

CHAPTER 1

POPULATION OF THE WORLD



DANIELA ARSENOVIĆ

Abstract

The world population passed 1 billion for the first time in history in the first half of the 19th century. Since then, the global population has continued to grow, and most regions and countries are experiencing rapid and broad demographic change. In 2022, the world population reached about 7.9 billion people, and according to the current projections developed by the United Nations, it could grow to approximately 9.7 billion in 2050. Until the middle of the 21st century, population growth rates will differ by region, and Central and Southeast Asia will be the most populated areas. A high increase in population is also expected to occur in sub-Saharan Africa, whereas Europe will reach a population peak during the 2030s, with the European population declining until 2050 owing to a low fertility level. With declines in fertility, the world's population is ageing. In 2018, the number of persons in the world aged 65 and over was higher than the number of children under five for the first time. All regions will experience ageing, with faster progress in developing countries than has historically been observed in developed regions. The projected trends in the world population are a common result of population momentum, future levels of fertility and mortality, and regional migration flows. The contribution of these components to future population trends will vary by region and country.

Keywords: demographic change, population growth, fertility, mortality, international migration

Daniela Arsenović (2024) 'Population of the World'. In: Tímea Barzó (ed.) *Demographic Challenges in Central Europe. Legal and Family Policy Response*, pp. 23–46. Miskolc–Budapest, Central European Academic Publishing.

https://doi.org/10.54237/profnet.2024.tbdecce_1

1. Introduction

As a result of changes in fertility and mortality trends, also known as ‘demographic transition’, the world has faced unprecedented population growth over the past 200 years. However, since the modern era, population trends have been more uncertain than in the past. Although the global population has been studied for decades, the economic, demographic, and social features of population trends, as well as their challenges and consequences, remain the subjects of much research today. One of the most meaningful studies is an article¹ by Malthus in 1798, in which he published his theory of population. Malthus’s theory predicted that global food production would increase at an arithmetic rate, while the population would rise at a geometric rate, meaning that in the absence of birth control, the population would double every 25 years.² Malthus failed to predict the Industrial Revolution, and most scholars use this as an argument to criticise his theory. However, ‘the crucial contribution of Malthus’s theory was not its pessimism about innovation but rather its prediction of the demographic consequences of technological change and the inevitable effect of population on the standard of living’.³ As the current world population is approximately 8 billion people, Malthus’s theory of population has become unreasonable. Nevertheless, this theory has been highly influential in economics in the context of investigating the consequences of population growth.⁴

The world’s regions are currently at different phases of demographic transition. This chapter summarises trends in population size, fertility, mortality, and international migration, aiming to contribute to a better understanding of global population changes. The beginning of the chapter presents historical trends in world population, followed by the demographic transitions throughout the 18th century, 19th century, and first half of the 20th century. Demographic changes during the second half of the 20th and beginning of the 21st century, as well as estimations for future periods, are also discussed.

2. Historical estimates of world population trends

Defining when humankind came into existence is a complex issue, and the estimations made by palaeontologists and anthropologists are diverse. According to current scientific evidence, the oldest hominins appeared around 7 million BCE,

1 Malthus, 1798.

2 Rahman, 2018, p. 14; Unat, 2020, p. 133.

3 Weir, 1991, p. 401.

4 Montano and Garcia-Lopez, 2020.

whereas the *Homo genus* appeared between 2 and 1.5 million BCE. The advent of modern man, *Homo sapiens sapiens*, dates back to around 190,000 BCE. In that period, population density was very low, and small groups of people lived in isolation, exploiting the environment by hunting and gathering wild food. Life expectancy varied between 15 and 17 years, and the crude birth and death rates were high, resulting in slow population growth. Around 8000 BCE, the world population numbered approximately 5 million. Until 1 CE, the annual growth rate was about 0.05%; by around 1 CE, the global population had grown to 300 million.⁵ Despite the fact that, due to a lack of data, information about the prehistory and early historic development of the human population is limited, it is known that changes in population growth shaped three demographic regions in the ancient world:⁶

- The first area was around the Mediterranean Sea; southern, southwestern, and eastern Asia; and Middle America. This was a city-centred zone with agrarian and commercial civilisations.
- The second area included northern Europe, northern Asia, Africa (south of the Sahara), Oceania, and a major part of North and South America. This zone covered isolated regions, mostly villages with tribal economies.
- The third area included southwest and central Asia, inhabited by a nomadic population mostly comprised of mounted herdsmen.

By 1650, the world population had reached about 500 million, with estimations varying between 470 million (by Willcox) and 545 million (by Carr-Saunders). The annual growth rate was lower than in the period from 8000 BCE to 1 CE for several reasons. The rise in population density increased the risk of epidemics, such as the plague events recorded in 541 and 1347 (also known as the ‘Black Death’). From 1348–1350, the plague decreased the population of Europe by 20–25%; from then until 1400, this decrease was about 40%.⁷ Between 1650 and 1900, the average annual growth rate varied from 3,000 to 7,000 (Table 1). By 1800, the total population of the world had increased to more than 900 million, and at the beginning of the 20th century, it was more than 1.5 billion (Table 2).

5 Kaneda and Haub, 2022.

6 United Nations, 1953.

7 United Nations, 1953.

Table 1. Average annual rates of increase (per 1,000) in estimated world population, 1650–1900⁸

Period	World		Europe, Asiatic USSR, America, and Oceania	
	Willcox's estimates	Carr-Saunders's estimates	Willcox's estimates	Carr-Saunders's estimates
1650–1750	4	3	3	3
1750–1800	6	4	7	7
1800–1850	3	5	8	9
1850–1900	7	6	11	11

At the beginning of the modern era, the estimated size of the world population was still based on uncertain data. In the early modern period, the first censuses were conducted in French and British colonies in Canada and Iceland in 1703. Throughout the 18th century, countries in northern Europe maintained vital registers and census statistics. However, in most parts of Asia, Africa, and Latin America, reliable data only started being collected at the beginning of the 20th century.⁹

Table 2. Historical growth of the world population, estimates by region, 1000–1900¹⁰

	World	Europe	Russia	America	North America	Latin America	Asia	Africa	Oceania
Clark									
1000	280	32	12	13	←	←	172	50	1
1200	384	45	12	23	←	←	242	61	1
1500	427	62	12	41	1	40	225	85	2
1750	731	102	34	15	2	13	320	100	2
1900	1,668	284	127	144	81	63	985	122	6

⁸ Source: United Nations, 1953, p. 12.

⁹ Djurdjev, Arsenović and Marinković, 2016, pp. 9, 33; United Nations, 1953, p. 10.

¹⁰ Source: United Nations, 1953, p. 11; Durand, 1974, p. 9. Note: Estimated population in millions.

