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# What's Beneath the Future: World Population Prospects

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**United Nations**

Department of  
Economic and  
Social Affairs

# ***What's Beneath the Future: World Population Prospects***

([P. Gerland](#), Population Division)

SEMAINE DATA-SHS 2023

Plateforme Universitaire de Données d'Aix-Marseille Universitaire (PUD-AMU)



**12 Dec. 2023, Maison Méditerranéenne des Sciences de L'Homme (MMSH), Aix-en-Provence (France)**

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# Context: UN World Population Prospects

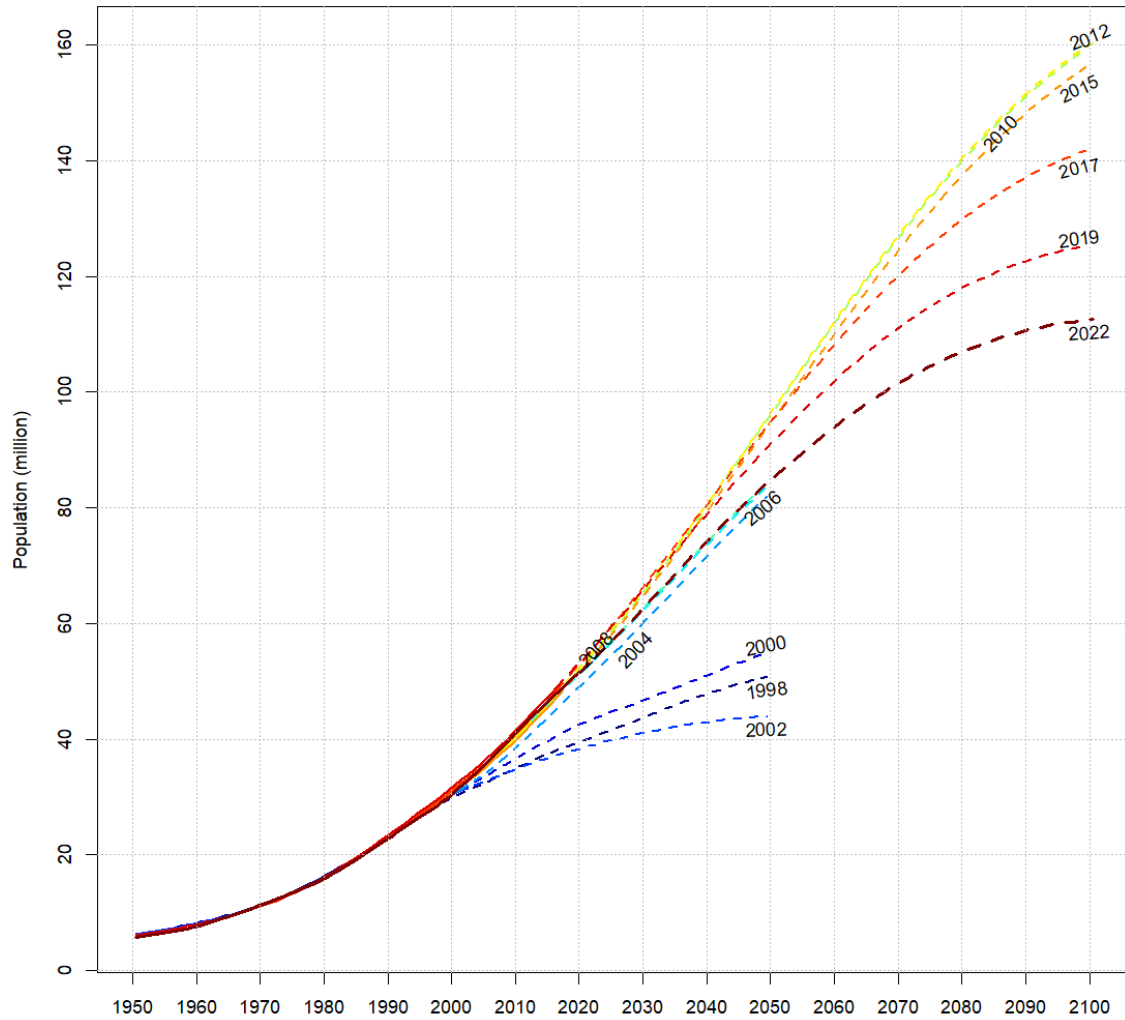
- 1. For all countries in the world, a comprehensive, standardized and consistent set of estimates and projections of population size and the three components of population change: **fertility, mortality** and **net international migration****
- 2. Population and demographic estimates used for international comparisons, and as denominators/inputs for global monitoring of various SDG indicators and international statistics (about 1/4 of them)**
- 3. Serve as basis for various projection scenarios** at the global, regional and national level – including derived projections by other international organizations (labor, education, social security benefits, agriculture, health, urbanization, energy, transport, infrastructure, environment, climate change, etc.)

# UN World Population Prospects (WPP)

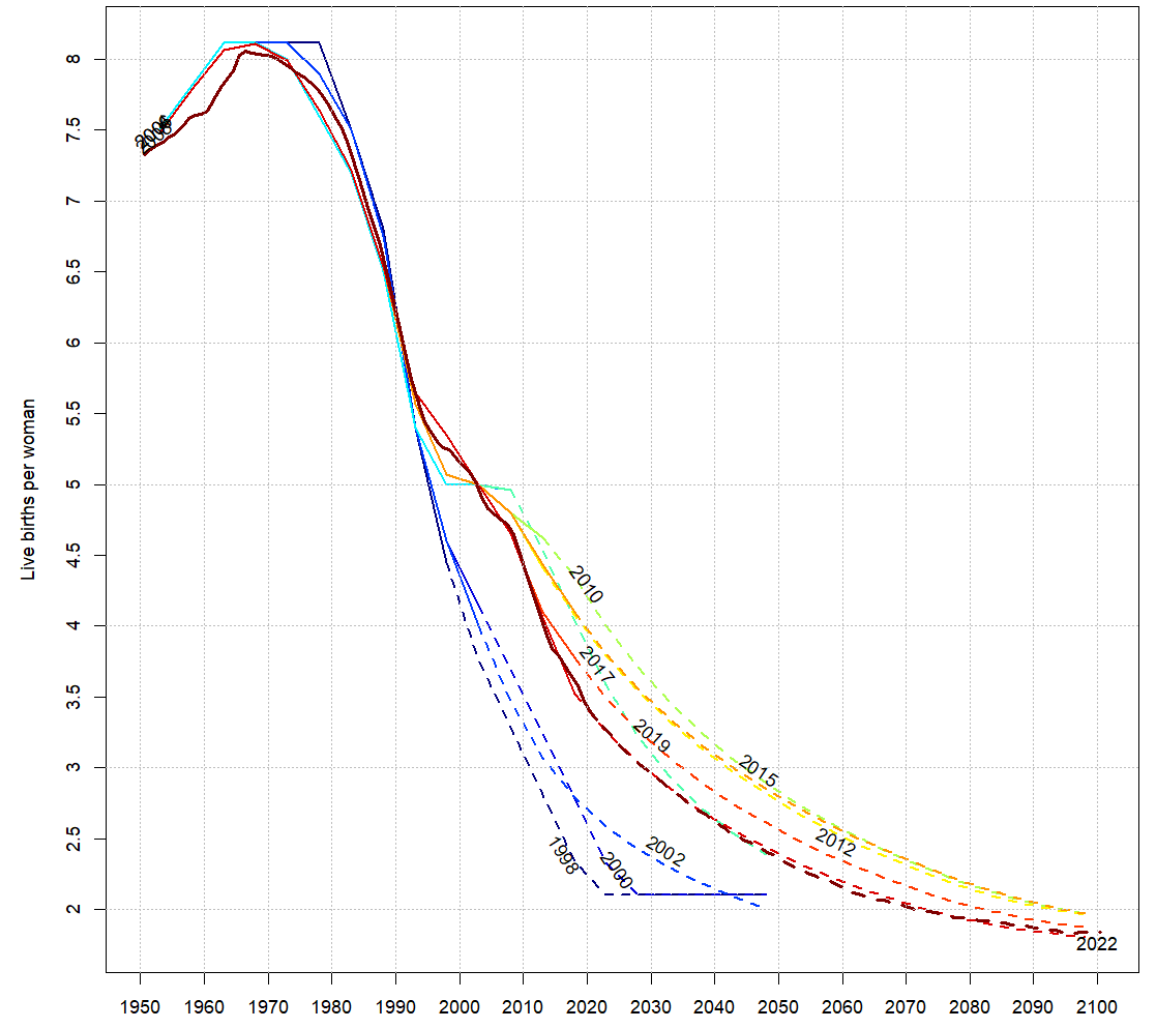
- **Scope:** 237 countries/areas + > 30 geographical and socio-economic/political aggregates + > 200 extra economic, political and UN groupings
- **Time:** annual series from 1950 to 2021 (and projection until 2100)
- **Dimensions:** population by single year age (and 5-year age groups) and by sex, fertility by age, mortality and migration by age and sex
- **Prediction intervals** associated with probabilistic projection, as well as **10 projection scenarios** based 5 fertility variants, 2 mortality variant, 2 migration variants
- **Revision:** every 2-years extensive review / update of past estimates and projections – 27<sup>th</sup> edition since 1950s.
- **Online data:** <https://population.un.org/wpp/>
- See [\*World Population Prospects 2022: Methodology of the United Nations Population Estimates and Projections\*](#) for further details + [structured metadata](#)

# Kenya: WPP 1998-2022 revisions

Kenya: Total pop.

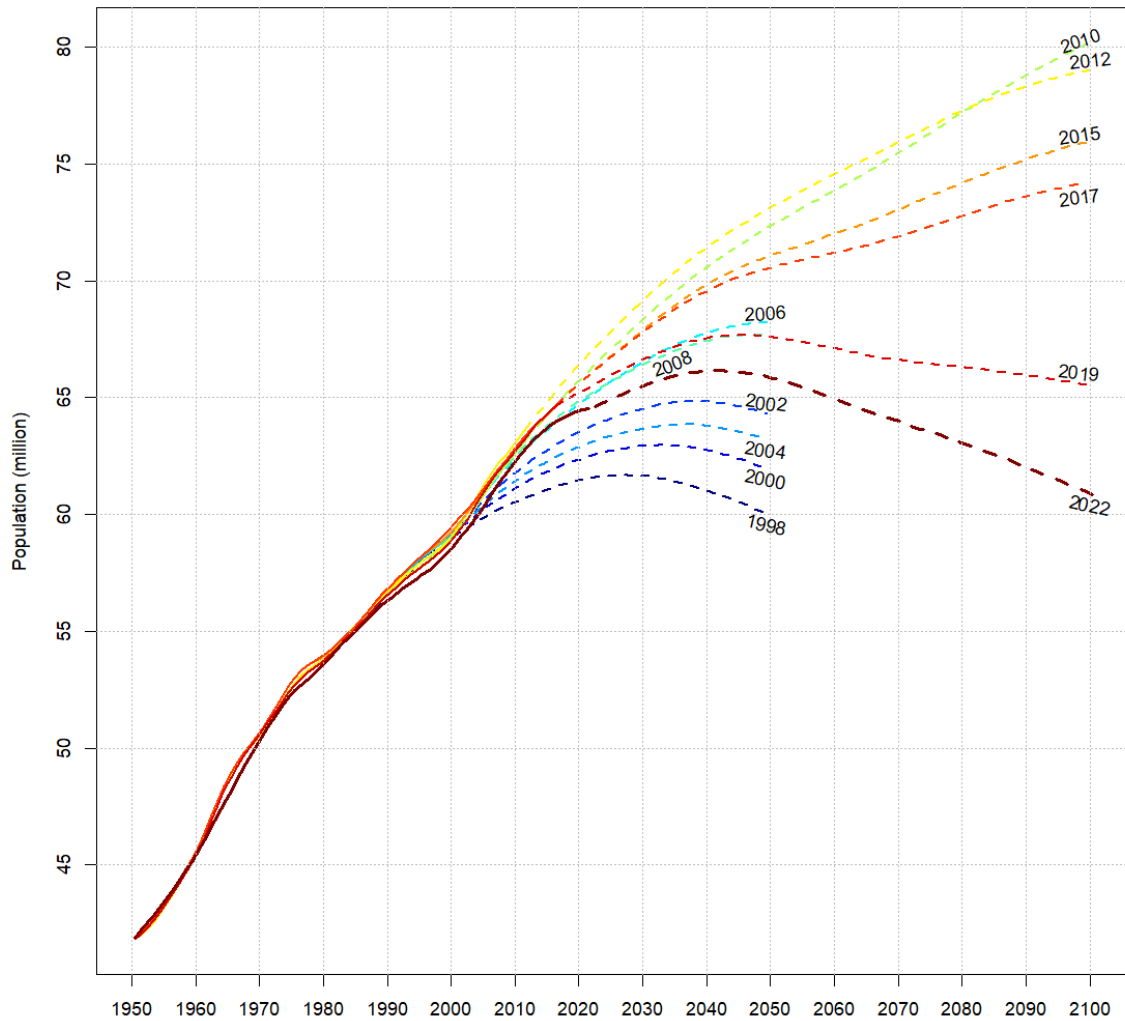


Kenya: TFR

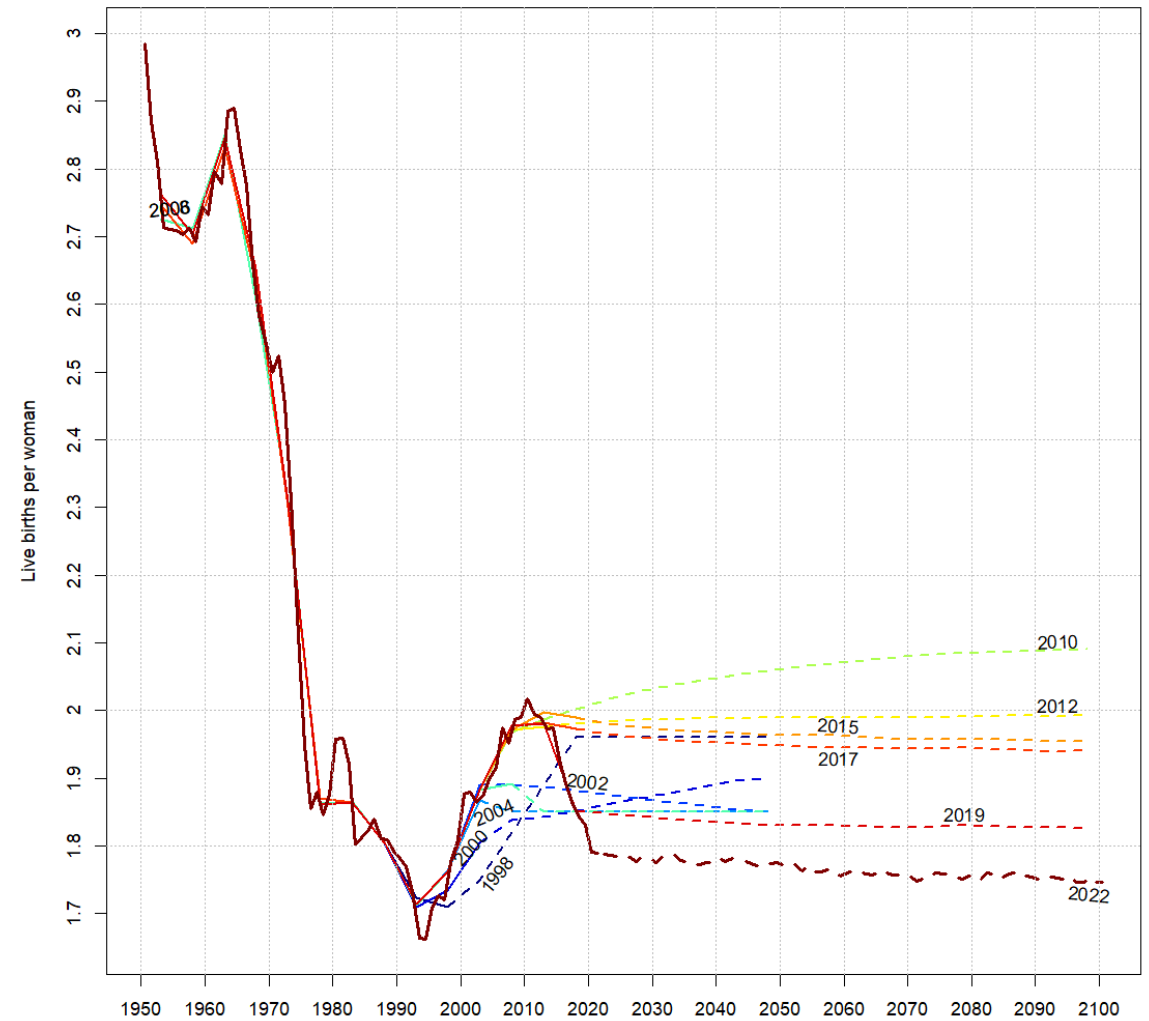


# France: WPP 1998-2022 revisions

France: Total pop.

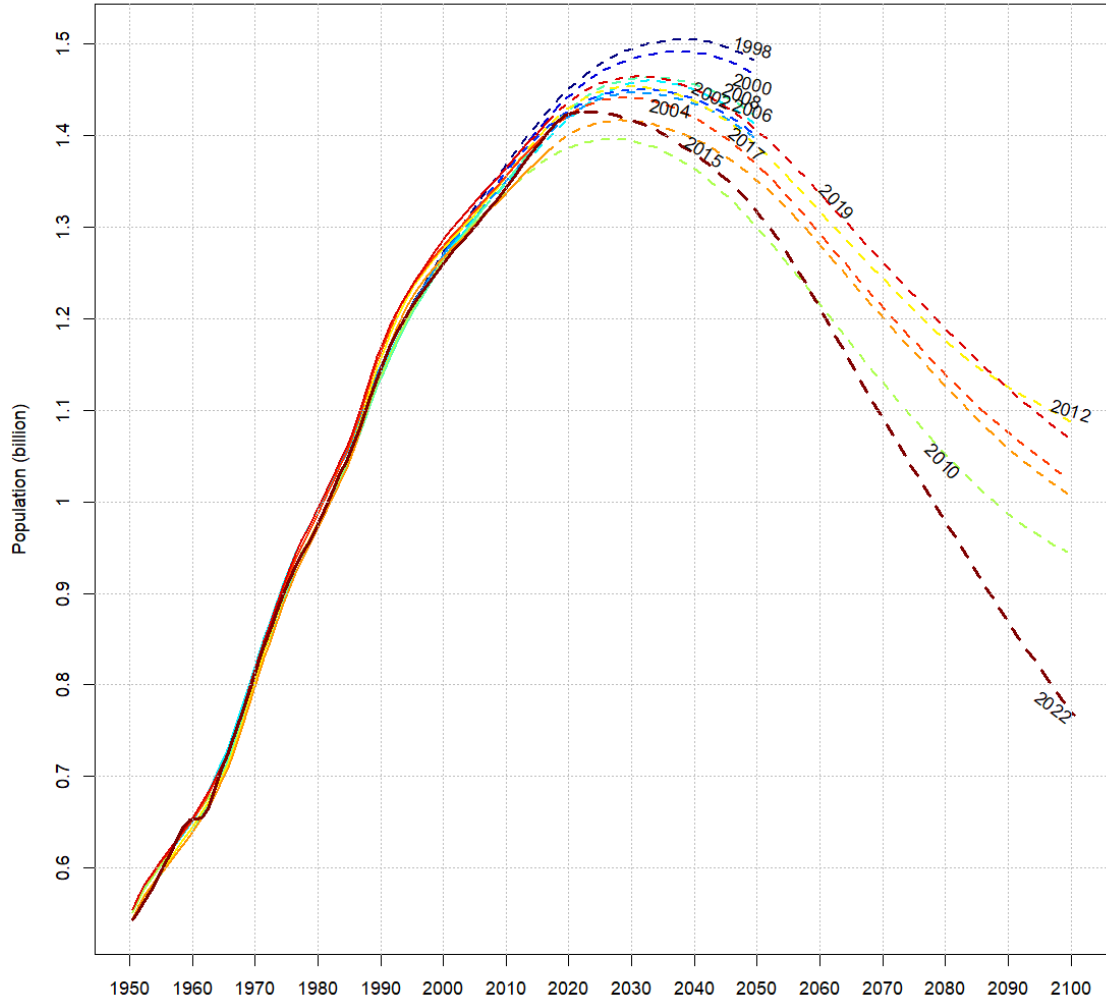


France: TFR

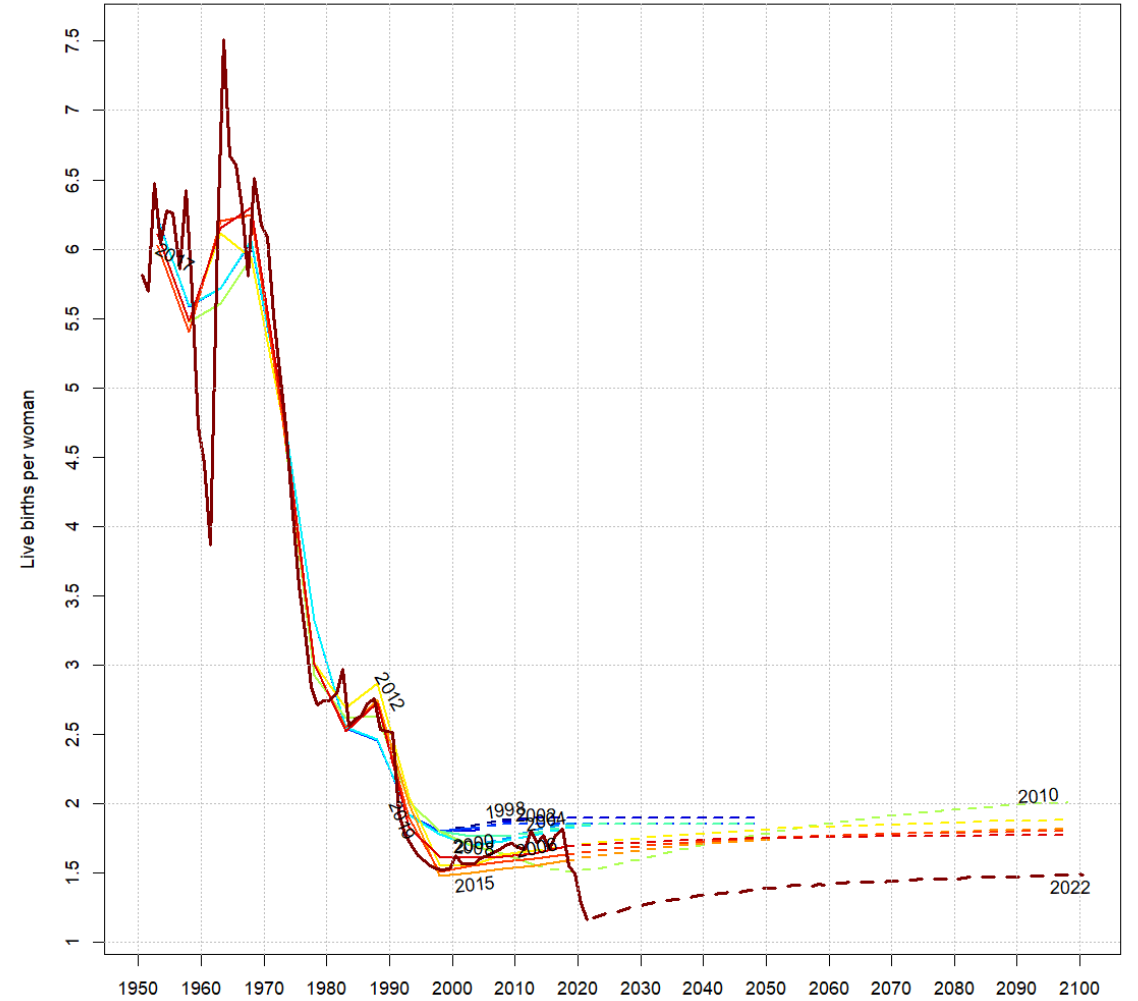


# China: WPP 1998-2022 revisions

China: Total pop.

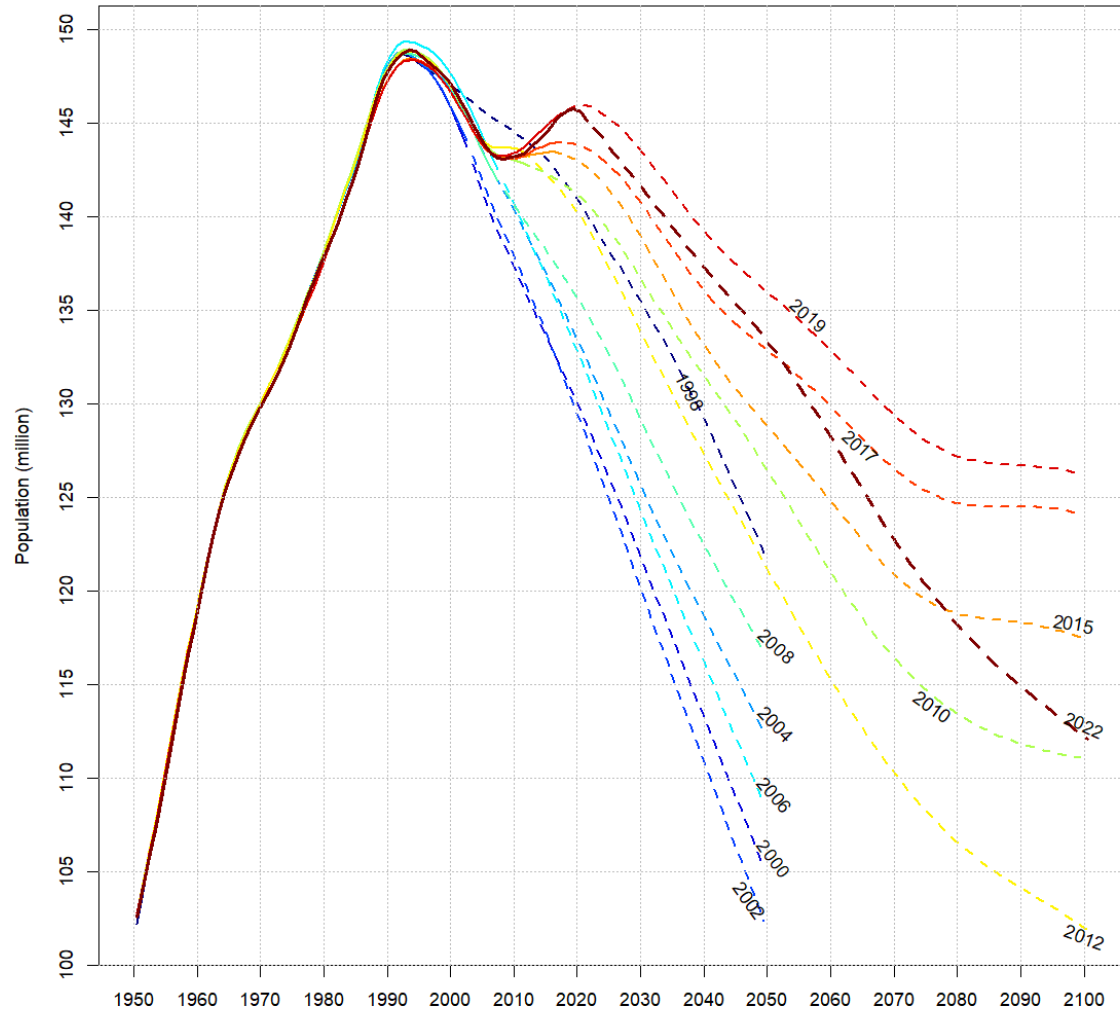


China: TFR

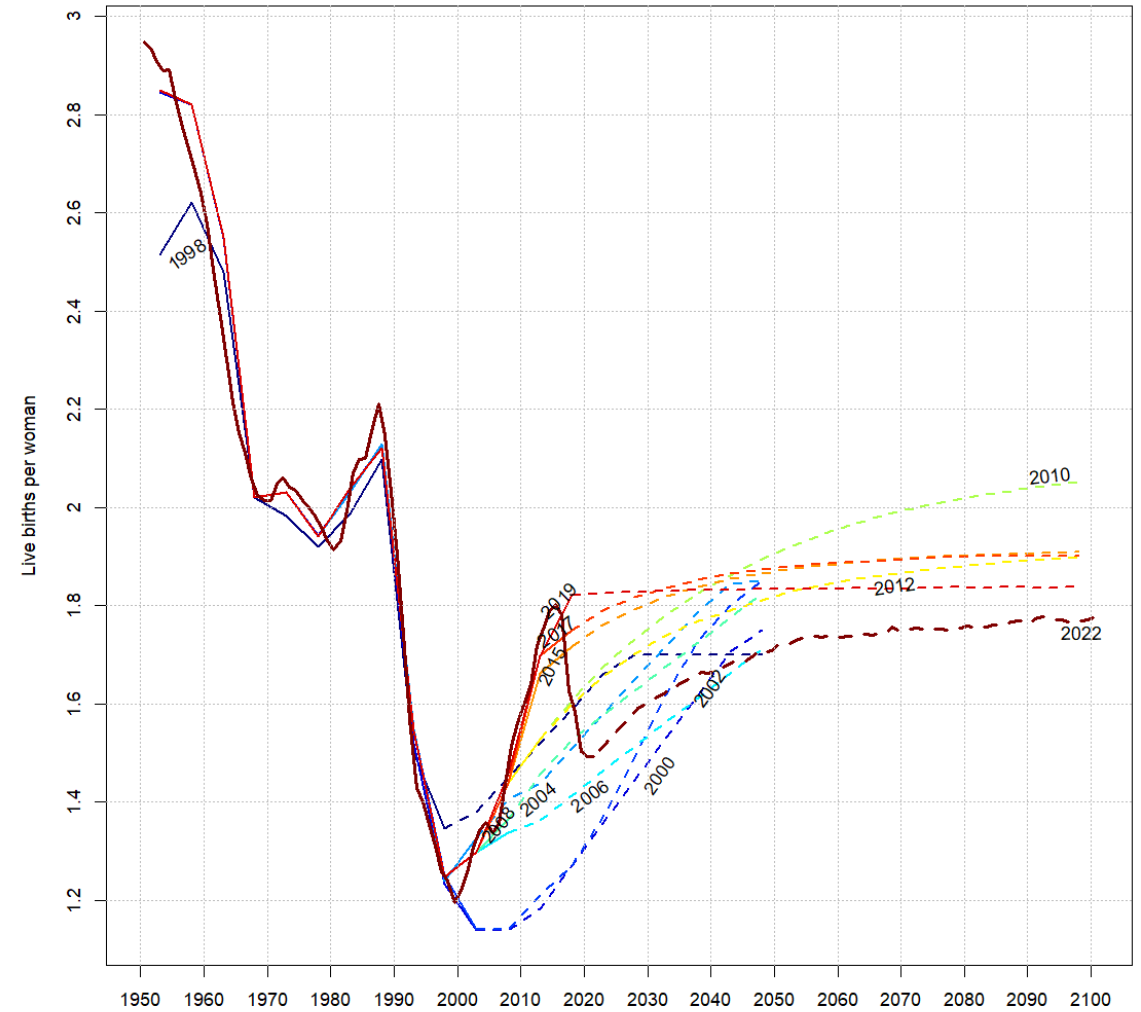


# Russian Federation: WPP 1998-2022 revisions

Russian Federation: Total pop.



