4th HMD Symposium
"Similarities and peculiarities on the way to longer life"
WissenschaftsForum, Berlin

Human Mortality Database

15 years of work for the international scientific community

Round table:
The future of the HMD project

MAX PLANCK INSTITUTE FOR DEMOGRAPHIC RESEARCH
MAX-PLANCK-INSTITUT FÜR DEMOGRAFISCHE FORSCHUNG

UC Berkeley Demography

Topics for discussion

- Growing problems with the population
- Growing problems at advanced
- New countries for the HMD
- Should we do anything extra to include new countries?
- Methods protocol
- Regime of the HMD data access
- New Human Lifetable Database

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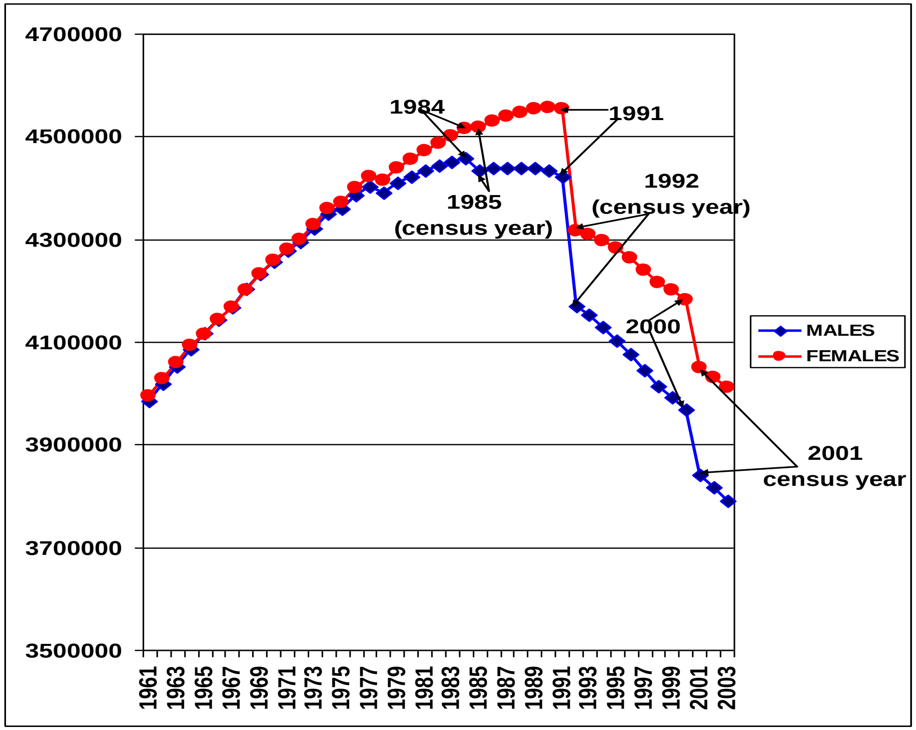
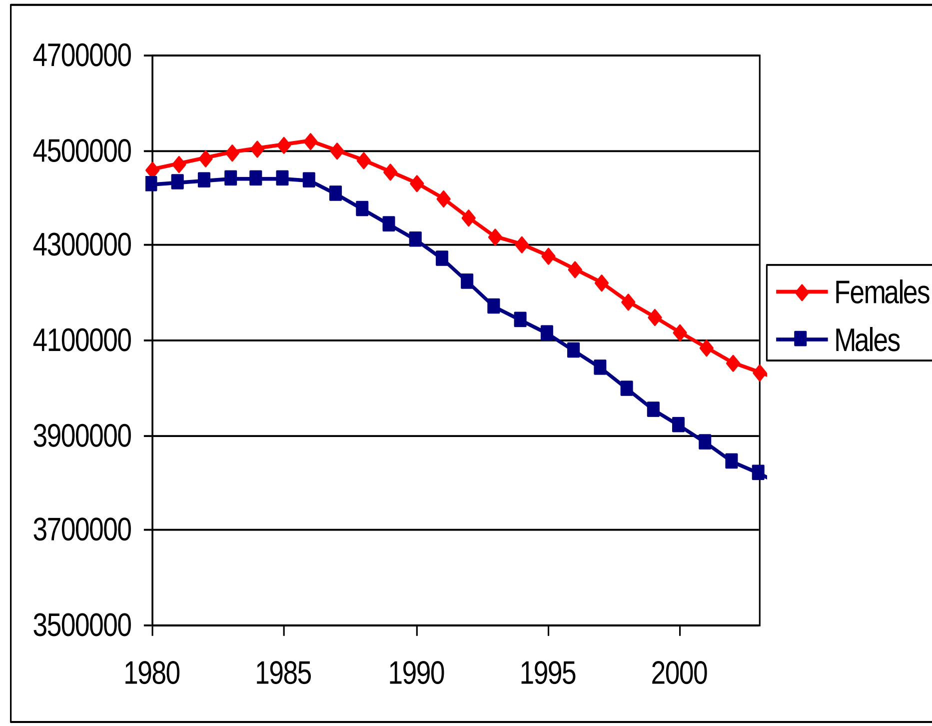
Bulgaria: correction of population series in 1980-2005





Trends in the total number of males and females. Bulgaria, 1961-2003. Official population estimates (left) and HMD data (right).

