
Small Area Population Estimates for Scotland Mid-2002 to Mid-2010 revised following the 2011 Census

Population estimates by sex, age and data zone

Published on 22 May 2014

A National Statistics publication for Scotland

National Statistics are produced to high professional standards set out in the National Statistics Code of Practice. They undergo regular quality assurance reviews to ensure that they meet customer needs.



Contents

1.	Introduction and Background	5
2.	Methodology.....	7
3.	Size of the difference between the Small Area Population Estimates (SAPE)	8
4.	Size of difference between estimates - Other Small Area Population Estimates	9
5.	Comparison between the unrevised Mid-2002 to Mid-2010 population estimates and the revised Mid-2002 to Mid-2010 population estimates – small and special area population estimates	18
6.	Notes and Definitions	28
7.	Notes on statistical publications	30
8.	Related organisations.....	32

List of Tables

Table 4.1: 6-fold Urban Rural Classification: difference between the 2011 census-based mid-2011 estimates and the rolled-forward mid-2011 estimates.....	10
Table 4.2: Difference between the 2011 Census-based mid-2011 estimates and the rolled-forward mid-2011 estimates, NUTS2, 3 and LAU1	11
Table 4.3: Scottish Index of Multiple Deprivation (SIMD) 2012 decile, difference between the 2011 census-based mid-2011 estimates and the rolled-forward mid-2011 estimates.....	13

List of Figures

Figure 4.2: 2011 Scottish Parliamentary Constituency, difference between the 2011 Census-based mid-2011 estimate and the rolled-forward mid-2011 estimates	15
Figure 4.3: UK Parliamentary Constituency, difference between the 2011 Census-based mid-2011 estimate and the rolled-forward mid-2011 estimates.....	17
Figure 5.1: Comparison of the change in population by 6-fold urban rural classification between unrevised population estimates and revised population estimates, 2002 - 2011.....	19
Figure 5.2: Comparison of the change in population by NUTS2 classification between unrevised population estimates and revised population estimates, 2001 – 2011	21
Figure 5.3: Comparison in change in population by SIMD 2012 classification between unrevised population estimates and revised population estimates, 2001 - 2011.....	23
Figure 5.4: Percentage change in population by Scottish Parliamentary Constituency between the unrevised population estimates and revised population estimates, 2002 – 2011.....	25
Figure 5.5: Percentage change in population by UK Parliamentary Constituency between the unrevised population estimates and revised population estimates, 2002 – 2011	27

Main Points

The main points in this report are:

- The mid-year small area population estimates for mid-2002 to mid-2010 have been revised to take into account information from the 2011 Census. The revised series provides a consistent time-series of population estimates from mid-2001 to mid-2011 for each data zone in Scotland.
- Over the decade the size of these revisions is small (45,100 or 0.9 per cent) in the context of total population for Scotland.
- For about two thirds of data zones the differences between the 2011 Census-based mid-2011 estimates and the rolled-forward mid-2011 estimates were small at fewer than 50 people.
- Looking at the 6-fold urban rural classification, population estimates for large urban areas were revised down (just over 7,000) with all other categories being revised upwards. Other urban areas have been revised up the most by just over 30,000 people.
- Estimates for the most deprived areas (Scottish Index of Multiple Deprivation (SIMD) 2012 deciles 1 to 7) in Scotland were revised upwards, with the estimates in the least deprived areas (SIMD 2012 deciles 8 to 10) being revised downwards.
- The reasons for the differences between the old and new estimates are complex and are most likely to do with issues in capturing migration and the base population especially for smaller areas. More information can be found in the following reports on the National Records of Scotland (NRS) website:

[2011 Census Reconciliation Report – Small Area Population](#)

[2011 Census Reconciliation Report – Population \(Council Area\)](#)

[Mid- 2002 to Mid- 2010 \(Revision\) Population Estimates Scotland \(Council Area\)](#)

1. Introduction and Background

- 1.1 This report summaries the National Records of Scotland's (NRS) revised small area population estimates (SAPE) for mid-2002 to mid-2010. These population estimates were revised to include information from the 2011 Census. The revised mid-2002 to mid-2010 population estimates are based on the rolled-forward series updated to account for the 45,100 difference between the mid-2011 estimates based on the 27 March 2011 Census and the estimates rolled-forward from the 2001 Census. This report on data zone population estimates, by age and sex, follows the publication of the revised mid-year population estimates at Council and NHS Board area levels (available at [Mid-2002 to Mid-2010 Revision](#) on the NRS website). The data zone estimates are consistent with the mid-year population estimates for Council areas.
- 1.2 This report mentions two types of estimates, 2011 Census based mid-2011 estimates and the rolled-forward mid-2011 estimates. The 2011 Census based mid-2011 estimates are those estimates rolled forward from the 2011 Census to mid-2011. The rolled-forward mid-2011 estimates are those estimates rolled forward from the 2001 Census to mid-2011.
- 1.3 This report is accompanied by a full set of tables showing the mid-2002 to mid-2010 population estimates for data zones by sex and five-year age group. They are available on the [Small Area Population Estimates](#) section of the NRS website.
- 1.4 Data zone population estimates are an important aspect of providing information at neighbourhood level. They can be used as building blocks for a variety of different geographies that can inform planning and the provision of services at sub-Council area level. They are used as the denominator in many of the rates available on the [Scottish Neighbourhood Statistics](#) website. They are also important in a number of other applications, such as the development and maintenance of the Scottish Government's Urban Rural Classification and the Scottish Index of Multiple Deprivation (SIMD).
- 1.5 [Section 2](#) of this report highlights the methodology used to produce the revised mid-2002 to mid-2010 small area population estimates.
- 1.6 In addition, a number of other tables have been revised. These are the population estimates for urban/rural areas, deprivation areas, the European Union (EU) statistical geography areas, and parliamentary constituencies. The revised mid-2002 to mid-2010 population estimates for each of these areas, built up from data zones on a best-fit basis, have been added to the [Special Area Population Estimates](#) section of the NRS website. A summary of the main points from these tables is included in this report.
- 1.7 Data zones are the small area geography used by Scottish Government to allow statistics to be available across a number of policy areas. The data zone geography covers the whole of Scotland. They were initially set up to nest within Council area boundaries and to have populations of between 500 and 1,000 household residents. As much as possible, data zones were set up to contain households with similar social characteristics and to take into consideration physical boundaries. More information on data zone geography can be found on the [Scottish Government](#) website. Following the 2011 Census the Scottish Government ran a consultation on the redrawing of data zone boundaries, finalised boundaries for the new data zones are expected in summer 2014.

- 1.8 Although the figures reported here and in the tables are given to unit level, it is not implied that the population estimates are accurate to this level of detail. The reason the figures are not rounded is to allow more accurate aggregation of data zones. The population figures are estimates that have gone through a number of stages of processing, each of which may impact on the quality of the estimates. Also, there are limitations with the administrative data sources used to produce the figures which may increase the uncertainty in the estimates.
- 1.9 Data zones are unique to Scotland and cannot be compared with small area geographies used in other countries. For more information on small area population estimates for England and Wales go to the [Office for National Statistics \(ONS\)](#) website and for Northern Ireland go to the [Northern Ireland Statistics and Research Agency \(NISRA\)](#) website. A PDF document describing the Small Area Population Estimates across the United Kingdom is also available on the NISRA website, at the link above.
- 1.10 The former mid-2002 to mid-2010 estimates were based on population change since the 2001 Census. However, any estimates are subject to uncertainty – meaning that the true value may be higher or lower – and this particularly applies to internal and international migration which is the most difficult component of population change to estimate. Since there is no means of verifying the true population between censuses, the amount of uncertainty will accumulate with time as we move further from the previous census. The 2011 Census and the resulting mid-2011 estimates, however provide a new base point at which certainty is greater. Therefore, by revising the mid-2002 to mid-2010 estimates to bring them into line with the census-based mid-2011 estimates, a more consistent series has been created.
- 1.11 These population estimates are produced using the demographic cohort component method. The population from the previous year is ‘aged on’ one year (that is the 0 year olds become 1 year olds, and so on), the number of births in the year are added, the number of death subtracted and adjustments are made for estimated migration and other changes in special populations. Both the former and revised mid-2002 to mid-2010 estimates follow this method.
- 1.12 Information around the age and sex structure, distribution of revisions and the components of population change can be found in the report that was published alongside the revised population estimates at Council and NHS Board areas ([Mid-2002 to Mid-2010 Revision](#)), published 17 December 2013 on the NRS website.
- 1.13 Along with the Mid-2011 and Mid-2012 Small Area Population Estimates, published 17 December 2013 on the NRS website, a small area reconciliation report ([2011 Census Reconciliation Report – Small Area Population](#)) was published. This reconciliation report shows the areas with the largest difference between the previously published mid-2011 Small Area Population Estimates (based on 2001 Census) and the mid-2011 Small Area Population Estimates (based on the 2011 Census).

