

HUMAN FERTILITY DATABASE DOCUMENTATION: FINLAND

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1 General information

This report documents Finnish data collected for the Human Fertility Database project, namely age- and birth order-specific data on births, data on births by calendar month, and data on population exposures (women by age and the number of live-born children). The Human Fertility Database (HFD) for Finland is based on the official data on birth counts published in vital statistics publications and population structure publications.

Data used in producing the HFD output are specified in Appendix 1.

1.1 Territorial coverage

Finland, which was constituted as an independent republic in 1917, has not experienced any changes to its state borders since 1945. These borders were established after Finland lost the Winter and the Continuation Wars with the Soviet Union over the course of World War II. Finland had to cede a portion of Karelia and of Northern Finland to the Soviet Union. As a result, approximately 430,000 people were forced to move from these ceded areas to other parts of Finland.

1.2 Data collection and availability

The origins of statistical organization in Finland date back to the mid-18th century, when Finland was under Swedish rule and the *Tabellverket* (Tables Office) was set up in Sweden for the purpose of keeping population statistics. This marked the beginning of the world's longest, continuously maintained set of population statistics. An independent Central Statistical Office of Finland (Tilastollinen Päätoimisto) was founded on 4 October 1865, while Finland was an autonomous Grand Duchy of the Russian Empire. The work of the Statistical Office continued uninterrupted after Finland gained independence in 1917.

In 1971 the Central Statistical Office was renamed Statistics Finland (*Tilastokeskus*).

2 Birth count data

All birth data included in the HFD originate from the official vital statistics and population structure publications or databases. Different kinds of birth data cover different calendar periods. This has to do with tabulation practices of the time. Finland has a very long time series of monthly data on births, extending over the period 1878-2015. Live births by the age of the mother (or, alternatively, by the mother's year of birth) are available from 1939 onwards. From 1939 to 1981, the tabulations of live births by the age of the mother and by birth order were made separately for marital and non-marital births. Thus, data on births by the age of the mother and by the true (biological) birth order do not become available until

1982¹, while data on births by the age of the mother (without birth order) are available from 1939 onwards.

The range of birth order in the birth tabulations varies substantially from year to year. For example, in 1939 the last category is “17-21”², while in 2008, the last category is “8+”.

Table 1: Data on births by age of the mother and/or the mother’s year of birth; and, when available, by birth order provided to the HFD

Period	Age of mother	Birth order (biological)	Lexis element	Data source***
1939–1944*	14/15, 16...53/54/55, unknown	NA	Square	7, 8
1945–1981**	12, 13...51, 52+	NA	Square	8 to 11
1982–1986	13/14, 15...48, 49/50	1, 2...9, 10+, unknown	Square	12 to 14
1987–1999	12, 13...50, 51+	1, 2...7, 8+, unknown	Square	15 to 17
2000–2007	12/13/14, 15...48, 49/52/54/55	1, 2...7, 8+	Square	17
1975–1996	12/13, 14...47, 48/49/50/51/52	NA	Triangle	10 to 16
1997–2007	13/14, 15...48, 49/50/51/52	NA	Triangle	17
1987-2015	12, 13,..., highest age recorded	1, 2,...,highest birth order recorded, unknown	Triangle	20-24

* These data were obtained by adding up marital and non-marital births tabulated by the age of the mother.

** There were some births of unknown age in the period before 1969. They were distributed proportionally across all known age categories.

*** Data sources behind these numeric codes are listed at the end of the document.

3 Population count data

The annual age structure of women is taken from the Human Mortality Database (www.mortality.org).

The distribution of women by the number of live-born children is available for the period 1986-2015 from the tables in Population Structure publications.

One piece of history concerning data on the number of children is worth mentioning in this context. The Central Population Register — now called the Population Information System — was established in 1969. This system is maintained by the Population Register Centre and by local register offices. Prior to the implementation of the Population Information System, only those children who still lived at home were registered on their mother's and father's records. Thus, only since the beginning of the 1970s have all live-born children been linked to their mothers, and vice versa. This means, for example, that women who were 72 years old at year-end 2007 were 37 in 1972, or at an age or family phase when almost all their children still lived at home. But note that if the child had died in 1960s, her or his record would still be missing from the system.

