

# Research Report

## Northumberland's Age Profile – Past Trends & Future Change

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Prepared by: Shona Rowe (Intelligence Officer)

Tel. 01670 624746

E-mail. [shona.rowe@northumberland.gov.uk](mailto:shona.rowe@northumberland.gov.uk)

Gillian Taylor (Research Associate)

E-mail. [gillian.taylor@northumberland.gov.uk](mailto:gillian.taylor@northumberland.gov.uk)

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## **1.0 Summary & Key Figures**

This short report examines the age profile of the population in Northumberland in terms of the current profile, past trends, and future projections. The key findings from the report are as follows:

### **Current profile** (based on the 2011 Census)

- On Census night (27 March 2011) the Northumberland population was 316,000; 154,100 males and 161,900 females.
- The 2011 age profile for Northumberland is considerably different to that of the North East and England:
  - Northumberland has fairly similar populations for age groups under 40, then much larger populations between 40 and 65. The population lessens for the older ages, with substantially higher populations among females than the corresponding male age groups;
  - The North East has similarly large populations in the 40 to 65 age group, but also has higher populations among the younger (15-29) ages. England as a whole has a much more rounded population, with the peak population at ages 40-49;
  - 20% of the Northumberland population is aged 65 or over; this is higher than for the North East (17.3%) and for England (16.3%), as well as for all of the counties / unitary authorities in the North East.

### **Past trends**

- The mid-year population of Northumberland in 2011<sup>1</sup> was estimated to be 316,300, a 2.9% increase on the 2001 Census-based mid-year estimate. In the previous 10 year period (1991 to 2001), the population increased by 1,900 (0.6%).
- This 2001 to 2011 population increase in Northumberland was slightly higher than that of the North East (2.2% increase), but substantially lower than for England as a whole (7.4% increase).
- The proportion of Northumberland's 2011 population<sup>1</sup> aged 5-19, 30-44 and 50-54 has decreased since 2001, whereas the population has increased for all age groups above 55, illustrating that Northumberland's population has aged over the last ten years.
- 20.2% of Northumberland's 2011 population was aged 65 and over; in 2001 the figure was 17.6%. This 2011 proportion was higher than for both the North East region (17.4%) and England (16.4%).
- In terms of the 34 small areas within Northumberland, total population has increased in 29 of the areas over the 10 year period 2001-2011.
- In all but one of the small areas, there has been an increase in the over 65 population.

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<sup>1</sup> mid-year population estimate based on the 2011 Census

**Future change** (based on the ONS 2010-based sub-national population projections)

- ONS produces population projections at a national and sub-national level generally every two years. These ONS projections are based on a short-term trend methodology, the nature of which means that the projections vary considerably.
- The 2010-based projection, which is the most recent full projection available, has been used in this report with the recommendation that this analysis is repeated once the next full set of sub-national projections is released.
- This projection suggests that there will be a considerable increase in the proportion of over 65's in Northumberland, and lowered proportions of people in the younger and middling ages over the next 20 years.
- The over 65 population is expected to account for over 30% of the total population in Northumberland in 2035.
- The ageing population is an issue facing the North East and England generally, but in Northumberland the problem is likely to be particularly acute.
- Analysis to generate population projections for the 34 small areas has recently been carried out by Edge Analytics.

## **2.0 Introduction & Data Sources**

This report provides an analysis of existing data sources in terms of the age profile of the county. The report focuses on past trends, current age profile and projected change to these age groups to highlight potential impacts on the county.

There are a number of data sources which have been used in the analysis:

### **2001 and 2011 Censuses**

A census is carried out in the UK every 10 years in order to “provide information on housing and population that government needs to develop policies, and to plan and run public services such as health and education”, (ONS).

### **Mid-Year Population Estimates**

ONS produce annual mid-year population estimates (population at 30 June each year) which provide the most accurate regularly updated estimate of Northumberland's population. Mid-year estimates use the Census population estimates as a base and apply migration, birth rates and death rates to give an annual estimate of population for an area.