2. Methodology

- 2.1 As mentioned in the previous section the revised small area population estimates are produced using the demographic cohort component method. Rolling forward from the mid-2001 population estimates, by 'ageing on', adding the number of births, subtracting the deaths and adjusting for revised migration and special populations gives the mid-2002 small area population estimate for each of the 6,505 data zones in Scotland before they are made consistent with the already published Council area estimates for these years. The methodology used follows closely that used to revise the Council area population estimates and more information can be found in the methodology paper ([Mid-2002 to Mid-2010 Revision](#)) on the National Records of Scotland (NRS) website.
- 2.2 As this rolling forward of estimates and adjusting for migration and special populations can sometimes lead to negative estimates at individual ages, it is necessary to make these estimates consistent with the revised Council area estimates at this time. This then gives us a set of population estimates for mid-2002 consistent with the Council area estimates. Continuing this method up to mid-2011 gives two sets of population estimates, those rolled forward from the 2011 Census (published in December 2013) and new estimates rolled forward from the 2001 Census.
- 2.3 At this point most of the unattributable population change has been taken account of. However, comparing the two sets of estimates, and taking the difference at single year of age provides us with the breakdown of the remaining unattributable population change adjustment that need to be accounted for over the period. More information on the overall unattributable population adjustment can be found in the methodology paper which accompanied the revised 2002-2010 Council area estimates on the NRS website. As the small area population estimates have been made consistent with the Council area population estimates, the differences are zero at Council area and Scotland level. The remaining unattributable differences are at data zone level, with 872 being the largest difference where the 2011 Census rolled-forward estimate greater than the 2001 Census rolled-forward estimate and 3,057 being the largest difference vice-versa. However, around 91 per cent of data zones differed by only plus or minus 100 people.
- 2.4 The methodology used to revise the small area population estimates was then discussed with representatives from Council areas at a quality assurance meeting in April 2014 and other quality queries raised directly with some councils. The method used to distribute the remaining unattributable difference accounts for every single difference by single year of age and sex and apportions this difference over the years, rounding the estimates to the nearest whole number. For example, a difference of -18 males aged ten in 2011 would result in 16 nine year old males being subtracted from the estimates in 2010, 14 eight year old males from 2009, 12 7 year old males from 2008, through to two two year old males from 2003.
- 2.5 Once adjustments had been made to all data zones, at single year of age and sex from mid-2002 to mid-2010 the estimates once again had to be made consistent with the Council area figures for age and sex. The data zone estimates were then quality assured against other sources, including patient register, average household size derived from dwelling counts and 2011 Census information.
- 2.6 Upon finalisation of the revised data zone estimates, these were then aggregated on a 'best-fit' basis to produce revised special area population estimates for various geographies and categories.

3. **Size of the difference between the Small Area Population Estimates (SAPE)**

A report explaining the difference between the 2011 SAPE rolled-forward from the 2011 Census and the 2011 SAPE rolled-forward from the 2001 Census was published on the 17 December 2013, along with the 2011 and 2012 Small Area Population estimates. The main points from this report are:

- For about two-thirds of data zones the differences between the SAPE were small at fewer than 50 people.
- Just over half of data zones had a higher population estimate in the SAPE rolled forward from the 2011 Census compared with SAPE rolled forward from the 2001 Census to mid-2011.
- The most deprived data zones are most likely to have a population estimate that is higher in the SAPE rolled-forward from the 2011 Census than the SAPE rolled-forward from the 2001 Census. Conversely, the least deprived data zones are most likely to have a population estimate that is lower in the SAPE rolled-forward from the 2011 Census than the SAPE rolled-forward from the 2001 Census.
- In general the differences for males is larger than for females. This is particularly apparent among those aged 20-29.

Reasons for the differences between the mid-2011 SAPE rolled-forward from 2011 Census and the mid-2011 SAPE rolled-forward from the 2001 Census

- Data zones where large numbers of households have been built between 2001 and 2011 are often considerably higher in the SAPE rolled-forward from the 2011 Census as migration into the area has not yet been captured completely due to a lag between people moving house and registering with a General Practitioner (GP).
- Conversely, data zones where there was demolition of a high number of households are often considerably lower in the SAPE rolled-forward from the 2011 Census as the migration out of these areas has not been picked up completely, again due to GP registration lags.
- The migration of young adults is difficult to capture as they are a demographic group that is less likely to update administrative data sources when they move. In data zones with a large number of young adults, such as data zones containing student accommodation, this frequently results in larger differences between the estimates.

4. Size of difference between estimates - Other Small Area Population Estimates

4.1 In addition to data zone estimates, National Records of Scotland (NRS) also publish best-fit data zone-based population estimates for other geographies:

- Scottish Government urban rural classification,
- Nonmenclature of Units for Territorial Statistics (NUTS) - the statistical geography of the European Union,
- Scottish Index of Multiple Deprivation (SIMD) deciles,
- Scottish Parliamentary Constituencies (SPC), and
- United Kingdom Parliamentary Constituencies (UKPC).

4.2 These estimates are produced by aggregating the data zone population estimates, using the appropriate geography area lookup tables. The data zone lookup tables can be found in the Scottish Neighbourhood Statistics (SNS) reference section of the [Scottish Government](#) website. Data zones do not always fit these other boundaries exactly. In this case where a data zone boundary crosses that of another geography, the data zone is allocated to the area that contains the population-weighted centroid of the data zone. An evaluation of non-standard geography population estimates¹ was carried out to assess population estimates built up from data zones. This showed that, for certain higher-level geographies, population estimates built up from data zones gave good results. A similar evaluation will be carried out following the release of the redrawn data zone boundaries.

Urban Rural Classification Populations

4.3 The Scottish Government Urban Rural Classification defines urban and rural areas across Scotland. The classification is based on population and accessibility (using drive-time analysis to identify accessible and remote areas). The main classifications are the 6-fold and 8-fold classifications which distinguish between urban, rural and remote areas using six and eight categories, respectively. Each data zone is assigned to one of the categories. The classification is updated every two years and the population estimates published on our website relate to the 2011-2012 classification. More background information on the urban rural classification is available on the Scottish Government's [Urban Rural Classification](#) website.

4.4 [Population Estimates by Urban Rural Classification](#) for the 6-fold and 8-fold classifications are available on the NRS website. The differences between the 2011 Census-based mid-2011 estimates and the rolled-forward mid-2011 estimates can be seen in [Table 4.1](#). Population estimates for large urban areas have been revised downwards by just over 7,000, in contrast to other urban areas which have been revised upwards by around 30,000 people. Other categories of area were revised upwards between 3,682 and 5,844 people. Some of the reasons could be explained through migration between large urban areas and surrounding other urban areas not being picked up in administrative sources.

Footnote

1) Further details available within the [Evaluation of Non Standard Geography Population Estimates](#) publication on the NRS website.

Table 4.1: 6-fold Urban Rural Classification: difference between the 2011 census-based mid-2011 estimates and the rolled-forward mid-2011 estimates

Classification	Census-based mid-2011 population (a)	Rolled-forward mid-2011 population (b)	Difference (a) - (b)
Large urban areas	2,053,577	2,061,016	-7,439
Other urban areas	1,614,586	1,584,400	30,186
Accessible small towns	456,994	451,150	5,844
Remote small towns	193,239	186,764	6,475
Accessible rural areas	637,731	631,379	6,352
Remote rural areas	343,773	340,091	3,682

- 4.5 The definition of urban and rural areas is specific to Scotland and population estimates for these areas cannot be compared with similar estimates for other countries. Urban and rural population estimates can be used to support the work of various national and local authority government departments, such as the Rural Development Council².

