



## **Human Fertility Database: Protocol for two countries**

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### **1 General information**

The Human Fertility Database, HFD, is a joint project of the Max Planck Institute for Demographic Research (MPIDR) and the Vienna Institute of Demography (VID), which aims to fill the gaps in fertility data availability and comparability. The main goal of the database is to document changes and inter-country differences in fertility in the past and in the modern era. We aim to provide open and user-friendly access to detailed and high-quality data on the period and cohort fertility to the international research community and other interested users. Following the example of the Human Mortality Database (HMD, [www.mortality.org](http://www.mortality.org)), our guiding principles are comparability, flexibility, accessibility and reproducibility. The HFD is in part supported by the EU 7th framework project, funded under the “Socio-economic sciences and humanities” theme, Grant Agreement: SSH-2007-3.1.2- 217173 (REPRO). The main support to the HFD is provided by its founding institutions, MPIDR and VID, from their own internal funds. The REPRO project mainly contributed to the initialisation of the work on the HFD and to checking, testing, and documenting the data for Austria, the Czech Republic, and, in part, also for Slovakia.

The HFD Project includes two principal parts, the Human Fertility Database (HFD) and the Human Fertility Collection (HFC). The HFD will be entirely based on one and the same type of initial data: the original, officially registered, birth counts by calendar year, age (and/or birth cohort) of mother and (whenever possible) biological birth order. These data, together with the exposure population estimates taken from the HMD, selected population censuses and register data will be used for further computations by the uniform set of methods. The major HFD output will include detailed fertility rates, cohort and period fertility tables as well as selected aggregate indicators, such as total fertility rates, mean ages at childbearing, and parity progression ratios. In the future, the database will be extended by an inclusion of duration and parity-specific fertility indicators. Original data received from national statistical offices, research organisations, and publications will be fully documented. Methods for the processing and calculations of fertility rates will be described in detail in the method protocol.

A companion part of the HFD project, the Human Fertility Collection, will hold a range of fertility data that cannot be included in the HFD. The HFC will include sets of fertility rates and fertility tables constructed by other researchers, research organisations and statistical agencies. Produced figures, though reliable and informative, will not always be comparable across countries and time periods due to variability in data origins and estimation methods.

The Human Fertility Database project will rely on the support of solicited country experts who will help to describe statistical systems and peculiarities of fertility data, to collect these data and to prepare documentation for individual countries. Their contribution will be indispensable for the successful development of the HFD.

The HFD data, including the database collected for the Human Fertility Collection, will be available through an openly accessible webpage (see also below). This document gives a brief overview of the current progress in the HFD preparations, lists documents that have been fully or in part prepared with the support of the REPRO project and are submitted as a part of Deliverable 2.5, and summarises future plans for the construction and dissemination of the Human Fertility Database.

## **2 State of affairs – October 2008**

At the end of October 2008 one person at VID (Kryštof Zeman) and one person at MPIDR (Aiva Jasilioniene) are working full time on the HFD project, contacting country experts and collecting data. By October 30, data collection and documentation has been completed for three countries (Austria, Czech Republic and Slovakia). Country experts and representatives from other 22 countries, including three non-European countries (Canada, Japan and the United States), have been invited to participate on the project.<sup>1</sup> For each country, the data are carefully checked and documented and all the data sources are listed.

### **2.1 Work conducted within the framework of the REPRO project**

The following activities have been conducted within the framework of the REPRO project (Section 2.2 below lists all the deliverables related to these activities):

1. Part of the preparation of the methods protocol,<sup>2</sup> which defines the types of data used, indicators to be computed, discusses the HFD methodology and provides a set of formulas and data instructions that will be used for all the datasets to ensure a uniform and comparable format of results and output data files.
2. Preparation of country documentation files for Austria, the Czech Republic and Slovakia.
3. Data collection and preparation of the data input files for Austria and the Czech Republic.

