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# People in cities: the numbers

Future of cities: working paper

Foresight, Government Office for Science

# People in cities: the numbers

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June 2014

This review has been commissioned as part of the UK Government's Foresight Future of Cities Project. The views expressed do not represent policy of any government or organisation.

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# Foreword

The Future of Cities project is informed by working papers which are commissioned by the [Lead Expert Group](#) and written by authors from academia and industry.

These papers highlight the key challenges and opportunities facing cities in the UK out to 2065. The Expert Group will draw upon this evidence base to develop project outputs which will be published in 2014 and 2015.

These outputs will aim to inform near-term policy making in both local and central government, which achieves desirable long-term outcomes for UK cities.

Professor Sir Alan Wilson

# Executive summary

Central question: How have city population numbers and age structure changed since 1981 and what are the likely trends to 2040 and 2065? Key subsidiary question: With what confidence can the trends of the past 30 years be used to anticipate the next 30-50 years?

The most important single factor affecting the future growth and size of cities is the pace of the UK's overall population growth. This is because the 64 cities (defined on the basis of best-fit local government areas to their Primary Urban Areas) in aggregate make up over half (54%) of total population and also because they were broadly matching national growth 2001-2011 (7.5% cf UK's 7.1%).

The latest (2012-based) national population projections (published November 2013) indicate population growth of 9.6m to 2037 (increase of 15% from 2012) and of 16.2m to 2062 (increase of 25% from 2012). Subnational projections are not expected until later this month, but if cities continue to track UK growth rate, then the expectation would be of extra 5.2m city dwellers by 2037 and a further 4.1m by 2062, i.e. extra 9.3m over the 50 years.

In terms of age structure, if the cities in aggregate follow the national trend (which they have done broadly in the past despite having a somewhat younger population than the UK as a whole), the main change between 2012 and 2062 will be a big increase in the proportion of people aged 75+ (up by nearly 8 percentage points) along with a 0.8 point increase in 60-74s, compared to falls of 1.3 points for 0-14s, 2.6 for 15-29s, 2.2 for 30-44s and 2.7 for 45-59s.

But a key area of uncertainty in both population numbers and age composition is how close UK growth will be to this 'principal projection' set of figures. For 2062, when the principal projection is 79.9m, the variants range from a high of 93.0m to a low of 67.5m (the latter only 4m higher than the 63.7m level of 2012). The main factor is migration: the (unrealistic) zero net migration assumption gives 66.2m for 2062.

Across the 64 cities (including by UK region and size group), there are the additional uncertainties about the (changing) attractiveness of places not just for international population movements but also for within-UK migrants.

The most impressive feature of the last three decades has been the resurgence of cities and especially of the big cities. Across the full urban/rural scale this has meant a major transformation from the 1980s pattern of 'counter-urbanization' (whereby growth rates then rose progressively with reducing urban status) to the 2000s when a very similar rate prevails across the hierarchy.

There is still a strong net 'counter-urbanization' pattern in terms of within-UK migration, but this is now fully offset by an increasing 'urbanization' pattern (higher growth for the more urban places) for natural increase and international migration, with London leading the way on both. Both these components of change have been running at a much higher level since 2001 than previously, so looking ahead there is the question of whether this will remain the case or even accentuate or whether rates will move back towards their previous levels.

In terms of the 64 cities individually, it is of course even more difficult to look ahead with confidence, judging by past experience. London is just one of several cities that have seen their 10-year growth rate surge by 10% points or more between the 1980s and the 2000s, others including Bradford, Leicester, Liverpool, Manchester, Oxford and Sheffield.

At the other extreme, the growth rate of Milton Keynes fell back by 24% points between the 1980s and the 2000s, with other new towns like Telford and Northampton also moving against the national tendency, along with Reading and seaside resorts like Blackpool, Bournemouth and Hastings.

On the other hand, 36 of the 64 cities broadly tracked the UK shift of +5.1% points between these two decades, suggesting a degree of stability for such places once the UK growth rate is taken into account.

# I. Introduction

Following discussion with Foresight, it was agreed that the primary focus of this evidence-based working paper should be on the question: how have city population numbers changed over the last 30 years and what are the implications of possible trends to 2040/2065?

The working paper builds on the *State of the English Cities Report* (SOECR), specifically the volume on 'Demography and the Big Picture', which surveyed the changing urban scene from 1981 to 2003 (see DCLG, 2006, and Champion, 2006, respectively).

The key features of work for the historical evidence base were as follows:

- Updating of the evidence base to 2011 for decade-based analyses.
- Extension of the evidence base to include Wales, Scotland and Northern Ireland.
- Adoption of the SOECR definition of cities as extended to the UK by the Centre for Cities (CfC), namely 64 Primary Urban Areas (PUAs, henceforth referred to as 'cities') for the UK, and as delineated by CfC, namely on the basis of best-fit post-2009 local and unitary authority areas (note: The use of administrative districts as building blocks means that there are a few cases – flagged up in the commentary – where a part of a city's continuously built-up area is excluded because it does not comprise a large enough proportion of the adjacent district for the latter to be included in the PUA definition).
- Analysis of population change and its components using estimates adjusted in the light of the results of successive Censuses, covering overall population change from 1981 and with a breakdown into natural change, international migration, within-UK migration and other changes from 2001.
- Examination of patterns and trends in age structure, including an analysis of the change in size of 10-year age cohorts between 2001 and 2011 that enables fuller insights into the longer-term effects of age-selective migration.
- Presentation of results for the 64 cities individually, plus aggregation of these to the three SOECR city size groups of Major Cities (termed 'Mets' in SOECR), Large Cities (other PUAs with a population of at least 275,000 in 2001 when defined at ward level) and Small Cities (other PUAs with a population of 125,000 or more in 2001), with the remaining local authorities classified into either Large Towns or Small Towns & Rural, all these within the context of a three-fold division of the UK into South & East England (comprising the former Government Office Regions of London, South East, South West, East of England and East Midlands), North & West England and Rest of UK (see Annex 1 for the classification of cities by broad region and size group).
- Examination of intra-city variations in overall population growth since 1981 for seven of the UK's largest cities where the local authority geography allows the core ('central city' in US parlance) to be distinguished, these being Belfast, Birmingham, Glasgow, Liverpool, London, Manchester and Newcastle.

This evidence base is used to identify the principal dimensions of the changing urban scene since 1981 and to raise questions about the identity and future trajectory of the

major factors that will influence population growth for the UK and its cities to 2040/2065. Unless indicated otherwise, the results presented here are all based on the analysis of data files provided by the Office for National Statistics (ONS), which are Crown Copyright. They all refer to estimates of mid-year population revised in the light of census results, with change periods thus being mid-year to mid-year.



## 2. Expectations from the literature

The two dominant spatial narratives impinging on the past performance of UK cities and, by extension, their likely future prospects are the so-called 'North-South drift' and 'urban-rural shift'. For instance, in their account of *Contemporary Britain: A Geographical Perspective*, Champion and Townsend (1990) used these two dimensions to examine the contrasting nature and fortunes of a four-way split of the country, such that the rural South was the most dynamic quadrant and the urban North the least. The persistent salience of this regionalization has subsequently been reflected in its adoption for the *State of the English Cities Report* (DCLG, 2006), which – as just outlined – is again used as the basis for the more aggregate sections of the analyses undertaken for the present study.

At the same time, over the last quarter of a century there have been some developments that have deviated from this picture, most notably affecting migration, the main driver of sub-national variation in annual population growth rates. One that is not exactly new and indeed is well documented from previous decades (Champion, 2005; Fielding, 1993; Stillwell et al., 1992) is the effect of the business cycle. Traditionally with a periodicity of around a decade, such as in the recessions starting at the end of the 1970s and the end of the 1980s, the recessionary periods tend to be associated with slowdowns in both urban-to-rural migration and North-to-South moves as house sales and job vacancies dry up. The latest cycle, however, has lasted almost two decades, with a 'long boom' beginning in London in the early 1990s and lasting until 2008 (apart from the blip of the dot-com recession in 2001). But when the downturn came, it proved to be the deepest cutback in output since the Great Depression that followed the Stock Market crash of 1929, such that in the USA this has been labelled the 'Great Recession' (Grusky et al., 2011). Certainly, as documented by Lomax et al. (2013, 2014), it has had a deeper and longer-lasting impact on within-UK migration patterns than previous recessions, with no recovery of migration rates observed by the end of that study in 2011, prompting the question as to whether the latest recession may herald a new regime as would be associated with a new Kondratieff long wave and the type of deep structural change portrayed in Fielding's (1993, 2012) conceptual model of migration.

The slowing of the 'urban exodus' observed by Lomax et al (2012) is consistent with the 'urban resurgence' reported as taking place in the UK and many other countries over the last two decades (see, for instance, Turok and Mykhnenko, 2007). This would seem to contradict earlier speculation that the post-industrial era following the contraction of the manufacturing sector after the 1960s was linked to a fundamental reversal in population redistribution away from urbanization to a 'counter-urbanization' pattern involving a rural and non-metropolitan renaissance and a negative relationship between population growth and city size (Berry, 1976; Champion, 1989, 2001; Fielding, 1982). Now the latter is interpreted as the 'last fling of Fordism', with the onset of 'globalization' leading to the fastest growth taking place in financial and business services, a development which has not only bypassed rural areas but particularly favoured the largest urban centres (the so-called 'world cities') over the medium-sized and small ones (Champion and Townsend, 2013; Parkinson et al., 2012). *State of the English Cities* (ODPM, 2006) was able to report London's remarkable post-1980s turnaround, while also observing that the 'urban renaissance' anticipated by the Rogers Report (1999) had by then produced only patchy results. Even so, a study by the Centre for Cities (Nathan and Urwin, 2007) revealed a marked rise in city-centre living since 1991, with further increases confirmed for a number of UK cities by the results of the 2011 Census (Rae, 2013).

London has for some time been recognised as playing the dominant player in UK migration. Several contributions to the Institute of British Geographers Working Group on migration, notably Coombes and Charlton (1992) and Stillwell et al. (1992), commented on London's pivotal role for within-UK migration, gaining people of younger working age and then losing retirees and older working-age people. This life-course phenomenon formed the basis of Fielding's (1989, 1992) 'escalator region', whereby the South East of England attracted people in the early stages of their careers who were keen to take advantage of that region's faster promotion chances and later 'cashed in' their assets by moving away again to regions with less heated housing markets and a better quality of life. Despite initial expectations that this might, like counter-urbanization, be the effect of special conditions operating in the 1970s (which formed Fielding's evidence base), more recent studies indicate that London has not only maintained but even enhanced its attractiveness in this respect and also that no other English city comes anywhere close to rivalling it (see, for instance, Fielding, 2012; Findlay et al., 2009; Champion et al., 2013).

London's pivotal role in the national migration system is also evident from studies of the UK's recent population exchanges with the rest of the world. In the boom period of immigration from the New Commonwealth during the 1960s and early 1970s, many employers in the old industrial cities of Northern England and the Midlands, not just London, recruited cheap labour in an attempt to keep down costs in their struggling textile and metal industries and to staff their transport and other public services (Rees and Phillips, 1996). By contrast, the renewal of large-scale immigration to the UK in the late 1980s and again in the late 1990s was much more highly focused, with the Greater London region emerging as the country's sole major 'gateway', especially so for skilled international migrants working in the City but also for low-skill workers in the hospitality, cleaning and security sectors and for successive waves of asylum seekers and refugees. Even though the destinations of 2004-onwards labour migrants from the new EU member states of Central and Eastern Europe proved to be somewhat more evenly spread across the country than most other inflows, London was still by far the largest receiver in absolute terms (Coombes et al., 2007). By the time of the 2001 Census this was clearly evident in the strong representation in London's population of the overseas-born and non-whites, as well as by its parallel transformation from being one of the lowest birth-rate cities in the country to having one of the highest rates (Champion, 2006; Rees et al., 2012).

Thus the context for the present study's updating of the demographic trends experienced by UK cities, as a precursor for assessing the prospects for the next 25-40 years, is one that mixes both continuity and change. The next section on overall population change over the last three decades starts by checking on how far North/South and urban/rural still form the principal dimensions of change across Britain, this then being explored further by reference to the individual performances of the 64 cities. The section after this focuses in on the latest decade, 2001-2011, in order to examine the ways in which the demographic dynamics of the region by city-size types and of the 64 cities separately have been driven by each of the three main components of population change, namely natural change (the surplus of births over deaths), international migration and within-UK population movement. The third and final set of analyses reports on changing age structure, given the major concerns over population ageing identified by Foresight's recent studies of UK demography and ageing – one of the issues picked up again in the concluding section that attempts to assess implications for the future. It should be noted that the report gives no further attention to the other major theme of population change observed above – the rapidly increasing ethnic diversity of UK cities – because this is the subject of the *Urban Social Disparities* working paper. Also, the present report makes only passing mention of the economic underpinnings of many aspects of migration and

population change, as data from the present study is being fed into the employment-based analyses of *The Evolving Economic Performance of the UK System of Cities* working paper.

## 3. Overall population change 1981-2011

Foresight's focus is on the long-term trends in population change over and above the short-term fluctuations caused by economic cycles and other time-limited factors, though later, in the context of the official population projections, there will be some discussion of the substantial post-2001 fluctuations, caused in part by the rise of new types of international migration (notably from the EU Accession States from 2004) and by the onset of and slow recovery from the 2008-09 recession. The emphasis here is therefore on decade-long change, which at city level can be taken back to 1981 on a consistent basis. This commentary begins with the UK context and broad regional picture before drilling down to the city level.

### 3.1 The UK context

The UK context underpins what happens in its constituent countries, regions and cities: if the rate of national population growth rises over time, it would be expected that this would be reflected in the growth rates of its several parts, albeit from their different starting levels of growth and no doubt to varying degrees related to the geographical incidence of the drivers of such a change. Certainly the general principle will be true of the 64-cities aggregate, given that in 2012 this accounted for over half (54%) of the UK's total population. In passing, it should also be recognized that this statistic excludes people living in the rest of these cities' city regions that comprise the wider 'commuting fields' of these built-up areas, such that these cities' share of the national economy is even larger than their population share. As a corollary, therefore, the national context can also be conceptualized the other way round; namely, the success or otherwise of these cities in attracting investment and trade within a global economy will have a strong influence over the UK's overall performance.

Table 1 shows that this effect will be particularly pertinent in the latest decade of 2001-11 as national population growth accelerated markedly more than it had done between the 1980s and the 1990s. By 2011 the UK's population was 12.3% higher than its level in 1981, but three-fifths (4.2m out of the overall 6.9m, or 60.2%) occurred in the final decade. The decadal level of growth was just over 1m in 1981-91, went up to nearly 1.7m in 1991-2001 and then rose steeply to 4.6m in 2001-11. In terms of decadal growth rate, this rose from 1.9% in 1981-91 to 2.9% in 1991-2001 and then surged to a 7.1% increase in the most recent decade.

When we come to look forward to 2040/2065, a judgement will be needed as to whether the much stronger growth of 2001-11 is the result of a set of factors that are specific only to that decade or to processes that are likely to continue into the future, and indeed whether the degree of acceleration between the 1990s and the 2000s may be sustained because of dynamics that are still building. That judgement will be crucial to the actual amounts of growth that the UK's cities will be expected to experience in the future, even if the performance of the 64 cities relative to each other does not alter from its current/recent pattern (see below).

**Table 1: Population change for the UK, 1981-2011**

| <i>Population in year</i> | <i>1981</i>     | <i>1991</i>      | <i>2001</i>     | <i>2011</i>      |
|---------------------------|-----------------|------------------|-----------------|------------------|
| <i>000s</i>               | <i>56,358.0</i> | <i>57,438.6</i>  | <i>59,114.3</i> | <i>63,285.3</i>  |
| <i>Change for period</i>  | <i>1981-91</i>  | <i>1991-2001</i> | <i>2001-11</i>  | <i>1981-2011</i> |
| <i>000s</i>               | <i>+1,080.7</i> | <i>+1,675.7</i>  | <i>+4,171.0</i> | <i>+6,927.4</i>  |
| <i>%</i>                  | <i>+1.92</i>    | <i>+2.92</i>     | <i>+7.06</i>    | <i>+12.29</i>    |

Source: Calculated from ONS files 'MYE6CC1\_mid-2001-mid-2012-unformatted-coc-data-file.xls', 'Table\_10\_local\_authority\_components\_of\_change\_1991\_to\_2001.xls', and 'Table\_8\_local\_authority\_quinary\_age\_groups\_1981.xls'. Crown copyright.

### 3.2 The regional context

The other key contextual feature of longer-term population change in the UK is the leading role played by the southern half of England. This is illustrated in Table 2 by data for the three-fold division of the UK adopted for this study (see above). The sheer dominance of South & East England is particularly striking in the 1980s and 1990s, when it accounted for virtually all the UK's growth, 105% and 95% in these two decades respectively. Indeed in terms of percentage point difference in growth rates, it pulled away from the other two parts of the UK between these two decades, with its growth rate rising by 1.46 points (from 4.20 to 5.66) compared to upward shifts of 0.76 points for Rest of UK and 0.28 for North & West England (see Figure 1).

The picture for 2001-11 is, however, somewhat different. While South & East England was still growing much more quickly than the other two parts of the UK, the percentage point excess over the other two parts narrowed a little, because all three regional divisions shared in the national upsurge in population growth then. Between the 1990s and the 2000s the decadal growth rate of South & East England rose by 3.30 points, lower than the rises of 5.12 and 4.29 points respectively for North & West England and Rest of UK. On the other hand, South & East England's absolute increase in 2001-11 was still almost twice that of the other two divisions combined.

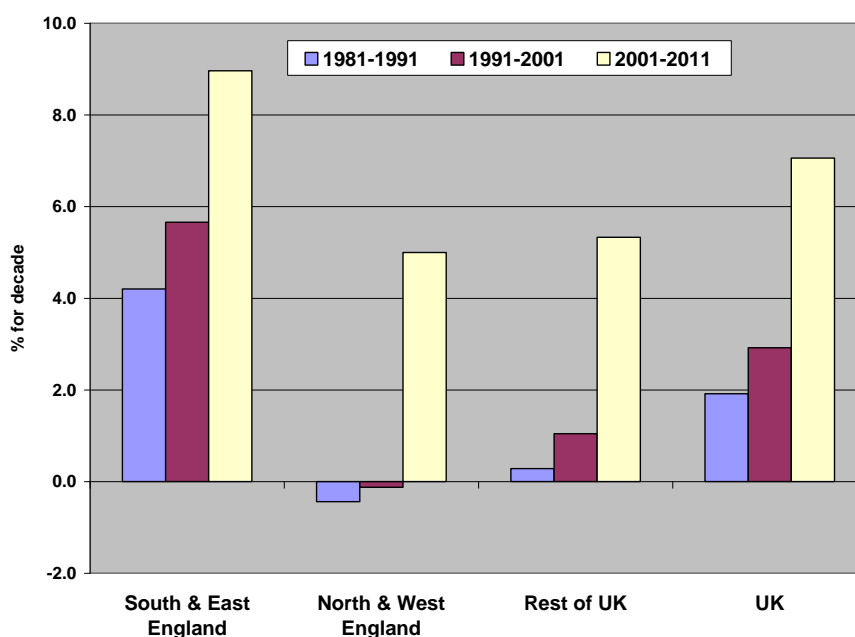
The overall result of these three decades of change was a significant increase in the proportion of the UK population living in the South & East England. The latter's share stood at 51.4% in 2011 compared to 48.2% in 1981, a rise of 3.3% points. Meanwhile, the proportion living in North & West England fell by 2.8% points (from 34.9% to 32.5%) and that in the other three countries combined fell by 0.8% (from 16.9% to 16.1%).

