5.11. Characteristics of the HSE sample

	Caribbean (n=2362) %	Black African (n=859) %	Indian (n=2467) %	Pakistani (n=2204) %	Bangladeshi (n=1985) %	White (n=12931) %
Age M(SD)	43.0(17.3)	36.2(12.9)	40.9(15.7)	35.5(14.4)	34.9(15.1)	48.7(18.6)
Sex						
Female	59.3	54.6	52.3	52.2	52.4	55.5
Registrar's class						
I & II	27.2	31.8	38.7	19.7	10.3	38.5
IIINM	16.0	14.0	12.8	12.6	7.9	14.3
IIIM	25.4	15.8	21.4	29.3	28.7	27.4
IV&V	26.4	24.9	23.0	25.0	35.3	17.8
Other	5.0	13.4	4.1	13.3	17.8	2.0
Nativity						
Foreign born	49.7	84.9	73.8	68.5	83.2	5.3
Index of Multiple Deprivation						
1. Most Deprived	43.6	50.5	25.6	59.2	82.5	12.2
2	24.3	20.3	16.5	17.7	8.8	12.7
3	20.8	19.9	23.6	12.3	6.2	23.1
4	6.1	4.3	16.5	7.0	1.0	16.6
5	3.8	3.7	11.0	2.3	0.7	17.9
6. Least Deprived	1.4	1.3	6.8	1.4	0.8	17.4
Perceived Social Support						
High social support	51.0	47.6	43.7	39.8	42.3	60.8
Medium social support	30.0	28.6	28.0	29.0	25.5	26.4
Low social support	19.0	23.8	28.3	31.2	32.2	12.8

Table 5.12 Distribution of MSOA ethnic density by ethnic group of the HSE sample

	Caribbean (n=2360) %	Black African (n=859) %	Indian (n=2460) %	Pakistani (n=2201) %	Bangladeshi (n=1984) %
Black Caribbean ethnic density					
0% - 0.9%	8.56	11.87	31.10	33.26	21.98
1% - 4.9%	26.57	35.16	44.43	41.89	69.20
5% - 9.9%	27.50	22.82	16.18	16.58	5.24
10% - 19.9%	32.20	28.99	7.60	8.13	2.97
20% or more	5.17	1.16	0.69	0.14	0.60
Black African ethnic density					
0% - 0.9%	26.95	11.87	53.01	66.52	21.77
1% - 4.9%	27.03	29.92	32.68	22.40	56.85
5% - 9.9%	25.97	26.89	10.85	7.81	17.99
10% - 19.9%	16.65	24.21	3.29	3.09	2.97
20% or more	3.39	7.10	0.16	0.18	0.40
Indian ethnic density					
0% - 0.9%	13.86	16.88	7.28	18.26	12.90
1% - 4.9%	55.21	57.04	30.33	48.48	76.06
5% - 9.9%	14.11	13.04	18.25	14.36	6.25
10% - 19.9%	10.04	8.61	17.36	7.68	2.92
20% or more	6.78	4.42	26.79	11.22	1.86
Pakistani ethnic density					
0% - 0.9%	42.58	50.06	34.80	9.04	56.75
1% - 4.9%	31.69	31.66	37.40	15.17	23.69
5% - 9.9%	14.58	9.90	13.25	16.49	5.75
10% - 19.9%	5.72	4.54	8.25	15.22	1.66
20% or more	5.42	3.84	6.30	44.07	12.15
Bangladeshi ethnic density					
0% - 0.9%	58.01	49.59	76.67	50.16	5.14
1% - 4.9%	31.23	31.55	15.61	22.35	9.43
5% - 9.9%	4.92	5.59	3.54	13.86	12.75
10% - 19.9%	3.60	2.21	3.62	11.54	15.88
20% or more	2.25	11.06	0.57	2.09	56.80

Table 5.13 presents the prevalences of health outcomes by ethnic minority groups. Due to the differences in age structure between ethnic groups, age and sex adjusted odds ratios of reporting poor health, relative to White people, are also presented for meaningful comparisons across groups. When compared to White people, ethnic minority people were more likely to report fair, bad or very bad self-rated health, and reported a greater likelihood of ever having cardiovascular disease. Ethnic minority people were also more likely than White people to report high GHQ scores. In contrast, ethnic minority people reported decreased odds of being current drinkers and exceeding sensible drinking guidelines. Due to the low drinking prevalence among Pakistani, and especially Bangladeshi respondents, estimates produced for these groups are not reliable.

Table 5.13. Prevalence and age and sex adjusted odds ratios of reporting poor health among the adult ethnic minority population of the HSE, as compared to White people

	Caribbean (n=2362)	Black African (n=859)	Indian (n=2467)	Pakistani (n=2204)	Bangladeshi (n=1985)
Fair, bad, very bad overall health, %	34.0	20.2	29.9	31.7	39.6
OR (95% CI) ¹	2.09 (1.89-2.32)†	1.38 (1.15-1.65)†	1.91 (1.73-2.12)†	2.71 (2.44-3.02)†	4.08 (3.66-4.56)†
Ever had CVD, %	32.6	19.1	23.5	19.9	16.4
OR (95% CI) ¹	2.13 (1.60-2.82)†	1.71 (1.26-2.31)†	1.46 (1.11-1.92)†	1.81 (1.38-2.36)†	1.35 (1.02-1.79)†
Waist:hip ratio					
Males, Age adjusted mean	3.2	3.5	4.0	4.0	4.0
Females, Age adjusted mean	4.0	4.1	3.9	4.4	4.8
Poor mental health (GHQ12 4+), %	14.8	11.5	12.9	15.6	16.1
OR (95% CI) ¹	1.35 (1.18-1.55)†	1.07 (0.83-1.38)	1.20 (1.04-1.38)**	1.56 (1.35-1.82)†	1.61 (1.37-1.89)†
Drinks Nowadays, %	72.9	44.9	47.7	5.2	1.6
OR (95% CI) ¹	0.43 (0.38 – 0.47)	0.10 (0.09 – 0.12)	0.12 (0.11 – 0.14)	0.01 (0.00 – 0.01)	0.00 (0.00 – 0.00)
Exceeds Sensible Drinking Guidelines² %	28.9	29.3	30.7	45.8	52.9
OR (95% CI) ¹	0.46 (0.39 – 0.53)	0.38 (0.28 – 0.52)	0.42 (0.35 – 0.49)	0.72 (0.44 – 1.17)	0.81 (0.30 – 2.17)

1. Adjusted for age and sex (ref=white)

2. Among those who drink

*p<0.05, **p<0.01, †p<0.001

5.3 Fourth National Survey of Ethnic Minorities

Data from the FNS were analysed in order to test the hypothesised buffering effects model and social norms model.

The FNS was undertaken in 1994 by the Policy Studies Institute and Social and Community Planning Research (now the National Centre for Social Research), with the objective of increasing the existent knowledge of the circumstances of ethnic minority people. Structured face-to-face interviews were conducted with a nationally representative sample of 5196 people of Black Caribbean, Indian/African Asian, Pakistani, and Bangladeshi origin, as well as with a comparison sample of 2867 White people living in England and Wales (Modood et al., 1997). Interviews were conducted with an ethnically matched interviewer in the language of the respondent's choice, and included questions on physical and mental health, ethnic identity, racism and discrimination, as well as a broad range of demographic and socioeconomic factors. The questionnaire administered to ethnic minorities was divided into a core set of questions asked of everyone. The remaining questions, which were divided into two sets, were each asked of a randomly selected half of the sample.

The survey's sampling procedures were designed to select probability samples of both individuals and households, with sampling areas selected after analysing data from the 1991 Census on the ethnic minority population size in enumeration districts and electoral wards. This sampling method produced a final sample that included respondents from areas with a low ethnic minority concentration. Screening for ethnic minority respondents was carried out using focused enumeration. In order to maximise the efficiency of the sampling process, two respondents were selected from households containing ethnic minority people whenever possible. White respondents were identified using a straightforward stratified sampling process, where areas were followed by addresses, and then individuals within addresses were identified to be included in the study.

5.3.1 FNS Variables and Health Measures

Two health measures were selected to be analysed with the FNS: the Psychosis Screening Questionnaire (PSQ), a measure of psychotic symptoms, and overall self-

rated health. The PSQ (Bebbington & Nayani, 1995) is a 12-item measure tapping into psychotic symptomatology that enquires about mania, thought insertion, paranoia, strange experiences and hallucinations. The PSQ has been used and validated in the National Psychiatric Morbidity Survey (Meltzer et al., 1995), and has been subjected to ethnic group specific validation in the FNS (Nazroo, 1997). The PSQ was chosen as a measure of mental health due to the strong association between discrimination and psychotic disorders that has been previously established in the literature (Halpern & Nazroo, 1999; Janssen et al., 2003; Karlsen & Nazroo, 2002a; Karlsen et al., 2007; Veling et al., 2008). Due to the severe skewness of the response range, the PSQ was dichotomised into zero or one positive response, and two or more positive responses.

The second health variable measured overall self-rated health. FNS respondents were asked to rate their health as of the last 12 months on a scale ranging from 1 (excellent) to 5 (very poor). Responses were dichotomised into Fair, Poor and Very Poor, or Excellent and Good.

Area deprivation was measured using the Townsend Index (Townsend et al., 1988), a material measure of deprivation and disadvantage commonly used in studies of area effects on health in the UK. The Townsend Index is calculated using four different census variables: percentage of households without a car, percentage of overcrowded households, percentage of households that are not owner-occupied, and percentage of persons unemployed. Higher scores of the Townsend Index represent higher levels of deprivation and disadvantage of an area.

Individual-level variables included in the analyses are summarised in table 5.14, and included respondent's age, sex and socioeconomic position, measured by the Registrar General's classification of occupation. Five ethnic minority groups were included in the analyses: Black Caribbean, Indian, Pakistani, and Bangladeshi. The Chinese group was too small for meaningful analyses, and so was excluded.

Table 5.14. FNS Individual and area-level variables

Variable	Type	Categories/Description
Demographic variables		
Ethnicity	Categorical	1: White 2: Black Caribbean 3: Indian 4: Pakistani 5: Bangladeshi
Sex	Binary	Male or female
Age	Continuous	
Socioeconomic position (Registrar's class)	Categorical	1: I & II - (Professional & Managerial technical) 2: IIN - Skilled non-manual 3: IIIM - Skilled manual 4: IV & V - (Semi-skilled & unskilled manual)
Area characteristics		
Townsend deprivation index	Continuous	

5.3.2 FNS Racism Measures

Four separate variables were used to measure racism: 1) having had any experience in the last 12 months of physical attack or damage to property due to race/colour; 2) having been insulted in the last 12 months due to race/colour; 3) being worried about racial harassment, and 4) having ever been refused a job or a promotion for reasons to do with race/colour or religious or cultural background. A fifth summary variable was created to combine having been the victim of any experience of racial harassment in the past 12 months, which included having been physically attacked, having had property deliberately damaged, or having been the victim of verbal attack for reasons to do with the respondent's race or colour. Employment discrimination was not included in the summary variable since the timeframe for the attack variables (past 12 months) is different from the employment discrimination variable (ever). All variables were dichotomised into yes or no.

Social norms against racism were analysed using three different variables: a variable measuring tolerance against racism, a measure of actions taken after experiencing racism, and a measure of actions taken to avoid racist victimisation.

The measure of tolerance against racism was derived from two questions asking respondents how they felt about the following statements: 1) 'present laws against discrimination should be enforced more effectively' and 2) 'there should be new and

stricter laws against racial discrimination.’ Response categories, ranging from 1: Strongly Agree, to 5: Strongly Disagree, were recoded into low tolerance (agree, strongly agree) and high tolerance (neutral, disagree, strongly disagree).

In order to measure actions taken after having experienced racism, a summary variable was created combining answers to whether respondents had reported any event of experienced physical harassment, verbal harassment, and property damage to the police. This variable was dichotomised into yes (reported any event to police) and no (did not report experienced events to police).

Avoidance of racism was measured by creating a summary variable from a set of 14 questions that were asked only to participants who had reported fear of racial harassment (complete list of questions in table 5.15). The summary variable was coded 1 if participants answered ‘yes’ to any of these questions on steps taken in order to avoid being discriminated against in the last 2 years, and 0 if they hadn’t done anything to avoid racial harassment.

Table 5.15. Variables used to create ‘avoidance of racism’ variable

To avoid racial harassment, have you in the last 2 years...
1. ...started to visit shops at certain times only?
2. ...moved home?
3. ...stopped your children from playing outside?
4. ...made your home more secure?
5. ...visited your place of worship less often?
6. ...changed your telephone number?
7. ...started to avoid going out at night?
8. ...made your business premises more secure?
9. ...stopped going out without your partner?
10. ...moved your children to a different school?
11. ...started to avoid areas where mostly white people live?
12. ...changed your travel routes?
13. ...stopped going to pubs or particular pubs?
14. ...stopped travelling on trains, tubes or buses?

5.3.3 FNS Participants

The FNS dataset consists of a total of 8063 participants aged 16 or older. Pakistani and Bangladeshi respondents tended to be younger, were in lower socioeconomic positions than all other ethnic groups, and lived in more deprived areas (see Table 5.16).

Table 5.16. Sociodemographic characteristics of the FNS sample

	Caribbean (n=1215) %	Indian (n =1278) %	Pakistani (n =1190) %	Bangladeshi (n =594) %	White (n =2980) %
Age M(SD)	41.2(16.3)	40.2(15.7)	36.4(14.4)	35.6(14.3)	47.6(19.1)
Sex					
Female	56.1	52.7	47.6	48.0	58.6
Registrar's class					
I & II	22.0	27.5	19.6	8.6	32.0
III _n	22.8	21.6	13.1	18.1	25.0
III _m	24.1	16.7	30.2	25.5	20.9
IV & V	31.1	34.2	37.1	44.8	22.1
Townsend Index					
M(SD)	5.96 (3.97)	4.54 (3.94)	6.58 (3.30)	9.03 (3.88)	0.73 (3.55)

Table 5.17 summarises the distribution of ethnic density at the ward level by ethnic group. Pakistani and Bangladeshi people were the most concentrated, with over a quarter of their population living in areas of 20% own density or more. The least concentrated ethnic minority group was the Black Caribbean, with only 5% of their population living in areas of the highest category of own ethnic density.

Table 5.17. Distribution of ward ethnic density by ethnic group in the FNS sample

	Caribbean (n=1215) %	Indian (n =1278) %	Pakistani (n =1190) %	Bangladeshi (n =594) %
Caribbean ethnic density				
0% - 0.9%	8.6	17.1	23.3	8.6
1% - 4.9%	22.9	49.1	43.4	54.7
5% - 9.9%	27.0	16.8	20.3	24.1
10% - 19.9%	36.5	16.1	12.8	12.6
20% or more	5.0	0.9	0.2	0.0
Indian ethnic density				
0% - 0.9%	18.5	8.4	21.9	22.1
1% - 4.9%	34.9	16.5	28.7	50.5
5% - 9.9%	24.9	21.7	24.0	12.6
10% - 19.9%	9.3	26.7	15.0	7.2
20% or more	12.4	26.7	10.4	7.6
Pakistani ethnic density				
0% - 0.9%	43.8	37.6	7.4	33.3
1% - 4.9%	26.5	23.3	11.9	32.7
5% - 9.9%	15.5	22.5	23.0	8.4
10% - 19.9%	8.1	12.5	24.4	14.1
20% or more	6.1	4.1	33.3	11.5
Bangladeshi ethnic density				
0% - 0.9%	51.9	65.6	41.3	11.8
1% - 4.9%	36.8	24.8	41.3	25.6
5% - 9.9%	8.8	8.3	13.7	17.2
10% - 19.9%	2.1	0.7	3.2	11.6
20% or more	0.5	0.5	0.5	33.8

Prevalences and age and sex adjusted odds ratios of reporting poor mental and physical health by ethnic minority group, as compared to White people, are presented in Table 5.18. Although ethnic minority people reported worse overall health than Whites, only Black Caribbean people were more likely to report poor mental health. Bangladeshi, Pakistani, and Indian people had decreased odds ratios of reporting psychotic symptomatology, relative to White people.

Table 5.18. Health Characteristics of the FNS sample

	Caribbean (n=1215) %	Indian (n=1278) %	Pakistani (n=1190) %	Bangladeshi (n=594) %
Fair, poor, very poor overall health, %	39.2	30.5	36.6	38.3
OR (95% CI) ¹	1.88 (1.62-2.18)†	1.31 (1.12-1.52)†	2.07 (1.77-2.41)†	2.30 (1.89-2.80)†
Psychotic Symptomatology (PSQ), %	40.2	17.5	16.1	9.2
OR (95% CI) ¹	1.25 (1.08-1.44)†	0.38 (0.32-0.44)†	0.32 (0.26-0.38)†	0.16 (0.12-0.22)†

¹Adjusted for age and sex (ref=white)

*p<0.05, **p<0.01, †p<0.001

Table 5.19 presents the prevalence of racism measures among ethnic minority groups in the FNS. In terms of experienced racism, Black Caribbean people tended to report more verbal attacks in the past year, followed by Pakistani people, who also reported the highest percentage of physical harassment. Bangladeshi people, in contrast, reported the lowest percentage of any verbal or physical racial harassment. Measures of social norms related to racism show that prevalence of low tolerance against racism tended to be higher among Bangladeshi, Black Caribbean and Pakistani people than among Indian people. Pakistani people tended to do more things to avoid racist victimisation and to report racial attacks to the police more often than all other ethnic minority groups.

Table 5.19. Prevalence of racism measures among the ethnic minority population of the FNS sample

	Caribbean (n=1215) %	Indian (n =1278) %	Pakistani (n =1190) %	Bangladeshi (n =594) %
Racist physical attacks in the past year				
Yes	2.5	3.1	3.5	2.0
Racist verbal attacks in the past year				
Yes	13.0	9.0	9.8	6.2
Any interpersonal racist event in the last year				
Yes	14.2	10.5	11.8	7.2
Worried about racial harassment				
Yes	18.1	22.2	22.6	21.5
Ever been refused a job or a promotion for reasons to do with race/colour, religious or cultural background				
Yes	16.9	7.4	5.3	2.0
Avoidance of racism				
Did something to avoid racism	39.5	69.7	77.7	81.0
Actions taken against experienced racism				
Reported racism	12.7	27.6	33.1	28.6
Tolerance against discrimination				
Low	94.0	88.6	92.2	95.6

5.4 2005 and 2007 Citizenship Survey

The CS was used in this study to test the civic-political participation model, given the wide range of civic and political engagement variables asked in the survey. In addition, data from the CS also provided more recent estimates of racism in the UK, which were compared to those provided by the FNS.

The CS, previously carried out by the Home Office and known as the Home Office Citizenship Survey (HOCS), is a biennial survey that started in 2001 and provides an evidence base for the work conducted by the Communities and Local Government Department (formerly the Department for Communities and Local Government). The CS includes questions on attitudes regarding one's neighbourhood, family and friendship networks, civic renewal and civic participation, trust between neighbours, perceived levels of racial and religious discrimination, and formal and informal volunteering. Demographic information such as age, gender, ethnicity, religion, educational background, occupational status, and income are also collected.

In order to improve analytical power, this study uses a merged file of the 2005 and 2007 CS. The 2005 CS consisted of two separate components: a core representative sample of the general adult population of England and Wales of around 10000 individuals, and an ethnic minority boost sample of approximately 4000 individuals. The core sample was obtained from residential addresses selected from the Royal Mail's Postcode Address File (PAF). A two-stage sampling approach was used to select the addresses: at the first stage a random sample of Census Area Statistics (CAS) wards was selected; at the second stage, addresses were sampled within the selected wards. The ethnic minority boost sample was chosen from wards selected for the core sample as well as from an additional boost sample of 150 wards, using screening and focused enumeration (Michaelson et al., 2006).

The 2007 CS consists of 14095 people aged 16 and over residing in England and Wales. A total of 9336 respondents were surveyed for the core sample, and 4759 people were surveyed for the ethnic boost sample, following a similar sampling strategy to that of the 2005 CS.

5.4.1 CS Variables and Health Measures

Only one health measure was collected in both the 2005 and the 2007 CS: limiting longstanding illness. Respondents were asked whether they had a longstanding illness, disability or infirmity, and whether it limited their daily activities in any way. Limiting long-term illness is one of the most common measures of chronic ill health, and is frequently used as a morbidity index in national health surveys (Power et al., 2000), and as a predictor of mortality and health service utilisation (Cohen et al., 1995; Charlon et al., 1994; Dale, 1993).

Individual and area-level variables included in analyses using the CS are summarised in table 5.20, and included respondent's age, sex, individual socioeconomic position, nativity (UK or abroad), number of years living in the neighbourhood, and area deprivation.

Ethnicity was measured as a self-reported variable, and was categorised into White, Black Caribbean, Black African, Indian, Pakistani, and Bangladeshi. Other ethnic groups covered too few respondents to be considered in the analyses presented here. Area deprivation was measured with the Index of Multiple Deprivation summary score, and was categorised the same way as in the HSE.

Table 5.20. CS Individual and area-level variables

Variable	Type	Categories/Description
Demographics		
Ethnicity	Categorical	1: White 2: Black Caribbean 3: Black African 4: Indian 5: Pakistani 6: Bangladeshi
Sex	Binary	Male or female
Age	Continuous	
Socioeconomic position (NS-SEC)	Categorical	1: higher/lower managerial and professions 2: intermediate occupations/small employer 3: lower supervisory & technical/semi-routine 4: routine occupations 5: never worked/ long-term unemployed
Nativity	Binary	UK or abroad
Number of years in neighbourhood	Categorical	1: Less than a year 2: 1 – 5 years 3: 5 – 10 years 4: 10+ years
Area characteristics		
Index of Multiple Deprivation overall score	Categorical	1: Most Deprived 2: 3: 4: 5: 6: Least Deprived

5.4.2 CS Racism Measures

Data from the CS was also used to examine the experiences of racial discrimination among ethnic minority people. Three different racism measures were analysed: fear of racial/religious harassment, experienced employment discrimination, and expected organisational discrimination. Fear of racial/religious attacks was measured by asking respondents how worried they were about being subject to a physical attack because of skin colour, ethnic origin or religion, and was dichotomised as ‘not very worried or not worried at all’ and ‘fairly or very worried’.

Experienced employment discrimination was measured by combining two variables that asked whether the respondent had been refused/turned down for a job, or

had been discriminated against at work with regard to a promotion, due to race or colour in the last five years (coded 'yes' or 'no').

Organisational discrimination was analysed as a dichotomous variable that measured whether the respondent felt that he/she would be treated better, worse, or the same as other races by members of any of the following organisations (categorised into 'expects to be treated better or same', and 'expects to be treated worse'): a local doctor's surgery, a local hospital, the health service generally, a local school, the education system generally, a council housing department or housing association, a local council, a private landlord, the Courts, the Crown Prosecution Service, the Police, the local police, the immigration authorities, the Prison Service, and the Probation Service.

5.4.3 CS Civic-Political Participation Measures

The main use of the Citizenship Survey in this study is to test the civic-political participation model. Civic-political participation was analysed using variables measuring three different constructs: civic engagement, perceptions of community cohesion, and satisfaction with local services.

Civic engagement measured whether respondents had participated in any formal or informal volunteering in the past 12 months, and whether they had participated in any political activity in the last 12 months which was not related to their jobs. Formal and informal volunteering activities are listed in Table 5.21. Political participation was analysed using a derived variable measuring respondents' participation in activities such as having been a local councillor, or having been a member of a decision making group (list of activities listed in table 5.22). A summary measure of civic engagement was also derived from whether respondents had engaged in any activity (formal/informal volunteering, political activity) in the last 12 months.

Perceptions of community cohesion, the second construct, was measured with a set of variables, presented in table 5.23, that asked respondents about how they felt regarding certain aspects of their neighbourhood.

The last construct of the civic-political participation model, satisfaction with local services, was measured using six variables that asked respondents about their

satisfaction with local schools; local council housing/housing association; local street cleaning; local policing; local health services; and local services for young people. Respondents were asked to rate their satisfaction using a 5 point Likert-type scale ranging from '1: very satisfied' to '5: very dissatisfied.'

Table 5.21. CS Formal and Informal volunteering variables

Formal volunteering

I'd like you to think about any groups, clubs or organisations that you've been involved with during the last 12 months. That's anything you've taken part in, supported, or that you've helped in any way, either on your own or with others.

1. ...Children's education/ schools
2. ...Youth/children's activities (outside school)
3. ...Education for adults
4. ...Sports/exercise (taking part, coaching or going to watch)
5. ...Religion
6. ...Politics
7. ...The elderly
8. ...Health, Disability and Social welfare
9. ...Safety, First Aid
10. ...The environment, animals
11. ...Justice and Human Rights
12. ...Local community or neighbourhood groups
13. ...Citizens' Groups
14. ...Hobbies / Recreation / Arts/ Social clubs
15. ...Trade union activity

In the **last 12 months** have you given **unpaid** help to any groups, clubs or organizations...

1. ...Raising or handling money/taking part in sponsored events
 2. ...Leading the group/ member of a committee
 3. ...Organising or helping to run an activity or event
 4. ...Visiting people
 5. ...Befriending or mentoring people
-

-
6. ...Giving advice/information/counselling
 7. ...Secretarial, admin or clerical work
 8. ...Providing transport/driving
 9. ...Representing
 10. ...Campaigning
 11. ...Other practical help (e.g. helping out at school, shopping)

Informal volunteering

In the last 12 months have you done any of the following things, unpaid, for someone who was not a relative?

1. ...Keeping in touch with someone who has difficulty getting out and about (visiting in person, telephoning or e-mailing)
 2. ...Doing shopping, collecting pension or paying bills
 3. ...Cooking, cleaning, laundry, gardening or other routine household jobs
 4. ...Decorating, or doing any kind of home or car repairs
 5. ...Baby sitting or caring for children
 6. ...Sitting with or providing personal care (e.g. washing, dressing) for someone
 7. ...who is sick or frail
 8. ...Looking after a property or a pet for someone who is away
 9. ...Giving advice
 10. ...Writing letters or filling in forms
 11. ...Representing someone (for example talking to a council department, or to a doctor)
 12. ...Transporting or escorting someone (for example to a hospital, or on an outing)
-

Table 5.22. CS Political activity variables

In the last 12 months, have you done any of these things...

1. ...been a local councillor (for the local authority, town or parish)
 2. ...been a school governor
 3. ...been a volunteer Special Constable
 4. ...been a Magistrate
 5. ...member of a group making decisions on local health services
 6. ...member of a decision making group set up to regenerate the local area
 7. ...member of a decision making group set up to tackle local crime problems
 8. ...member of a tenants' group decision making committee
 9. ...member of a group making decisions on local education services
 10. ...member of a group making decisions on local services for young people
 11. ...member of another group making decisions on services in the local community
-

Table 5.23. CS Perception of community cohesion variables

1. To what extent would you agree or disagree that people in this neighbourhood pull together to improve the neighbourhood? (1. Definitely agree to 4. Definitely disagree).
 2. How safe would you feel if you were walking alone after dark? (1. Very safe to 4. Very unsafe).
 3. Would you say that
 - (1) many of the people in your neighbourhood can be trusted,
 - (2) some can be trusted,
 - (3) a few can be trusted,
 - (4) or that none of the people in your neighbourhood can be trusted?
 4. To what extent do you agree or disagree that people in this neighbourhood share the same values? (1. Strongly agree to 4. Strongly disagree).
 5. To what extent do you agree or disagree that this local area, (within 15/20 minutes walking distance), is a place where people from different backgrounds get on well together? (1. Definitely agree to 4. Definitely disagree).
 6. Would you agree or disagree that this local area (15/20 minutes walking distance) is a place where residents respect ethnic differences between people? (1. Definitely agree to 4. Definitely disagree).
-

5.4.4 CS Participants

The combined 2005 and 2007 CS produced a final sample of 28176 respondents aged 16 or older. Table 5.24 presents the demographic characteristics of the ethnic minority groups of interest in the merged dataset. Among ethnic minorities, Black Caribbean people were older, and Indian respondents were in higher socioeconomic position. More than half of all respondents in all ethnic minority groups were born abroad. This was most important for Black African (88%), Bangladeshi (79%), and Pakistani respondents (66%). Bangladeshi people had the highest proportion of people living in areas of high deprivation, whereas Indian people had the least. The majority of ethnic minority people reported living in an area where less than half of the residents were from the same ethnic background.