Changes in the definition of population: Poland

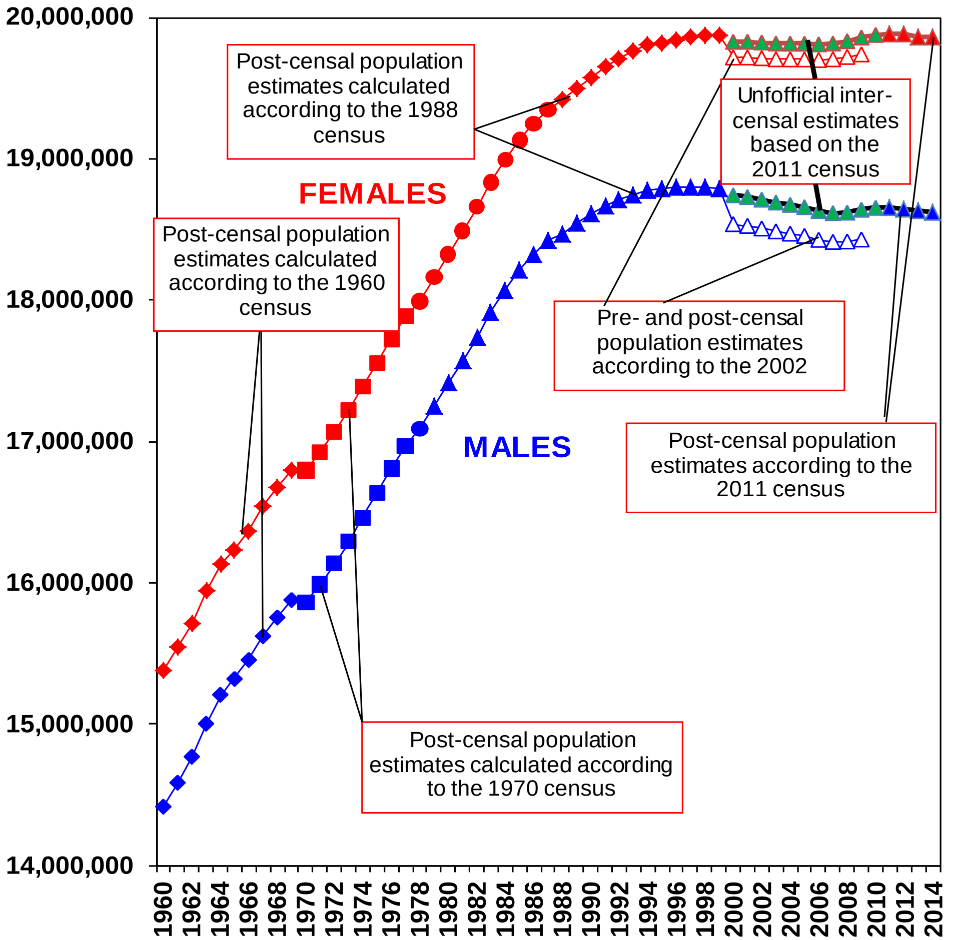


Figure: Official and adjusted (Tymicki et al. , 2015) estimates of population of Poland

In the 2000s, Poland faced a massive out-migration that followed the EU enlargement of 2004. It was expected that the population counts will be corrected downward after the next population census of 2011. But Statistics Poland has unexpectedly decided to change the official definition of the population status from the permanently resident (acting in 2010 and earlier) to the usually resident (from 2011 onward). *Statistics Poland did not re-estimate age-specific population counts back to previous census.*