In publications, the data on the number of live-born children is tabulated up to 10+ children.

¹ Previous research on cohort reproductive patterns in Finland provides estimates on cohort childlessness for the cohorts born between 1930 and 1960 based on birth order data obtained by combining data for marital and non-marital births for the period 1939-1981. However, combining the two datasets did not sum up to the total number of biological births by birth order. As a result, a possible discontinuity between the HFD cohort estimates, which use data on biological birth order (1982-2009) and previously published ones could occur.

² Please note that before 1982 birth order was registered within current marriage.

4 Specific details

4.1 Definitions of live birth

At least as far back as 1950, Finland followed the conventional WHO definition of a live birth, according to which a live birth is the complete expulsion or extraction of a product of conception from its mother, irrespective of the duration of pregnancy, which, after separation, breathes or shows any other evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles, whether or not the umbilical cord has been cut or the placenta is attached; each product of such a birth is considered live-born (World Health Organization. Technical Report Series 1950: 25). Prior to the adoption of the WHO definition, the definition of a live birth was not as precise. There was a time when a live birth simply referred to a newborn who showed “signs of life” after birth. Later, this expression “signs of life” was classified more exactly: a live-born infant was a term used to refer to a newborn who was breathing and showed other signs of life after birth.

When considering these definitions of a live birth, it is important to keep in mind where in Finland deliveries took place before 1950. At the end of 19th century, about 96% of all deliveries were home births. Of these, only about 20% were assisted by midwives. A quarter of a century later, in 1925, the percentage of all women who gave birth in maternity hospitals or who were assisted by a professional midwife was still only 53%. Over the following decades, the shift away from home births was rapid: by 1950, over 90% of women gave birth in maternity hospitals. Given these figures, it is natural to assume that the concept of live birth must have been quite simple in the past. The same also holds for the definition of a stillbirth. But the dividing line between stillbirth and miscarriage is difficult to identify before most deliveries took place in maternity hospitals (Fougstedt 1941).

4.2 Stillbirth

At the beginning of the 1930s, there was no official definition of a stillbirth in Finland. In principle, however, Finland had the same definition that was used in Denmark and Norway at that time: A stillborn child is a fetus or a newborn that shows no signs of life after delivery, or is born dead after a pregnancy lasting at least 28 weeks. This definition was included in a presentation given by Gunnar Fougstedt in 1941 on Finnish birth statistics that were revised in 1939 (Fougstedt 1941). This definition remained valid throughout the first decade of the revised birth statistics.

In early 1951, the Statistical Office sent a letter to all bodies in charge of collecting statistics on vital events. As well as providing general instructions on recordkeeping, this letter contained a definition of stillbirth: A stillborn is a fetus that shows no signs of life, and whose birth weight is at least 600g (Kiertokirje kirkkoherranvirastoille 1951, Kuolemansyyt 1955).

This definition was modified in 1969. The duration of the pregnancy was added to the previous definition: A pregnancy had to last at least six months, and the birth weight had to be at least 600g (Väestönmuutokset 1969). From 1975 to 1986, the following definition was used: A stillborn is a newborn who is born dead after a pregnancy lasting at least 28 weeks (Väestönmuutokset 1975, Väestörakenne ja väestönmuutokset 1986).

From 1987 to 1996, a stillborn was considered to be a fetus or a newborn that shows no signs of life after a delivery, which is born dead after a pregnancy lasting 22 weeks or more, or has a birth weight of at least 500g. From 1997 to 2002, the definition was slightly modified to match the WHO's definition: A stillborn is a newborn with no signs of life with a birth weight of at least 500g, or, if the birth weight is not available, a newborn born dead after a pregnancy lasting 22 weeks or more. Since 2003, the definition applied in 1987-1996 has been used again (Väestönmuutokset 1996, 1997 and 2007).

4.2 Marital live birth

A child born in wedlock is a marital child. Before 1982, a widowed or a divorced woman could also give birth to a marital child if the pregnancy began while the woman was still married. From 1982 onwards, a widowed, but not a divorced woman could give birth to a marital child if the pregnancy began while the woman was still married.

