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# Sustainability Challenges of Entering Population Decline at Low Income Levels: A Cross-Country Comparative Analysis

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# Sustainability Challenges of Entering Population Decline at Low Income Levels: A Cross-Country Comparative Analysis

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## Abstract

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# 1. Introduction

Demographic dynamics are a critical factor that must be considered in virtually all economic and social issues. Accordingly, population trends have long been the subject of extensive academic and policy-oriented inquiry (Bloom and Canning 2004, Lee 2002, Mason et al 2022, Myrskylä et al 2009), with population growth and decline attracting particular attention (Lutz et al 2014, Lee and Mason 2011). The United Nations Department of Economic and Social Affairs, Population Division, regularly updates its estimates and projections of population size not only for the world as a whole, but also for major regions and individual countries.

One of the key indicators of population growth or decline is the total fertility rate (TFR), which is defined according to World Development Indicators of the World Bank as follows: "Total fertility rate represents the number of children that would be born to a woman if she were to live to the end of her childbearing years and bear children in accordance with age-specific fertility rates of the specified year." When a country's TFR falls below 2.1, its population is expected to enter a phase of natural decline in the absence of substantial immigration. This threshold is widely known as replacement-level fertility. Today, many high-income and upper-middle-income countries have already experienced a drop in TFR below this level, and many lower-income countries are projected to follow the same path in the coming decades. Figure 1 shows the trend of TFR by income group, which is explained later in detail. TFR of high-income economies has been below 2.1 since 1975, and has never risen above 2.1 since then. The TFR of upper middle-income economies has also been below 2.1 since 1996 to the present. The TFRs of lower middle-income and low-income economies remain above 2.1, but they exhibit clear declining trends and are approaching 2.1. This raises a natural question: At what stage of economic development does a country tend to experience the onset of below-replacement fertility? The objective of this study is to identify the level of economic development at which each country recorded a TFR below 2.1, and to compare these thresholds across income groups. By quantifying the discrepancy in economic standards at this demographic turning point, this study aims to highlight the risk of "getting old before getting rich" for today's developing economies. This is followed by a discussion of the observed pattern, its causes, and its plausible consequences for sustainable development.

Countries where TFR still exceeds 2.1 are excluded from the analysis. However, by comparing the levels of economic development at which countries have already fallen below this threshold, it becomes possible to explore potential causes of fertility decline, the speed at which countries transition to below-replacement fertility, and the challenges they may face in the future.

It is well established that the demographic transition in developing regions is occurring at a faster pace and often at lower levels of income compared to the historical experience of developed nations (Bloom & Canning, 2004; Bongaarts, 2017). Furthermore, research emphasizing human capital has demonstrated that fertility decline can proceed even without substantial economic growth, driven largely by improvements in education (Lutz & KC, 2011). However, while these trends are recognized, the literature lacks a systematic quantitative assessment specifically focusing on the economic threshold at which the critical replacement level (TFR of 2.1) is crossed. To my knowledge, no previous study has utilized a comprehensive dataset to visualize the specific GDP per capita at this turning point, nor has any study measured the magnitude of the economic discrepancy between early-industrialized countries and today's

developing economies.

The remainder of this paper is organized as follows. Section 2 describes the data and methodology. Section 3 presents the main findings. Section 4 discusses the potential mechanisms behind the observed trends and their future implications. Finally, Section 5 concludes.

## 2. Methods

I collected information on the very first year in which the TFR fell below 2.1 (hereafter, the "first year"), as well as the most recent year, observed from the perspective of 2023, in which the TFR dropped below 2.1 (hereafter, the "latest year"). Then, I collected information on the level of economic development in the corresponding years. The data on TFR were obtained from World Development Indicators of the World Bank.[1] The data are available from 1960 to 2023. In some countries, the TFR never rose above 2.1 after it dropped below 2.1. In such cases, the first and latest years when a country had a TFR below 2.1 are the same. Meanwhile, in other countries, the TFR fell below 2.1 but then rose above it again, only to fall below 2.1 again. In these cases, the first and latest years when a country had TFR below 2.1 are different.

As a proxy for the level of economic development, I use the expenditure-side real GDP at chained purchasing-power parities (PPPs) for the United States dollar (USD) in 2017 and divide it by the population in the corresponding year to construct PPP-adjusted GDP per capita. These data were obtained from Penn World Table ver. 10.01.[2] Data are available from 1950 (but not all countries and regions) to 2019. This allows us to compare the economic level of different countries at different years. For instance, I can compare China's economic level today compared with that of the US at some point in the past. Although PPP-adjusted GDP data are available for earlier years compared with TFR data, they are only available up to 2019 at present. Therefore, when the year in which the TFR fell below 2.1 was after 2020, the PPP-adjusted GDP value for 2019 was used.

There are no standard classification criteria of countries based on PPP-adjusted GDP. As an alternative, I use the income group classification (four categories) based on gross national income (GNI) per capita used by the World Bank. Specifically, I use World Bank Group income classifications for fiscal year 2026.[3] Low-income economies (25 countries/regions) are defined as those with a GNI per capita of USD 1,135 or less in 2024; lower middle-income economies (50 countries/regions) are those with a GNI per capita between USD 1,136 and 4,495; upper middle-income economies (54 countries/regions) are those with a GNI per capita between USD 4,496 and 13,935; and high-income economies (87 countries/regions) are those with a GNI per capita of more than USD 13,935.

I first identify the "first year" and "latest year" for each country, then find the corresponding PPP-adjusted GDP per capita of the year. I find 87 pairs (i.e., 87 countries/regions) of the "first year" and corresponding PPP-adjusted GDP level, and 90

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[1] https://databank.worldbank.org/source/world-development-indicators (last accessed July 30, 2025). The note on total fertility explains that the data sources are World Population Prospects, United Nations (UN), publisher: UN Population Division; Statistical databases and publications from national statistical offices, National statistical offices; Demographic Statistics, Eurostat (ESTAT).

[2] https://www.rug.nl/ggdc/productivity/pwt/ (last accessed July 30, 2025).

[3] https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups (last accessed July 30, 2025).

pairs of the "latest year" and corresponding PPP-adjusted GDP level. The reason why the former number (87) is smaller than the latter (90) is because the PPP-adjusted GDP is not available for some countries and regions in the earlier years. However, there are two countries (Kazakhstan and Mongolia) where the TFR dropped below 2.1 before rising and staying above 2.1 in 2023.

## 3. Results

The results are summarized in three tables. Table 1 shows the list of countries by the income groups explained in the previous section, whose TFR fell below 2.1 before 2023, the latest year available in the data. In addition, the table records the first and latest year when the TFR fell below 2.1, and the corresponding PPP-adjusted GDP per capita of the same year. Note that Table 1 lists only countries/regions with a TFR below 2.1 for which GDP data are available, while countries/regions with a TFR below 2.1 for which GDP data are not available are listed in Table 2.

