



DEMOGRAPHIC OBSERVATORY
Latin America and the Caribbean

2023

Population dynamics in Latin America and their effects on the labour force



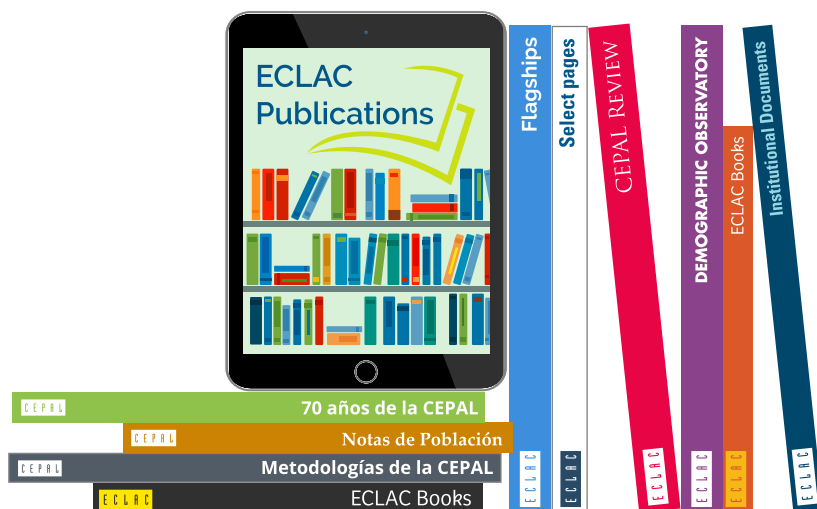
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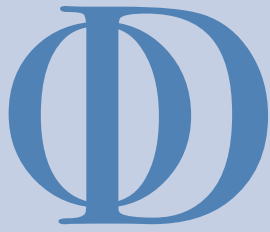
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2023

Population dynamics in Latin America and their effects on the labour force



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For subscriptions or single issues:

publicaciones.cepal@un.org

ISBN: 978-92-1122139-8 (print)

ISBN: 978-92-1002254-5 (pdf)

Sales No.: E.23.II.G.17

LC/PUB.2023/26-P/Rev.1

Distribution: G

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Printed at United Nations, Santiago

S.2400630[E]

This publication should be cited as: Economic Commission for Latin America and the Caribbean (ECLAC), *Demographic Observatory*, 2023 (LC/PUB.2023/26-P/Rev.1), Santiago, 2024.

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Foreword

The Latin American and Caribbean Demographic Centre (CELADE)-Population Division of the Economic Commission for Latin America and the Caribbean (ECLAC) is pleased to present its readers with the estimates and projections of the urban and rural population, by sex and age groups, for the period 1950–2100, and estimates and projections of the labour force, by sex, age and area of residence, for the period 1980–2050 for the 20 countries of Latin America. Both sets of estimates and projections are derived from national-level estimates and projections prepared by CELADE-Population Division of ECLAC in conjunction with the United Nations Population Division (UNPD) in 2022.

In this edition of the *Demographic Observatory*, selected indicators of labour force estimates and projections are analysed to illustrate the impact of population dynamics on the labour force in the 20 countries of Latin America.

CELADE-Population Division of ECLAC produces estimates and projections of the labour force (defined as the population aged 15 and over that is employed or unemployed) using its own methodology, first published in 1969. Although the only data initially available was from population and housing censuses, over time more data sources have emerged for the labour force and the population—primarily household surveys and employment surveys—making it possible to adjust the methodology and with each adjustment produce more accurate estimates of labour force participation, especially in the case of women. Previous versions of the methodology drew on standard labour force participation models for the countries, based on the assumption that at some point in time the countries of the region would converge toward those models. The current methodology takes into account observed trends in each country to determine the specific future participation rates for different age groups among urban and rural populations in each country.

This edition, in addition to covering the 2020 population census round (Chile (2017), Colombia (2018), Guatemala (2018), Mexico (2020) and Peru (2017)), also includes data from household and employment surveys, available from ECLAC from 2000 to 2021 for most of the countries. The available data was sufficient to perform an analysis of each calendar year and put forward hypotheses for future trends in activity rates by sex, area of residence and age, based on the information from each country. The aim of this analysis is not to estimate and project the impact of economic activity on the labour force, but rather to provide a long-term vision of how the labour force is affected by demographic change and variations in participation rates by sex and age groups.