Table 5.25 summarises the distribution of ethnic density at the MSOA level by ethnic group among the CS sample. Similarly to the HSE and FNS, Black Caribbean respondents were the least concentrated in the CS, with only 4.5% of their population living in areas of 20% or more own ethnic density. Indian people, in contrast, were the most concentrated, with over 45% of respondents living in areas of 20% or more own ethnic density. Black Caribbean, Black African, and Bangladeshi respondents had around 50% of their population in areas with less than 10% own ethnic density. About half of Indian and Pakistani respondents lived in areas with less than 20% own ethnic density.

Prevalences of limiting longstanding illness, and sex and age adjusted odds ratios of reporting limiting longstanding illness among ethnic minority people, relative to the White sample, are shown in table 5.26. Black Caribbean, Pakistani and Bangladeshi people were more likely to report poor health as compared to White people, whereas Black African participants were less likely to report limiting longstanding illness, relative to Whites.

Table 5.24. Characteristics of CS Participants

	Caribbean (n=1644) %	African (n=1536) %	Indian (n=2687) %	Pakistani (n=1503) %	Bangladeshi (n=536) %	White (n =16532) %
Age M(SD)	46.2(16.5)	37.5(12.5)	42.4(15.8)	36.9(14.0)	35.1(13.0)	51.2(18.5)
Sex						
Female	58.6	59.0	50.1	48.6	51.5	56.4
Registrar's class						
Higher and lower management	30.0	29.7	33.4	19.6	13.5	34.7
Intermediate and small employers	28.0	19.6	25.6	25.1	21.9	31.9
Semi-routine and routine	34.8	31.4	29.1	28.4	37.7	29.4
Never worked, long-term unemployed	7.2	19.3	11.9	26.9	26.9	4.0
Nativity						
Foreign born	54.7	87.5	73.1	66.2	78.7	2.6
Years in neighbourhood						
Less than a year	3.3	13.3	7.0	6.7	5.8	4.6
1 – 5 years	26.3	49.2	30.0	29.5	30.5	21.5
5 – 10 years	18.3	17.6	14.2	19.1	23.3	14.9
10+ years	52.1	19.9	48.8	44.7	40.4	59.0
Index of Multiple Deprivation						
1. Most Deprived	40.3	39.3	27.1	48.0	71.5	10.8
2	28.4	27.9	24.0	25.1	11.6	13.9
3	20.6	21.6	24.5	16.1	8.6	22.3
4	6.7	5.9	12.4	5.4	3.7	18.9
5	2.2	3.2	6.1	3.1	3.3	16.1
6. Least Deprived	1.8	2.1	5.9	2.3	1.3	18.0

Table 5.25. CS Distribution of ethnic density by MSOA in the CS sample

	Caribbean (n=1644) %	African (n=1536) %	Indian (n=2687) %	Pakistani (n=1503) %	Bangladeshi (n=536) %
Caribbean ethnic density					
0% - 0.9%	7.4	13.4	30.4	32.2	18.5
1% - 4.9%	25.9	35.9	48.8	44.6	53.4
5% - 9.9%	28.6	24.4	12.3	13.4	17.0
10% - 19.9%	33.6	24.3	7.8	9.1	10.2
20% or more	4.5	2.0	0.7	0.7	0.9
African ethnic density					
0% - 0.9%	19.7	15.5	41.9	51.0	22.2
1% - 4.9%	29.4	31.4	42.8	34.4	45.9
5% - 9.9%	25.9	24.0	11.9	11.2	18.7
10% - 19.9%	19.0	21.7	3.2	3.1	10.8
20% or more	6.0	7.4	0.2	0.3	2.4
Indian ethnic density					
0% - 0.9%	14.5	17.1	6.5	14.3	12.5
1% - 4.9%	50.1	49.6	18.4	36.5	63.1
5% - 9.9%	13.6	12.4	10.5	13.9	7.4
10% - 19.9%	11.6	11.8	19.5	15.9	7.1
20% or more	10.2	9.1	45.1	19.4	9.9
Pakistani ethnic density					
0% - 0.9%	39.2	45.6	22.2	9.8	47.6
1% - 4.9%	33.2	34.7	39.3	16.8	19.9
5% - 9.9%	15.3	10.1	19.2	18.8	9.0
10% - 19.9%	7.8	6.8	12.6	22.1	11.2
20% or more	4.5	2.8	6.7	32.5	12.3
Bangladeshi ethnic density					
0% - 0.9%	56.9	55.6	75.4	56.4	16.2
1% - 4.9%	34.5	36.1	17.0	24.6	21.6
5% - 9.9%	4.9	4.5	4.4	12.0	15.5
10% - 19.9%	2.2	2.1	2.5	4.9	12.9
20% or more	1.5	1.7	0.7	2.1	33.8

Table 5.26. Health characteristics of the CS sample

	Caribbean (n=1631)	African (n=1519)	Indian (n=2677)	Pakistani (n=1490)	Bangladeshi (n=522)
Has a limiting, longstanding illness, %	23.7	10.5	16.2	16.6	17.2
Has a limiting, longstanding illness¹					
O.R. (95% C.I.)	1.30 (1.15 – 1.48)†	0.73 (0.61 – 0.87)†	0.94 (0.84 – 1.06)	1.29 (1.12 – 1.51)†	1.50 (1.18 – 1.90)†

¹Adjusted for age and sex (ref=male)

*p<0.05, **p<0.01, †p<0.001

Experiences of racial discrimination among the ethnic minority population of the CS sample are presented in Table 5.27. Bangladeshi people were the most worried about racial/religious attacks, followed by Indian, Pakistani and Black African people. Black African people reported the highest percentage of having experienced employment discrimination in the past 5 years. Black Caribbean people reported the highest prevalence of expecting to be treated worse than other races, whereas Indian people reported the highest prevalence of expecting to be treated better than other races by members of several organisations.

Table 5.27. Experiences of racial discrimination among the ethnic minority sample of the CS

	Caribbean (n=1644) %	African (n=1536) %	Indian (n=2687) %	Pakistani (n=1503) %	Bangladeshi (n=536) %
Fear of Racial/religious attack					
Fairly or very worried	25.1	36.5	40.7	39.3	42.7
Employment discrimination in the last 5 years					
Yes	5.8	10.4	3.5	4.5	2.4
Organisational Racism					
Expects to be treated worse than other 'races'	43.9	37.4	24.1	29.1	30.2

Prevalences of the civic-political participation variables by ethnic group are presented in tables 5.28 to 5.30. Table 5.28 presents the distribution of civic engagement participation across ethnic minority respondents of the CS. Prevalences of civic engagement were high, with over half of all ethnic minority groups participating in any activity. Informal volunteering was the activity most ethnic minority people engaged in, followed by formal volunteering and political participation. Tables 5.29 and 5.30 show positive ratings of perception of community cohesion and satisfaction with local services reported across ethnic groups.

Table 5.28. Prevalence of civic engagement in the CS survey, by ethnic group

	Caribbean (n=1644) %	African (n=1536) %	Indian (n=2687) %	Pakistani (n=1503) %	Bangladeshi (n=536) %	White (n=16536) %
Political participation	12.6	11.1	7.7	7.2	7.3	9.4
Informal volunteering	64.3	60.6	55.0	52.8	45.0	65.8
Formal volunteering	40.5	42.1	34.8	26.2	25.2	43.6
Any civic engagement	75.5	73.6	67.5	64.1	60.6	80.1

Table 5.29. Prevalence of community cohesion in the CS survey, by ethnic group

	Caribbean (n=1644) %	African (n=1536) %	Indian (n=2687) %	Pakistani (n=1503) %	Bangladeshi (n=536) %	White (n=16536) %
Agrees that local area is place where people respect ethnic differences	81.4	86.9	86.4	85.6	83.8	82.1
Agrees that people in neighbourhood can be trusted	69.2	68.1	72.7	72.7	65.3	85.6
Feels safe after dark	71.4	70.5	66.4	68.2	62.9	73.3
Agrees that people pull together to improve neighbourhood	62.2	63.9	68.5	68.8	70.6	69.6
Disagrees that people in this neighbourhood do not share the same values	41.0	41.7	39.7	36.6	42.8	39.4
Agrees that local area is place where people from different backgrounds get on well together	82.4	82.03	84.5	81.7	83.8	80.9

Table 5.30. Prevalence of satisfaction with local services in the CS survey, by ethnic group

	Caribbean (n=1644) %	African (n=1536) %	Indian (n=2687) %	Pakistani (n=1503) %	Bangladeshi (n=536) %	White (n=16536) %
Satisfied with local transport	86.8	90.1	89.1	91.3	91.0	78.6
Satisfied with local council housing	70.8	77.9	81.6	78.2	73.9	80.7
Satisfied with local street cleaning services	79.2	85.7	80.4	77.8	80.5	79.2
Satisfied with local police	79.6	85.9	81.9	80.9	78.0	69.0
Satisfied with local health services	86.3	88.5	82.8	84.5	83.6	87.2
Satisfied with local youth services	48.1	68.9	68.8	67.7	71.8	49.1

5.5 Statistical Analyses

Statistical analyses for the proposed study varied depending on the hypothesis tested and the dataset used. All analyses were performed using STATA 9, and were stratified by ethnic group. Descriptive analyses were undertaken for all datasets, and included frequencies and distributions of the explanatory and outcome variables.

Since all datasets analysed in this study have a hierarchical or clustered structure (individuals, at level 1, are nested within areas, at level 2), multilevel modelling techniques were employed to model the data. Multilevel modelling allows for the fact that individuals living in the same area are more similar to each other than to individuals living in a different location. In analyses where multilevel modelling could not be used, robust standard errors were applied to the analytical models to allow for the clustering of subjects living in the same neighbourhood, and to avoid underestimating standard errors of regression coefficients.

5.5.1 Overall association between ethnic density and health

The association between ethnic density and different health outcomes was examined using data from the HSE. In order to properly model the association between ethnic density and health throughout the study, the assumption of linearity was tested first (methodological details below). To explore the overall association between ethnic density and health, ethnicity-stratified odds ratios of reporting poor health by a 10% increase in ethnic density were estimated first as the unadjusted relationship, and then adjusting for age and gender; then adding individual socioeconomic status; and finally adding area deprivation. For binary outcomes, multilevel logistic regressions were conducted. For continuous outcomes, multilevel linear regressions were used instead. Analyses were conducted using own ethnic density first, and then overall ethnic minority density.

5.5.1.1 Assumption of linearity

The assumption of a linear relationship between ethnic density and health was assessed by comparing the goodness-of-fit between two models that examined the ethnic density effect. Since the two models were nested, their goodness-of-fit was

compared using the likelihood ratio test. Model one included a linear ethnic density term, whereas model two included a linear ethnic density term and a squared ethnic density term. Separate models were conducted for each ethnic group, for the different health outcomes, and for own ethnic density and overall ethnic minority density. For example, in the test of linearity between own ethnic density and the continuous health measure of waist to hip ratio, waist:hip ratio was modelled as

$$y_{ij} = \beta_0 + u_{0j} + e_{ij}$$

where u_{0j} is the difference between the overall mean β_0 and the mean measurement in neighbourhood j , and e_{ij} is the measurement error for i^{th} person in the j^{th} neighbourhood. Model 1 was then modelled as:

$$y_{ij} = \beta_0 + \beta_1 \text{ own ethnic density}_j + \beta_2 \text{ gender}_{ij} + \beta_3 \text{ age}_{ij} + \beta_{4_2} \text{ sep_2}_{ij} + \beta_{4_3} \text{ sep_3}_{ij} + \beta_{4_4} \text{ sep_4}_{ij} + \beta_{5_2} \text{ area deprivation_2}_j + \beta_{5_3} \text{ area deprivation_3}_j + \beta_{5_4} \text{ area deprivation_4}_j + \beta_{5_5} \text{ area deprivation_5}_j + \beta_{5_6} \text{ area deprivation_6}_j + (u_{0j} + e_{ij})$$

Here β_1 represents the increase in the overall mean waist to hip ratio for a 1 unit increase in ethnic density, β_2 represents the increase in the overall mean waist to hip ratio for women (as compared with the reference group: men), β_3 represents the increase in the overall mean waist to hip ratio per 1 year increase in age, β_{4_2} to β_{4_4} represent the difference from the overall mean waist:hip ratio in NSSEC categories to that of the reference category (NSSEC category I & II), and β_{5_2} to β_{5_6} represent the difference from the overall mean waist:hip ratio in area deprivation categories to that of the reference category (most deprived wards in the country). Estimates of model one were stored and compared to those of model two, below, which included the addition of a squared ethnic density variable (in bold).

$$y_{ij} = \beta_0 + \beta_1 \text{ own ethnic density}_j + \mathbf{\beta_2 \text{ own ethnic density}^2_j} + \beta_3 \text{ gender}_{ij} + \beta_4 \text{ age}_{ij} + \beta_{4_2} \text{ sep_2}_{ij} + \beta_{4_3} \text{ sep_3}_{ij} + \beta_{4_4} \text{ sep_4}_{ij} + \beta_{5_2} \text{ area deprivation_2}_j + \beta_{5_3} \text{ area deprivation_3}_j + \beta_{5_4} \text{ area deprivation_4}_j + \beta_{5_5} \text{ area deprivation_5}_j + \beta_{5_6} \text{ area deprivation_6}_j + (u_{0j} + e_{ij})$$

5.5.2 Social norms model

The hypothesised pathways of the study were analysed next. Analyses of the social norms model were conducted using FNS data, and set out to:

1. Establish the prevalence of racism in the UK, which was accomplished by comparing data from the FNS (collected in 1993/1994) to data from the CS (2005/2007), in order to examine the prevalence of experienced racism in a more recent context. Initial comparisons were conducted by calculating weighted prevalences for both datasets. Then, logistic regressions were applied to the data to produce mutually adjusted odds ratios of reporting experienced racism or discrimination across the different sociodemographic characteristics of ethnic minority respondents in both datasets. This allowed for a detailed examination of the variations of experienced racism reported by different sociodemographic groups in both contexts.

2. Examine whether experiences of racism are less common in areas of high ethnic density, which was achieved by conducting ethnicity-stratified multilevel regression models using FNS data to ascertain the likelihood of reporting racism as own and overall ethnic minority density increased by 10%. Separate multilevel regression models, adjusted for age, sex, and individual socioeconomic position, were conducted for each type of discrimination.

3. Explore whether racism-related social norms vary according to level of ethnic density. In order to examine this, multilevel logistic regressions were conducted to explore the association between a 10% increase in own and overall ethnic minority density and racism-related social norms. Models were conducted for each ethnic minority group and social norms construct separately, and were adjusted for age, sex, individual socioeconomic position, and area deprivation.

5.5.3 Buffering effects model

The buffering effects model was tested using data from the FNS. Multilevel regression analyses were conducted to examine:

1. The relationship between racism and health in the FNS sample. Models examining the impact of racism on the health of ethnic minority people were

conducted separately for each ethnic group and racism exposure, and were adjusted for sex, age, socioeconomic status, and area deprivation.

2. The prevalence of social support among ethnic minority people, and whether individuals living in areas of higher ethnic density enjoy increased social support as compared to their counterparts. Multinomial logistic regression models were conducted using HSE data to test the association between perceived social support and ethnic density, with different models conducted for own and overall ethnic minority density. As the most numerous category, 'high social support' was used as the base outcome in the regressions. Robust standard errors were used in order to correct for non-independence of observations due to geographic clustering.

3. The buffering effects model, which was tested by exploring whether the detrimental impact of racism on health reduced as ethnic density increased. Six sets of ethnicity-stratified multilevel logistic regression models were conducted, one for each health outcome and racism measure. Multilevel logistic regression models were built in two sequential steps: model one examined the adjusted odds ratios of reporting psychotic symptomatology and poor self-rated health as own or overall ethnic minority density increased by 10%; and model two added racism (fear of racism, any experienced racist attack, or employment discrimination), and an interaction term between ethnic density and experienced racism (the buffering effect). Analyses were adjusted for age, sex, individual socioeconomic position and area deprivation.

To further understand how increases in own and overall ethnic minority density protect ethnic minority people from the detrimental impact of racism on health, statistically significant results of the buffering effect analyses were plotted in a graph, which modelled ethnic density at six different levels: 1%, 5%, 10%, 20%, 30% and 40%. The adjusted log odds of reporting psychotic symptomatology or poor self-rated health were calculated as

$$\text{Health} = \text{racism} + \text{ethnic density} + \text{ethnic density} * \text{racism}$$

The graph then presented the odds ratios of reporting poor health with increasing own ethnic density among people who reported experienced racism, relative to those who did not.

5.5.4 Civic-political participation model

The civic-political participation model was tested using data from the 2005 and 2007 CS. Analyses were carried out in four stages: the first stage described the different facets of civic-political participation and its association with model covariates; in the second stage, an examination of the association between civic-political participation and health was conducted; in the third stage, analyses examined the association between civic-political participation and ethnic density; and finally, where a significant association between civic-political participation, health and ethnic density was found, a test for mediation was conducted.

Multilevel regression models were conducted to test the association between health and civic-political participation constructs, and were adjusted for ethnic group, individual socioeconomic position, age, sex, and area deprivation.

Examinations of whether civic engagement improves as the proportion of ethnic minority residents in their local area increases were conducted using multilevel regression analyses adjusted for age, sex, individual socioeconomic position, number of years living in neighbourhood, nativity, and area deprivation.

To conduct mediation analyses, multilevel logistic regression models were constructed entering variables in sequence, with limiting longstanding illness as the outcome. Step one included no covariates; step two included age, gender, socioeconomic status; step three included area deprivation; and finally, factors measuring civic-political participation were entered last, in step four.

Chapter 6. Ethnic Density Effect

Chapter 3 presented an overview of the evidence on the ethnic density effect, which is characterised by inconsistent results, with some studies reporting statistically significant protective effects of ethnic density on health, particularly mental health, whereas other studies report no association, or even a detrimental effect. In addition, although two UK studies have found a curvilinear ethnic density effect (Fagg et al., 2006; Neeleman et al., 2001), the majority of studies have assumed a linear association between ethnic density and health, but have failed to test for it. Thus, it is currently uncertain whether ethnic density impacts on health, and it is unknown whether it does so in a linear manner.

The aim of Chapter 6 is to fill these gaps in the literature by exploring the assumption of a linear association between ethnic density and health, and by examining the effect of ethnic density on several health outcomes. This chapter is structured as follows: the first part of the chapter examines the assumptions of linearity between ethnic density and health (section 6.1); analyses in section 6.2 explore the ethnic density effect on physical health, operationalising ethnic density as both own and overall ethnic minority density; section 6.3 examines the effect of own and overall ethnic minority density on the mental health of ethnic minority people; and section 6.4 does so for health behaviours. A concluding summary of findings is presented in section 6.5.

6.1 Tests for Linearity

The assumption of a linear association between ethnic density and health was assessed by comparing the goodness-of-fit between two models that examined the ethnic density effect on self-rated health, directly measured physical health, mental health, and one health behaviour (current drinking).

None of the linearity tests conducted found any evidence to support a non-linear association between ethnic density and health. Results yielded that model one, with the linear ethnic density term, was more parsimonious than model two, which included a squared ethnic density term. Given the results obtained, the relationship between

ethnic density and health was assumed to be linear, and thus was analysed as such all throughout this thesis.

6.2 Ethnic Density Effect on Physical Health

After finding no evidence of a non-linear relationship between ethnic density and health, a direct examination of the ethnic density effect was conducted next. The associations between health outcomes analysed to test the ethnic density effect and model covariates are presented in table 6.1. Ethnic minority women were more likely than their male counterparts to report fair, bad, or very bad self-rated health and worse mental health, but less likely to report current drinking and exceeding sensible drinking guidelines. A statistically significant linear association was found between health and age, except for current alcohol consumption and exceeding sensible drinking guidelines, which decreased in older ages. A social gradient was found for overall self-rated health, waist to hip ratio and mental health, but not for cardiovascular disease and the alcohol consumption measures. Results showed a linear association between area deprivation and reports of poor self-rated health, increased waist to hip ratio, reports of cardiovascular disease and poor mental health, whereby as area deprivation decreased, so did the odds ratios of reporting ill health. This was not the case for current alcohol consumption, which was found to increase as area deprivation decreased.

Table 6.1. Mutually adjusted odds ratios of reporting poor health by different sociodemographic characteristics among the ethnic minority sample of the HSE

	Fair, bad or very bad overall self-rated health OR (95% CI)	Waist:hip ratio B (SE)	Cardiovascular disease OR (95% CI)	Poor mental health (GHQ) OR (95% CI)	Current alcohol consumption OR (95% CI)	Exceeds sensible drinking guidelines OR (95% CI)
<i>Individual-level variables</i>						
Women ^a	1.31 (1.20-1.42)†	-0.08 (0.00)†	1.01 (0.92-1.11)	1.36 (1.21-1.53)†	0.55 (0.51-0.60)†	0.56 (0.49-0.65)†
Age 34-44 years ^b	2.34 (2.09-2.62)†	0.04 (0.00)†	2.93 (2.54-3.38)†	1.41 (1.22-1.63)†	0.94 (0.81-1.08)	0.59 (0.50-0.70)†
Age 45-60 years ^b	5.32 (4.74-5.97)†	0.08 (0.00)†	8.80 (7.68-10.09)†	1.68 (1.44-1.95)†	0.68 (0.60-0.76)†	0.52 (0.43-0.62)†
Age 61+ years ^b	10.47 (9.19-11.93)†	0.09 (0.00)†	24.47 (21.09-28.39)†	1.72 (1.44-2.05)†	0.64 (0.57-0.73)†	0.27 (0.21-0.34)†
SEP IIINM ^c	1.48 (1.28-1.72)†	-0.00 (0.00)	1.04 (0.89-1.22)	1.47 (1.21-1.78)†	0.28 (0.23-0.34)†	0.91 (0.74-1.12)
SEP IIIM ^c	1.77 (1.57-2.00)†	0.01 (0.00)†	0.98 (0.87-1.12)	1.27 (1.08-1.50)†	1.27 (1.14-1.42)†	1.23 (1.03-1.47)*
SEP IV&V ^c	2.23 (1.97-2.51)†	0.01 (0.00)†	1.08 (0.95-1.23)	1.64 (1.39-1.93)†	1.22 (1.09-1.37)†	1.25 (1.03-1.52)*
SEP Other ^c	2.58 (2.18-3.05)†	0.01 (0.00)†	1.13 (0.93-1.37)	1.81 (1.43-2.27)†	0.88 (0.77-1.00)	0.89 (0.60-1.32)
<i>Area-level variables</i>						
IMDQ 2 ^{hd}	0.80 (0.70-0.92)†	-0.01 (0.00)†	1.05 (0.91-1.21)	0.92 (0.77-1.10)	1.95 (1.62-2.35)†	0.88 (0.71-1.08)
IMDQ 3 ^d	0.56 (0.49-0.65)†	-0.01 (0.00)†	0.90 (0.78-1.04)	0.79 (0.67-0.95)**	2.64 (2.18-3.21)†	0.99 (0.81-1.21)
IMDQ 4 ^d	0.59 (0.49-0.70)†	-0.01 (0.00)†	0.90 (0.75-1.08)	0.85 (0.68-1.06)	3.23 (2.53-4.12)†	0.87 (0.68-1.12)
IMDQ 5 ^d	0.44 (0.36-0.55)†	-0.02 (0.00)†	0.97 (0.79-1.18)	0.60 (0.46-0.79)†	5.08 (3.83-6.74)†	0.97 (0.74-1.25)
IMDQ least deprived ^d	0.31 (0.24-0.41)†	-0.02 (0.00)†	0.74 (0.58-0.94)**	0.45 (0.31-0.65)†	4.94 (3.60-6.78)†	0.83 (0.61-1.12)

*p<0.05, **p<0.01, †p<0.001

^aReference group – Men

^bReference group – Age 16-33 years

^cReference group – SEP category I & II

^dReference group – Most deprived MSOA in the country

To explore the effect of ethnic density on health, ethnicity-stratified multilevel regression models examining reports of poor health by a 10% increase in ethnic density (own-group and overall ethnic minority density) were performed first as the unadjusted relationship (base model), then adjusting for age, gender and individual socioeconomic status (model one), and adding area deprivation in model two.

6.2.1 Self-rated health

Tables 6.2 and 6.3 summarise the results of the analyses conducted to test the ethnic density effect on reports of fair, bad or very bad self-rated health for both own ethnic density (table 6.2) and overall ethnic minority density (table 6.3).

Black Caribbean people

As shown in Table 6.2, the unadjusted association between own ethnic density and reports of fair, bad or very bad self-rated health yielded a statistically significant detrimental impact on the health of Black Caribbean people, although the negative effect diminished by almost 20% once individual and area-level variables were adjusted for in model two.

When analysed as overall ethnic minority density, the effect of ethnic density was also detrimental, although weaker than when ethnic density was measured as own ethnic density. After adding individual and area-level variables in models one and two, the detrimental effect of ethnic density decreased and lost statistical significance (Table 6.3).

Black African people

Analyses of the association between own ethnic density and self-rated overall health in Black African people showed a protective ethnic density effect, which although consistently non-significant, strengthened once individual and area-level controls were added in models one and two. Table 6.2 shows a decrease in the odds of reporting fair, bad, or very bad health as own ethnic density increases.

The effect of overall ethnic minority density on Black African people also showed a protective effect, which reached statistical significance in models one and two, after controlling for individual and area-level variables (table 6.3).

Indian people

For Indian people, the unadjusted association between own ethnic density and self-rated health was found to be detrimental. Once individual controls were added in model one the association ceased to be statistically significant, and upon the addition of area deprivation in model two, it changed direction and turned into a protective, non-significant effect.

When analysed as overall ethnic minority density, the ethnic density effect on reports of fair, bad or very bad self-rated health for Indian people showed a statistically significant detrimental effect in the unadjusted model, which decreased in strength in model one, and became non-significant in model two after adjusting for area-level effects (see table 6.3).

Pakistani people

As presented in table 6.2, the effect of own ethnic density on overall self-rated health for Pakistani people showed a small detrimental effect in the unadjusted model, which was strengthened once individual controls were added in model one, but weakened to non-significance in model two, once area deprivation was controlled for.

Unadjusted analyses of the ethnic density effect operationalised as overall ethnic minority density showed a statistically significant, but very small increase in the odds of reporting poor health among Pakistani people. This detrimental ethnic density effect lost statistical significance once individual-level variables were controlled for, and changed direction once area deprivation was added in model two.

Bangladeshi people

Analyses of own ethnic density on self-rated health among Bangladeshi people showed a non-significant detrimental effect in the unadjusted model. No changes were observed after adding individual and area-level variables to model one and two (see table 6.2).

As summarised in table 6.3, the effect of overall ethnic minority density on reports of fair, bad or very bad self-rated health of Bangladeshi people was similar to that of own ethnic density, with a non-significant detrimental effect found in the unadjusted model, which decreased in strength after adding individual and area-level controls.

All ethnic minority people

Analyses of overall ethnic minority density on reports of fair, bad or very bad health of all ethnic minority people combined yielded a small, although highly statistically significant detrimental effect on overall self-rated health (see table 6.3). The addition of individual-level controls in model one did not alter the effect, which decreased in strength and significance in model two, after adjusting for area deprivation.

