ABOUT MORTALITY DATA FOR BELGIUM

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Warning: There is a gap in the HMD data series for years 1914-1918 in Belgium due to the lack of mortality statistics during this period. This lack of data also explains why there is no cohort life table series for this country.

GENERAL

Between 1770 and 1830, Belgium was governed by three different sovereignties: the Austrians until the French revolution, the French until 1815, and the Dutch until 1830. Belgium became independent in 1830.

Starting in 1830 under the Dutch regime, Quetelet and Heuschling developed a Statistical Bureau in Brussels and produced some retrospective statistics for the Dutch period. Data for births, deaths, and marriages by month and sex were collected. Rough estimates of the change in the population at the communal level were also available starting with the 1830 census.

The first government statistical bureau (*la Commission Centrale de Statistique*) was created in 1841. Five years later, in 1846, Belgium conducted its first official population census. Since then, there have been 14 population censuses at approximately 10-year intervals as well as an exhaustive socioeconomic survey in 2001 and a virtual census in 2011. A national population register has served as the centralizing database for municipal registers on a voluntary basis since 1968 and by law since 1985 (NationaalInstituutvoorStatistiek/Institut National de Statistique, 2004). A conventional population and housing census was taken on March 1, 1991 based on the National Register. Since 1991, official population figures have been based on the population register. In 2001, Belgium conducted a general socioeconomic survey (*Survey 2001*) rather than a conventional census. The purpose of this survey was not to count the population, but to collect socioeconomic data on the population. Accordingly, there has been no further census enumeration since 1991 and the National Population Register has become the base for determining the legal population figures needed for electoral purposes and all administrative matters, including the 2011 census.

Today, Statistics Belgium (Institut national de statistique; NationaalInstituutvoorStatistiek; StatistichesLandesamt;http://www.statbel.fgov.be/) is the official statistical agency for Belgium. This agency is responsible for collecting, processing, and disseminating statistics related to the Belgian population.

Source of Data

For the most part, death and birth counts come from the official statistics published by *NationaalInstituutvoorStatistiek*. Birth and death counts have traditionally been collected via statistical forms gathered and analyzed by Statistical Office, with an

intermediate step at the community level (i.e., Flanders and Wallonie-Bruxelles) for coding cause of death. Consequently, there can be a long delay before statistical tables on births and deaths are published. Statistics on births and deaths can be obtained based on the National Population Register. However, these data are available only by basic demographic characteristics (e.g., age, sex, marital status). Population and vital statistics data with more specific details and including asylum-seekers have been provided by Statistics Belgium starting with year 2011.

For years prior to 1991, HMD population estimates are based on official census counts and are derived using standard HMD methods (see the Methods Protocol). For years since 1991, official population estimates (based on the National Population Register) published by Statistics Belgium are used. The format of the data has varied over time (see Appendix I for details).

TERRITORIAL COVERAGE

Although a number of important territorial changes took place between 1806 and 1839, the HMD does not include data from that early historical period. Between 1840 and 1919, there were no national-level territorial changes. Under the territorial provisions of the Treaty of Versailles (June 28, 1919), Belgium was enlarged along the German border to include the districts of Eupen and Malmédy (the now so-called “East Cantons” or “Cantons rédimés” in French). During World War II, these areas were temporarily re-annexed by the Germans.[1] After 1944, however, the former territorial boundaries of Belgium were restored. There have been no further territorial changes since the end of World War II. All of the various territorial changes for Belgium are described in detail by Vrielinck (2000). All data in the Human Mortality Database (HMD) refer exclusively to those areas included in Belgium national statistics during the year in question.

A further adjustment is made to account for a minor universe change starting on January 1, 2011, when Belgium started complying with EU regulation 862/2007, mandating the inclusion of asylum-seekers in the definition of the resident population. Both death counts and population counts are provided according to the new definition starting in 2011, and the HMD adjusts using the coefficients derived from the age profile of the January 1, 2011 resident population including and excluding asylum-seekers.

[1] Since these districts were only sparsely populated (88,090 people as of December 31st, 1939), the effect of the territorial changes at the national level was very limited (Veys, 1981, p. 92).

Dates	Territory	Area Code†
1840-1924	Includes the territory established in 1839 by the treaty of the XXIV articles, which settled territorial disputes between the Netherlands and Belgium.	10
1925-1939	The cantons of Eupen, Malmédy, and Saint-Vith (the "East Cantons") along the German border were ceded to Belgium under the territorial provisions of the Treaty of Versailles (June 28, 1919), which took effect on January 10, 1920 (Vrielinck, 2000). This change was reflected in vital statistics counts as of January 1, 1925. The 1930 census counts include these districts.	20
1940-1943	Germany invaded Belgium on May 10, 1940, and the cantons of Eupen, Malmédy, and Saint-Vith were temporarily re-annexed by Germany as of June 1, 1940 (Vrielinck, 2000). During 1940 to 1943, the vital statistics counts excluded these territories. http://home-13.tiscali-business.nl/~tpm09245/terr/eumal/40.htm	10
1944-2010	On September 1, 1944, the former territorial boundaries of Belgium were restored (Vrielink, 2000). The cantons of Eupen, Malmédy, and Saint-Vith have been included in vital statistics since 1944 and were included in the 1947 census.	20
2011-present	Starting January 1, 2011 the resident population includes asylum-seekers. Deaths of asylum-seekers are also included in death counts. We account for this minor universe change using the same method as territorial adjustments.	30

† The area code is an arbitrary number used in the raw data files (Input Database) to denote the geographic area covered by the data.

