The Institute for Quantitative Social Sciences (IQSS)
Harvard Dataverse
1737 Cambridge Street, CGIS Knafel Building, Room 350
Cambridge, MA 02138 USA.
Website: https://dataverse.harvard.edu/

Demographic Indicators and Future Predictions of China, Hong Kong, Macao, and Taiwan: A Comparative Perspective

*Armando Aliu**

Description: The demographic indicators of the People's Republic of China, Hong Kong, Macao, and Taiwan[1] were compiled from (1) the World Bank United Nations (UN) Population Division, World Population Prospects: 2022 Revision. (2) Census reports and other statistical publications from national statistical offices, (3) Eurostat: Demographic Statistics, (4) UN Statistical Division. Population and Vital Statistics Report (various years), (5) U.S. Census Bureau: International Database, and (6) Secretariat of the Pacific Community: Statistics and Demography Program. The dataset consists of descriptive demographic statistics of the People's Republic of China, Hong Kong, Macao, and Taiwan and includes the following indicators: (1) total population, (2) population by broad age groups, (3) annual rate of population change, (4) crude birth rate and crude death rate, (5) annual number of births and deaths, (6) total fertility, (7) mortality under age 5, (8) life expectancy at birth by sex, (9) life expectancy at birth (both sexes combined), (10) annual natural change and net migration, (11) population by age and sex: 2101, (12) annual number of deaths per 1,000 population, and (13) annual number of deaths.

---

* M.A., Ph.D., Assistant Professor in the Faculty of International and Political Studies at the Jagiellonian University in Kraków (Poland). Email: armando.aliu@uj.edu.pl

The dataset was developed in the framework of an edited book project and the "Promoting Order at the Edge of Turbulence (POET) Project" that is conducted in the Center for International Studies and Development (CISAD) at the Jagiellonian University in Krakow (Poland). "**The Project is co-financed by the Polish National Agency for Academic Exchange under the NAWA Guest Professorship programme**" **and the** "**Polish National Agency for Academic Exchange within the NAWA Chair programme**". The author wishes to acknowledge the financial assistance of the NAWA Grant (PPN/PRO/2020/1/00003/DEC/1) from the Polish Academic Exchange Council and NCN grant (ZARZADZENIE NCN 94/2020) from the Polish National Science Council.

[1] China's latest household survey was the National Sample Survey on Population Changes in 2014. On 1 July 1997 China resumed its exercise of sovereignty over Hong Kong, and on 20 December 1999, China resumed its exercise of sovereignty over Macao. Unless otherwise noted, data for China do not include data for Hong Kong SAR, China; Macao SAR, China; or Taiwan, China. The World Bank systematically assesses the appropriateness of official exchange rates as conversion factors. In this country, multiple or dual exchange rate activity exists and must be accounted for appropriately in underlying statistics. An alternative estimate is thus calculated as a weighted average of the different exchange rates in use in the country. Doing so better reflects economic reality and leads to more accurate cross-country comparisons and country classifications by income level. For this country, this applies to the period 1978-1993. Alternative conversion factors are used in the Atlas methodology and elsewhere in World Development Indicators as single-year conversion factors (United Nations, DESA, Population Division 2022).

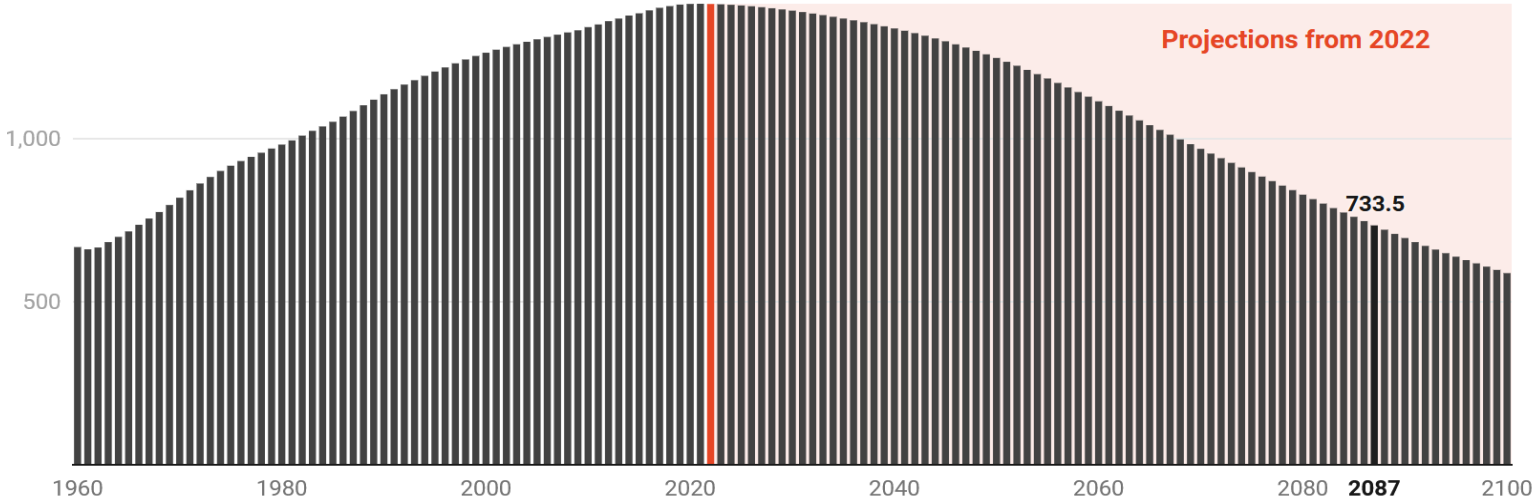
Limitations and Exceptions: Current population estimates for developing countries that lack (i) reliable recent census data, and (ii) pre- and post-census estimates for countries with census data, are provided by the UN Population Division and other agencies. The cohort component method - a standard method for estimating and projecting population - requires fertility, mortality, and net migration data, often collected from sample surveys, which can be small or limited in coverage. Population estimates are from demographic modeling and so are susceptible to biases and errors from shortcomings in both the model and the data. In the UN estimates the five-year age group is the cohort unit and five-year period data are used, therefore interpolations to obtain annual data or single age structure may not reflect actual events or age composition. Because future trends cannot be known with certainty, population projections have a wide range of uncertainty.

Statistical Concept and Methodology: Population estimates are usually based on national population censuses. Estimates for the years before and after the census are interpolations or extrapolations based on demographic models. Errors and undercounting occur even in high-income countries. In developing countries errors may be substantial because of limits in the transport, communications, and other resources required to conduct and analyze a full census. The quality and reliability of official demographic data are also affected by public trust in the government, government commitment to full and accurate enumeration, confidentiality, and protection against misuse of census data, and census agencies' independence from political influence. Moreover, comparability of population indicators is limited by differences in the concepts, definitions, collection procedures, and estimation methods used by national statistical agencies and other organizations that collect the data. The currentness of a census and the availability of complementary data from surveys or registration systems are objective ways to judge demographic data quality. Some European countries' registration systems offer complete information on population in the absence of a census. The UN Statistics Division monitors the completeness of vital registration systems. Some developing countries have made progress over the last 60 years, but others still have deficiencies in civil registration systems. International migration is the only other factor besides birth and death rates that directly determines a country's population growth. Estimating migration is difficult. At any time, many people are located outside their home country as tourists, workers, or refugees or for other reasons. Standards for the duration and purpose of international moves that qualify as migration vary, and estimates require information on flows into and out of countries that is difficult to collect. Population projections, starting from a base year are projected forward using assumptions of mortality, fertility, and migration by age and sex through 2050, based on the UN Population Division's World Population Prospects database medium variant (United Nations, DESA, Population Division 2022).

Subject: Social Sciences; Demography; Statistics; Population

In 2021 China's population grew by 480,000. The Shanghai Academy of Social Sciences team predicts an **annual average decline of 1.1% after 2021**, **pushing China's population down to 587 million in 2100**, less than half of what it is today (Sydney Business Insides 2022).

China's Population and Projections
Total population, millions



Source: Shanghai Academy of Social Sciences 2022a

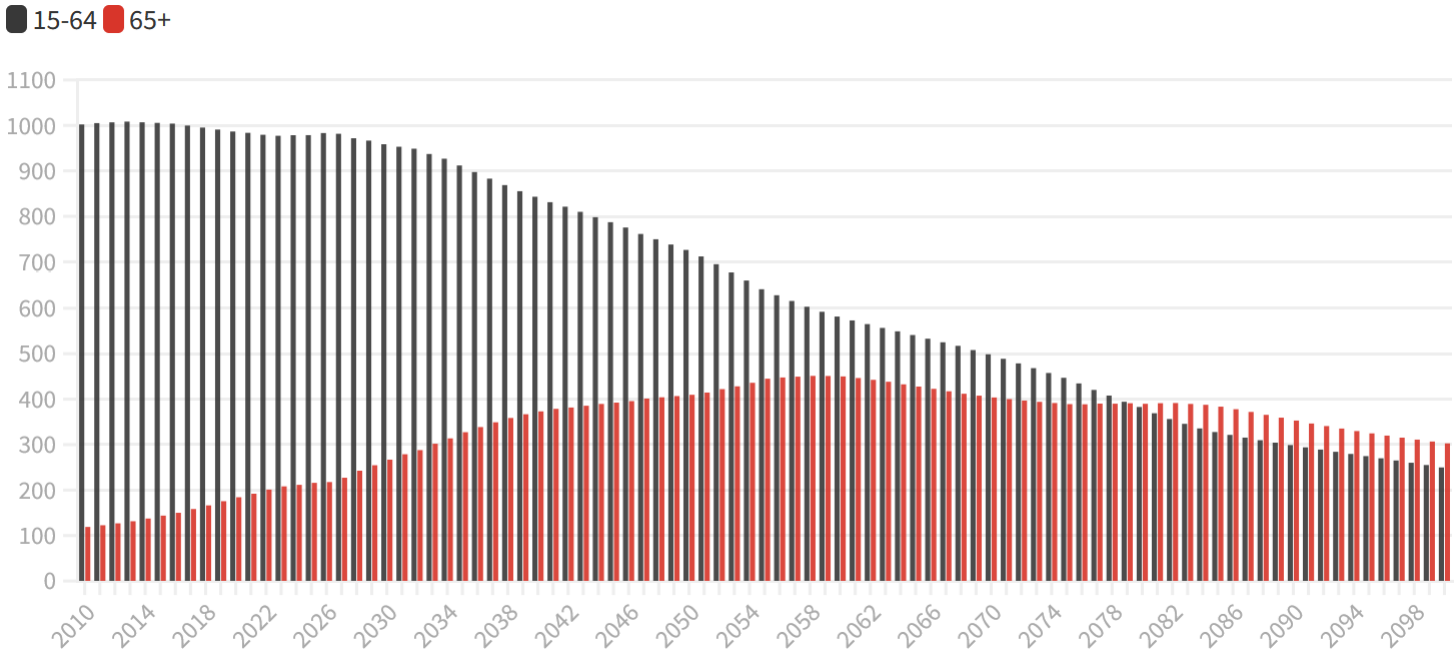
Table 1. China's Demographic Indicators (2000-2021)

	Population		Average annual population growth %	Population age composition			Dependency ratio		Crude death rate	Crude birth rate
				Ages 0-14	Ages 15-64	Ages 65+	young	old		
	millions			%	%	%	% of working-age population	% of working-age population	per 1,000 people	per 1,000 people
	2000	2021	2000-2021	2021	2021	2021	2021	2021	2020	2020
China	1,262.6	1,412.4	0.5	18	70	12	25	18	7	9
Hong Kong	6.7	7.4	0.5	13	68	19	19	28	7	6
Macao	0.4	0.7	2.1	15	73	13	20	18	4	11

Source: The World Bank 2022

China working-age population, 65+ population

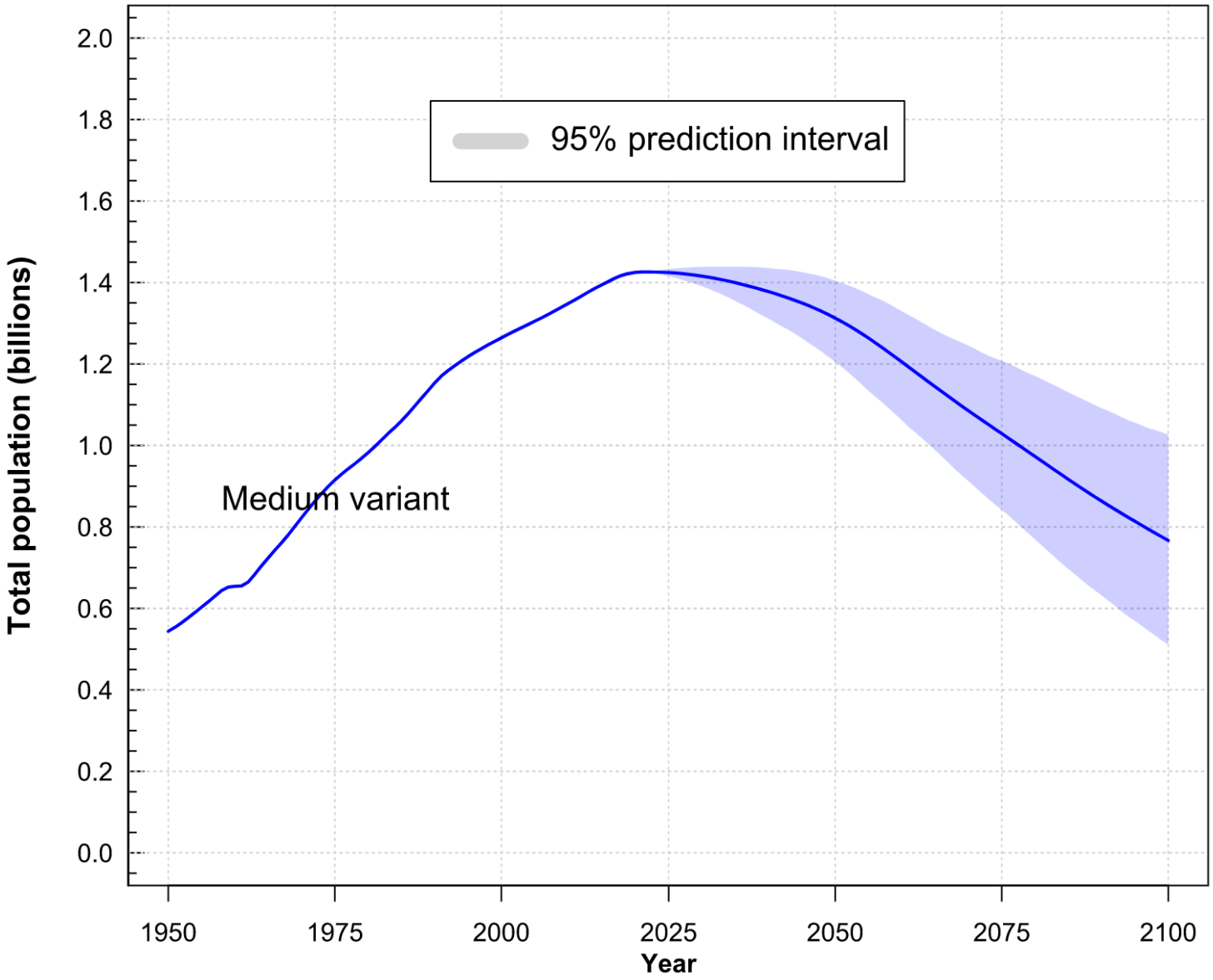
Projections, millions



Source: Shanghai Academy of Social Sciences 2022b

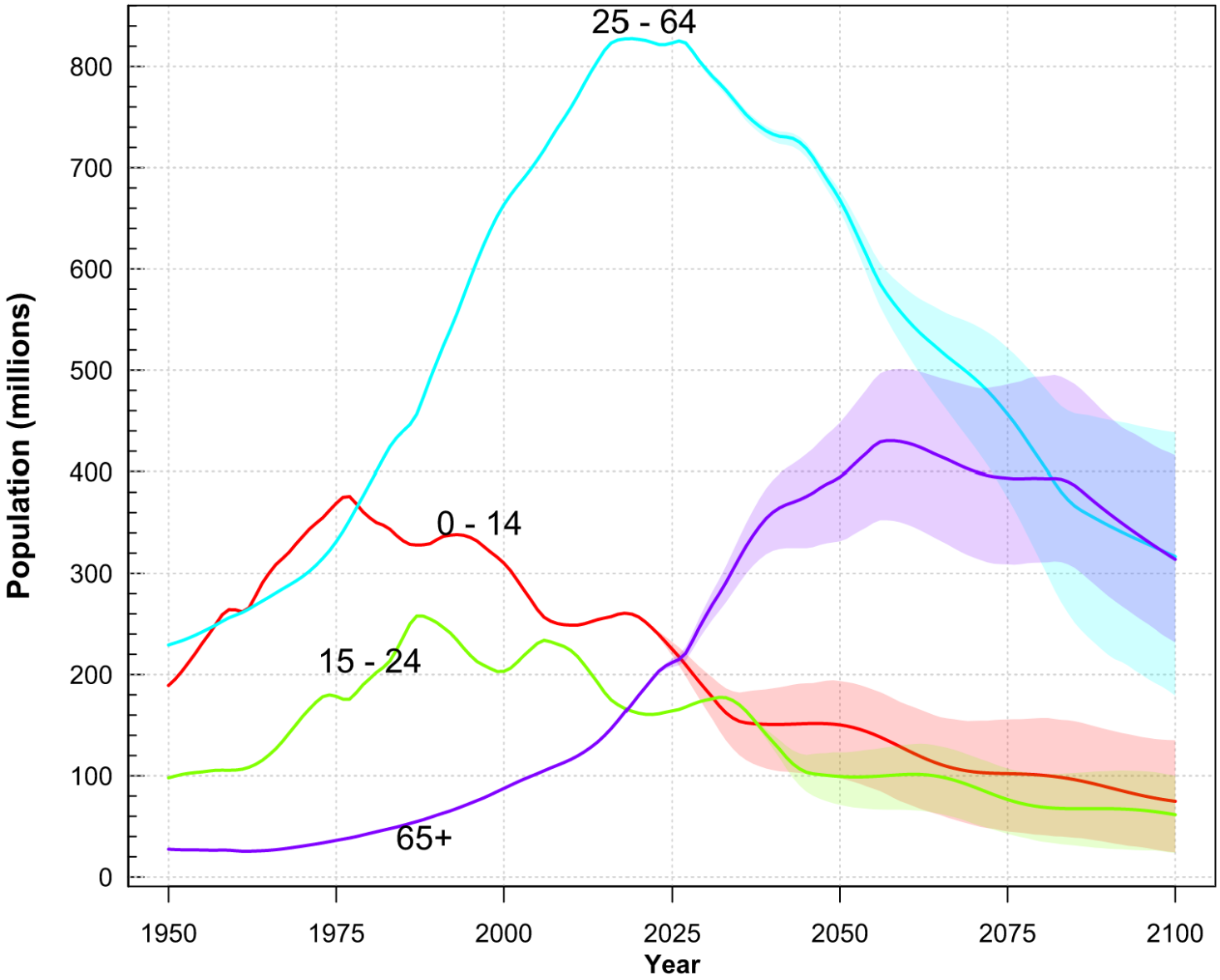
While there are currently 100 working-age people available to support every 20 elderly people, by 2100, 100 working-age Chinese will have to support as many as 120 elderly Chinese. China's working-age population is projected to shrink to less than one third of that peak by 2100. China's elderly population (aged 65 and above) is expected to continue to climb for most of that time, passing China's working-age population near 2080. China's pension payments will grow five-fold from 4% of GDP in 2020 to 20% of GDP in 2100 (World Economic Forum 2022).

China's total population



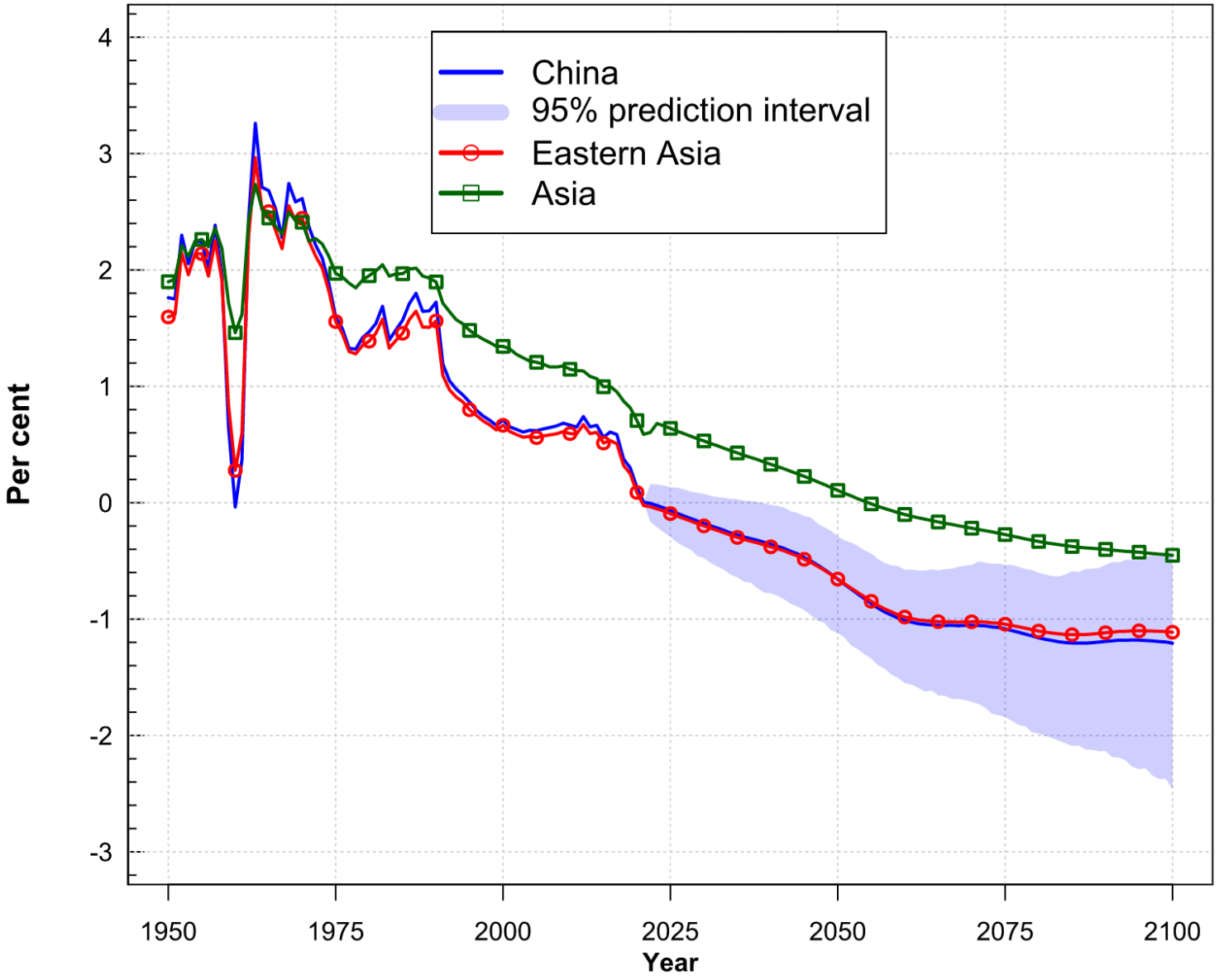
Source: United Nations, DESA, Population Division, 2022.

China's population by broad age groups



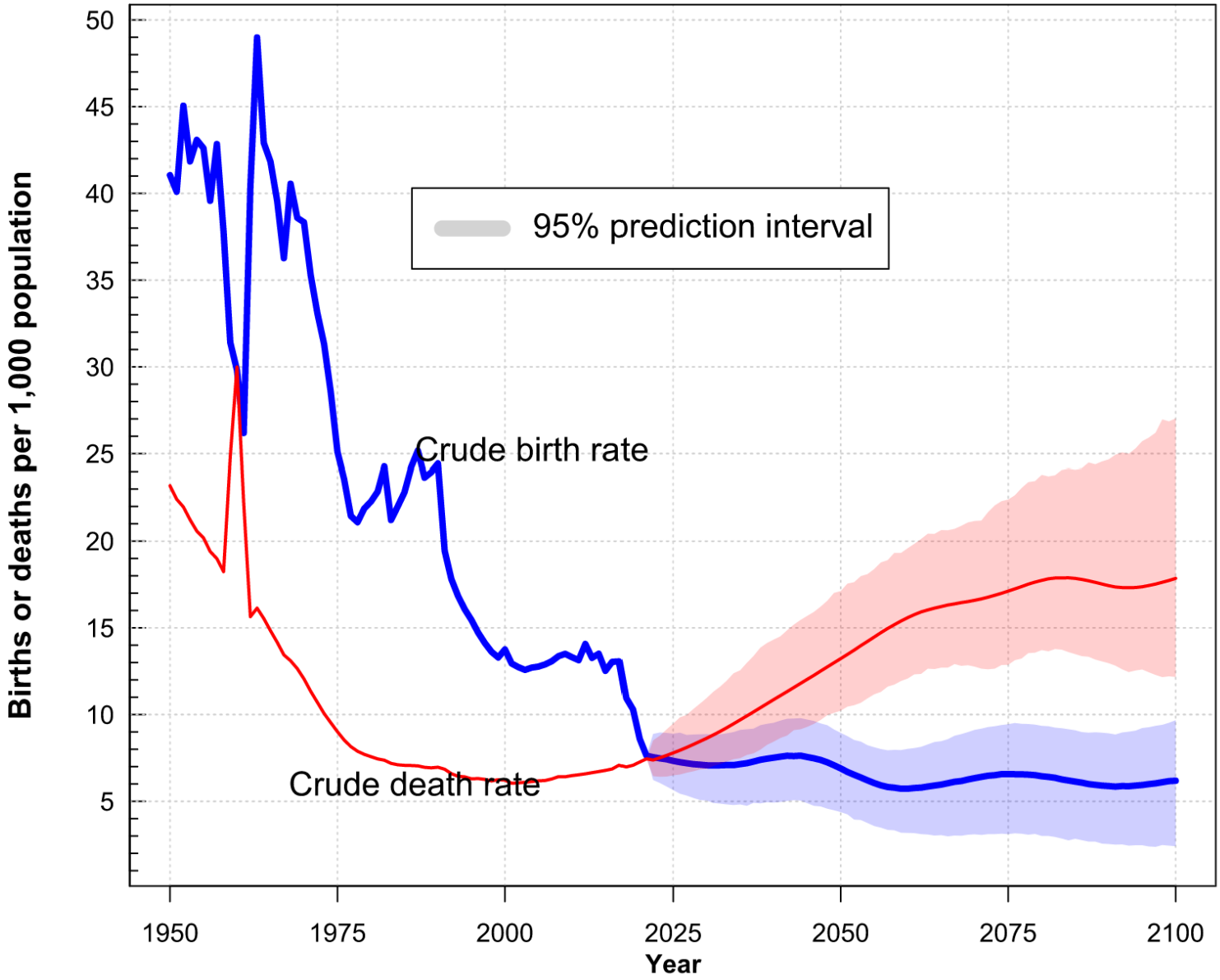
Source: United Nations, DESA, Population Division, 2022.

China's annual rate of population change



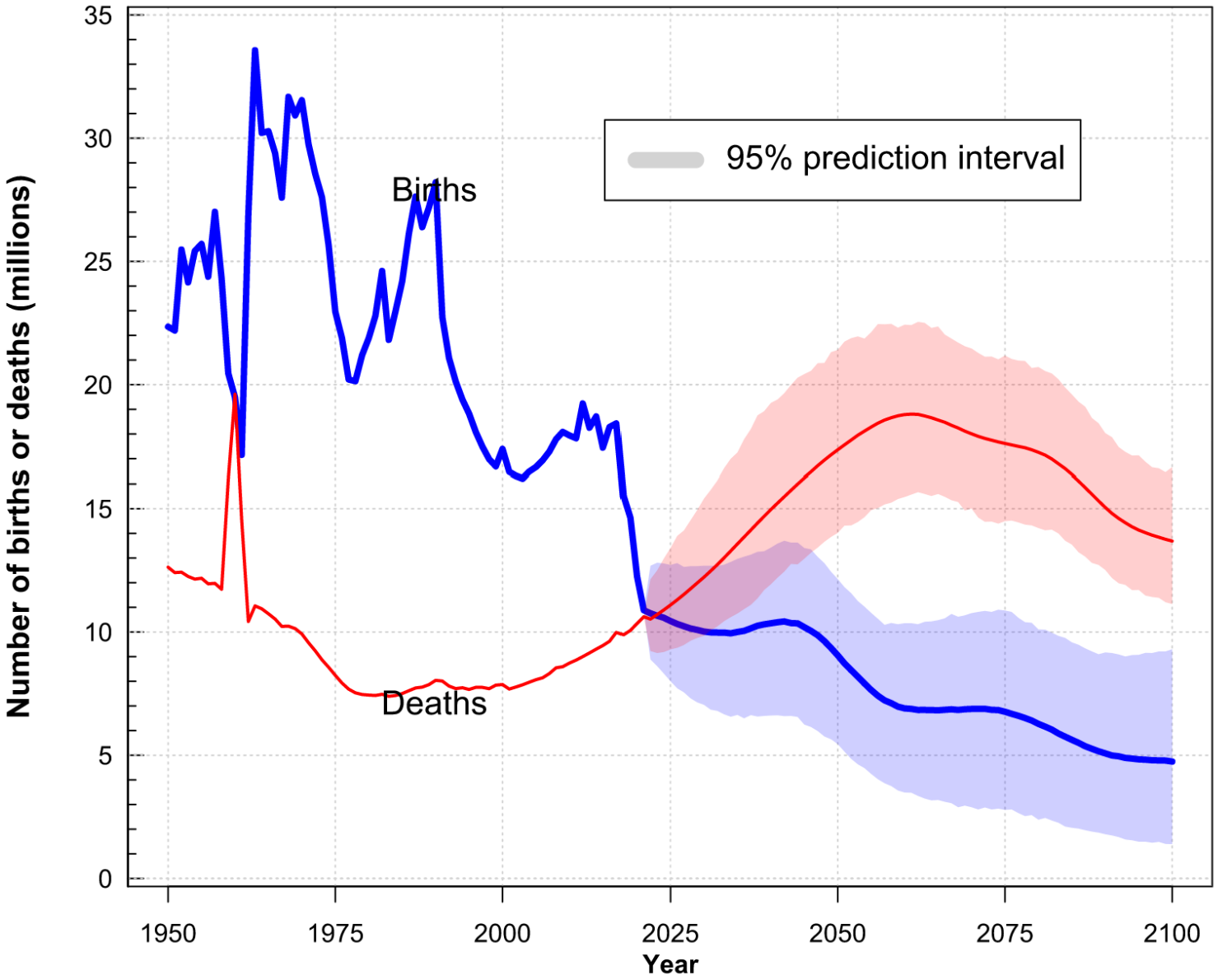
Source: United Nations, DESA, Population Division, 2022.

China's crude birth rate and crude death rate



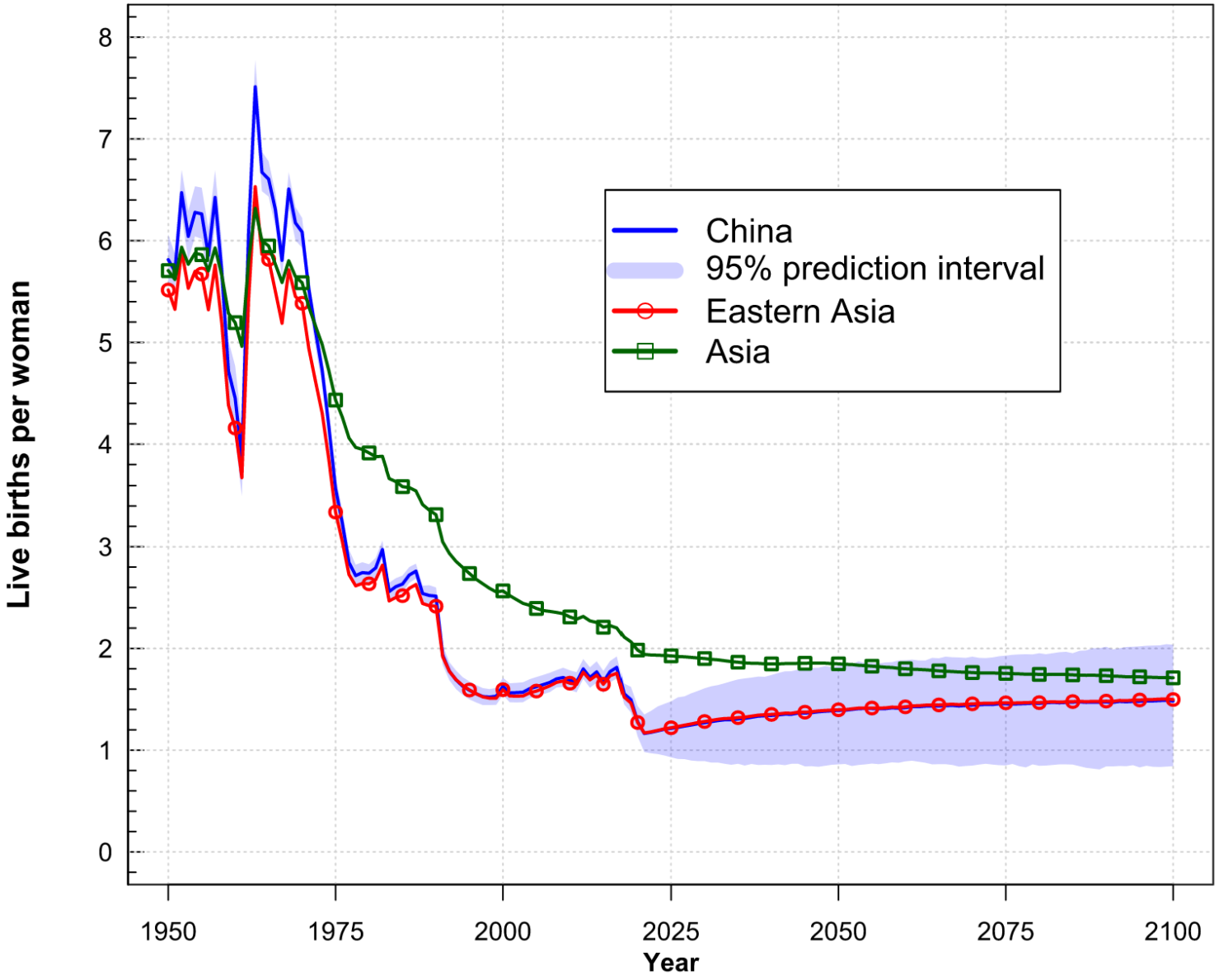
Source: United Nations, DESA, Population Division, 2022.

China's annual number of births and deaths



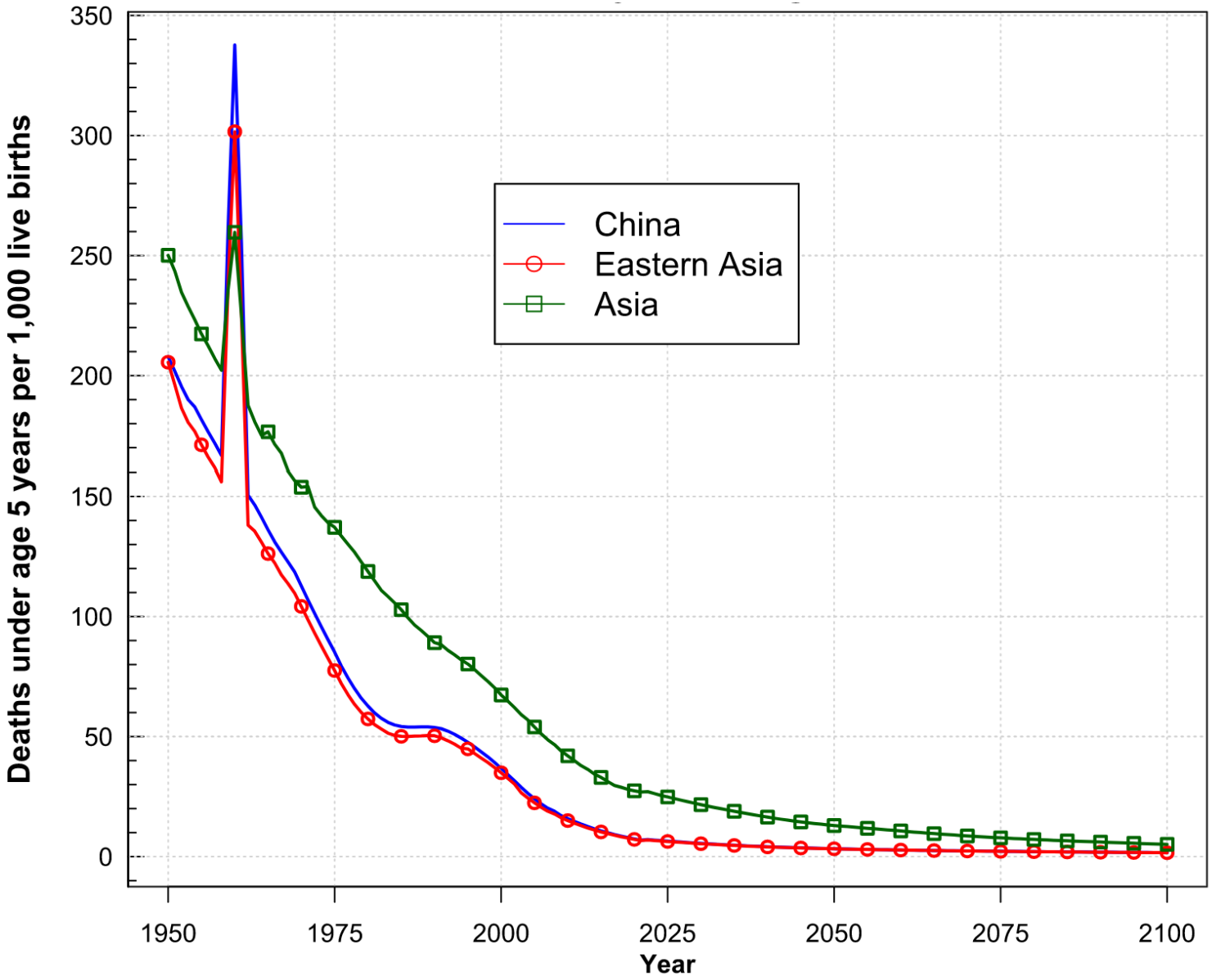
Source: United Nations, DESA, Population Division, 2022.