Russian Federation: TFR



# Population balance (demographic accounting)

$$P_{t+n} = P_t + B_{t,t+n} - D_{t,t+n} + I_{t,t+n} - E_{t,t+n}$$

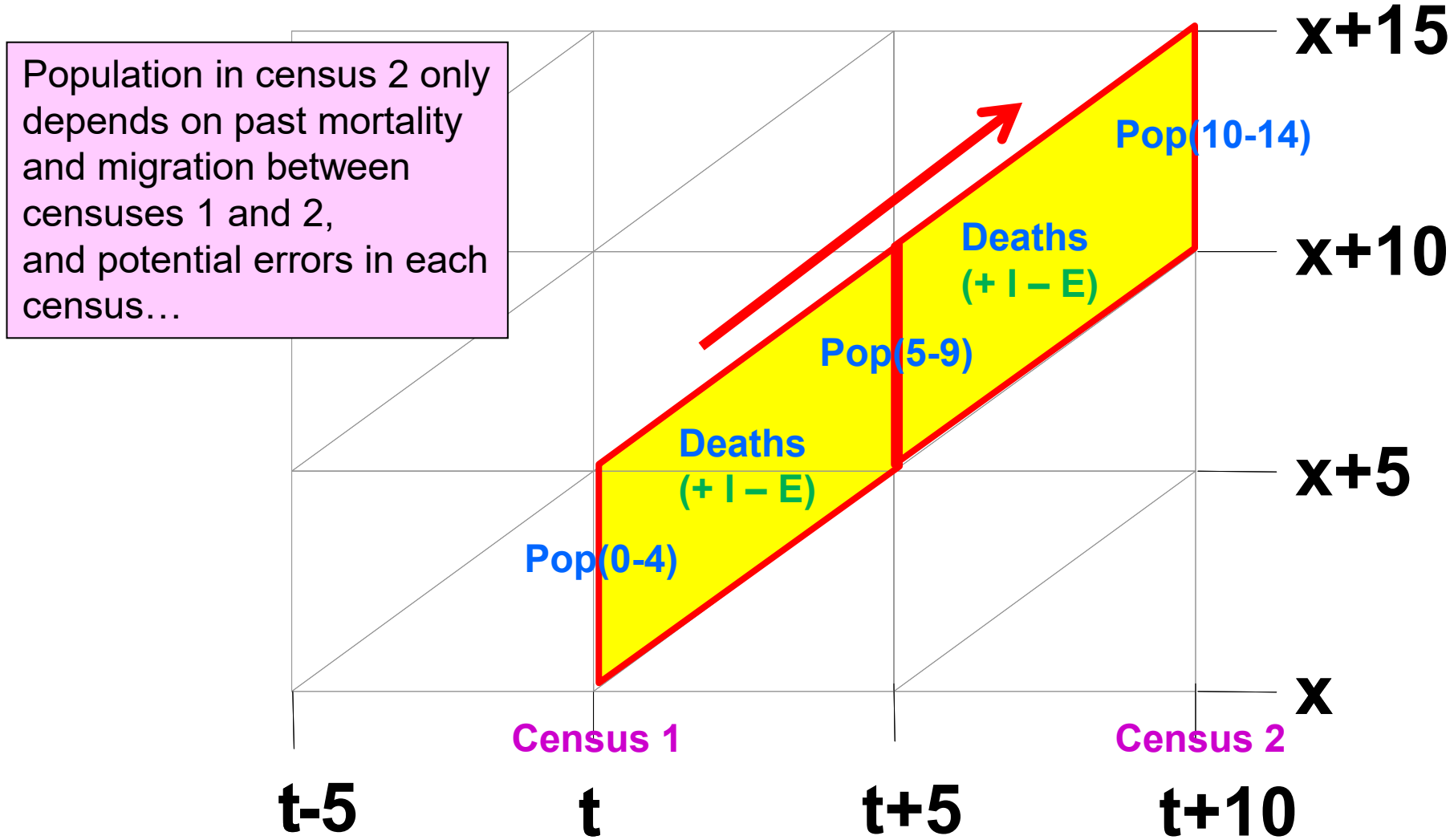
$$P_{t+n} - P_t = B_{t,t+n} - D_{t,t+n} + I_{t,t+n} - E_{t,t+n}$$

$P_t$  is the population at time  $t$

$B_{t,t+n}$  and  $D_{t,t+n}$  are number of births and deaths occurring between  $t$  and  $t + n$ .

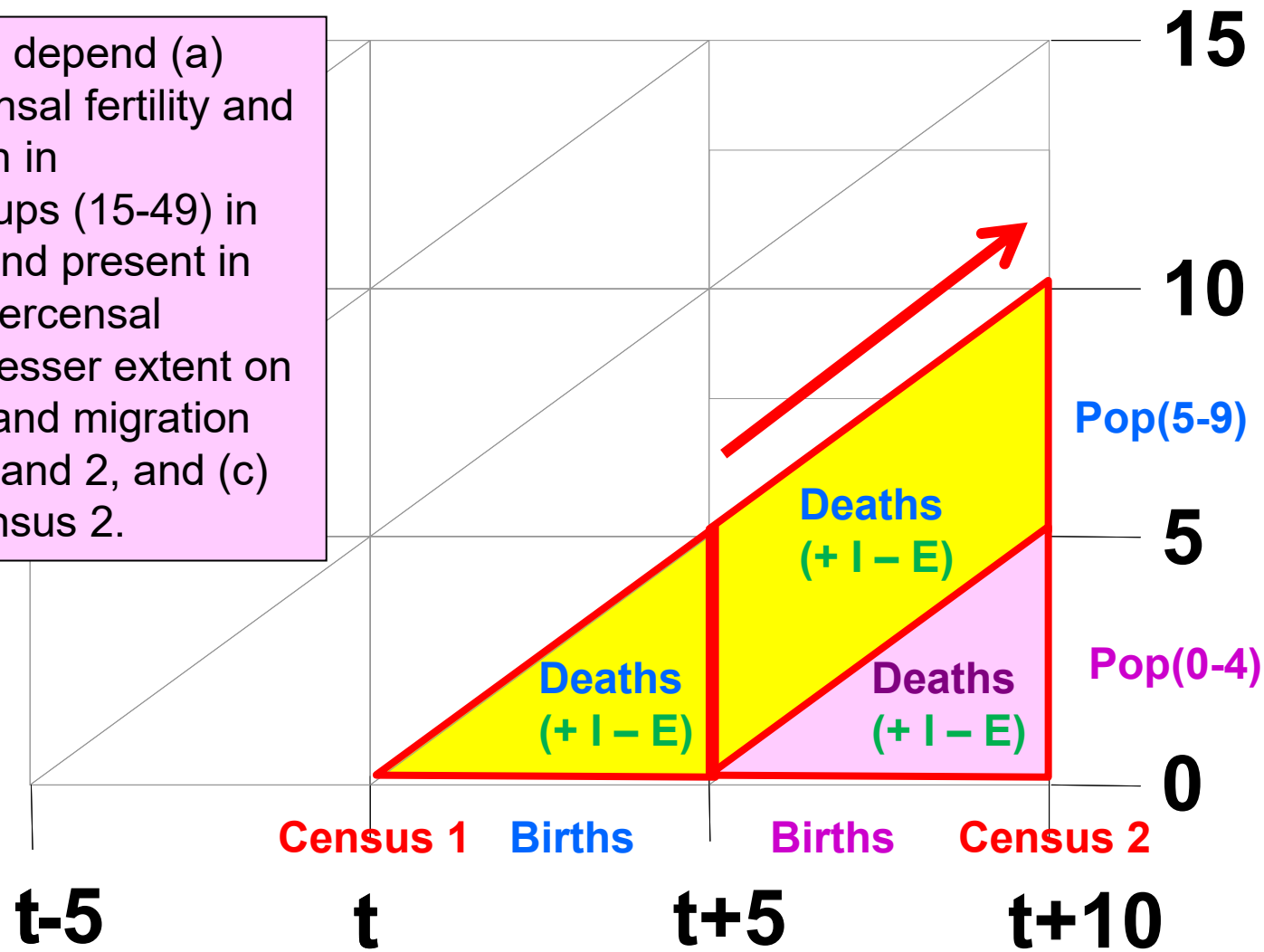
$I_{t,t+n}$  and  $E_{t,t+n}$  are number of immigrants and emigrants from the country during the same period

# Cohort component



# Cohort component

Youngest age groups depend (a) mostly on the intercensal fertility and the number of women in reproductive age groups (15-49) in census 1 (surviving and present in the country during intercensal period), and (b) to a lesser extent on infant/child mortality and migration between censuses 1 and 2, and (c) potential errors in census 2.



# Input data requirements for WPP

- For each of the 237 countries or areas:
  - Base population by sex and single year of age (or graduated 5-year age group) in 1950
  - For every year from 1950-2021, time series of:
    - fertility rates for women aged 10-54 years by single year of age group (or graduated 5-year age groups)
    - sex ratio at birth (males/females)
    - sex and age-specific mortality rates (life tables) for single ages (or graduated abridged age groups)
    - net international migration by sex and single ages

# Procedures/frequency to incorporate newly available data ?

- Estimates and projections are revised every 2 years, incorporating all newly available data from censuses, administrative registers, surveys, etc.
- Data collected through:
  - UN Statistics Division (Demographic Yearbook System)
  - UN regional commissions & agencies (UNICEF, UNFPA, UNHCR, UNAIDS, etc.)
  - Global or regional databases (WHO, Eurostat, HMD, HFD, etc.)
  - Public-use micro-datasets (IPUMS International, DHS, MICS, etc.)
  - Published reports and NSO web sites
  - Ad-hoc requests to national institutions
- Latest revision in 2022 considered:
  - **1,758 population censuses** conducted between 1950 and 2021
  - Information on **births and deaths from vital registration systems for 169 countries**
  - Demographic indicators from **2,890 surveys**

# With so many data available, why estimates are necessary...

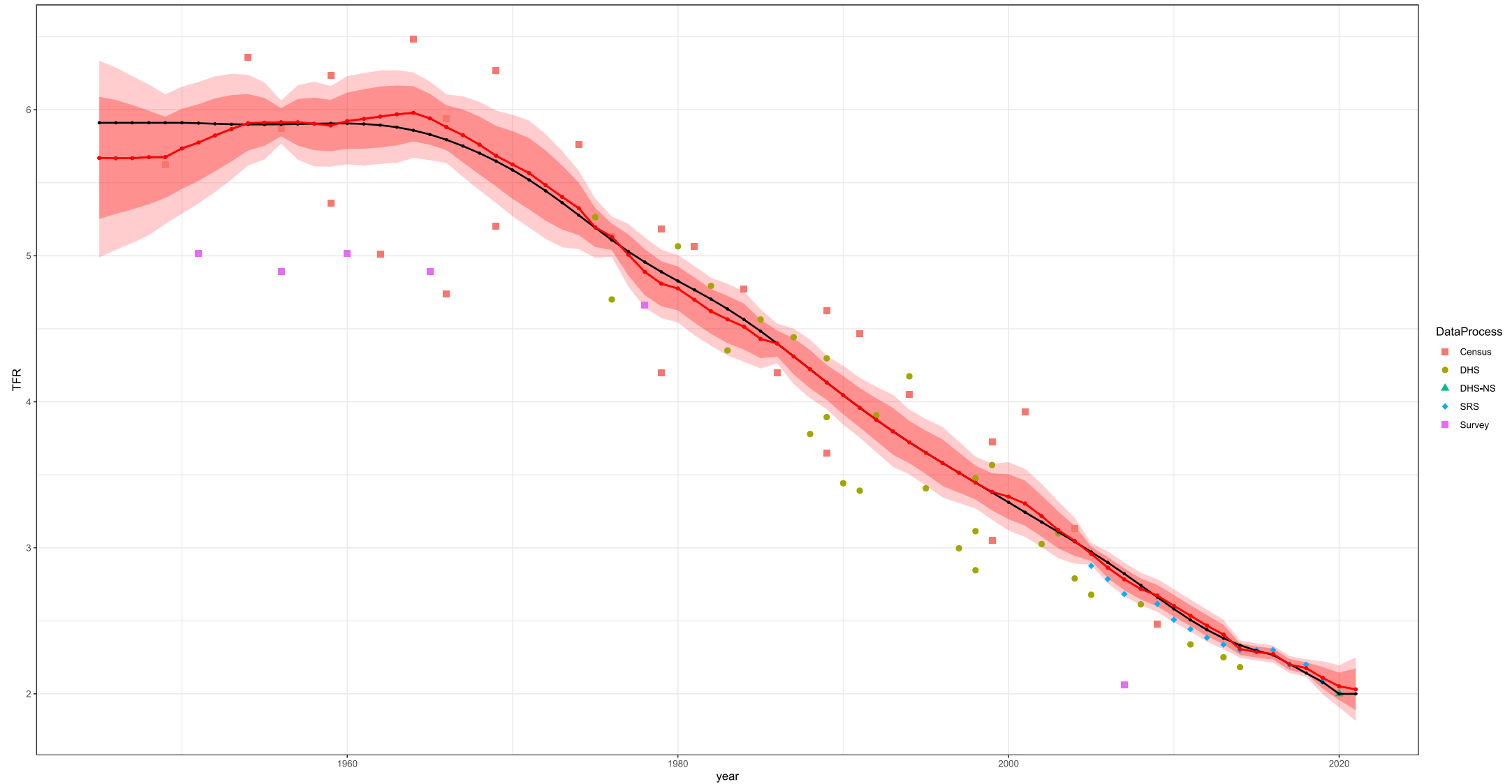
- **To fill-in gaps in missing data:** most information often available only for some countries and/or dates, or not sufficiently disaggregated by age
- **To reconcile differences** between (a) data sources and/or estimation method(s) for a specific date and (b) within sources over time
- **To ensure international comparability** using similar definitions/concepts, methodology and assumptions across countries

*UN population estimates and projections are used in the calculation of many development indicators used by the United Nations system, including about one-quarter of the indicators used to monitor global progress towards the achievement of the SDGs.*

# Estimation of robust time series for demographic rates (e.g., fertility and mortality)

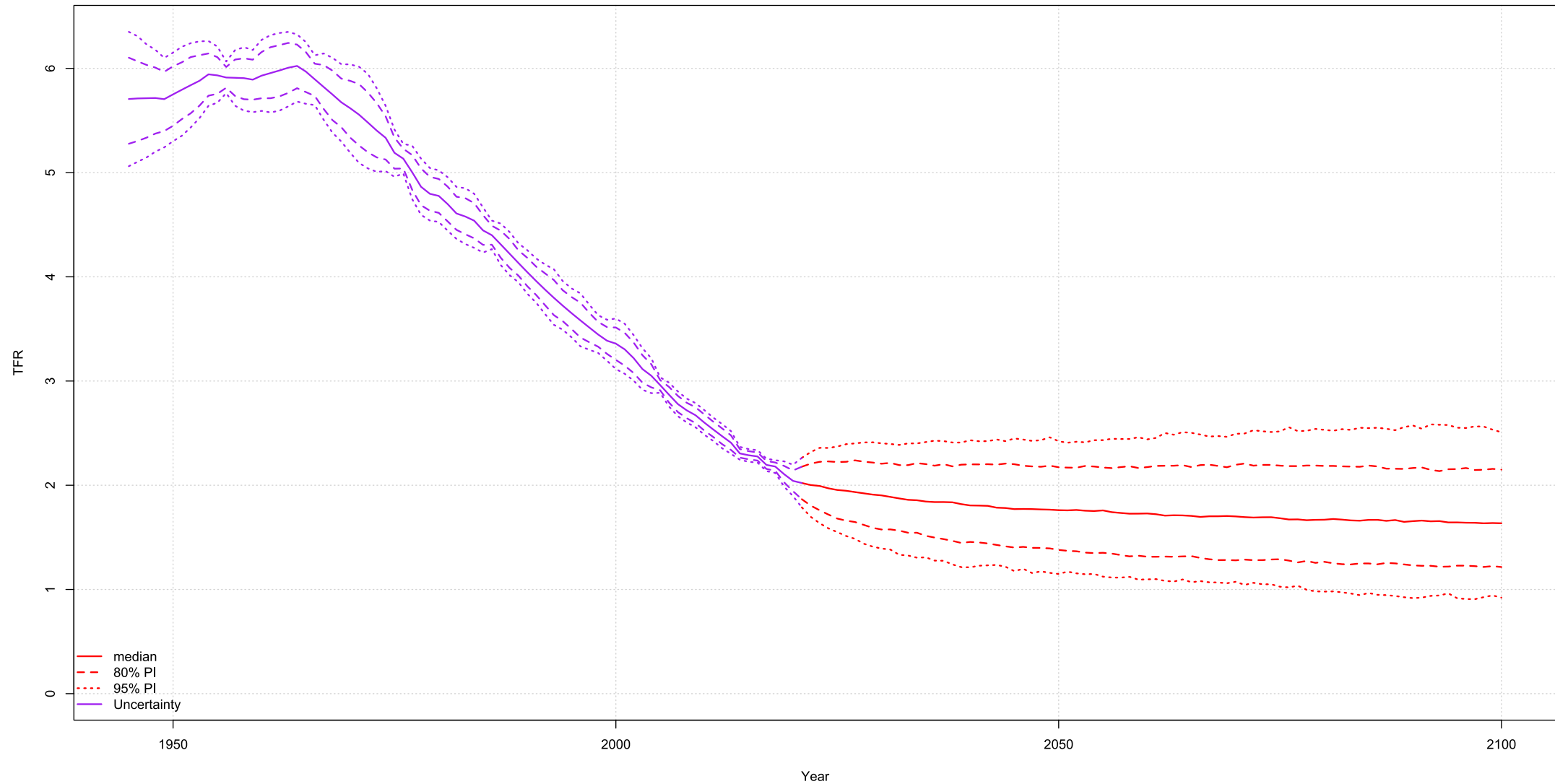
- For many countries, data available vary greatly in quantity, frequency, quality, reliability and consistency.
- Not all data points are as informative and can be trusted equally...
- Estimates can vary based on the **type of data sources** (census, surveys, vital registration), the **type of survey** itself (national survey vs. international survey programs), the **estimation methods** (direct or indirect estimates) and by **various biases affecting reporting of retrospective data** (e.g., birth histories or lifetime fertility, parental or siblings' survival).