POPULATION OF THE WORLD

	World	Europe	Russia	America	North America	Latin America	Asia	Africa	Oceania
Willcox									
1650	470	103	←	8	1	7	257	100	2
1750	694	144	←	11	1	10	437	100	2
1800	919	193	←	29	6	23	595	100	2
1850	1,091	274	←	59	26	33	656	100	2
1900	1,571	423	←	144	81	63	857	141	6
Carr-Saunders									
1650	545	103	←	13	1	12	327	100	2
1750	728	144	←	12	1	11	475	95	2
1800	906	193	←	25	6	19	597	90	2
1850	1,171	274	←	59	26	33	741	95	2
1900	1,608	423	←	144	81	63	915	120	6

3. World population in the 19th century and the first half of the 20th century

World population growth is determined by two factors: fertility and mortality. During the early 19th century, in the now economically developed parts of the world, mortality began a secular decline around 1800, and a few decades later, it was followed by reduced fertility. This process has been known as the ‘demographic transition’, which, today, is more or less complete.¹¹

According to United Nations estimates, in 1800, life expectancy at birth was around 27 years (Table 3). As a result of mortality decline, life expectancy had risen by 20 years by 1950. Several factors contributed to the decrease in mortality. Initially, this decline was due to a reduction in infectious diseases. During the second half of the 18th century, the smallpox vaccine was discovered, and preventive medicine played an important role in mortality reduction. At this time, improvements in

11 Lee, 2003, pp. 167, 170, 173; Bongarts, 2009, p. 2985.

nutrition and hygiene were also important.¹² According to Kirk,¹³ there were three stages of mortality decline in the modern world:

- The late 18th century and first half of the 19th century, when the foundation of a modern state with public order reduced death from random violence and local wars between tribes. The development of transport and commerce infrastructure provided better conditions for agriculture and improved nutrition. At this stage, a raise in incomes was also likely important for mortality reduction.
- The late 19th century until World War I was a period of significant revolutions in medicine developed by Robert Koch, Louis Pasteur, Anna W. Williams, and others. Most of the mortality decline during this period was due to a reduction in child and infant mortality.
- World War II and the following period, when penicillin was discovered.

The demographic transition in less developed countries started later, during the first half of the 20th century. Consequently, though life expectancy was 47 years and a significant reduction in infant and child mortality had been achieved in 1950, the regional differences were quite distinguished. In the 1930s, life expectancy was 58.7 years in Western Europe; 61.3 years in the United States, Canada, Australia, and New Zealand; 37.8 years in Latin America and the Caribbean; 31.9 years in East Asia; 31.9 years in South and South-East Asia; and 34.5 years in the Middle East and North Africa.¹⁴

Table 3. Demographic indicators of world population, 1800–1950¹⁵

Year	Total population	Population Growth Rate	Life expectancy	Total Fertility Rate
1800	978	0.51	27	6.0
1900	1,650	0.56	30	5.2
1950	2,251	1.80	47	5.0

From 1890 to 1920, marital fertility declined in most European provinces, and between 1870 and 1930, the number of children per woman declined by 40%.¹⁶ The exception was France, where marital fertility started to decline around 1800.¹⁷ Most

¹² Lee, 2003, pp. 170–171.

¹³ Kirk, 1996, p. 368.

¹⁴ Van Zanden, 2014, p. 108.

¹⁵ Sources: Total population and growth rate: United Nations, 1999; Total fertility rate and life expectancy: Lee, 2003. Note: Population growth rate = %/years.

¹⁶ Coale and Treadway, 1986, p. 44, cited in Lee, 2003, p. 173.

¹⁷ Djurdjević, Arsenović and Marinković, 2016, p. 49.

theories suggest that fertility decline was associated with changes in the economic environment, which further led to changes in behaviours related to marriage and the desired number of children.¹⁸ Various theories of fertility also support the idea that couples tended to have a certain number of surviving children and did not, thus, need to have more, which likely contributed to fertility decline.¹⁹

4. World population changes since 1950

At present, the world is populated by about 7.9 billion people, which is more than three times more than in 1950. According to the United Nations, the global population reached 8.0 billion in mid-November 2022.²⁰ Over the 70 years between 1950 and 2022, the fastest population growth occurred in the 1960s. In the next few decades, population growth slowed and, in 2020, it fell below 1% per year. This growth is projected to continue to slow until 2050 and at the end of this century. The slowing pace of population growth is mostly due to a decline in fertility.²¹ Nevertheless, regardless of this decline in fertility, the world population is expected to continue to grow because of population momentum,²² which occurs when fertility declines but the population continues to increase as a result of the existing age structure. Current projections suggest that the world population could grow to around 9.7 billion in 2050, adding more than 600 million from 2100 (Table 4).

Table 4. World population and annual rate of population change by major area, 1950–2100²³

	1950	2000	2022	2050	2100
Region	Population (millions)				
World	2,499	6,149	7,975	9,709	10,349
Africa	228	819	1,427	2,485	3,924
Asia	1,379	3,736	4,723	5,293	4,673
Latin America and the Caribbean	168	523	660	749	647

18 Birdsall, 1983.

19 Lee, 2003, p. 174.

20 United Nations, 2022, p. 3.

21 Ibid.

22 Gu, Andreev and Dupre, 2021, p. 605.

23 Source: United Nations, 2022. Notes: Medium scenario. *Excluding Australia and New Zealand.

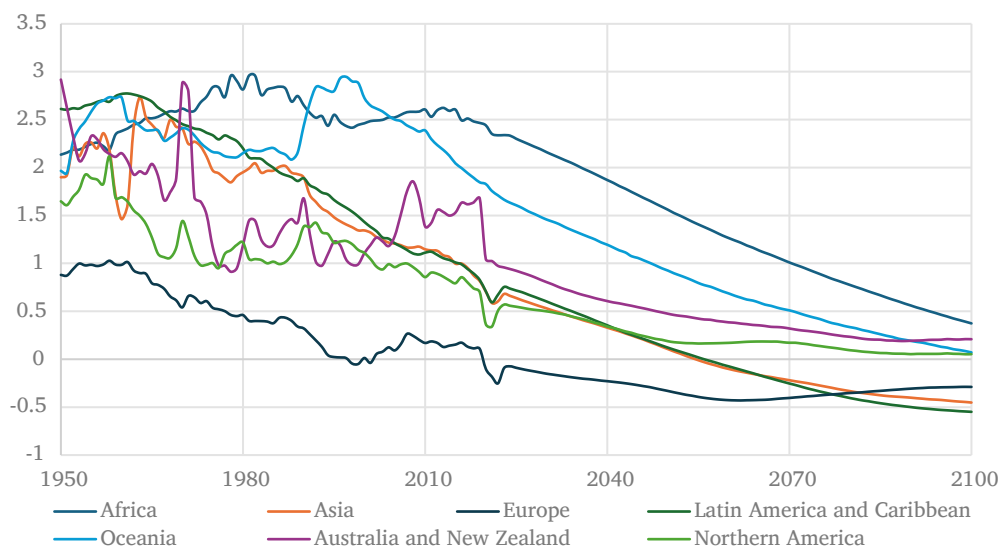
	1950	2000	2022	2050	2100
Oceania*	2	8	14	20	25
Australia and New Zealand	10	23	31	38	44
Northern America	162	313	377	421	448
Europe	550	727	744	703	587
Region	Annual Rate of Population Change (%)				
World	1.70	1.30	0.80	0.50	-0.10
Africa	2.10	2.50	2.30	1.60	0.40
Asia	1.90	1.30	0.60	0.10	-0.50
Latin America and the Caribbean	2.60	1.40	0.70	0.10	-0.50
Oceania*	2.0	2.70	1.70	0.90	0.10
Australia and New Zealand	2.90	1.10	1.00	0.50	0.20
North America	1.60	1.10	0.50	0.20	0.10
Europe	0.90	0.00	-0.30	-0.30	-0.30

