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A G20 and Selected Geographies
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Human Capital by Gender: A G20 and Selected Geographies Perspective

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ABSTRACT

Human Capital by Gender: A G20 and Selected Geographies Perspective

This working paper identifies the sources of human capital growth for the observation period 1990–2020 by region, gender and various determinants. It is a preliminary version of a forthcoming UNESCO/ Kyushu University Urban Institute Inclusive Wealth Report 2023 chapter. It focuses on five important country groups by gender—Asia, Africa, Latin America, the G20, and the EU—to highlight the differences between them. Human capital per capita varies significantly across countries in each group. Education and human capital is unevenly distributed among males and females, although both total and per capita human capital have grown over time in almost all countries. The paper concludes that attention must be paid to what has happened to the world's gender-disaggregated levels of education and human capital per capita over time. The future sustainability of nations and the well-being of individuals within nations depend on the continuation of historical progress.

JEL Classification:	I21, J16, J24, O57
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1. Introduction

The United Nations' *Inclusive Wealth Report*[1] documents how human capital is the predominant wealth in most countries worldwide. Moreover, human capital benefits both individuals and their countries. This chapter focuses on four major elements of human capital by gender from 1990 to 2020: expected years of schooling (EYS), per capita human capital, contributions to human capital growth, and human capital Gini coefficients. These are presented and discussed for Africa, Asia, Latin America, the European Union (EU) and the G20, which includes some countries in the previous groups, and others such as Australia and the United States.[2] Taken together, the countries included in these groups account for 97% of the world's population both in 1990 and 2020.[3] Both the absolute level of the three major elements across the five country groups and the relative levels within the groups show distinctive gender differences and trends. Human capital per capita rankings are shown in an appendix for 1990 and 2020 for all 166 countries covered by the IWR.

Human capital can differ significantly by gender for several reasons. These include, for example, education, occupation, years worked, hours worked and wages paid. EYS, number of educated individuals who have completed the average EYS, number of working years remaining by gender, and average wages paid from 1990 to 2020, as well as lifetime earnings, all impact the

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[1] 'The Inclusive Wealth Report (IWR) is a biennial effort led by the United Nations Environment Programme (UNEP) to evaluate national capacities and performance in terms of measuring economic sustainability and well-being. Existing national statistical systems use Systems of Environmental and Economic Accounts, which are geared towards measuring the flow of income. These flows critically depend upon the health and resilience of capital assets like manufactured capital, human capital and natural capital' (UNEP, 2023).

[2] Latin America includes countries in Central and South America where Romance languages, which are derived from Latin, are predominantly spoken. The region also includes some Caribbean countries. A listing of the countries included in each of the five groups and the world is in the appendices: Appendix A covers Africa, Asia, Latin America, the EU and the G20 and Appendix B covers the 166 world countries.

[3] There are 249 countries listed in United Nations population data sets. Those not included in this study are mostly very small countries and include a number in the Caribbean, Melanesia, Micronesia and Polynesia, and a few elsewhere, such as Antarctica, Jersey and Monaco.

contributions to IWR human capital economic growth. Using EYS and lifetime earnings, the IWR takes a forward-looking approach to highlight the sustainability of a country's economic growth.

2. Measurement approaches

There are two major approaches for measuring human capital: monetary measures and indicator-based measures There are two major monetary measures and four major indicator-based measures using the two different approaches.[4] The IWR and the World Bank's Changing Wealth of Nations (CWON) series are the two major monetary measures, and both are lifetime income measures. The IWR methodology, which is largely based on a model by Arrow et al. (2012), is described later in this chapter. The CWON adopts the Jorgenson-Fraumeni methodology (1989, 1992a, 1992b) for measuring human capital based on the World Bank's extensive, private database[5] whereas the IWR depends on publicly available data. The Jorgenson-Fraumeni methodology calculates the lifetime market income of an individual as the sum of future expected labour income discounted to the present, but which is allowed to grow over time at a specified rate. Since Fraumeni (2021), the latest comprehensive monetary versions to have been published are CWON 2021 (World Bank, 2021a) and the 2018 IWR (UNEP, 2023).

The four major indicator-based measures using the indicator-based approach are the Institute for Health Metrics and Evaluation Human Capital Index (IHME), the United Nations Human Development Index (HDI), the World Economic Forum's Global Human Capital Index (WEFGHCI) and the World Bank's Human Capital Index (WBHCI). There are some similarities between the first three approaches as they all incorporate education and health components, with

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[4] All six major measures are described in Fraumeni (2021). The introduction to this book gives an overall summary of each measure; six of the chapters cover each of the measures in more detail.
[5] Before its 2018 report (Lange, Wodon and Carey, 2018), the CWON series relied upon a residual approach to measure human capital.

the HDI also having a standard of living component. The WEFGHCI differs markedly from the others as it emphasizes both education and employment. It also draws upon LinkedIn's membership information, The World Economic Forum's Executive Opinion Survey and constructs a Herfindahl–Hirschman Index of concentration among broad fields of study. Its four dimensions are capacity, deployment, development and know-how. All major indicator-based measures equally weight their main top-level components.[6,7] Since Fraumeni (2021), the HDI has published new comprehensive estimates (United Nations Development Programme, 2022). All of the six major measures (monetary and indicators) are for a large number of countries, more than 100 each, and all of the latest comprehensive versions of depend on the methodology presented in Fraumeni (2021).

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[6] A major issue with indexes is how to weight components.
[7] See Fraumeni (2021) for further information on all six major measures.

3. Expected years of schooling

In the 2022 IWR (UNEP, 2023), EYS replaced years of school completed, a measure that had been applied for human capital estimation in all previous IWRs (Managi and Kumar, 2018). EYS is a well-accepted measure; for example, it is a component of the Human Development Index (UNDP, 2019). EYS estimates are based on population education enrolment rates and are calculated using school life tables (Stockwell and Nam, 1963).

IWR EYS is determined by the enrolment, labour force participation and survival rates of those aged five to 24.[8] Compared to the Barro and Lee's (2013, 2018) measure of school years currently completed, it is forward-looking because it considers how many years of school will eventually be completed. For example, a 15-year-old included in the Barro-Lee data set for current years of school completed may complete more years of education in the future.

Figure 1 presents the average EYS by gender every five years over the period 1990–2020 for the world and the five country groups.[9] The group average is a weighted average of each country's EYS using the number of individuals aged zero to four in each constituent country in a group or the world as the weight.[10,11] (Table 2, which will be discussed later, presents the groups'

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[8] EYS is given by $e\_x^i = (T\_x^i)/l\_x$, where exi indicates the length of life expectancy, the first stage (i=1) represents the period of childhood during which one receives education, with the upper age limit for this stage assumed to be 24 years. The second stage (i=2) represents the adult population generally engaging in the work stage. Educational attainment, training or work skills in adulthood are assumed to be age-specific properties rather than a product of public education. The term $T\_x^i = \sum\_x^\infty [s\_x^i * L\_x^n$ represents the number of person-years spent alive and enrolled in education or work at age x or older; sxi denotes the school enrolment rate in childhood if i=1 and the labour participation rate in adulthood if i=2. Lxn indicates the cohort's number of years lived within the indicated age interval (x, x+n). Term lx represents the age-specific survival rate, indicating the number of individuals alive at the beginning of the age interval.

[9] The authors calculated the aggregates presented in all of the figures and tables in this chapter.

[10] The population data for those aged zero to four comes from the United Nations Department of Economic and Social Affairs, Population Division (2019), which includes population data through 2020.

[11] The 'world' in this chapter includes 166 countries, which account for almost 99% of the population of all countries in the world.

share of the total covered country groups population and world population for males, females and both genders aged zero to four in 1990 and 2020.)

Figure 1 shows a consistent pattern between EYS in the three regions and those of the EU and the G20. The geographic aggregates across all such aggregates, for female and male EYS respectively, rose from a low of 5.7 and 7.4 for Africa in 1990 to a high of 11.7 and 12.2 in 2020 for Latin America. The lowest values and the highest values rise between each region; the only case in which the 1990 EYS is higher than the 2020 EYS is for males in Latin America. EYS has increased because of the strong correlation between education and income earned, and female EYS has increased relative to male EYS. Even though females' access to education may have improved over time, given societal norms, disproportionate care responsibilities and gender discrimination, females may have to achieve a higher level of education to achieve the same level of labour market outcomes as males (Carvalho and Evans, 2022). Female EYS in Africa is always less than that for males, Asian female EYS catches up to that of males and surpasses it, and female Latin American EYS is always greater than that of males, except in 1990 when it is slightly less. In regions or countries with relatively high levels of female labour force participation, such as Latin America, the EU and China, female EYS by region is higher than that of males by the end of the period or sooner. EYS in the EU is higher than EYS in the G20, and there is a higher population share of high-income countries in the EU than in the G20 in large part because China and India are middle-income countries. There is a strong association between a country's level of income and its level of average education, because high-income countries can afford better education infrastructure and individuals with higher education have the ability to earn higher incomes. EU female EYS is always higher than EU male EYS. In 2010, G20 female EYS was greater than that of G20 male EYS. For the purposes of comparison, we present the world EYS, which looks very similar to that

of Asia because the two most populous countries in the world, China and India, are in Asia. The 1990 world male EYS is almost identical to that of Asia, but the 1990 world female EYS is higher than the female EYS for Asia. Subsequently, Asia EYS for both males and females rises somewhat faster than that of the world.

