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 "<u>service</u>" institution, producing data resources and tools for demographers and information for the general public

- The Population Division serves as a Secretariat for the <u>Commission on Population and Development</u>. 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: Global Trends and Projections
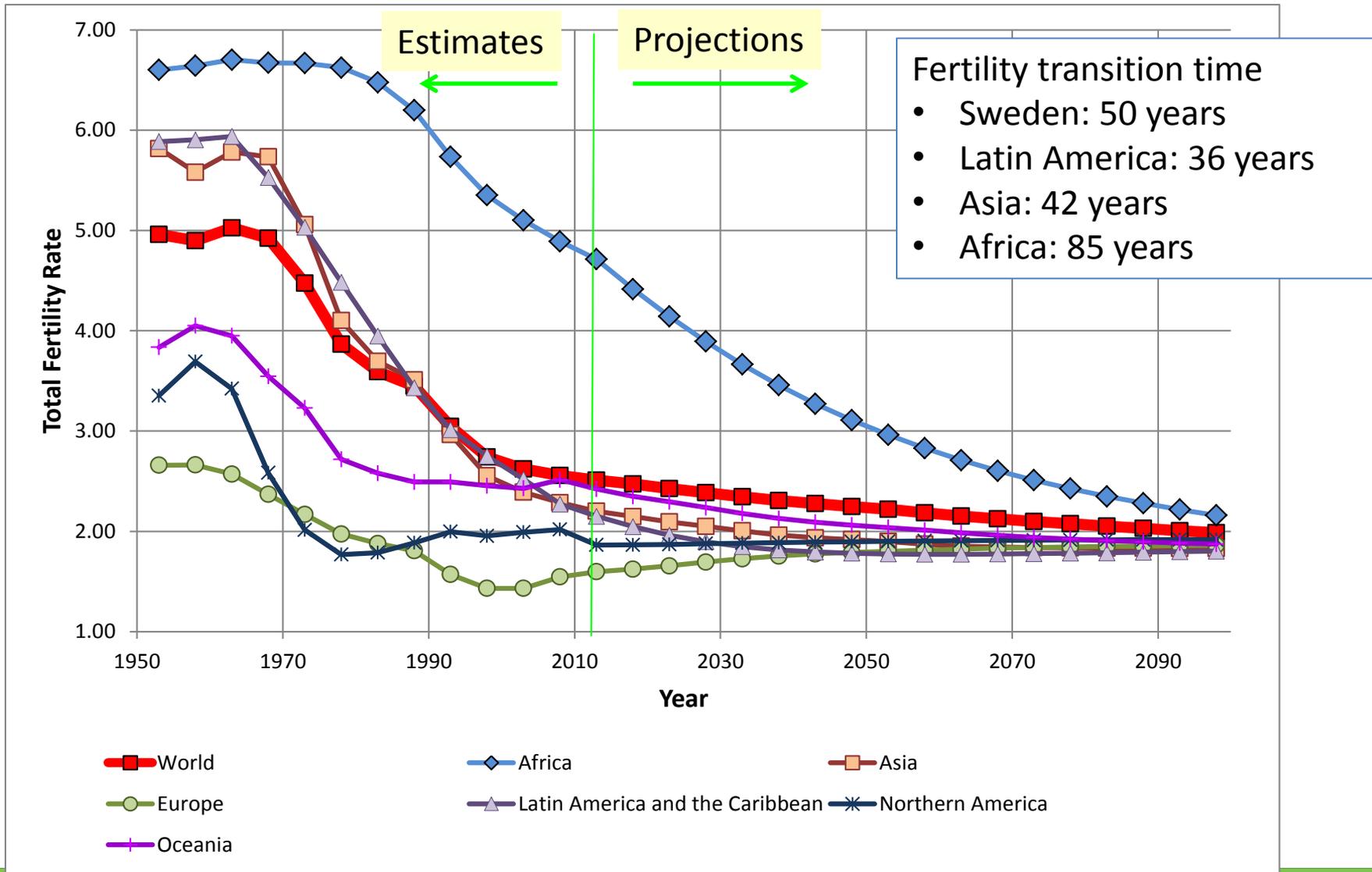
Estimates