**Table 2: Population change for the UK's three regional divisions, 1981-2011**

|                                 | 1981-1991 | 1991-2001 | 2001-2011 | 1981-2011 |
|---------------------------------|-----------|-----------|-----------|-----------|
| <b>South &amp; East England</b> |           |           |           |           |
| 000s                            | 1,140.5   | 1,600.4   | 2,677.9   | 5,418.8   |
| %                               | 4.20      | 5.66      | 8.96      | 19.97     |
| <b>North &amp; West England</b> |           |           |           |           |
| 000s                            | -86.6     | -24.4     | 978.2     | 867.2     |
| %                               | -0.44     | -0.12     | 5.00      | 4.41      |
| <b>Rest of UK</b>               |           |           |           |           |
| 000s                            | 26.8      | 99.7      | 514.9     | 641.4     |
| %                               | 0.28      | 1.04      | 5.33      | 6.73      |

Source: Calculated from ONS files 'MYE6CC1\_mid-2001-mid-2012-unformatted-coc-data-file.xls', 'Table\_10\_local\_authority\_components\_of\_change\_1991\_to\_2001.xls', and 'Table\_8\_local\_authority\_quinary\_age\_groups\_1981.xls'. Crown copyright.

**Figure 1: Population change rate, for UK and three regional divisions, 1981-2011**



On the basis of this regional evidence, it would seem that the key issue to be addressed in looking ahead is how, once a judgement is made on the future rate of overall UK growth, this level of growth will be distributed across the country. Will the contribution of South & East England remain at around the 64% level recorded for the 2000s or fall further away from its almost 100% level of the 1980s and 1990s, say down to the 50% long-term share, or will it be somewhere in between (e.g. its 1981-2011 overall level of 78%)? The most stable element of the past three decades is that South & East England's decadal growth rate has stayed at about 4-5% points above the rates of the other two parts of the UK, so maybe this is also the most likely scenario for the future; namely, all

three regional divisions broadly tracking the UK rate but with the margin between South & East England and the other two regional divisions being maintained.

### 3.3 The urban/rural dimension

Before looking at the relative performance of the 64 cities individually, this analysis groups them into three city size groups as well as looking across the full settlement size spectrum that also includes two non-city categories, the latter being split on the basis of whether or not the local authority area contains an urban area of 50,000 people (in 2001). Table 3 shows the absolute levels of population change for each category and what this means for the share of total UK growth, while Figure 2 displays the trend in period growth rates across the three decades.

The key feature of Table 3 is the resurgence of cities from the situation in 1981-91 when in aggregate the 64 cities were losing population at a time when the non-city part of the UK recorded a 1.1m increase. By contrast, between 1991 and 2001 the cities gained well over half a million residents and between 2001 and 2011 their growth totalled almost 2.4m. While this upward trend is in keeping with the overall national picture, the cities increased their share of national growth, this rising from just over one-third in the 1990s to nearly three-fifths in the 2000s, by which time they were punching above their weight (54.2% of the UK population in 2011). Moreover, the primary driver of this population turnaround was the Major Cities group, with its net loss of 0.3m people in 1981-91 transforming into a growth of 1.4m between 2001 and 2011, when they accounted for one-third of national population growth (compared to 29.6% of UK population in 2011). Meanwhile, at the other end of the urban/rural scale, the Small Towns & Rural category saw their contribution to national growth fall back from over three-quarters in the 1980s to just a little over one-quarter in the 2000s (though still almost on a par with their 2011 UK population share of 28.6%).

The decadal growth rates shown in Figure 2 reinforce this headline of city resurgence and the eclipsing of rural growth and emphasise that this change was primarily a feature of the most recent decade, though the first signs had appeared in the population turnaround of the Major Cities in the 1990s. In the 1980s the UK was still in the throes of 'counter-urbanization', which had become apparent in the previous decade both in the UK and in several other countries. This is reflected in the negative relationship between population growth rate and settlement size that is seen to be prevailing then, such that the columns become progressively higher moving across Figure 2 from Major Cities to Small Towns & Rural (albeit with no significant difference between Small Cities and Large Towns then). This general pattern remained broadly in place for the 1990s (indeed with the Small Cities now in line), but it is broken by the Major Cities, whose growth then outpaced that of the Large Cities. By contrast, the rates for 2001-11 display no clear relationship with settlement size and the Major Cities have emerged as the fastest-growing of the five categories.

**Table 3: Population change for the UK's five settlement size categories, 1981-2011**

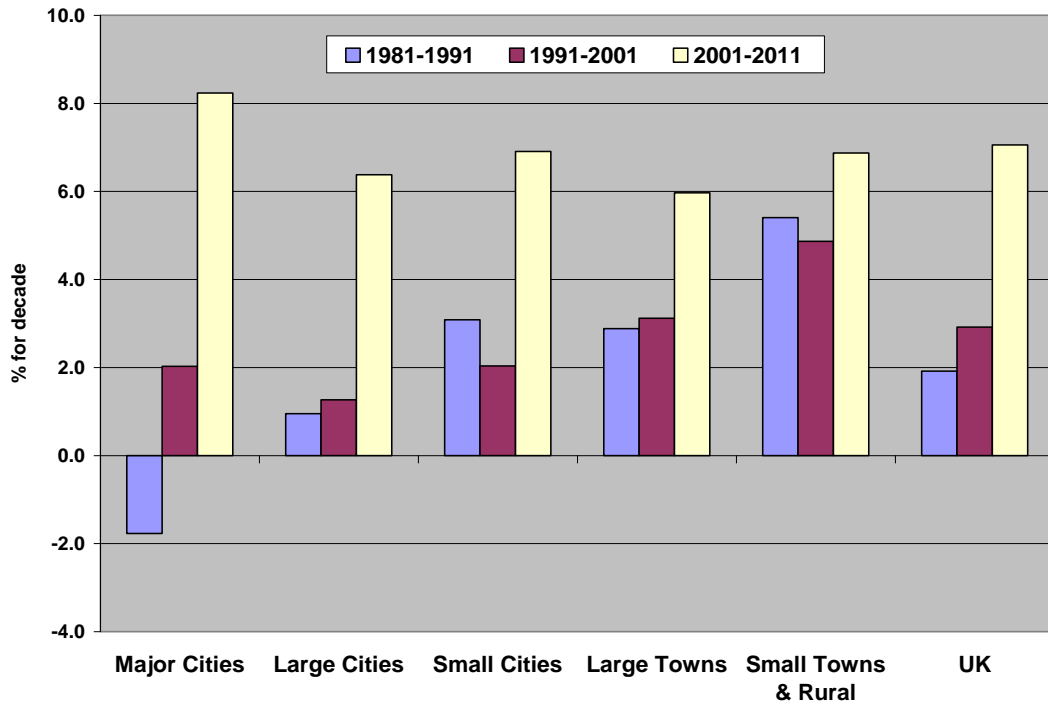
|                                | 1981     | 1981-1991 | 1991-2001 | 2001-2011 | 1981-2011 |
|--------------------------------|----------|-----------|-----------|-----------|-----------|
| <b>000s</b>                    |          |           |           |           |           |
| <i>Major Cities</i>            | 17255.8  | -305.9    | 343.3     | 1,424.3   | 1,461.7   |
| <i>Large Cities</i>            | 7287.1   | 69.3      | 93.0      | 475.2     | 637.6     |
| <i>Small Cities</i>            | 6799.6   | 209.5     | 142.6     | 493.8     | 845.9     |
| <i>Large Towns</i>             | 9675.4   | 279.0     | 310.2     | 612.4     | 1,201.5   |
| <i>Small Towns &amp; Rural</i> | 15340.1  | 828.8     | 786.6     | 1,165.4   | 2,780.7   |
| <i>UK</i>                      | 56,358.0 | 1080.7    | 1675.7    | 4171.0    | 6,927.4   |
| <b>% of UK total</b>           |          |           |           |           |           |
| <i>Major Cities</i>            | 30.6     | -28.3     | 20.5      | 34.1      | 21.1      |
| <i>Large Cities</i>            | 12.9     | 6.4       | 5.5       | 11.4      | 9.2       |
| <i>Small Cities</i>            | 12.1     | 19.4      | 8.5       | 11.8      | 12.2      |
| <i>Large Towns</i>             | 17.2     | 25.8      | 18.5      | 14.7      | 17.3      |
| <i>Small Towns &amp; Rural</i> | 27.2     | 76.7      | 46.9      | 27.9      | 40.1      |
| <i>UK</i>                      | 100.0    | 100.0     | 100.0     | 100.0     | 100.0     |

Source: Calculated from ONS files 'MYE6CC1\_mid-2001-mid-2012-unformatted-coc-data-file.xls', 'Table\_10\_local\_authority\_components\_of\_change\_1991\_to\_2001.xls', and 'Table\_8\_local\_authority\_quinary\_age\_groups\_1981.xls'. Crown copyright.

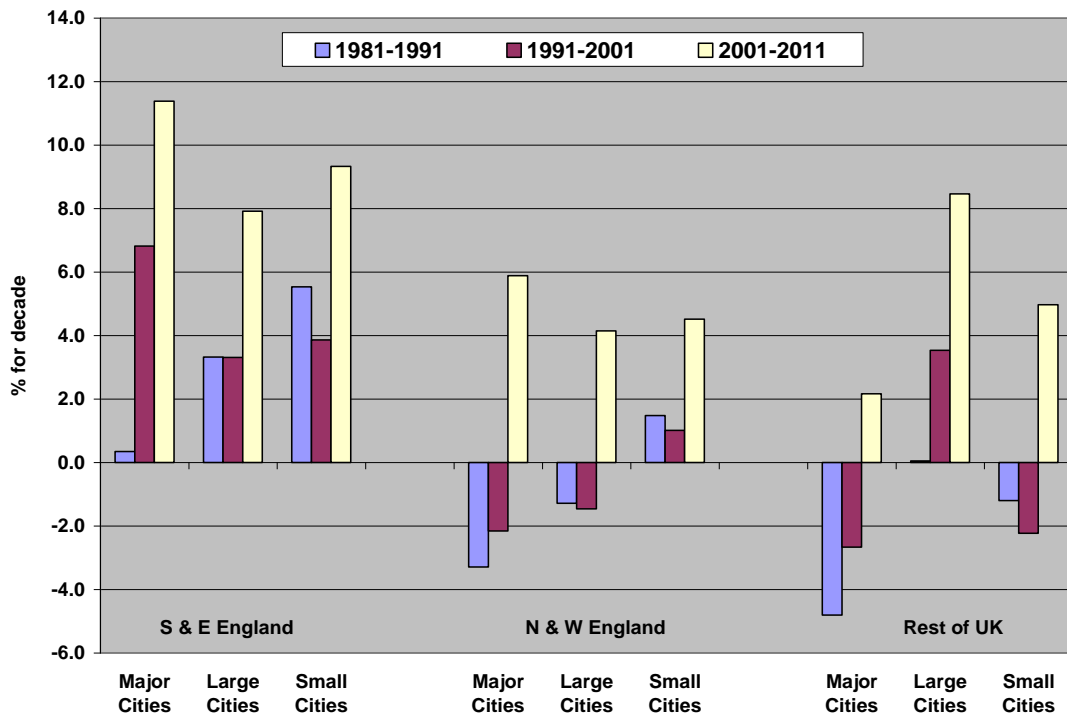
The Major Cities category is numerically dominated by the case of London, so Figure 3 separates the three city types into the UK's three regional divisions. Given that London is the only Major City in South & East England (see Annex 1), this confirms the major transformation of London's fortunes since the 1980s and shows how this was as much a feature of the 1990s (when the acceleration of national growth was fairly modest) as of the 2000s. But it also shows that the other two regional divisions had begun their big-city recovery in the 1990s, as their loss rates diminished, but here the larger part of their recovery was reserved for the most recent decade. The biggest upward shift in growth rate between the 1990s and 2000s was for the aggregate of the six Major Cities of North & West England (Birmingham, Leeds, Liverpool, Manchester, Newcastle and Sheffield). In the Rest of UK division, the recovery in the 2000s was less marked for the Major Cities of Belfast and Glasgow combined than for the two other size groups, with the fastest growth being recorded by the Large Cities (these comprising the national capitals of Scotland and Wales).



**Figure 2: Population change rate, for UK and five settlement size categories, 1981-2011**



**Figure 3: Population change rate, for the UK's three city sizes, by regional division, 1981-2011**



This somewhat more disaggregated perspective on these three decades of population change adds to the dilemma of anticipating future trajectories. Figures 2 and 3 have revealed that the 2000s represented a substantial break in pattern, with the move away

from the previously prevailing ‘counter-urbanization’ relationship between growth and settlement size and with a sudden uplift in growth rates in the 2000s for several of the city categories, posing the question as to whether or not this was a one-off deviation from the longer-term pattern. On the other hand, there is some evidence of a more progressive urban resurgence across the three decades, this being displayed most prominently by London but also being shared to varying extents by the Major Cities of both other parts of the UK and also by the Cardiff/Edinburgh group.

### 3.4 The 64 cities individually

The full breakdown of cities can be expected to create more complexity, but at the same time will hopefully provide greater insight into the types of places that are contributing most to national urban resurgence and those that are lagging behind. As it is not easy to profile the whole spectrum, the focus here is on the two extremes of the top and bottom 10 cities. Emphasis is placed initially on overall growth for the 30-year period both in absolute and relative terms (Table 4), followed by a look at which cities saw the biggest upward and downward shifts in growth rate between decades (Table 5).

In terms of the 30-year period (Table 4), London stands out as seeing by far the largest absolute population increase, a gain of 1.5m, but does not feature in the top 10 on relative growth because of its very large initial size. By contrast, Milton Keynes comes second in absolute terms, but its increase of 124 thousand represents a doubling of its 1981 population. The M4 corridor features strongly in the high absolute gainers in the form of Reading, Swindon, Bristol, Gloucester and Cardiff, while new and expanded towns dominate the top 10 in relative growth, while Bournemouth performs strongly on both criteria.

**Table 4: Top and bottom 10 cities on the basis of 1981-2011 total population change and change rate**

| <i>Top 10 cities</i> |                      |         |      |                      |      |
|----------------------|----------------------|---------|------|----------------------|------|
| Rank                 |                      | 000s    | Rank |                      | %    |
| 1                    | <i>London</i>        | 1,544.8 | 1    | <i>Milton Keynes</i> | 98.3 |
| 2                    | <i>Milton Keynes</i> | 123.9   | 2    | <i>Swindon</i>       | 38.3 |
| 3                    | <i>Bristol</i>       | 87.2    | 3    | <i>Peterborough</i>  | 37.9 |
| 4                    | <i>Reading</i>       | 84.8    | 4    | <i>Northampton</i>   | 33.7 |
| 5                    | <i>Bournemouth</i>   | 77.3    | 5    | <i>Telford</i>       | 32.9 |
| 6                    | <i>Leicester</i>     | 66.3    | 6    | <i>Bournemouth</i>   | 25.6 |
| 7                    | <i>Southampton</i>   | 59.1    | 7    | <i>Reading</i>       | 25.0 |
| 8                    | <i>Birmingham</i>    | 59.1    | 8    | <i>Luton</i>         | 23.5 |
| 9                    | <i>Bradford</i>      | 58.8    | 9    | <i>Crawley</i>       | 23.2 |
| 10                   | <i>Cardiff</i>       | 58.5    | 10   | <i>Gloucester</i>    | 21.7 |

| <b>Bottom 10 cities</b> |                      |             |             |                      |          |
|-------------------------|----------------------|-------------|-------------|----------------------|----------|
| <b>Rank</b>             |                      | <b>000s</b> | <b>Rank</b> |                      | <b>%</b> |
| 55                      | <i>Coventry</i>      | -2.1        | 55          | <i>Grimsby</i>       | -1.0     |
| 56                      | <i>Burnley</i>       | -2.5        | 56          | <i>Burnley</i>       | -1.4     |
| 57                      | <i>Middlesbrough</i> | -10.0       | 57          | <i>Middlesbrough</i> | -2.1     |
| 58                      | <i>Hull</i>          | -17.6       | 58          | <i>Newcastle</i>     | -3.4     |
| 59                      | <i>Birkenhead</i>    | -20.7       | 59          | <i>Birkenhead</i>    | -6.1     |
| 60                      | <i>Dundee</i>        | -22.4       | 60          | <i>Hull</i>          | -6.4     |
| 61                      | <i>Sunderland</i>    | -22.8       | 61          | <i>Sunderland</i>    | -7.6     |
| 62                      | <i>Newcastle</i>     | -29.4       | 62          | <i>Liverpool</i>     | -10.7    |
| 63                      | <i>Liverpool</i>     | -94.4       | 63          | <i>Glasgow</i>       | -11.6    |
| 64                      | <i>Glasgow</i>       | -139.0      | 64          | <i>Dundee</i>        | -13.2    |

Source: Calculated from ONS files 'MYE6CC1\_mid-2001-mid-2012-unformatted-coc-data-file.xls', 'Table\_10\_local\_authority\_components\_of\_change\_1991\_to\_2001.xls', and 'Table\_8\_local\_authority\_quinary\_age\_groups\_1981.xls'. Crown copyright.

Just 12 of the 64 cities ended up with a smaller population in 2011 than they had in 1981, so most of the names feature in both lists, albeit in a somewhat different order because of differences in their starting sizes. Ports and industrial cities dominate the list, with Dundee, Glasgow, Newcastle, Sunderland, Hull, Liverpool and Birkenhead comprising the bottom 7 on both criteria. Note, however, that the lowly positions of Dundee and Hull are likely to be somewhat exaggerated by their local authority boundaries being so tightly drawn that some of their newer suburban areas are excluded.

Table 5 shows which cities saw their growth rates move up or down most between the 1980s and 2000s. Given its size and the number involved in just a small shift in rate, London impresses by being in the top three, closely behind much smaller Ipswich and Oxford. But the top 10 also includes a number of other large cities, reflecting the upturn of the Major Cities of North & West England (as seen above) and indicating substantial recovery of large industrial cities from their weak performances in the 1980s.

As would be expected, the cities that dominate the list of greatest growth deceleration between the 1980s and the 2000s (right-hand panel of Table 5) are those that had been relatively dynamic at the outset, most notably the official 'New Towns' of Milton Keynes, Telford, Northampton, Warrington and Sunderland (where the local authority district includes Washington New Town). Previously fast-growing Reading also slipped back, along with the traditional seaside resorts of Blackpool and Hastings. A third seaside resort, Bournemouth, registered a rise in decadal rate but one that was well short of the 5.1% upward shift of the UK as a whole.