According to the estimates, Latin America will have a population of 652.4 million by the end of 2023, with the labour force accounting for 50.8% or 331.2 million people. As a result of the demographic transition, population growth will become slower and slower, resulting in a projected regional population of 736.9 million

in 2050, with 54.6% of people in a labour force of 402.7 million. By 2050, labour force growth will outpace population growth, meaning that absorbing the additional labour force will remain a considerable challenge for the region's labour markets. The labour force is projected to account for a larger proportion of the population because of greater participation by women in economic activity, faster growth in the working-age population owing to the demographic transition, and people spending more years in the labour force.

The countries of the region are at different points in the demographic transition and have diverse levels of participation in economic activity. For that reason, the labour force estimates and projections prepared by CELADE-Population Division of ECLAC represent an important contribution to understanding the sizes of the labour forces in Latin American countries, their growth, and their structures by sex, age and area of residence. The analysis reveals a growing labour force in urban areas, and in female populations and older persons.

The data used in the estimates and projections, for national, urban and rural populations and for the labour force of Latin American countries, is available on the ECLAC website.¹

Simone Cecchini

Chief

Latin American and Caribbean Demographic Centre
(CELADE)-Population Division of ECLAC

¹ See [online] <https://www.cepal.org/en/subtopics/demographic-projections/latin-america-and-caribbean-population-estimates-and-projections>.

Introduction

Population estimates and projections are crucial for understanding the impact of population dynamics on the age structure of populations. The countries of Latin America and the Caribbean have undergone unprecedented changes: firstly, in terms of reductions in mortality and secondly, in terms of fertility declines, resulting a faster demographic transition than in other countries in the world (ECLAC, 2022). The main result of this population dynamic is a change in the age structure of the population through population ageing.

This process is leading to the working-age population¹ growing more quickly than the population in general, and together with the impact of the economic and social conditions in the countries, could lead to the labour force² expanding more rapidly than the working-age population. This growth is also linked to increased participation by women in the labour force.

Since 1969, the Latin American and Caribbean Demographic Centre (CELADE)-Population Division of the Economic Commission for Latin America and the Caribbean (ECLAC) has estimated and projected activity rates by sex and age based on information from population censuses (see CELADE, 1969). The *Demographic Bulletin* of that year estimated regional averages for gross working life³ of 49.4 years for men and of 11.9 years for women. For the male population, the highest estimate was 53.9 years for Ecuador and the lowest estimate was 45.8 years for Argentina; for the female population, the highest estimate was 46.6 years for Haiti and the lowest 6.2 years for the Dominican Republic. The panorama was therefore quite diverse, with vast gender inequalities in the labour market.

In 1975, in *Demographic Bulletin*, No. 16 (CELADE, 1975), CELADE-Population Division of ECLAC published a series for the 1970–2000 period with estimates of the labour force by sex and age, with the activity rates estimated in the latest available censuses as constants. For some countries, censuses from the 1950 round were used, for others the 1960 round, and for 15 countries censuses from the 1970 round were used.

In 1985, in *Demographic Bulletin*, No. 36 (CELADE, 1985), CELADE-Population Division of ECLAC published estimates and projections of the labour force by sex and age for the 1950–1970 period, using information from available censuses, interpolating census rates to obtain rates for years ending in 0 and 5.

¹ In this report, the definition of the working-age population is based on resolution I of the nineteenth International Conference of Labour Statisticians (ILO, 2013). According to the resolution, the lower age limit should be set taking into consideration the minimum age for employment and exceptions specified in national laws or regulations, or the age of completion of compulsory schooling; No upper age limit should be set so as to permit comprehensive coverage of work activities of the adult population and to examine transitions between employment and retirement. Thus, the minimum age may vary depending on the country being analysed. In this document, the working-age population is defined as the population of men and women aged 15 years and over, since, although several countries have a lower legal minimum age, in most countries of the region information on employment is obtained in censuses and surveys from age 15 upward.

² According to the International Labor Organization (ILO, 2013), the labour force is considered to be the current supply of labour for the production of goods and services in exchange for pay or profit. According to ILO (2013) definitions, then, people in the labour force can be either employed or unemployed.