Table 6.2. Effect of own ethnic density (10% increase) on reports of fair, bad or very bad overall self-rated health by ethnic minority group

Own ethnic density	Base Model	Model 1	Model 2
	OR (95% CI)	Partially adjusted OR (95% CI)	Fully adjusted OR (95% CI)
Black Caribbean	1.56 (1.30-1.87)†	1.39 (1.15-1.67)†	1.25 (1.04-1.51)*
Black African	0.89 (0.65-1.22)	0.79 (0.56-1.12)	0.73 (0.50-1.05)
Indian	1.11 (1.02-1.19)**	1.02 (0.94-1.1)	0.98 (0.90-1.07)
Pakistani	1.07 (1.01-1.13)*	1.11 (1.03-1.18)†	1.05 (0.98-1.13)
Bangladeshi	1.03 (0.98-1.09)	1.05 (0.97-1.14)	1.03 (0.95-1.12)

*p<0.05, **p<0.01, †p<0.001;

Model 1: Adjusted for age, sex, and socioeconomic position

Model 2: Adjusted for age, sex, socioeconomic position and area deprivation

Table 6.3. Effect of overall ethnic minority density (10% increase) on reports of fair, bad or very bad overall self-rated health by ethnic minority group

Overall ethnic minority density	Base Model	Model 1	Model 2
	OR (95% CI)	Partially adjusted OR (95% CI)	Fully adjusted OR (95% CI)
Black Caribbean	1.17 (1.11-1.23)†	1.09 (1.04-1.15)†	1.04 (0.98-1.10)
Black African	0.95 (0.85-1.06)	0.88 (0.78-0.99)*	0.85 (0.74-0.97)*
Indian	1.09 (1.04-1.14)†	1.05 (1.00-1.11)*	1.00 (0.95-1.07)
Pakistani	1.04 (1.00-1.08)*	1.04 (0.99-1.09)	0.99 (0.94-1.05)
Bangladeshi	1.03 (0.97-1.08)	1.04 (0.97-1.12)	1.00 (0.93-1.09)
All ethnic minorities	1.09 (1.06-1.11)†	1.09 (1.07-1.12)†	1.03 (1.00-1.06)*

*p<0.05, **p<0.01, †p<0.001;

Model 1: Adjusted for age, sex, and socioeconomic position

Model 2: Adjusted for age, sex, socioeconomic position and area deprivation

6.2.2 Biomarkers

6.2.2.1 Waist:hip ratio

Tables 6.4 and 6.5 present the results of the analyses conducted to test the ethnic density effect (own and overall, respectively) on the waist to hip ratio of ethnic minority people.

Black Caribbean people

Results for Black Caribbean people yielded a detrimental increase in waist to hip ratio in the unadjusted model, which reduced its strength in model one. After adjusting for area-level effects in model two, the coefficient decreased further and lost statistical significance.

When analysed as overall ethnic minority density, a very small but statistically significant detrimental increase of waist to hip ratio was observed in the unadjusted model, and after adjusting for individual-level covariates in model one. After controlling for area deprivation in model two, the detrimental effect of overall ethnic minority density lost statistical significance (see table 6.5).

Black African people

For Black African people, a non-significant detrimental increase in waist to hip ratio was observed as own ethnic density increased. Although the coefficient varied between models, a similar strength and non-significance remained throughout (table 6.4).

When analysed as overall ethnic minority density, a detrimental increase in waist to hip ratio was found. This remained after adjusting for area and individual level variables.

Indian people

A protective, although not statistically significant effect of ethnic density was found for own ethnic density among Indian people. The coefficient strengthened in model one after controlling for age, sex and socioeconomic position, but weakened in model two once area deprivation was adjusted for.

A similar protective non-significant effect was found when ethnic density was analysed as overall ethnic minority density, which remained unchanged after adjusting for covariates in models one and two (see table 6.5).

Pakistani people

Analyses of own ethnic density among Pakistani people showed a detrimental increase in waist to hip ratio as own ethnic density increased. This effect, which was not statistically significant in the unadjusted model, reached statistical significance in model one, with the addition of individual-level variables, and became non-significant again in the fully adjusted model (table 6.4).

A small protective effect of overall ethnic minority density was found for Pakistani people in the unadjusted analysis. After adjusting for individual covariates in model one, the effect became null, although it regained a protective, non-significant effect after controlling for area deprivation in model two.

Bangladeshi people

A similar non-significant detrimental effect of ethnic density on waist to hip ratio was found for own and overall ethnic minority density among Bangladeshi people. A small increase in waist to hip ratio was found on both occasions after individual and area-level variables were accounted for in model two.

All ethnic minority people

Analyses of the ethnic density effect for all ethnic minority people combined yielded a significant detrimental effect, presented in table 6.5. As ethnic density increased by 10%, and after all covariates were adjusted for, ethnic minority people experienced a small statistically significant increase in waist to hip ratio.

Table 6.4. Effect of own ethnic minority density (10% increase) on waist to hip ratio by ethnic minority group

Own ethnic density	Base Model	Model 1	Model 2
	B (SE)	Partially adjusted B (SE)	Fully adjusted B (SE)
Black Caribbean	0.012 (0.004)†	0.008 (0.003)**	0.004 (0.003)
Black African	0.005 (0.007)	0.001 (0.006)	0.003 (0.006)
Indian	-0.000 (0.001)	-0.007 (0.001)	-0.001 (0.001)
Pakistani	0.004 (0.001)	0.003 (0.001)*	0.002 (0.001)
Bangladeshi	0.001 (0.001)	0.002 (0.001)	0.001 (0.001)

*p<0.05, **p<0.01, †p<0.001;

Model 1: Adjusted for age, sex, and socioeconomic position

Model 2: Adjusted for age, sex, socioeconomic position and area deprivation

Table 6.5. Effect of overall ethnic minority density (10% increase) on waist to hip ratio by ethnic minority group

Overall ethnic minority density	Base Model	Model 1	Model 2
	B (SE)	Partially adjusted B (SE)	Fully adjusted B (SE)
Black Caribbean	0.005 (0.001)†	0.003 (0.001)†	0.002 (0.001)
Black African	0.006 (0.002)**	0.004 (0.002)	0.005 (0.002)*
Indian	0.000 (0.001)	-0.001 (0.001)	-0.001 (0.001)
Pakistani	-0.000 (0.001)	0.000 (0.001)	-0.000 (0.001)
Bangladeshi	0.001 (0.001)	0.002 (0.001)	0.001 (0.002)
All ethnic minorities	0.002 (0.000)†	0.002 (0.000)†	0.001 (0.000)†

*p<0.05, **p<0.01, †p<0.001;

Model 1: Adjusted for age, sex, and socioeconomic position

Model 2: Adjusted for age, sex, socioeconomic position and area deprivation

6.2.2.2 Cardiovascular disease

Analyses to test the ethnic density effect on cardiovascular disease (CVD) were conducted next. Given the young age structure of ethnic minority groups in the UK, and the low prevalence of CVD found when analyses were stratified by ethnic group, age was entered as a continuous variable in analyses exploring the ethnic density effect on CVD in order to increase sample power.

Results of the analyses examining the effect of own ethnic density on CVD are presented in table 6.6, and findings from the examinations of the overall ethnic minority density effect on CVD are presented in table 6.7.

Black Caribbean people

Among Black Caribbean people, a statistically significant detrimental effect of own ethnic density was found in the unadjusted model. After age, sex, and socioeconomic position were controlled for in model one, the ethnic density effect lost strength and statistical significance. In model two, after the addition of area deprivation, the strength of the detrimental effect increased, but did not reach statistical significance (table 6.6).

A detrimental, statistically significant effect was also found in the unadjusted model when ethnic density was analysed as overall ethnic minority density (see table 6.7). After adjusting for individual and area-level covariates, the effect lost strength and statistical significance, yielding a null ethnic density effect on cardiovascular disease.

Black African people

Analyses of own ethnic density on cardiovascular disease among Black African people showed a slightly detrimental, although non-significant, effect. The strength of the effect changed direction after adjusting for individual level variables, but became detrimental again once area-level controls were controlled for, yielding a final non-significant, detrimental impact of ethnic density on cardiovascular disease (table 6.6).

When analyses were conducted with overall ethnic minority density, a protective non-significant effect was found in the unadjusted model, which became stronger and reached statistical significance in model one, after adjusting for age, sex, and socioeconomic position. After area-level deprivation was adjusted for in model two, the protective effect of ethnic density remained, but lost statistical significance.

Indian people

For Indian people, a small non-significant detrimental effect was found for own ethnic density on cardiovascular disease. After controlling for individual and area-level confounders in subsequent models, the direction of the effect became protective, but it did not reach statistical significance.

When analysed as overall ethnic minority density (see table 6.7), a very small, non-significant detrimental effect of ethnic density was found in the unadjusted model,

which changed to a protective effect in model one, and turned null in model two after adjusting for area-level deprivation.

Pakistani people

A protective effect of own ethnic density on cardiovascular disease was found for Pakistani people in the unadjusted model. After controlling for sex, age and socioeconomic position in model one, the effect lost statistical significance, and lost further strength after controlling for area-level deprivation in model two (table 6.6).

When ethnic density was analysed as overall ethnic minority density, a non-significant protective effect was found. After adding individual and area-level variables in models one and two, the effect increased but did not reach statistical significance.

Bangladeshi people

Among Bangladeshi people, results showed a protective non-significant ethnic density effect on cardiovascular disease. The strength of the effect did not change after adjusting for covariates in models one and two, and it did not reach statistical significance.

When analysed as overall ethnic minority density, a non-significant detrimental effect was observed, which strengthened in subsequent models without reaching statistical significance.

All ethnic minority people

Analyses of the ethnic density effect for all ethnic minority people combined showed a slightly protective, but not statistically significant, effect in the unadjusted model, which became significantly detrimental in model one, after adjusting for age, sex and socioeconomic position. Once area-level controls were added in level two, the effect lost statistical significance (see table 6.7).

Table 6.6. Effect of own ethnic density (10% increase) on cardiovascular disease by ethnic minority group

Own ethnic density	Base Model	Model 1	Model 2
	OR (95% CI)	Partially adjusted OR (95% CI)	Fully adjusted OR (95% CI)
Black Caribbean	1.36 (1.14-1.62)†	1.13 (0.95-1.35)	1.58 (0.96-1.39)
Black African	1.07 (0.83-1.38)	0.99 (0.71-1.38)	1.08 (0.76-1.56)
Indian	1.05 (0.98-1.12)	0.98 (0.91-1.07)	0.99 (0.91-1.08)
Pakistani	0.92 (0.87-0.98)**	0.97 (0.89-1.04)	0.99 (0.91-1.08)
Bangladeshi	0.97 (0.91-1.04)	0.97 (0.87-1.07)	0.96 (0.86-1.08)

*p<0.05, **p<0.01, †p<0.001;

Model 1: Adjusted for age, sex, and socioeconomic position

Model 2: Adjusted for age, sex, socioeconomic position and area deprivation

Table 6.7. Effect of overall ethnic minority density (10% increase) on cardiovascular disease by ethnic minority group

Overall ethnic minority density	Base Model	Model 1	Model 2
	OR (95% CI)	Partially adjusted OR (95% CI)	Fully adjusted OR (95% CI)
Black Caribbean	1.13 (1.08-1.19)†	1.03 (0.97-1.09)	1.04 (0.98-1.10)
Black African	0.96 (0.87-1.05)	0.88 (0.77-0.99)*	0.89 (0.78-1.03)
Indian	1.02 (0.98-1.07)	0.99 (0.94-1.05)	1.00 (0.94-1.07)
Pakistani	0.98 (0.93-1.02)	0.96 (0.91-1.02)	0.96 (0.91-1.03)
Bangladeshi	1.02 (0.95-1.09)	1.05 (0.95-1.15)	1.08 (0.96-1.21)
All ethnic minorities	0.99 (0.97-1.02)	1.03 (1.00-1.05)*	1.02 (0.99-1.05)

*p<0.05, **p<0.01, †p<0.001;

Model 1: Adjusted for age, sex, and socioeconomic position

Model 2: Adjusted for age, sex, socioeconomic position and area deprivation

6.3 Ethnic Density Effect on Mental Health

Examinations of the ethnic density effect on mental health were conducted using the 12-item version of General Health Questionnaire (GHQ). Results conducted to analyse the effect of own ethnic density on the mental health of ethnic minority people are presented in table 6.8, whereas results of the analyses of overall ethnic minority density are presented in table 6.9.

Black Caribbean people

For Black Caribbean people, an increase in poor mental health was observed across the three models, although it was only statistically significant in the unadjusted analyses (table 6.8).

Analyses of the ethnic density effect as overall ethnic minority density yielded a statistically significant increase in the odds ratios of reporting poor mental health, which remained detrimental and statistically significant after the addition of individual and area-level covariates in models one and two (see table 6.9).

Black African people

Among Black African people, analyses of ethnic density showed a weak, non-significant detrimental impact on mental health in the unadjusted model for both own and overall ethnic minority density. After controlling for age, sex and socioeconomic position in model one, the effect changed direction becoming protective, which further strengthened after controlling for area deprivation in model two, although it never reached statistical significance (see tables 6.8 and 6.9).

Indian people

Indian people experienced a protective effect on mental health as own ethnic density increased. Although this protective association was not statistically significant in the unadjusted model, the effect and statistical significance strengthened as individual and area-level variables were controlled for in models one and two.

A similar association was found when ethnic density was analysed as overall ethnic minority density, which strengthened as confounders were adjusted for. However, in this case, the protective ethnic density effect did not reach statistical significance (see table 6.9).

Pakistani people

Analyses of the relationship between own ethnic density and mental health among Pakistani people showed a non-significant, protective ethnic density effect in the unadjusted model, which became detrimental after controlling for individual age, sex, and socioeconomic position. After area deprivation was added in model two, the effect became null and not statistically significant.

A similar pattern was observed when ethnic density was analysed as overall ethnic minority density, whereby a detrimental, non-significant increase in the odds ratios of reporting poor mental health was observed in all models, strengthening in model one, but becoming null after area-level effects were adjusted for (see table 6.9).

Bangladeshi people

Results of analyses conducted to test the effect of own ethnic density on mental health among Bangladeshi people showed that when unadjusted, a 10% increase in own ethnic density was associated with an increase in the odds ratios of reporting poor mental health. After adding individual-level variables in model one the effect decreased, and became null in model two after controlling for area deprivation (table 6.8).

When analysed as overall ethnic minority density, a non-significant detrimental effect was observed in the base model, which was reduced in model one, and further reduced in model two, producing a non-significant protective effect of ethnic density.

All ethnic minority people

When ethnic density was analysed for all ethnic minority people combined, a statistically significant detrimental increase in the odds ratios of reporting poor mental health was observed in the unadjusted association, and after adjusting for individual-level variables in model one. The effect decreased in size and lost statistical significance after area deprivation was adjusted for in model two.

Table 6.8. Effect of own ethnic density (10% increase) on poor mental health (GHQ score of 4 or more) by ethnic minority group

Own ethnic density	Base Model	Model 1	Model 2
	OR (95% CI)	Partially adjusted OR (95% CI)	Fully adjusted OR (95% CI)
Black Caribbean	1.28 (1.03-1.60)*	1.23 (0.98-1.54)	1.21 (0.96-1.53)
Black African	1.02 (0.69-1.50)	0.90 (0.59-1.35)	0.73 (0.47-1.15)
Indian	0.95 (0.85-1.05)	0.88 (0.79-0.98)*	0.85 (0.76-0.96)**
Pakistani	0.99 (0.91-1.09)	1.02 (0.93-1.12)	1.00 (0.90-1.12)
Bangladeshi	1.04 (0.94-1.16)	1.03 (0.92-1.15)	1.00 (0.89-1.14)

*p<0.05, **p<0.01, †p<0.001;

Model 1: Adjusted for age, sex, and socioeconomic position

Model 2: Adjusted for age, sex, socioeconomic position and area deprivation

Table 6.9. Effect of overall ethnic minority density (10% increase) on poor mental health (GHQ score of 4 or more) by ethnic minority group

Overall ethnic minority density	Base Model	Model 1	Model 2
	OR (95% CI)	Partially adjusted OR (95% CI)	Fully adjusted OR (95% CI)
Black Caribbean	1.11 (1.04-1.19)†	1.10 (1.03-1.18)†	1.10 (1.03-1.19)**
Black African	1.01 (0.88-1.16)	0.98 (0.84-1.14)	0.90 (0.76-1.06)
Indian	1.02 (0.95-1.09)	0.98 (0.91-1.05)	0.94 (0.87-1.02)
Pakistani	1.00 (0.94-1.07)	1.00 (0.94-1.08)	0.99 (0.92-1.07)
Bangladeshi	1.01 (0.91-1.11)	0.99 (0.89-1.10)	0.95 (0.84-1.07)
All ethnic minorities	1.06 (1.03-1.09)†	1.04 (1.02-1.08)†	1.01 (0.98-1.05)

*p<0.05, **p<0.01, †p<0.001;

Model 1: Adjusted for age, sex, and socioeconomic position

Model 2: Adjusted for age, sex, socioeconomic position and area deprivation

6.4 Ethnic Density Effect on Health Behaviour

Alcohol consumption was the outcome chosen to analyse the ethnic density effect on health behaviour among ethnic minority people. Analyses were divided into two sections: first, analyses examined the effect of ethnic density on current drinking; then, among those who reported current drinking, analyses were conducted to investigate the impact of ethnic density on exceeding sensible drinking guidelines. Due to the low drinking prevalence among some ethnic groups, and in order to increase analytical power, age was entered as a continuous variable in all analyses of the ethnic density effect on alcohol use.

6.4.1 Current Alcohol Consumption

Black Caribbean people

Analyses of the association between own ethnic density and current alcohol consumption among Black Caribbean people showed a statistically significant protective effect of ethnic density. The protective effect of ethnic density weakened as individual and area-level controls were added to subsequent models, losing its statistical significance (table 6.10).

When analysed as overall ethnic minority density, a protective ethnic density effect was shown in the unadjusted model and in model one, but lost statistical

significance after controlling for area deprivation, although it still retained a protective quality (see table 6.11).

Black African people

Black African ethnic density was found to have a protective effect on current drinking among Black African people, albeit this was only statistically significant in the unadjusted model and in model one. After adjusting for area deprivation, the ethnic density effect remained protective but lost statistical significance (table 6.10).

Table 6.11 shows the results of the ethnic density effect when analysed as overall ethnic minority density. A significant and protective ethnic density effect remained after adjusting for individual and area-level variables. For each 10% increase in overall ethnic minority density, Black African people were about 20% less likely to report current drinking.

Indian people

For Indian people, own ethnic density was found to be protective of current drinking, even after adjusting for individual and area effects. Although the strength of the effect diminished in models one and two, it did not lose statistical significance (table 6.10). When analysed as overall ethnic minority density (see table 6.11), a significant, protective ethnic density effect was found across the three models.

Pakistani people

For Pakistani people, own ethnic density provided a strong protection against being a current drinker, with a decreased likelihood of 55% in reporting current drinking for a 10% increase in own ethnic density, after adjusting for individual and area-level confounders.

Overall ethnic minority density did not have a similar strong effect, although the direction remained protective. In the unadjusted model and model one, a significant protective effect of overall ethnic minority density was found, but the association lost statistical significance (although it remained protective), once area deprivation was controlled for in model two (table 6.11).

Bangladeshi people

Analyses of the ethnic density effect on current drinking for own ethnic density among Bangladeshi people showed a statistically significant protective effect in the unadjusted model. However, after adding individual-level variables in model one, the effect ceased to be significant, and after controlling for area deprivation in model two, it changed direction into a detrimental, non-significant effect (see table 6.10).

Analyses of the effect of overall ethnic minority density on current drinking showed a similar effect to that of own ethnic density, although results did not reach statistical significance in any of the models.

Given the low prevalence of drinking in the Bangladeshi population, it is possible that the lack of significance results is due to low sample power.

All ethnic minority people

The effect of overall ethnic minority density on current drinking among all ethnic minority people was found to have a statistically significant protective effect, although its strength weakened slightly as individual and area-level confounders were adjusted for in models one and two.

Table 6.10. Effect of own ethnic density (10% increase) on current alcohol consumption by ethnic minority group

Own ethnic density	Base Model	Model 1	Model 2
	OR (95% CI)	Partially adjusted OR (95% CI)	Fully adjusted OR (95% CI)
Black Caribbean	0.71 (0.59-0.86)†	0.77 (0.63-0.94)**	0.82 (0.67-1.01)
Black African	0.75 (0.58-0.98)*	0.70 (0.52-0.95)*	0.78 (0.56-1.07)
Indian	0.76 (0.69-0.83) †	0.77 (0.69-0.85)†	0.82 (0.74-0.91)†
Pakistani	0.46 (0.36-0.60)†	0.47 (0.35-0.63)†	0.45 (0.33-0.62)†
Bangladeshi	0.81 (0.66-0.99)*	0.84 (0.67-1.04)	1.04 (0.81-1.34)

*p<0.05, **p<0.01, †p<0.001;

Model 1: Adjusted for age, sex, and socioeconomic position

Model 2: Adjusted for age, sex, socioeconomic position and area deprivation

Table 6.11. Effect of overall ethnic minority density (10% increase) on current alcohol consumption by ethnic minority group

Overall ethnic minority density	Base Model	Model 1	Model 2
	OR (95% CI)	Partially adjusted OR (95% CI)	Fully adjusted OR (95% CI)
Black Caribbean	0.88 (0.83-0.94)†	0.91 (0.86-0.96)†	0.94 (0.88-1.00)
Black African	0.81 (0.73-0.89)†	0.80 (0.72-0.89)†	0.83 (0.73-0.93)†
Indian	0.83 (0.79-0.88)†	0.83 (0.78-0.89)†	0.89 (0.83-0.96)†
Pakistani	0.84 (0.73-0.97)*	0.84 (0.71-0.98)*	0.87 (0.74-1.04)
Bangladeshi	0.87 (0.73-1.04)	0.90 (0.75-1.09)	1.16 (0.92-1.47)
All ethnic minorities	0.71 (0.68-0.74)†	0.72 (0.69-0.75)†	0.78 (0.75-0.81)†

*p<0.05, **p<0.01, †p<0.001;

Model 1: Adjusted for age, sex, and socioeconomic position

Model 2: Adjusted for age, sex, socioeconomic position and area deprivation

6.4.2 Sensible Drinking

This section presents the results of the ethnic density effect on exceeding sensible drinking guidelines, which was measured as drinking 4 or more units per day for men, and 3 or more units per day for women. Table 6.12 shows the results of the analyses conducted to examine the effect of own ethnic density, and table 6.13 shows the results of the examinations of overall ethnic minority density on exceeding sensible drinking guidelines.

Black Caribbean people

Tests of the association between own ethnic density and exceeding sensible drinking guidelines yielded a protective, non-significant effect for Black Caribbean people. A similar, non-significant protective effect was found when ethnic density was analysed as overall ethnic minority density, although the strength of the effect was weaker (see table 6.13).

Black African people

Analyses of own ethnic density for Black African people showed a strong protective effect towards sensible drinking, whereby Black African people were about 60% less likely to report exceeding drinking guidelines per a 10% increase in ethnic density. This effect strengthened after individual and area controls were added in model two (see table 6.12).

When analysed as overall ethnic minority density, a null effect of ethnic density was found. In the unadjusted analysis, a non-significant detrimental effect was observed, which was reduced to a null finding after individual and area-level variables were added in models one and two.

Indian people

A protective, non-significant effect of own ethnic density was found in the analyses of own ethnic density on sensible drinking for Indian people. Although the effect strengthened in each model as individual and area-level controls were added, it did not reach statistical significance.

When analysed as overall ethnic minority density, a protective ethnic density effect was found in the fully adjusted model. After controlling for individual and area-level factors, Indian people were 11% less likely to report exceeding drinking guidelines as ethnic density increased by 10% (table 6.13).

Pakistani and Bangladeshi people

Due to their low drinking prevalence (see table 5.13 in Chapter 5), analyses conducted on the ethnic density effect on sensible drinking for Pakistani and Bangladeshi people did not produce reliable estimates, and thus results are not presented.

All ethnic minority people

When grouped together, ethnic minority people experienced a protective and statistically significant ethnic density effect on sensible drinking, which strengthened as confounding variables were adjusted for in models one and two (see table 6.13).

Table 6.12. Effect of own ethnic density (10% increase) on exceeding sensible drinking guidelines by ethnic minority group

Own ethnic density	Base Model	Model 1	Model 2
	OR (95% CI)	Partially adjusted OR (95% CI)	Fully adjusted OR (95% CI)
Black Caribbean	0.87 (0.69-1.08)	0.92 (0.73-1.16)	0.89 (0.70-1.15)
Black African	0.49 (0.26-0.91)*	0.46 (0.24-0.91)*	0.38 (0.18-0.77)**
Indian	0.92 (0.80-1.04)	0.92 (0.80-1.06)	0.89 (0.77-1.03)
Pakistani	-	-	-
Bangladeshi	-	-	-

*p<0.05, **p<0.01, †p<0.001;

Model 1: Adjusted for age, sex, and socioeconomic position

Model 2: Adjusted for age, sex, socioeconomic position and area deprivation

Table 6.13. Effect of overall ethnic minority density (10% increase) on exceeding sensible drinking guidelines by ethnic minority group

Overall ethnic minority density	Base Model	Model 1	Model 2
	OR (95% CI)	Partially adjusted OR (95% CI)	Fully adjusted OR (95% CI)
Black Caribbean	0.96 (0.89-1.03)	0.97 (0.90-1.04)	0.95 (0.88-1.03)
Black African	1.09 (0.88-1.35)	1.05 (0.84-1.31)	1.02 (0.80-1.30)
Indian	0.96 (0.88-1.04)	0.95 (0.87-1.03)	0.89 (0.80-0.99)*
Pakistani	-	-	-
Bangladeshi	-	-	-
All ethnic minorities	0.94 (0.91-0.98)†	0.93 (0.90-0.96)†	0.90 (0.87-0.94)†

*p<0.05, **p<0.01, †p<0.001;

Model 1: Adjusted for age, sex, and socioeconomic position

Model 2: Adjusted for age, sex, socioeconomic position and area deprivation

6.5 Conclusions

The first part of Chapter 6 found no evidence to support a non-linear association between ethnic density and health.

Analyses of the ethnic density effect on the health of ethnic minority people did not present consistent findings. Although different results were found in different directions as confounding variables were added to the analytical models, controlling for area deprivation noticeably altered the ethnic density effect in most analyses, and since area deprivation is an important confounding variable, only fully adjusted findings are discussed in this section.

Summaries of the fully adjusted findings from all health outcomes are presented in tables 6.14 and 6.15. Analyses of the ethnic density effect on physical health failed to show a clear picture of the direction or strength of the ethnic density effect. For example, in the case of overall self-rated health, whereas a detrimental effect of own ethnic density was found for Black Caribbean, a protective effect was found for Black African people and overall ethnic minority density.

Possibly due to its low prevalence, analyses of the effect of ethnic density on cardiovascular disease did not yield any statistically significant findings, nor did they clarify a particular direction of the effect.

In the case of waist to hip ratio, a statistically significant increase in waist to hip ratio was found only for Black African people and overall ethnic minority density, and for all ethnic minority people combined. Non significant findings of the association between ethnic density and waist to hip ratio tended to lean towards a detrimental effect of ethnic density, rather than the hypothesised protective effect.

A somewhat stronger support for the ethnic density effect was found for mental health, where a significant protective effect was observed in the case of Indian people and own ethnic density, and a non-significant, but protective effect was also found for Black African and Bangladeshi people and own ethnic density, and Black African and Indian people and overall ethnic minority density.

Ethnic minority people experienced a strong protective effect of ethnic density against alcohol consumption. As seen in the summary tables 6.14 and 6.15, ethnic minority people were less likely to report current drinking, and more likely to report engaging in sensible drinking guidelines, as ethnic density (both own and overall) increased.

Overall, stratified analyses showed that the effect of ethnic density on health is slightly stronger for own ethnic density than for overall ethnic minority density. When all ethnic minority groups were combined, a greater number of significant results were found, possibly due to an increase in sample power.

It is unclear why ethnic density performed protectively with some health outcomes (mainly mental health and health behaviour) but detrimental in other instances, including physical health. Investigation into the pathways linking ethnic

density to health, explored in subsequent chapters, might provide insight into the possible explanations.