**Table 5: Top and bottom 10 cities on the basis of % point shift in population change rate between 1981-1991 and 2001-2011**

| <b>Rank</b> | <b>Top 10 cities</b> | <b>%pt</b> | <b>Rank</b> | <b>Bottom 10 cities</b> | <b>%pt</b> |
|-------------|----------------------|------------|-------------|-------------------------|------------|
| 1           | <i>Ipswich</i>       | 15.5       | 64          | <i>Milton Keynes</i>    | -24.0      |
| 2           | <i>Oxford</i>        | 12.0       | 63          | <i>Telford</i>          | -7.4       |
| 3           | <i>London</i>        | 11.0       | 62          | <i>Northampton</i>      | -6.5       |
| 4           | <i>Leicester</i>     | 10.9       | 61          | <i>Reading</i>          | -5.5       |
| 5           | <i>Manchester</i>    | 10.7       | 60          | <i>Hastings</i>         | -3.8       |
| 6           | <i>Liverpool</i>     | 10.2       | 59          | <i>Warrington</i>       | -2.5       |
| 7           | <i>Blackburn</i>     | 10.2       | 58          | <i>Sunderland</i>       | -2.5       |
| 8           | <i>Bradford</i>      | 10.1       | 57          | <i>Bournemouth</i>      | -0.7       |
| 9           | <i>Sheffield</i>     | 9.7        | 56          | <i>Blackpool</i>        | -0.4       |
| 10          | <i>Dundee</i>        | 9.5        | 55          | <i>Burnley</i>          | -0.3       |

Source: Calculated from ONS files 'MYE6CC1\_mid-2001-mid-2012-unformatted-coc-data-file.xls', 'Table\_10\_local\_authority\_components\_of\_change\_1991\_to\_2001.xls', and 'Table\_8\_local\_authority\_quinary\_age\_groups\_1981.xls'. Crown copyright.

The corollary of Table 5 is that many cities did not see much shift in their population change rates between decades. This is particularly the case if the national shift is factored in. The results are shown in Annex 2 for the shift in rates between 1981-1991 and 2001-2011. The third data column there shows the actual shift, while the final one adjusts this for the UK's upward shift in rate of 5.1% points between these two decades. Relative to the national rate, 14 cities had a change in 10-year rate of less than one per cent up or down, i.e. they closely mirrored the national trend: Cambridge, Wigan, Mansfield, Derby, Chatham, Nottingham, Doncaster, York, Southampton, Rochdale, Portsmouth, Crawley, Southend and Aberdeen. A further 11 registered an upward shift of at least 1.0 but no more than 3% points relative to the UK shift in decadal rate: Cardiff, Barnsley, Gloucester, Plymouth, Bristol, Brighton, Newcastle, Swansea, Leeds, Bolton and Hull. Another 11 saw a downward shift of at least 1.0 but no more than 3% points: Luton, Aldershot, Newport, Wakefield, Stoke, Birkenhead, Swindon, Norwich, Belfast, Worthing and Middlesbrough.

In sum, while a number of cities experienced quite marked changes in decadal growth rate between the 1980s and 2000s, most notably substantial slowdowns for some of the New Towns designated in the 1960s and a 'renaissance' for some of the larger cities in the 2000s (London in the 1990s), there appears to be a considerable rump of cities – just over half of the 64 – that did not see their growth rates alter by much, once the UK trend is factored in. Put another way, these 36 cities followed the UK's upward shift of 5.1% fairly closely, irrespective of what their initial change rate was in the 1980s. Equally, however, other cities saw an upward shift of up to 1% points more than the UK shift, while others recorded a downward shift of this magnitude and the three 'new cities' of Milton Keynes, Telford and Northampton one of 12% or more (see Annex 2).

### 3.5 Inner/outer city contrasts for seven major cities

At Foresight’s request, this study also examined inner/outer city contrasts in overall population growth for those Major Cities where such a split is possible using local authority areas. This is not possible in just two of the nine cases, namely Leeds and Sheffield in West and South Yorkshire respectively where the reorganisation of the early 1970s adopted very large areas that cannot be subdivided. In the case of Manchester, the inner area is taken to include Salford which contains a sizeable part of the inner area. In London the main two-way split uses the traditional definition of Inner London (the 13 Boroughs plus the City of London), but London’s Primary Urban Area (PUA) is large enough to split four ways for more detailed study, separating off Central London (City of London, Camden, Westminster and Kensington & Chelsea) from the rest of Inner London and splitting ‘outer’ into the Outer London Boroughs and the part of the Primary Urban Area that lies outside Greater London Authority and former Government Office Region.

Figure 4 displays the actual 10-year rates of population change for the inner parts as just defined. The broad picture is very consistent across the three decades, with rates shifting upwards (apart from Newcastle’s being static between the 1980s and 1990s). In all cases except London there was population loss in the first two decades, and the bigger upward shift was for the 2000s, paralleling the national pattern of accelerating growth (1.9% for 1981-91, 2.9% for 1991-2001 and 7.1% for 2001-11). Inner London saw overall growth in all three decades, with the bigger upward shift being between the 1980s and 1990s.

**Figure 4: Population change rate for the inner districts of seven large cities, 1981-2011**

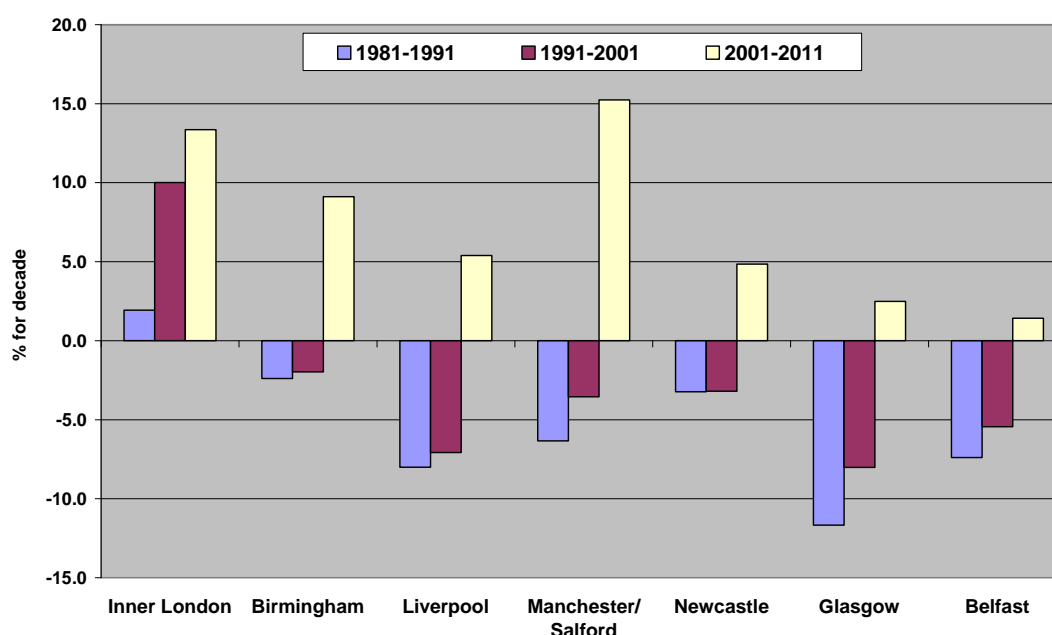
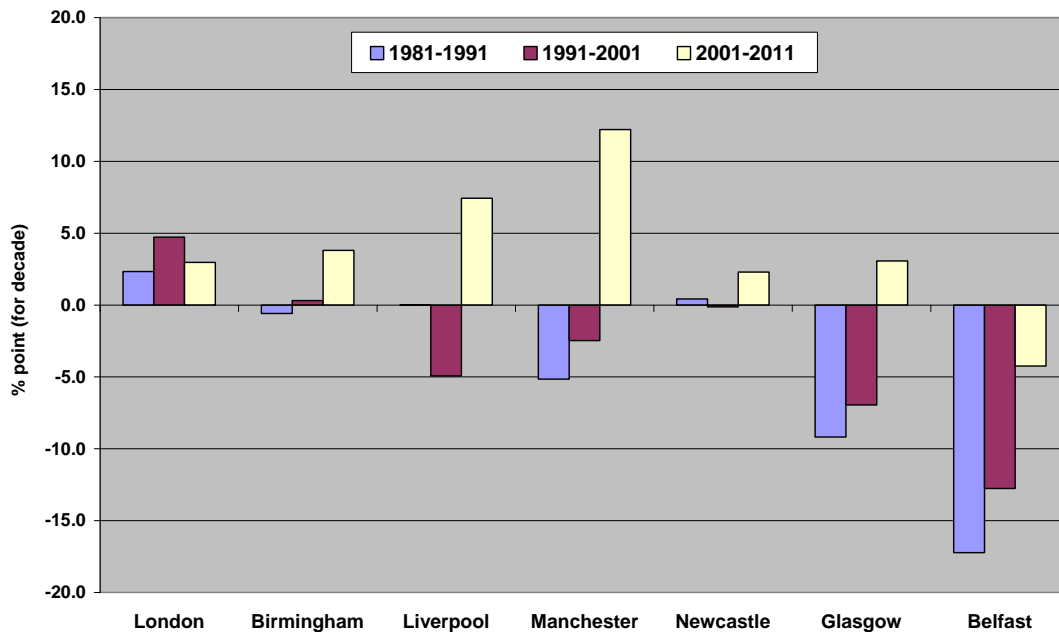


Figure 5 compares the rates for the inner parts with those for the rest of the cities, expressed in terms of the percentage point excess of the former over the latter, such that bars above the zero line denote a superior performance by the inner part. Inner London outpaced the rest of the city in all three decades, but by most in the 1990s when it saw its stronger upward shift in actual rate (see Figure 4). At the other extreme, Belfast city grew more weakly than the rest of the city in all three decades, though the margin narrowed progressively. Steady improvement of inner compared to outer parts is also found for

Glasgow, Manchester and Birmingham (the latter only marginally between the 1980s and 1990s), but here to the extent that the inner parts were the stronger in the final decade. Newcastle is similar to Birmingham, though with a very slight setback in the 1990s, while Liverpool saw a more substantial setback for its inner part in the 1990s after the two parts had matched change rates in the 1980s. By 2001-11, therefore, in only one case (Belfast) did the outer part register a more positive change rate than the inner part, with the strongest upward shifts in the inner/outer difference from the previous decade being for Liverpool and Manchester.

**Figure 5: Excess of inner area over outer area population growth rate of seven large cities, 1981-2011**



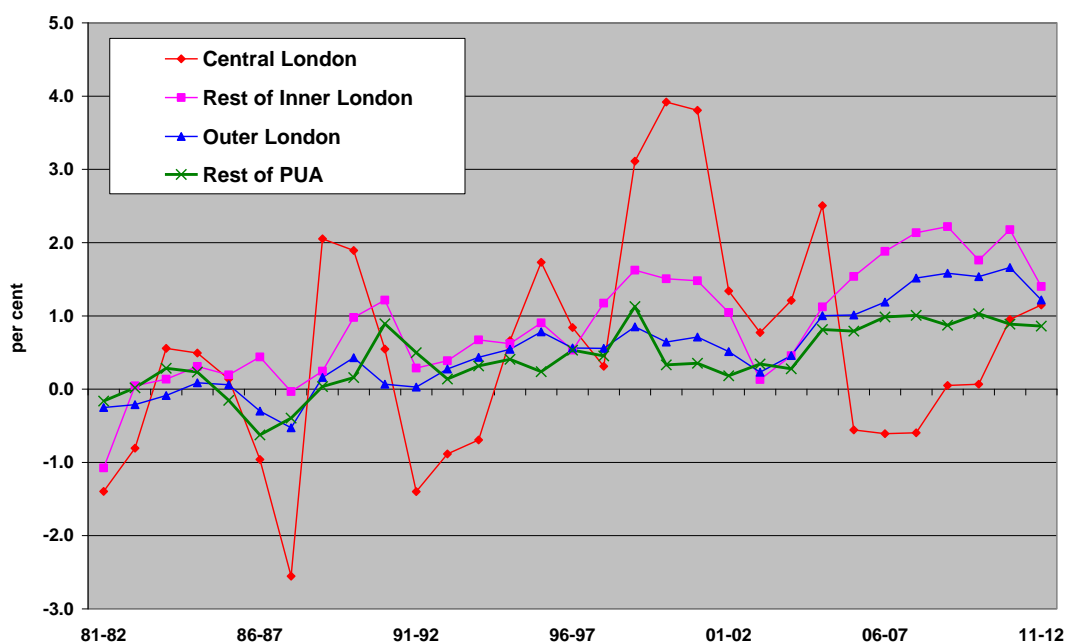
**Figure 6: Population change rate for four subdivisions of London, 1981-2011**



Figure 6 displays the decadal-change results of the 4-way breakdown of London. The distinctive element of Inner London shown in Figure 4 is due to Central London seeing a major surge in population growth during the 1990s and then falling back in growth rate somewhat. The other three parts recorded progressively stronger growth across the three decades. The pattern of growth rate tailing off with increasing distance from Central London, established in the 1990s, was not continued in the 2000s due to the cutback in Central London while the other three parts were still accelerating. But the general picture of the inner areas growing more strongly than the more distant parts is the direct opposite of the pattern of suburbanization and decentralization recorded by London and most other cities during the last century.

Figure 7 presents the rates on an annual basis through to 2012. The pattern is much more volatile for Central London. Its latest major peaking and cutback in 1998-2002 coincides with the dot-com boom and subsequent mini-recession. After 2005 London's core then lost population for 3 years before a gradual recovery took its rate back up to the level recorded by the other three parts in 2011-12. The latter all show a steadily rising growth trajectory, though one punctuated by short-term slowdowns that broadly coincide with periods of overheating in the capital's economy and associated higher rates of net migration to other parts of the UK.

**Figure 7: Annual change rate for four subdivisions of London, 1981-2012**



In sum, confirming the studies reviewed above (most recently Rae, 2013), there clearly was an 'inner city' renaissance in the 2000s alongside the wider city resurgence, in that by 2001-2011 the inner parts were growing more strongly than the outer parts in all cases except Belfast. This represents something of a turnaround then, except for London where the inner part was already outperforming the outer one in the 1980s. The more detailed breakdown of London has also revealed a high degree of volatility for Central London, but a steadily rising growth trajectory for its other three parts, though punctuated by short-term slowdowns that broadly coincide with periods of overheating in the capital's economy.

## 4. The components of population change

While certain patterns have emerged from the examination of overall population growth, it is unwise to anticipate the future merely on the basis of these aggregate statistics. Two places with very similar overall rates of population growth may have achieved this position through two very different routes; for instance, one primarily through natural increase (with an excess of births over deaths) and the other through net migration (with more people moving into than out of there). In its turn, strong net migration growth can come about through either within-UK population movement ('internal migration') or migration exchanges with other parts of the world ('international migration'), each being subject to rather different drivers. This is why population projections are nowadays based on the so-called 'component method' rather than the earlier practice of fitting curves to recorded trends in total population. This part of the report illustrates the importance of this approach by reference to the latest decade of records, 2001-2011. Unfortunately, this analysis cannot be taken further back in time because of the lack of local-area data then on the split between internal and international migration – a distinction which has become critically important since the late 1990s.

### 4.1 The UK context

Table 6 gives the numbers (in thousands) and annual percentage rate (compound basis) for the UK as a whole for 'natural change' and 'migration and other changes'. Over the decade from mid-year 2001 to mid-year 2011, the UK's population grew by 4.17m. Natural change accounted for 1.65m of this increase, i.e. 39.6% or almost two-fifths, with migration contributing the remaining 2.52m, or just over three-fifths. The UK's rate of population growth averaged 0.68% a year over the decade, with natural change averaging 0.27% a year and migration 0.41%.

Table 6 also provides a breakdown of these two broad components into their constituent elements. It can be seen that natural change was positive because births outnumbered deaths by a ratio of a little more than 5 to 4. However, the migration component – which, by definition at this UK level, should be composed entirely of international migration – is more complicated, this being for two reasons. One is that the net within-UK migration total does not sum to exactly zero because the UK's statistical agencies (ONS, NRS and NISRA) use somewhat different methodologies for estimating migration between their territory and the other countries of the UK. The other is that 'other changes' comprises the difference between the sum of all the 'recorded' population changes and total population change as estimated using the 2001 and 2011 censuses, put at 165,000.

It is very unfortunate that nothing can be known about this 165,000 gain due to 'other changes', because of it being derived as a residual. As the counts of births and deaths are deemed to be highly accurate, however, at this national level it must result from international migration which the available recording systems have missed. This means that the UK's real international migration balance for the decade is a gain of 2.52m, but only the 2.36m of 'recorded' net gain can be unpacked to show that around 3 people enter the UK for every 2 people that leave it. This latter statistic is, however, extremely important to keep in mind because it emphasises that, in thinking about future population trends, it is nearly as important to make assumptions about rates of emigration (averaging 0.61% a year over this decade) as it is about rates of immigration (averaging 0.99%).



**Table 6: Components of population change, 2001-2011, UK**

|                                    | <i>000s for decade</i> | <i>%/year</i> |
|------------------------------------|------------------------|---------------|
| <i>Births</i>                      | 7446.5                 | 1.22          |
| <i>Deaths</i>                      | 5795.3                 | 0.95          |
| <i>Natural change</i>              | 1651.2                 | 0.27          |
| <i>Arrivals from outside UK</i>    | 6043.5                 | 0.99          |
| <i>Departures to outside UK</i>    | 3683.0                 | 0.61          |
| <i>Net international migration</i> | 2360.4                 | 0.39          |
| <i>Net within-UK migration*</i>    | -4.2                   | 0.00          |
| <i>Other changes*</i>              | 164.8                  | 0.03          |
| <i>Migration and other changes</i> | 2521.0                 | 0.41          |
| <i>Total population change</i>     | 4172.1                 | 0.68          |

Note: \* see text. Numbers are rounded, so may not sum exactly.

Source: Calculated from ONS file 'MYE6CC1\_mid-2001-mid-2012-unformatted-coc-data-file.xls'.  
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## 4.2 The regional and urban/rural dimensions

This section looks at the components of population change for the two sets of sub-national aggregates used above. Here by definition the within-UK migration component becomes a big player, while the 'other changes' component becomes even less knowable because this residual contains not just the allocation across the UK of the 165,000 'missed' international migration gain (see above) but also any unrecorded within-UK migration. Table 7 shows how natural change and 'migration and other changes', together with the three elements of the latter, make up the level of overall population change 2001-2011, while Figure 8 shows what these mean in terms of annual average rate (compound percentage).