If the first and latest year are the same, it means that the country's TFR fell below 2.1 that year and has never risen above 2.1 since, implying that the country is in a sustained phase of population decline. If the first and latest year are different, it means that the country experienced some years with a TFR above 2.1 between those years, but the TFR eventually fell below 2.1 again in the "latest" year and it did not rise above 2.1 before 2023. The data for the latest years are missing for only two countries, Kazakhstan and Mongolia, suggesting that these two countries' TFR was still above 2.1 in 2023, although they had a TFR below 2.1 in the past.

Among the 56 high-income countries/regions, 18 experienced some years with a TFR above 2.1 between the first and latest years. However, most countries/regions (except Bahrain, Curaçao, Kuwait, and Seychelles) have been in long-lasting population decline phases—lasting more than ten years—when observed from the perspective of 2023. Meanwhile, the TFRs of some European countries (Austria, Belgium, Denmark, Finland, Germany, Luxembourg, Netherlands, Switzerland, United Kingdom), Canada, and Japan have been below 2.1 for more than last 50 years.

Half (27) of the upper middle-income economies have already had a TFR below 2.1, a relatively recent phenomenon given that the TFRs of 19 of those 27 countries/regions fell below 2.1 in this century.

Only seven of the 50 lower middle-income economies have seen their TFR drop below 2.1; in all cases, this took place after 2010. The TFR of Tunisia and Vietnam fell below 2.1 in the 1990s (1999 and 1998, respectively) for the first time since 1960, and then rose above 2.1 before dropping below 2.1 again in 2020 and 2016, respectively. As might be expected, the TFR has not fallen below 2.1 in any of the low-income economies for which the corresponding PPP-adjusted GDP are available.

One very notable finding is the difference in economic levels by income group when the TFR dropped below 2.1 (Table 1). Looking at the mean PPP-adjusted GDP per capita for the "latest year," the TFR of a typical high-income country/region fell below 2.1 at the economic level of USD 26,218 per capita. This number is USD 10,743 for a typical upper middle-income country/region, and USD 7,369 for a typical lower middle-income country/region. These differences in the level of economic development when the TFR dropped below 2.1 suggest that countries with low-income levels today have reached their population replacement level at a lower stage of economic development compared with countries with high income levels today. This pattern qualitatively does not change

when looking at the median of GDP per capita. The median GDP per capita for a typical high-income country/region for the "latest year" is USD 18,374, while that for a typical upper middle (lower)-income country/region is USD 9,263 (USD 8,205). Note that comparing across different countries in different years is valid because I use PPP-adjusted GDP per capita for this comparison.

Table 2 shows the list of countries, by income groups, whose TFR fell below 2.1 before 2023, although their PPP-adjusted GDP data are not available. One concern against my claim that countries with low-income levels today have reached their population replacement level at a lower stage of economic development compared with countries with high income levels today is that those countries/regions who have already seen their TFR drop below 2.1, but do not have GDP data available, might lead to sample selection bias. However, 14 of the 19 high-income economies are either located in western Europe or are self-governing territories of western European countries or the U.S. Therefore, the economic levels of these countries can be considered comparable to those of high-income countries, making sample selection bias less likely. Next, among the seven upper middle-income economies listed in Table 2, four are the countries of the former Yugoslavia; the TFRs of two former Soviet bloc countries, Belarus and Ukraine, had fallen below 2.1 before independence from the Soviet Union in 1991; and the last country is Cuba. Therefore, it is considered that the economic level at which the TFR in these countries fell below 2.1 was significantly lower than that of high-income countries/regions, making sample selection bias unlikely. There are no lower-income countries/regions in Table 2, and the Democratic People's Republic of Korea is the only country among the low-income countries/regions to have a TFR that has already fallen below 2.1.

Table 3 lists the countries/regions, by income groups, whose TFR was still above 2.1 in 2023, the most recent year for which TFR data are available, and the TFR for 2023. These countries/regions are largely beyond the scope of the present analysis, but there are some points worth noting. First, the TFRs of several populous countries were nearly down to 2.1 in 2023: Indonesia (2.13), South Africa (2.22), Bangladesh (2.16), Morocco (2.23), and Myanmar (2.12).[4] Second, some populous countries still had a high TFR but were all either lower middle-income economies (Pakistan, Nigeria, Egypt, Tanzania, Kenya) or low-income economies (Democratic Republic of the Congo and Sudan).[5] Third, the TFRs of the listed lower middle-income economies and low-income economies are still high on average. The simple geometric mean of TFR in 2023 is 3.29 for the lower middle-income economies and 4.55 for the low-income economies. However, I note that the TFRs of these two income groups are much lower in 2023 than in the past (See Figure 1).

## 4. Discussion

### 4.1 What are the causes of the observed pattern?

The key finding of this article is that countries with lower current income levels

[4] All countries mentioned here are within the top 30 in the world by population except Morocco. The data source is World Population Prospects 2024, United Nations (UN) https://population.un.org/wpp/ (last accessed August 25, 2025).

[5] All countries mentioned here are within top 30 in the world by population. The data source is World Population Prospects 2024, United Nations (UN) https://population.un.org/wpp/ (last accessed August 25, 2025).

tend to reach their population replacement level at an earlier stage of economic development. Considering the availability of PPP-adjusted GDP data, this finding is unlikely to be driven by the sample selection. In addition, several populous countries' TFRs are trending down toward 2.1, which might make this found pattern much clearer. Although there are still many countries/regions (especially in Africa) with a high TFR, the sharp declining trend in TFR among lower middle-income and the low-income economies does not contradict my finding.

A natural question arises: What are the causes of this pattern? Here, I discuss several possible causes, among which there might be some interplay.

First, education induces the re-optimization of fertility decisions through increased opportunity costs and greater bargaining power of women. Theoretically, education raises women's marginal returns in the labor market, thereby increasing the opportunity costs of time devoted to childbearing and childcare (Becker, 1960, 1993). At the same time, education improves women's outside options (threat points), strengthening their bargaining power within households and thus their influence on fertility decisions (Manser and Brown, 1980; McElroy and Horney, 1981; Browning and Chiappori, 1998; Lundberg and Pollak, 1993). Empirically, exogenous expansions of schooling opportunities have been shown to delay childbearing and reduce fertility (Duflo 2001, Osili and Long 2008, Black et al. 2008). Furthermore, even modest interventions such as providing labor market information to young women have been shown experimentally to raise educational attainment, increase employment aspirations, and delay marriage and fertility (Jensen, 2012). These effects occurring in a compressed timeframe help to explain why decline in TFR has been faster in low- and middle-income countries. Figure 2 shows the rapid increase in school enrollment rates for middle and low-income groups at both the primary and secondary level for both boys and girls in the past 50 years.