Table 6.14. Summary table of the effect of own ethnic density on the health of ethnic minority people

	Caribbean	African	Indian	Pakistani	Bangladeshi
Own ethnic density	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Self-rated health	1.25 (1.04-1.51)*	0.73 (0.50-1.05)	0.98 (0.90-1.07)	1.05 (0.98-1.13)	1.03 (0.95-1.12)
Cardiovascular disease	1.58 (0.96-1.39)	1.08 (0.76-1.56)	0.99 (0.91-1.08)	0.99 (0.091-1.08)	0.96 (0.86-1.08)
Waist to hip ratio	0.004 (0.003)	0.003 (0.006)	-0.001 (0.001)	0.002 (0.001)	0.001 (0.001)
<i>B (SE)</i>					
Mental health	1.21 (0.96-1.53)*	0.73 (0.47-1.15)	0.85 (0.76-0.96)**	1.00 (0.90-1.12)	1.00 (0.89-1.14)
Current drinking	0.81 (0.66-0.99)*	0.78 (0.56-1.06)	0.82 (0.74-0.91)†	0.45 (0.33-0.61)†	1.03 (0.80-1.32)
Sensible drinking	0.88 (0.69-1.12)	0.39 (0.20-0.78)**	0.88 (0.76-1.02)	-	-

*p<0.05, **p<0.01, †p<0.001

Table 6.15. Summary table of the effect of overall ethnic minority density on the health of ethnic minority people

	Caribbean	African	Indian	Pakistani	Bangladeshi	All
Overall ethnic density	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Self-rated health	1.04 (0.98-1.10)	0.85 (0.74-0.97)*	1.00 (0.95-1.07)	0.99 (0.94-1.05)	1.00 (0.93-1.09)	1.03 (1.00-1.06)*
Cardiovascular disease	1.04 (0.98-1.10)	0.89 (0.78-1.03)	1.00 (0.94-1.07)	0.96 (0.91-1.03)	1.08 (0.96-1.21)	1.02 (0.99-1.05)
Waist to hip ratio	0.002 (0.001)	0.005 (0.002)*	-0.001 (0.001)	-0.000 (0.001)	0.001 (0.002)	0.001 (0.000)†
<i>B (SE)</i>						
Mental health	1.10 (1.03-1.19)**	0.90 (0.76-1.06)	0.94 (0.87-1.02)	0.99 (0.92-1.07)	0.95 (0.84-1.07)	1.01 (0.98-1.05)
Current drinking	0.94 (0.88-1.00)	0.83 (0.73-0.93)†	0.89 (0.83-0.96)†	0.88 (0.74-1.04)	1.16 (0.92-1.47)	0.78 (0.75-0.81)†
Sensible drinking	0.95 (0.88-1.03)	1.01 (0.81-1.27)	0.89 (0.80-0.99)*	-	-	0.90 (0.87-0.94)†

*p<0.05, **p<0.01, †p<0.001

Chapter 7. Social norms model

Chapter 7 tests the social norms model, which posits that ethnic minority people living in areas of greater ethnic density will experience less racial harassment than their counterparts who live in areas of reduced ethnic density. Decreased reports of experienced racism are hypothesised to be the result of both the enforcement of informal social control exerted over racism (see figure 2 in Chapter 3), and a decreased likelihood of encountering a perpetrator. Due to the constraints of secondary data given the availability of relevant measures, the second phenomena, a decreased likelihood of encountering a perpetrator, is not empirically tested in this study.

This chapter is structured as follows: it first sets out to establish the prevalence of racism in the UK (section 7.1); then it examines whether experiences of racism are less common in areas of high ethnic density (section 7.2); and it explores whether an increase in racism-related social norms vary according to level of ethnic density (section 7.3). Lastly, a conclusion and summary of the results are provided in section 7.4.

7.1 Racism in the UK

Analyses for this chapter were conducted using data from the Fourth National Survey of Ethnic Minorities (FNS). Since data for the FNS were collected in 1993-1994, the merged dataset of the 2005 and 2007 Citizenship Survey (CS) was also analysed in this section in order to examine the prevalence of experienced racism in a more recent context.

Racism questions in the FNS cover experiences of physical and verbal racial victimisation in the last year, fear of racial harassment in the past two years, and lifetime employment discrimination. The CS assesses employment discrimination in the past five years, fear of racial/religious harassment, and expected organisational racism. Despite differing time frames and slightly different constructs of racism collected in the two surveys, both datasets provide a nationally representative snapshot of the experiences of discrimination reported by ethnic minority people during two periods in time.

Standardised prevalences of reported experiences of racism and discrimination in both datasets are presented in tables 7.1 and 7.2. Although prevalences showed in the CS are higher, possibly due to the different nature of the questions asked and increased timeframe (five years as compared to one and two years), both the FNS and the CS yield a consistent picture of prevailing racism and discrimination experienced by ethnic minority people in the UK.

Prevalences of experienced racism in the FNS, presented in Table 7.1, were higher in the case of fear of racial harassment (ranging from 19.5% to 23.4%), and lower for experienced physical racial attacks (ranging from 1.8% to 2.9%). Experiences of verbal racist attacks were more prevalent than physical racist attacks, and ranged from 8.1% to 14.2%. Black Caribbean people reported the highest prevalence of experienced verbal racist attacks, any racist attack, and employment discrimination, whereas Pakistani people reported the highest prevalence of experienced physical verbal attacks, and together with Bangladeshi people, the highest prevalence of fear of racial harassment. Bangladeshi people reported the lowest prevalence of experienced physical, verbal and any racist attack, and employment discrimination

In the CS sample, employment discrimination presented the lowest prevalence (ranging from 3.7% to 11.4%), whereas expectations of organisational discrimination showed the largest prevalence (ranging from 25.3 to 47.3%, see table 7.2). As in the FNS, Bangladeshi people reported the highest prevalence of fear of racial harassment, with almost half of the respondents expressing fear of racial/religious attacks in the past two years. Black African people reported the highest prevalence of employment discrimination in the past five years (11.4%), whereas Black Caribbean people reported the highest expected organisational racism (47.3%).

In both datasets, direct experiences of racism, such as interpersonal racial harassment or employment discrimination, presented the lowest prevalence, whereas expected or fear of racism presented the highest. Black Caribbean people reported the highest amount of racism in four out of the eight measures of racism presented, more than any other ethnic group. Bangladeshi people consistently reported the highest prevalence of fear of racial harassment in both datasets.

Table 7.1. Standardised prevalences of experienced racism in the FNS Sample (1993/1994)

	Caribbean	Indian	Pakistani	Bangladeshi
<i>Weighted count</i>	1567	1292	862	284
<i>Unweighted count</i>	2980	1215	1190	594
	n(%)	N(%)	n(%)	n(%)
Fear of racial harassment in the past 2 years	150(19.5)	140(22.8)	92(23.2)	30(23.4)
Experienced any physical racist attack in the past year	45(2.9)	35(2.7)	36(4.2)	5(1.8)
Experienced any verbal racist attack in the past year	222(14.2)	113(8.7)	92(10.7)	23(8.1)
Experienced any racist attacks (verbal or physical) in the past year	241(15.4)	126(9.8)	110(12.8)	25(8.8)
Ever been refused a job or a promotion for reasons to do with race/colour, religious or cultural background	267(17.0)	100(7.7)	50(5.8)	11(3.9)

Table 7.2. Standardised prevalences of experienced racism in the CS Sample (2005/2007)

	Caribbean	African	Indian	Pakistani	Bangladeshi
<i>Weighted count</i>	225	267	528	296	115
<i>Unweighted count</i>	1644	1536	2687	1503	536
	n(%)	n(%)	n(%)	n(%)	n(%)
Fear of Racial/religious attack (fairly or very worried)	58(24.5)	103(36.7)	226(40.6)	127(40.6)	56(45.7)
Employment discrimination in the last 5 years	16(6.6)	32(11.4)	21(3.8)	16(5.2)	5(3.7)
Organisational Racism (expects to be treated worse than other 'races')	112(47.3)	109(39.0)	141(25.3)	97(31.0)	39(32.4)

Tables 7.3 and 7.4 present mutually adjusted odds ratios of reporting experienced racism or discrimination by different sociodemographic characteristics of ethnic minority respondents in the FNS and CS datasets. In both datasets, females were more likely to report fear of racial attacks than males (only significant in the CS dataset), but significantly less likely to report all other kinds of racism and discrimination (results significant for experienced physical, verbal and any assaults in the FNS dataset, and fear of racial/religious attacks and employment discrimination in the CS dataset). A trend for decreased reports of experienced racism as age increased was found in both datasets, although results were not always statistically significant.

Examinations of the variations of experienced racism by socioeconomic position showed that in the case of fear of racial/religious attacks in the CS sample, a social gradient was found whereby as socioeconomic position decreased, reports of experiencing fear of racial harassment significantly increased (see table 7.4). This was not the case for any of the other racism measures, particularly those in the FNS, which showed an association in the opposite direction (not significant in the case of fear of racial attacks and experienced physical assaults). A statistically significant association was found between socioeconomic position and experienced racism for employment discrimination and expected organisational discrimination in the CS sample, as well as for all racism constructs of the FNS dataset, whereby as social class decreased, so did reports experienced racism. This was statistically significant throughout except for fear of racial attacks and employment discrimination in the FNS (see tables 7.3 and 7.4).

Analyses of the variations of experienced racism by area deprivation in the FNS, measured using the Townsend Index, showed a non-significant decrease in reported experiences of racism and discrimination as area deprivation increased. A reverse association was found for fear of racial/religious attacks and expected organisational discrimination in the CS sample, although this was only significant for fear of racial/religious attacks in the least deprived areas of the country. In the case of employment discrimination, a statistically significant association was found in the 2nd category of deprivation, whereby as area deprivation decreased by one IMDQ category, reports of employment discrimination significantly increased. Non-significant results were found for the other categories of area deprivation.

Table 7.3. Mutually adjusted odds ratios of reporting experienced racism by different sociodemographic groups in the FNS ethnic minority sample

	Fear of racial attacks OR (95% CI)	Experienced physical assaults OR (95% CI)	Experienced verbal assaults OR (95% CI)	Experienced any racist attack OR (95% CI)	Employment discrimination OR (95% CI)
Gender^a					
Female	1.30 (0.95-1.78)	0.58 (0.37-0.91)*	0.79 (0.63-0.99)*	0.77 (0.62-0.96)*	0.88 (0.71-1.11)
Age	0.99 (0.99-1.01)	0.99 (0.97-1.00)	0.98 (0.97-0.99)†	0.98 (0.97-0.99)†	1.00 (0.99-1.01)
Socioeconomic Position^b					
IIIN - Skilled non-manual	1.04 (0.68-1.59)	0.78 (0.44-1.39)	0.75 (0.56-1.01)	0.79 (0.59-1.05)	0.99 (0.75-1.33)
IIIM - Skilled manual	0.89 (0.58-1.37)	0.71 (0.40-1.26)	0.62 (0.45-0.85)†	0.67 (0.50-0.91)**	0.70 (0.51-0.96)*
IV & V - Semi-skilled & unskilled manual	0.86 (0.59-1.26)	0.60 (0.34-1.04)	0.55 (0.41-0.74)†	0.57 (0.43-0.75)†	0.56 (0.42-0.75)†
Area Deprivation	0.97 (0.93-1.00)	1.00 (0.95-1.05)	0.99 (0.96-1.02)	0.99 (0.97-1.02)	0.98 (0.96-1.01)

*p<0.05, **p<0.01, †p<0.001

^aReference group – Men

^bReference group – SEP 1st category, I & II - (Professional & Managerial technical)

Table 7.4. Mutually adjusted odds ratios of reporting experienced racism by different sociodemographic groups in the CS ethnic minority sample

	Fear of racial/religious attacks OR (95% CI)	Employment discrimination OR (95% CI)	Expected organisational discrimination OR (95% CI)
Gender^a			
Female	1.27 (1.17-1.38)†	0.62 (0.52-0.74)†	0.99 (0.91-1.08)
Age	0.99 (0.99-0.99)*	0.97 (0.96-0.98)†	0.98 (0.98-0.98)†
Socioeconomic Position^b			
Intermediate and small employers	1.25 (1.12-1.40)†	0.74 (0.59-0.92)**	0.76 (0.68-0.85)†
Semi-routine and routine	1.39 (1.25-1.55)†	0.70 (0.56-0.87)†	0.61 (0.55-0.69)†
Never worked, long-term unemployed	1.53 (1.34-1.75)†	0.26 (0.17-0.39)†	0.51 (0.45-0.59)†
Area Deprivation^c			
IMDQ 2 nd most deprived	0.97 (0.88-1.08)	1.26 (1.01-1.59)*	1.01 (0.90-1.13)
IMDQ 3	0.98 (0.87-1.09)	0.85 (0.66-1.09)	0.93 (0.83-1.04)
IMDQ 4	0.89 (0.77-1.04)	1.04 (0.76-1.43)	0.92 (0.79-1.08)
IMDQ 5	0.67 (0.55-0.82)†	0.64 (0.40-1.04)	0.92 (0.76-1.12)
IMDQ 6 least deprived	0.43 (0.34-0.54)†	0.87 (0.56-1.33)	0.91 (0.75-1.11)

*p<0.05, **p<0.01, †p<0.001

^aReference group – Men

^bReference group – SEP 1st category, Higher and Lower management (I & II)

^cReference group – Most deprived MSOA in the country

7.2 Experiences of racism in areas of high ethnic density

Section 7.2 examines whether ethnic minority people living in areas of high ethnic density report fewer experiences of racism and discrimination, as compared to their counterparts living in areas of decreased ethnic density. Analyses for this section were conducted using the FNS dataset, and were controlled for age, sex and socioeconomic position, which were the variables that showed a significant association with racism in section 7.1 (table 7.3). Given the low numbers of respondents reporting physical and verbal racial attacks (see table 7.1), and since statistical models are stratified by ethnic group, producing a further reduction in analytical power, analyses of the association between racism and ethnic density were conducted only with reporting fear of racial attacks, any experienced racial attacks (physical or verbal), and employment discrimination, which had enough power to allow for reliable estimates. Results presented in this section show both the effect of own ethnic density (table 7.5), and overall ethnic minority density (table 7.6), on experienced racism.

7.2.1 Fear of racism

Table 7.5 shows the odds ratios of reporting experienced racism per a 10% increase in own ethnic density. A protective association between increasing own ethnic density and reduced reports of fear of racial harassment was found for all ethnic minority groups, although results were only statistically significant for Indian people in the case of employment discrimination.

When analysed as overall ethnic minority density, results yielded a protective, non-significant effect on reports of fear of racial harassment across all ethnic minority groups (see table 7.6).

7.2.2 Experienced racial attacks

A protective, non-significant effect of own ethnic density on reports of any experience of interpersonal racism was found for all ethnic minority groups except for Indian people, where a null effect of own ethnic density was observed. Although not statistically significant, the size of the effect was larger for Bangladeshi people, who

were 31% less likely to report experiences of interpersonal racism as ethnic density increased by 10%.

Analyses of the effect of overall ethnic minority density yielded a consistently protective ethnic density effect on experienced racial attacks for all ethnic minority groups. Results were only statistically significant in the case of Pakistani people, who were 20% less likely to experience interpersonal racism as overall ethnic minority density increased by 10% (see table 7.6).

7.2.3 Experiences of employment discrimination

As in the case of fear of racial harassment and experienced racial attacks, a protective effect of own ethnic density was found across all ethnic minority groups. This effect, however, was only statistically significant in the case of Indian people, who were 25% more likely to report decreased odds of experiencing employment discrimination as own ethnic density increased by 10% (see table 7.5).

A protective effect of ethnic density was also found for Indian people when analyses were conducted using overall ethnic minority density. As shown in table 7.6, odds ratios of reporting experienced employment discrimination among Indian people decreased by approximately 10% as overall ethnic minority density increased by 10%. A protective, although non-significant effect of overall ethnic minority density was found for Black Caribbean, Pakistani, and all ethnic minority people combined.

Table 7.5. Association between experienced racism and own ethnic density (10% increase)

	Caribbean OR (95% CI)	Indian OR (95% CI)	Pakistani OR (95% CI)	Bangladeshi OR (95% CI)
Fear of racial attacks	0.94 (0.72-1.23)	0.93 (0.77-1.13)	0.95 (0.78-1.17)	0.74 (0.33-1.66)
Experienced racist attacks	0.89 (0.59-1.37)	1.00 (0.78-1.30)	0.73 (0.52-1.02)	0.69 (0.35-1.34)
Employment discrimination	0.98 (0.77-1.24)	0.75 (0.60-0.92)**	0.93 (0.75-1.17)	0.35 (0.08-1.54)

*p<0.05, **p<0.01, †p<0.001; Adjusted for age, sex, and socioeconomic position

Table 7.6. Association between experienced racism and overall ethnic minority density (10% increase)

	Caribbean OR (95% CI)	Indian OR (95% CI)	Pakistani OR (95% CI)	Bangladeshi OR (95% CI)	All ethnic minorities OR (95% CI)
Fear of racial attacks	0.93 (0.85-1.02)	0.98 (0.88-1.10)	0.99 (0.88-1.13)	0.97 (0.65-1.44)	0.92 (0.88-0.98)†
Experienced racist attacks	0.88 (0.76-1.01)	1.03 (0.88-1.20)	0.80 (0.66-0.97)*	0.80 (0.56-1.14)	0.94 (0.88-1.02)
Employment discrimination	0.97 (0.89-1.05)	0.89 (0.79-0.99)*	0.95 (0.83-1.09)	1.09 (0.74-1.60)	0.96 (0.91-1.02)

*p<0.05, **p<0.01, †p<0.001; Adjusted for age, sex, and socioeconomic position

7.3 Social norms

As outlined in section 7.1, Chapter 7 aims to test the social norms model, which hypothesises that ethnic minority people living in areas of high ethnic density will experience fewer incidents of racism due to an increased enforcement of social norms, which will control deviant behaviour of racist perpetrators. Section 7.4 tests the hypothesised increase of social norms in areas of high ethnic density by analysing three different racism-related social norms constructs: 1) degree of tolerance against racism, 2) reporting the experienced racist event to the police; and 3) actions taken to avoid racist victimisation.

The first construct, degree of tolerance against racism, aims to empirically test the theoretical proposition posited in Chapter 3, which stipulates that decreased experienced racism in areas of high ethnic density (shown in section 7.2) is hypothesised to be the result of the enforcement of informal social control exerted over deviant behaviour. Informal social control, in turn, is hypothesised to be due to low tolerance against racist victimisation. To measure tolerance against racism, a tolerance measure was derived from two questions asking respondents how they felt about the following statements: 1) 'present laws against discrimination should be enforced more effectively' and 2) 'there should be new and stricter laws against racial discrimination.' Low tolerance was described as agreeing to those statements.

The second social norms construct, reporting experienced racist events to the police, is based on existent literature showing that among people who report having experienced discrimination, those who do something about it, such as reporting the event or talking about it, have better health outcomes than those who do not (Krieger & Sidney, 1996). The theoretical background of the present chapter states that living in areas of high ethnic density, which are supposedly characterised by low tolerance against racism, will bestow upon the individual the notion that racism is not tolerated and is a criminal offence, and so action is expected to be taken following the racist attack. To measure reporting of experienced racist events, a variable that combined questions asking respondents whether they had reported any event of experienced physical harassment, racial verbal attacks, and property damage to the police was used.

The third construct used to analyse the social norms model, actions taken to avoid racist victimisation, aims to test the hypothesis that people who live in areas of high ethnic density, where racism is less prevalent, will engage in fewer behaviours aimed at avoiding racist victimisation, which is hypothesised to have a decreased impact on their daily life, and consequently, decreased stress and increased quality of life (not tested in this study). To measure avoidance of racist victimisation, a variable was used which summarised several behaviours taken in order to avoid being discriminated against in the last 2 years. For a more detailed explanation of the variables used to measure any of the three social norms constructs, please refer to Chapter 5.

Section 7.3 first examines the sociodemographic characteristics of ethnic minority people engaging in the three social norms constructs (section 7.3.1), and then explores the association between ethnic density and racism-related social norms (section 7.3.2).

7.3.1 Engaging in racism-related social norms

Table 7.7 shows the mutually adjusted odds ratios of engaging in the three different social norms constructs by different sociodemographic characteristics of ethnic minority people. Females tended to be more likely than males to report low tolerance against racism and to report experienced racist events to the police, but less likely to do things to avoid racist victimisation (results not significant). A statistically significant association was found between age and tolerance against racism and reporting victimisation to the police, whereby as age increased, odds of engaging in these constructs decreased (only significant for low tolerance against racism). A non-significant association in the opposite direction was found for avoiding racist victimisation.

The association between racism-related social norms and socioeconomic position differed depending on the construct measured, and for the majority of the comparisons conducted, results were not statistically significant. Only in the case of avoiding racism and socioeconomic position a statistically significant association was found, whereby individuals who reported never working or having been unemployed for a

long time were more than twice as likely to do something to avoid racial victimisation, as compared to respondents in the highest socioeconomic position.

Analyses conducted to explore variations between ethnic minority groups in racism-related social norms yielded that Black Caribbean, Pakistani and Bangladeshi people were more likely to report low tolerance against racism than Indian people (the largest ethnic group, and so the reference category in the analyses). Results, however, were only statistically significant for Black Caribbean people (OR: 2.16; 95% CI: 1.34-3.48).

In the case of reporting victimisation, Black Caribbean people were significantly less likely to report experienced racial events to the police, as compared to Indian people. The direction of the effect was reversed for all other ethnic minority groups, although results were not significant. All ethnic minority groups were less likely than Indian people to report having done things in the past 2 years to avoid racist victimisation. Results were only statistically significant for Black Caribbean people, who were 80% less likely than Indian people to do something to avoid racial harassment.

Analyses of the association between area deprivation and racism-related social norms showed that as area deprivation increased, so did reports of low tolerance against racism, reports of victimisation to the police, and things done to avoid racist victimisation (results only significant for the latter, see table 7.7).

Table 7.7. Mutually adjusted odds ratios of engaging in racism-related social norms by different sociodemographic characteristics of ethnic minority people in the FNS sample

	Low tolerance against racism OR (95% CI)	Reporting Victimization OR (95% CI)	Avoiding racism OR (95% CI)
Gender^a			
Female	1.01 (0.64-1.59)	1.17 (0.65-2.13)	0.83 (0.45-1.53)
Age	0.98 (0.96-0.99)†	0.99 (0.98-1.02)	1.02 (0.99-1.04)
Socioeconomic Position^b			
IIIN - Skilled non-manual	0.60 (0.32-1.11)	0.62 (0.27-1.40)	2.10 (0.90-4.91)
IIIM - Skilled manual	0.85 (0.46-1.58)	0.96 (0.44-2.09)	1.02 (0.45-2.29)
IV & V - Semi-skilled & unskilled manual	1.02 (0.58-1.81)	0.87 (0.42-1.80)	2.26 (1.06-4.83)*
Ethnic group^c			
Caribbean	2.16 (1.34-3.48)†	0.45 (0.23-0.89)*	0.20 (0.10-0.40)†
Pakistani	1.31 (0.75-2.28)	1.02 (0.48-2.14)	0.98 (0.46-2.11)
Bangladeshi	2.45 (0.92-6.54)	1.26 (0.42-3.83)	0.64 (0.22-1.91)
Area Deprivation	1.01 (0.96-1.06)	1.01 (0.94-1.09)	1.08 (1.00-1.16)*

*p<0.05, **p<0.01, †p<0.001

^aReference group – Men

^bReference group – SEP 1st category, I & II - (Professional & Managerial technical)

^cReference group – Indian people (largest ethnic minority group)

7.3.2 The social norms model: The ethnic density effect on racism-related social norms

Section 7.3.2 directly tests the social norms model, and examines whether racism-related social norms are more prevalent in areas of increased ethnic density. Multilevel logistic regressions were conducted for each of the social norms constructs, and were adjusted for age, sex, individual socioeconomic position, and area deprivation, which are the sociodemographic factors that showed a statistically significant association to at least one of the social norms constructs in section 7.3.1.

Due to the low prevalence of interpersonal racism in the FNS, and since two of the social norms constructs are asked only among people reporting experiences of racism, further reducing analytical power, ethnic density analyses conducted in this

section are not stratified by ethnic group. Instead, a summary variable of own ethnic density for all ethnic minority people is used. This variable was created for all ethnic minority groups combined, whereby each respondent was assigned the value corresponding to his/her own ethnic density in an area. This summary variable is not the same for all respondents living in the same area (i.e., own ethnic density levels for an Indian resident were not the same than for a Black Caribbean resident of the same area).

Analyses using overall ethnic minority density are conducted in the same way as in section 7.2.

7.3.2.1 Tolerance against racism

Tables 7.8 and 7.9 show the odds ratios of reporting racism-related social norms constructs per 10% increase in own and overall ethnic minority density. Social norms related to tolerance against racism showed differing results depending on whether ethnic density was analysed as own or overall ethnic minority density. In the first instance, an expected increase in reporting low tolerance of racism was observed as the summary variable of own ethnic density increased by 10% (results not significant), whereas the opposite occurred for overall ethnic minority density, where as overall ethnic minority density increased by 10%, low tolerance against racism decreased (results not significant).

7.3.2.2 Reporting of experienced racism events

A non-significant decrease in the odds of reporting experienced racial attacks to the police was found as the summary variable of own ethnic density increased by 10% (see table 7.8). A similar pattern was found when ethnic density was analysed as overall ethnic minority density, whereby ethnic minority people living in areas of increased ethnic density were less likely than their counterparts to report experienced racial victimisation to the authorities (results not significant, see table 7.9).

7.3.2.3 Actions taken to avoid racist victimisation

A non-significant association between an increase in the odds of engaging in specific behaviours in order to avoid racist victimisation as ethnic density increased was found for both the summary variable of own ethnic density, and for overall ethnic minority density. Ethnic minority people who reported experiencing fear of racial harassment tended to do more things to avoid being discriminated against as ethnic density increased (results not significant).

Table 7.8. Association between racism-related social norms constructs and own ethnic density (10% increase)

	All ethnic minorities OR (95% CI)
Low tolerance of racism	1.01 (0.81-1.24)
Reporting victimisation	0.86 (0.65-1.15)
Avoiding racism	1.08 (0.87-1.34)

*p<0.05, **p<0.01, †p<0.001; Adjusted for age, sex, socioeconomic position and area deprivation

Table 7.9. Association between racism-related social norms constructs and overall ethnic minority density (10% increase)

	All ethnic minorities OR (95% CI)
Low tolerance of racism	0.87 (0.74-1.04)
Reporting victimisation	0.85 (0.71-1.02)
Avoiding racism	1.01 (0.86-1.19)

*p<0.05, **p<0.01, †p<0.001; Adjusted for age, sex, socioeconomic position and area deprivation

7.4 Conclusions

The social norms model examined in this chapter is based on the premise that ethnic minority people living in areas of high ethnic density will report fewer experiences of racism and discrimination, due to an increase in the enforcement of social norms that control deviant racist behaviour. This enforcement of social norms is

hypothesised to strengthen as the proportion of ethnic minority residents in an area increases. Although results of this chapter do not provide full evidence for the social norms model, several confirming findings sustain some of the protective properties of the ethnic density effect, and delineate the work for future chapters in this study.

Experiences of racism were found to be prevalent among ethnic minority people in the UK, and were found to decrease as ethnic minority density increased. Despite the fact that results seldom reached statistical significance, a trend of a protective ethnic density effect was observed, whereby odds of reporting interpersonal racism, fear of racial attacks, or employment discrimination decreased as own and overall ethnic minority density increased. It is plausible that non-significant findings presented in section 7.2 are due to a low prevalence of experienced racism and a restricted range of ethnic density among ethnic minority people in the UK. Nonetheless, a consistent protective pattern of ethnic density on the different racism constructs is visible throughout the results.

Section 7.3 set out to explore the association between racism-related social norms and ethnic density. Hypotheses of strengthened social norms as ethnic density increased were not confirmed, and non-significant results were found. A non-significant detrimental effect of ethnic density was found for reporting victimisation and doing things to avoid racial harassment, for both the summary variable of own ethnic density and overall ethnic minority density. In the case of reporting low tolerance of racism, a small, non-significant protective effect of own ethnic density was found.

In conclusion, Chapter 7 provides confirmatory evidence of the existence of racism in the UK and establishes a consistent, albeit non-significant, trend of the protective effect of ethnic density on experiences of racism and discrimination among ethnic minority people in the UK. Findings from Chapter 7 lay out the initial support for the hypotheses of buffering effect model, to be tested in Chapter 8.

Chapter 8. Buffering effects model

This chapter tests the buffering effects model, which posits that increased social support found in areas of high ethnic density will buffer, or protect, ethnic minority people from the potentially pathogenic influence of stressful events, such as experiences of racial harassment and discrimination. The increase in social support that is expected to be found in areas of high ethnic density is hypothesised to moderate the detrimental effect of racism on health through two mechanisms: a) a change in the appraisal process of a stressful event, such as experienced racism; and b) the recognition and discussion of experienced racism with others (refer to Chapter 3 for a detailed explanation of the model).

