

Northern Ireland Local Area Population Projections

1. In Northern Ireland, the Northern Ireland Statistics and Research Agency (NISRA) produce sub-national or local area population projections for Local Government Districts (LGD), Health and Social Services Boards (HSSB), Education and Library Boards (ELB) and Nomenclature of Units for Territorial Statistics (NUTS) Areas. The latest set of local area population projections available are based on the 2006 mid-year population estimates which are projected forward until 2021.
2. The remainder of this paper describes the:
 - previous local area population projections in Northern Ireland;
 - methodology behind local area population projections;
 - fertility assumptions used in the 2006 based population projections;
 - mortality assumptions used in the 2006 based population projections;
 - migration assumptions used in the 2006 based population projections;
 - treatment of HM Armed Forces and Students in local population projections;
 - further constraints on local population projections;
 - level of data available;
 - comparison with previous local area projections;
 - limitations of local area population projections; and
 - Northern Ireland and local area household projections

Historical Projections

3. In July 2002, NISRA produced the first set of local area population projections which were based on the Northern Ireland and local area 2000 mid-year population estimates and also constrained to the Northern Ireland level 2000-based population projections jointly published by the Government Actuary's Department and NISRA in November 2001.
4. In December 2003, the 2002-based projections for Northern Ireland were jointly published by the Government Actuary's Department and NISRA and in August 2004 NISRA produced the subsequent 2002-based local area projections.
5. Northern Ireland level population projections are updated every second year and the next set of population projections, the 2004-based set, was produced in October 2005. Following the publication of the Northern Ireland level projections, NISRA took the decision not to produce 2004-based local area population projections given the level of local migration from the new Eastern European accession countries.
6. In October 2007 the 2006-based Northern Ireland level population projections were published by the Office for National Statistics (ONS) after responsibility was transferred from the Government Actuary's Department. Following this NISRA produced 2006-based local area population projections in February 2008.

Population Projections Methodology

7. The population projections methodology is similar to that used for the mid-year population estimates¹ and it projects the number of people usually resident in each area at the 30 June each year. The projections are updated using a standard technique known as the **cohort component method**.
8. The starting point is the mid-year population estimate. For each year of the projections the previous year's figure is "aged on" by one year, births, which are projected to occur during the year, are added, deaths, which are projected to occur during the year, are removed and finally changes in migration included. The following formula is thus applied to update the projections:

Previous year's projections aged on
+ Births to mothers resident in Northern Ireland
- Deaths
+ Net migration (including changes to HM Armed Forces)
= Following year's projection

9. **The projections are based on a top-down approach which means they are consistent with the Northern Ireland level population projections. Furthermore population projections are based on demographic trends only. Therefore they do not take into account issues such as future planned housing or policy changes which may influence the size of the population. Projections are therefore strictly not forecasts of what Government expect to happen.**
10. For the 2006-based local area population projections software called POPGROUP² was used. The POPGROUP software is managed by the Cathie Marsh Centre for Census and Survey Research at the University of Manchester. The software is used widely throughout the UK.