4.3 Age

In Finnish birth statistics, the age of the mother is the age in completed years at the time of birth. The distribution of women by age and the number of children ever born is taken from population structure statistics. This age refers to the age of the women in full years on the last day of the year.

4.4 Birth order

Between 1939 and 1981, marital birth order contained all children born in a valid marriage, also including stillbirths. Meanwhile, non-marital birth order was calculated from all the mother's non-marital births, including stillbirths (Ohjeita syntyneisyystilastosta). Since 1982, annual tabulations for birth order have been made regarding all biological births. Therefore, the HFD includes order-specific data on births only from 1982 onwards.

4.5 Cases with unknown birth order

The issue of unknown cases of birth order was only problematic in the first year after the birth statistics were renewed. In 1939, the child's birth order was unknown for 24% of all marital births and for 28% of all non-marital births. In the following year, the number of cases of unknown birth order dropped dramatically, to 0.3% for marital births and to 0.7% for non-marital births. Levels remained similarly low thereafter, and eventually tapered off to just a few cases.

5 Revision history

Update 17.02.2016:

Due to a refinement of the HFD method there are minor changes to the redistribution of late registered births (we switched from 50/50 to proportional splitting). These changes are negligible, as the share of late registered births is very small.

Update 15.02.2017:

Data for years 2013-2015 added. In addition, information on births by month for the years 1878-1899 has been included, which has minor effects on population exposures at high childbearing ages in the period 1939-1950.

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References

- Ohjeita syntyneisyystilastosta. Tilastollinen Päätoimisto. Helsingissä, lokakuun 18 p:nä 1939 (Guidelines for Birth Statistics, 1939).
- Fougstedt, Gunnar (1941): Suomen uudistettu syntyneisyystilasto. Kansantaloudellinen aikauskirja. XIII (XXXVII) vuosikerta 1941. Helsinki 1941. (Renewed Finnish Birth Statistics, Article in Journal of National Economy 1941).
- Kiertokirje kirkkoherranvirastoille (ohjeita väestönmuutostilastoista). Tilastollinen Päätoimisto, Helsinki joulukuun 14 p:nä 1951. (Circular letter to Vicars' Offices; guidelines for vital statistics).
- Kuolemansyyt 1955, SVT VI B 112 (Causes of Death 1955).
- Väestönmuutokset 1966 SVT VI A:127 (Vital Statistics 1966).
- Väestönmuutokset 1969 SVT VI A: 131 (Vital Statistics 1969).
- Väestönmuutokset 1975 SVT VI A:138. (Vital Statistics 1975).
- Väestörakenne ja väestönmuutokset 1986, osa1. SVT VI A:153. (Population Structure and Vital Statistics 1986).
- Väestörakenne ja väestönmuutokset 1987 SVT: Väestö1990:7. (Population Structure and Vital Statistics 1987).
- Väestönmuutokset 1996, SVT: Väestö 1997:12 (Vital Statistics 1997).
- Väestönmuutokset 1997, SVT Väestö: 1998:12 (Vital statistics 1997)
- Väestönmuutokset 2007, SVT Väestö: 2009 (Vital statistics 2007).
- World Health Organization, Technical report series, No. 25, p. 12.