Although the theoretical rationale behind the buffering effects model proposes the two mechanisms above by which ethnic density moderates the impact of racism on health, due to the limitations of available constructs in the datasets used, this thesis only explores the existence of social support in areas of increased ethnic density, and the buffering effects of ethnic density on the health of ethnic minority people.

Chapter 7 described the prevalence of racism and discrimination among ethnic minority people in the UK, and presented a general trend of decreased reports of experienced racism as ethnic density increased. This chapter builds on these findings to test the buffering effects model, and is structured as follows: it first examines the relationship between racism and health in the Fourth National Survey of Ethnic Minorities (FNS) sample (section 8.1); then, using Health Survey for England (HSE) data, it explores the prevalence of social support among ethnic minority people, and examines whether individuals living in areas of higher ethnic density enjoy increased social support as compared to their counterparts (section 8.2). In section 8.3, the buffering effects model is tested by exploring whether the detrimental impact of racism on health is reduced as ethnic density increases. Section 8.4 provides a conclusion and summary of findings.

8.1 Effect of racism on health

Two health measures were selected to test the buffering effects model: a measure of mental health, and a measure of overall self-rated health. To examine the buffering effects model on mental health, a measure of psychotic symptoms, the Psychosis Screening Questionnaire (PSQ), was chosen due to the strong association between discrimination and psychotic disorders that has been previously established in the literature (Veling et al., 2008; Karlsen & Nazroo, 2002a; Karlsen et al., 2007; Halpern & Nazroo, 1999). The PSQ is a 12-item measure tapping psychotic symptomatology that enquires about mania, thought insertion, paranoia, strange experiences and hallucinations. The second measure used, self-rated overall health, asked respondents to rate their health as of the last 12 months on a scale ranging from 1 (excellent) to 5 (very poor). To test the buffering effects model, responses were dichotomised into fair, poor and very poor, or excellent and good (for a more detailed description of these measures, please refer to Chapter 5).

As done in Chapter 7, experienced racism was measured using five variables that captured different aspects of racism and discrimination: fear of racial attacks, physical racial harassment, verbal racial harassment, any experience of racist attacks, and employment discrimination.

Multilevel logistic regression models conducted to ascertain the association between racism and health, presented in sections 8.1.1 and 8.1.2, were adjusted for age, sex, individual socioeconomic position, and area deprivation, which were found to be associated with health (see table 8.1).

Table 8.1. Mutually adjusted odds ratios of reporting poor health by different sociodemographic characteristics among the ethnic minority sample of the FNS

	Psychotic Symptomatology (PSQ) OR (95% CI)	Fair, poor or very poor overall self-rated health OR (95% CI)
Gender^a		
Female	1.37 (1.16-1.62)†	1.38 (1.16-1.63)†
Age	0.98 (0.98-0.99)†	1.05 (1.04-1.05)†
Socioeconomic Position^b		
IIIN - Skilled non-manual	1.03 (0.82-1.29)	1.09 (0.85-1.40)
IIIM - Skilled manual	0.94 (0.74-1.20)	1.60 (1.25-2.04)†
IV & V - Semi-skilled & unskilled manual	0.88 (0.71-1.10)	1.59 (1.28-1.98)†
Area Deprivation	0.99 (0.97-1.01)	1.04 (1.02-1.06)†

*p<0.05, **p<0.01, †p<0.001

^aReference group – Men

^bReference group – SEP 1st category, I & II - (Professional & Managerial technical)

8.1.1 Mental health

Table 8.2 presents the association between reports of psychotic symptomatology and experiences of racism and discrimination. In the case of fear of racism amongst Bangladeshi people, results are not shown due to unreliable estimates produced from a small sample size.

A detrimental association between fear of racism and reported psychotic symptomatology was found for Black Caribbean, Indian and all ethnic minority people combined, who were significantly more likely to report poor mental health when experiencing fear of racial harassment.

Results of the analyses exploring the association between experienced physical racial attacks and mental health yielded a consistently detrimental impact of racism on psychotic symptomatology across all ethnic minority groups. This was only significant for Black Caribbean, Indian and all ethnic minority people combined.

A similar pattern to that of experienced physical racism can be observed in the case of verbal racial attacks, where racial verbal attacks were found to be detrimental for all ethnic minority groups, although the association was only statistically

significant in the case of Black Caribbean, Indian and all ethnic minority people combined.

The impact on mental health of experiencing any physical or verbal racial attacks in the past year yielded a consistent detrimental effect. Although in a similar, harmful direction for all groups, the association was only significant for Black Caribbean, Indian and all ethnic minority people combined, who were over three and four times more likely than their counterparts who have not had such experiences to report psychotic symptomatology.

The association between experiences of employment discrimination and the mental health of all ethnic minority groups was also found to be detrimental throughout. In this case, results were only statistically significant for Indian, Pakistani and all ethnic minority people combined, who were 3.34, 2.41 and 2.19 times more likely, respectively, to report psychotic symptomatology when reporting employment discrimination, as compared to their counterparts who had not experienced employment discrimination (see table 8.2).

Table 8.2. Association between experienced racism and psychotic symptomatology among ethnic minority people in the FNS

	Caribbean OR (95% CI)	Indian OR (95% CI)	Pakistani OR (95% CI)	Bangladeshi OR (95% CI)	All ethnic minorities OR (95% CI)
Fear of racial attacks	2.88 (1.72-4.80)†	3.98 (2.29-6.91)†	0.97 (0.39-2.42)	-	2.34 (1.79-3.06)†
Experienced physical racist attacks	5.37 (2.10-13.73)†	4.46 (1.99-9.99)†	1.73 (0.49-6.06)	1.80 (0.17-18.80)	3.09 (2.03-4.71)†
Experienced verbal racist attacks	3.34 (2.25-4.97)†	4.04 (2.44-6.70)†	1.79 (0.89-3.62)	2.43 (0.66-8.88)	3.15 (2.51-3.96)†
Experienced any racist attacks	3.25 (2.21-4.77)†	4.41 (2.72-7.16)†	1.69 (0.86-3.33)	1.85 (0.53-6.41)	3.03 (2.44-3.78)†
Employment discrimination	1.19 (0.85-1.66)	3.34 (2.04-5.47)†	2.41 (1.17-5.00)*	3.40 (0.67-17.28)	2.19 (1.75-2.74)†

*p<0.05, **p<0.01, †p<0.001; Adjusted for age, sex, socioeconomic position and area deprivation

8.1.2 Overall self-rated health

Results of the multilevel logistic regressions exploring the association between experiences of racism and reports of poor health among ethnic minority people are presented in table 8.3. A statistically significant association between reports of fear of racial harassment in the last two years and poor health was found for Black Caribbean, Indian and all ethnic minority people combined. Fear of racism was also detrimental for the health of Pakistani people, although this was not statistically significant. A non-significant association was found between fear of racism and health for Bangladeshi people, whereby Bangladeshi respondents who reported experiencing fear of racism were less likely than their counterparts to report fair, poor or very poor self-rated health.

Analyses of the impact of experiencing physical racial attacks on the self-rated health of ethnic minority people showed a detrimental association for Indian, Bangladeshi and all ethnic minority people combined (results not significant for Bangladeshi people). High odds ratios observed among Indian people are due to insufficient numbers of Indian respondents experiencing physical racist assaults, which produced unreliable estimates.

Results of the analyses examining the effect of experienced verbal racial attacks on the health of ethnic minority people showed a consistently detrimental association for all ethnic minority groups, although results were only statistically significant for Indian people and all ethnic minority people combined, who were significantly more likely to report fair, poor, or very poor health if they had experienced verbal racial attacks, as compared to their counterparts who did not report experienced racism.

Analyses exploring the association between experiencing any verbal or physical racial attacks in the past year and overall self-rated health yielded a detrimental impact of interpersonal racism on health. A uniform pattern of increased odds ratios of reporting poor health was found among people who reported experiencing interpersonal racism, relative to those who did not. Results were only significant in the case of Indian people and all ethnic minority people combined, who were 3.20 and 1.69 times more likely to report poor health after experiencing interpersonal racism.

Reports of experienced employment discrimination were found to be significantly harmful for the health of Indian people. As table 8.3 shows, Indian people who had ever been denied a job or a promotion for reasons due to their colour or ethnic origin were over twice as likely as their counterparts to report fair, poor, or very poor health. A detrimental, non-significant impact of employment discrimination was found for Black Caribbean people and all ethnic minority people combined, whereas a reverse non-significant association was found between employment discrimination and health among Pakistani and Bangladeshi people. Analyses conducted in this study were not limited to respondents who reported ever having had a paid job, and thus associations presented here may be weaker or reversed because of this.

Table 8.3. Association between experienced racism and poor self-rated health among ethnic minority people in the FNS

	Caribbean OR (95% CI)	Indian OR (95% CI)	Pakistani OR (95% CI)	Bangladeshi OR (95% CI)	All ethnic minorities OR (95% CI)
Fear of racial attacks	2.09 (1.24-3.53)**	2.66 (1.58-4.45)†	1.91 (0.90-4.08)	0.73 (0.21-2.48)	1.83 (1.40-2.40)†
Experienced physical racist attacks	0.83 (0.31-2.20)	8.61 (3.63-20.40)†	0.74 (0.23-2.39)	3.24 (0.43-24.17)	2.20 (1.43-3.39)†
Experienced verbal racist attacks	1.21 (0.80-1.84)	2.36 (1.41-3.93)†	1.79 (0.94-3.39)	2.15 (0.65-7.12)	1.63 (1.28-2.08)†
Experienced any racist attacks	1.14 (0.76-1.71)	3.20 (1.97-5.21)†	1.48 (0.81-2.71)	2.09 (0.71-6.18)	1.69 (1.34-2.12)†
Employment discrimination	1.08 (0.75-1.57)	2.12 (1.28-3.49)†	0.53 (0.25-1.14)	0.28 (0.03-2.58)	1.16 (0.91-1.48)

*p<0.05, **p<0.01, †p<0.001; Adjusted for age, sex, socioeconomic position and area deprivation

8.2 Social Support

After confirming in section 8.1 the detrimental association between experienced racism and health in the FNS sample, section 8.2 explores the existence of social support across different sociodemographic groups in the HSE, and examines whether social support is more prevalent in areas of increased ethnic density. To test the hypothesis that increased social support will be found in areas of higher ethnic density, analyses were conducted using the merged dataset of the 1999 and 2004 HSE, as this contained the most appropriate measure of social support, the Multidimensional Scale of Perceived Social Support (MSPSS). The MSPSS (Zimet et al., 2009) asks respondents about the amount of support and encouragement received from family and friends, which was categorised into ‘high social support,’ ‘medium social support,’ and ‘low social support.’ For a detailed description of the MSPSS, see Chapter 5.

8.2.1 Sociodemographic characteristics of perceived social support

This first part of section 8.2 describes the existence of social support among different sociodemographic groups, in order to later decide what covariates to include in the models exploring the ethnic density effect on social support.

Mutually adjusted log odds of reporting medium and low social support, relative to reporting high social support amongst different sociodemographic groups are presented in table 8.4. Females were significantly more likely than males to report high social support. A statistically significant social gradient was found between increased reports of social support and decreased individual and area deprivation, whereby as individual socioeconomic position and area deprivation decreased, log odds of reporting medium or low social support, relative to reporting high social support significantly increased.

Analyses of differences of reporting perceived social support between different ethnic groups yielded that all ethnic minority groups were significantly less likely to report high social support, as compared to white people (see table 8.4). No statistically significant associations were found between age and social support.

Table 8.4. Results of the multinomial logistic regression assessing the associations between reports of perceived social support and different sociodemographic characteristics in the HSE sample

	Perceived Social Support	
	Medium social support ^a Coeff (95% CI)	Low social support ^a Coeff (95% CI)
Gender^b		
Female	-0.27 (-0.34 to -0.21)†	-0.44 (-0.51 to -0.36)†
Age	0.00 (0.00 to 0.00)*	0.00 (0.00 to 0.00)
Socioeconomic Position^c		
SEP I&II	0.17 (0.07 to 0.28)†	0.42 (0.29 to 0.54)†
SEP III	0.35 (0.27 to 0.44)†	0.46 (0.35 to 0.56)†
SEP IV&V	0.33 (0.24 to 0.43)†	0.62 (0.51 to 0.73)†
SEP Other	0.39 (0.22 to 0.57)†	0.77 (0.59 to 0.95)†
Area Deprivation^d		
IMDQ 2 nd most deprived	-0.08 (-0.19 to 0.03)	-0.14 (-0.26 to -0.01)*
IMDQ 3	-0.10 (-0.21 to 0.00)*	-0.26 (-0.38 to -0.14)†
IMDQ 4	-0.14 (-0.26 to -0.02)*	-0.37 (-0.52 to -0.23)†
IMDQ 5	-0.17 (-0.29 to -0.04)**	-0.41 (-0.56 to -0.26)†
IMDQ 6 least deprived	-0.20 (-0.33 to -0.07)†	-0.52 (-0.69 to -0.36)†
Ethnicity^e		
Caribbean	0.21 (0.02 to 0.40)*	0.62 (0.41 to 0.83)†
African	0.36 (0.24 to 0.47)†	1.05 (0.93 to 1.17)†
Indian	0.35 (0.21 to 0.48)†	1.00 (0.85 to 1.14)†
Pakistani	0.08 (-0.07 to 0.24)	0.83 (0.68 to 0.99)†
Bangladeshi	0.21 (0.10 to 0.33)†	0.36 (0.22 to 0.49)†
<i>Constant</i>	-0.65 (-0.79 to -0.51)†	-1.36 (-1.52 to -1.19)†

*p<0.05, **p<0.01, †p<0.001

^aBase outcome – High social support

^bReference group – Men

^cReference group – SEP category I & II

^dReference group – Most deprived MSOA in the country

^eReference group – White people

8.2.2 The ethnic density effect on perceived social support

Multinomial logistic regression models were applied to the HSE data in order to test the association between perceived social support and ethnic density, with different models conducted for own and overall ethnic minority density. As the most numerous

category, 'high social support' was used as the base outcome in the regressions. Robust standard errors were used in order to correct for non-independence of observations due to geographic clustering.

Table 8.5 shows the associations between perceived social support and own ethnic density, which were found to differ between ethnic minority groups, especially in the case of reporting medium social support. For Black Caribbean, Black African and Pakistani people, the likelihood of reporting medium social support, as compared to reporting high social support, increased as own ethnic density increased by 10%. The opposite was found for Indian and Bangladeshi people, where a non-significant protective effect of ethnic density was found (results only significant for Bangladeshi people).

Results were more consistent in the case of reporting low social support, where Black Caribbean, Black African, Indian and Bangladeshi people were less likely to report this as own ethnic density increased by 10% (results only significant for Bangladeshi people, see table 8.5). The opposite was found for Pakistani people, whereby a 10% increase in own ethnic density was associated with an increased likelihood of reporting low social support, although results were not statistically significant.

Table 8.6 shows the association between perceived social support and overall ethnic minority density. A statistically significant protective effect of overall ethnic minority density was found for Bangladeshi people, who were more likely to report high social support than to report medium social support, as overall ethnic minority density increased by 10%. A detrimental, non-significant effect of overall ethnic minority density was found for reports of medium social support among Black Caribbean, Black African and overall ethnic minority people combined. In the case of reports of low social support, Bangladeshi people experienced a statistically significant protective effect of overall ethnic minority density. A protective, non-significant effect of overall ethnic minority density was found for Indian people. The opposite was found for Black Caribbean, Black African and overall ethnic minority people (results not significant, see table 8.6).

Table 8.5. Association between perceived social support and own ethnic density (10% increase) among ethnic minority people

	Caribbean Coeff (95% CI)	African Coeff (95% CI)	Indian Coeff (95% CI)	Pakistani Coeff (95% CI)	Bangladeshi Coeff (95% CI)
Medium social support^a	0.03 (-0.15 to 0.21)	0.16 (-0.15 to 0.47)	-0.04 (-0.11 to 0.02)	0.01 (-0.07 to 0.09)	-0.08 (-0.16 to -0.00)*
Low social support^a	-0.01 (-0.21 to 0.20)	-0.01 (-0.33 to 0.31)	-0.03 (-0.09 to 0.03)	0.05 (-0.02 to 0.13)	-0.12 (-0.19 to -0.05)†

*p<0.05, **p<0.01, †p<0.001; Adjusted for sex, individual socioeconomic status, and area deprivation

^aBase outcome – High social support

Table 8.6. Association between perceived social support and overall ethnic minority density (10% increase) among ethnic minority people

	Caribbean Coeff (95% CI)	African Coeff (95% CI)	Indian Coeff (95% CI)	Pakistani Coeff (95% CI)	Bangladeshi Coeff (95% CI)	All ethnic minorities Coeff (95% CI)
Medium social support^a	0.04 (-0.02 to 0.09)	0.08 (-0.04 to 0.20)	0.00 (-0.05 to 0.05)	-0.00 (-0.06 to 0.05)	-0.13 (-0.22 to -0.05)†	0.01 (-0.01 to 0.03)
Low social support^a	0.03 (-0.04 to 0.10)	0.04 (-0.09 to 0.16)	-0.01 (-0.06 to 0.04)	0.00 (-0.05 to 0.06)	-0.17 (-0.25 to -0.09)†	0.01 (-0.01 to 0.03)

*p<0.05, **p<0.01, †p<0.001; Adjusted for sex, individual socioeconomic status, and area deprivation

^aBase outcome – High social support

8.3 Buffering effect of ethnic density

Data from the FNS was used to test the buffering effect of ethnic density on the detrimental impact of racism on health. Due to the low statistical power encountered in previous analyses of physical and verbal racist attacks, analyses for section 8.3 were limited to fear of racism, any experienced racism, and employment discrimination.

Six sets of ethnicity-stratified multilevel logistic regression models, one for each health outcome and racism measure, were conducted. Regression models were built in two sequential steps: model one examined the adjusted odds ratios of reporting poor health as own or overall ethnic minority density increased by 10%; and model two added racism (fear of racism, any experienced racist attack, or employment discrimination), and an interaction term between ethnic density and experienced racism (the buffering effect). Analyses were adjusted for age, sex, individual socioeconomic position and area deprivation, which had been found to be associated with health in previous analyses (see table 8.1). Due to small numbers across several outcomes amongst Bangladeshi people, some analyses of the buffering effect of ethnic density are not reported here.

8.3.1 Buffering effect of ethnic density on mental health

Results of the analyses conducted to test the hypothesised buffering effect of ethnic density on psychotic symptomatology are presented in table 8.7 (own ethnic density) and table 8.8 (overall ethnic minority density).

Table 8.7 presents the association between own ethnic density and reports of psychotic symptomatology, which show that for all groups except for Pakistani people, a 10% increase in own ethnic density produced a reduction in the odds of reporting poor mental health. This association, however, was only statistically significant for Bangladeshi people, who were less likely to report psychotic symptomatology as own ethnic density increased by 10%.

Explorations of the buffering effect of own ethnic density on the association between fear of racism and psychotic symptomatology showed a reduction in the detrimental impact of fear of racism on mental health for all ethnic minority groups.

In the case of any experienced racist attack, a buffering effect was found for all ethnic minority groups, whereby the detrimental impact of experiencing any physical or verbal racist attack was reduced as ethnic density increased. However, results were not statistically significant.

Mixed results were found in the case of employment discrimination, where a buffering effect was not found for Black Caribbean and Pakistani people (results not significant, see table 8.7), but a protective, buffering effect of own ethnic density was found for Indian and Bangladeshi people. Results were only statistically significant for the former, for whom the impact of experiencing employment discrimination on psychotic symptomatology was reduced as own ethnic density increased.

Results of the buffering effect of overall ethnic minority density on reports of psychotic symptomatology among ethnic minority people are presented in table 8.8. A protective, non-significant effect of overall ethnic minority density on psychotic symptomatology was found for all ethnic minority groups, whereby as overall ethnic minority density increased by 10%, the likelihood of reporting psychotic symptomatology decreased for all groups.

Analyses of the buffering effect of overall ethnic minority density on the impact of fear of racism on psychotic symptomatology did not find a protective effect (i.e., the impact of fear of racism on psychotic symptomatology did not vary by ethnic density). A tendency for a buffering effect of overall ethnic minority density on experienced racist attacks was found for Indian, Pakistani, and Bangladeshi people (results not significant, see table 8.8). Results of the analyses conducted to test the buffering effect of overall ethnic minority density on the association between experienced employment discrimination and psychotic symptomatology yielded a buffering effect for Black Caribbean and Indian people, for whom the detrimental impact of employment discrimination on reporting psychotic symptomatology decreased as overall ethnic minority density increased (see table 8.8; results not statistically significant).

Table 8.7. Association between own ethnic density (10% increase), racism and psychotic symptomatology (PSQ) among ethnic minority people in the FNS

	Fear of Racism			Experienced any racist attack		Employment discrimination	
	Effect of own ethnic density	Racism effect	Buffering effect ¹	Racism effect	Buffering effect ¹	Racism effect	Buffering effect ¹
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Caribbean	0.95 (0.73-1.24)	2.88 (1.72-4.80)†	0.92 (0.42-1.99)	3.25 (2.21-4.77)†	0.78 (0.44-1.38)	1.19 (0.85-1.66)	1.10 (0.68-1.78)
Indian	0.86 (0.72-1.04)	3.98 (2.29-6.91)†	1.05 (0.69-1.60)	4.41 (2.72-7.16)†	0.77 (0.52-1.15)	3.34 (2.04-5.47)†	0.56 (0.33-0.95)*
Pakistani	1.24 (0.90-1.70)	0.97 (0.39-2.42)	0.74 (0.38-1.45)	1.69 (0.86-3.33)	0.93 (0.60-1.45)	2.41 (1.17-5.00)*	1.06 (0.67-1.70)
Bangladeshi	0.59 (0.36-0.97)*	-	-	1.85 (0.53-6.41)	0.07 (0.00-2.98)	3.40 (0.67-17.28)	0.15 (0.00-35.40)

1. Interaction effect between racism and ethnic density

*p<0.05, **p<0.01, †p<0.001; Adjusted for age, sex, individual socioeconomic status, and area deprivation

Table 8.8. Association between overall ethnic minority density (10% increase), racism and psychotic symptomatology (PSQ) among ethnic minority people in the FNS

	Fear of Racism			Experienced any racist attack		Employment discrimination	
	Effect of overall ethnic density	Racism effect	Buffering effect ¹	Racism effect	Buffering effect ¹	Racism effect	Buffering effect ¹
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Caribbean	0.96 (0.88-1.06)	2.88 (1.72-4.80)†	1.08 (0.83-1.42)	3.25 (2.21-4.77)†	1.03 (0.85-1.25)	1.19 (0.85-1.66)	0.98 (0.82-1.16)
Indian	0.88 (0.77-1.01)	3.98 (2.29-6.91)†	1.05 (0.81-1.36)	4.41 (2.72-7.16)†	0.88 (0.70-1.10)	3.34 (2.04-5.47)†	0.71 (0.54-0.94)
Pakistani	0.93 (0.74-1.16)	0.97 (0.39-2.42)	0.94 (0.60-1.47)	1.69 (0.86-3.33)	0.93 (0.69-1.25)	2.41 (1.17-5.00)*	1.14 (0.82-1.57)
Bangladeshi	0.92 (0.69-1.22)	-	-	1.85 (0.53-6.41)	0.65 (0.33-1.29)	3.40 (0.67-17.28)	1.26 (0.70-2.26)
All ethnic minorities	0.92 (0.86-0.99)*	2.34 (1.79-3.06)†	1.02 (0.90-1.16)	3.03 (2.44-3.78)†	0.98 (0.88-1.09)	2.19 (1.75-2.74)†	0.99 (0.89-1.10)

1. Interaction effect between racism and ethnic density

*p<0.05, **p<0.01, †p<0.001; Adjusted for age, sex, individual socioeconomic status, and area deprivation

8.3.2 Buffering effect of ethnic density on overall self-rated health

Tables 8.9 and 8.10 present the results of the analyses testing the buffering effect of own and overall ethnic minority density on overall self-rated health of ethnic minority people.

As table 8.9 shows, an effect of own ethnic density was not found for self-rated health. Moreover, a detrimental effect of own ethnic density was found for Black Caribbean, Pakistani and Bangladeshi people. Results were only statistically significant for Pakistani people, who were 30% more likely to report fair, poor or very poor health as own ethnic density increased by 10%. A protective, non-significant effect of own ethnic density was found for Indian people.

Analyses of the buffering effect of own ethnic density on the association between fear of racism and self-rated health showed a protective, buffering effect of ethnic density (results not significant), whereby the detrimental effect of fear of racism on health was reduced as own ethnic density increased among Indian, Pakistani, and Bangladeshi people. The opposite was found for Black Caribbean people, although results were not statistically significant (see table 8.9).

Mixed results were found for the buffering effect of own ethnic density on experiences of any physical and verbal attacks. Whereas a non-significant protective effect was found amongst Indian and Pakistani people, a non-significant detrimental effect was found for Black Caribbean people.

Own ethnic density did not show a buffering effect on experienced employment discrimination amongst Indian and Pakistani people. In the case of Indian people, experiencing employment discrimination was significantly detrimental to overall self-rated health, despite increases in own ethnic density. A buffering effect of own ethnic density was found for Black Caribbean people, although results were not statistically significant (see table 8.9).

Table 8.10 presents the results of the examination of the buffering effect of overall ethnic minority density on overall self-reported health of ethnic minorities, which showed a protective effect for Indian, Pakistani, and Bangladeshi people. Opposite to results found when ethnic density was analysed as own ethnic density, results presented in table 8.10 show that a 10% increase in overall ethnic minority

density was significantly protective for Pakistani people, who were less likely to report poor health as overall ethnic minority density increased.

Analyses conducted to test the buffering effect of overall ethnic minority density on fear of racial attacks showed a protective effect for Black Caribbean, Pakistani, Bangladeshi, and all ethnic minority respondents, for whom the detrimental effect of fear of racism was reduced as overall ethnic minority density increased (results only statistically significant for Pakistani people).

A statistically significant buffering effect of overall ethnic minority density on the association between experiences of physical or verbal attacks was found for Pakistani people as well, for whom the detrimental association between experiencing physical or verbal attacks and poor self-rated overall health was reduced as overall ethnic minority density increased. A buffering effect of overall ethnic minority density was also found for Black Caribbean, Indian and overall ethnic minority people, although results were not statistically significant.

A buffering effect of overall ethnic minority density was not found for the association between employment discrimination and health. Only in the case of Pakistani people a protective effect was found, but results were not significant. For all other groups the detrimental impact of employment discrimination on self-rated health was reduced, but remained detrimental (results not significant, see table 8.10).