China's total fertility



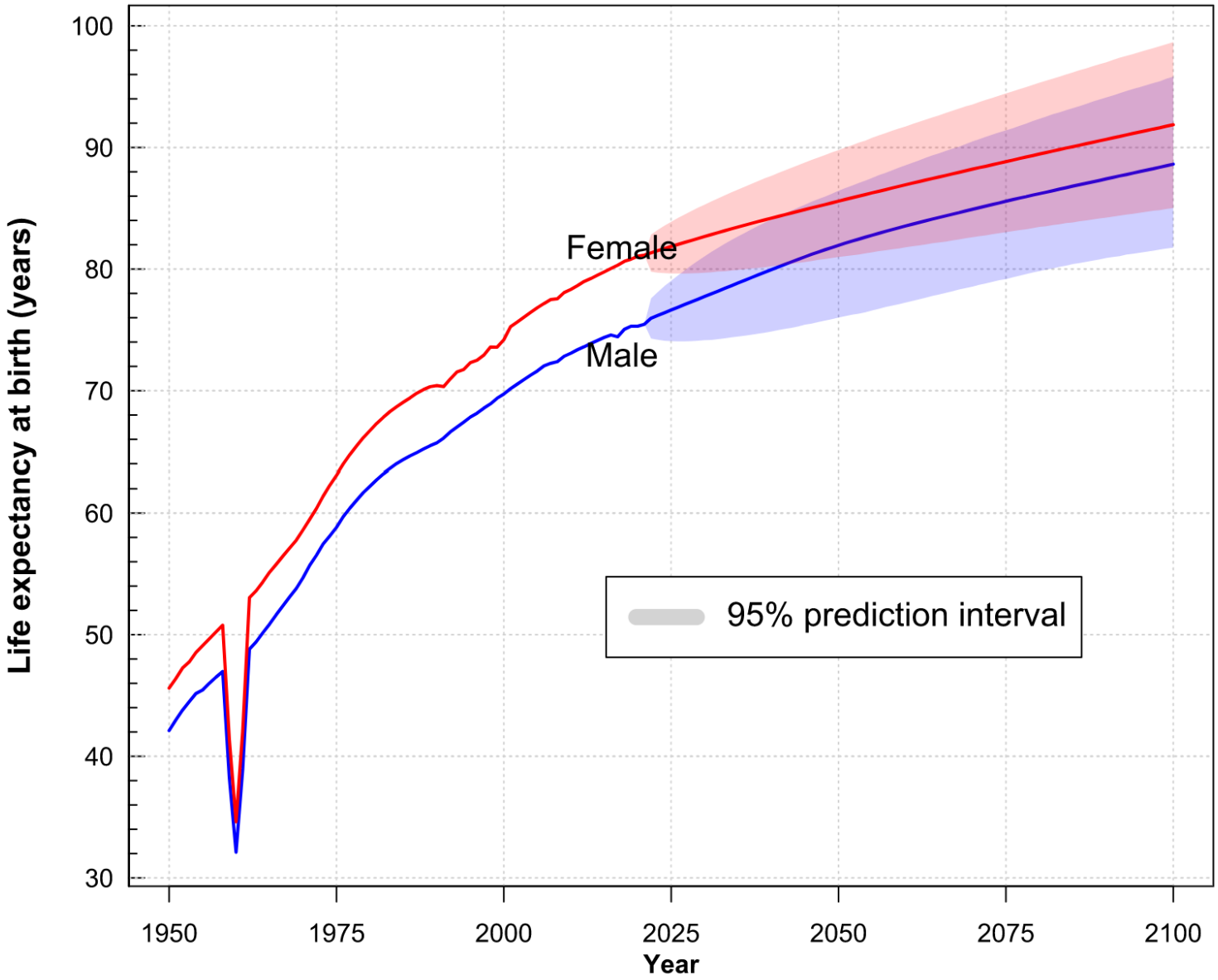
Source: United Nations, DESA, Population Division, 2022.

China's mortality under age 5



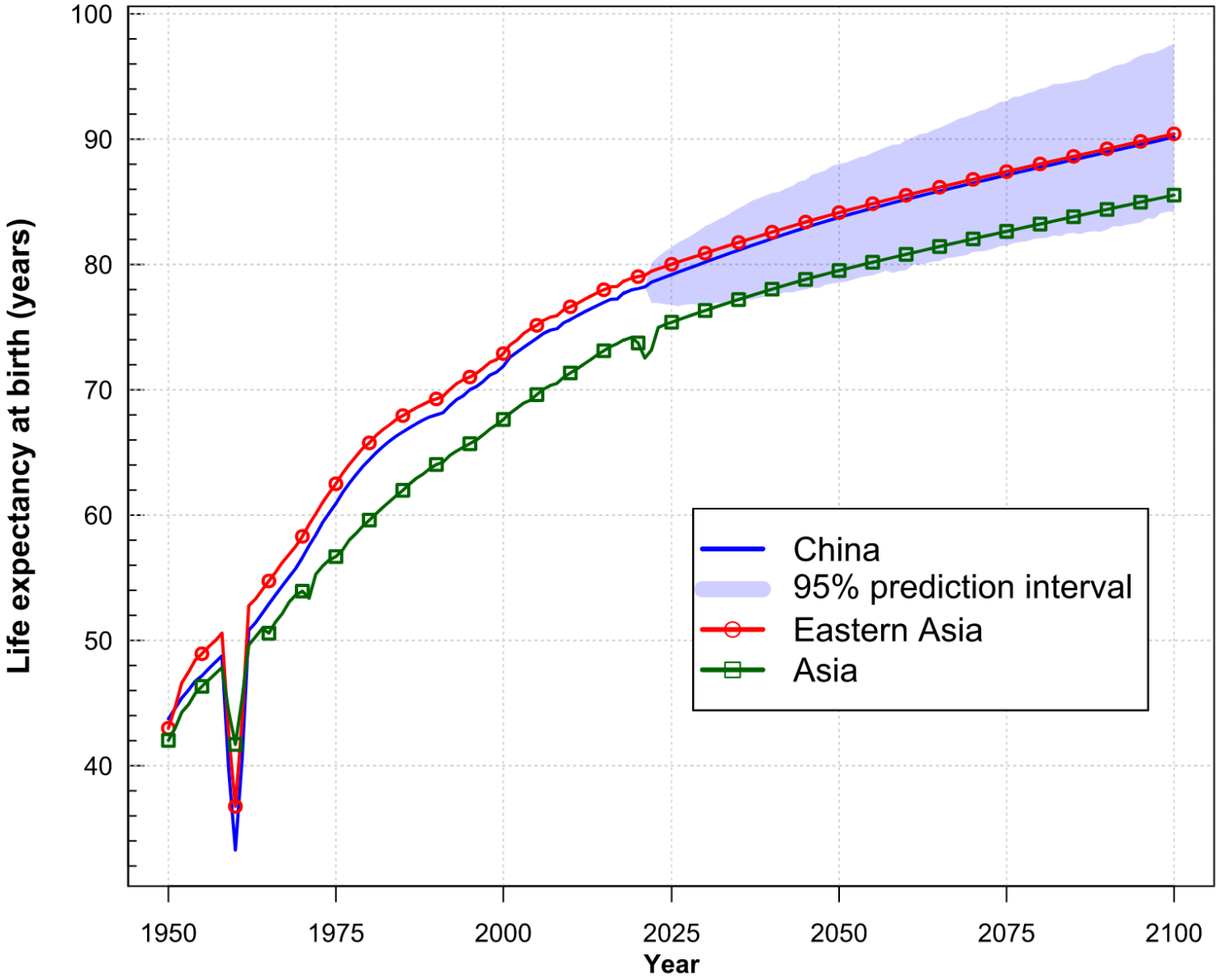
Source: United Nations, DESA, Population Division, 2022.

China's life expectancy at birth by sex



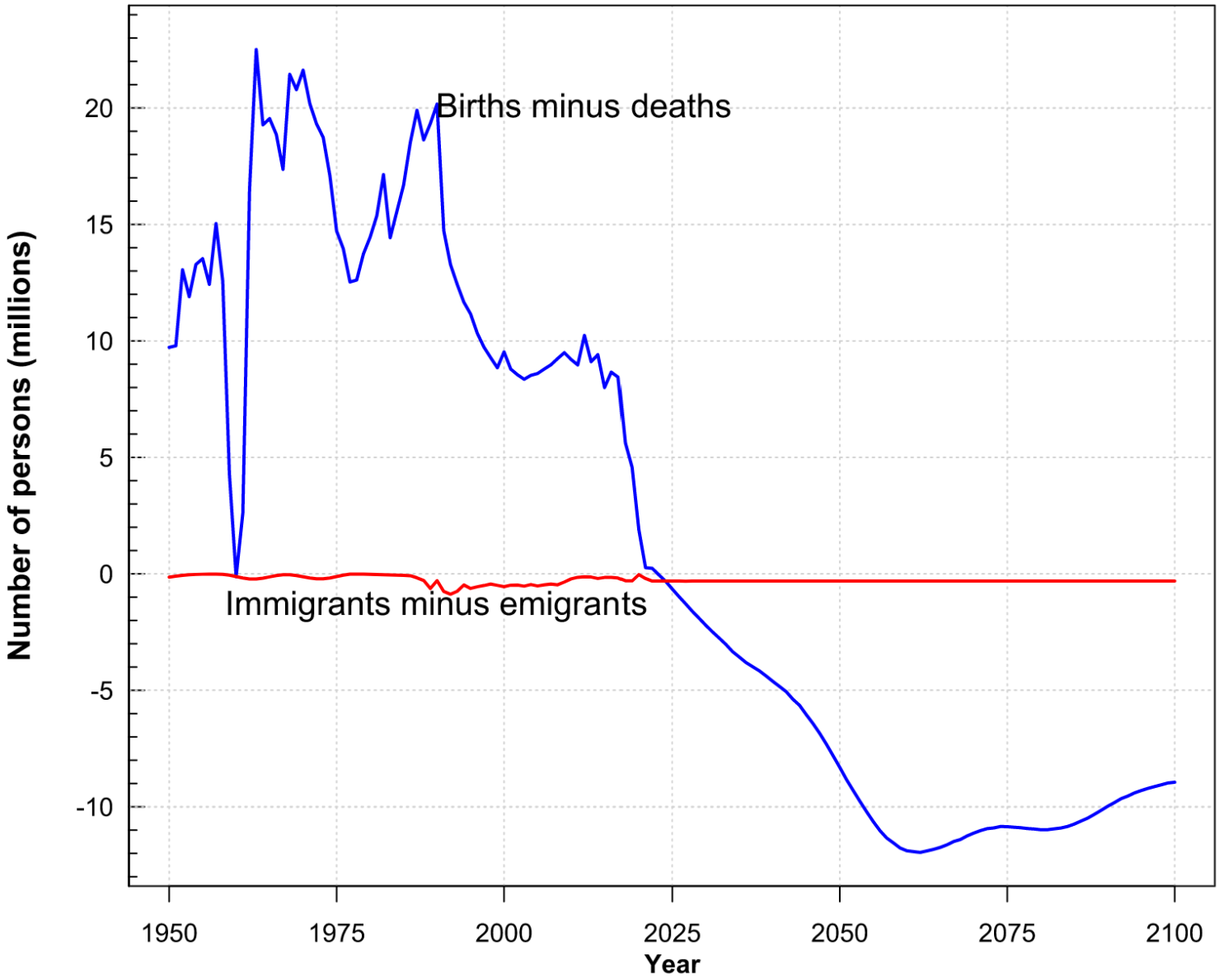
Source: United Nations, DESA, Population Division, 2022.

China's life expectancy at birth (both sexes combined)



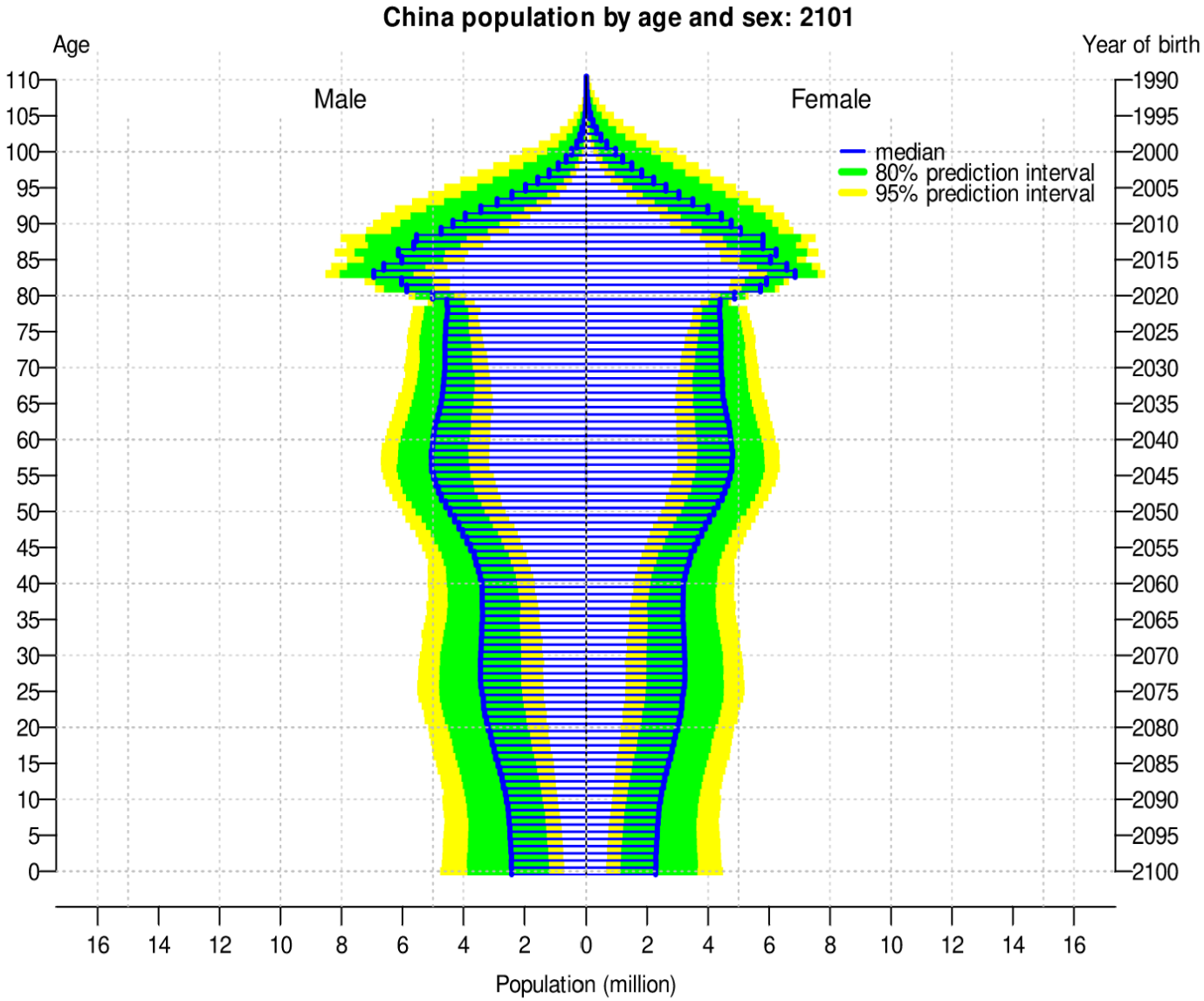
Source: United Nations, DESA, Population Division, 2022.

China's annual natural change and net migration



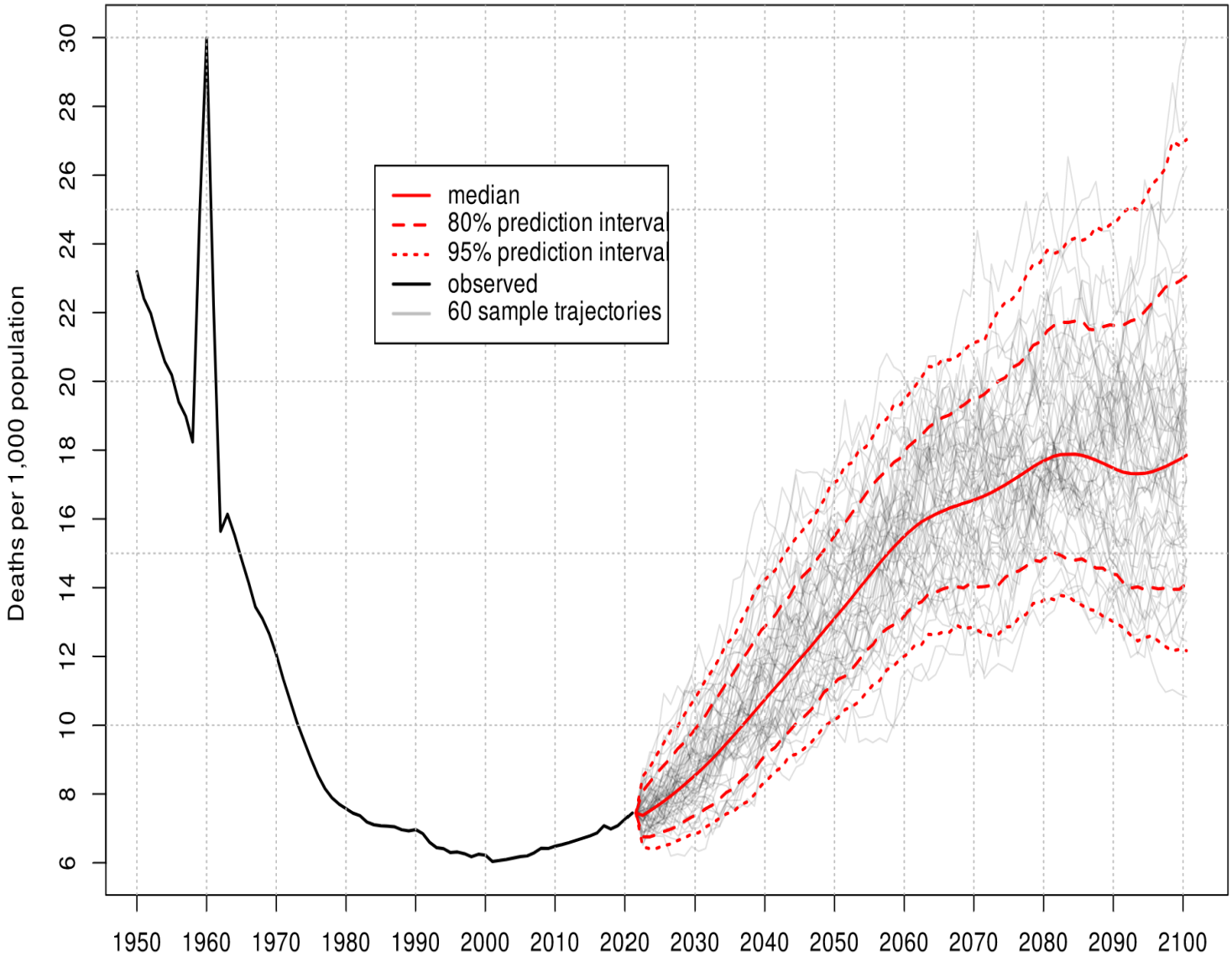
Source: United Nations, DESA, Population Division, 2022.

China's population by age and sex: 2101



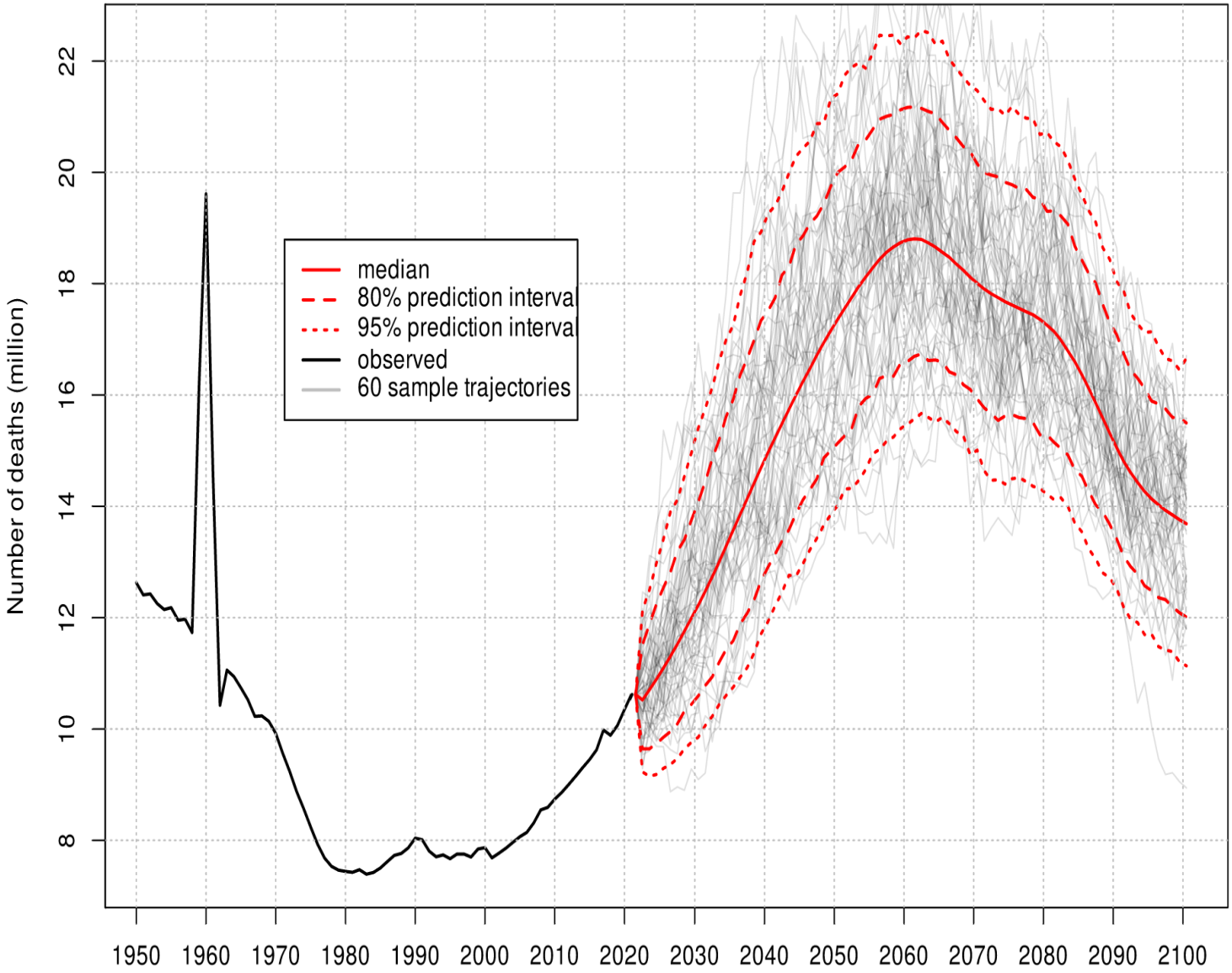
Source: United Nations, Department of Economic and Social Affairs, Population Division 2022.

China's annual number of deaths per 1,000 population



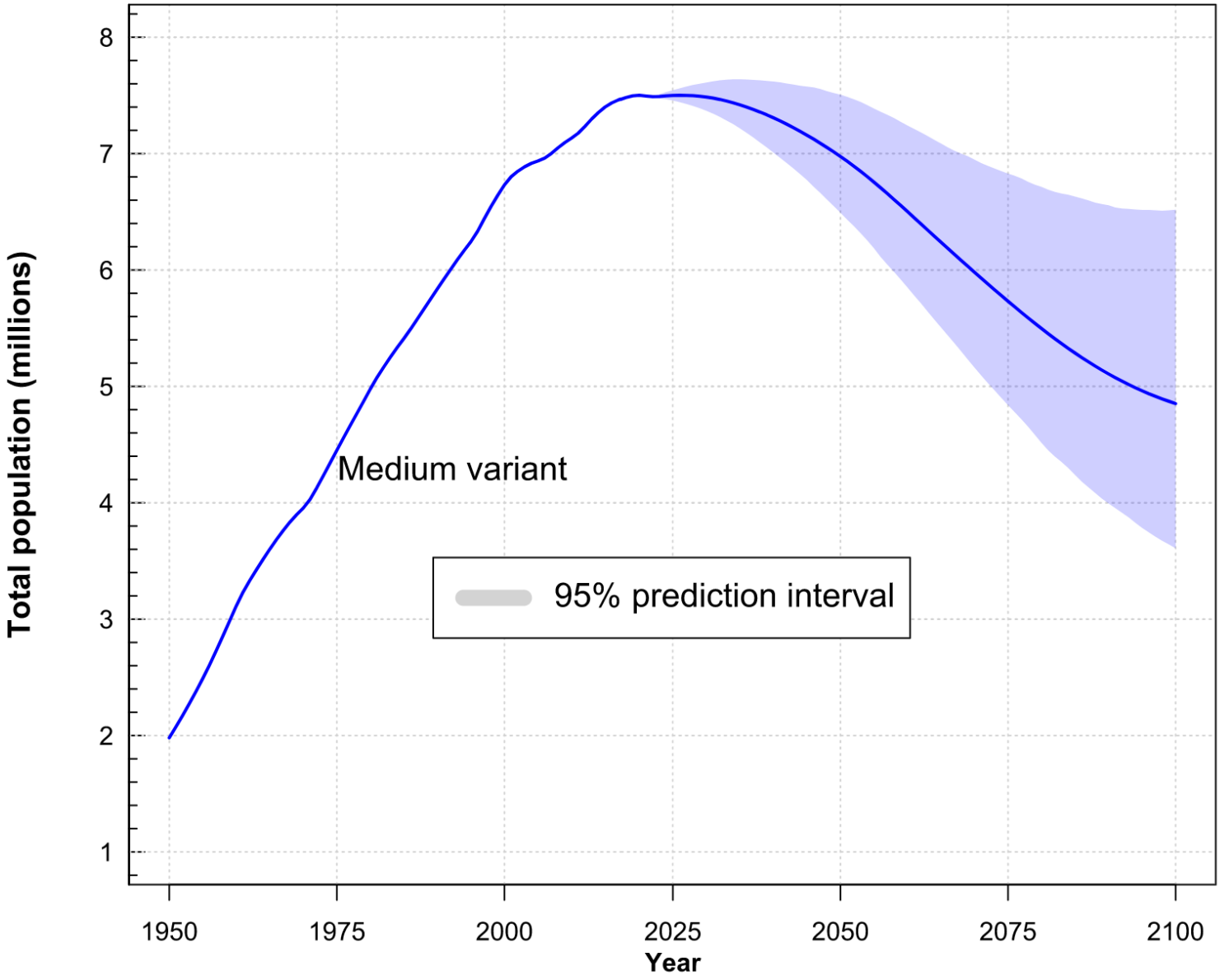
Source: United Nations, Department of Economic and Social Affairs, Population Division 2022.

China's annual number of deaths



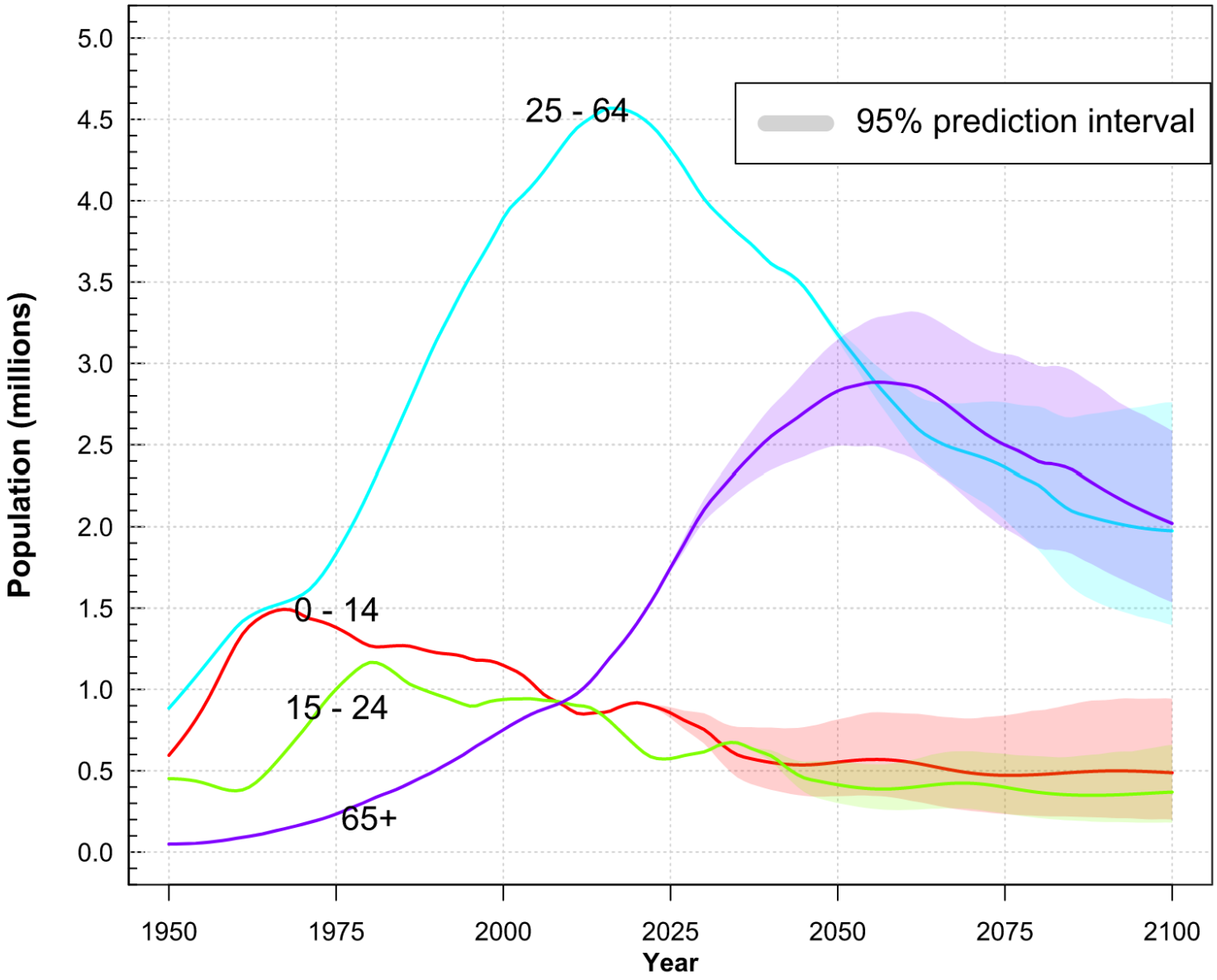
Source: United Nations, Department of Economic and Social Affairs, Population Division 2022.

Hong Kong's total population



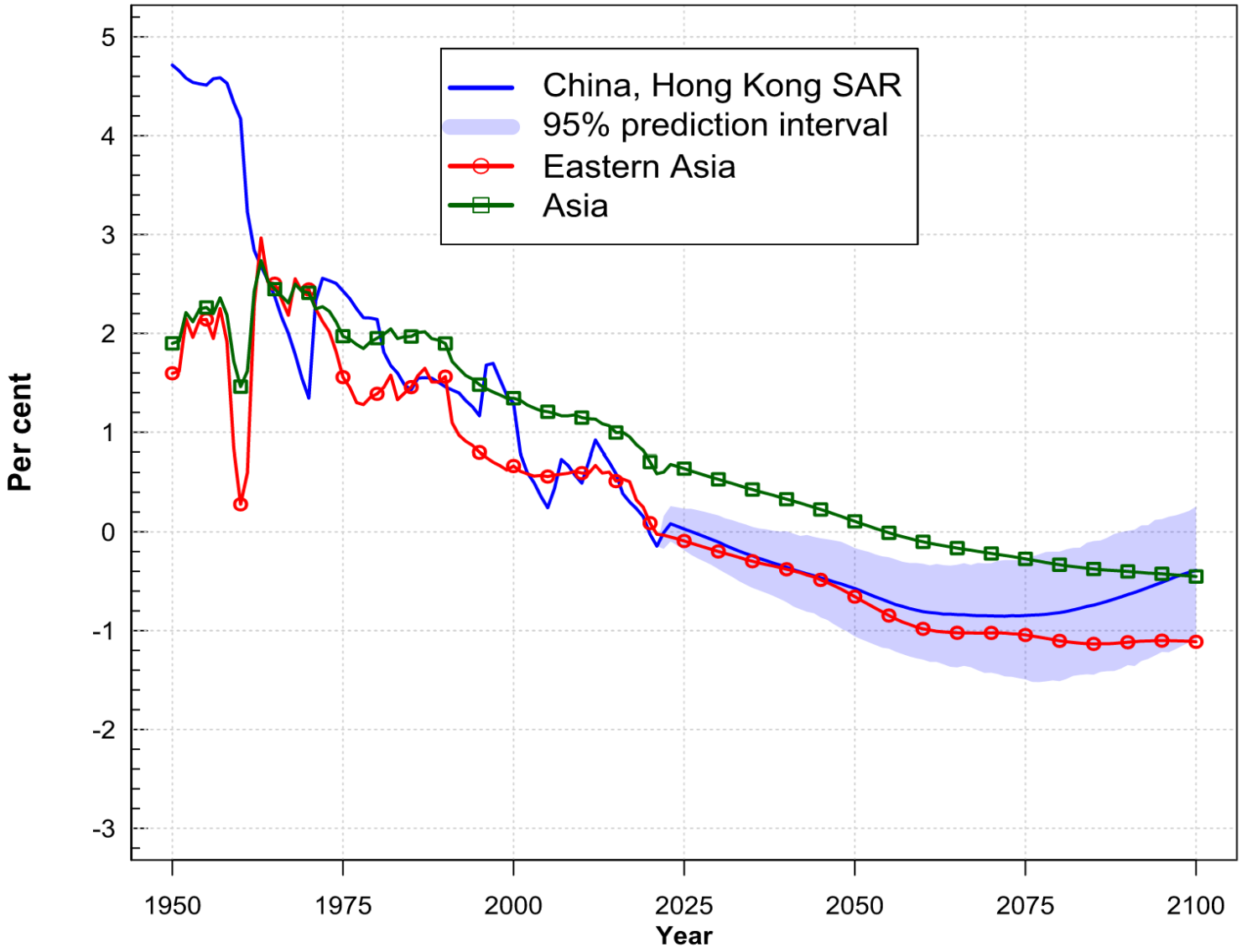
Source: United Nations, DESA, Population Division, 2022.

Hong Kong's population by broad age groups



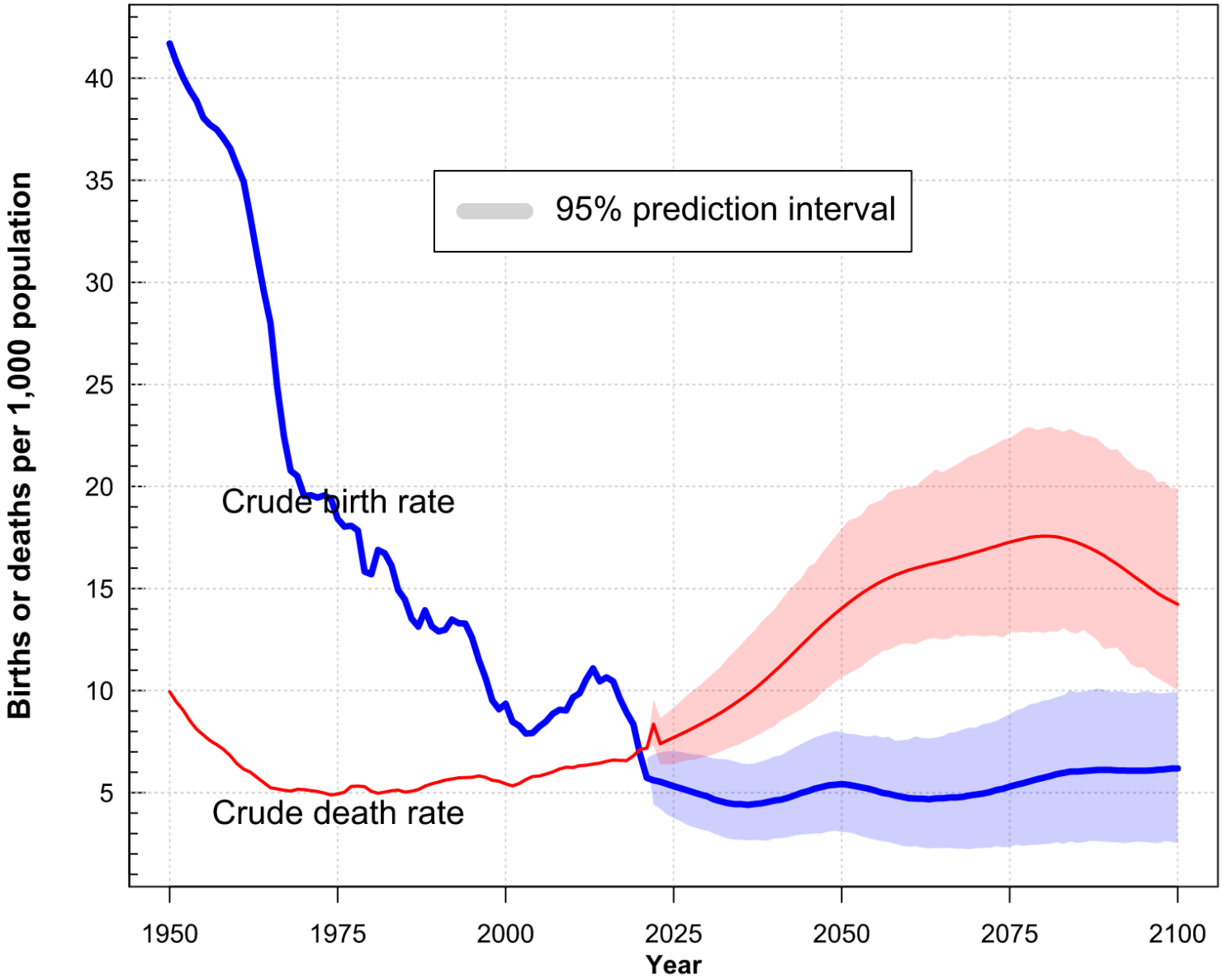
Source: United Nations, DESA, Population Division, 2022.