### **Population Projections**

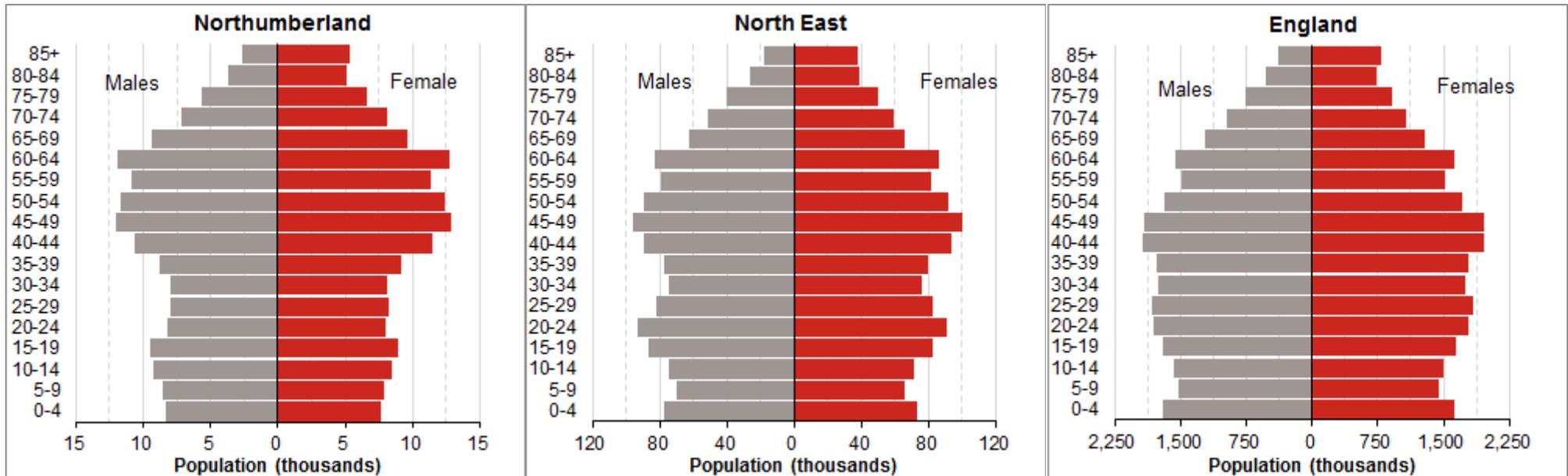
ONS produces population projections at a national and sub-national level generally every two years. These projections use the internationally accepted cohort component methodology, which takes the population of a particular age and gender, moving it on year-by-year across the projection period by applying the relevant projected births, deaths and migration rates for these groups. ONS bases these rates on short-term trends (predominantly the 5 preceding years), and assumes that these short-term trends will continue without taking into account future local policy impacts.

### 3.0 Northumberland's Current Age Profile

The most up to date population data by age for Northumberland is from the 2011 Census. On Census night (27 March 2011) the Northumberland population was 316,000; 154,100 males and 161,900 females.

The three population pyramids below (Figure 1) show the 2011 age profiles for Northumberland, the North East and England from the 2011 census. The shapes of the pyramids for the three areas are quite different. Northumberland has fairly similar populations for each of the age groups under 40, then much larger populations between 40 and 65. The population lessens for the older ages, with substantially higher populations among females than the corresponding male age group. The North East has similarly large populations in the 40 to 65 age group, but has higher populations among the younger (15-29) ages as well. England as a whole has a much more rounded population, with the peak ages in terms of population at 40-49.