³ Gross years of working life is the average number of years that a person in a hypothetical cohort will continue to perform economic activities, if, during said working life, the activity rates by ages for the period analysed were to prevail, without mortality risks before leaving the labour force through retirement. It is obtained by adding together the five-year activity rates and multiplying the result by five.

In 1992, in *Demographic Bulletin*, No. 49 (CELADE, 1992), CELADE-Population Division of ECLAC published labour force estimates and projections for the 1950–2025 period by sex, age and area of residence. Area of residence was included because over time a conclusion was reached that for more accurate labour force estimates and projections, it was essential to consider urban and rural areas of residence separately. This is primarily because populations and labour forces grow at different rates in each of these areas. At that time, the 1984 methodology was applied, building models of the structure of participation rates for men, and by urban and rural areas. In the case of women, given the low participation rates indicated by censuses, a decision was reached to make the rates tend toward those of capital cities or metropolitan regions.

In each revision of labour force estimates and projections, CELADE-Population Division of ECLAC has made changes to the models, and above all to assumptions on patterns in the female labour force. In the 1960s, the distribution of activity rates for the female population was bimodal, with women leaving economic activity between the ages of 20 and 25 and returning to it later, a pattern attributed to the fertility of women (Elizaga and Mellon 1971). Because this characteristic was not clearly observed in subsequent decades, participation models were built for the female population that took into account the experiences of more developed countries, such as Spain and Italy, and the countries in the region with higher rates of participation by women in economic activity (CELADE, 1996).

In 2006, when more results of censuses and household surveys were available, the conclusion was reached that women's participation would tend toward the same structure as men's, but around 50 years later (ECLAC, 2006). In 2016, CELADE-Population Division of ECLAC made a new change to the methodology for projecting participation in economic activity, projecting participation rates according to the observed trend in each age group by sex and area of residence (ECLAC, 2017). Lastly, at the same time, a decision was reached to determine structures based on observed participation of the male population, by area of residence. The information gathered revealed that the countries of the region have reached a plateau for labour participation rates for men; models were derived from the rates, based on observed values from available data sources.

This summary of the methodological changes made over time, during revisions of the labour force estimates and projections prepared by CELADE-Population Division of ECLAC, illustrates the complexity and uncertainty of projections for participation in economic activity. As more information becomes available, projections are refined, enabling more accurate monitoring of the different patterns in the countries, determined by the characteristics of their labour markets and economic activity, as well as by levels of urbanization and the pace at which more women take part in economic activity.

It is important to remember that labour force estimates and projections are figures derived from urban and rural population estimates and projections which, in turn, are obtained from total population estimates and projections by sex and age (United Nations, 2022). The labour force estimates and projections contained in this document are therefore based on the estimates and projections for national, urban and rural populations prepared by CELADE-Population Division of ECLAC in 2023. In the 2023 revision of the labour force estimates and projections, methodological changes were made, to estimate and project activity rates by sex, five-year age groups, and area of residence per calendar year, analysing figures from the population censuses and household surveys available to ECLAC. For most countries, household surveys were available from 2000 to 2020 or 2021.

The sustained rise in life expectancy at birth, higher labour force participation rates for women, technological advances and new forms of work led to construction of new participation hypotheses for older persons and women for the projected period that differed from previous revisions. In this revision, future participation rates were established based on observed trends in the analysed sources for the most recent period (see the annex for the methodology used).

Lastly, the methodology employed is not intended to estimate and project the impact of economic activity on the labour force, but rather to illustrate the impact of demographic change on the labour force and the effect of observed variations in participation rates by sex and age groups drawn from the analysed data sources. This type of exercise with respect to long-term trends therefore does not reflect variations in labour force participation as responses to prevailing economic or labour conditions at a point in time.

The following chapters analyse changes, over the 1980–2050 period, in the labour forces of 20 Latin American countries,⁴ and in averages for the region, from a long-term demographic perspective.

⁴ The countries analysed are Argentina, Bolivarian Republic of Venezuela, Brazil, Chile, Colombia, Costa Rica, Cuba, the Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Plurinational State of Bolivia and Uruguay. No labour force estimates or projections were prepared for the Caribbean countries because the information from censuses and surveys required to apply the urban-rural and labour force projection methodology was not available. The methodology begins with national projections, which in turn are used to obtain projections of urban and rural population by sex and age, and then labour force projections by sex, age and area of residence.

