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Ludi Simpson, Vasilis Gavalas and Nissa Finney

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Abstract

Ethnically diverse urban areas are often strongly influenced by the demographic consequences of immigration. A dynamic model of population, housing and social change following immigration is proposed and then tested using a time-series of census data for northern English towns. The results show how natural growth generates dispersal of immigrant populations to new clusters. They chart the changing nature of cities and challenge the interpretation of clustering as a negative phenomenon representing retreat and separation. Instead, the focus is moved to indicators of migration, demand for housing and services, and social equality. The post-immigration demographic cycle proposed is a general one that may be tested in many other situations and countries.

Introduction

The association of immigrant concentration with poverty has frequently led to fears of separate development and violent confrontation, which make integration more difficult. However, a historical and demographic viewpoint shows that residential separation and social integration are not as opposed as they linguistically appear to be. This paper sets out

such a historical and demographic approach, providing an agenda for research on the processes of population change. The proposed model suggests that patterns of residence by ethnicity must be understood in relation to both natural growth of immigrant-origin populations in inner urban settlement areas and simultaneous migration away to other areas. The extent of social stratification over time and across generations is a key secondary

Ludi Simpson and **Nissa Finney** are in the Cathie Marsh Centre for Census and Survey Research, Crawford House, University of Manchester, Oxford Road, Manchester M13 9PL, UK. Fax: 0161 275 4722. E-mails: ludi.simpson@manchester.ac.uk and nissa.finney@manchester.ac.uk.

Vasilis Gavalas is in the Department of Geography, University of the Aegean, University Hill, 81100 Mytilene, Greece. Fax: +30 22510 36409. E-mail: bgav@geo.aegean.gr.

feature of the paper. A case study provides evidence of the fruitfulness of the model.

Sociological and statistical studies of residential racial segregation evolved from the Chicago School throughout the 20th century. Their work measured the evolution of African American ghettos in the northern US, contrasting their separation from White residential areas with the gradual dispersal of immigrants of European origin (Duncan and Duncan, 1955; Lieberman 1963; Taeuber and Taeuber 1965). In western Europe, immigration during and after the Second World War gave rise to population groups defined racially; by the end of the 20th century, not only the flow of immigrants but neighbourhood and city ethnic composition had become a common academic and policy concern. In the measurement of residential composition in both the US and European contexts,

Segregation has an outspoken negative connotation and is predominantly focused upon the ethnic dimension. ... The fear [of ghettoisation] is based on the idea that a sequence of events may happen which is regarded as unwanted. That sequence is: increasing spatial segregation will lead to increasing separation of different social and ethnic classes and population categories; in its turn, that will produce ghetto-like developments and will finally result in the disintegration of urban society (Fortuijn *et al.*, 1998, p. 367).

In Britain, racial geographical patterns have periodically been highlighted as problematic

by media and commentators, most recently in 2005 following bombings in London (Phillips, 2005). The ensuing debate (Dorling, 2005; GLA, 2005) suggests the importance not only of what is studied but also the paradigm within which the evidence is viewed. It is argued here that an emphasis on patterns of ethnic composition is not as helpful as an examination of the process by which cities develop their ethnic composition. The approach outlined in this paper provides both a prognosis and empirical results helpful to policy development, which can be tested in any location.

Table 1 illustrates the limitation of focusing only on ethnic composition. The upper part of the table clarifies that the number of areas in England with concentrations of non-White population has been growing and that the proportion of all non-White residents who live in such areas has also been growing. The conclusion that there is retreat into enclaves or ghettos is not sustainable, however, because this pattern is not a result of movement towards 'minority areas' by minority residents. The lower part of the table shows that the net impact of migration within the UK is outwards, to reduce the concentrations of non-White residents, and the out-movement of non-White residents is greater than the out-movement of White residents. The role of this paper is to investigate the deeper socio-demographic processes at work that give rise to changing ethnic composition.

Table 1. The concentration and dispersal of minority population groups

<i>Concentrations of non-White population in England</i>	1991	2001
Electoral wards with a non-White majority	57	118
Percentage of all non-White residents who live in these areas	15	23
<i>Net impact of migration within the UK, 2000–01</i>	Non-White	White
118 Electoral wards with a non-White majority in 2001	–14 716	–9 747

Source: Census 1991, Table L06, and Census 2001, Tables ST101 and KS24, for electoral wards of England.

Before hypothesising the nature of these processes in some detail, it is worth highlighting a contrast within relevant literature, between a focus on quantifiable patterns of racial segregation and historical studies of immigrant settlement more concerned with explanations and experiences. Studies have identified several quantitative dimensions of racial segregation, leading to the term 'hypersegregation' to denote those situations where segregation is evident by all of its aspects (Massey and Denton, 1989; Wilkes and Iceland, 2004). In Europe, ghettos are rarely encountered (Peach, 1996a), but increased concentrations of populations rooted in recent immigration are identified and viewed with concern (Johnston *et al.*, 2002). In Britain, the concern with concentrations of Muslim populations has been politically evident since riots in northern British cities in 2001 and the rise of the US government's 'war on terror' supported by the British government (Cantle, 2001; Phillips, 2005). "Ethnic polarisation, leading to fears of accelerating separation" is regularly cited as one of the major barriers to the recovery of British cities and indeed to national sustainability (Power, 2007, p. 6).

US and European studies of residential segregation have in common a focus on the local proportion of minority populations. This is taken as the target of analysis, such that low proportions are seen as positive and high proportions a result partly of failing policy and partly of failing commitment to integration on the part of minority individuals and leaders themselves. Literature about models of ethnic relations and integration focuses on creating area typologies and assessing how places have changed (for example, Boal, 1999; Forrest *et al.*, 2006). The processes of change themselves are relatively neglected; and, when they are considered, primacy is given to economic drivers of spatial mixing. In the UK context, for example, Boal

(1999) suggests five scenarios—assimilation, pluralism, segmentation, polarisation and cleansing—which form a spectrum of urban ethnic relations. Forrest *et al.* (2006) propose a continuum of ethnic residential patterns from homogeneity (polarised enclave or ghetto) to heterogeneity (mixed assimilation) to homogeneity (isolated host society) represented by six types of area. Forrest *et al.*'s broad theory for changing spatial patterns is economic convergence and resulting equality in the housing market. For these writers, "stability is the dominant characteristic of urban ethnic relations" (Boal, 1999, p. 595). The main scientific weakness in the current measurement of segregation is its focus on indices based on the local proportion of minorities, without measurement of the dynamic and historical causes of residential clustering.