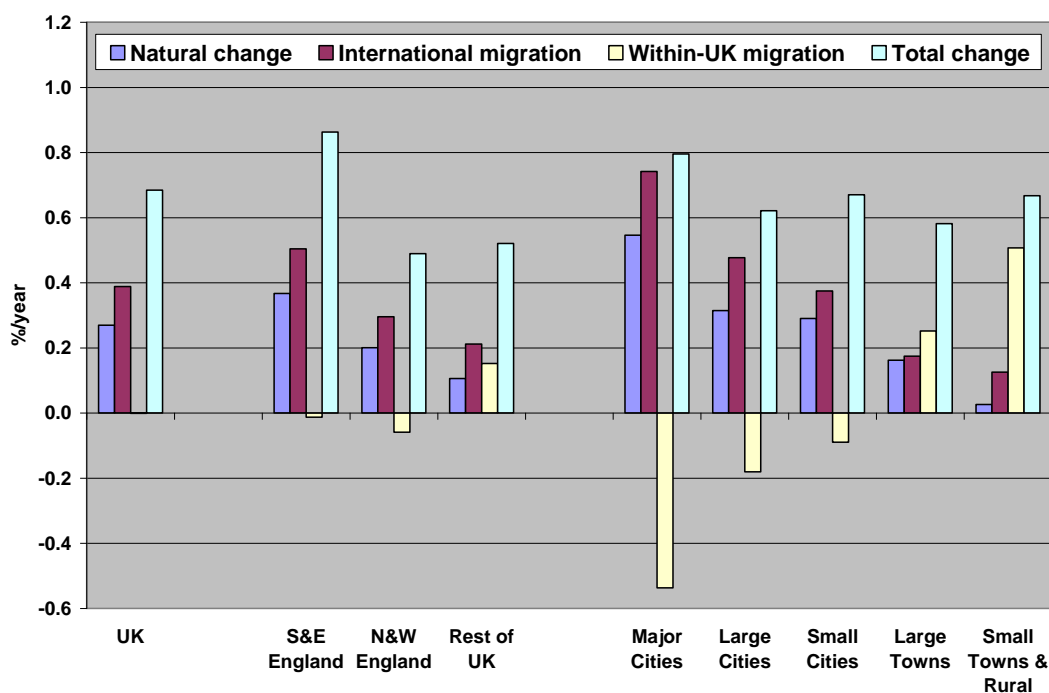
Taking natural change first, this shows a clear pattern. For both area classifications, the rate of natural increase declines from left to right in Figure 8, such that it is highest in South & East England and the Major Cities respectively and lowest in Rest of UK and Small Towns & Rural. In terms of the contribution of this component to total population change, the absolute figures in Table 7 translate into a very regular progression by settlement size, with the Major Cities obtaining 69% of their growth from this source (and thus only 31% through migration) compared to 51% for Large Cities, 44% for Small Cities, 28% for Large Towns and just 4% for Small Towns & Rural.

**Table 7: Main components of population change, 2001-2011, UK, by 3 regional divisions and 5 settlement size groups**

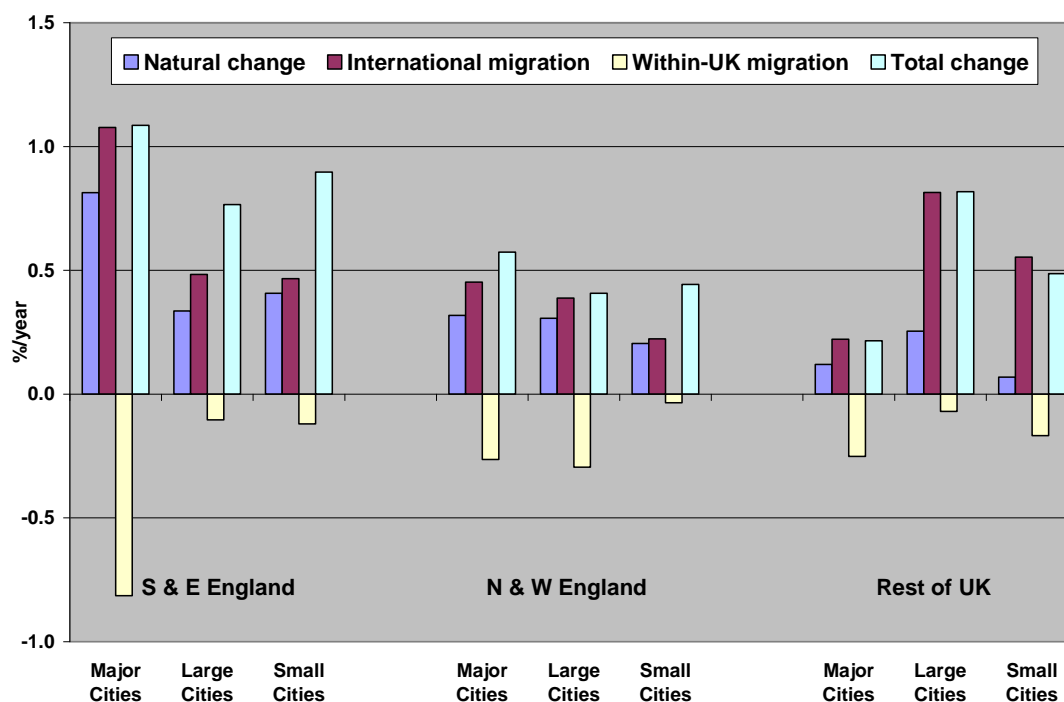
| Area                      | Natural change | Net international migration | Net within-UK migration | Other changes | Migration & other changes | Total change |
|---------------------------|----------------|-----------------------------|-------------------------|---------------|---------------------------|--------------|
| UK                        | 1651.2         | 2360.4                      | -4.2                    | 164.8         | 2521.0                    | 4172.1       |
| <b>Regional divisions</b> |                |                             |                         |               |                           |              |
| S&E England               | 1142.6         | 1559.7                      | -34.8                   | 11.0          | 1535.9                    | 2678.6       |
| N&W England               | 402.8          | 590.6                       | -118.7                  | 104.1         | 576.0                     | 978.8        |
| Rest of UK                | 105.7          | 210.2                       | 149.2                   | 49.6          | 409.0                     | 514.7        |
| <b>Settlement size</b>    |                |                             |                         |               |                           |              |
| Major Cities              | 975.4          | 1317.3                      | -946.8                  | 78.5          | 449.1                     | 1424.5       |
| Large Cities              | 241.2          | 363.7                       | -137.0                  | 7.8           | 234.4                     | 475.6        |
| Small Cities              | 214.6          | 275.4                       | -66.0                   | 69.8          | 279.3                     | 493.9        |
| Large Towns               | 172.1          | 184.0                       | 263.1                   | -6.4          | 440.7                     | 612.7        |
| Small Towns & Rural       | 47.9           | 220.0                       | 882.5                   | 15.1          | 1117.6                    | 1165.5       |

Source: Calculated from ONS file 'MYE6CC1\_mid-2001-mid-2012-unformatted-coc-data-file.xls'. Crown copyright.

**Figure 8: Main components of population change, 2001-2011, for UK, three regional divisions and five settlement size groups**



**Figure 9: Main components of population change, 2001-2011, for three city size groups in three regional divisions of the UK**



The picture is very similar for international migration, except that in all cases this is a stronger contributor to total growth than natural change. By contrast, the role of within-UK migration is the exact opposite across the settlement-size spectrum, with the strongest gains recorded by Small Towns & Rural and its role diminishing progressively up the urban hierarchy in both relative and absolute terms. Regionally, only Rest of UK was a net gainer, though South & East England was only a marginal net loser. As above, some caution must again be exercised here because of the ‘other changes’ that cannot be split between the two types of migration, these looming largest for North & West England and the Major and Small Cities. Even so, at this aggregate scale, this element will comprise mainly unrecorded moves into and out of the UK and, as such, do not alter the broad picture across these two dimensions.

Figure 9 combines the two dimensions for just the city element and excludes the ‘other changes’ component except in the ‘total change’ bars. Once the focus is just on the 64 cities grouped by region and size, there are only one or two distinctive features. London – South & East England’s sole Major City – is the fastest growing in terms of both natural change and international migration but is also by far the fastest loser of within-UK migration. Elsewhere, the Large Cities type of the Rest of UK – comprising Cardiff and Edinburgh – performs the most strongly on international migration, while all the non-London types lose out through within-UK migration, though by not as much as London.

### 4.3 The 64 cities individually

Table 8 shows the top and bottom 10 cities for the two primary components of population change. In terms of natural change (left-hand panel), there is a wide margin between Luton with an annual average increase of almost 1% and Blackpool with a decline of 0.34% a year from this cause. Traditionally the highest rates of natural increase are associated with places with a youthful population, the latter normally arising from strong

international immigration and/or the arrival of younger adults from other parts of the UK. Natural decrease is normally associated with retirement areas, as well as cities that find it difficult to hold on to their school-leavers and university graduates. Blackpool, Worthing, Bournemouth and Hastings fit the former well, and Glasgow, Swansea and Newcastle the latter.

The migration component (right-hand panel of Table 8) can be expected to be more difficult to interpret as it includes several different types of population movement, but the high position of Bournemouth and Worthing attests to their attraction of retirees that partially compensates for the large number of deaths there. Nine of the 64 cities registered a net migration loss over the decade, very likely because any attraction that they hold for international migration was more than offset by losses to the rest of the UK.

**Table 8: Top and bottom 10 cities for rates of natural change and migration & other changes, 2001-2011, %/year (compound)**

| <b>Top 10 Cities</b>    |                       |               |             |                              |               |
|-------------------------|-----------------------|---------------|-------------|------------------------------|---------------|
| <b>Rank</b>             | <b>Natural change</b> | <b>%/year</b> | <b>Rank</b> | <b>Migration &amp; other</b> | <b>%/year</b> |
| 1                       | <i>Luton</i>          | 0.99          | 1           | <i>Bournemouth</i>           | 1.05          |
| 2                       | <i>Milton Keynes</i>  | 0.83          | 2           | <i>Worthing</i>              | 1.04          |
| 3                       | <i>London</i>         | 0.82          | 3           | <i>Swindon</i>               | 0.99          |
| 4                       | <i>Bradford</i>       | 0.71          | 4           | <i>Peterborough</i>          | 0.90          |
| 5                       | <i>Peterborough</i>   | 0.70          | 5           | <i>Ipswich</i>               | 0.90          |
| 6                       | <i>Reading</i>        | 0.67          | 6           | <i>Milton Keynes</i>         | 0.81          |
| 7                       | <i>Blackburn</i>      | 0.65          | 7           | <i>Cambridge</i>             | 0.75          |
| 8                       | <i>Northampton</i>    | 0.62          | 8           | <i>York</i>                  | 0.75          |
| 9                       | <i>Oxford</i>         | 0.59          | 9           | <i>Cardiff</i>               | 0.67          |
| 10                      | <i>Swindon</i>        | 0.55          | 10          | <i>Swansea</i>               | 0.65          |
| <b>Bottom 10 Cities</b> |                       |               |             |                              |               |
| <b>Rank</b>             | <b>Natural change</b> | <b>%/year</b> | <b>Rank</b> | <b>Migration &amp; other</b> | <b>%/year</b> |
| 55                      | <i>Newcastle</i>      | 0.05          | 55          | <i>Aldershot</i>             | 0.01          |
| 56                      | <i>Hastings</i>       | 0.05          | 56          | <i>Blackburn</i>             | -0.01         |
| 57                      | <i>Southend</i>       | 0.04          | 57          | <i>Grimsby</i>               | -0.03         |
| 58                      | <i>Swansea</i>        | 0.01          | 58          | <i>Luton</i>                 | -0.05         |
| 59                      | <i>Birkenhead</i>     | -0.03         | 59          | <i>Hull</i>                  | -0.08         |
| 60                      | <i>Glasgow</i>        | -0.03         | 60          | <i>Rochdale</i>              | -0.15         |
| 61                      | <i>Dundee</i>         | -0.08         | 61          | <i>Reading</i>               | -0.20         |
| 62                      | <i>Bournemouth</i>    | -0.14         | 62          | <i>Middlesbrough</i>         | -0.22         |
| 63                      | <i>Worthing</i>       | -0.31         | 63          | <i>Sunderland</i>            | -0.38         |
| 64                      | <i>Blackpool</i>      | -0.34         | 64          | <i>Burnley</i>               | -0.45         |

Source: Calculated from ONS file 'MYE6CC1\_mid-2001-mid-2012-unformatted-coc-data-file.xls'. Crown copyright.

More light is shed on these patterns by the split between the 'known' levels of net international and within-UK migration shown in Table 9, necessarily excluding 'other changes' that cannot be assigned to one or other migration type (see above). Luton is a major loser through within-UK migration, just as it is the premier gainer from overseas migration. Oxford, London, Hull, Coventry, Peterborough, Leicester and Aberdeen share the same pattern of international gains and within-UK losses, albeit to a lesser extent than Luton. Seaside resorts that nowadays perform the role of retirement centres

dominate the list of within-UK migration gainers, along with the cathedral cities of York and Gloucester. Such places tend to be less attractive to migration from overseas, but net gain from 'recorded' overseas migration overseas was the norm. Only two of the 64 cities – Birkenhead and Southend – appear to have lost population through international migration during this decade, but even this may not be the case because both these cities had sizeable positive balances of 'other changes' (0.30% and 0.25% a year respectively).

In general, therefore, the main conclusion to be drawn from examining the 64 cities individually is, as would be expected, the same as that from the aggregates, but with a wider range of experience. Growth was the norm for the 2001-2011 decade, with only 6 cities registering natural decrease and a maximum of two cities (and probably none) registering a net loss through international migration. Set against this, however, is that 42 of the 64 cities lost more people through within-UK migration than they gained from it, primarily because of net loss to the non-city parts of the UK (see above). Nevertheless, as a corollary, this means that 1 in 3 cities gained through this internal migration, these tending to be those which were less attractive to immigration from overseas. Scatterplots of the 64 cities confirm the negative relationship between rates of international and internal migration (Figure 10), as well as natural change rates being related positively to international migration (Figure 11) and negatively to internal migration (Figure 12).

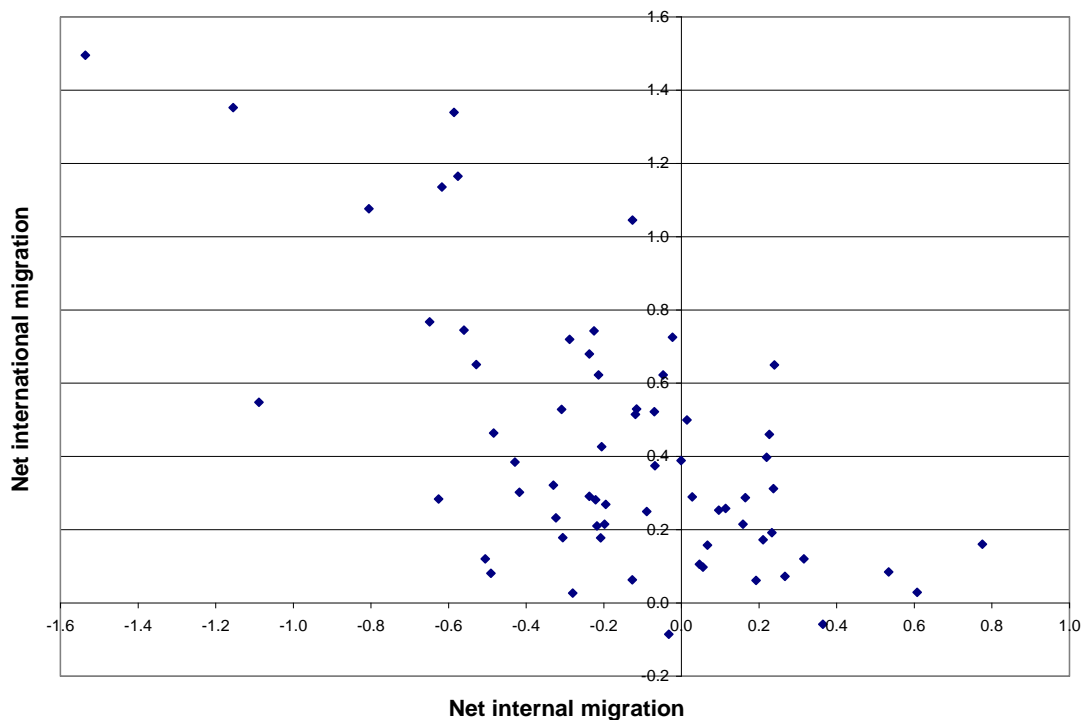
**Table 9: Top and bottom 10 cities for rates of net international and within-UK migration, 2001-2011, %/year (compound)**

| <b>Top 10 cities</b> |                      |               |             |                      |               |
|----------------------|----------------------|---------------|-------------|----------------------|---------------|
| <b>Rank</b>          | <b>International</b> | <b>%/year</b> | <b>Rank</b> | <b>Within-UK</b>     | <b>%/year</b> |
| 1                    | <i>Luton</i>         | 1.50          | 1           | <i>Worthing</i>      | 0.78          |
| 2                    | <i>Oxford</i>        | 1.35          | 2           | <i>Bournemouth</i>   | 0.61          |
| 3                    | <i>Peterborough</i>  | 1.34          | 3           | <i>Blackpool</i>     | 0.53          |
| 4                    | <i>Aberdeen</i>      | 1.16          | 4           | <i>Southend</i>      | 0.36          |
| 5                    | <i>Coventry</i>      | 1.14          | 5           | <i>Barnsley</i>      | 0.32          |
| 6                    | <i>London</i>        | 1.08          | 6           | <i>Mansfield</i>     | 0.27          |
| 7                    | <i>Edinburgh</i>     | 1.05          | 7           | <i>York</i>          | 0.24          |
| 8                    | <i>Hull</i>          | 0.77          | 8           | <i>Milton Keynes</i> | 0.24          |
| 9                    | <i>Leicester</i>     | 0.74          | 9           | <i>Gloucester</i>    | 0.23          |
| 10                   | <i>Nottingham</i>    | 0.74          | 10          | <i>Swindon</i>       | 0.23          |

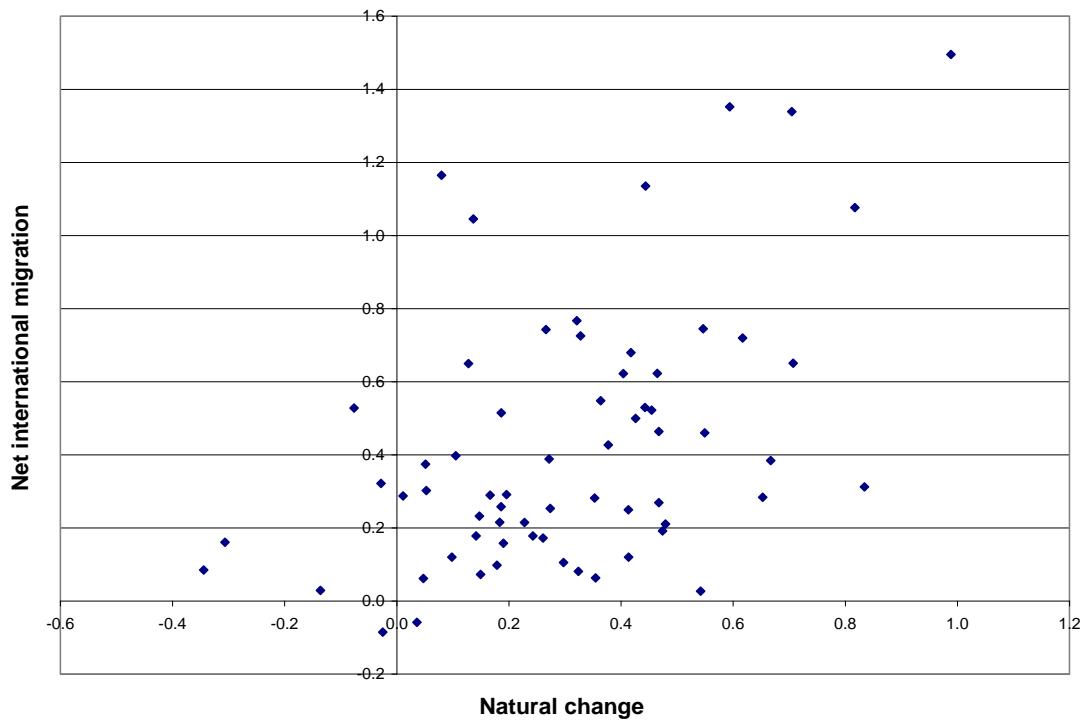
| Bottom 10 cities |               |        |      |              |        |
|------------------|---------------|--------|------|--------------|--------|
| Rank             | International | %/year | Rank | Within-UK    | %/year |
| 55               | Wigan         | 0.10   | 55   | Leicester    | -0.56  |
| 56               | Blackpool     | 0.08   | 56   | Aberdeen     | -0.58  |
| 57               | Burnley       | 0.08   | 57   | Peterborough | -0.59  |
| 58               | Mansfield     | 0.07   | 58   | Coventry     | -0.62  |
| 59               | Belfast       | 0.06   | 59   | Blackburn    | -0.63  |
| 60               | Hastings      | 0.06   | 60   | Hull         | -0.65  |
| 61               | Bournemouth   | 0.03   | 61   | London       | -0.81  |
| 62               | Aldershot     | 0.03   | 62   | Cambridge    | -1.09  |
| 63               | Southend      | -0.06  | 63   | Oxford       | -1.15  |
| 64               | Birkenhead    | -0.09  | 64   | Luton        | -1.54  |

Source: Calculated from ONS file 'MYE6CC1\_mid-2001-mid-2012-unformatted-coc-data-file.xls'. Crown copyright.