Projections

Fertility transition time
- Sweden: 50 years
- Latin America: 36 years
- Asia: 42 years
- Africa: 85 years

Legend:
- World
- Africa
- Asia
- Europe
- Latin America and the Caribbean
- Northern America
- Oceania

Y-axis: Total Fertility Rate

X-axis: Year

Mean Age at Childbearing: Global Trends and Projections
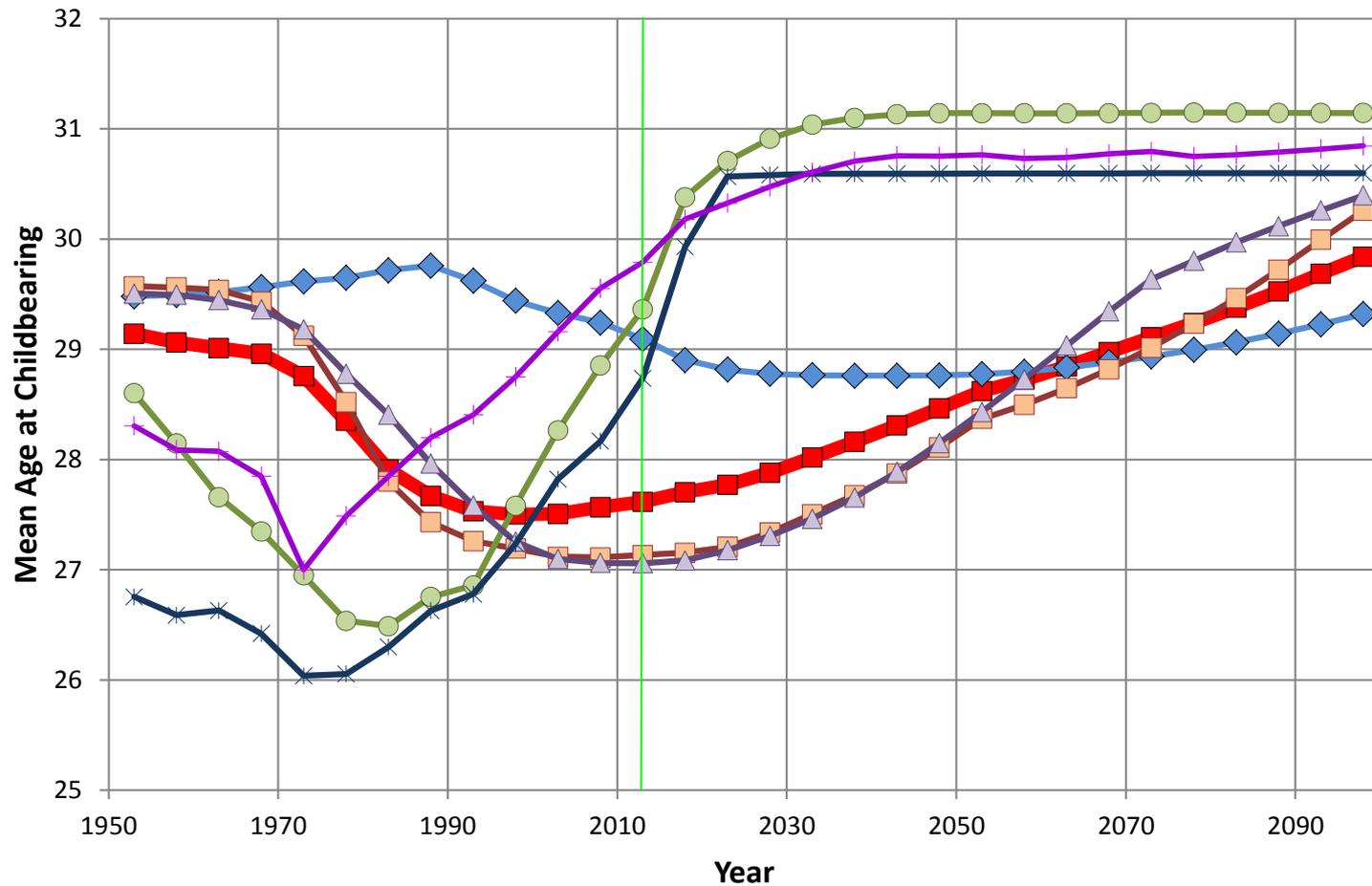
Standard Deviation of Age Schedule of Fertility
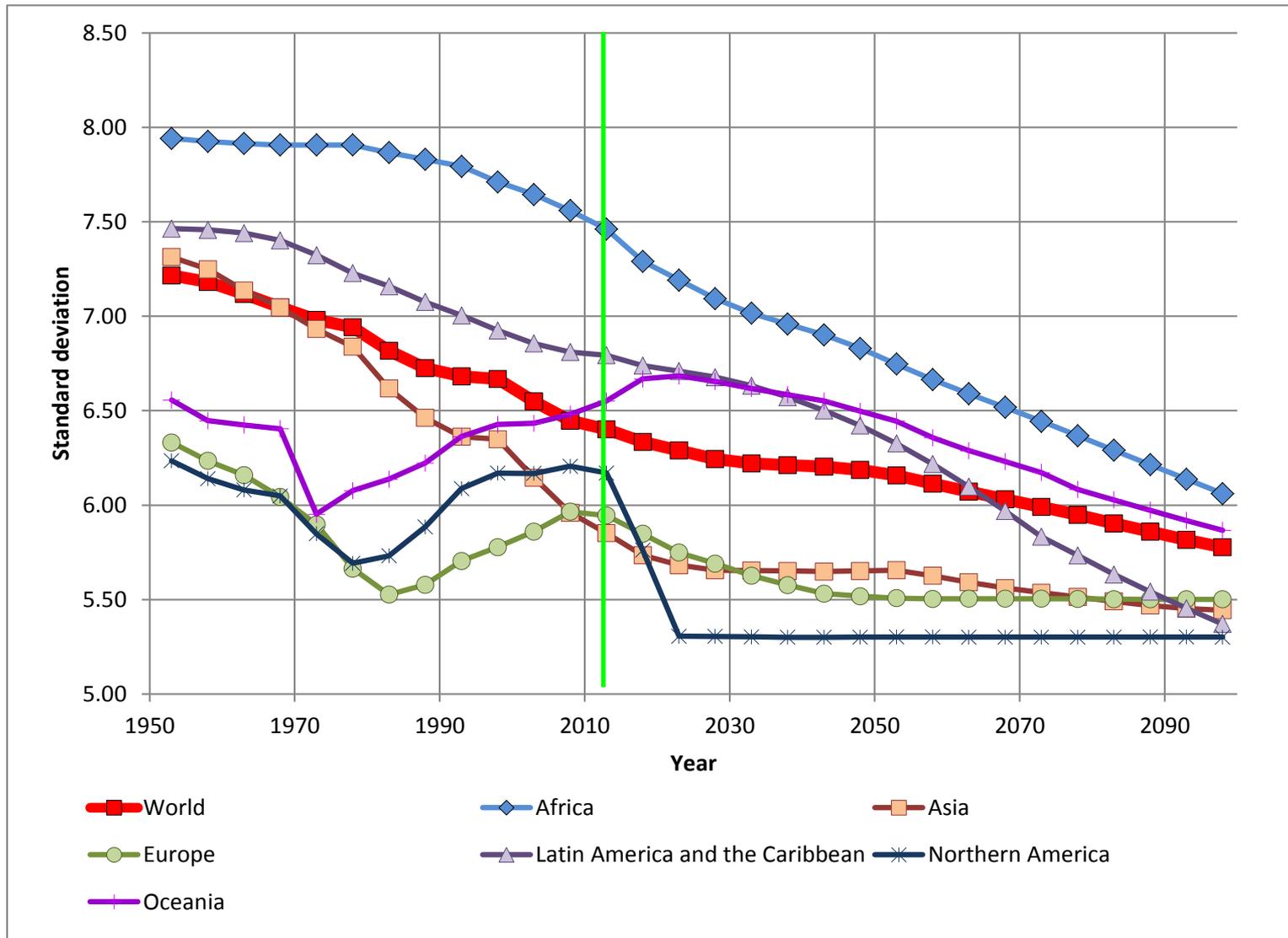
Legend: World, Africa, Asia, Europe, Latin America and the Caribbean, Northern America, Oceania