If studies of segregation tend to ignore causes and population dynamics, studies of immigration are more frequently historical. In the UK, historical studies of the older migrations of Jews, Huguenots and Irish are less well quantified than modern migrations in the time of computerised census output, but emphasise positive causes and consequences of residential clustering in the process of immigrant integration. Writers have emphasised that the residential concentration of Jews was a result of congregative as well as segregative forces; a consequence of positive identification as well as defensive protection (Kantrowitz, 1981; Waterman and Kosmin, 1987). Subsequent upward socioeconomic mobility has resulted in regroupings of the Jewish population, re-identifications that have affected residential patterns—for example, in London and Manchester (Newman, 1985; Valins, 2003).

Huguenot immigrants of the 16th–18th centuries similarly clustered "perhaps for several generations, before slowly being

assimilated” (Gwynn, 1985, p. 2). The communities they established were not free from experiences of prejudice but were generally welcomed because of the refugees’ Protestant religion (Vigne and Littleton, 2001).

Irish immigration to Britain is a third example of dynamic processes of clustering and dispersal that accompany settlement. In the mid 19th century, up to a third of the population of major cities such as London, Manchester, Birmingham and Glasgow were Irish, but by the 1870s, dispersal was evident (MacRaild, 1999). The importance of cultural and religious networks remained and studies in the late 20th century revealed the persistence of Irish clusters together with social integration (for example, Busteed *et al.*, 1992; Busteed, 2000; Neal, 2000).

These historical studies point to the social and economic advantages of clustering by recent immigrants, to provide support in a familiar linguistic, religious and familial environment. In modern times, labour demands of the receiving country are geographically specific and housing available to immigrants is often concentrated in the poorest inner-city areas shunned by the indigenous population.

Over time, immigrant families and their offspring have generally dispersed from original settlement areas of poor housing as the labour and housing markets allow many to find better living conditions. Where cultural practices and beliefs remain strong, and especially where these dictate marriage within a restricted community, clusters remain but are more dispersed in the style of a mosaic. Peach (1996b) has also distinguished between voluntary clustering due to cultural affinities and forced segregation due to housing and other discrimination.

At first sight, the historical view of immigrant dispersal from and reformulation of clusters may seem to be at odds with the increase in residential concentrations of

particular ethnic groups measured in recent years. This paper offers a paradigm within which the paradox of growing concentrations and dispersal can be accommodated. It is primarily a demographic view that sees changing population composition as the result of a balance of natural population growth among young populations on the one hand and migration away from settlement areas on the other hand. It relies not on static indices of segregation but rather recognises the dynamism of European populations. In this framework, residential segregation can be monitored and predicted and sometimes influenced via either of its two components: natural growth and migration.

The paper provides a discussion of this dynamic paradigm in the next section, suggesting a model of stages of population change after immigration and hypotheses by which it can be verified and developed. The remaining sections of the paper describe a case study of population dynamics in two northern English towns, describing in turn the context, the data and methods used, and the results relating to population, housing and social change in the 1990s. An exhaustive test of the model is not possible in a single paper. The case study is intended to provide a persuasive illustration of the potential of this approach to studies of ethnic composition. Discussions both of the case study and of the potential benefits to planning and public policy of this demographic approach to racial composition conclude the paper.

A Model of Population Dynamics after Immigration

Here we propose a model that expects rapid population growth following immigration, leading to a degree of isolation and segregation, but which is accompanied by a counter-current of dispersal. Dispersal is to some extent the result of population growth, such that the

two processes may be thought of as developmental stages. However, the length of each stage is not pre-determined and an extensive overlap between the two stages is expected. Each stage consists of several contributing processes which are detailed here. The section ends by proposing that, while ethnic groups' high fertility after immigration may not continue in the second generation born in the UK, distinct household and employment characteristics are more persistent. A short explanation precedes the statement of each process as a hypothesis, which is deliberately phrased in a testable but general manner, allowing for further hypotheses of greater nuance. While this paper is focused on quantitative evidence, qualitative interview and ethnographic methods have much to offer elucidation of the processes suggested by this model.

Population Growth in Geographical Clusters

The role of labour shortages in attracting pioneer migrants to specific industrial and geographical sectors reiterates well-established theory which requires continual re-evaluation with modern data. Continued clustering of ethnically similar residents is to be expected, since new immigrants are attracted to people who are culturally familiar and supportive; they can provide the social and economic capital necessary to survive in foreign conditions after the demand for labour has ceased to be strong. The definition of 'ethnically similar' is a matter for empirical research. Chain migration (following in pioneer footsteps) and family building (joining spouses) bring new immigrants from areas much closer to the origins of pioneers than ethnic categories used in official data collection can distinguish (specific Caribbean islands and specific Indian and Pakistani regions; for example, Ballard 1994). The process as a whole can be described as follows:

1. *Pioneer immigration results in settlement areas of ethnically similar population and subsequent immigrants are attracted to these settlement areas.*

The young age structure of migrants suggests relatively few deaths, creating a natural momentum of further population growth. The balance of new immigration and natural growth depends on many factors, including the legislative permission for spouses to join pioneer immigrants. With time, the number of potential spouses within the group expands in the host country, so that the pressure for immigration of spouses decreases even when endogamous marriage (within the same group) is important. In general, one might expect that

2. *Settlement areas grow rapidly from relatively few deaths compared with the number of births and natural growth becomes greater than immigration.*

This sequence of pioneer immigration of young workers, chain immigration and family building leads one to expect rapid population growth in geographical clusters. One would expect as a consequence increased concentration of ethnic or racial minorities in relation to the existing population.

Dispersal

The impact of growth on the existing population depends initially on the availability of local housing. The immediate likelihood is a reduction of in-migration to the area from other parts of the country. This may explain the net loss of White population as much or more than the much-claimed and little-researched 'White flight'. Local housing is insufficient for the needs of the immigrant families, especially when their children become adults seeking their own housing. To some extent, dispersal is a direct result of too few dwellings for the growing population.