Nomenclature of Units for Territorial Statistics (NUTS) Populations

- 4.6 The European Union Nomenclature of Units for Territorial Statistics (NUTS) Regulation, enacted in June 2003, formalised the statistical geography of the European Union (EU). The United Kingdom NUTS structure was established in 1998 following an extensive consultation exercise. Some changes were made to the structure following a review in 2006. The latest review took place in 2014, during this time no changes were made to the Scottish boundaries. The purpose of the NUTS regional structure is to provide a single uniform breakdown of territorial units for the production of regional statistics for the EU. The NUTS regional structure is used for various policy funding whereby if any NUTS2 region has a Gross Domestic Product (GDP) per head less than 75 per cent of the EU average it is entitled to financial support.
- 4.7 There are three levels of NUTS geography. It is a hierarchical structure – Scotland is one of the NUTS1 areas of the UK. Within Scotland there are 4 NUTS2 areas and 23 NUTS3 areas. The previously named NUTS4 areas were renamed Local Administrative Units (LAU1) but were not included in the regulation – there are 41 LAU1 areas in Scotland. Maps of the NUTS/LAU areas of Scotland are included in the [Boundary Mapping](#) section of the Scottish Government website.
- 4.8 [NUTS Population Estimates](#) by single year of age and sex for NUTS2, NUTS3 and LAU1 areas are provided on the NRS website. [Table 4.2](#) shows the difference between the mid-2011 SAPE rolled-forward from the 2011 Census and the mid-2011 SAPE rolled-forward from the 2001 Census, at NUTS2, NUTS3 and LAU1 areas. It gives more information of where the differences occurred, for example although Eastern Scotland was nearly 7,000 people fewer in the most recent estimates, the Angus and Dundee City area was larger by over 7,000 people.

Footnote

- 2) Refer to, for example, '[Socio-economic briefing on rural Scotland: Demography](#)' on the Scottish Government website

Table 4.2: Difference between the 2011 Census-based mid-2011 estimates and the rolled-forward mid-2011 estimates, NUTS2, 3 and LAU1

NUTS 2	NUTS 3	LAU 1 (NUTS 4)	Mid-2011 SAPE rolled-forward from 2011 Census			Mid-2011 SAPE rolled forward from 2001 Census			Difference between both sets of mid-2011 population estimates		
			$a_{2i} = \sum a_{3j}$	$a_{3j} = \sum a_{4k}$	a_{4k}	$b_{2i} = \sum b_{3j}$	$b_{3j} = \sum b_{4k}$	b_{4k}	$c_{2i} = a_{2i} - b_{2i}$	$c_{3j} = a_{3j} - b_{3j}$	$c_{4k} = a_{4k} - b_{4k}$
Eastern Scotland	<i>Angus and Dundee City</i>	Angus	263,400	116,200	256,200	110,630	7,200	5,570			
		Dundee City		147,200		145,570		1,630			
	<i>Clackmannanshire and Fife</i>	Clackmannanshire	416,800	51,500	418,140	50,770	-1,340	730			
		Fife	365,300	367,370	-2,070						
	<i>East Lothian and Midlothian</i>	East Lothian	183,370	99,920	180,540	98,170	2,830	1,750			
		Midlothian	83,450	82,370	1,080						
	<i>Scottish Borders</i>	Scottish Borders	113,880	113,880	113,150	113,150	730	730			
	<i>Edinburgh, City of</i>	Edinburgh, City of	477,940	477,940	495,360	495,360	-17,420	-17,420			
	<i>Falkirk</i>	Falkirk	156,250	156,250	154,380	154,380	1,870	1,870			
	<i>Perth & Kinross and Stirling</i>	Perth & Kinross	237,180	146,850	240,290	149,520	-3,110	-2,670			
		Stirling	90,330	90,770	-440						
	<i>West Lothian</i>	West Lothian	175,300	175,300	172,990	172,990	2,310	2,310			
	South Western Scotland	<i>East Dunbartonshire, West Dunbartonshire and Helensburgh & Lomond</i>	Helensburgh & Lomond	222,138	26,528	220,914	25,984	1,224	544		
			West Dunbartonshire	90,610	90,360	250					
East Dunbartonshire			105,000	104,570	430						
<i>Dumfries & Galloway</i>		Dumfries & Galloway	151,410	151,410	148,060	148,060	3,350	3,350			
<i>East Ayrshire and North Ayrshire mainland</i>		East Ayrshire	254,689	122,690	248,635	120,200	6,054	2,490			
		North Ayrshire mainland	131,999	128,435	3,564						
<i>Glasgow City</i>		Glasgow City	593,060	593,060	598,830	598,830	-5,770	-5,770			
<i>Inverclyde, East Renfrewshire and Renfrewshire</i>		East Renfrewshire	346,730	90,810	339,720	89,850	7,010	960			
		Renfrewshire	174,700	170,650	4,050						
		Inverclyde	81,220	79,220	2,000						
<i>North Lanarkshire</i>		North Lanarkshire	337,720	337,720	326,680	326,680	11,040	11,040			
<i>South Ayrshire</i>		South Ayrshire	112,980	112,980	111,560	111,560	1,420	1,420			
<i>South Lanarkshire</i>		South Lanarkshire	313,900	313,900	312,660	312,660	1,240	1,240			

Table 4.2: Difference between the 2011 Census-based mid-2011 estimates and the rolled-forward mid-2011 estimates, NUTS2, 3 and LAU1 – continued

NUTS 2	NUTS 3	LAU 1 (NUTS4)	Mid-2011 SAPE rolled-forward from 2011 Census			Mid-2011 SAPE rolled forward from 2001 Census			Difference between both sets of mid-2011 population estimates				
			$a_{2i} = \sum a_{3j}$	$a_{3j} = \sum a_{4k}$	a_{4k}	$b_{2i} = \sum b_{3j}$	$b_{3j} = \sum b_{4k}$	b_{4k}	$c_{2i} = a_{2i} - b_{2i}$	$c_{3j} = a_{3j} - b_{3j}$	$c_{4k} = a_{4k} - b_{4k}$		
North Eastern Scotland	Aberdeen City & Aberdeenshire	Aberdeen City	476,110	476,110	222,460	468,020	468,020	8,090	8,090	2,040			
		Aberdeenshire									253,650	247,600	6,050
Highlands and Islands	Caithness & Sutherland and Ross & Cromarty	Caithness & Sutherland	467,043	95,409	55,601	448,671	91,047	18,372	4,362	2,643			
		Ross & Cromarty									39,808	38,089	1,719
	Inverness & Nairn, Moray and Badenoch & Strathspey	Inverness & Nairn	Inverness & Nairn	197,904	90,852	186,616	186,616	11,288	11,288	4,479			
			Badenoch & Strathspey								13,582	12,983	599
			West Moray								23,242	21,734	1,508
			North East Moray								70,228	65,526	4,702
	Lochaber, Skye & Lochalsh, Arran & Cumbrae and Argyll & Bute	Arran & Cumbrae	Arran & Cumbrae	101,380	6,091	102,268	102,268	-888	-888	-604			
			Argyll & Bute Islands								7,378	7,951	-573
			Argyll & Islands LEC (Rest of)								55,024	55,655	-631
			Lochaber								19,977	19,286	691
			Skye & Lochalsh								12,910	12,681	229
	Eilean Siar (Western Isles)	Eilean Siar (Western Isles)	Eilean Siar (Western Isles)	27,690	27,690	26,080	26,080	1,610	1,610	1,610			
	Orkney Islands	Orkney Islands	Orkney Islands	21,420	21,420	20,160	20,160	1,260	1,260	1,260			
	Shetland Islands	Shetland Islands	Shetland Islands	23,240	23,240	22,500	22,500	740	740	740			

Scottish Index of Multiple Deprivation (SIMD) Decile Populations

- 4.9 The SIMD ranks each of the 6,505 data zones in Scotland from one (most deprived) to 6,505 (least deprived). The index is updated every three years. The most recent was published in 2012 and is known as SIMD 2012. More information on SIMD 2012 and earlier versions is available on the SIMD section of the [Scottish Government](#) website.
- 4.10 Population Estimates by SIMD 2012 are available on the NRS website, by single year of age and sex for SIMD 2012 deciles, where each decile has 10 per cent of the data zones in Scotland (either 650 or 651 data zones) grouped according to ascending SIMD ranking³. Table 4.3 shows the difference in the SIMD 2012 decile population estimates for the 2011 census-based mid-2011 estimates and the rolled-forward mid-2011 estimates.
- 4.11 Table 4.3 shows that the rolled-forward mid-2011 population estimates underestimated the population in decile 1 (2011 census-based mid-2011 population estimate greater than the rolled-forward mid-2011 population estimate by 18,671 people) to decile 7 (2011 census-based mid-2011 population estimate greater than the rolled-forward mid-2011 population estimate by 5,191 people). However, for deciles 8 to 10 the rolled-forward mid-2011 population was greater than the 2011 Census-based mid-2011 population, from 2,837 people in decile 8 to 16,014 people in decile 10. So we have been under estimating the population in the most deprived areas and over estimating in the least deprived.