Two activities have been carried out for the Human Fertility Collection subset of the HFD:

4. Database of European fertility data. It features detailed fertility rates and indicators, specified by birth order, from data available through Eurostat database and selected country-specific datasets.
5. Work on the reconstruction of detailed age- and order-specific data on births and fertility rates for Austria for the period 1951-1983, when the officially published vital statistics data distinguished birth order within marriage only. This estimation was done by combining

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<sup>1</sup> Until October 2008, national experts from the following European countries were contacted and invited to cooperate on the HFD project: Bulgaria, Denmark, United Kingdom (data will be provided separately for England & Wales, Northern Ireland and Scotland), Estonia, Finland, France, Germany, Hungary, Italy, Lithuania, the Netherlands, Norway, Poland, Portugal, Romania, Russia, Slovenia, Spain, Sweden, Switzerland. Outside Europe, experts from Canada, the USA and Japan were contacted and asked to supply data and documentation for the HFD.

<sup>2</sup> The methods protocol has been jointly prepared by the researchers from VID and MPIDR. The work carried out at VID has been conducted as a part of the REPRO project.

detailed census data from 1981, which recorded retrospective birth histories for all women aged 15+, with the vital statistics data on live births by age of mother and marital birth order in 1951-1983.

## **2.2 Deliverables prepared within the framework of the REPRO project**

The following deliverables have been prepared within the framework of the REPRO project and are submitted as separate documents, either in written form (pdf format) or as data collections (in MS Excel or MS Access):

### **2.2.1. Documents**

#### **a) Detailed summary and methods protocol of the Human Fertility Database**

This is a first draft, prepared jointly by the VID and MPIDR researchers involved in the preparation of the HFD. This is the key HFD document, which will undergo certain modifications before it becomes available online.

#### **Country data documentation**

These documents list, for each country, the available data used in the HFD, discuss their quality and definitions, describe territorial changes and other relevant issues, and list the data sources and important publications. They are prepared by country experts, in some cases in collaboration with the HFD team.

The following deliverables have not undergone language editing and will further change in the future, as new data will become available for the HFD:

#### **b) Country documentation file for Austria**

#### **c) Country documentation file and reference file for the Czech Republic**

#### **d) Country documentation file and reference file for Slovakia**

### **2.2.2. Datasets and data input files**

The following HFD datasets<sup>3</sup> have been fully or in part prepared within the framework of the HFD project and are submitted as deliverables:

#### **a) Country input data file for Austria**

- Female population by parity (number of children ever born) from the Population Censuses 1981, 1991, 2001 (Austria) [*AUTcensus1981-2001.csv*]
- Live births by mother's age, birth cohort, and birth order (Lexis triangles) for 1984-2007, live births by mother's age since 1951 [*AUTbirths.csv*]
- Live births by calendar month in 1914-2007 [*AUT\_N\_monthly\_1914-2007.csv*]

#### **b) Country input data file for the Czech Republic**

- Female population by parity (number of children ever born) from the Population Censuses 1950, 1961, 1970, 1980, 1991, and 2001 [*CZEcensus1950-2001.csv*]
- Live births by mother's age, and birth order for 1925-1937 and 1945-1990, Live births by mother's age, birth cohort, and birth order (Lexis triangles) for 1991-2007 [*CZEBirths.csv*]
- Live births by calendar month in 1919-37 and 1945-2007 [*CZE\_N\_monthly\_1919-2007.csv*]

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<sup>3</sup> Files are available on request.

**c) Database of Eurostat fertility data (for the Human Fertility Collection, HFC)**  
**[File: *Europe\_Birth\_database\_1950-2006*]**

This database has been prepared in the first stage of the Human Fertility Collection (HFC). It features detailed fertility rates and indicators, specified by birth order, from the data available through Eurostat database (epp.eurostat.ec.europa.eu) and selected country-specific datasets. These data have been thoroughly checked and corrected, when needed, to make the dataset comparable across countries and over time. Especially the order-specific data had to be carefully checked, as many countries provide statistics on births within marriage only or did so in the past.