Table 1 shows that there is a high level of diversity among the groups. In all five groups except Latin America, EYS gradually increases from lowest to highest. In Latin America, Haiti's EYS is significantly below that of the next lowest country's EYS, ranging from a difference of about 3.5 to 8 during the period 1990–2020. The lowest and highest world EYS is always included in one of the featured groups.

The substantial relative growth in Africa and the decrease in the relative shares in all other groups for the population aged zero to four are documented in Table 2. While there have been widespread birth rate increases in Africa, the decrease in the birth rate in China is the primary reason for the decrease in the Asia share. The percentage decline in the birth rate as evidenced by those aged zero to four in Latin America is about half that for the G20 and the EU.

Figure 1. Expected years of schooling by gender, every five years, 1990–2020*
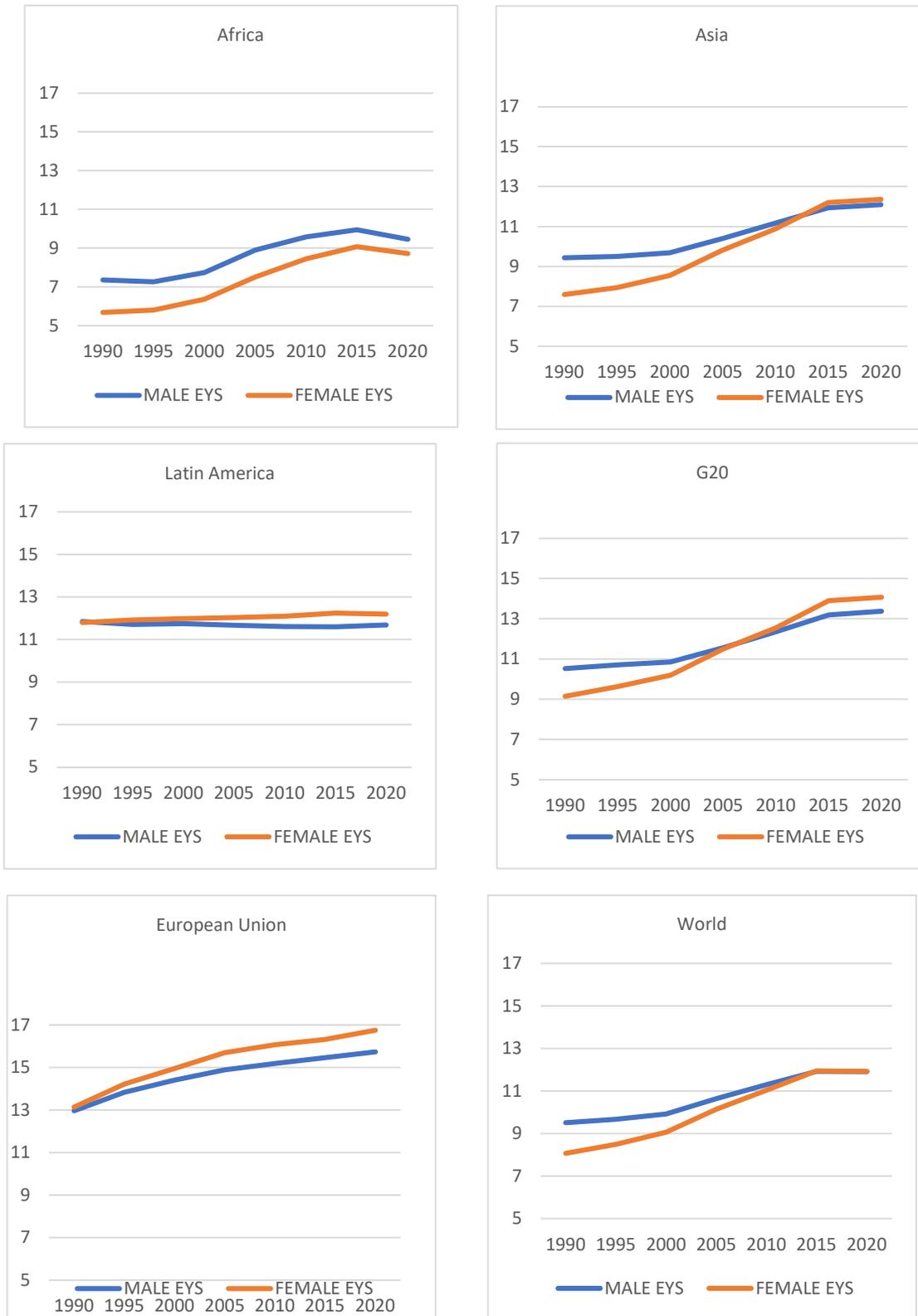
* There is one more country in Asia in this figure than in figures and tables which include human capital as Palestine EYS is estimated, but Palestine human capital is not estimated.

Table 1. Lowest and highest values for expected years of school by gender, 1990 and 2020

			Africa		Asia*		Latin America		
			Country	Value	Country	Value	Country		Value
1990	Male	Lowest	Mali	2.6	Afghanistan	3.7	Haiti		2.3
		Highest	Gabon	11.8	Korea, Republic of	14.0	Argentina		14.2
	Female	Lowest	Niger	1.4	Yemen	1.4	Haiti		2.9
		Highest	S. Africa	11.5	Saudi Arabia	14.5	Argentina		15.7
	Both	Lowest	Niger	2.0	Afghanistan	2.8	Haiti	2.6	
		Highest	Gabon	11.5	Saudi Arabia	14.0	Argentina	14.9	
2020	Male	Lowest	Somalia	1.6	Korea, Democratic People's Republic of	8.2	Haiti		3.0
		Highest	Gabon	11.8	Turkey	16.9	Chile		16.4
	Female	Lowest	Somalia	0.9	Iraq	6.9	Haiti		3.9
		Highest	Mauritius	15.3	Hong Kong	17.0	Argentina		17.5
	Both	Lowest	Somalia	1.3	Iraq	7.9	Haiti	3.5	
		Highest	Mauritius	14.9	Turkey	16.8	Chile	16.7	

			G20		EU		World		
			Country	Value	Country	Value	Country		Value
1990	Male	Lowest	Cyprus	9.1	Cyprus	9.1	Haiti		2.3
		Highest	Canada	15.9	Germany	14.6	Canada		15.9
	Female	Lowest	India	6.6	Cyprus	9.3	Niger		1.4
		Highest	Canada	17.0	Finland	15.2	Canada		17.0
	Both	Lowest	India	8.2	Cyprus	9.2	Mali	2.0	
		Highest	Canada	16.4	Finland	14.6	Canada	16.4	
2020	Male	Lowest	India	11.1	Luxembourg	13.8	Somalia		1.6
		Highest	Australia	18.4	Greece	17.7	Australia		18.4
	Female	Lowest	India	11.7	Luxembourg	14.0	Somalia		0.9
		Highest	Denmark	19.3	Denmark	19.3	Denmark		19.3
	Both	Lowest	India	11.4	Luxembourg	13.9	Somalia	1.3	
		Highest	Australia	18.5	Ireland	18.0	Australia	18.5	

* There is one more country in Asia in this figure than in figures and tables which include human capital as Palestine EYS is estimated, but Palestine human capital is not estimated.

The year 2020 is the only year in which the difference between the male and female percentage in absolute value is greater than or equal to 1 percentage point. In 2020, the percentage difference between African males versus females is –1.0 percentage point, and the corresponding Asia and G20 percentage point difference is 1.1 percentage points. In Asia and the G20, the percentage of the male population aged zero to four is higher than that of females, but in Africa, the reverse is

the case. In the EU, the percentage of the population aged zero to four is equal for males and females; in Latin America, the percentages differ slightly.

Table 2. Share of population aged zero to four in the world and country groups by gender (%), 1990 and 2020

| | 1990 | | 2020 | | 1990 | 2020 | |
| | Male | Female | Male | Female | Total | Total | |
	% of population*		% of population*		% of population*		Number of countries
Africa	16.3	16.8	28.3	29.3	16.6	28.8	46
Asia**	64.9	64.1	55.2	54.1	64.5	54.7	48**
Latin America	8.8	9.0	7.7	7.8	8.9	7.8	22
G20	63.9	63.1	51.1	50	63.5	50.6	43
EU	4.0	4.0	3.2	3.2	4.0	3.2	27
	% of world				% of world		
	97.0	97.1	97.9	97.9	97.1	97.9	167

* The shares do not add up to one as all EU countries are in the G20 and some African, Asian or Latin American countries are in the G20.
** There is one more country in Asia in this table than in later tables or figures as this table includes Palestine.

4. Human capital per capita

As a headline indicator, human capital per capita is calculated as human capital divided by the total population. Human capital per capita is the best measure of a country's relative human capital because it indicates how an individual is faring on average rather than according to a country's total human capital determined by the size of its workforce. The size of the educated population and the total population is a component of the methodology used to construct human capital per capita.

IWR human capital in a country, *HC*, is estimated using the following formula:

$$HC = \underbrace{e^{\rho \cdot Edu}}_{Term_1} \cdot \underbrace{P_{5+Edu}}_{Term_2} \cdot \underbrace{\int_0^T w \cdot e^{-\delta\tau} d\tau}_{Term_3},$$

(1)

where ρ is return to years of schooling, *Edu* is average EYS, P_{5+edu} is number of individuals who are old enough to have finished the average number of years of education, T is an employee's expected remaining working years, w is the average annual labour compensation, and δ is the discount rate.