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)

Sweden: Ideal Case
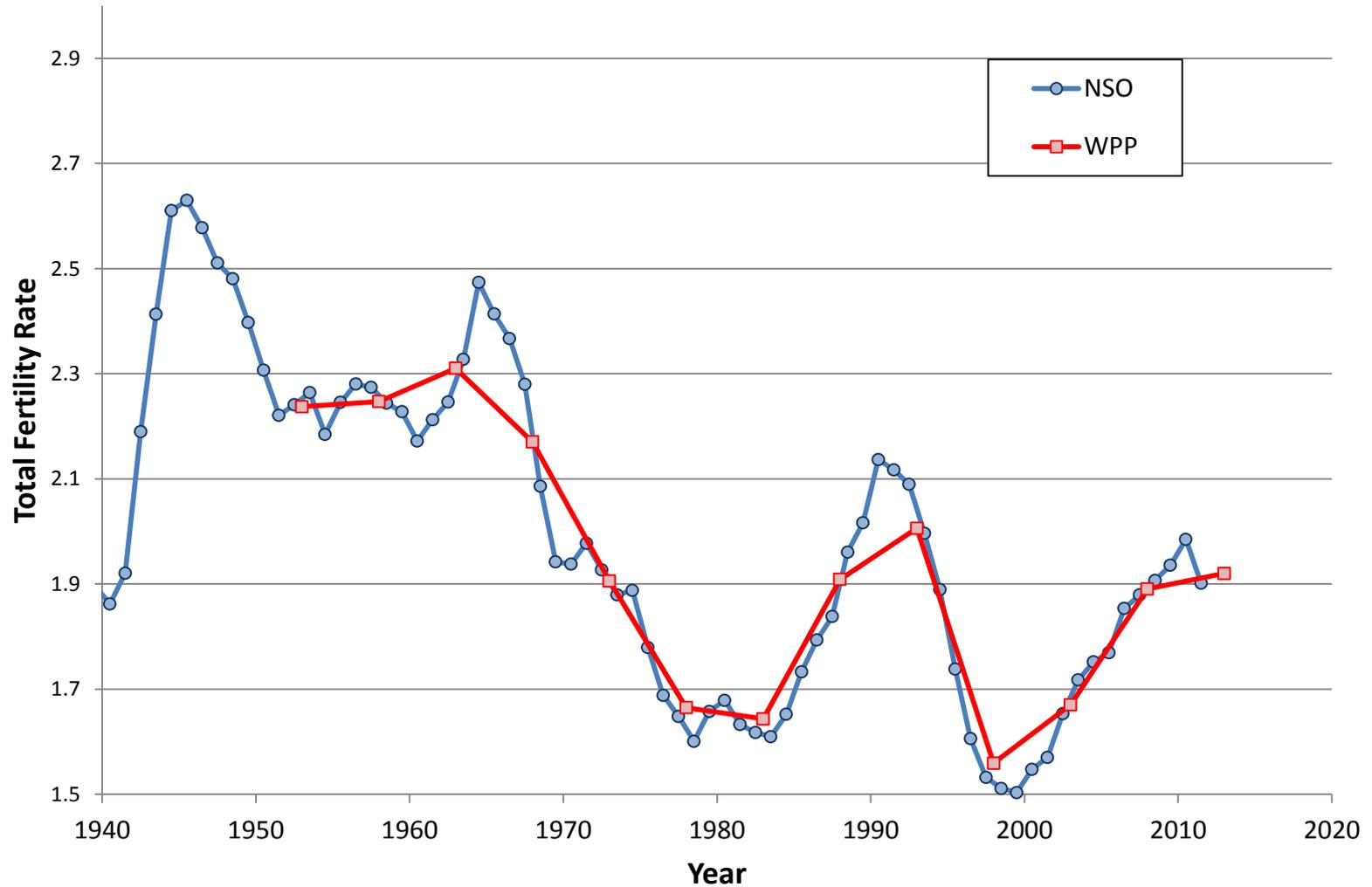