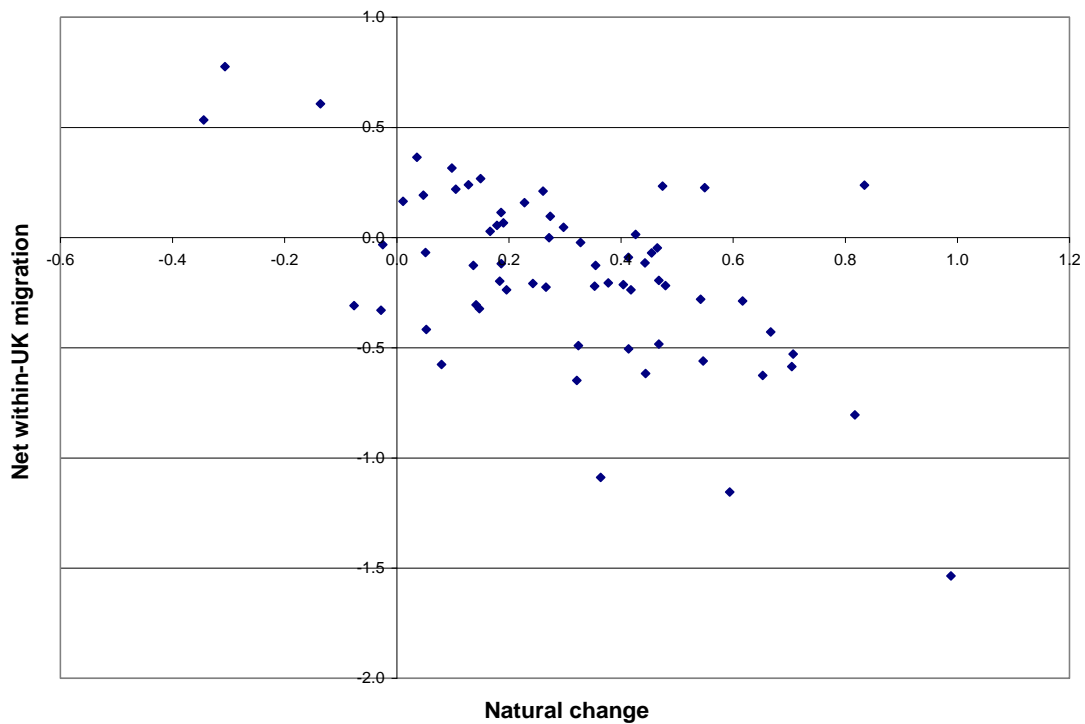
**Figure 10: Scatterplot of international migration by within-UK migration, 2001-2011, for 64 cities, % per year**



**Figure 11: Scatterplot of net international migration by natural change, 2001-2011, for 64 cities, % per year**



**Figure 12: Scatterplot of net within-UK migration by natural change, 2001-2011, for 64 cities, % per year**



There are, however, many departures from this overall picture, as is shown in Table 10's classification of the 64 cities by whether their 'recorded' rates for these three components of population change are above or below the rates for the whole UK. On the one hand, the modal category of the 8-way split is Type B, which is the one that experienced faster



growth than the UK through natural increase and international migration (i.e. above 0.27% and 0.39% respectively) and below average performance for internal migration (i.e. net loss to the UK, this being a zero-sum game). Also conforming to the general picture is the reverse of this, Type G, which has the next largest number of members and is where net gain from the rest of the UK is accompanied by slower than average growth for natural change and international migration.

**Table 10: Classification of 64 cities on basis of which of three components of population change, 2001-2011 was above the UK rate**

| <i>NC IM IN</i> | <i>NC IM</i>        | <i>NC IN</i>         | <i>IM IN</i>   | <i>NC</i>           | <i>IM</i>         | <i>IN</i>          | <i>None</i>          |
|-----------------|---------------------|----------------------|----------------|---------------------|-------------------|--------------------|----------------------|
| <b>A</b>        | <b>B</b>            | <b>C</b>             | <b>D</b>       | <b>E</b>            | <b>F</b>          | <b>G</b>           | <b>H</b>             |
| <i>Cardiff</i>  | <i>Birmingham</i>   | <i>Gloucester</i>    | <i>Norwich</i> | <i>Aldershot</i>    | <i>Aberdeen</i>   | <i>Barnsley</i>    | <i>Birkenhead</i>    |
| <i>Swindon</i>  | <i>Bradford</i>     | <i>Milton Keynes</i> | <i>York</i>    | <i>Belfast</i>      | <i>Dundee</i>     | <i>Blackpool</i>   | <i>Doncaster</i>     |
|                 | <i>Bristol</i>      | <i>Newport</i>       |                | <i>Blackburn</i>    | <i>Edinburgh</i>  | <i>Bournemouth</i> | <i>Glasgow</i>       |
|                 | <i>Cambridge</i>    | <i>Preston</i>       |                | <i>Bolton</i>       | <i>Nottingham</i> | <i>Brighton</i>    | <i>Grimsby</i>       |
|                 | <i>Coventry</i>     |                      |                | <i>Burnley</i>      | <i>Sheffield</i>  | <i>Hastings</i>    | <i>Liverpool</i>     |
|                 | <i>Crawley</i>      |                      |                | <i>Chatham</i>      |                   | <i>Mansfield</i>   | <i>Middlesbrough</i> |
|                 | <i>Derby</i>        |                      |                | <i>Huddersfield</i> |                   | <i>Plymouth</i>    | <i>Newcastle</i>     |
|                 | <i>Hull</i>         |                      |                | <i>Rochdale</i>     |                   | <i>Portsmouth</i>  | <i>Stoke</i>         |
|                 | <i>Ipswich</i>      |                      |                | <i>Telford</i>      |                   | <i>Southend</i>    | <i>Sunderland</i>    |
|                 | <i>Leeds</i>        |                      |                |                     |                   | <i>Swansea</i>     |                      |
|                 | <i>Leicester</i>    |                      |                |                     |                   | <i>Wakefield</i>   |                      |
|                 | <i>London</i>       |                      |                |                     |                   | <i>Warrington</i>  |                      |
|                 | <i>Luton</i>        |                      |                |                     |                   | <i>Wigan</i>       |                      |
|                 | <i>Manchester</i>   |                      |                |                     |                   | <i>Worthing</i>    |                      |
|                 | <i>Northampton</i>  |                      |                |                     |                   |                    |                      |
|                 | <i>Oxford</i>       |                      |                |                     |                   |                    |                      |
|                 | <i>Peterborough</i> |                      |                |                     |                   |                    |                      |
|                 | <i>Reading</i>      |                      |                |                     |                   |                    |                      |
|                 | <i>Southampton</i>  |                      |                |                     |                   |                    |                      |

Notes: Top row indicates which of the three components was above the UK rate: NC Natural change, IM international migration, IN Internal (i.e. within-UK) migration. The rates exclude 'other changes' which cannot be split between IM and IN (see text).

Source: Calculated from ONS file 'MYE6CC1\_mid-2001-mid-2012-unformatted-coc-data-file.xls'. Crown copyright.

On the other hand, this leaves six types of city that are more distinctive, none more so than Cardiff and Swindon that outperformed the UK on all three components (Type A) and the 9 cities that underperformed on all three (Type H). Four cities managed to combine above average performances for natural change and net within-UK migration only (Type C), suggesting that these are places that attract younger adults and their families from the rest of the UK rather than retirees or international migrants. Norwich and York group together on the basis of their strong performance on both types of migration but not on natural change (Type D). Finally are those cities which outperformed the UK on the basis of either natural change (Type E with 9 members) or international migration (Type F with 5 members) but not both (cf Type B).

In thinking about the population futures of the 64 cities, Table 10 provides a potentially powerful set of insights about their underlying dynamics, but there are several caveats to note. First, this classification uses the UK rate as its key criterion, whereas it might tell us more if performance on each of the three components were divided not two ways but three, with a middle category of 'around average' (i.e. close to the UK rate). Secondly, and a good reason for not attaching too much weight to any particular class cut-off, is the fact that both the migration rates used have had to exclude the 'unrecorded' migration which is included in 'other changes' and cannot be split between the two. Thirdly, despite this classification being referenced to the UK rate rather than using actual rates and hopefully providing a more stable basis for looking ahead (on the basis that city growth rates tend to move up and down over time broadly in parallel with the UK as a whole), it is impossible to tell from this single-period analysis how much these between-city differentials are likely to alter in the future – except to note from above (see Table 5 and Annex 2) that there are quite a number of cases where overall population change rates – relative to the UK as well as in absolute terms – altered substantially between the 1980s and 2000s and therefore so too must at least one of their change components.

Nevertheless, within Table 10 there are a number of what might be called 'natural' groupings that would be expected on the basis of places' histories; for instance, Oxford and Cambridge in Type B, Norwich and York in Type D and Glasgow and Liverpool in Type H. These sorts of groupings indicate the powerful impacts of previous legacies that may well continue to influence trajectories into the future. What might be helpful for looking ahead is to undertake a more systematic classification of the 64 cities based on a wider range of data, including economic, social and environmental, and over a longer span of time than just a single decade – something that is beyond the remit of the present study.

## 5. Age perspectives

Further insights into the demographic dynamics of the UK's cities can be obtained by looking at variations in their current age structures because these bear the imprint of what has happened to them in the past. For instance, a traditionally high birth rate will lead to a younger population, all other things being equal, just as higher life expectancy will result in an older population. Migration plays an important role in this because much of it is 'age-specific'. Places that tend to lose school-leavers will tend to have older populations because not only do they lose these young adults but also their children will be born elsewhere. Places that gain from migration tend to have younger populations because the majority of both within-UK and international migration is undertaken by people aged between the late teens and early 40s and of child-bearing age. Places that attract retirees tend to have older populations, partly because of this direct effect but also because retirement migrants are normally wealthier and healthier than the norm and live to a greater age. This section starts with a powerful age-related diagnostic before looking at the recent patterns and trends in age composition.

### 5.1 Change in age cohort size, 2001-2011

Tracing an 'age cohort' over time is particularly useful for a better understanding of the impact of migration on the size and age composition of places. This is done here on the basis of 10-year cohorts, starting with those aged 0-9 in 2001 and seeing how the number of these compares with the number of 10-19 year olds in 2011 (at 30 June in both cases), with the exercise repeated for all cohorts up to a starting age of 70-79. Only two processes can change the size of such a cohort, namely migration and mortality, with the latter becoming a progressively more significant feature with rising age. The key value of this approach in the present context is its ability to show the net effect of migration by age on different areas, though the results will also be affected somewhat by differential life expectancy.

Table 11 illustrates the results of applying this approach. As regards the UK as a whole, the top panel shows clearly how much mortality takes its toll at the older ages, with the 70-79 cohort diminishing by 44% between 2001 and 2011 (when it was aged 80-89). The next three younger cohorts contracted by progressively less, with only a 2% drop for those aged 40-49 in 2001 (becoming 50-59 in 2011). By contrast, the UK's four youngest cohorts ended up with more people in 2011 than they had had in 2001, this being because the (relatively small) mortality effects at these ages were more than offset by net immigration from overseas.

The second panel of Table 11 shows how much this pattern varies between the three broad regional divisions, for which the effect of within-UK migration is also playing a role as well as differences in life expectancy across the UK. Generally at this scale the variations between the three regions appear relatively small, especially those between North & West England and the rest of the UK. But South & East England does stand out in relation to the 10-19s (becoming 20-29) and the 20-29s (becoming 30-39), with much stronger gains than for the other two regions, presumably due to its net gains of these two cohorts through both international and within-UK migration. South & East England also registers a somewhat smaller contraction of the 70-79s (becoming 80-89) than the other two regions, but this may be due to lower mortality rather than any migration differential.

**Table 11: Change in size of age cohorts, 2001-2011, for UK and its three regional divisions**

|  | <i>0-9</i> | <i>10-19</i> | <i>20-29</i> | <i>30-39</i> | <i>40-49</i> | <i>50-59</i> | <i>60-69</i> | <i>70-79</i> |
|--|------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| <b>% change</b>  |            |              |              |              |              |              |              |              |
| <i>UK</i>  | 5.7        | 13.8         | 10.8         | 0.6          | -2.4         | -7.3         | -18.6        | -43.7        |
| <i>S&amp;E England</i>                                 | 6.1        | 21.5         | 14.7         | -0.8         | -3.0         | -7.5         | -17.4        | -41.5        |
| <i>N&amp;W England</i>                                 | 5.2        | 6.9          | 7.0          | 1.4          | -2.8         | -8.0         | -20.0        | -45.6        |
| <i>Rest of UK</i>                                      | 5.3        | 5.8          | 5.6          | 3.3          | -0.3         | -5.3         | -18.8        | -46.1        |
| <b>% point difference from UK change rate (UK=0.0)</b> |            |              |              |              |              |              |              |              |
| <i>S&amp;E England</i>                                 | 0.4        | 7.7          | 3.9          | -1.3         | -0.5         | -0.2         | 1.1          | 2.2          |
| <i>N&amp;W England</i>                                 | -0.4       | -7.0         | -3.8         | 0.8          | -0.3         | -0.7         | -1.5         | -2.0         |
| <i>Rest of UK</i>                                      | -0.4       | -8.0         | -5.2         | 2.7          | 2.2          | 2.0          | -0.3         | -2.5         |

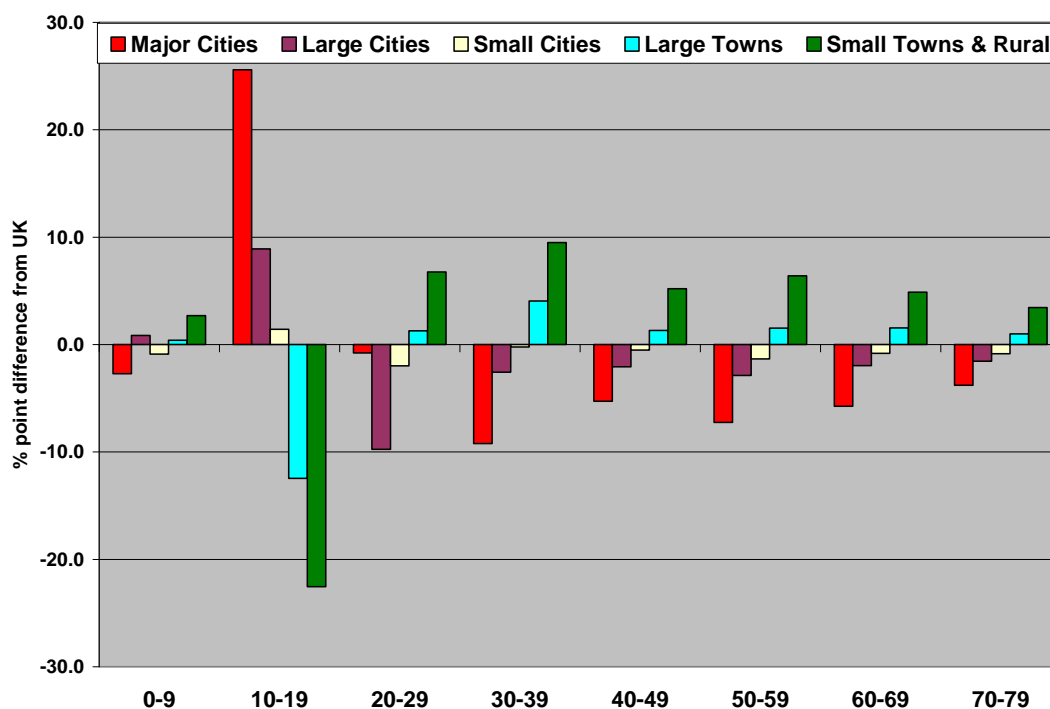
Note: Age as in 2001, add 10 for age in 2011.

Source: Calculated from ONS file 'MYE6PE1\_mid-2001-mid-2012-unformatted-syoa-data-file.xls'.  
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These inter-regional variations are more readily visualised by allowing for the UK's level of change, as shown in the patterning of plus and minus signs in the bottom panel of Table 11. Even clearer now are South & East England's stronger gains of those aged 10-29 in 2001. This also highlights the more positive position of Rest of UK for the 30-39s, 40-49s and 50-59s, likely to be due to net in-migration from England. By contrast, the above-average performance of South & East England for those aged 60 and over in 2001 is likely to be as much the result of lower life expectancy in the other regions as of retirement migration.