Data sources

1. 1900-1906: SVT VI 34, 36, 38, 40. Väkiluvun-tilastoa. Yleiskatsaus väkiluvun muutoksiin Suomessa vuonna 1900-1906, Helsinki 1903, 1905, 1906, 1908. Taulukko 10. Elävänä syntyneitä kunakin kuukautena vuonna 1900-1906. s. 56-58 (58-60) ja 150-152 (156-158). (Official Statistics of Finland VI 34, 36, 38, and 40. Table 10: Live births by month 1900-1906. p 56-58 (58-60) and 150-152 (156-158).)
2. 1907-1918: SVT VI 42, 43, 46, 49, 52, 53. Väestötilastoa. Väkiluvun muutokset Suomessa vuosina 1907-1918. Helsinki 1913-1921. Taulukko 10. Elävänä syntyneitä sukupuolen, avioisuuden ja uskontunnustuksen mukaan kuukausittain 1907-1918. (Official Statistics of Finland VI 42, 43, 46, 49, 52, 53. Helsinki 1913-1921. Table 10: Live births by sex, legitimacy, confession, and month 1907 -1918.)
3. 1919-1920: SVT VI 59. Väestötilastoa. Väestönmuutokset vuosina 1919 ja 1920. Helsinki 1923. Taulukko 10. Elävänä sekä kuolleena syntyneet sukupuolen ja avioisuuden mukaan kuukausittain 1919 ja 1920. s. 45 ja 111. (Official Statistics of Finland VI 59. Table 10: Live births and stillbirths by sex, legitimacy, and month 1919 and 1920. p. 45 and 111.)
4. 1921-1925: SVT VI 57, 60, 62-64. Väestötilastoa. Väestösuhteet vuonna 1921-1925. Helsinki 1923-1926. Elävänä syntyneet avioisuuden mukaan kuukausittain (Official Statistics of Finland VI 57, 60, 62-64. Live births by legitimacy and month 1921-1925.)
5. 1926-1930: SVT VI 75. Väestötilastoa. Väestönmuutokset 1926-1930. Helsinki 1933. Taulukko 17. Elävänä ja kuolleena syntyneet sukupuolen, avioisuuden ja uskontokunnan mukaan, kuukausittain, vuosina 1926-1930. s. 330-334. (Official Statistics of Finland VI 75. Table 17: Live births and stillbirths by sex, legitimacy, denomination, and month 1926-1930. p 330-334.)
6. 1931-1938: SVT VI 79, 82, 85, 95. Väestötilastoa. Väestönmuutokset vuosina 1931-1938. Helsinki 1934, 1936, 1938. Taulukko 8. Elävänä ja kuolleena syntyneet sukupuolen, avioisuuden ja uskontokunnan mukaan, kuukausittain, vuosina 1931-1938. (Official Statistics of Finland VI 79, 82, 85, 95. Table 8: Live births and stillbirths by sex, legitimacy, denomination, and month 1931-1938.)
7. 1939-1940: Väestönmuutokset vuosina 1939-1940, Suomen Virallinen Tilasto VI, Väestötilastoa 96, Helsinki 1944. Taulukko 8. Elävänä ja kuolleena syntyneet sukupuolen ja avioisuuden mukaan, kuukausittain, vuosina 1939-1940. s. 31 ja 89, taulukko 15:

- Elävänä ja kuolleena syntyneet äidin iän ja lapsen järjestysluvun mukaan, s. 36-37 ja 94-95. (Vital statistics in 1939-1940, Official Statistics of Finland VI 96. Table 8: Live births and stillbirths by sex, legitimacy, and month 1939-1940. p. 31 and 89. Table 15: Live births and stillbirths by age of mother and birth order, pp. 36-37 and 94-95.)
8. 1941-1954: Väestönmuutokset vuosina 1941-1954, Suomen Virallinen Tilasto VI A, Väestötillasto 102-112, Helsinki 1949-1956. Taulukko 10 (15,16): Elävänä ja kuolleena syntyneet sukupuolen ja avioisuuden mukaan, kuukausittain, vuosina 1941-1954. Taulukko 14 (17,18): Elävänä ja kuolleena syntyneet äidin iän ja lapsen järjestysluvun mukaan. (Vital statistics in 1941-1954, Official Statistics of Finland VI 102-112. Table 10: Live births and stillbirths by sex, legitimacy, and month 1941-1954. Table 14: Live births and stillbirths by age of mother and birth order.)
 9. 1955-1974: Väestönmuutokset 1955-1974, Suomen Virallinen Tilasto VI A 113-137, Helsinki 1957-1977. Taulukko 28 (29-33, 23): Elävänä ja kuolleena syntyneet äidin iän ja lapsen järjestysluvun mukaan. Taulukko 30 (31-36): Elävänä ja kuolleena syntyneet sukupuolen ja avioisuuden mukaan, kuukausittain, vuonna 1955-1974. (Vital statistics in 1955-1974, Official Statistics of Finland VI A 113-137. Helsinki 1957-1974. Table 28 (29-33, 23): Live births and stillbirths by age of mother and birth order. Table 30 (31-36): Live births and stillbirths by sex, legitimacy, and month 1955-1974.)
 10. 1975: Väestönmuutokset 1975, Suomen Virallinen Tilasto VI A 138, Helsinki 1978, taulukko 31: Elävänä ja kuolleena syntyneet avioisuuden, äidin iän ja lapsen järjestysluvun mukaan 1975, s. 54-55, taulukko 34. Elävänä syntyneet avioisuuden, äidin syntymävuoden, iän ja siviilisäädyn mukaan 1975, s. 56-57, taulukko 36. Elävänä ja kuolleena syntyneet avioisuuden ja sukupuolen mukaan kuukausittain vuonna 1975, s. 58. (Vital statistics in 1975, Official Statistics of Finland VI A 138, table 31: Live births and stillbirths by legitimacy, age of mother, and birth order, pp. 54-55, table 34: Live births by legitimacy, year of birth, age and marital status of mother 1975, pp. 56-57, table 36: Live births and stillbirths by legitimacy, sex, and month 1975, p. 58.)
 11. 1976-1981: Väestö 1976-1981 Osa I, Väestörakenne ja väestönmuutokset, Koko maa ja läänit. Suomen Virallinen Tilasto VI A 140-146, Helsinki 1978-1983, taulukko 32 (33, 37, 38, 45, 46): Elävänä ja kuolleena syntyneet avioisuuden, äidin iän ja lapsen järjestysluvun mukaan 1976-1981, taulukko 35 (36, 40, 41, 48, 49): Elävänä syntyneet avioisuuden, äidin syntymävuoden, iän ja siviilisäädyn mukaan 1976-1981, taulukko 38 (39, 43, 44, 45, 46): Elävänä ja kuolleena syntyneet avioisuuden ja sukupuolen mukaan kuukausittain vuonna 1976-1981. (Population 1976-1981, Volume I, Structure of Population and Vital Statistics. Whole country and provinces. Official Statistics of Finland VI A 140-146, table(s) 32 (33, 37, 38, 45, 46): Live births and stillbirths by legitimacy, age of mother, and birth order 1976-1981, table 35 (36, 40, 41, 48, 49): Live births by legitimacy, year of birth, age and marital status of mother 1976-1981, table 38 (33, 37, 38, 45, 46): Live births and stillbirths by legitimacy, sex, and month 1976-1981).
 12. 1982-1985: Väestö 1982-1985 Osa I, Väestörakenne ja väestönmuutokset, Koko maa ja läänit. Suomen Virallinen Tilasto VI A 148-151, Helsinki 1984-1987, taulukko 50 (43, 46, 42): Elävänä syntyneet avioisuuden, äidin iän ja lapsen järjestysluvun mukaan sekä kuolleena syntyneet avioisuuden ja äidin iän mukaan 1982-1985, taulukko 53 (45, 49, 45): Elävänä syntyneet avioisuuden, äidin syntymävuoden, iän ja siviilisäädyn mukaan 1982-1985, taulukko 57 (51, 55): Elävänä ja kuolleena syntyneet kuukausittain vuonna 1982-1985. (Population 1982-1985, Volume I, Structure of Population and Vital Statistics. Whole country and provinces. Official Statistics of Finland VI A 148-151, table 50 (43, 46, 42): Live births by legitimacy, age of mother, and birth order and stillbirths by legitimacy and age of mother 1982-1985, table 53 (45, 49, 45): Live births by legitimacy, year of birth, age and marital status of mother 1982-1985, table 57 (51, 55): Live births and stillbirths by month 1982-1985.)
 13. 1986-2009: Väestönmuutokset 1997, 2008, 2009 Suomen Virallinen Tilasto, Väestö 1998, 2010 Helsinki 1999, 2008, 2009 taulukko 2.03: Elävänä syntyneet kuukausittain 1986-2009, s. 65, 74. (Vital Statistics 1997, 2008, 2009. Official Statistics of Finland, series Population 1998, 2010. Table 2.03: Live births by month 1986-2009, p. 65 and 74.)
 14. 1986: Väestö 1986 Osa I, Väestörakenne ja väestönmuutokset, Koko maa ja läänit. Suomen Virallinen Tilasto VI A 153, Helsinki 1988, taulukko 44. Elävänä syntyneet