Population growth is not equally distributed in all regions of the world. Starting in 1950, more intensive population increases took place in Asia, Africa, and Latin America and the Caribbean. Africa has had the highest growth and is the only world region with a continuously growing rate (more than 2% per year) since 1950. Among the sub-regions, sub-Saharan Africa has been the area with the fastest growth.²⁴ In 2022, almost 60% of the world's population lived in Asia: with around 1.4 billion inhabitants in 1950, the population of Asia increased by 37% up to 2000 and had added almost 1 billion inhabitants by 2022. Populations in Europe and Northern America have been growing at a lower annual rate, particularly in Europe, where the population growth rate was below 1%. In 2022, the European population was the only global population with a negative growth rate (Graph 1). Until the middle of the 21st century, world regions will continue to experience different growth rates, and Central and Southeast Asia will be the most populated areas. A high increase in population is also expected to occur in sub-Saharan Africa, with the number of inhabitants in this region predicted to almost double between 2022 and 2050. According to data from 2022, this region increased at an annual growth rate of 2.5%, which is more than three times higher than the global rate. Europe will reach a peak during the 2030s, and the European population will decline until 2050 owing to low fertility levels.

24 United Nations, 2022. Notes: Medium scenario. *Excluding Australia and New Zealand.

POPULATION OF THE WORLD

Graph 1. Annual rate of population changes (in %) by major area, medium scenario, 1950–2100²⁵



The projected trends in the world population are a common result of population momentum and future levels of fertility and mortality, as well as regional migration flows. The contribution of these components to future population trends will not be equal across regions and countries. According to Gu et al.,²⁶ in sub-Saharan Africa, relative to the total population in 2020, the highest contribution to population increase (around 53%) from 2020–2050 will be fertility, while population momentum will account for approximately 40% of this increase. The contribution of the other two components – mortality and migration – will be less significant. In Eastern and South-Eastern Asia, the population will increase from 2020–2050 owing to population momentum, mortality will range from 3–5%, and fertility will provide a negative contribution. In Central and Southern Asia and Latin America and the Caribbean, population momentum will be a major driver of future growth. Gu et al. expect that in Europe, population momentum and low fertility will cause population decreases in the next three decades, while in Northern America, population growth is expected to occur due to positive net migration flows.

The transition of fertility and mortality is followed by an increase in life expectancy and, consequently, an increase in the share of the older population in the world (persons aged 65 and over). In 2018, the number of persons in the world aged 65

25 Source: United Nations, 2022. Note: Oceania (excluding Australia and New Zealand).

26 Gu, Andreev and Dupre, 2021, p. 607.

and over was higher than the number of children under five for the first time.²⁷ From 2015–2020, life expectancy at age 65 was, on average, about 17 years; however, from 2045–2050, this will increase to 19 years. Until the middle of this century, life expectancy at age 65 will increase in all countries.²⁸ As a result of the increase in life expectancy and the decline in fertility, the share of the older population will continue to rise, and population ageing will accelerate. In 2022, about 10% of the world's population were aged 65 and over, with this figure projected to reach about 12% and 16% in 2030 and 2050, respectively.²⁹ The highest shares of older adults in the population in 2022 were observed in Europe and Northern America (about 19%) and Australia and New Zealand (17%). According to current trends, by the middle of the 21st century, one in every four persons in Europe and Northern America will be older than 65. In other regions, the population is also expected to age in the coming decades: from 2022 to 2050, the share of the old population will increase from 9% to 19% in Latin America and the Caribbean, from 13 to 26% in Eastern and South-Eastern Asia, and from 3 to 5% in sub-Saharan Africa. In some developed countries, as well as countries with rapid declines in fertility, the share of the older population is much higher. Japan has the most aged population in the world, with 29.8% of persons aged 65 years and over. Italy holds second place with 23.7%, followed by Finland (22.9%), Portugal (22.6%), Greece (22.5%), Bulgaria (22.4%), Puerto Rico (22.4%), Germany (22.2%), Martinique (22.1%), and Croatia (22.0%).³⁰ Seven out of 10 of the world's oldest countries are in Europe, which is expected given that Europe is the oldest of the world regions.

The increase in average age is a positive achievement for the human population, but, at the same time, presents a significant challenge for humanity. Sander et al.³¹ noted three challenges of population ageing: the biological challenge refers to the deterioration in physical strength and mental capacity in old age; the social challenge is to increase the retirement age; and the cultural challenge is to provide the older population with the opportunity to live in age-friendly environments. Other scholars, such as Zaidi,³² have highlighted five challenges associated with an ageing society: pension policy, health and long-term care policy, employment policy, migration and integration policy, and infrastructure development. Given that the population in developing countries is ageing faster than it did historically in developed regions, developing countries will face these challenges in a shorter time. As such, these countries lack time to prepare for rapid population ageing.

27 United Nations, 2022.

28 United Nations, 2019.

29 United Nations, 2022.

30 United Nations, 2023.

31 Sander et al., 2015, p. 187.

32 Zaidi, 2008, p. 9.

4.1. Trends in fertility

The global total fertility rate (average number of births per woman) began to decline in the early 1960s, from about five births per woman to three births during the early 1990s. In 1994, a year when one of the Cairo Conferences was held, about 46% of the global population, mostly settled in Europe and Northern America, lived in countries with a fertility level below 2.1, which is below the population replacement level.³³ Today, according to the United Nations,³⁴ about two-thirds of the global population lives in a country or area where fertility is below 2.1 births per woman. In 2022, the global total fertility rate was 2.3 children per woman, and in the medium scenario of assumptions, it is expected to fall to 2.1 children per woman by 2050 (Table 5, Graph 2).