However, economically successful families will also seek better housing conditions. In summary

3. *Population growth limits the in-migration of all groups to immigrant settlement areas and creates pressure to disperse from settlement areas.*

However, the distinction between simple insufficiency of dwellings and more complex social stratification leads to an expected relation between the distance and social nature of migration

4. *Migration gives spatial form to social stratification, such that economically more successful members of the ethnic group move further to achieve better housing.*

Religious and cultural facilities and more simply family and social contacts shape the destination of migration, both by creating new clusters and by maintaining proximity to large concentrations that support greater facilities

5. *Internal migration maintains clusters of ethnically similar population, either in new locations or by enlargement of settlement areas.*

Thus dispersal results in a geographical spread of ethnic minority populations with family origins in recent immigration, but clustering will remain noticeable.

Socio-demographic Change

Thus far, the posited combination of natural growth and dispersal could explain continued high indices of segregation in spite of movement away from settlement areas. A further set of expectations concerns divergence between first- and second-generation minority populations and convergence between diverse populations over time. They are frequently the subject of speculation and assumption in

social forecasting and in regional development plans.

Fertility of immigrant populations is often high, partly due to the fact of family building taking place in the same period for most of the young immigrant workers of the same origin, and partly due to the higher expectations of family size in countries of origin. Over time, one would expect a greater spread of family stages within the minority population and a growing proportion of women born and educated locally. Whether in the longer term fertility rates completely converge with or remain somewhat different from those of the indigenous population is less predictable and may depend on employment and education trends as well as cultural preferences. However, in general, one would expect that

6. *Fertility rates decline after the initial immigration period.*

Housing pressure in pioneer immigrant settlement areas may impose the necessity for households to share the same housing units. In Britain, there is a relatively high proportion of extended households of two or more related families in the Indian, Pakistani and Bangladeshi populations, but a higher proportion of single-adult households in the Caribbean population. A key assumption for housing plans is the extent to which current extended households are led by economic necessity and therefore represent hidden demand for smaller housing units; the alternative of cultural preference would represent continued demand for larger housing units. This leads to the following hypothesis

7. *Household formation differences between groups are persistent over time and persistent outside immigrant settlement areas.*

A similar argument may be made regarding the commonly very low economic activity among Muslim women in Britain, which may or may not change as the composition of the

Muslim population becomes largely born and educated in Britain. Men among the Muslim populations also have relatively low economic activity. The following hypothesis requires empirical testing with different outcomes to be expected for different minorities, men and women, and quite possibly for different locations:

8. *Economic activity differences between groups are persistent over time and persistent outside immigrant settlement areas.*

In summary, the model and hypotheses of this section address broad demographic and socio-demographic indicators of natural change, migration, labour participation and household structure as they may be affected by immigration regionally in the medium and long term. Similar hypotheses would be developed straightforwardly for other indicators of importance to broader health and community development. They form an agenda for quantitative research of importance to planning. Qualitative research has the capability to explain the political and socio-cultural causes of change. As a by-product, such research will provide a greater understanding of ethnic composition and its development. The model suggests common processes of population change which will maintain considerable residential clustering for at least several generations after immigration. Policies of social equality and cohesion alter the speed of dispersal and address the quality of life for all residents but, if this model of population change is correct, they cannot expect to affect strongly levels of geographical clustering measured by indices of segregation.

Case Study: Oldham and Rochdale in Northern England

The next three sections describe a study of two Metropolitan Districts in northern

England which quantitatively address the model and most of the processes defined earlier. Investigation of housing pressure and persistence of economic differences (the third and eighth processes) would require more detailed data on housing vacancies and economic activity than were available.

Rochdale and Oldham are neighbouring districts to the north-east of Manchester. The two districts are typical of towns outside London which received immigrants in the second half of the 20th century. Along with many towns across Lancashire and Yorkshire, the local textile industry responded to international competition in the 1950s by expanding factory operating hours and recruiting to fill the extra overnight shifts. Recruitment was often from rural areas of Pakistan, including what is now the country of Bangladesh. The move did not save the textile industries from major decline, but gave impetus to immigration in the 1960s and 1970s to many northern towns of Britain. In 2001, each district's population was a little over 200 000. Each included between 13 000 and 16 000 people with family origin from Pakistan, significant populations from Bangladesh and smaller populations from India and the Caribbean (Table 2). The total population with ethnic group recorded other than White in 2001 was 30 000 in Oldham and 23 000 in Rochdale. Immigration continues from Pakistan and Bangladesh at the rate of approximately 400 per annum according to the local monitoring by the two local government councils. In both districts, about half of the populations of Pakistani and Bangladeshi origins were born in the UK. Because of the composition of these towns, the focus of the case study is on the Asian population. This focus is particularly relevant to the current public discourses on the integration of Muslim populations.

The population pyramids of Figure 1 show the young age structure of the Pakistani and Bangladeshi groups. Cohorts aged under 20

Table 2. Populations of Oldham, Rochdale, and England and Wales, 2001

	<i>Oldham</i>		<i>Rochdale</i>		<i>England and Wales</i>	
	<i>Number</i>	<i>Percentage</i>	<i>Number</i>	<i>Percentage</i>	<i>Number</i>	<i>Percentage</i>
Total persons	217 200	100	205 200	100	52 041 900	100
White	187 100	86	181 900	89	47 520 900	91
Black	1 200	1	600	0	1 139 500	2
Indian	1 500	1	800	0	1 036 700	2
Pakistani	13 600	6	15 800	8	714 800	1
Bangladeshi	9 800	5	2 600	1	280 900	1
Other	3 900	2	3 500	2	1 349 100	3

Source: 2001 Census.

are double the size of those aged over 30 and relatively few are aged over 70. Male pioneer immigrants are now aged in their 60s, somewhat older than their wives. This young age structure of both populations is a major source of population growth.

Oldham had been one of three northern towns affected by destructive disturbances in the summer of 2001 in which mainly Asian young people confronted police (Kundnani, 2001) and which official concerns blamed partly on concentrations of Asian population (Cantle, 2001; Denham, 2001; Ouseley, 2001). When the Rochdale and Oldham Housing Market Renewal programme was awarded £54 million in 2004 to pave the way for major housing development, it was concerned to develop housing in ways that would enhance community cohesion and reduce the isolation of all communities. The programme prioritised 31 Housing Market Renewal (HMR) neighbourhoods for improvement. It wished to know how the ethnic composition of the two districts and neighbourhoods could be predicted to change.