Hong Kong's annual rate of population change



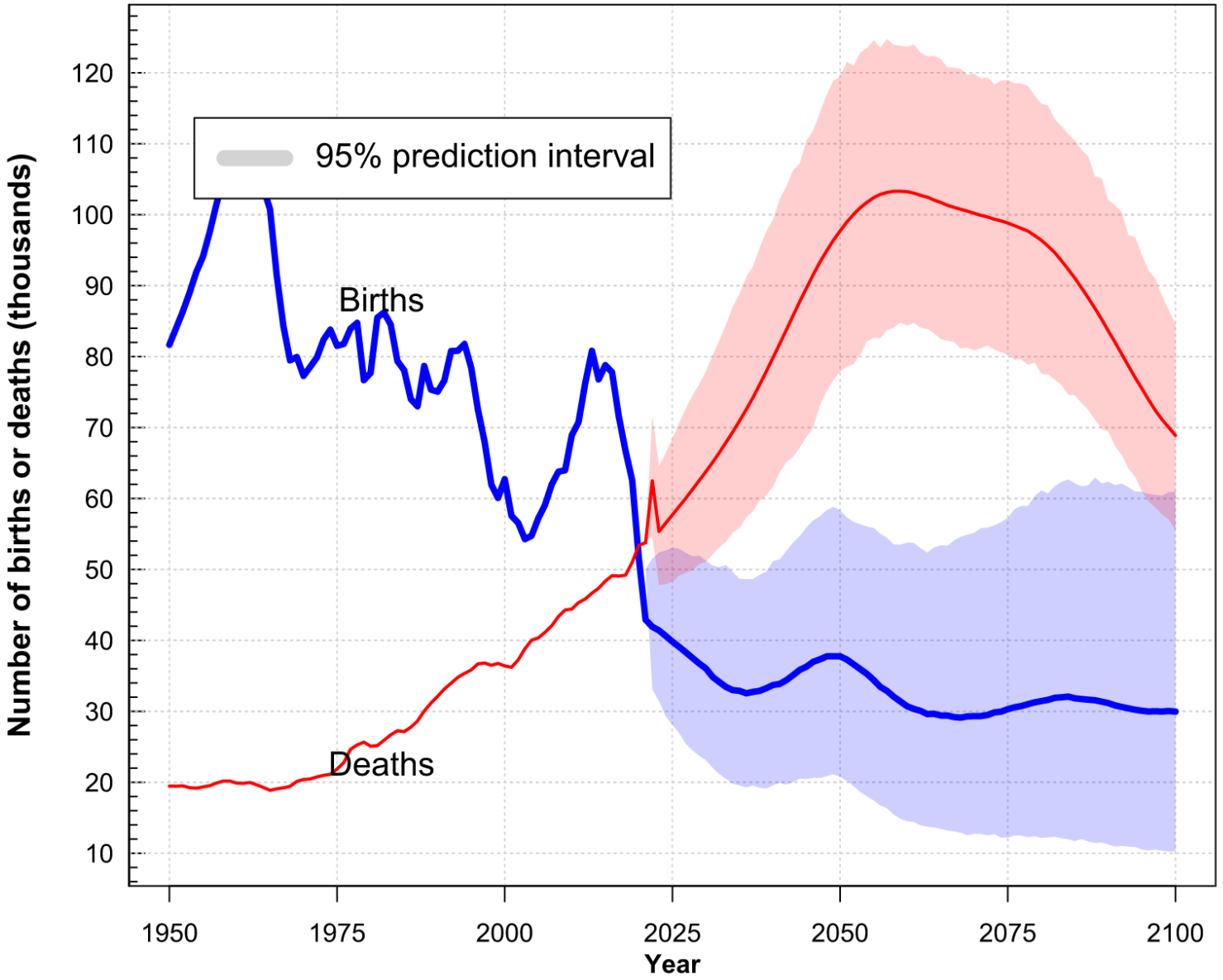
Source: United Nations, DESA, Population Division, 2022.

Hong Kong's crude birth rate and crude death rate



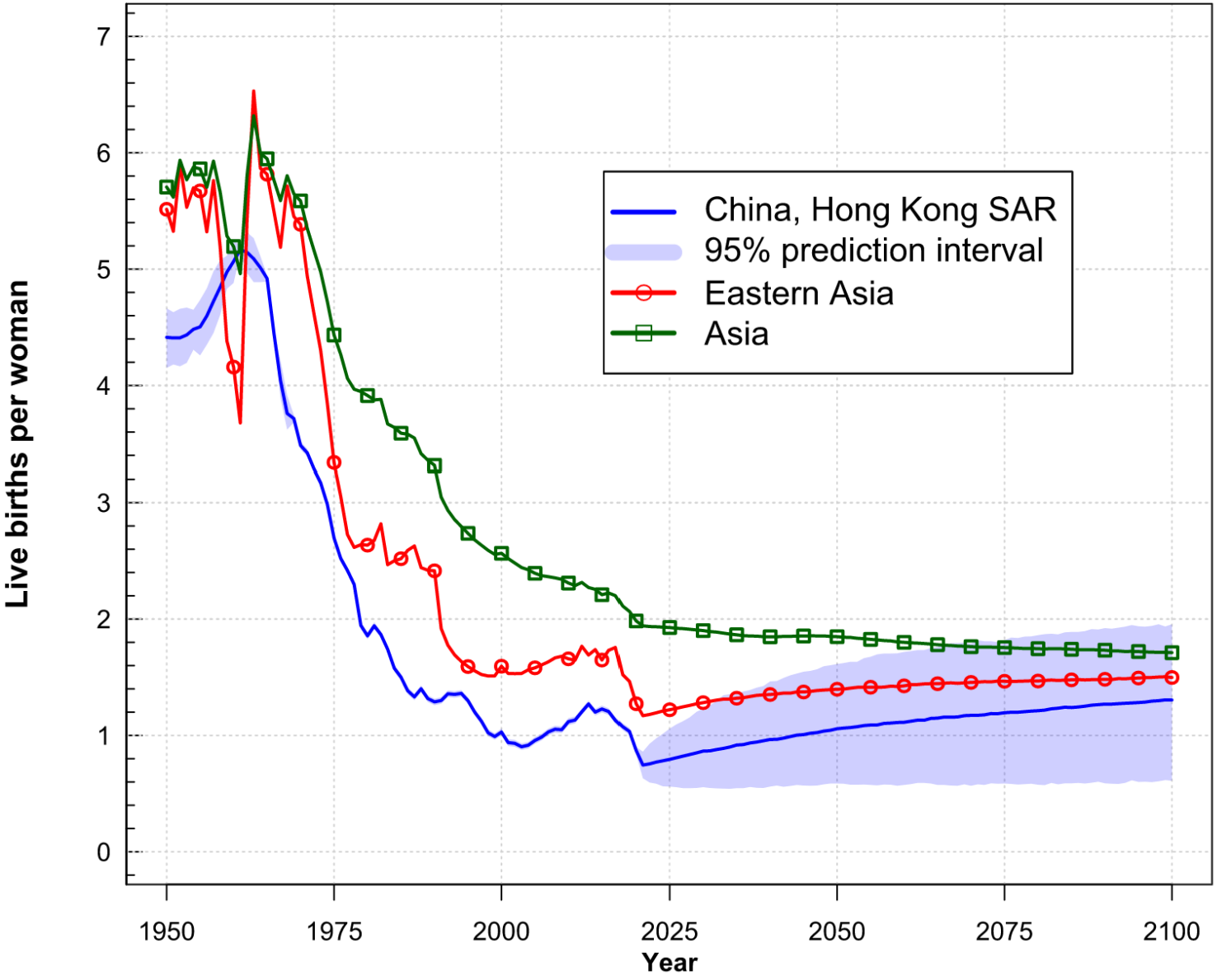
Source: United Nations, DESA, Population Division, 2022.

Hong Kong's annual number of births and deaths



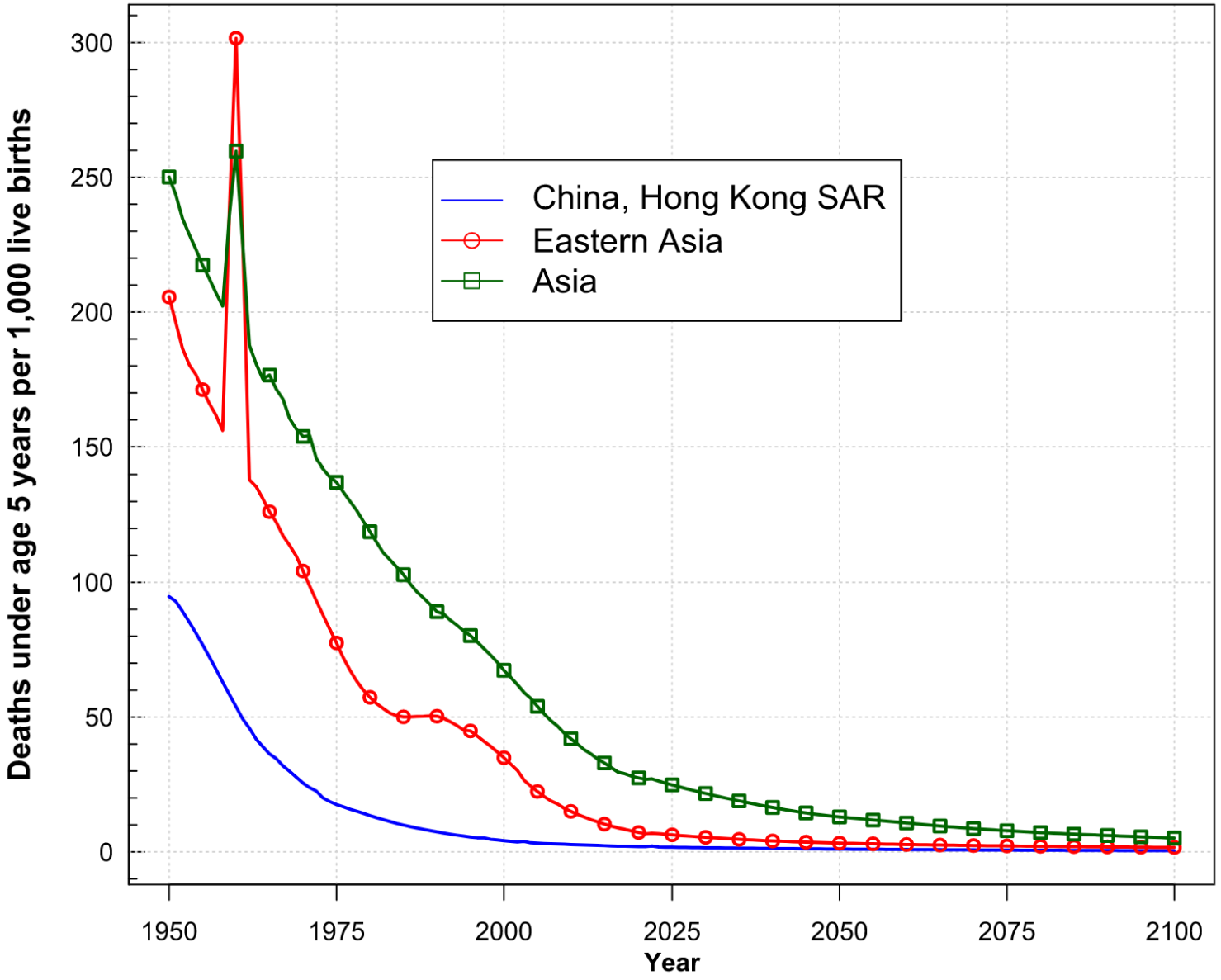
Source: United Nations, DESA, Population Division, 2022.

Hong Kong's total fertility



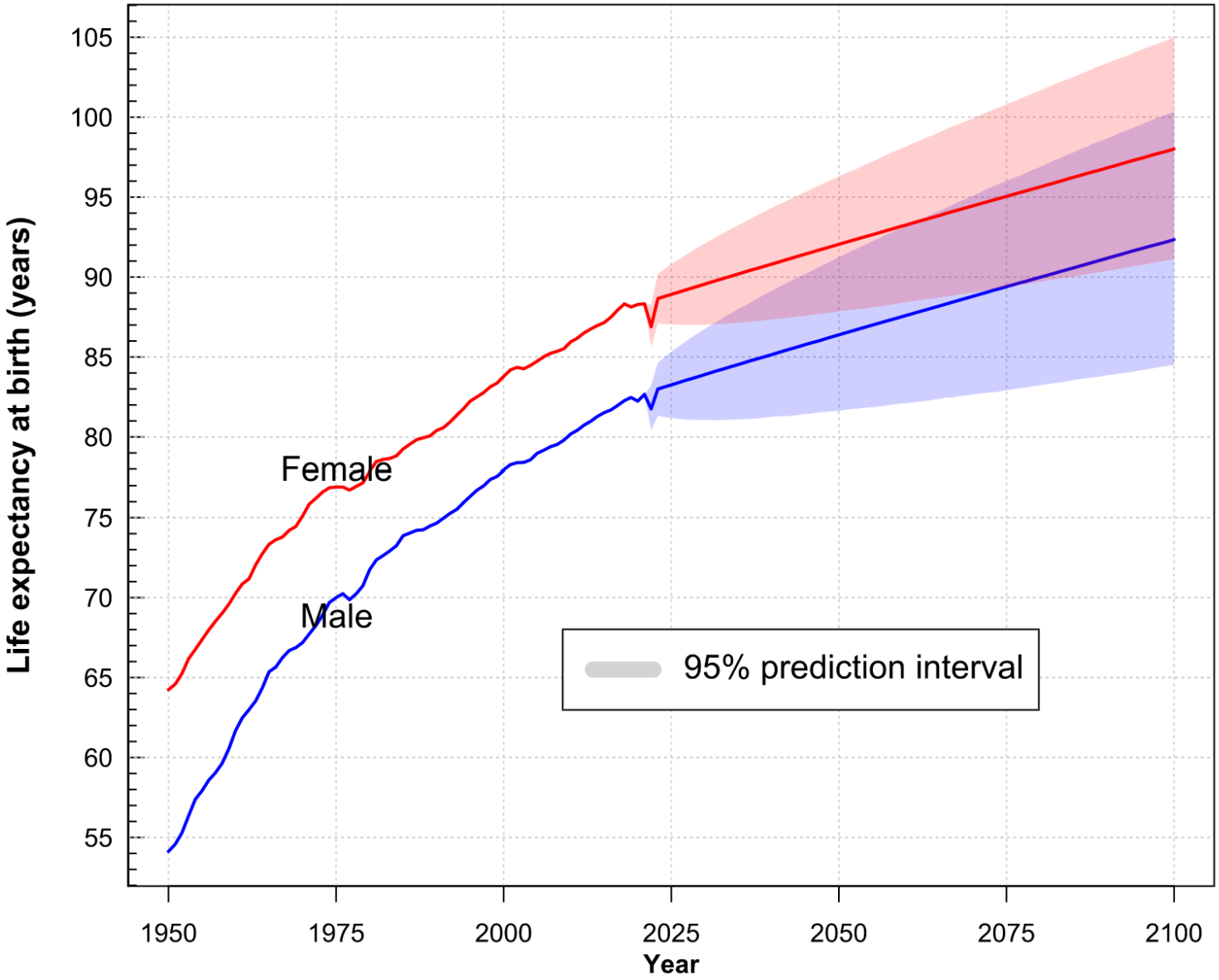
Source: United Nations, DESA, Population Division, 2022.

Hong Kong's mortality under age 5



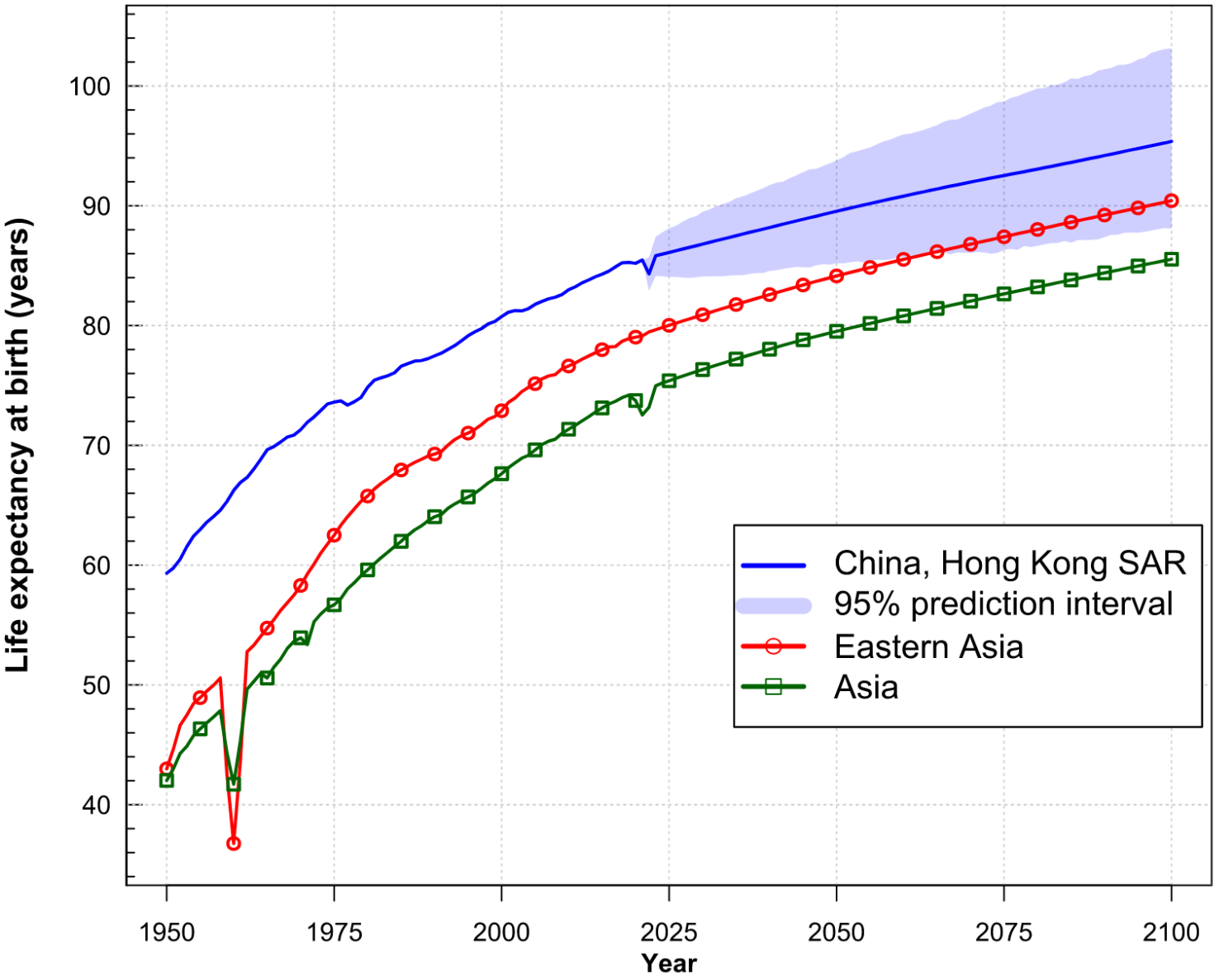
Source: United Nations, DESA, Population Division, 2022.

Hong Kong's life expectancy at birth by sex



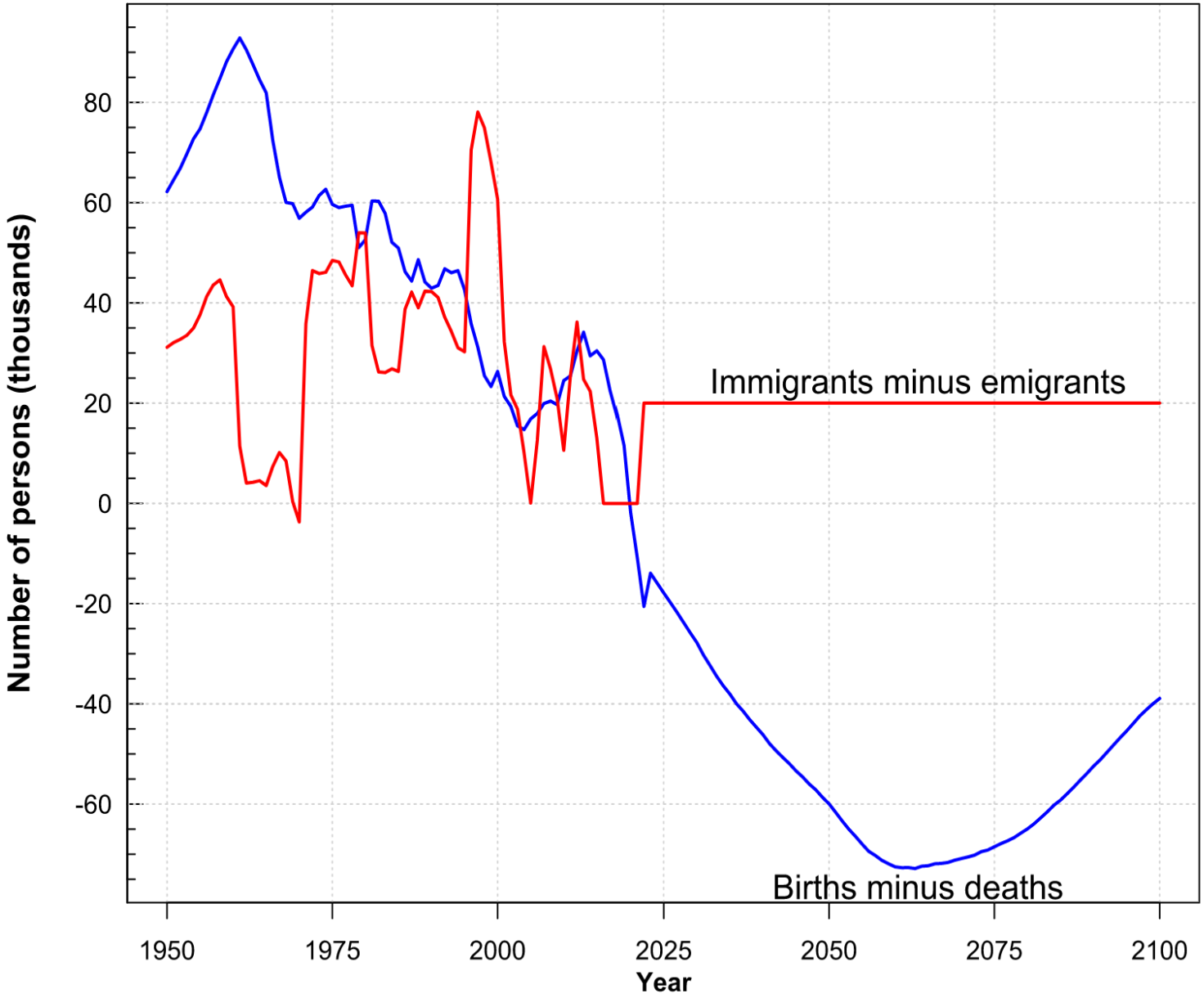
Source: United Nations, DESA, Population Division, 2022.

Hong Kong's life expectancy at birth (both sexes combined)



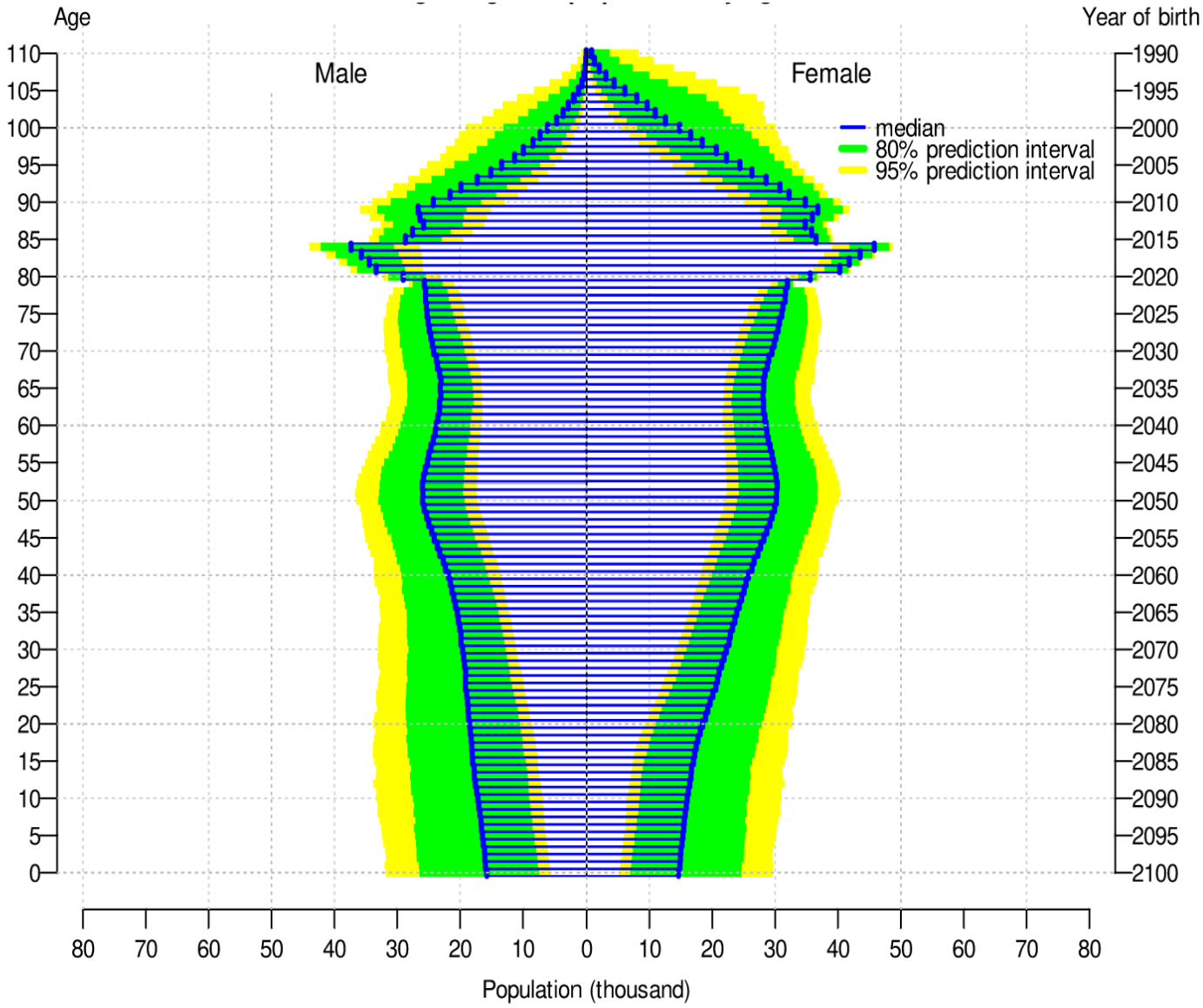
Source: United Nations, DESA, Population Division, 2022.

Hong Kong's annual natural change and net migration



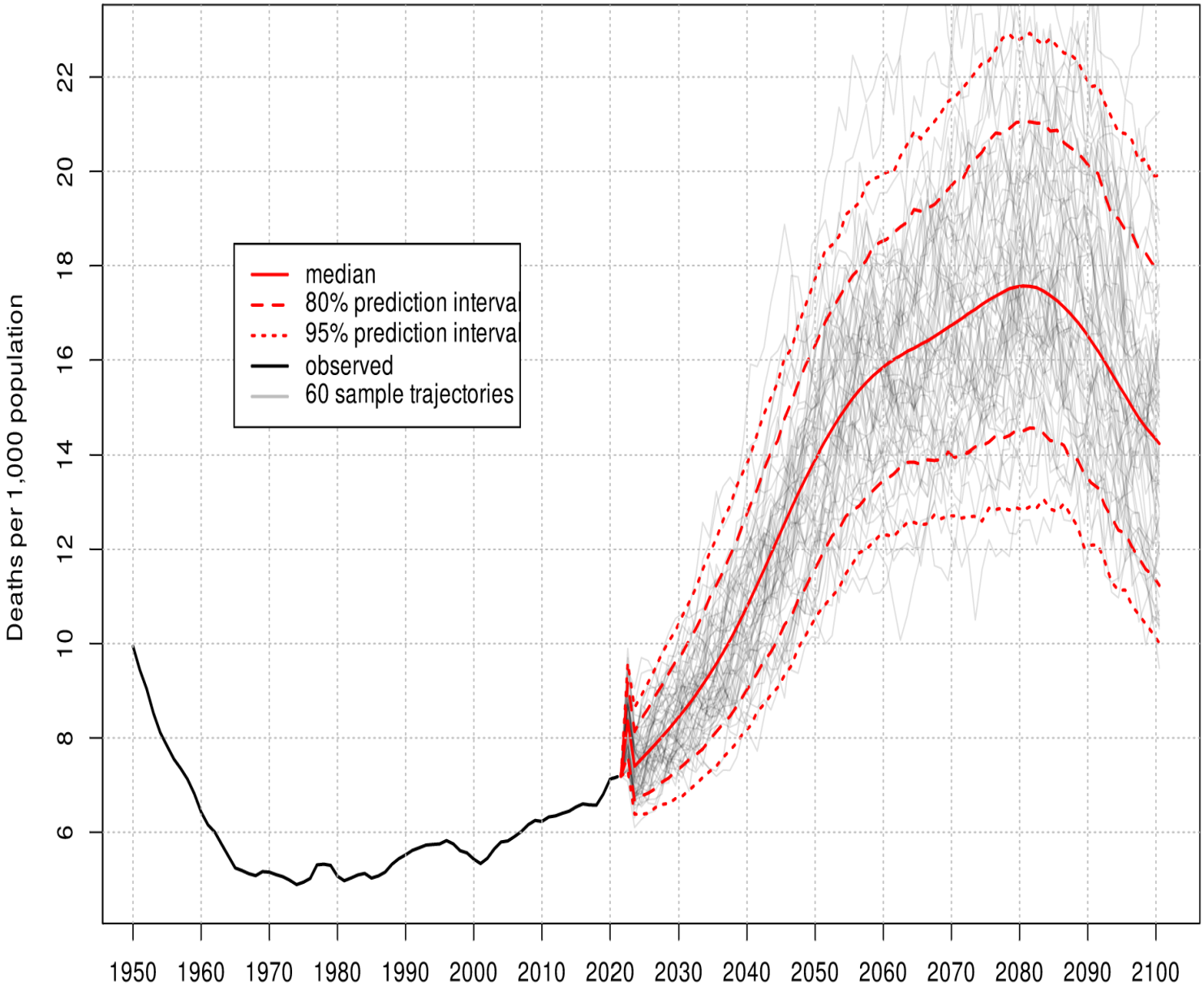
Source: United Nations, DESA, Population Division, 2022.

Hong Kong's population by age and sex: 2101



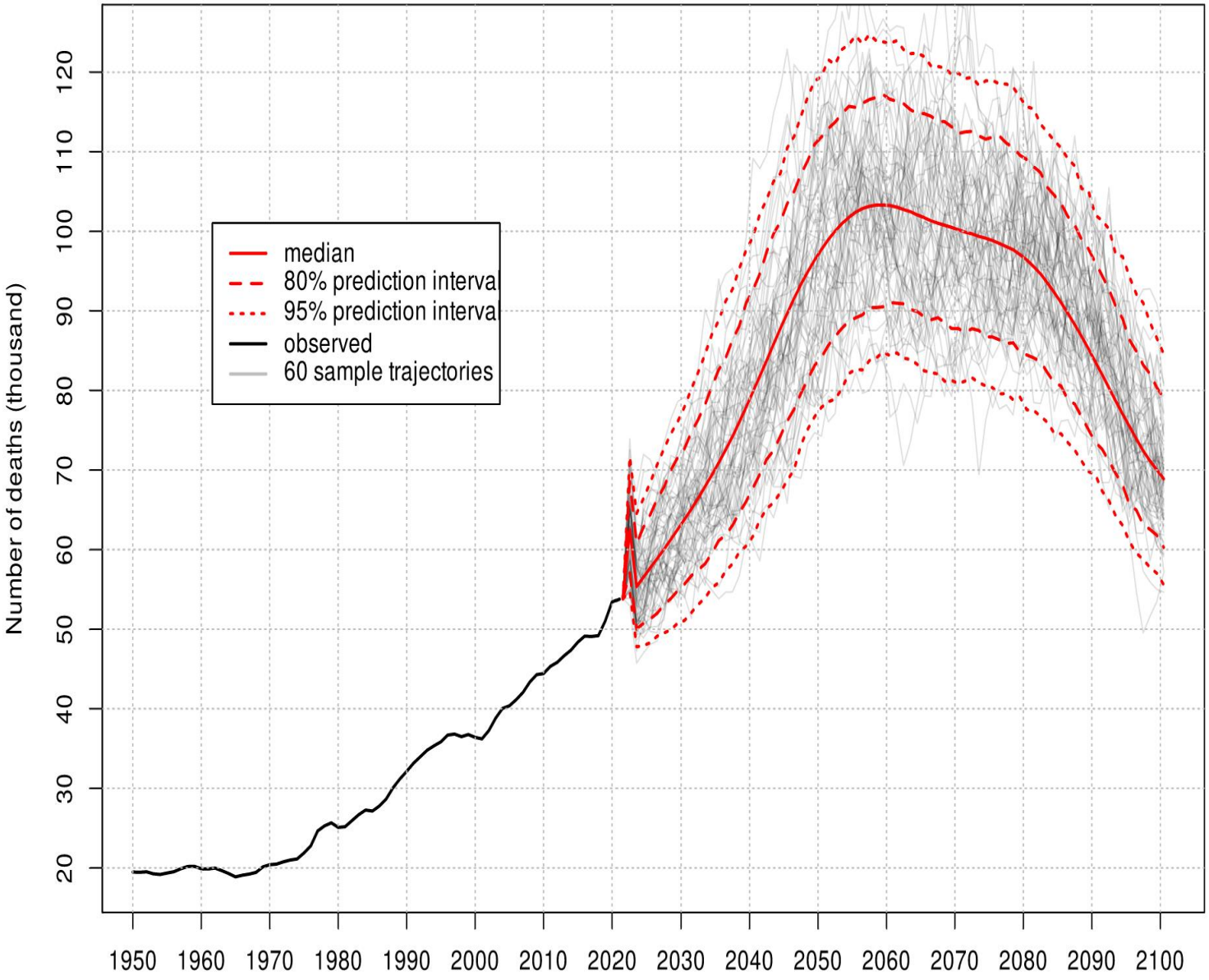
Source: United Nations, DESA, Population Division, 2022.

Hong Kong's annual number of deaths per 1,00 population



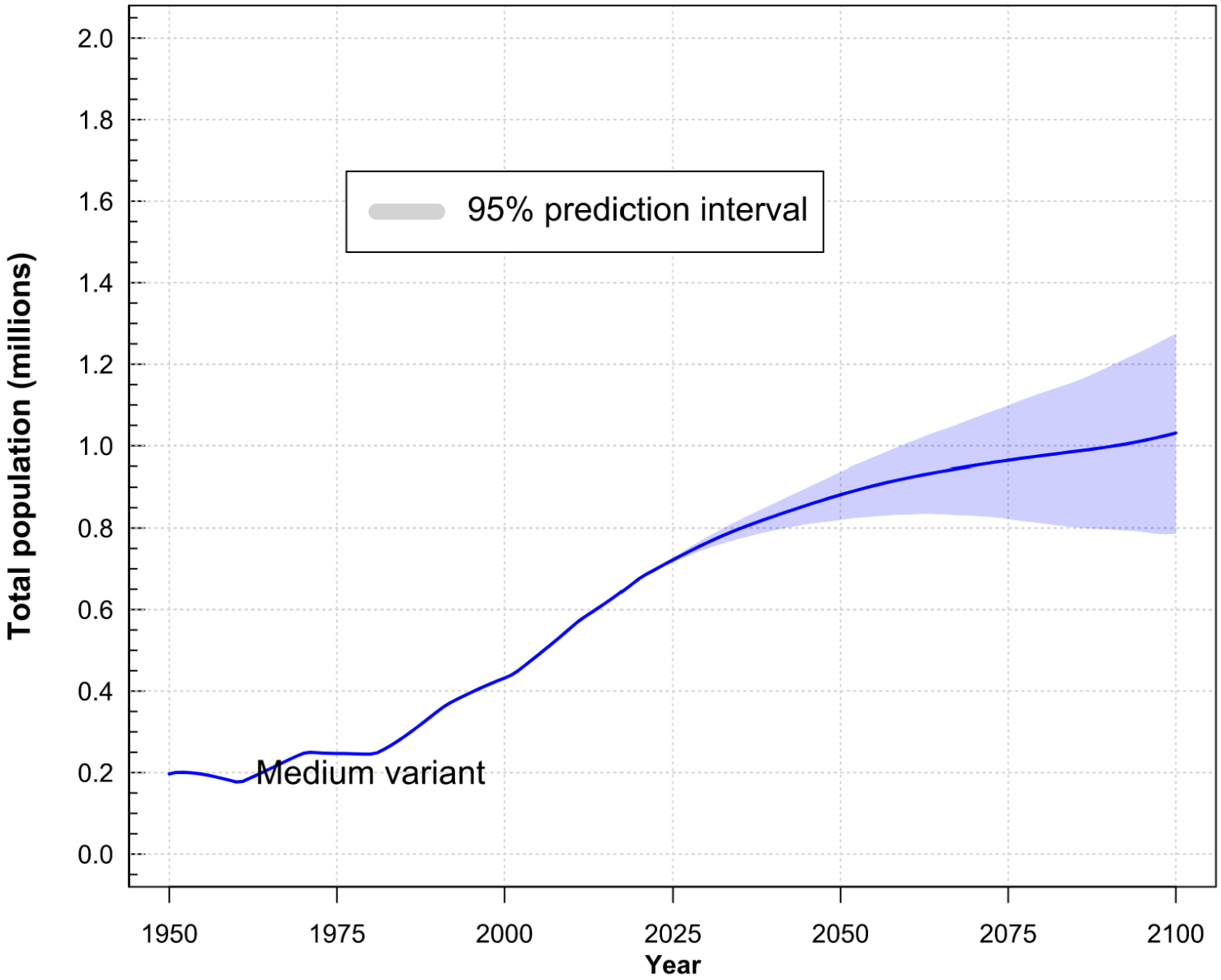
Source: United Nations, DESA, Population Division, 2022.

Hong Kong's annual number of deaths



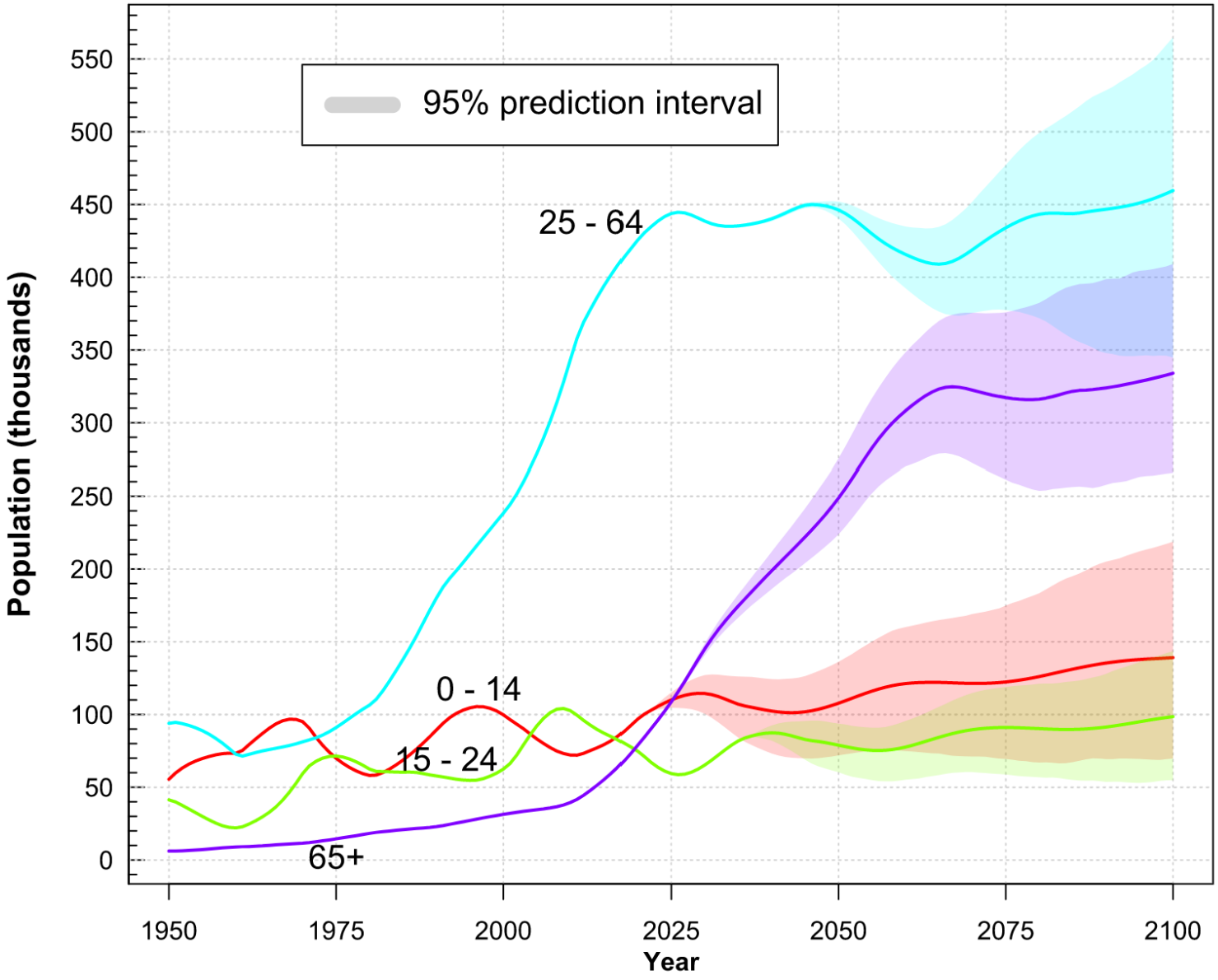
Source: United Nations, DESA, Population Division, 2022.