2006 Population Projections Fertility Assumptions

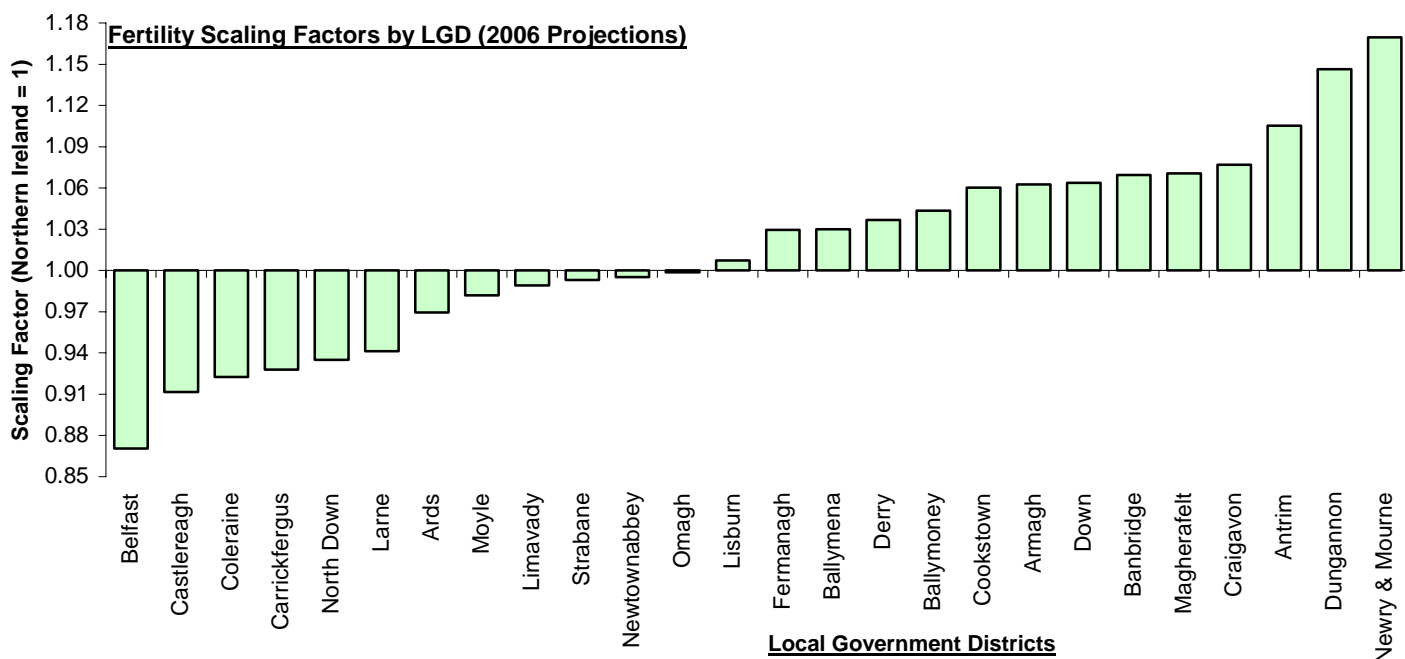
11. Northern Ireland level assumptions on fertility project the overall total period fertility rate (TPFR)³ to increase until 2010 and then to fall slightly. The long-term assumptions of average completed family size are that an 'average' woman will have 1.95 children in her lifetime.
12. For the first year of the local area projections the best estimate of births was used for 2006-7 as this data was available when the local area projections were compiled. For subsequent years Northern Ireland level age-specific fertility rates were adjusted for local variation in fertility. This variation is made using a local scaling factor based on the relationship between the local and Northern Ireland TPFR for the period 2001-2007. The chart below shows the local fertility scaling factors used. As an example the local scaling factor for Newry & Mourne Local Government District is 1.17. This assumes long-term fertility patterns in Newry & Mourne will be 17% higher than the Northern Ireland level assumption of 1.95 children per 'average' woman.

¹ For mid-year estimate methodology see:

http://www.nisra.gov.uk/archive/demography/publications/mye_methodology.doc

² For further information on POPGROUP software see: <http://www.ccsr.ac.uk/popgroup/>

