

## **ABOUT MORTALITY DATA FOR FINLAND**

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### **GENERAL**

Finnish population and vital statistics are collected by Statistics Finland ([www.stat.fi](http://www.stat.fi)), an administration founded in 1865.

It has been possible, with some effort, to estimate the mortality surface for Finland back to 1751. Currently, however, the focus of the HMD is on the period since 1878, due to data reliability issues for the previous period. Therefore, the information provided here refers to this latter period only.

#### ***Source of Data***

Most of the Finnish population and death count data included in the Human Mortality Database (HMD) were obtained directly from Statistics Finland. Data on deaths for the years 1878–1980 and 1999–2002 were received in the form of paper copies of various statistical publications (Statistics Finland, 1879-2021a), which were scanned and computerized for this project. Data on deaths for the years 1981–1998 were received in the form of a single computer file. These data are assumed to have been compiled from various publications on vital statistics (Statistics Finland, 1879-2021a). Data on deaths for years 2003–2022 were received directly from Statistics Finland. They are also assumed to be consistent with the data published in Finnish vital statistics (Statistics Finland, 1879-2022a).

One of the problems in producing statistics on deaths is that there may be a significant delay between a death occurring and the receipt of the corresponding death certificate by the statistical office. Thus, some of the death certificates that are processed in the production of mortality statistics for the current year could refer to a death that in fact occurred during the previous year. In the computer file for years 1980–1998 such cases are not included. For years 1999-2009, death statistics from Statistics Finland for a given year of registration were identified by age, sex, and cohort (year of birth). No explicit year of occurrence was provided. Year of occurrence and Lexis shape were deduced using a method described in Appendix II. At least for recent years, Statistics Finland includes such cases in the current year's mortality statistics. For the years 1999–2022 the raw data (see above) include such deaths. In the years, 2010-2011, these late-registered deaths constitute a fraction of 0.2% or less of total deaths for a given year of occurrence. For years 2010-2022, death counts are provided with year of occurrence and Lexis shape can thus be explicitly attributed.

Population estimates for the years 1878–1995 were obtained directly from Statistics Finland, and should correspond to population estimates published in annual volumes on population structure. Population data for 1996–2022 come from annual publications of Statistics Finland.

For later years, population estimates were obtained directly from Statistics Finland, and they are consistent with officially published figures (Statistics Finland, 1879-2022b).

Birth data for the years 1859–2012 were obtained directly from Statistics Finland. Subsequent years were obtained from the public-access webpages of Statistics Finland.

### ***Specific Episodes in Finland's Demographic History***

Historical crude death rates for Finland are presented in Turpeinen and Kannisto (1997).

Figure 1 below is directly reproduced from this publication:

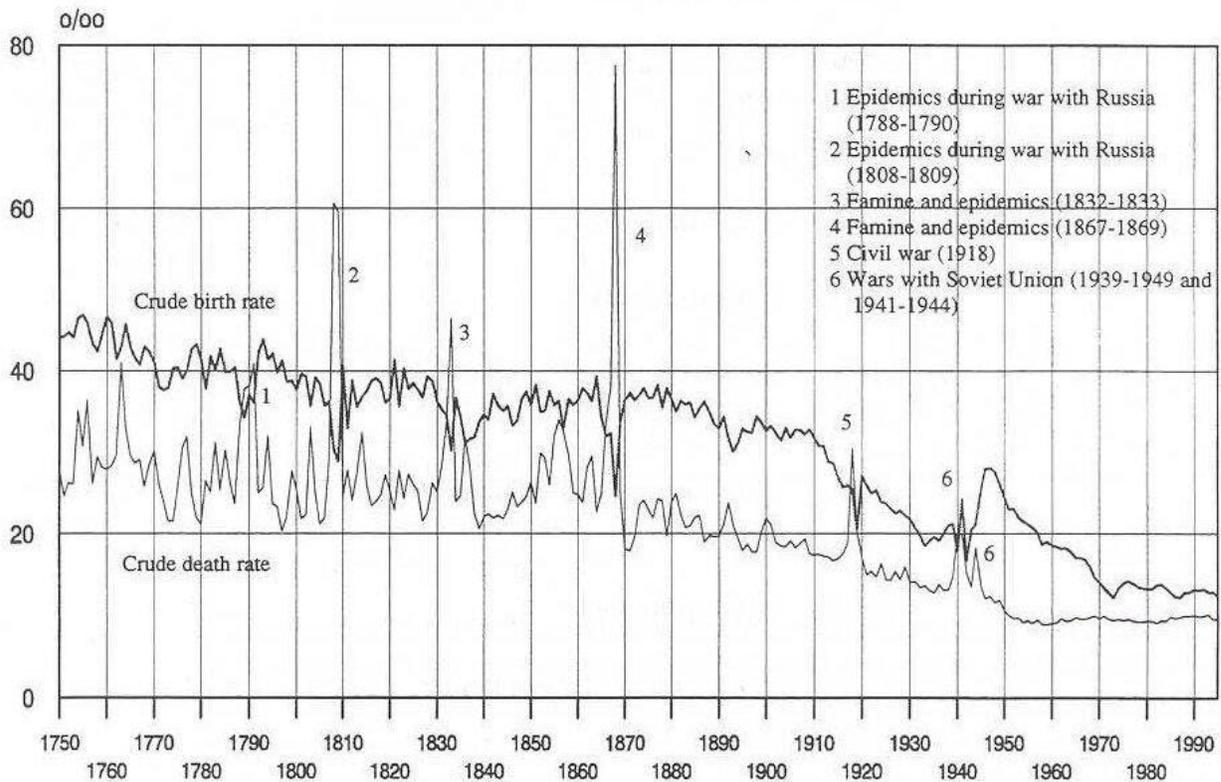


Figure 1: Births and deaths per 1000 population in Finland, 1750-1995. Source: Turpeinen and Kannisto (1997), figure 1.

It can be seen from this figure that the most severe mortality crisis during the period illustrated was the famine of 1866–1868. According to Turpeinen and Kannisto (1997): “the excess mortality of these years amounted to 8 percent of the population of the country”.

### **TERRITORIAL COVERAGE**

Prior to Finland independence in 1917, the country was under, first, Swedish (until 1809) and, then, Russian (1809-1917) rule. In 1920, a treaty was signed between Russia and Finland under which the northern area of Petsamo was incorporated into Finland while the previously Finnish districts of Repola and Porajärvi were ceded to Russia. Finland eastern border was again redefined in 1944, when the country had to further cede to the Soviet Union some additional territories (around Vyborg and Lake Ladoga as well as parts of Salla and Kuusamo in the North).

However, the entire Finnish population in these areas, which included some 400,000 people, was resettled in other parts of Finland so that statistical coverage of the population has remained unchanged.

## **POPULATION COUNT DATA**

### ***Coverage and Completeness***

According to Goyer and Draaijer (1992), population statistics have been collected in Finland since 1749, and prior to the establishment of modern censuses, data were collected in the form of parish and civil registers. These registers were updated annually and permanent immigrants were required to join a register. Registers were inventoried periodically (initially every three years, then every five years, and beginning in 1880 every ten years). Decennial tables produced from these inventories were published from 1880 to 1940. Although not a formal census, these inventories based on the population registers constituted “a form of indirect population census”.

A short description of the history of Finnish censuses is provided on the Statistics Finland website, at [http://www.stat.fi/tk/he/vaestolaskenta/vaestolask\\_historia\\_en.html](http://www.stat.fi/tk/he/vaestolaskenta/vaestolask_historia_en.html), whilst Goyer and Draaijer (1992) give a more detailed account of each census (starting with the first full national census in 1950), their content, quality, special features, and resulting publications. A key point to note is that the censuses of 1990, 1995, 2000 and 2010 were entirely register-based, meaning that they did not involve the completion of questionnaires by individuals or households, but were conducted by aggregation of data from the population registers.

## **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  $a_0$ , 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](http://v5.mortality.org) but will not be further updated in the future.