Macao's total population



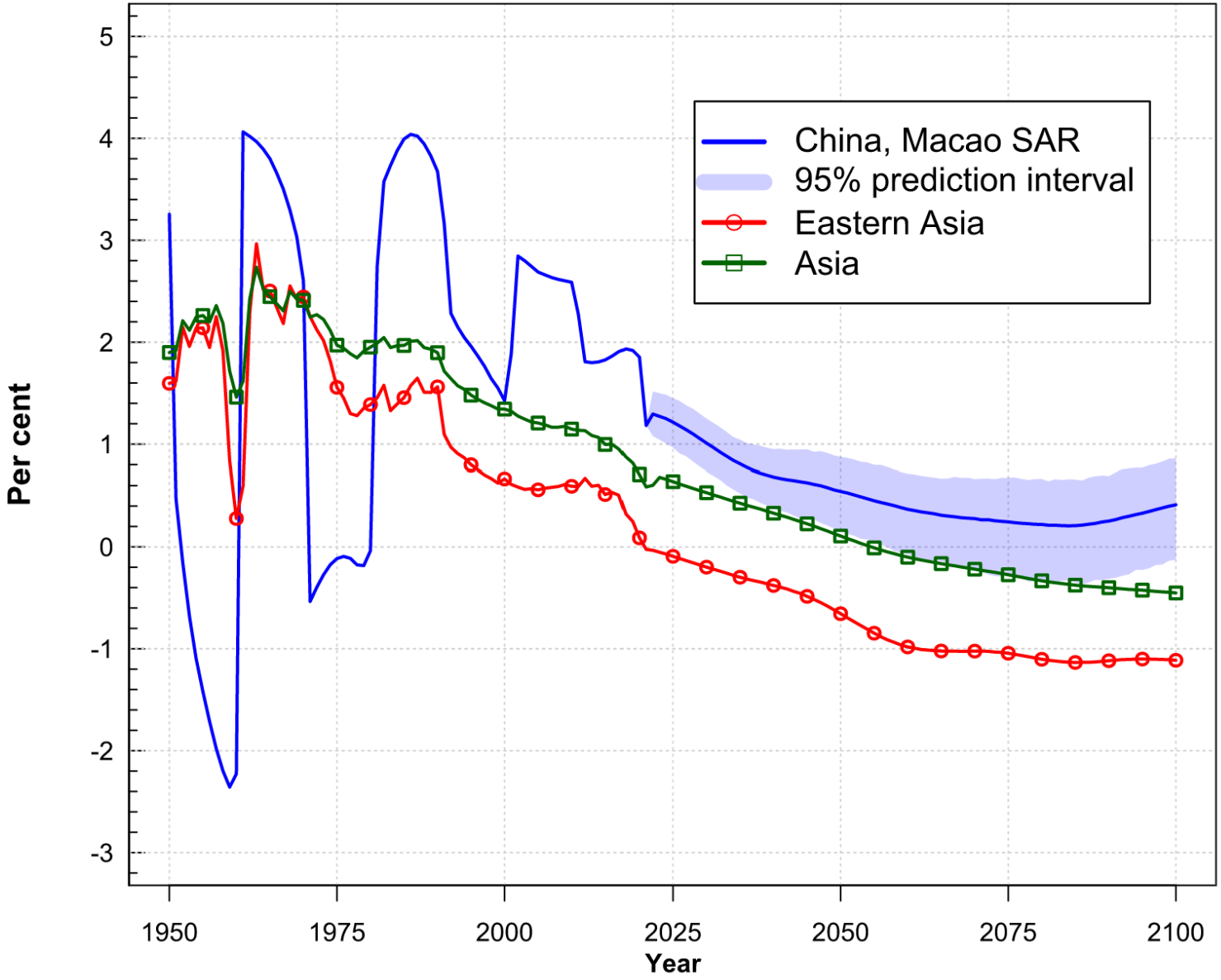
Source: United Nations, DESA, Population Division, 2022.

Macao's population by broad age groups



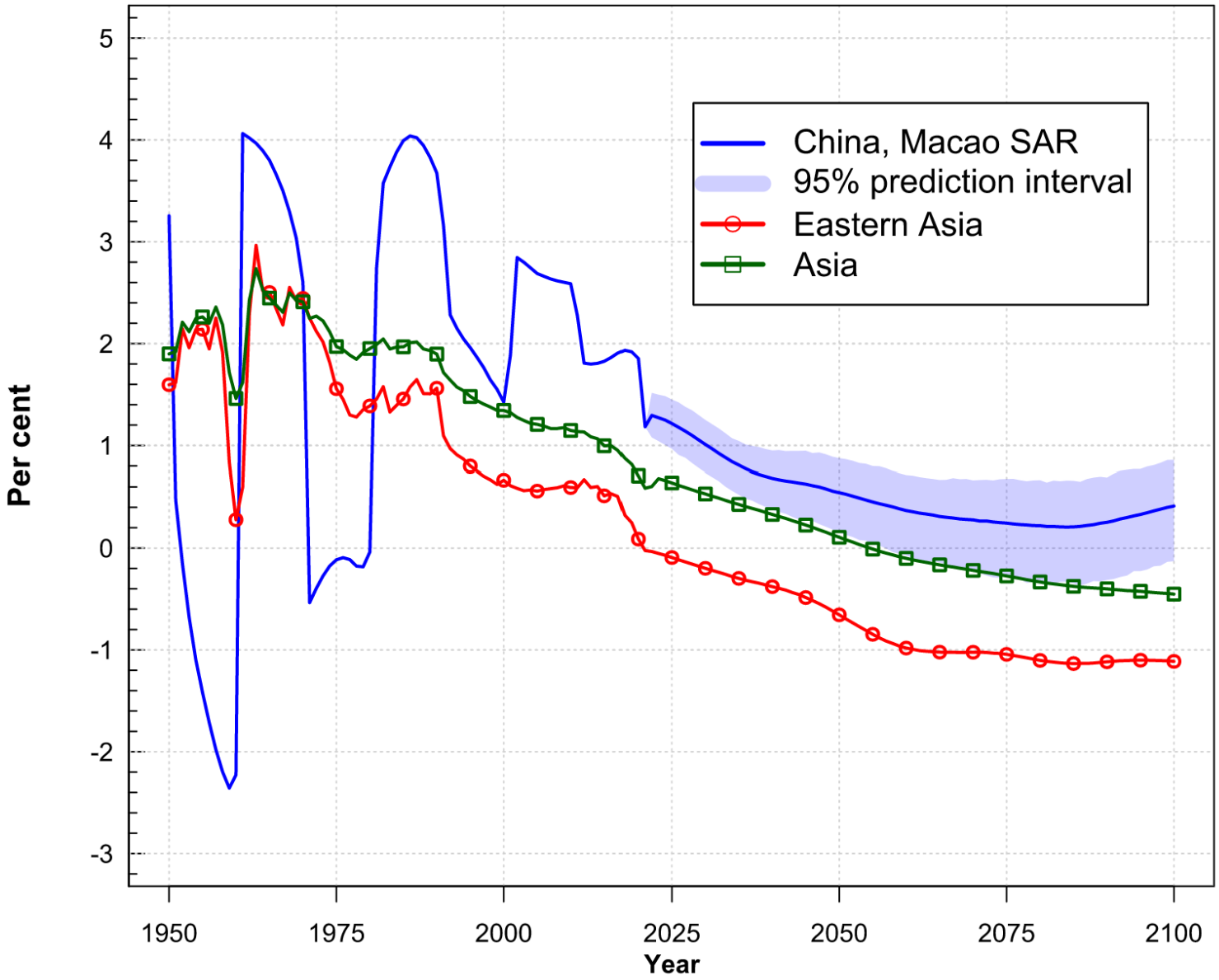
Source: United Nations, DESA, Population Division, 2022.

Macao's annual rate of population change



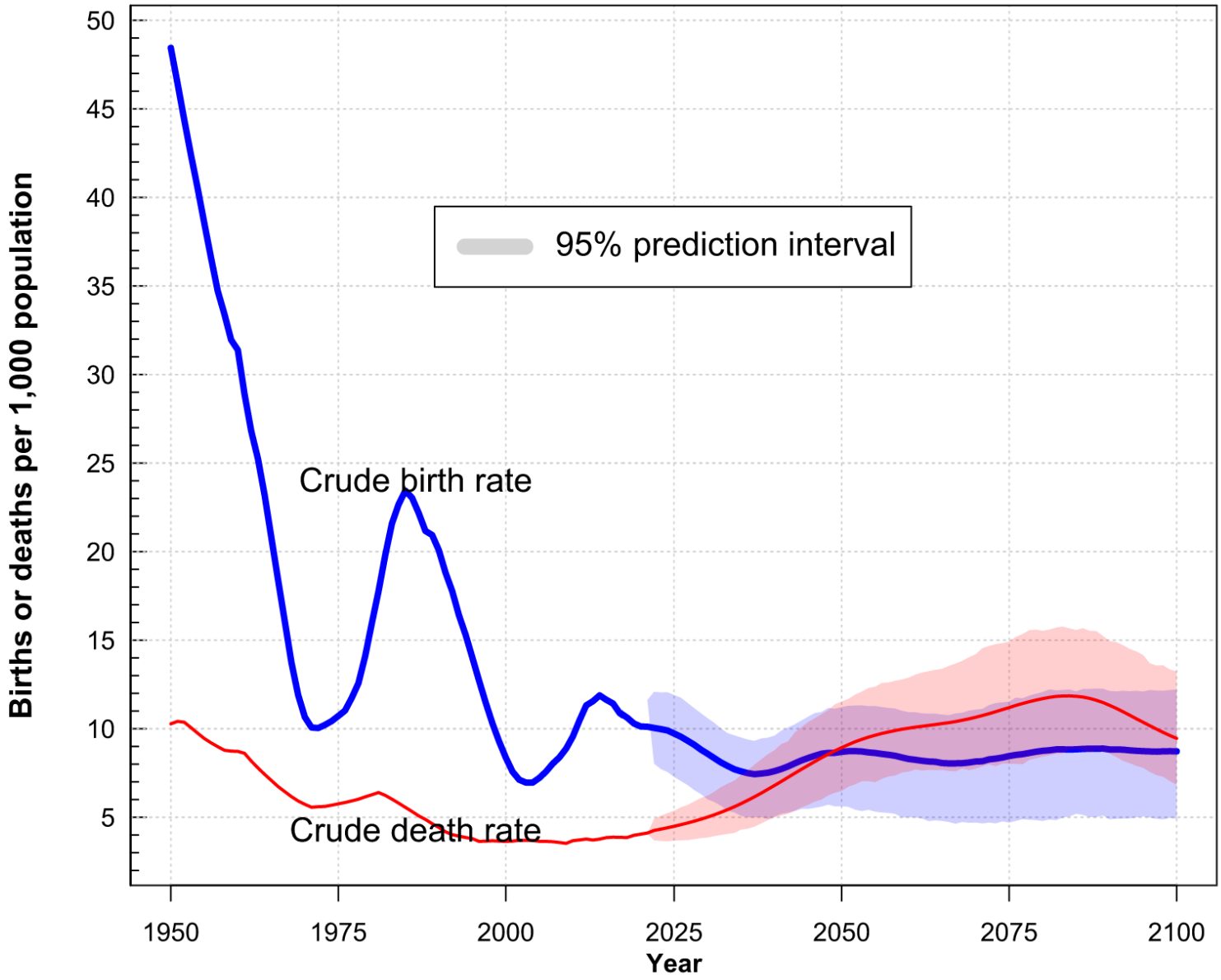
Source: United Nations, DESA, Population Division, 2022.

Macao's annual rate of population change



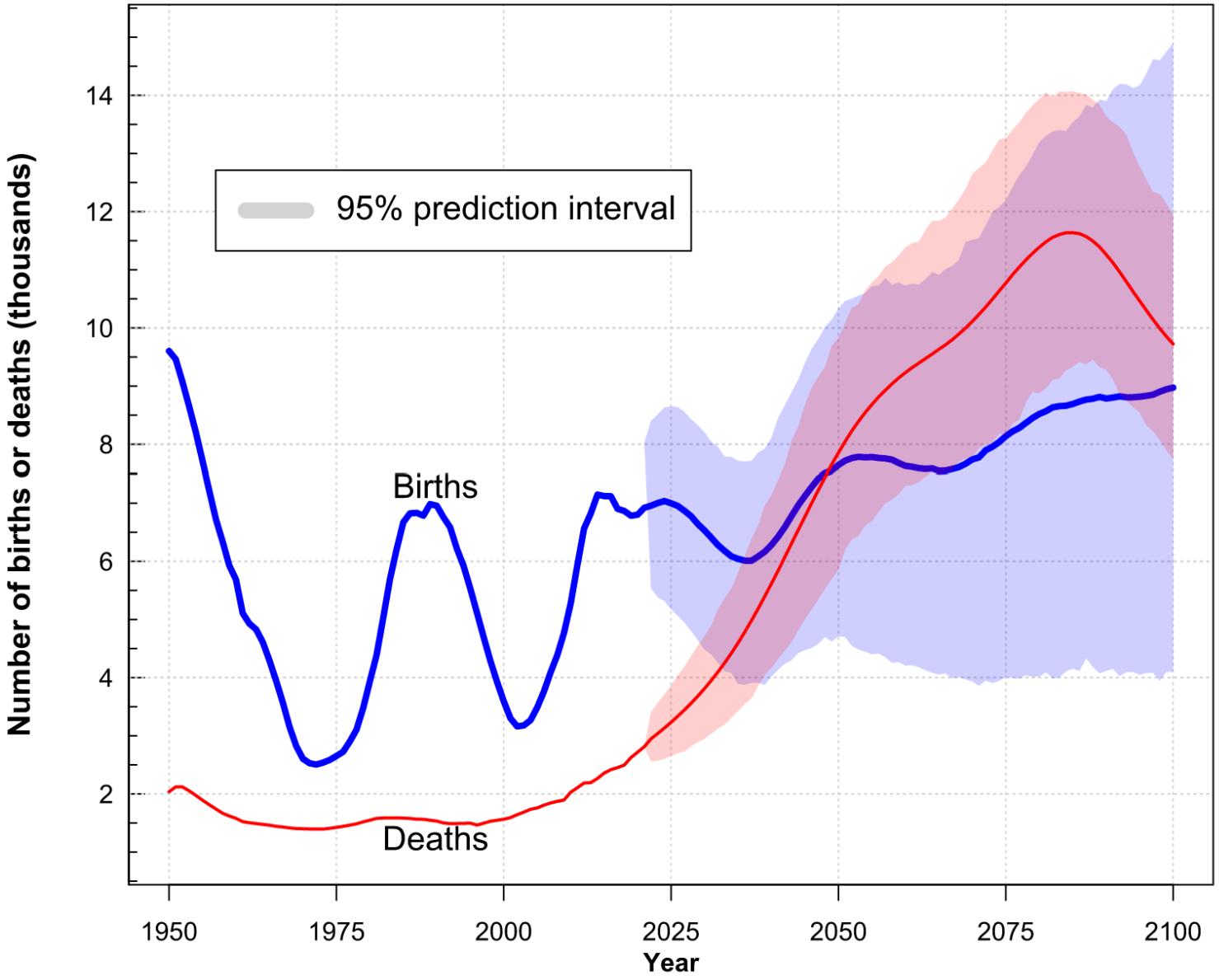
Source: United Nations, DESA, Population Division, 2022.

Macao's crude birth rate and crude death rate



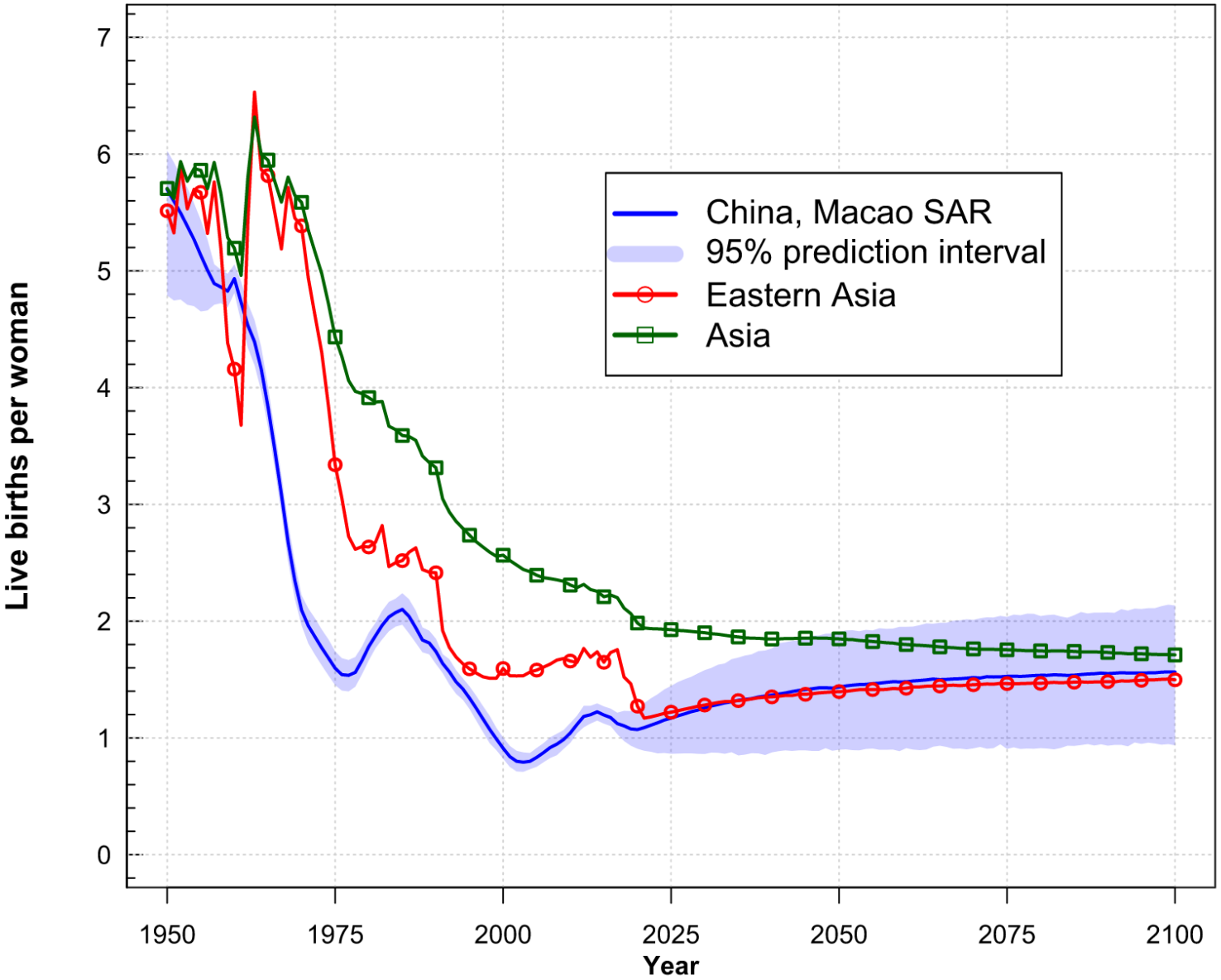
Source: United Nations, DESA, Population Division, 2022.

Macao's annual number of births and deaths



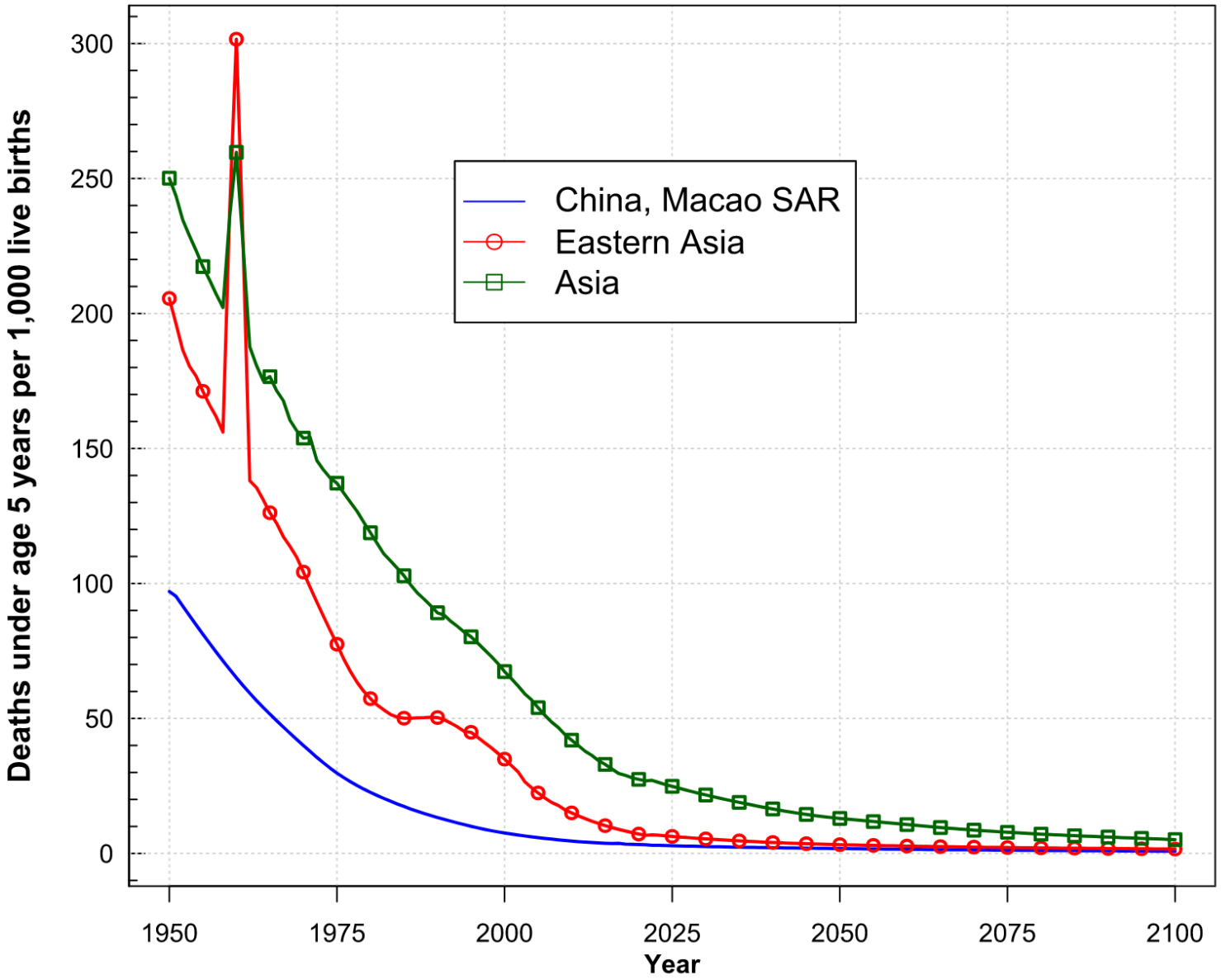
Source: United Nations, DESA, Population Division, 2022.

Macao's total fertility



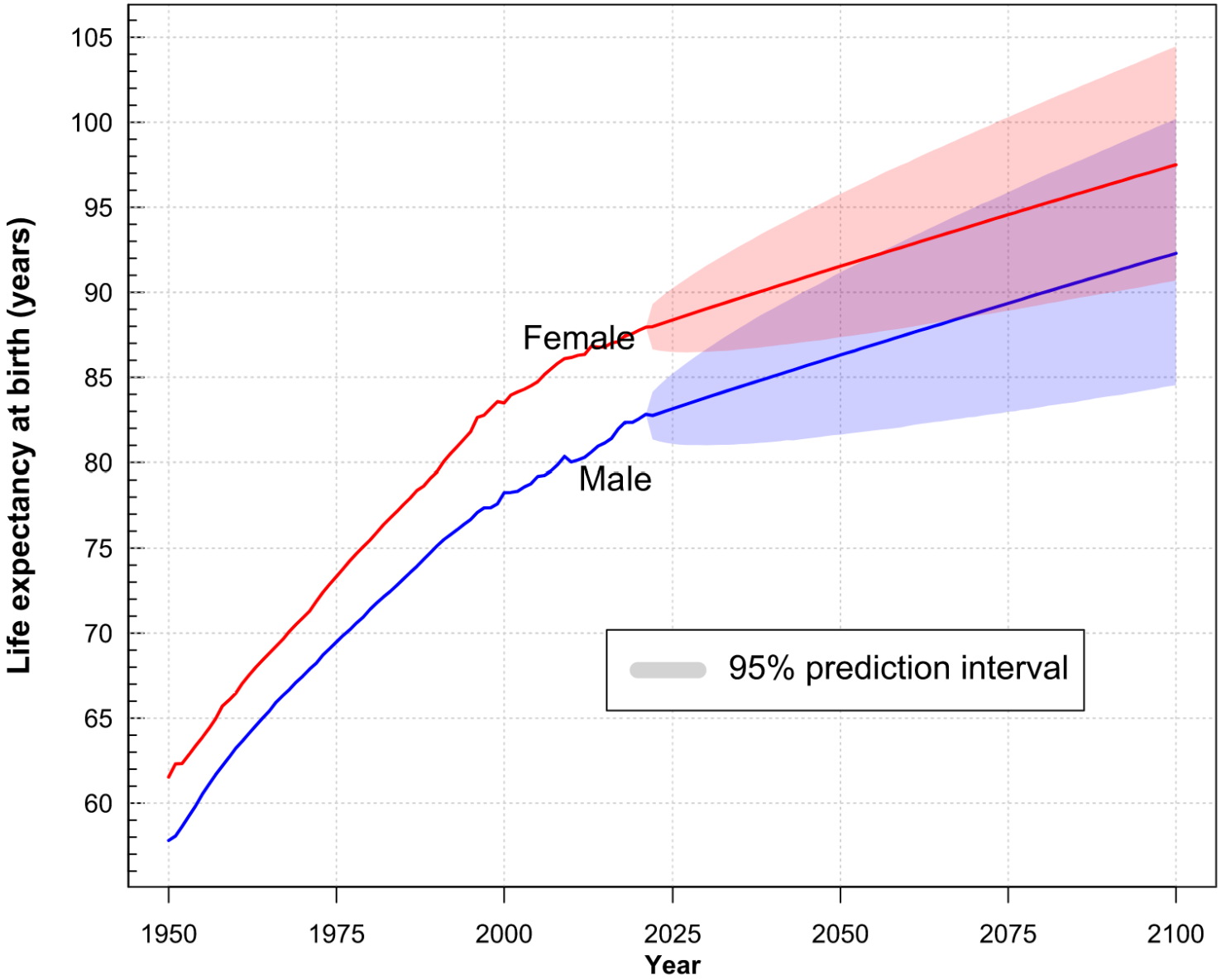
Source: United Nations, DESA, Population Division, 2022.

Macao's mortality under age 5



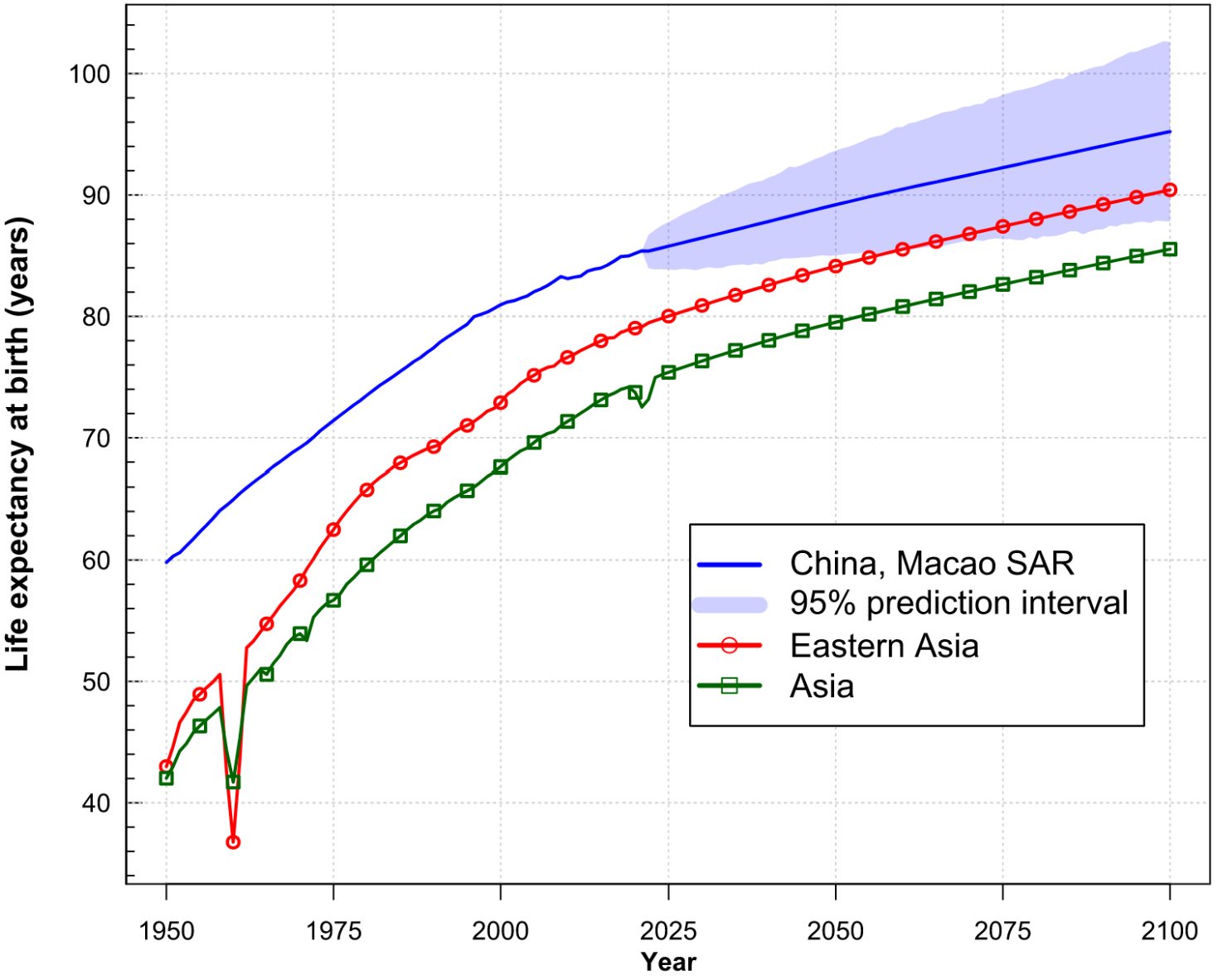
Source: United Nations, DESA, Population Division, 2022.

Macao's life expectancy at birth by sex



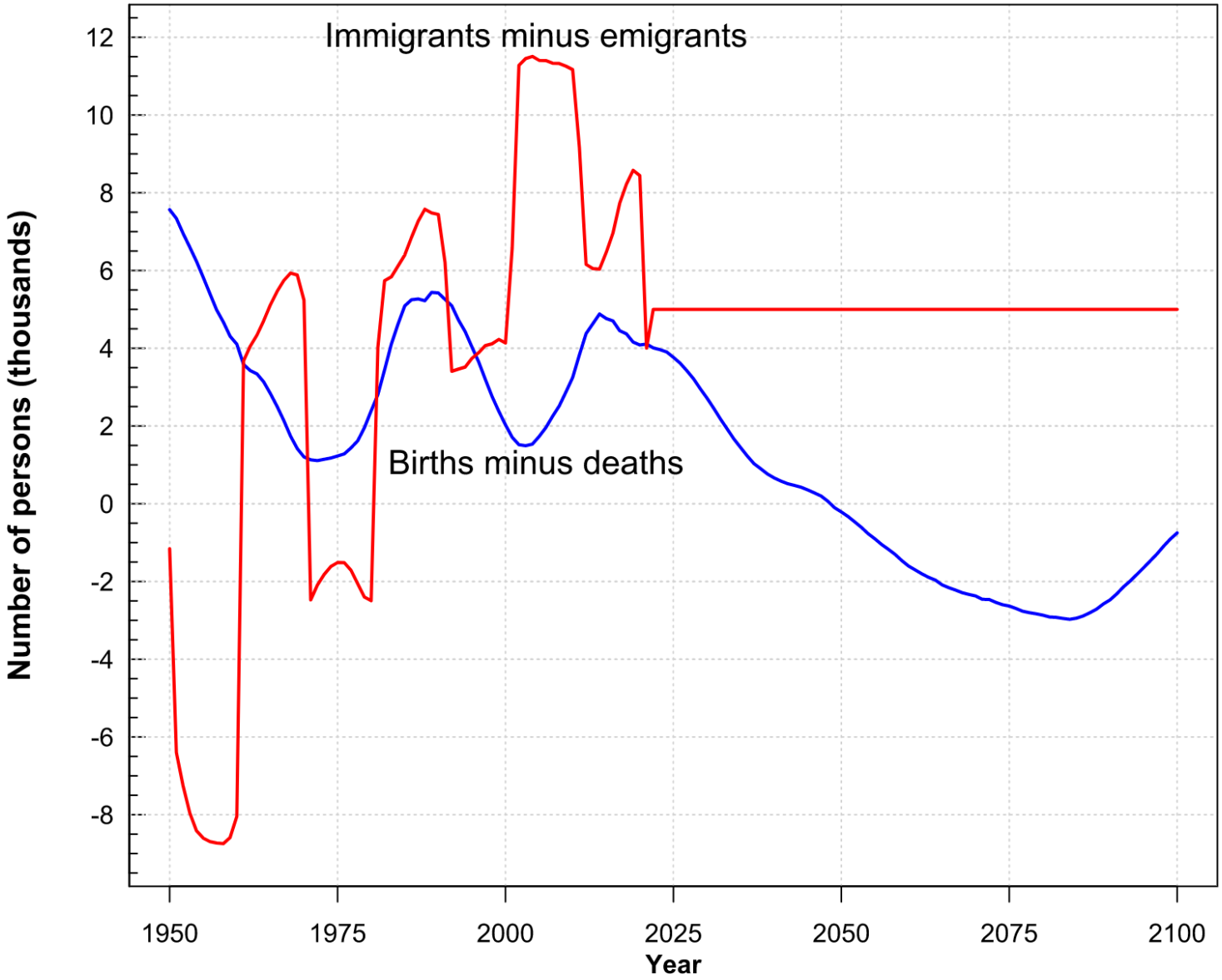
Source: United Nations, DESA, Population Division, 2022.

Macao's life expectancy at birth (both sexes combined)



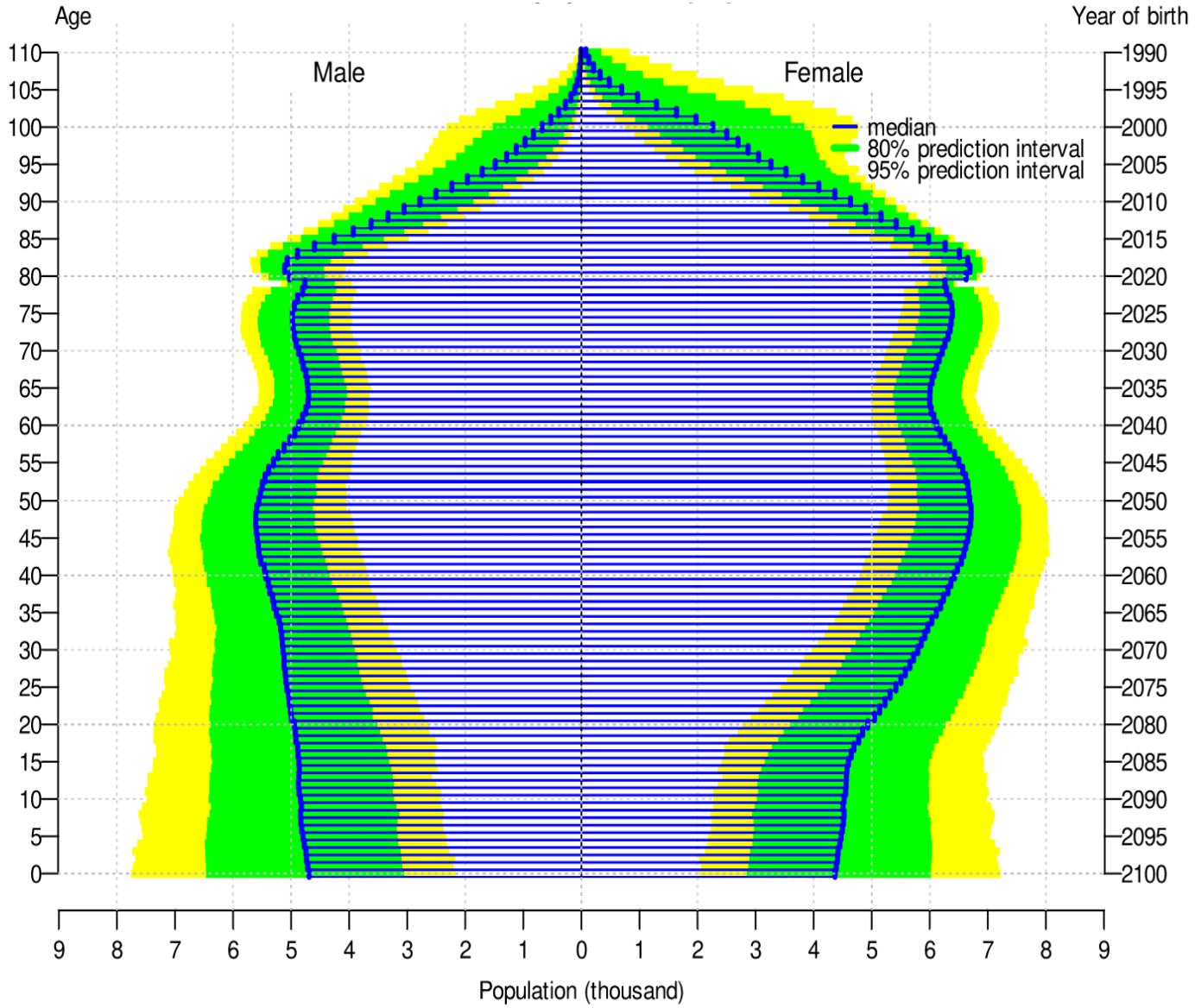
Source: United Nations, DESA, Population Division, 2022.