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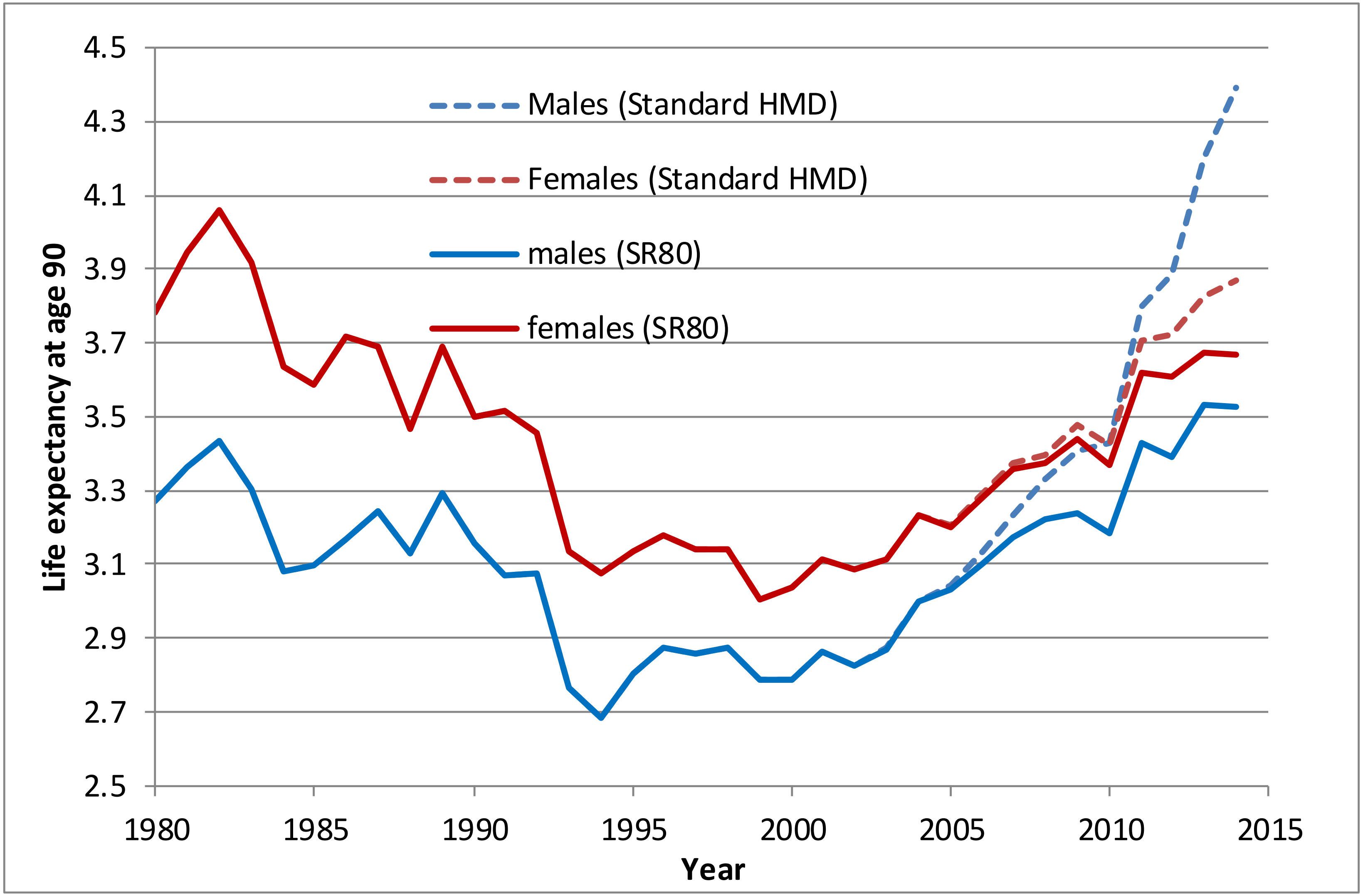
Russia: life expectancy at age 90



Official statistical data. Emerging migrants

Sweden 2014:

Age group	Males	Females	Males foreign born (%)	Females foreign born (%)
90-94	23,648	52,869	0.00	0.00
95-99	3,941	12,585	0.05	0.02
100-104	309	1,558	0.97	0.19
105+	12	74	33.3	5.4

A steep increase in the proportion of foreign-born individuals in the population denominator that does not match with a similar increase in the death numerator is a signal of problematic population estimates, and of a numerator-denominator bias at extreme ages. In light of this new problem, Statistics Sweden has decided to use an aggregated open age interval 100+ instead of showing individual ages above 100.

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HMD Candidates

South Korea, Romania (??), ….