Second, the rapid decline in child mortality eliminated the need for "high fertility as survival insurance." In traditional "high-mortality, high-fertility" contexts, high child mortality created incentives for couples to have many children as a form of insurance. Health system expansion, immunization, and maternal and child health programs rapidly reduced child mortality, thereby weakening the rationale for high fertility (Cutler et al. 2006; Gakidou et al. 2010). Figure 3 shows the rapid decline in both infant and under-five mortality for middle and low-income groups over the past 30 years. In addition, access to family planning and contraception reduced unintended pregnancies and reshaped the timing of marriage and fertility (Ashraf et al. 2014; Miller, 2010; Cleland et al. 2006). Figure 4 shows the prevalence of using any modern contraceptive method among women aged 15 to 49 years. The prevalence rate of upper middle-income economies is higher than that of high-income economies, and it has been rapidly increasing in lower middle-income and low-income economies. Importantly, education and health improvements have had synergistic effects; in Indonesia, increased female education contributed to reductions in both fertility and infant mortality (Breierova and Duflo, 2004).

Third, low- and middle-income economies, especially upper middle economies, have experienced rapid urbanization since the 1990s (see Figure 5). In urban areas, the fixed costs of housing, education, and healthcare are higher, raising the relative cost of child quantity compared with child quality (Jedwab et al. 2017; Montgomery 2008). Nuclear family structures and limited housing space have further reduced the feasibility of high fertility, and urban residents have consistently exhibited lower fertility compared

with rural populations (Brockerhoff 1995). Moreover, cities serve as hubs for the rapid diffusion of family planning, education, and women's employment norms (Bongaarts and Watkins 1996; Montgomery 2008), amplifying the effects of education and health improvements.

Fourth, policies, technologies, and norms were directly transferred through international aid—particularly official development assistance (ODA)—and global markets, facilitating the early adoption and diffusion of best practices in family planning and educational investment (Cleland et al. 2006). In particular, Figure 6 shows the international aid for health and population policies/programs and reproductive health from donor countries belonging to the Organisation for Economic Co-operation and Development's Development Assistance Committee have been steadily increasing.

As a consequence of the causes discussed above, compared with high-income economies, low- and middle-income economies have been able to implement best practices in education and health at an earlier stage, under the influence of international assistance and global markets while simultaneously experiencing rapid urbanization. This combination helps explain why the TFR of many middle-income economies has fallen below 2.1 at much lower economic levels compared with the historical experience of high-income economies.

### 4.2 What are the plausible consequences in the future?

The most immediate and critical consequence of the observed discrepancy is the risk of "getting old before getting rich" (Ogawa et al., 2021). Unlike early-industrialized nations that accumulated sufficient physical and human capital before facing population aging, today's low- and middle-income countries are entering the phase of fertility decline at much lower income levels. This phenomenon implies that the "window of opportunity" to harvest the demographic dividend is closing much faster than historically expected (Lee & Mason, 2006; Jones 2022). If potential growth rates decline at these lower income levels, economic catch-up with high-income economies will proceed more slowly, or in some cases may never be achieved. In a related discussion, Fujiwara and Matsuyama (2024) present a theoretical model explaining the phenomenon whereby developing countries reach the peak of their manufacturing share at lower income levels. This suggests that these economies face the dual challenges of "premature deindustrialization" and "premature aging" simultaneously.

Moreover, entering a phase of population decline at low levels of economic development implies that economic and political institutions, as well as social security systems, are likely to remain underdeveloped. The bidirectional relationship between economic development and institutions (North et al. 2009; Acemoglu and Robinson 2006; Acemoglu et al. 2014) has been extensively discussed. Thus, it is of great concern that population decline occurs while institutional frameworks remain fragile. Specifically, the fiscal sustainability of social security becomes precarious. As the share of the working-age population begins to shrink, the tax base required to support pension and healthcare systems will narrow before it has sufficiently expanded (Clements et al., 2015; World Bank, 2024). Consequently, the burden of care may fall disproportionately on families, potentially hindering further female labor participation and creating a vicious cycle of poverty.

Finally, from the perspective of sustainable development, these findings present a complex trade-off. While a decline in population growth may arguably reduce

environmental pressures and contribute to planetary boundaries (O'Neill et al., 2018), "premature" fertility decline without economic maturity threatens social sustainability (SDG 1 and SDG 8). While the World Bank (2025) points out that population aging poses serious challenges to the sustainability of social protection systems, little has been written about how this specific "low-income onset" of depopulation challenges the overall resilience of developing societies. Therefore, development strategies must shift from simple population control to building resilient social systems that can sustain human well-being even in the face of demographic headwinds.

## 5. Conclusion

The evidence presented in this study reveals a critical demographic reality: low-income economies are likely to enter a phase of natural population decline at much earlier stages of development than their high-income predecessors. This implies that the "getting old before getting rich" phenomenon will become a widespread challenge for the Global South.

Although it remains uncertain exactly when low-income economies will fall below the replacement level, the trajectory of middle-income economies strongly suggests this outcome is inevitable. Unlike high-income countries that had ample time and resources to prepare, these countries face the dual challenge of "premature aging" and "fragile institutions" with limited fiscal space. Further importantly, even high-income economies with decades of policy intervention have struggled to halt or reverse population decline.

Consequently, the international development agenda must urgently shift. Rather than focusing solely on fertility reduction, policy responses must acknowledge demographic decline as a likely near-term reality. The priority should transition toward building resilient social security systems and labor markets that can sustain human well-being even in the face of demographic headwinds. Advancing rigorous research on such "adaptation strategies" is essential not only for the future of these economies but for the sustainable development of humanity as a whole.

