



West Yorkshire

A demographic case study

DEMIFER

Demographic and migratory flows affecting European regions and cities
Applied Research Project 2013/1/3

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1. Introduction

The general aim of the DEMIFER project has been to examine the historical and future impact of demographic change upon the 27 members of the European Union plus the four additional European states that have a close relationship with the EU (EEA plus Switzerland). To achieve this aim a project team from across the study area has built a comprehensive database of demographic statistics, capturing data on fertility, mortality, internal migration and international migration for each NUTS2 region in the 31 countries.

This data has been used to examine how the components of demographic change combine to exert different impacts upon population growth, the size of the labour force and the ageing of the population in each of the NUTS2 regions. Historical analysis, coupled with multi-regional forecasting methods, has been used to assess how future developments in migration, fertility and mortality might affect population growth or decline and drive changes in the age structure in different types of regions. The impact of migration, both internal and international, has been a particular focus of the study, to establish its influence upon the labour force, how migration between European countries and migration to Europe compensate or reinforce each other and how climate change may drive migration flows within, between and into countries and regions.

A key part of the project has been a more detailed examination of the complexity of the demographic process within a series of Case Studies. These Case Studies draw together the various strands of analysis undertaken in the DEMIFER project; connecting the historical analysis, the development of the regional typology, the scenario building and the formulation of the policy implication, to illustrate the results and impacts at a more disaggregate, NUTS3 regional geography. Case Study areas have been selected from Demifer's regional typology, with at least one region from each cluster selected.

Two Case Studies have been prepared for the UK: West Yorkshire and Greater London. This paper reports on the West Yorkshire study.

West Yorkshire is a NUTS2 region classified as 'Family Potentials' in the DEMIFER typology (see Appendix 1). Areas with this classification typically have a labour force population in the younger adult ages (aged 20-39) of average size, lower than average population beyond retirement (65+) and higher than average growth due to both natural increase and net migration. This study examines how well West Yorkshire fits its typology classification. Two other 'Family Potentials' regions have been selected for more detailed Case Studies: Alsace (FR42) and Stockholm (SE4).

Section 2 of this report provides the geographical context for the West Yorkshire study and briefly summarises the nature of the demographic data available for study in the UK. Section 3 reviews some of the more recent studies of demographic change in West Yorkshire, drawing in particular on the expertise in migration analysis that exists at the School of Geography at the University of Leeds.

Section 4 summarises the historical picture of population change and its key components, with section 5 taking a more detailed look at the importance of migration in this process. Section 6 examines how demographic change is likely to impact upon the profile of the population: its age-structure, the labour force, the elderly and its ethnic composition.

Section 7 indicates how the Demifer scenarios would impact upon West Yorkshire and a concluding section draws together the analysis and policy-relevant findings of the Case Study.

2. Study Area definition and data availability

West Yorkshire is situated in the North East of England and is one of four NUTS2 regions (South Yorkshire, North Yorkshire and East Yorkshire/North Lincolnshire being the others) within the UK's Government Office Region (GOR) of Yorkshire and the Humber. The NUTS3 geography of West Yorkshire identifies three separate areas: the individual local authorities of Leeds and Bradford plus a third area combining Calderdale, Kirklees and Wakefield. The analysis in this report uses both the NUTS3 geography and the local authority geography for presentation purposes (Figure 1).

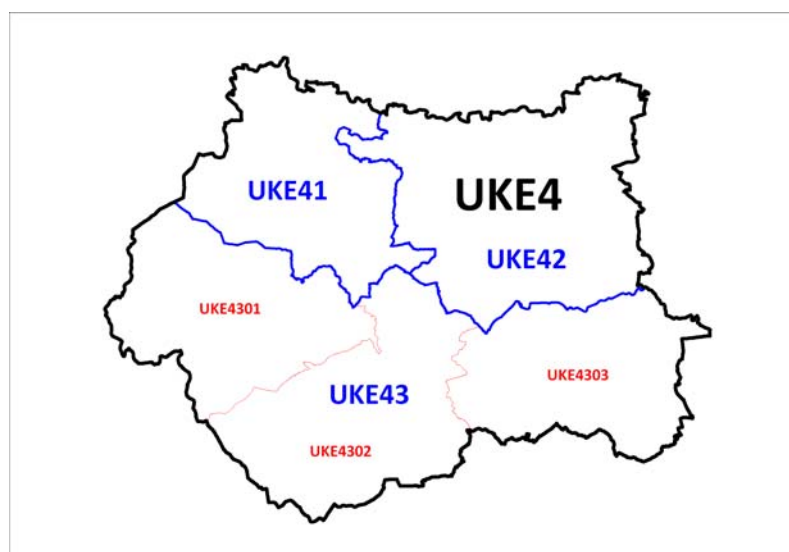


Figure 1: West Yorkshire - study area

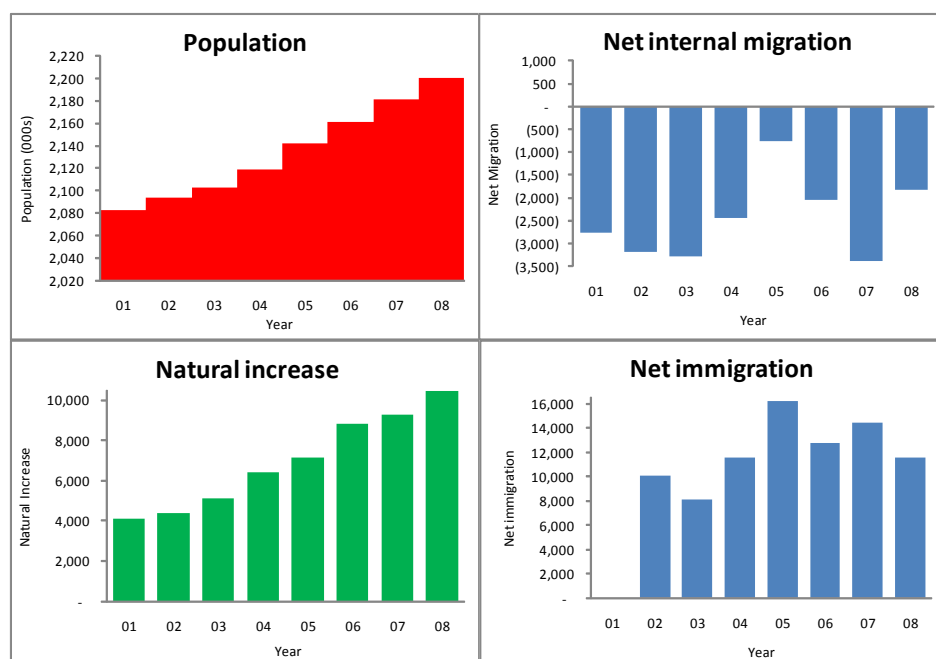
West Yorkshire is a largely urban area with a total population in 2008 of 2.2 million. Leeds is the economic hub of the GOR with a financial services industry that is second only to London in its importance to the UK economy. In contrast, Bradford continues to suffer economically, has pockets of extreme deprivation and has one of the highest concentrations of ethnic minority populations in the UK.

To facilitate this study data has been collated from a variety of sources. The UK does not operate a population register and so relies on the decennial census plus a range of surveys and administrative sources to provide its key demographic statistics. Mid-year population estimates are produced for each local authority area on an annual basis, updating the 2001 Census statistics using the most recent information on births, deaths and migration. The most accurate data is available on births and deaths, with an all-inclusive process of births and deaths registration providing very accurate and timely statistics at all geographical scales. Sources of migration data are less definitive. Internal migration for inter-censal years is derived from patient registration statistics, captured as individuals move and re-register with their local doctor. This data is collected on a rolling basis and provides disaggregation by age and local authority area; it does however suffer from issues of under-registration, particularly for young adult males who are least likely to register with a doctor when they move.

International migration statistics are the least robust. The UK relies upon the International Passenger Survey (IPS) as the primary source of its data on immigration and emigration, combining it with a number of other sources to produce estimates for local areas (ONS, 2008). These estimation methods have been subject to considerable scrutiny and comment (House of Commons, 2008; Rees *et al.*, 2009) at a time when net immigration has been a dominant driver of population change in the UK. Alternative estimates of immigration have been produced using a variety of administrative sources (Boden & Rees, 2009) and the Office for National Statistics (ONS) has recently completed a consultation process on its own methodological revisions (using administrative data) which will see local authority population estimates revised for 2001-2008. In the absence of definitive statistics on international migration, local authorities have been encouraged to use alternative sources to gather information (Audit Commission, 2007: Green *et al.*, 2008) with administrative sources such as the Department of Works and Pensions' (DWP) National Insurance Number (NINo) statistics, Workers Registration Scheme (WRS) data from the UK Borders Agency and the registration of foreign nationals with the UK health service, providing useful, if incomplete, evidence on this key element of local population change.

3. A summary of population change

Since 2001 the population of West Yorkshire is estimated to have increased by 6%, reaching 2.2 million in 2008. The components of demographic change are exerting different influences on this growth and there remains particular uncertainty regarding the true impact of international migration (Figure 2).



Source: ONS Mid-year estimates

Figure 2: West Yorkshire – components of population change, 2001-2008

Since 2001 the number of deaths recorded in West Yorkshire has remained relatively stable at 20-22,000 per year. In contrast, the number of births has increased year-on-year from 25,700 in 2001 to 30,600 thousand in 2008. Natural increase has therefore contributed approximately 55,600 of the total population growth in West Yorkshire in 2001-2008, roughly 47% of the total.

Net migration has therefore contributed over 50% of the estimated population growth but there is a marked contrast between the influence of internal migration versus that of international migration. Internal migration has resulted in a net loss of population in every year since 2001, ranging from 500-3,500 per year. The net impact of international migration has compensated for this with gains of 12-16,000 in 2005-2008.

Whilst there is considerable certainty regarding the number of births and deaths recorded in West Yorkshire since 2001 and good statistics on internal migration (albeit with some likely biases in the younger age-groups) there remains substantial uncertainty with regard to the robustness of the international migration estimates. Research has shown that immigration estimates for the larger Yorkshire and Humber GOR are likely to be in error (too high) which has a knock-on effect to the

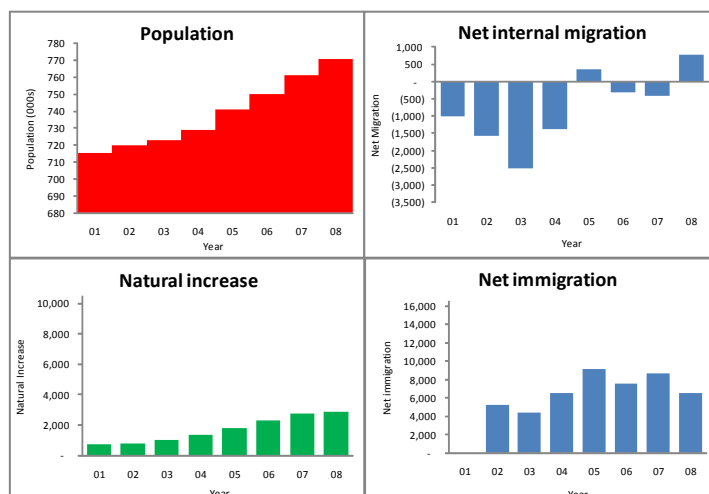
estimates for local authority areas (Boden and Rees, 2009). The scale of the over-estimation could be as high as 20-30% which, given the importance of international migration as a driver of demographic change, would have a substantial impact upon population estimates and projections; altering the age-group profile, the size of the labour force and the scale and speed of population ageing that is expected.