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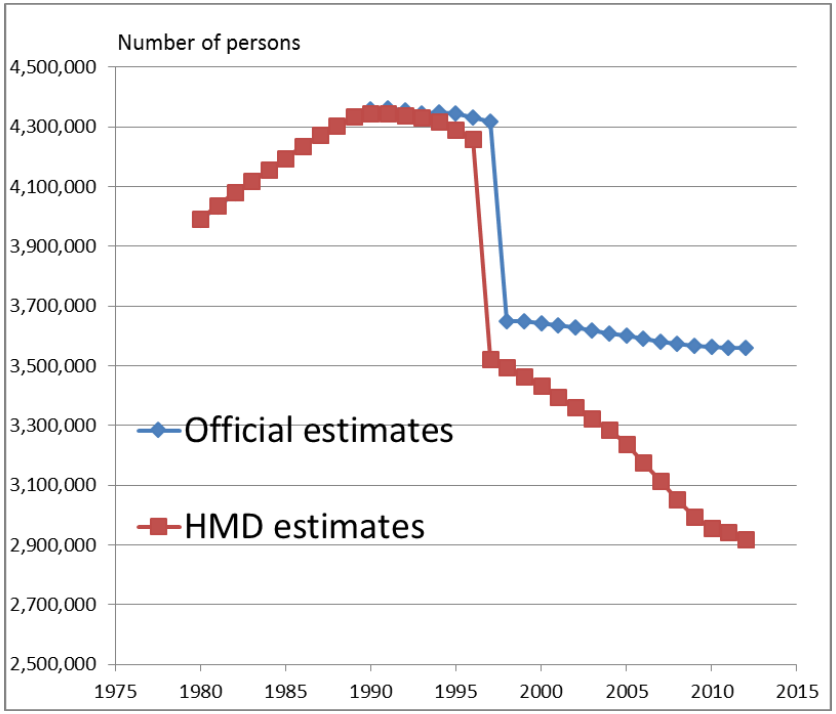
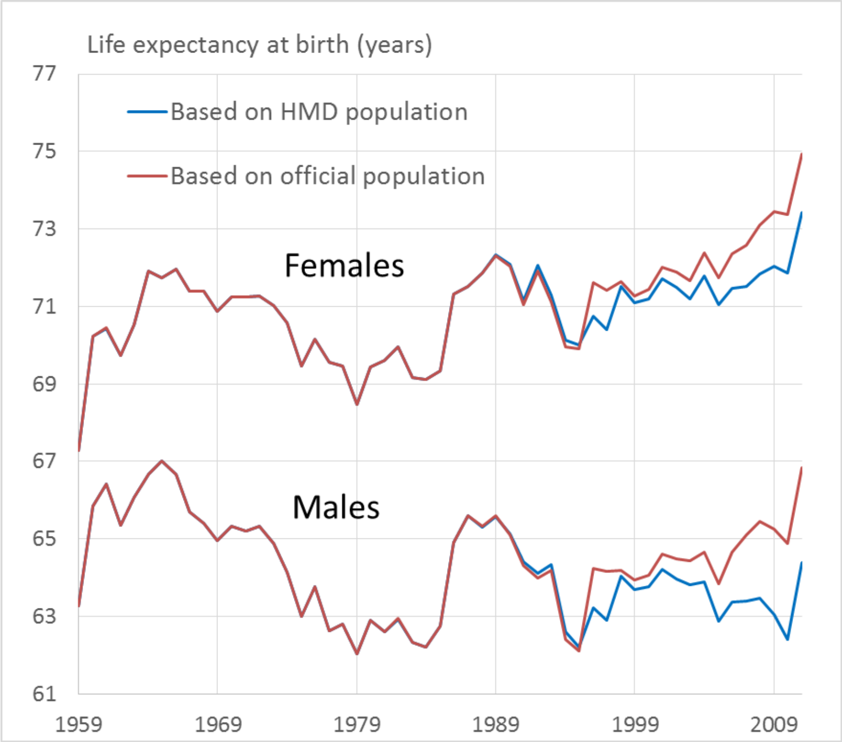
Numerator-denominator bias: case of Moldova



* Since 1998 official population counts do not include Transnistria region

The problem: systematic bias (deaths and births refer to the *de facto* population, (i.e. occurred within the country, while population estimates also include long-term emigrants - Moldavian citizens living abroad). Results in under-estimation of mortality and fertility.

The solution: population estimates were corrected using data on border crossings and additional data collected at the census of 2004