Turning to the urban/rural dimension, Figure 13 goes straight to the percentage point differential from the UK change. The most conspicuous feature of this, dominating the vertical scale, is the massive net shift up the urban hierarchy of the age cohort aged 10-19 in 2001 (becoming 20-29 in 2011). This will be powered by the differential impact of net international migration as well as a within-UK migration pattern that pulls school-leavers towards the major cities. All the other age cohorts share the opposite relationship between size and cohort change, though to varying degrees and primarily driven by the 'counter-urbanization' pattern of within-UK migration at all these ages. The only substantial exception is for the 20-29s (becoming 30-39), for whom Major Cities' level is close to the UK (zero) line rather than the 'expected' position of well below it, this no doubt being primarily due to university graduates moving to London at the end of their studies.

**Figure 13: Change in size of age cohort, 2001-2011, for 5 settlement size groups, % point difference from UK change rate (age as in 2001, +10 for 2011)**



When this type of analysis is applied to the 64 cities individually, the headline results (now reverting to actual percentage change in cohort size rather than difference from the UK level) are the following:

- Oxford and Cambridge saw a more than doubling of their cohorts aged 10-19 (becoming 20-29 in 2011), presumably mainly as a result of those moving there to take up university places hugely outnumbering the number of locals moving elsewhere for study and work, just as they lay at the other extreme for 20-29s (becoming 30-39 in 2011), with a contraction of this cohort by a third at both.
- The biggest gainer of 20-29s (becoming 30-39) was Milton Keynes (an increase of 35%), followed by Swindon, Worthing, Crawley and Peterborough (all up by at least 26%).
- Burnley's number of 10-19s in 2011 was 11% lower than its number of 0-9s in 2001, signalling a significant exodus of school-leavers as well as little gain from international migration, followed by Grimsby, Blackburn and Hull (all with contractions of 3% or more).
- Luton and Reading saw the largest contractions of both 40-49s (becoming 50-59) and 50-59s (becoming 60-69), suggesting these are not places that hold on to their older working age and retiree populations as well as elsewhere.
- Worthing was in the top rank for all the three highest age cohorts, no doubt reflecting lower than average mortality rate as well as its attraction for retiree migration.
- Bottom of the list on both the two oldest cohorts was Glasgow and Hull, this no doubt at least partly reflecting higher mortality there than average.

The full results can be examined in Annex 3.

## 5.2 Age composition 2011

The age structure of a place's population not only bears the imprint of the processes relating to migration and mortality but is also affected by birth rate. Also, the number of births is itself partly driven by inherited age structure in terms of the proportion of the female population that is of child bearing age, but is also affected by the number of children born to the average woman and how this has changed in the past. The UK's birth rate rose by around a third between the mid 1950s and mid 1960s, so these 'baby boomers' are starting to enter their 60s and will generate rapid growth in the oldest age groups over the next 30-40 years. In recent years, however, that ageing effect has been partially offset by a surge of immigration that has been feeding mainly into the young working ages (see above) and by a rise in births that is partly associated with this. How have these changes impacted across the UK and, in particular, on its cities?

The main features of age structure can be identified by reference to just a small number of age groups. Table 12 shows the distribution of the 2011 population across the five groups of 0-14, 15-29, 30-49, 50-69 and 70+ for the UK as a whole and its city classifications. As regards the three regional divisions, the differences are relatively small. The 70+ and 50-69s are fewest in South & East England and are slightly more numerous in Rest of UK than North & West England. South & East England has the highest proportion of 30-49s, while Rest of UK has fewest 15-29s.

There is a clearer pattern to age differences across the five settlement size groups (middle panel of Table 12). The proportion of both 70+ and 50-69s is smallest for the Major Cities and rises progressively down the urban-rural hierarchy. The corollary is primarily that the proportion of 15-29s falls with settlement size. There is less difference for the other two age groups, but the Major Cities have 2-3% points more 0-14s and 30-50s than the Small Towns & Rural category.

The bottom panel of Table 12 breaks down the city size classes by regional division and reveals the distinctiveness of London, with its markedly smaller proportions of 70+ and 50-69s. Next lowest on these is the Large Cities of the Rest of UK, this comprising just Cardiff and Edinburgh and thus paralleling England's capital. The Cardiff/Edinburgh category has a higher proportion of 15-29s than even London (possibly a university effect), but London's proportion of 30-49s is at least 3% points higher than any of the other 8 groups. The most regular patterning across the 3 city size categories is in North & West England, where the 15-29s diminish with city size and the two oldest age groups rise with city size.

**Table 12: Age composition 2011 (%) for UK, 3 regional divisions, 5 settlement sizes and city size groups by region**

|                                | <i>0-14</i> | <i>15-29</i> | <i>30-49</i> | <i>50-69</i> | <i>70+</i> | <i>All ages</i> |
|--------------------------------|-------------|--------------|--------------|--------------|------------|-----------------|
| <i>UK</i>                      | 17.6        | 19.9         | 27.8         | 23.1         | 11.7       | 100.0           |
| <b>Region</b>                  |             |              |              |              |            |                 |
| <i>S&amp;E England</i>         | 17.7        | 19.8         | 28.5         | 22.5         | 11.4       | 100.0           |
| <i>N&amp;W England</i>         | 17.6        | 20.0         | 26.9         | 23.5         | 11.9       | 100.0           |
| <i>Rest of UK</i>              | 17.0        | 19.7         | 27.1         | 24.2         | 11.9       | 100.0           |
| <b>Size</b>                    |             |              |              |              |            |                 |
| <i>Major Cities</i>            | 18.4        | 22.5         | 29.7         | 19.8         | 9.6        | 100.0           |
| <i>Large Cities</i>            | 17.8        | 21.9         | 27.5         | 21.8         | 11.1       | 100.0           |
| <i>Small Cities</i>            | 17.8        | 20.5         | 27.7         | 22.7         | 11.3       | 100.0           |
| <i>Large Towns</i>             | 17.4        | 18.6         | 27.2         | 24.4         | 12.5       | 100.0           |
| <i>Small Towns &amp; Rural</i> | 16.7        | 16.9         | 26.4         | 26.3         | 13.7       | 100.0           |
| <b>Region &amp; city size</b>  |             |              |              |              |            |                 |
| <b>S&amp;E England</b>         |             |              |              |              |            |                 |
| <i>Major Cities</i>            | 18.7        | 22.7         | 31.8         | 18.3         | 8.4        | 100.0           |
| <i>Large Cities</i>            | 17.2        | 22.6         | 28.0         | 21.1         | 11.0       | 100.0           |
| <i>Small Cities</i>            | 18.1        | 21.2         | 28.4         | 21.6         | 10.7       | 100.0           |
| <b>N&amp;W England</b>         |             |              |              |              |            |                 |
| <i>Major Cities</i>            | 18.3        | 22.4         | 27.2         | 21.2         | 10.9       | 100.0           |
| <i>Large Cities</i>            | 18.5        | 20.6         | 26.9         | 22.8         | 11.2       | 100.0           |
| <i>Small Cities</i>            | 17.8        | 19.4         | 27.1         | 23.8         | 11.8       | 100.0           |
| <b>Rest of UK</b>              |             |              |              |              |            |                 |
| <i>Major Cities</i>            | 16.8        | 21.8         | 28.2         | 22.3         | 10.9       | 100.0           |
| <i>Large Cities</i>            | 17.4        | 24.9         | 26.7         | 20.7         | 10.4       | 100.0           |
| <i>Small Cities</i>            | 15.8        | 21.5         | 26.4         | 23.8         | 12.5       | 100.0           |

Source: Calculated from ONS file 'MYE6PE1\_mid-2001-mid-2012-unformatted-syoa-data-file.xls'. Crown copyright.

Table 13 shows the extremes among the 64 cities. Top for 15-29 year olds are the two archetypal university cities of Oxford and Cambridge, with twice the proportion of the lowest ones, Dundee, Edinburgh, Worthing and Blackpool (not shown but with 16.5% or less). Top for 30-49s are some of the UK's fastest-growing cities, but the range is much smaller than for 15-29s, with lowest-placed Dundee and Blackpool on around 25%, only 7 points below London's 31.8%. The patterns on the two older age groups shown in Table 13 are more or less a mirror image of the two younger groups. Finally, for the under-15s (not shown in Table 13), Cambridge and Aberdeen are lowest at 13.6%,



compared to 22% for Bradford and 20% or more for Blackburn, Luton, Milton Keynes, Peterborough and Birmingham.

**Table 13: Top 10 cities on the basis of broad age group 2011 (% total population)**

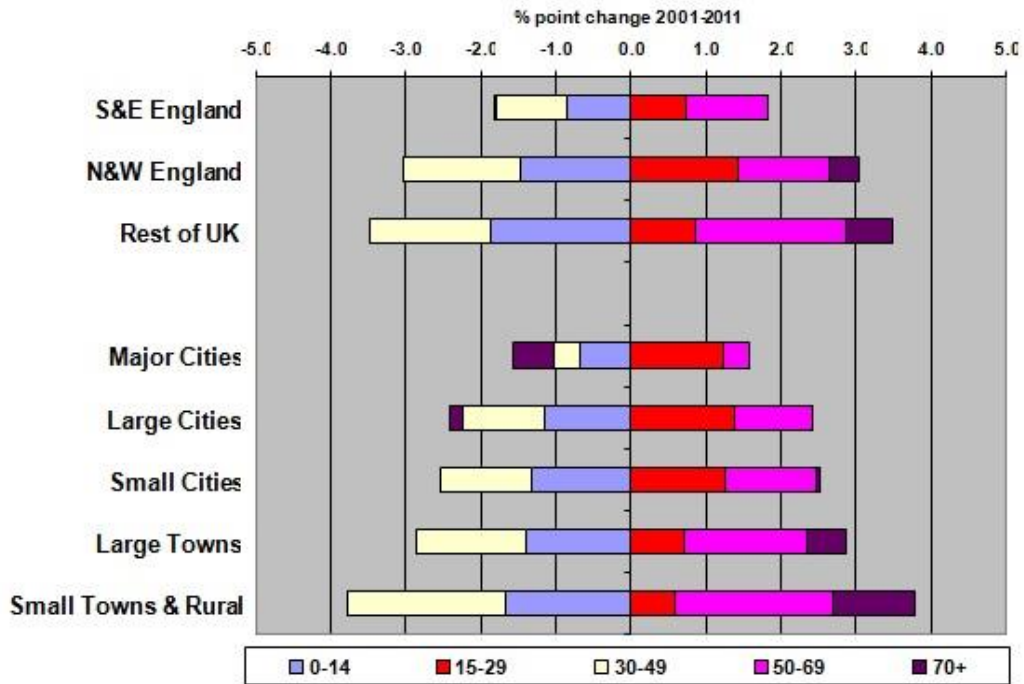
| <b>Rank</b> | <b>15-29</b>       | <b>%</b> | <b>Rank</b> | <b>30-49</b>         | <b>%</b> |
|-------------|--------------------|----------|-------------|----------------------|----------|
| 1           | <i>Oxford</i>      | 33.9     | 1           | <i>London</i>        | 31.8     |
| 2           | <i>Cambridge</i>   | 33.1     | 2           | <i>Milton Keynes</i> | 31.2     |
| 3           | <i>Cardiff</i>     | 27.2     | 3           | <i>Swindon</i>       | 30.9     |
| 4           | <i>Aberdeen</i>    | 26.2     | 4           | <i>Reading</i>       | 30.8     |
| 5           | <i>Coventry</i>    | 24.9     | 5           | <i>Brighton</i>      | 30.6     |
| 6           | <i>Southampton</i> | 24.8     | 6           | <i>Aldershot</i>     | 30.6     |
| 7           | <i>Leeds</i>       | 24.3     | 7           | <i>Crawley</i>       | 30.4     |
| 8           | <i>Leicester</i>   | 24.2     | 8           | <i>Northampton</i>   | 29.4     |
| 9           | <i>Luton</i>       | 24.0     | 9           | <i>Warrington</i>    | 29.0     |
| 10          | <i>York</i>        | 24.0     | 10          | <i>Peterborough</i>  | 28.8     |
| <b>Rank</b> | <b>50-69</b>       | <b>%</b> | <b>Rank</b> | <b>70+</b>           | <b>%</b> |
| 1           | <i>Dundee</i>      | 28.8     | 1           | <i>Blackpool</i>     | 16.1     |
| 2           | <i>Blackpool</i>   | 26.6     | 2           | <i>Worthing</i>      | 15.5     |
| 3           | <i>Edinburgh</i>   | 25.8     | 3           | <i>Dundee</i>        | 15.4     |
| 4           | <i>Birkenhead</i>  | 25.6     | 4           | <i>Bournemouth</i>   | 15.1     |
| 5           | <i>Sunderland</i>  | 25.1     | 5           | <i>Birkenhead</i>    | 13.8     |
| 6           | <i>Barnsley</i>    | 25.0     | 6           | <i>Southend</i>      | 13.7     |
| 7           | <i>Southend</i>    | 25.0     | 7           | <i>Norwich</i>       | 13.4     |
| 8           | <i>Wakefield</i>   | 24.9     | 8           | <i>Edinburgh</i>     | 13.1     |
| 9           | <i>Mansfield</i>   | 24.7     | 9           | <i>Swansea</i>       | 12.9     |
| 10          | <i>Hastings</i>    | 24.7     | 10          | <i>Grimsby</i>       | 12.8     |

Source: Calculated from ONS file 'MYE6PE1\_mid-2001-mid-2012-unformatted-syoa-data-file.xls'.  
Crown copyright.

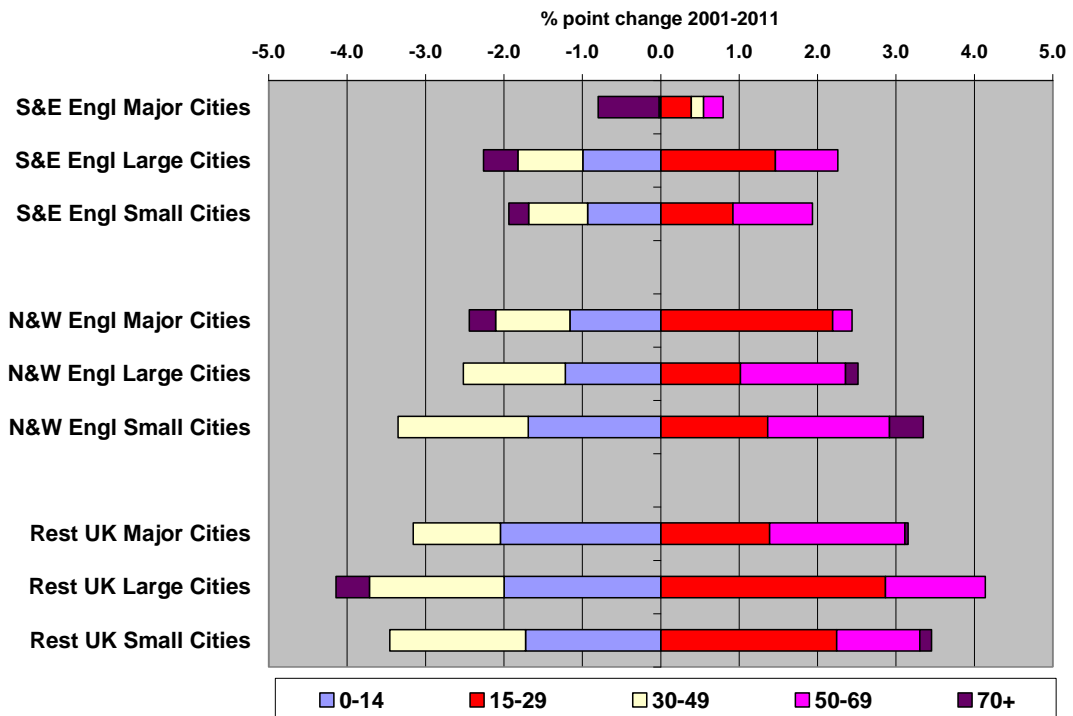
### 5.3 Change in age composition 2001-2011

Figures 14 and 15 show how the proportions of these five broad age groups altered between 2001 and 2011. Nationally (top bar of Figure 14), the picture is one of declines in the proportions of 0-14s and 30-49s by around one percentage point each and increases of a similar amount for both 15-29s and 50-69s, plus just a small increase in the share of 70+. This pattern is primarily a reflection of the ageing of the 1960s baby boom out of the 30-49 group into the 50-69s, together with the high rate of immigration 2001-2011 which boosted the 15-29s at the expense of the other age groups.

**Figure 14: Change in age structure, 2001-2011, for UK, three regional divisions and five settlement size groups**



**Figure 15: Change in age structure, 2001-2011, for UK, three regional divisions by three city size groups**



This broad picture was very much the same for the three UK regional divisions and five settlement sizes shown in the lower panels of Figure 14. The only structural difference is that South & East England, Major Cities and Large Cities registered a fall in the

proportion aged 70+, as the combined size of the other age groups increased faster than for these. The most conspicuous feature, however, is that the extent of age structure change, as demonstrated by the length of the bars, increases both away from South & East England and down the urban hierarchy. Least change is found for Major Cities, with their greater dynamism (reflected in the above-average rise in the share of 15-29s) also serving to minimise the relative contraction of the under-14s and 30-49s. In fact, this was predominantly due to the London effect (see top bar of Figure 15). By contrast, the shifts are much larger than average outside England and in the two non-city settlement sizes, where there are notably large increases in the two oldest groups, large decreases in the share of the 30-49s and 0-14s and a below-average rise in the share of 15-29s (the age group most affected by immigration).

It is a far more difficult task to report on changes across all the cities individually, even with just the five broad age groups, but here are the highlights, taking each in turn.

0-14s: Only 2 cities registered an increase in the share of this age group, Oxford and Bradford, followed by London, Cambridge and Milton Keynes with the lowest drops. The largest drops were for Grimsby and Liverpool, down by around 2.8% points, followed by Hastings, Burnley and Sunderland.

- 15-29s: Just 5 cities saw a decrease in the share of this age group: Milton Keynes (-1.6% points), Reading, Cambridge, Aldershot and Sunderland. The largest increase was for Plymouth (3.4), followed by Cardiff, York, Newport and Liverpool.
- 30-49s: Just 7 increased their percentage of this age group between 2001 and 2011: Cambridge (top at 1.6% points), followed by Brighton, Bournemouth, Worthing, Ipswich, Oxford and London. The biggest relative shrinkage was for Edinburgh (-4.1), followed by Dundee, Middlesbrough, Plymouth and Wakefield.
- 50-69s: Only 3 saw their share of this age shrink: Luton (-1.2% points), Birmingham and Oxford. Edinburgh's grew by 3.2% points, followed by Sunderland, Burnley, Hastings, Dundee and Milton Keynes.
- 70+: Just over half of the 64 saw this age group shrink in its proportion of all ages, with the biggest drop being for Worthing (-2.9% points), followed by Brighton, Bournemouth, Oxford, Ipswich, Hastings and Cambridge. The largest increases were for Edinburgh (2.0), followed by Dundee, Sunderland, Aldershot, Middlesbrough Telford and Warrington.