These issues should be borne in mind when examining the components of population change for each of the NUTS3 zones within West Yorkshire, recognising that net international migration and therefore estimated population growth are subject to considerable uncertainty (Figure 3). Since 2001 population growth has been highest in Leeds (8%) and Bradford (7%) with less significant growth in Calderdale/Kirklees/Wakefield (4%). The increasing number of births is reflected in the rising impact of natural increase in each NUTS3 region; however, there are significant differences in its importance as a driver of growth. Natural increase has accounted for 79% of population change in Bradford since 2001, whereas in Leeds it has only contributed 25%. The figure is 56% in Calderdale/Kirklees/Wakefield. With a high concentration of minority-group ethnic populations, Bradford does have high fertility rates (see below) but these differences in the impact of natural increase are also being driven by the relative importance of the migration components in each local population change estimate.

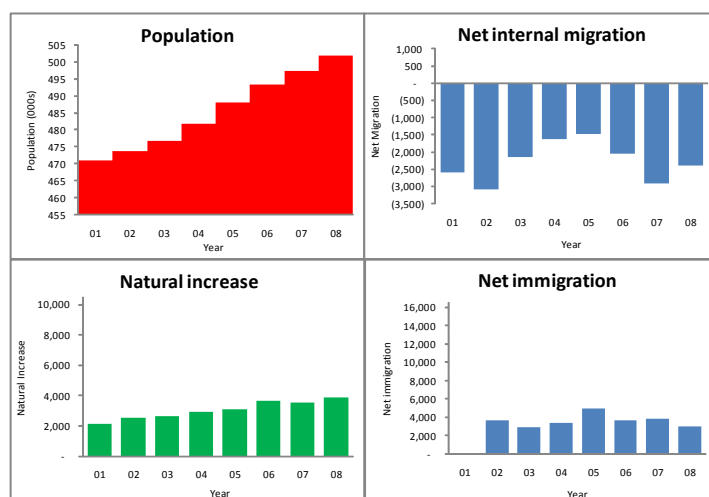
Net internal migration to Leeds has changed since 2001, from a small net loss to a small net gain. International migration in contrast has become a dominant driver of growth in the population estimates, with net immigration contributing 5,000–8,600 each year (Figure 3a). Between 2002 and 2008 net immigration is estimated to have contributed 48,000 of the overall growth of 54,600 in Leeds' population. The potential impact of uncertainty in the estimation of international migration is clear.

In Bradford a substantial net loss due to internal migration has become a consistent feature of population change. This net loss has been compensated for by annual net gains due to net immigration of 2,000 – 4,000 in 2002-2008. In Calderdale/Kirklees/Wakefield a different picture is evident for migration with a net gain due to internal migration in each year, with the exception of 2008. A net annual inflow of 1,000-2,000 through international migration has also contributed to population growth since 2002.

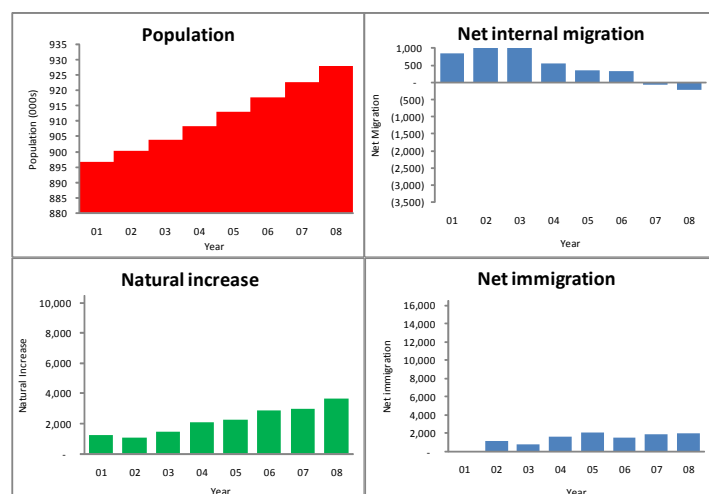
(a) Leeds



(a) Bradford



(b) Calderdale, Kirklees and Wakefield

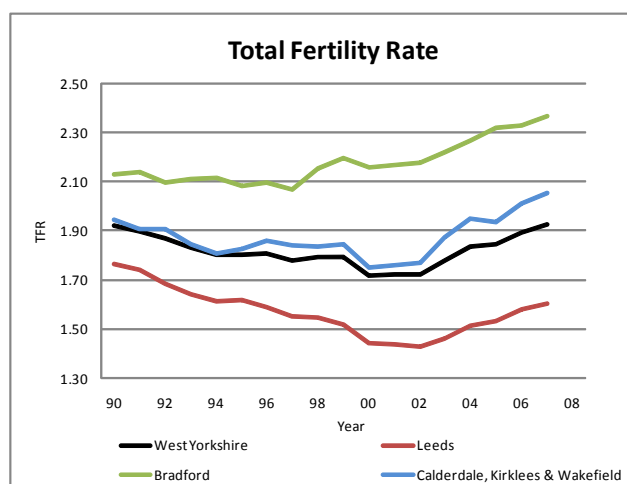


Note: Scale on population graph varies by area; other graphs have a fixed scale for all areas.
Source: ONS mid-year estimates

Figure 3: West Yorkshire – components of population change, 2001-2008

4. Fertility and mortality

The increasing contribution of natural increase to population growth in West Yorkshire since 2001 has been driven by a reversal in the downward trend in fertility rates that were experienced throughout the UK to the end of the last century. This trend has been underpinned by the trend towards late childbearing that has led to an increase in fertility for females in older age-groups and by the increasing percentage of births to mothers born outside the UK. Each of the three NUTS3 regions has experienced a rise in its total fertility rate (TFR) since 2001 but it is interesting to examine the differences that exist between the levels of the three curves (Figure 4).



Source:

Figure 4: Total Fertility Rate (TFR), West Yorkshire

With 'replacement' fertility rates now standing at slightly below 2.1, Bradford has maintained an above-replacement TFR since the 1990s, rising to almost 2.4 in 2007. With a diverse ethnic mix, the number of births to mothers whose country of birth was outside the UK now exceeds 30%.

In Leeds the TFR trend parallels Bradford but at a much lower level, climbing from a low-point of 1.4 in 2001 to reach 1.6 in 2007; still well below replacement. The large student population clearly plays a significant part in reducing the TFR but the uncertainty over the true population size due to the inadequacies of immigration estimation may also be playing a part, with an artificially high population denominator keeping the TFR at its low level. Leeds has a TFR lower than any of the other major metropolitan areas in the UK. Births to mothers whose country of birth was outside the UK are also an increasingly important component of the birth mix in Leeds; 13% in 2004, rising to 19% by 2008.

The TFR for the third NUTS3 region of Calderdale/Kirklees/Wakefield appears to demonstrate the sharpest rise since 2001, approaching replacement level by 2007; with Calderdale and Kirklees above replacement by 2007 and Wakefield just below.

Mortality rates in West Yorkshire are 5% higher than the England and Wales average. Bradford again has the highest levels in West Yorkshire with its Standardised Mortality Ratio (SMR) being 15% higher than the England and Wales benchmark. Leeds, in contrast has an SMR for both males and females that has fluctuated around the England and Wales average, although the male SMR has shown an upward trend in recent years. Calderdale/Kirklees/Wakefield more or less reflects the West Yorkshire average.

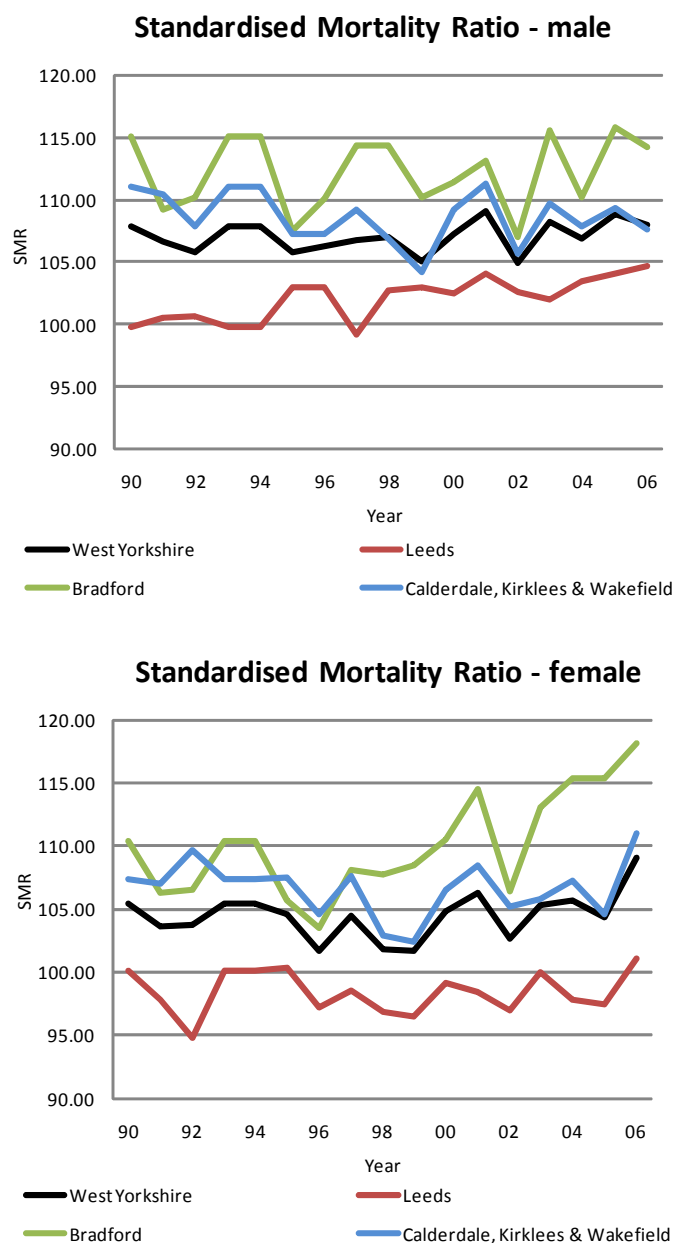
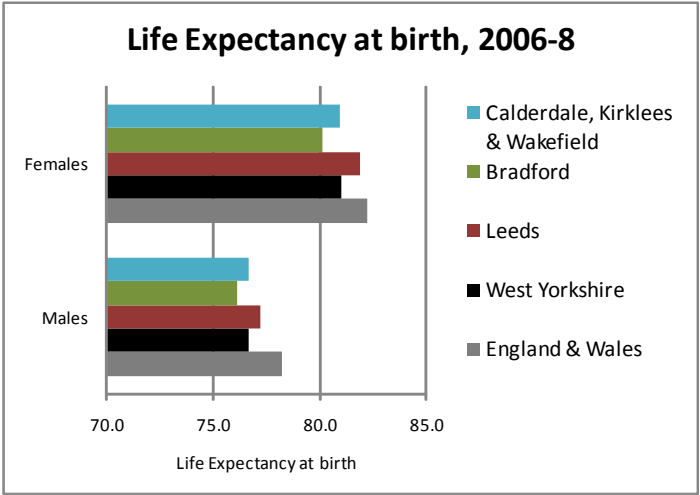


Figure 5: Standardised Mortality Ratios (SMR), West Yorkshire

Statistics on life expectancy at birth reflect these SMR differences, with West Yorkshire residents expected to live one year less than the England and Wales average would

suggest (Figure 6). Bradford has the lowest life expectancy for both males and females, whereas Leeds more closely resembles the England and Wales average for females, slightly less for males.