I. Rapid growth of the working-age population and the demographic bonus

To analyse labour markets in the region and make related policy recommendations, it is vital to understand how population dynamics affect the working-age population, labour supply and the profile of workers by age and sex. In Latin America and the Caribbean, demographic changes have resulted in the largest cohorts now being young people and adults, meaning that there is population pressure on the labour market, which will be maintained over the coming years.

The size and age structure of the working-age population are directly related to the demographic transition. In just 70 years, Latin America and the Caribbean has undergone unprecedented changes. In 1950, the region had the second highest total fertility rate in the world, at 5.8 live births per woman, just below the rate of 6.6 for Africa. However, in 2022, the region had the third lowest rate in the world, at 1.8 live births per woman, just above the rates of 1.5 for Europe and 1.6 for North America (see table I.1). Life expectancy at birth has also risen considerably, from 48.6 years in 1950 to 73.8 years in 2022. These two factors, together with net migration, have caused a marked shift in the age structure of the population and in the mean age of the population, which stood at 30.6 years in 2022, close to the world average of 30.2 years.

Table I.1
Total fertility rate, life expectancy at birth, and mean age of population, by regions, 1950 and 2022
(Number of live births per woman and years)

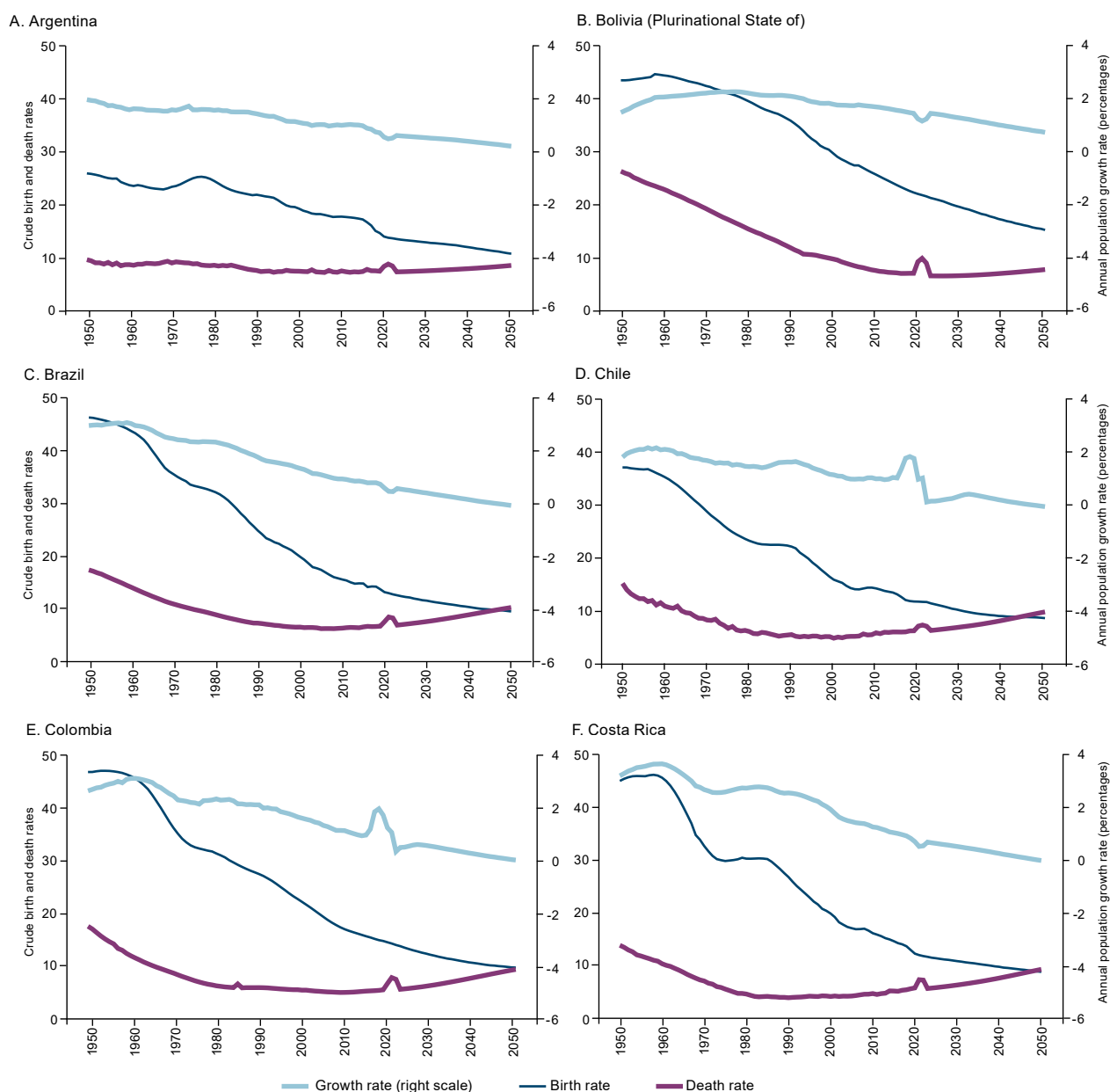
Region	Total fertility rate <i>(Live births per woman)</i>		Life expectancy at birth (e0) <i>(Years)</i>		Mean age of population <i>(Years)</i>	
	1950	2022	1950	2022	1950	2022
Africa	6.6	4.2	37.6	62.2	18.1	18.7
North America ^a	3.0	1.6	68.0	78.7	29.0	38.2
Latin America and the Caribbean	5.8	1.8	48.6	73.8	18.3	30.6
Asia	5.7	1.9	42.0	73.2	20.6	31.6
Europe	2.7	1.5	62.8	77.4	27.8	41.9
Oceania	3.7	2.1	61.4	79.2	26.4	32.4
World	4.9	2.3	46.5	71.7	22.2	30.2