Macao's annual natural change and net migration



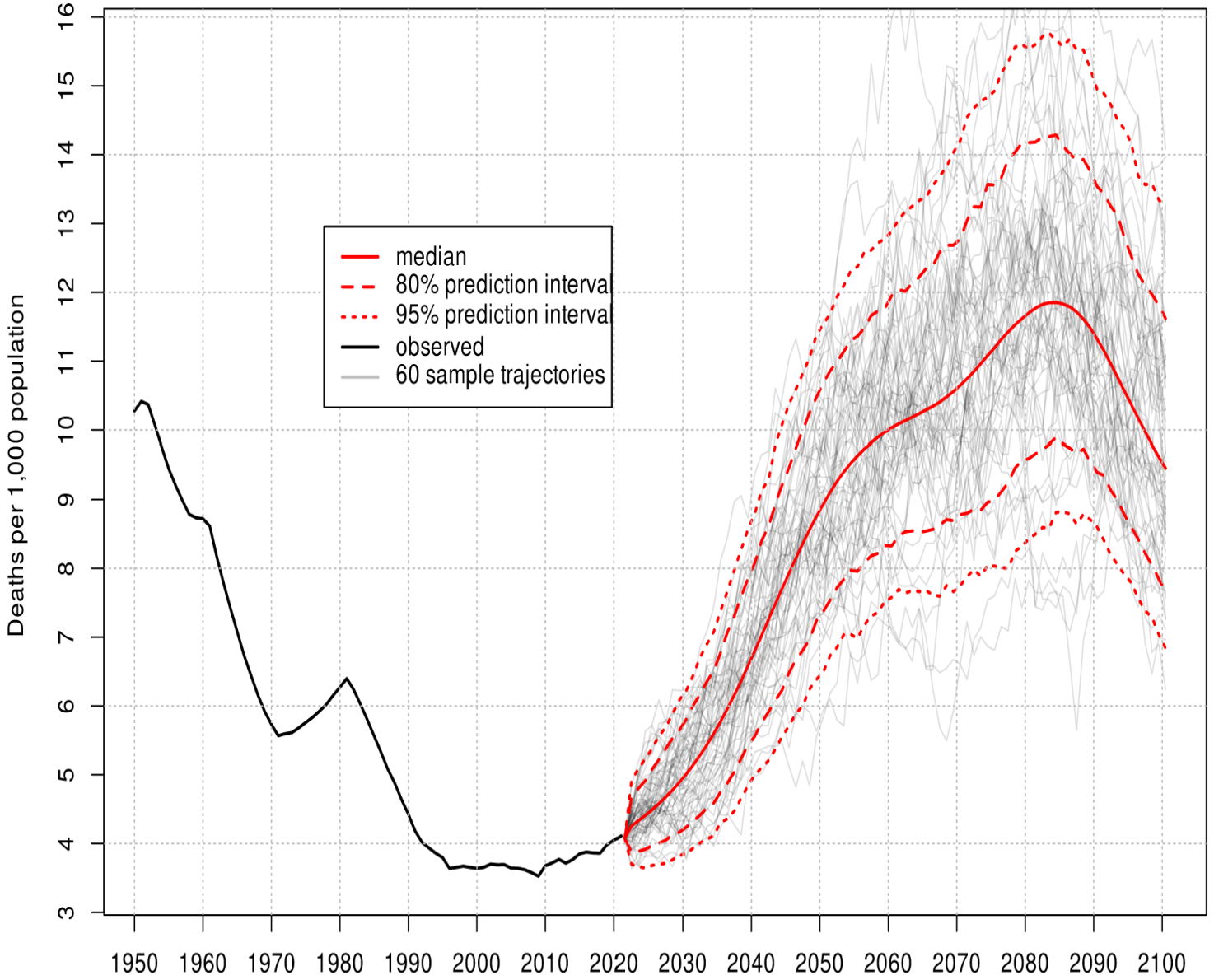
Source: United Nations, DESA, Population Division, 2022.

Macao's population by age and sex: 2101



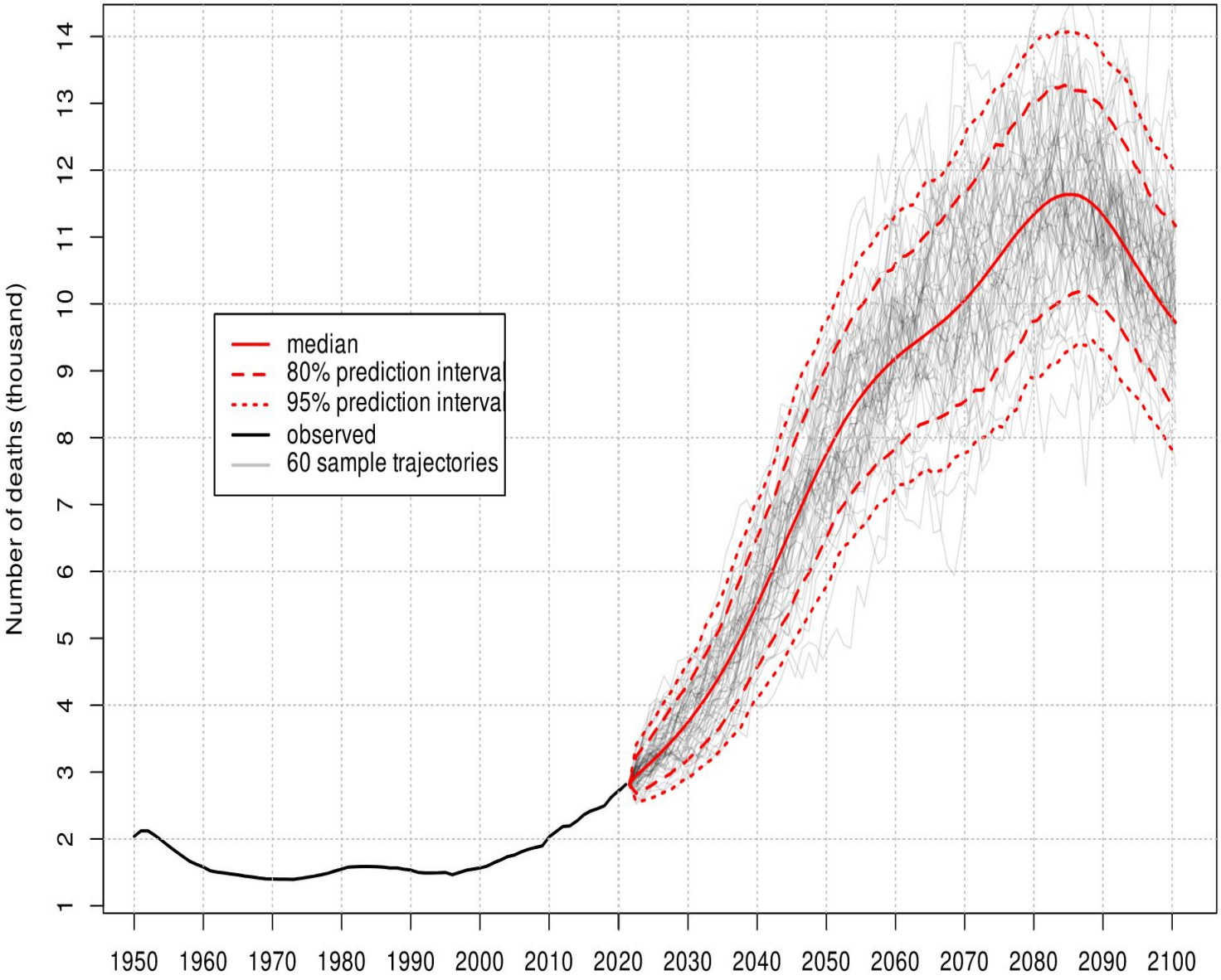
Source: United Nations, DESA, Population Division, 2022.

Macao's annual number of deaths per 1,000 population



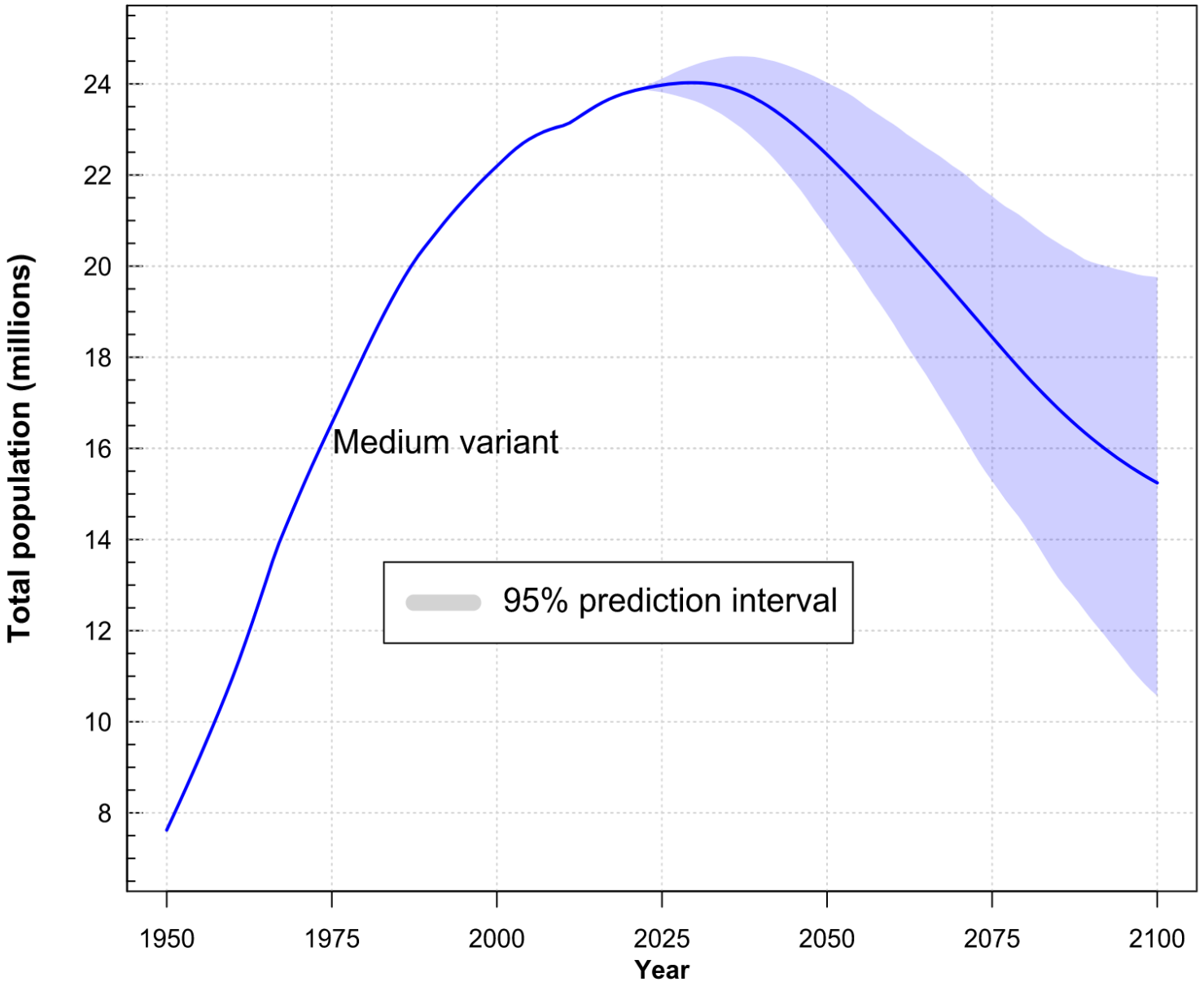
Source: United Nations, DESA, Population Division, 2022.

Macao's annual number of deaths



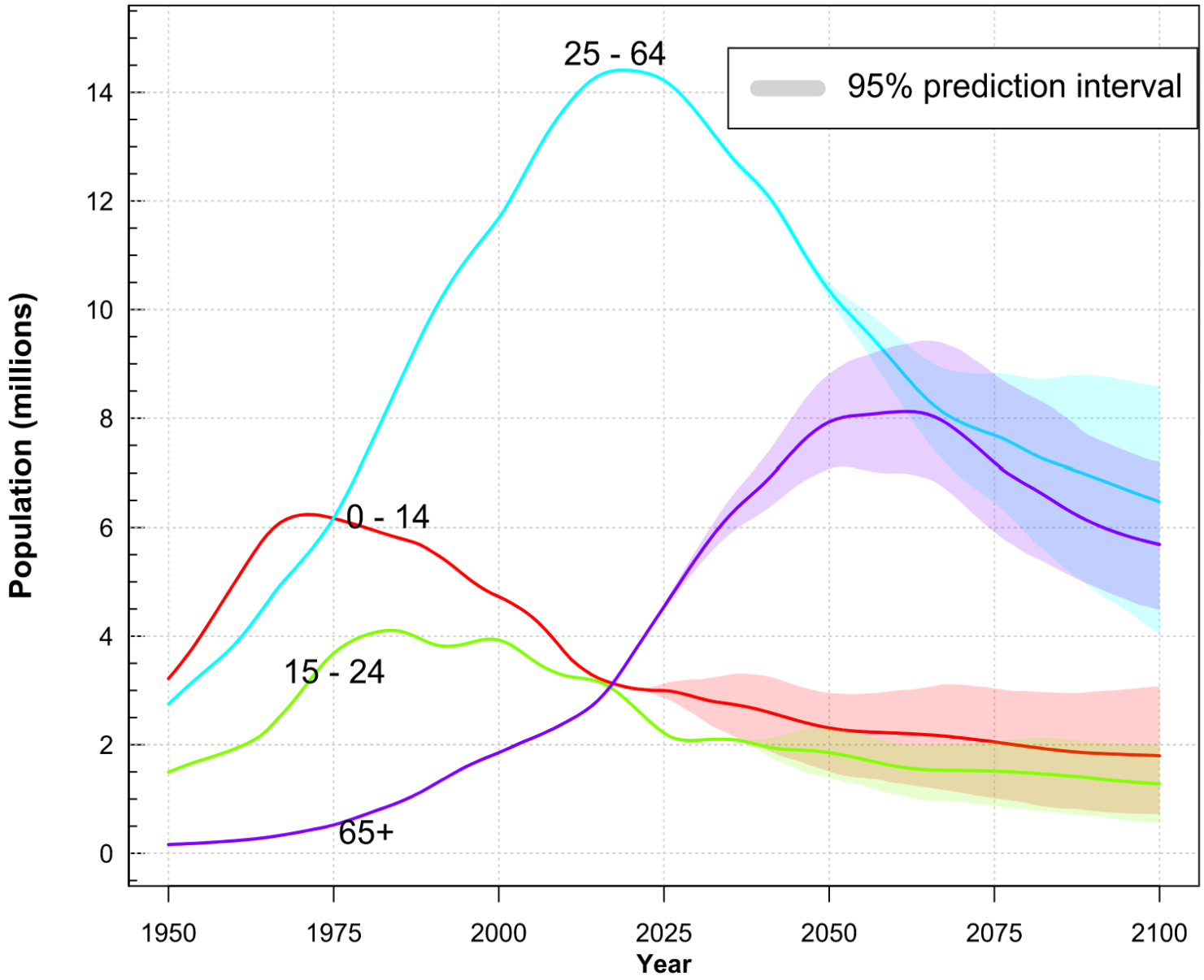
Source: United Nations, DESA, Population Division, 2022.

Taiwan's total population



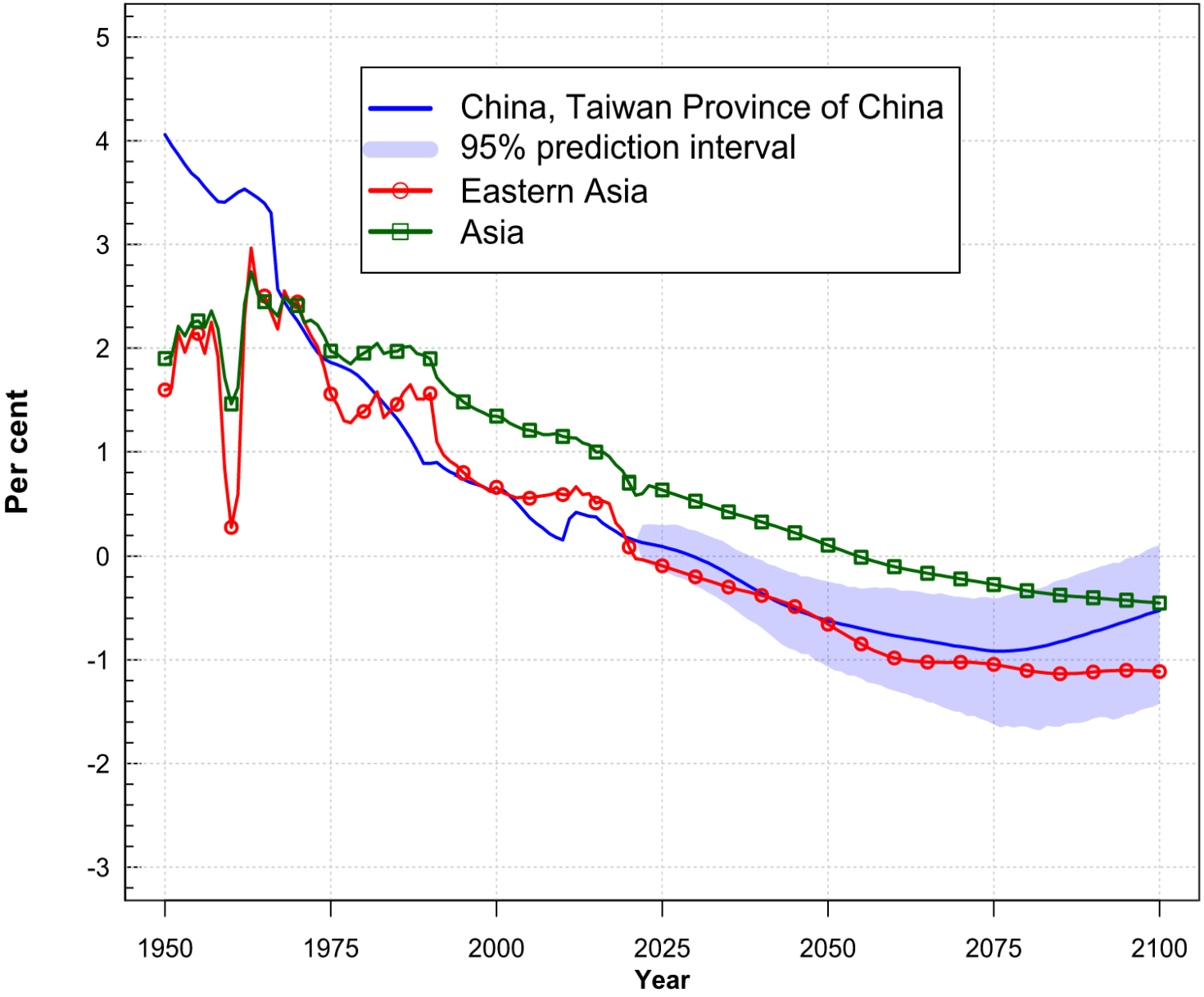
Source: United Nations, DESA, Population Division, 2022.

Taiwan's population by broad age groups



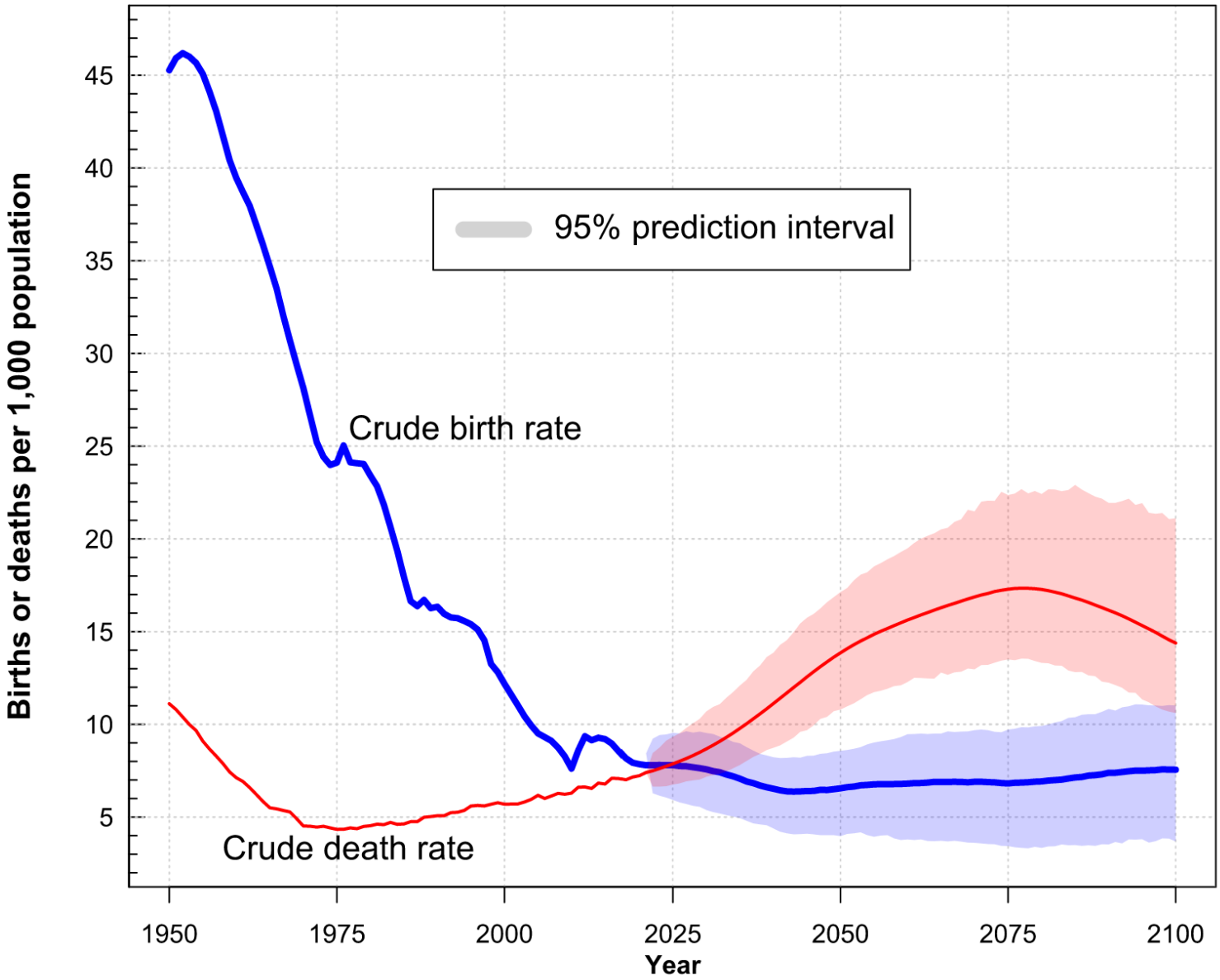
Source: United Nations, DESA, Population Division, 2022.

Taiwan's annual rate of population change



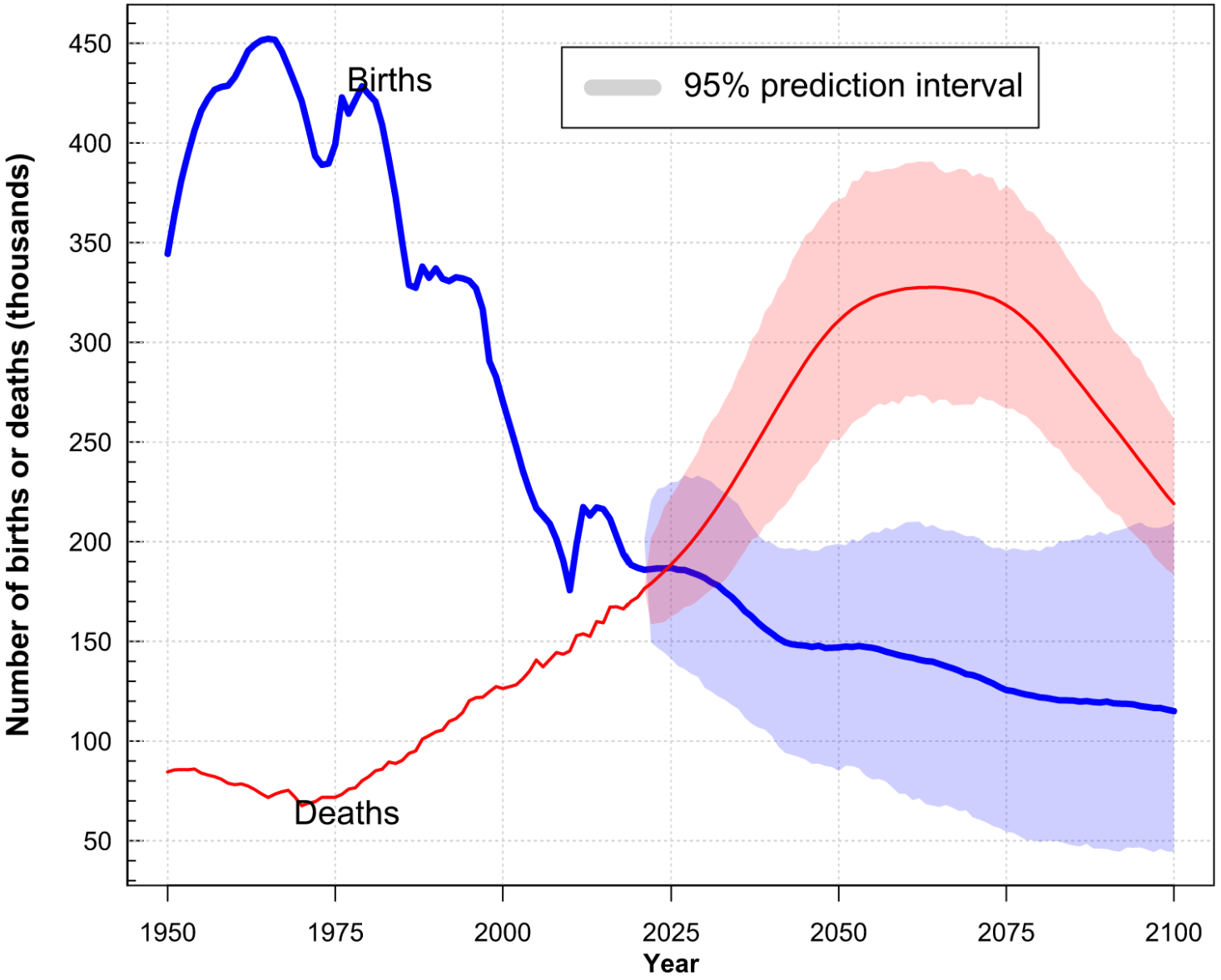
Source: United Nations, DESA, Population Division, 2022.

Taiwan's crude birth rate and crude death rate



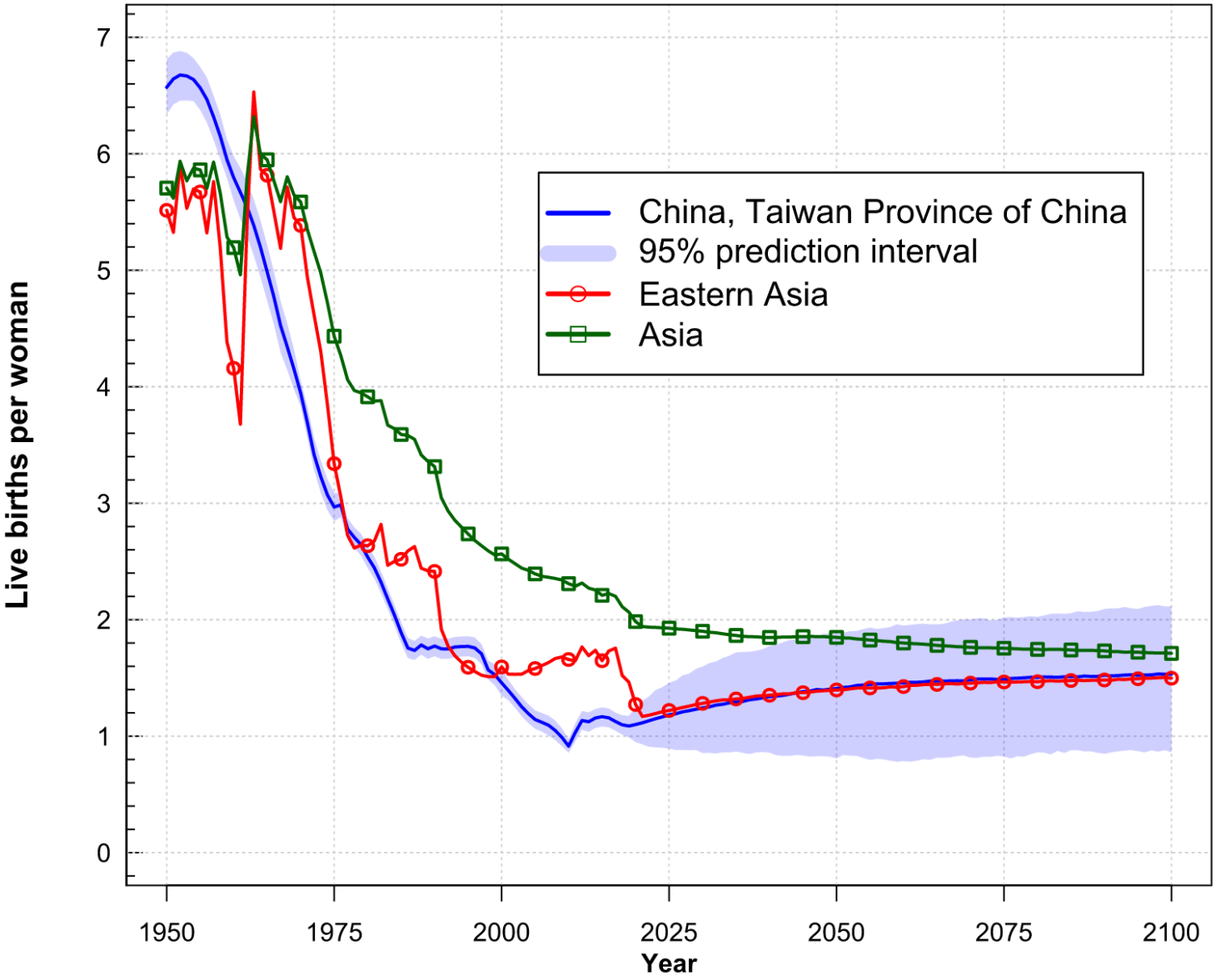
Source: United Nations, DESA, Population Division, 2022.

Taiwan's annual number of births and deaths



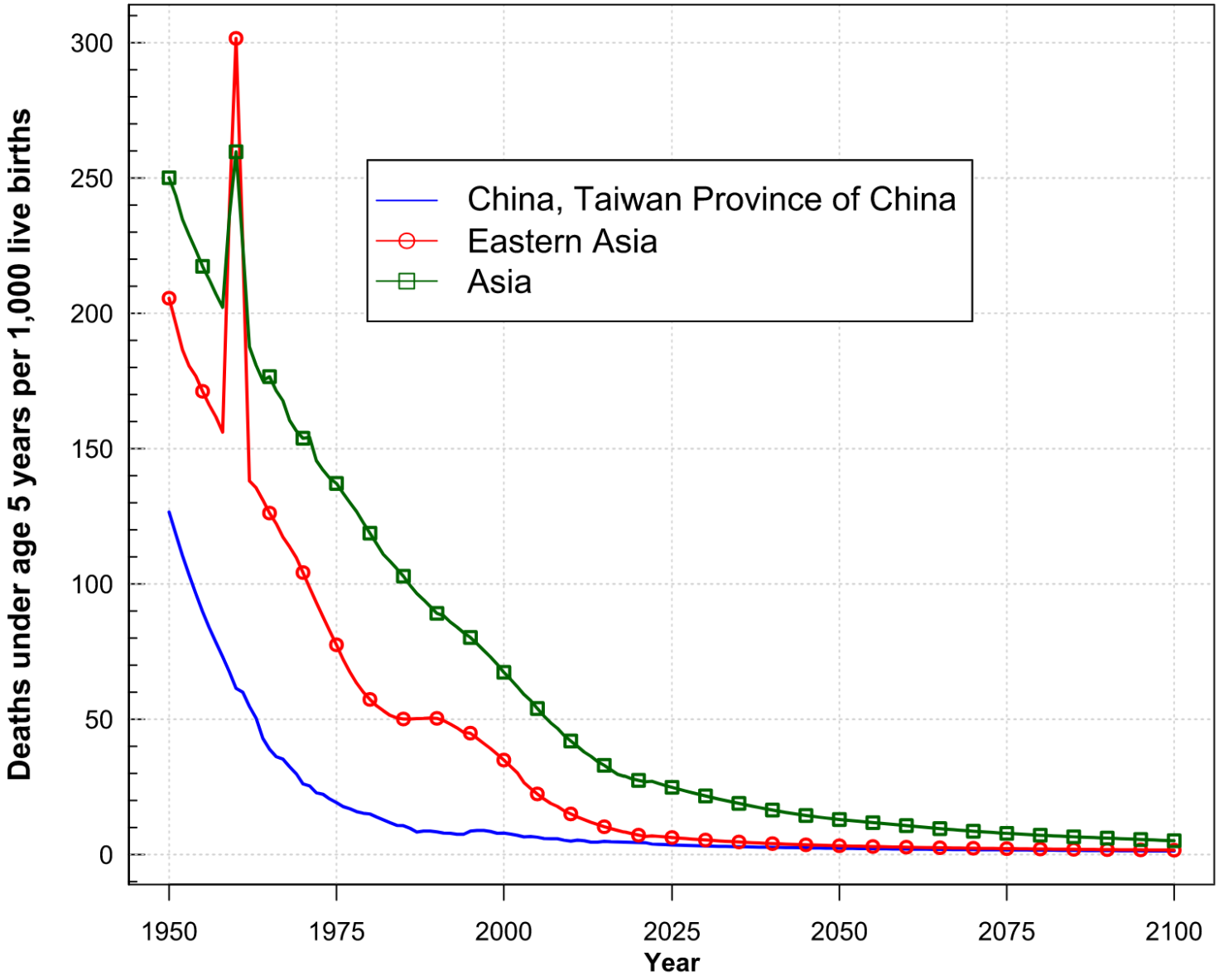
Source: United Nations, DESA, Population Division, 2022.

Taiwan's total fertility



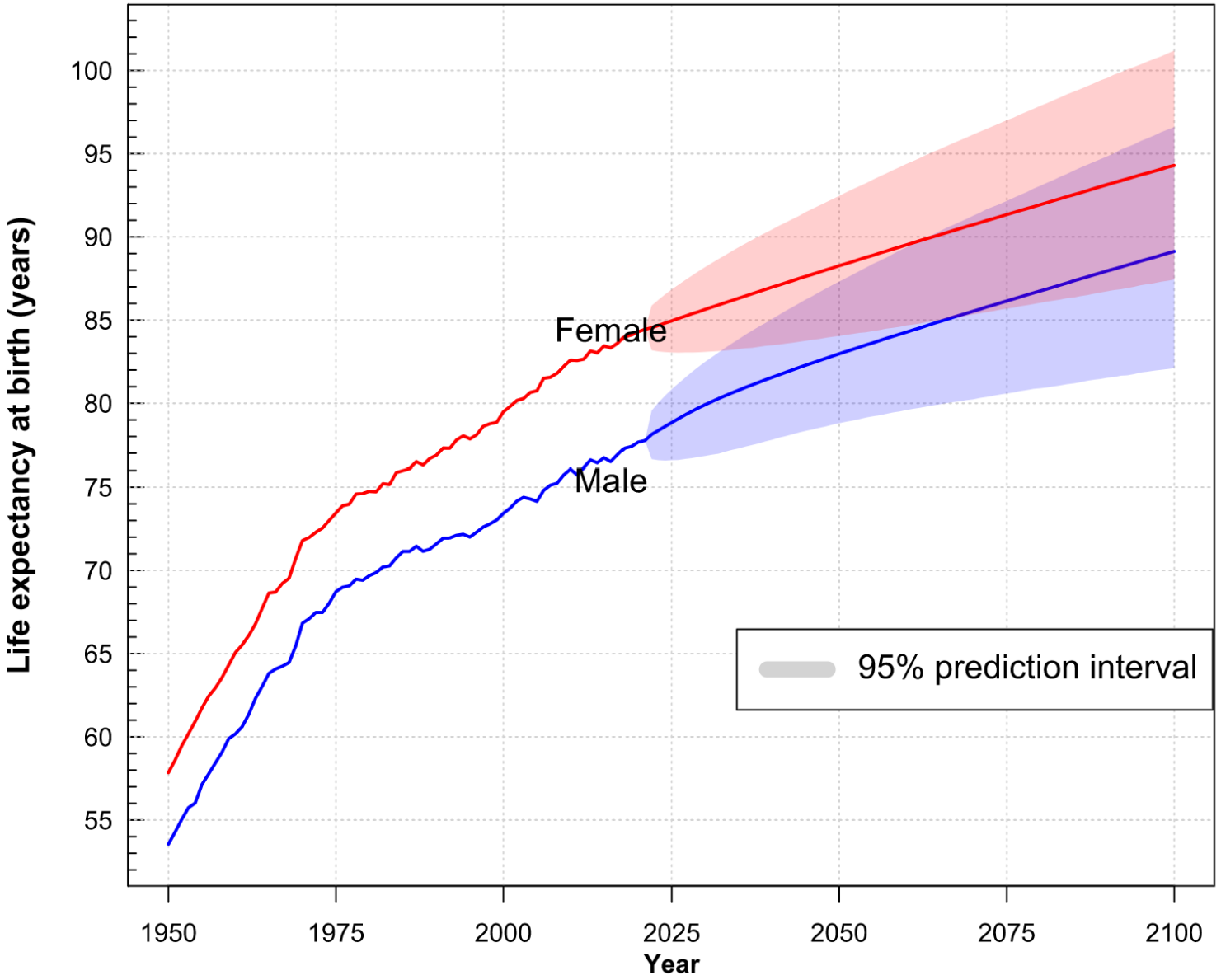
Source: United Nations, DESA, Population Division, 2022.