Table 4.3: Scottish Index of Multiple Deprivation (SIMD) 2012 decile, difference between the 2011 census-based mid-2011 estimates and the rolled-forward mid-2011 estimates

SIMD decile*	2011 Census-based mid-2011 population (a)	Rolled-forward mid-2011 population (b)	Difference (a) – (b)
1 (most deprived 10%)	515,330	496,659	18,671
2	509,926	499,653	10,273
3	509,926	501,955	7,971
4	527,805	520,015	7,790
5	532,655	522,663	9,992
6	543,669	536,220	7,449
7	549,610	544,419	5,191
8	548,647	551,484	-2,837
9	547,799	551,185	-3,386
10 (least deprived 10%)	514,533	530,547	-16,014

Footnote

* Each decile contains 10 per cent (650 or 651) of the data zones in Scotland

Scottish Parliamentary Constituency Populations

- 4.12 The Members of the Scottish Parliament (MSPs) at Holyrood represent 73 constituencies. The constituency boundaries were re-drawn for the 2011 election. The population estimates reported here relate to the 2011 boundaries.

Footnote

3) Decile 1 has the 651 most deprived data zones, decile 2 the next 650 data zones according to deprivation ranking, and so on, up to decile 10 which has the 650 least deprived data zones.

- 4.13 Constituency population estimates were derived by aggregating data zone population estimates. However, data zones do not always fit the constituency boundaries exactly and those that cross a constituency boundary are allocated to the constituency that contains the population-weighted centroid of the data zone.
- 4.14 [Scottish Parliamentary Constituency Population Estimates](#) by single year of age and sex are available on the NRS website. [Figure 4.2](#) shows the differences between the 2011 census-based mid-2011 estimates and the rolled-forward mid-2011 estimates. Roughly speaking those constituencies around central Scotland now have fewer people and those in the north, Islands and south have more people from the revised estimates.

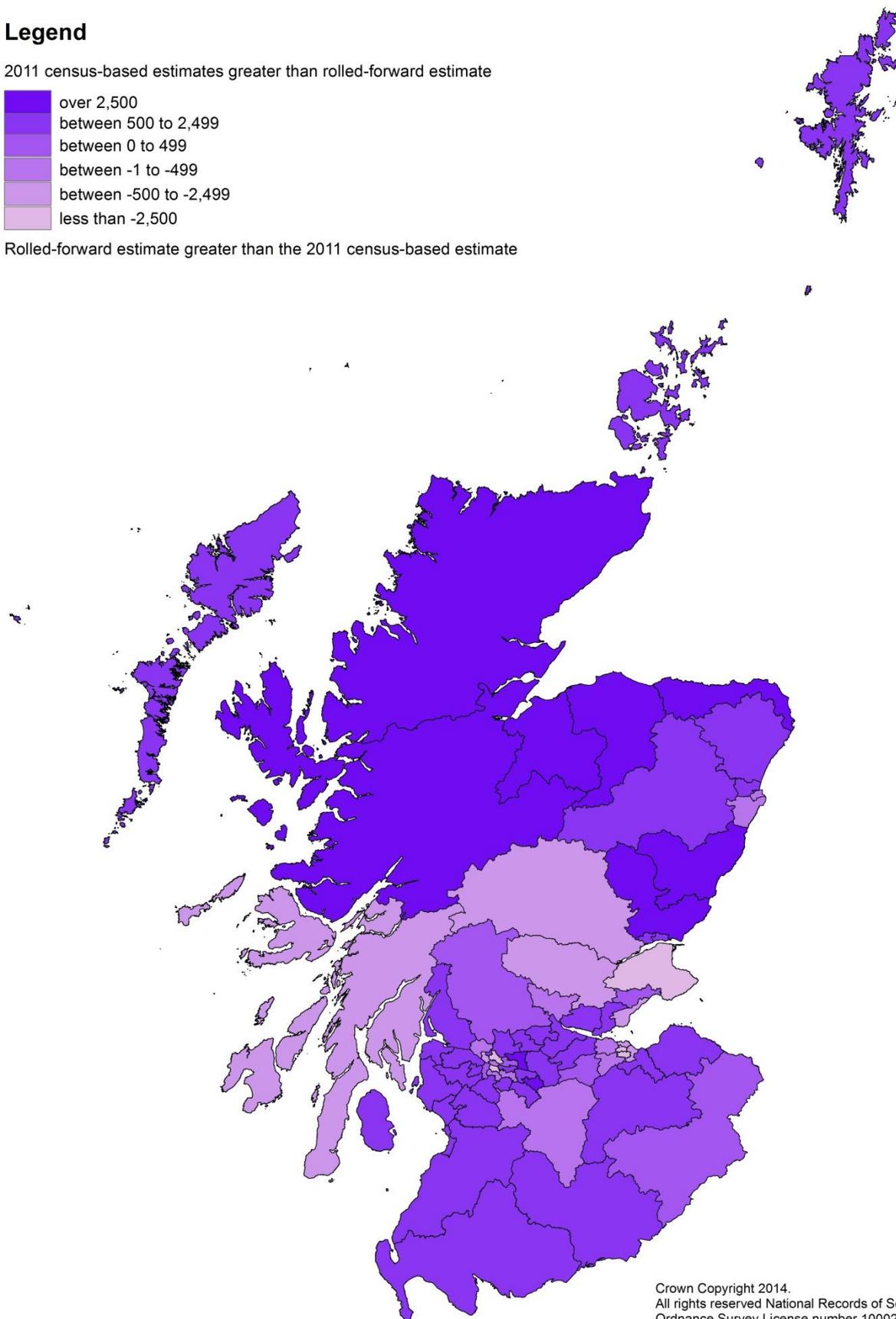
Figure 4.2: 2011 Scottish Parliamentary Constituency, difference between the 2011 Census-based mid-2011 estimate and the rolled-forward mid-2011 estimates

Legend

2011 census-based estimates greater than rolled-forward estimate

- over 2,500
- between 500 to 2,499
- between 0 to 499
- between -1 to -499
- between -500 to -2,499
- less than -2,500

Rolled-forward estimate greater than the 2011 census-based estimate



Crown Copyright 2014.
All rights reserved National Records of Scotland
Ordnance Survey License number 100020542

UK Parliamentary Constituency Populations

- 4.15 The Members of Parliament (MPs) at Westminster represent 59 Scottish constituencies. The population estimates reported here relate to the boundaries used in the 2010 general election. Constituency population estimates were derived by aggregating data zone population estimates. However, data zones do not always fit the constituency boundaries exactly and those that cross a constituency boundary are allocated to the constituency that contains the population-weighted centroid of the data zone. Previous research showed that the data zone to constituency fit was good in all constituencies except Glasgow North and Glasgow North West. Based on this research an adjustment of +3.7 per cent has been made to the population of Glasgow North each year, spread equally across the age/sex distribution. A corresponding adjustment of -3.7 per cent has been made to Glasgow North West.
- 4.16 [UK Parliamentary Constituency Population Estimates](#) by single year of age and sex are available on the NRS website. [Figure 4.3](#) shows the differences between the census-based mid-2011 estimate and the rolled-forward mid-2011 estimates.