Table 8.9. Association between own ethnic density (10% increase), racism and poor self-rated health among ethnic minority people in the FNS

	Effect of own ethnic density OR (95% CI)	Fear of Racism		Experienced any racist attack		Employment discrimination	
		Racism effect	Buffering effect ¹	Racism effect	Buffering effect ¹	Racism effect	Buffering effect ¹
		OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Caribbean	1.19 (0.88-1.62)	2.09 (1.24-3.53)**	1.38 (0.61-3.09)	1.14 (0.76-1.71)	1.08 (0.58-2.00)	1.08 (0.75-1.57)	0.90 (0.53-1.51)
Indian	0.90 (0.78-1.05)	2.66 (1.58-4.45)†	0.97 (0.67-1.41)	3.20 (1.97-5.21)†	0.93 (0.66-1.31)	2.12 (1.28-3.49)†	1.69 (1.09-2.62)*
Pakistani	1.30 (1.00-1.70)*	1.91 (0.90-4.08)	0.60 (0.30-1.20)	1.48 (0.81-2.71)	0.91 (0.60-1.39)	0.53 (0.25-1.14)	1.15 (0.71-1.87)
Bangladeshi	1.03 (0.77-1.38)	0.73 (0.21-2.48)	0.64 (0.18-2.32)	2.09 (0.71-6.18)	-	0.28 (0.03-2.58)	-

1. Interaction effect between racism and ethnic density

*p<0.05, **p<0.01, †p<0.001; Adjusted for age, sex, individual socioeconomic status, and area deprivation

Table 8.10. Association between overall ethnic minority density (10% increase), racism and poor self-rated health among ethnic minority people in the FNS

	Effect of overall ethnic density OR (95% CI)	Fear of Racism		Experienced any racist attack		Employment discrimination	
		Racism effect	Buffering effect ¹	Racism effect	Buffering effect ¹	Racism effect	Buffering effect ¹
		OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Caribbean	1.04 (0.93-1.16)	2.09 (1.24-3.53)**	0.93 (0.70-1.23)	1.14 (0.76-1.71)	0.96 (0.78-1.17)	1.08 (0.75-1.57)	1.01 (0.84-1.22)
Indian	0.92 (0.82-1.03)	2.66 (1.58-4.45)†	1.02 (0.81-1.30)	3.20 (1.97-5.21)†	0.93 (0.75-1.15)	2.12 (1.28-3.49)†	1.49 (1.16-1.92)
Pakistani	0.85 (0.72-0.99)*	1.91 (0.90-4.08)	0.49 (0.29-0.82)**	1.48 (0.81-2.71)	0.75 (0.56-1.00)*	0.53 (0.25-1.14)	0.99 (0.70-1.40)
Bangladeshi	0.89 (0.71-1.11)	0.73 (0.21-2.48)	0.50 (0.20-1.25)	2.09 (0.71-6.18)	1.49 (0.84-2.66)	0.28 (0.03-2.58)	-
All ethnic minorities	0.94 (0.88-1.00)	1.83 (1.40-2.40)†	0.89 (0.78-1.01)	1.69 (1.34-2.12)†	0.96 (0.86-1.07)	1.16 (0.91-1.48)	1.10 (0.98-1.23)

1. Interaction effect between racism and ethnic density

*p<0.05, **p<0.01, †p<0.001; Adjusted for age, sex, individual socioeconomic status, and area deprivation

To further understand how increases in own and overall ethnic minority density protect ethnic minority people from the detrimental impact of racism on health, those analyses that showed a statistically significant buffering effect were plotted in a graph, which modelled ethnic density at six different levels: 1%, 5%, 10%, 20%, 30% and 40%. Figures 1, 2 and 3 present the moderating effect of ethnic density on psychotic symptomatology and overall self-rated health amongst people who have experienced racism, relative to those who have not.

Results showed a linear buffering effect of ethnic density that can be seen across figures. For example, in the case of the buffering effect of own ethnic density on the impact of employment discrimination on the mental health on Indian people (figure 1), odds ratios of reporting psychotic symptomatology amongst Indian people who had experienced employment discrimination were 5.50 in the lowest category of own ethnic density (1%), and decreased to 0.47 in the highest (40%; see figure 1). A similar association is shown in figure 2, which presents the adjusted odds ratios of reporting poor self-rated health amongst Pakistani people who experienced fear of racism, relative to those who did not, in 6 different categories of overall ethnic minority density. Whereas a highly detrimental impact of fear of racism was found in the lowest overall ethnic minority density category (OR: 11.11), a progressive, linear decrease can be observed as overall ethnic minority density increases, where it ceases to become detrimental to health in the highest category of ethnic density (OR: 0.47). And finally, similar results are presented in figure 3, where the adjusted odds ratios of reporting poor self-rated health amongst Pakistani people who experienced any racist attack, relative to those who did not, decreased from 3.41 in the lowest category of overall ethnic minority density, to 0.70 in the highest.

Despite the fact that odds ratios in the highest category of ethnic density are below 1, thus leading to the interpretation of a protective effect of experienced racism, this is a statistical artefact and not a real protective effect of experiencing racism on the health of ethnic minorities. The figures illustrate a linear relationship of the buffering effect of ethnic density, which should stop once the detrimental effect of racism on health ceases to exist.

Figure 8.1. Odds ratios of reporting psychotic symptomatology with increasing own ethnic density among Indian people who reported employment discrimination, relative to those who did not

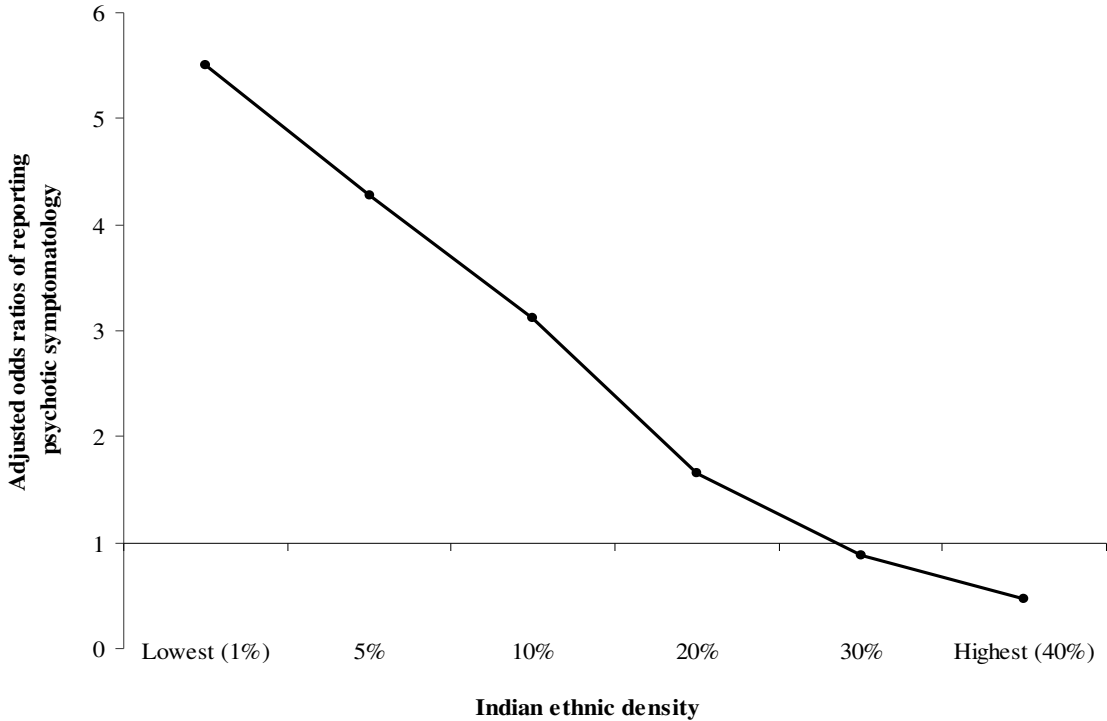


Figure 8.2. Odds ratios of fair, poor or very poor self-rated health with increasing overall ethnic minority density among Pakistani people who reported fear of racism, relative to those who did not

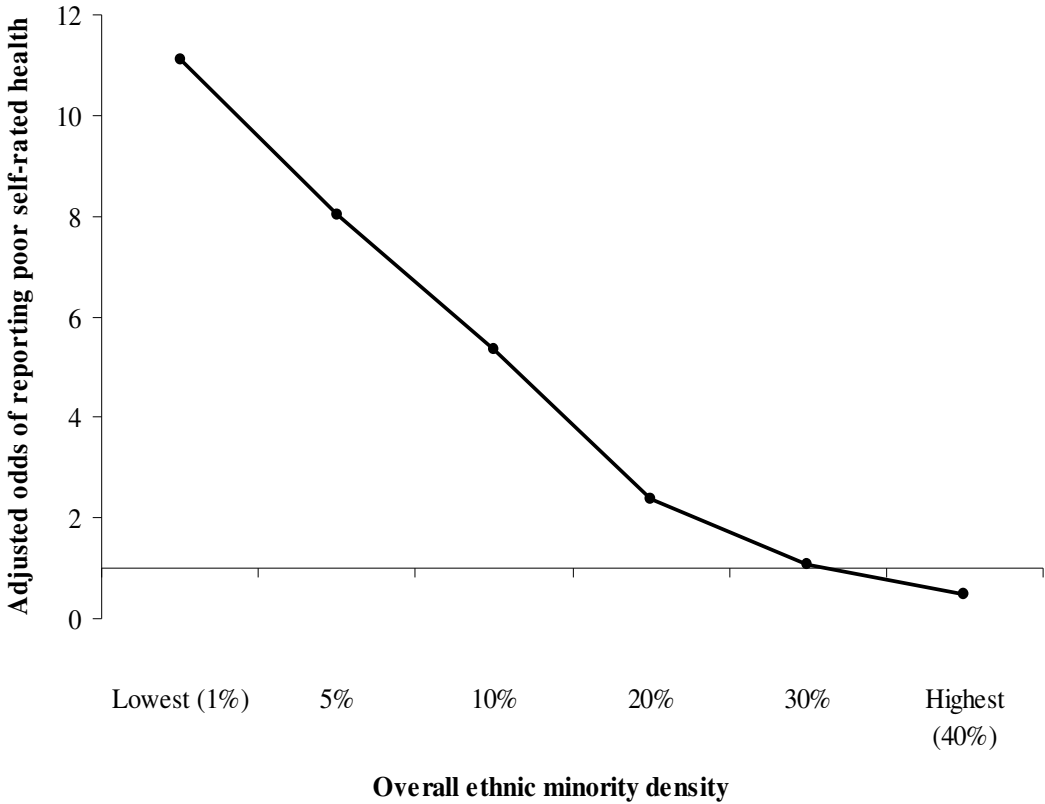
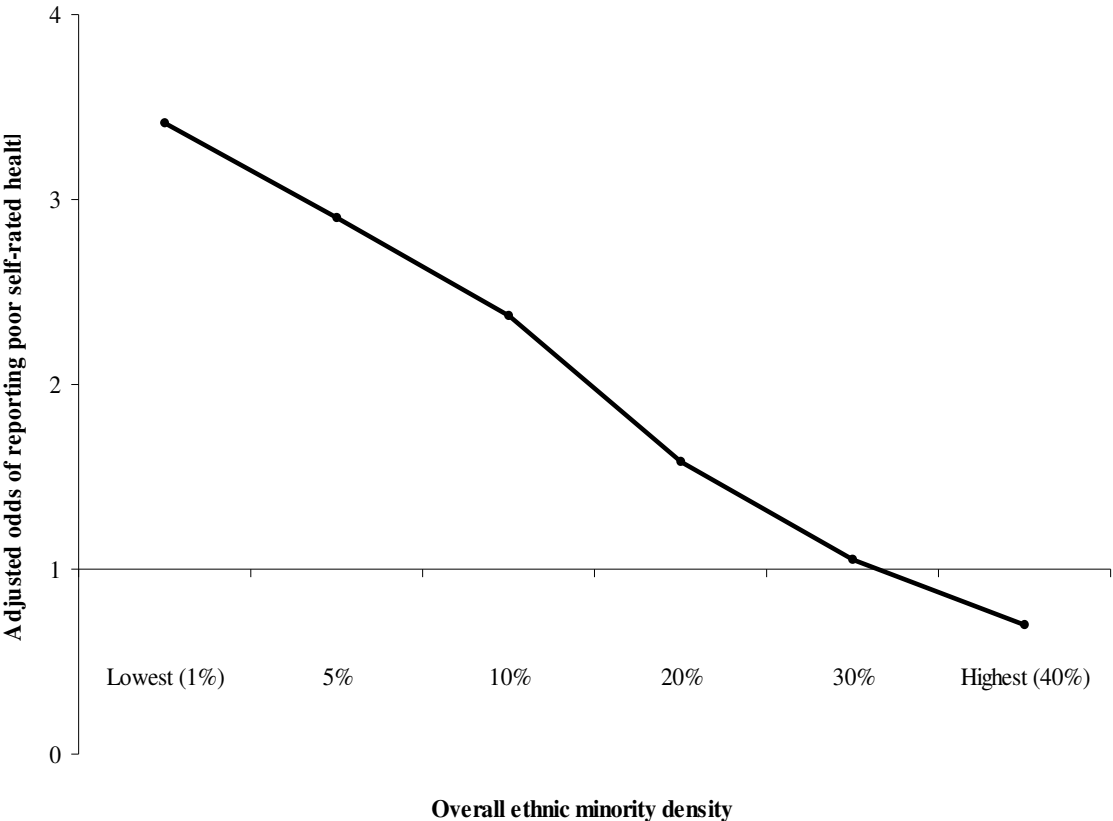


Figure 8.3. Odds ratios of fair, poor or very poor self-rated health with increasing overall ethnic minority density among Pakistani people who reported any racist attack, relative to those who did not



8.4 Conclusions

Chapter 8 set out to test the hypothesised buffering effects model by first establishing the association between racism and health in section 8.1; exploring the prevalence of social support in areas of increased ethnic density in section 8.2; and finally testing the buffering effects hypothesis in section 8.3.

The first part of Chapter 8 showed a detrimental impact of experienced racism on the mental health and overall self-rated health of ethnic minority people. Overall, experiencing racism or discrimination had a strong detrimental effect on reports of psychotic symptomatology among ethnic minority people. Stratified analyses showed that Black Caribbean, and particularly Indian people were the most affected, with all of their associations showing a statistically significant detrimental effect of racism on mental health. Although a general detrimental effect of racism on self-rated health was found, effect sizes were not as large as those found in mental health analyses. Nonetheless, a statistically significant detrimental effect of all racism measures was found for the self-rated health of Indian, and all ethnic minority people combined. Detrimental associations were found for all other ethnic minority groups, but results were not statistically significant.

The hypothesis that increased social support would be found in areas of higher ethnic density was partially supported in section 8.2. Examinations of the existence of social support in areas of high ethnic density, conducted using HSE data, showed that for own ethnic density, a non-significant protective effect was found for low social support. As own ethnic density increased, Black Caribbean, Black African, Indian, and Bangladeshi people were less likely to report experiencing low social support, relative to reporting high social support (results were only significant for Bangladeshi people). In the case of overall ethnic minority density, this was only found amongst Indian and Bangladeshi people, although results were only statistically significant for the latter. Overall, results were only significant for Bangladeshi people, who were less likely to report medium and low social support as own and overall ethnic minority density increased by 10%.

Analyses conducted in section 8.3 showed a generally non-significant protective ethnic density effect of both own and overall ethnic minority density on psychotic symptomatology. Results were not as consistent in the case of self-reported overall health, although a statistically significant protective effect of overall ethnic minority density was found for Pakistani people.

Results of the buffering effect examinations showed that although not always statistically significant, a consistent reduction in the odds ratios of reporting psychotic symptomatology and poor health was observed as own and overall ethnic minority density increased. Further examinations conducted to better understand the buffering effects of ethnic density showed a clear buffering effect, whereby odds of reporting psychotic symptomatology and poor self-rated health after experiencing racism were visibly reduced as own and overall ethnic minority density increased.

Although the initial hypothesis posited in this chapter that an increase of social support was expected to be found in areas of higher ethnic density was not fully met, evidence for a buffering effect of ethnic density on the detrimental impact of racism and health does come across the results of section 8.3. This is particularly the case for own ethnic density buffering the detrimental impact of employment discrimination among Indian people, and for overall ethnic minority density buffering the detrimental impact of fear of racism and any experienced racist attack on the self-rated overall health of Pakistani people.

It is possible that the measure of social support available in the HSE is not properly capturing the type of social support expected to be found in areas of high ethnic density, which would be better characterised by an increase in friendships with other ethnic minority people (of either same or other ethnic group), and increased support relevant to ethnic identity and racist events.

Chapter 9. Civic-political participation model

This chapter tests the civic-political participation model, which proposes additional dimensions by which ethnic density is hypothesised to impact on the health of ethnic minority people. The civic-political participation model posits that ethnic density will protect the health of ethnic minority people through an increase in political and civic engagement, which is expected to translate into greater community cohesion and better services for the community. Political empowerment, community cohesion and provision of appropriate services, in turn, are hypothesised to result in better health of ethnic minority people.

The civic-political participation model was tested using data from the 2005 and 2007 Citizenship Survey (CS). Analyses were carried out in four stages: the first stage described the different facets of civic-political participation and its association with model covariates (presented in section 9.1); in the second stage, an examination of the association between civic-political participation and health was conducted (section 9.2); analyses in the third stage examined the association between civic-political participation and ethnic density (section 9.3); and finally, where a significant association between civic-political participation, health and ethnic density was found, a test for mediation was conducted. A conclusion and summary of findings of the civic-political participation model are presented in section 9.4.

9.1 Defining Civic-Political Participation

Three different constructs were analysed to test the civic-political participation model: engagement in civic activities, perceptions of community cohesion, and satisfaction with local services. Civic engagement measured respondents' participation in civic activities, including formal and informal volunteering, and more direct political participation, such as having been a local councillor or a member of a local decision making group. Perceptions of community cohesion were measured with a set of variables that asked respondents how they felt about certain aspects of their neighbourhood, including whether they felt safe walking alone after dark, or whether they agreed that people in their neighbourhood shared the same values. Variables measuring satisfaction with local services asked respondents about their satisfaction

with services including local housing, local police, and local youth services. For a detailed description of these variables and the prevalence of the civic-political participation constructs across ethnic groups, see Chapter 5.

Tables 9.1 to 9.3 show mutually adjusted associations between constructs of the civic-political participation model and individual and area-level characteristics. Women were found to be significantly more likely to participate in civic engagement activities, and overall, more likely to express poor community cohesion. They were also significantly more likely to rate their local services poorly, except in the case of satisfaction with local police (table 9.3). A statistically significant decrease in civic engagement was observed as social class worsened. A similar social gradient was observed for perception of community cohesion, but was reversed in the case of satisfaction with local services, whereby as social class worsened, ratings of local services significantly improved. A statistically significant association was found between age and civic engagement, with participation in civic activities increasing as age decreased. Perception of community cohesion and satisfaction with local services were found to significantly improve as age increased, except for feeling safe after dark and satisfaction with local police, which decreased in older ages. A curvilinear association was found for number of years living in the neighbourhood and participation in civic engagement activities, whereby civic engagement increased for those living in the area between 5 and 10 years, and decreased after that, remaining higher than that of respondents living in the area for 5 or fewer years. Although statistically significant associations were found between number of years living in the neighbourhood and perception of community cohesion, the direction of the effect varied between variables. In the case of satisfaction with local services, ratings worsened as time in neighbourhood increased. Respondents born in the UK were significantly more likely to participate in civic engagement activities, more likely to perceive poor community cohesion, and less likely to be satisfied with local services, as compared to respondents born abroad. Overall, participation in civic engagement activities significantly increased as area deprivation decreased. So did perceptions of community cohesion and satisfaction with local services, except in the case of satisfaction with local transport.

Table 9.1. Mutually adjusted odds ratios of reporting civic and political engagement by different sociodemographic characteristics among the ethnic minority sample of the CS

	Political participation OR (95% CI)	Informal volunteering OR (95% CI)	Formal volunteering OR (95% CI)	Any civic engagement OR (95% CI)
<i>Individual-level variables</i>				
Women ^a	1.12 (1.03-1.22)**	1.25 (1.19-1.32)†	1.40 (1.33-1.48)†	1.28 (1.20-1.37)†
Intermediate, small, lower supervisory, technical ^b	0.53 (0.48-0.59)†	0.63 (0.59-0.68)†	0.53 (0.49-0.56)†	0.51 (0.47-0.56)†
Semi-routine and routine ^b	0.37 (0.33-0.41)†	0.44 (0.41-0.48)†	0.35 (0.32-0.37)†	0.33 (0.30-0.36)†
Never worked, long-term unemployed ^b	0.37 (0.31-0.45)†	0.29 (0.26-0.33)†	0.27 (0.24-0.30)†	0.23 (0.21-0.26)†
Age	1.00 (0.99-1.00)	0.98 (0.98-0.98)†	0.99 (0.99-0.99)†	0.98 (0.98-0.98)†
1-5 years in neighbourhood ^c	1.18 (0.95-1.46)	1.10 (0.97-1.24)	1.28 (1.13-1.44)†	1.25 (1.09-1.43)†
5-10 years in neighbourhood ^c	1.69 (1.35-2.10)†	1.39 (1.22-1.58)†	1.73 (1.52-1.97)†	1.66 (1.43-1.93)†
Over 10 years in neighbourhood ^c	1.54 (1.25-1.90)†	1.31 (1.16-1.47)†	1.57 (1.39-1.77)†	1.54 (1.35-1.77)†
Born in the UK	1.18 (1.06-1.31)†	1.36 (1.27-1.45)†	1.29 (1.21-1.38)†	1.62 (1.51-1.75)†
<i>Area-level variables</i>				
IMDQ 2 nd most deprived ^d	0.94 (0.81-1.09)	1.16 (1.05-1.28)†	1.17 (1.05-1.30)†	1.18 (1.05-1.32)†
IMDQ 3 ^d	0.76 (0.66-0.88)†	1.25 (1.13-1.38)†	1.26 (1.14-1.39)†	1.26 (1.13-1.40)†
IMDQ 4 ^d	0.93 (0.80-1.09)	1.31 (1.17-1.45)†	1.55 (1.39-1.73)†	1.50 (1.32-1.70)†
IMDQ 5 ^d	0.86 (0.73-1.02)	1.50 (1.33-1.69)†	1.64 (1.46-1.84)†	1.58 (1.37-1.81)†
IMDQ 6 least deprived ^d	0.81 (0.69-0.96)**	1.62 (1.44-1.83)†	1.73 (1.54-1.93)†	1.89 (1.64-2.17)†

*p<0.05, **p<0.01, †p<0.001

^aReference group – Men

^bReference group – SEP category Higher and Lower management

^cReference group – Less than a year in neighbourhood

^dReference group – Most deprived MSOA in the country

Table 9.2. Mutually adjusted odds ratios of perceptions of community cohesion by different sociodemographic characteristics among the ethnic minority sample of the CS

	People respect ethnic differences OR (95% CI)	People can be trusted OR (95% CI)	Feels safe after dark OR (95% CI)	People pull together OR (95% CI)	People share the same values OR (95% CI)	People get on well together OR (95% CI)
<i>Individual-level variables</i>						
Women ^a	0.87 (0.81-0.95)†	0.92 (0.86-0.98)**	0.35 (0.33-0.37)†	1.07 (1.01-1.14)*	1.07 (1.01-1.13)*	0.93 (0.87-1.00)*
Intermediate, small, lower supervisory, technical ^b	0.87 (0.78-0.96)**	0.61 (0.56-0.67)†	0.81 (0.75-0.88)†	0.98 (0.91-1.05)	0.95 (0.88-1.02)	0.96 (0.88-1.05)
Semi-routine and routine ^b	0.78 (0.71-0.87)†	0.51 (0.47-0.56)†	0.74 (0.69-0.80)†	0.92 (0.85-0.99)*	0.94 (0.87-1.01)	0.98 (0.90-1.07)
Never worked, long-term unemployed ^b	0.81 (0.70-0.95)**	0.52 (0.46-0.59)†	0.80 (0.72-0.91)†	1.03 (0.91-1.15)	0.81 (0.72-0.92)†	1.04 (0.90-1.19)
Age	1.01 (1.00-1.01)†	1.02 (1.02-1.02)†	0.99 (0.99-0.99)†	1.02 (1.01-1.02)†	1.00 (0.99-1.00)†	1.01 (1.01-1.02)†
1-5 yrs in neighbourhood ^c	0.78 (0.65-0.95)**	1.08 (0.93-1.26)	0.92 (0.80-1.06)	0.71 (0.61-0.83)†	0.98 (0.85-1.14)	0.86 (0.74-1.02)
5-10 yrs in neighbourhood ^c	0.69 (0.56-0.84)†	1.17 (1.00-1.38)*	0.93 (0.80-1.08)	0.59 (0.51-0.70)†	0.99 (0.85-1.15)	0.78 (0.66-0.92)†
10+ yrs in neighbourhood ^c	0.72 (0.60-0.87)†	1.16 (0.99-1.36)	0.89 (0.78-1.02)	0.59 (0.51-0.69)†	0.99 (0.86-1.15)	0.79 (0.67-0.93)†
Born in the UK	0.61 (0.55-0.67)†	1.19 (1.10-1.29)†	0.91 (0.84-0.98)**	0.70 (0.65-0.75)†	0.99 (0.92-1.07)	0.69 (0.63-0.75)†
<i>Area-level variables</i>						
IMDQ 2 nd most deprived ^d	1.12 (0.98-1.27)	1.30 (1.17-1.46)†	1.26 (1.13-1.41)†	1.09 (0.99-1.21)	0.95 (0.83-1.08)	1.05 (0.93-1.18)
IMDQ 3 ^d	1.44 (1.26-1.64)†	1.69 (1.51-1.89)†	1.57 (1.41-1.75)†	1.26 (1.14-1.39)†	0.92 (0.81-1.04)	1.28 (1.14-1.44)†
IMDQ 4 ^d	1.94 (1.65-2.28)†	2.52 (2.21-2.88)†	2.55 (2.25-2.89)†	1.75 (1.57-1.96)†	0.94 (0.82-1.09)	1.88 (1.64-2.16)†
IMDQ 5 ^d	2.39 (2.00-2.87)†	3.59 (3.06-4.20)†	3.23 (2.80-3.72)†	2.25 (1.98-2.55)†	0.87 (0.75-1.02)	2.01 (1.73-2.34)†
IMDQ 6 least deprived ^d	3.33 (2.75-4.03)†	4.99 (4.21-5.90)†	3.66 (3.18-4.21)†	2.64 (2.33-3.00)†	0.93 (0.80-1.09)	2.40 (2.05-2.80)†

*p<0.05, **p<0.01, †p<0.001

^aReference group – Men

^bReference group – SEP category Higher and Lower management

^cReference group – Less than a year in neighbourhood

^dReference group – Most deprived MSOA in the country

Table 9.3. Mutually adjusted odds ratios of satisfaction with local services by different sociodemographic characteristics among the ethnic minority sample of the CS

	Transport OR (95% CI)	Housing OR (95% CI)	Street cleaning OR (95% CI)	Police OR (95% CI)	Health Services OR (95% CI)	Youth Services OR (95% CI)
<i>Individual-level variables</i>						
Women ^a	0.89 (0.83-0.96)†	0.85 (0.79-0.92)†	0.89 (0.83-0.95)†	1.14 (1.07-1.21)†	0.90 (0.84-0.97)**	0.86 (0.81-0.92)†
Intermediate, small, lower supervisory, technical ^b	1.10 (1.01-1.20)*	0.93 (0.84-1.02)	1.03 (0.95-1.12)	0.95 (0.88-1.02)	1.05 (0.96-1.15)	0.94 (0.87-1.01)
Semi-routine and routine ^b	1.30 (1.18-1.43)†	0.94 (0.85-1.04)	1.08 (0.99-1.17)	1.01 (0.93-1.09)	1.31 (1.19-1.44)†	0.95 (0.88-1.03)
Never worked, long-term unemployed ^b	1.55 (1.31-1.82)†	1.13 (0.97-1.31)	1.23 (1.08-1.39)†	1.26 (1.11-1.44)†	1.48 (1.27-1.73)†	1.41 (1.24-1.60)†
Age	1.00 (1.00-1.01)†	1.01 (1.01-1.01)†	1.00 (1.00-1.00)*	0.99 (0.99-1.00)†	1.01 (1.01-1.02)†	1.00 (1.00-1.01)†
1-5 yrs in neighbourhood ^c	0.85 (0.71-1.02)	1.06 (0.88-1.27)	0.85 (0.73-1.00)*	0.68 (0.58-0.81)†	0.88 (0.74-1.06)	0.79 (0.67-0.92)†
5-10 yrs in neighbourhood ^c	0.61 (0.51-0.73)†	0.89 (0.73-1.07)	0.70 (0.60-0.83)†	0.49 (0.41-0.58)†	0.73 (0.61-0.89)†	0.56 (0.47-0.65)†
10+ yrs in neighbourhood ^c	0.69 (0.58-0.82)†	0.89 (0.74-1.06)	0.69 (0.59-0.80)†	0.43 (0.37-0.51)†	0.68 (0.57-0.81)†	0.50 (0.43-0.59)†
Born in the UK	0.69 (0.63-0.76)†	0.86 (0.78-0.94)†	0.70 (0.65-0.76)†	0.48 (0.44-0.52)†	1.03 (0.94-1.12)	0.45 (0.42-0.49)†
<i>Area-level variables</i>						
IMDQ 2 nd most deprived ^d	0.86 (0.74-1.01)	1.07 (0.95-1.21)	1.19 (1.07-1.32)†	0.94 (0.84-1.05)	0.98 (0.86-1.12)	0.99 (0.89-1.10)
IMDQ 3 ^d	0.76 (0.66-0.88)†	1.28 (1.13-1.44)†	1.42 (1.28-1.58)†	1.04 (0.93-1.15)	0.97 (0.85-1.10)	1.08 (0.98-1.20)
IMDQ 4 ^d	0.56 (0.48-0.66)†	1.51 (1.32-1.74)†	1.58 (1.40-1.77)†	1.13 (1.01-1.27)*	1.09 (0.95-1.26)	1.20 (1.07-1.35)†
IMDQ 5 ^d	0.50 (0.42-0.59)†	1.76 (1.50-2.06)†	1.82 (1.60-2.07)†	1.25 (1.10-1.41)†	1.21 (1.03-1.42)*	1.36 (1.20-1.55)†
IMDQ 6 least deprived ^d	0.45 (0.38-0.52)†	2.00 (1.70-2.35)†	2.13 (1.87-2.43)†	1.34 (1.18-1.52)†	1.30 (1.11-1.52)†	1.30 (1.15-1.47)†

*p<0.05, **p<0.01, †p<0.001

^aReference group – Men

^bReference group – SEP category Higher and Lower management

^cReference group – Less than a year in neighbourhood

^dReference group – Most deprived MSOA in the country

9.2 Association between civic-political participation and health

Limiting longstanding illness is the only health measure available in both the 2005 and 2007 Citizenship Surveys, and thus was the measure used to test the civic-political participation model. Table 5.26 in Chapter 5 presents the prevalence of having a limiting longstanding illness across ethnic groups, as well as age and sex adjusted odds ratios of reporting a limiting longstanding illness, as compared to White people. As a summary, Black Caribbean, Pakistani and Bangladeshi people were significantly more likely than White people to report limiting longstanding illness, whereas Black African and Indian people were not (results only significant for Black African people).