Table 5. Crude birth rate, total fertility rate, and net reproduction rate for the world and major regions, 1950–2010³⁵

	1950	2000	2022	2050
Region	Crude Birth Rate			
World	36.8	21.8	16.8	14.0
Africa	48.1	38.4	32.1	22.9
Asia	41.7	21.1	14.2	11.3
Latin America and the Caribbean	43.6	22.2	14.6	10.7
Oceania*	43.8	31.8	24.3	17.7
Australia and New Zealand	23.8	13.4	11.6	9.9
Northern America	23.2	14.1	10.9	9.8
Europe	22.2	10.1	9.2	8.8
Region	Total Fertility Rate			
World	4.8	2.7	2.3	2.1
Africa	6.6	5.2	4.2	2.9
Asia	5.7	2.6	1.9	1.9

33 United Nations, 2019.

34 United Nations, 2022.

35 Source: United Nations, 2022. Notes: Estimates: 1950–2022; medium scenario: 2023–2050. *Excluding Australia and New Zealand.

	1950	2000	2022	2050
Latin America and the Caribbean	5.8	2.6	1.9	1.7
Oceania*	5.9	4.1	3.1	2.4
Australia and New Zealand	3.1	1.8	1.6	1.7
Northern America	3.0	2.0	1.6	1.7
Europe	2.7	1.4	1.5	1.6
Region	Net Reproduction Rate (R_0)			
World	1.64	1.17	1.06	1.01
Africa	1.83	1.98	1.85	1.31
Asia	1.79	1.11	0.90	0.88
Latin America and the Caribbean	2.05	1.22	0.88	0.83
Oceania*	1.87	1.80	1.41	1.10
Australia and New Zealand	1.46	0.87	0.78	0.80
Northern America	1.38	0.96	0.79	0.81
Europe	1.16	0.68	0.72	0.79

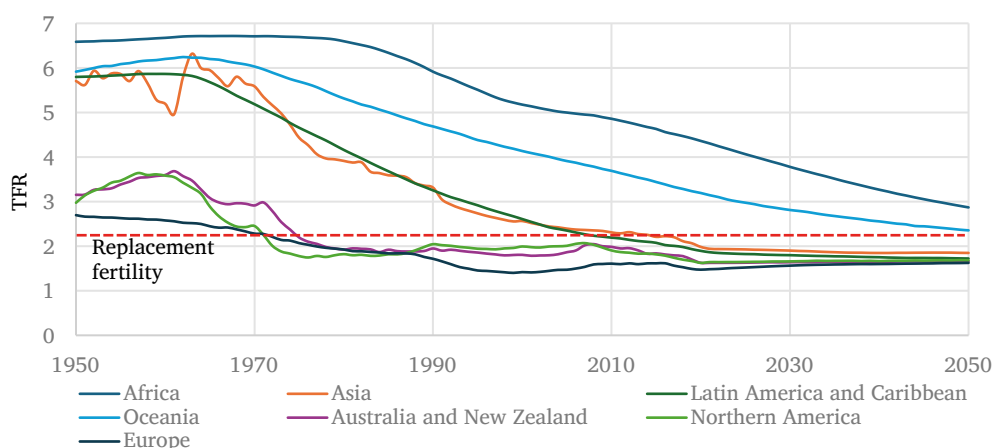
Regardless of fertility decline, the total number of births has shown a relatively stable trend since the second half of the 1980s (about 140 million). In 2022, 134 million babies were born globally. It is expected that the number of newborns will increase slightly (around 138 million) between 2040 and 2045, before declining in 2050 (around 136 million).³⁶

Across the regions, fertility levels show wide variations. In 2022, Africa and Oceania (excluding Australia and New Zealand) were the only two regions with a net reproduction rate above 1 and a total fertility rate above the replacement level. The lowest number of children per woman was observed in Europe, at approximately 1.5. After 2000, Asia reached a fertility rate below 2, although some parts continue to have high fertility levels; for example, in 2022, the rate was an average of 2.2 children per woman in Central and Southern Asia. Among the subregions, in 2022, sub-Saharan Africa had the highest fertility level (4.5 children per woman), followed by Northern Africa and Western Asia with 3 and 2.6 births per woman, respectively. Most births occurred in sub-Saharan Africa, Central and Southern Asia, and Eastern and South-Eastern Asia, with shares in the total global births of 30%, 28%, and 18%,

³⁶ United Nations, n.d.

respectively.³⁷ These subregions are also characterised by a high level of adolescent fertility. In 2021, 13.3 million babies (about 10% of the total number of births in the world) were born to mothers under the age of 20, with half of them in sub-Saharan Africa. In the region of Latin America and the Caribbean, adolescent fertility was even higher, and its contribution to total fertility was 14%.³⁸ Most governments in countries with high adolescent fertility have adopted policy measures to improve sexual and reproductive health. These measures include school-based sexuality education, which is increasing among young people in secondary school and encouraging girls and young women to postpone giving birth.³⁹

Graph 2. Total fertility rate by major area, 1950–2050⁴⁰



In Europe and Northern America, the total fertility rate started to decline earlier than in other parts of the world. In Europe, the number of children per woman decreased below the replacement level between 1975 and 1980. The fall in the fertility rate to below 2.1 was followed by an increase in pre-marital cohabitation, a demographic regime that marked the beginning of the second demographic transition.⁴¹ The concept of the second demographic transition was formulated by Lesthaeghe and Van de Kaa in 1986⁴² and has been associated with various structural changes, such as modernisation; the expansion of higher education; the growth of the service economy; cultural changes, most notably secularisation; shifts in personal values; the growing significance of personal expression and fulfilment; and technological

37 Ibid.

38 United Nations, 2022.

39 United Nations, 2019.

40 Source: United Nations. Population division. Data portal. Source year: 2022 Notes: Estimates: 1950–2022; medium scenario: 2023–2050. *Oceania excluding Australia and New Zealand.