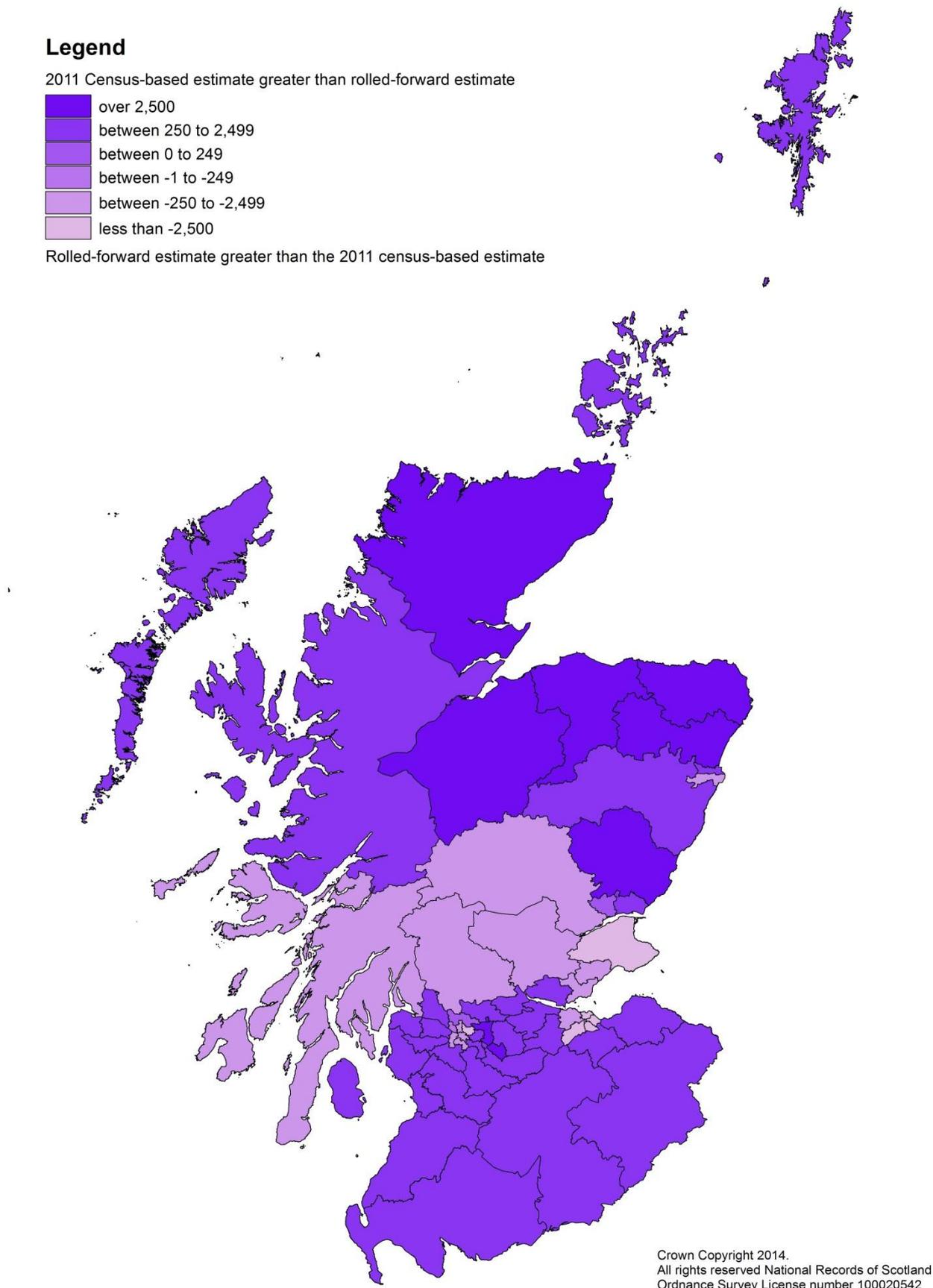
Figure 4.3: UK Parliamentary Constituency, difference between the 2011 Census-based mid-2011 estimate and the rolled-forward mid-2011 estimates

Legend

2011 Census-based estimate greater than rolled-forward estimate

-  over 2,500
-  between 250 to 2,499
-  between 0 to 249
-  between -1 to -249
-  between -250 to -2,499
-  less than -2,500

Rolled-forward estimate greater than the 2011 census-based estimate



Crown Copyright 2014.
All rights reserved National Records of Scotland
Ordnance Survey License number 100020542

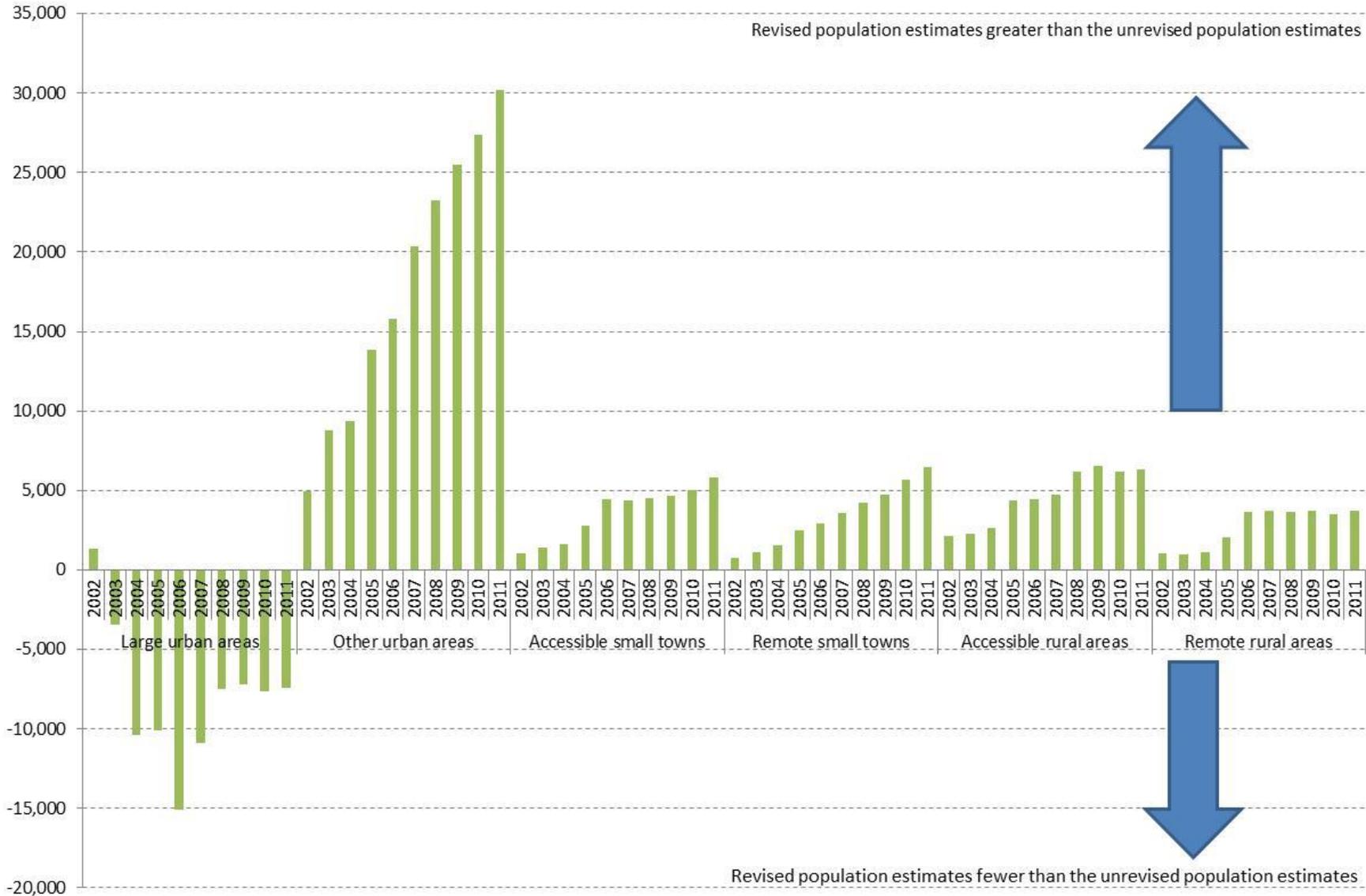
5. **Comparison between the unrevised Mid-2002 to Mid-2010 population estimates and the revised Mid-2002 to Mid-2010 population estimates – small and special area population estimates**

- 5.1 This section of the report concentrates on doing a comparison between the unrevised Mid-2002 to Mid-2010 population estimates and the revised Mid-2002 to Mid-2010 population estimates. As there are 6,505 data zones in Scotland a comparison cannot be provided for each one, so this section will concentrate on the data zones aggregated to other small area population estimates on a best-fit basis mentioned previously.

Urban Rural Classification Populations

- 5.2 [Figure 5.1](#) shows the difference between the revised mid-year estimates and the unrevised mid-year estimates. For other urban areas, accessible small towns, remote small towns, accessible rural areas and remote rural areas the revised estimates are greater than the unrevised population estimates for each year. But the unrevised estimates overestimated the population of large urban areas in each year after 2002.