Taiwan's mortality under age 5



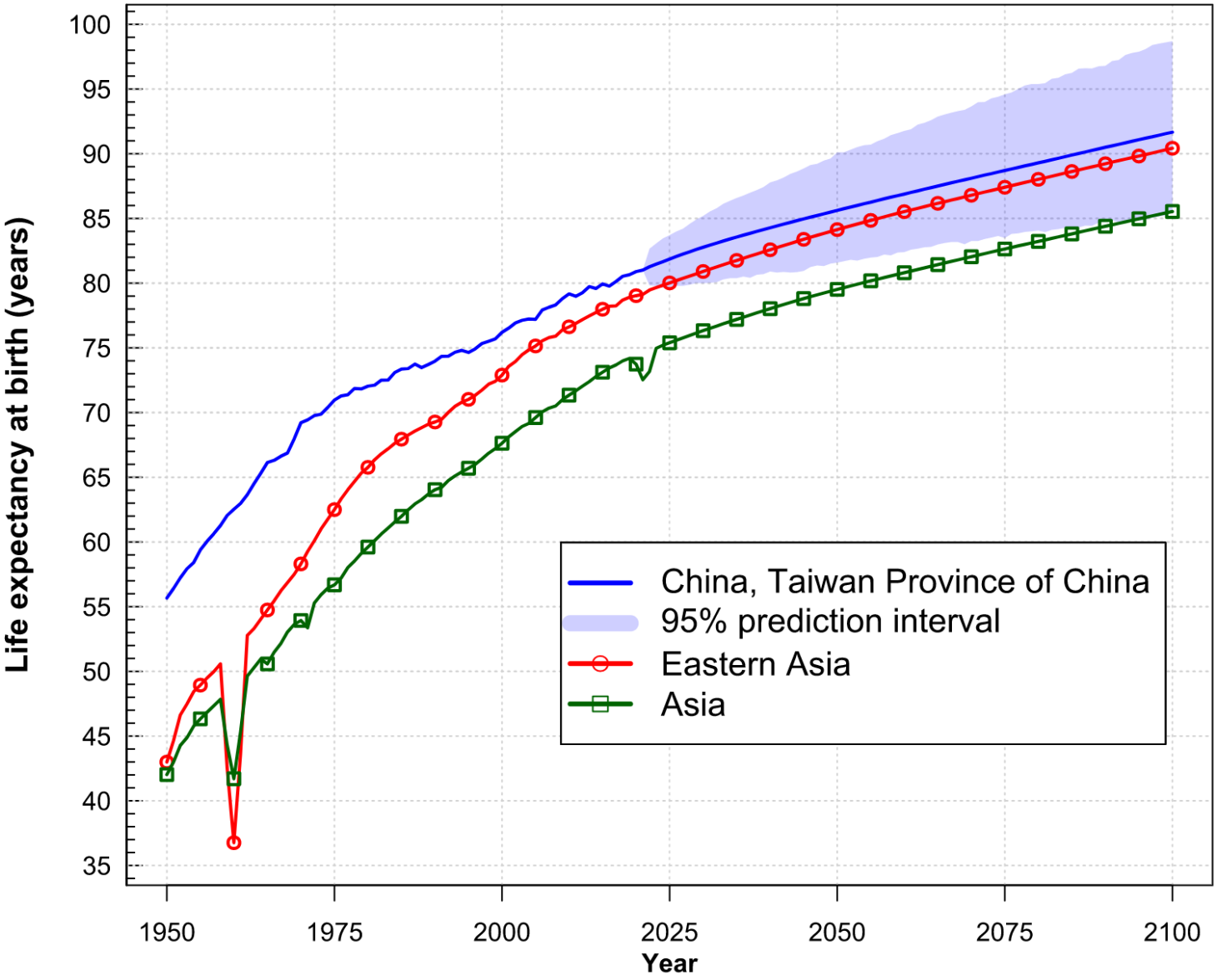
Source: United Nations, DESA, Population Division, 2022.

Taiwan's life expectancy at birth by sex



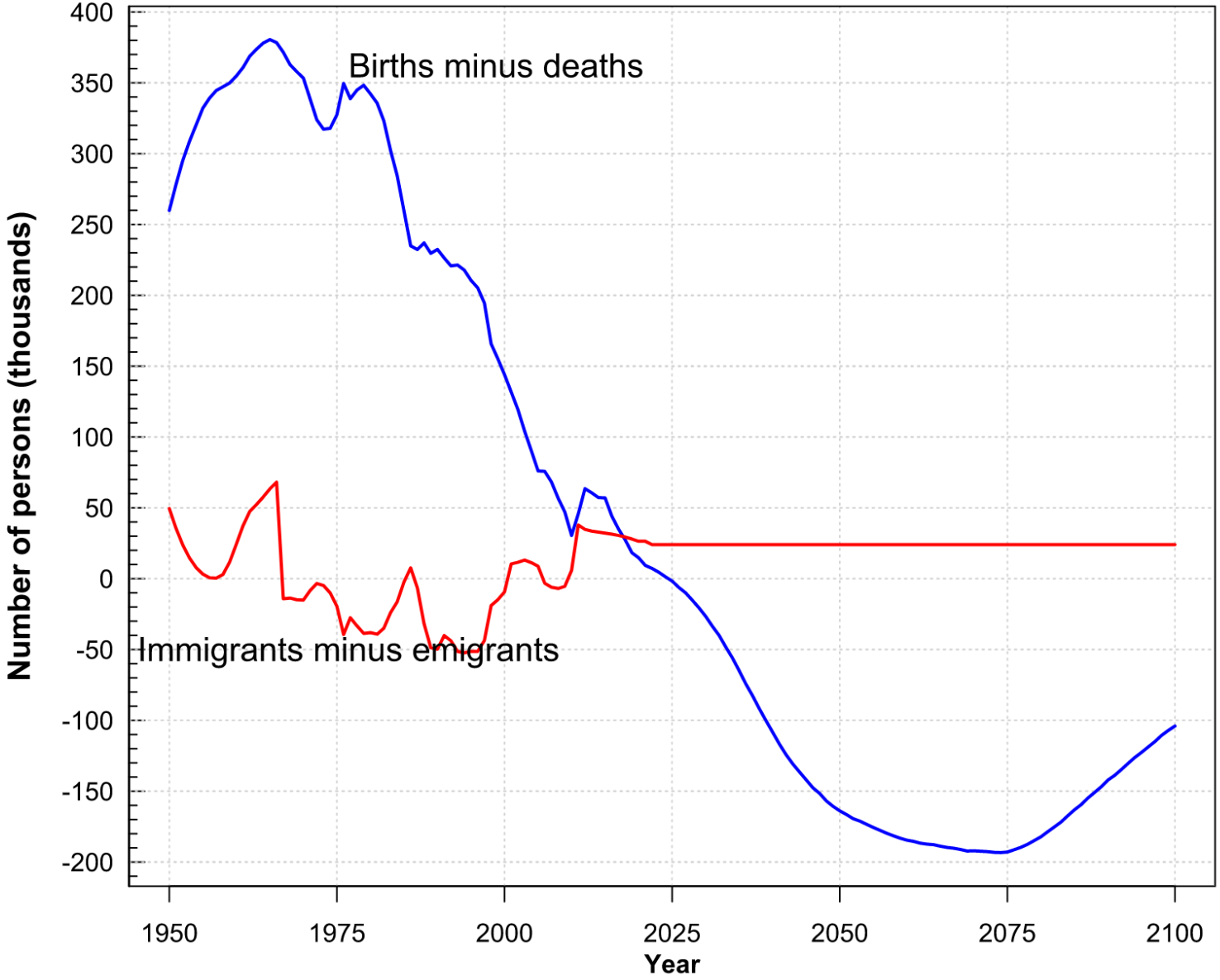
Source: United Nations, DESA, Population Division, 2022.

Taiwan's life expectancy at birth (both sexes combined)



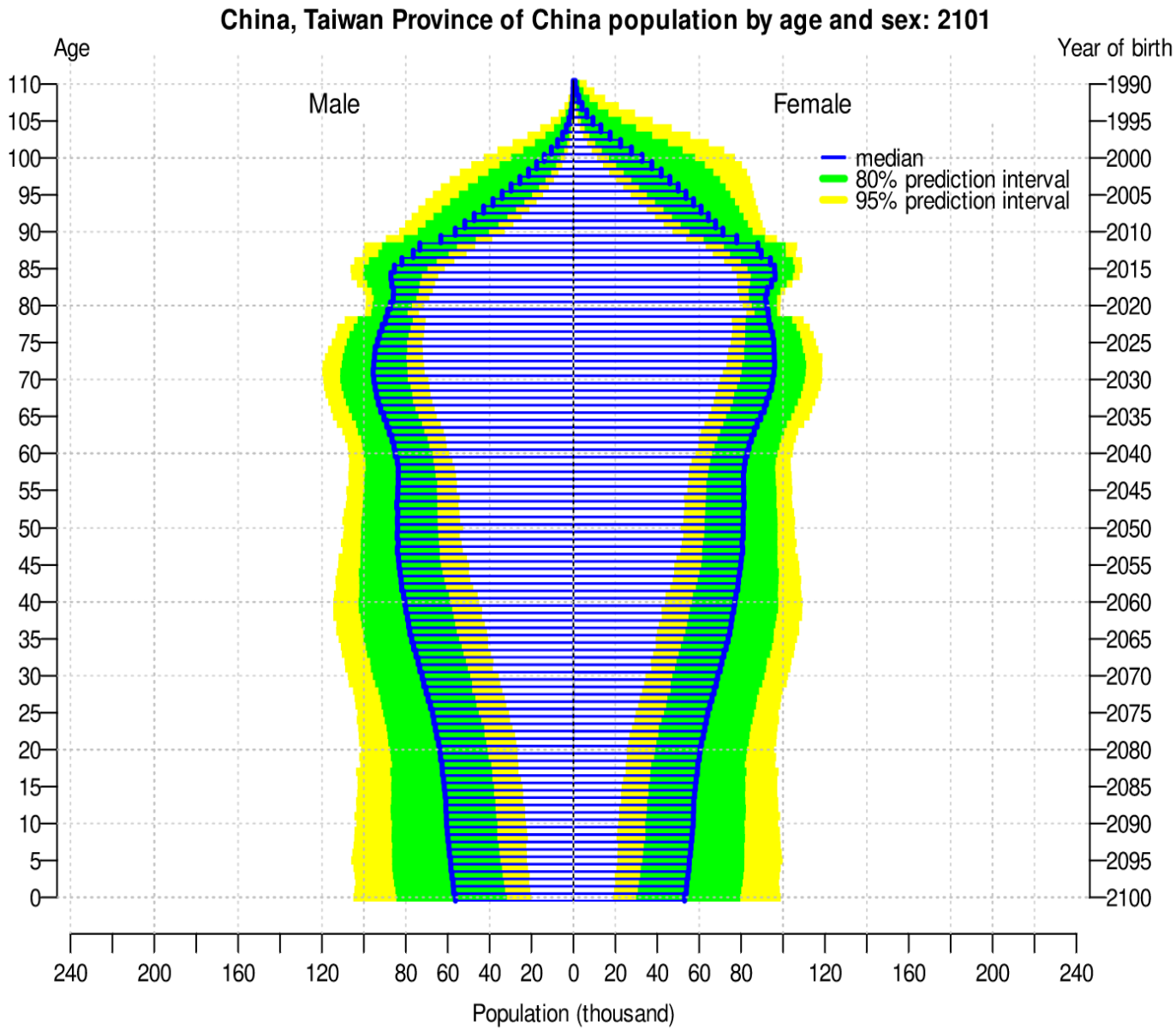
Source: United Nations, DESA, Population Division, 2022.

Taiwan's annual natural change and net migration



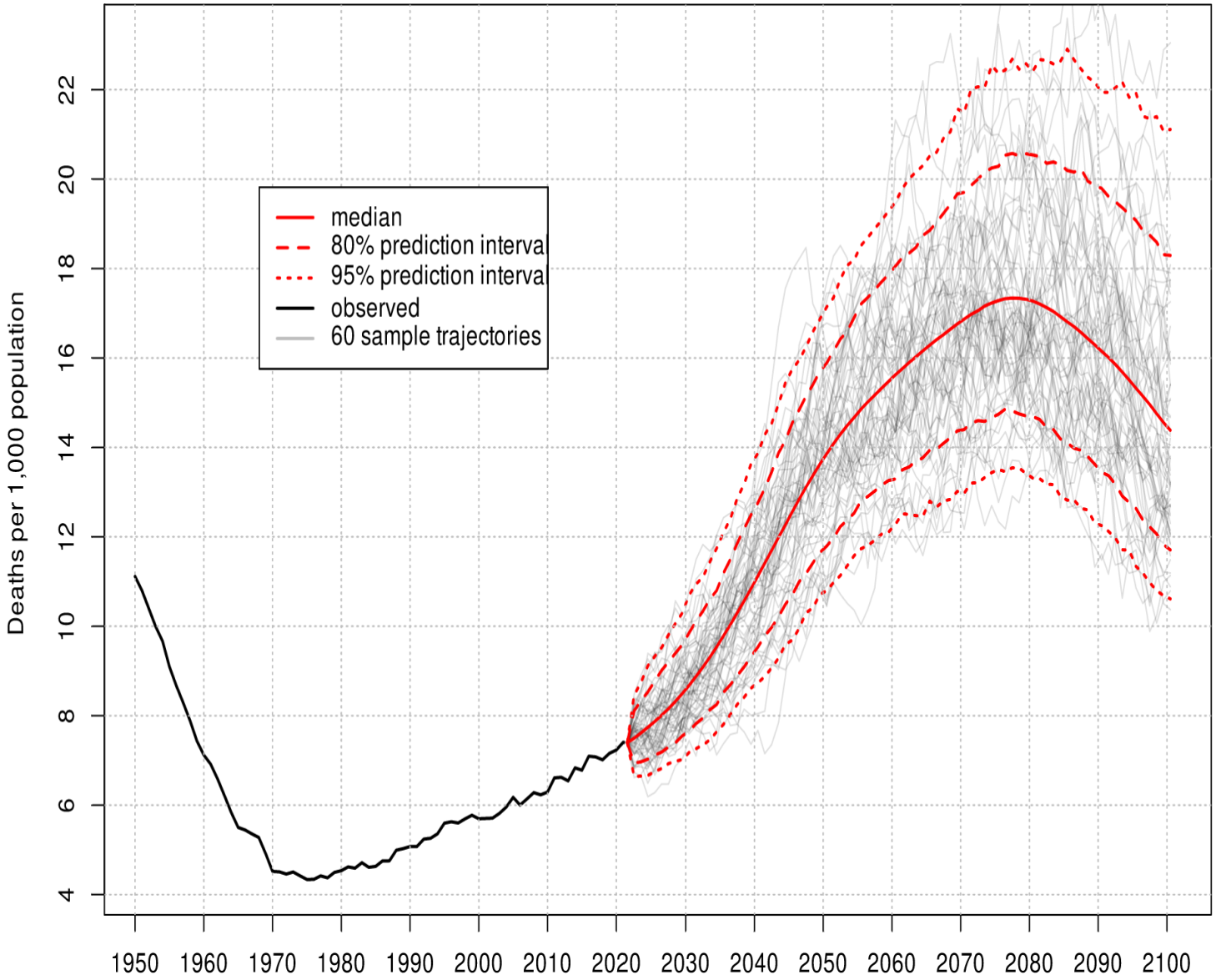
Source: United Nations, DESA, Population Division, 2022.

Taiwan's population by age and sex: 2101



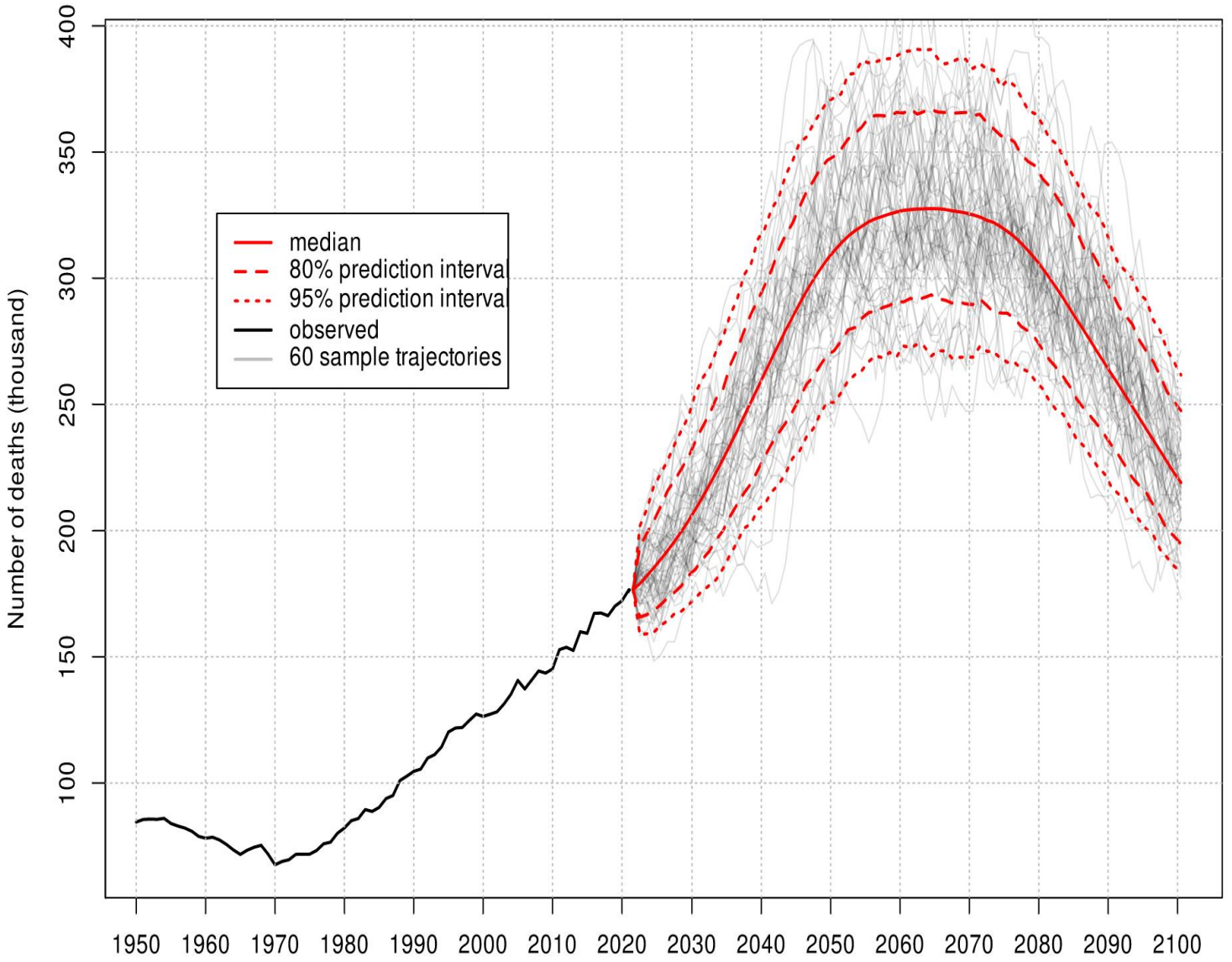
Source: United Nations, DESA, Population Division, 2022.

Taiwan's annual number of deaths per 1,000 population



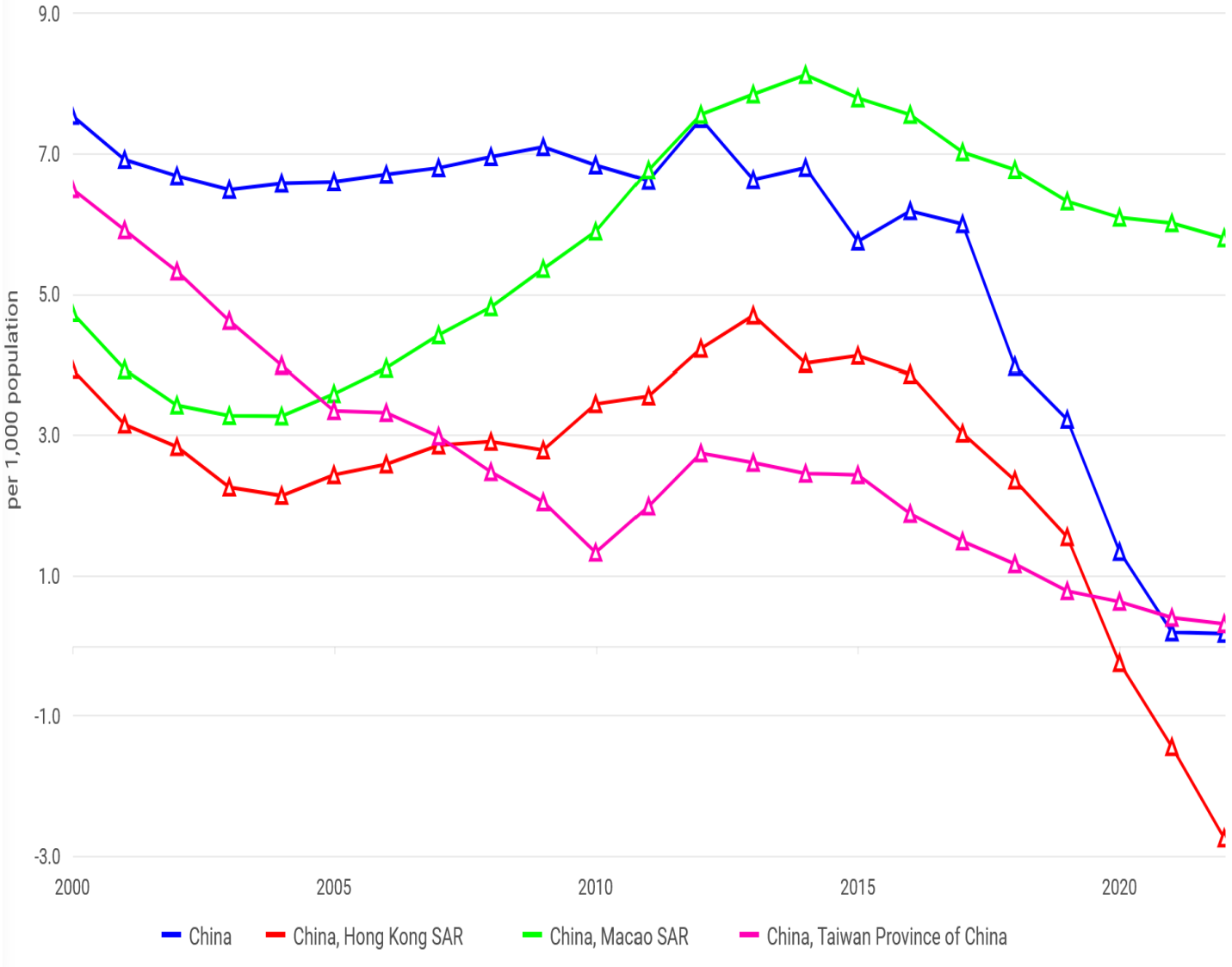
Source: United Nations, DESA, Population Division, 2022.

Taiwan's annual number of deaths



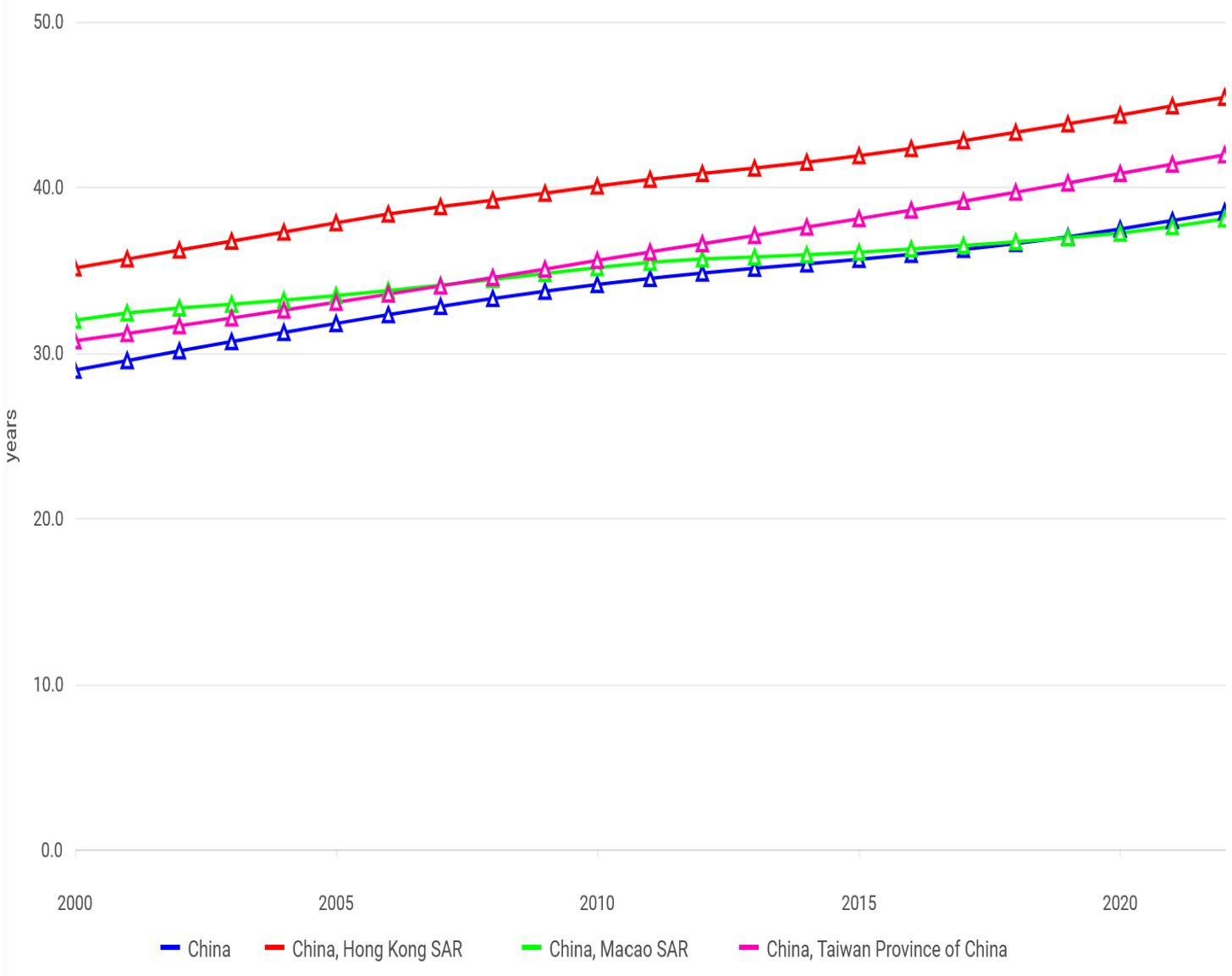
Source: United Nations, DESA, Population Division, 2022.

Crude rate of natural change of population, (both sexes) 2000-2022



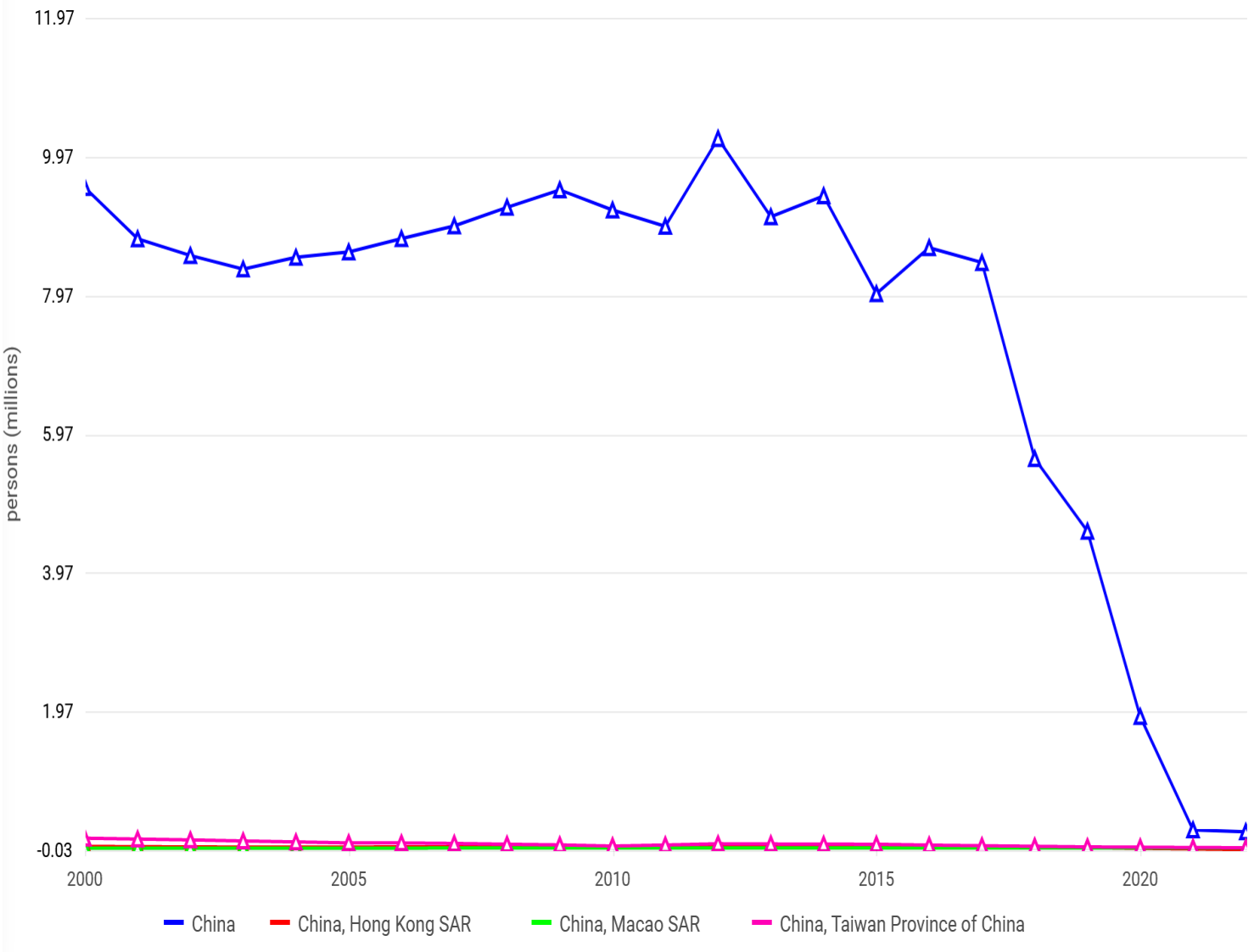
Source: United Nations, DESA, Population Division, 2022.

Median age population, (both sexes) 2000-2022



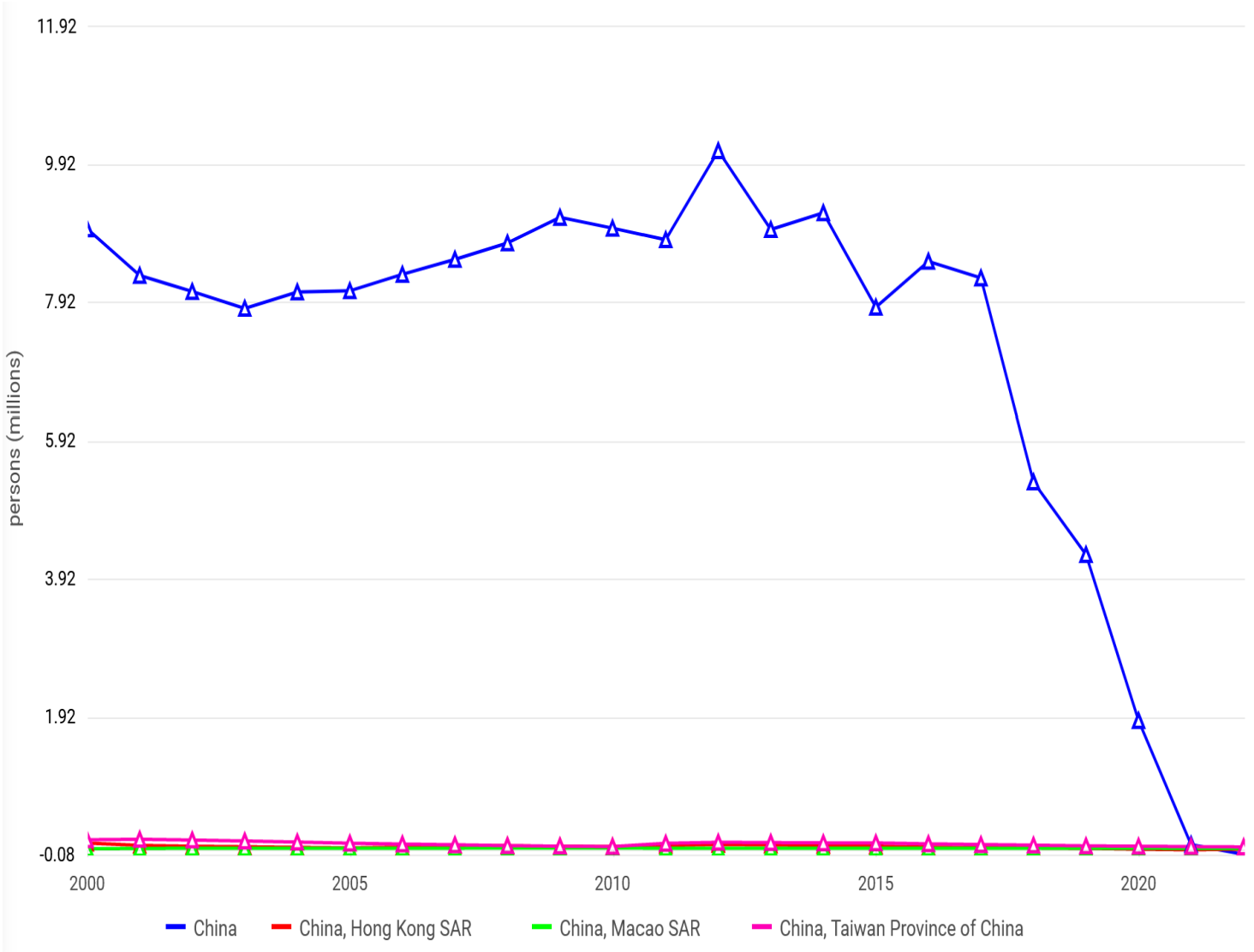
Source: United Nations, DESA, Population Division, 2022.

Natural change of population, (both sexes) 2000-2022



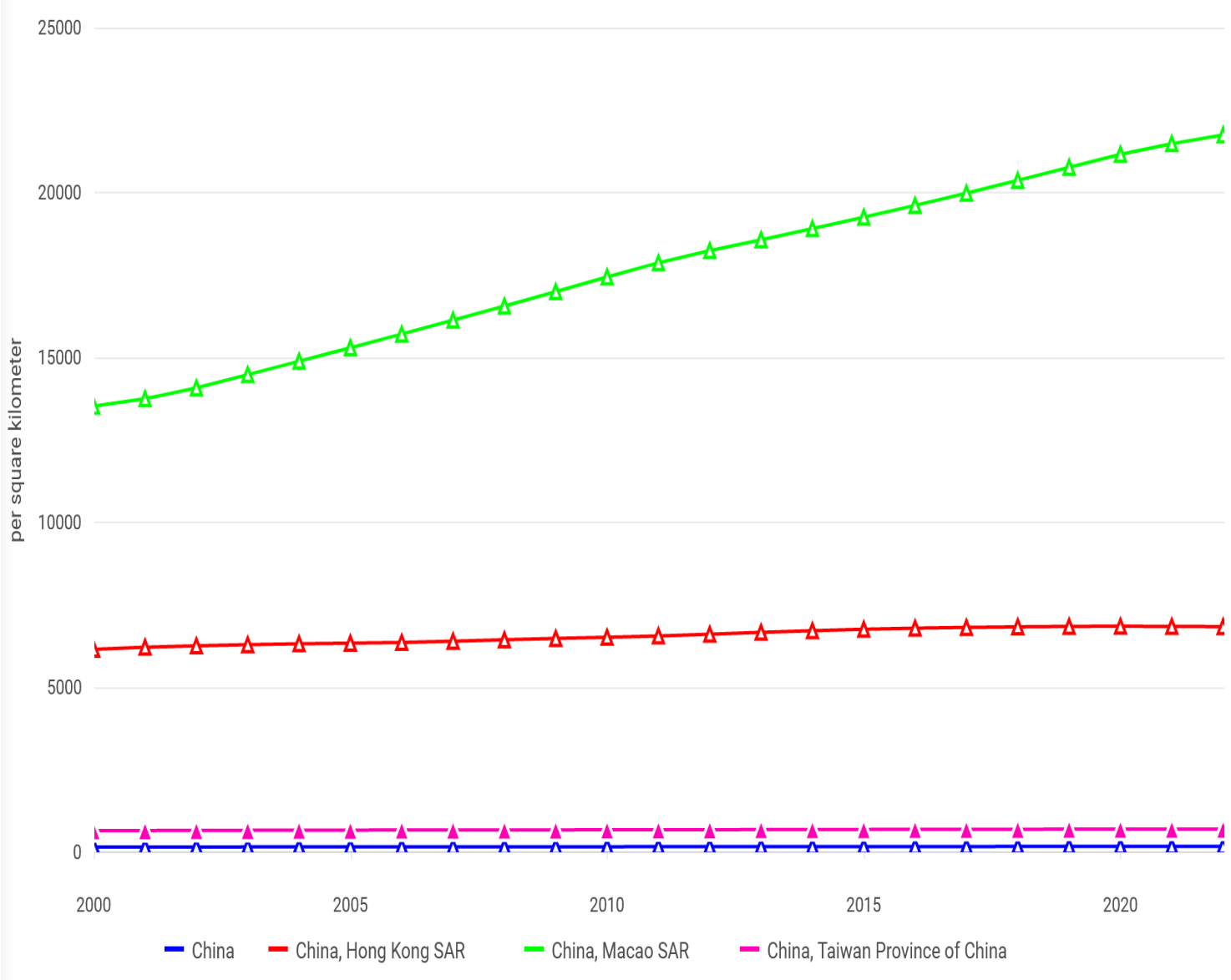
Source: United Nations, DESA, Population Division, 2022.