Australia: Revisions of National Fertility Estimates
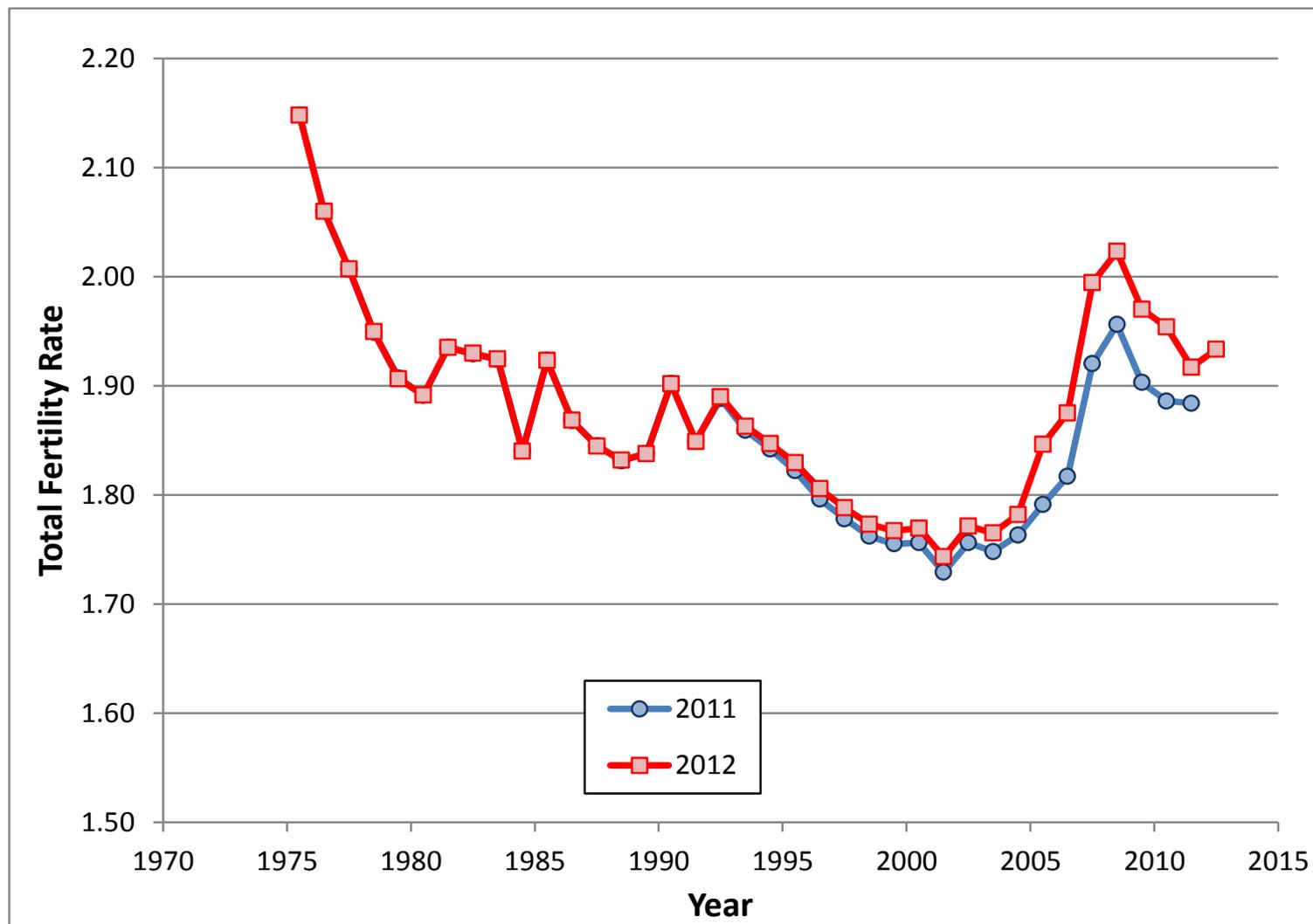
Georgia: VR vs. Surveys
