ABOUT MORTALITY DATA FOR NORTHERN IRELAND

By Domantas Jasilionis   Last Revised: 26 June 2020

The Northern Ireland Statistics and Research Agency (NISRA) is the official statistical organization for this territory of the United Kingdom. We are still working on the *Background and Documentation* file for Northern Ireland. For a description of the original data used to estimate the mortality surface for Ireland, see Appendix 1.

DATA QUALITY ISSUES

The population estimates for the period 1922-1925 are pre-censal population estimates calculated according to the Human Mortality Database (HMD) methodology (assuming zero net-migration).

The population estimates for the period 1938-1950 are inter-censal population estimates calculated according to the HMD methodology, which assumes that net-migration is distributed uniformly over the inter-censal period. This assumption is questionable given the large migration waves and mobilization/demobilization of conscripts before and after the World War II.

During the period 1971-1981, the official population estimates show a notable dip in the number of males at ages 18 and 19 (conscript age) in the official population estimates for the years 1971-1980. A similar, albeit smaller, dip at the same ages can also be observed in the 1981 census counts for males (Appendix 2, Figure 1). This pattern may be related to the exclusion (or at least partial exclusion) of the usual residents who moved to/from the United Kingdom armed forces.

Starting in 1981, the population estimates include movements to/from the armed forces and the changes in the number of the United Kingdom armed forces stationed in Northern Ireland (NISRA, 2008). In addition, the NIRSA adjusted these estimates for census under-enumeration. However, during the 1980s and 1990s, some sudden changes are seen in female-male differences in population counts at military ages (e.g., from one year to the next, or from one age to the next).

Therefore, instead of using official population estimates for the period 1971-1980, we produced a new set of inter-censal population estimates based on the HMD methodology. It should be noted that we used the official population estimates for 1981 (which includes the armed forces and adjustments for census undercount) as an artificial census point instead of the 1981 census data. However, even the newly calculated inter-censal population estimates for the 1970s should be used with caution due to large and irregular migration peaks and other data problems related to the political turbulence and armed conflict in Northern Ireland during this period.

The NISRA warns that "users interested in population changes are advised to use the mid-year population estimates, which are designed to measure such changes [definitions and adjustment for under-enumeration]" (NISRA, 2002). The new intercensal population estimates for the period 1922-1980 are calculated using the HMD methodology based on the official census counts 1926-1971 (unadjusted for census undercount) and the official population estimates for 1981. In this way, it was possible to avoid the numerator-denominator bias that would result from calculating death rates based on death counts (which include the military) and official population estimates (which do not include the military). Nonetheless, the resulting population estimates may still underestimate the size of the population (due to census undercount) and thus, overestimate the death rates.

Taking into account the aforementioned data issues, we conclude that the quality of the data for Northern Ireland for 1922-1980 is much lower than for later years and those data should be used with caution. In particular, the population estimates calculated according to the HMD Methods Protocol for this period do not account for the large and irregular migration during the inter-censal periods.

The population estimates for 2001-2010 are revised inter-censal estimates based on the 2011 census data.

There are some unusual patterns in the distribution of monthly births. The share of births registered in January tends to increase over time and shows peaks in the most recent decades. By contrast, the share of births registered in December is always the lowest (Appendix 2, Figure 1). These two phenomena are typical of late birth registration (i.e. some births which occurr in December are registered in January).

Revision NOTES

Changes with the December 2017 revision:

> **Life tables:** All life tables have been recalculated using a modified methods protocol. The revised protocol (Version 6) includes two changes: 1) a more precise way to calculate a0, the mean age at death for children dying during the first year of life and 2) the use of birth-by-month data (where and when available) to more accurately estimate population exposures. These changes have been implemented simultaneously for ALL HMD series/countries. For more details about these changes, see the revised Methods Protocol (at http://www.mortality.org/Public/Docs/MethodsProtocol.pdf), particularly section 7.1 on Period life tables and section 6 and Appendix E, on death rates. The life tables calculated under the prior methods (Version 5) remain available at v5.mortality.org but they have not been, and will not be, updated.

REFERENCES

The Northern Ireland Statistics and Research Agency (NISRA). (2002). Northern Ireland Census 2001 Population Report and Mid-Year Estimates. NISRA: Belfast.