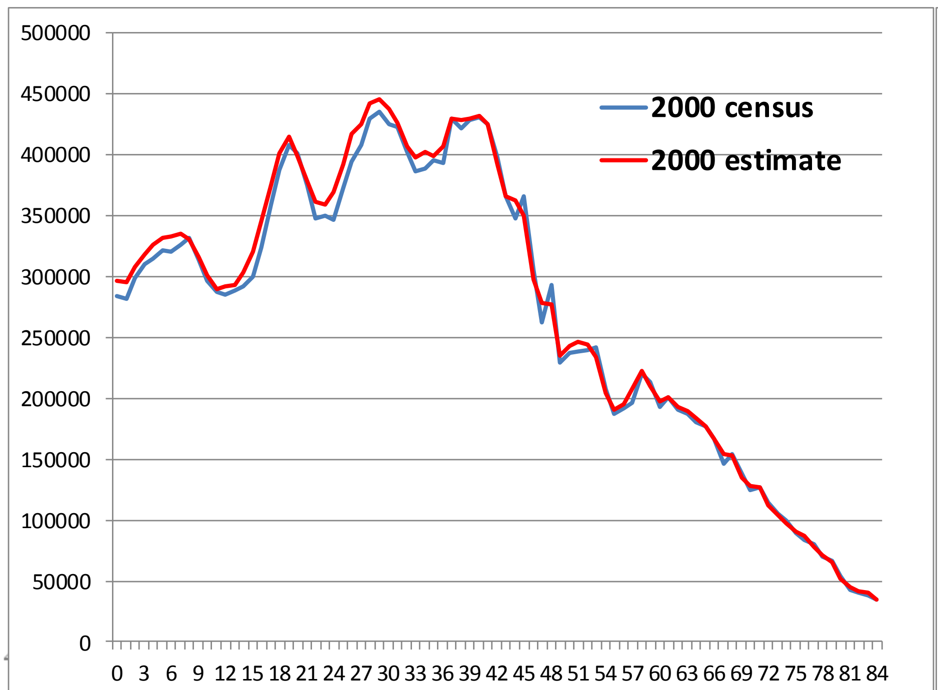


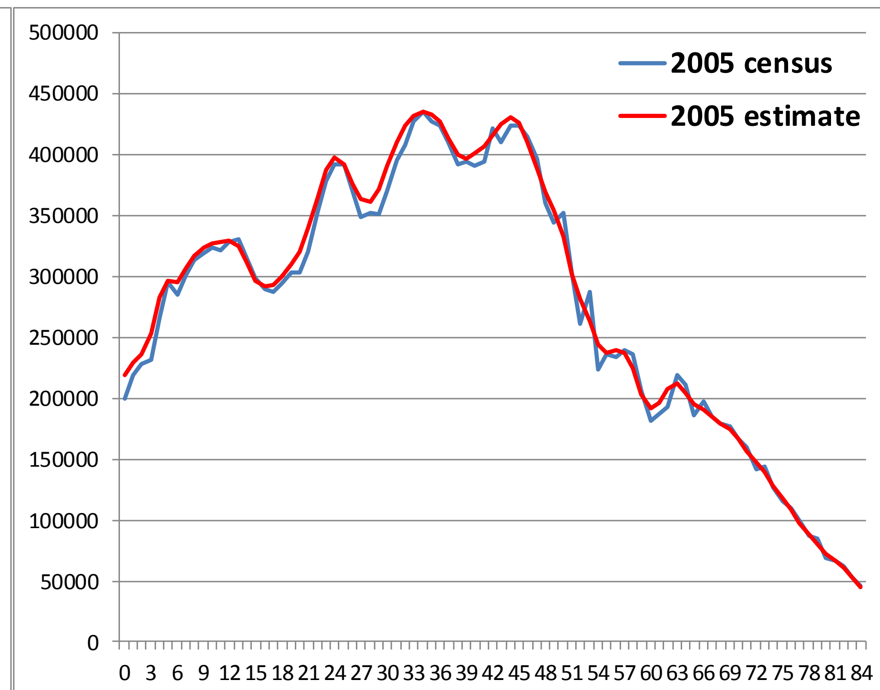
Source: Penina, Jdanov, Grigoriev (2015)

South Korea: preliminary analysis

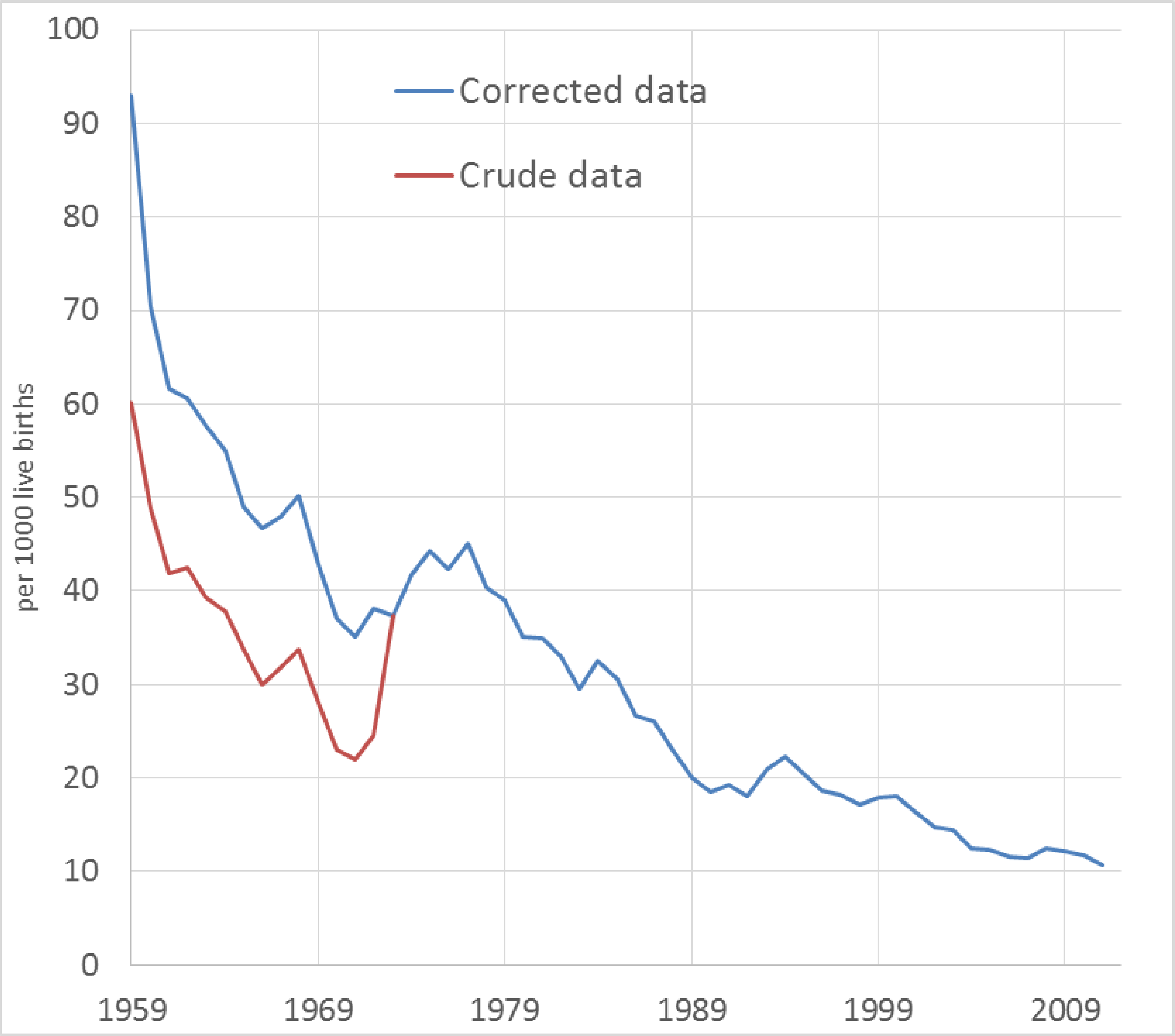
Infant mortality before 2000 is not reliable