The case study uses the first UK Census which measured ethnic group, in 1991, to establish the state of the immigrant-origin population 20 years after major immigration, when the model outlined earlier would predict rapid growth in geographical clusters. It uses the change in the subsequent 10 years to the following census, in 2001, to establish the nature

of population change at a time when the pioneer immigrants' own children, born in the UK, were forming their own families.

Data and Methods

The 1991 and 2001 Censuses provide by far the most complete datasets referring to the 'ethnic group' of individuals and the head of each household. Individual residents' data are not disclosed but are made available as cross-tabulations of ethnic group categories with age structure and social indicators. All the data were available for the two districts as a whole and further sub-divided for the small 'output areas' from each census. Considerable estimation was required first to make the geography, ethnic group categories and other detail compatible between the 1991 and 2001 datasets and, secondly, to estimate the impact of migration between the two censuses separately from natural change.

The two great advantages of data conversion from census areas to the housing market neighbourhoods used in this paper are comparability over time and political currency. Geographical data conversion adds only a little noise to the data because the small size of census output areas relative to the target neighbourhoods ensures a high degree of fit (Simpson, 2002).

Six ethnic group categories were used wherever possible, which are comparable

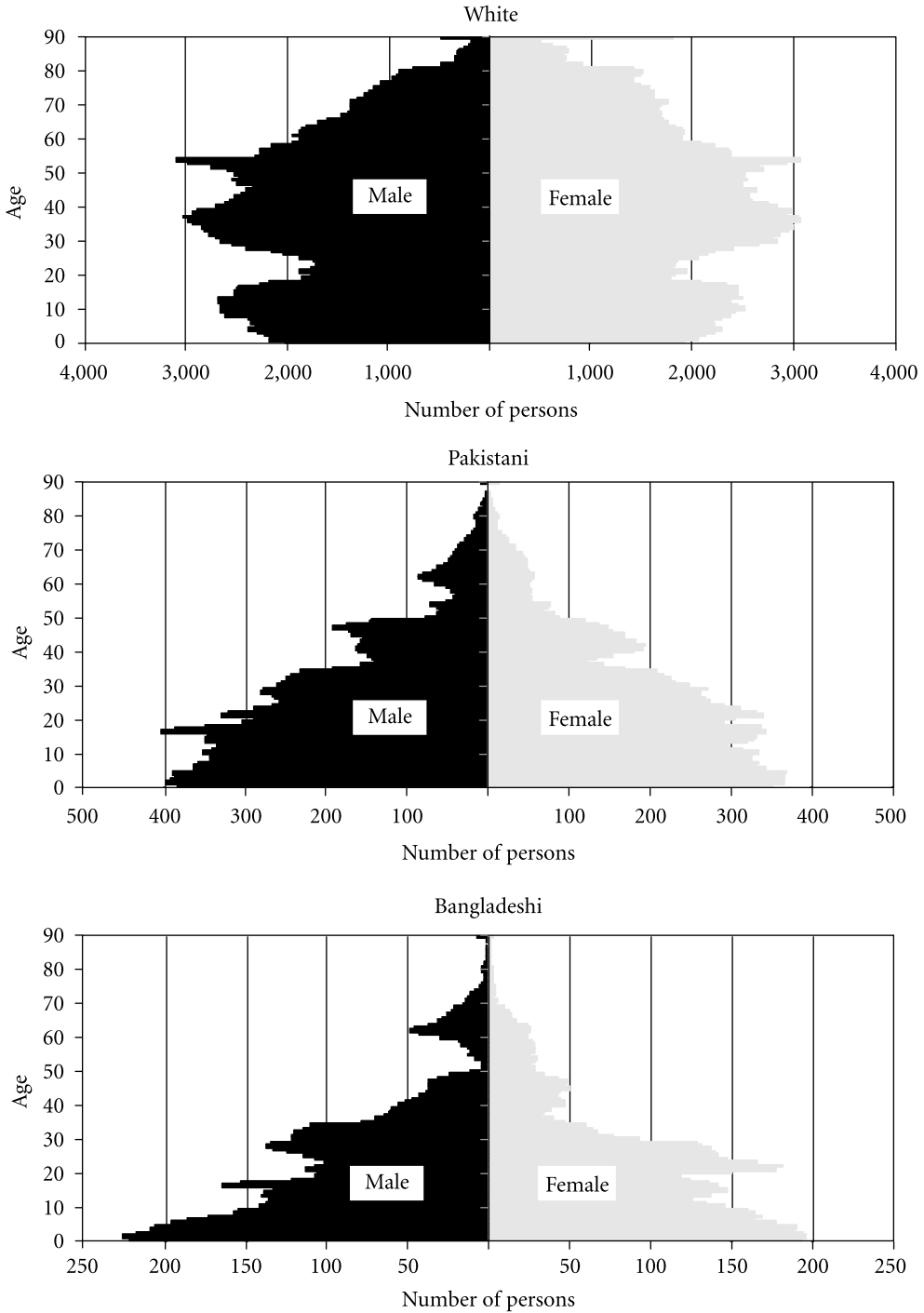


Figure 1. Population structure of Oldham and Rochdale, 2001

Source: Five-year age–sex groups from Census 2001, adjusted by the authors to single year of age and with full allowance for non-response.

over time (Simpson and Akinwale, 2007). Caribbean, African and Other Black were aggregated into a single 'Black' category, as these are relatively small populations in Oldham and Rochdale. Where necessary for comparison over time, Indian, Pakistani and Bangladeshi have been aggregated and labelled 'Asian'.

The population not represented in the census output—the 'undercount'—was relatively small and was estimated to be 0.6 per cent in 2001 and 0.9 per cent in 1991 for both districts. The interpretation highlighted in this paper focuses on significantly large trends and inequalities and is not threatened by the quality of the data.

To supplement the evidence available directly from the census, the net impact of migration over the 10-year period 1991–2001 has been estimated for each ethnic group, by estimating the births and deaths during the period 1991–2001 and deducting this natural population change from the overall population change indicated by the census. This innovative procedure is described fully in Simpson and Gavalas (2005), where it is shown that the estimates are probably conservative in their magnitude but correct in the net direction (positive or negative) of migration and natural change.