In recent years, the country has evolved rapidly through several institutional reforms (in 1970, 1981, 1988-89 and 1993) into a federal structure. Belgium constitutionally recognizes three communities based on the official languages (the Dutch-speaking Flemings, the French-speaking Walloons, and the small German-speaking community). The three communities are responsible for all personal matters including the treatment of birth and death statistical forms. From a territorial point of view, Belgium is divided into three different regions: Brussels-Capital, Flanders, and Wallonia. Each of the latter two regions is divided into five provinces (Flanders into Antwerp, Flemish Brabant, East-Flanders, Limburg, and West-Flanders; and Wallonia into Walloon Brabant, Hainaut, Liège, Luxembourg, and Namur). The correspondence between communities and regions may be summarized as follows: All persons living in the Flanders region are members of the Flemish community. In addition, the Dutch-speaking people living in the Brussels region are also considered members of the Flemish community. The French-speaking persons living in Brussels are members of the Wallonie-Bruxelles community as are all those living in the Wallonia region, except for the 60,000 German-speaking people living in the East cantons. The latter constitute the German-speaking community.

DEATH COUNT DATA

Coverage and Completeness

Compulsory government registration of vital statistics began in 1796. Prior to 1796, records of baptism, burials, and marriages were kept by the local clergy. The first attempts to count births, deaths, and marriages appeared under the rule of the Austrian Empire in 1769. However, because Belgium was an integral part of France during the Napoleonic era, the Belgian system of vital registration is largely inspired by the French system. Yet, unlike the situation in France, a population register was introduced in Belgium starting in 1847 (like the one later introduced in the Netherlands in 1856). Parallel to the traditional data collection of births and deaths based on the *de facto* place of occurrence, Belgium can also produce statistics from the births and deaths recorded by the population register. The data collected through the National Population Register are based on the *de jure* place of residence (i.e., the first place of residence after birth; the last place of residence before death). Some discrepancies may appear when a birth is registered abroad for a person usually living in Belgium.

Starting in 1954, the data collected through the statistical forms also covered the *de jure* population. At this time, the collection of vital statistics data (i.e., births and deaths) changed from covering the *de facto* to the *de jure* population (Veys, 1981, p. 92). Prior to 1956 (and during 1958-60 as well), the infant death counts are underestimated because some newborns who died before being registered were recorded as stillbirths rather than infant deaths. During the 19th century and 20th centuries, vital statistics distinguished between true stillbirths (*mort-nés*) and false stillbirths (*présentés sans vie*). These data have been used in the HMD to correct infant deaths to account for these false stillbirths. Today, a certificate of stillbirth is issued when a newborn is pronounced dead at the time of birth as notified by the doctor (or the midwife) or by an official registrar. This certificate is then entered into the death register.

Specific Details

False Stillbirths

Prior to 1956 (and during 1958-60 as well), some live births were registered as stillbirths when the infant died prior to birth registration. According to an imperial decree of 4 July 1806, a newborn that dies before the registration of the birth by the municipal authority (i.e., within three days after the delivery[2]) should be registered as stillborn, and a certificate of death should be issued. Thus, the record of stillbirths compiled from the registry of deaths includes not only fetuses actually born dead, but also infants who were born alive but died in the first three days after birth (the "*présentés sans vie*"). In order to correct this problem, the municipal authorities were required (beginning on December 13th of 1848) to make a distinction between newborns who died before delivery from those who died during or after delivery (Commission Centrale de Statistique, 1865, p. 24). Because this information was sometimes lacking, a circular by the Ministry of Interior (December 16th ,1867) later suspended the requirement to keep a separate register for

[2] Since March 30th 1984, the maximum delay for registration of births has been fixed at 14 days (BurgerlijkWetboek/Code Civil, art 55).

stillbirths. Beginning in 1878, however, public administrators were required to register how long the infant actually lived. Registration of live births and stillbirths gradually improved over time.