After 2000:
Substantial differences between pop estimates for 2000 and 2005 and census counts for the same years. Perhaps census counts excludes foreigners? These differences are important for the ages 0,1 and also for other ages (including adult and old ages). It can be also seen that some smoothing was used to produce pop estimates (fluctuations observed at some ages in census data are absent in pop estimates - this cannot be explained by a simple exclusion of foreigners).





Underestimation of infant mortality: adjustment by mortality trend



An abrupt increase in the infant mortality that occurred in all of the Soviet republics at the beginning of the 1970s was interpreted by Anderson and Silver (1986) as a result of improvements in the registration rather than a real deterioration in survival of the newborns.

Figure: Infant mortality rate in Moldova before and after correction prior to 1973, both sexes, Moldova, 1959–2014. Source: (Penina et al., 2015)

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Beginning of the HMD Methods Protocol

Draft: October 30, 2000

Methods Protocol for the Core Section
of the Database-That-Has-No-Name

John R. Wilmoth et al.

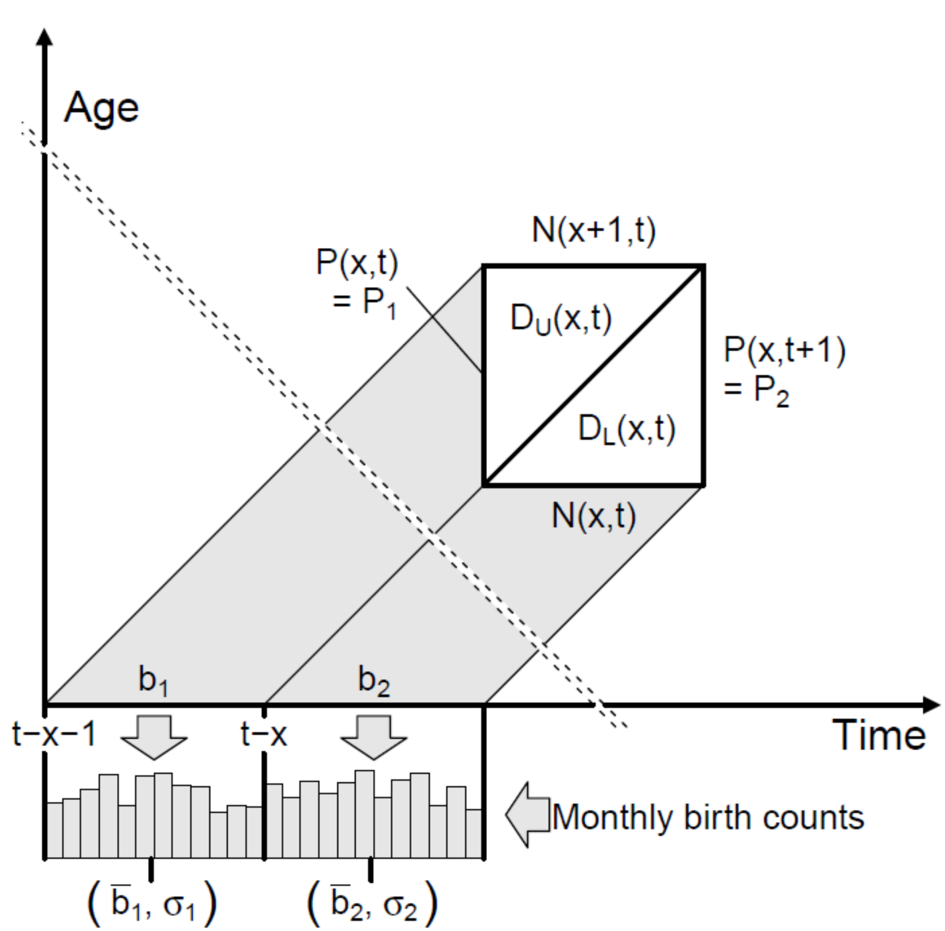
The Database-That-Has-No-Name (DTHNN) is a collaborative project involving researchers at the University of California at Berkeley (United States) and the Max Planck Institute for Demographic Research (Rostock, Germany). When complete, the core section of the database will contain life tables for about 30 advanced industrialized countries (on 4 or 5 continents) and the raw data used in constructing those tables.[1] The raw data generally consist of birth and death counts from vital statistics, plus population counts from periodic censuses.[2] Both general documentation and the individual steps followed in computing mortality rates and constructing life tables are described here. More detailed information – for example, sources of raw data, specific adjustments to raw data, and comments about data quality – will be covered separately in the documentation for each country.