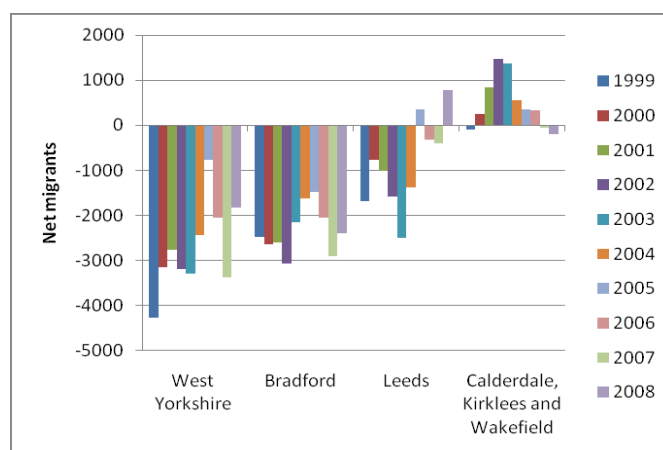
Source:

Figure 6: Life Expectancy at birth 2006-8, West Yorkshire

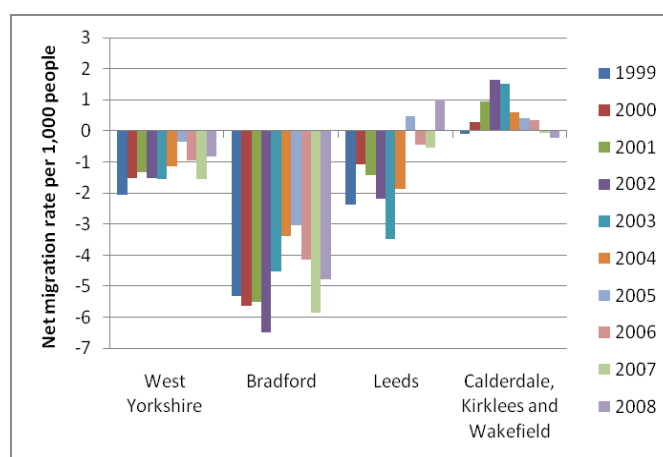
5. Internal migration

This section examines the impact of internal migration upon population change in West Yorkshire in a little more detail. In the ten years leading up to 2008, the NUTS2 region experienced a net loss of internal migrants in every year of the decade. The level of this loss, however, has varied quite considerably. In volume terms the losses are relatively low with a maximum loss of only around 4,000 migrants in 1999 and a minimum of some 800 migrants in 2005 (Figure 7a). Expressed as a rate, these losses are also low with a median rate of around 1.4 migrants per 1,000 population over the ten year period (Figure 7b). Within West Yorkshire, this pattern varies quite considerably, with Bradford making the largest net-loss, both in terms of total migrants (an average of around 2,300 migrants a year) and in terms of the rate of loss (around 5 migrants per 1,000 people on average).

(a) Net migration flows



(b) Net migration rates



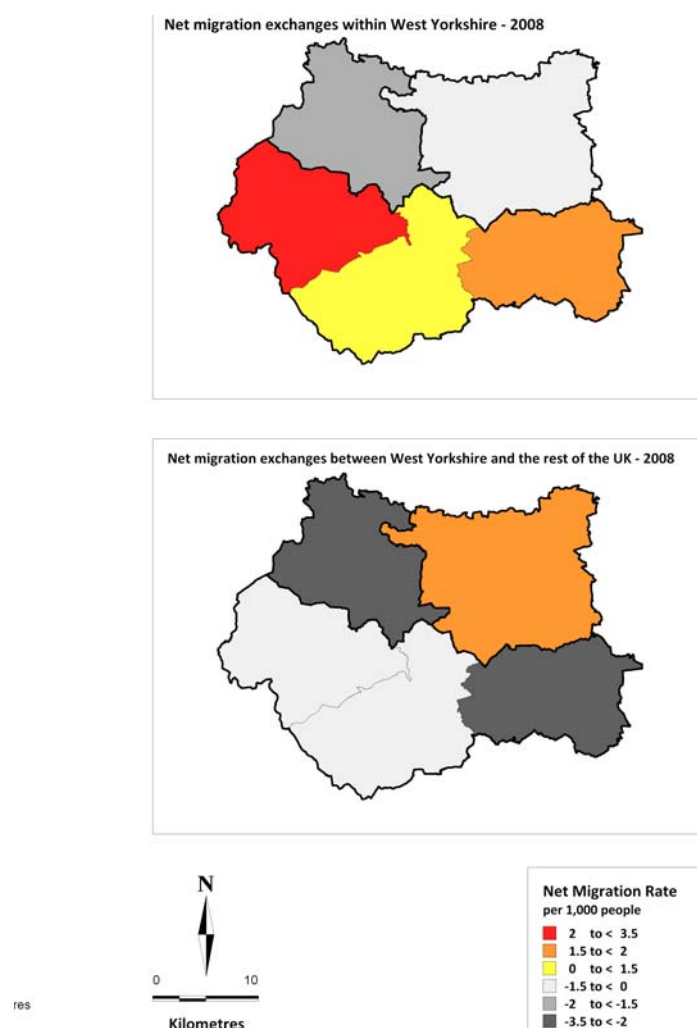
Source:

Figure 7: Net migration and net migration rates, West Yorkshire, 1999-2008

Calderdale, Kirklees and Wakefield, on the whole, experiences a positive net-migration balance across the decade, however at both ends of the time period, there is a slight net-loss of population,

at most, however, this net loss is only around 200 people. Leeds experiences more variation than any other NUTS3 region within West Yorkshire. For most of the decade, the region experiences a net loss of population, however this loss reduces considerably after 2003 to the extent that in 2005 and 2008 there is a modest net-gain of population.

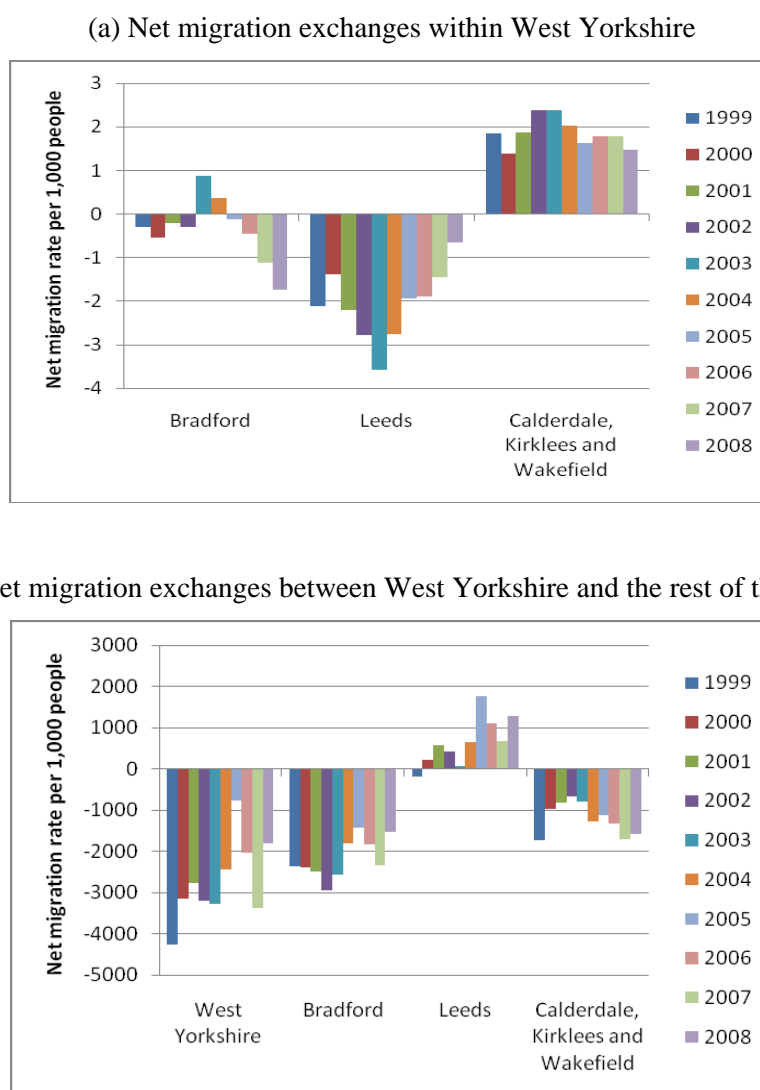
These patterns can be examined in more detail if we disaggregate the flows between those that occur *within* West Yorkshire, and those which occur between regions within West Yorkshire and other places in the UK. The maps in Figure 8 exemplify this flow disaggregation for the most recent year for which there are data; 2008. What can be seen clearly is that when the flows are within West Yorkshire, the largest urban areas – Leeds and Bradford – are losing migrants in net terms to the less urbanised districts in Calderdale, Kirklees and Wakefield. When the flows are between districts in West Yorkshire and the rest of the country, all districts are losing migrants to other areas in the UK except for Leeds, which becomes a net-gainer of migrants.