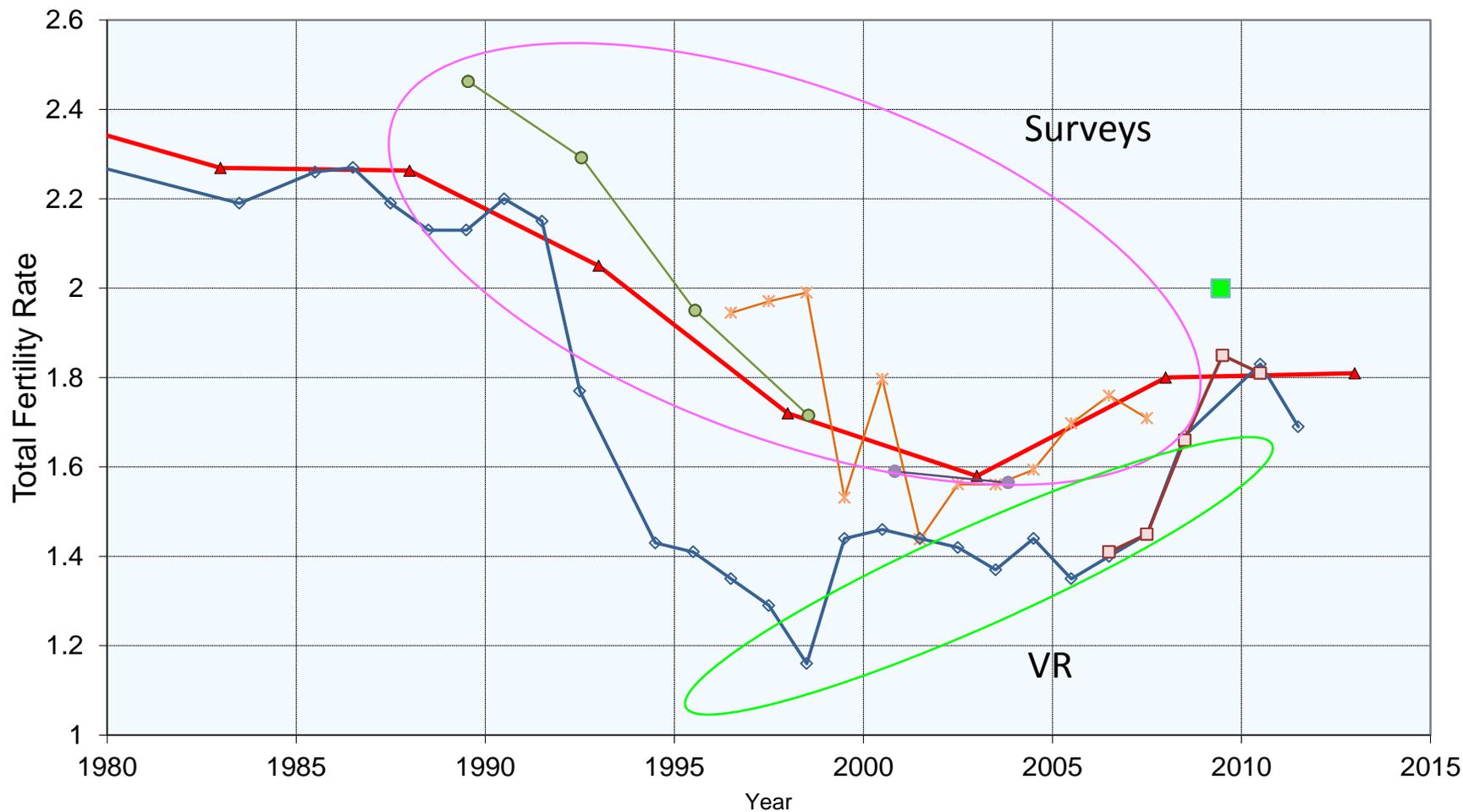
Legend: WPP, RHS2010 (OCM), RHS2010, RHS2005, RHS1999, Direct_DYB, Eurostat.20150811