### ***Changes with the July 2020 revision:***

#### **Deaths:**

We realized that deaths of unknown ages in an open age interval 90 years and over for years 1939-1950 had not been properly been taken into account in previous version of the HMD data series. These deaths have now been included and, through the standard HMD procedure, they have been redistributed proportionately to the single-year of age distribution for deaths of exact age known at ages 90+ by Lexis triangle.

### ***Changes with the June 2022 revision:***

#### **Deaths:**

Deaths for 2012-2020 were updated with new figures and late registrations.

#### **Births:**

Births and births by months were checked against Human Fertility Database inputs. No differences exist for the matching years, but HMD series have been extended for years 1859-1864 to match the coverage of HFD.

### ***Changes with the May-June 2023 revision:***

#### **Deaths:**

Deaths for 2017-2021 were updated with late registrations of deaths and 2022 is introduced as new data.

## **ACKNOWLEDGEMENTS**

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## APPENDIX I:

### DESCRIPTION OF DATA USED FOR LEXIS DATABASE

#### DEATHS

Period	Type of Data	Age groups	Comments	RefCode(s) †
1878–1916	Annual number of deaths, by sex, single year of age (Lexis rectangles)	0,1,2...max		6
1917–1980	Annual number of deaths, by sex, single year of age, and birth cohort (Lexis triangles)	0,1,2...max		6
1939-1950	Annual number of deaths, by sex, single year of age, and birth cohort (Lexis triangles)	90+	Deaths from 90+ RR age group by sex and year for years 1939-1950 were redistributed proportionally to the single year of age 90 and above by sex and Lexis triangle.	75
1981–2022	Annual number of deaths, by sex, single year of age, and birth cohort (Lexis triangles)	0,1,2...max		3, 5, 7, 21, 25, 26, 29, 31, 33, 35, 38, 81, 85

† The reference code is used in the raw data files (Input Database) to link data with sources.

max=maximum age attained; unk=deaths of unknown age

#### POPULATION

Period	Type of Data	Age groups	Comments	RefCode(s)†
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1877–1939	Population estimates (as of December 31st)	0, 5...90+		18
1940–1960	Population estimates (as of December 31st)	0, 1...100+		17
1961–1969	Population estimates (as of December 31st)	0, 1...89+		17
1971–1995	Population estimates (as of December 31st)	0, 1...100+	1990 was the first modern register-based population estimate.	17
1996–2022	Population estimates (as of December 31st)	All ages by single year of age		8, 10, 12, 13, 14, 15, 16, 20, 22, 23, 27, 28, 34, 37, 40, 67, 71, 76, 80, 84

† The reference code is used in the raw data files (Input Database) to link data with sources.  
max=maximum age attained; unk=deaths of unknown age

## **BIRTHS**

Period	Type of Data	Comments	RefCode(s)
1859–2022	Annual live birth counts by sex		1, 4, 9, 24, 30, 32, 36, 39, 42, 69, 73, 78, 82, 86

## **BIRTHS BY MONTH**

**Type of data:** Annual live birth counts by month.

**Period covered:** 1859-2022

**Refcodes:** 2, 43-66, 70, 74, 79, 83, 87

## APPENDIX II: SPECIAL METHOD TO ACCOMMODATE FOR THE LACK OF INFORMATION ON YEAR OF OCCURRENCE (DEATHS FOR 1999-2009 AND FOR 2010-2012)

- For years 1999-2009, death statistics from Statistics Finland for a given year of registration were identified by age, sex, and cohort (year of birth). No explicit year of occurrence was provided. Year of occurrence and Lexis shape were deduced from the following score:

$$\text{Score} = (\text{Year of Registration}) - (\text{Year of Birth} + \text{Age}) + 1$$

With the following result:

Score (N)	Lexis Shape	Year of Occurrence
1	Lower Triangle (TL)	Year of Registration
2	Upper Triangle (TU)	Year of Registration
3+	Cohort-Parallelogram (VH)	Year of Registration – N + 1

Deaths with a score of 3+ (in cohort parallelograms) are equally split between the lower and upper triangles of two successive years, following the HMD methods protocol.

- For years 2010-2021, the mortality statistics from Statistics Finland for a given year of registration were identified by age, sex, cohort (year of birth), and year of occurrence. The Lexis triangle for each record could be explicitly reconstructed.