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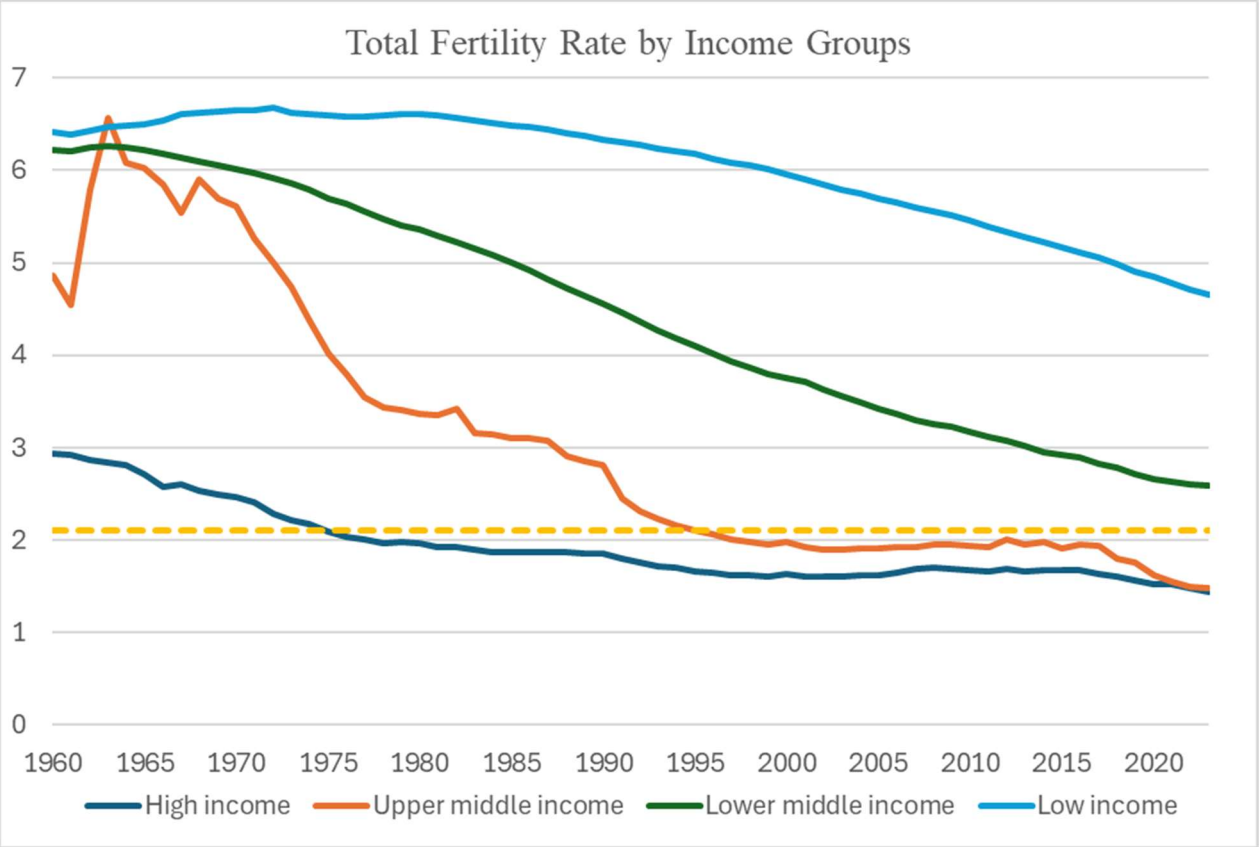
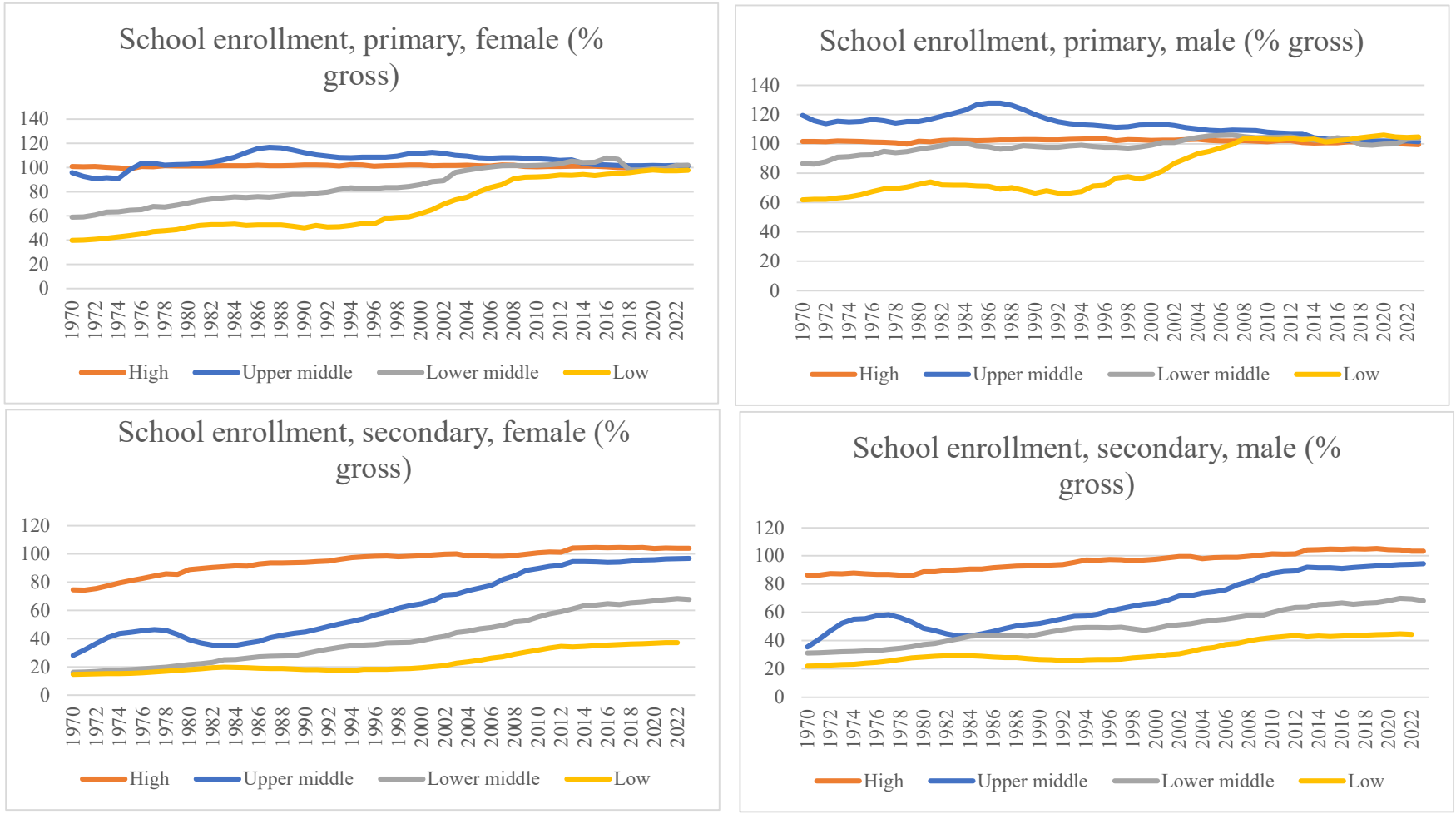
**Figure 1: Total Fertility Rate by Income Group**