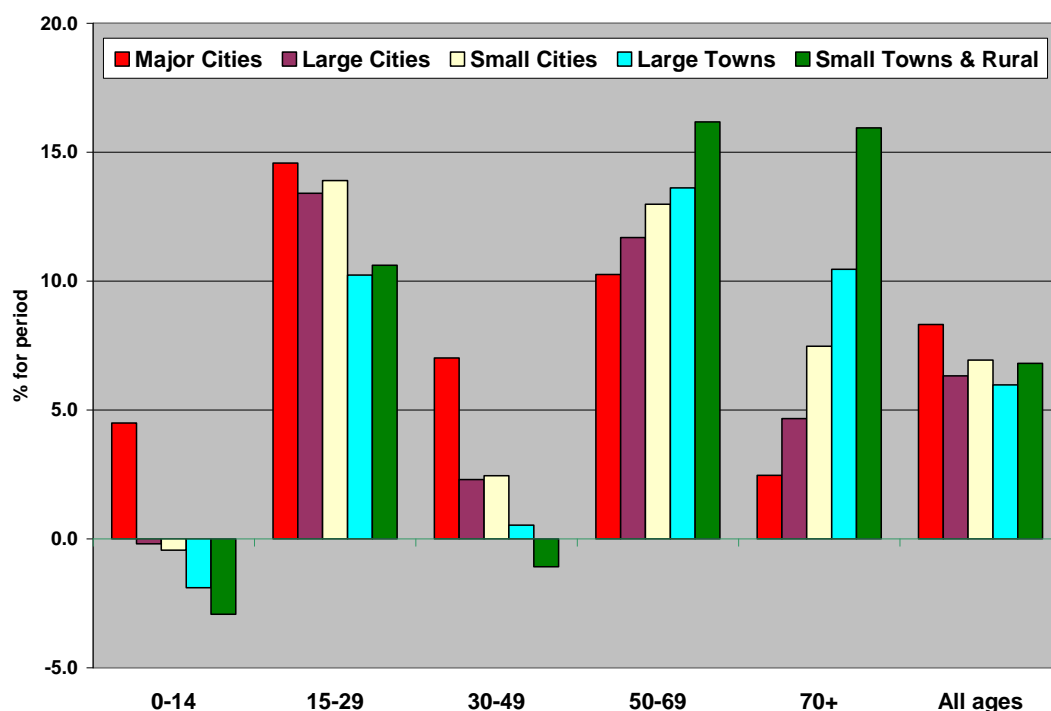
## 5.4 Change in the numbers in each broad age group 2001-2011

While the above information on age-composition changes reflects some important developments in the demography of UK cities, the percentage change in numbers is more crucial for many policy and planning purposes including educational provision, health care and the labour market. On this basis, there have been some remarkable changes since 2001, especially at the level of the individual city. Using the same five age groups as above, the most impressive statistics are:

- A 34% increase between 2001 and 2011 in the numbers of those aged 50-69 for Milton Keynes, reflecting the ageing of the population of this new (1960s onwards) city and accompanied by a 22% increase in its 70+ population

- Milton Keynes also standing out for its 17% increase in number of 0-14s, second only to Oxford's 18%, while falls of 12-15% occurred at Sunderland, Grimsby, Liverpool and Burnley
- A fall of 11% in the number of people aged 70+ for Brighton and of 5% or more for Worthing, Oxford and Hastings
- An increase of over 25% in 15-29s for Cardiff and Gloucester, while Sunderland and Reading were the only cities to see a fall in their number of these, and
- An increase by over 15% in the number of 30-49s at Cambridge and Ipswich, contrasting with a reduction by 10% or more for Edinburgh and Sunderland.

**Figure 16: Change in population numbers, 2001-2011, by broad age group, for UK and five settlement size groups**



While the full set of such data provides a somewhat bewildering array of experiences, summarisation using the five-fold settlement size classification produces a much clearer patterning, including some regularities across the 3 city size categories, as shown in Figure 16. The Major Cities recorded the strongest growth of the 3 younger groups, but the lowest for the two older ones. For both the two older age groups, the growth rate rises with falling size, whereas for the three younger groups the reverse is generally the case, contributing to faster ageing of the non-city parts of the UK and the rejuvenation of London and a number of other cities.

## 6. Implications for the future

The purpose of this final section is to look ahead to 2040 and 2065 and try to anticipate what past experience and current trends would suggest for the size and age composition of the 64 cities by then. This is a task that has to be undertaken without the benefit of up-to-date official sub-national population projections, due on May 29. The currently available set – the 2011-based interim population and household projections – run forward only to 2021 (and thus only partially replaced the previous 2010-based projections with their 35-year horizon) and are based on a starting population that the 2011 Census showed to be nearly 0.5m short of the actual number, with this discrepancy being believed to be due to underestimation of the UK's international migration gain over the preceding decade though there is still speculation that the UK population number from the 2001 Census was on the low side. The other big change between the 2010-based projections and the 2012-based ones released in November 2013 is that the UK population is now expected to grow more slowly than previously envisaged, such that – even despite the higher starting population in the 2012-based projections – the UK population is now expected to move below that suggested by the 2010-based projections as early as 2022.

There can be two opposite reactions to these observations about the context of the national population projections. One is that, if ideas about the future growth rate of the national population can alter so much over just a two-year period, it is difficult to place much confidence in the latest numbers when a new set of national projections will be released in less than two years from now. The other is to recognise and embrace the levels of uncertainty that exist in the real world and keep in mind the need for flexibility. As is shown below, there seems little doubt that the UK population will continue growing in size over the next 30-50 years, so at national level the main uncertainty is the date at which any particular level of population will be reached, though there will be some extra variations in age composition arising from which of the main components of population change – births, deaths and international migration – is primarily responsible for any departure from the so-called 'principal projection'. This uncertainty is, of course, multiplied considerably when taking a sub-national perspective and especially when drilling down to the trajectories of 64 individual cities, not least because there are the additional uncertainties associated with the other main component of within-UK migration as well as those relating to how international migration will be distributed across the UK in future years (for example, see Rees et al., 2012, 2013).

Given this background, it could almost be argued that it is helpful for present purposes not to be able to rely on an up-to-date set of sub-national projections. One reason for suggesting this is merely that, unlike the national projections which look up to 100 years into the future, the sub-national projections have a horizon of 25 years (i.e. 2037 for the next set of projections), which while getting close to Foresight's nearer target year of 2040 is well short of its further target year of 2065. This shorter horizon than for the national projections is, of course, a direct recognition of the greater degree of uncertainty that must be expected of sub-national population trends, primarily because of the much greater volatility attaching to migration than to births and especially deaths. Related to this is the way in which the projections methodology handles migration, which across the UK's national statistical agencies is normally on the basis of averaging the migration rates of the latest few years. As we will see below, for the 2012-based projections, this period is dominated by the effects of the 2008-09 recession and the slowness of the recovery from it, when within-UK migration has been very different from that of the

preceding period of economic boom. A better feel for long-term trends is provided by the type of 30-year analysis provided above, along with decade-long change periods helping to even out the effects of economic cycles.

So, what does the historical record suggest about future population numbers for the 64 cities? One lesson that it teaches us is that the most important single factor affecting the future growth and size of cities is the pace of the UK's overall population growth. This is because of the dual observations that the 64 cities in aggregate make up over half (54%) of total population and that in the latest decade 2001-2011 they closely matched the national rate of growth (a 7.5% increase compared with the UK's 7.1%). If this share of national growth were to remain constant from 2012 onwards, then the expectation would be that the 64 cities would see their combined population grow by 5.2m by 2037 and by a further 4.1m by 2062, based on the UK's principal projection being for a 9.6m increase by 2037 and rising by a total of 16.2m by 2062. This represents a total increase of 9.3m for the 64 cities over the 50 years to 2062.

As regards age structure, it would follow that the 64 cities in aggregate would tend to track the national ageing trend expected over the next 50 years. At the UK level the main change between 2012 and 2062 indicated by the principal projection is a substantial increase in the proportion of people aged 75+ (up by nearly 8% points), accompanied by a 0.8 point increase in 60-74s and a relative shrinkage of all the younger broad age groups (by 1.3 points for 0-14s, by 2.6 for 15-29s, by 2.2 for 30-44s and by 2.7 for 45-59s). For the cities, however, the pace of ageing is unlikely to be as rapid as nationally, judging by the observation above that the three city size groups aged more slowly than average between 2001 and 2011 and indeed that some cities even experienced a degree of literal rejuvenation. In aggregate, the cities are very unlikely to entirely escape the major national shift into the 75+ age group, but on the basis of recent performance the proportion of their population aged under 30 in 2062 may not be markedly different from its current level of 40%, which is 2.5% points above the UK level – a margin that would seem likely to widen somewhat over the next few decades.

These numbers on the future population size and age composition of the cities are, however, based on the 'principal projection' for the UK population and therefore their accuracy depends on how close UK growth gets to this set of national figures. The published national projections helpfully include a number of variants based on alternative sets of assumptions. The headline outcomes from these are shown in Table 14. For 2062, when the principal projection is 79.9m, the variants range from a high of 93.0m to a low of 67.5m. The latter figure is only 4m higher than the 63.7m level of 2012, whereas the former gives an increase of 30m for the 50-year period. The main factor behind this wide range of variation is the future level of international migration, with the (unrealistic) zero net migration assumption giving a population level of 66.2m for 2062. Clearly any attempt at anticipating the future numbers for UK cities requires judgement to be exercised over how much confidence can be placed in the principal projection.

A second area of uncertainty where a judgement call is needed for any scenario or forecasting exercise is whether the cities will maintain their recent share of the UK's overall population growth. Here the chief story of the past 30 years is one of resurgence, moving from a situation where the 64 cities combined lost population in 1981-91 to their contributing over a third of national growth in the 1990s and over half of it in the 2000s. Accompanying this turnaround has been a major transformation from a pattern of 'counter-urbanization', in which growth rates rise with reducing urban status, to a situation where a very similar rate prevails across the hierarchy. Should we expect this long-term progression to continue, such that future city growth becomes positively related

to size across the urban/rural spectrum, as it was in the UK's main phase of urbanization in the nineteenth century, or will there be a degree of realignment that would see the cities' share of growth moving back down towards the 30-year average of 42.5% or lower?

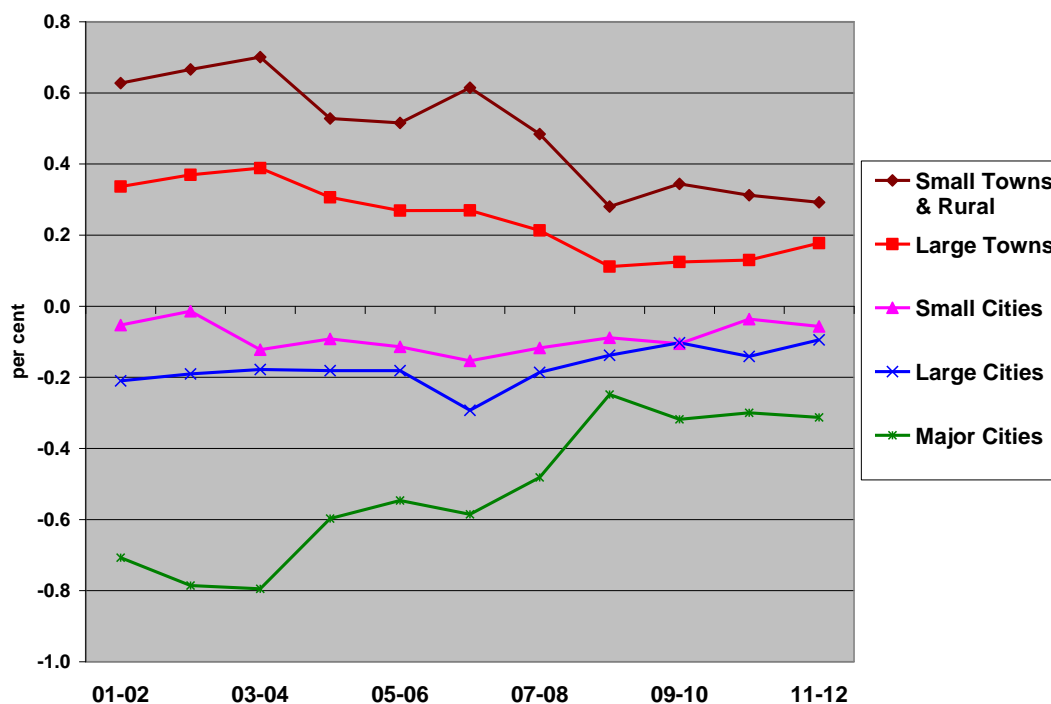
**Table 14: Variant 2012-based projections of the UK population, 2037 and 2062 (in thousands)**

| <i>Variant</i>  | <i>2037</i>   | <i>2062</i>   |
|---|---------------|---------------|
| <i>(base 2012 = 63,705)</i>                                 |               |               |
| <i>Principal projection</i>                                 | <i>73,272</i> | <i>79,904</i> |
| <i>High fertility, high life expectancy, high migration</i> | <i>77,717</i> | <i>93,012</i> |
| <i>High fertility</i>                                       | <i>75,200</i> | <i>85,554</i> |
| <i>High migration</i>                                       | <i>71,606</i> | <i>83,882</i> |
| <i>High life expectancy</i>                                 | <i>74,068</i> | <i>83,162</i> |
| <i>Low life expectancy</i>                                  | <i>72,443</i> | <i>76,529</i> |
| <i>Low migration</i>  | <i>71,606</i> | <i>75,942</i> |
| <i>Low fertility</i>  | <i>71,390</i> | <i>74,645</i> |
| <i>Low fertility, low life expectancy, low migration</i>    | <i>68,935</i> | <i>67,540</i> |
| <i>Zero net migration</i>                                   | <i>67,477</i> | <i>66,248</i> |

Source: *National Population Projections, 2-12-based Extra Variants Report*, ONS, 10 December 2013.

Looking into the future is made no easier by recent events, most notably the latest recession and its aftermath. As mentioned above, the main determinant of the relative growth rates of city, town and countryside is the scale and patterning of internal (i.e. within-UK) migration. The effects of recession are all too apparent for this component of population change: the 2000s divide into two very different halves – a period up to 2007 when there was still a strong ‘counter-urbanization’ shift of population from Major Cities across to Small Towns & Rural areas and the markedly slower redistribution of 2008-09 through till the latest year for which data are available on internal migration, 2011-12 (see Figure 17). This narrowing of the range of rates across the urban/rural spectrum is fully consistent with the experience of previous economic cycles, as both labour and housing markets slow down. What is new, however, is that the subsequent recovery does not seem to have been accompanied by a re-opening of the gap, which is strange given reports that employment has bounced back to now being the highest on record. Has the recession introduced a qualitative transformation that would mean that we can no longer rely on past experience in anticipating what will happen over the rest of the 2010s and beyond?

**Figure 17: Annual net rate of within-UK migration, 2001-2012, UK, by settlement size**



A further element of uncertainty relates to any change in government policy, which the official population projections do not attempt to anticipate. One way in which government might influence the population trajectory of cities is in its decisions about public investment. There is already a body of literature suggesting that high levels of public expenditure played a major part in securing the impressive resurgence of some of the larger cities outside South & East England during the New Labour administration, both directly in terms of public-sector jobs and indirectly through the multiplier effect on the private sector there. The latest signs are that this was a one-off injection of funding and that its cessation will move the level of government support back closer to the pre-1997 situation. If that is the case, has that burst of investment achieved effects that will prove lasting and sustainable? In addition, various ‘big’ future investment decisions (for example about HS2) might have important implications for some regions, as also might house building and planning policy.

Secondly, policy on immigration could be important, given that the level and nature of international migration is the biggest area of uncertainty. If central government sticks to the goal of getting net immigration down to under 100,000 a year and manages to achieve it, this will introduce a very different set of dynamics from those prevailing in the 2000s. At the same time, the findings of this study indicate some of the contradictions inherent in the geographical outworkings of such a policy direction. At one level, the high-level impact of international immigration for a relatively small range of cities suggests that action in these ‘choke points’ could make national immigration targets much easier to hit. On the other hand, the importance of international immigration for some cities (the clearest example being the global city of London) means that these urban areas could be disproportionately disadvantaged for the sake of anti-immigration political pressures arising from places that might in some cases be very distant socially and spatially.



Finally, there are the big uncertainties concerning climate/environmental change and fuel/resource costs. Will the former have impacts across the entire urban system, even if affecting some places more severely than others such as some of the coastal cities that are discussed (Hull amongst others), where the experience of the past 30 years is a poor guide for the future. The most detailed assessment of the impact of environmental change on Britain's migration patterns to date, however, concludes that the effects will be minimal except in a small number of such cases (Fielding, 2012). As regards the continued high cost of fuel and our car dependency as a nation, it might well be that new ways of urban living will be necessary in the future and this could change the balance between population agglomeration and de-agglomeration tendencies in the longer-term future.

This working paper has been focused very largely on 'the numbers', as stipulated. This emphasis, not surprisingly, tends to generate more questions than answers. Hopefully, other working papers commissioned by Foresight can furnish additional insights that will shed light on such aspects. According to Fielding (2012), it is likely to be the papers that are concerned with the economic performance of the cities that will be most relevant, followed by those on social change, with those on climate change being much less important over Foresight's time horizon. Given the high degree of inertia in settlement systems, however, it could be argued that government intervention is needed already in order to safeguard the future of UK cities in the much longer term.

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# Annex I: UK's 64 cities by regional division and size group

Table A1: UK's 64 cities by regional division and size group

| <b>City size group</b>  | <b>South &amp; East England</b>   | <b>North &amp; West England</b>  | <b>Rest of UK</b>                                  |
|---|---|--|--|
| <p><b>Major City</b><br/>(deemed to be of metropolitan status)</p>      | <p>London</p>   | <p>Birmingham<br/>Leeds<br/>Liverpool<br/>Manchester<br/>Newcastle<br/>Sheffield</p>                                       | <p>Belfast<br/>Glasgow</p>                         |
| <p><b>Large City</b><br/>(other cities with 275,000 or more people)</p> | <p>Bournemouth<br/>Brighton<br/>Bristol<br/>Leicester<br/>Nottingham<br/>Portsmouth<br/>Reading<br/>Southampton</p> | <p>Birkenhead<br/>Bradford<br/>Coventry<br/>Huddersfield<br/>Hull<br/>Middlesbrough<br/>Stoke<br/>Sunderland<br/>Wigan</p> | <p>Cardiff<br/>Edinburgh</p>                       |
| <p><b>Small City</b><br/>(125,000-275,000 people)</p>                   | <p>Aldershot<br/>Cambridge<br/>Chatham<br/>Crawley<br/>Derby<br/>Gloucester</p>                                     | <p>Barnsley<br/>Blackburn<br/>Blackpool<br/>Bolton<br/>Burnley<br/>Doncaster</p>   | <p>Aberdeen<br/>Dundee<br/>Newport<br/>Swansea</p> |

|  |  |   |  |
|--|--|---|--|
|  | <i>Hastings</i><br><i>Ipswich</i><br><i>Luton</i><br><i>Mansfield</i><br><i>Milton Keynes</i><br><i>Northampton</i><br><i>Norwich</i><br><i>Oxford</i><br><i>Peterborough</i><br><i>Plymouth</i><br><i>Southend</i><br><i>Swindon</i><br><i>Worthing</i> | <i>Grimsby</i><br><i>Preston</i><br><i>Rochdale</i><br><i>Telford</i><br><i>Wakefield</i><br><i>Warrington</i><br><i>York</i> |  |
|--|--|---|--|

Note: Size groups are based on 2001 Census population for Primary Urban Areas delineated at ward level, plus status for Major Cities.