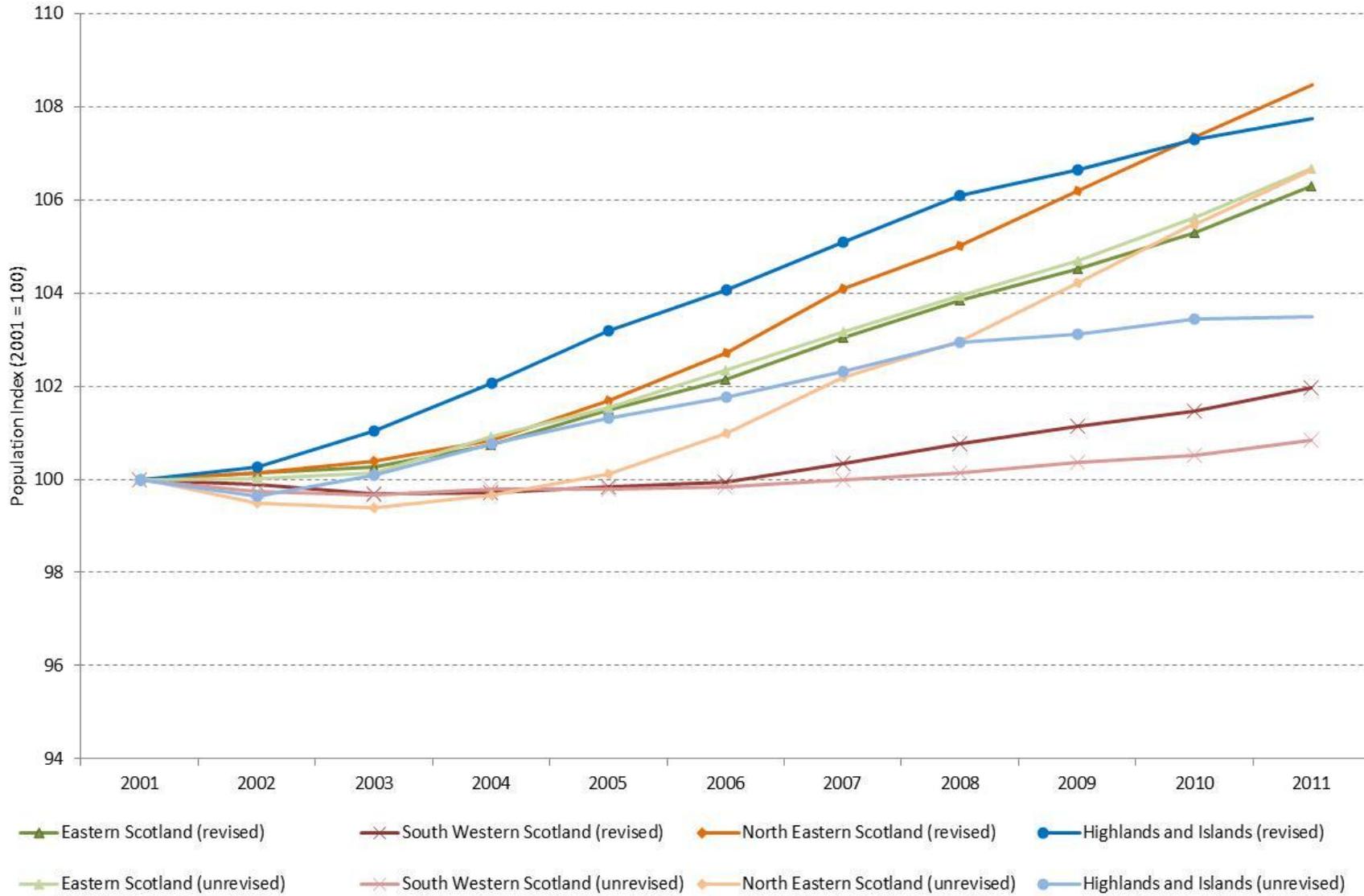
Figure 5.1: Comparison of the change in population by 6-fold urban rural classification between unrevised population estimates and revised population estimates, 2002 - 2011



Nomenclature of Units for Territorial Statistics (NUTS) Populations

- 5.3 Based on mid-2001 population estimates, [Figure 5.2](#) shows the change in NUTS2 areas for both the unrevised and revised estimates. For each area other than Eastern Scotland the revised estimates have seen a greater increase in population over the years than the unrevised estimates had shown.

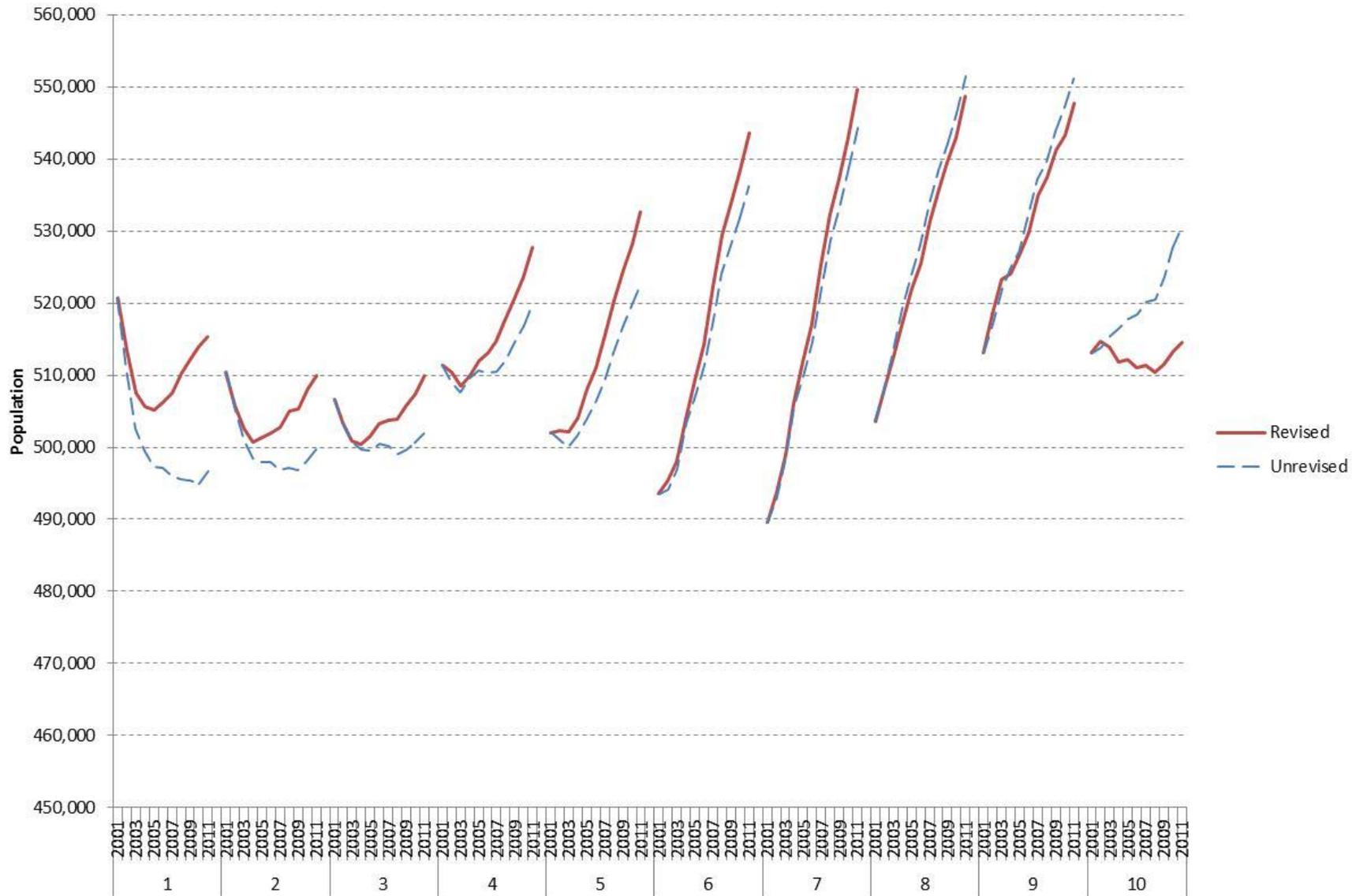
Figure 5.2: Comparison of the change in population by NUTS2 classification between unrevised population estimates and revised population estimates, 2001 – 2011



Scottish Index of Multiple Deprivation (SIMD) Decile Populations

- 5.4 [Figure 5.3](#) shows the trend from 2001 to 2011 for each SIMD decile separately, comparing the unrevised estimates with the revised estimates. When comparing the unrevised with the revised estimates the population estimates of the most deprived areas appear to have been underestimated in the unrevised population estimates. In contrast to the least deprived areas where the population estimates appear to have been overestimated.
- 5.5 Moving from the most deprived areas in decile 1 towards the least deprived decile 10, the difference between the revised and the unrevised population estimates get smaller. This is until decile 8 where the unrevised population estimates become greater than the revised estimates and this increases for decile 9 and 10. This shows that the population estimates of the most deprived areas were underestimated and the least deprived were over estimated.