Results: Population, Household and Social Change

Population Change, Areas of Asian settlement and Areas of Asian Growth

The demographic approach outlined earlier suggests overall growth of the immigrant populations in Oldham and Rochdale. If original settlement areas have become insufficient for that growth, movement from them to nearby areas is to be expected such that the immigrant-origin populations in those nearby areas will have grown at a proportionately

higher rate than in the settlement areas. Each HMR area of Oldham and Rochdale has been allocated to one of four groups based on census statistics of the ethnic composition of the area in 1991 and the growth of the Asian population in the following 10 years

Asian settlement

Already more than 33 per cent Asian population (Indian, Pakistani and Bangladeshi together) in 1991.

Among other areas, with less than 33 per cent Asian population in 1991

Asian growth

Growth of more than 500 Asian residents during 1991–2001.

Small Asian growth

Growth of at least 100 but not as many as 500 Asian residents during 1991–2001.

Other

Smaller Asian population growth during 1991–2001.

The choice of threshold to classify settlement areas was not arbitrary. The HMR areas identified as 'settlement areas' were recognised as such by research staff in the two districts. The classification of non-settlement areas was also based on examination of each area's statistics to provide most discrimination between the classes of area, as is possible with the relatively small total number of areas involved. The total population of each class of area is of similar order, varying from 26 000 to 60 000 people. Figure 2 shows the classification of HMR areas. Table 3 shows those statistics for the areas aggregated within each class.

There are two conclusions that can be drawn immediately from Figure 2 and Table 3. First, the percentage growth of the Asian population is considerable in each type of area, but

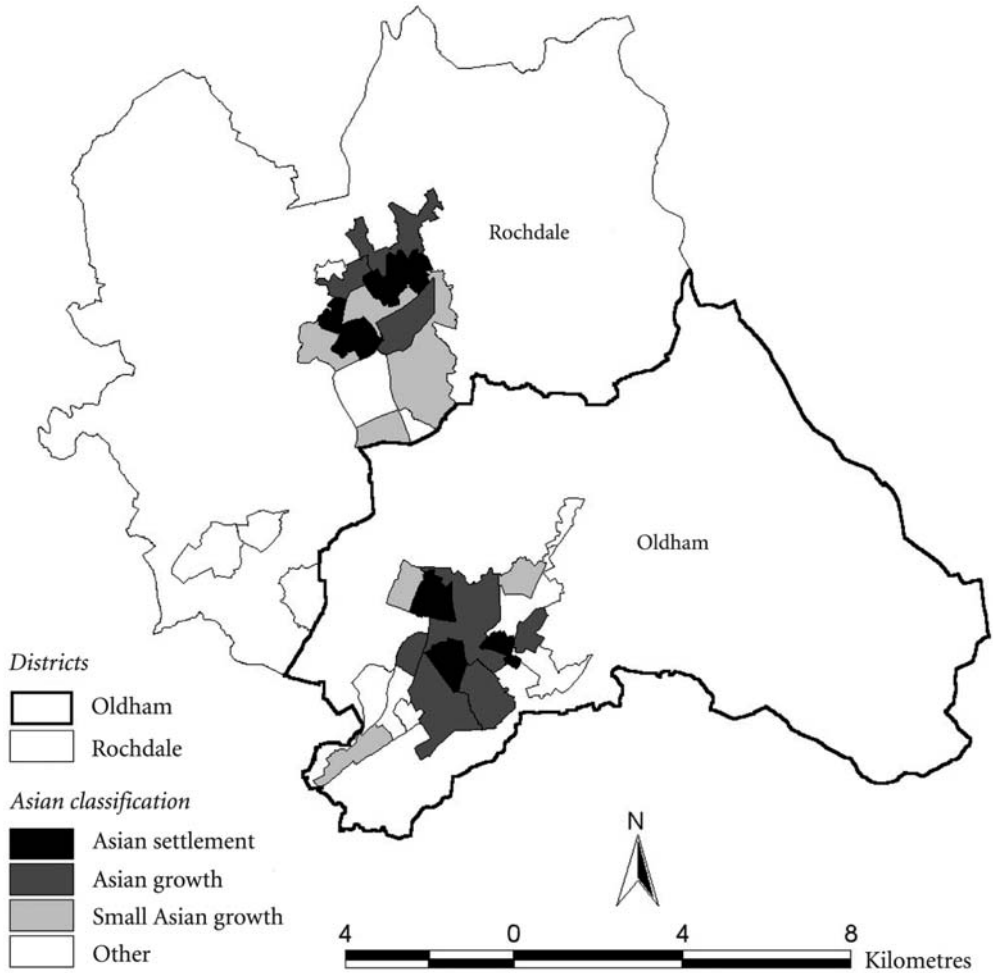


Figure 2. Classification of housing market renewal neighbourhoods in Oldham and Rochdale.

Table 3. South Asian population and growth in Oldham and Rochdale 1991–2001, by housing market renewal areas

Type of HMR area ^a	1991 South Asian population	1991–2001 South Asian total population change		2001 South Asian population	2001 total population
		Number	Percentage		
Asian settlement	19 690	+6 186	+31	25 876	40 219
Asian growth	5 635	+5 510	+98	11 145	60 169
Small Asian growth	366	+1 134	+249	1 590	25 902
Other	590	+445	+75	1 035	46 551
All HMR areas	26 370	+13 275	+50	39 645	172 841

^a The classification of HMR areas is defined in the text.

Sources: Authors' calculations based on 1991 and 2001 Censuses.

is much greater outside the settlement areas. Secondly, that growth is not evenly spread. Settlement areas are not a single block and growth areas are not all those contiguous to the settlement areas. Thus the movement is not even, in the image of a fountain spreading water outwards, but some areas are more attractive than others, giving rise to the clustered mosaic pattern also observed by Peach (1996b).

Thus the population change is consistent with the growth and clustered dispersal expected from our earlier discussion. However, this pattern of population change cannot distinguish the extent to which the change is movement from settlement areas to other areas, or differing rates of natural growth. We examine this in the next section from direct measures of migration from the 2001 Census for the year 2000/01 and from indirect estimates of both migration and natural change during the decade 1991–2001.