41 Lesthaeghe, 2020, pp. 2–9.

42 Lesthaeghe, 2014, p. 18112.

changes.⁴³ Some scholars have argued against the concept of a second demographic transition, suggesting that this demographic regime will remain a phenomenon typical of the population in North-western Europe and the mostly European population of the United States, Canada, Australia, and New Zealand. According to this theory, the second demographic transition will not spread to the countries of Eastern and Southern Europe or to the other cultures of Latin America and Asia. However, the transition in fertility over the last few decades suggests that the rising proportion of couples in cohabitation and the sub-replacement fertility rate is spreading outside the European cultural area, with most prominent changes in the region of Latin America and the Caribbean.⁴⁴

Significant variations in the fertility rate in different regions necessitate different government policies to address fertility. In 2019, among 197 governments of member and non-member states of the United Nations, about three-quarters had implemented policies to address the fertility rate. In total, 69 governments had implemented policies to decrease fertility, 55 governments had policies to increase fertility, and 19 governments aimed to maintain their country's current fertility rate.⁴⁵

4.2. Trends in mortality

Life expectancy is a key indicator of the health and well-being of a population. A country's life expectancy reflects its social and economic circumstances and the quality of its public health and healthcare infrastructure.⁴⁶ Global life expectancy at birth reached 72 years in 2022; this expectancy increased by 5.5 years between 2000 and 2022 and by 25.5 years between 1950 and 2022. Life expectancy at birth in the historically most advanced countries has increased by 2.0–2.5 years per decade over the last few centuries.⁴⁷ According to current projections, global life expectancy at birth will reach 77 years by 2050 (Table 7).

Africa is the region with the lowest life expectancy at birth, at below 70 years, while Australia and New Zealand have the highest life expectancy. In Europe, Northern America, and Asia, life expectancy is close to or above 80 years. As these differences are closely associated with socioeconomic development, many international organisations use the classification proposed by the World Bank, which groups countries into low, middle, and high income categories based on the gross national income per capita.⁴⁸ According to this classification, in 2022, life expectancy at birth was 80.9 years in high-income countries, 70.8 years in middle-income countries, and 62.3 years in low-income countries.⁴⁹ At the country level, the differences are even

43 Van de Kaa, 1994; Sobotka, 2008, p. 172.

44 Lesthaeghe, 2014, p. 18114.

45 United Nations, 2019.

46 Ho and Hendi, 2018; OECD, 2021.

47 Oeppen and Vaupel, 2002; Gu, Andreev and Dupre, 2021, p. 608.

48 Cambois, Duthe and Mesle, 2023, p. 3.

49 United Nations, n.d.

POPULATION OF THE WORLD

higher. From 2015–2020, the lowest life expectancy was recorded in the Central African Republic (52.7 years), while the highest was observed in Japan at 84.4 years.⁵⁰ A significant contributor to the gap between countries with the lowest and highest life expectancies is the under-five mortality rate.⁵¹ Since the middle of the 20th century, the under-five mortality rate has continuously declined, from 224 deaths per 1,000 live births in 1950 to 92.8, 75.6, and 36.9 in 1990, 2000, and 2022, respectively. However, divergences across regions remain large, and in 2022, the under-five mortality rate in low-income countries was 61.7 deaths per 1,000 live births, while it was 4.6 in high-income countries.⁵²

Table 6. Life expectancy at birth (years) by gender and world region, 1950–2050⁵³

	1950	2000	2022	2050
Region	Both Sexes			
World	46.5	66.5	71.7	77.2
Africa	37.6	53.4	62.1	68.3
Asia	42.0	67.6	73.2	79.5
Latin America and the Caribbean	48.6	71.1	73.8	80.6
Oceania*	41.8	64.2	67.8	71.6
Australia and New Zealand	69.0	79.5	83.5	87.0
Northern America	68.0	77.0	78.7	84.0
Europe	62.8	73.5	77.4	83.8
Region	Male			
World	44.6	64.1	69.1	74.8
Africa	36.4	51.8	60.2	65.8
Asia	40.6	65.7	70.8	77.2
Latin America and the Caribbean	46.5	67.9	70.6	78.1
Oceania*	40.3	62.3	65.2	68.4

50 Cambois, Duthe and Mesle, 2023.

51 United Nations, 2022.

52 United Nations, n.d.

53 Source: United Nations, 2022. Notes: Estimates: 1950–2022; medium scenario: 2023–2050. *Excluding Australia and New Zealand.

	1950	2000	2022	2050
Australia and New Zealand	66.7	76.8	81.6	85.4
Northern America	65.4	74.4	76.0	82.2
Europe	60.0	69.3	74.0	81.3
Region	Female			
World	48.4	68.9	74.4	79.8
Africa	38.8	54.9	64.1	70.8
Asia	43.6	69.6	75.8	82.0
Latin America and the Caribbean	50.8	74.5	77.0	83.1
Oceania*	43.9	66.7	71.0	74.9
Australia and New Zealand	71.6	82.1	85.3	88.6
Northern America	71.0	79.7	81.4	85.8
Europe	65.5	77.8	80.8	86.3

Despite the unprecedented rise in life expectancy, progress slowed in 2020 and 2021, when the COVID-19 pandemic spread across the world. Current evidence suggests that in some parts of Europe and Northern America, progress in life expectancy was already slowing or spinning out even before the pandemic. For instance, in Canada, the United States, and the United Kingdom, life expectancy is lower than what was previously projected. In some regions of the world, life expectancy at birth declined during the late 1980s and 1990s; for example, in sub-Saharan Africa owing to the HIV epidemic, and in Western and Central Africa as a result of various factors, such as malaria, economic crises, and political conflicts. Countries in Central Asia also experienced a decline in life expectancy because a significant share of the Russian population was settled in that part of the continent, and these countries were facing political, economic, and health crises during the collapse of the Soviet Union. The situation was similar in former countries of the Soviet Union in Eastern Europe, where the rise in cardiovascular diseases caused health crises.⁵⁴

Globally, women live an average of 5.3 years more than men. This is mainly because women experience a lower mortality rate at all ages, which is related to a biological advantage and the lower impact of behavioural risk factors.⁵⁵ A gender gap in life expectancy has been observed in all regions of the world. In 2022, the gender

⁵⁴ United Nations, 2022, p. 16; Cambois, Duthe and Mesle, 2023, p. 7.

⁵⁵ Ibid.

gap varied from 6.8 and 6.4 years in Europe and Latin America and the Caribbean, respectively, to 3.7 years in Australia and New Zealand.