Source:

Figure 8. Net migration exchanges within West Yorkshire and between West Yorkshire and the rest of the UK

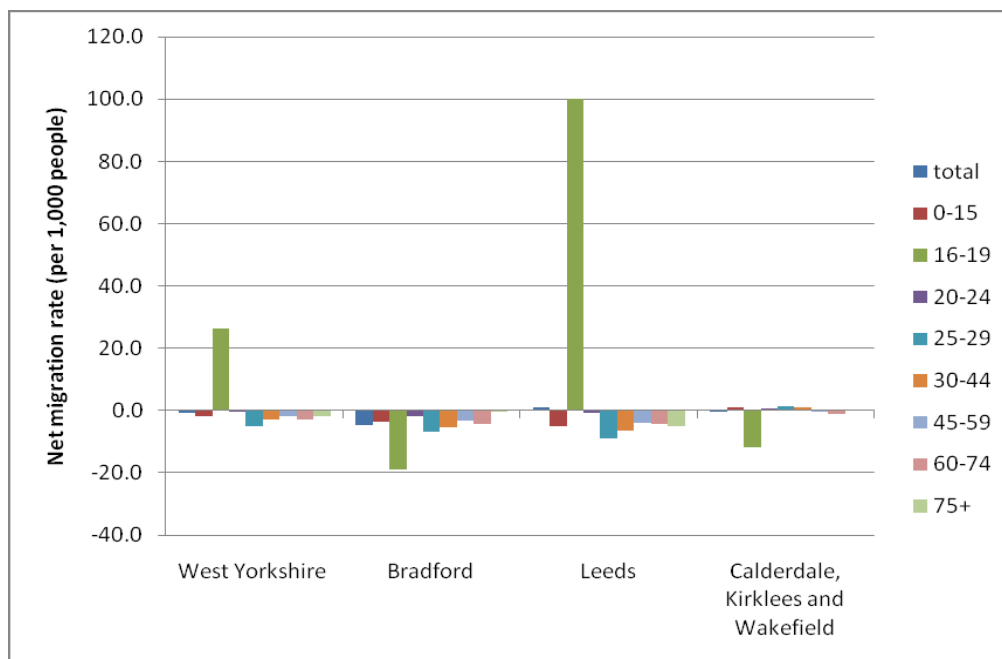
Figure 9 shows how this pattern varies over time. Calderdale, Kirklees and Wakefield maintains a relatively constant level of net in-migration from the rest of West Yorkshire and net out-migration to the rest of the UK over the decade leading up to 2008. Bradford varies somewhat more, with on the whole a net loss of migrants to other areas in West Yorkshire, except for in 2003/04 when it experienced a modest net-gain. With the rest of the country, however, Bradford is a steady net-loser of population; however the level of this net-loss reduces towards 2008. Leeds is the only region within West Yorkshire that experiences a net gain of migrants from the rest of the UK. In 1999 it experienced a small net-loss, however from 2000 onwards Leeds has increased its net-migration gain from the rest of the UK. In contrast, with the rest of West Yorkshire it has consistently been losing population, although the rate of loss has varied, with a peak in 2004.



Source:

Figure 9. Net migration exchanges within West Yorkshire and between West Yorkshire and the rest of the UK, 1999-2008

As always, aggregate flows can disguise some of the variation in the types of flows occurring between areas. Analysis of migration patterns by age group in Figure 10 reveals variation for the whole of the NUTS2 region of West Yorkshire, but more interestingly, also for the NUTS3 regions within. Taking West Yorkshire first, it is clear that it is only migrants in age group 16-19 that are moving into the region more frequently than they are moving out. Migrants in this age group are moving into the region as a whole at a rate of around 25 migrants per 1,000 population. All other age groups exhibit a net out-migration.



Source:

Figure 10. Net migration rates by age for West Yorkshire, 2008.

Moving to the NUTS3 level, however, it becomes clear exactly what is driving this pattern of net-migration. Both Bradford and Calderdale, Kirklees and Wakefield actually experience net out-migration of migrants in the 16-19 age group. These losses are hugely offset by the massive net in-migration into Leeds. Leeds has a net in-migration rate of almost 100 migrants per 1,000 people which is driven by it being a very important university destination for students. Leeds has two of the largest universities (in terms of student numbers) in the UK, with other specialist music and art colleges also attracting students from far afield. All other age groups within Leeds lose migrants in net-terms to other areas in the UK. Only Calderdale, Kirklees and Wakefield experiences any kind of net in-migration from any other age group, but these net-gains are extremely modest in comparison to the huge net-gains Leeds experiences in the 16-19 age group.

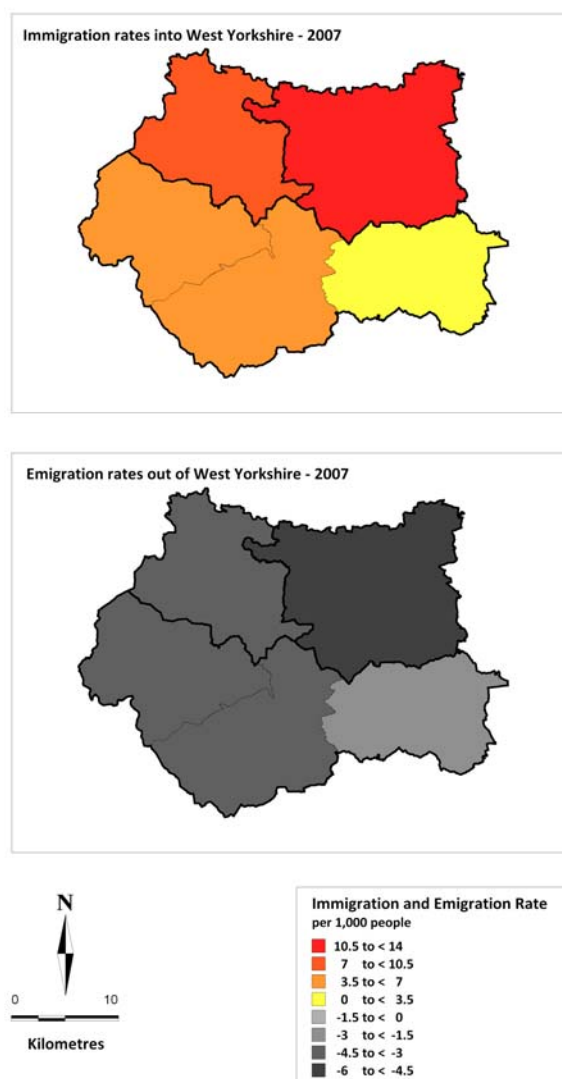
Overall, the patterns of migration in West Yorkshire can in some ways be viewed as quite unremarkable. For a region with a population of over two million people, net gains and losses are very modest – rarely exceeding a few thousand individuals. Over the decade leading up to 2008,

the general pattern was of a modest net loss of migrants each year; a loss not just unique to West Yorkshire, but to the larger government office region of which it is part (Dennett and Stillwell, 2008). Most of these losses are from Bradford, and to a lesser extent Leeds, with only Calderdale, Kirklees and Wakefield experiencing a net-gain, although this net gain is small even in comparison with the small net-losses from the more urban regions. When only the flows within the region are taken into consideration, the more urban regions of Leeds and Bradford tend to lose to the less urban regions of Calderdale, Kirklees and Wakefield – a pattern which has been noticed elsewhere by Stillwell and Dennett (2009). For flows between West Yorkshire and the rest of the country, however, Leeds is the only net-gainer of migrants in the region. The position of Leeds as a net-grainer of migrants is very much driven by the huge inflows of young migrants moving into the region in order to study at one of the large higher and further education institutions in the city. In fact, in a region which exhibits relative low levels of internal migration, the huge net inflows into Leeds stand out as a defining feature.

6. International migration

Since 2001 international migration has been a dominant driver of population change yet it remains the most difficult to estimate accurately. In the absence of a population register, the UK relies upon a combination of census and survey data to estimate immigration and emigration flows at a local level. But in the face of much public scrutiny of its data and methods, ONS has continued to evaluate alternative approaches to the measurement and estimation of international migration, with administrative data sources now an important component of the process.

Existing approaches to estimation have been shown to be less than robust (Boden and Rees, 2009) but these methods still underpin the population estimates produced for local authority areas in the UK. The immigration and emigration rates used in the 2007 mid-year estimates for West Yorkshire are illustrated in Figure 11.



Source: ONS mid-year estimates

Figure 11. Immigration and emigration rates, West Yorkshire, 2007

Leeds and Bradford have the highest immigration and emigration rates with the impact upon net migration flows illustrated in the picture presented in Figure 3.

To examine the robustness of estimates of international migration, researchers at Leeds University have compared ‘official’ estimates of immigration (migrants whose duration of stay is more than 12 months) with empirical evidence from alternative administrative sources, most notably the registration of foreign nationals with a General Practitioner (GP) and the registration of foreign workers for a National Insurance Number (NINo). Both sources provide continuous data capture, albeit for a different population to that captured by ONS estimates. GP registration is not compulsory and may not capture certain groups of migrants, young males in particular. No length of stay information is captured by the registration process and migrants are not required to de-register when they leave the country. NINo registration captures workers only, excluding students and dependents. Again length of stay is not recorded and de-registration is not required. Despite these drawbacks the two administrative sources do provide a large sample of statistical evidence on migrant activity at a local level that is based upon factual data and not on estimates derived from a combination of national surveys and previous census information.

A comparison of ONS immigration estimates used in the population mid-year estimates for West Yorkshire with GP registrations and NINo registrations is presented in Figure 12. The gap between the GP registration total and the ONS estimate has been used to suggest that the latter may be too high, particularly when compared to the pattern evident in other parts of the UK (Boden and Rees, 2009)

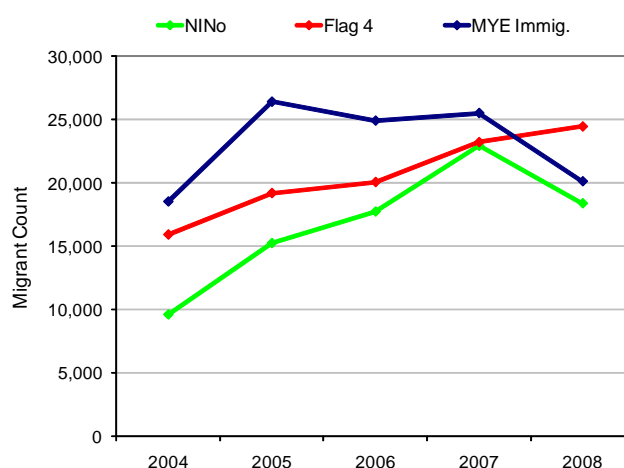


Figure 12. Immigration statistics, West Yorkshire 2004-2008

The differences between the datasets are particularly noticeable in Leeds when compared to Bradford (Figure 13). The most recent changes to ONS immigration estimation methodologies have attempted to make direct use of both GP registrations and NINo registrations but current

indications suggest that although data is being used at a local authority level, regional estimates remain unchanged. Immigration estimates for West Yorkshire remain a source of great uncertainty and given the importance of international migration as a driver of population growth in the most recent official mid-year estimates it affects confidence in the robustness of the data.

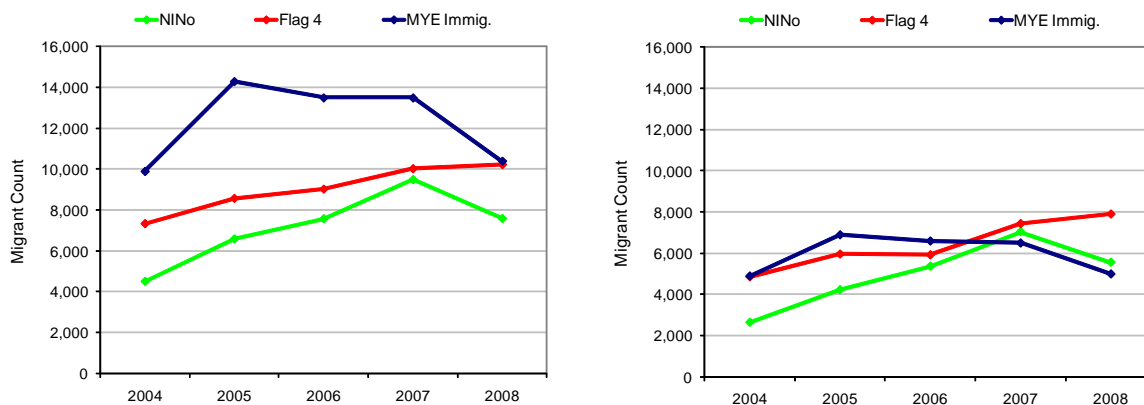


Figure 13. Immigration statistics, Leeds & Bradford 2004-2008

NINo statistics provide an interesting, alternative picture of immigration in the UK, despite the inability to measure length of stay and the corresponding process of emigration. After EU expansion in 2004 there was a surge of in-migration from Accession states, supplementing the existing non-Accession migrant streams (Figure 14). It is interesting to see that the latter have remained relatively stable since 2004 as Accession flows have peaked and then fallen sharply in 2008. New Commonwealth flows are a particular feature of the established immigration streams of West Yorkshire into the existing communities in Bradford, Kirklees and Leeds.