**Figure 1: Population pyramids by age band**



Source: ONS 2011 Census data (© Crown Copyright)

*Northumberland's Age Profile – Past Trends & Future Change*

Figure 2 shows this information numerically for the under 16s, the 16-64s and the 65+ age groups. It also gives a comparison against other counties/unitary authorities within the North East. It is clear from the figures that Northumberland has a lower under 16 population proportion, and a substantially higher 65+ population proportion, than both the North East region and England as a whole. In fact, the proportion of the population aged 65+ is higher in Northumberland than for each of the counties / unitary authorities in the North East.

**Figure 2: Population by selected age bands**

<b>Area name</b>	<b>All ages</b>	<b>Under 16</b>		<b>16-64</b>		<b>65 and over</b>	
England	53,012,456	10,022,836	18.9%	34,329,091	64.8%	8,660,529	16.3%
North East	2,596,886	462,437	17.8%	1,684,964	64.9%	449,485	17.3%
Northumberland UA	316,028	53,866	17.0%	198,858	62.9%	63,304	20.0%
County Durham UA	513,242	87,984	17.1%	332,913	64.9%	92,345	18.0%
Darlington UA	105,564	20,207	19.1%	66,918	63.4%	18,439	17.5%
Hartlepool UA	92,028	17,800	19.3%	58,630	63.7%	15,598	16.9%
Middlesbrough UA	138,412	28,003	20.2%	89,718	64.8%	20,691	14.9%
Redcar and Cleveland UA	135,177	24,166	17.9%	84,759	62.7%	26,252	19.4%
Stockton-on-Tees UA	191,610	37,107	19.4%	124,552	65.0%	29,951	15.6%
Gateshead	200,214	35,498	17.7%	129,471	64.7%	35,245	17.6%
Newcastle upon Tyne	280,177	47,974	17.1%	193,484	69.1%	38,719	13.8%
North Tyneside	200,801	35,713	17.8%	129,793	64.6%	35,295	17.6%
South Tyneside	148,127	25,927	17.5%	95,347	64.4%	26,853	18.1%
Sunderland	275,506	48,192	17.5%	180,521	65.5%	46,793	17.0%

*Source: ONS 2011 Census data (© Crown Copyright)*

## 4.0 Northumberland's Age Profile – Past Trends

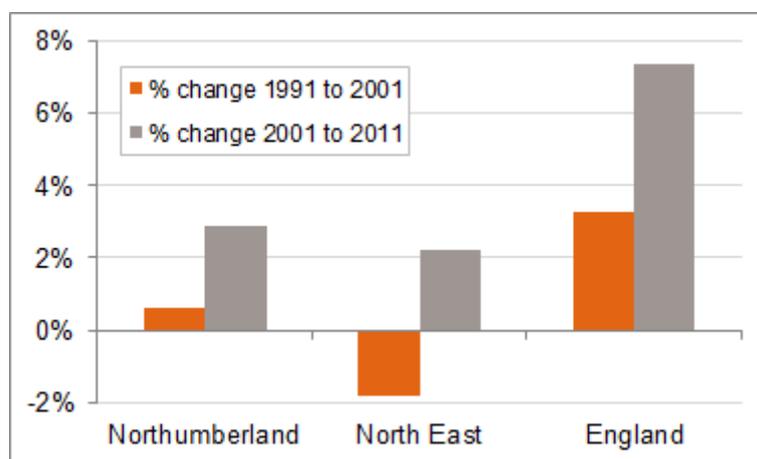
### Population change over time

In order to look at past trends, mid-year population estimates<sup>2</sup> have been used, as these provide estimates based on the same point in time each year (June 30<sup>th</sup>). The mid-year population of Northumberland in 2011 was estimated to be 316,300, an increase of 8,900 (2.9%) on the 2001 Census-based mid-year estimate. In the previous 10 year period (1991 to 2001), the population increased by 1,900 (0.6%).

This 2001 to 2011 population increase in Northumberland was slightly higher than that of the North East (an increase of 2.2% to 2,596,400 in 2011), but substantially lower than for England (7.4% increase to 53,107,200) (see Figure 3).