Migration and Natural Population Change

Table 4 shows the migration data available from the 2001 Census tabulations, for each type of area, which measures the impact of

migration in the year before the census within the UK, and of immigration from overseas, for White and for the total of all other ethnic groups. Emigration, out of the UK, cannot be captured by a national census. The statistics in this section throw light on processes 2 and 6 of the model.

First, there is migration out of settlement areas to other parts of the UK, in net terms. This is the case for both White and other groups taken as a whole, which in these areas are mainly Pakistani and Bangladeshi, and amounts to between 2 per cent and 3 per cent of the 2001 population in the single year before the census, 2000/01. For the non-White populations, there is clearly dispersal from the settlement areas to the other types of area. The net gain is greatest in percentage terms into the areas of 'small' Asian population growth. These may be the areas of greater absolute growth in future years.

The White net movement out of the settlement areas is not much greater in percentage terms than other ethnic groups, but it is not mirrored by growth in the other types of area. The movement is to areas further away. In fact, the loss of White population from Oldham and Rochdale Districts as a whole was a little

Table 4. Migration 2000/01, extract for HMR areas in Oldham and Rochdale

	<i>Net migration within the UK 2000/01 (percentage of 2001 population)</i>			<i>Immigration 2000/01 (percentage of 2001 population)</i>		
	<i>All</i>	<i>White</i>	<i>Groups other than White</i>	<i>All</i>	<i>White</i>	<i>Groups other than White</i>
Asian settlement 1991	-2.2	-2.6	-2.0	0.7	0.2	1.0
Asian growth 1991–2001	-0.7	-1.5	2.4	0.5	0.2	1.3
Small Asian growth	-0.3	-0.7	4.1	0.2	0.1	0.9
Other areas	-0.6	-0.7	2.1	0.2	0.1	0.8

Notes: The left-hand part of the table shows the net impact of migration within the UK, on each type of area. The right-hand part of the table shows the immigration from outside the UK to each type of area. In each case, the figures are a percentage of the population of the group shown in the column heading.

Source: 2001 Census, Table KS24.

under 1 per cent, and is not greater than from many other districts in England with very few residents of other ethnic groups. It is thus consistent with a general migration from cities to less urban areas, usually termed counter-urbanisation. There is no evidence for 'White flight' from these districts.

As one would expect, the impact of immigration from outside the UK is higher in percentage terms for the Asian population (adding about 1 per cent in one year) than for the White population (about 0.1 per cent). Immigration has a similar impact on the non-White population in each type of area in terms of the percentage addition to the population.

This analysis is limited to two very broad ethnic categories, to the single year before the Census, and does not show the impact of natural growth from an excess of births over deaths. These limitations are overcome in Table 5. Note that the net impact of migration in Table 5 includes emigration, but does not distinguish between migration within the UK and migration overseas. It refers to the

whole 10-year period 1991-2001 and to each of six ethnic groups.

Oldham and Rochdale are already at the stage of demographic development where natural change has a greater role than migration for the populations of Pakistani and Bangladeshi origins. More than two-thirds of their growth during the 1990s was from natural change: some 9000 residents, compared with 4000 from migration.

The population dynamics involve exchanges between the types of area. In settlement areas, population growth is almost entirely from natural change, as one would expect from the young age structure of the population. There is an overall loss of Pakistani population from migration and only a small gain for the Bangladeshi population. This net impact of migration includes immigration from overseas: the dispersal within the UK to other areas is considerable. In contrast, in areas of growth of the Pakistani and Bangladeshi populations, the impact of migration is similar to that of natural growth and usually greater than it.

Table 5. Natural change and net migration 1991-2001: extract for HMR areas in Oldham and Rochdale (numbers of people)

	<i>Total persons</i>	<i>White</i>	<i>Black</i>	<i>Indian</i>	<i>Pakistani</i>	<i>Bangladeshi</i>	<i>Other</i>
<i>Natural change 1991-2001</i>							
Asian settlement 1991	5 164	-1 158	-3	77	3 410	2 527	314
Asian growth 1991-2001	2 442	-812	17	43	2 160	583	448
Small Asian growth	795	302	9	3	233	122	126
Other areas	885	382	5	14	168	46	269
<i>All Areas</i>	9 286	-1 286	28	137	5 971	3 278	1 157
<i>Net migration 1991-2001</i>							
Asian settlement 1991	-4 188	-4 454	-300	-358	-211	741	392
Asian growth 1991-2001	-3 481	-6 599	-164	-56	1 743	1 037	555
Small Asian growth	414	-494	-54	9	508	258	185
Other areas	-3 253	-3 640	-105	-4	168	53	270
<i>All Areas</i>	-10 508	-15 187	-623	-409	2 208	2 089	1 402

Note: Groups will not sum exactly to the total, due to independent rounding.

Source: Derived by the authors as explained in the text.

Although the statistics do not show the origin and destination of the migration, it is safely assumed that there is significant dispersal from the settlement areas to the areas of population growth. The simultaneous growth and dispersal hypothesised earlier is evident in Oldham and Rochdale.

The negative value of natural change for the White population between 1991 and 2001 shows that there were more deaths than births. In contrast to the Asian populations, the White population in the inner urban areas of these towns is ageing. This is consistent with few White families moving to the areas of Asian settlement so that remaining White families are of relatively older composition. White families have moved out of the Asian settlement areas and rather further than Asian families.

Household Formation

In Britain, housing policy assumes the need for a mix of types of housing based on the distribution of sizes and types of household

observed in the population as a whole. Previous studies have shown the propensity for larger families and extended households of adult siblings and three generations in the Indian, Pakistani and Bangladeshi populations (Murphy, 1996; Simpson and Close, 1996). A key question for planners is whether those different housing demands will affect future housing needs as the proportion of Asian households grows, or whether household formation might tend towards smaller households for Pakistani and Bangladeshi residents when they have lived longer in Britain or moved away from the original settlement areas (process 7).

