World Fertility Trends: Empirical Evidence, Estimation and Challenges

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Overview

• Role of UN Population Division

• Global Estimates and Projections of Fertility

• Empirical Evidence for Fertility Estimation

• Challenges

• A way forward
UN Population Division

• Population Division has always been a think tank carrying out research and producing scientifically sound information.

• Population Division has also been a “service” institution, producing data resources and tools for demographers and information for the general public.

• The Population Division serves as a Secretariat for the Commission on Population and Development. It provides supports for annual meetings and intergovernmental process.
Main Fertility-Related Activities

• Monitor fertility, marriage and family planning levels and trends
• Analyze the relationship between fertility and development
• Provide global data on marriage, fertility and family planning
• Provide estimates for global monitoring of development goals (SDG):

  Adolescent birth rate:
  • Ages 10-14 years
  • Ages 15-19 years
Fertility Estimates and Projections

- **Global coverage**: 201 countries
- 5-year periods and 5-year age groups
- Estimation period 1950-2015 (approximate, depending on data availability)
- Projection period 2015-2100 (input to global population projections)
Fertility transition time
- Sweden: 50 years
- Latin America: 36 years
- Asia: 42 years
- Africa: 85 years
Mean Age at Childbearing: Global Trends and Projections

Year

Mean Age at Childbearing

World
Africa
Asia
Europe
Latin America and the Caribbean
Northern America
Oceania

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Standard Deviation of Age Schedule of Fertility

Year


Standard deviation

World Africa Asia
Europe Latin America and the Caribbean Northern America
Oceania

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Challenges
Fertility Estimation

• Data from all sources
• Assessment of data quality
• Estimation approach
• Cohort component method with estimated fertility inputs
Estimation Methods

- Direct estimates (VR and population estimates)
- Direct estimates (birth histories from household surveys)
- Direct and adjusted estimates (recent births in censuses)
- Reverse survival and OWC methods
- Estimates based on cumulative fertility histories (CEB)
Georgia: VR vs. Surveys

![Graph showing Total Fertility Rate over years for Georgia, comparing VR and Surveys data sources. The graph includes data from WPP, RHS2010 (OCM), RHS2010, RHS2005, RHS1999, Direct_DYB, and Eurostat.20150811.](image)

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Uganda: Censuses vs. Surveys (no-VR)

- Direct estimates from surveys
- Adjusted estimates from censuses
- Total Fertility Rate

Year:
- 1950
- 1960
- 1970
- 1980
- 1990
- 2000
- 2020

Data Sources:
- 2009 MIS,D-BH
- 2011 DHS,D-BH
- 2011 DHS,X-BH
- 2006 DHS,D-BH
- 2006 DHS,X-BH
- 2002 Census,D-RB
- 2002 Census,A-RB
- 2000-2001 DHS,D-BH
- 2000-2001 DHS,X-BH
- 1995 DHS,D-BH
- 1995 DHS,X-BH
- 1991 Census,D-RB
- 1991 Census,A-RB
- 1988-1989 DHS,D-BH
- 1988-1989 DHS,X-BH
- 1969 Census,A-RB
- 1969 Census,D-RB
- 1959 Census,A-RB
- 1959 Census Report

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The latest UNPD estimate for 2010-2015

Spline estimates

The only empirical data point below the 2010-2015 estimate

+0.5 child difference

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Empirical Fertility Data: 2015 World Fertility Data

• About 140,000 data points (TFR, ASFRs and MAC)
• Online plots of empirical data and estimates (all indicators and countries) (1809 charts)

World Fertility Data 2015

World Fertility Data 2015 presents data on age-specific fertility rates, total fertility and mean age at childbearing for 201 countries or areas of the world. The database includes data available as of November 2015 and covers the time period from 1950 to the present. Data for the time period before 1950 have been included as well, if readily available, but no systematic attempt was made to collect data prior to 1950 for all countries. The time series are available for download in Excel workbooks and are presented in online charts.

Download data in Excel
Interactive Data (coming soon)
Graph
Metadata
CHALLENGES: Sustainable Data Collection

Sources
• Demographic Year Books (DYB) and internal databases. DYB is available via data.un.org (UN data portal)
• NSO online databases and web services
• Microdata, VR or birth histories
• Eurostat
• HFD and HFC

Challenges
• Manual download (e.g. no SQL or web service access to data.un.org)
• Variable / Incomplete meta information
• Often no assessment of data quality (e.g. data.un.org – re-publishing)
• Little information on population estimates: intercensal or postcensal? Adjusted or not adjusted? How consistent with the reported births?
• Limitations to access to micro data
• Harmonization of data
CHALLENGES: Data Gaps

A country is classified as a country with “gaps in fertility data” if there are no empirical data for at least one decade since 1950 or for the period 2010 and later.
A country is classified as a country with “timely VR-based data available” if the latest empirical point is available for the period 2010 or later and birth registration in a country is at least 90%.

[Bar chart showing timely VR-based data availability by region]
A Way Forward?

• Improved methodology for estimates and automated process of estimation:
  o Total fertility, age-specific fertility rates
  o Single year of age and single calendar year
  o Uncertainty around fertility estimates
  o Age-specific fertility rate for ages 10-14 (SDG reporting)

• Comprehensive and (possibly) automated data collection and updates of fertility databases

• Better online dissemination of fertility levels and trends with interactive graphics, indicator-specific and country profiles for the general public

• Improving collaboration (regional commissions, UN agencies, national statistical offices and research organizations)
unpopulation.org