Term 1 captures return to schooling, Term 2 is the number of individuals who have completed the average number of years of education and who might be working, while Term 3 is labour compensation received by an individual over their lifetime, discounted to the present. Following the underlying model developed by Arrow et al. (2012), by country, w is held constant over the whole period, 1990–2020, and because of data limitations, w is the same for males and females.[12] As suggested by Klenow and Rodriguez-Clare (1997), the rate of return to education is set at 8.5%, as is the discount rate. Human capital is deflated using country-level purchasing power parities.

Figure 2 presents the average human capital per capita by gender every five years from 1990 to 2020 for the world and the country groups. The y-axis scale for Africa, Asia, Latin America and the world are identical to facilitate comparison; that for the G20 and the EU differs as these groups' human capital per capita is so much higher than that of the others. There is a consistent pattern among the five country groups, as human capital per capita rises between Africa and Asia, Asia and Latin America, Latin America and the G20, and the G20 and the EU. Even the 2020 figures are lower than the following shown male or female aggregate 1990 figure, for example, human capital per capita in Africa in 2020 is less than human capital per capita in Asia in 1990;

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[12] It is difficult to obtain publicly available wage rates by gender for a large number of countries. The World Bank, in its Changing Wealth of Nations series (World Bank, 2021), probably has annual labour compensation by gender, but not necessarily hours worked in order to compute the hourly wage rate. Montenegro and Patrinos (2014) estimate Mincer equations which show that return to schooling (see Figure 2, p. 8) is higher for females than for males.

human capital per capita in Asia in 2020 is less than human capital per capita in Latin America in 1990, and so forth. In Figure 1, we see that male and female human capital per capita differ less than expected. There are two reasons for this, as previously noted: the average annual labour compensation rate per country is held constant over the whole period and the male and female average annual labour compensation rates, because of the lack of publicly available data, are the same. In Africa, Asia and Latin America, female human capital per capita is less than that of males in each of the years shown, with the 2020 difference between male and female human capital per capita being about US$1,500 for Africa, just over US$2,000 for Asia and US$1,000 for Latin America.[13] Of these three, Latin American female human capital per capita demonstrates the greatest catch-up to males between 1990 and 2020, as the percentage of female human capital of male human capital per capita rose 13.9 percentage points compared to 10.4 percentage points for Africa and 5.6 percentage points for Asia. Other factors besides EYS impact Latin America human capital per capita, as female human capital per capita is always less than that of males even though female EYS is always greater than male EYS. Some of these factors are explored in the decomposition section of this chapter, which outlines each of the three terms' contribution to growth in human capital. Brazil (first) and Mexico (second) are the two largest countries in their region in terms of population, accounting for over 50% of the total population in Latin America. The overall human capital ranking dropped slightly between 1990 and 2020 in both countries, from 60th to 57th for Brazil and from 71st to 68th for Mexico. In Africa, where human capital per capita is very low, the second largest country by population, Ethiopia, has the lowest average human capital per capita of all 166 countries in 1990; in 2020 it ranks next to last.[14] Nigeria, the largest

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[13] Dollar amounts are 2015 US dollars.

[14] See Table 4 and its discussion later in this report for the lowest and highest country human capital per capita by gender and overall in 1990 and 2020 and appendix B for a listing of rankings by gender.

country in this region by population, is in the bottom ten average human capital per capita countries in both years. The level of Asian human capital per capita is primarily due to that in China and India. Specifically, it is India's human capital per capita that results in a second lowest by region figure as its average human capital ranks 133rd in both 1990 and 2020. China's average human capital ranks 95th in 1990 and 85th in 2020. For the years shown, G20 female human capital per capita is always above that of males; world female human capital per capita is above that of males from 1995. The EU is the only group in which there is a clear crossing point between female and male human capital per capita. After 2000, female human capital per capita is always greater than male human capital per capita. Just over half of the G20 countries are high-income countries, but the two G20 countries that are the most populous in the world, China and India, are not high-income countries.[15] Only two of the 27 EU countries are not high-income countries. In general, it is in high-income countries, particularly G20 high-income countries, where female human capital per capita is greater than male human capital per capita. The world figures are all above those for Africa, Asia and Latin America, and the EU figures are above those for the G20, as would be expected given the relative EYS level.

Comparing Table 2 to Table 3 (and Table 5), the present and future impacts of higher and rising birth rates in Africa are evident. The 1990 African countries' share dropped from around 16% for the population aged zero to four to about 11% for the total population; in 2020, the drop was from 28–29% to 16% respectively. Table 3 shows that Asia is the only region in which the male percentage of the total population remained at least 1 percentage point greater than that for females in 2020; there is no group in which females have at least a 1-percentage-point larger share than males. Comparing Table 3 to Table 2, the shares for the G20 are much higher than those in

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[15] See https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups for a listing of high-income countries.

Table 2, and the EU Table 3 shares are about double those of Table 2, which suggests that the G20 and the EU on average have older populations than Africa, Asia or Latin America.

Within the human capital per capita aggregates, as with EYS, there is a high level of diversity. The countries in the lowest or highest EYS or human capital per capita categories are frequently the same (Table 4). More than 50% of the time in the case of Africa, Asia and Latin America, when a country has the lowest or highest EYS, it also has the lowest or highest human capital per capita. This is most common among those countries with the lowest value in both categories. Haiti appears in all of Latin America's lowest categories. For the G20 in all categories, India always ranks lowest and Luxembourg always ranks highest. For all world categories, there are two consistent country appearances in the lowest category – Ethiopia and Somalia – and in the highest category it is always Luxembourg.

Table 3. Share of the total world population and by aggregates and gender (%)

	1990		2020		1990	2020	
	Male	Female	Male	Female	Total	Total	
	% the population*		% of population*		% of population*		Number of countries
Africa	11.3	11.6	16.4	16.7	11.4	16.5	46
Asia**	63.1	61.3	61.8	60.1	62.2	61.0	47
Latin America	8.3	8.6	8.3	8.8	8.5	8.5	22
G20	71.9	71.7	65.0	64.5	71.8	64.7	43
EU	7.9	8.4	5.7	6.1	8.2	5.9	27
	% of world		% of world		% of world		
	97.9	97.7	98.5	98.3	97.8	98.4	166

* The shares do not add up to one as all EU countries are in the G20 and some African, Asian or Latin America countries are in the G20.
** There is one less Asian country in this table as an estimate for Palestine EYS was constructed, but Palestine human capital was not constructed.

Figure 2. Human capital per capita by gender, every five years, 1990–2020 (thousands, 2015 US dollars)*
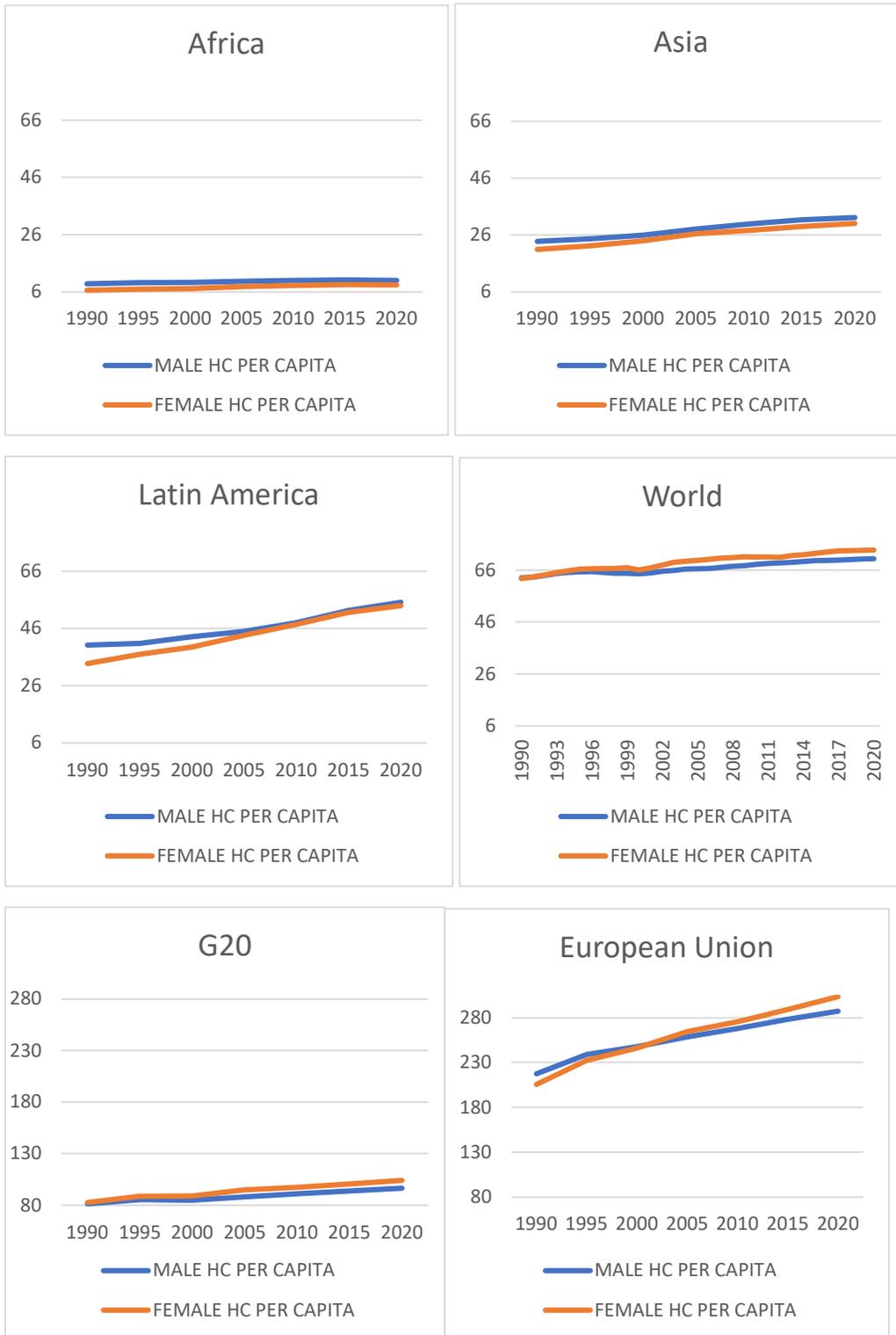
* There is one less Asian country in this figure as an estimate for Palestine human capital was not constructed.