Population change, (both sexes) 2000-2022



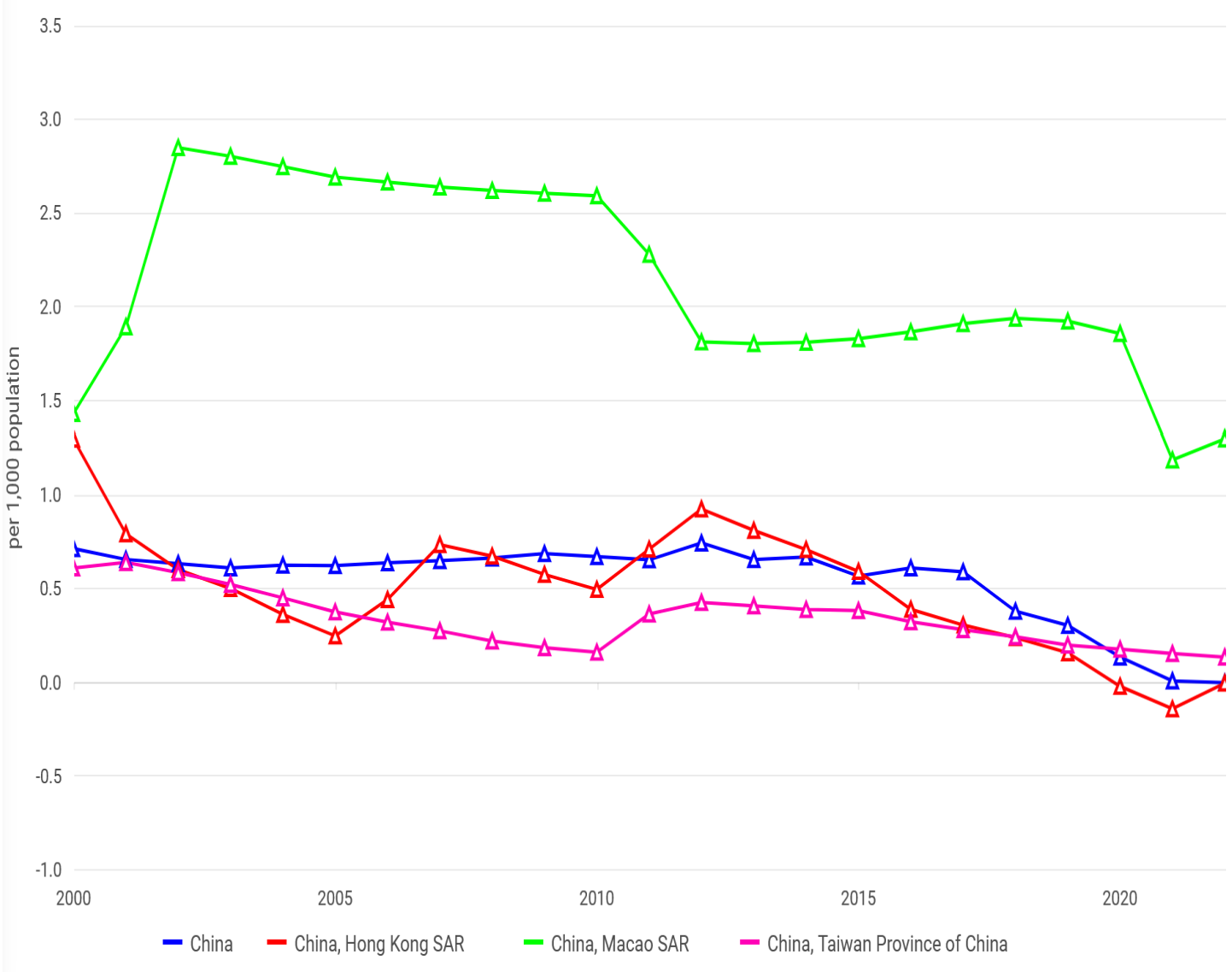
Source: United Nations, DESA, Population Division, 2022.

Population density, (both sexes) 2000-2022



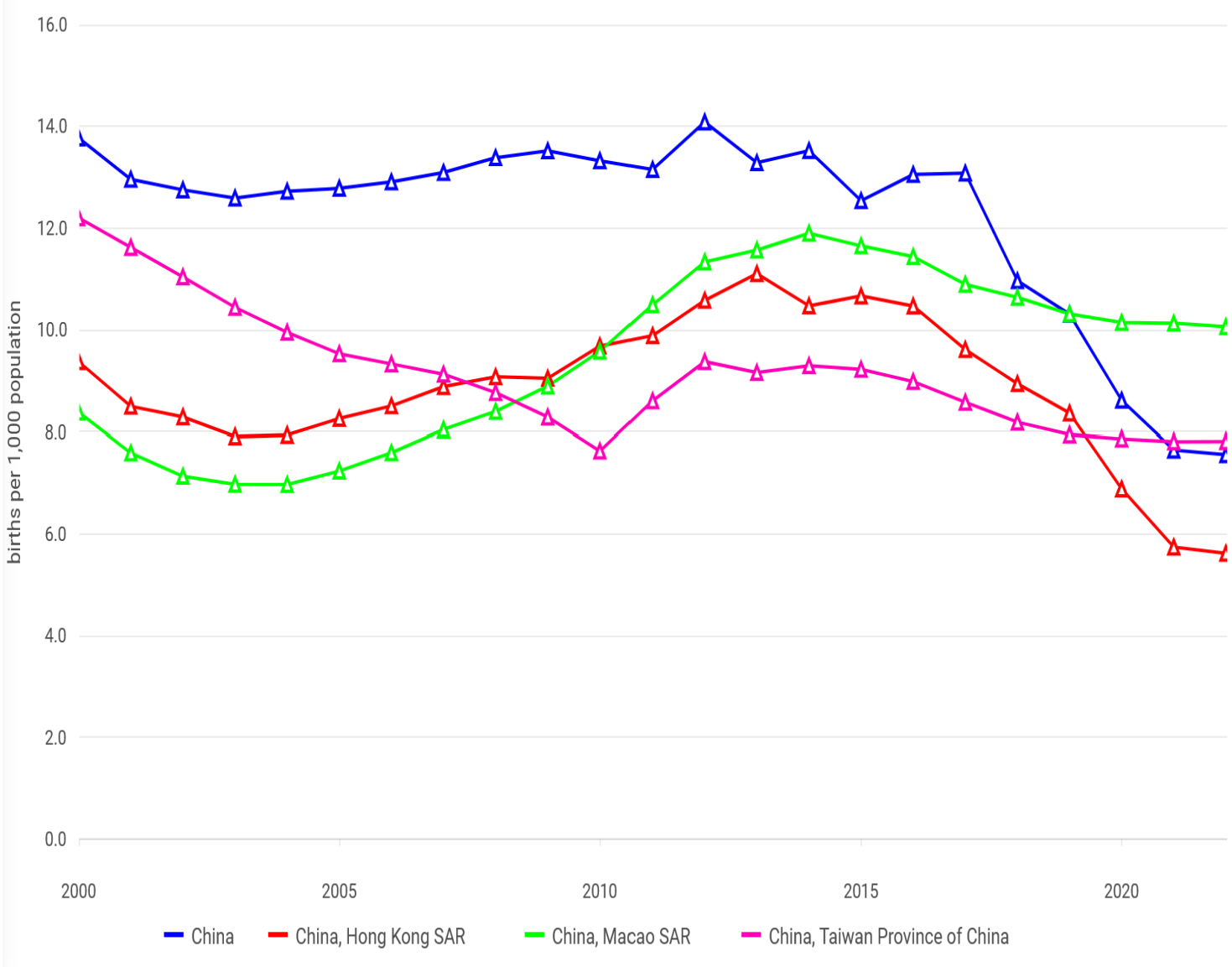
Source: United Nations, DESA, Population Division, 2022.

Rate of population change, (both sexes) 2000-2022



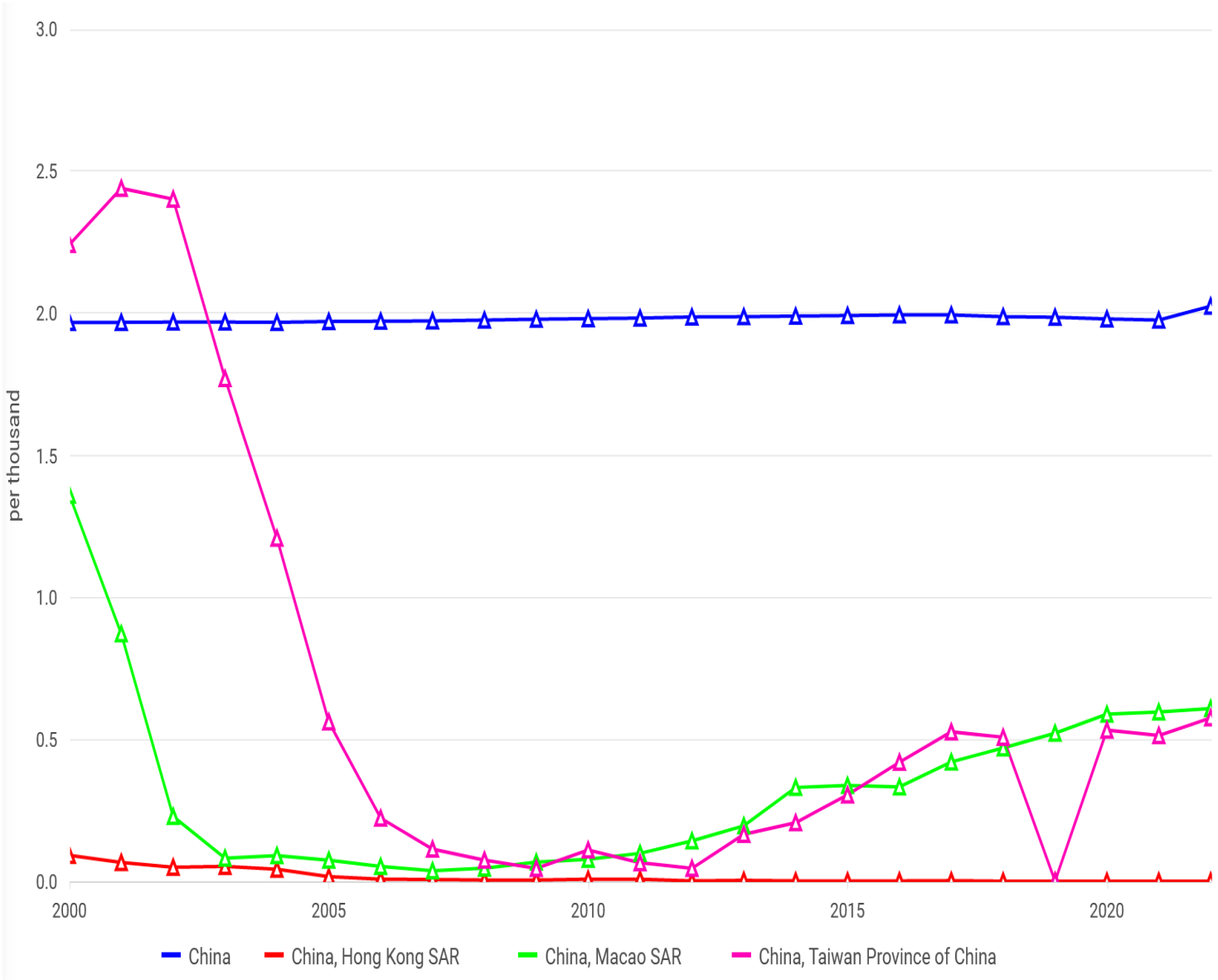
Source: United Nations, DESA, Population Division, 2022.

Crude birth rate, (both sexes) 2000-2022



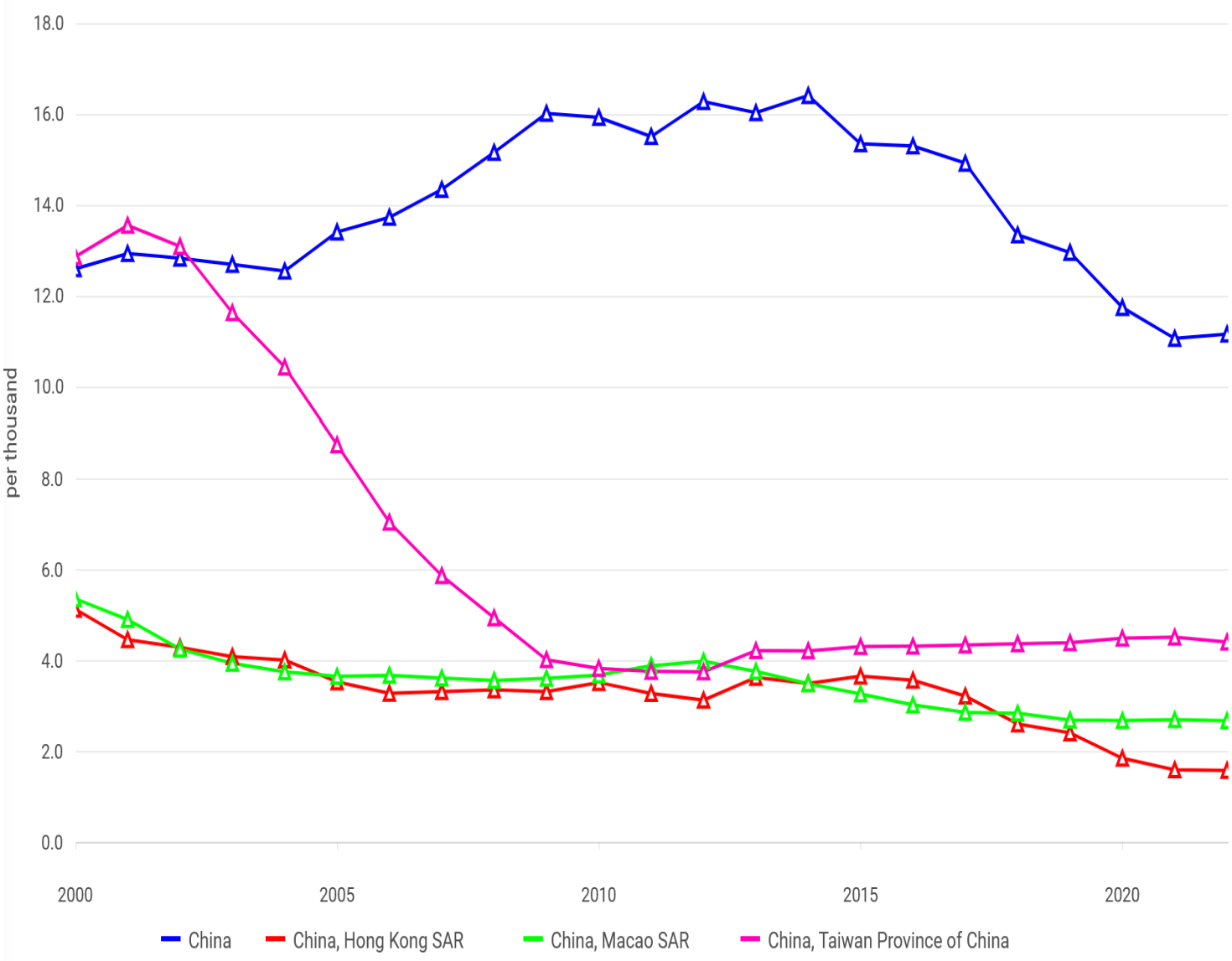
Source: United Nations, DESA, Population Division, 2022.

Fertility rates by age of mother (1-year), (both sexes) 2000-2022



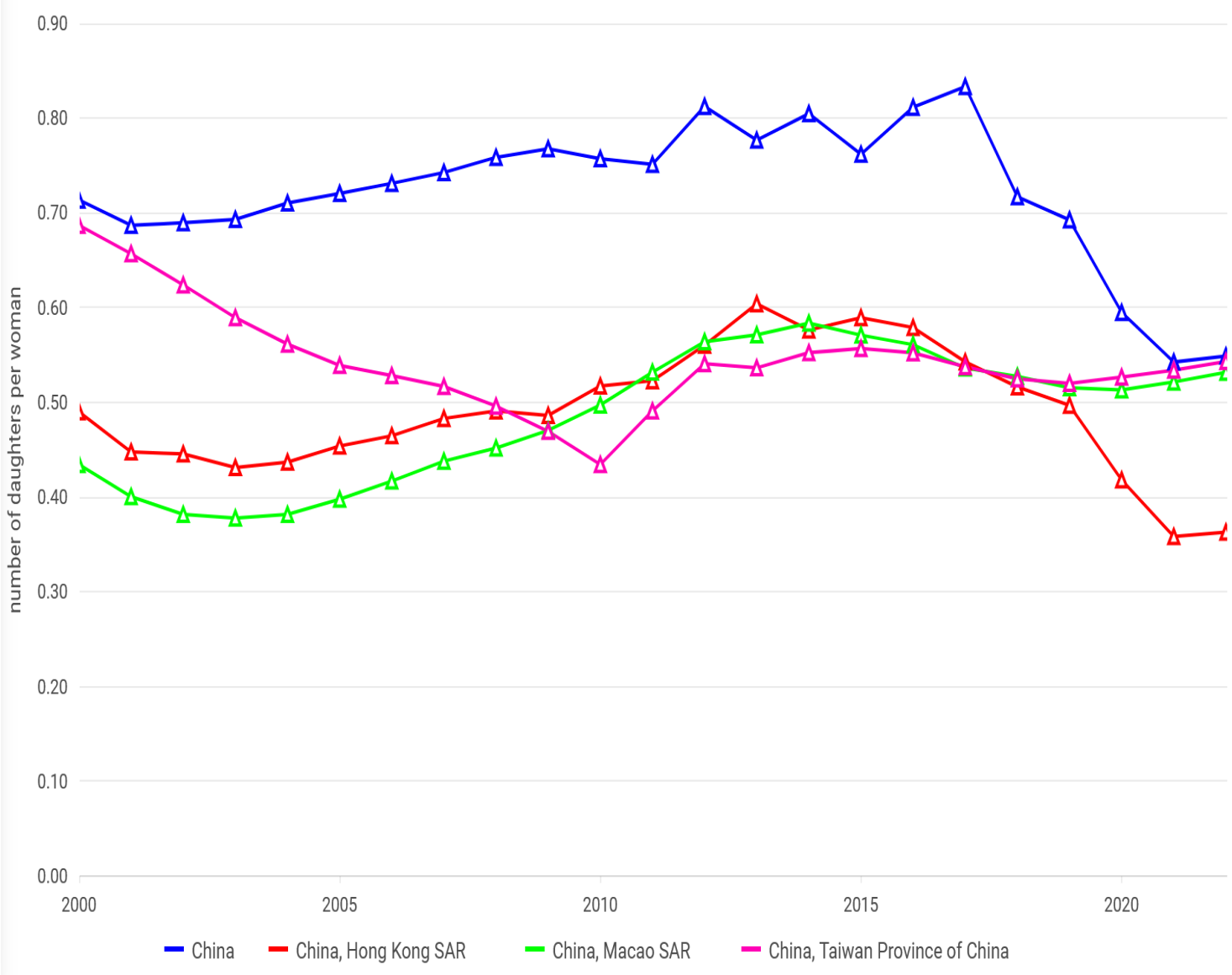
Source: United Nations, DESA, Population Division, 2022.

Fertility rates by age of mother (5-year), (both sexes) 2000-2022



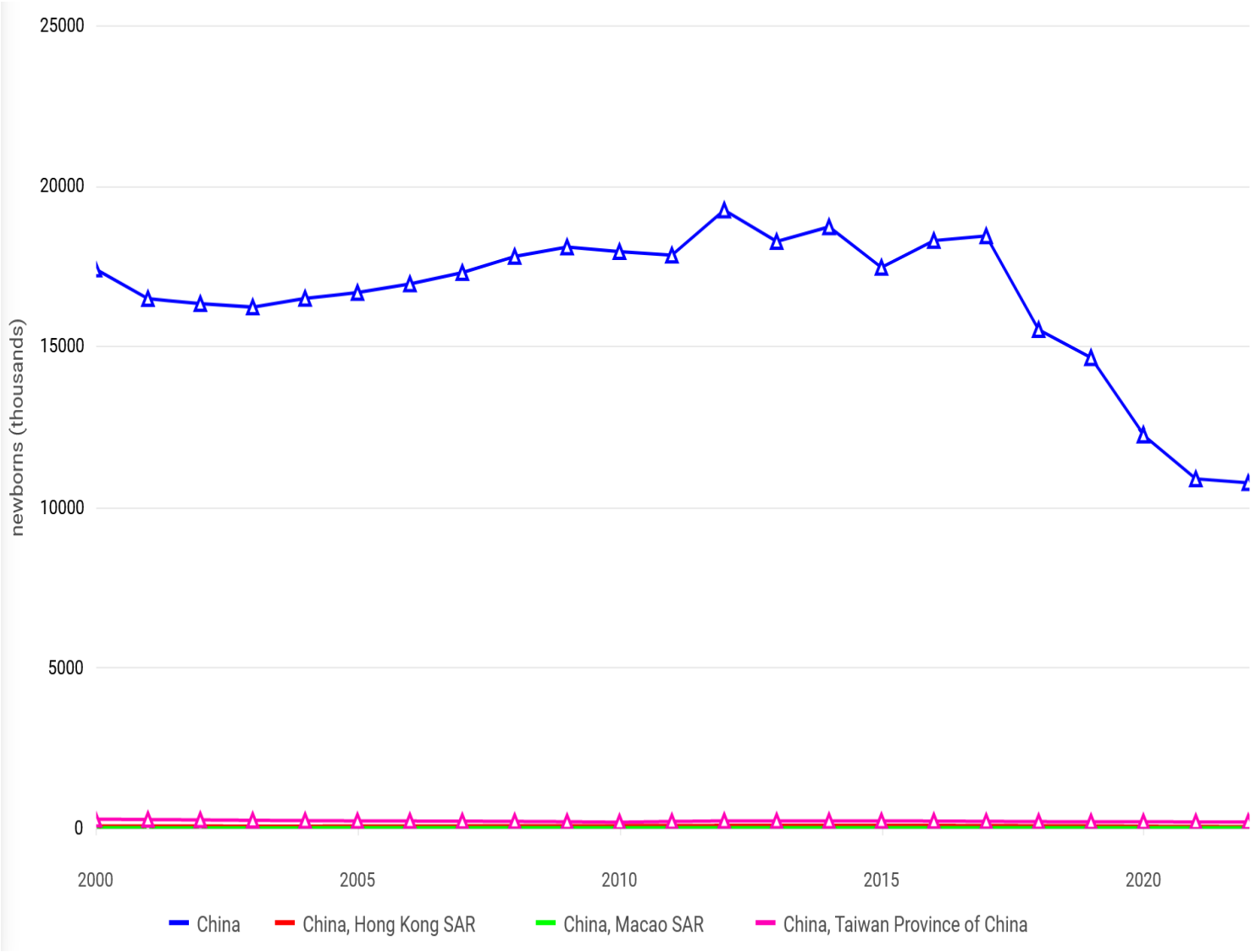
Source: United Nations, DESA, Population Division, 2022.

Net reproduction rate, (both sexes) 2000-2022



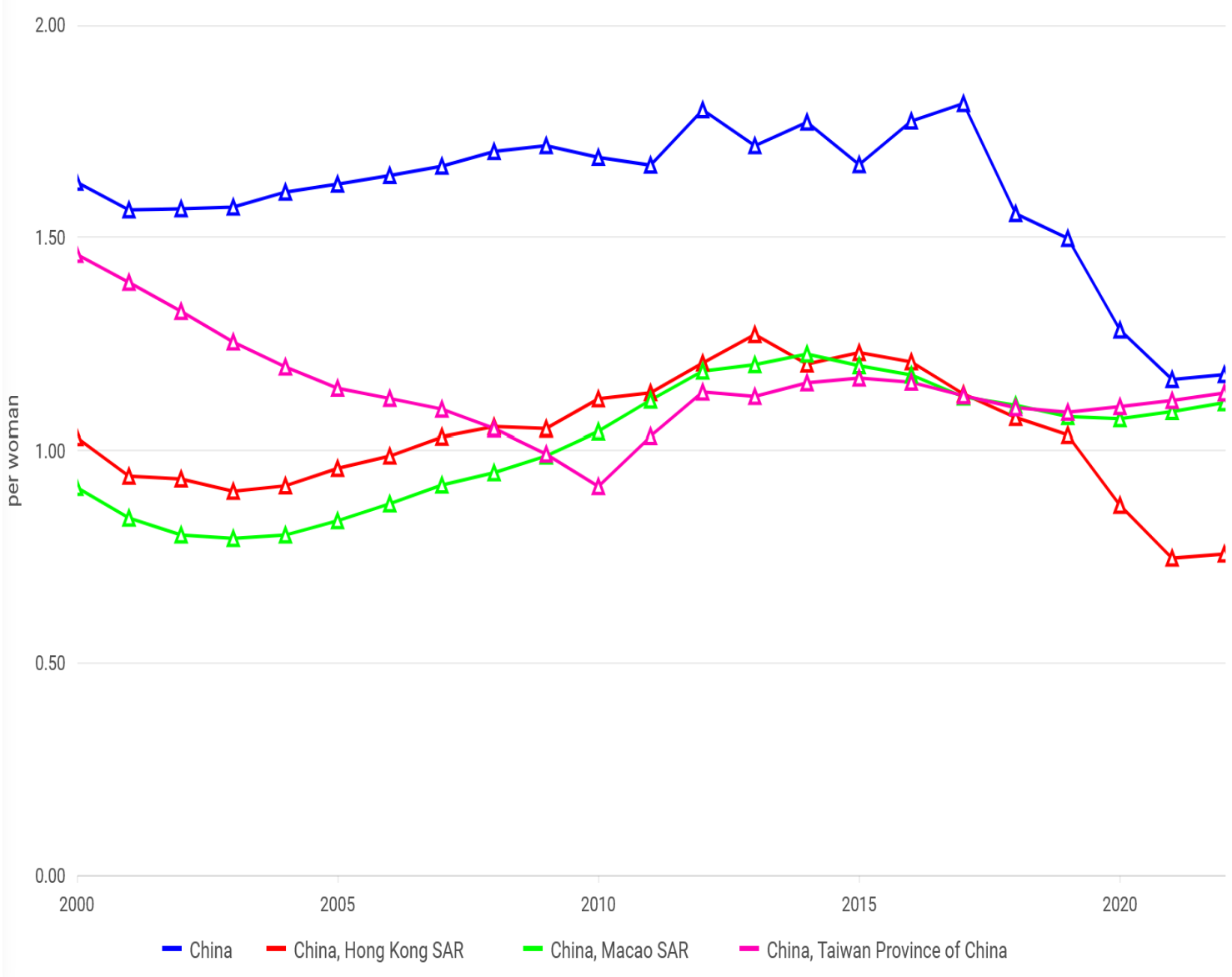
Source: United Nations, DESA, Population Division, 2022.

Total births by sex, (both sexes) 2000-2022



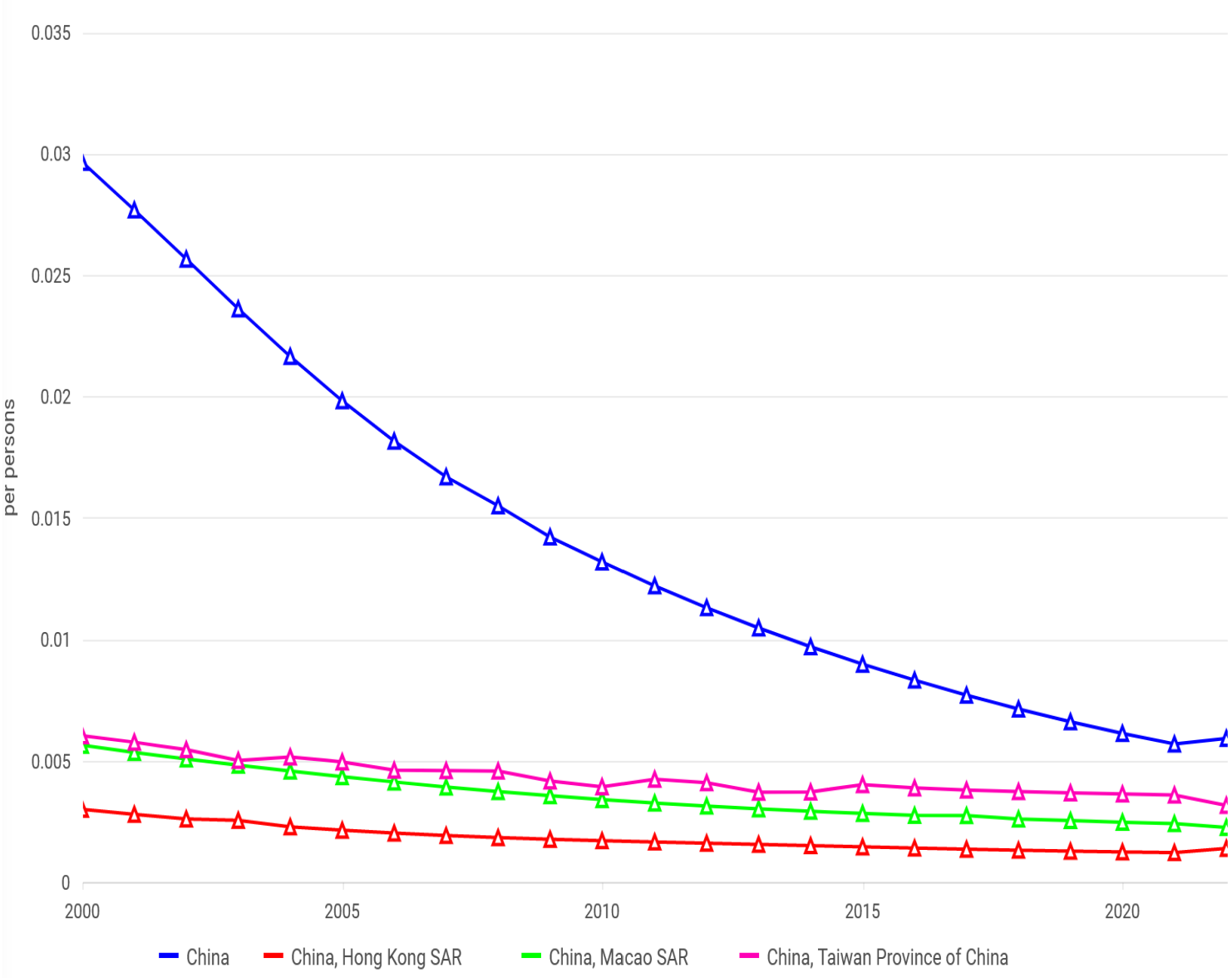
Source: United Nations, DESA, Population Division, 2022.

Total fertility rate, (both sexes) 2000-2022



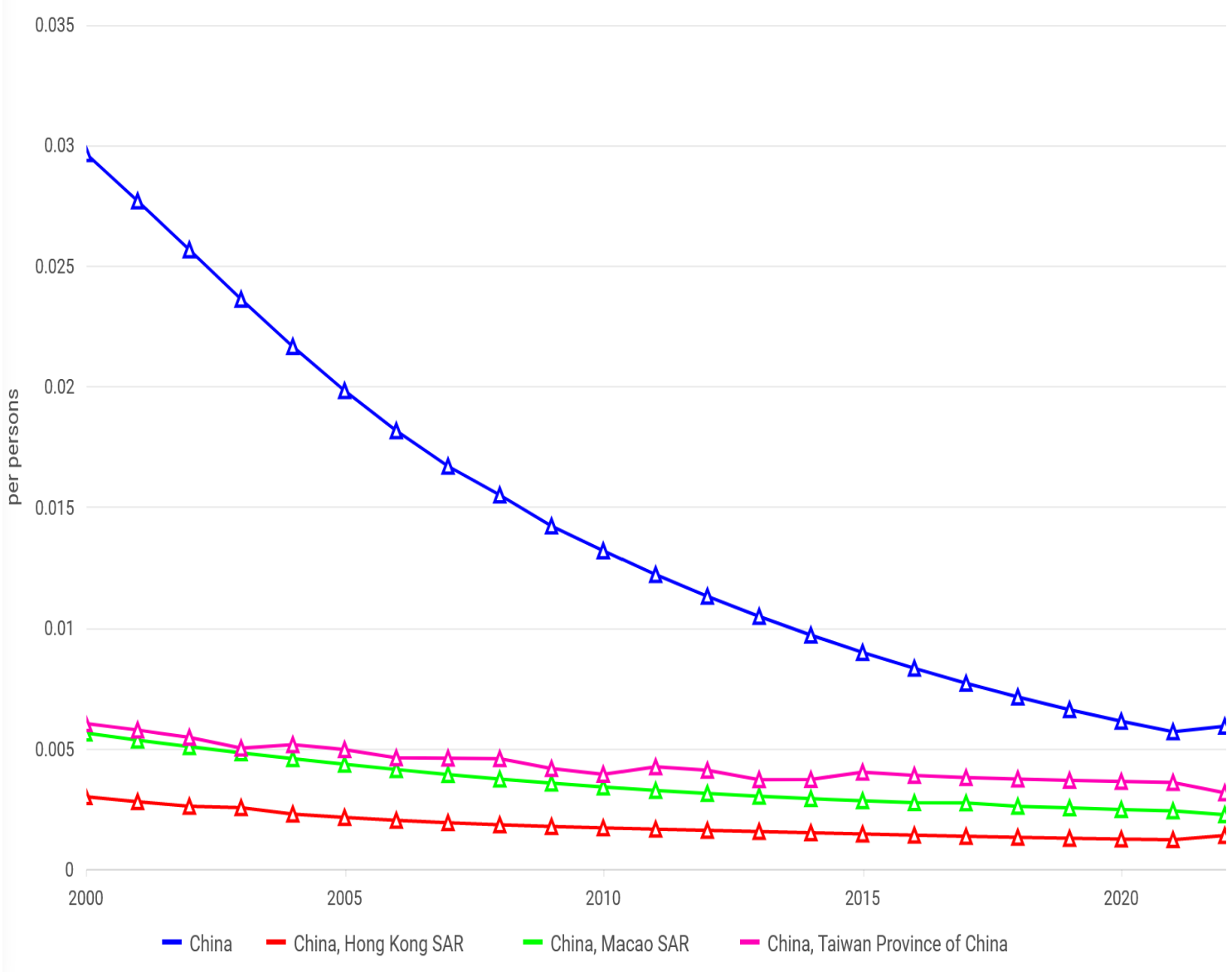
Source: United Nations, DESA, Population Division, 2022.

Age specific mortality rate m(x,n) – abridged, (both sexes) 2000-2022



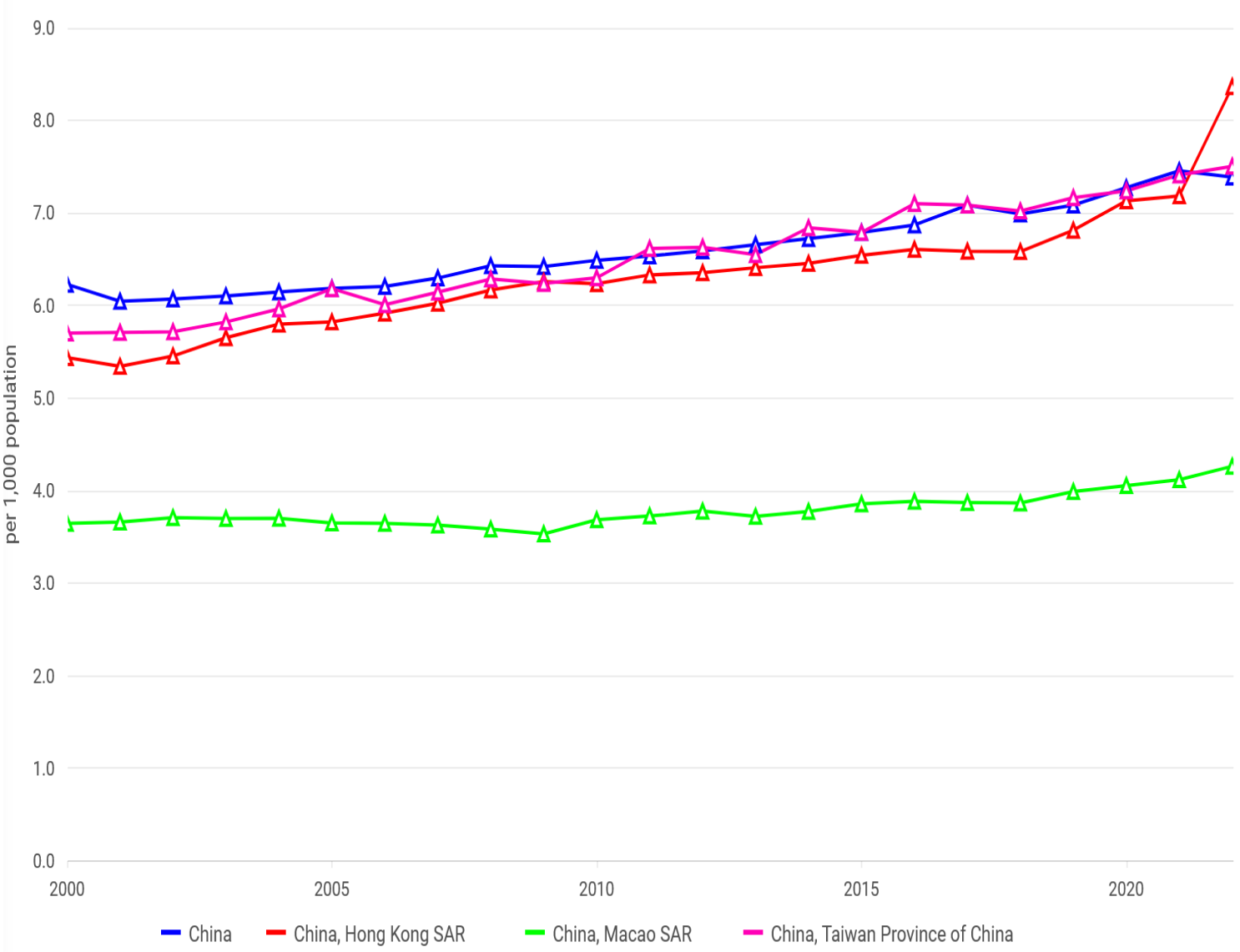
Source: United Nations, DESA, Population Division, 2022.