The scope of the present discussion is limited to total mortality and to period life tables based on raw data available in 1-year age categories (or Lexis triangles for deaths, when available). In other words, we will not deal (yet) with the following issues: (1) cohort life tables, (2) raw data in broad (e.g., 5-year) age groups, except for an open category at the highest ages (e.g., ages 100 and above), and (3) causes of death. These topics will be addressed and resolved later on – in future versions of this document and during future discussions.

Revisions of the HMD MP

- **Revisions 1-2 not published**
- **Revision 3 (May 2002)** is the first published version. The fist (published) HMD data were calculated according to the MP v.3
- **Revision 4 (November 2005)**:
  - Changed method for splitting deaths into Lexis triangles;
  - Revised method for splitting open age interval;
  - Revised formula for population exposure;
  - Revised procedure for smoothing M(x).
- **Revision 5 (February 2007)**:
  - Various places through MP, changed "country"/"countries" to "country or area"/"population“;
  - Inaccuracies in some equations corrected;
  - Cubic spline method modified to split VV data.
- **Revision 6 (2017)**:
  - Changed method for calculating population exposures;
  - Changed method for calculating the mean age of infant death;
  - MP re-written in LaTEX
- **Revision 7** – work in progress

MP6: Population exposure accounting for variation in cohort's birthdays



$$E_L(x,t) = s_1 P(x,t+1) + s_2 D_L(x,t)$$

and

$$E_U(x,t) = u_1 P(x,t) - u_2 D_U(x,t)$$

The coefficients s_1, s_2, u_1 and u_2 are calculated using informatic birthdays within annual cohorts, which we approximate using dat males and females combined:

$$s_1 = 1 - \bar{b}_2 \quad (53)$$

$$s_2 = \frac{\bar{b}_2}{2} - \frac{\sigma_2^2}{2(1-\bar{b}_2)} \quad (54)$$

$$u_1 = \bar{b}_1 \quad (55)$$

$$u_2 = \frac{\bar{b}_1}{2} - \frac{\sigma_1^2}{2\bar{b}_1} \quad , \quad (56)$$

MP6: New formula for a_0 accounting for change in infant death distribution at low levels of mortality

Table 1: Andreev-Kingkade formulas for computing a_0 given m_0

m_0 range	formula: $a_0 = a + b \cdot m_0$
Males	
$[0, 0.0230)$	$0.14929 - 1.99545 \cdot m_0$
$[0.0230, 0.08307)$	$0.02832 + 3.26201 \cdot m_0$
$[0.08307, \infty)$	0.29915
Females	
$[0, 0.01724)$	$0.14903 - 2.05527 \cdot m_0$
$[0.01724, 0.06891)$	$0.04667 + 3.88089 \cdot m_0$
$[0.06891, \infty)$	0.31411

Source: E.Andreev and Kingkade, 2015

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User's agreement

The data in the Human Mortality Database (HMD) are provided free of charge to all individuals who request access to the database. ***We ask that you kindly observe the following requests and restrictions***:

The HMD provides original estimates of exposure-to-risk, death rates, and life tables as well as the official data used for deriving these estimates. **All such data are intended to be used for scientific purposes only.** Moreover, all original data provided by official institutions and published here in the section called "Input data" should not be used for commercial gain or re-published in any form without the explicit permission of the data owners (usually government statistical offices).