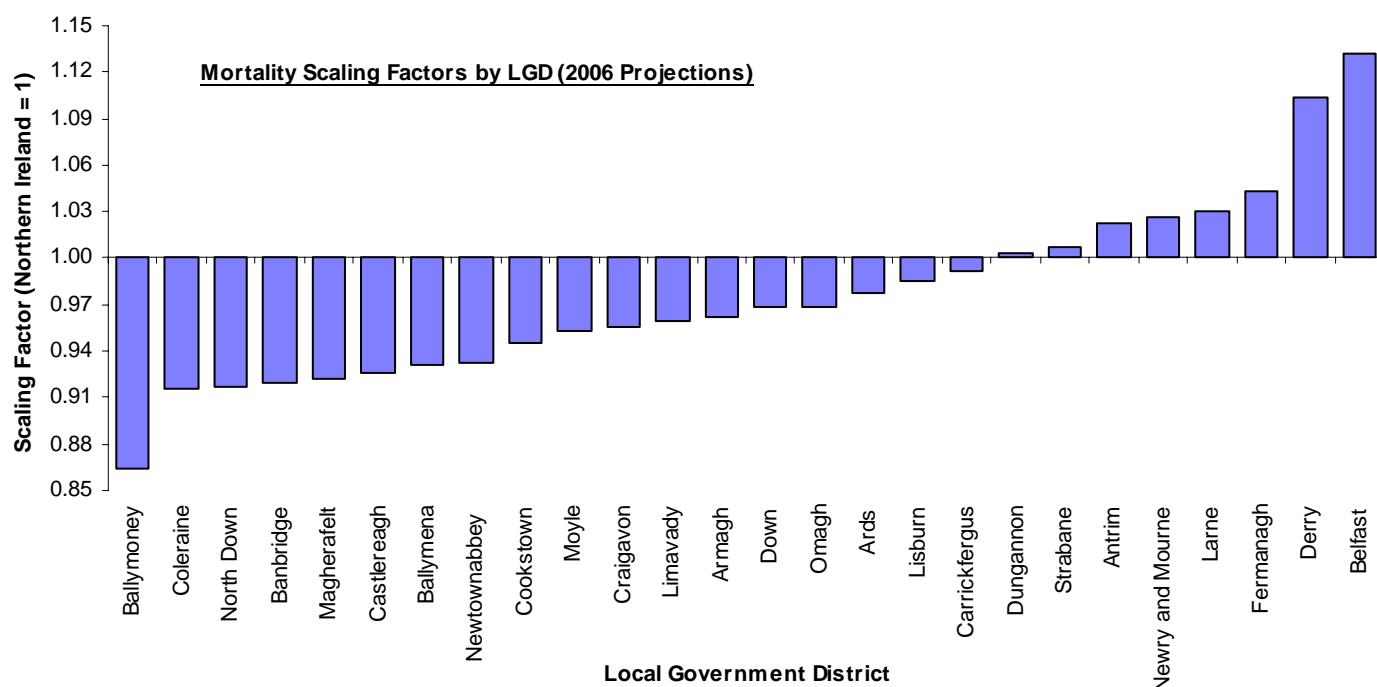
³ The TPFR is the average number of children that would be born to a cohort of women who experienced, throughout their childbearing years, the fertility rates of the calendar year in question.



2006 Population Projections Mortality Assumptions

13. At the Northern Ireland level the assumptions on mortality project improving mortality. In overall terms it is projected that there will be a 1% per annum improvement in mortality rates.
14. For the first year of the local area projections the best estimate of deaths by age and sex was used for 2006-7 as this data was available when the assumptions were being compiled. For subsequent years the Northern Ireland age-specific mortality rates were adjusted for local variation in mortality. This is done by using a scaling factor based on the relationship between the local and Northern Ireland standardised mortality ratio (SMR)⁴ for the period 2001-2007. The chart below shows the local mortality scaling factors used. As an example the local scaling factor for Belfast Local Government District is 1.13. This assumes long-term mortality patterns in Belfast will be 13% higher than the Northern Ireland level assumptions.

⁴ Standardisation involves a comparison of the actual number of events occurring in an area with the aggregate number expected if the age/sex specific rates in the standard population were applied to the age/sex groups of the observed population. The results are expressed as standardised mortality ratios (SMRs) where the standard ratio (for Northern Ireland) equals 100.



2006 Population Projections Migration Assumptions

15. The long-term assumption for net migration to Northern Ireland is that 500 more people per annum will come to Northern Ireland than leave – this takes account of migration between Northern Ireland, Great Britain, the Republic of Ireland and the Rest of the World.
16. Specific short-term migration assumptions have been applied for the first few years of the projections (2006-7 to 2013-14). The table below summarises these short-term assumptions. This allowance is primarily to allow for short-term net migration gain from the eight European Union Accession countries⁵.

Table: 2006 projection series principal migration assumptions

Year	Northern Ireland
2006-7	10,000
2007-8	4,000
2008-9	3,000
2009-10	2,000
2010-11	1,500
2011-12	1,000
2012-13 & 2013-14	500
Long-Term assumption (2014-15 onwards)	500

17. For the local area projections the best estimate of net migration was used for 2006-7. This was achieved using the data available when the assumptions were being compiled. Clearly the Northern Ireland level projections do not include migration related to people moving address within Northern Ireland (internal migration). However internal migration is required for local area projections. Each year around 40,000 people move between Local Government Districts in Northern Ireland (the average of the last 5 years internal migration data).

⁵Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia and Slovenia which joined the EU on 1 May 2004.