**Figure 3: Population Change Over Time**

Area	1991	2001	2011	% change 1991-2001	% change 2001-2011
Northumberland	305,500	307,400	316,300	0.6%	2.9%
North East	2,587,000	2,540,100	2,596,400	-1.8%	2.2%
England	47,875,000	49,449,700	53,107,200	3.3%	7.4%



Source: ONS 1991, 2001 and 2011 mid-year population estimates (2011 MYE based on 2011 Census)

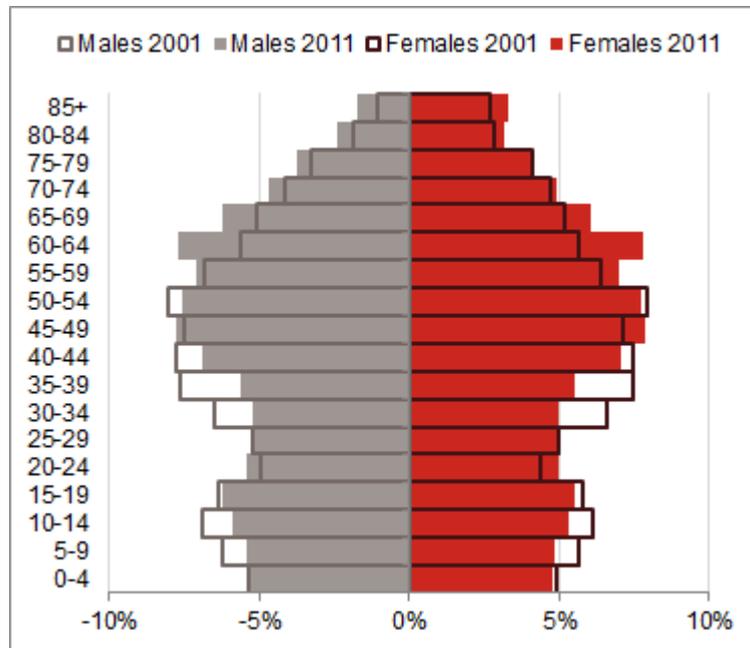
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Figure 4 illustrates the percentage of the total population by 5 year age band and sex. The proportion of Northumberland's 2011 population aged 5-19, 30-44 and 50-54 has decreased since 2001, whereas population has increased for all age groups above 55, illustrating that Northumberland's population has aged over the last ten years.

<sup>2</sup> The mid-year estimate for 2011 is based on the 2011 Census

20.2% of Northumberland's 2011 population was aged 65 and over; in 2001 the figure was 17.6%. This 2011 proportion was higher than for both the North East region and England (17.4% and 16.4% respectively).

**Figure 4: Northumberland 2001 and 2011 Population Pyramid**



Source: ONS 1991, 2001 and 2011 mid-year population estimates (2011 MYE based on 2011 Census)

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### Comparison of 2011 population estimates

It is important to note here that there are two<sup>3</sup> different mid-year estimates for 2011: the first is based on the 2011 Census (used in the analysis above); the second is rolled-forward from the 2001 Census. These two estimates differ in varying amounts for different ages, genders and areas.

According to ONS, some of the difference at the national level can be accounted for by: recent method changes, where improvements in recent years could not be backdated over the whole decade; the 2001 Census underestimating the population; and the underestimation of international migration over the last decade.<sup>4</sup>

ONS are currently carrying out a reconciliation exercise to try to understand the cause of the differences between the mid-year estimates rolled forward from the 2001 Census and the estimates based on the 2011 Census. This process will help to evaluate ONS methods for producing population estimates in the year

<sup>3</sup> For completeness' sake, there is also a third mid-year estimate for 2011 which is rolled-forward from the 2001 Census, but based on old immigration methods. This estimate is ignored for the purposes of this analysis.