In most cases, except for Africa and Latin America, there are several human capital per capita jumps within each group. All countries' human capital per capita within their group are ranked to examine this phenomenon. The increase is considered significant if the difference between adjacent ranked countries in 2015 US dollars is US$20,000 or more. The only time there was such a significant difference in Africa was between males' and females' highest and next highest country human capital per capita level in 1990. The only time such a significant difference occurred for Latin America was between the countries ranked 18th and 19th in female human capital per capita in 1990. The jumps in human capital per capita for Asia, the G20 and the EU typically start in the last third of countries, ranked from lowest to highest. The exception is the EU in 2020 for males and females; significant differences in ranked human capital per capita figures begin much earlier for males and females. Since the world group includes many more countries than any of the other groups, it is not surprising that jumps occur rarely; in fact, almost all occur for countries that are ranked low. Subsequent differences in human capital per capita almost always occur between all countries ranked 161 or higher.

The last population factor that directly impacts human capital is the number of individuals who have completed the average EYS, that is, the educated population. Table 5, which presents the share of the educated population, is much more similar to Table 3, the total population table, than to Table 1, the population aged zero to four. In 1990, the African, Asian and Latin American educated population shares in Table 5, except for Asian females, are lower than the shares in Table 3. In both years, the G20 and the EU educated population shares are significantly higher than the corresponding total population shares. In 2020, the African educated population shares were about 2 percentage points lower than the total population shares, but the Asian educated population

shares were higher than the total population shares. In 2020, the Latin American shares were reasonably similar in the two tables.

Table 4. Lowest and highest values for human capital per capita by gender, 1990 and 2020

			Africa		Asia*		Latin America	
			Country	Value	Country	Value	Country	Value
1990	Male	Lowest	Ethiopia	1.2	Nepal	2.9	Haiti	6.8
		Highest	Gabon	63.4	Singapore	305.1	Argentina	69.6
	Female	Lowest	Niger	0.9	Iraq	1.6	Haiti	6.5
		Highest	Gabon	61.8	Saudi Arabia	267.8	Uruguay	71.9
	Both	Lowest	Ethiopia	1.1	Nepal	2.6	Haiti	6.6
		Highest	Gabon	62.6	Singapore	286.6	Uruguay	70.3
2020	Male	Lowest	Somalia	1.3	Korea, Democratic People's Republic of	3.5	Haiti	7.7
		Highest	Mauritius	58.5	United Arab Emirates	388.2	Chile	109.4
	Female	Lowest	Somalia	0.8	Iraq	1.9	Haiti	8.0
		Highest	Mauritius	56.9	Macao	364.6	Chile	108.2
	Both	Lowest	Somalia	1.1	Iraq	3.4	Haiti	7.9
		Highest	Mauritius	57.7	Macao	357.7	Chile	108.8

			G20		EU		World	
			Country	Value	Country	Value	Country	Value
1990	Male	Lowest	India	6.7	India	8.7	Ethiopia	1.2
		Highest	Luxembourg	786.8	Luxembourg	786.8	Luxembourg	786.8
	Female	Lowest	India	4.4	Bulgaria	33.2	Niger	.9
		Highest	Luxembourg	699	Luxembourg	699.0	Luxembourg	699.0
	Both	Lowest	India	5.6	Bulgaria	33.0	Ethiopia	1.1
		Highest	Luxembourg	742.0	Luxembourg	742.0	Luxembourg	742.0
2020	Male	Lowest	India	8.7	Bulgaria	43.6	Somalia	1.3
		Highest	Luxembourg	1014.9	Luxembourg	1014.9	Luxembourg	1014.9
	Female	Lowest	India	5.5	Bulgaria	46.4	Somalia	.8
		Highest	Luxembourg	1008	Luxembourg	1008.0	Luxembourg	1008.0
	Both	Lowest	India	7.2	Bulgaria	45.0	Somalia	1.1
		Highest	Luxembourg	1011.5	Luxembourg	1011.5	Luxembourg	1011.5

* There is one less Asian country in this table as an estimate for Palestine human capital was not constructed.

Appendix B lists the human capital per capita 1990 and 2020 rankings for all 166 countries by gender. Appendix Table B1 includes the male rankings and the changes in rankings between the two years; Appendix B2 includes the female rankings and the changes in rankings between the two years. The top three countries for males and females in 1990 and 2020 are Luxembourg, Switzerland and Norway. Denmark and the United States are ranked either fourth or fifth in both years. There is a fair amount of movement up or down among the following five countries between 1990 and 2020. Ethiopia, Niger and Somalia are continually ranked among the bottom three for both males and females in both 1990 and 2020. The bottom 10th ranked countries for male human capital per capita are always in Africa; for females, there are a couple of exceptions: Afghanistan and Iraq in 1990 and only Iraq in 2020. Changes of 10 or more up or down are considered large changes and there are almost three times as many large changes in rankings for females than for males. In addition, female large changes on average are much greater than male large changes. With one exception, male large changes are in the middle third of the rankings, with only one male large change for a country in the top 25 in 2020. Female large changes are much more widely distributed than male large changes. The greatest male upward movement is Bhutan and Turkey at 12; the greatest downward male movement is Gabon at 15. Half of the eight male large changes are in Asian countries; all but one of the other four changes are in an African country. Similarly, half of the 22 female large changes are in Asian countries; almost half of the remaining female large changes are in African countries. The greatest female upward movement is Iran at 28; the greatest downward movement is Gabon at 25.

Table 5. Share of educated population in the world and country groups by gender (%), 1990 and 2020*

	1990		2020		1990	2020	Number of countries
	Male	Female	Male	Female	Total	Total	
	% of population**		% of population**		% of population**		
Africa	10.4	11	14.1	14.9	10.7	14.5	46
Asia***	62.9	61.3	63.4	61.2	62.1	62.3	47
Latin America	8.0	8.0	8.1	8.5	8.0	8.3	22
G20	73.9	73.2	67.7	66.7	73.6	67.2	43
EU	8.8	9.2	6.3	6.7	9.0	6.5	27
	% world		% of world		% of world		
	97.9	97.7	98.6	98.4	97.8	98.5	166

* Educated population refers to individuals who have completed the average number of EYS completed in their country.
** The shares do not add up to one as all EU countries are in the G20 and some Africa, Asia, or Latin America countries are in the G20.
*** There is one less Asian country in this table as an estimate for Palestine human capital was not constructed.

Appendix Table B3 shows how much male rankings have changed between 1990 and 2020 compared to female rankings for all 166 countries. The difference columns subtract the female human capital per capita ranking from that of males. The change in the difference column indicates if the male/female rank difference has increased between 1990 and 2020 (a positive number) or declined (a negative number). The change in the difference column does not indicate if the rank of either males or females has improved; that can be ascertained by looking at Appendix B1 or B2 or by comparing the rank columns in Appendix B3. There are 12 large change differences (differences greater than 10). Two-thirds of the large rank changes between 1990 and 2020 show that the differences in ranks between males and females have narrowed. Half of the significant rank changes are for Asian countries, and one-third is for African countries. Within Asia, four of the significant rank changes are for countries in the Middle East, except in the case of Yemen,

where the difference between the male and female human capital per capita ranks has narrowed, and the female rank improved between 1990 and 2020.