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Uganda: Censuses vs. Surveys (no-VR)

Dem. Rep. Of Congo: What is the Current Fertility Level?
(no recent census)

Spline estimates

+0.5 child difference

The latest UNPD estimate for 2010-2015

The only empirical data point below the 2010-2015 estimate

Legend:
- WPP
- 2010 MICS
- 2001 MICS
- 1975-1976 EDOZA,BH
- Spline (GCV)
- 2013-2014 DHS,X-BH
- 2007 DHS,X-BH
- 1995 MICS,OWC
- 1975-1976 EDOZA
- Spline (p=0.01)
- 2013-2014 DHS,D
- 2007 DHS,D
- 1984 Census
- 1955-57 Survey, Adj

Total Fertility Rate vs Year (1950–2020)

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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
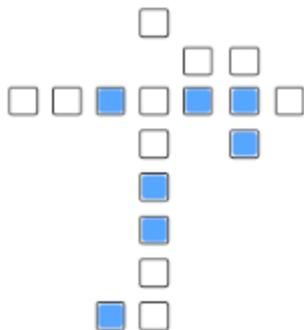
Interactive Data
(coming soon)
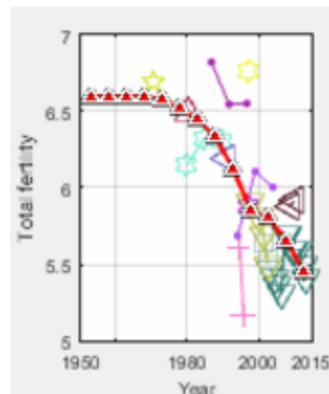
Graph
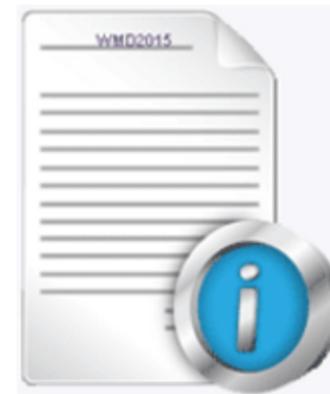
Metadata

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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.

Region	No Gaps	Gaps
World	95	106
Africa	10	47
Asia	25	26
Europe	36	4
Latin America and the Caribbean	18	20
Northern America	2	
Oceania	4	9