# India TFR: 1950-2021 time trend



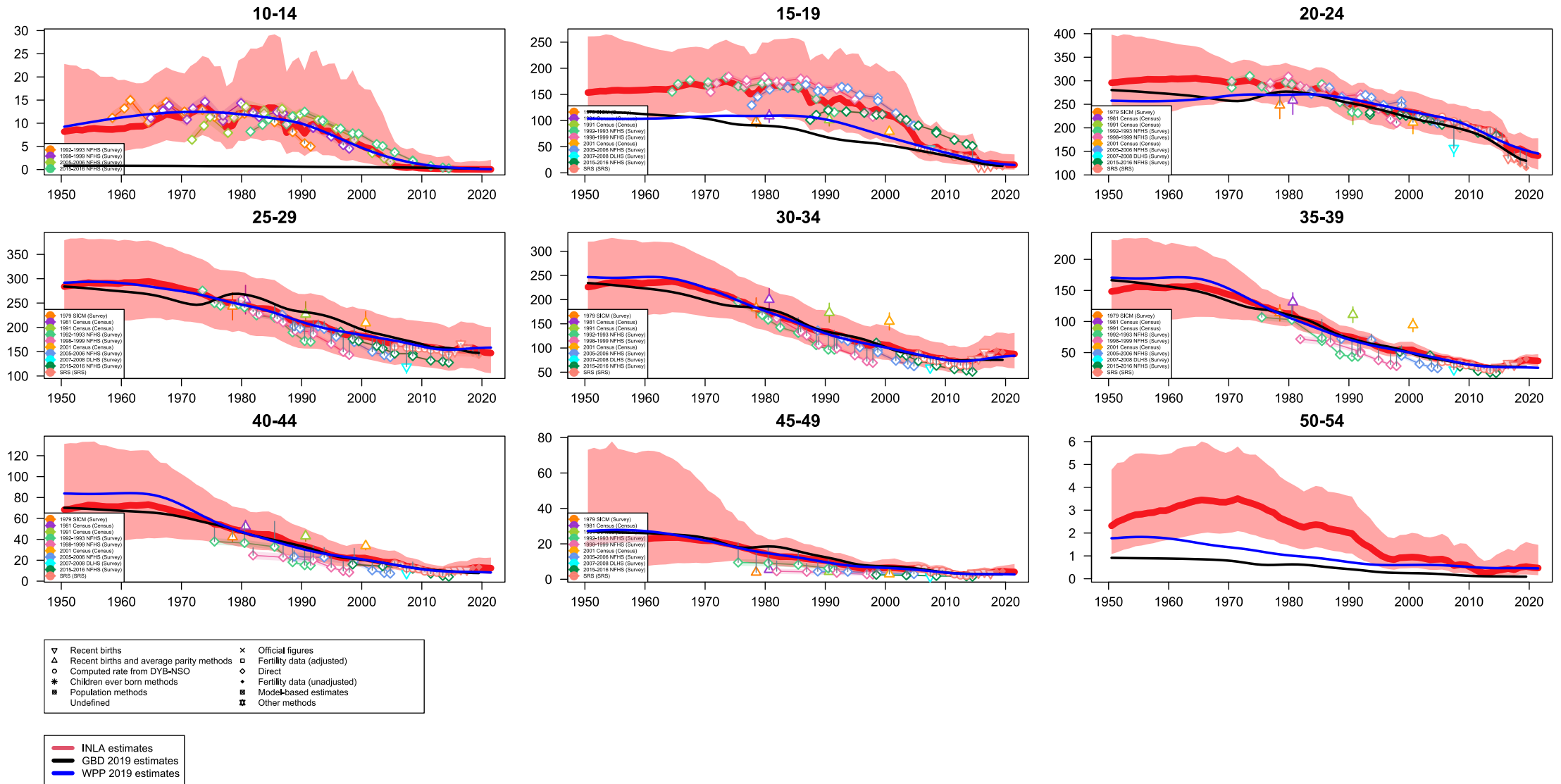
full run: 2022-05-10 09:54:01

# India TFR: 1950-2100 time trend



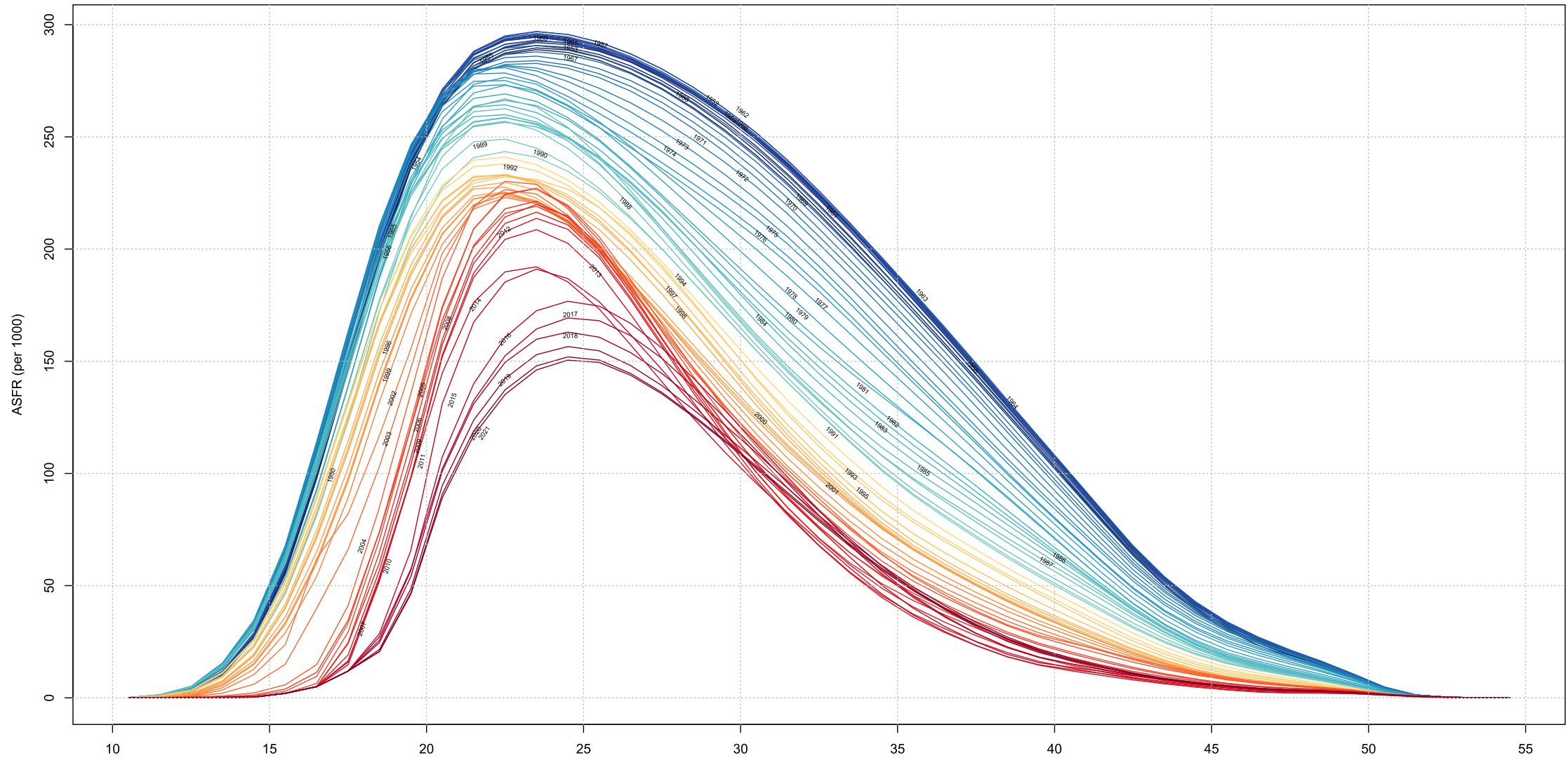
full run: 2022-04-11 00:49:44

# India fertility rates 5-year age groups: 1950-2021



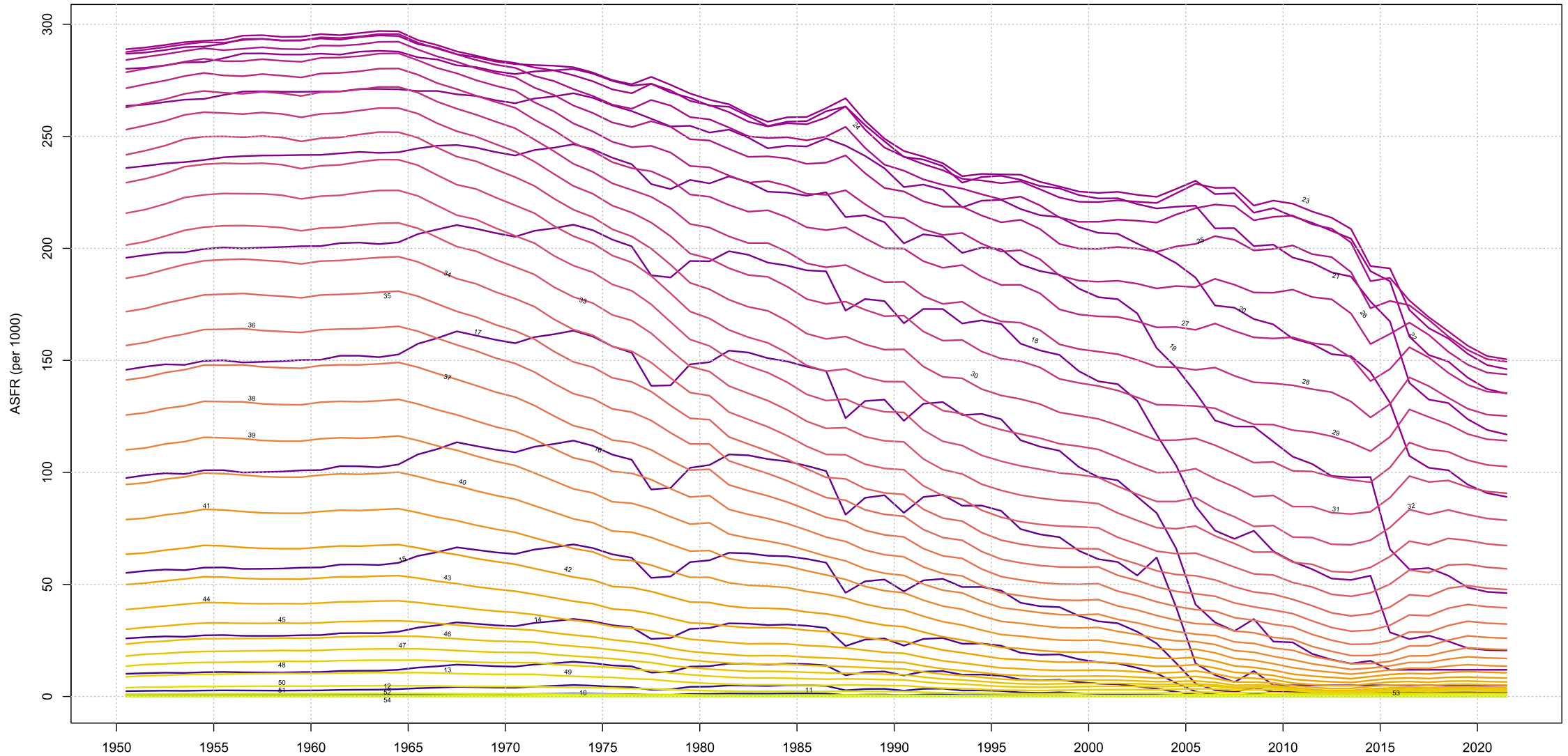
2022-05-10 16:20:24

# India fertility rates graduated by age: 1950-2021



2022-05-19 16:03:50

# India fertility rates graduated by age: 1950-2021



# WPP workflow process with vital rates

- Compile and compute direct and indirect estimates from as many empirical data sources as possible for each country since 1950
- Review and assess the various series
- Generate an initial robust time trend for overall summary indicators (e.g., TFR, 5q0, 45q15) and age-specific rates (e.g., ASFR, life tables)
- Use this initial set of estimates within the full cohort-component population reconstruction by age and sex since 1950
- Compare and assess the reconstructed population cohorts with those enumerated across the various censuses
- Revise and adjust the set of WPP estimates to reconcile the various demographic components (e.g., TFR) that satisfy the demographic balancing relationships over time, age and cohorts

# Age-specific type of mortality input data

- 113 locations with empirical life tables based on different types of inputs and data gaps

<b>Type of age pattern</b>	<b>Input data</b>	<b>Locations (n)</b>
Empirical	Complete	44
Empirical	Abridged	69
Model-based	Abridged	124
	<i>Total</i>	<i>237</i>

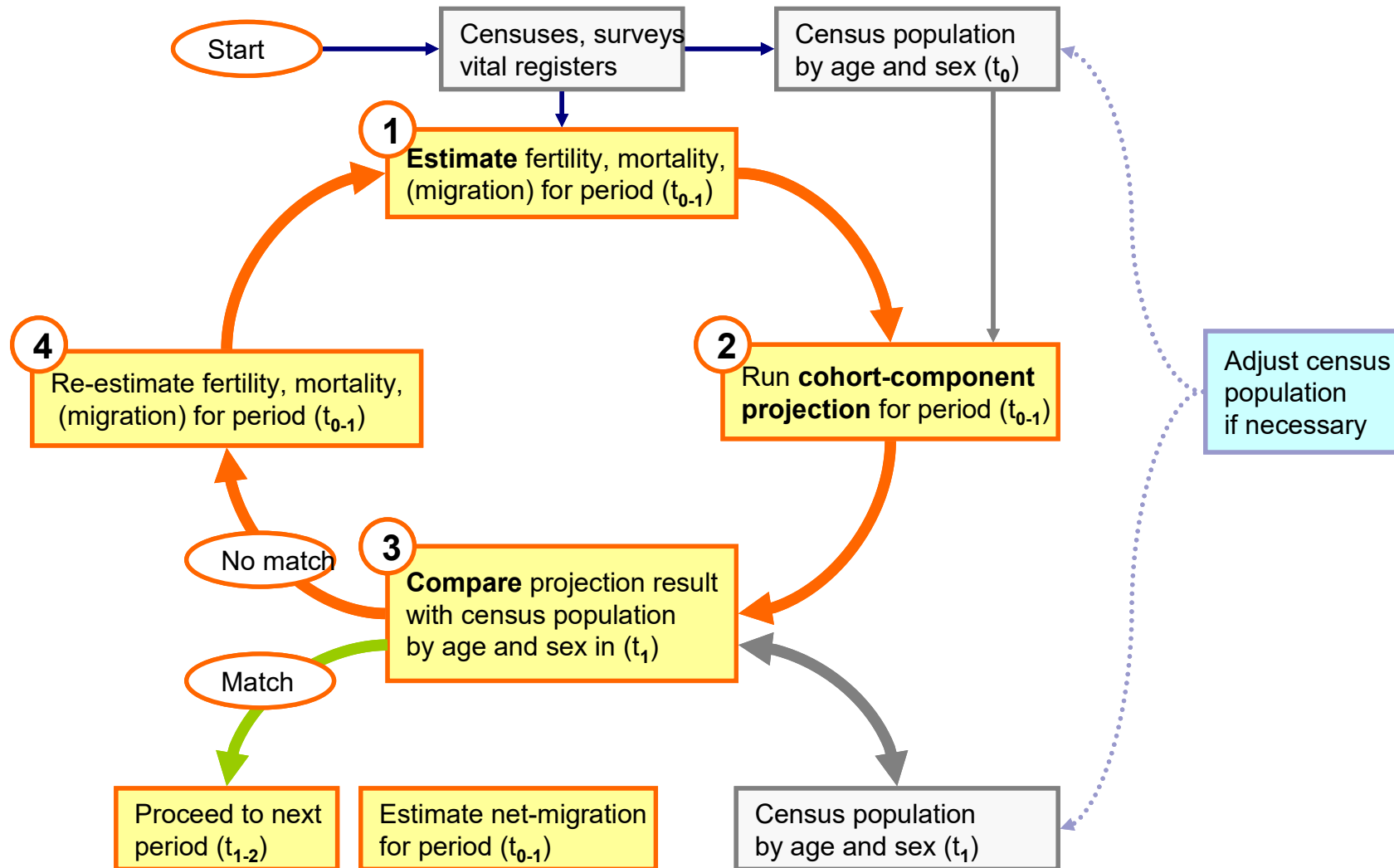
# Annual time series of excess mortality due to crises

- 1950-2021: **6945 country/area x years with mortality crises** out of 16,827 locations x years or about 41% (n=237 over 71 years)
- Conflicts and Battle deaths: 2355 locations x years (n=171)
- Mass killings (including genocide): 95 locations x years (n=18)
- Floodings: 2323 locations x years (n=162)
- Cyclones: 1605 locations x years (n=169)
- Epidemics: 1988 locations x years (n=152)
- Earthquakes: 1143 locations x years (n=124)
- COVID-19: 431 locations x years (n=218)
- Famines/Droughts: 160 locations x years (n=32)
- Tsunami: 45 locations x years (n=25)

## **About 61 million excess deaths:**

- **19.8 million due to conflicts (32%)**
- **19.9 million due to famines (33%)**
- **4.7 million due to natural disasters (8%)**
- **15.0 million due to COVID-19 (25%)**

# WPP estimation process for each country/area



# UN cohort-component projections to cross-validate estimations

Remember... over the last 70 years:

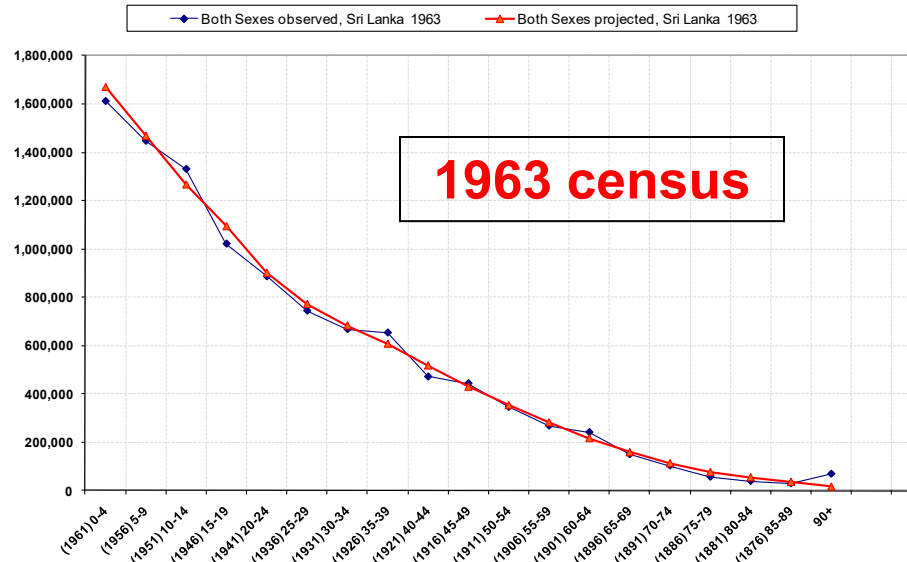
- 87% of countries have  $\geq 3$  censuses, 77% have  $\geq 4$  and about half of the countries have  $\geq 5$ .
- Each census can be evaluated by itself, and in the context of the previous ones by following birth cohorts over time.

With at least 3-5 censuses in the last decades...

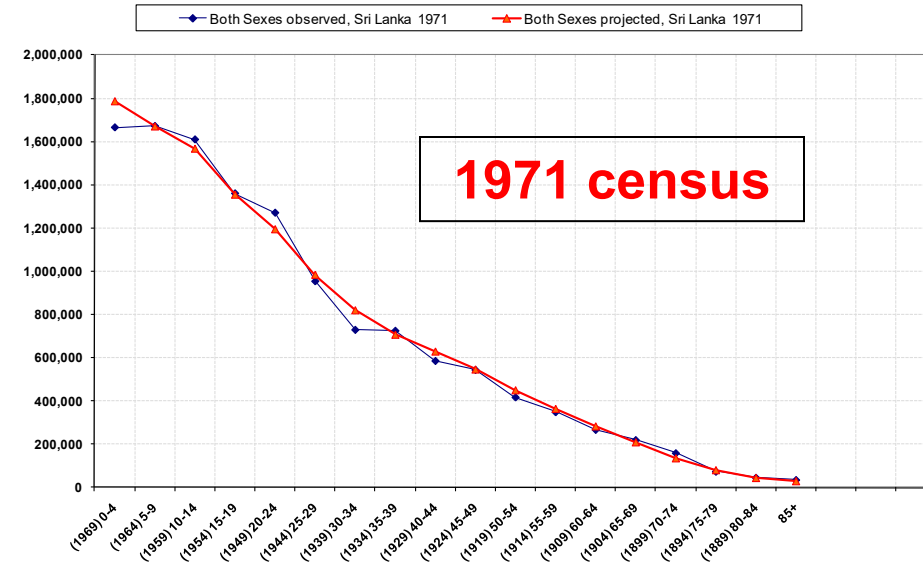
1. Start cohort-component projections with base year in 1950 for all 237 countries/areas.
2. Insure full internal consistency by age and sex between all demographic components and enumerated populations.

# Sri Lanka: 1963-2001 censuses

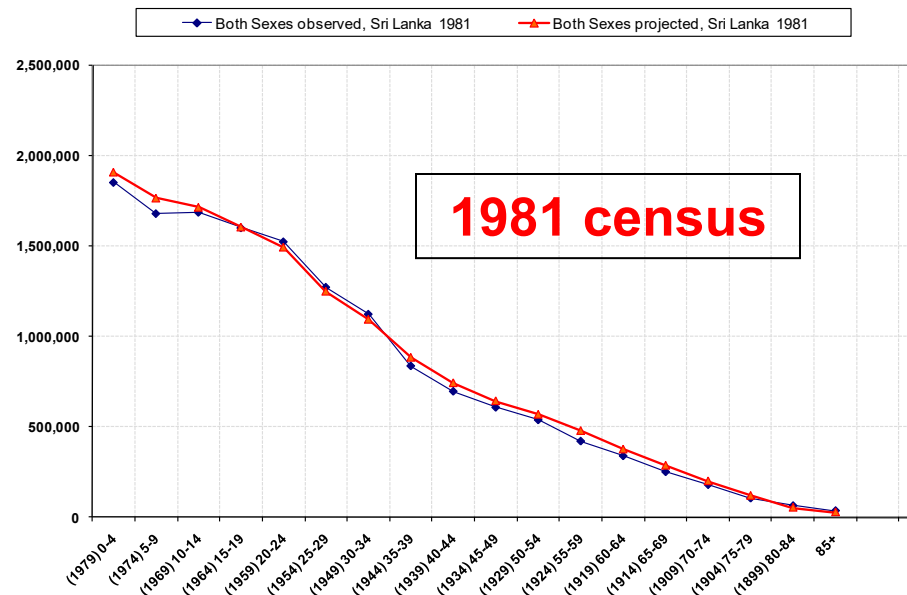
Sri Lanka - Comparison of the projected and observed Both Sexes population: WPP vs 1963 Census



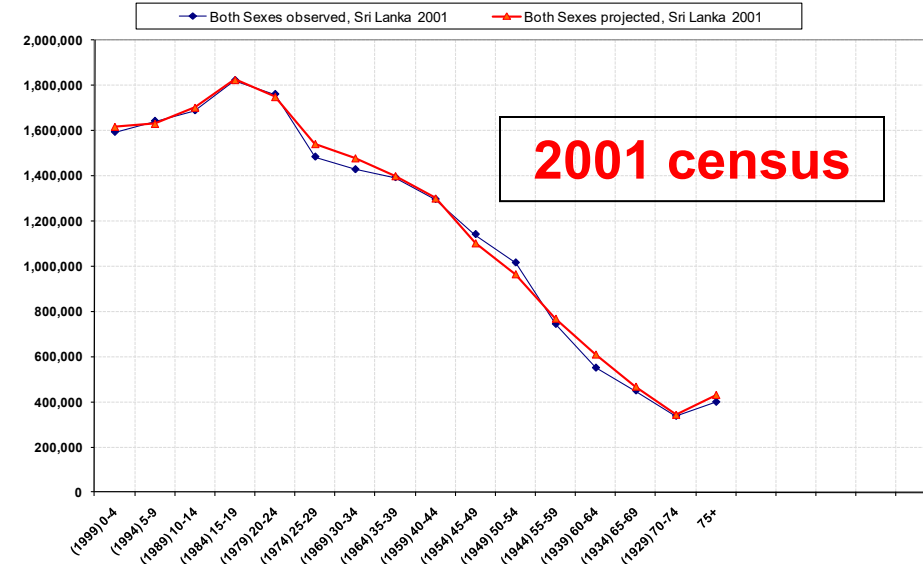
Sri Lanka - Comparison of the projected and observed Both Sexes population: WPP vs 1971 Census



Sri Lanka - Comparison of the projected and observed Both Sexes population: WPP vs 1981 Census



Sri Lanka - Comparison of the projected and observed Both Sexes population: WPP vs 2001 Census



# Steps of cohort-component population projection

- 1. Survive the base population in  $t$  by age and sex to  $t+n$  in projection period**

Multiply each age group population by life table survival ratios (open-ended interval requires special handling)

- 2. Make any necessary adjustments for migration**
- 3. Calculate the total number of births (total, by sex) during  $t, t+n$**
- 4. Apply survivorship to these births to determine number that survive to  $t+n$**
- 5. Obtain population projection at  $t+n$**
- 6. Repeat steps 1-5 for the next projection period**

# How to project the components of population change?

- Deterministic
  - Project fertility, mortality and migration and use with base population in cohort-component framework
  - Can do this through trend extrapolation, parametric modelling, assumptions (e.g., expert-based)
  - Can investigate implications of different scenarios
    - Fast vs slow pace of fertility decline
    - Instant-replacement fertility
    - Constant-mortality
    - No migration
- Probabilistic
  - Employ statistical models to project likely trajectories of fertility, mortality and migration, then use results with base population in cohort-component framework

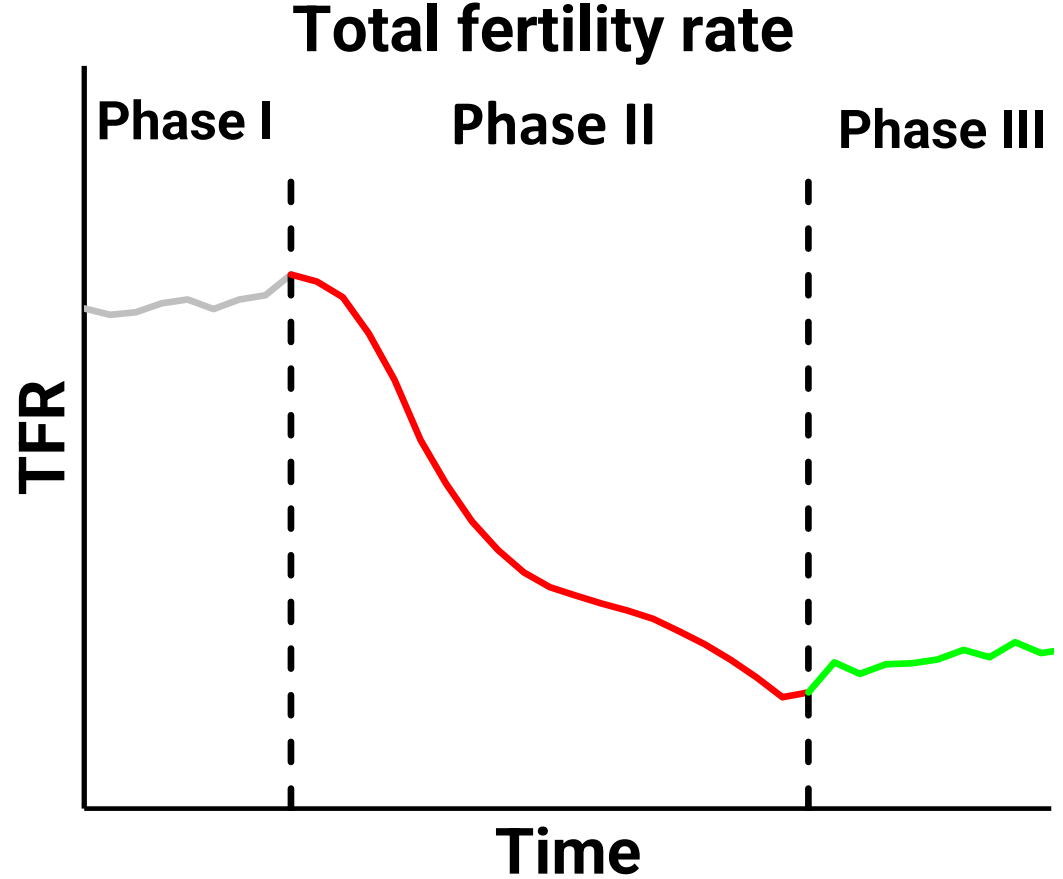
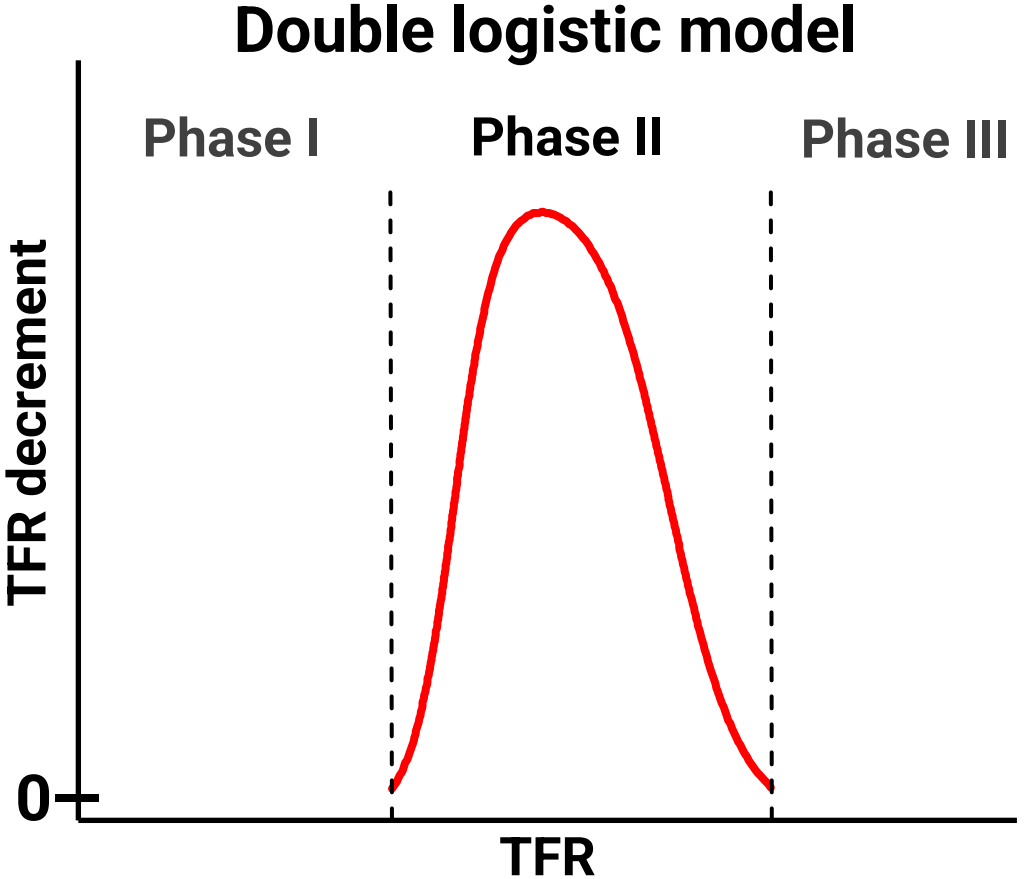
# Using historical evidence for projections

- UN projections of fertility and mortality are guided by historical trends in those same variables
- Regularities in historical trends have led to theories of demographic change, which give structure to the projection model
- Model is calibrated for each country using an estimation procedure that relies primarily on data for that country
- Data for other countries influence estimates especially for countries in which the transition is less complete
- Bayesian hierarchical model of past trends, combined with time series model of future trends, yields probabilistic depiction of plausible future outcomes

# Theory-based methods

- Theories of the demographic transition share certain common points about the historical decline of fertility and mortality, which are reflected in the structure of the United Nations projection model
- For fertility, there is a transition from high to low values of TFR, typically followed by fluctuations and a modest recovery (i.e., below replacement level)
- For mortality, the increase of life expectancy at birth follows an S-curve (slow-rapid-slow change), which remains positive and roughly linear in the final phase

# Three phases of TFR trend: Pre-decline, decline and post-decline

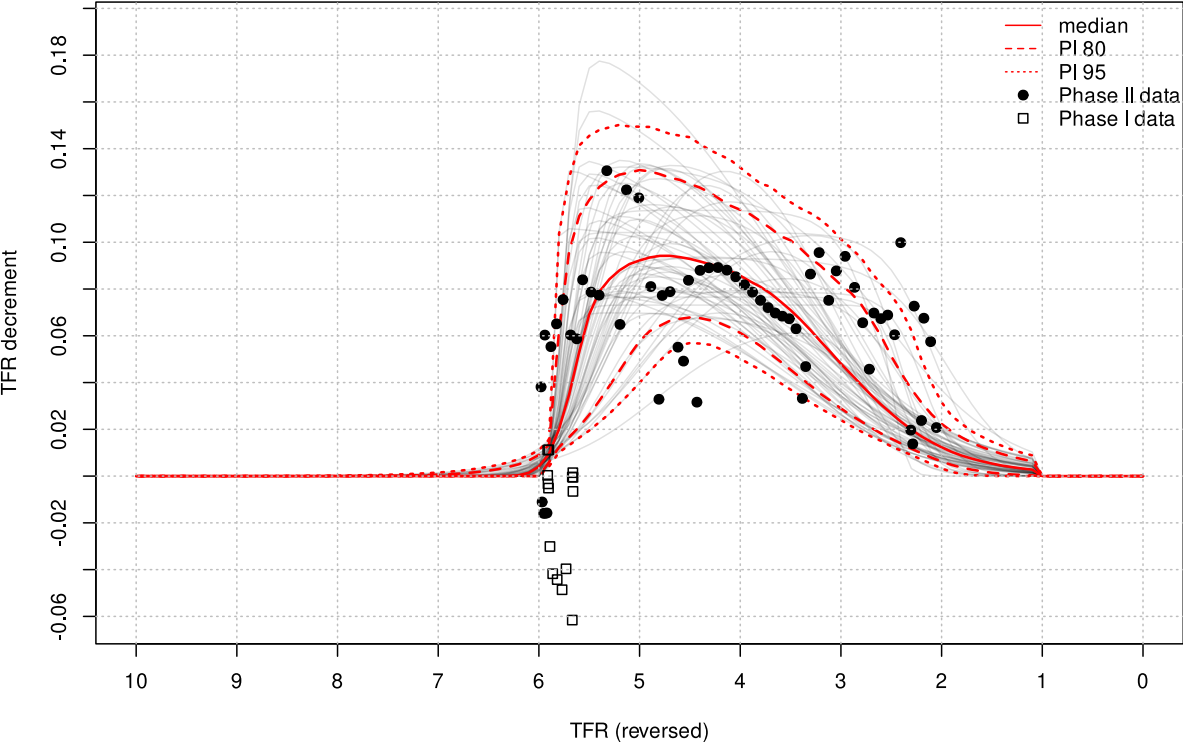


# Phase II: fertility decline model

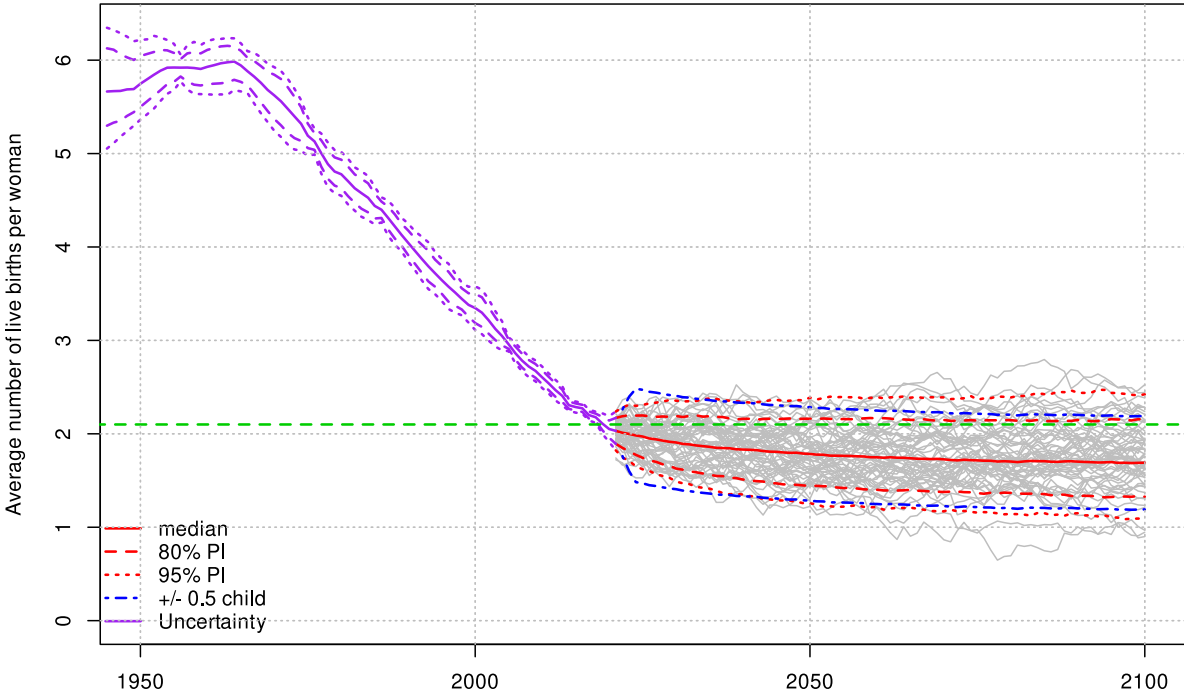
- Rate of TFR decline depends on level of TFR
- Peak rate of decline when total fertility rates is around 5 or 6
- Slower decline for  $TFR > 6$  or  $TFR < 5$
- Rate of decline in the TFR, as a function of its current level, is modeled using a double-logistic function, which has an inverted U-shape
- Bayesian hierarchical model used to estimate model for the world and for each country
- In addition, standard time series methods are used to project future trends once countries reach below replacement level