Source: Latin American and Caribbean Demographic Centre (CELADE)-Population Division of the Economic Commission for Latin America and the Caribbean (ECLAC), 2022 revision, and United Nations, *World Population Prospects, 2022* [online] <https://population.un.org/wpp/>.

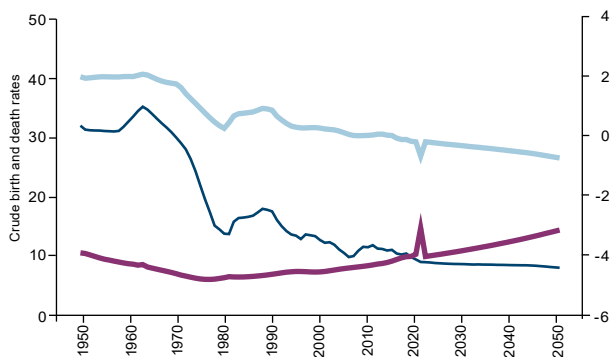
^a Includes Canada and the United States.

The demographic transition can be seen in all Latin American countries (see figure I.1). Although birth rates did not begin to decline at the same time in every country in the region, by 1980 fertility transitions were under way in all of them. Mortality transitions had already begun before 1950. Birth and death rates in 1950 were very varied, both within countries and among them; Argentina and Uruguay, for example, had significantly lower crude birth and death rates than other countries in the region. While differences among countries remain, they are smaller in absolute terms than in the 1950s. By 2050, there is generally expected to be some convergence of crude birth and death rates among the countries, primarily for Argentina, Brazil, Chile, Colombia, Costa Rica and Mexico. In Cuba and Uruguay, rates will converge and cross before 2050, meaning that there would be population declines in those countries before that year, based on the assumptions employed for the projections.

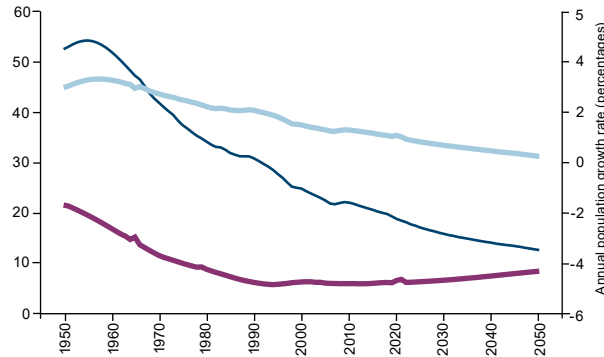
Figure I.1
Latin America (20 countries): crude birth and death rates and annual population growth rate, estimated and projected, 1950–2050
(Live births and deaths per 1,000 persons and percentages)