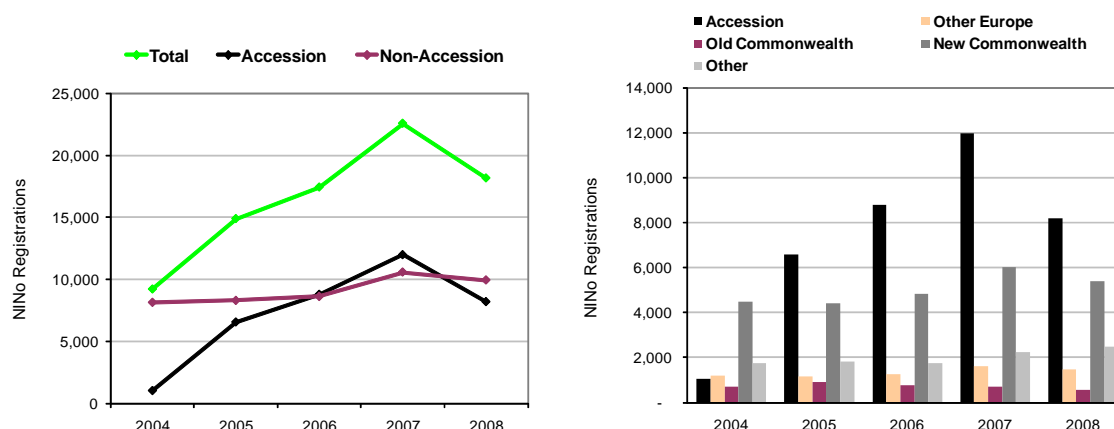


Figure 14. NINo registration profile, West Yorkshire, 2004-2008

The West Yorkshire pattern is reflected in both Leeds and Bradford, although non-Accession flows to Leeds have remained higher than Accession flows since 2004 (Figure 15). In Bradford, the level of Accession and non-Accession migrant inflows have been similar since 2004 (Figure

16) but the later have been dominated by New Commonwealth migrants; in contrast to Leeds which had a greater mix of migrants from elsewhere in Europe and from Old Commonwealth countries.

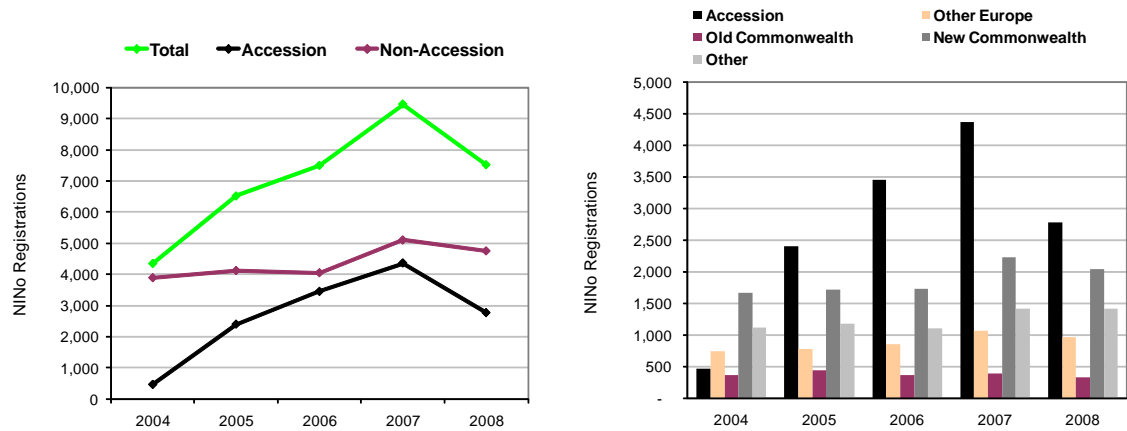


Figure 15. NINo registration profile, Leeds, 2004-2008

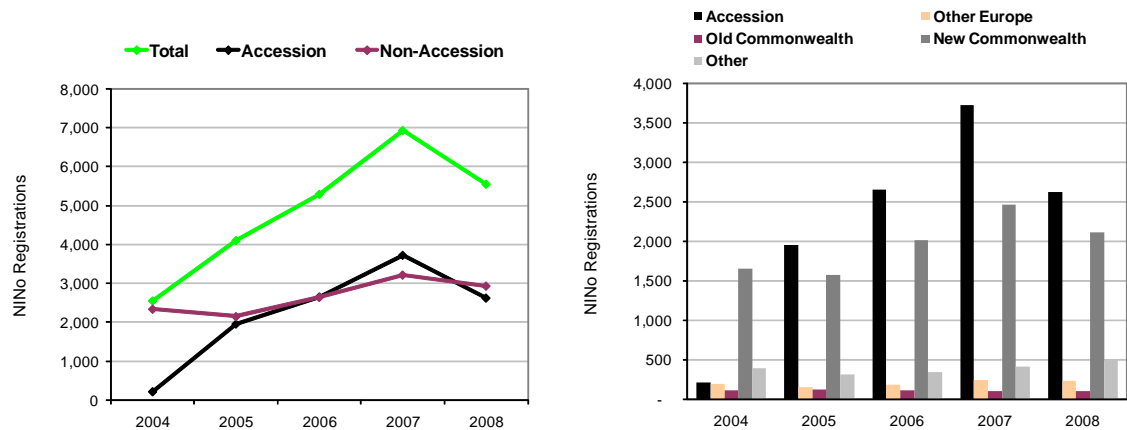


Figure 16. NINo registration profile, Bradford, 2004-2008

7. Changing profile of the West Yorkshire population

Using statistics from ONS 2006-based sub-national population projections, Figures 17a & b and 18a & b show comparable population pyramids for both England and West Yorkshire, with some notable differences. Firstly whilst the shapes of the pyramid are broadly similar, there is a big difference at age 20-24, where in West Yorkshire, this is the age group containing the highest proportion of the population. The reasons for this are clear in the context of the earlier evidence on internal migration and the huge attraction the region is for students studying in higher education. The much lower population in the 25-29 age group reinforces the transient nature of these students and their propensity to migrate away again from the region once their studies have finished. The rest of the population pyramid for West Yorkshire follows a similar pattern to the English one, with a slight bulge in the population between the ages of 35 and 44, and the later outlier at age 55-59 – a feature of the post-World War II baby boom.

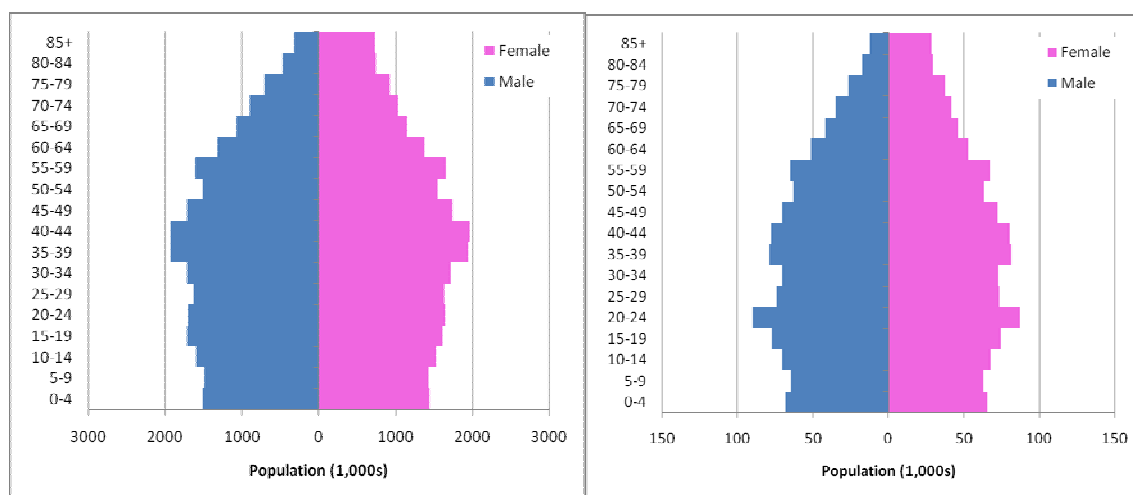


Figure 17a – Population profile, England, 2006 (b) – Population profile, West Yorkshire, 2006

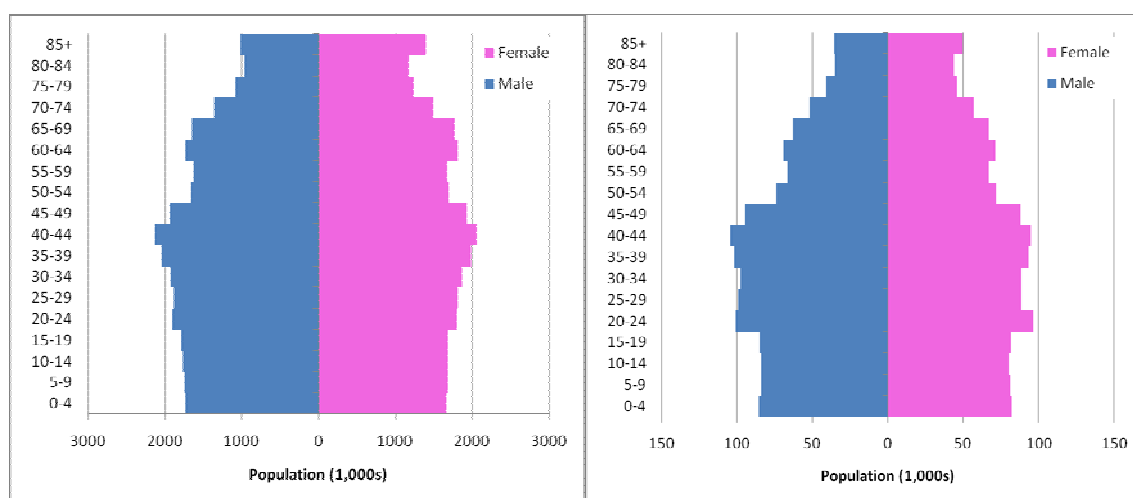


Figure 18a – Population profile, England, 2031 (b) – Population profile, West Yorkshire, 2031

In the 25 years between 2006 and 2031, the age structure of the population of both England and West Yorkshire is set to change. An aging population means that in 2031 in England, a higher proportion of the population will occupy the older age groups. In West Yorkshire, whilst this is true to a certain extent, the growth in the post-50 age groups is less pronounced than it is for England as a whole. Of note is that after the jump in the population at around age 20, certainly for males and to a slightly lesser extent for females, the immediate decline in the population at age 25-29 has been somewhat arrested. The other main point of observation is that the proportion of the population under 20 is projected to increase quite noticeably when compared to 2006, perhaps a reflection of the projected increase in the Pakistani population – a population characterised by high fertility rates – in the region over this period.