# Fertility projection for India

TFR: Rate of decline function

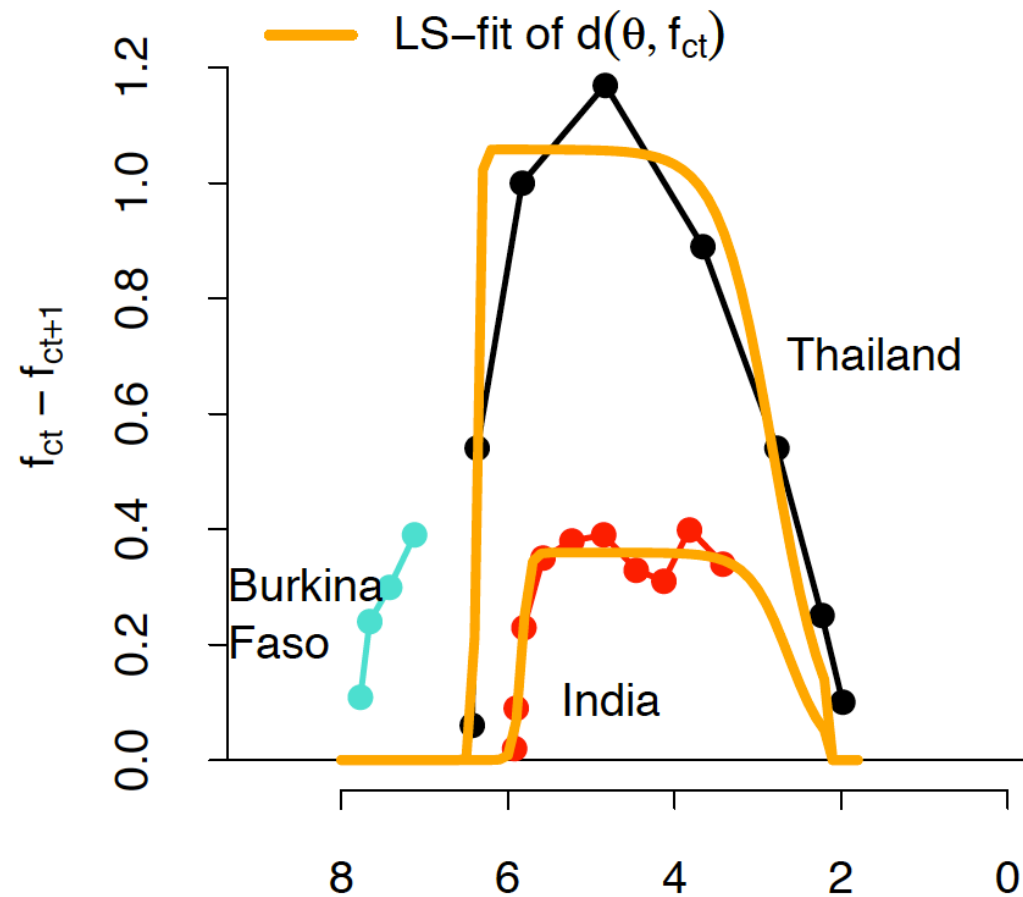


Probabilistic TFR projections



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 United Nations, DESA, Population Division. *World Population Prospects 2022*. <http://population.un.org/wpp/>

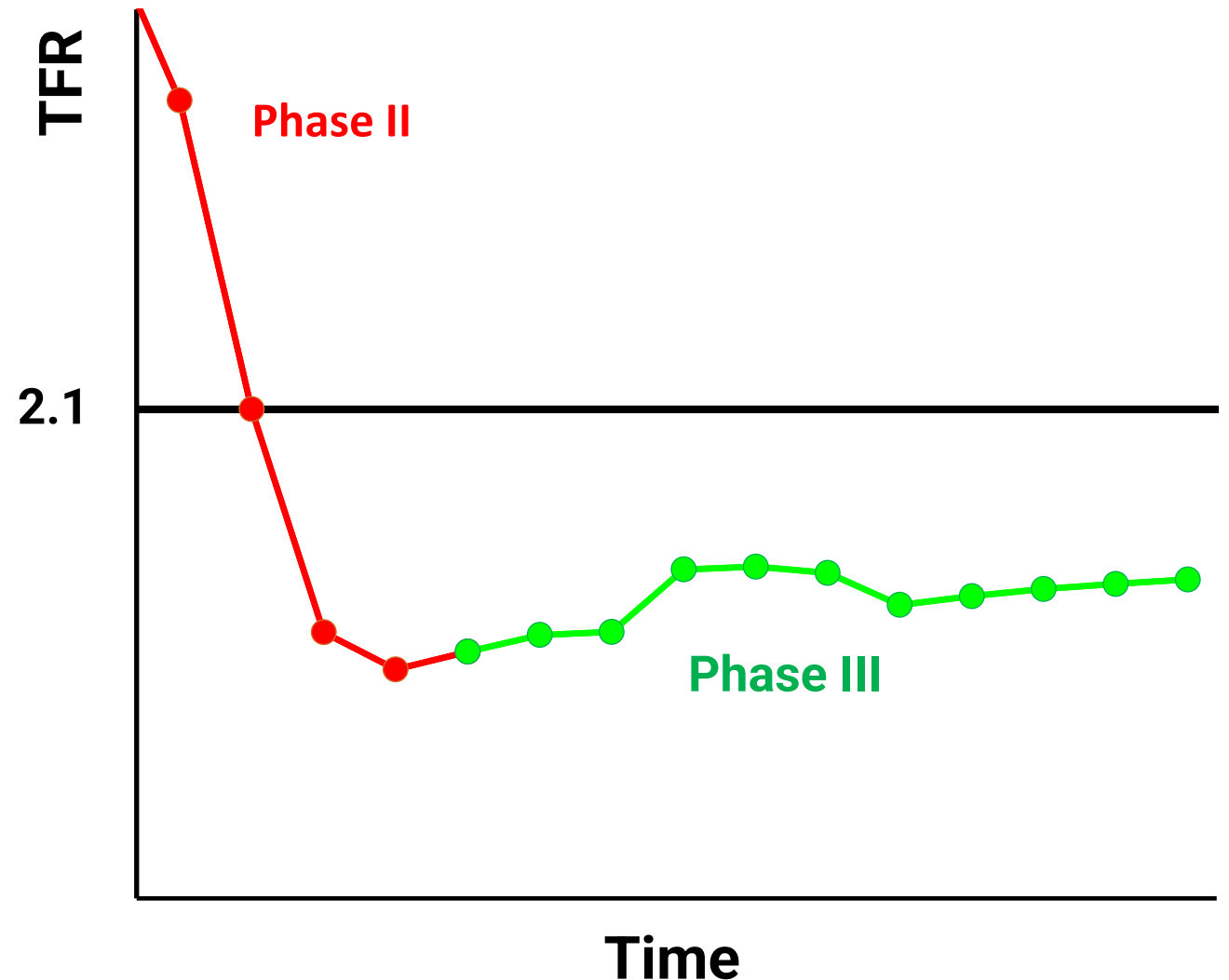
# Country-specific estimates of the TFR rate of decline function



Source: [Alkema L., A.E. Raftery, P. Gerland, S.J. Clark, F. Pelletier, T. Buettner, and G.K. Heilig \(2011\). "Probabilistic Projections of the Total Fertility Rate for All Countries." in: Demography, 48:815-839. doi: 10.1007/s13524-011-0040-5 \[open access\]](#)

# Post-transition fertility trend

Phase III begins, by definition, after the first of two consecutive increases in TFR over 5-year intervals after reaching its minimum when  $TFR < 2$



# 48 countries/areas in Phase III by 2021

- Europe

- Armenia
- Austria
- Belarus
- Belgium
- Bulgaria
- Czechia
- Denmark
- Estonia
- Finland
- France
- Germany
- Greece
- Guernsey
- Hungary
- Ireland
- Italy
- Jersey
- Latvia
- Lithuania
- Luxembourg
- Malta
- Netherlands
- North Macedonia
- Norway
- Poland
- Republic of Moldova
- Romania
- Russian Federation
- Serbia
- Slovakia
- Slovenia
- Spain
- Sweden
- Switzerland
- Ukraine
- United Kingdom

- Eastern & South-Eastern Asia / Pacific

- Australia
- China
- China - Hong Kong SAR
- China - Macao SAR
- China - Taiwan Province of China
- Japan
- Singapore
- Viet Nam

- Latin America and the Caribbean

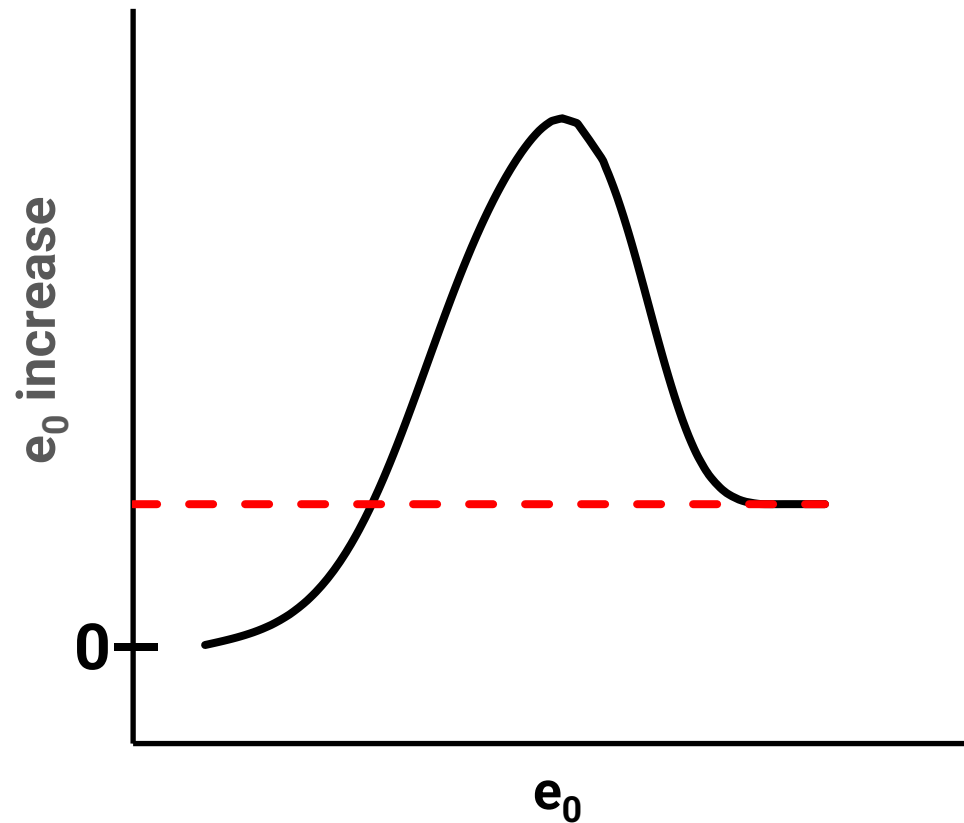
- Barbados
- Cuba

- Northern America

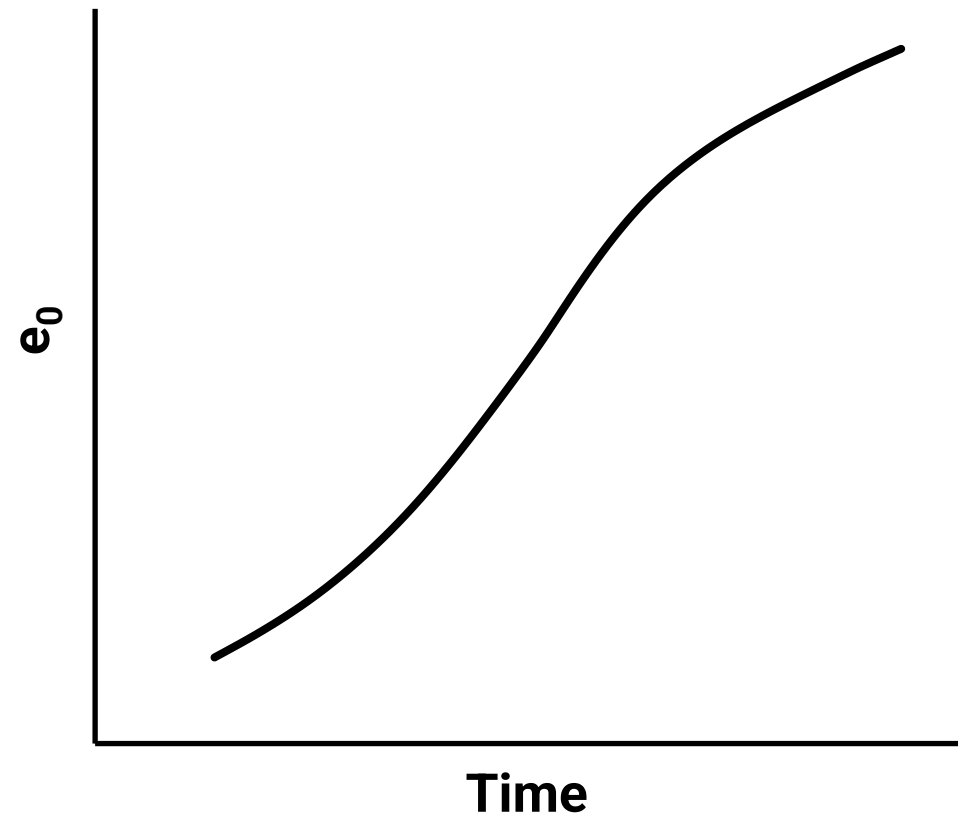
- Canada
- United States of America

# Model of historical trend in life expectancy at birth

## Double logistic model

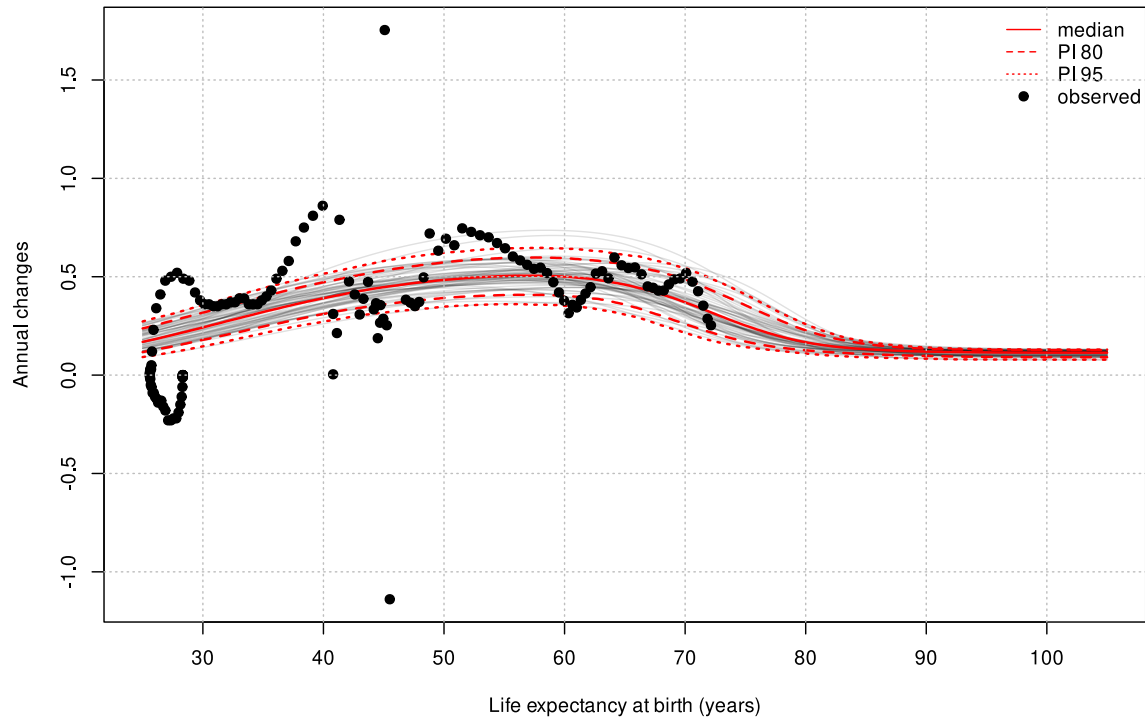


## Life expectancy at birth



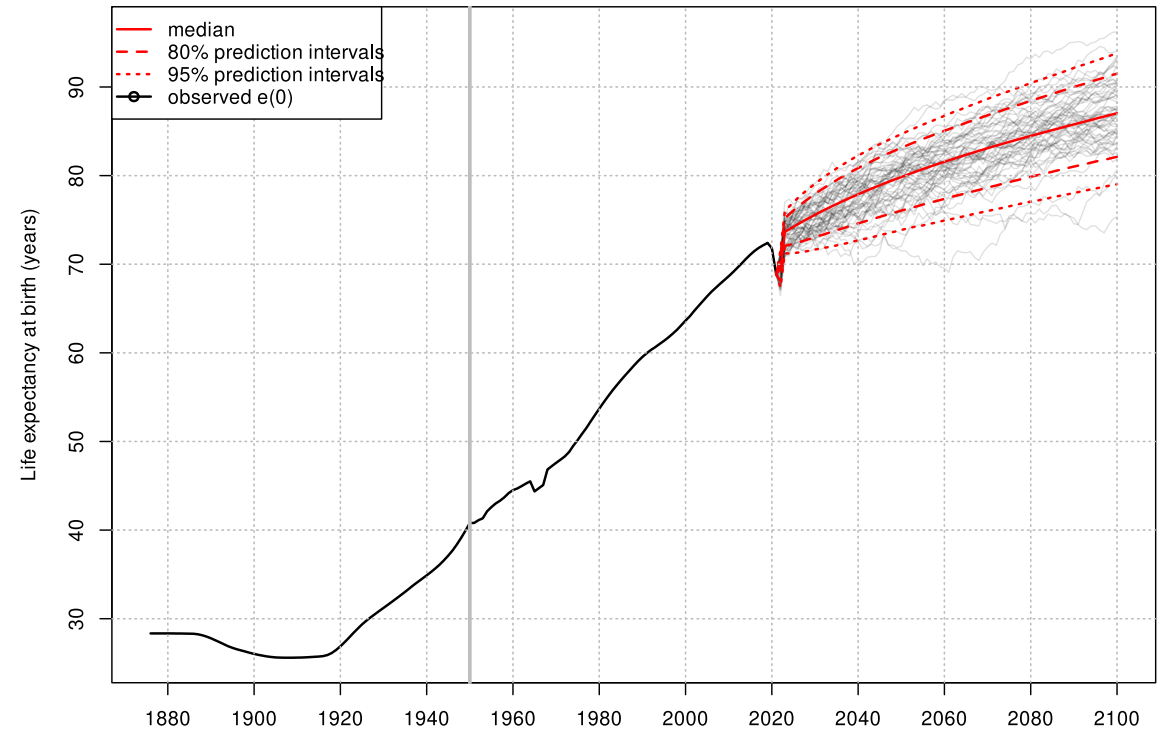
# India: female life expectancy at birth projection

## Rate of improvement function



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United Nations, DESA, Population Division. *World Population Prospects 2022*. <http://population.un.org/wpp/>

## Probabilistic projections

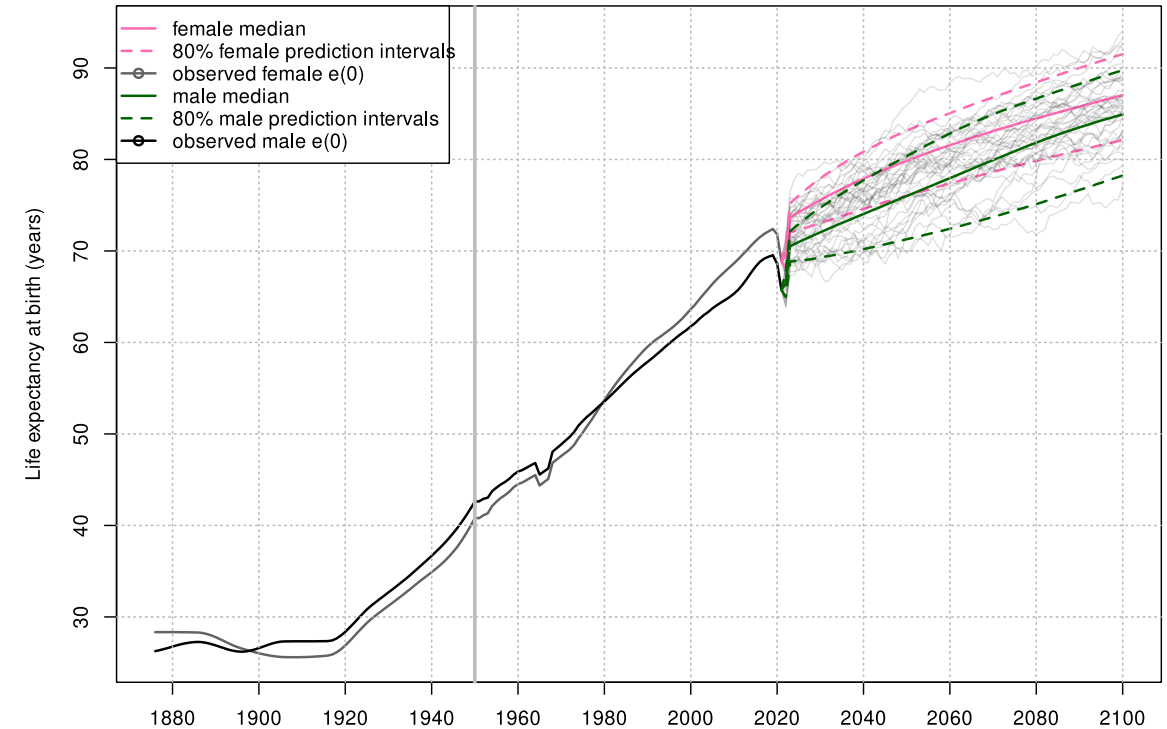
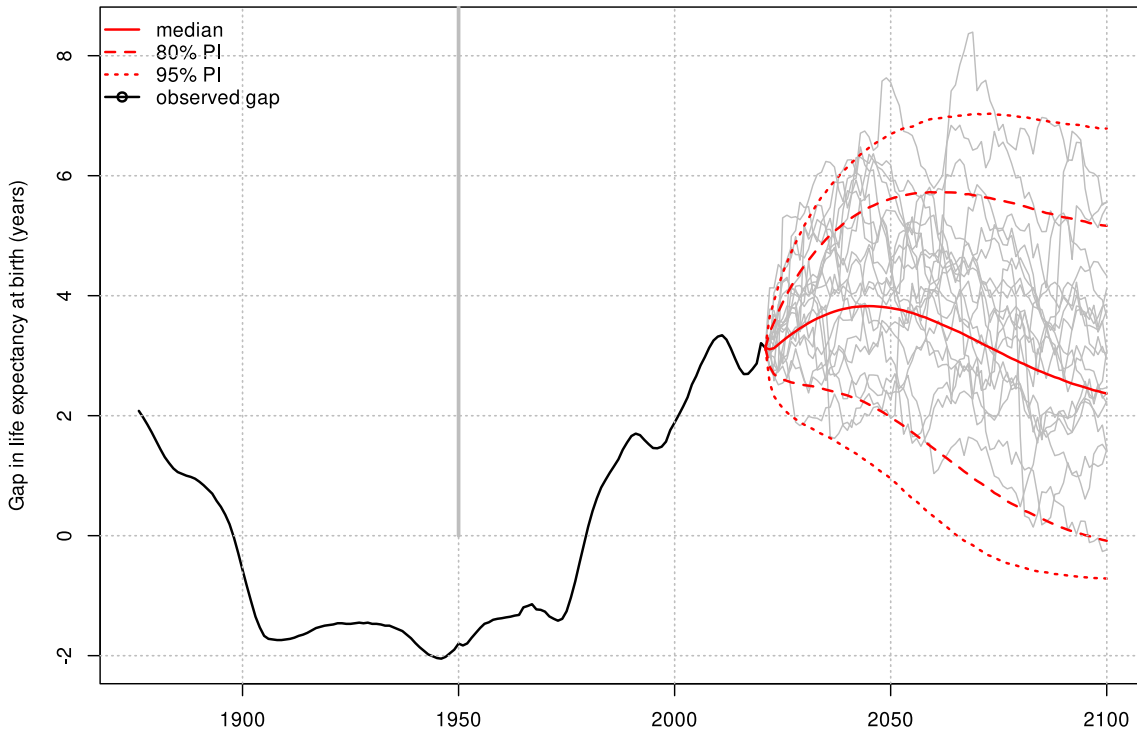


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United Nations, DESA, Population Division. *World Population Prospects 2022*. <http://population.un.org/wpp/>