- avioisuuden, äidin syntymävuoden, iän ja siviilisäädyn mukaan 1986, s. 58-59, taulukko 47: Elävänä syntyneet avioisuuden, äidin iän ja lapsen järjestysluvun mukaan sekä kuolleena syntyneet avioisuuden ja äidin iän mukaan 1986, s. 60.(Population 1986, Volume I, Structure of Population and Vital Statistics. Whole country and provinces. Official Statistics of Finland VI A, table 44: Live births by legitimacy, year of birth, age and marital status of mother 1986, pp. 58-59, table 47: Live births by legitimacy, age of mother, and birth order and stillbirths by legitimacy and age of mother 1986, p. 60.)
15. 1987-1988: Väestörakenne ja väestönmuutokset 1987, 1988. Väestö 1990 (1991):7, Suomen Virallinen Tilasto, Helsinki 1990, 1991, taulukko 45 (39). Elävänä syntyneet avioisuuden, äidin syntymävuoden, iän ja siviilisäädyn mukaan 1987-1988, taulukko 48 (41): Elävänä syntyneet avioisuuden, äidin iän ja lapsen järjestysluvun mukaan sekä kuolleena syntyneet avioisuuden ja äidin iän mukaan 1987-1988. (Structure of Population and Vital Statistics 1987, 1988. Population 1990 (1991):7, Official Statistics of Finland, table 45 (39): Live births by legitimacy, year of birth, age and marital status of mother 1987-1988, table 48 (41): Live births by legitimacy, age of mother, and birth order and stillbirths by legitimacy and age of mother 1987-1988.)
 16. 1989-1996: Väestönmuutokset 1989-1996. Väestö 1992-1997, Suomen Virallinen Tilasto, Helsinki 1992-1997, taulukko 35 (38, 49). Elävänä syntyneet avioisuuden, äidin syntymävuoden, iän ja siviilisäädyn mukaan 1989-1996, taulukko 39 (42, 53): Elävänä syntyneet äidin iän ja lapsen järjestysluvun mukaan sekä kuolleena syntyneet äidin iän mukaan 1989-1996. (Vital Statistics 1989-1996. Population 1992-1997, Official Statistics of Finland, table 35 (38, 49): Live births by legitimacy, year of birth, age and marital status of mother 1989-1996, table 39 (42, 53): Live births by age of mother and birth order and stillbirths by age of mother 1989-1996.)
 17. 1997-2007: Väestönmuutokset 1997-2007. Väestö 1998-2008, Suomen Virallinen Tilasto, Helsinki 1999-2008, taulukko 2.09 (2.10). Elävänä syntyneet äidin syntymävuoden, iän ja siviilisäädyn mukaan 1997-2007, taulukko 2.10 (2.11): Elävänä syntyneet äidin iän ja äidin kaikista lapsista lasketun järjestysluvun mukaan sekä lapsen sukupuolen mukaan 1997-2008. (Vital Statistics 1997-2007. Population 1998-2008, Official Statistics of Finland, table 2.09 (2.10): Live births by mother's year of birth, age, and marital status 1997-2007, table 2.10 (2.11): Live births by age of mother, birth order of child calculated from mother's all children and by sex of child 1997-2007.)
 18. 1986-1988: Väestörakenne ja väestönmuutokset 1986-1988. Julkaisematon taulukko 30: 15 vuotta täyttäneet naiset iän ja elävänä syntyneiden lasten määrän mukaan 31.12.1986-1988. (Population Structure and Vital Statistics 1986-1988. Unpublished table 30: Females aged 15 and over by number of live-born children 31.12.1986-1988.)
 19. 1989-1995: Väestörakenne 1989-1995. Väestö 1990-1996, Suomen Virallinen Tilasto, Helsinki 1990-1996, taulukko 23 (24A, 27): 15 – 54(55-60)-vuotiaat naiset iän ja elävänä syntyneiden lasten määrän mukaan 31.12.1990-1995. (Population Structure 1989-1995. Population 1990-1996, Official Statistics of Finland, table 23 (24A, 27): Females aged 15 – 54(55-60) by number of live-born children 31.12.1989-1995.)
 20. 1996-2009: Väestörakenne 1996-2009. Väestö 1997-2010, Suomen Virallinen Tilasto, Helsinki 1997-2010, taulukko 31 (30, 27, 26, 19): 15 – 61(62-74)-vuotiaat naiset iän ja elävänä syntyneiden lasten määrän mukaan 31.12.1996-2009. (Population Structure 1996-2009. Population 1997-2010, Official Statistics of Finland, Helsinki 1997-2010, table 31 (30, 27, 26, 19): Females aged 15 – 61(62-74) by number of live-born children 31.12.1996-2009.)
 21. 1987-2009: Statistics Finland. Live births by age of the mother, mother's year of birth, and birth order, 1987-2009. Tabulations produced using individual-level vital statistics data. Unpublished data, received by email from Timo Nikander (Statistics Finland).
 22. 2010-2011: Live births by age of the mother, mother's year of birth, and birth order, live births by month, distribution of women by age and parity, 2010-2011. Tabulations produced using individual-level vital and population statistics data. Unpublished data, received by email from Timo Nikander (Statistics Finland) on 08.11.2012.
 23. 2012-2014: Live births by age of the mother, mother's year of birth, and birth order, live births by month, distribution of women by age and parity, 2012-2014. Tabulations