The average number of adults in a household is key to housing demand, as children as a rule do not live on their own. Table 6 shows the changing average numbers of adults and children in households and their sum, the average household size for the four types of area in 1991, in 2001, and the change during that decade.¹

Table 6. Change in average household size and structure, 1991–2001

	<i>White population</i>			<i>Asian population</i>		
	<i>1991</i>	<i>2001</i>	<i>Change</i>	<i>1991</i>	<i>2001</i>	<i>Change</i>
<i>Adults per household</i>						
Asian settlement 1991	1.84	1.76	-0.08	2.64	2.94	+0.30
Asian growth 1991–2001	1.79	1.68	-0.11	2.52	2.64	+0.12
Small Asian Growth	1.85	1.76	-0.09	2.45	2.52	+0.07
Other areas	1.84	1.71	-0.13	2.80	2.35	-0.45
<i>Children per household</i>						
Asian settlement 1991	0.44	0.45	+0.01	2.60	1.92	-0.68
Asian growth 1991–2001	0.48	0.47	-0.01	2.35	1.79	-0.55
Small Asian Growth	0.49	0.51	+0.02	1.85	1.47	-0.38
Other areas	0.52	0.51	-0.01	2.17	1.37	-0.81
<i>Average household size</i>						
Asian settlement 1991	2.28	2.21	-0.07	5.24	4.86	-0.38
Asian growth 1991–2001	2.27	2.15	-0.12	4.87	4.44	-0.43
Small Asian Growth	2.34	2.26	-0.07	4.30	3.99	-0.31
Other areas	2.36	2.22	-0.15	4.97	3.71	-1.26

Notes: Children: aged 0–15. Adults: aged 16+.

Sources: 1991 and 2001 Censuses.

Table 6 shows that White households have a very similar average household structure in each type of area. The average number of adults has decreased slightly between 1991 and 2001, probably due to more one-adult households. The number of children on average in each household has remained steady. It is well below one because many White households do not have any children.

The average number of adults in Asian households (the data do not allow a comparison over time for Pakistani and Bangladeshi households separately) is higher than for White households, reflecting the lower incidence of single-person households and the higher proportion of extended families. It has not reduced since 1991; indeed, if anything it has slightly increased (the contrary trend for the 'Other areas' is based on a small number of households and is not replicated for the classification of electoral wards not shown here). However, the number of children in each household on average has reduced over time and is lower outside the areas of Asian settlement. Although this is not a direct measure of fertility, it does suggest that the fertility rates of these immigrant-origin populations have decreased over time and are lower in the second generation, as suggested earlier and supported by other studies (Sporton and White, 2002; Coleman, 1994).

The need for larger housing units is determined mainly by the number of adults in a household, which is not reducing in the Asian populations. To avoid overcrowding, larger units of housing are needed, although correspondingly fewer units for the same population size. This lack of convergence with White household structure is not surprising when considered alongside other research which shows the continuing prevalence of extended families in the Indian population in Britain, which has a longer residence and more prosperous employment outcomes than the Pakistani and Bangladeshi populations

(Murphy, 1996; Simpson and Close, 1996). The demand for larger housing units is also determined by changing standards; but we have shown that the purely demographic element of demand for larger housing units from the Asian population is persistent over time, after internal migration, and after a reduction in fertility, at least in the medium term.

Social and Employment Characteristics

We are now able to examine whether those individuals and families who now live in the new areas of South Asian population have improved their conditions either between 1991 and 2001 or in comparison areas of settlement (process 4). Table 7 shows the three indicators which are available from both censuses. In 2001, the information is available for each ethnic group; in 1991, the broad 'South Asian' category was used, including the Indian group as well as the Pakistani and Bangladeshi populations. The tables now refer to households and sub-groups of the population. In order to focus on the larger sub-populations for which the data are most reliable, Table 7 shows White, Pakistani and Bangladeshi groups, and the areas of settlement and greatest South Asian population growth.

A number of conclusions relevant to the earlier hypotheses can be made. Poor labour market outcomes are common for the Pakistani and Bangladeshi populations. Unemployment in 2001 was more than double that of the White population in the same areas. Overcrowding is also severe for both populations in 2001, affecting between a quarter and a half of households in each type of area. Car ownership is often used in Britain to measure the general level of wealth of a population, even though car ownership can be a lifestyle choice for some individuals. There are still many households without a car. In Oldham and Rochdale, the Pakistani

Table 7. Employment and housing indicators

	Percentage, 2001			Percentage point change, 1991–2001	
	White	Pakistani	Bangladeshi	White	Asian
<i>Unemployed</i>					
All HMR Oldham and Rochdale	9	20	24	–7	–11
HMR Asian settlement 1991	10	21	23	–7	–13
HMR Asian growth 1991–2001	9	19	31	–7	–5
<i>Households overcrowded</i>					
All HMR Oldham and Rochdale	2	26	44	–1	–12
HMR Asian settlement 1991	2	29	47	–1	–10
HMR Asian growth 1991–2001	2	25	35	0	–12
<i>Households without a car</i>					
All HMR Oldham and Rochdale	49	33	56	–9	–13
HMR Asian settlement 1991	52	33	55	–7	–17
HMR Asian growth 1991–2001	52	32	60	–8	–4

Note: Overcrowding is defined as households with more than 1 person per room.

Sources: 1991 and 2001 Censuses.

households tended to have access to a car in spite of the lower incomes indicated by the level of unemployment.

However, conditions for all populations have improved during the 1990s. Unemployment and overcrowding decreased, at a faster pace for the Pakistani and Bangladeshi populations than the White population, even though not sufficiently to make the conditions similar in the three groups.

The differences between areas of settlement and areas of growth are not noticeable. Only overcrowding is consistently a little less in the growth areas for both Pakistani and Bangladeshi populations, perhaps reflecting the smaller families that were noted earlier.

Table 8 shows the tenure of each type of area. Homeownership has decreased since 1991 for the Asian populations as a whole by 13 percentage points. It is relatively high only for the Pakistani population, where it averages 67 per cent across all the HMR neighbourhoods. Private renting is more common for both the Pakistani and

Bangladeshi populations than the White population. Renting from a social landlord is concentrated outside the local government (council) sector, in contrast to the White population where local government provision has been historically common.

In summary, the social and employment conditions in areas of South Asian growth are similar to those of the settlement areas. The movement away from settlement areas within Oldham and Rochdale appears to be a response to the limited capacity of housing in those areas and not motivated by improved resources. The areas of growth can be seen as overspill areas with similar conditions. There are, however, fewer owner-occupiers in those areas among the Pakistani and Bangladeshi populations, with more reliance on all types of rented property. Affluent movement away from the settlement areas is not evident, but may be to areas outside the two districts, or to areas where the Pakistani and Bangladeshi populations are much smaller.