# India: male life expectancy at birth projection (correlated model using gender gap)

(female – male) gap

Probabilistic projections



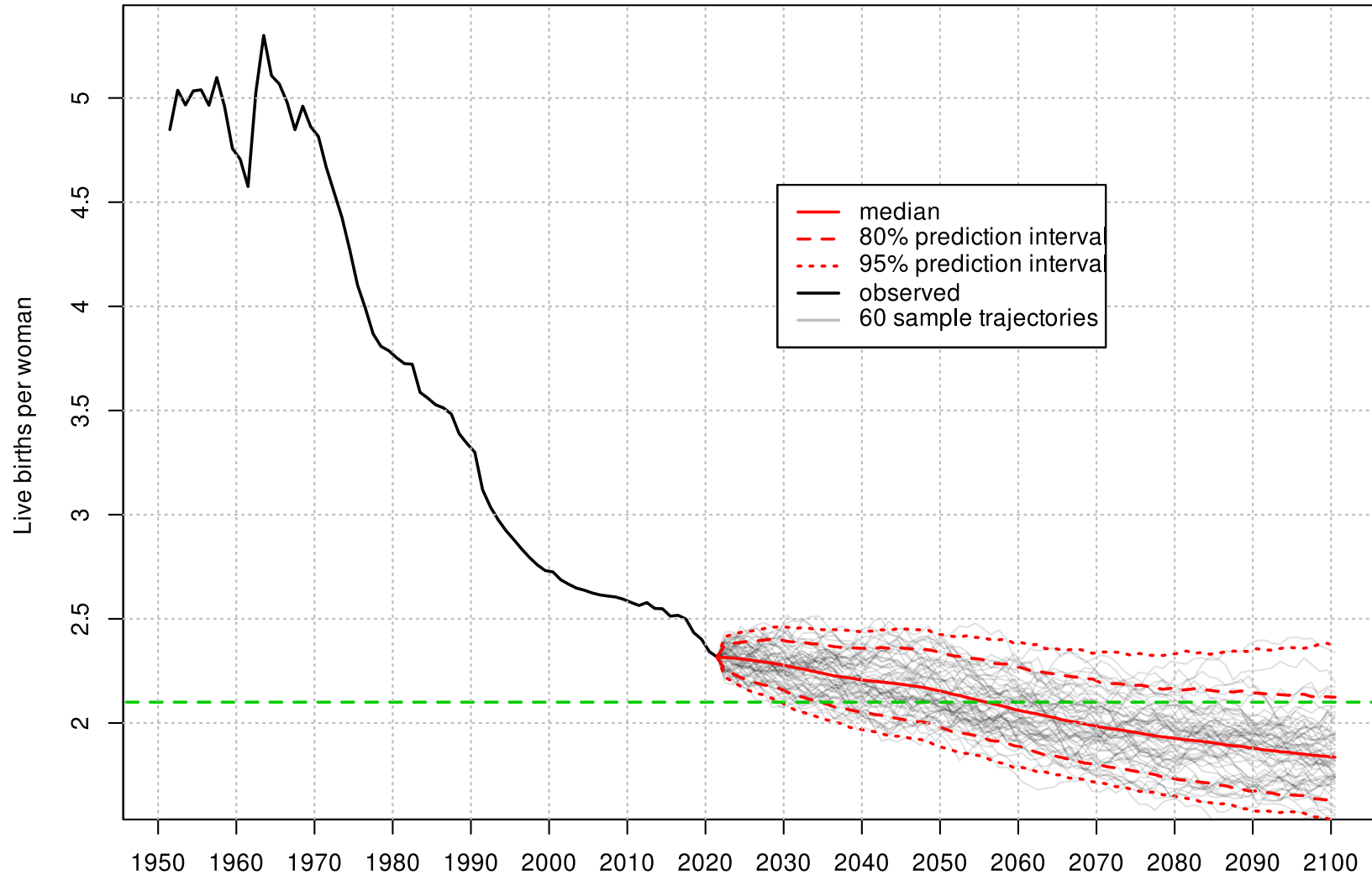
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# Future trends are uncertain

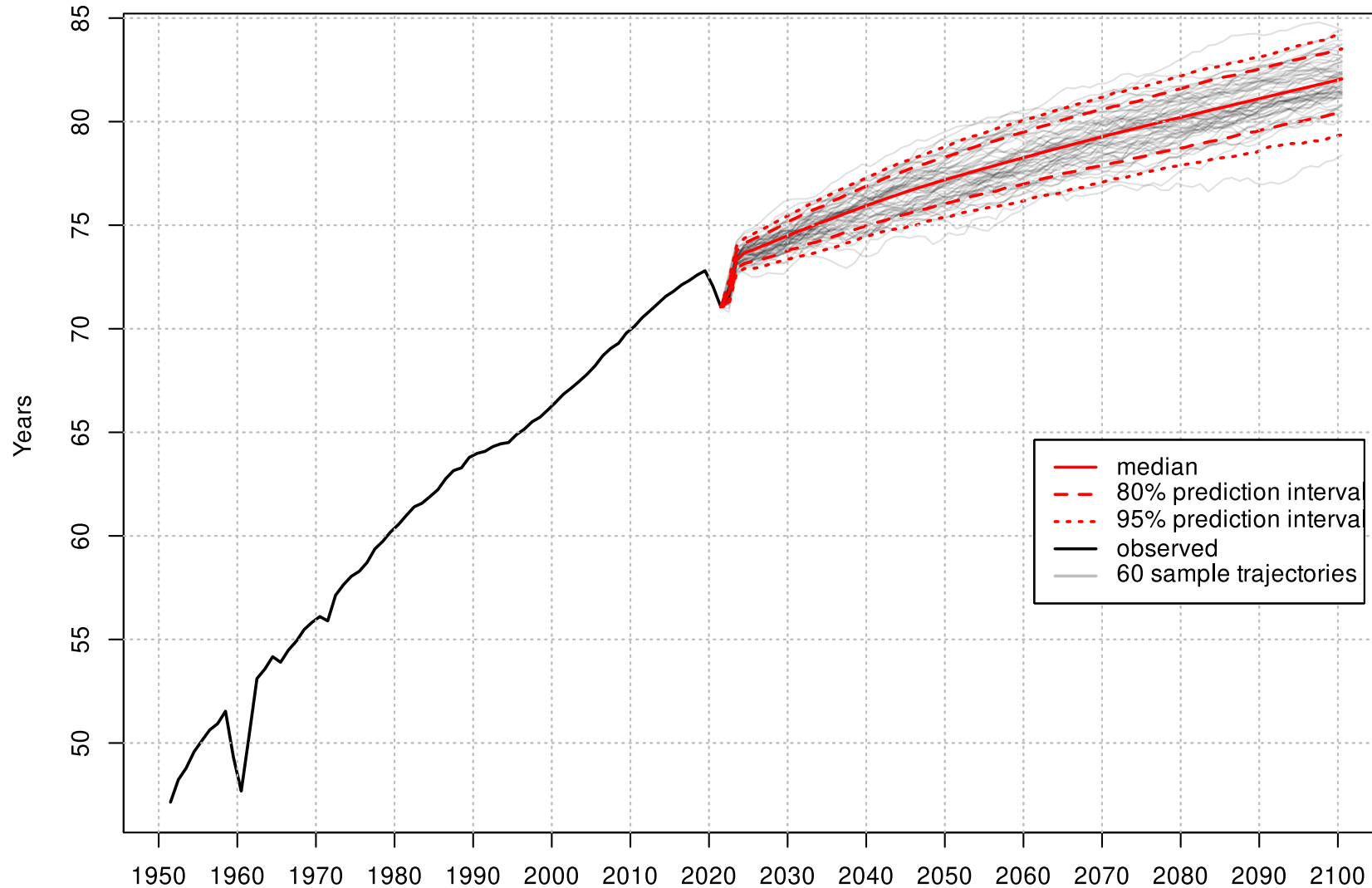
- Traditionally, UN projections have included several variants or scenarios:
  - Variants describe future trends produced by varying key assumptions (e.g. fertility), illustrating sensitivity of results
  - Scenarios describe hypothetical future trajectories, illustrating core concepts such as population momentum
- Bayesian hierarchical model of past trends, combined with time series model of future trends, yields probabilistic depiction of plausible future outcomes

# Probabilistic projection – total fertility



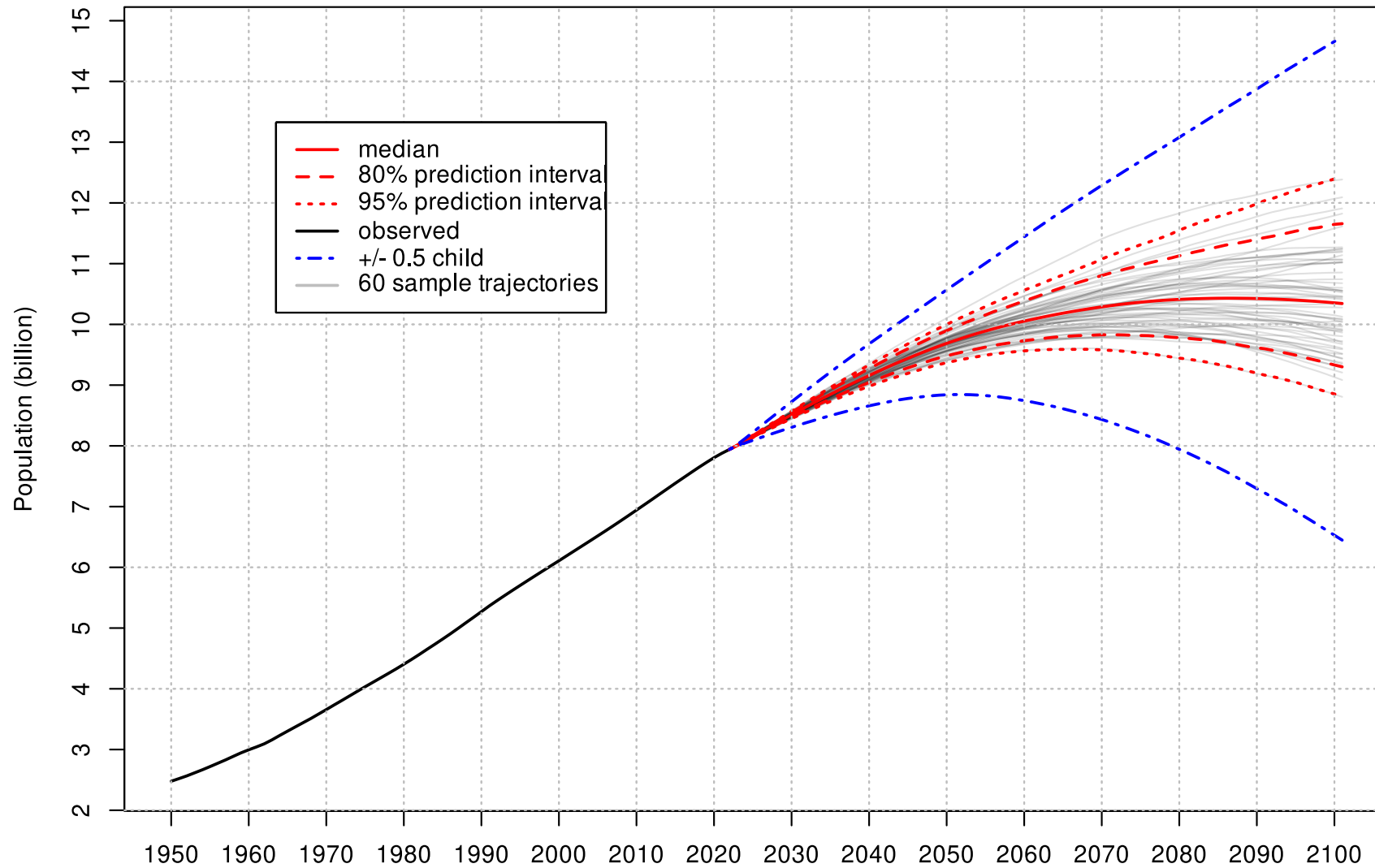
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# Prob. proj. – life expectancy at birth



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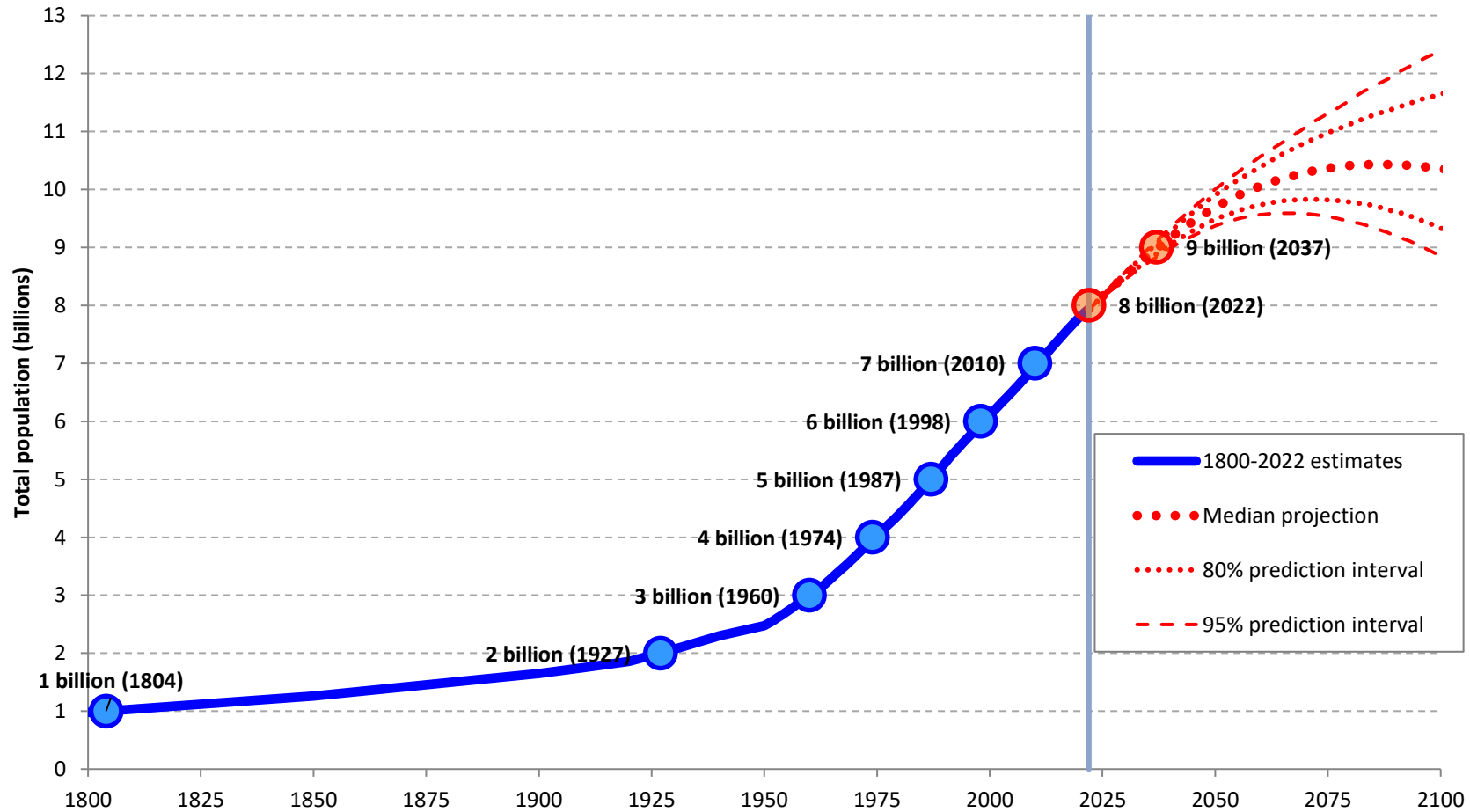
# Probabilistic projection – total population



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United Nations, DESA, Population Division. *World Population Prospects 2022*. <http://population.un.org/wpp/>

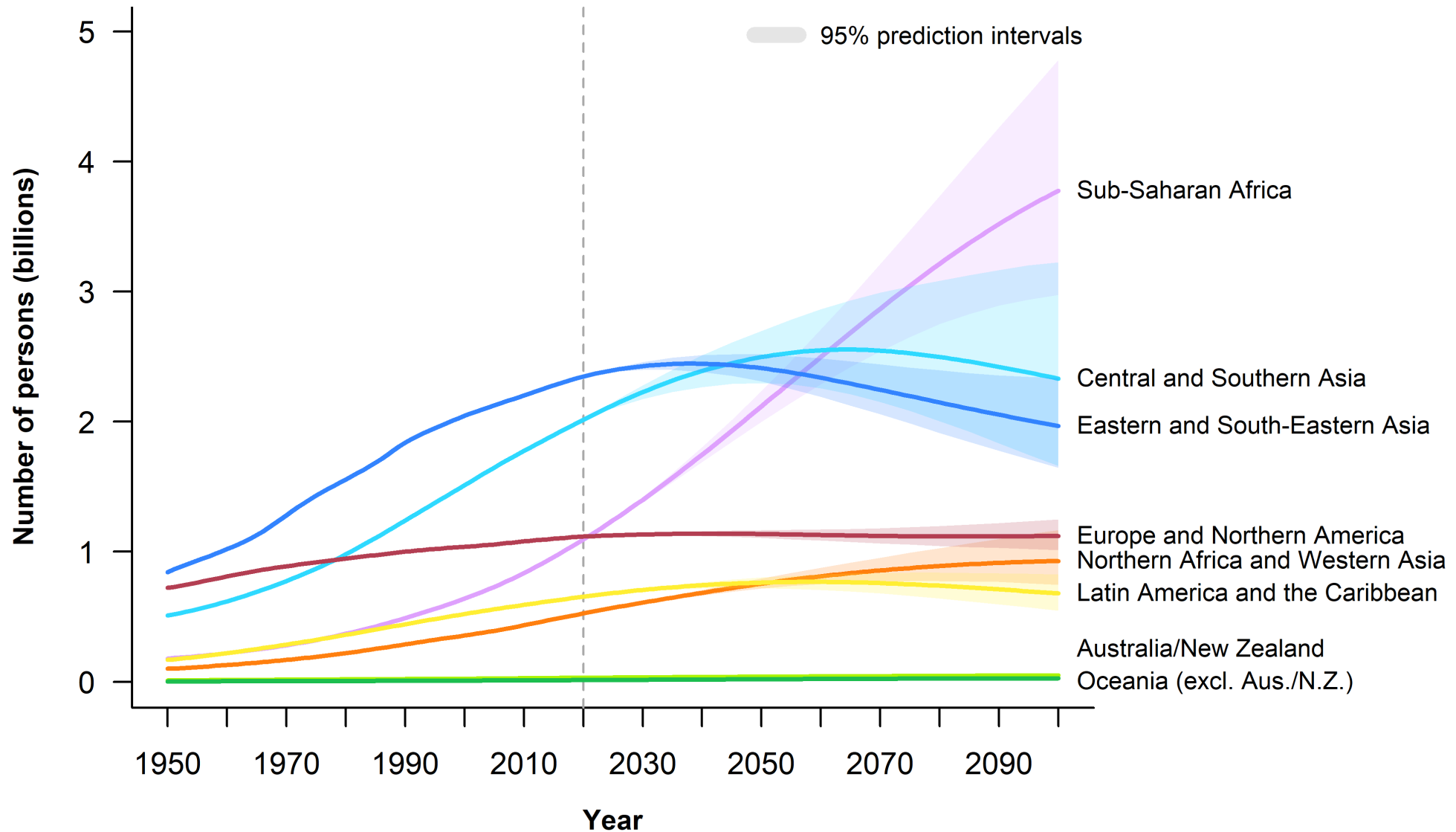
# Global trend: World population

World population: estimates, 1800-2022, and medium-variant projection with 80 and 95 per cent prediction intervals, 2022-2100



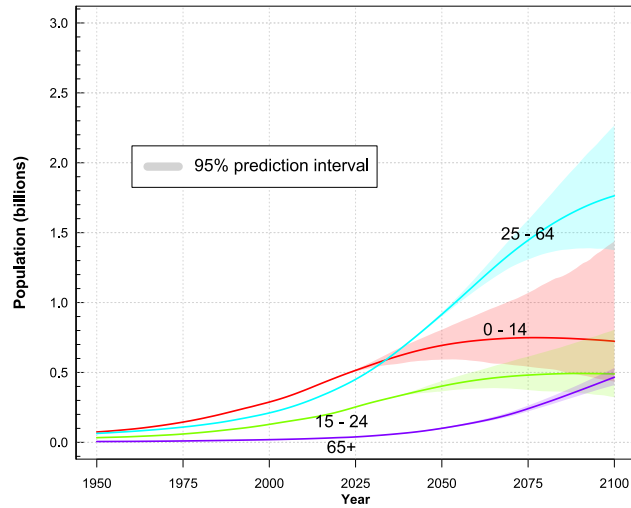
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Suggested citation: United Nations, DESA, Population Division (2022). *World Population Prospects 2022*.