Michel Poulain and Dominique Tabutin (1977, p. 50) calculated the percentage of false stillbirths within the total of the *mort-nés* and the *présentés sans vie* since the middle of the 19th century as follows:

1849-50:	24.5 %	1886-90:	16.8 %
1851-55:	23.6 %	1891-00:	16.5 %
1856-60:	23.4 %	1901-05:	16.6 %
1861-65:	22.2 %	1906-10:	17.7 %
1866-70:	21.0 %*	1911-13:	17.0 %
1871-75:	20.0 %*	1919-20:	15.3 %
1876-80:	19.0 %*	1921-25:	15.0 %
1881-85:	18.0 %*		

* Estimated by interpolation

The effect of this divergent registration procedure on infant death counts becomes more important as infant mortality declines (Gourbin and Masuy-Stroobant, 1995, p. 449). In periods of low infant mortality, deaths in the first year of life tend to be more concentrated in the first few days or even hours of life. Thus, false stillbirths comprise a greater proportion of all infant deaths. For example, in 1886, false stillbirths comprised only 4.5% of all infant deaths, but by 1955, the proportion had grown to 22%.

Using data on "*présentés sans vie"* from Veys (1981, p. 47-55) and from the *AnnuaireStatistique*, infant death counts (for 1886-55 and 1958-60) have been adjusted in the HMD to include these false stillbirths (see Appendix II). Published infant death counts for 1956-57 and since 1961 already include the *présentés sans vie.* No data are available to make such a correction to infant deaths prior to 1886.

1868-1875

Death counts by sex for 1868-1875 are available only in period-cohort format (five-year cohorts). Infant death counts are available, but not by sex. Therefore, we have estimated the sex distribution of deaths at age 0 from the average percentage male among deaths at age 0 in nearby years (see *NoteCode* 32 & 38 in the raw data files for details).

1876

Death counts in 1876 are not available by both age and sex. We use published death counts by age (for both sexes combined) and estimate the sex distribution at each age based on the data for 1877-79 (see *NoteCode* 26 in the raw data files for details).

1885

Death counts in 1885 are available by sex only for aggregated aged groups (0-14, 15-19,...95-99, 100+). Deaths under age 15 are available for more detailed age groups (0,1,…9,10-14), but not by sex. Therefore, we estimate the sex distribution of deaths at these ages based on data for 1886-89 (see *NoteCode* 31 in the raw data files for details).

1899

Death counts in 1899 are not available by both age and sex. We use published death counts by age (for both sexes combined) and estimate the sex distribution at each age based on the data for 1896-98 (see *NoteCode* 28 in the raw data files for details).

POPULATION COUNT DATA

Coverage and Completeness

The first national census in Belgium after it became an independent nation took place in 1846. Since then, censuses have occurred approximately every 10 years (1856, 1866, 1876, 1880, 1890, 1900, 1910, 1920, 1930, 1947, 1961, 1970, 1981, 1991). With the exception of the 1846 census—which was taken on October 15th—all censuses prior to 1981 occurred on December 31st. The 1981 and 1991 censuses were completed on March 31st. Since 1991, the official population figures have been based on the national population register (*NationaalInstituutvoorStatistiek*). In October 2001, there was a national socio-economic survey instead of a conventional census. A virtual census was conducted in 2011 with a reference date of January 1.

The first two censuses (1846 and 1856) enumerate the *de facto* population. Since 1866, the data have been gathered on the basis of the *de jure* population, but until 1920 the census also included *de facto* population figures (De BelderenVanhaute, 1993, p. 97-98). Beginning in 1920, the published census counts cover only the *de jure* population (Goyer&Draaijer, 1992). The official population estimates since 1991 based on the national population register also cover the *de jure* population. For the HMD, we use census counts based on the *de facto* population prior to 1866, and *de jure* census counts and population estimates since 1866. Details regarding the format of the original data are provided in Appendix I.

Specific Details

Evaluation of data quality in the first four censuses (1846-1880) reveals a pattern of age-heaping (Lesthaeghe, 1977, p. 234-235). This age-heaping is obvious from age 30 onwards at multiples of 10 years. The 1846 census is the most affected, but the pattern diminishes gradually to negligible proportions by 1880. Lesthaeghe (1977, p. 236) also mentions drastic misreporting for the first three years of life in the 1856 census: the number of infants aged 0 to 1 is strongly inflated, whereas the number of children aged 2 to 3 is undercounted. No trace of such a misstatement is apparent in the other censuses. Lesthaeghe found no explanation for this phenomenon. Evaluations of data quality of census counts since 1947 indicate that age reporting is highly accurate (Goyer & Draaijer, 1992).

Warning: Population for January 1, 2021 was not available at the time of the August/September 2021 update. HMD post-censal estimation was used instead, based on January 1, 2020 population. Future updates will replace these estimates with the official figures for January 1, 2021.