■ No Gaps ■ Gaps

CHALLENGES: Timely VR-based Data

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%.
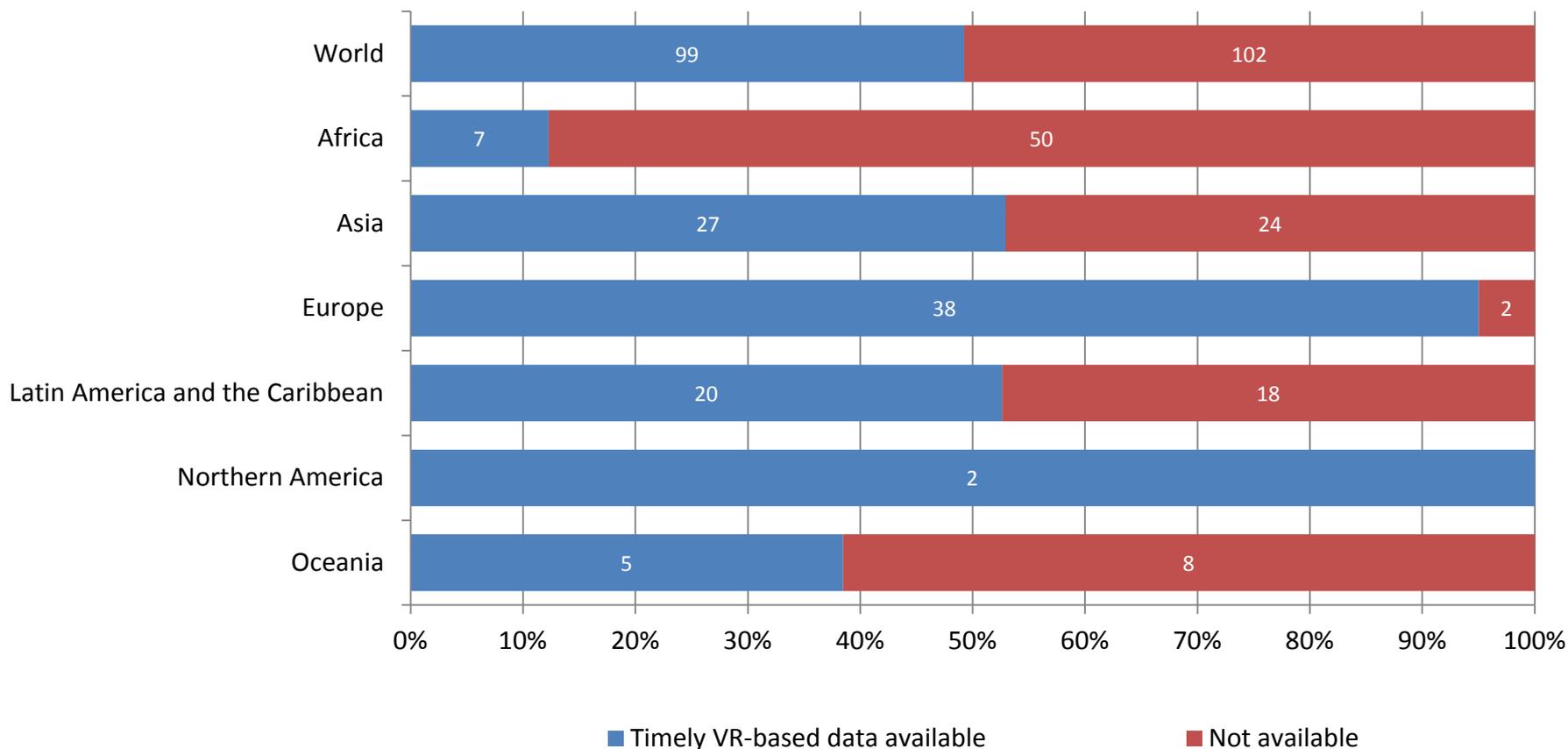
Region	Timely VR-based data available	Not available
World	99	102
Africa	7	50
Asia	27	24
Europe	38	2
Latin America and the Caribbean	20	18
Northern America	2	
Oceania	5	8

■ Timely VR-based data available   ■ Not available

A Way Forward?

- Improved methodology for estimates and automated process of estimation:
  - Total fertility, age-specific fertility rates
  - Single year of age and single calendar year
  - Uncertainty around fertility estimates
  - 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

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