# Global trend: World population by regions

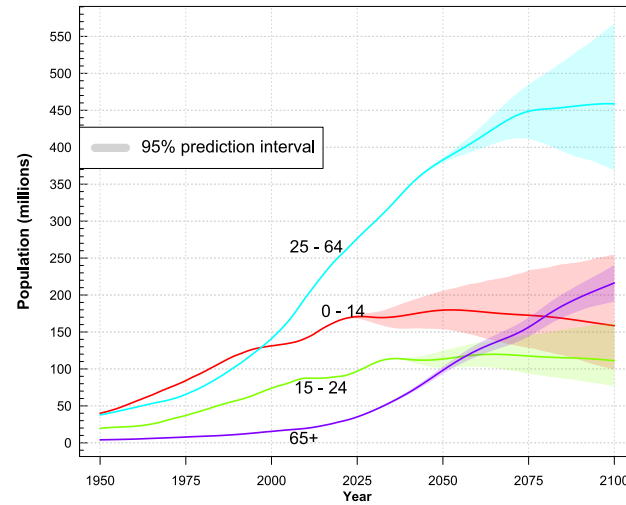


# Pop. by broad age groups for selected regions

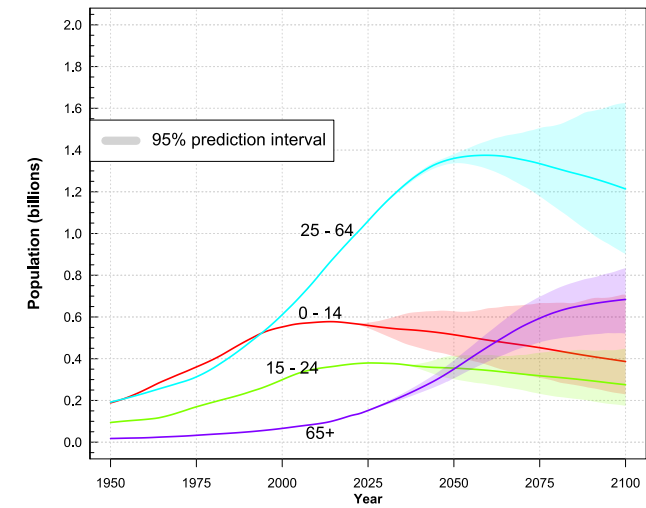
## Sub-Saharan Africa



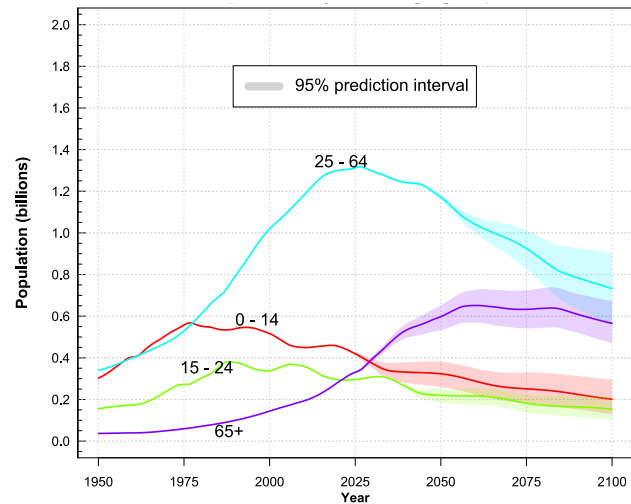
## Northern Africa and Western Asia



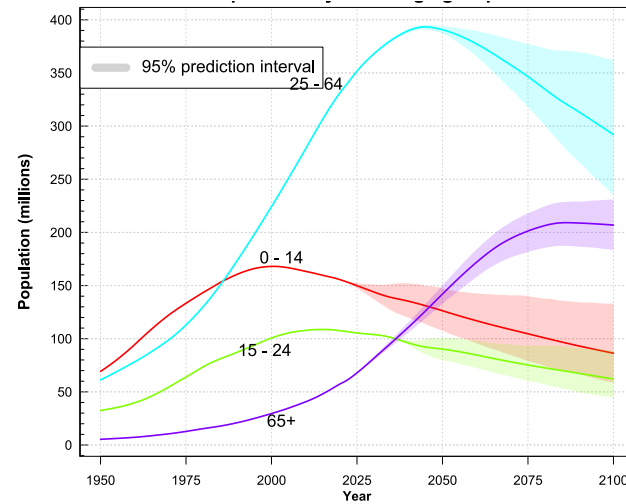
## Central and Southern Asia



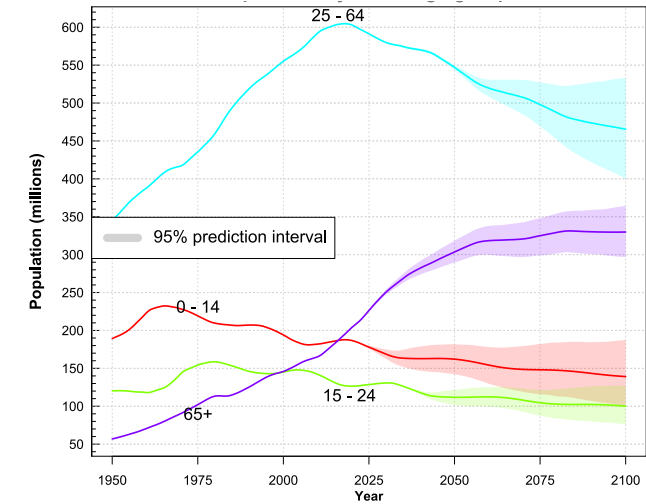
## Eastern and South-Eastern Asia



## Latin America and the Caribbean

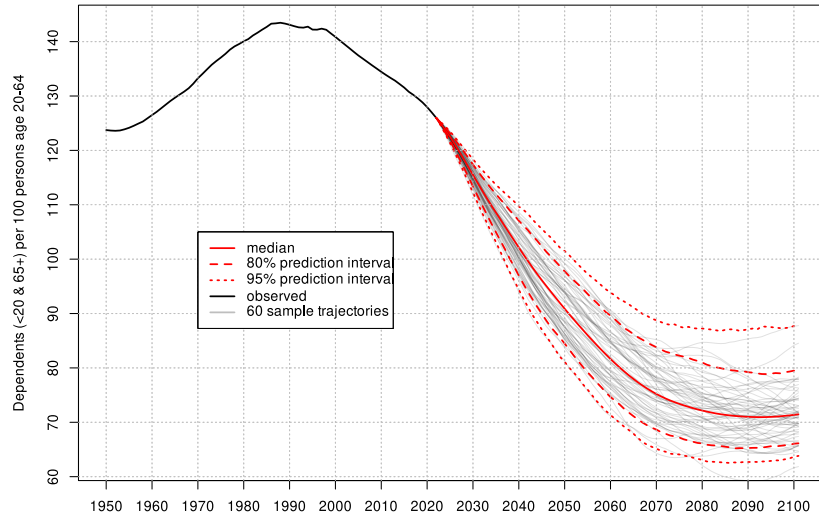


## Europe and Northern America

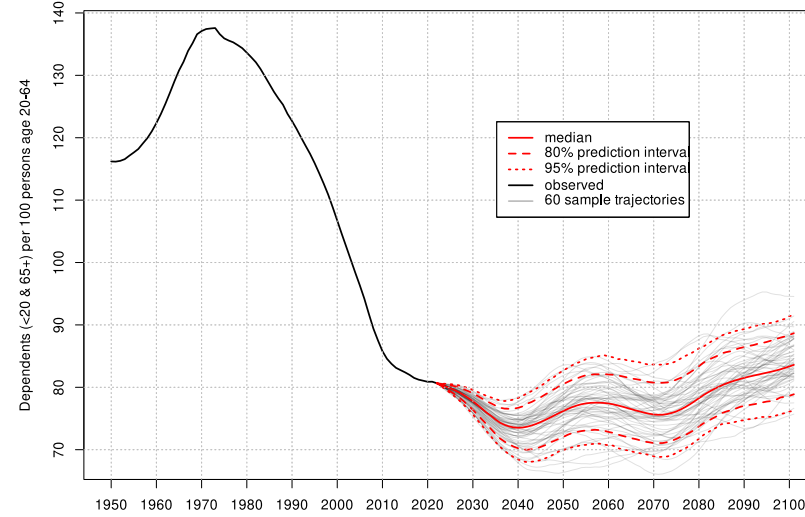


# Dependency ratios ( $[\lt 20, 65+] / 20-64$ ) for selected regions

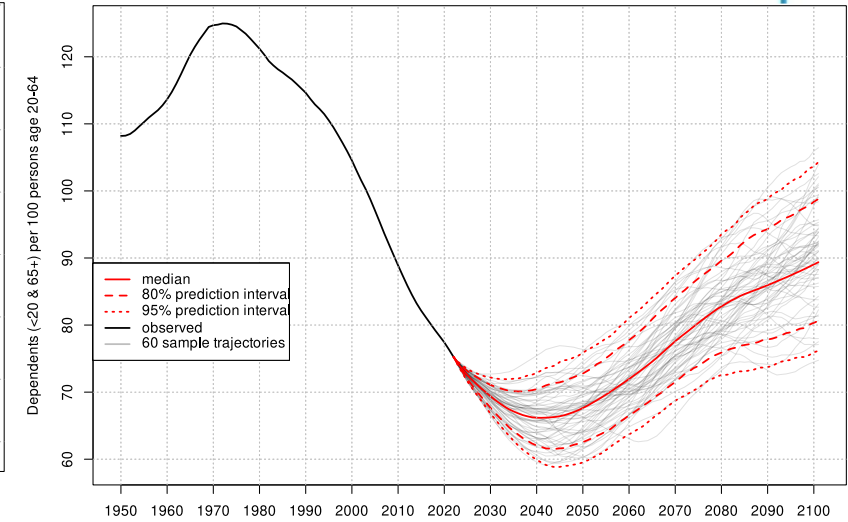
## Sub-Saharan Africa



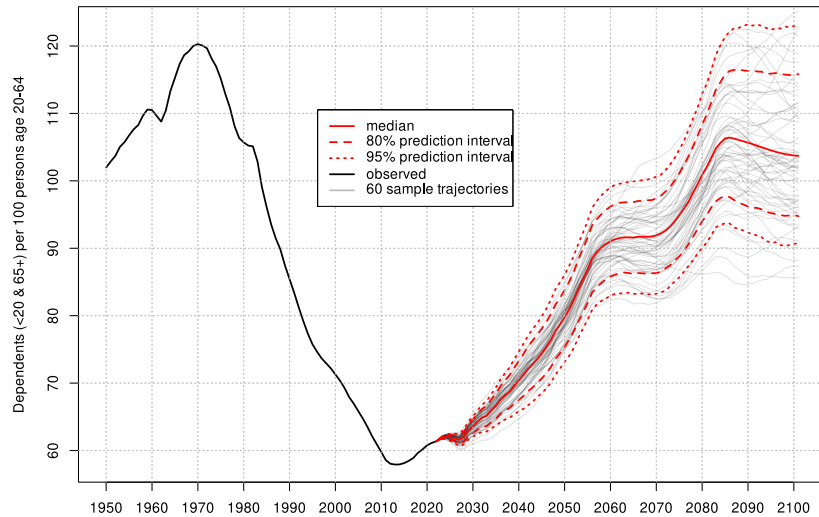
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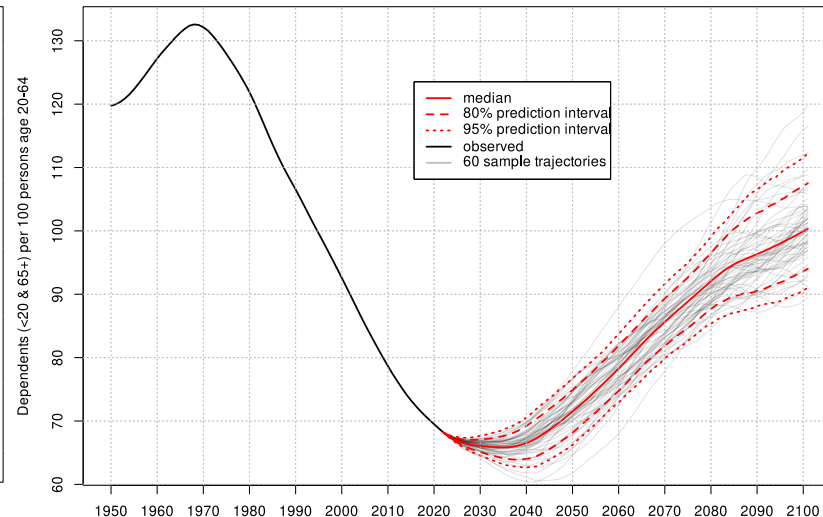
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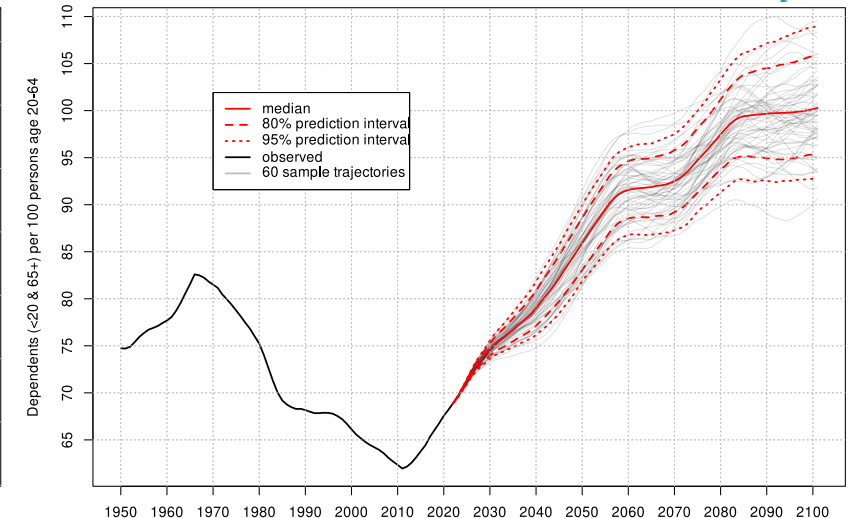
## Eastern and South-Eastern Asia



## Latin America and the Caribbean

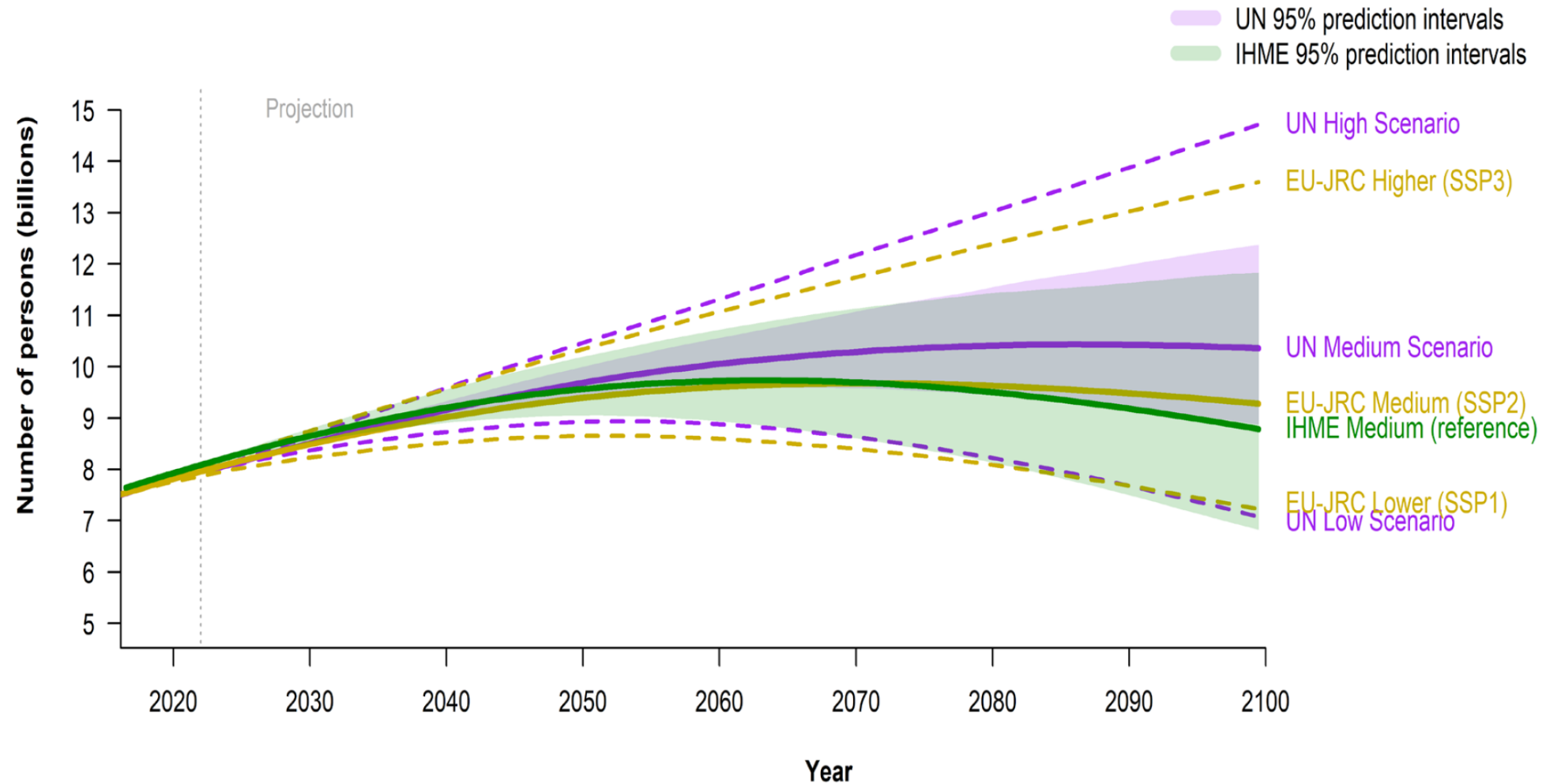


## Europe and Northern America



# Comparisons of long-term global population projections under various scenarios

United Nations, IHME and IIASA/VID/EC-JRC, 2022-2100



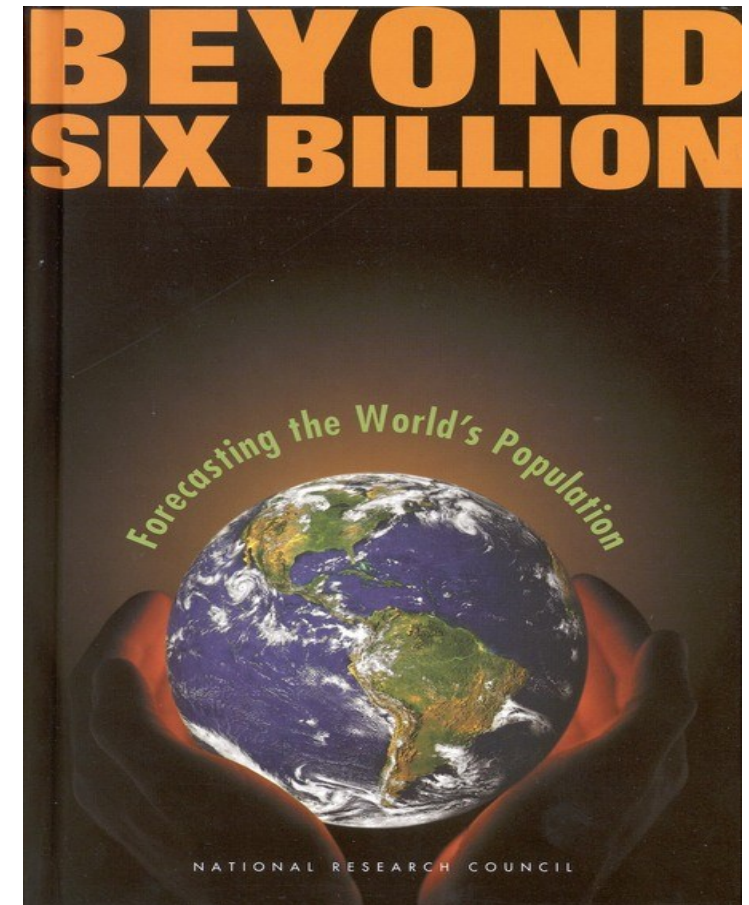
# Three important considerations about differences in long-term population projections

- Differences in medium trajectories are driven mostly by differences in fertility assumptions
- Differences in uncertainty ranges are closely linked to differences in assumptions about the strength of correlation across countries in changes taking place over time
- UN population projections have a good track record and continue to be guided by the same core principle in choosing assumptions – that historical trends in fertility, mortality and migration are the best available predictor of future trends\*.

\* More precisely, that historical trends in fertility, mortality and migration provide the most reliable basis for calibrating theoretically informed models of future trends

# Independent assessments of the accuracy of UN projections

- National Research Council, & Committee on Population (2000). *Beyond six billion: Forecasting the world's population*. National Academies Press.
- Keyfitz, N. (1981). The limits of population forecasting. *Population and development review*.
- Lee, R. D. (1990). Long-run global population forecasts: A critical appraisal. *PDR*.
- Keilman, N. (1998). How accurate are the United Nations world population projections, 1950-95, *PDR*.
- Keilman, N. (2001). Data quality and accuracy of United Nations population projections, *Pop. Studies*.
- Khan, H. T., & Lutz, W. (2008). How well did past UN population projections anticipate demographic trends in six South-east Asian countries?. *Asian Population Studies*.
- Vollset, S. E., et al. (2020). Fertility, mortality, migration, and population scenarios for 195 countries and territories from 2017 to 2100: a forecasting analysis for the Global Burden of Disease Study. *The Lancet*.
- Castiglioni, M., et al. (2020). Post-transitional Demography and Convergence: What Can We Learn from Half a Century of World Population Prospects?. In *Developments in Demographic Forecasting*. Springer, Cham.
- Hannah Ritchie (2023) - "The UN has made population projections for more than 50 years – how accurate have they been?" Published online at *OurWorldInData.org*. Retrieved from: '<https://ourworldindata.org/population-projections>' [Online Resource]

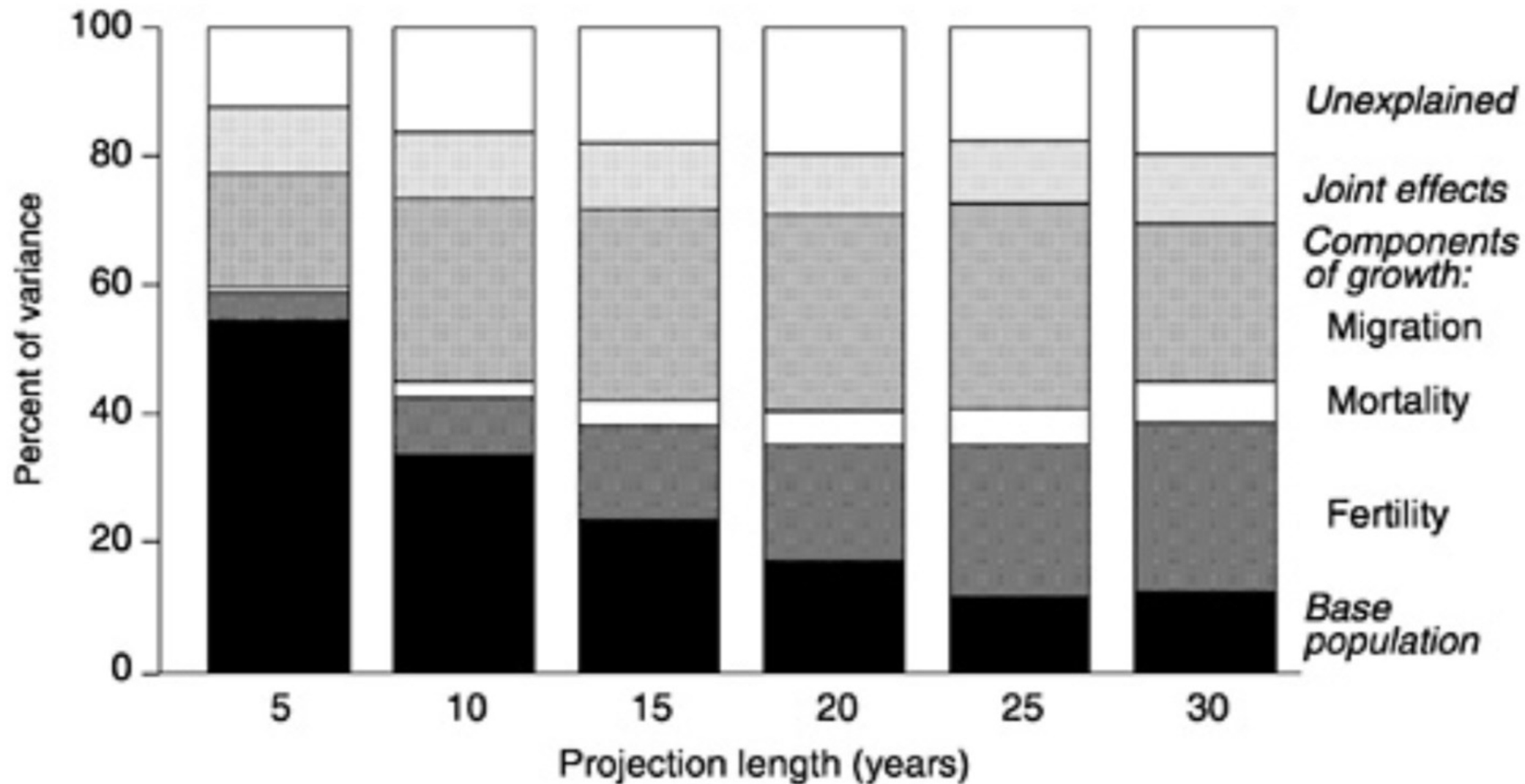


# Projection accuracy: factors influencing forecast errors

- Gap/lag between latest available data and base year used for projection
- [Accuracy and reliability of the baseline population]
- Degree of disaggregation (sex, age, and other characteristics)
- Length of projection horizon (i.e., next 5-10 years vs. 1-3 future generations)
- Assumptions (fertility; mortality; migration)  
[and accuracy and reliability of past empirical estimates]
- [changing] demographic trends, reversal of trends, crises and new emerging issues (e.g., AIDS)

See **Keilman, N. (2001)** Data quality and accuracy of United Nations population projections, 1950-95. *Population Studies* 55: 149-164.

# Sources of error vary in importance with the length of the projection horizon: 1950-1995.



# UN 2010 out-of-sample validation: 1990-2010

Quantity	MARE (%)	Coverage (percent)	
		80% prediction interval	95% prediction interval
Total fertility rate	12.3	72	87
Female life expectancy	2.0	83	94
Male life expectancy	2.5	83	91
Total population	2.7	73	85

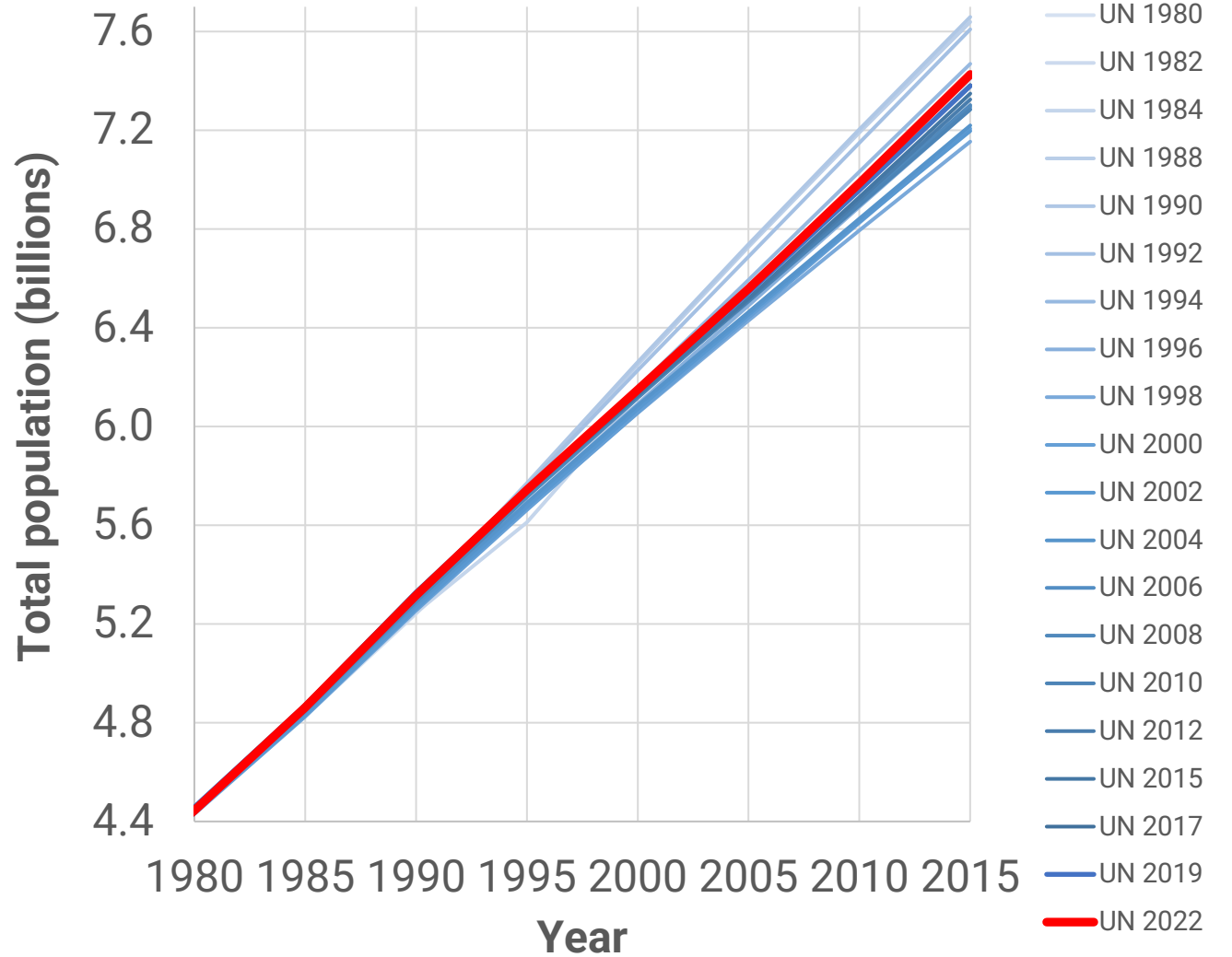
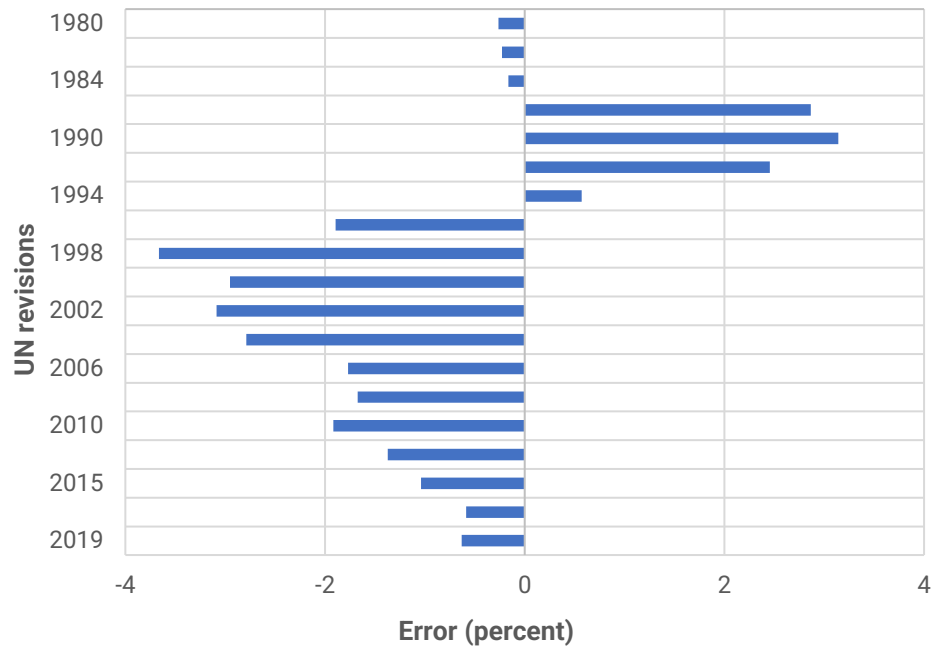
\* MARE is the mean absolute relative error. Coverage is the proportion of the 1990-2010 observations that fell within their prediction interval, in percent.

# UN population projections: Past and Present

1980 to 2022 revisions of the World Population Prospects (WPP)

## Population in 2015:

- +3.1% (233 mio)  
to -3.7% (-272 mio)



# Summary

- Population projections by the United Nations are derived from models of future trends in the demographic components of change, in particular fertility and mortality
- UN projection models have a strong basis in demographic theory; for each country, the models are calibrated using data from the country itself and, especially when data are sparse, from other countries as well
- Uncertainty of the UN population projections is reflected in traditional deterministic/normative scenarios; the 2012 Revision introduced new methods based on formal models that yields probabilistic statements about plausible future trends ; the 2022 revision also takes into account uncertainty in past fertility estimates
- Work on the probabilistic assessment of uncertainty is ongoing and could benefit from further efforts to incorporate additional sources of uncertainty, notably for international migrations

# WPP 2022 upgrade summary (1)

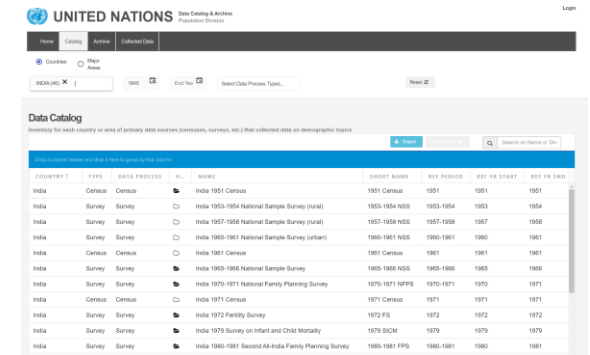
1. Upgrade production system to **single year and single age data model**
2. Improve capacity to **use annual time series** (upon data availability and reliability).
3. Improve capacity to **use single age data** (upon availability and reliability): use for good VR countries, for the rest **use 5-year age groups graduated into single age**.
4. Streamline/harmonize steps used to prepare country data and WPP estimates to enhance transparency, reproducibility, accessibility and linkages between empirical data and WPP estimates
5. Greater documentation and explanations of the various methods used to derive demographic estimates for each demographic components and the reconciliation with population estimates -> [WPP methodological report](#) + [WPP method protocol](#) + [population census evaluation/adjustment protocol](#)
6. Harmonized methods and tools (e.g., R packages like DemoTools), and open APIs and databases for input/output data

# WPP 2022 upgrade summary (2)

7. Improved visualization and dissemination of key indicators (e.g., new DataPortal)
8. Provide access to both WPP estimates and underlying empirical data for key demographic indicators -> [Data Portal](#) + [Demo Data](#) + [Data Archive](#)
9. More [GATHER](#) compliant, including comprehensive metadata on data sources and estimation methods for all demographic components and locations (in textual and structured database format)
10. Data available interactively and for bulk download in Excel and ASCII formats, online plots and country profiles
11. R packages implementing all probabilistic projection methods + wpp R data package used for replication
12. Results of all previous revisions available online in data format since 1992 (Excel) and 1998 (ASCII), and PDF reports (since 1950s)

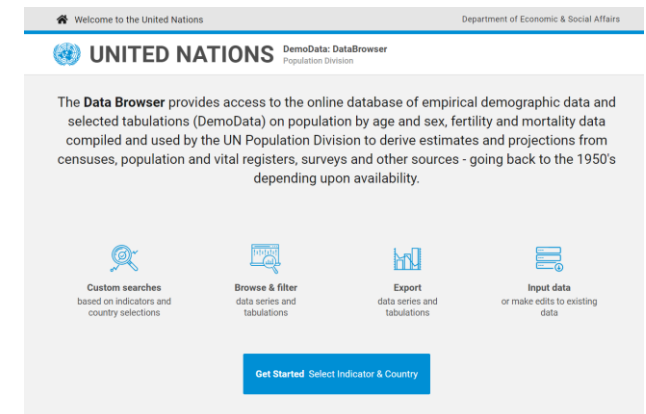
# DataCatalog, DataArchive and DemoData

- DataCatalog: comprehensive **inventory for each country of primary data sources** (censuses, demographic surveys, etc.) providing data on demographic processes (fertility, mortality, population structure and dynamics, marital status and family planning) for all countries and areas, as of Dec. 2023, about 8,250 entries
- DataArchive: a **virtual repository** of documents, tabular datasets and reports (potentially) for each data source, as of Dec. 2023, more than 32,750 files
- DemoData: **SQL database to store in a structured and standardized way empirical data and demographic estimates** (with meta-information) on population, fertility, mortality and (net) international migration data from as many sources as possible: interactive web UI + open API



The screenshot shows the 'Data Catalog' interface for India. It features a search bar and a table with columns for 'Country', 'Year', 'Data Process', 'Survey Name', 'Year Range', and 'Year of Survey'. The table lists various surveys and censuses for India, including the 1951 Census, National Sample Surveys (NSS) from 1953-1954 to 1980-1981, and National Family Planning Surveys (NFPS) from 1970-1971 to 1979-1979.