4.3. International migration

International migration is a critical part of the development process in countries of origin, transit, and destination. International migrants include all persons regardless of the reason for their migration. For statistical purposes, refugees and asylum seekers fall under the broad umbrella term ‘international migrant’, whether or not they have specific legal status and advocacy under international law.⁵⁶ Some of the principal historical factors that have contributed to the growth of international migration are the decomposition of medieval society, followed by the renaissance, commercial revolution, colonisation, the agricultural and industrial revolution, the emergence of free market societies, education, and technological headway.⁵⁷

International migration does not have a direct impact on global population growth, and its impact on population growth is significantly lower in most countries than that of other demographic components. Nevertheless, migration has contributed significantly to the growth of certain countries’ populations.⁵⁸ In some regions of the world, international migration has also become a major driver of population change. From 1980–2000, population growth in high-income countries was mainly a result of natural increases (104 million), whereas the contribution of net international migration was approximately 44 million. However, over the next 20 years, between 2000 and 2020, the contribution of international migration (80.5 million) exceeded that of the natural increase (66.2 million).⁵⁹

In 2020, the COVID-19 pandemic constrained all types of human mobility, including international migration. At the global level, the closure of national borders and travel bans forced hundreds of thousands of people to cancel or delay plans to migrate.⁶⁰ According to the United Nations,⁶¹ in 2020, the pandemic likely reduced the number of international migrants by around 2 million globally, corresponding to a decrease of approximately 27% of the growth expected from June 2019 to June 2020. Nevertheless, though COVID-19 caused interruptions in migration in 2020, the overall number of international migrants has increased over the past two decades. In 2020, the number of persons living outside of their country of origin was 281 million.⁶² Between 2000 and 2020, most of this flow was due to labour and family migration,⁶³ while refugees and asylum seekers contributed an increase of 17 mil-

56 Menozzi, 2022, p. 1.

57 Wickramasinghe and Wimalaratana, 2016, p. 13.

58 Gu, Andreev and Dupre, 2021, p. 609.

59 United Nations, 2022.

60 United Nations, 2020.

61 Ibid.

62 Ibid.

63 OECD, 2020.

lion.⁶⁴ In 2022, the number of people forcibly displaced was estimated to be around 108 million.⁶⁵

More than half of international migration is oriented towards the high-income countries. In 2020, about 65% of all international migrants lived in high-income countries, 31% lived in middle-income countries, and 4% lived in low-income countries (Graph 3). The regional distribution of international migrants is relatively diverse. In 2020, Europe was home to the highest number of international migrants at about 87 million, followed by Northern America with 59 million, and Northern Africa and Western Asia with approximately 50 million.⁶⁶ At the same time, Europe and Northern America are the largest emigrant-origin regions, followed by Central and Southern Asia, and Latin America and the Caribbean.⁶⁷

Large disparities are also observed between nations as the majority of global migrants live in a small number of countries. The United States is the leading destination country, with 51 million migrants in 2020. Germany was the second most popular country of destination with 16 million migrants, followed by Saudi Arabia with 13 million, the Russian Federation with 12 million, and the United Kingdom and Northern Ireland with 9 million. Simultaneously, one-third of international migrants originate from just 10 countries. India is the country with the largest outflow of migration, followed by Mexico, China, and the Russian Federation, with more than 10 million emigrants each.⁶⁸ According to the United Nations High Commissioner for Refugees,⁶⁹ the highest number of refugees and asylum seekers are hosted in Turkey (approximately 3.6 million), the Islamic Republic of Iran (3.4 million), Colombia (2.5 million), Germany (2.1 million), and Pakistan (1.7 million).

Demographic data show that women comprise around half (48%) of the total number of international migrants, increasing by 26% from 2010. In the same period, the number of male migrants grew slightly faster, by 28%.⁷⁰ Female migrations are mostly related to labour, education, and family motivations, with some women leaving their countries due to conflict or persecution. In the regions of Europe, Northern America, and Oceania, the number of female migrants was slightly higher than the number of male migrants. The regions of sub-Saharan and Northern Africa and Western Asia have a significantly higher number of male migrants, while there are slightly fewer female than male migrants in Central and Southern Asia, Eastern and South-Eastern Asia, and Latin America and the Caribbean. In 2020, the median age of international migrants was 39.1 years, and the median age of refugees and asylum seekers was 19.4 years.⁷¹

64 UNHCR, 2019.

65 UNHCR, 2022.

66 United Nations, 2020.

67 Batalova, 2022, p. 4.

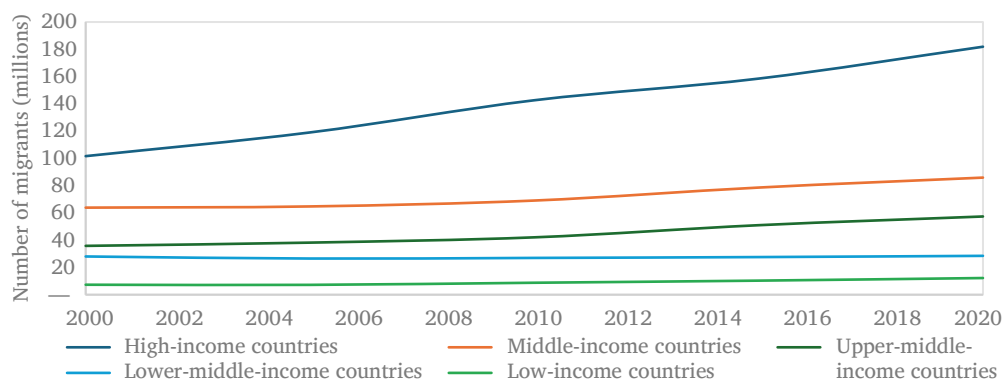
68 United Nations, 2020.

69 UNHCR, 2022.

70 Batalova, 2022, p. 8.

71 United Nations, 2020.

Graph 3. International migrant population by World Bank income group at destination, 2000–2020⁷²



The overall impact of migration may have a positive effect for both countries of origin and countries of destination, which has been acknowledged by the 2030 Agenda for Sustainable Development and the Global Compact for Safe, Orderly, and Regular Migration.⁷³ Globally, 61% of national governments have a policy to maintain the current level of reported migration into their country, whereas 13% have policies to lower the level of immigration, 12% have policies to raise it, and 14% do not have an official policy on immigration. Labour demand is the main reason for the direction of immigration policy for most governments, followed by concerns about employment opportunities for nationals and demographic implications such as population ageing and long-term population decline. Many governments have policies to stimulate the return migration of their own citizens as this could have a positive impact by promoting capital inflow and investment and fostering the transfer of technology and skills.⁷⁴

5. Impact of the COVID-19 pandemic on fertility, mortality, and migration

The recent COVID-19 pandemic had various implications for the population, affecting all three components of fertility, mortality, and migration. The full demographic impact of the pandemic is difficult to quantify owing to differences in methodology and gaps in the collection of demographic data. Nevertheless, a significant

⁷² Source: United Nations, 2020.

⁷³ United Nations, 2017, p. 1; Gu, Andreev and Dupre, 2021, p. 609.

⁷⁴ Ibid.

number of scientific papers and reports have examined the pandemic's impact on demographics. The pandemic may have influenced fertility, for example, by causing people to postpone childbearing as they are less likely to have children in a period of uncertainty. Balbo et al. observed lower access to in-vitro fertilisation procedures and options for abortion in several countries.⁷⁵ According to the United Nations,⁷⁶ the pandemic may have produced short-term reductions in the number of births without affecting long-term trends in countries with low fertility.