Analyses conducted to test the association between civic-political participation constructs and the health of ethnic minority people were adjusted for individual socioeconomic position, age, sex, and area deprivation. Results, presented in table 9.4, show a detrimental association between increased participation in civic engagement activities and reports of limiting longstanding illness, although results were only statistically significant for engaging in political activity. A non-significant decrease in the odds of reporting limiting longstanding illness was found for people who engaged in any informal volunteering.

A statistically significant association with reporting limiting longstanding illness was found for five of the six community cohesion variables analysed, whereby a decrease in the odds of reporting poor health was found among individuals who agreed that the local area is a place where people respect ethnic differences, and that people in their neighbourhood can be trusted, who felt safe after dark, who agreed that people pull together to improve the neighbourhood, and among those who agreed that their local area is a place where people from different backgrounds get on well together.

Analyses conducted to examine whether satisfaction with local services is associated with health yielded a strong and consistently negative association, whereby reports of being fairly or very satisfied with local public transport, council housing, street cleaning, police, health services and services for youth people showed a statistically significant association with a decrease in the odds of reporting a limiting longstanding illness.

Overall, a strong association was found between health and perceptions of community cohesion and satisfaction with local services, although the same association did not exist for variables measuring civic engagement.

Table 9.4. Association between reporting a limiting longstanding illness and variables of the civic-political participation model among the ethnic minority sample of the CS

	OR (95% CI)
<i>Civic engagement</i>	
Political activity	1.33 (1.10-1.61)†
Informal volunteering	0.98 (0.87-1.11)
Formal volunteering	1.03 (0.91-1.17)
Any civic engagement	1.10 (0.97-1.25)
<i>Perceptions of community cohesion</i>	
People respect differences	0.61 (0.52-0.71)†
People can be trusted	0.82 (0.72-0.93)†
Feels safe after dark	0.67 (0.59-0.76)†
People pull together	0.72 (0.64-0.82)†
Disagrees that people do not share same values	1.07 (0.94-1.21)
People get on well together	0.76 (0.66-0.89)†
<i>Satisfaction with local services</i>	
Local transport	0.67 (0.56-0.80)†
Local housing	0.74 (0.63-0.86)†
Local street cleaning services	0.86 (0.74-0.99)*
Local police	0.66 (0.57-0.76)†
Local health services	0.69 (0.59-0.80)†
Local youth services	0.68 (0.58-0.78)†

*p<0.05, **p<0.01, †p<0.001; Adjusted for age, sex, ethnicity, SES, economic activity and area deprivation

9.3 The ethnic density effect on civic-political participation

After confirming the association between health and the different factors that constitute the civic-political participation model in section 9.2, section 9.3 explores whether civic engagement, individuals' perceptions of community cohesion, and satisfaction with local services improve as the proportion of ethnic minority residents in their local area increases.

Multilevel regression analyses conducted to examine the association between ethnic density and the civic-political participation constructs were adjusted for age, sex, individual socioeconomic position, number of years living in the neighbourhood,

nativity, and area deprivation, which had shown a statistically significant association with the civic-political participation constructs in the previous section (see tables 9.1 to 9.3).

9.3.1 Civic engagement

Table 9.5 shows the results of the analyses conducted to test the effect of own ethnic density on civic engagement of ethnic minority people. Overall, results do not support an ethnic density effect. Moreover, a consistent direction of the impact of ethnic density across ethnic minority groups could not be established. For example, in the case of engaging in political activity in the past year, own ethnic density was significantly detrimental for Indian people, but protective for Bangladeshi people. Only in the case of formal volunteering a consistent direction of the ethnic density effect was more evident, with detrimental effects found for all ethnic minority groups (results only significant for Indian and Pakistani people).

Analyses of overall ethnic minority density are presented in table 9.6. A detrimental effect of increased ethnic density can be observed across ethnic minority groups, whereby as overall ethnic minority density increases, the odds of engaging in political activity decrease for all ethnic groups (results significant for Indian and Black Caribbean people, and for all ethnic minority people combined).

Table 9.5. Association between 10% increase in own ethnic density and participating in civic engagement

	Caribbean OR (95% CI)	African OR (95% CI)	Indian OR (95% CI)	Pakistani OR (95% CI)	Bangladeshi OR (95% CI)
Political activity	1.10 (0.81-1.50)	1.00 (0.77-1.30)	0.89 (0.81-0.98)*	0.95 (0.81-1.12)	1.34 (1.08-1.67)**
Informal volunteering	0.93 (0.74-1.17)	1.15 (0.94-1.41)	0.97 (0.91-1.04)	1.04 (0.95-1.13)	1.08 (0.96-1.22)
Formal volunteering	0.91 (0.73-1.15)	0.99 (0.83-1.19)	0.92 (0.86-0.98)**	0.86 (0.76-0.98)*	0.98 (0.82-1.17)
Any civic engagement	0.96 (0.74-1.23)	1.12 (0.90-1.40)	0.94 (0.88-1.01)	1.02 (0.93-1.11)	1.12 (0.96-1.29)

*p<0.05, **p<0.01, †p<0.001; Adjusted for age, sex, SES, nativity, years in neighbourhood, and area deprivation

Table 9.6. Association between 10% increase in overall ethnic minority density and participating in civic engagement

	Caribbean OR (95% CI)	African OR (95% CI)	Indian OR (95% CI)	Pakistani OR (95% CI)	Bangladeshi OR (95% CI)	All ethnic minorities OR (95% CI)
Political activity	0.99 (0.89-1.08)	0.94 (0.84-1.04)	0.88 (0.81-0.94)†	0.97 (0.87-1.08)	0.96 (0.78-1.18)	0.94 (0.91-0.97)†
Informal volunteering	0.91 (0.85-0.98)**	0.93 (0.86-1.00)	0.94 (0.89-0.99)*	0.99 (0.94-1.06)	0.99 (0.89-1.12)	0.95 (0.93-0.98)†
Formal volunteering	0.92 (0.85-0.98)*	0.91 (0.85-0.98)**	0.89 (0.85-0.94)†	0.91 (0.84-0.99)*	0.97 (0.83-1.13)	0.93 (0.90-0.95)†
Any civic engagement	0.91 (0.84-0.98)*	0.93 (0.85-1.00)	0.91 (0.86-0.96)†	0.98 (0.93-1.04)	1.01 (0.89-1.15)	0.94 (0.91-0.96)†

*p<0.05, **p<0.01, †p<0.001; Adjusted for age, sex, SES, nativity, years in neighbourhood and area deprivation

9.3.2 Perceptions of community cohesion

Similar to results found in section 9.3.1, analyses of the ethnic density effect on ethnic minority people's perceptions of community cohesion did not show a consistent effect (see tables 9.7 and 9.8). Only in the perception that people in the area respect ethnic differences did ethnic density show a consistent protective effect (although only statistically significant for Indian and Black African people). A protective effect (except for Black Caribbean people) was also found for the perception that people in the area get on well together, whereby an increase in 10% own ethnic density was associated with increased odds ratios of agreeing with that statement (results statistically significant for Indian and Black African people). For the other items, ethnic density showed mixed results. For example, whereas Pakistani and Bangladeshi people reported increased trust and feeling safe after dark as own ethnic density increased by 10%, Black Caribbean people reported decreased odds of agreeing to those items.

When analysed as overall ethnic minority density, inconsistent findings remained (see table 9.8). In line with analyses of own ethnic density, a protective effect was found for perceiving that people respect ethnic differences (statistically significant for Indian, Bangladeshi and all ethnic minority people combined), and agreeing that people in the area get on well together (significant for Black African and all ethnic minority people combined). A statistically significant detrimental effect of overall ethnic minority density was observed for feeling safe after dark among Indian, Black Caribbean, Black African, and overall ethnic minority people. Black Caribbean and Pakistani people were also less likely to report agreeing that people in the area pull together to improve the neighbourhood as overall ethnic minority density increased.

Table 9.7. Association between 10% increase in own ethnic density and perceptions of community cohesion

	Caribbean OR (95% CI)	African OR (95% CI)	Indian OR (95% CI)	Pakistani OR (95% CI)	Bangladeshi OR (95% CI)
People respect differences	1.33 (0.98-1.81)	1.48 (1.10-1.99)**	1.19 (1.10-1.31)†	1.09 (0.96-1.22)	1.16 (0.93-1.44)
People can be trusted	0.73 (0.58-0.93)**	0.88 (0.73-1.07)	1.01 (0.95-1.08)	1.15 (1.04-1.27)**	1.21 (1.03-1.43)*
Feels safe after dark	0.71 (0.57-0.88)†	0.82 (0.66-1.01)	1.04 (0.97-1.12)	1.14 (1.04-1.24)†	1.21 (1.04-1.42)*
People pull together	0.91 (0.73-1.13)	0.83 (0.67-1.03)	1.04 (0.98-1.12)	0.95 (0.86-1.05)	1.12 (0.98-1.30)
Disagrees that people do not share same values	0.80 (0.63-1.01)	0.96 (0.79-1.16)	1.03 (0.97-1.10)	0.90 (0.81-1.01)	0.99 (0.84-1.18)
People get on well together	0.96 (0.70-1.31)	1.40 (1.07-1.84)**	1.12 (1.03-1.22)**	1.00 (0.90-1.12)	1.04 (0.88-1.22)

*p<0.05, **p<0.01, †p<0.001; Adjusted for age, sex, SES, years in neighbourhood, nativity and area deprivation

Table 9.8. Association between 10% increase in overall ethnic minority density and perceptions of community cohesion

	Caribbean OR (95% CI)	African OR (95% CI)	Indian OR (95% CI)	Pakistani OR (95% CI)	Bangladeshi OR (95% CI)	All ethnic minorities OR (95% CI)
People respect differences	1.03 (0.94-1.13)	1.09 (0.98-1.21)	1.08 (1.01-1.15)*	1.08 (0.99-1.17)	1.37 (1.13-1.66)†	1.08 (1.05-1.12)†
People can be trusted	0.93 (0.87-1.00)	0.98 (0.91-1.06)	0.95 (0.91-1.00)	0.95 (0.89-1.02)	1.06 (0.92-1.22)	0.95 (0.92-0.97)†
Feels safe after dark	0.90 (0.84-0.96)†	0.90 (0.83-0.98)*	0.91 (0.86-0.96)†	0.96 (0.91-1.02)	1.03 (0.89-1.19)	0.92 (0.89-0.95)†
People pull together	0.90 (0.84-0.97)†	0.95 (0.87-1.03)	0.96 (0.91-1.02)	0.93 (0.87-0.99)*	0.98 (0.86-1.11)	0.98 (0.95-1.01)
Disagrees that people do not share same values	0.99 (0.92-1.06)	0.99 (0.92-1.07)	0.99 (0.95-1.05)	0.92 (0.86-0.99)*	0.96 (0.83-1.11)	0.98 (0.95-1.01)
People get on well together	0.93 (0.85-1.02)	1.10 (1.00-1.22)*	1.02 (0.95-1.09)	1.00 (0.93-1.08)	1.15 (0.99-1.34)	1.05 (1.01-1.08)†

*p<0.05, **p<0.01, †p<0.001; Adjusted for age, sex, SES, years in neighbourhood, nativity and area deprivation

9.3.3 Satisfaction with local services

A conclusive effect of ethnic density was not found for ethnic minority people's satisfaction with local services either. Nonetheless, most of the results particularly for own ethnic density, tended to show a protective, albeit non-significant, effect of ethnic density.

As presented in table 9.9, analyses of own ethnic density showed that, although in most cases results were not statistically significant, all ethnic minority groups reported increased satisfaction with local police and local youth services as own ethnic density increased by 10%. Black Caribbean density was found to have a statistically significant protective effect for satisfaction with local street cleaning, whereas for Pakistani people, a 10% increase in own ethnic density translated into a 10% decrease in the odds ratios of reporting satisfaction with local street cleaning services.

When analysed as overall ethnic minority density, a statistically significant protective effect was found for satisfaction with local transport amongst Indian, Black Caribbean and all ethnic minority people combined. Pakistani people were the least satisfied with local services as overall ethnic minority density increased by 10%, reporting decreased satisfaction with local housing, local street cleaning services, and local health services (see table 9.10). A 10% increase in overall ethnic minority density translated into decreased reports of satisfaction with local street cleaning services for all ethnic minority groups (results only statistically significant for Pakistani people and all ethnic minority people combined).

Table 9.9. Association between 10% increase in own ethnic density and satisfaction with local services

	Caribbean OR (95% CI)	African OR (95% CI)	Indian OR (95% CI)	Pakistani OR (95% CI)	Bangladeshi OR (95% CI)
Local transport	1.41 (1.02-1.95)*	1.39 (0.98-2.00)	1.08 (0.99-1.18)	0.97 (0.82-1.16)	0.99 (0.80-1.23)
Local housing	0.91 (0.69-1.20)	0.98 (0.78-1.22)	1.07 (0.98-1.18)	1.01 (0.89-1.14)	0.94 (0.83-1.07)
Street Cleaning					
Services	1.19 (0.92-1.53)	1.03 (0.81-1.32)	1.03 (0.96-1.11)	0.90 (0.82-0.98)*	0.88 (0.77-1.01)
Local Police	1.11 (0.84-1.47)	1.06 (0.81-1.37)	1.05 (0.98-1.13)	1.01 (0.91-1.12)	1.03 (0.88-1.20)
Local Health					
Services	1.02 (0.77-1.35)	0.92 (0.68-1.24)	0.94 (0.88-1.00)	1.08 (0.93-1.24)	1.09 (0.94-1.27)
Local Youth					
Services	1.05 (0.83-1.35)	1.02 (0.82-1.27)	1.03 (0.96-1.10)	1.01 (0.90-1.12)	1.05 (0.90-1.23)

*p<0.05, **p<0.01, †p<0.001; Adjusted for age, sex, SES, years in neighbourhood, nativity and area deprivation

Table 9.10. Association between 10% increase in overall ethnic minority density and satisfaction with local services

	Caribbean OR (95% CI)	African OR (95% CI)	Indian OR (95% CI)	Pakistani OR (95% CI)	Bangladeshi OR (95% CI)	All ethnic minorities OR (95% CI)
Local transport	1.12 (1.02-1.24)*	1.07 (0.94-1.22)	1.07 (1.00-1.15)*	1.02 (0.91-1.15)	0.83 (0.67-1.02)	1.10 (1.06-1.14)†
Local housing	0.96 (0.87-1.05)	0.96 (0.87-1.05)	1.00 (0.93-1.08)	0.88 (0.81-0.96)†	1.00 (0.87-1.15)	0.99 (0.96-1.02)
Street Cleaning						
Services	0.94 (0.87-1.02)	0.91 (0.83-1.01)	0.98 (0.93-1.04)	0.91 (0.85-0.97)†	0.88 (0.76-1.02)	0.95 (0.93-0.98)†
Local Police	0.99 (0.91-1.08)	1.01 (0.91-1.11)	1.03 (0.97-1.09)	1.01 (0.94-1.08)	0.88 (0.77-1.02)	1.03 (1.00-1.06)*
Local Health						
Services	1.00 (0.92-1.09)	0.95 (0.84-1.07)	0.93 (0.88-0.98)**	0.90 (0.82-0.99)*	0.82 (0.71-0.96)**	0.93 (0.90-0.96)†
Local Youth						
Services	1.04 (0.96-1.12)	0.96 (0.88-1.05)	1.02 (0.97-1.08)	0.98 (0.91-1.06)	1.11 (0.96-1.29)	1.04 (1.02-1.07)†

*p<0.05, **p<0.01, †p<0.001; Adjusted for age, sex, SES, years in neighbourhood, nativity and area deprivation

9.4 Conclusions

Chapter 9 set out to test the civic-political participation model, analysing the associations between ethnic density and three different civic-political participation constructs: civic engagement, perceptions of community cohesion, and satisfaction with local services.

After describing the characteristics of the civic-political participation constructs, analyses of this chapter confirmed, in the CS sample, the established association between perception of neighbourhood characteristics and health (Ellaway et al., 2001; Chandola, 2001; Stafford et al., 2008; Balfour & Kaplan, 2002; Kawachi & Berkman, 2003; Ellaway & Macintyre, 2009; Sooman & Macintyre, 1995; Yen et al., 2006; Weden et al., 2008; Bowling & Stafford, 2007). As expected, results showed a general negative association between decreased odds of reporting a limiting longstanding illness and positive ratings of community cohesion and satisfaction with local services.

Examinations of the ethnic density effect did not confirm the hypothesised pathway of strengthened civic-political participation with an increase in ethnic density. Analyses in section 9.3 showed that, in general, an increase in ethnic density has no effect on civic engagement, ratings of community cohesion, or satisfaction with local services.

Given that non-significant results were found for the association between ethnic density and civic-political participation, further analyses on the mediating effect of civic-political participation were not conducted.

It appears from the results of this chapter that the hypothesised theoretical pathway of the civic-political participation model is not confirmed by the analyses conducted. It is possible that existent associations are not accurately portrayed with the measures used, and that perhaps analysing actual political and civic engagement (e.g., electoral participation) and actual community services (e.g., number of ethnic community-based organisations), a more confirmatory picture results.

Chapter 10. Conclusions

This study consisted of an investigation of the ethnic density effect, which examined the direct association between ethnic density and several health outcomes, and proposed three pathways by which ethnic density impacts on the health of ethnic minority people: 1) through an increase in racism-related social norms, which was hypothesised to translate into a decreased prevalence of racism; 2) through buffering the detrimental effects of racism on health; and 3) through an increase in civic-political participation, which was expected to lead to improved community services. These pathways were tested using multilevel methods that modelled data from three large nationally representative datasets: the 1999 and 2004 Health Survey for England (HSE), the Fourth National Survey of Ethnic Minorities (FNS), and the 2005 and 2007 Citizenship Survey (CS).

This last chapter provides a summary and discussion of study findings (section 10.1), a description of the study's limitations (section 10.2), recommendations for future research (section 10.3), and an overall conclusion (section 10.4).

10.1 Summary and discussion of findings

The following sections summarise the results found in Chapters 6 to 9, and interpret them in light of the literature and current UK context.

10.1.1 Ethnic density effect

The direct association between ethnic density and health was examined in Chapter 6, which tested study hypothesis 1, namely that the health of ethnic minority people residing in areas of high ethnic density would be better than the health of ethnic minority people residing in less ethnically dense areas, after controlling for area deprivation and individual socio-economic and demographic characteristics. Explorations of the ethnic density effect were conducted with a range of objective and subjective health outcomes, as well as with health behaviours, for both own and overall ethnic minority density.

Results showed that the effects of own ethnic density were most protective for Indian people, for whom all health outcomes examined showed improved results as

own ethnic density increased, although results were only statistically significant for mental health and current drinking. In contrast, own ethnic density was the least protective for Black Caribbean people, who had detrimental effects of own ethnic density on four out of the six health outcomes examined (results were only statistically significant for self-rated health).

Analyses of overall ethnic minority density showed that Black African, Indian and Pakistani people benefitted the most from an increase in the proportion of ethnic minority residents in their neighbourhoods, whereas the effect was most detrimental for Bangladeshi people, whose health deteriorated across all outcomes as overall ethnic minority density increased. There is a precedent for differing ethnic density effects in the literature, whereby studies have found protective ethnic density effects for some ethnic groups, but non-significant or detrimental effects for other groups (see for example Halpern & Nazroo, 1999; Bécares et al., 2009; Yuan, 2008). As described in Chapter 2, ethnic minority groups in the UK differ greatly by their reasons for migration, settlement patterns, class and age structure. It is thus possible that given these differences, living among co-ethnics does not have the same impact for all ethnic groups or for all health outcomes, or that different groups are more able than others to provide its members with the protective properties thought to operate behind the ethnic density effect.

The effect of ethnic density was stronger for current alcohol use, where 15 out of 18 tests conducted showed a protective effect. Besides this consistent effect on alcohol use, ethnic density behaved erratically across all other health outcomes, which is a finding consistent with the current literature. Ethnic density is thought of as a phenomenon that mitigates the detrimental impact of hazardous stressors on health through a set of hypothesised pathways. Given the mainly psychosocial nature of these pathways, it is to be expected that the ethnic density effect will have a different buffering impact on the processes and determinants of mental health, as compared to those leading to physical ill health. For example, it is likely that whereas increased social support will buffer ethnic minority people against the detrimental effect of racism on psychotic symptomatology, the strength of the ethnic density effect will not be the same on the processes leading to reduced waist to hip ratio. In other words,

given the hypothesised buffering properties of ethnic density on stressors such as experienced racism, it is likely that the effect of ethnic density will be stronger on psychological outcomes such as mental health and alcohol consumption, but weaker on physical health outcomes. This is sustained by existent literature that has reported consistent protective effects of ethnic density on mental health, but a less clear picture for measures of physical health (see Chapter 2).

In general, own ethnic density seemed to have a stronger effect on health than overall ethnic minority density, although results were most often significant in the category of all ethnic minority people combined for overall ethnic minority density, which is likely to be caused by an increase in statistical power, since combining all ethnic minority groups considerably increased the sample size and the range of ethnic density. It is not unexpected for the ethnic density effect to function slightly different for own and overall ethnic minority density, since the hypothesised operating mechanisms may be more relevant for one category than for the other. For example, whereas both own and overall ethnic minority density would fit the hypothesis that in areas of high ethnic density ethnic minority people will feel decreased stigma caused by their ethnic minority status (Pickett & Wilkinson, 2008), it is possible that for the civic-political participation model, participation in community organisations is more likely to occur if these are own-ethnicity centred, rather than targeted at any ethnic minority group. It might also be that in the case of the buffering effects model, social support obtained from members of one's ethnic minority group is more successful at buffering the effects of racism on health than that received from friends of other ethnic backgrounds. In regards to the social norms model, one could also expect ethnic minority people to experience racial harassment from other ethnic minority groups, and not only White people. This is however unlikely, since detailed investigations on the perpetrators of racial harassment have reported that the great majority (about 92%) of perpetrators of racial violence and harassment are of White ethnic background (Virdee, 1997).

Chapter 6 also examined the assumption of linearity between ethnic density and health. Results found no evidence to support a non-linear association between ethnic

density and any of the health outcomes analysed. This provides an important contribution to the literature on ethnic density research, since the majority of studies examining the ethnic density effect have modelled this association in a linear manner, but have not purposely tested for it. Among studies exploring the ethnic density effect in the UK, only two have reported non-linear effects (Neeleman et al., 2001; Fagg et al., 2006), and of those, only one statistically compared the fit of linear and quadratic models on the ethnic density effect (Neeleman et al., 2001).

Two possible explanations are provided to understand why the present study found no evidence of a non-linear association, while a non-linear association was reported by Neeleman et al (2001), and Fagg et al (2006). First, although those two studies analysed different datasets, both examined the effect of ethnic density on the mental health of ethnic minority people living in a small area of London. Both studies found a curvilinear effect, whereby as ethnic density increased from moderate to high levels, the ethnic density effect either attenuated (Fagg et al., 2006), or became detrimental (Neeleman et al., 2001). In contrast, the present study analysed data at a national level, and although HSE data was also collected from the same local authorities as the two aforementioned studies, it is possible that the sampling methodology produced different proportions and ranges of ethnic density, which resulted in those two studies having increased power to detect curvilinear effects. Since Fagg and colleagues (2006) report on the summary statistics of their ethnic density variable across their study areas (Newham, Tower Hamlets and Hackney), it is possible to compare the range of ethnic density available in their analyses, to that available in the HSE. Table 10.1 shows the distribution of the ethnic density categories analysed by Fagg et al., (2006), as well as the distribution of these categories in the HSE data from Newham, Tower Hamlets and Hackney. The last row of table 10.1 presents the distribution of ethnic density in the complete HSE dataset. Categorisation of ethnic density into South Asian and Black portrayed in this table is the same as that analysed by Fagg et al (2006).

Table 10.1 Comparison of ethnic density in Fagg et al., 2006 and in the HSE

Study Area	South Asian density		Black density	
	M(SD)	Range	M(SD)	Range
Fagg et al. (2006)	26.48(18.93)	4.89 - 70.99	17.55(9.59)	2.48 - 42.48
HSE – Fagg et al (2006) study area	33.14(18.48)	2.75 - 65.25	11.26(8.75)	1.58 - 38.41
HSE overall	12.70(18.38)	0 - 79.02	4.84(7.60)	0 - 52.23

Whereas as a whole the HSE encompasses a greater range of South Asian and Black ethnic density, the range of ethnic density in the HSE in Newham, Tower Hamlets and Hackney is smaller than that of the dataset analysed by Fagg and colleagues (2006). It is possible that due to their study's sampling methodology, the analyses conducted by Fagg and colleagues have a greater number of small areas with higher ethnic density, and thus more power to detect non-linear effects.

The second possible explanation behind the differing results of linearity lies in the compositional characteristics of the areas analysed. Area deprivation and ethnic density are positively correlated, and the areas analysed in Neeleman et al (2001)'s and Fagg et al (2006)'s studies are amongst the most deprived in the country. Both studies find that in the highest ethnic density, the ethnic density effect, which in areas of medium to high ethnic density was protective, either attenuates or becomes detrimental. It is possible that in these areas, the ethnic density effect operates until the injurious effect of deprivation overpowers the protective properties of ethnic density. Residence in a more deprived area is associated with poorer health (Davey Smith et al., 1998; Diez-Roux, 2001; Kaplan, 1996; Pickett & Pearl, 2001), and so perhaps, in areas of high ethnic density and high deprivation, the characterising qualities of deprived areas, including lower quality and quantity of leisure facilities, transport, housing, physical environment, food shopping opportunities, and poor primary and secondary health services (Cummins et al., 2005), have a stronger effect on health than that of ethnic density, which would cause the ethnic density effect to lose power, and as

Neeleman et al (2001) and Fagg et al (2006) report, become detrimental, or reduce its protective strength.

In summary, analyses of the direct association between ethnic density and health did not detect a non-linear association; showed different relationships of ethnic density and health between ethnic minority groups; and were more often significant for overall ethnic minority density, which is likely a result of increased sample power, but had larger effect sizes across own ethnic density, possibly due to a greater relevance of the hypothesised ethnic density mechanisms.

After exploring in detail the association between ethnic density and health, this study aimed to empirically examine three proposed pathways by which ethnic density is hypothesised to impact on the health of ethnic minority people: the social norms model, the buffering effects model, and the civic-political participation model.

10.1.2 Social norms model

This study proposed that informal mechanisms of social control, defined as the capacity of a group to regulate its members according to desired principles in order to achieve collective goals (Sampson et al., 1997), such as reduced racial harassment, would be the driving mechanism behind the decreased prevalence of racism and discrimination found in areas of high ethnic density.

Chapter 7 set out to empirically test the social norms model, which is based on the premise that increased racism-related social norms in areas of high ethnic density will translate into a reduced prevalence of racism in those areas. Examinations of the social norms model showed that although events of racism and discrimination were indeed less likely to occur in areas of high own and overall ethnic minority density, this was not necessarily due to the racism-related social norms captured in this study.