Country	Year	Data Process	Survey Name	Year Range	Year of Survey
India	1951	Census	India 1951 Census	1951	1951
India	1953-1954	Survey	India 1953-1954 National Sample Survey (rural)	1953-1954	1954
India	1957-1958	Survey	India 1957-1958 National Sample Survey (rural)	1957-1958	1957
India	1960-1961	Survey	India 1960-1961 National Sample Survey (urban)	1960-1961	1960
India	1960-1961	Census	India 1961 Census	1961	1961
India	1965-1966	Survey	India 1965-1966 National Sample Survey	1965-1966	1966
India	1970-1971	Survey	India 1970-1971 National Family Planning Survey	1970-1971	1970
India	1971	Census	India 1971 Census	1971	1971
India	1972	Survey	India 1972 Fertility Survey	1972	1972
India	1979	Survey	India 1979 Survey on Infant and Child Mortality	1979	1979
India	1980-1981	Survey	India 1980-1981 Second All-India Family Planning Survey	1980-1981	1980



The screenshot shows the 'DemoData: DataBrowser' interface. It includes a header with the UN logo and 'Department of Economic & Social Affairs'. Below the header, there is a text box explaining that the Data Browser provides access to empirical demographic data and selected tabulations (DemoData) on population by age and sex, fertility, and mortality data. At the bottom, there are four icons representing different functions: 'Custom searches based on indicators and country selections', 'Browse & filter data series and tabulations', 'Export data series and tabulations', and 'Input data or make edits to existing data'. A prominent blue button labeled 'Get Started Select Indicator & Country' is located at the bottom center.

# An open suite of R packages and functions

- New 1x1 cohort-component population projection computational engine designed to work with a standard set of 1x1 inputs and outputs
  - R implementation – for deterministic projections/simulations
  - C implementation – for probabilistic projections/simulations
- INLA B3-type of robust time trend modelling for TFR/ASFR, and adult mortality
- [DDSQLTools](#): set of functions to query [DemoData](#) SQL database with API
- [DemoTools](#): set of functions to evaluate, transform and adjust counts or rates
- [DDM](#) and [FertEstR](#): set of functions to evaluate and adjust mortality and fertility data
- [Ungroup](#) and [MortalityLaws](#): mortality graduation and extension at older ages
- [SVDcomp](#): new expanded set of model life tables (including HIV and ART)
- [Calibrated Splines](#): graduation of fertility age patterns
- Additional packages/functions to operationalize WPP method protocol
- [popReconstruct](#): probabilistic demographic estimation and population reconstruction
- [BayesTFR](#), [BayesLife](#)/[BayesLifeHIV](#), [MortCast](#), [BayesPop](#): probabilistic projections + wpp data package

# Data Portal: dissemination of estimates/projections and empirical data

Welcome to the United Nations

**United Nations** Department of Economic and Social Affairs **Data Portal** Population Family Planning

Home Data Country Profiles About

The **Data Portal** allows users to access documentation for the work on family planning estimates and projections.

5 Indicators selected 51 Locations selected DATE RANGE: 1950 2030

**Get Started and Search**

United Nations Department of Economic and Social Affairs **Data Portal** Population Family Planning

Home Data Country Profiles About

5 Indicators selected 51 Locations selected DATE RANGE: 1950 2030

Custom Searches based on indicators and country selections

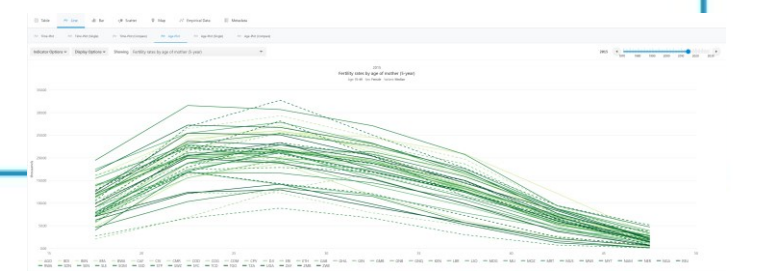
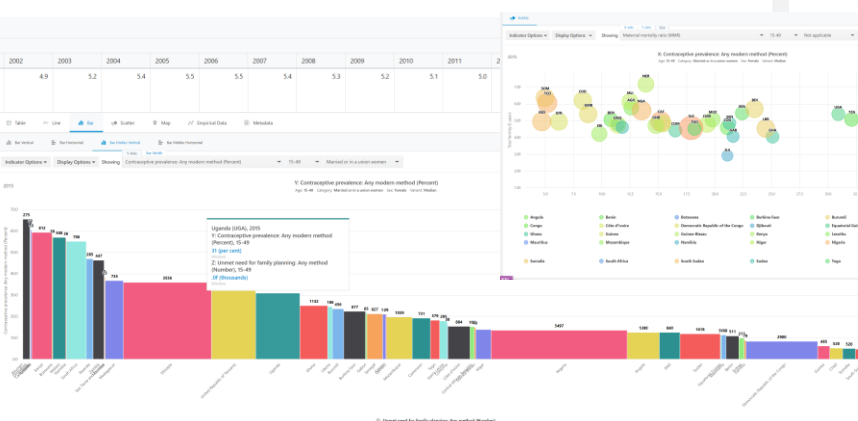
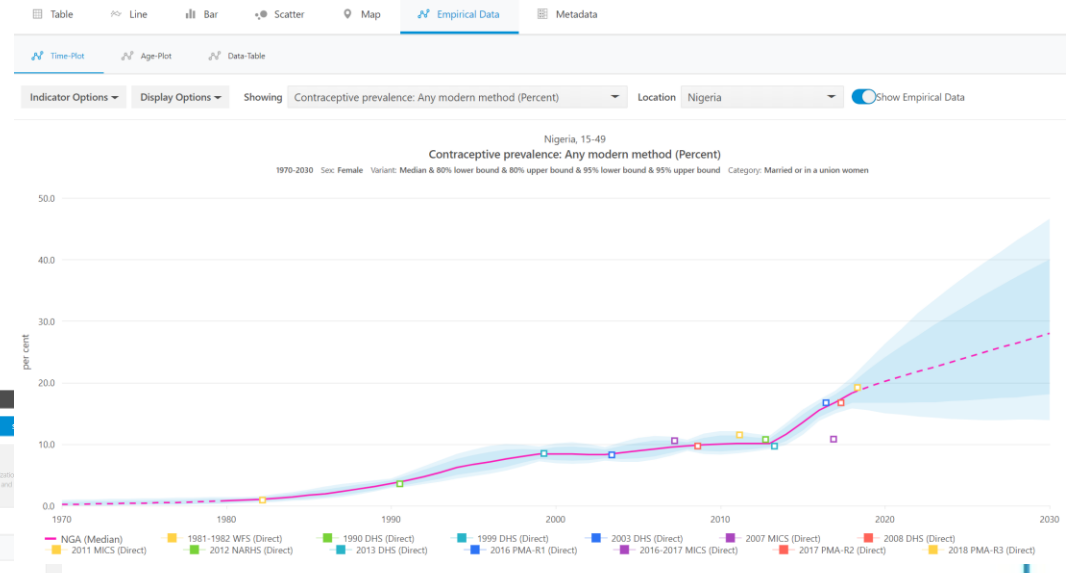
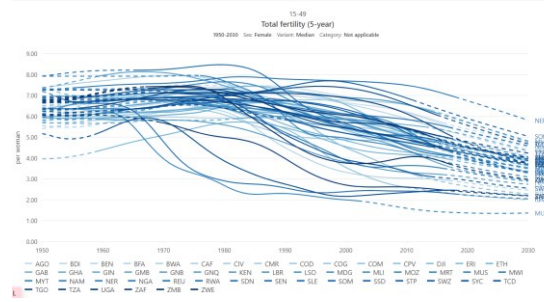
MMR<sup>1</sup> USMR<sup>2</sup> CPMoD<sup>3</sup> ASFRs<sup>4</sup> TFRs<sup>5</sup> Sources

(1) UN MMRG (2019). Trends in maternal mortality: 1990 to 2019. Estimates by WHO, UNICEF, UNFPA, World Bank Group and the United Nations Population Division. Geneva: WHO. [Link to source](#) (2) UN IGME (2019). Levels and Trends in Child Mortality Report 2019. Estimates developed by the UN Inter-agency Group for Child Mortality Estimation (United Nations Children's Fund, World Health Organization, World Bank Group and United Nations Population Division) of the Department of Economic and Social Affairs, New York. [Link to source](#) (3) United Nations, Department of Economic and Social Affairs, Population Division (2019). World Labor Situation Report: The 2019 Revision, custom data acquired via website. [Link to source](#) (4) United Nations, Department of Economic and Social Affairs, Population Division (2019). World Labor Situation Report: The 2019 Revision, custom data acquired via website. [Link to source](#) (5) United Nations, Department of Economic and Social Affairs, Population Division (2019). World Labor Situation Report: The 2019 Revision, custom data acquired via website. [Link to source](#)

Table Line Bar Scatter Empirical Data Metadata

Indicator Options Display Options

Indicator	Sex	Age Label	Category	Variant	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	
Contraceptive prevalence: Any modern method (Percent)	Female	15-49	Married or in union women	Median	3.4	4.0	4.3	4.6	4.9	5.2	5.4	5.5	5.5	5.4	5.3	5.2	5.1	5.0	5.0	
Fertility rates by age of mother (5-year)	Female	15-19	Not applicable	Median	173.6	171.9	170.1	168												
	Female	20-24	Not applicable	Median	262.0	259.2	256.2	253												
	Female	25-29	Not applicable	Median	268.2	265.9	263.5	260												
	Female	30-34	Not applicable	Median	237.5	235.6	233.7	231												
	Female	35-39	Not applicable	Median	173.7	172.0	170.2	168												
	Female	40-44	Not applicable	Median	96.7	95.2	93.9	92												
	Female	45-49	Not applicable	Median	30.4	29.5	28.7	28												
Maternal mortality ratio (MMR)	Female	15-49	Not applicable	Median	977.0	978.8	975.5	973												
Total fertility (5-year)	Female	15-49	Not applicable	Median	6.2	6.1	6.1	6												
Under-five mortality rate (U5MR)	Both sexes	< 5	Not applicable	Median	185.5	173.0	165.4	157												
	Female	< 5	Not applicable	Median	172.4	165.1	157.5	150												



# References

- United Nations, Department of Economic and Social Affairs, Population Division (2022). [World Population Prospects 2022: Methodology of the United Nations population estimates and projections](#) and [Summary of Results](#).
- Buettner, T. (2020). Perspectives de population mondiale—Une vision sur le long terme/World Population Prospects—A Long View. *Economie et Statistique*, 520(1), 9-29. <https://www.insee.fr/en/statistiques/4997857?sommaire=4999813>
- Raftery, A.E., N. Li, H. Ševčíková, P. Gerland, and G.K. Heilig (2012). "[Bayesian probabilistic population projections for all countries](#)." Proceedings of the National Academy of Sciences. 109 (35):13915-13921. doi: 10.1073/pnas.1211452109 [open access]
- Raftery, A. E., L. Alkema, and P. Gerland (2014). "[Bayesian Population Projections for the United Nations](#)." in: Statistical Science, 29(1), 58-68. doi: 10.1214/13-STS419 [open access]
- Fosdick, B., and A. Raftery (2014). "[Regional probabilistic fertility forecasting by modeling between-country correlations](#)." in: Demographic Research, 30(35), 1011-1034. doi: 10.4054/DemRes.2014.30.35 [open access]
- Alkema L., A.E. Raftery, P. Gerland, S.J. Clark, F. Pelletier, T. Buettner, and G.K. Heilig (2011). "[Probabilistic Projections of the Total Fertility Rate for All Countries](#)." in: Demography, 48:815-839. doi: 10.1007/s13524-011-0040-5 [open access]
- Raftery, A. E., J.L. Chunn, P. Gerland, and H. Ševčíková, H. (2013). "[Bayesian Probabilistic Projections of Life Expectancy for All Countries](#)". in: Demography, 50(3), 777-801. doi: 10.1007/s13524-012-0193-x [open access]
- Raftery, A.E., N. Lalic, and P. Gerland (2014). "[Joint probabilistic projection of female and male life expectancy](#)". in: Demographic Research, 30(27), 795-822. doi: 10.4054/DemRes.2014.30.27 [open access]
- Godwin, J., and A.E. Raftery (2017). "[Bayesian projection of life expectancy accounting for the HIV/AIDS epidemic](#)". in: Demographic Research, vol. 37, No., pp. 1549-1610. doi: 10.4054/DemRes.2017.37.48 [open access]
- Ševčíková, H., and others (2016). "[Age-Specific Mortality and Fertility Rates for Probabilistic Population Projections](#)". In Dynamic Demographic Analysis, edited by Robert Schoen, pp. 285-310. Cham: Springer International Publishing. [open access]

# Online resources

# WPP Information

And where to find it.



United Nations

Department of Economic and Social Affairs  
Population Division

World Population Prospects 2022

WPP Home	Data ▼	Graphs / Profiles	Documentation ▼	World Urbanization Prospects	Population Division	Contact Us
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The *2022 Revision of World Population Prospects* is the twenty-seventh edition of official United Nations population estimates and projections that have been prepared by the Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat. It presents population estimates from 1950 to the present for 237 countries or areas, underpinned by analyses of historical demographic trends. This latest assessment considers the results of 1,758 national population censuses conducted between 1950 and 2022, as well as information from vital registration systems and from 2,890 nationally representative sample surveys. The 2022 revision also presents population projections for 2023-2050.

The main results are presented in a [series of Excel files](#) for each region, *Sustainable Development Goals (SDGs)* region, and country. The *Excel files* provides access to a subset of key indicators and interactive maps. For those who need these data in a database form or statistical software, we recommend to use the [CSV format](#) for bulk download. [Special Aggregates](#) also provide additional groupings of countries. For the first time, the estimates and projections are presented in one-year intervals of age and time instead of the five-year intervals used previously. The various datasets disaggregated by age are available in two forms: by standard 5-year age groups and single ages.

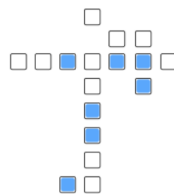
<https://population.un.org/wpp/>

Additional outputs, including results from the probabilistic projections, and more detailed metadata will be posted soon after the initial public release.

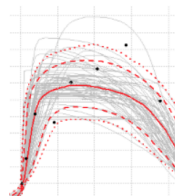
## Quick Navigation



Download Data Files



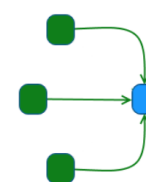
Data Portal



Graphs and Profiles



Publications



Data Sources

# WPP Information

## Data Sources



United Nations

Department of Economic and Social Affairs  
Population Division

World Population Prospects 2022

WPP Home	Data ▾	Graphs / Profiles	Documentation ▾	World Urbanization Prospects	Population Division	Contact Us
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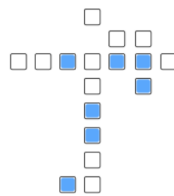
The main results are presented in a [series of Excel files](#) displaying key demographic indicators for each UN development group, *World Bank* income group, geographic region, *Sustainable Development Goals (SDGs)* region, subregion and country or area for selected periods or dates within 1950-2100. An [online database \(Data Portal\)](#) provides access to a subset of key indicators and interactive data visualization, including an open API for programmatic access. For advanced users who need to use these data in a database form or statistical software, we recommend to use the [CSV format](#) for bulk download. [Special Aggregates](#) also provide additional groupings of countries. For the first time, the estimates and projections are presented in one-year intervals of age and time instead of the five-year intervals used previously. The various datasets disaggregated by age are available in two forms: by standard 5-year age groups and single ages.

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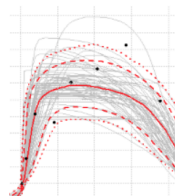
### Quick Navigation



Download Data Files



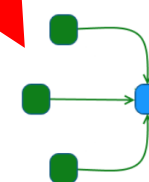
Data Portal



Graphs and Profiles



Publications



Data Sources



<a href="#">WPP Home</a>	<a href="#">Data ▼</a>	<a href="#">Graphs / Profiles</a>	<a href="#">Documentation ▼</a>	<a href="#">World Urbanization Prospects</a>	<a href="#">Population Division</a>	<a href="#">Contact Us</a>	
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## Data Sources

A description of the empirical data used and the methods applied in revising past estimates of population and components of demographic change (fertility, child, adult and overall mortality, international migration) is available here for each country or area for the period 1950 to 2021. For the countries with less than 1,000 inhabitants in 2021, only the data sources for total population are made available.

Select below a country or area to see the respective information, or download the whole set of metadata in PDF format for all countries or areas or a tabular version for each demographic component under [Documentation](#).

### Senegal

**Population:** Total population and distribution by age and sex estimated to be consistent with the population by age and sex of the (a) 1976, 1988, 2002, 2013 censuses; (b) adjusted for under/over count; (c) adjusted for age heaping; (d) adjusted for under enumeration of children under age 15; (e) 1960-1961 ED and 1991 Survey and 1992-1993, 1997, 2005 DHS and 2000 MICS survey estimates; (f) official estimates through 2021; and with estimates of the subsequent trends in fertility, mortality and international migration.

**Fertility:** Total fertility rate and age pattern of fertility based on: (a) official estimates of age-specific fertility rates through 2017; (b) registered births

WPP data sources:

**Population:** Total population and distribution by age and sex estimated to be consistent with the population by age and sex of the (a) 1976, 1988, 2002, 2013 censuses; (b) adjusted for under/over count; (c) adjusted for age heaping; (d) adjusted for under enumeration of children under age 15; (e) 1960-1961 ED and 1991 Survey and 1992-1993, 1997, 2005 DHS and 2000 MICS survey estimates; (f) official estimates through 2021; and with estimates of the subsequent trends in fertility, mortality and international migration.

**Fertility:** Total fertility rate and age pattern of fertility based on: (a) official estimates of age-specific fertility rates through 2017; (b) registered births classified by age of mother and the underlying female population by age through 1970; (c) birth-histories data from the 1978 WFS and 1986, 1992-1993, 1997, 2005, 2010-2011, 2012-2013, 2014, 2015, 2016, 2017, 2018, 2019 DHS and 2006, 2008-2009 MIS; (d) births in the household in the preceding 12 (or 24) months classified by age of mother from the 1970-1971 ED and 2000 MICS and 2002, 2013 censuses; (e) adjusted fertility using Brass P/F ratio method (or variants) with data on children ever born and births in the preceding 12 (or 24/36) months, both classified by age of mother, from the 1960-1961 ED and 1978 WFS; (f) indirect estimates obtained from the application of the reverse survival method to the 1960-1961 ED and 1976, 1988, 2002, 2013 censuses and 1991 Survey and 2000 MICS and 2012-2014 DHS; (g) indirect estimates obtained from the application of the own-children method of fertility estimation to the 1988, 2002 censuses; (h) cohort-completed fertility backdated by the mean age of childbearing from the 1960-1961 ED and 1978 WFS and 1986, 1992-1993, 1997, 2005, 2010-2011, 2012-2013, 2012-2014, 2014, 2015, 2016, 2017, 2018, 2019 DHS and 2006, 2008-2009 MIS. In addition, the (a) births in the household in the preceding 12 (or 24) months classified by age of mother from the 1988 Census; (b) indirect estimates obtained from the application of the reverse survival method to the 1956-2011 Education Stats and 2006, 2008-2009 MIS; (c) indirect estimates obtained from the application of the own-children method of fertility estimation to the 2003 WHS; (d) cohort-completed fertility backdated by the mean age of childbearing from the 2002, 2013 censuses have been considered.

**Child Mortality:** Under-five mortality based on: (a) official estimates of infant and child mortality through 2017; (b) direct estimates from births and deaths under-five calculated from full birth histories data from the 1978 WFS and 1986, 1992-1993, 1997, 1999, 2005, 2010-2011, 2012-2013, 2014, 2015, 2016, 2017, 2018, 2019 DHS and 2000 MICS and 2008-2009 MIS; (c) indirect estimates from data on children ever born and surviving from the 1960-1961 ED and 2006 MIS; (d) recent household deaths from the 1970-1971, 1978-1979 ED; (e) International estimates used up to 2021. In addition, the (a) direct estimates from births and deaths under-five calculated from full birth histories data from the 1960-1961 ED; (b) indirect estimates from data on children ever born and surviving from the 2002, 2013 censuses; (c) recent household deaths from the 2002, 2013 censuses have been considered.

**Overall Mortality:** Life expectancy at birth and age pattern of mortality based on: (a) official estimates through 2007; (b) estimates using CD South model life tables and estimates of infant and under-five mortality (5q0), and adult mortality (45q15).

**Adult and Old Age Mortality:** Estimates derived from: (a) recent household deaths adjusted at adult ages for underregistration using death distribution methods; (b) maternal orphanhood from the 1992-1993, 2005, 2010-2011 DHS and 2000 MICS; (c) paternal orphanhood from the 1992-1993, 2005 DHS and 2000 MICS; (d) estimates of under-five, adult and old age mortality. In addition, the (a) recent household deaths data by age and sex from the 2002, 2013 censuses; (b) siblings deaths from the 1992-1993, 2005, 2010-2011 DHS; (c) maternal orphanhood from the 1986 DHS and 1988 Census; (d) paternal orphanhood from the 1986, 2010-2011 DHS and 1988 Census have been considered.

**Migration:** International migration based on: (a) information on foreign-born populations from censuses and registers from major countries of destination; (b) estimates derived as the differences between overall population growth and natural increase; (c) UNHCR statistics on the number of refugees in the main countries of asylum.

# WPP Information

## Data Sources



United Nations

Department of Economic and Social Affairs  
Population Division

World Population Prospects 2022

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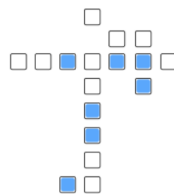
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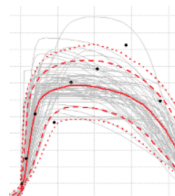
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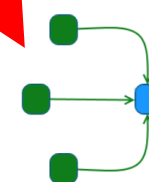
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Graphs and Profiles



Publications



Data Sources

# WPP Information

Meta Data, Population Data, Demographic Data



United Nations

Department of Economic and Social Affairs  
Population Division

World Population Prospects 2022

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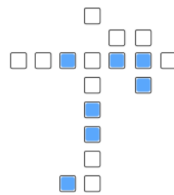
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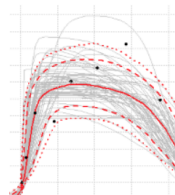
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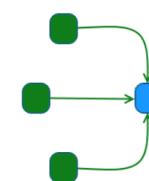
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Graphs and Profiles



Publications



Data Sources

# Meta data Excel Spreadsheet

AutoSave OFF

WPP2022\_F02\_METADATA

Home Insert Draw Page Layout Formulas Data Review View Automate Developer Table Tell me

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Population Division  
Department of Economic and Social Affairs

World Population Prospects 2022: Metadata (overall)  
File 0-2: List of sources of data by demographic components and estimation methods

POP/DB/WPP/Rev.2022/F0-2  
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Suggested citation: United Nations, Department of Economic and Social Affairs, Population Division (2022). World Population Prospects 2022, Online Edition.

Location	Notes	LocID	ISO3_Co	ISO2_Co	SDMX_Code	TotPop2022Less	SubRegID	SubRegName	SDGRegID	SDGRegName	GeoRegID	GeoRegName	DataCatalogID	DataCatalogShortme	DataCatalogName
Afghanistan		4 AFG	AF	4		5501	Southern Asia	921	Central and Southern Asia	935	Asia	160	1972-1974 NDFGS	Afghanistan 1972-1974 National Demographic and Family Guidance Survey	
Afghanistan		4 AFG	AF	4		5501	Southern Asia	921	Central and Southern Asia	935	Asia	280	1979 Census	Afghanistan 1979 Census	
Afghanistan		4 AFG	AF	4		5501	Southern Asia	921	Central and Southern Asia	935	Asia	5250	1997 MICS	Afghanistan 1997 Multiple Indicator Cluster Survey	
Afghanistan		4 AFG	AF	4		5501	Southern Asia	921	Central and Southern Asia	935	Asia	1925	2003 MICS	Afghanistan 2003 Multiple Indicator Cluster Survey	
Afghanistan		4 AFG	AF	4		5501	Southern Asia	921	Central and Southern Asia	935	Asia	4471	2003-2005 HH Listing	Afghanistan 2003-2005 Household Listing	
Afghanistan		4 AFG	AF	4		5501	Southern Asia	921	Central and Southern Asia	935	Asia	4368	2005 NRVA	Afghanistan 2005 National Risk and Vulnerability Assessment	
Afghanistan		4 AFG	AF	4		5501	Southern Asia	921	Central and Southern Asia	935	Asia	4369	2006 HS	Afghanistan 2006 Health Survey	
Afghanistan		4 AFG	AF	4		5501	Southern Asia	921	Central and Southern Asia	935	Asia	4465	2007-2008 NRVA	Afghanistan 2007-2008 National Risk and Vulnerability Assessment	
Afghanistan		4 AFG	AF	4		5501	Southern Asia	921	Central and Southern Asia	935	Asia	5045	2010 DHS Special	Afghanistan 2010 Mortality Survey	
Afghanistan		4 AFG	AF	4		5501	Southern Asia	921	Central and Southern Asia	935	Asia	4983	2010-2011 MICS	Afghanistan 2010-2011 Multiple Indicator Cluster Survey	
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Afghanistan		4 AFG	AF	4		5501	Southern Asia	921	Central and Southern Asia	935	Asia	7507	2015 AHS	Afghanistan 2015 Health Survey	
Afghanistan		4 AFG	AF	4		5501	Southern Asia	921	Central and Southern Asia	935	Asia	5689	2015 DHS	Afghanistan 2015 Demographic and Health Survey	
Afghanistan		4 AFG	AF	4		5501	Southern Asia	921	Central and Southern Asia	935	Asia	7734	2018 AHS	Afghanistan 2018 Health Survey	
Afghanistan		4 AFG	AF	4		5501	Southern Asia	921	Central and Southern Asia	935	Asia	8074	Education Stats	Education statistics (enrolment by level)	
Afghanistan		4 AFG	AF	4		5501	Southern Asia	921	Central and Southern Asia	935	Asia	2028	Estimates	All sources of estimates	
Afghanistan		4 AFG	AF	4		5501	Southern Asia	921	Central and Southern Asia	935	Asia	6118	Register	Vital Registration	
Afghanistan		4 AFG	AF	4		5501	Southern Asia	921	Central and Southern Asia	935	Asia	8357	Voter State	Voter Registration	

Data source

Overall Population\_by\_Age Fertility Child\_Mortality Overall\_Mortality Adult\_Mortality Mortality\_Crises Migration NOTES +

Ready Accessibility: Investigate 100%

# WPP Information

Cool graphs



United Nations

Department of Economic and Social Affairs  
Population Division

World Population Prospects 2022

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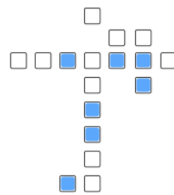
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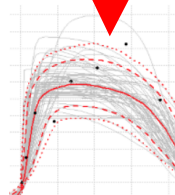
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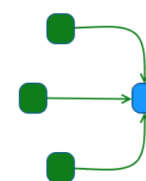
Data Portal



Graphs and Profiles



Publications



Data Sources

## Graphs / Profiles

Select the location:

Senegal ▾

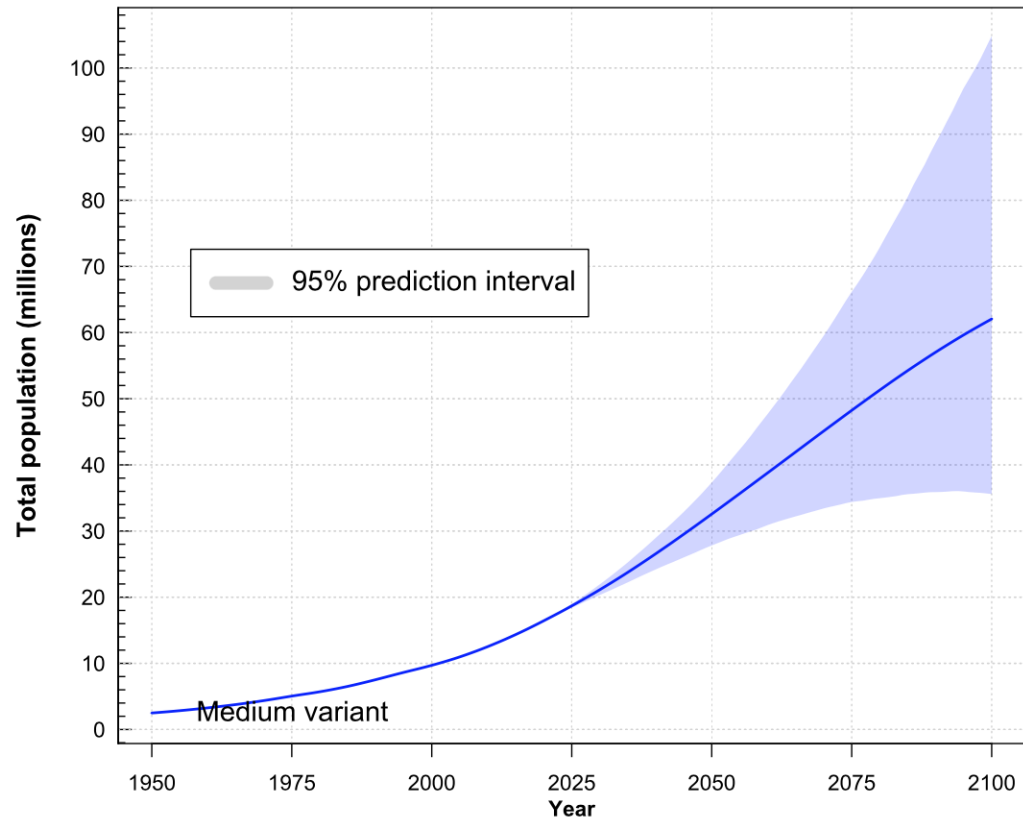
(World and other aggregates are listed at the bottom of the list)

Select the graph:

- Demographic Profiles
- Probabilistic Projections
- > Line Charts
- Population Pyramids

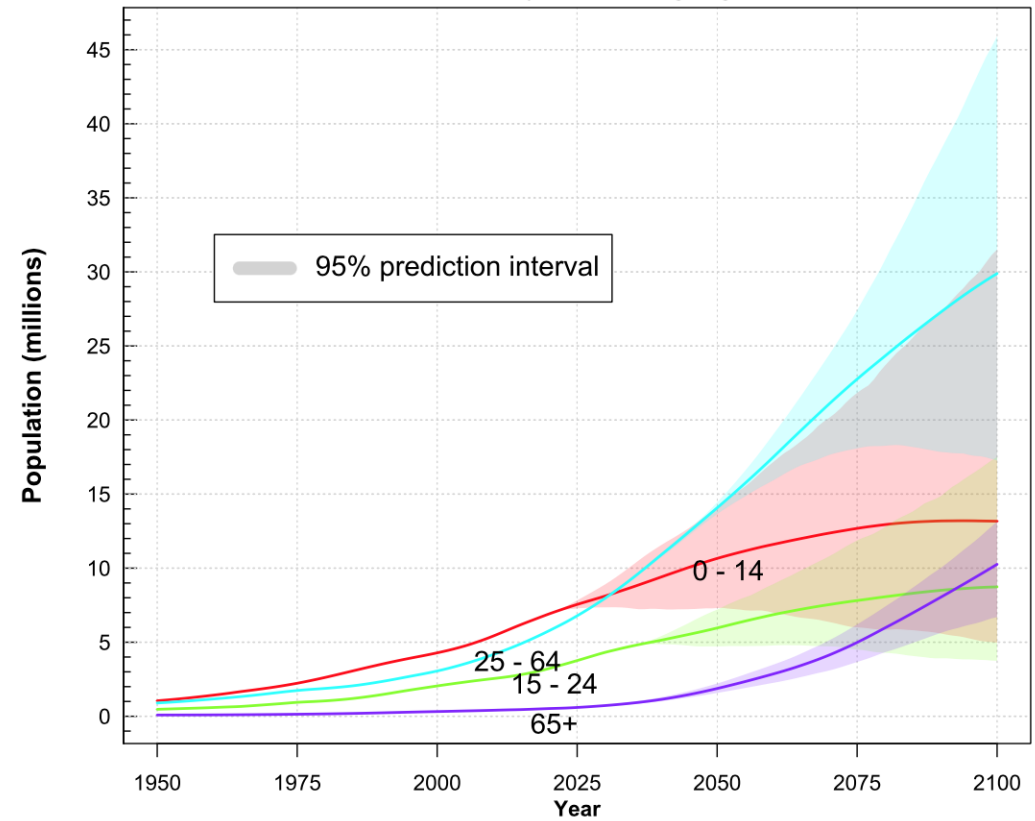
Currently showing: Senegal > Demographic Profiles > Line Charts

### Total population

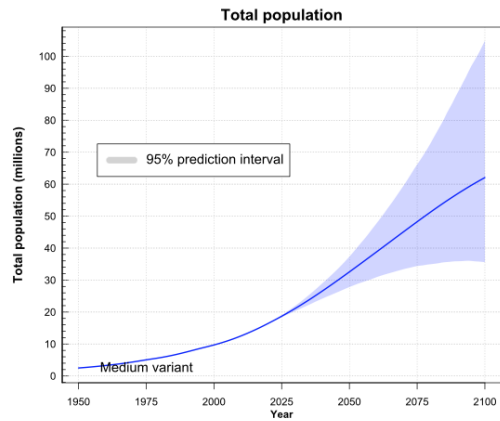


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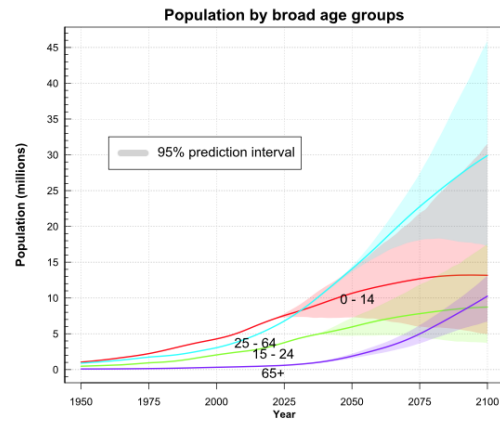
### Population by broad age groups



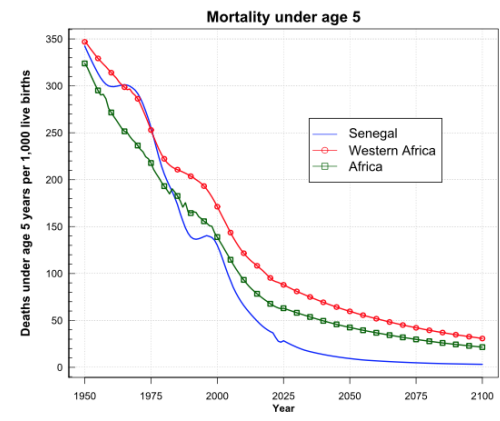
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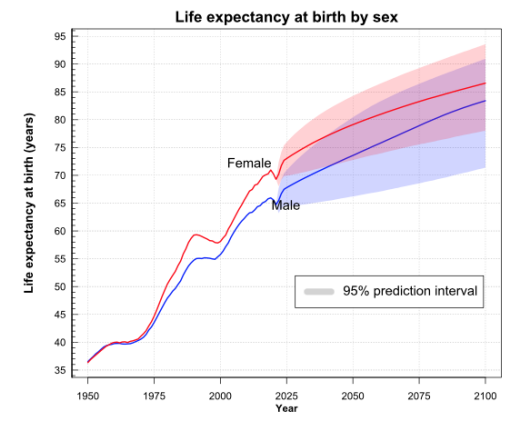
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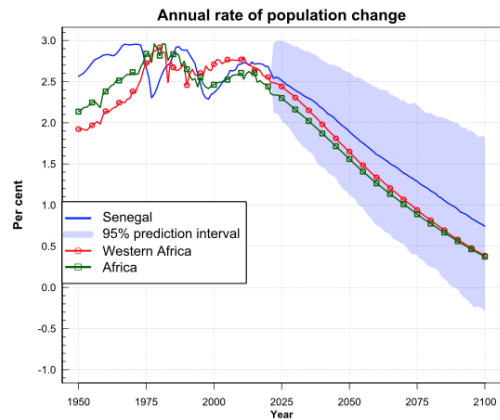
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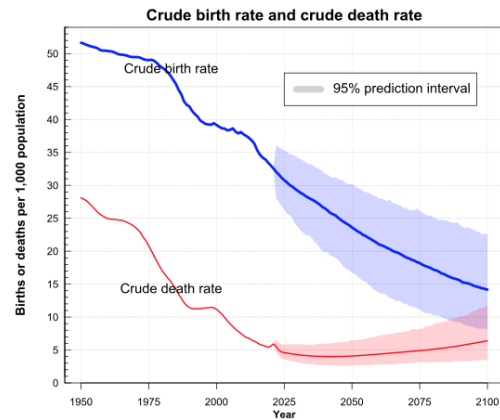
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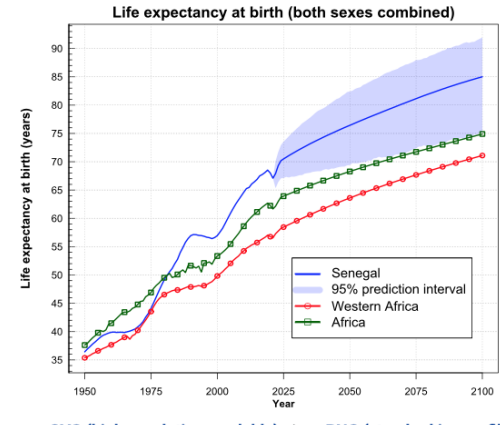
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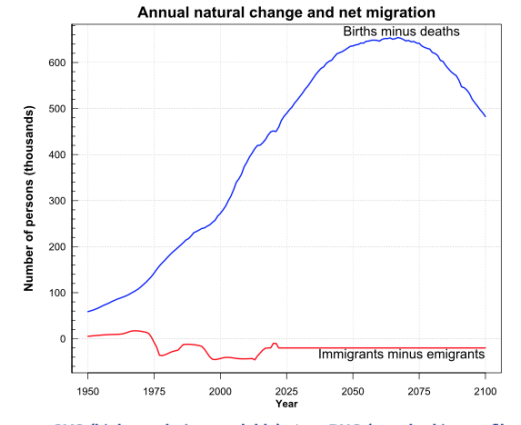
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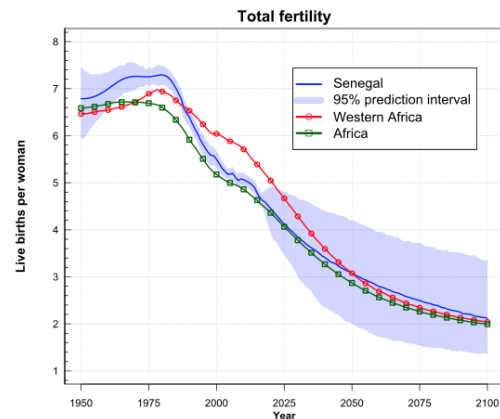
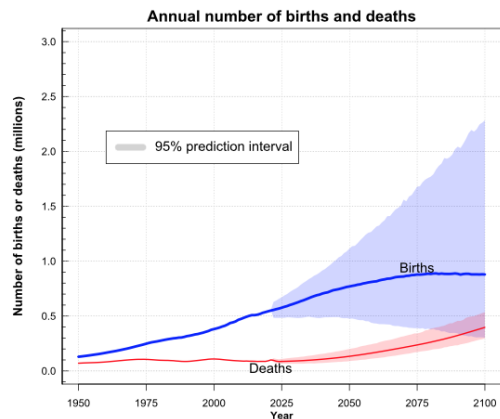
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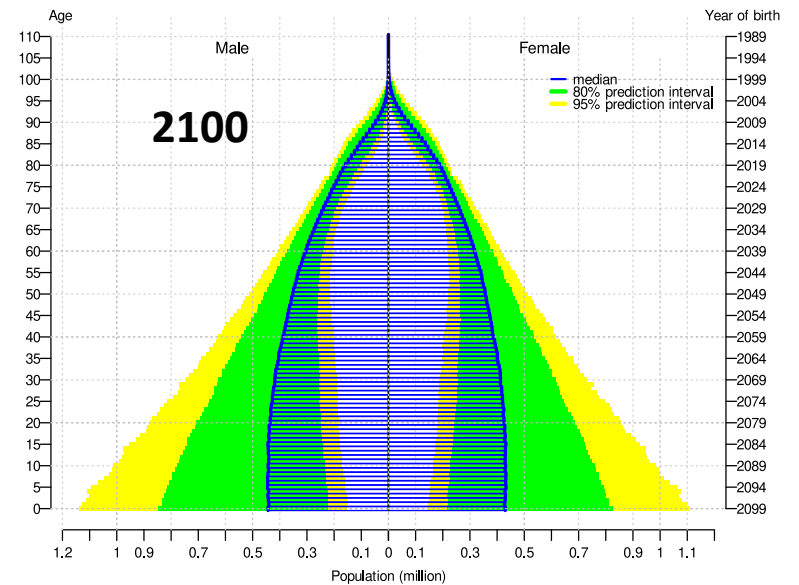
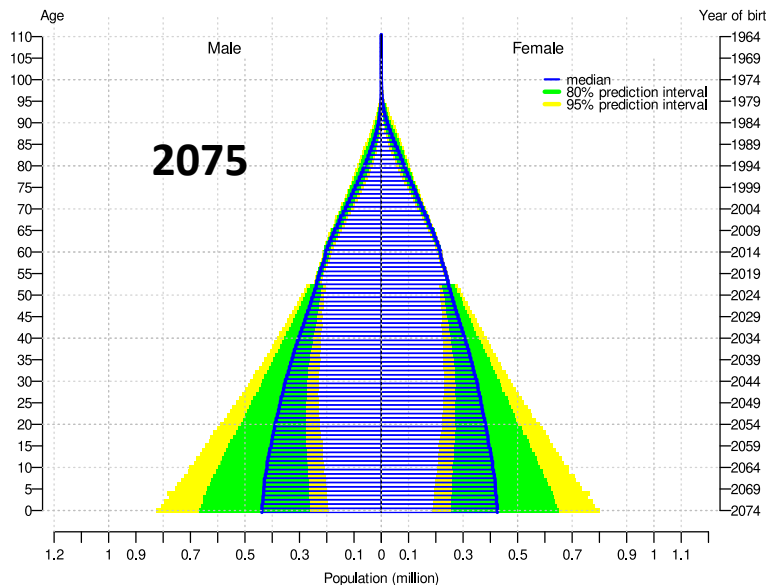
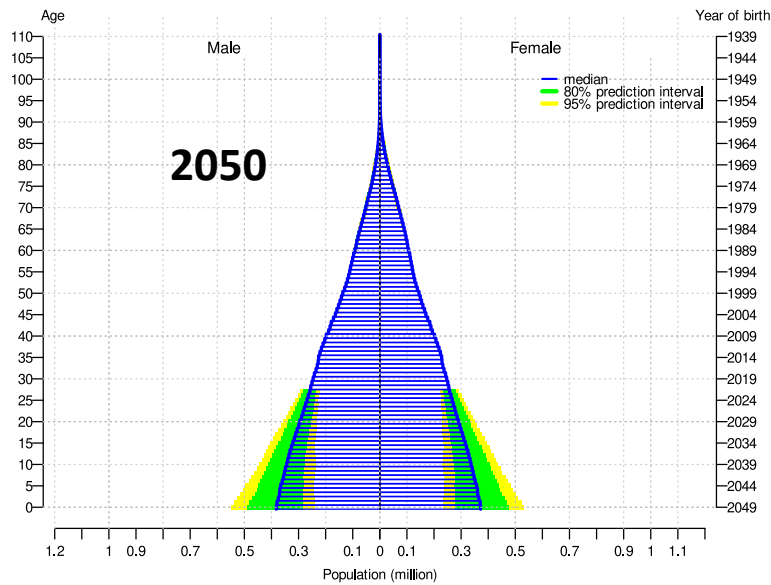
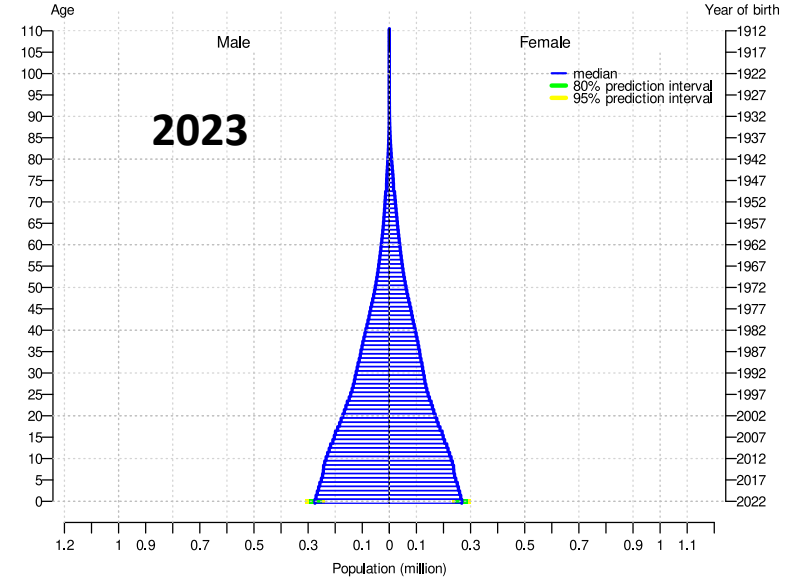
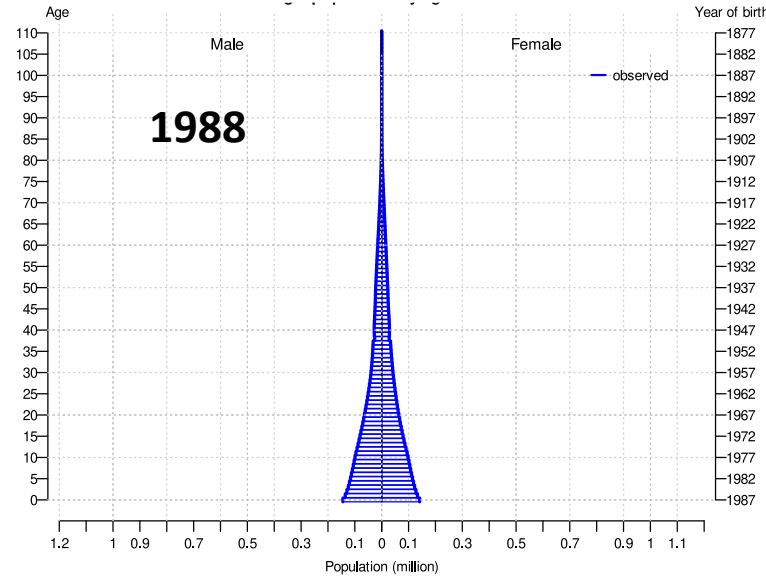
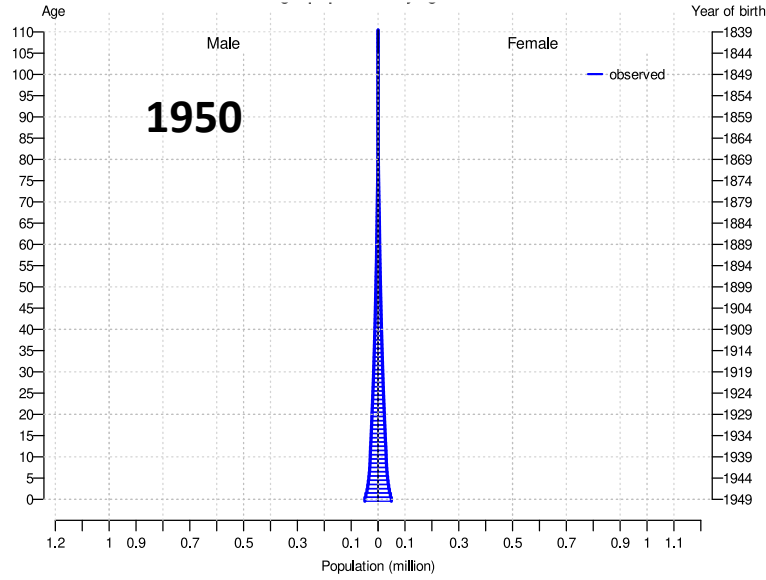
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# Senegal population age structure



# WPP Information

## Data portal



United Nations

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Population Division

World Population Prospects 2022

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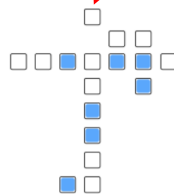
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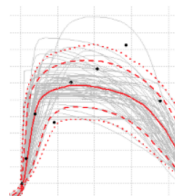
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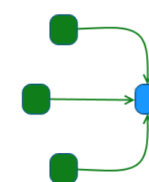
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Graphs and Profiles



Publications



Data Sources



# UN Population Division Data Portal

Interactive access to global demographic indicators

## Search data by indicator and location

Please select indicator(s)  DATE RANGE 1950 - 2100

View by **Topic** Alphabetical Top Selected Currently Selected 0 / 60  OR USE

Search indicators

- Population
- Fertility
- Mortality
- Child Mortality
- International Migration
- Family Planning
- Marital Status

## Explore the data

Mortality (Forthcoming) Urbanization (Forthcoming) International Migration (Forthcoming)

By country or area

## Different ways to access the dataset

**Interactive**

Explore the data through interactive tables & visualizations »

**API**

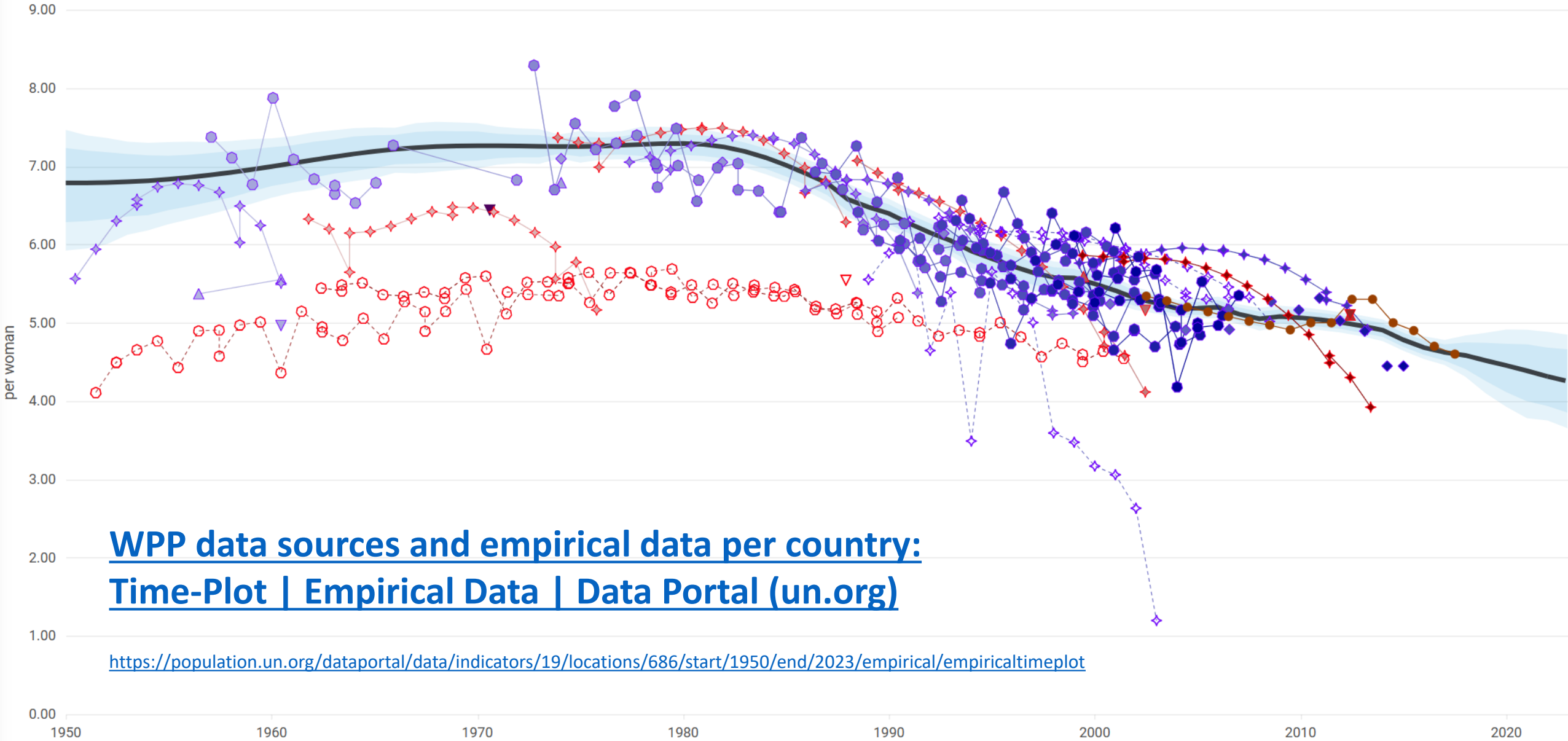
Access the API pull data into your online tools »

Senegal  
Total fertility rate

1950-2023

Sex: Both sexes

Variant: Median, 80-percent prediction interval, 95-percent prediction interval



**[WPP data sources and empirical data per country:](https://population.un.org/dataportal/data/indicators/19/locations/686/start/1950/end/2023/empirical/empiricaltimeplot)**  
**[Time-Plot](#) | [Empirical Data](#) | [Data Portal \(un.org\)](#)**

<https://population.un.org/dataportal/data/indicators/19/locations/686/start/1950/end/2023/empirical/empiricaltimeplot>

# Open API for online databases

- **DemoData** (inputs) for empirical data
  - Interactive data browser (in development): <https://popdiv.dfs.un.org/demodata/web/#>
  - ddSQLtools [R] library: <https://timriffe.github.io/DDSQLtools/> with vignette how to query/download data
- **DataPortal** (outputs) for model-based estimates
  - API technical documentation: <https://population.un.org/dataportalapi/index.html>
  - **User guide and tutorial** for Python and R : <https://population.un.org/dataportal/about/dataapi>

Swagger  
Select a definition: 3.0.0

### Data Portal API <sup>OpenAPI 3.0.0</sup>

Through this API you can access Population Division Indicators.

Population Division - Website  
Send email to Population Division  
Creative Commons License: CC BY 3.0 IGO

Services  
dataportalapi

#### Data

- GET /api/v(version)/data/indicators/{indicators}/locations/{locations} Returns a 'Data' for a given set of indicators, Locations, StartYear, EndYear, StartAge, EndAge, Variants, Sexes and Categories.
- GET /api/v(version)/data/indicators/{indicators}/locations/{locations}/start/{startYear}/end/{endYear} Returns a 'Data' for a given set of indicators, Locations, StartYear and EndYear.

#### Dimensions

- GET /api/v(version)/dimensions/times/{timeType}
- GET /api/v(version)/dimensions/variants/{param} Gets a list of variants.

#### EmpiricalData

- GET /api/v(version)/empirical/data Returns a 'ResultData' for a given set of indicators, Locations, StartYear and EndYear.

#### Indicators

- GET /api/v(version)/indicators Returns a pagged list of all active indicators.

United Nations Data Portal  
Population Division

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## Data API

### DataPortal API

#### Introduction

Users can also access data on the Data Portal via its API for displaying on webpages, linking to applications, and for local storage and processing. The API uses a RESTful interface, which allows users to query the data by inserting or appending their preferred set of selection parameters onto a base URL. This page will introduce the various API endpoints, explain how to use them, and provide examples of how to call them. For advanced users, a complete set of endpoints and their documentation may be found [here](#).

#### Base Path

The base path for accessing the API is:

<https://population.un.org/dataportalapi/api/v1>

All calls to the API will use this base path, plus a relative path that may include the parameters a user specifies. In this user's guide, relative paths will be introduced in the following sections as well as their relevant parameters. To call the API, one will always use this stylized structure: {basepath}/{relative path}.

The default response format for the API is JSON, but the API also supports other output formats, including: CSV and XML.

#### Status codes

Status codes are useful when calling the API, as they can inform the user of whether or not the call was successful and, if not, where the problem may lie. Possible status codes that may be returned when calling the API are:

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