

HUMAN FERTILITY DATABASE DOCUMENTATION: SWEDEN

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1 General information

This report documents the Swedish data collected for the Human Fertility Database, namely age- and birth order-specific data on births in Sweden, data on births by calendar month, and data on number of women by age and parity (at the end of each year).

The data for Sweden to the Human Fertility Database contain information on:

- Number of (live) births by single years of age for single calendar years 1891–1969;
- Number of live births by age of the mother, mother's year of birth, and birth order for single calendar years 1970–2010;
- Number of women by age (one-year age groups) and parity for single calendar years 1969–2010 (end of the year);
- Monthly data on births for single calendar years 1911–2010.

2 Territorial coverage

In 2008 the population of Sweden amounted to 9.3 million people, of whom six percent were of foreign nationality and 13.8 percent were born in a country other than Sweden. The three largest groups of foreign-born people were persons from Finland, Iraq and the former Yugoslavia.

There have been some territorial changes in Sweden over the years. Until 1809, Finland was part of Sweden, and between 1814 and 1905 Sweden and Norway were in a union. Since 1905, the Swedish borders have not changed. The historical data provided to the Human Fertility Database that pertain to periods before 1905 apply to the same territorial definition of Sweden as is relevant today.

2.1 Data collection and availability

As early as 1749 Sweden started collecting statistical information about the annual number of births, deaths and the country's population by age and sex. This information was collected by *Tabellverket* (the Office of Tables), and was later transformed into Statistics Sweden. In

1860, the collection of data was reorganized; demographic data for subsequent years are very accurate.

During the period 1751–1775, censuses were conducted every third year, and during 1775–1860, every fifth year. Between 1860 and 1930 the censuses were conducted every 10 years, and thereafter every fifth year (with the exception of 1955, a year with no census). The last census in Sweden was conducted in 1990; thereafter Swedish statisticians have relied entirely on population registers to measure population change.

When the national civil registration system was computerized in 1968, Statistics Sweden received a copy of the civil registers and established its own register covering the total population. This register was named the Total Population Register (TPR) and it contains most of the data found in the civil registration. The register is updated daily, using data on changes in the registered population transferred electronically from the central civil register.

3 Swedish data in the Human Fertility Database

3.1 Birth count data, 1891–1969

For the period 1891–1969, data on births by calendar year and age of the mother are available for single-year categories. Age ranges are between 11 and 55 years.

Up to 1954, all deliveries, including still-births, are included in the data. Multiple deliveries are calculated as a single delivery. However, for the years 1911–1954, counts of live births by month are available. Based on these data, estimates of live births for the years 1891–1954 were generated. For the description of the method, see Appendix 2. From 1955 onwards, recorded births refer to all live-born children only.

Data up to 1950 are derived from the publication *Swedish Population History* (Statistics Sweden, 1976). Data after 1950 are derived from official publications on annual vital statistics and demographic change.

3.2 Birth count data and female population by parity, 1970–2010

In the late 1960s, the Swedish population-register systems were computerized. This made it possible to more readily produce further statistics on childbearing based on the longitudinal information available in the registers. From 1970 onwards we can therefore provide data on births and risk populations of women by parity, age in single-year age groups (13–55 years), birth cohort and calendar year. This allows for the specification of cohort as well as period fertility measures, and the coverage of data for all triangles of the Lexis diagram for these years. The data are processed from the Historic Population Register (HPR) that has been generated from the Total Population Register (TPR). Both registers are described in the section *Swedish Population Registers*.

Births refer to live-born children. Parity is a tabulated variable and refers to the total number of live births that the woman has previously given birth to. In case of multiple deliveries, each child is assigned a separate birth order.

Women at the end of each year from the period 1969–2010 are provided by age and parity.

In practice, it is possible to produce statistics on various other dimensions of fertility as well. Statistics Sweden publishes information on some of these dimensions in their annual series *Befolkningsförändringar*, which contains tabulations of annual vital statistics and population change in Sweden. Data on births by civil status of the woman, geographical residence, and migration status are covered. In general, the demand for birth statistics by civil status of

parents has decreased since the 1970s. Today this social category is less important than it once was. In contrast, demographic statistics by migration status and country of origin have gained in importance and coverage.