5. Decompositions

Contributions to human capital growth are analyzed using a decomposition approach. The framework was first employed in the previous IWR (UNEP, 2023; Liu, 2021). Since the human capital of a country k in an aggregate consisting of K countries is estimated separately for males and females (gender being indexed by j, $j = 1, 2$), one has:

(2) $$HC_{jk} = \prod_i Term_{ijk}, \qquad i = 1, 2, 3; j = 1, 2; k = 1, 2, \ldots K,$$

and the total aggregate human capital, HC^R, will be:

(3) $$HC^R = \sum_{jk} HC_{jk} = \sum_{jk} \left(\prod_i Term_{ijk} \right), \qquad i = 1, 2, 3; j = 1, 2; k = 1, 2,$$

$\ldots K.$

In term i, $i=1$ is return to schooling, $i=2$ is the number of individuals who have finished the average number of years of education and might be working, and $i=3$ is the labour compensation received by an individual over their lifetime. By using the logarithmic mean function as weights, the (percentage) growth of aggregate human capital defined in equation (3) can be decomposed as:

(4) $$\frac{\Delta HC^R}{HC^R} = \frac{\sum_{jk} \Delta HC_{jk}}{HC^R} = \left(\sum_i \sum_{jk} \frac{\Delta HC_{jk}}{\Delta(lnHC_{jk})} \Delta lnTerm_{ijk} \right) / HC^R, \quad i = 1, 2, 3; j = 1, 2; k$$

$= 1, 2, \ldots K,$

where Δ stands for the change of variable between two time points. Formally, the contribution by each factor indexed by term i, gender j and country k to the regional human capital growth is defined as:

(5) $\quad$ *Contribution (i, j, k)* $= \left(\frac{\Delta HC_{jk}}{\Delta(lnHC_{jk})} \Delta lnTerm_{ijk} \right) / HC^R$, $i = 1, 2, 3; j = 1, 2; k = 1, 2, \ldots K.$

Figure 3 shows the 1990–2020 decompositions for Africa, Asia, Latin America, the G20 and the EU.[16] It is not surprising given the population growth in Africa that the largest contribution to its human capital growth is term 2, the number of individuals who have finished the average number of EYS and who might be working. The Africa term 2 contribution is also the largest term 2 contribution of any of the five groups. The Africa and Asia male term 2 contributions are larger than their corresponding female term 2 contributions. Latin America, the G20 and the EU term 2 male and female contributions are about equal. The Latin America term 1 contribution, the return to schooling contribution term, is the largest of any of the five groups, although it is only a few percentage points larger than its term 2 contribution. The G20 and EU contributions are the smallest of any of the five groups. Both male and female EU term 1 contributions are larger than their term 2 contributions. In the case of the G20, the female term 1 contribution is larger than the male contribution, but for males, the reverse is the case. As expected, term 3, labour compensation received by an individual over a lifetime, typically is quite small and even negative; however, for Latin American females it is 9.3%. The size of term 3 reflects the limitation of the current methodology applied by the IWR project for human capital estimation, in which no difference is allowed for labour compensation between genders and over years, leading to term 3 being practically determined solely by expected remaining working years. Finally, note that total African and Asian male contribution to human capital growth is greater than that for females, but for Latin America, the G20 and the EU the reverse is the case.

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[16] In IWR 2022 (UNEP, 2023) the 1990–2020 decompositions are shown in an appendix for all of the countries covered.

Figure 3. Contributions to human capital growth by country groups and by gender, 1990–2020*
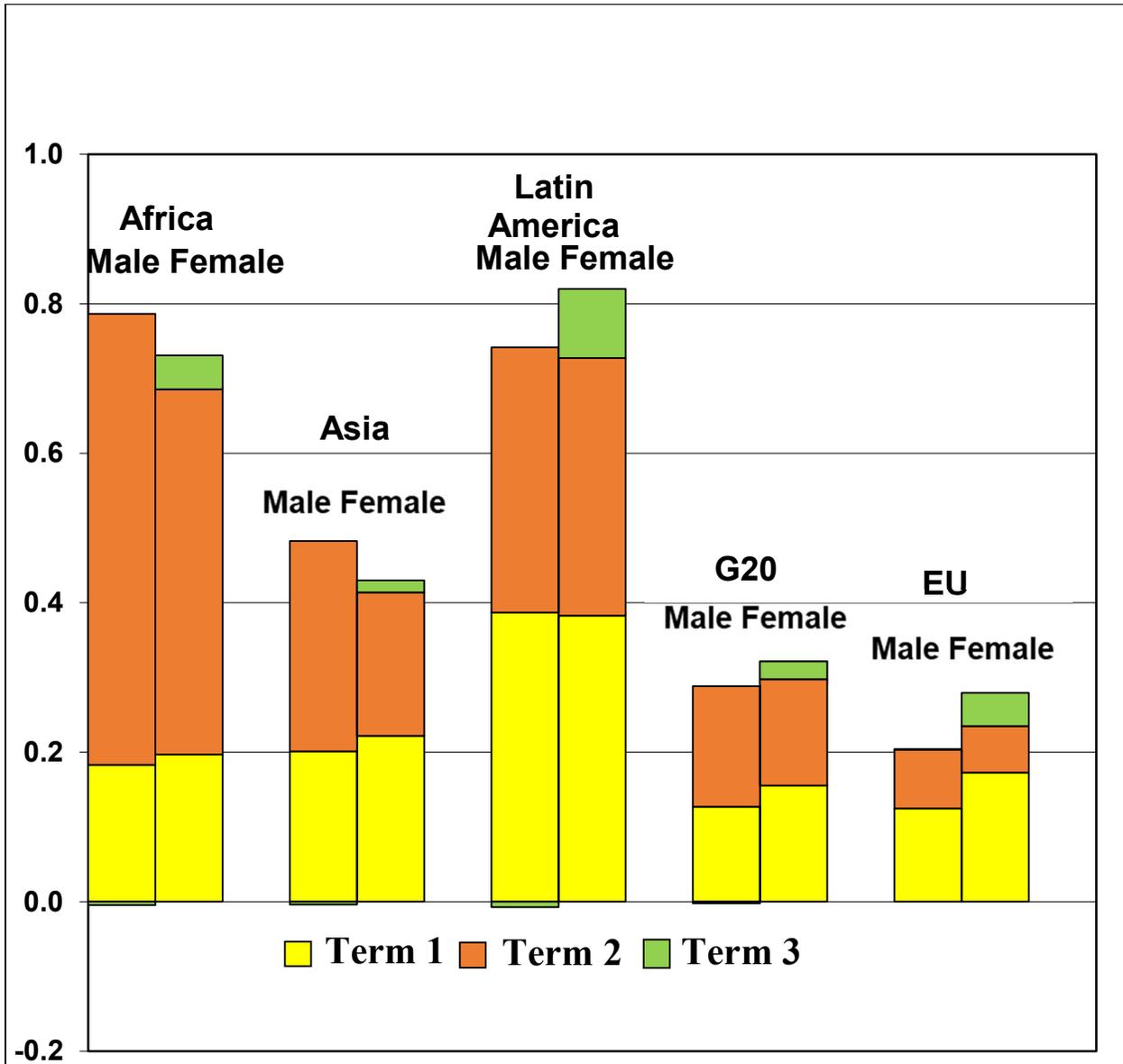
* There is one less Asian country in this figure as an estimate for Palestine human capital was not constructed.

6. Gini gender coefficient

A Gini gender coefficient is computed to examine the gender distribution of human capital among educated people, to determine whether it is relatively equal or unequal. A positive estimated Gini

gender coefficient value indicates that educated males generate or own more human capital than educated females, while a negative value suggests the opposite. The larger the absolute value, the more unevenly human capital is distributed between genders, and a value of zero implies that human capital is equally distributed among educated males and females.

Figure 4 shows the Gini gender coefficient for each of the five aggregates from 1990 to 2020. The highest coefficient is for Africa; Asia and Latin America have fairly similar coefficients as do the EU and the G20. The coefficients generally decrease over time, indicating that the extent to which educated males generate/own more human capital than females has lessened over time. The EU and the G20 are the only groups in which educated females generate/own more human capital than males at some point. This occurred for the EU beginning in 2006 and the G20 starting in 1997.

Figure 4. Gini gender coefficient, 1990–2020*
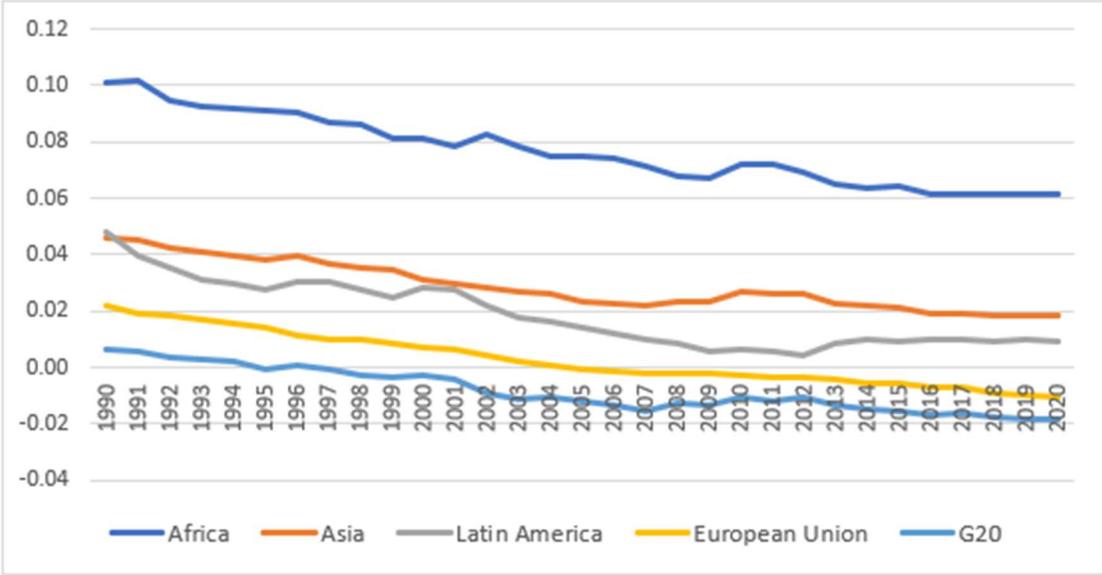
* There is one less Asian country in this figure as an estimate for Palestine human capital was not constructed.