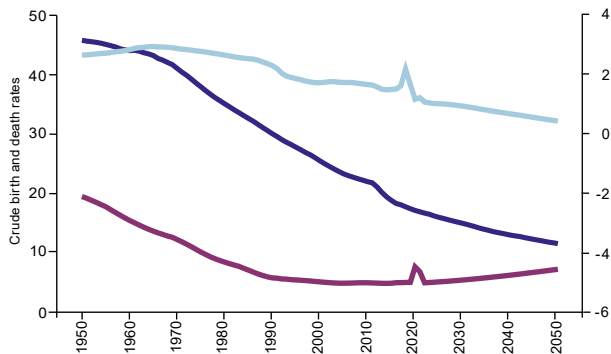
G. Cuba



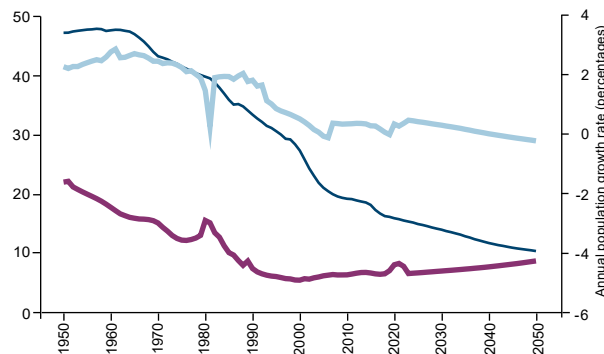
H. Dominican Republic



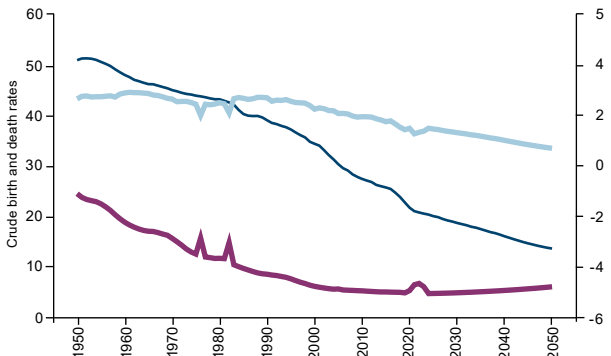
I. Ecuador



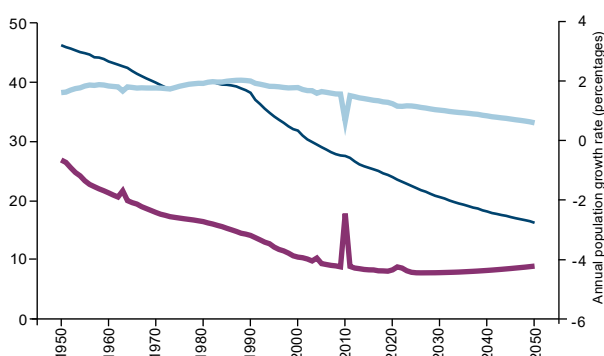