## Annex 2: Shift in population change rate from 1981-1991 to 2001-2011, 64 cities ranked on % point shift

Table A2: Shift in population change rate from 1981-1991 to 2001-2011, 64 cities ranked on % point shift

| <b>City</b>         | <b>1981</b> | <b>1981-1991</b>    | <b>2001-2011</b>    | <b>80s to 00s</b>   | <b>80s to 00s</b>  |
|---------------------|-------------|---------------------|---------------------|---------------------|--------------------|
|                     | <b>000s</b> | <b>% for period</b> | <b>% for period</b> | <b>%point shift</b> | <b>cf UK shift</b> |
| <i>Ipswich</i>      | 120.1       | -1.4                | 14.1                | 15.5                | 10.4               |
| <i>Oxford</i>       | 130.4       | -1.2                | 10.8                | 12.0                | 6.9                |
| <i>London</i>       | 7,969.3     | 0.3                 | 11.4                | 11.0                | 5.9                |
| <i>Leicester</i>    | 413.4       | 1.0                 | 11.8                | 10.9                | 5.7                |
| <i>Manchester</i>   | 1,841.0     | -3.2                | 7.5                 | 10.7                | 5.5                |
| <i>Liverpool</i>    | 881.4       | -8.0                | 2.2                 | 10.2                | 5.1                |
| <i>Blackburn</i>    | 142.5       | -3.6                | 6.6                 | 10.2                | 5.1                |
| <i>Bradford</i>     | 464.3       | 1.0                 | 11.1                | 10.1                | 5.0                |
| <i>Sheffield</i>    | 800.7       | -3.4                | 6.3                 | 9.7                 | 4.5                |
| <i>Dundee</i>       | 169.6       | -8.3                | 1.2                 | 9.5                 | 4.3                |
| <i>Coventry</i>     | 319.0       | -4.7                | 4.7                 | 9.4                 | 4.3                |
| <i>Glasgow</i>      | 1,193.2     | -8.0                | 1.1                 | 9.1                 | 3.9                |
| <i>Birmingham</i>   | 2,363.8     | -2.1                | 7.0                 | 9.0                 | 3.9                |
| <i>Edinburgh</i>    | 446.0       | -2.2                | 6.4                 | 8.6                 | 3.5                |
| <i>Huddersfield</i> | 377.3       | 0.5                 | 8.7                 | 8.3                 | 3.1                |
| <i>Cardiff</i>      | 286.9       | 3.5                 | 11.4                | 7.9                 | 2.8                |
| <i>Barnsley</i>     | 226.2       | -1.3                | 6.3                 | 7.7                 | 2.5                |
| <i>Gloucester</i>   | 100.2       | 3.3                 | 10.9                | 7.6                 | 2.5                |
| <i>Plymouth</i>     | 253.3       | -0.8                | 6.5                 | 7.3                 | 2.2                |
| <i>Bristol</i>      | 604.3       | 1.7                 | 8.7                 | 7.1                 | 1.9                |
| <i>Brighton</i>     | 295.9       | 1.0                 | 8.0                 | 6.9                 | 1.8                |
| <i>Newcastle</i>    | 858.2       | -3.5                | 3.3                 | 6.8                 | 1.7                |
| <i>Swansea</i>      | 229.3       | 0.2                 | 6.8                 | 6.6                 | 1.5                |
| <i>Leeds</i>        | 717.7       | -1.5                | 4.9                 | 6.4                 | 1.3                |
| <i>Bolton</i>       | 262.1       | -0.3                | 6.1                 | 6.4                 | 1.3                |

|                      |       |      |      |      |      |
|----------------------|-------|------|------|------|------|
| <i>Hull</i>          | 273.7 | -3.8 | 2.5  | 6.3  | 1.1  |
| <i>Cambridge</i>     | 101.0 | 5.6  | 11.6 | 6.0  | 0.9  |
| <i>Wigan</i>         | 307.0 | -0.5 | 5.5  | 6.0  | 0.8  |
| <i>Mansfield</i>     | 206.7 | 1.5  | 6.9  | 5.4  | 0.2  |
| <i>Derby</i>         | 217.4 | 2.5  | 7.9  | 5.4  | 0.2  |
| <i>Chatham</i>       | 240.3 | 0.9  | 6.1  | 5.2  | 0.0  |
| <i>Nottingham</i>    | 594.4 | 1.7  | 6.9  | 5.1  | 0.0  |
| <i>Doncaster</i>     | 290.8 | 0.3  | 5.4  | 5.1  | 0.0  |
| <i>York</i>          | 165.4 | 4.2  | 9.1  | 4.9  | -0.2 |
| <i>Southampton</i>   | 302.7 | 2.9  | 7.7  | 4.9  | -0.3 |
| <i>Rochdale</i>      | 208.2 | -2.1 | 2.7  | 4.7  | -0.4 |
| <i>Portsmouth</i>    | 474.0 | 1.8  | 6.3  | 4.5  | -0.6 |
| <i>Crawley</i>       | 199.2 | 3.7  | 8.1  | 4.4  | -0.8 |
| <i>Southend</i>      | 318.1 | 1.7  | 6.1  | 4.3  | -0.8 |
| <i>Aberdeen</i>      | 212.5 | 0.8  | 5.0  | 4.2  | -0.9 |
| <i>Luton</i>         | 164.8 | 5.4  | 9.5  | 4.1  | -1.0 |
| <i>Aldershot</i>     | 163.0 | 1.5  | 5.6  | 4.1  | -1.1 |
| <i>Newport</i>       | 132.4 | 2.3  | 6.0  | 3.6  | -1.5 |
| <i>Wakefield</i>     | 314.5 | -0.1 | 3.5  | 3.6  | -1.6 |
| <i>Stoke</i>         | 372.9 | -0.7 | 2.8  | 3.5  | -1.6 |
| <i>Birkenhead</i>    | 340.5 | -1.8 | 1.5  | 3.3  | -1.8 |
| <i>Swindon</i>       | 151.6 | 13.1 | 16.4 | 3.3  | -1.8 |
| <i>Norwich</i>       | 224.2 | 3.3  | 6.5  | 3.2  | -1.9 |
| <i>Belfast</i>       | 630.5 | 1.2  | 3.9  | 2.7  | -2.5 |
| <i>Worthing</i>      | 92.5  | 5.1  | 7.5  | 2.4  | -2.7 |
| <i>Middlesbrough</i> | 475.4 | -2.0 | 0.3  | 2.3  | -2.9 |
| <i>Preston</i>       | 315.4 | 4.5  | 6.6  | 2.1  | -3.1 |
| <i>Peterborough</i>  | 133.8 | 15.2 | 17.2 | 2.0  | -3.2 |
| <i>Grimsby</i>       | 161.3 | -0.2 | 1.1  | 1.3  | -3.9 |
| <i>Burnley</i>       | 179.1 | -0.9 | -1.2 | -0.3 | -5.5 |
| <i>Blackpool</i>     | 317.4 | 1.8  | 1.4  | -0.4 | -5.5 |
| <i>Bournemouth</i>   | 302.2 | 10.1 | 9.4  | -0.7 | -5.8 |
| <i>Warrington</i>    | 170.2 | 8.5  | 6.0  | -2.5 | -7.6 |
| <i>Sunderland</i>    | 298.1 | -0.7 | -3.3 | -2.5 | -7.7 |
| <i>Hastings</i>      | 75.7  | 9.4  | 5.6  | -3.8 | -8.9 |



|                      |          |      |      |       |       |
|----------------------|----------|------|------|-------|-------|
| <i>Reading</i>       | 339.1    | 10.3 | 4.7  | -5.5  | -10.7 |
| <i>Northampton</i>   | 158.9    | 15.8 | 9.3  | -6.5  | -11.6 |
| <i>Telford</i>       | 125.5    | 12.6 | 5.2  | -7.4  | -12.6 |
| <i>Milton Keynes</i> | 126.0    | 41.5 | 17.5 | -24.0 | -29.2 |
|                      |          |      |      |       |       |
| <i>UK</i>            | 56,358.0 | 1.9  | 7.1  | 5.1   | 0.0   |

Note: 1981 population size is based on mid-year estimate for the best-fit of local and unitary authority areas. Decade change rates are rounded to one decimal point, so may not sum exactly to the percentage point shifts.

## Annex 3: Change in size of age cohorts, 2001-2011, for UK and its 64 cities (arranged in alphabetic order)

Table A3: Change in size of age cohorts, 2001-2011, for UK and its 64 cities (arranged in alphabetic order)

| City        | 0-9   | 10-19 | 20-29 | 30-39 | 40-49 | 50-59 | 60-69 | 70-79 |
|-------------|-------|-------|-------|-------|-------|-------|-------|-------|
| UK          | 5.7   | 13.8  | 10.8  | 0.6   | -2.4  | -7.3  | -18.6 | -43.7 |
| Aberdeen    | 10.3  | 77.7  | -12.7 | -9.5  | -7.0  | -14.2 | -24.6 | -47.6 |
| Aldershot   | -2.8  | 8.2   | 14.7  | -3.6  | -9.3  | -16.2 | -20.2 | -39.2 |
| Barnsley    | 2.8   | 0.6   | 16.1  | 4.5   | 2.8   | -4.6  | -18.7 | -46.3 |
| Belfast     | 1.5   | 3.0   | 2.2   | -2.4  | -4.2  | -9.5  | -20.6 | -46.4 |
| Birkenhead  | 2.5   | -16.6 | 16.1  | 6.0   | -1.0  | -6.9  | -18.3 | -43.8 |
| Birmingham  | 6.7   | 12.6  | 8.2   | -2.2  | -5.8  | -12.6 | -22.5 | -46.4 |
| Blackburn   | -3.6  | -1.8  | 11.1  | -2.4  | -3.2  | -10.4 | -25.1 | -49.5 |
| Blackpool   | 5.6   | -10.6 | 12.6  | 7.3   | 3.6   | -0.1  | -16.2 | -44.7 |
| Bolton      | 3.5   | 2.7   | 10.5  | 2.4   | -2.8  | -10.2 | -21.0 | -48.8 |
| Bournemouth | 12.8  | 35.2  | 16.7  | 8.0   | 2.1   | -0.2  | -12.9 | -38.4 |
| Bradford    | 5.8   | 9.3   | 14.1  | 0.8   | -3.5  | -12.2 | -22.7 | -46.3 |
| Brighton    | 13.4  | 69.0  | 4.5   | -3.7  | -7.9  | -12.0 | -24.6 | -46.1 |
| Bristol     | 4.7   | 46.7  | 3.4   | -6.5  | -7.7  | -12.4 | -20.4 | -44.1 |
| Burnley     | -11.0 | -10.4 | 6.7   | -5.1  | -9.9  | -8.3  | -23.2 | -47.7 |
| Cambridge   | 45.2  | 125.8 | -30.3 | -13.4 | -5.8  | -15.8 | -23.4 | -37.8 |
| Cardiff     | 10.8  | 62.1  | -8.3  | -5.6  | -2.5  | -11.9 | -20.1 | -45.7 |
| Chatham     | 4.5   | 5.0   | 9.8   | -2.7  | -6.3  | -13.0 | -21.8 | -45.2 |
| Coventry    | 7.3   | 28.8  | -8.2  | -8.3  | -10.8 | -12.2 | -24.9 | -47.8 |
| Crawley     | -2.1  | 13.8  | 29.2  | -1.4  | -8.2  | -14.3 | -22.5 | -39.9 |
| Derby       | 5.7   | 24.4  | 1.3   | -0.4  | -4.2  | -12.0 | -20.2 | -45.1 |
| Doncaster   | 1.5   | 2.8   | 16.2  | 2.3   | -0.4  | -8.7  | -20.3 | -47.3 |
| Dundee      | 3.7   | -15.7 | 10.2  | 8.2   | 6.7   | 2.2   | -15.2 | -45.7 |
| Edinburgh   | 6.5   | -28.3 | 12.1  | 11.3  | -6.4  | -11.2 | -17.0 | -40.6 |
| Glasgow     | 3.4   | 26.4  | -0.2  | -3.7  | -5.0  | -11.4 | -26.3 | -51.9 |
| Gloucester  | 3.0   | 17.5  | 25.3  | -0.1  | -1.8  | -6.9  | -18.7 | -44.4 |

|                      |      |       |       |       |       |       |       |       |
|----------------------|------|-------|-------|-------|-------|-------|-------|-------|
| <i>Grimsby</i>       | -5.0 | -8.9  | 9.6   | -0.6  | -2.1  | -7.6  | -19.4 | -44.7 |
| <i>Hastings</i>      | -0.4 | 3.4   | 16.9  | 9.0   | 0.6   | -1.9  | -20.6 | -43.1 |
| <i>Huddersfield</i>  | 3.5  | 7.1   | 12.5  | 4.5   | -2.5  | -7.4  | -17.1 | -45.1 |
| <i>Hull</i>          | -3.3 | 28.2  | -7.4  | -8.2  | -6.4  | -12.6 | -26.9 | -51.3 |
| <i>Ipswich</i>       | 7.9  | 30.9  | 19.8  | 4.5   | 4.3   | -6.1  | -19.7 | -42.0 |
| <i>Leeds</i>         | 6.1  | 36.2  | -5.2  | -5.4  | -8.7  | -13.9 | -23.9 | -47.7 |
| <i>Leicester</i>     | 13.3 | 36.0  | 0.9   | -3.3  | -2.2  | -9.6  | -20.5 | -44.1 |
| <i>Liverpool</i>     | 4.2  | 18.6  | -5.4  | -4.6  | -4.9  | -10.2 | -24.6 | -51.0 |
| <i>London</i>        | 0.1  | 61.0  | 16.3  | -13.6 | -10.0 | -17.6 | -25.1 | -46.2 |
| <i>Luton</i>         | -0.5 | 31.8  | 5.2   | -10.3 | -11.5 | -23.7 | -25.9 | -46.3 |
| <i>Manchester</i>    | 5.7  | 27.5  | 7.3   | -2.7  | -5.8  | -13.9 | -25.5 | -49.0 |
| <i>Mansfield</i>     | 5.2  | 1.0   | 18.2  | 4.2   | 2.8   | -5.5  | -18.8 | -46.7 |
| <i>Middlesbrough</i> | 1.0  | -5.3  | -2.2  | -2.3  | -6.4  | -10.9 | -21.6 | -48.0 |
| <i>Milton Keynes</i> | 3.5  | 12.6  | 35.4  | 0.5   | -5.5  | -12.3 | -15.7 | -38.8 |
| <i>Newcastle</i>     | 6.7  | 23.4  | 0.4   | -2.3  | -4.7  | -9.0  | -23.4 | -49.6 |
| <i>Newport</i>       | 3.1  | 2.3   | 19.1  | 2.2   | -3.8  | -11.0 | -19.4 | -45.7 |
| <i>Northampton</i>   | 2.1  | 23.8  | 13.2  | -3.7  | -7.6  | -13.5 | -21.8 | -45.8 |
| <i>Norwich</i>       | 9.0  | 37.2  | -1.4  | -1.9  | -2.2  | -3.5  | -15.2 | -40.3 |
| <i>Nottingham</i>    | 14.0 | 36.1  | -6.4  | -4.2  | -3.0  | -11.2 | -20.8 | -46.0 |
| <i>Oxford</i>        | 43.7 | 115.2 | -33.9 | -16.6 | -11.0 | -14.1 | -25.6 | -46.8 |
| <i>Peterborough</i>  | 8.2  | 31.2  | 26.2  | 2.3   | -0.9  | -10.6 | -18.0 | -40.6 |
| <i>Plymouth</i>      | 10.9 | 33.2  | -3.8  | -3.8  | -3.8  | -7.9  | -18.9 | -44.8 |
| <i>Portsmouth</i>    | 11.5 | 17.2  | 0.4   | -0.1  | -3.3  | -5.3  | -16.5 | -41.3 |
| <i>Preston</i>       | 6.6  | 10.9  | 7.6   | 3.5   | -4.0  | -9.8  | -20.5 | -44.6 |
| <i>Reading</i>       | -1.2 | 14.3  | 5.8   | -8.3  | -11.2 | -19.0 | -21.7 | -40.2 |
| <i>Rochdale</i>      | -0.2 | -3.9  | 9.7   | -2.7  | -7.5  | -14.4 | -23.8 | -49.5 |
| <i>Sheffield</i>     | 10.9 | 29.8  | -2.1  | -1.2  | -4.9  | -10.5 | -20.9 | -46.5 |
| <i>Southampton</i>   | 9.0  | 50.5  | -13.5 | -2.8  | -5.5  | -11.6 | -19.1 | -43.3 |
| <i>Southend</i>      | 5.2  | -4.3  | 21.1  | 8.6   | 1.5   | -4.3  | -13.6 | -40.4 |
| <i>Stoke</i>         | 7.9  | 11.6  | -3.6  | -1.1  | -2.8  | -10.6 | -21.9 | -50.6 |
| <i>Sunderland</i>    | -1.7 | -5.2  | -12.3 | -3.8  | -4.2  | -9.6  | -23.5 | -50.4 |
| <i>Swansea</i>       | 14.1 | 24.7  | 2.9   | 6.5   | -0.9  | -5.7  | -18.1 | -46.6 |
| <i>Swindon</i>       | 6.7  | 23.9  | 31.2  | 5.7   | 1.4   | -5.1  | -18.7 | -41.1 |
| <i>Telford</i>       | 2.4  | -2.0  | 7.6   | -1.3  | -6.6  | -10.6 | -21.5 | -46.2 |
| <i>Wakefield</i>     | 0.5  | -2.4  | 11.1  | 0.5   | -2.0  | -6.9  | -19.3 | -47.1 |

|                   |      |      |      |      |      |      |       |       |
|-------------------|------|------|------|------|------|------|-------|-------|
| <i>Warrington</i> | 2.5  | -1.0 | 21.9 | 2.2  | -5.2 | -9.4 | -19.6 | -45.3 |
| <i>Wigan</i>      | 1.2  | 0.8  | 12.1 | 4.7  | -0.5 | -8.3 | -22.5 | -48.7 |
| <i>Worthing</i>   | 2.5  | 7.7  | 30.4 | 10.3 | 3.7  | 2.4  | -8.2  | -36.7 |
| <i>York</i>       | 20.4 | 50.8 | -4.8 | -0.5 | -3.0 | -7.5 | -15.7 | -42.1 |

Note: Age as in 2001, add 10 for age in 2011.