<sup>4</sup> 'Examining the difference between the rolled-forward mid-2011 population estimates and the 2011 Census-based MYEs at local authority level' – ONS (Sept 2012)

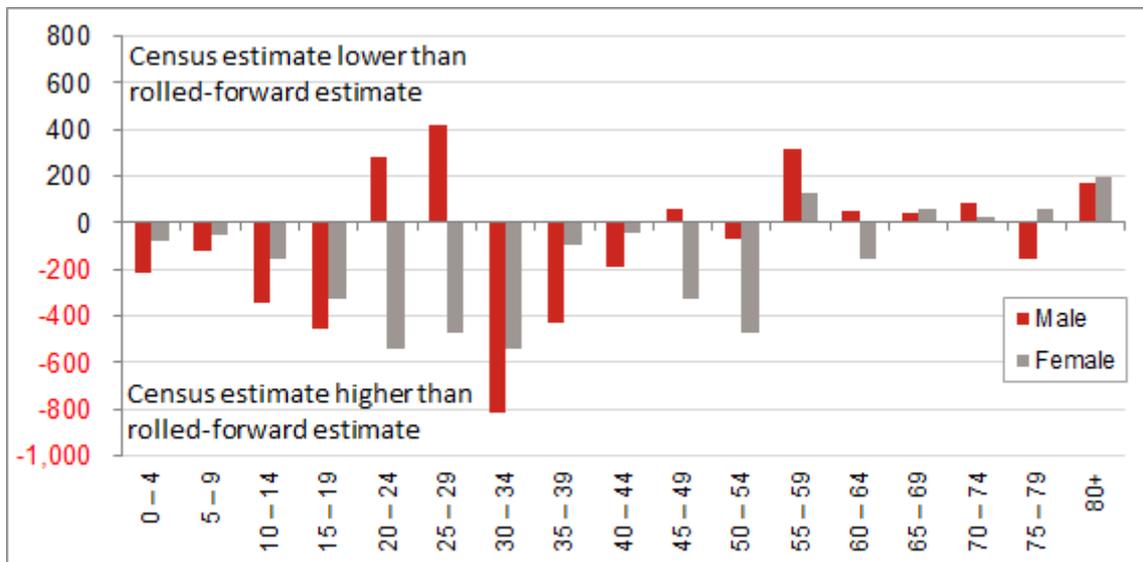
between Censuses with a view to minimising any differences between rolled-forward estimates and the Census in future years. It is anticipated that this reconciliation process will be completed at the local authority level in March 2013, and, as part of this, a set of 2002-2010 population estimates revised in light of the 2011 Census will be produced.

Detailed analysis examining the differences between the two mid-year estimates for Northumberland can be found in the report 'Population Trends and Projections in Northumberland' (see section 6.0). However, a chart showing these differences by age and gender is also provided here (Figure 5).

For females, the 2011 Census suggests that the rolled-forward estimates were underestimated for those people aged under 55. With the exception of the 60-64 age group, the rolled-forward population estimates were over-estimated for the older age groups.

For males, the 2011 Census data suggests that the accuracy of the rolled-forward estimates was more varied. As for the females, the population of the younger age groups tended to be under-estimated, and the older groups over-estimated. However, the 20-24 and 25-29 year old male populations were over-estimated.

**Figure 5: Difference between 2011 Census-based and Rolled-forward 2011 MYEs**



Source: ONS 2011 Census-based and rolled-forward population estimates

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## **Small area population changes**

As part of a separate piece of work to produce population projections for areas within Northumberland (see section 5.0), 34 small areas have been created. In this section, a brief summary of the change in age profile between 2001 and 2011 for these small areas has been provided<sup>5</sup>. For this analysis, the population has been split into 'under 16s', '16-64 year olds' and '65+ years'.

Population overall has increased in 29 of the 34 areas over the 10 year period, with the largest percentage increase in 'Broomhill, Hadston, Togston & Red Row' (23%), and the largest percentage decrease in Cramlington (-3%).