7. Conclusion

To understand levels and trends in human capital and human capital per capita, it is essential to analyze components of human capital by gender. This chapter focuses on five essential country groups by gender: Asia, Africa, Latin America, the G20 and the EU, to highlight differences between them.

The order of the groups in Figures 1–3 is intentional and clearly shows how EYS, human capital per capita, decomposition contributions and the Gini gender coefficient change from one group to the next. The human capital per capita of countries within each total differs significantly; the diversity within each is highlighted by showing the lowest and the highest EYS and human capital per capita value within each group. Contributions by terms and Gini gender coefficients summarize the impact that education and human capital have had on individuals in countries over time.

Changes in relative birth rates are evidenced by the shares of those aged zero to four, the total population and the educated population. Particular attention should be paid to Africa because it is the region with the highest population growth rates. Even though Asian zero to four and total population shares have been declining, Asia still represents the majority of the world's population in all of the three population measures. Notably, the Asia educated world population percentage rose slightly between 1990 and 2020. The population shares for the G20, a collection of powerful countries, are all decreasing, even considering both China and India are members of the G20. All of the EU population shares, even though historically Europe is a region that has shaped the world,

are declining. Of all the country groups, population shares in Latin America display minor changes relative to their starting values.

It is essential to observe changes in the levels of education and human capital per capita by gender in the world over time. This will assist government officials and others in formulating future policies. The future sustainability of countries and the welfare of individuals within countries may depend on historical progress continuing.

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Appendix A

Countries in the five groups

Africa (46): Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Capo Verdi, Cameroon, Central African Republic, Chad, Congo, Congo (Democratic Republic of), Cote d'Ivoire, Djibouti, Egypt, Eritrea, Eswatini, Ethiopia, Gabon, Gambia, Ghana, Guinea, Kenya, Lesotho, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sao Tome & Principe, Senegal, Sierra Leone, Somalia, South Africa, Tanzania (United Republic of), Togo, Tunisia, Uganda, Zambia, Zimbabwe.

Asia (47 or 48): Afghanistan, Armenia, Azerbaijan, Bahrain, Bangladesh, Bhutan, Brunei Darussalam, Cambodia, China, Cyprus, Georgia, Hong Kong, India, Indonesia, Iran, Iraq (Islamic Republic of), Israel, Japan, Jordon, Kazakhstan, Korea (Democratic People's Republic of), Korea (Republic of), Kuwait, Kyrgyzstan, Lao People's Democratic Republic, Macao, Malaysia, Maldives, Mongolia, Myanmar, Nepal, Oman, Pakistan, Philippines, Qatar, Saudi Arabia, Singapore, Sri Lanka, Syrian Arab Republic, Tajikistan, Thailand, Turkey, Turkmenistan, United Arab Emirates, Uzbekistan, Viet Nam, Palestine in the EYS section only.

Latin America (22): Argentina, Bolivia (Plurinational State of), Brazil, Belize, Chile, Columbia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay, Venezuela (the Bolivarian Republic of).

European Union (27): Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden.

G20 (43): All of the members of the EU listed above, plus Argentina, Australia, Brazil, Canada, China, India, Indonesia, Japan, Korea (Republic of), Mexico, Russia, Saudi Arabia, South Africa, Turkey, United Kingdom, United States.

Appendix B

Human capital per capita ranking of all world countries

Appendix Table B1. Country rankings for male human capital per capita

1990		2020		
Country	**Rank**	**Country**	**Rank**	**Difference**
Luxembourg	1	Luxembourg	1	
Switzerland	2	Switzerland	2	
Norway	3	Norway	3	
United States	4	Denmark	4	1
Denmark	5	United States	5	–1
Germany	6	Belgium	6	3
France	7	Netherlands	7	4
Austria	8	Austria	8	
Belgium	9	United Arab Emirates	9	7
Canada	10	France	10	–3
Netherlands	11	Germany	11	–5
Singapore	12	Sweden	12	1
Sweden	13	United Kingdom	13	1
United Kingdom	14	Finland	14	1
Finland	15	Australia	15	3
United Arab Emirates	16	Ireland	16	5
Iceland	17	Iceland	17	
Australia	18	Macao	18	1
Macao	19	Canada	19	–9
Israel	20	Hong Kong	20	3
Ireland	21	Japan	21	3
Italy	22	Italy	22	
Hong Kong	23	Singapore	23	–11
Japan	24	Israel	24	–4
Brunei Darussalam	25	Spain	25	1
Spain	26	Brunei Darussalam	26	–1
New Zealand	27	New Zealand	27	
Bahamas	28	Malta	28	2
Qatar	29	Slovenia	29	2
Malta	30	Korea, Republic of	30	2
Slovenia	31	Portugal	31	2
Korea, Republic of	32	Bahamas	32	–4
Portugal	33	Qatar	33	–4
Bahrain	34	Greece	34	1
Greece	35	Cyprus	35	2

1990		2020		
Country	**Rank**	**Country**	**Rank**	**Difference**
Saudi Arabia	36	Saudi Arabia	36	
Cyprus	37	Bahrain	37	–3
Estonia	38	Oman	38	6
Barbados	39	Czechia	39	1
Czechia	40	Croatia	40	1
Croatia	41	Hungary	41	2
Kuwait	42	Estonia	42	–4
Hungary	43	Chile	43	5
Oman	44	Barbados	44	–5
Argentina	45	Kuwait	45	–3
Slovakia	46	Costa Rica	46	6
Uruguay	47	Slovakia	47	–1
Chile	48	Trinidad & Tobago	48	1
Trinidad & Tobago	49	Latvia	49	2
Gabon	50	Uruguay	50	–3
Latvia	51	Argentina	51	–6
Costa Rica	52	Lithuania	52	1
Lithuania	53	Poland	53	1
Poland	54	Maldives	54	8
Suriname	55	Venezuela	55	3
Russia	56	Russia	56	
Panama	57	Brazil	57	2
Venezuela	58	Malaysia	58	3
Brazil	59	Panama	59	–2
Belarus	60	Turkey	60	12
Malaysia	61	Belarus	61	–1
Maldives	62	Suriname	62	–7
Azerbaijan	63	Mauritius	63	5
South Africa	64	Azerbaijan	64	–1
Romania	65	Gabon	65	–15
Jordan	66	Romania	66	–1
Cuba	67	Mexico	67	3
Mauritius	68	South Africa	68	–4
Jamaica	69	Cuba	69	–2
Mexico	70	Jordan	70	–4
Kazakhstan	71	Kazakhstan	71	
Turkey	72	Bulgaria	72	2
Bosnia & Herzegovina	73	Jamaica	73	–4
Bulgaria	74	Bosnia & Herzegovina	74	–1
Serbia	75	Belize	75	1
Belize	76	Serbia	76	–1

1990		2020		
Country	Rank	Country	Rank	Difference
Namibia	77	North Macedonia	77	5
Turkmenistan	78	Dominican Republic	78	2
Guyana	79	Namibia	79	–2
Dominican Republic	80	Colombia	80	4
Samoa	81	Bhutan	81	12
North Macedonia	82	Guyana	82	–3
Fiji	83	Iran	83	9
Colombia	84	Turkmenistan	84	–6
Guatemala	85	Samoa	85	–4
Angola	86	Guatemala	86	–1
Sri Lanka	87	Fiji	87	–4
Eswatini	88	Eswatini	88	
El Salvador	89	Paraguay	89	1
Paraguay	90	Angola	90	–4
Tunisia	91	China	91	5
Iran	92	Sri Lanka	92	–5
Bhutan	93	Tunisia	93	–2
Botswana	94	El Salvador	94	–5
Albania	95	Thailand	95	5
China	96	Botswana	96	–2
Ecuador	97	Albania	97	–2
Armenia	98	Algeria	98	1
Algeria	99	Peru	99	10
Thailand	100	Morocco	100	10
Egypt	101	Djibouti	101	4
Honduras	102	Cabo Verde	102	10
Yemen	103	Ecuador	103	–6
Congo	104	Armenia	104	–6
Djibouti	105	Honduras	105	–3
Ukraine	106	Ukraine	106	
Vanuatu	107	Egypt	107	–6
Bolivia	108	Syria	108	5
Peru	109	Bolivia	109	–1
Morocco	110	Mauritania	110	1
Mauritania	111	Vanuatu	111	–4
Cabo Verde	112	Yemen	112	–9
Syria	113	Uzbekistan	113	1
Uzbekistan	114	Congo	114	–10
Moldova	115	Indonesia	115	2
Pakistan	116	Pakistan	116	
Indonesia	117	Viet Nam	117	2