3.3 Monthly data on births 1911–2010

Monthly data on live births are available starting from the year 1911. The data for 1970 onwards are processed from the Historic Population Register (HPR) that has been generated from the Total Population Register (TPR). Data for the years before 1970 are derived from official publications on annual vital statistics and demographic change.

3.4 Definition of live birth

A live birth refers to a newborn child who after delivery was breathing or showed other signs of life, such as heartbeat, pulsations in the umbilical cord, or clear spontaneous movements of the skeletal musculature.

4 Swedish Population Registers

4.1 The Total Population Register (TPR)

When the national civil registration system was computerized in 1968, Statistics Sweden received a copy of the civil registers and established its own register covering the total population. This register was named the Total Population Register (TPR), and it contains most of the data found in the civil registration. The register is updated daily, using data on changes in the registered population transferred electronically from the central civil register.

In recent years, some new registers have been created on the basis of TPR data. The most important are the Multi-Generation Register and the Historic Population Register, which are mainly used for medical and demographic research and analysis.

4.2 The Historic Population Register (HPR)

There has been a need to facilitate the use of historical data and to make longitudinal studies easier. Therefore, a Historic Population Register (HPR) has been created by integrating the annual stock and flow registers and organizing data into an easily accessible database. All individuals who have been entered in the national civil population register of Sweden at any time since 1969 can be studied by means of the HPR. When it comes to registered births, the HPR differs slightly from the TPR in that late announced births are added to the HPR.

Acknowledgements

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Data sources

1. Statistics Sweden (1976). *Swedish Population History*. Urval No 8.
2. Official Annual Reports on Vital Statistics and Demographic Change: *Befolkningsrörelsen*, 1911-1960; *Folkmängdens förändringar*, 1961-1966; *Befolkningsförändringar (del 3)*, 1967-1969.
3. Extracts of annual register counts from the Historic Population Register. Statistics Sweden.

**APPENDIX 1
DESCRIPTION OF DATA USED FOR LEXIS DATABASE**

BIRTHS

Period	Type of data	Age scale	Birth order	RefCode(s)
1891-1969 ¹	Annual number of live births by age of mother (Lexis squares)	11,12,...,54,55, unknown	total	1, 2
1970-2010 ²	Annual number of live births by age of mother, mother's year of birth and birth order (Lexis triangles)	12,13,...,54,55	1,2,...14,15	3
1911-2010	Annual number of live births by month	total	total	2, 3

¹ For the years 1891–1954, birth counts by age were originally available for all births, including still-births. Estimates of live births were generated using the method described in Appendix 2.

² Total numbers of births by age of the mother in the period of 1970-2010 were computed on the basis of order-specific birth data, which are assumed to cover all births that occurred in the given years.

FEMALE POPULATION: Distribution by age and parity

Period	Type of data	Age scale	Year of birth, range	Parity	RefCode(s)	Notes
31.12.1969-2010	Women by age and parity	10, 11,..., 54, 55	1914-1993	0, 1,..., 17, 18	3	The first year is used as the 'Golden' census

FEMALE POPULATION: Exposure by age and year of birth

Female exposure population by calendar year, age, and year of birth (Lexis triangles) is estimated using data on population size and deaths from the Human Mortality Database, which is available at <http://www.mortality.org> or <http://www.humanmortality.de>.

APPENDIX 2 ADJUSTMENT OF ALL BIRTHS TO LIVE BIRTHS

For the years 1891 – 1954, birth counts by age are available only for all births and not for live births. However, for the years 1911-1954, counts of live births by month are available and so the total number of live births in the year may be determined.

In order to estimate the number of live births by age $B^*(x,t)$ for the years where total counts of both live $B(t)$ and all $B^A(t)$ births are available, we therefore calculate the ratio $r(t)$ of live births to all births for the year using equation 1 and then multiply the counts of births by age $B^A(x,t)$ by this ratio to produce the estimate (equation 2).

For years where no total number of live births is available, the mean ratio $\overline{r(t)}$ of live births to all births by year is used (equation 3), calculated from all years where both are known (i.e. 1911-1954).

Note that this correction may result in a non-integer estimate of the number of live births by age.

$$r(t) = \frac{B(t)}{B^A(t)} \quad (1)$$

$$B^*(x,t) = r(t) \cdot B^A(x,t) \quad (2)$$

$$B^*(x,t) = \overline{r(t)} \cdot B^A(x,t) \quad (3)$$