All but one of the small areas ('Cambois, Bedlington Station & East Sleekburn') had an increase in the 65+ population. The largest percentage increases occurred in 'Hartburn & Longhorsley (47% (201)), 'Cramlington' (44% (1,440)) and 'West Tynedale' (38% (196)). 'Alnwick Hinterland' and 'Ponteland & Stamfordham' also had large absolute increases (699 (29%) and 550 (21%) respectively).

In terms of the under 16 population, 29 of the 34 areas saw a fall in population numbers, with 13 falling by more than 10%. The largest decline, percentage wise, occurred in 'Allendale & Haydon Bridge' and 'Amble' (both 19%). 'Broomhill, Hadston, Togston & Red Row' had the largest percentage increase (9%).

For the 16-64 population, the change in population generally ranged between -7% and 9%, with nearly three quarters of the small areas having an increase in population. However, two of the areas, 'Broomhill, Hadston, Togston & Red Row' and 'Widdrington Station & Stobswood' both had larger increases (27% and 14% respectively).

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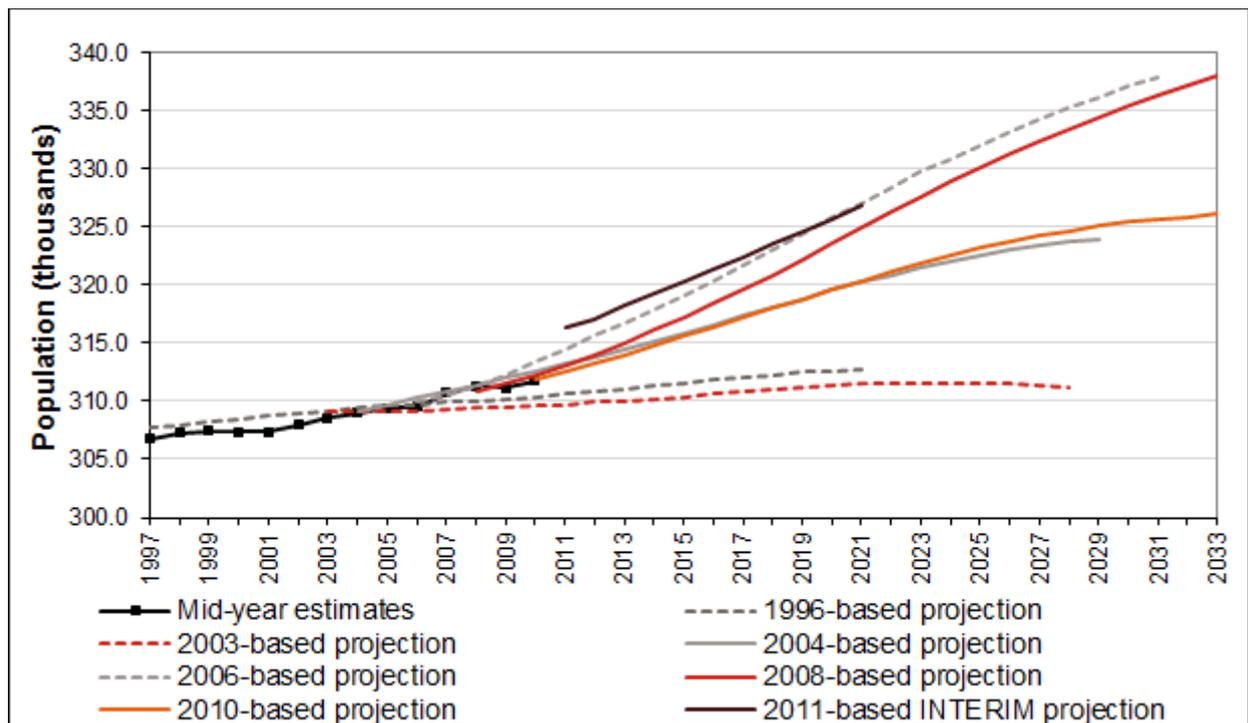
<sup>5</sup> The figures are based on the 2001 and 2011 Censuses. These Censuses were carried out at slightly different times of the year (29<sup>th</sup> April 2001 and 27<sup>th</sup> March 2011). However, mid-year population estimates for 2011 at this geographical level were not available at the time of writing this report hence the Census figures were considered to be the best alternative.