So with the ethnic populations of West Yorkshire potentially affecting the age profile of the region leading up to 2031, it is useful to first examine the current ethnic break down of the population. Figure 19 details the percentage of the total population all non-white British groups comprise in 2006. By far the group which comprises the largest percentage of the population is the Pakistani group. Across the whole UK, the Pakistanis comprise only around 1.5% of the population. In West Yorkshire the proportion is over four times higher at over 6% of the population. The proportion of Pakistanis is particularly high in Bradford, where almost 16% of the population are Pakistani. The only other ethnic group with proportions above the national average are the Indians, however this is only very slightly over the national average.

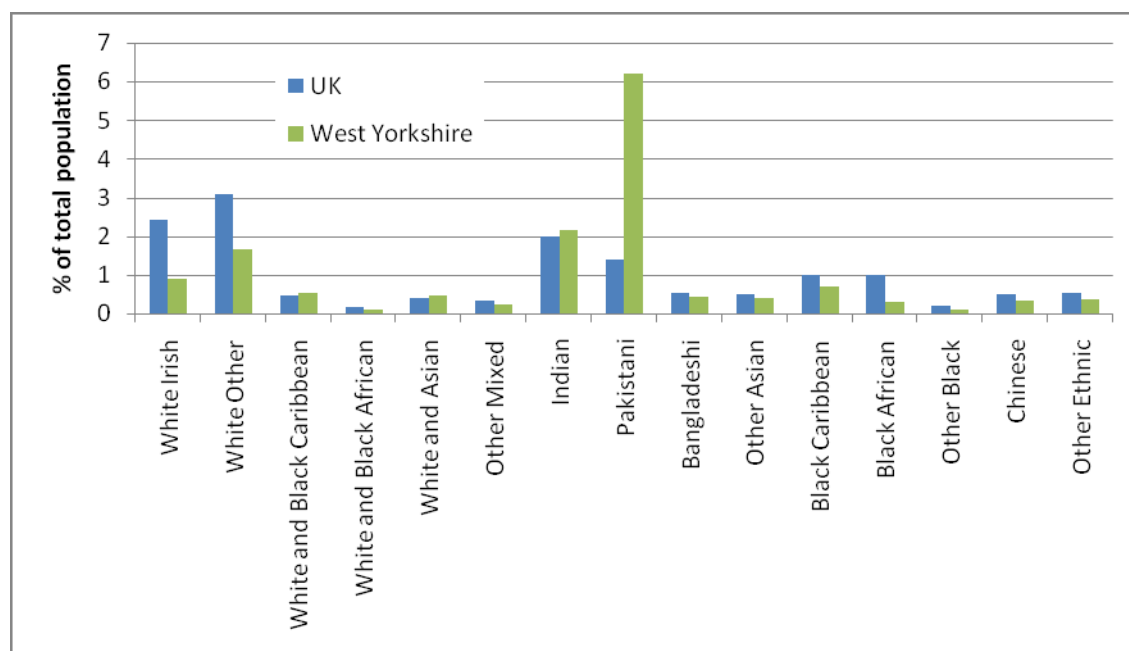


Figure 19 – Non-white British ethnic groups as a percentage of total population, 2006

All other non-white British ethnic groups comprise proportions of the population much lower than the UK average. Significantly lower are the White Irish and White Other groups with proportions around half that of the rest of the UK. Examining the proportion of the population in each ethnic group is interesting, but it does not allow us to compare the relative concentrations of these ethnic groups when compared to all other areas in the UK. Location quotients allow us to do this, with a ratio of 1 representing the average concentration across all areas in the UK; a positive value an over-representation, and a negative value an under-representation. Figure 20 shows the location quotients for each ethnic group in West Yorkshire in 2006. Clearly the Pakistani ethnic group not only comprise a large proportion of the West Yorkshire population, but when compared with the rest of the UK also are far more concentrated in the region than would be expected from the national average. Whilst location quotients are high for Calderdale (3.4) Kirklees (5.0) and Leeds (1.6), they are particularly high for Bradford, which exhibits a location quotient of 11.3. Some other ethnic groups such as the White and Asian, White and Black and Indian groups have very slightly positive location quotients, but all other ethnic groups have noticeably negative location quotient associated with them, indicating that the concentrations of these groups are lower than would be expected.

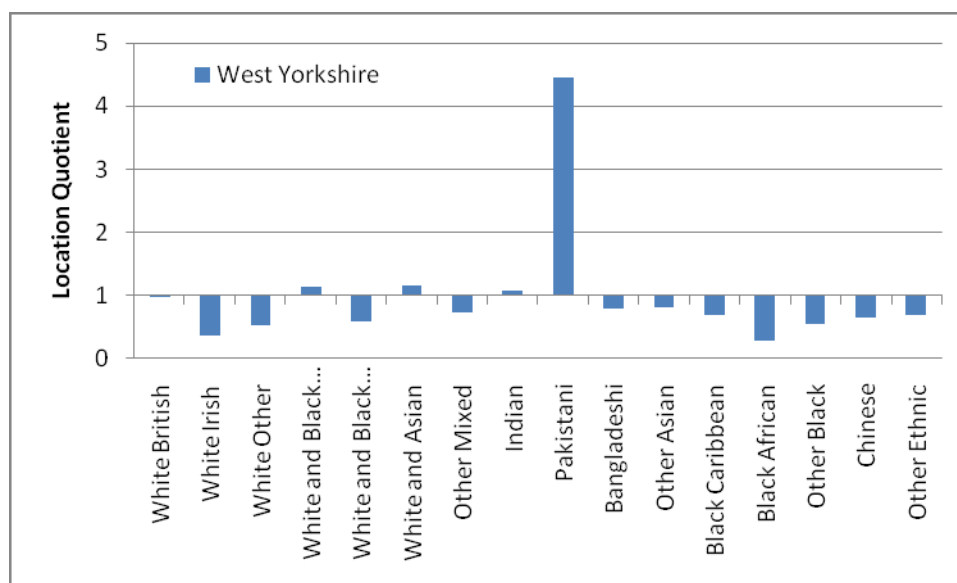


Figure 20 – Location quotients of ethnic groups, 2006

Another metric which is useful in the study of ethnic group populations is the index of diversity. Rather than measuring the concentration of the ethnic group, the index of diversity measures how mixed an area is – i.e. the likelihood that two people who bumped into each other in the street in an area would differ by ethnicity. An index of 1 would mean that it is 100% likely that they would differ; 0, that it is 100% likely they will not differ. Of course, with large areas, the indices close to 1 or 0 will not occur. In 2006, the index of diversity for the whole of the UK was 0.27 – in West Yorkshire the figure was 0.27 as well, indicating that the region lies on the national average for

diversity. Of course, within the region diversity varies quite considerably, with Wakefield being the least diverse district with a diversity index of only 0.07; this is compared to Bradford which exhibits a diversity index of 0.44. Surprisingly, Leeds, despite being the largest City in the region, has a diversity index which is lower than the UK average at 0.22.

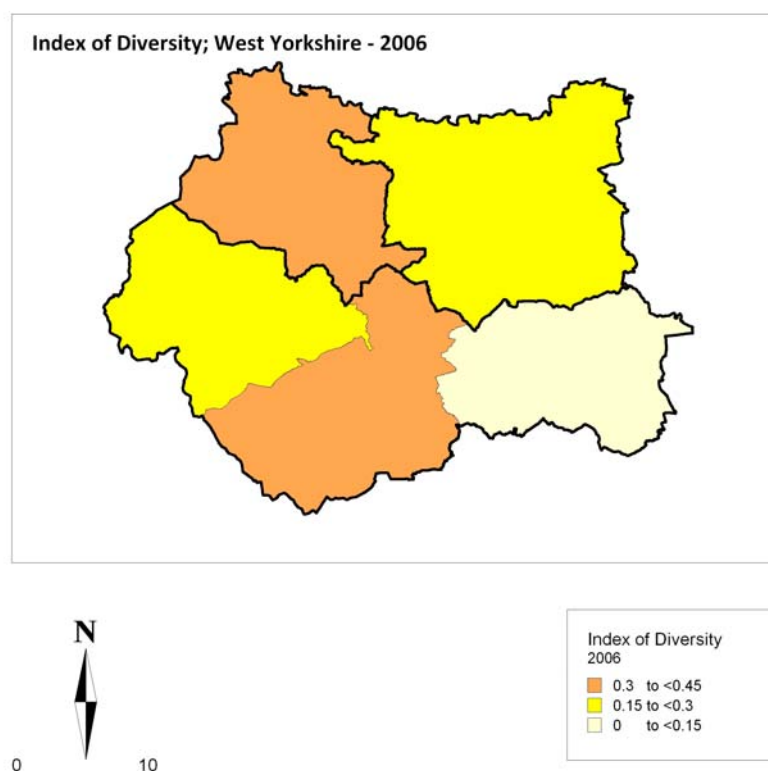


Figure 21 – Index of diversity, West Yorkshire districts, 2006.

Examining the projected change in ethnic group location quotients and diversity by 2031, a number of points can be noted. Firstly, the average non-white British location quotient across all districts and all ethnic groups will reduce from 0.89 to 0.82, indicating that the ethnic groups within West Yorkshire will become even less concentrated in relation to the rest of the country. This is against a backdrop of the most concentrated Pakistani group increasing its location quotient from 11.27 to 11.33. In terms of diversity, the region is projected to increase its diversity from an index of 0.27 to 0.31. Whilst broadly in line with the projected national increase to 0.32, these projections do suggest that diversity will increase more slowly than the national average over this 25 year period.

8. The impact of the DEMIFER scenarios on West Yorkshire

8.1 Scenario definition

Five scenarios have been defined as a generic framework to evaluate alternative projections of demographic change 2005-2050. These scenarios are driven by alternative assumptions on fertility, mortality, internal migration, international migration within Europe and international migration to/from outside Europe. They are designed to evaluate alternative trajectories of growth that imply greater or lesser degrees of competitiveness or cohesion across the regions of Europe.

STQ	Status Quo
GSE	Growing Social Europe
LSE	Limited Social Europe
EME	Expanding Market Europe
CME	Challenged Market Europe

The Status Quo scenario retains the components of demographic change for the base period throughout the projection horizon and acts as a benchmark against which the four alternative growth scenarios are compared.

8.2 Scenario summary

A summary of the key outcomes of the five alternative scenarios in West Yorkshire is presented in Figure 22 with more detail in the charts contained in Figure 23. Maintaining the Status Quo (STQ) would result in a 25% increase in population to 2050 but the relative importance of the components of change would alter considerably. A loss through natural increase would be the result of an increased number of deaths relative to births. The net loss through internal migration would be greatly accentuated and net emigration from outside Europe would be the dominant driver of population growth.