Age specific mortality rate m(x,n) – complete, (both sexes) 2000-2022



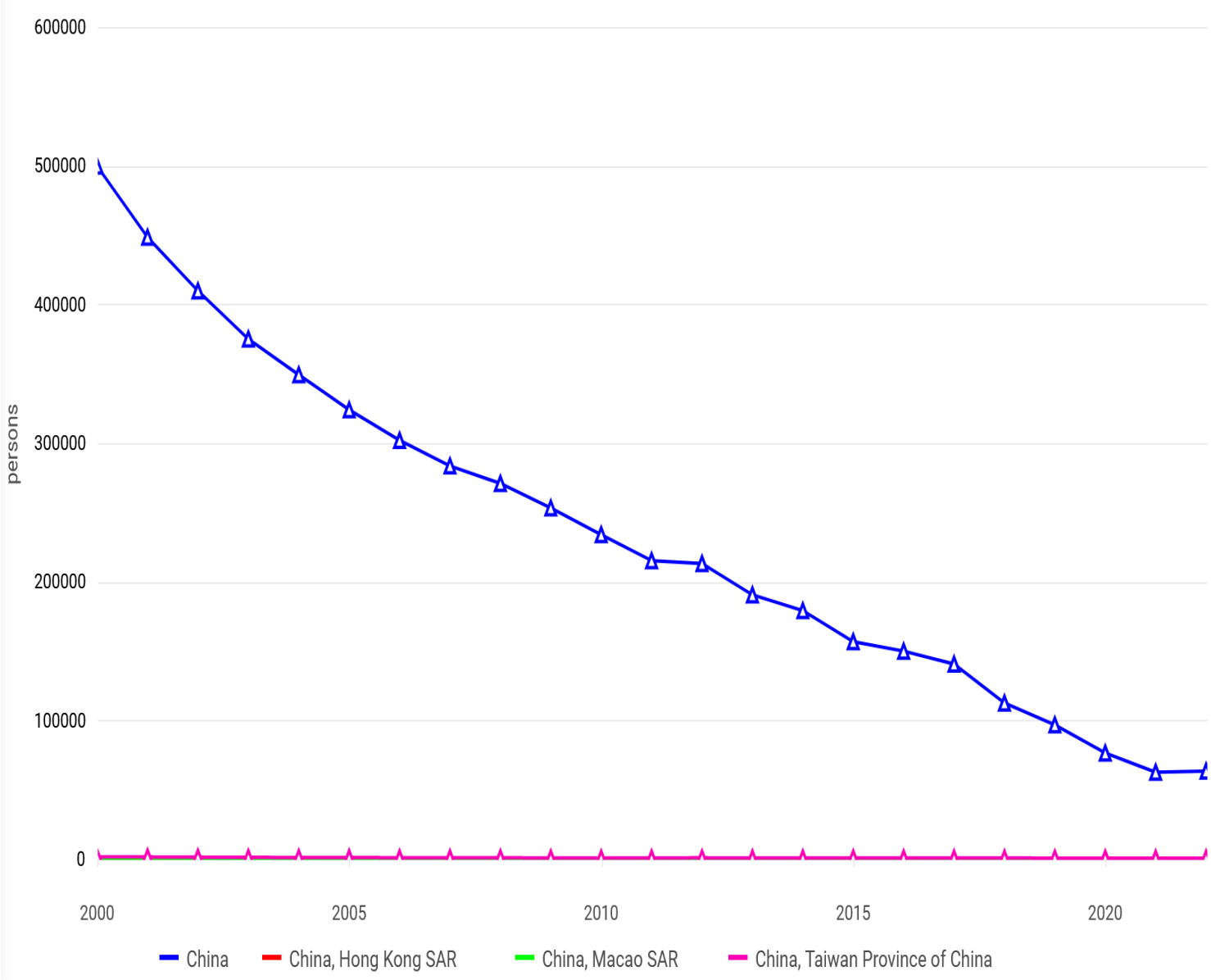
Source: United Nations, DESA, Population Division, 2022.

Crude death rate, (both sexes) 2000-2022



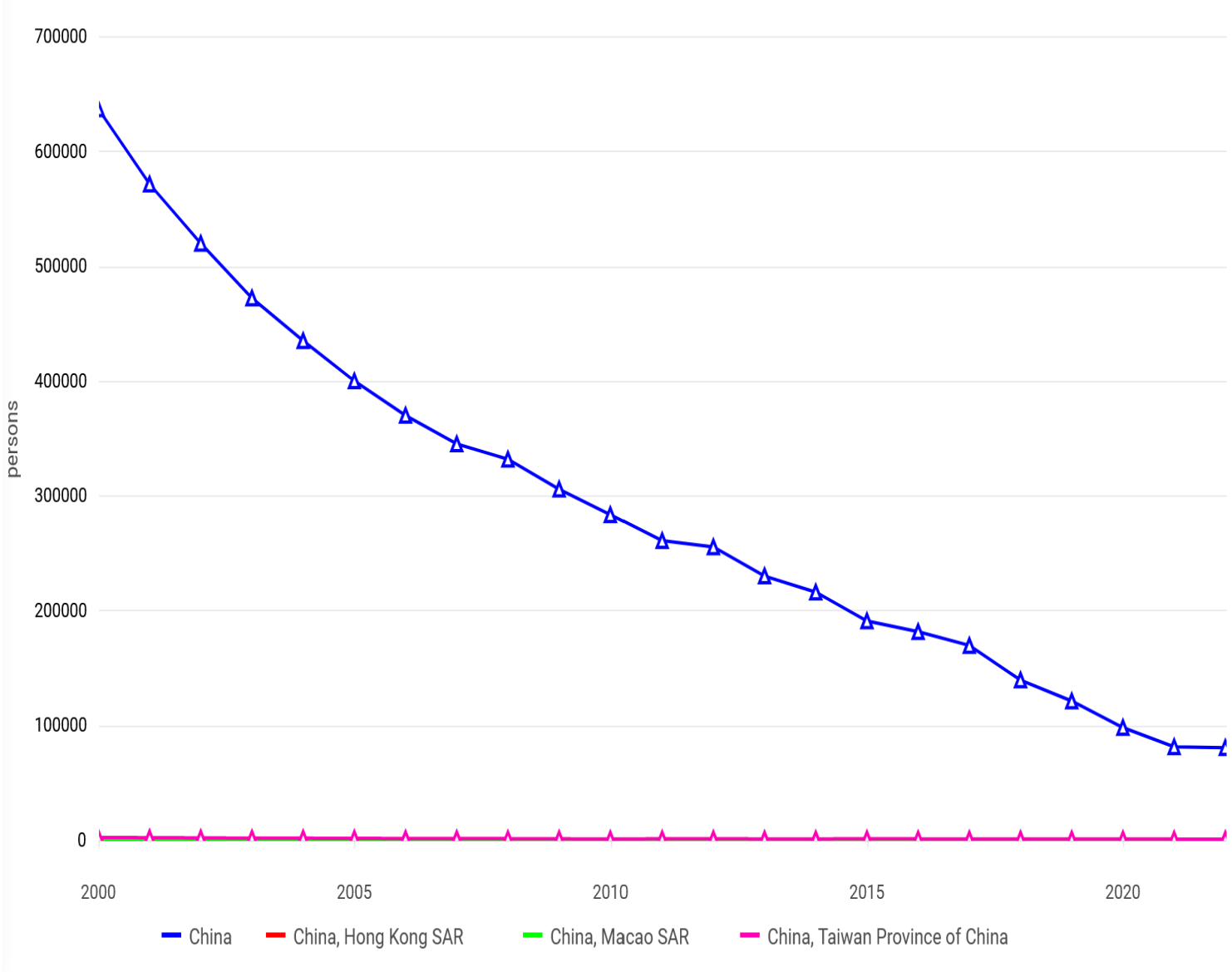
Source: United Nations, DESA, Population Division, 2022.

Deaths by 1-year age groups and sex, (both sexes) 2000-2022



Source: United Nations, DESA, Population Division, 2022.

Deaths by 5-year age groups and sex, (both sexes) 2000-2022

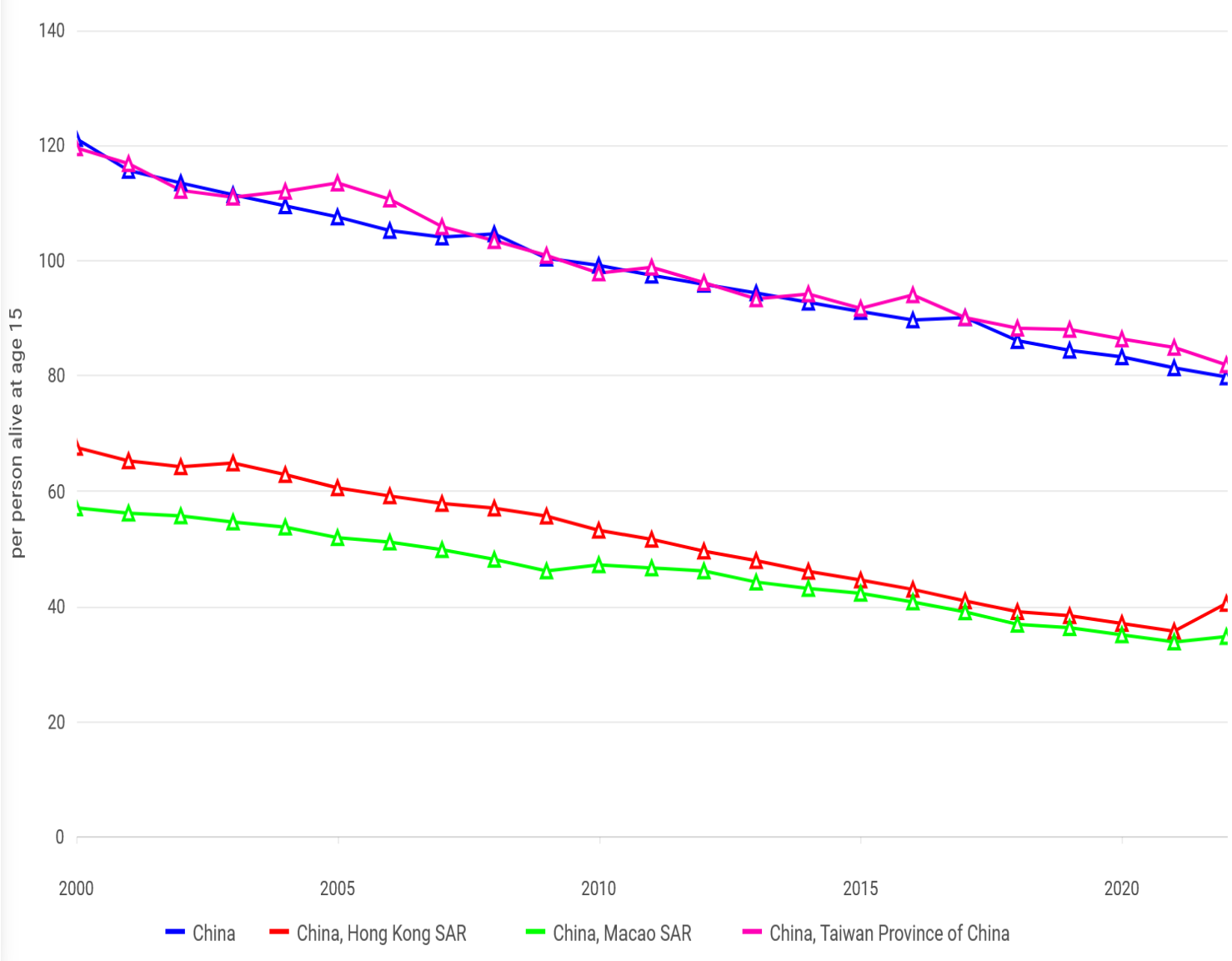


Source: United Nations, DESA, Population Division, 2022.

Probability of dying 15-50 (35q15), (both sexes) 2000-2022

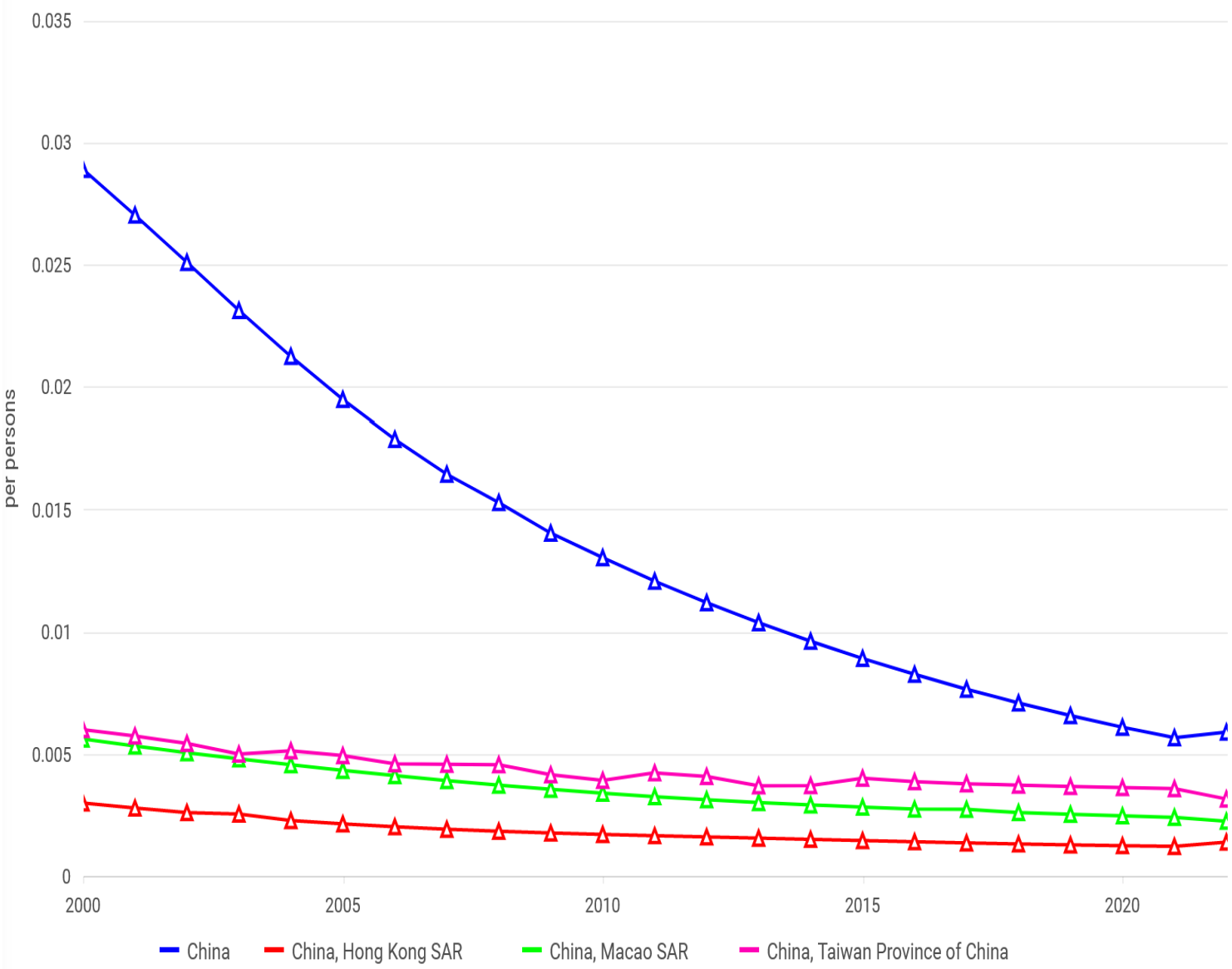
Source: United Nations, DESA, Population Division, 2022.

Probability of dying 15-60 (45q15), (both sexes) 2000-2022



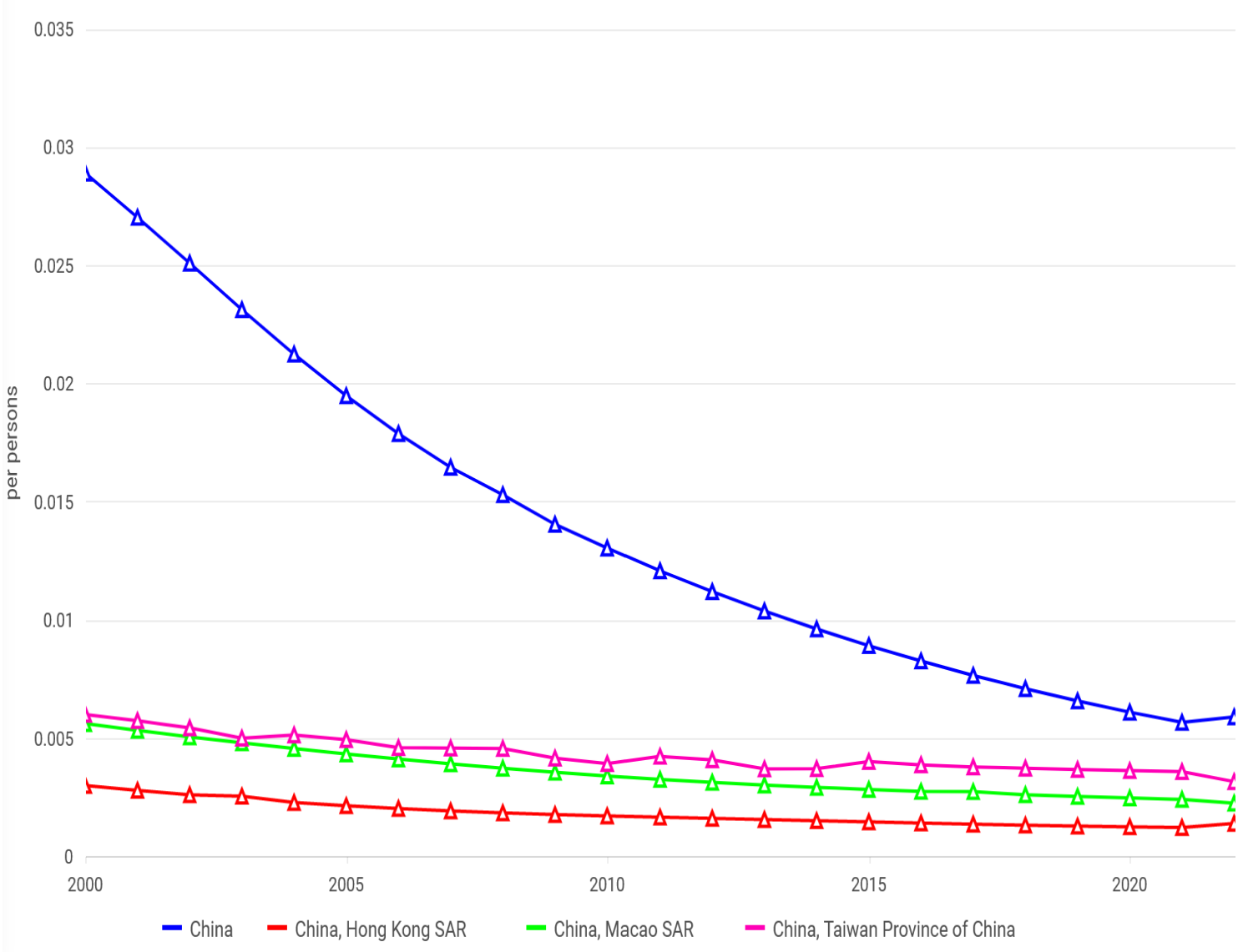
Source: United Nations, DESA, Population Division, 2022.

Probability of dying q(x,n) – abridged, (both sexes) 2000-2022



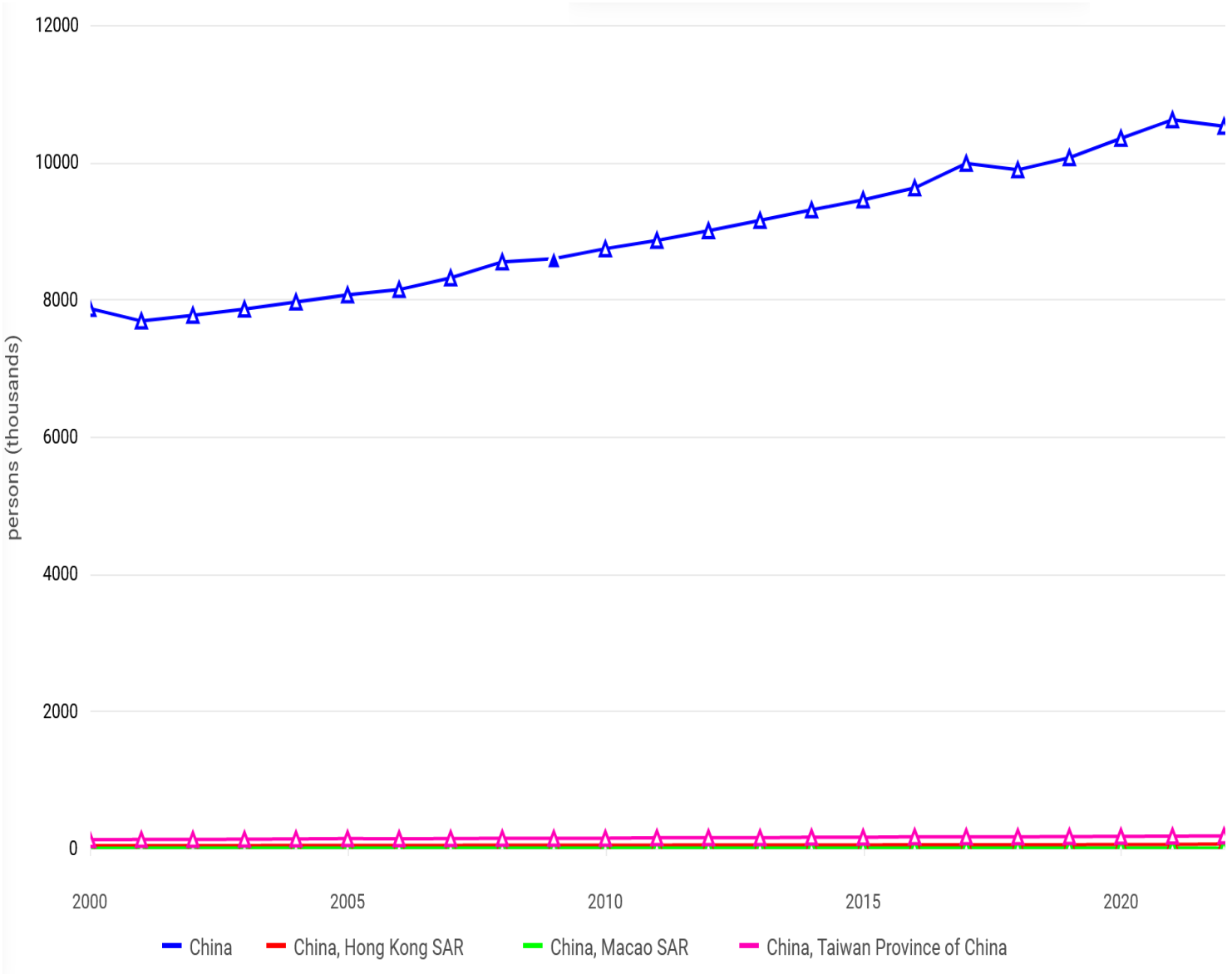
Source: United Nations, DESA, Population Division, 2022.

Probability of dying q(x,n) – complete, (both sexes) 2000-2022



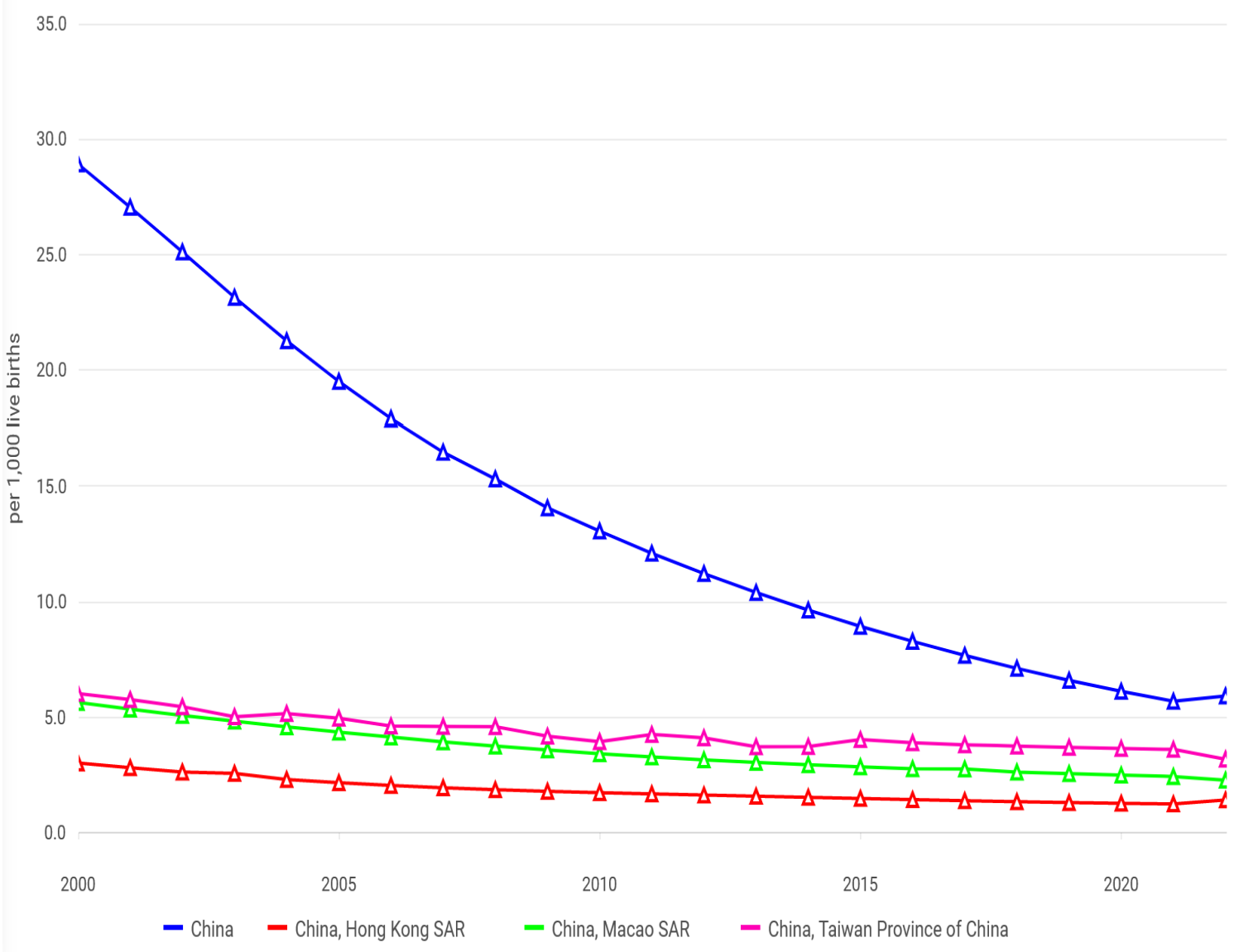
Source: United Nations, DESA, Population Division, 2022.

Total deaths by sex, (both sexes) 2000-2022



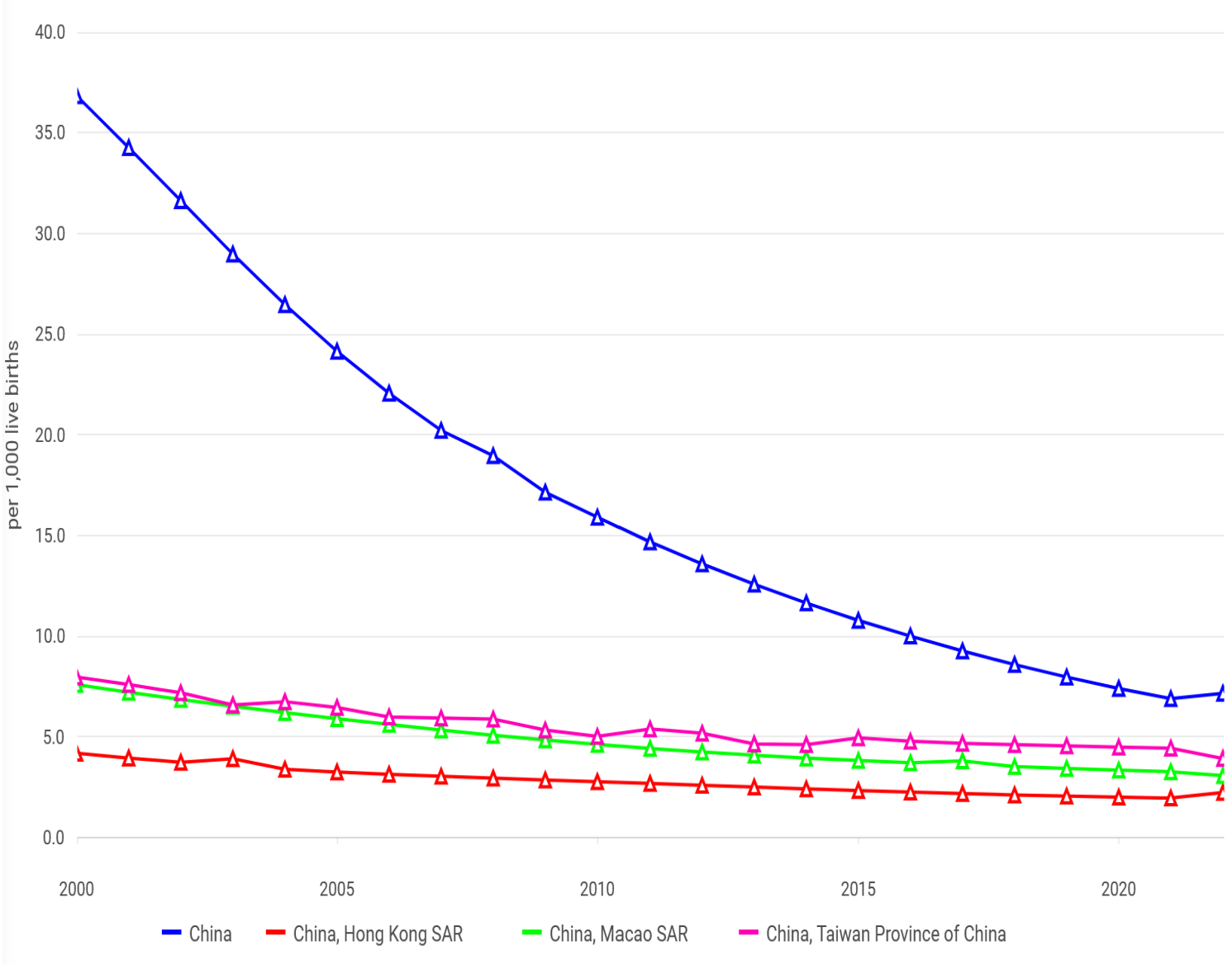
Source: United Nations, DESA, Population Division, 2022.

Infant mortality rate (IMR), (both sexes) 2000-2022



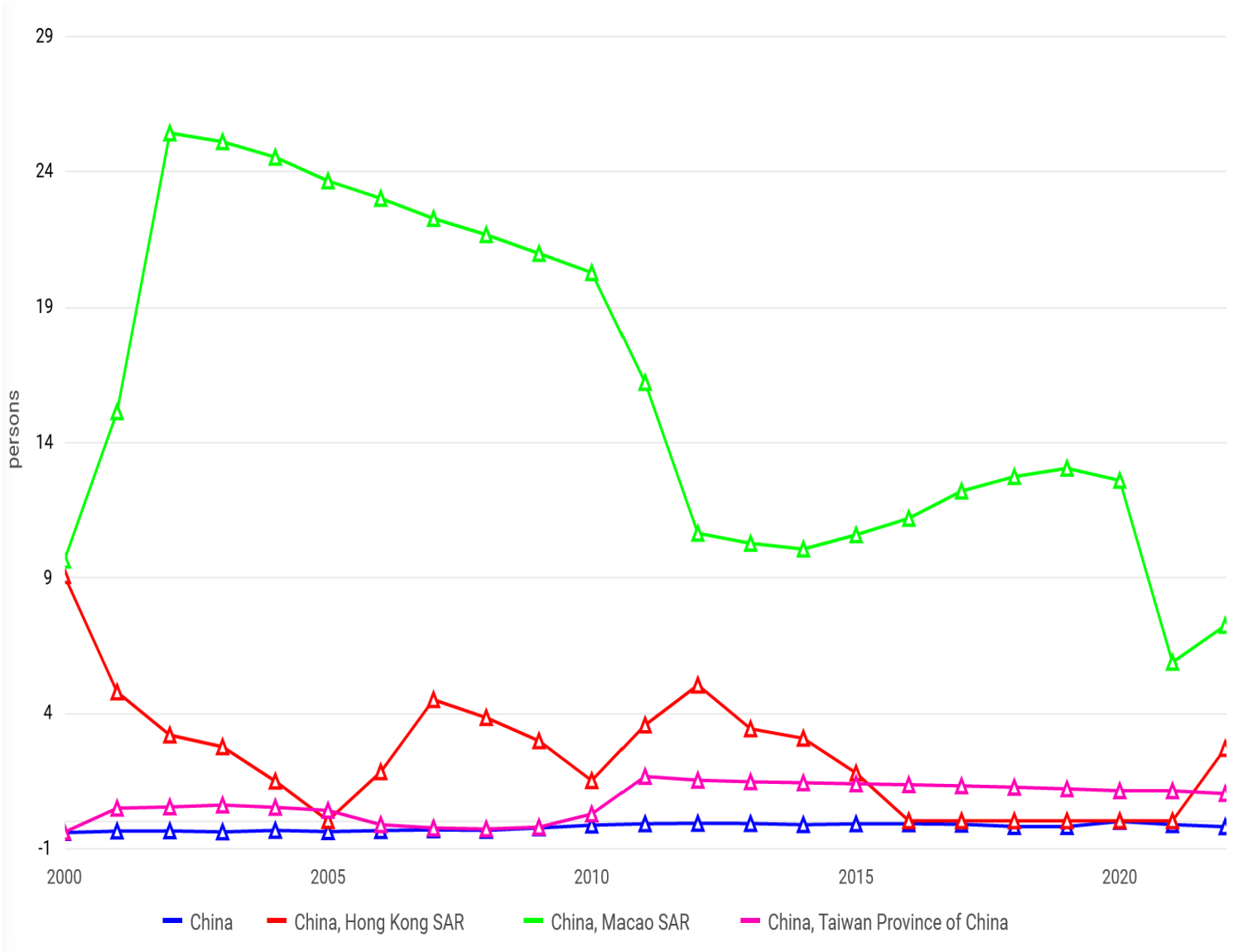
Source: United Nations, DESA, Population Division, 2022.

Under-five mortality rate (U5MR), (both sexes) 2000-2022



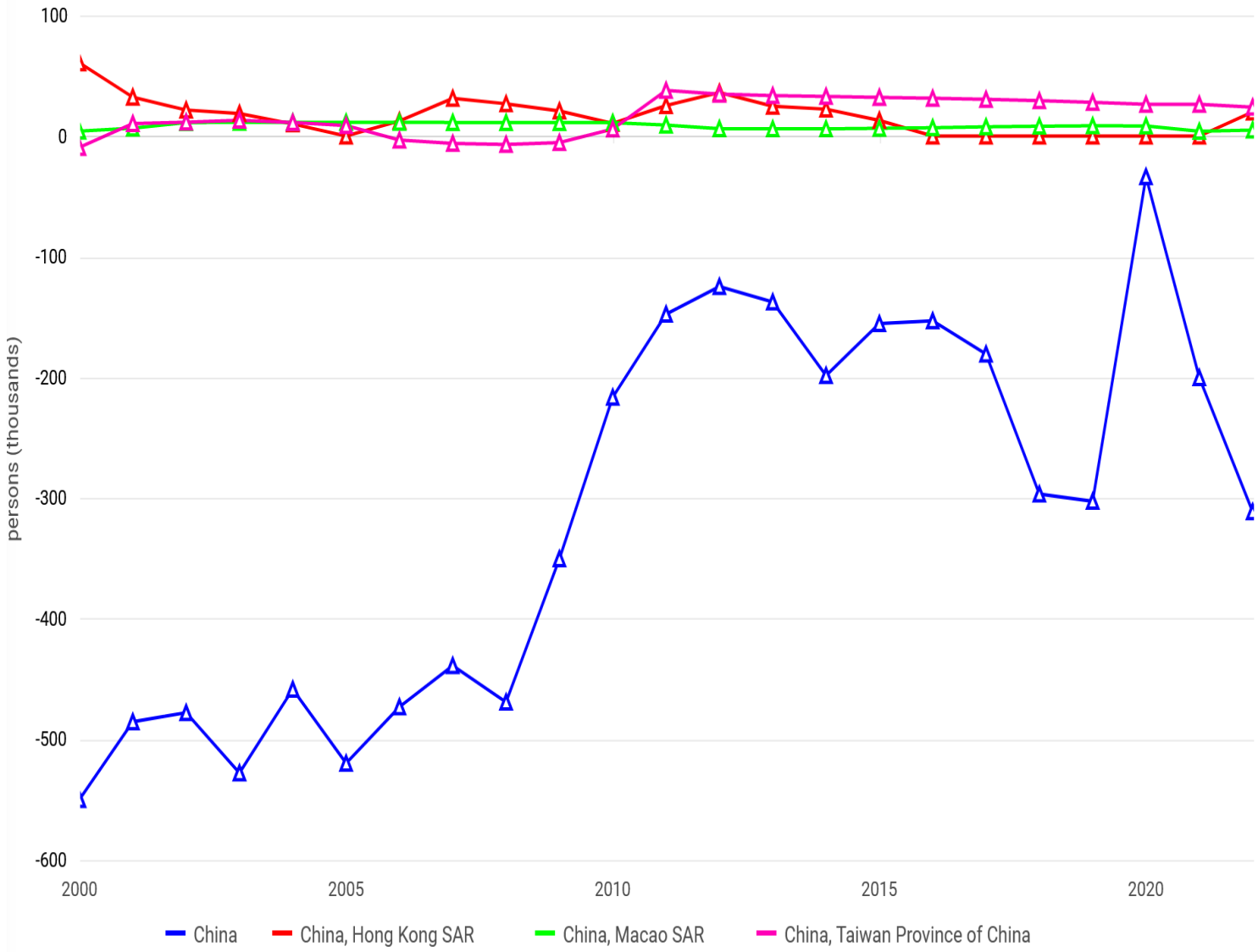
Source: United Nations, DESA, Population Division, 2022.

Crude rate of net migration, (both sexes) 2000-2022



Source: United Nations, DESA, Population Division, 2022.

Total net-migration, (both sexes) 2000-2022



Source: United Nations, DESA, Population Division, 2022.

References

Shanghai Academy of Social Sciences (2022a). China's Population and Projections. Date Accessed: 2 December 2022. Available at: https://english.sass.org.cn/

Shanghai Academy of Social Sciences (2022b). China Working-age Population, 65+ Population. Date Accessed: 2 December 2022. Available at: https://english.sass.org.cn/

Sydney Business Insides (2022). China's Baby Bust Will Change the World. Date Accessed: 2 December 2022. Available at: https://sbi.sydney.edu.au/chinas-baby-bust-will-change-the-world/

The World Bank (2022). World Development Indicators: Population Dynamics. Date Accessed: 2 December 2022. Available at: http://wdi.worldbank.org/table/2.1#

United Nations, DESA, Population Division (2022). World Population Prospects 2022. Date Accessed: 2 December 2022. Available at: http://population.un.org/wpp/

World Economic Forum (2022). China's Population is About to Shrink for the First Time Since the Great Famine Struck 60 Years Ago: Here's What That Means for the World. Date Accessed: 2 December 2022. Available at: https://www.weforum.org/agenda/2022/07/china-population-shrink-60-years-world/

Author Biography

Dr. Armando Aliu holds an MA degree from the University of Hamburg and a Ph.D. degree from Istanbul Commerce University. During 2011-2014, Dr. Aliu was a DAAD Visiting and Postgraduate Scholar at Heidelberg University and an investigator at the Max-Planck-Institute for Comparative Public Law and International Law (Heidelberg, Germany). In 2017, he was a Visiting Study Fellow in the Department of International Development, IMI at the University of Oxford. In 2021, he was International Consultant (EU Fellowship) and Postdoctoral Researcher at the United Nations International Organization for Migration (UN-IOM) in Geneva (Switzerland). He currently works as Assistant Professor in the Faculty of the International and Political Studies, CISAD at the Jagiellonian University in Kraków (Poland).