BIRTH COUNT DATA

Coverage and Completeness

As noted earlier, compulsory government registration of vital statistics began in 1796. In 1954, the coverage of vital statistics changed from the *de facto* to the *de jure* population (Veys, 1981, p. 92). Another change that affected the collection of birth statistics was a change in the definition of live birth. Prior to 1956, newborns who died prior to registration (i.e., in the first three days after birth) were not recorded as live births, but rather as a stillbirth. As a result, the live births were under counted. Nonetheless, these false stillbirths (*présentés sans vie or PSV*) comprise a very small proportion of all live births. The United Nations handbook (1955, p. 52) indicates that in 1952, the omission of these births resulted in underestimation of live births by one percent.

The registration procedure was later changed so that all live births (including the *PSV*) were counted. Since 1886 (with the exception of 1914-18), data are available that distinguish between true stillbirths (*mort-nés*) and false stillbirths (*présentés sans vie)*. Using these data, we have adjusted the 1895-1913 and 1919 birth counts so that they comprise all live births (including *PSV)*. Births during the war period 1914-18 are likely to be underestimated by 0.5 to 0.8% because the *PSV* are excluded. Birth counts for 1886-1894 and since 1920 have been published including the *PSV*.

DATA QUALITY ISSUES

- Users should be careful not to over-interpret estimates at older ages. During some early years, deaths counts at older ages were available only for at an aggregate level (e.g., 1930-1940: age 40-44, 45-49,…95-99, 100+). Thus, our estimates by single year of age at these older ages are subject to uncertainty. In fact, because of data quality problems, our methods produce implausible results in some cases. For example, among males in 1939, our estimates of central death rates (“Mx”) decline above age 95 (see Figure 1 below). For calculating the life table, a parametric model is fitted to these data in order to obtain fitted death rates (life table “mx”), which do increase at older ages as we would expect. Nonetheless, users should not interpret these data as representing “real” patterns. Our estimates may differ substantially from the true values (which are unknown).

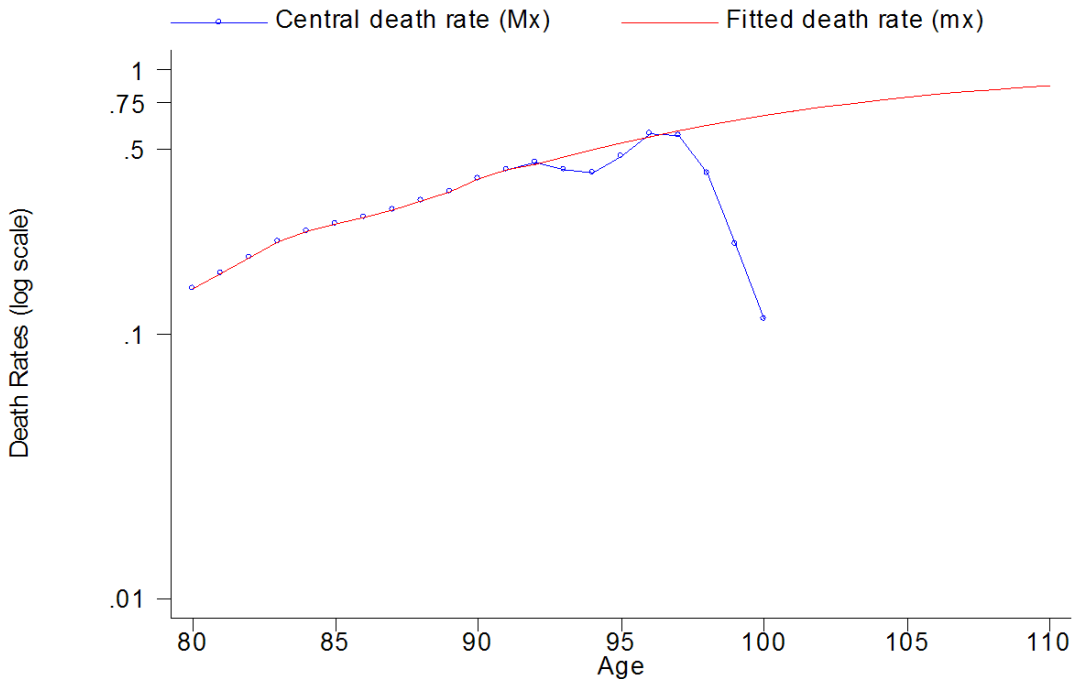
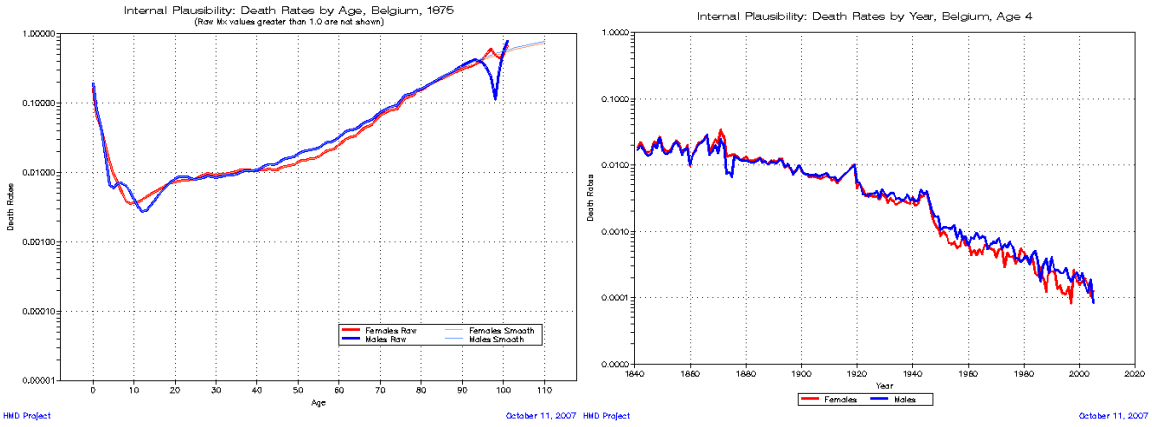
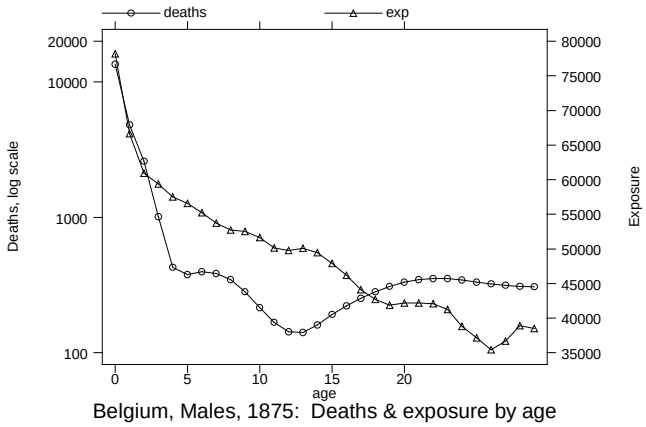