The ‘Social Europe’ scenarios imply greater cohesiveness across the European regions with more convergence on fertility and mortality inequalities and a more balanced attractiveness of individual regions as migrant destinations. The Growing Social Europe (GSE) scenario achieves 66% population growth 2005-2050. High fertility results in an increasing number of births and a significant contribution to growth through natural increase. Net internal migration increases despite greater convergence being achieved between the relative attractiveness of UK destinations. Migration to and from Europe continues to increase throughout the projection period but the net

impact is gradually reduced. Net –immigration from outside Europe remains a dominant driver of growth throughout.

With a smaller increase in fertility the Limited Social Europe (LSE) scenario results in less significant growth to 2050 (35%) compared to GSE, and a reduced influence of natural increase as a component of this growth. Net out-migration to other regions of the UK remains stable throughout the projection period. Net immigration both from within Europe and from outside Europe remain as key drivers of growth although the volume is reduced from the base period due to lower inflows.

	STQ		GSE		LSE		EME		CME	
Population change 2005-2050	25%		66%		35%		71%		34%	
Components of change	2005/10	2045/50	2005/10	2045/50	2005/10	2045/50	2005/10	2045/50	2005/10	2045/50
Natural Increase	35,821	-2,959	34,541	111,393	31,697	28,159	35,940	134,264	30,925	18,854
Net Internal	-10,602	-25,656	-10,877	-23,808	-10,624	-11,069	-11,025	-60,484	-10,762	-37,453
Net Europe	17,774	5,778	20,527	9,808	19,366	6,685	21,177	10,666	19,989	7,901
Net External	49,843	46,566	57,406	80,333	51,524	38,520	60,307	100,325	54,378	63,813
All components	92,836	23,729	101,597	177,726	91,963	62,295	106,399	184,771	94,530	53,115

Figure 22 – Scenario summary, West Yorkshire, 2005-2050

The ‘Market Europe’ scenarios imply greater competitiveness between European regions. The Expanding Market Europe (EME) scenario achieves the most substantial population growth (71%) over the projection period but results in a substantial and increasing net loss through internal migration as West Yorkshire loses out to more attractive regional destinations. Population growth is driven by very high net immigration from within and outside Europe, which in turn fuels a large increase in the number of births to the more youthful migrant population. The EME scenario presents a diluted version of the Status Quo scenario with an increasingly diverse population resulting from the high net migration from abroad and continued net loss through internal migration.

The Challenged Market Europe (CME) scenario achieves less significant growth to 2050 (34%) than the EME scenario. The retention of mortality and fertility inequalities significantly reduces the impact of natural change. Net losses through internal migration are significant as the competitive nature of regions draws migrants away from West Yorkshire. Net immigration is the dominant driver of growth, primarily from outside Europe.

Scenario profile:

West Yorkshire

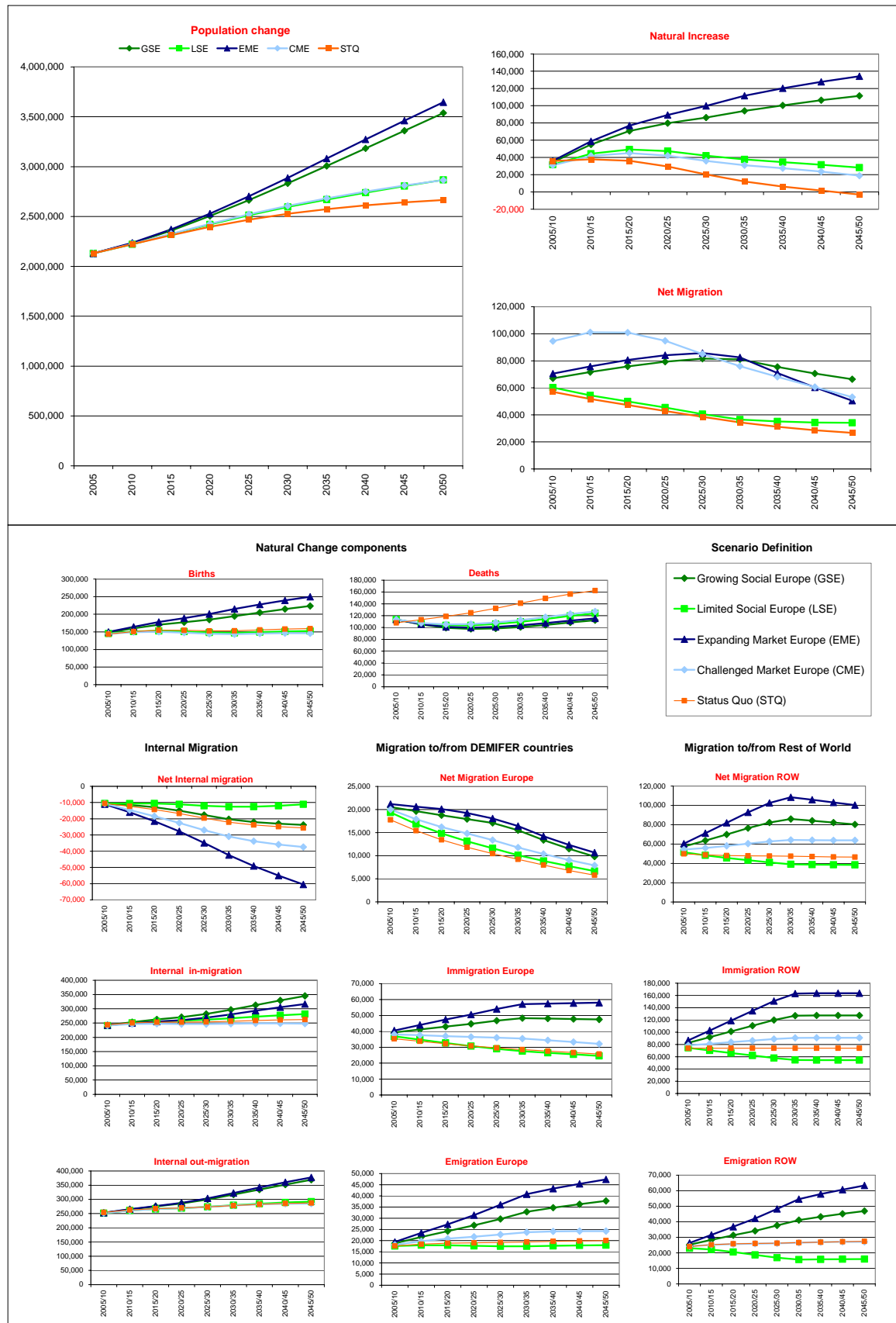


Figure 23 – Components of change under alternative scenarios, West Yorkshire, 2005-2050

The effect of the various scenarios upon the age profile of West Yorkshire's population are illustrated in Figure 24 with a complementary illustration of these temporal shifts provided by the change over time in the key dependency ratios (Figures 25). The old-age dependency ratio (ODR) is defined as the ratio of population aged 65+ to population aged 15-64 years. This is a demographic indicator of ageing which provides the number of individuals above retirement age relative to the number of people in the economically active age-groups. An increase in the ODR suggests that more elderly people will need to be supported by the same number of people in the labour age. The very-old-age dependency ratio (VODR) provides an additional measure of how the increase of the most elderly will impact upon the population. It is the ratio between those aged 75+ and those aged 15-64 years, so, with the same denominator but a smaller numerator, will always be lower than the ODR.

Demographic change is the key driver of the dynamics of labour markets; however, it does not take into account variations in labour force participation. The economic old-age dependency ratio (EODR) is the ratio of the economically inactive population above retirement age (65+) to the active population aged 15 +or more. The EODR measures the burden of the inactive population of pensionable age on the working population and is an indicator that could be used to assess the sustainability of state pension systems.

Finally, the labour market dependency ratio (LMDR) is defined as the ratio of the total economically inactive population to the total active population. This indicator measures the overall economic burden of the inactive population on the labour market. The LMDR value depends not only on the size of the retired population, but also on the labour market participation of young people who may be in higher education rather than actively employed in the labour force.

Each of the four growth scenarios results in significant ageing of the West Yorkshire population as large, baby-boomer cohorts shift through the population during the projection period. The ODR increases from 22% in 2005/10 to reach 34-40% by 2050. The LSE and CME scenarios present the most extreme impacts of demographic ageing, with ODRs of 42% and 39% respectively by 2050, a virtual doubling of the dependency. The effect of increased longevity is emphasised by the VODR statistics which increase from 14% to 33% in the case of the LSE scenario, with a less extreme increase to 25% in the EME, owing to the higher levels of net immigration that result from this scenario throughout the projection period, maintaining a more youthful age profile.

The LMDR provides a more effective illustration of the effect of demographic ageing through the application of participation rates that might result from alternative scenarios of competitiveness or cohesion. In a Limited Social Europe (LSE) and a Challenged Market Europe (CME) with lower rates of labour force participation the level of dependency rises most sharply, approaching 100% in

the case of LSE, from a base of 64% in 2005. This means that the size of the active labour force would be equal in size to the dependent population, taking into account inactivity in the labour force ages, including students, in addition to the inactivity of the elderly. With higher levels of participation in the GSE and EME scenarios, LMDR are maintained below 80%, lowest for the more competitive Expanding Market Europe scenario. All of these labour force patterns displayed in West Yorkshire, are broadly in line with the patterns shown in the rest of the UK.