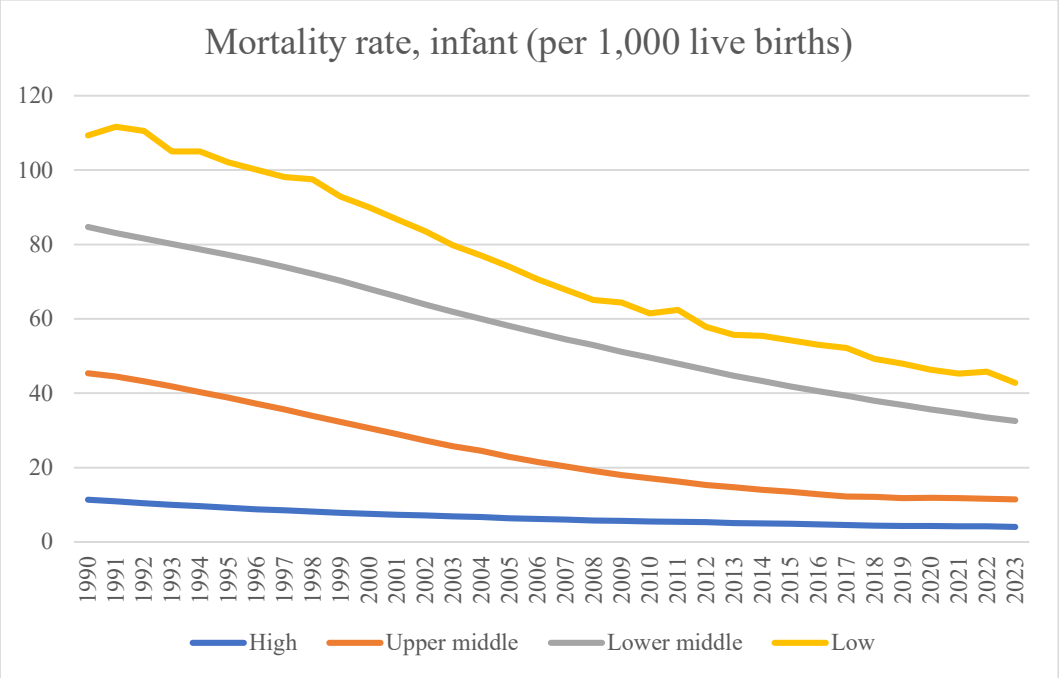

Data source: World Development Indicators (https://databank.worldbank.org/source/world-development-indicators: last accessed August 29, 2025)

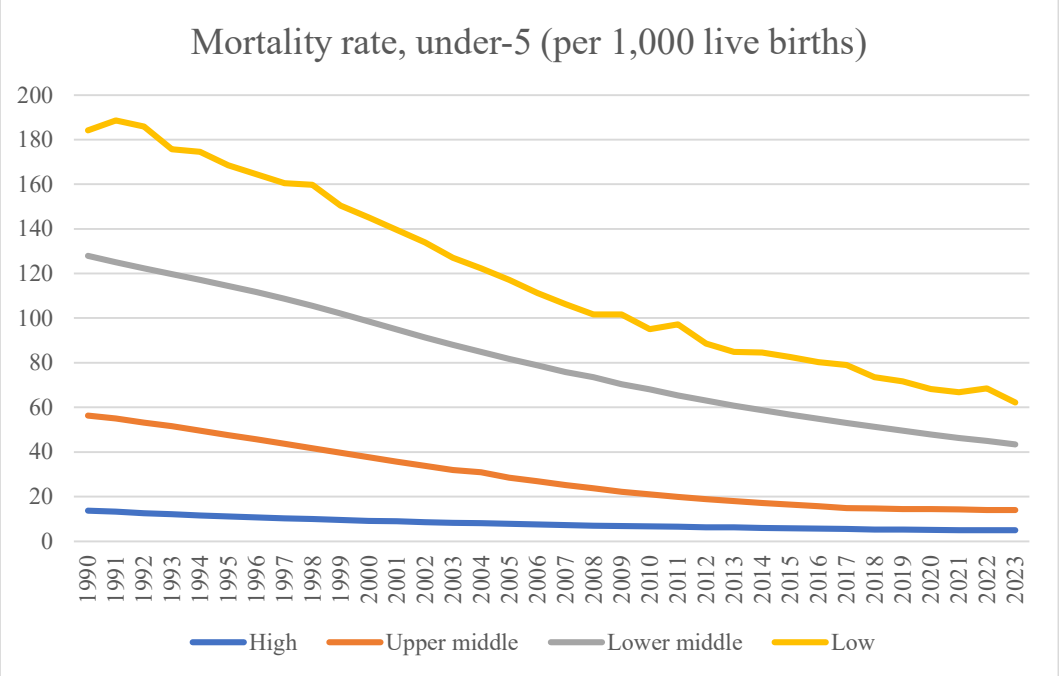
**Figure 2: School Enrollment Rate by Income Group**




Data source: World Development Indicators
(https://databank.worldbank.org/source/world-development-indicators: last accessed August 29, 2025)

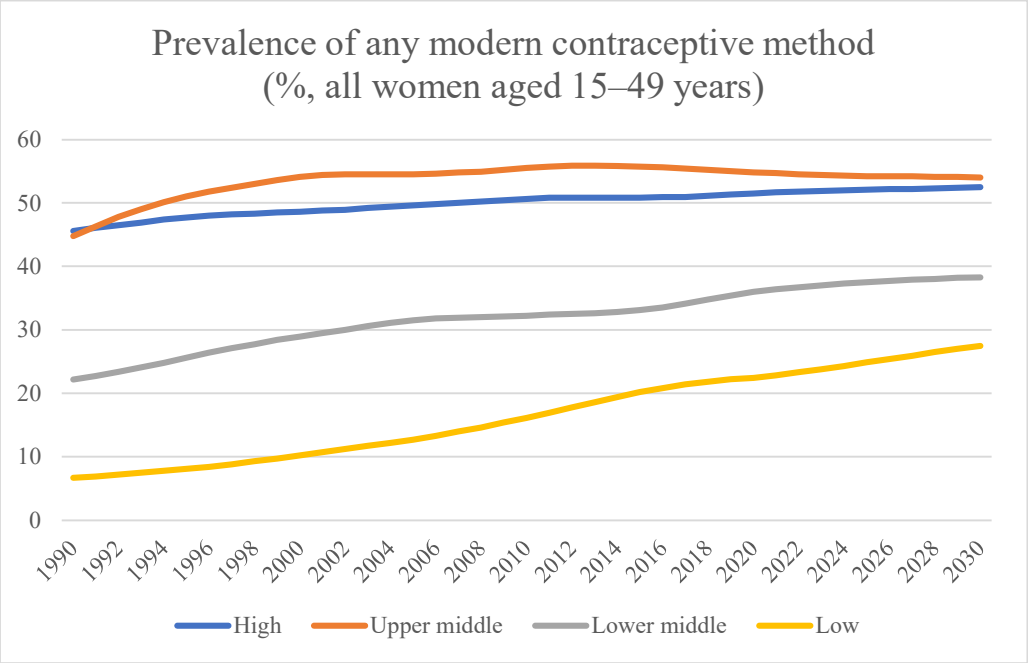
**Figure 3: Infant and Under-5 Mortality Rate by Income Group**