Fig 1: Belgian Males, 1939, age 80+

- There are some unusual patterns in the death rates between ages 3 and 14 for 1869-75, especially among males in 1873-75 (see figure below on the left). This same problem is reflected in unusually low death rates for males aged 4-5 around this same period (see below figure on the right).



This result stems from a similar pattern in the estimated death counts (see below). For this period, the raw data are available only in period-cohort (VV) format for 5-year cohorts. We use the cubic spline method to split the VV data into triangles, which produces this unusual pattern. Some inconsistencies between published data from different sources suggest that there could be an error in the original data.



Belgium, Males, 1875: Deaths & exposure by age

REVISION NOTES

Changes with the January 2014 revision:

Population Counts: The population series was extended to 2012. Years 2005-2009 were replaced with up-to-date official intercensal estimates. These replace previous estimates from Eurostat that have since been superseded by new official estimates. A minor universe adjustment, due to an EU-mandated change in the definition of resident populations, has also been introduced for January 1, 2011.

Deaths: Deaths for years 2010-2012 were added. Deaths for years 2005-2009 were replaced with up-to-date official death counts. Previously these were provisional Eurostat death counts. The official death counts have undergone adjustments late registrations and universe changes.

Births: The annual birth series was extended until 2012. Births for years 2005-2009 replace Eurostat counts with new official figures. A new series of monthly total birth counts has been added for years 1900-2012. This new monthly series will change exposure estimates when version 6 of the HMD Methods Protocol comes into affect, but it was not used in the present update.

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://v6.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 will not be further updated in the future.

Changes with the July 2021 revision:

Deaths: Deaths for 2010 have been revised with late registrations/latest adjustments.

Population: Official population estimates for 2021 are not available yet and population for January 1, 2021 has been estimated using the HMD method for post-censal estimates based on the 2020 population data and the vital events.

The previous population counts have been updated with the latest intercensal estimates for 2011-2019.