The impact of COVID-19 on mortality was traced through estimations of excess mortality⁷⁷ and trends in life expectancy. Between 1 January 2020 and 31 December 2021, the World Health Organization⁷⁸ estimated 14.9 million excess deaths associated with the pandemic. Meanwhile, research by the COVID-19 Excess Mortality Collaborators⁷⁹ reported 18.2 million deaths due to the pandemic in this period. According to the same study, the number of excess deaths due to COVID-19 was highest in the regions of South Asia, North Africa and the Middle East, and Eastern Europe. At the country level, the largest number of excess deaths were estimated in India, the United States, Russia, Mexico, Brazil, Indonesia, and Pakistan. Further, COVID-19 contributed to a decrease in life expectancy at birth by 1.7 years between 2019 and 2021.⁸⁰

As a result of the pandemic-related lockdowns in 2020, international migration flows were drastically reduced or stopped. The closure of borders impacted both circular and permanent migration, affecting the labour market and migrant family relations.⁸¹ The United Nations⁸² estimated that the COVID-19 pandemic reduced the number of international migrants by approximately 2 million by mid-2020, which is a decrease of 27% in the growth expected from July 2019 to June 2020. Data from the OECD shows that in 2020, permanent migration inflows to OECD countries fell by more than 30%, with the largest decline being in family migration at more than 35%.⁸³

75 Balbo et al., 2020, p. 4.

76 United Nations, 2022.

77 WHO, 2022, 'Excess mortality is calculated as the difference between the number of deaths that have occurred and the number that would be expected in the absence of the pandemic based on data from earlier years'.

78 Ibid.

79 Excess Mortality Collaborators, 2022.

80 United Nations, 2022.

81 Balbo et al., 2020, pp. 4–5.

82 United Nations, 2020.

83 Migration data portal (last updated: 11 July 2023) 'Migration data relevant for the Covid-19 pandemic' [Online]. Available at: <https://www.migrationdataportal.org/themes/migration-data-relevant-covid-19-pandemic#key-migration-trends> (Accessed: 16 June and 17 July 2023).

6. Conclusion

Despite various possible future scenarios, the world's population is likely to continue to grow. In the upcoming decades, trends in the growth rate will vary by region, with developing regions projected to have more rapid growth than developed regions. Faster growth is expected particularly in areas with high fertility rates, such as countries in sub-Saharan Africa.

Developed regions face the combined trends of decreasing fertility and increasing life expectancy, which are leading to population ageing. Some regions and countries with a high proportion of older adults in the population are already facing ageing. Most countries in developing regions are still in the middle stage of demographic transition, with high fertility rates; for these countries, current projections suggest faster population growth. Currently, developing countries are experiencing more rapid population ageing, and governments and societies in these countries will have a short time frame for adaptation.

Considering the large variation in population trends across regions and countries, there is no singular approach to population policies and demographic measures. Different countries should implement policies specific to their own demographic situation to address the challenges and goals of future population development.

Bibliography

- Balbo, N., Kashnitsky, I., Melegaro, A., Mesle, F., Mills, C.M., de Valk, H., Vono de Vilhena, D. (2020) 'Demography and the Coronavirus Pandemic', *Population and Policy Brief*, no. 25, Max Planck Society for the Advancement of Science on behalf of the collaborative network "Population Europe".
- Batalova, J. (2022) 'Top Statistics on Global Migration and Migrants', *Migration Information Source*, 21 July [Online]. Available at: <https://www.migrationpolicy.org/article/top-statistics-global-migration-migrants> (Accessed: 15 July 2023).
- Birdsall, N. (1983) 'Fertility and Economic change in Eighteenth and nineteenth Century Europe: A Comment', *Population and Development Review*, 9(1), pp. 111–123; <https://doi.org/10.2307/1972899>.
- Bongarts, J. (2009) 'Human population growth and the demographic transition'. *Philosophical Transactions of the Royal Society*, 364, pp. 2985–2990; <https://doi.org/10.1098/rstb.2009.0137>
- Cambois, E., Duthe, G., Mesle, F. (2023) 'Global Trends in Life Expectancy and Healthy Life Expectancy.' Oxford Research Encyclopedia of Global Public Health; <https://doi.org/10.1093/acrefore/9780190632366.013.384>
- Coale, A. J., Treadway, R. (1986) 'A Summary of the Changing Distribution of Overall Fertility, Marital Fertility and the Proportion Married in the Provinces of Europe' in Watkins, S. (ed.) *The Decline of Fertility in Europe*. Princeton: Princeton University Press, pp. 31–181; <https://doi.org/10.1515/9781400886692-007>.
- COVID-19 Excess Mortality Collaborators (2022) 'Estimating excess mortality due to the COVID-19 pandemic: a systematic analysis of COVID-19-related mortality, 2020–21', *Lancet*, 399(10334), pp. 1513–1536; [https://doi.org/10.1016/S0140-6736\(21\)02796-3](https://doi.org/10.1016/S0140-6736(21)02796-3).
- Djurdjev, B., Arsenović, D., Marinković D. (2016) *Geografija stanovništva (Population geography)*. Novi Sad: Univerzitet u Novom Sadu, Prirodno-matematički fakultet, Departman za geografiju, turizam i hotelijerstvo.
- Durand, J.D. (1974) *Historical Estimates of World Population: An Evaluation*. PSC Analytical and Technical Report Series 10. Philadelphia: University of Pennsylvania.
- Gu, D., Andreev, K., Dupre, E.M. (2021) 'Major Trends in Population Growth Around the World' *China CDC Weekly*, 3(28), pp. 604–613; <https://doi.org/10.46234/ccdcw2021.160>.
- Kaneda, T., Haub, K. (2022) 'How many people have ever lived on Earth?', *PRB.org*, 15 November [Online]. Available at: <https://www.prb.org/articles/how-many-people-have-ever-lived-on-earth/> (Accessed: 17 April 2023).
- Kirk, D. (1996) 'Demographic Transition Theory', *Population Studies*, 50(3), pp. 361–387; <https://doi.org/10.1080/0032472031000149536>.
- Ho, Y.J., Hendi, S.A. (2018) 'Recent trends in life expectancy across high income countries: retrospective observational study', *BMJ*, 2018/362:k2562; <http://doi.org/10.1136/bmj.k2562>.
- Lee, R. (2003) 'The Demographic Transition: Three Centuries of Fundamental Change', *Journal of Economic Perspectives*, 17(4), pp. 167–190.
- Lesthaeghe, R. (2014) 'The second demographic transition: A concise overview of its development', *Proceeding of the National Academy of Sciences of the United States of America (PNAS)*, 111(51), pp. 18112–18115; <https://doi.org/10.1073/pnas.1420441111>.
- Lesthaeghe, R. (2020) 'The second demographic transition, 1986-2020: sub-replacement fertility and rising cohabitation-a global update', *Genus*, 76(10), nr. 10; <https://doi.org/10.1186/s41118-020-00077-4>.