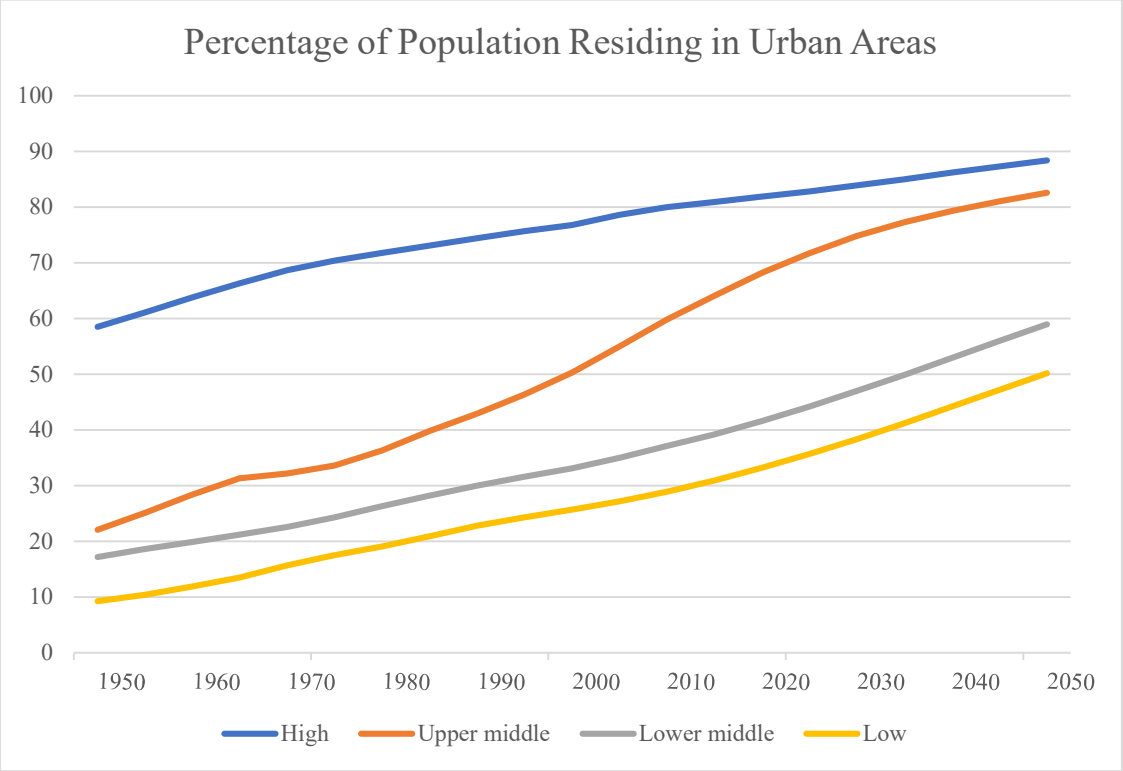

Data source: World Development Indicators (https://databank.worldbank.org/source/world-development-indicators: last accessed August 29, 2025)

**Figure 4: Prevalence of Any Modern Contraceptive Method by Income Groups (%, all women aged 15–49 years)**



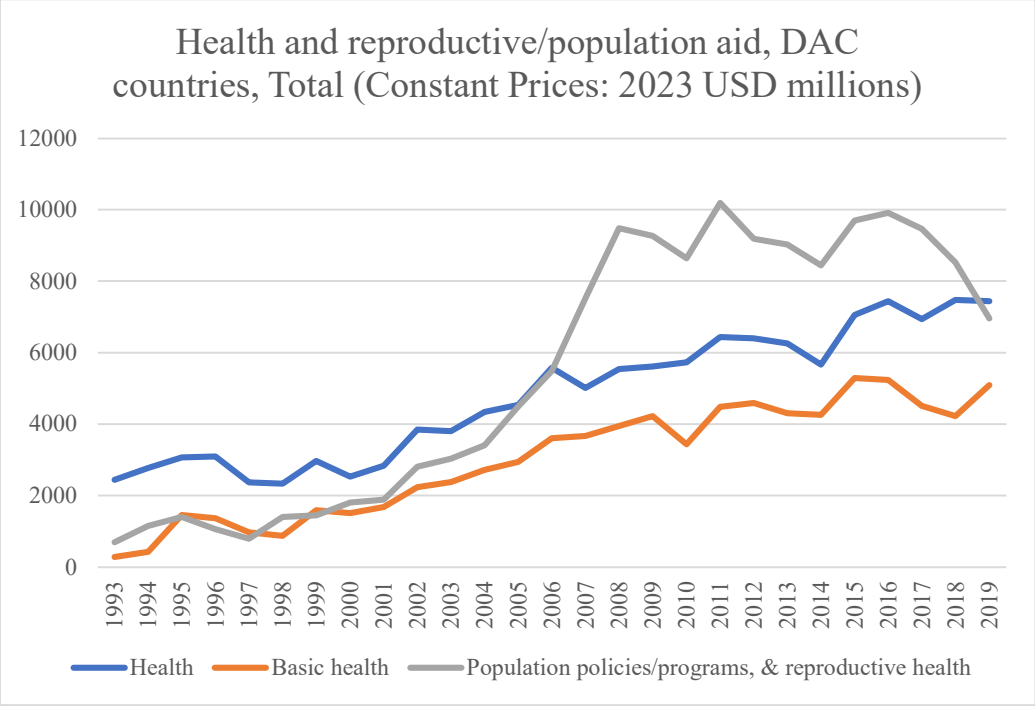

Data source: Family Planning Data, Population Division, United Nations (https://www.un.org/development/desa/pd/data/family-planning-data: last accessed August 29, 2025)

**Figure 5: Percentage of Population Residing in Urban Areas**




Data source: World Urbanisation Prospects 2018, Population Division, United Nations (https://population.un.org/wup/downloads: last accessed August 29, 2025)

**Figure 6: International Aid for Health and Population Policies/Programs and Reproductive Health from Donor Countries Belonging to the Development Assistance Committee**




Data source: OECD Data Explorer (Official Development Assistance (ODA)) by sector and provider) (https://data-explorer.oecd.org/: : last accessed August 29, 2025)

**Table 1: First and latest year when the total fertility rate fell below 2.1 and the corresponding GDP per capita**

| HIGH-INCOME ECONOMIES ($13,935 OR MORE) | | | | |
|---|---|---|---|---|
| Country name | (A) | (B) | (C) | (D) |
| Antigua and Barbuda | 1982 | 9,389 | 2001 | 16,410 |
| Aruba | 1998 | 45,744 | 1998 | 45,744 |
| Australia | 1976 | 22,139 | 1976 | 22,139 |
| Austria | 1972 | 16,505 | 1972 | 16,505 |
| Bahamas, The | 2000 | 38,724 | 2000 | 38,724 |
| Bahrain | 2009 | 44,161 | 2016 | 45,642 |
| Barbados | 1978 | 12,860 | 1978 | 12,860 |
| Belgium | 1972 | 18,860 | 1972 | 18,860 |
| Bermuda | 1974 | 22,519 | 1974 | 22,519 |
| British Virgin Islands | 1984 | 8,497 | 1984 | 8,497 |
| Brunei Darussalam | 2005 | 78,708 | 2005 | 78,708 |
| Canada | 1972 | 22,065 | 1972 | 22,065 |
| Cayman Islands | 1982 | 54,425 | 1982 | 54,425 |
| Chile | 1999 | 11,733 | 1999 | 11,733 |
| Costa Rica | 2003 | 11,137 | 2003 | 11,137 |
| Curacao | 2004 | 29,844 | 2014 | 25,543 |
| Cyprus | 1977 | 10,023 | 1995 | 24,886 |
| Denmark | 1969 | 21,000 | 1969 | 21,000 |
| Estonia | 1960 | N.A. | 1990 | 11,346 |
| Finland | 1969 | 14,941 | 1969 | 14,941 |
| France | 1975 | 21,160 | 1975 | 21,160 |
| Germany | 1970 | 16,183 | 1970 | 16,183 |
| Greece | 1981 | 15,189 | 1981 | 15,189 |
| Hong Kong SAR, China | 1980 | 16,538 | 1980 | 16,538 |
| Hungary | 1960 | N.A. | 1978 | 9,708 |
| Iceland | 1984 | 30,591 | 2011 | 44,159 |
| Ireland | 1989 | 18,316 | 1991 | 19,895 |
| Italy | 1976 | 17,220 | 1976 | 17,220 |
| Japan | 1960 | 5,821 | 1974 | 16,180 |
| Korea, Rep. | 1983 | 6,359 | 1983 | 6,359 |
| Kuwait | 2010 | 71,193 | 2021 | 55,943* |
| Latvia | 1960 | N.A. | 1989 | 10,537 |
| Luxembourg | 1969 | 25,987 | 1969 | 25,987 |
| Macao SAR, China | 1970 | 7,160 | 1987 | 22,790 |
| Malta | 1969 | N.A. | 1990 | 14,791 |
| Netherlands | 1973 | 22,310 | 1973 | 22,310 |
| New Zealand | 1978 | 18,426 | 2013 | 36,736 |
| Norway | 1975 | 21,245 | 1975 | 21,245 |
| Poland | 1989 | 9,862 | 1989 | 9,862 |
| Portugal | 1982 | 10,803 | 1982 | 10,803 |
| Qatar | 2011 | 166,520 | 2011 | 166,520 |
| Romania | 1962 | 1,822 | 1990 | 7,755 |
| Russian Federation | 1967 | N.A. | 1989 | 16,294 |
| Seychelles | 1998 | 22,381 | 2022 | 31,039* |