1990		2020		
Country	Rank	Country	Rank	Difference
Georgia	118	Mongolia	118	4
Viet Nam	119	Nicaragua	119	2
Sao Tome & Principe	120	Georgia	120	–2
Nicaragua	121	Moldova	121	–6
Mongolia	122	Sao Tome & Principe	122	–2
Papua New Guinea	123	Papua New Guinea	123	
Philippines	124	Ghana	124	1
Ghana	125	Philippines	125	–1
Cameroon	126	Laos	126	3
Côte d'Ivoire	127	Cameroon	127	–1
Kenya	128	India	128	4
Laos	129	Kenya	129	–1
Zambia	130	Côte d'Ivoire	130	–3
Haiti	131	Bangladesh	131	5
India	132	Haiti	132	–1
Zimbabwe	133	Lesotho	133	4
Kyrgyzstan	134	Zambia	134	–4
Gambia	135	Afghanistan	135	9
Bangladesh	136	Kyrgyzstan	136	–2
Lesotho	137	Benin	137	2
Guinea	138	Zimbabwe	138	–5
Benin	139	Guinea	139	–1
Iraq	140	Myanmar	140	3
Chad	141	Gambia	141	–6
Senegal	142	Chad	142	–1
Myanmar	143	Senegal	143	–1
Afghanistan	144	Cambodia	144	3
Tajikistan	145	Iraq	145	–5
Korea, Democratic People's Republic of	146	Mali	146	4
Cambodia	147	Sierra Leone	147	5
Central African Republic	148	Togo	148	1
Togo	149	Tajikistan	149	–4
Mali	150	Central African Republic	150	–2
Congo, Democratic Republic of	151	Eritrea	151	2
Sierra Leone	152	Nepal	152	3
Eritrea	153	Congo, Democratic Republic of	153	–2
Uganda	154	Korea, Democratic People's Republic of	154	–8
Nepal	155	Uganda	155	–1

1990		2020		
Country	Rank	Country	Rank	Difference
Madagascar	156	Madagascar	156	
Burkina Faso	157	Rwanda	157	3
Mozambique	158	Mozambique	158	
Nigeria	159	Burkina Faso	159	−2
Rwanda	160	Burundi	160	1
Burundi	161	Nigeria	161	−2
Malawi	162	Malawi	162	
Tanzania	163	Tanzania	163	
Niger	164	Niger	164	
Somalia	165	Ethiopia	165	1
Ethiopia	166	Somalia	166	−1

Appendix Table B2. Country rankings for female human capital per capita

1990		2020		
Country	**Rank**	**Country**	**Rank**	**Difference**
Luxembourg	1	Luxembourg	1	
Switzerland	2	Switzerland	2	
Norway	3	Norway	3	
United States	4	Denmark	4	1
Denmark	5	United States	5	–1
Canada	6	Sweden	6	3
Finland	7	Belgium	7	5
France	8	Iceland	8	6
Sweden	9	Austria	9	2
Germany	10	Netherlands	10	5
Austria	11	Finland	11	–4
Belgium	12	France	12	–4
United Kingdom	13	United Kingdom	13	
Iceland	14	Ireland	14	8
Netherlands	15	Germany	15	–5
Singapore	16	Canada	16	–10
Australia	17	Macao	17	6
Israel	18	Australia	18	–1
Japan	19	Hong Kong	19	2
Italy	20	Japan	20	–1
Hong Kong	21	Singapore	21	–5
Ireland	22	Italy	22	–2
Macao	23	Israel	23	–5
Bahamas	24	Spain	24	2
New Zealand	25	United Arab Emirates	25	4
Spain	26	New Zealand	26	–1
Brunei Darussalam	27	Slovenia	27	1
Slovenia	28	Brunei Darussalam	28	–1
United Arab Emirates	29	Malta	29	4
Portugal	30	Portugal	30	
Qatar	31	Bahamas	31	–7
Korea, Republic of	32	Korea, Republic	32	
Malta	33	Cyprus	33	3
Estonia	34	Greece	34	1
Greece	35	Qatar	35	–4
Cyprus	36	Estonia	36	–2
Barbados	37	Croatia	37	2
Hungary	38	Czechia	38	2
Croatia	39	Barbados	39	–2
Czechia	40	Hungary	40	–2

1990		2020		
Country	Rank	Country	Rank	Difference
Uruguay	41	Bahrain	41	3
Slovakia	42	Chile	42	10
Argentina	43	Kuwait	43	8
Bahrain	44	Slovakia	44	–2
Gabon	45	Latvia	45	1
Latvia	46	Costa Rica	46	10
Trinidad & Tobago	47	Lithuania	47	2
Poland	48	Argentina	48	–5
Lithuania	49	Oman	49	22
Russia	50	Uruguay	50	–9
Kuwait	51	Poland	51	–3
Chile	52	Trinidad & Tobago	52	–5
Suriname	53	Saudi Arabia	53	9
Belarus	54	Russia	54	–4
Panama	55	Venezuela	55	2
Costa Rica	56	Panama	56	–1
Venezuela	57	Maldives	57	18
Azerbaijan	58	Brazil	58	1
Brazil	59	Malaysia	59	2
Romania	60	Belarus	60	–6
Malaysia	61	Suriname	61	–8
Saudi Arabia	62	Azerbaijan	62	–4
Kazakhstan	63	Mauritius	63	5
Jamaica	64	Romania	64	–4
Cuba	65	South Africa	65	1
South Africa	66	Cuba	66	–1
Bulgaria	67	Mexico	67	5
Mauritius	68	Turkey	68	8
Bosnia & Herzegovina	69	Kazakhstan	69	–6
Namibia	70	Gabon	70	–25
Oman	71	Bulgaria	71	–4
Mexico	72	Jamaica	72	–8
Serbia	73	Serbia	73	
Turkmenistan	74	Dominican Republic	74	3
Maldives	75	Namibia	75	–5
Turkey	76	Bosnia & Herzegovina	76	–7
Dominican Republic	77	North Macedonia	77	1
North Macedonia	78	Colombia	78	8
Samoa	79	Belize	79	1
Belize	80	Bhutan	80	16
Guyana	81	Guyana	81	

1990		2020		
Country	**Rank**	**Country**	**Rank**	**Difference**
Angola	82	China	82	12
Botswana	83	Turkmenistan	83	−9
Guatemala	84	Thailand	84	11
Eswatini	85	Albania	85	8
Colombia	86	Paraguay	86	1
Paraguay	87	Eswatini	87	−2
Armenia	88	Botswana	88	−5
El Salvador	89	Fiji	89	2
Sri Lanka	90	Angola	90	−8
Fiji	91	Guatemala	91	−7
Ukraine	92	El Salvador	92	−3
Albania	93	Samoa	93	−14
China	94	Sri Lanka	94	−4
Thailand	95	Jordan	95	4
Bhutan	96	Peru	96	6
Vanuatu	97	Tunisia	97	10
Ecuador	98	Armenia	98	−10
Jordan	99	Cabo Verde	99	7
Congo	100	Djibouti	100	13
Bolivia	101	Ecuador	101	−3
Peru	102	Honduras	102	1
Honduras	103	Ukraine	103	−11
Moldova	104	Iran	104	28
Uzbekistan	105	Vanuatu	105	−8
Cabo Verde	106	Bolivia	106	−5
Tunisia	107	Morocco	107	7
Georgia	108	Uzbekistan	108	−3
Viet Nam	109	Viet Nam	109	
Egypt	110	Congo	110	−10
Indonesia	111	Mongolia	111	1
Mongolia	112	Indonesia	112	−1
Djibouti	113	Georgia	113	−5
Morocco	114	Mauritania	114	6
Papua New Guinea	115	Algeria	115	18
Sao Tome & Principe	116	Nicaragua	116	3
Philippines	117	Moldova	117	−13
Ghana	118	Egypt	118	−8
Nicaragua	119	Ghana	119	−1
Mauritania	120	Sao Tome & Principe	120	−4
Kenya	121	Papua New Guinea	121	−6
Cameroon	122	Philippines	122	−5

1990		2020		
Country	Rank	Country	Rank	Difference
Haiti	123	Laos	123	1
Laos	124	Cameroon	124	–2
Zambia	125	Kenya	125	–4
Syria	126	Haiti	126	–3
Yemen	127	Syria	127	–1
Zimbabwe	128	Pakistan	128	10
Lesotho	129	Lesotho	129	
Kyrgyzstan	130	Côte d'Ivoire	130	1
Côte d'Ivoire	131	Zambia	131	–6
Iran	132	Bangladesh	132	5
Algeria	133	Zimbabwe	133	–5
Gambia	134	Kyrgyzstan	134	–4
India	135	Guinea	135	1
Guinea	136	Benin	136	6
Bangladesh	137	India	137	–2
Pakistan	138	Myanmar	138	1
Myanmar	139	Gambia	139	–5
Chad	140	Cambodia	140	5
Senegal	141	Chad	141	–1
Benin	142	Senegal	142	–1
Tajikistan	143	Sierra Leone	143	6
Korea, Democratic People's Republic of	144	Nepal	144	10
Cambodia	145	Mali	145	3
Central African Republic	146	Togo	146	4
Congo, Democratic Republic of	147	Eritrea	147	4
Mali	148	Congo, Democratic Republic of	148	–1
Sierra Leone	149	Central African Republic	149	–3
Togo	150	Korea, Democratic People's Republic of	150	–6
Eritrea	151	Yemen	151	–24
Uganda	152	Rwanda	152	5
Madagascar	153	Afghanistan	153	6
Nepal	154	Uganda	154	–2
Mozambique	155	Madagascar	155	–2
Burkina Faso	156	Tajikistan	156	–13
Rwanda	157	Mozambique	157	–2
Nigeria	158	Burkina Faso	158	–2
Afghanistan	159	Burundi	159	1
Burundi	160	Malawi	160	3