18. To project local area gross migration flows to and from each Local Government Districts the last four years gross flows were used. Each year was given a weight with the earliest year weighted 1 and the most recent weighted 4. The four-year average proportion of the total Northern Ireland flow for each area was then taken with the weights applied.
19. For the Northern Ireland level population projections only net flow is projected, not gross in and out flows, so for local area projections a total gross outflow of 60,000 people (20,000 people leaving and 40,000 people moving within Northern Ireland) has been assumed and this is kept constant for each year of the projections. To ensure the sum of the local net flows are equal to the national net flow, inflows are equal to the projected national net flow plus 60,000.
20. Migration by age and gender often differs between areas, for example some areas attract more students than others. So unlike fertility and mortality the Northern Ireland age specific migration rates were not applied to all areas, instead each area had its own individual age specific migration rates calculated using the last complete year's data and this was applied to the gross flows for each area. The resultant net flows by Local Government Districts for each year are shown in the table below.

Table: 2006 projection series principal local area migration assumptions

Local Government Districts	2006-7	2007-8	2008-9	2009-10	2010-11	2011-12	2012-13 onwards
Antrim	780	510	470	440	420	400	380
Ards	810	440	400	350	330	310	290
Armagh	490	380	350	320	300	280	270
Ballymena	510	280	250	220	200	190	170
Ballymoney	420	280	260	240	230	220	220
Banbridge	670	430	410	380	360	350	340
Belfast	20	-1,710	-1,900	-2,090	-2,180	-2,280	-2,370
Carrickfergus	260	230	160	150	150	150	110
Castlereagh	-210	-410	-450	-500	-520	-540	-560
Coleraine	-210	-270	-300	-340	-350	-370	-390
Cookstown	330	230	220	200	190	180	170
Craigavon	1,110	920	860	810	790	760	730
Derry	-50	-290	-320	-360	-380	-400	-420
Down	500	370	340	300	280	270	250
Dungannon	1,460	1,000	960	920	900	880	860
Fermanagh	590	400	380	350	330	320	310
Larne	40	10	-10	-20	-30	-40	-50
Limavady	-190	-140	-150	-170	-180	-190	-190
Lisburn	440	350	270	200	160	120	90
Magherafelt	320	190	170	160	150	140	130
Moyle	180	30	20	10	10	0	0
Newry & Mourne	1,280	820	780	740	720	690	670
Newtownabbey	-180	-300	-350	-390	-420	-440	-470
North Down	-60	20	-20	-70	-100	-120	-140
Omagh	620	250	230	200	190	180	170
Strabane	70	-20	-30	-50	-50	-60	-70
Northern Ireland	10,000	4,000	3,000	2,000	1,500	1,000	500

Treatment of HM Armed Forces and Students in 2006 based local population projections

21. Two special populations in the mid-year population estimate and projections are HM Armed Forces and students. In the local area projections these groups are treated separately to the rest of the population as the age structure of these groups remains stable over time. Therefore these two groups are removed prior to calculating the migration and ageing on and added back in at the end of the calculation so their age-structure remains fixed over the projection period.
22. It was known that the armed forces in Northern Ireland will be reduced from their current level to 5,000 by the end of July 2007. When the national and sub-national projections were being produced this reduction was built into the projections.

Constraints on local population projections

23. Even though there are assumptions made about fertility, mortality and migration for each local area in Northern Ireland the sum of the individual local area projections are constrained to the overall Northern Ireland projections. The sum of the local area projections by single year of age and sex will be constrained to add up to the Northern Ireland projected population each year. Also the total births, deaths and migrants are also constrained each year to equal the Northern Ireland figures. The Northern Ireland figures can be found at:
http://www.gad.gov.uk/Demography_Data/Population/Index.asp?v=Principal&y=2006&subYear=Continue