| | | | | |
|---|---|---|---|---|
| Singapore | 1975 | 8,566 | 1975 | 8,566 |
| Slovak Republic | 1989 | 18,903 | 1989 | 18,903 |
| Spain | 1981 | 14,883 | 1981 | 14,883 |
| St. Kitts and Nevis | 2001 | 14,916 | 2001 | 14,916 |
| Sweden | 1968 | 19,251 | 1992 | 29,397 |
| Switzerland | 1971 | 32,508 | 1971 | 32,508 |
| Trinidad and Tobago | 1994 | 10,458 | 1994 | 10,458 |
| Turks and Caicos Islands | 2006 | 25,915 | 2006 | 25,915 |
| United Arab Emirates | 2006 | 105,325 | 2006 | 105,325 |
| United Kingdom | 1973 | 17,888 | 1973 | 17,888 |
| United States | 1972 | 27,130 | 2008 | 54,421 |
| Uruguay | 2004 | 10,673 | 2004 | 10,673 |
| Mean of GDP per capita | | 25,976 | | 26,218 |
| Median of GDP per capita | | 18,426 | | 18,374 |
| # of countries | | 51 | | 54 |

**UPPER-MIDDLE-INCOME ECONOMIES ($4,496 TO $13,935)**

| Country name | (A) | (B) | (C) | (D) |
|---|---|---|---|---|
| Albania | 2002 | 5,247 | 2002 | 5,247 |
| Argentina | 2018 | 23,125 | 2018 | 23,125 |
| Armenia | 1994 | 2,762 | 1994 | 2,762 |
| Azerbaijan | 1996 | 2,445 | 1996 | 2,445 |
| Belize | 2020 | 6,868 | 2020 | 6,868* |
| Brazil | 2002 | 9,224 | 2002 | 9,224 |
| Cabo Verde | 2013 | 6,283 | 2013 | 6,283 |
| China | 1991 | 2,577 | 1991 | 2,577 |
| Colombia | 2009 | 10,769 | 2009 | 10,769 |
| Dominica | 2003 | 8,695 | 2003 | 8,695 |
| Ecuador | 2019 | 11,238 | 2019 | 11,238 |
| El Salvador | 2015 | 7,663 | 2015 | 7,663 |
| Georgia | 1992 | 4,522 | 2018 | 13,328 |
| Grenada | 2009 | 11,028 | 2009 | 11,028 |
| Iran, Islamic Rep. | 1999 | 7,645 | 1999 | 7,645 |
| Jamaica | 2006 | 7,518 | 2006 | 7,518 |
| Kazakhstan | 1997 | 6,238 | --- | --- |
| Malaysia | 2013 | 24,159 | 2013 | 24,159 |
| Maldives | 2014 | 16,490 | 2014 | 16,490 |
| Mauritius | 1985 | 7,156 | 1997 | 15,250 |
| Mexico | 2016 | 19,311 | 2016 | 19,311 |
| Moldova | 1994 | 3,095 | 1994 | 3,095 |
| Mongolia | 2003 | 3,910 | --- | --- |
| North Macedonia | 1996 | 6,201 | 1996 | 6,201 |
| Peru | 2019 | 12,413 | 2019 | 12,413 |
| St. Lucia | 2002 | 9,301 | 2002 | 9,301 |
| St. Vincent and the Grenadines | 2004 | 9,268 | 2016 | 12,136 |
| Thailand | 1990 | 5,452 | 1990 | 5,452 |
| Turkiye | 2010 | 19,386 | 2017 | 25,972 |

| | | | | |
|---|---|---|---|---|
| Mean of GDP per capita | | 9,310 | | 10,743 |
| Median of GDP per capita | | 7,645 | | 9,263 |
| # of countries | | 29 | | 26 |

| **LOWER-MIDDLE INCOME ECONOMIES ($1,136 TO $4,495)** | | | | |
|---|---|---|---|---|
| Country name | (A) | (B) | (C) | (D) |
| Bhutan | 2012 | 8,364 | 2012 | 8,364 |
| India | 2020 | 6,547 | 2020 | 6,547* |
| Nepal | 2019 | 3,104 | 2019 | 3,104 |
| Philippines | 2020 | 8,205 | 2020 | 8,205* |
| Sri Lanka | 2015 | 11,580 | 2015 | 11,580 |
| Tunisia | 1999 | 8,708 | 2020 | 10,740* |
| Vietnam | 1998 | 2,075 | 2016 | 6,426 |
| Mean of GDP per capita | | 6,940 | | 7,369 |
| Median of GDP per capita | | 8,205 | | 8,205 |
| # of countries | | 7 | | 7 |

| **LOW-INCOME ECONOMIES ($1,135 OR LESS)** | | | | |
|---|---|---|---|---|
| Country name | (A) | (B) | (C) | (D) |
| No countries | | | | |

Note:

1: Each column shows the following:

(A) The first year when the total fertility rate (TFR) fell below 2.1 (defined as the "first year" in the text).

(B) Purchasing-power parity (PPP)-adjusted GDP per capita in the year (A)

(C) The first year, observed from the perspective of 2023, in which the TFR dropped below 2.1 (defined as the "latest year" in the text).

(D) PPP-adjusted GDP per capita in the year (C)

2: Income groups are defined based on the World Bank's income classifications for fiscal year 2026, which use Gross National Income (GNI).

3: "*" indicates that the PPP-adjusted GDP per capita for the corresponding year is not available because PPP-adjusted GDP data are available only up to 2019. Therefore, the PPP-adjusted GDP of 2019 is applied.