1990		2020		
Country	**Rank**	**Country**	**Rank**	**Difference**
Tanzania	161	Nigeria	161	−3
Iraq	162	Tanzania	162	−1
Malawi	163	Iraq	163	−1
Ethiopia	164	Niger	164	2
Somalia	165	Ethiopia	165	−1
Niger	166	Somalia	166	−1

Appendix Table B3. Changes in relative ranking of male versus female human capital per capita

	1990			2020			Change in
Country	**Male**	**Female**	**Difference**	**Male**	**Female**	**Difference**	**difference**
Afghanistan	144	159	−15	135	153	−18	3
Albania	95	93	2	97	85	12	−10
Algeria	99	133	−34	98	115	−17	−17
Angola	86	82	4	90	90	0	4
Argentina	45	43	2	51	48	3	−1
Armenia	98	88	10	104	98	6	4
Australia	18	17	1	15	18	−3	4
Austria	8	11	−3	8	9	−1	−2
Azerbaijan	63	58	5	64	62	2	3
Bahamas	28	24	4	32	31	1	3
Bahrain	34	44	−10	37	41	−4	−6
Bangladesh	136	137	−1	131	132	−1	0
Barbados	39	37	2	44	39	5	−3
Belarus	60	54	6	61	60	1	5
Belgium	9	12	−3	6	7	−1	−2
Belize	76	80	−4	75	79	−4	0
Benin	139	142	−3	137	136	1	−4
Bhutan	93	96	−3	81	80	1	−4
Bolivia	108	101	7	109	106	3	4
Bosnia & Herzegovina	73	69	4	74	76	−2	6
Botswana	94	83	11	96	88	8	3
Brazil	59	59	0	57	58	−1	1
Brunei Darussalam	25	27	−2	26	28	−2	0
Bulgaria	74	67	7	72	71	1	6
Burkina Faso	157	156	1	159	158	1	0
Burundi	161	160	1	160	159	1	0
Cabo Verde	112	106	6	102	99	3	3
Cambodia	147	145	2	144	140	4	−2
Cameroon	126	122	4	127	124	3	1

Country	1990			2020			Change in difference
	Male	Female	Difference	Male	Female	Difference	
Canada	10	6	4	19	16	3	1
Central African Republic	148	146	2	150	149	1	1
Chad	141	140	1	142	141	1	0
Chile	48	52	−4	43	42	1	−5
China	96	94	2	91	82	9	−7
Colombia	84	86	−2	80	78	2	-4
Congo	104	100	4	114	110	4	0
Congo, Democratic Republic of	151	147	4	153	148	5	−1
Costa Rica	52	56	−4	46	46	0	−4
Côte d'Ivoire	127	131	−4	130	130	0	−4
Croatia	41	39	2	40	37	3	−1
Cuba	67	65	2	69	66	3	−1
Cyprus	37	36	1	35	33	2	−1
Czechia	40	40	0	39	38	1	−1
Denmark	5	5	0	4	4	0	0
Djibouti	105	113	−8	101	100	1	−9
Dominican Republic	80	77	3	78	74	4	−1
Ecuador	97	98	−1	103	101	2	−3
Egypt	101	110	−9	107	118	−11	2
El Salvador	89	89	0	94	92	2	−2
Eritrea	153	151	2	151	147	4	−2
Estonia	38	34	4	42	36	6	−2
Eswatini	88	85	3	88	87	1	2
Ethiopia	166	164	2	165	165	0	2
Fiji	83	91	−8	87	89	−2	−6
Finland	15	7	8	14	11	3	5
France	7	8	−1	10	12	−2	1
Gabon	50	45	5	65	70	−5	10
Gambia	135	134	1	141	139	2	−1
Georgia	118	108	10	120	113	7	3
Germany	6	10	−4	11	15	−4	0
Ghana	125	118	7	124	119	5	2
Greece	35	35	0	34	34	0	0
Guatemala	85	84	1	86	91	−5	6
Guinea	138	136	2	139	135	4	−2
Guyana	79	81	−2	82	81	1	−3
Haiti	131	123	8	132	126	6	2
Honduras	102	103	−1	105	102	3	−4
Hong Kong	23	21	2	20	19	1	1
Hungary	43	38	5	41	40	1	4

Country	1990			2020			Change in difference
	Male	Female	Difference	Male	Female	Difference	
Iceland	17	14	3	17	8	9	−6
India	132	135	−3	128	137	−9	6
Indonesia	117	111	6	115	112	3	3
Iran	92	132	−40	83	104	−21	−19
Iraq	140	162	−22	145	163	−18	−4
Ireland	21	22	−1	16	14	2	−3
Israel	20	18	2	24	23	1	1
Italy	22	20	2	22	22	0	2
Jamaica	69	64	5	73	72	1	4
Japan	24	19	5	21	20	1	4
Jordan	66	99	−33	70	95	−25	−8
Kazakhstan	71	63	8	71	69	2	6
Kenya	128	121	7	129	125	4	3
Korea, Democratic People's Republic of	146	144	2	154	150	4	−2
Korea, Republic of	32	32	0	30	32	−2	2
Kuwait	42	51	−9	45	43	2	−11
Kyrgyzstan	134	130	4	136	134	2	2
Laos	129	124	5	126	123	3	2
Latvia	51	46	5	49	45	4	1
Lesotho	137	129	8	133	129	4	4
Lithuania	53	49	4	52	47	5	−1
Luxembourg	1	1	0	1	1	0	0
Macao	19	23	−4	18	17	1	−5
Madagascar	156	153	3	156	155	1	2
Malawi	162	163	−1	162	160	2	−3
Malaysia	61	61	0	58	59	−1	1
Maldives	62	75	−13	54	57	−3	−10
Mali	150	148	2	146	145	1	1
Malta	30	33	−3	28	29	−1	−2
Mauritania	111	120	−9	110	114	−4	−5
Mauritius	68	68	0	63	63	0	0
Mexico	70	72	−2	67	67	0	−2
Moldova	115	104	11	121	117	4	7
Mongolia	122	112	10	118	111	7	3
Morocco	110	114	−4	100	107	−7	3
Mozambique	158	155	3	158	157	1	2
Myanmar	143	139	4	140	138	2	2
Namibia	77	70	7	79	75	4	3
Nepal	155	154	1	152	144	8	−7
Netherlands	11	15	−4	7	10	−3	−1

Country	1990			2020			Change in difference
	Male	Female	Difference	Male	Female	Difference	
New Zealand	27	25	2	27	26	1	1
Nicaragua	121	119	2	119	116	3	−1
Niger	164	166	−2	164	164	0	−2
Nigeria	159	158	1	161	161	0	1
North Macedonia	82	78	4	77	77	0	4
Norway	3	3	0	3	3	0	0
Oman	44	71	−27	38	49	−11	−16
Pakistan	116	138	−22	116	128	−12	−10
Panama	57	55	2	59	56	3	−1
Papua New Guinea	123	115	8	123	121	2	6
Paraguay	90	87	3	89	86	3	0
Peru	109	102	7	99	96	3	4
Philippines	124	117	7	125	122	3	4
Poland	54	48	6	53	51	2	4
Portugal	33	30	3	31	30	1	2
Qatar	29	31	−2	33	35	−2	0
Romania	65	60	5	66	64	2	3
Russia	56	50	6	56	54	2	4
Rwanda	160	157	3	157	152	5	−2
Samoa	81	79	2	85	93	−8	10
Sao Tome & Principe	120	116	4	122	120	2	2
Saudi Arabia	36	62	−26	36	53	−17	−9
Senegal	142	141	1	143	142	1	0
Serbia	75	73	2	76	73	3	−1
Sierra Leone	152	149	3	147	143	4	−1
Singapore	12	16	−4	23	21	2	−6
Slovakia	46	42	4	47	44	3	1
Slovenia	31	28	3	29	27	2	1
Somalia	165	165	0	166	166	0	0
South Africa	64	66	−2	68	65	3	−5
Spain	26	26	0	25	24	1	−1
Sri Lanka	87	90	−3	92	94	−2	−1
Suriname	55	53	2	62	61	1	1
Sweden	13	9	4	12	6	6	−2
Switzerland	2	2	0	2	2	0	0
Syria	113	126	−13	108	127	−19	6
Tajikistan	145	143	2	149	156	−7	9
Tanzania	163	161	2	163	162	1	1
Thailand	100	95	5	95	84	11	−6
Togo	149	150	−1	148	146	2	−3
Trinidad & Tobago	49	47	2	48	52	−4	6

Country	1990			2020			Change in difference
	Male	Female	Difference	Male	Female	Difference	
Tunisia	91	107	–16	93	97	–4	–12
Turkey	72	76	–4	60	68	–8	4
Turkmenistan	78	74	4	84	83	1	3
Uganda	154	152	2	155	154	1	1
Ukraine	106	92	14	106	103	3	11
United Arab Emirates	16	29	–13	9	25	–16	3
United Kingdom	14	13	1	13	13	0	1
United States	4	4	0	5	5	0	0
Uruguay	47	41	6	50	50	0	6
Uzbekistan	114	105	9	113	108	5	4
Vanuatu	107	97	10	111	105	6	4
Venezuela	58	57	1	55	55	0	1
Viet Nam	119	109	10	117	109	8	2
Yemen	103	127	–24	112	151	–39	15
Zambia	130	125	5	134	131	3	2
Zimbabwe	133	128	5	138	133	5	0