The Northern Ireland Statistics and Research Agency (NISRA). (2008). Registrar General Northern Ireland Annual Report 2007. Retrieved 19 December 2008 (http://www.nisra.gov.uk).

APPENDIX 1:

Description of the original data used for HMD calculations

DEATHS

Period	Type of Data	Age grouping	RefCode
1922-1954	Annual number of deaths by sex and age groups (*n*x1 rectangles)	0, 1, 2, 3, 4, 5-9, …, 95+, unknown	9
1955-1961	Annual number of deaths by sex and age groups (1x1 rectangles)	0, 1, 2, …, maximum age attained, unknown	10
1962	Annual number of deaths by sex and age groups (1x1 rectangles)	0, 1, 2, …, 99, 100+, unknown	10
1963-2018	Annual number of deaths by sex and age groups (1x1 rectangles)	0, 1, 2, …, maximum age attained, unknown	10, 29, 31, 37, 42

POPULATION

Period	Type of Data	Age grouping	Comments	RefCode
1926, 1937, 1951, 1961, 1966, 1971	Census counts	1926, 1937, 1961, 1966: 0, 1, 2, 3, 4, …, 100+, unknown 1951: 0, 1, 2, 3, 4, maximum age attained, unknown 1971: 0, 1, 2, 3, 4, …, 100+, unknown	*de jure* (resident) population	2, 3, 4, 5, 6, 7
1981-2000	Annual mid-year population estimates (all permanent residents including armed forces)	0, 1, 2, 3, …., 90+, unknown	*de jure* (resident) population including adjustments for the armed forces and census undercount	1
2001-2010	Annual mid-year population estimates (all permanent residents including armed forces)	0, 1, 2, 3, …., 90+, unknown	*de jure* (resident) inter-censal population estimates revised according to the 2011 census	24
2011-2019	Annual mid-year population estimates (all permanent residents including armed forces)	0, 1, 2, 3, …., 90+, unknown	*de jure* (resident) post-censal population estimates based on the 2011 census	25, 26, 30, 38, 43

BIRTHS

Period	Type of Data	RefCode
1922-2018	Annual live birth counts, by sex	8, 14, 15, 19, 23, 27, 34, 35, 36, 40

BIRTHS BY MONTH

Type of data: Annual live birth counts by month

Period covered: 1955-2018.

RefCode(s): 21, 22, 28, 33, 39, 41.

APPENDIX 2:

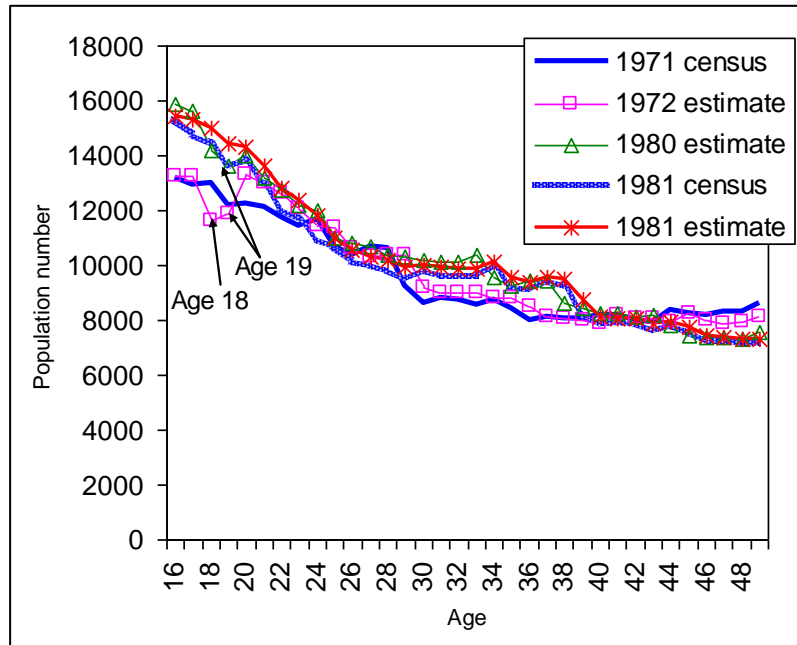Figure 1. Official census and estimated male population counts by age in 1971, 1972, 1980, and 1981.

Figure 2. Time trends in shares of monthly births, 1955-2014.