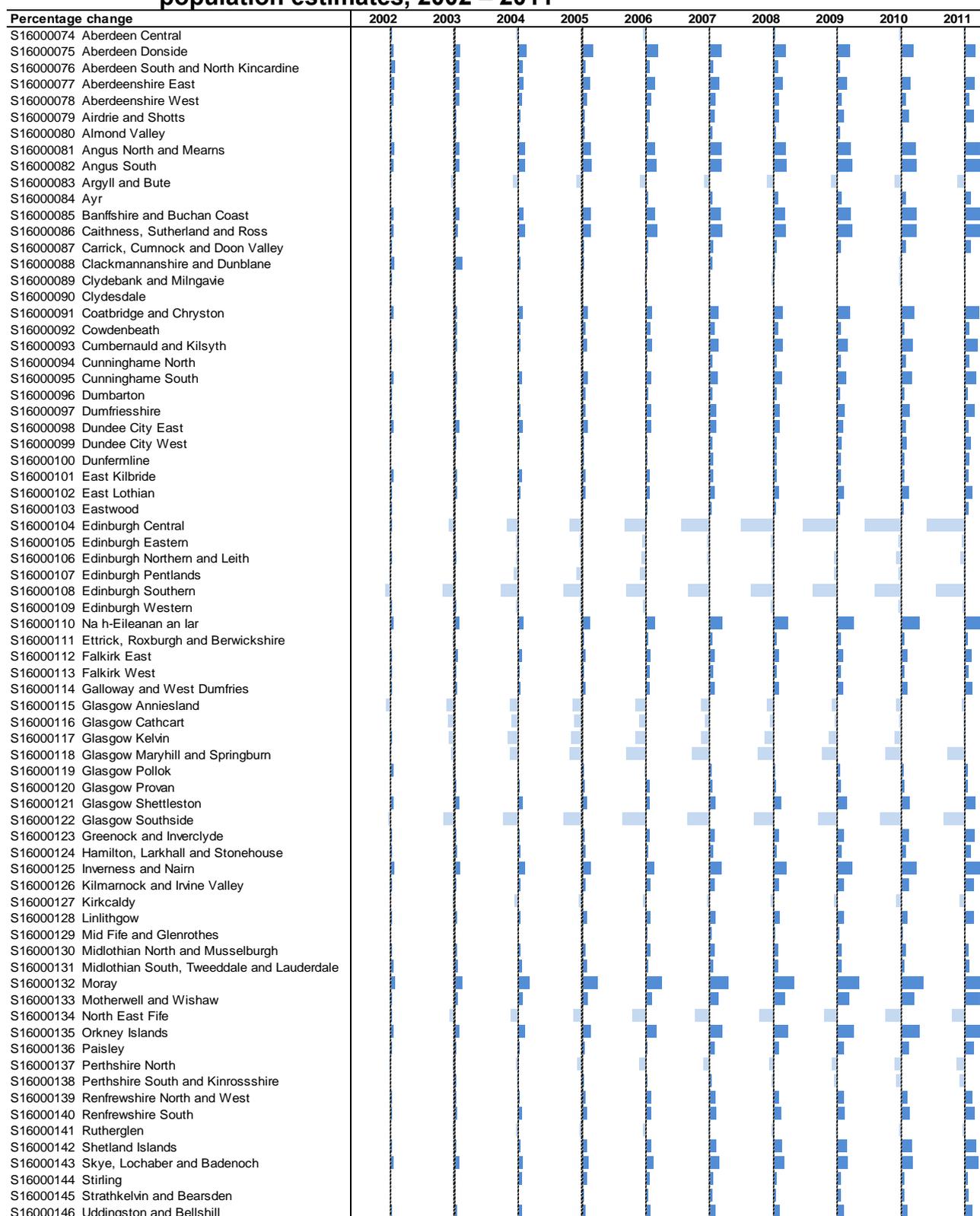
Figure 5.3: Comparison in change in population by SIMD 2012 classification between unrevised population estimates and revised population estimates, 2001 - 2011



Scottish Parliamentary Constituency Populations

- 5.6 [Figure 5.4](#) shows the percentage change in population, between the revised and unrevised estimates, for each of the 73 Scottish Parliamentary Constituencies. For those estimates to the left of the dotted line, the unrevised population estimates were greater than the revised populations and vice versa for those on the right of the dotted line. For example, Edinburgh Central shows an ever decreasing percentage change from 2002 to 2011.
- 5.7 The percentage changes range from 7 per cent for Moray in 2011, (where the revised population estimates are greater than the unrevised estimates) to -11 per cent for Edinburgh Central in 2011 (where the revised population estimates are lower than the unrevised estimates).

Figure 5.4: Percentage change⁴ in population by Scottish Parliamentary Constituency between the unrevised population estimates and revised population estimates, 2002 – 2011



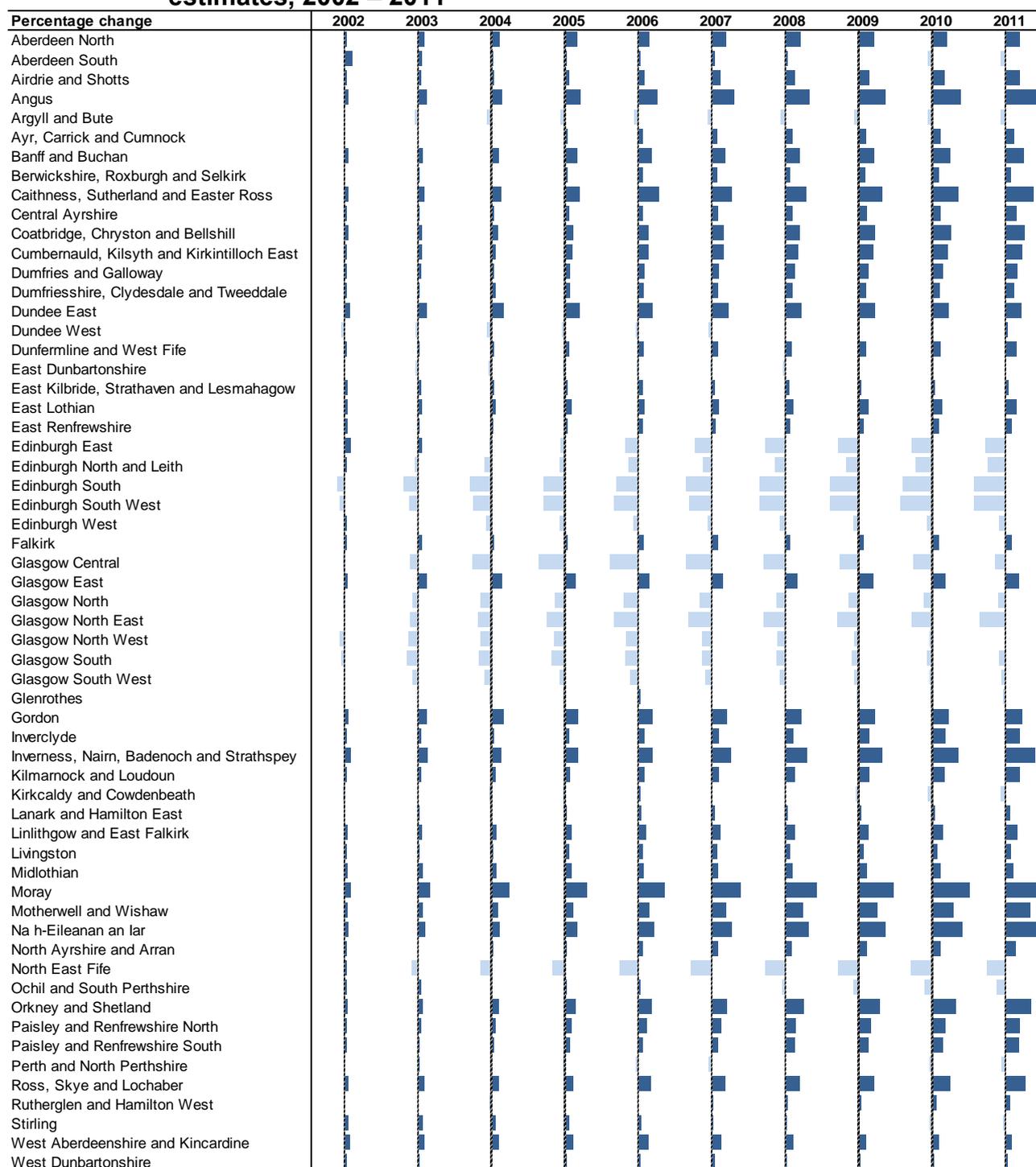
Footnote

4) Percentage change is calculated by taking the difference between the revised population estimates and unrevised estimates and taking this as a percentage of the revised population estimate.