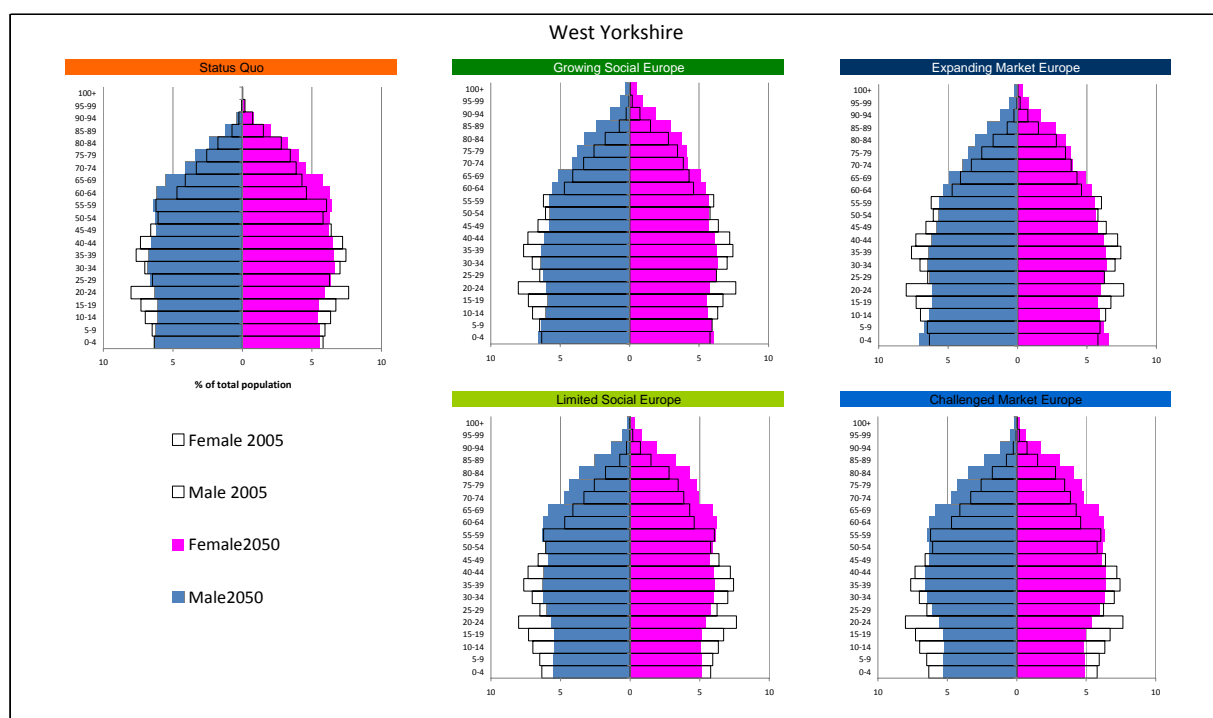


Figure 24 – Age-profiles under alternative scenarios, West Yorkshire, 2005-2050

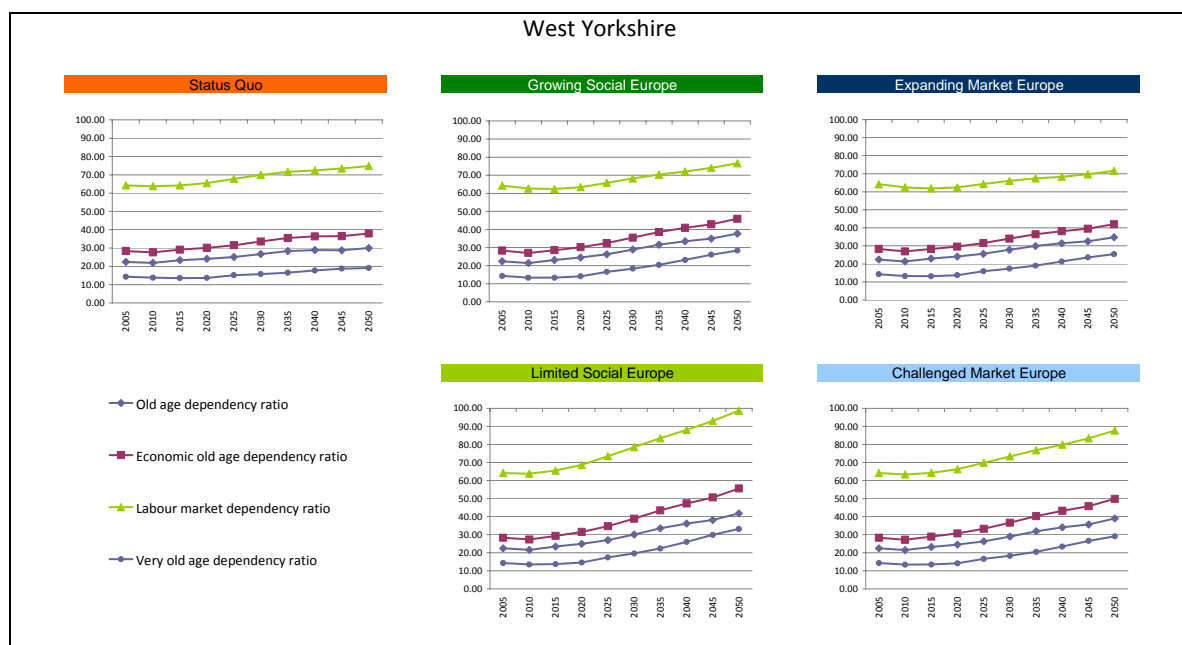


Figure 25 – Dependency ratios under alternative scenarios, West Yorkshire, 2005-2050

9. Summary comments

Sitting in the North of England, 200 miles north of London, West Yorkshire appears as a 'peripheral' region on the European map but it remains an important commercial hub with Leeds as a key node in the UK's economy. However, with the largest financial services industry outside London, Leeds will continue to feel the impact of the economic recession well into 2011 and Yorkshire's latest jobless statistics suggest that the region as a whole, along with the West Midlands, is suffering the highest rates of unemployment in the UK.

Leeds and Bradford provide two very contrasting sub-areas within West Yorkshire. Leeds has a very large student population and in the last twenty years has attracted significant investment to develop its retail centre, expand residential accommodation in and around its central business district and to generally benefit from sustained economic growth prior to the credit crunch. The diversity of its service economy and a relatively small percentage of workers within the public sector compared to other regions will assist its economic recovery.

Bradford, in contrast, has suffered through lack of investment. Its city centre re-development plans have been put on ice leaving a large un-developed hole in the heart of the city that is symptomatic of its current economic position. It remains in the shadow of Leeds and continues to experience significant net out-migration through internal migration, particularly to adjacent areas in Calderdale, Kirklees and Wakefield. This net outflow is balanced by a large net inflow due to international migration that continues to enhance one of the largest concentrations of minority ethnic populations in the country.

In a more competitive market economy West Yorkshire as a region is likely to experience mixed benefits, with the local dominance of Leeds being the magnet for investment and growth. But Leeds, like most other UK cities is fast reaching its capacity in terms of road traffic that it can accommodate and it is faced with challenging new targets for new housing developments that are designed to meet a growing population. Increasingly a regional strategy that positions Leeds within a much wider 'City Region' is necessary to enable a more spatially integrated approach to economic development, the much needed enhancements to public transport infrastructure and the need to provide adequate market and affordable housing to a growing population. A more cohesive market economy, which seeks to reduce economic and demographic inequalities between regions, is a challenging scenario, particularly in a region like West Yorkshire with such diversity within its borders. The Northern Way initiative, has brought the three regions of the north of England (North East, North West and Yorkshire and Humber) together to facilitate a more 'cohesive' approach to economic development but it again is faced with a network of cities which

see themselves very much in competition with each other and sub-regions which demonstrate huge spatial inequalities and significant demographic diversity.

Abbreviations

ASFR	Age Specific Fertility Rate
CLG	Communities and Local Government
DEMIFER	Demographic and Migratory Flows affecting European Regions and Cities
DWP	Department for Works and Pensions
EODR	Economic Old Age Dependency Ratio
EU	European Union
GAD	Government Actuary Department
GOR	Government Office Regions
LLTI	Limiting Long-Term Illness
LMDR	Labour Market Dependency Ratio
LSOA	Lower Super Output Area
NPP	National Population Projections
NUTS2	Nomenclature of Territorial Units for Statistics, level 2
ODR	Old Age Dependency Ratio
ONS	Office for National Statistics
PBS	Points Based System
SMR	Standardised Mortality Ratios
SNPP	Sub-national Population Projections
SPA	State Pension Age
TFR	Total Fertility Rate
VODR	Very Old Age Dependency Ratio
ASFR	Age Specific Fertility Rate
CLG	Communities and Local Government
DEMIFER	Demographic and Migratory Flows affecting European Regions and Cities
DWP	Department for Works and Pensions
EU	European Union
GAD	Government Actuary Department
GOR	Government Office Regions
LLTI	Limiting Long-Term Illness
LSOA	Lower Super Output Area
NPP	National Population Projections

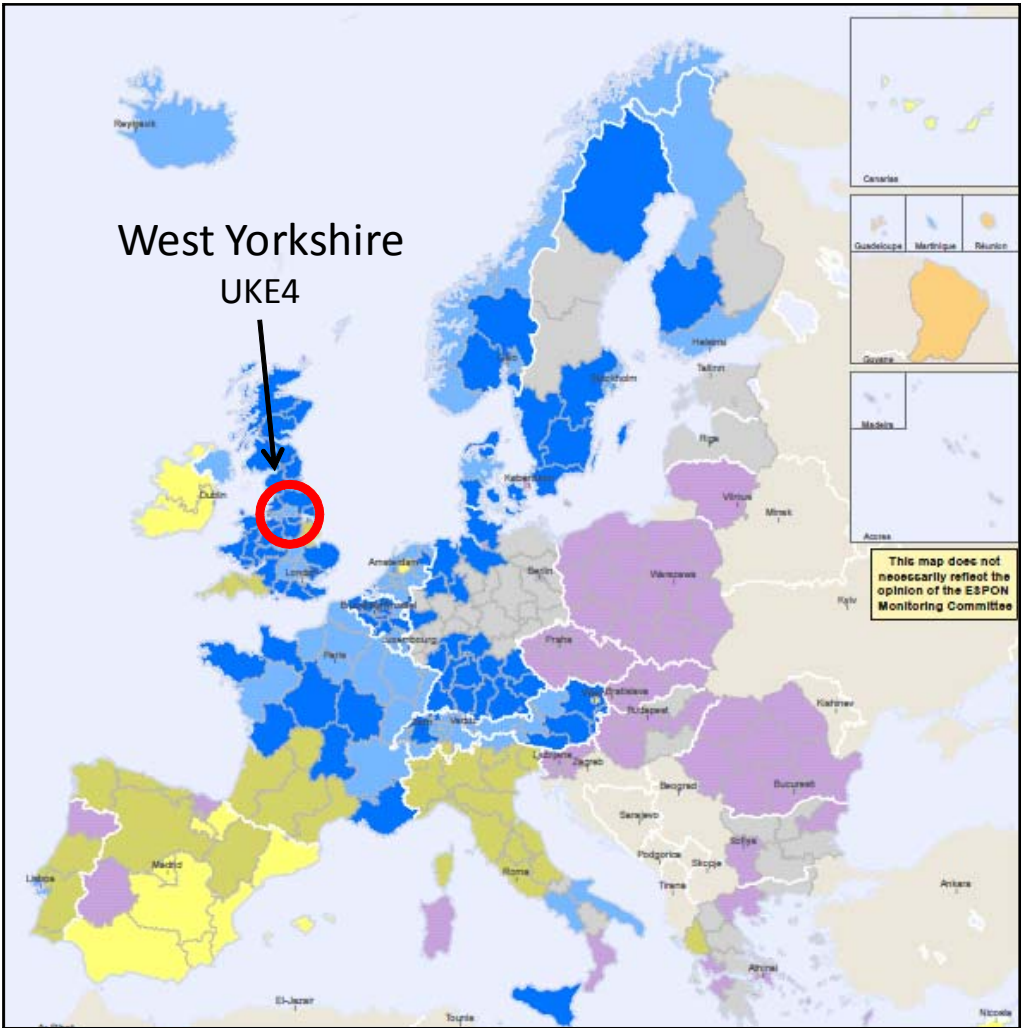
NUTS2	Nomenclature of Territorial Units for Statistics, level 2
OAD	Old Age Dependency (ratio)
ONS	Office for National Statistics
PBS	Points Based System
SMR	Standardised Mortality Ratios
SNPP	Sub-national Population Projections
SPA	State Pension Age
TFR	Total Fertility Rate

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Appendix

A1. West Yorkshire – location and typology



Type	Classification	Cases
1	Euro Standard	79
2	Challenge of Transition	61
3	Family Potentials	55
4	Challenge of Ageing	33
5	Challenge of Decline	38
6	Young Potentials	15
7	Overseas	5
EU 27+4	ESPON Space	286