produced using individual-level vital and population statistics data. Unpublished data, received by email from Timo Nikander (Statistics Finland) on 04.09.2015.

24. 2015: Live births by age of the mother, mother's year of birth, and birth order, live births by month, distribution of women by age and parity, 2015. Tabulations produced using individual-level vital and population statistics data. Unpublished data, received by email from Timo Nikander (Statistics Finland) on 24.01.2017.

25. 1878-1899: Live births by month. SVT (Suomen Virallinen Tilasto). Suomenmaan Tilastollinen Vuosikirja 1880-1902 (volumes 2-23). Helsinki. [Official Statistics of Finland. Statistical Yearbook of Finland. Helsinki.]

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

BIRTHS

Period	Type of data	Age range	Birth order	RefCode(s)
1939-1944	Annual number of live births by age of mother (Lexis squares)	14/15, 16...53/54/55, unknown	–	7,8
1945-1974	Annual number of live births by age of mother (Lexis squares)	12, 13...51, 52+	–	8,9
1975-1986*	Annual number of live births by age of mother and mother's year of birth (Lexis triangles)	12/13, 14...47, 48/49/50/51/52	–	10 to 16
1982-1986	Annual number of live births by age of mother and birth order (Lexis squares)	13/14, 15..48, 49/50	1, 2,..., 9, 10+, unknown	12 to 14
1987-2015**	Annual number of live births by age of mother, mother's year of birth and birth order (Lexis triangles)	lowest age,..., highest age	1, 2,...,highest parity, unknown	20 to 24
1878-2015	Annual number of live births by month	–	–	1 to 13, 22 to 25

* Births of unknown age were distributed proportionally across all known age categories.

** The data classified by Lexis triangles allow for identification of late-registration births. These births are moved to the years of their actual occurrence in the HFD outputs.

FEMALE POPULATION: Distribution by age and parity

Period	Type of data	Age range	Year of birth, range	Parity	RefCode(s)	Notes
31.12.1986-31.12.2012	Number of women by age and parity	15, 16,..., *	–	0,1,..., 9, 10+	18 to 20, 22, 23	First year is used as the 'golden' census
31.12.2013-31.12.2015	Number of women by age and parity	15, 16,..., *	–	0,1,..., highest parity	23 to 24	

* Upper bound of the age range moves up from 106 to 108 between 1986 and 1988, and from 54 to 80 between 1989 and 2015.

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>.