UK Parliamentary Constituency Populations

- 5.8 [Figure 5.5](#) shows the percentage change in population, between the revised and unrevised estimates, for each of the 59 UK Parliamentary Constituencies. For those years where the bars are to the left of the dotted line, the unrevised population estimates were greater than the revised populations and vice versa for those where the bar is on the right of the dotted line. For example, Edinburgh South shows an ever decreasing percentage change from 2002 to 2011. This implies that the difference between revised and unrevised estimates is increasing between 2002 to 2011 with the unrevised estimates being larger than the revised estimates.
- 5.9 The percentage changes range from 7 per cent for Moray in 2011, (where the revised population estimates are greater than the unrevised estimates) to -6 per cent for Edinburgh South West in 2011 (where the revised population estimates are fewer than the unrevised estimates).

Figure 5.5: Percentage change⁵ in population by UK Parliamentary Constituency between the unrevised population estimates and revised population estimates, 2002 – 2011



* Note left of dotted line means the unrevised estimate greater than revised estimates, right of the dotted line means revised estimates greater than the unrevised estimates

Footnote

5) Percentage change is calculated by taking the difference between the revised population estimates and unrevised estimates and taking this as a percentage of the revised population estimate.

6. Notes and Definitions

This section gives brief definitions of statistical and other terms used in this report.

Decile

A decile splits a group of values which have been arranged in ascending or descending order into ten equal groups. For example, the first decile has the first 10 per cent of the values.

Best-fit

Aggregating data zones to a higher-level geography does not always give an exact match. In these cases, data zones are allocated on a 'best-fit' basis to give the best possible match. The [Geography Best Fit Matrix](#) on the Scottish Government (SG) website shows how well the boundaries for different geographies (including data zones) match, while the paper '[Evaluation of Non Standard Geography Population Estimates](#)' on the National Records of Scotland website assesses the accuracy of population estimates built up from data zones.

Population-weighted centroid

This identifies the centre of a data zone by taking into account the size and location of the population, as well as the physical characteristics of the data zone. More information is available in the paper '[Data Zone Centroids Methodology](#)' on the SG website.

Data zone lookup tables

The data zone lookup tables used to derive the population estimates for the areas in [Section 4](#) can be found in the [reference section](#) of the Scottish Neighbourhood Statistics website. The next file 'Data Zone Lookup' gives geographic information for each data zone, while the Excel workbook 'Code to Name Lookup' gives the full names of the codes held in the 'Data Zone Lookup' file.

Urban Rural Classification

The 6-fold Urban Rural classification categories are:

1. Large urban areas	Settlements of over 125,000 people
2. Other urban areas	Settlements of 10,000 to 125,000 people
3. Accessible small towns	Settlements of between 3,000 and 10,000 people and within a 30 minutes' drive of a settlement of 10,000 or more
4. Remote small towns	Settlements of between 3,000 and 10,000 people and with a drive time of over 30 minutes to a settlement of 10,000 or more
5. Accessible rural areas	Settlements of less than 3,000 people and within 30 minutes' drive of a settlement of 10,000 or more
6. Remote rural areas	Settlements of less than 3,000 people and with a drive time of over 30 minutes to a settlement of 10,000 or more

The 8-fold Urban Rural classification categories are:

1. Large urban areas	Settlements of over 125,000 people
2. Other urban areas	Settlements of 10,000 to 125,000 people
3. Accessible small towns	Settlements of between 3,000 and 10,000 people and within a 30 minutes' drive of a settlement of 10,000 or more
4. Remote small towns*	Settlements of between 3,000 and 10,000 people and with a drive time of between 30 and 60 minutes to a settlement of 10,000 or more
5. Very remote small towns	Settlements of between 3,000 and 10,000 people and with a drive time of over 60 minutes to a settlement of 10,000 or more
6. Accessible rural areas	Settlements of less than 3,000 people and within 30 minutes' drive of a settlement of 10,000 or more
7. Remote rural areas*	Settlements of less than 3,000 people and with a drive time of between 30 and 60 minutes to a settlement of 10,000 or more
8. Very remote rural areas	Settlements of less than 3,000 people and with a drive time of over 60 minutes to a settlement of 10,000 or more

* The Remote Small Towns and Remote Rural categories in the 8-fold classification should not be confused with the similarly labelled categories in the 6-fold classification.

7. Notes on statistical publications

National Statistics

The United Kingdom Statistics Authority (UKSA) has designated these statistics as National Statistics, in line with the Statistics and Registration Service Act 2007 and signifying compliance with the Code of Practice for Official Statistics (available on the [UK Statistics Authority](#) website).

This can be broadly interpreted to mean that the statistics:

- meet identified user needs;
- are well explained and readily accessible;
- are produced according to sound methods; and
- are managed impartially and objectively in the public interest.

Once statistics have been designated as National Statistics it is a statutory requirement that the Code of Practice shall continue to be observed.

National Records of Scotland

We, the National Records of Scotland (NRS), are a non-ministerial department of the devolved Scottish Administration. Our aim is to provide relevant and reliable information, analysis and advice that meets the needs of government, business and the people of Scotland. We do this as follows:

- Preserving the past – We look after Scotland’s national archives so that they are available for current and future generations, and we make available important information for family history.
- Recording the present – At our network of local offices, we register births, marriages, civil partnerships, deaths, divorces and adoptions in Scotland.
- Informing the future – We are responsible for the Census of Population in Scotland which we use, with other sources of information, to produce statistics on the population and households.

You can get other detailed statistics that we have produced from the [Statistics](#) section of the NRS website. Statistics from the 2001 Census are on [Scotland’s Census Results On-Line \(SCROL\)](#) website and the 2011 Census results are held on the [Scotland’s Census](#) website.

We also provide information about [future publications](#) on our website. If you would like us to tell you about future statistical publications, you can register your interest on the Scottish Government [ScotStat website](#).

Enquiries and suggestions

Please contact our Statistics Customer Services if you need any further information.

Email: customer@gro-scotland.gsi.gov.uk

If you have comments or suggestions that would help us improve our standards of service, please contact:

Kirsty MacLachlan
Senior Statistician
National Records of Scotland
Room 1/2/3
Ladywell House
Ladywell Road
Edinburgh
EH12 7TF

Phone: 0131 314 4242

Email: kirsty.maclachlan@gro-scotland.gsi.gov.uk

8. Related organisations

Organisation	Contact
<p>The Scottish Government (SG) forms the bulk of the devolved Scottish Administration. The aim of the statistical service in the SG is to provide relevant and reliable statistical information, analysis and advice that meets the needs of government, business and the people of Scotland.</p>	<p>Office of the Chief Statistician Scottish Government 3WR, St Andrews House Edinburgh EH1 3DG</p> <p>Phone: 0131 244 0442</p> <p>Email: statistics.enquiries@scotland.gsi.gov.uk</p> <p>Website: www.scotland.gov.uk/Topics/Statistics</p>
<p>The Office for National Statistics (ONS) is responsible for producing a wide range of economic and social statistics. It also carries out the Census of Population for England and Wales</p>	<p>Customer Contact Centre Office for National Statistics Room 1.101 Government Buildings Cardiff Road Newport NP10 8XG</p> <p>Phone: 0845 601 3034 Minicom: 01633 815044</p> <p>Email: info@statistics.gsi.gov.uk</p> <p>Website: www.ons.gov.uk/</p>
<p>The Northern Ireland Statistics and Research Agency (NISRA) is Northern Ireland's official statistics organisation. The agency is also responsible for registering births, marriages, adoptions and deaths in Northern Ireland, and the Census of Population.</p>	<p>Northern Ireland Statistics and Research Agency McAuley House 2-14 Castle Street Belfast BT1 1SA</p> <p>Phone: 028 9034 8100</p> <p>Email: info.nisra@dfpni.gov.uk</p> <p>Website: www.nisra.gov.uk</p>

© Crown Copyright

You may use or re-use this information (not including logos) free of charge in any format or medium, under the terms of the Open Government Licence. Further is available within the [Copyright & Disclaimer](#) section of the National records of Scotland Website .