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Please do not pass your copy of these data to other users. Rather refer them to the HMD website, where they may download the data for themselves. Since these data will be updated on a regular basis (including corrections as needed), this practice helps to prevent the existence of multiple outdated or incorrect versions. It also ensures that each user has full access to information about the data, citation procedures, etc.

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Access to the HMD data

Open access

Open access without permission for republishing

Restricted access for commercial use

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Human Life Table Database

Life tables describe the extent to which a generation of people (i.e. life table cohort) dies off with age. Life tables are the most ancient and important tool in demography. They are widely used for descriptive and analytical purposes in demography, public health, epidemiology, population geography, biology and many other branches of science.

History

The Human Life-Table Database (HLD) documents the evolution of human mortality by providing a quantitative life-table description of mortality patterns. The database also supplies information on calculation techniques as well as on ways of publishing mortality data used in different countries in different times. Two principal types of life tables are displayed: original life tables as published and recalculated life tables. The latter allow for comparability (in respect to the computation method) across countries and calendar years.

Most of the HLD tables are life tables for national populations that have been officially published by national statistical offices. Some of the tables cover certain regional or ethnic sub-populations within countries. Some of the life tables are unofficial ones produced by research organizations or researchers. All life tables ordered by countries are available under link below:

Please note that by entering the database, you agree to be bound by the terms of the user agreement

The HLD is a companion database to the **Human Mortality Database** and has been jointly developed by the Max Planck Institute for Demographic Research (MPIDR) in Rostock, Germany, Department of Demography at the University of California in Berkeley, USA and Institut national d'études démographiques in Paris, France. Currently the HLD based at the MPIDR. Professor J.W.Vaupel, Founding Director of the MPIDR, provided a general guidance to the HLD project. Hide this content

Project Team

Three scientific institutions are jointly developing the HLD: the Max Planck Institute for Demographic Research (MPIDR) in Rostock, Germany, the Department of Demography at the University of California at Berkeley, USA and the Institut d'études démographiques (INED) in Paris, France. The MPIDR is responsible for maintaining the test.lifetable.de/cgi-bin/data.php

Human Life Table Database

Home | Methods | Formats | Terms | **Data** | Credits | Links | Contact

At present the HLD contains **7900** life tables for **101** countries or areas. Data can be downloaded as one aggregated file, aggregated file for the selected country or subpopulation, or as single tables. Please note that by downloading the HFC data you agree to be bound to the terms of the user agreement.

All HLD data in one ziped CSV file	All HLD data (unk)
References	*Codes used in HLD*

Data by country				
Albania	Cuba	Iceland	Netherlands	Sri Lanka
Algeria	Cyprus	India	New Zealand	Suriname
Argentina	Czech Republic	Ireland	Norway	Sweden
Aruba	Czechoslovakia	Israel	Palau	Switzerland
Australia	Denmark	Italy	Panama	Taiwan
Austria	Dominican Republic	Jamaica	Peru	Thailand
Bangladesh	Egypt	Japan	Philippines	Togo
Barbados	El Salvador	Kazakhstan	Poland	Tonga
Belarus	Estonia	Kiribati	Portugal	Trinidad and Tobago
Belgium	Fiji	Kosovo	Puerto Rico	Turkey
Bolivia	Finland	Lithuania	Republic of Korea	Ukraine
Bosnia and Herzegovina	France	Luxembourg	Reunion	United Kingdom
Botswana	French Guiana	Macedonia	Romania	United States of America
Brazil	Germany	Maldives	Russia	Uruguay
Bulgaria	Greece	Malta	Senegal	USSR
Canada	Greenland	Martinique	Serbia	Venezuela
Chile	Grenada	Mauritius	Singapore	Yugoslavia

Human Life Table Database

GERMANY

Pooled Data Files	
All HLD data for Germany in one ziped file (years: 1871-1913, 1924-1926, 1932-1934, 1946-1947, 1949-2012)	-
Life expectancy at birth	-
References	

Region: **Country:**

Data (by years) [plain text]	Source [pdf]
1871 - 1881	Bewegung der Bevölkerung im Jahre 1910, Statistik des Deutschen Reichs, Vol. 246, Berlin 1913, 16-17.
1871 - 1880	Statistisches Bundesamt: Statistisches Jahrbuch für die Bundesrepublik Deutschland 1962; Stuttgart/Mainz: W. Kohlhammer, p. 63. former Federal Republic
1881 - 1890	Bewegung der Bevölkerung im Jahre 1910, Statistik des Deutschen Reichs, Vol. 246, Berlin 1913, 16-17.
1891 - 1900	Zeitschrift des K. Bayerischen Statistischen Landesamts - 1913: Sterbetafel nach Geschlecht, 1891/1900, S. 673-676. Bavaria