- Malthus, T. (1798) *An Essay on the Principle of Population*. London: Printed for J. Johnson in St. Paul's Church Yard.
- Menozzi, C. (2022) 'Why safe, orderly and regular migration matters for sustainable development'. *Policy Brief 146. Department of Economic and Social Affairs, Population Division*. New York. United Nations. pp. 1–4 [Online]. Available at: https://www.un.org/development/desa/pd/sites/www.un.org.development.desa.pd/files/undesd_pd_2022_pb_146.pdf (Accessed: 1 June 2023).
- Montano, B., Garcia-Lopez, M. (2020) 'Malthusianism of the 21st century', *Environmental and Sustainability Indicators*, 6(100032); <https://doi.org/10.1016/j.indic.2020.100032>.
- OECD (2020) *International Migration Outlook 2020*. Paris: OECD Publishing; <https://doi.org/10.1787/ec98f531-en>.
- OECD (2021) *Health at a Glance: OECD Indicators*. Paris: OECD Publishing; <https://doi.org/10.1787/19991312>.
- Oeppen, J, Vaupel, J.W. (2002) 'Broken limits to life expectancy', *Science*, 296(5570), pp. 1029– 1031; <http://doi.org/10.1126/science.1069675>.
- Rahman, M. (2018) 'Validity of Malthusian Theory of Population in the 20th Century in Terms of Using Scientific Technology to the Economic Growth and Strength', *International Journal of Tax Economics and Management*, 1(1), pp. 13-21; <https://doi.org/10.35935/tax/11.2113>.
- Sander, M., Oxlund, B., Jespersen, A., Krasnik, A., Mortensen, L.E., Westerndorp, J.G.R., Rasmussen, J.L. (2015) 'The challenges of human population ageing', *Age and ageing*, 44(2), pp. 185–187; <https://doi.org/10.1093/ageing/afu189>.
- Sobotka, T. (2008) 'Overview Chapter 6: The diverse faces of Second Demographic Transition in Europe', *Demographic research*, 19(8), pp. 171–224; <https://doi.org/10.4054/DemRes.2008.19.8>.
- Van Zanden, J. L., et al. (eds.) (2014) *How Was Life?: Global Well-being since 1820*. Paris: OECD Publishing; <https://doi.org/10.1787/9789264214262-en>.
- Van de Kaa, D. J. (1994) 'The Second demographic transition revisited: Theories and expectations' in Beets, G., et al. (eds) *Population and family in the low Countries 1993: late fertility and other current issues*. NIDI/CBGS Publication, No. 30, Berwyn, Pennsylvania – Amsterdam: Swets and Zeitlinger, pp. 81–26.
- Unat, E. (2020) 'A review of Malthusian theory of population under the scope of human capital', *FORCE: Focus on Research in Contemporary Economics*, 1(2), pp. 132–147.
- United Nations (n.d.) UN Population Division Data Portal – Interactive access to global demographic indicators [Online]. Available at: <https://population.un.org/dataportal/home> (Accessed: 17-25 April 2023).
- United Nations (1953) 'The determinants and consequences of population trends', *Population studies*, vol. 17. New York. United Nations. [Online] Available at: https://www.un.org/development/desa/pd/sites/www.un.org.development.desa.pd/files/files/documents/2020/Jan/un_1953_determinantsandconsequencesofpopulationtrends_0.pdf (Accessed: 2 May 2023).
- United Nations (2017) *International Migration Policies: Data Booklet (ST/ESA/SER.A/395)*. New York: United Nations, Department of Economic and Social Affairs, Population Division [Online]. Available at: https://www.un.org/development/desa/pd/sites/www.un.org.development.desa.pd/files/files/documents/2020/Jan/un_2017_internationalmigrationpolicies_databooklet.pdf (Accessed: 2 May 2023).

- United Nations (1999) *'The World at Six billion'*. New York: United Nations. [Online]. Available at: https://www.un.org/development/desa/pd/sites/www.un.org.development.desa.pd/files/files/documents/2020/Jan/un_1999_6billion.pdf (Accessed: 13 April 2023).
- United Nations (2019) *World Population Ageing 2019: Highlights* (ST/ESA/SER.A/430). New York: United Nations, Department of Economic and Social Affairs, Population Division.
- United Nations (2020) *International migration 2020: Highlights*. New York: United Nations, Department of Economic and Social Affairs, Population Division.
- United Nations (2021) *World Population Policies 2021 Highlights: Policies on Fertility*. (DESA/POP/2021/TR/NO. 1). New York: United Nations, Department of Economic and Social Affairs, Population Division.
- United Nations (2022) *World Population Prospects 2022: Summary of Results*. (DESA/POP/2021/TR/NO. 3). New York: United Nations, Department of Economic and Social Affairs, Population Division.
- United Nations (2023) *Leaving No One Behind In An Ageing World: World Social Report 2023* (ST/ESA/379). New York: United Nations, Department of Economic and Social Affairs, Population Division.
- UNHCR (2019) *Global trends: Forced displacement in 2019*. Copenhagen: UNHCR. [Online]. Available at: <https://www.unhcr.org/media/unhcr-global-trends-2019> (Accessed: 11 June 2023).
- UNHCR (2022) *Global trends: Forced displacement in 2022*. Copenhagen: UNHCR [Online]. Available at: <https://www.unhcr.org/global-trends-report-2022> (Accessed: 9 July 2023).
- Zaidi, A. (2008) *Features and Challenges of Population Ageing: The European Perspective?*. Policy Brief, 2008/1., Vienna: European Centre (Accessed: 11 June 2023).
- Wickramasinghe, A.A.I.N., Wimalaratana, W. (2016) 'International migration and migration theories', *Social Affairs: A Journal for the Social Sciences*, 1(5), pp. 13–32.
- Weir, D.R. (1991) 'Malthus's Theory of Population' in Eatwell, J., Milgate, M., Newman, P. (eds.) *The World of Economics. The New Palgrave*. London: Palgrave Macmillan, pp. 401–406; https://doi.org/10.1007/978-1-349-21315-3_52.
- WHO (2022) '14.9 million excess deaths associated with the COVID-19 pandemic in 2020 and 2021', *World Health Organization*, 5 May [Online]. Available at: <https://www.who.int/news/item/05-05-2022-14.9-million-excess-deaths-were-associated-with-the-covid-19-pandemic-in-2020-and-2021> (Accessed: 11 June and 9 July 2023).