## 5.0 Northumberland's Age Profile – Future Change

### ONS population projections for Northumberland

ONS produces population projections at a national and sub-national level generally every two years. As stated in section 2.0, the ONS projections are based on a short-term trend methodology. The nature of this approach means that the projections vary considerably, ranging from a slight projected population increase in the 2003-based projection, to a much larger increase in the 2006 and 2008-based projections (Figure 6).

**Figure 6: Comparison of ONS population projections for Northumberland**



Source: ONS sub-national population projections (© Crown copyright)

For examining the projected future change of Northumberland's age profile, ONS's 2010-based sub-national population projection for Northumberland is used. Although an interim 2011-based projection was released in September 2012, it is a short-term projection based on a combination of data from the 2011 Census and trends from the 2010-based projection, and is known to have issues around the validity of the projection.<sup>6</sup> Therefore the 2010-based projection, which is the most recent full projection available, has been used with the recommendation that this analysis is repeated once the next full set of sub-national projections is released.

<sup>6</sup> 'Population trends and projections in Northumberland', Policy & Research, January 2013, and [www.ons.gov.uk/ons/rel/snpp/sub-national-population-projections/Interim-2011-based/stb-2011-based-snpp.html](http://www.ons.gov.uk/ons/rel/snpp/sub-national-population-projections/Interim-2011-based/stb-2011-based-snpp.html)

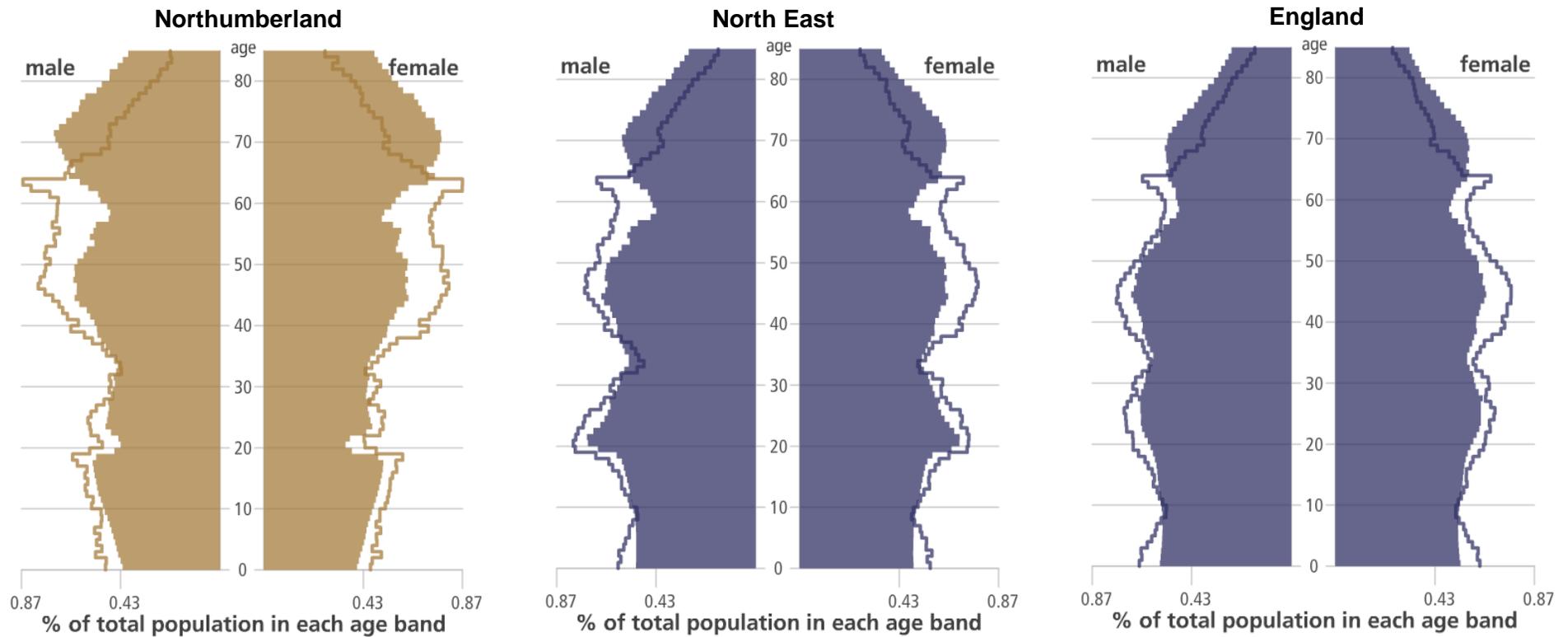
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Figure 7 shows how the age structure of the population in Northumberland is projected to change over the 25 year period 2010-2035. The charts clearly show an anticipated increase in the proportion of over 65's, and lowered proportions of people in the younger and middling ages. In fact, at almost every age up to 65 the proportion is expected to fall, whereas above this, the proportion is expected to be considerably higher than the 2010 figures. The over 65 population is expected to account for over 30% of the total population in Northumberland in 2035.