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APPENDIX I: DESCRIPTION OF DATA USED FOR LEXIS DATABASE

DEATHS

Period	Type of Data	Age Grouping	Comments	RefCode(s)†
1841-1866	Annual number of deaths (*de facto* population) by sex and single year of age (1x1) to age 9, 5-year age groups (5x1) to age 100+	0, 1,…9, 10-14, 15-19,… 95-99, 100+		47, 48, 49
1867	Annual number of deaths (*de facto* population) by sex and 1-year birth cohort (1858-1867) or 5-year birth cohorts (<1858)	TL Age 0; VV (age on Dec 31st): 1, 2,…9, 10-14, 15-19,…95-99, 99+		46
1868-1875	Annual number of deaths (*de facto* population) by sex and 5-year birth cohort; also includes infant death count (1x1 age 0)	1x1 Age 0; RV (Age on Dec 31st): 0-4; VV (Age on Dec 31st): 5-9,…95-99, 100+	Sex distribution for infant death counts is estimated. The first age group (1x1 Age 0) is a subset of the second (RV age 0-4). [See also *NoteCode*=32 & 38.]	44, 45
1876	Annual number of deaths (*de facto* population) by sex and single year of age (1x1) to age 9, 5-year age groups (5x1) to age 100+	0,1,…9,10-14, 15-19,… 95-99,100+, unk	Counts not available by age and sex; distribution by sex within each age is estimated. [See also *NoteCode*=26.]	37
1877	Annual number of deaths (*de facto* population) by sex and single year of age (1x1) to age 9, 5-year age groups (5x1) to age 100+	0,1,…9,10-14, 15-19,… 95-99,100+, unk		36
1878-1884	Annual number of deaths (*de facto* population) by sex and single year of age (1x1) to age 24, 5-year age groups (5x1) to age 100+	0,1,…24, 25-29,… 95-99, 100+, unk		35,36
1885	Annual number of deaths (*de facto* population) by sex and single year of age (1x1) to age 9, 5-year age groups (5x1) to age 100+	0,1,…9,10-14,15-19,…95-99,100+, unk	Distribution by sex for ages 0,1,…9,10-14 has been estimated.	34
1886-1889	Annual number of deaths (*de facto* population) by sex and single year of age (1x1) to age 24, 5-year age groups (5x1) to age 100+	0,1,...24,25-29,…90-94,95+, unk	(See Note below)	33
1890	Annual number of deaths (*de facto* population) by sex and single year of age (1x1)	0,1,…24, 25-29,…	(See Note below)	33

Period	Type of Data	Age Grouping	Comments	RefCode(s)†
	to age 24, 5-year age groups (5x1) to age 100+	95-99, 100+, unk		
1891	Annual number of deaths (*de facto* population) by sex and single year of age (1x1) to age 24, 5-year age groups (5x1) to age 100+	0,1,...24,25-29,…90-94,95+, unk	(See Note below)	33
1892-1898	Annual number of deaths (*de facto* population) by sex and single year of age (1x1) to age 100+	0,1,...99, 100+, unk	(See Note below)	33
1899	Annual number of deaths (*de facto* population) by single year of age (1x1) to age 44, 5-year age groups (5x1) to age 100+	0,1,...44, 45-49,…95-99, 100+, unk	Counts not available by age and sex; distribution by sex within each age is estimated. (See also Note below)	32
1900-1910	Annual number of deaths (*de facto* population) by sex and single year of age (1x1) to age 24, 5-year age groups (5x1) to age 100+	0,1,…24, 25-29,... 95-99,100+, unk	(See Note below)	31
1911-1913	Annual number of deaths (*de facto* population) by sex and single year of age (1x1) to age 100+	0,1,...99, 100+, unk	(See Note below)	30
1914-1918	**Death counts are not available for these years.** See Appendix III for details regarding the special methods used to accommodate for this gap in the data series.			
1919-1929	Annual number of deaths (*de facto* population) by sex and single year of age (1x1) to age 100+	0,1,...99, 100+, unk	(See Note below)	26, 30
1930-1940	Annual number of deaths (*de facto* population) by sex and single year of age (1x1) to age 39, 5-year age groups (5x1) to age 100+	0,1,...39, 40-44,…95-99, 100+, unk	(See Note below)	25
1941-1953	Annual number of deaths (*de facto* population) by sex, age, and birth cohort to age 100 lower triangle (LT) & open age interval from upper triangle (UT) age 100+	Lexis triangles: 0,1,…99, 100 (LT), UT 100+, unk	(See Note below)	1
1954-1961	Annual number of deaths (*de jure* population) by sex, age, and birth cohort to age 100 lower triangle (LT) & open age interval from upper triangle (UT) age 100+	Lexis triangles: 0,1,…99, 100 (LT), UT 100+, unk	unk (1954 only); (See also Note below)	1
1962-1967	Annual number of deaths (*de jure* population) by sex, age, and birth cohort to age 101 lower triangle (LT) &	Lexis triangles: 0,1,…100, 101 (LT), UT 101+, unk	unk (1962-65 only)	1

Period	Type of Data	Age Grouping	Comments	RefCode(s)†
	open age interval from upper triangle (UT) age 101+			
1968-1971	Annual number of deaths (*de jure* population) by sex, age, and birth cohort to age 100+	Lexis triangles: 0,1,…99, 100+		1
1972-1992	Annual number of deaths (*de jure* population) by sex and age 0, age and birth cohort ages 1 to 100+	0, Lexis triangles: 1,…99, 100+		1
1993-1997	Annual number of deaths (*de jure* population) by sex, age, and birth cohort to age 110+	Lexis triangles: 0,1,…109, 110+		5,6,7,8
1998-2001	Annual number of deaths (*de jure* population) by sex, age, and birth cohort	Lexis triangles: 0,1,…to max		9
2002	Annual number of deaths (*de jure* population) by sex, age, and birth cohort to open age interval 110+	Lexis triangles: 0,1,…110+		50
2003-2004	Annual number of deaths (*de jure* population) by sex, age, and birth cohort	Lexis triangles: 0,1,…to max		51
2005-2015	Annual number of deaths (*de jure* population) by sex, age, and birth cohort	Lexis triangles: 0,1,…to 110+	Starting in 2011, death counts include deaths of asylum-seekers	66, 71, 78 (78 is for 2010 only)
2016-2020	Annual number of deaths (*de jure* population) by sex, age, and birth cohort	Lexis triangles: 0,1,…to 110+		74, 78