4: "N.A." indicates that the PPP-adjusted GDP per capita is not available for the corresponding year.

5: Column (C) (and (D)) are missing for Kazakhstan and Mongolia because the TFRs in 2023 are above 2.1 in 2023, the latest year for which data are available.

Data sources:

1: World Development Indicators (Total fertility rate)

2: Penn World Table ver. 10.01 (PPP-adjusted GDP per capita)

**Table 2: First and latest years TFR fell below 2.1 (GDP data not available)**

| HIGH-INCOME ECONOMIES ($13,935 OR MORE) | | | UPPER-MIDDLE-INCOME ECONOMIES ($4,496 TO $13,935) | | |
|---|---|---|---|---|---|
| Country name | (A) | (B) | Country name | (A) | (B) |
| Andorra | 1977 | 1977 | Belarus | 1977 | 1985 |
| Bulgaria | 1965 | 1980 | Bosnia and Herzegovina | 1978 | 1978 |
| Channel Islands | 1970 | 1970 | Cuba | 1978 | 1978 |
| Croatia | 1968 | 1968 | Kosovo | 2011 | 2011 |
| Czechia | 1960 | 1980 | Montenegro | 1986 | 1986 |
| Faroe Islands | 2022 | 2022 | Serbia | 1963 | 1963 |
| French Polynesia | 2011 | 2011 | Ukraine | 1964 | 1987 |
| Gibraltar | 2002 | 2002 | | | |
| Greenland | 1983 | 2012 | | | |
| Isle of Man | 1976 | 1976 | | | |
| Liechtenstein | 1970 | 1970 | | | |
| Lithuania | 1978 | 1988 | | | |
| Monaco | 1987 | … | | | |
| New Caledonia | 2015 | 2015 | | | |
| Palau | 1998 | 1998 | | | |
| Puerto Rico (US) | 1996 | 1996 | | | |
| San Marino | 1975 | 1975 | | | |
| Sint Maarten (Dutch part) | 1987 | 1999 | | | |
| Slovenia | 1981 | 1981 | | | |
| Virgin Islands (U.S.) | 2000 | 2016 | | | |

| LOWER-MIDDLE INCOME ECONOMIES ($1,136 TO $4,495) | | | LOW-INCOME ECONOMIES ($1,135 OR LESS) | | |
|---|---|---|---|---|---|
| Country name | (A) | (B) | Country name | (A) | (B) |
| No countries | | | Korea, Dem. People's Rep. | 1996 | 1996 |

Note:
1: Each column shows the following:
(A) The first year when the total fertility rate (TFR) fell below 2.1 (defined as the “first year” in the text).
(B) The first year, observed from the perspective of 2023, in which the TFR dropped below 2.1 (defined as the “latest year” in the text).

2: Income groups are defined based on the World Bank’s income classifications for fiscal year 2026, which use Gross National Income (GNI).

3: Column (B) is missing for Monaco because the TFR in 2023 is above 2.1 in 2023, the latest year for which data are available.
Data source: World Development Indicators

**Table 3: Countries with TFR above 2.1 in 2023**

| HIGH-INCOME ECONOMIES ($13,935 OR MORE) | | UPPER-MIDDLE-INCOME ECONOMIES ($4,496 TO $13,935) | | LOWER-MIDDLE INCOME ECONOMIES ($1,136 TO $4,495) | | LOW-INCOME ECONOMIES ($1,135 OR LESS) | |
|---|---|---|---|---|---|---|---|
| Country name | TFR | Country name | TFR | Country name | TFR | Country name | TFR |
| Guyana | 2.41 | Algeria | 2.77 | Angola | 5.12 | Afghanistan | 4.84 |
| Israel | 2.85 | Botswana | 2.73 | Bangladesh | 2.16 | Burkina Faso | 4.19 |
| Nauru | 3.33 | Dominican Republic | 2.24 | Benin | 4.56 | Burundi | 4.88 |
| Northern Mariana Islands | 2.35 | Equatorial Guinea | 4.08 | Bolivia | 2.55 | Central African Republic | 6.01 |
| Oman | 2.53 | Fiji | 2.28 | Cambodia | 2.58 | Chad | 6.12 |
| Panama | 2.12 | Gabon | 3.65 | Cameroon | 4.32 | Congo, Dem. Rep | 6.05 |
| Saudi Arabia | 2.28 | Guatemala | 2.31 | Comoros | 3.88 | Eritrea | 3.71 |
| St. Martin (French part) | 2.72 | Indonesia | 2.13 | Congo, Rep. | 4.16 | Gambia, The | 4.01 |
| | | Iraq | 3.25 | Côte d'Ivoire | 4.28 | Guinea-Bissau | 3.84 |
| | | Libya | 2.36 | Djibouti | 2.61 | Liberia | 3.95 |
| | | Marshall Islands | 2.92 | Egypt, Arab Rep. | 2.75 | Madagascar | 3.97 |
| | | Paraguay | 2.42 | Eswatini | 2.75 | Malawi | 3.65 |
| | | Samoa | 3.83 | Ghana | 3.40 | Mali | 5.61 |
| | | South Africa | 2.22 | Guinea | 4.22 | Mozambique | 4.76 |
| | | Suriname | 2.25 | Haiti | 2.66 | Niger | 6.06 |
| | | Tonga | 3.13 | Honduras | 2.50 | Rwanda | 3.70 |
| | | Turkmenistan | 2.69 | Jordan | 2.64 | Sierra Leone | 3.79 |
| | | Tuvalu | 3.21 | Kenya | 3.21 | Somalia | 6.13 |
| | | | | Kiribati | 3.15 | South Sudan | 3.86 |
| | | | | Kyrgyz Republic | 2.70 | Sudan | 4.32 |
| | | | | Lao PDR | 2.42 | Syrian Arab Republic | 2.71 |
| | | | | Lebanon | 2.24 | Togo | 4.19 |
| | | | | Lesotho | 2.69 | Uganda | 4.28 |
| | | | | Mauritania | 4.70 | Yemen, Rep. | 4.59 |

| | |
|---|---|
| Micronesia, Fed. Sts. | 2.75 |
| Morocco | 2.23 |
| Myanmar | 2.12 |
| Namibia | 3.21 |
| Nicaragua | 2.22 |
| Nigeria | 4.48 |
| Pakistan | 3.61 |
| Papua New Guinea | 3.10 |
| São Tomé and Principe | 3.64 |
| Senegal | 3.82 |
| Solomon Islands | 3.56 |
| Tajikistan | 3.07 |
| Tanzania | 4.61 |
| Timor-Leste | 2.71 |
| Uzbekistan | 3.50 |
| Vanuatu | 3.60 |
| West Bank and Gaza | 3.31 |
| Zambia | 4.10 |
| Zimbabwe | 3.72 |

Note:

1: The numbers next to the country names are the TFRs in 2023.

2: Income groups are defined based on the World Bank's income classifications for fiscal year 2026, which use Gross National Income (GNI).

Data source: World Development Indicators