The first part of the chapter established the existence of experiences of racism and discrimination among ethnic minority people in the UK, which were particularly salient among Black Caribbean people, who reported the highest prevalence of experienced verbal racist attacks, any racist attacks, and employment discrimination in

FNS, and the highest expected organisational discrimination in the CS. Overall, Black Caribbean people reported the highest amount of experienced racism in four out of the eight variables of racism and discrimination measured across both studies, more than any other ethnic minority group.

As expected, a decrease in the prevalence of racism was found as ethnic density increased. This was true for all ethnic minority groups and measures of racism, although the ethnic density effect was not always significant. Nonetheless, a consistent trend of decreased fear of racial attacks, experienced racism, and employment discrimination was observed as own and overall ethnic minority density increased. This finding is consistent with other quantitative (Halpern & Nazroo, 1999) and qualitative (Hudson et al., 2007; Whitley et al., 2006) studies reporting decreased reports of racism in areas of high ethnic minority concentration.

After these confirmatory findings, analyses were conducted to test hypothesis 2, which stated that ethnic minority people living in areas of high ethnic density would report an increase in racism-related social norms (avoidance of racism, actions taken after experiencing racism, and low tolerance of racism), as compared to their counterparts living in areas of lower ethnic density. Despite the initial confirmation of reduced racism in areas of high ethnic density, further analyses did not support the social norms model. Only one of the three racism-related social norms analysed showed the expected association, and only with own ethnic density. Results, however, were not statistically significant for any of the three constructs across own or overall ethnic minority density.

These findings are possibly due to the likelihood that the measures in the FNS do not adequately capture the racism-related social norms hypothesised to operate in areas of high ethnic density. Confirmatory findings of the social norms model have been reported elsewhere. For example, a qualitative study of the ethnic density effect in the London ward of Gospel Oak found that ethnic minority people living in areas of low ethnic density did in fact engage in specific actions to avoid being racially victimised, and that White British residents in those same areas overtly express racist ideologies (Whitley et al., 2006). Other qualitative studies have found that ethnic minority people not living amongst co-ethnics employ dramatic behaviours in order to avoid racial

harassment, such as erecting high fences around the house, changing daily routines, being reluctant to leave their home, not letting their children play outside, and even going to the extent of putting the rubbish out in the dark in order to avoid encountering racist perpetrators (Chahal & Julienne, 1999).

The second social norms construct measured actions taken after experiencing racial harassment, such as reporting the events to the authorities. Qualitative studies exploring the impact of racist victimisation on the lives of ethnic minority people have found that reporting racial attacks only occurs when harassment becomes intolerable or the problem escalates (Chahal & Julienne, 1999). If this is in fact the case, and there is a tendency for ethnic minority people to report racial harassment only when racial attacks escalate or become unbearable, it is likely that reporting will not increase in areas of high ethnic density, since it is in those areas where racism is less prevalent, and thus less likely to intensify.

Partial, albeit non-significant, support for the social norms model was shown by the third construct, lower tolerance against racism and discrimination, which strengthened as own ethnic density increased. This finding is consistent with narratives reported by a qualitative study of young Black Caribbean people in Britain, that recognise ‘Black neighbourhoods’ as safe areas for Black residents, due in part to implied low tolerance against racism. As one of the study’s respondents declared,

“In this area, it’s Brixton. Yeah, it’s got its problems with shootings and muggings but that mostly drug related. I like living here because I feel safe, my bredrins [friends] live round the corner. I feel safer here in Brixton than in some leafy suburb where you don’t see no Black faces around for miles. Why would I want to live like that? Brixton is renowned to be Black and a bunch of skinheads could never walk through Brixton. [...]”

(Tony, age 29, interview April 2004; Reynolds, 2006; p.282)

Overall, analyses conducted in the FNS to test the social norms model did not support hypothesis 2, although confirming evidence of this hypothesis, as well as of the social norms in general, has been reported by other studies. Nonetheless, analyses reported a significant reduction in experienced racism among ethnic minority people living in areas of high ethnic density, as compared to their counterparts who live in areas of reduced ethnic density.

Results found in Chapter 7 do not necessarily translate into the dismissal of the social norms model, but rather highlight the need to test this hypothesis in other datasets with different measures of racism-related social norms.

10.1.3 Buffering effects model

Chapter 8 examined the buffering effects model and explicitly tested hypotheses 3 and 4, which stated that ethnic minority people living in areas of high ethnic density would report increased social support, relative to ethnic minority people living in areas of lower ethnic density (hypothesis 3), and that the impact of discrimination would be less among ethnic minority people living in areas of high ethnic density as compared to their counterparts living areas of decreased ethnic density (hypothesis 4).

The first part of Chapter 8 consisted of exploring the effects of racism on psychotic symptomatology and self-rated health, in order to later investigate whether this association was modified as ethnic density increased. Results showed a detrimental association between racism and health, whereby ethnic minority people who had experienced racism and discrimination were more likely to report ill health, as compared to their counterparts who had not experienced racist events. These findings, which are consistent with the current literature on racism on health (Bécares et al., 2009b; Bécares et al., 2009a; Karlsen & Nazroo, 2002b; Krieger, 1990; Krieger & Sidney, 1996; Krieger, 1999; Krieger, 2000; Paradies, 2006; Williams et al., 1997; Williams, 1999; Williams & Neighbors, 2001; Williams & Mohammed, 2009), provided the base for the analyses conducted to test the buffering effects model.

After establishing the detrimental impact of racism on psychotic symptomatology and self-rated health in the first part of Chapter 8, analyses set out to test hypothesis 3, and examine whether social support is more prevalent in areas of high ethnic density. Results showed that whereas own ethnic density protects against severe social isolation of ethnic minority people, it does not lead to increased reports of higher social support. Overall ethnic minority density was detrimental for perceived social support for all ethnic groups except for Bangladeshi people, who were less likely to report low social support as overall ethnic minority density increased by 10%. Indeed, for Bangladeshi people, increases in both own and overall ethnic minority

density produced greater perceived social support. This was also the case for Indian people and own ethnic density (results not statistically significant), but not for any other ethnic minority group. This finding supports the argument proposed in section 10.1.2 in relation to different results of ethnic density found between ethnic minority groups, which referred to the possibility that different ethnic groups are more able than others to provide its members with the protective properties of the ethnic density effect.

It is important to note, however, that the measure of social support used in the analyses captures social support that respondents perceive to receive from family and friends, but it does not specify the ethnic minority background of their contacts, or whether they reside in the same area as the respondent. Although this is a measure of social support that is widely used in the literature, it is perhaps not the most appropriate to measure the hypothesised impact that living amongst increased numbers of ethnic minority people has on increased support. The social norms model hypothesises that social support will encourage ethnic minority people to engage in confrontation and social support seeking after experiencing racial harassment (see Chapter 3), and so a scale measuring interaction and support received from people of one's own ethnic background (for own ethnic density) or members of any ethnic minority group (for overall ethnic minority density), would conceivably be more suitable to test this hypothesis. Unfortunately, none of these measures are available in the HSE, and so evidence of the association between social support and ethnic density is limited to that presented in Chapter 8.

Analyses examining the core of the buffering effects model explored whether an increase in ethnic density reduced the detrimental impact of racism on health. Results showed a trend in the reduction of the harm of racism on mental and self-rated health in areas of high ethnic density, although interaction terms were mostly non-significant. The buffering effect on psychotic symptomatology and self-rated health was more noticeable for own ethnic density and for experienced racial harassment, compared with the effects found for overall ethnic minority density and the other measures of racism and discrimination. Overall, the detrimental influence of racism and the moderating effect of ethnic density on health were observed more clearly across

psychotic symptomatology, which is consistent with findings from existing studies which generally support a relationship between racial discrimination and mental health, but are less consistent for physical health (Paradies, 2006). These findings are also consistent with the previous argument mentioned in section 10.1.1, which contended that ethnic density effects are more clearly observed across mental health outcomes, due to the psychosocial focus of the ethnic density hypothesis in relation to the different determinants leading to ill physical and mental health.

In the instances where the buffering effect showed significant results, analyses were conducted to further understand how the ethnic density effect buffered the detrimental impact of racism on health at different levels of ethnic density. Plotted graphs showed a clear reduction in the odds of reporting ill health as ethnic density increased, providing some support for hypothesis 4 and for the buffering effects model. Despite the clear improvement in mental health and overall self-rated health as ethnic density increased (see figures 1 to 3 in Chapter 8), the occasions in which the effect moderating properties of ethnic density on racism reached statistical significance were very limited. Therefore, although results provide initial support for the buffering effects model, a strong conclusion of the protective properties of ethnic density on the effect of racism and health can not be drawn from the findings presented. Nonetheless, this study confirms that the experience of racism is lower in places of higher ethnic density, and indicates a tendency for a weaker association between racism and health as ethnic density increases.

10.1.4 Civic-political participation model

The civic-political participation model was explored in Chapter 9, where analyses examined whether own and overall ethnic minority density were associated with an increase in civic-political participation, measured by participation in civic engagement activities, perceptions of community cohesion, and satisfaction with local services.

Analyses conducted to test the ethnic density effect on the first construct of civic-political participation, civic engagement, did not support the expected protective effect of ethnic density. Although Black African and Bangladeshi people tended to report

greater participation in informal volunteering as own ethnic density increased, for the remaining ethnic minority groups and civic engagement variables, ethnic density showed a detrimental effect or no association. This was particularly the case for overall ethnic minority density, where the detrimental effect of ethnic density was consistent, although not always statistically significant, across ethnic groups and civic engagement measures. This finding is in line with other UK studies that report no significant associations between ethnic density and volunteering or civic participation (Pennant, 2005). It is important to highlight, however, that studies that have measured other forms of civic engagement and political involvement, such as voter registration (Fieldhouse & Cutts, 2007) and voter turnout (Fieldhouse & Cutts, 2008), have found that high ethnic density is associated with increased political involvement. This points to the possibility that the non-significant and non-confirming findings reported in Chapter 9 do not necessarily reflect the fact that ethnic density does not impact on the civic engagement and political participation of ethnic minority people. Rather, it is likely that the measures available in the CS are not validly capturing increased participation. Ethnic density has been suggested to allow the development of institutions that enable ethnic minority participation (Peach, 1966), and it is possible that the measures available in the CS are not capturing participation which might be occurring in these specific types of organisations. For example, whereas variables used to examine this model measured participation at the local level, they did not measure whether civic and political activities were ethnic specific. Support for this difference is provided by qualitative studies of young Black Caribbean people, which have found that whereas a majority of the respondents did not vote in the national and local government elections, most of them actively participated in ethnic social events and community associations, such as Black-led church groups, youth groups and Saturday/supplementary schools (Reynolds, 2006). Other qualitative studies that provide support for the civic-political participation model (Phillips et al., 2007; Whitley et al., 2006) have reported that ethnic minority people want and like participating in networks that they feel mirror their own values (Whitley et al., 2006; p.381), and that ethnic minority residents of areas of high ethnic density recognise the importance of community spaces which give access to amenities, facilitate religious

and cultural observance, and enhance a sense of belonging (Phillips et al., 2007; p.224). These community spaces have been reported to create feelings of familiarity, security and support (Phillips et al., 2007), all of which resonate with the ethnic density hypothesis. Furthermore, in areas of low ethnic density, ethnic minority residents have been found to prefer services and facilities outside the neighbourhood, including culturally specific services only available in areas of higher ethnic density, even if this involves long and inconvenient commutes (Whitley et al., 2006). This literature supports the possibility that despite not finding confirmatory results in Chapter 9, this is not due to a lack of political involvement in areas of high ethnic density, but rather to poor construct validity of the measures analysed.

The two other constructs analysed to empirically test the civic-political participation model, perceptions of community cohesion and satisfaction with local services, showed more confirmatory results, particularly for own ethnic density. Examinations of the ethnic density effect on perceptions of community cohesion showed that as own ethnic density increased, so did reports of improved community cohesion. This trend was true for Indian, Bangladeshi, and Pakistani people, but not for Black Caribbean and Black African people, for whom an increase in own ethnic density translated into a worsening in the perceptions of community cohesion. It is interesting to note, however, that despite these latter findings, as ethnic density increased Black African people were more likely to agree that their area was a place where people respected ethnic differences, and where people from different backgrounds got on well together. This was mirrored by all other ethnic minority groups, and was found for both own and overall ethnic minority density. This is an important and timely finding, given the recent literature on increased diversity and its association with a decrease in social capital and an erosion of generalised trust (Goodhart, 2004; Putnam, 2007; Stolle et al., 2008). Discourses on the undesirable social consequences brought about by increased diversity have been widely portrayed in the media (see for example *The Downside of Diversity* in the *Boston Globe* of August 5, 2007; *Immigration is bad for society, but only until a new solidarity is forged* in *The Guardian* of 18 June, 2007; *Diversity and its discontents* in *The Washington Post* of March 30, 2008; or *Home Alone* in *The New York Times* of June

17, 2007, not to mention other articles published in more conservative media outlets), which can permeate into people's perception of ethnic minority people, migration, and their impact on their communities' well-being, creating resentment and further promoting prejudice. Reports that as own and overall ethnic minority density increases, ethnic minority people report an increased perception of respect and cohesion in their communities is a positive finding that should be further explored and publicised to counteract other, more unfavourable images of ethnic density.

Analyses of the impact of ethnic density on perceptions of community cohesion showed that for Black Caribbean people, an increase in own ethnic density was significantly associated with a decrease in the odds of reporting that people can be trusted and of feeling safe in the area after dark. This was found for Black African people as well (results not statistically significant), but the opposite was found for all other groups. It is unclear why in this case ethnic density would impact differently on Black Caribbean people, but a few possibilities are suggested later on in this chapter.

The last construct of the civic-political participation model, satisfaction with local services, showed a trend of increased reports of satisfaction across ethnic minority groups as own ethnic density increased. Results were seldom statistically significant, but the direction of the effect supported an own ethnic density hypothesis.

The last two constructs of the civic-political participation model aimed to measure the consequences of the hypothesised increase in political participation in areas of high ethnic density. Despite the fact that a cross-sectional dataset was analysed, and thus causality could not be established, the civic-political participation model hypothesised that increased political participation would result in improved local services, which would then translate into better health (see Chapter 3). Studies in the US have shown that ethnic minority people with greater political participation and political power are better placed to influence decisions about resource allocation to improve relevant welfare and services, and that civic and social institutions and neighbourhood associations are stronger when greater political power is held by ethnic minority people (LaVeist, 1992). Although variables available in the CS are not able to measure resource allocation and improvement of relevant services, results of this study partially supported that increased ethnic density, particularly own ethnic density,

impacts on the perception of local services, and on some aspects of community cohesion.

10.1.5 Black Caribbean ethnic density

It is a common theme in this study that the ethnic density effect is not consistent across ethnic groups. However, in the case of Black Caribbean people, a salient detrimental effect of ethnic density can be observed throughout several outcomes. For example, analyses of the direct association between ethnic density and health showed that own ethnic density was least protective for Black Caribbean people, who had detrimental effects of own ethnic density on four out of the six health outcomes examined. Also, analyses of the prevalence of racism and discrimination in the UK showed that Black Caribbean people reported higher prevalence of experienced verbal racist attacks, any racist attacks, and employment discrimination in the FNS, and reported the highest expected organisational discrimination in the CS. Analyses of the impact of ethnic density on perceptions of community cohesion showed that for Black Caribbean people, an increase in own ethnic density was associated with a statistically significant decrease in the odds of reporting that people can be trusted, and that they feel safe in the area after dark, which was not found for any other ethnic minority group. In addition, studies that have examined the impact of perceived ethnic density on health have reported that ethnic minority people who perceive their local area to contain a greater proportion of people of the same ethnic background tend to be less likely to have a long-term limiting illness, with the exception of Black Caribbean people (Stafford et al., 2009a). Other studies report that for Black Caribbean people, perceived ethnic density is associated with lower social cohesion and greater fear of racial attacks (Stafford et al., 2009c). In general, results of this and other studies show a pattern of detrimental results of ethnic density for Black Caribbean people. Two possible explanations, described below, are proposed to understand these findings: increased internalised racism and oppression, and contextual and compositional effects of Black Caribbean areas.

Dangerous or criminal are traits usually ascribed to Black people (Greenwald et al., 2003). These stereotypes are further perpetuated and exacerbated by current media

in several ways, which creates an image of Black youth inclined to violence and crimes as a result of negative influences of hip-hop music and culture (Apena, 2007). It is of no surprise that qualitative studies have found that Black people believe they are being portrayed negatively in television programs, either as criminals, dysfunctional parents, or as psychologically ill characters (Commission for Racial Equality, 1998). These negative, longstanding stereotypes infiltrate peoples' psyche and materialise into real-life settings. For example, experimental weapon-holding studies have shown Black people to be incorrectly shot at more frequently than White people, and objects they hold are more likely to be recognised as guns than those of White people (Correll et al., 2002; Greenwald et al., 2003; Payne, 2001; Payne et al., 2002). This has been found to be the case not only among White participants, but among Black participants also (Correll et al., 2002). Other experimental studies have found that the presence of unfamiliar Black males produce threat-relevant physiological reactions among non-Black individuals (Blascovich et al., 2001; Phelps et al., 2000), and that when in dark situations, individuals are more likely to report derogative stereotypes about Black people (Schaller et al., 2003). In the educational arena, Black children have experienced underachievement and exclusion for decades, and have generally been regarded as problematic (Christian, 2005; Rhamie & Hallam, 2002), and stigmatised as aggressive (Bourne et al., 1994).

Negative stereotypes are also present in the criminal justice system. It has been suggested that because of where they live and how they dress, Black people are discriminated against by the police and are always viewed as potential suspects (Apena, 2007). Black people are over-represented in the prison system, making up over 10% of the male and over 20% of the female incarcerated population, while only representing 2% of the overall UK population (CRE, 2002). In addition, the Metropolitan Police has been publicly accused of institutional racism (MacPherson, 1999) and racial profiling, which has not only been directed at civilians, but at their own members and possible recruits as well, as evidenced by British police services being accused of under-recruitment and racial harassment (Cashmore, 2001).

Negative stereotypes about Black people not only have a detrimental impact on the public, educational, and criminal justice domains, but may also have strong

implications for self perception, as documented by research on stereotype threat and internalised racism. The institutionalisation and normalisation of oppression in everyday life have been suggested to involve the internalisation of the dominant group's values, norms and ideas (Speight, 2007), leading to self-stereotyping and internalised racism. Internalised racism has been defined as the acceptance by members of stigmatised ethnic groups of detrimental messages and stereotypes about their own abilities and intrinsic worth, including self-devaluation, resignation, helplessness, and hopelessness (Jones, 2000; Williams & Williams-Morris, 2000). A 1998 survey from the Commission for Racial Equality reported that Black African and Black Caribbean people felt they were judged based on widely held negative stereotypes of them as a group, particularly stereotypes characterising them as aggressive, rude, and using drugs (CRE, 1998). Further, a qualitative study of incarcerated Black youth in Lewisham found that respondents internalised and accepted negative stereotypes about Black culture (Apena, 2007).

Stereotype threat has been defined as the event of a negative stereotype about one's group becoming self-relevant (Steele & Aronson, 1995), and as a discomforting or distracting concern about being viewed and treated stereotypically (Marx, Brown & Steele, 1999). It has been associated with decreased intellectual performance (Steele & Aronson, 1995; Wout et al., 2009), and increased high blood pressure (Blascovich et al., 2001). Stereotype threat is distinguished from internalised racism in that it is a situational threat, not dependent on any internalised belief in the particular stereotype (Marx, Brown & Steele, 1999), and shown to activate only when individuals perceive that it is both possible and probable that they will be negatively stereotyped (Wout et al., 2009). It has been suggested that in order for individuals to feel the threat of being negatively stereotyped, they must first be aware that a negative stereotype can be applied to them in their present setting (Wout et al., 2009).

Internalisation of racism and negative stereotypes on the part of Black Caribbean people relate strongly to findings reported by other studies (Stafford et al., 2009a; 2009b), which show that increased perceived Black Caribbean ethnic density is associated with lower social cohesion and greater fear of racial attacks (Stafford et al., 2009b). These findings, which are perhaps due to internalised negative stereotypes and

racism per part of Black Caribbean people, are suggested to be an expression of internalised neighbourhood racial stigma (Sampson & Raudenbush, 2004), produced by internalised racism and negative stereotypes. It is possible that, in closer relevance to the stereotype threat hypothesis, when being prompted about questions regarding their area, Black Caribbean respondents were being made aware of the stereotype of violence and aggression usually applied to their ethnic group, and were thus more likely to report fear of racial/religious attacks and low social cohesion in their neighbourhood.

This first explanation of internalised racism and negative stereotypes, builds on the background about oppression and negative stereotyping of Black people to interpret the findings that, in general, Black Caribbean people in this study experience a detrimental impact of increased own ethnic density on several outcomes.

As a second proposed explanation, it is also possible that as Black Caribbean ethnic density increases, negative stereotyping and the oppression from other, non-Black area residents increase as well, translating not only into worse health as Black Caribbean ethnic density increases, but also into decreased generalised trust and an increased feeling of being unsafe. This second explanation behind the detrimental impact of ethnic density on Black Caribbean people stems from the characteristics of the areas in which Black Caribbean people reside, such as the employment situation, industrial history, urbanicity and urbanisation, which, when Black Caribbean people become a visible minority, play out to further oppress and victimise Black Caribbean residents. Black Caribbean ethnic density ranges from 0% to 24% in the HSE and the CS, and from 0% to 32% in the FNS, which measures ethnic density at the ward level. Given the limited range of Black Caribbean ethnic density, it is possible that only in the few areas where Black Caribbean people enjoy the highest ethnic density will the protective properties of ethnic density take effect. Unfortunately, the data and methodology used in this study do not allow for an empirical investigation of this hypothesis, which warrants further exploration, ideally employing mixed methodology consisting of spatial, historical, and qualitative analyses. This would allow to better understand whether the compositional characteristics of the areas where Black Caribbean people reside, as well as the historical context of those areas, and the timing

and reasons behind Black Caribbean's settlement patterns differ between areas and produce differing ethnic density effects.

10.2 Study Limitations

The main limitation of this study is that, due to the cross-sectional nature of the data, it is not possible to discern from the results presented whether living in a low ethnic density area precedes poor health and experiences of racism and discrimination, or vice versa. However, Halpern and Nazroo (1999) tested in their study the possibility that the ethnic density effect was due to social causation, social selection or drift, and acculturation, and based on their findings they argue that the ethnic density effect can not be fully explained by these phenomena, and that the effect found reflects the benefits of group density, which notably reduce the exposure to racial harassment and provide increased social support from other ethnic minority people (Halpern & Nazroo, 1999).

This study analysed objectively measured and self-reported health outcomes. The self-report measures of health and racism that are used in this study suffer from the same cognitive and social limitations as other self-report variables (Blank et al., 2004; Krieger, 1999; Stone et al., 2000). Notwithstanding, the validity of self-report health measures has been demonstrated by showing their associations with mortality, psychological distress, and poor functioning (Farmer & Ferraro, 1997; Idler & Benyamini, 1997; Krause & Jay, 1994; Miilunpalo et al., 1997; Wannamethee & Shaper, 1991). Similar assessments of the measures of experienced discrimination employed in this study are not possible, but measures such as these have been used in a number of other studies exploring the impact of racism on health (Halpern & Nazroo, 1999; Harris et al., 2006; Karlsen & Nazroo, 2002a; Karlsen et al., 2002; Karlsen et al., 2007).

This study measured the ethnic density effect at the ward and MSOA level. It is possible that the effects of ethnic density are stronger, and thus more easily observed, at a lower level of geography. However, given concerns of the data holder that

analyses at a lower level could potentially identify survey respondents, data could not be obtained at a more local level. In addition, analysing data at artificially placed boundaries, such as the MSOA and electoral wards, analytically limits the construct of the ethnic density effect. It is indeed a plausible event that individuals living in close proximity to each other, thus sharing similar neighbourhood effects, are assigned to different areas. At the same time, it is possible that respondents are assigned to a particular MSOA, but that they socially interact in an adjacent one. Furthermore, this study did not account for other social interactions outside the respondents' place of residence, such as in work settings or those experienced while commuting. It is also possible that a different definition of ethnic density, including other characteristics such as shared language, nativity, religion, and immigration status, might also be useful in deciphering the protective effects of living among one's own. However, such data was not available at the area level, and thus analyzing these differing definitions were not possible in the present study.

Analyses conducted in Chapters 6 to 9 are based on small numbers of participants for some outcomes, particularly experienced racism and social norms, so this study is limited by low statistical power, which creates a difficulty when detecting small effect sizes. However, the three datasets analysed in this study are some of the largest surveys focused on ethnic minority populations. Presently there are no UK datasets with substantially larger numbers of participants to address this limitation.

Finally, whereas the datasets analysed in this study provide a wide array of relevant variables to analyse the ethnic density effect and its hypothesised pathways, the measures analysed do not fully capture the constructs proposed to be operating behind the proposed mechanisms, particularly those measuring social support and racism-related social norms. These should be tested in other datasets with more suitable measures.

10.3 Recommendations for future research

Throughout the discussion of study findings, several recommendations for future research have arisen to improve our understanding of the ethnic density effect. These include:

- Replicating the analyses conducted in this study to test the hypothesised pathways behind the ethnic density effect with different measures, particularly those capturing racism-related social norms and social support. In order to adequately measure these pathways, new measures need to be included in future surveys.
- Employing interdisciplinary methodologies in the research arena of ethnic density, including spatial, historical, and qualitative methods, to conduct a detailed exploration of the detrimental effects of own ethnic density on Black Caribbean people.
- Examining the ethnic density effect at a more relevant, local level of geography, with the addition of socio-ethnic interactions experienced in other relevant settings (e.g. ethnic composition of the work environment).
- In addition, further work should widen the definition of ethnic density to include other relevant characteristics such as religion and ethnic identity.

10.4 Conclusions

This study explored the effect of ethnic density on several health outcomes, and examined three pathways by which the ethnic density effect is hypothesised to operate. Results showed that protective properties of ethnic density differ across health outcomes and are more salient for mental health; that they vary between ethnic groups; and that the effect of ethnic density is somewhat stronger for own ethnic density, compared with overall ethnic minority density. Results of the three hypothesised pathways showed that although ethnic minority people report decreased prevalence of experienced racism in areas of high ethnic density, this is not due to racism-related social norms as analysed in this study. Results also showed that ethnic density protects ethnic minority people from severe social isolation, but that it does not lead to greater social support, as measured in the construct available in the HSE. Findings of the

buffering effects model indicate a tendency for a weaker association between racism and health as ethnic density increases. Finally, ethnic minority people were not found to engage more in civic and political activities as ethnic density increased, but they were found to be more satisfied with certain local services and to report greater community cohesion, as shown by an increased tendency to report that people respect ethnic differences and get on well together.

The social and spatial segregation of new migrants and established ethnic minority groups has become a highly politicised and sensitive issue (Phillips, 2007). Following the 2001 urban disturbances in the former textile towns of Bradford, Oldham and Burnley in northern Britain, current political discourses in the UK represent ethnic minority segregation as a sign of failure, and as the result of ethnic minority groups' reluctance to adapt to the host culture (Phillips, 2007). This has been followed by a recent academic trend to depict ethnic minority concentration as a problem (Phillips, 2007), including suggestions that ethnic density undermines a sense of community and social cohesion (Alesina & Ferrara, 2000; Costa & Khan, 2003; Glaser, 1994; Putnam, 2007). Attempts to engineer patterns of ethnic minority settlement have led public policy to respond to the tendency for new migrants to concentrate in London and other major cities by actively seeking to disperse people more widely, for example through the NASS (National Asylum Support Service) dispersal programme, which has placed immigrants in areas with a limited previous history of accommodating new migrants (Robinson & Reeve, 2006). Results of this study dispute these discourses and provide evidence for positive outcomes emerging from the residential concentration of ethnic minority people, particularly decreased experiences of racism, increased buffering of the detrimental effects of racism on the health of ethnic minority people, and ultimately, improved mental health. Results from this study contribute to our understanding of the individual and community assets available to ethnic minority residents living in areas characterised by high concentrations of co-ethnics, and to a broader understanding of the construction of healthy communities.

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