† The reference code is used in the raw data files (Input Database) to link data with sources.
TL=Lower triangle; TU=Upper triangle; VV=Period-cohort parallelogram; RV=Same as VV except also includes TL for the first age in the interval; max=maximum age attained; unk=deaths of unknown age
Note: Infant deaths for 1886-1955 and 1958-60 have been adjusted to include *présentés sans vie* (false stillbirths). For details, see Appendix II.

POPULATION

Period	Type of Data	Age Grouping	Comments	RefCode(s)†
1846	Census counts (*de facto* population) as of October 15th, by sex and age to 100+	0,1,…99,100+		21
1856	Census counts (*de facto* population) as of December 31st, by sex and age to 100+	0,1,…99,100+		21
1866	Census counts (*de jure* population) as of December 31st, by sex and age to 85+	0,1,…84, 85+		22
1880, 1890	Census counts (*de jure* population) as of December 31st, by sex and age to 100+	0,1,…99,100+		21

Period	Type of Data	Age Grouping	Comments	RefCode(s)†
1900, 1910	Census counts (*de jure* population) as of December 31st, by sex and age to 100+	0,1,…99,100+, unk		21
1920	Census counts (*de jure* population) as of December 31st, by sex and age to 85+	0,1,…84, 85+, unk		22
1930, 1947	Census counts (*de jure* population) as of December 31st, by sex and age to 100+	0,1,…99,100+, unk	unk (1930 only)	10, 20
1961	Census counts (*de jure* population) as of December 31st, by sex and age to 100+	0,1,…99,100+		11
1970	Census counts (*de jure* population) as of December 31st, by sex and age to 100+	0,1,…99,100+		12
1981	Census counts (*de jure* population) as of March 1st, by sex and age to 100+	0,1,…99,100+		19
1989-1990	Population estimates (*de jure*) as of January 1st, by sex and age to 100+	0,1,…99,100+	Since 1991, official population figures have been based on the national population register.	13
1991	Census counts (*de jure* population) as of March 1st, by sex and age to 100+	0,1,…99,100+	Census in 1991 was based on the national population register.	19
1992-2004	Population estimates (*de jure*) as of January 1st, by sex and age to 100+	0,1,…99,100+	Since 1991, official population figures have been based on the national population register.	2, 13, 23, 52
2005-2010	Population estimates (*de jure*) as of January 1st, by sex and age to 112+	0,1,…109,112+		65
2011-2020	Population estimates (*de jure*) as of January 1st, by sex and age to 112+	0,1,…109,112+	Starting in 2011, includes asylum-seekers	77

unk=population of unknown age

ANNUAL BIRTHS BY SEX

Period	Type of Data	Comments	RefCode(s)
1840-1885	De facto live births by sex	Counts exclude *présentés sans vie* (false stillbirths, or PSV)	3
1886-1894	De facto live births by sex		3
1895-1913	De facto live births by sex	corrected to include PSV	3, 16
1914-1918	De facto live births by sex	Counts exclude PSV	16
1919	De facto live births by sex	corrected to include PSV	16
1920-1953	De facto live births by sex		17
1954-2020	Resident live births by sex	Starting in 2011, includes asylum-seekers	17,18,14,24,63, 72, 76, 80

BIRTHS BY MONTH

Type of data: Annual live birth counts by month for the *de facto* population up to 1953 and for the *resident* population afterwards.

Period covered: 1900-2020

RefCode(s): 67, 68, 69,75, and 79.

APPENDIX II: ADJUSTMENTS TO THE ORIGINAL RAW DATA

As noted earlier, for some years we made adjustments to the original raw data. Specifically, for certain years, we adjusted for false stillbirths (*présentés sans vie*).

FALSE STILLBIRTHS

Counts of false stillbirths for 1886-1913 and 1919-1960 are included in the raw data [identified by *Area*=130]. Such data are not available for the period prior to 1886 or during 1914-18. After 1960, published birth and death counts include all live births.

LIVE BIRTHS

For 1895-1913 and 1919, we add the false stillbirths [*Area*=130] to the original birth counts [*Area*=110] to obtain complete live birth counts [Area=10]. Published birth counts for 1886-1894 and since 1920 already include false stillbirths.