An Access database file was prepared and the summary fertility indicators were computed for all available countries and periods. The MS Access database includes the following data for period 1950-2007 (if available):

- total live births by age of mother
- live births by age of mother, order 1
- female population as of 1 January 1950-2007
- age-specific fertility rates (total, 1st birth order, 2nd birth order)
- total fertility rate
- total fertility rate of order 1, 2, 3, 3+, 4, 5+
- total fertility rate adjusted for tempo effect (using Bongaarts-Feeney method)<sup>4</sup>
- total fertility rate of order 1 adjusted for tempo effect (Bongaarts-Feeney method)
- mean age of mother at childbirth
- mean age of mother at childbirth of order 1, 2, 3
- notes on country data

**d) Reconstruction of live births by age of mother and true birth order for Austria, 1951-1983**  
**[File: *Austria\_births\_and\_fertility\_rates\_true\_birth\_order\_1952-1983*]**

During the period of August/September 2008 Anna Štátná (Research Institute for Labour and Social Affairs, Prague) and Tomáš Sobotka (VID) reconstructed data on live births in Austria by age of mother and true birth order in 1951-1983, i.e., for the period when the officially published vital statistics data distinguished birth order within marriage only. This estimation was done by combining detailed census data from 1981, which recorded retrospective birth histories (dates of births of the first four children) for all women aged 15+, with the vital statistics data on live births by age of mother and marital birth order in 1951-1983. These data will be included in the Human Fertility Collection to allow scholars to analyse fertility in Austria by biological birth order also for the period before 1984. After 1984 these data are available from the official vital statistics and will be included in the HFD.

### **2.2.3 Other documents prepared for the HFD (not submitted as part of Deliverable 2.5)**

Other documents prepared for the HFD include:

- the specification of input data files, methods of computation
- methodological documents related to the following issues: dealing with incomplete data series, estimating data for one-year age groups from five-year age groups records, and other data estimations for the HFD

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<sup>4</sup> Bongaarts, J. and Feeney, G., 1998. 'On the quantum and tempo of fertility', *Population and Development Review* 24(2): 271-291.

- instructions for data quality checks of the input data files
- project summary and invitation letter sent to country experts and HFD collaborators

### 3 Future plans and activities

#### 3.1 Data collection from other countries

Country experts are being asked to provide data for the first stage of the HFD within four months. Some of the datasets have already come in (complete or partial data series for Canada, Estonia, Finland, Japan, and Sweden). The 'raw data' received from the national experts and official statistical agencies will be subsequently processed and checked at MPIDR and VID, before they are ready to be included on the HFD website.

Experts and institutions from other countries will be invited to join the HFD in the future as well. The goal is to cover all European countries (assuming their vital statistics data on births are of very good quality) as well as some overseas countries with extensive demographic data collection covering all their population (Republic of Korea, Singapore, Mauritius, Israel, Chile, Taiwan).

#### 3.2 Webpage of HFD

The HFD webpage is now in the preliminary preparation phase and should be activated soon. It will be openly accessible (all users will be asked to register and will obtain access with a personal password) and regularly updated, flexibly including datasets for different countries once they have been checked and their documentation is completed. All the data will be further updated in the future and new dimensions to the existing datasets will be added.

For each country, the following materials and datasets will be included:

- Country documentation file, incl. references to all data sources

##### **Input data files:**

- Female population by age, cohort, and parity (number of children ever born), estimated for each calendar year
- Live births by mother's age, birth cohort, and birth order (Lexis triangles) for each calendar year
- Live births by calendar month

##### **Output data files:**

- Fertility rates and probabilities by age, parity (birth order)
- Detailed cohort fertility tables and indicators
- Detailed period fertility tables by age and parity and selected indicators derived from them (see methods protocol)
- Selected summary indicators

##### **Other materials:**

The HFD will also list all the relevant methodological documents and working papers as well as other materials pertaining to the HFD. The companion project, Human Fertility Collection (HFC), will feature diverse data sets, including non-standardised expert estimates, collections of historical data, and selected papers and publications.

### **3.3 Further extensions of the HFD project**

A number of extensions in the scope and coverage of the HFD data are planned for the future. Most importantly, a research on parity and duration-specific fertility data (i.e., data specified by the time elapsed since the last previous birth) will be conducted, a uniform methodology will be specified and these indicators will be gradually included for the countries where such data are available.