Table 8. Household tenure

	Percentage, 2001			Percentage point change, 1991–2001	
	White	Pakistani	Bangladeshi	White	Asian
<i>In owner-occupied housing</i>					
All HMR Oldham and Rochdale	50	67	49	1	–13
HMR Asian settlement 1991	51	72	55	–4	–10
HMR Asian growth 1991–2001	47	62	28	1	–19
<i>Rented from local council</i>					
All HMR Oldham and Rochdale	29	8	13	–9	0
HMR Asian settlement 1991	24	6	8	–3	–3
HMR Asian growth 1991–2001	32	10	33	–11	5
<i>Rented from other social landlord</i>					
All HMR Oldham and Rochdale	8	10	20	1	9
HMR Asian settlement 1991	11	10	21	0	9
HMR Asian growth 1991–2001	9	12	20	3	9
<i>Privately rented</i>					
All HMR Oldham and Rochdale	11	14	18	7	6
HMR Asian settlement 1991	15	13	17	8	5
HMR Asian growth 1991–2001	12	15	21	8	6

Discussion

The evidence from Oldham and Rochdale provides strong confirmatory evidence of the co-existence of growth and dispersal of populations of recent immigrant origin. It measures clear characteristics of these two stages, many of which were hypothesised earlier in the paper. There are significant clusters of Asian population in areas of original settlement of pioneer immigrants, to which immigrants are attracted in greater numbers than other areas (confirming process 1). However, immigration is similar to all types of area as a proportion of the existing population, suggesting that chain migration of overseas spouses continues to families who have moved out of settlement areas. Those settlement areas have a relatively young age structure, with few deaths relative to the number of births, and have grown rapidly for this reason, the natural growth

now exceeding the growth from immigration by a factor of two (confirming the second process of population growth).

The subsequent stage of dispersal is confirmed in its generality, but not in all the particulars proposed earlier: there has been migration out of the settlement areas such that the Asian population is growing at a considerably faster rate in other areas. Whether this out-migration is a result of a lack of in-migration because local housing is 'full up' could not be verified as it requires detailed information on housing stock, which is not currently available. The growth areas are close to the settlement areas and are similar in employment conditions to the settlement areas, although conditions have much improved in all areas over the decade 1991–2001. This study did not identify significant clusters of more prosperous Asian families: the growth areas do not include all areas neighbouring the settlement areas, but

in these towns one cannot yet talk of a mosaic of clusters in new locations.

Fertility rates have declined over time and are lowest outside the settlement areas, but household structures (of extended families) have been maintained over time and space, confirming the suggested convergence of fertility rates but persistence of distinct household structures as suggested in the model of dynamic population change. Economic activity was not investigated in this study but other studies have found that distinct patterns of Pakistani, Bangladeshi and Caribbean women's economic activity are persistent both over time and in different concentrations of those populations (Simpson *et al.*, 2006).

The model presented in this paper predicts in their generality demographic consequences of immigration over several generations. It provides a framework that makes sense of local population change, by resolving the observation that core areas of ethnic concentration are increasing in intensity, at the same time as movement away from those core areas creates a decrease in segregation. The growth of the core settlement areas is through natural increase and to a lesser extent through continued immigration, while the spread to other areas is largely through the overspill outward migration of new households created in the core. The White population in the core areas is ageing while the minority population is young. The combined effect of White mortality and minority natural increase produces the increased minority concentrations without the intervention of the supposed White 'flight'. On the contrary, both White and minority populations show net migration out from the core settlement areas in similar rates, although Whites tend to move further than minority migrants.

The framework adds considerable richness to tracking segregation indices over time, which ignore the powerful processes of demographic change that develop after immigration.

Indeed, it suggests that segregation should be expected to increase for a period after pioneer immigration due to growing populations and a spatial expansion of noticeable clusters of immigrant-origin families. Cultural facilities attract particular groups, creating spatial and cultural fission along caste, regional and sectarian lines (Dahya, 1974). The framework suggests that growing concentrations are likely to continue for some decades, until the age structure stabilises and dispersal becomes the main feature, accompanied by a reduction in segregation indices.

These predictable demographic trends towards larger concentrations of Asian residents at the same time as dispersal challenge the assumption that concentration is a form of voluntary segregation and must be viewed negatively. It is a result mainly of natural growth, which is not easily amenable to policy change.

Although the data in Britain are limited in their time-frame and the coarseness of their ethnic categories, they have immediate useful impact on local planning and are available in each locality. Once the predictable dynamics of population change are understood, planning can focus on what is amenable to policy influence. Scenario-building by the local councils of Oldham and Rochdale is focused on the development of equality of housing and employment opportunity. For example, the Housing Market Renewal programme is encouraging migration of Asian families to areas beyond the inner town areas; the councils have had success in a scheme for the community induction of new families of whatever origin on housing estates, encouraging interaction and participation while sanctioning hostile or racist receptions when they occur (HMR Board, 2005). The demographic data for small areas allow scenario-building to evaluate policy alternatives and can be the basis for qualitative research on young people's aspirations and expectations.

There is plenty of scope for similar work in other areas, but also for extension of the hypotheses and their testing. Qualitative surveys following Debbie Phillips (2006) are needed to test the relationship between spatial geography and integration into the housing and labour markets, as well as the role of institutions in easing integration. Quantitative studies should divert energy from the 'industry' that measures segregation into a more historical and dynamic view of change. Where possible, such studies should look directly at gross flows of migration of different groups including Whites, at the distance of migration and at the social stratification that results from migration of the more prosperous. If levels of segregation remain of interest, demographic projections would provide a useful prognosis. In European countries, the demographic development of White immigrants from eastern Europe in the early 21st century may follow the same path outlined in this paper for Black and Asian immigrants of the 20th century.

In this paper, we have presented a framework which can be used positively, not to stigmatise areas according to their racial composition, but to understand the rapidly changing population of our cities and to plan for a future of integration and equality.

Note

1. The census allows calculation of average household size for an ethnic group as the ratio of the number of people of the ethnic group divided by the number of heads of household of that group ('household reference persons' in the terminology of the UK 2001 Census). In general, this would not be appropriate where there are many households of people of different ethnic groups, or where the population not in households was significantly large. Neither of these potential limitations is a concern in this study.

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