INFANT DEATHS

For 1886-1913, 1919-55, and 1958-60, we add false stillbirths [*Area*=130] to the original infant death counts [*Area*=110, 120] to obtain complete death counts [*Area*=10, 20]. Published death counts for 1956-57 and after 1960 already include false stillbirths.

ORIGINAL DATA USED TO DERIVE ADJUSTED COUNTS

The table below describes the original data upon which the adjusted numbers are based. Although these data are included in the indicated raw data file, we use the adjusted figures described in Appendix I for HMD estimates.

BELTNPbirth.txt

Period	Type of Data	RefCode	Area Code
1886-1913, 1919-1955, 1958-1960	*Présentés sans vie* (PSV) by sex (i.e., false stillbirths)	38-43	130
1895-1913, 1919	Live births by sex; excludes false stillbirths	03, 16	110

BELTNPdeath.txt

Period	Type of Data	RefCode	Area Code
1886-1913,	Infant deaths (*Age*=0, *Lexis*=RR) by sex; excludes false stillbirths	26,30-33	110

1919-1924			
1925-1939	Infant deaths (*Age*=0, *Lexis*=RR) by sex; excludes false stillbirths	25, 26	120
1940	Infant deaths (*Age*=0, *Lexis*=RR) by sex; excludes false stillbirths	25	110
1941-1943	Infant deaths in the lower triangle (*Age*=0, *Lexis*=TL) by sex; excludes false stillbirths	1	110
1944-1955, 1958-1960	Infant deaths in the lower triangle (*Age*=0, *Lexis*=TL) by sex; excludes false stillbirths	1	120

Note: Area=110 covers the same territory as Area=10 except that false stillbirths are excluded. Similarly, Area=120 represents the same territory as Area=20 excluding false stillbirths.

APPENDIX III:
SPECIAL METHODS USED TO ACCOMMODATE GAP IN SERIES

The lack of availability of death counts for 1914-18 presents some difficulties for HMD calculations. First, this gap in the data series means that we cannot produce cohort life tables for Belgium even though the data series begins in 1841. The 1919 cohort cannot yet be considered extinct, while earlier cohorts are missing data for years during the gap.

Second, our method for splitting deaths in the open age interval relies on death counts from prior years to correct for cohort size (see Appendix C of the *Methods Protocol* for details). So, if we had a complete data series, we would normally use the data for 1914-18 in our procedure for splitting deaths for ages 100+ during 1919-29. Because those data are lacking, we use death counts prior to 1914 to adjust for cohort size under the assumption that migration/error during 1914-18 was similar for adjacent cohorts.

Third, the extinct cohort method for estimating population at ages 80+ relies on death counts from subsequent years. Therefore, in order to produce extinct cohort estimates for the period prior to 1914, we "fill in" the gap using the average number of deaths for 5-year period before and after the gap within each Lexis triangle:

$$D_L(x,t) = \frac{\sum_{i=1909}^{1913} D_L(x,i) + \sum_{i=1919}^{1923} D_L(x,i)}{10} \quad \text{and} \quad D_U(x,t) = \frac{\sum_{i=1909}^{1913} D_U(x,i) + \sum_{i=1919}^{1923} D_U(x,i)}{10}$$

where $D_L(x,t)$ and $D_U(x,t)$ represents deaths at age *x* in year *t* for the lower and upper triangles, respectively, $x = 80, 81, \ldots \omega$, and $t = 1914, 1915, \ldots 1918$. We can then calculate extinct cohort estimates as usual. It is important to note that we are not trying to estimate mortality during the gap, but rather population prior to the gap. We *do not* include these estimated deaths for 1914-18 in the HMD. Moreover, this procedure applies only to ages 80 and older, which should be less affected by war, migration, etc. than younger ages.

We tested this procedure using data for France, by replacing observed deaths in 1914-18 with estimates derived using the procedure described above. The hypothetical results demonstrate that this procedure has the biggest impact on population estimates just prior to gap. For 1913, death rates at ages 80 and older were 3-12% lower than the observed death rates in France. The effect on French life expectancy in 1913 was greatest for e80 (i.e., +0.3 years for females and +0.2 years for males versus results based on observed deaths); the effect on e0 was virtually nil. The estimates for France in years prior to 1913 were less affected.

Finally, we typically calculate population estimates below age 80 using intercensal survival, which incorporates an adjustment for migration/error. Because of the gap in the death series, we cannot use this method for the period between the 1910 and 1920 censuses. Working forwards from the census on December 31, 1910, we derive post-censal estimates for January 1, 1912, 1913, and 1914. Working backwards from the census on December 31, 1920, we produce pre-censal estimates for January 1, 1919

and 1920. Both sets of estimates assume zero migration during the respective post- and pre-censal periods (see the *Methods Protocol* for more details). Data from *Annuaire Statistique* (Ministère de L'Intérieur, various years) indicate that migration was minimal during the periods before and after World War I (less than 0.2% in 1905-1913 and 1919-1923).