The ageing population is an issue facing the North East and England generally, but in Northumberland the problem is likely to be particularly acute.

**Figure 7: 2010-based Population Projections, 2010-2035**

(The outline represents the 2010 populations; the solid colour represents the projected 2035 populations)



Source: © Crown copyright ONS Data Visualisation Tool, ONS Population Projections Unit (figures rounded to 100)

### **Small area population projections**

Edge Analytics has recently carried out analysis to produce population projections for the 34 small areas mentioned in section 4.0. Further details can be obtained from the Policy & Research Team within Northumberland County Council.

## 6.0 References

A list of references referred to in this document, together with the location in which they can be found on the internet, is given below:

### **Censuses 2001 and 2011**

<http://www.ons.gov.uk/ons/guide-method/census/2011/index.html>

### **ONS data visualisation tool**

<http://www.ons.gov.uk/ons/interactive/index.html>

### **2010-based sub-national population projections**

<http://www.ons.gov.uk/ons/rel/snpp/sub-national-population-projections/2010-based-projections/stb-2010-based-snpp.html>

### **Interim 2011-based sub-national population projections**

<http://www.ons.gov.uk/ons/rel/snpp/sub-national-population-projections/Interim-2011-based/stb-2011-based-snpp.html>

### **Examining the difference between the rolled-forward mid-2011 population estimates and the 2011 Census-based MYEs at local authority level, ONS, September 2012**

<http://www.ons.gov.uk/ons/guide-method/method-quality/specific/population-and-migration/population-statistics-research-unit--psru/latest-publications-from-the-population-statistics-research-unit/index.html>

### **Population Trends and Projections in Northumberland, Policy & Research, January 2013**

Please contact the Policy & Research Team within Northumberland County Council for more details.

### **Northumberland small area population projections, Edge Analytics, February 2013**

Please contact the Policy & Research Team within Northumberland County Council for more details.

**NORTHUMBERLAND**

Northumberland County Council

**Policy and Research Team**

Transformation Group  
Northumberland County Council  
County Hall  
Morpeth  
Northumberland  
NE61 2EF

[infonet@northumberland.gov.uk](mailto:infonet@northumberland.gov.uk)  
[www.northumberlandinfonet.org.uk](http://www.northumberlandinfonet.org.uk)