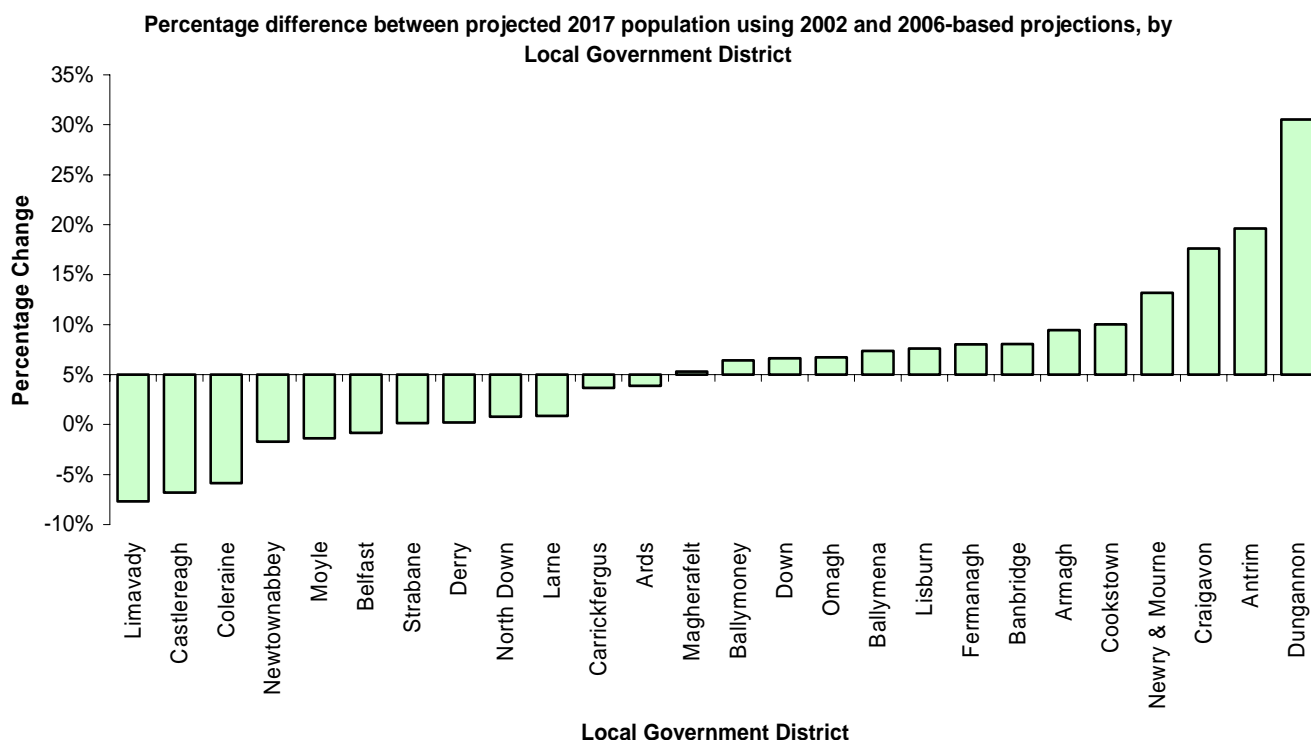
Data available

24. The projections have been produced at Local Government District, Health and Social Services Board, Education and Library Board and NUTS111⁶ areas by single year of age up to age 85+ and gender from 2006 to 2021. Detailed data is available at:
<http://www.nisra.gov.uk/demography/default.asp47.htm>

Comparison with 2002-based local area population projections

25. The 2002-based population projections showed the projected population to be 1.72 million by 2006. This compares with the actual 2006 mid-year estimate of 1.74 million. The difference of about 20,000 is mainly due to more people migrating to Northern Ireland (18,500) than had been assumed, although there were also more births (3,500) and slightly fewer deaths (900) than had been assumed.
26. By 2017, the final year of the 2002-based population projections, the Northern Ireland level difference between the two projections series increases to about 90,000 people. There are differences by local areas under the two projections. These differences are shown in the chart below which show the percentage change between the 2002 and 2006-based population projections in the population projected for 2017.

⁶ Nomenclature of Units for Territorial Statistics (NUTS) see <http://www.statistics.gov.uk/geography/nuts.asp> for further details.



27. By 2017, the population of most Local Government Districts is higher under the 2006-based projections than under the 2002-based projections, with the exception of Limavady, Castlereagh, Coleraine, Newtownabbey, Moyle and Belfast. In all other Local Government Districts, the 2006-based projections are higher, with the biggest percentage increases seen in Craigavon, Antrim and Dungannon Local Government Districts.

Limitations of local area population projections

28. Northern Ireland and local area projections are the result of applying long-term demographic assumptions only. They are solely based on historical trends in fertility, mortality and migration; they do not take into account any planned policy changes which may influence population distribution. Local area figures tend to be less reliable than Northern Ireland figures as smaller areas will be more affected by changes in migration. Also the reliability of projections decreases over time.

2006 based Northern Ireland and local area Household Projections

29. Following the publication of the sub-national population projections, household projections have been produced on behalf of the Department for Regional Development.

30. The household projections are based on trends in household composition from the 1991 and 2001 Censuses and the method used is similar to that used in the 2002-based household projections and they have been updated with the 2006-based population projections. Full details on the household projections can be found at: <http://www.nisra.gov.uk/demography/default.asp21.htm>.