J. El Salvador



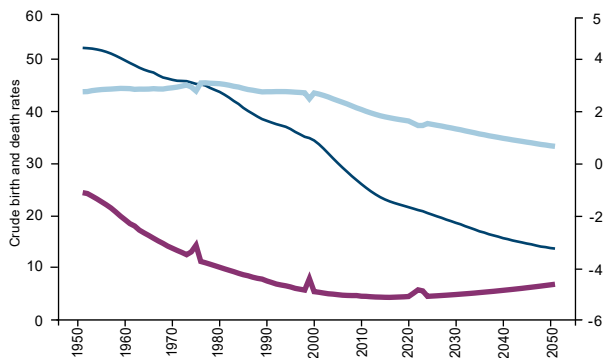
K. Guatemala



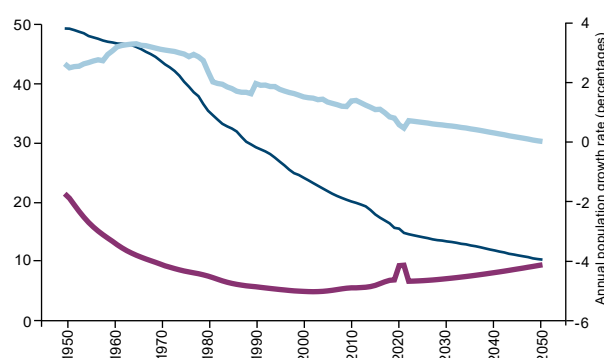
L. Haiti



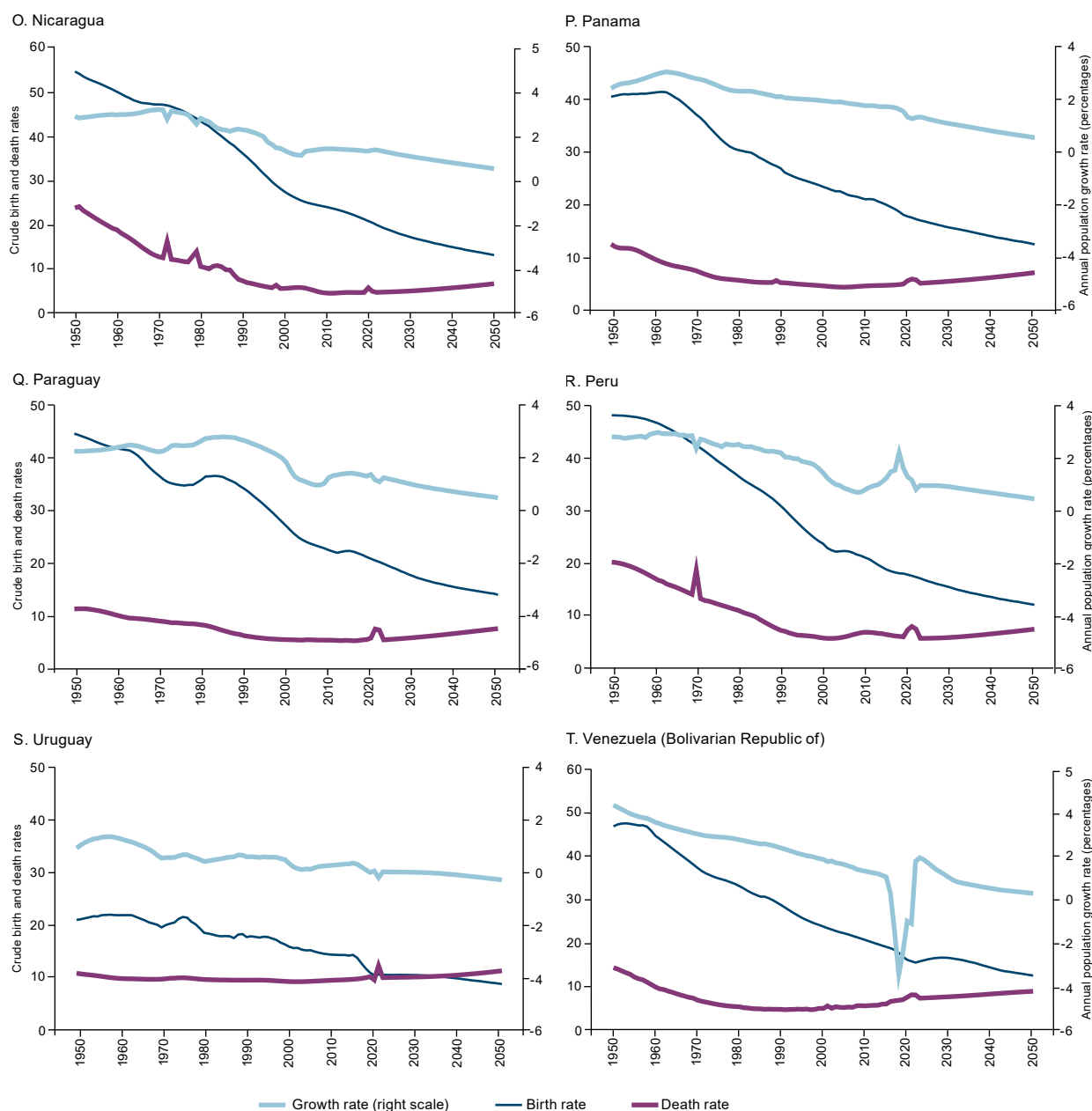
M. Honduras



N. Mexico



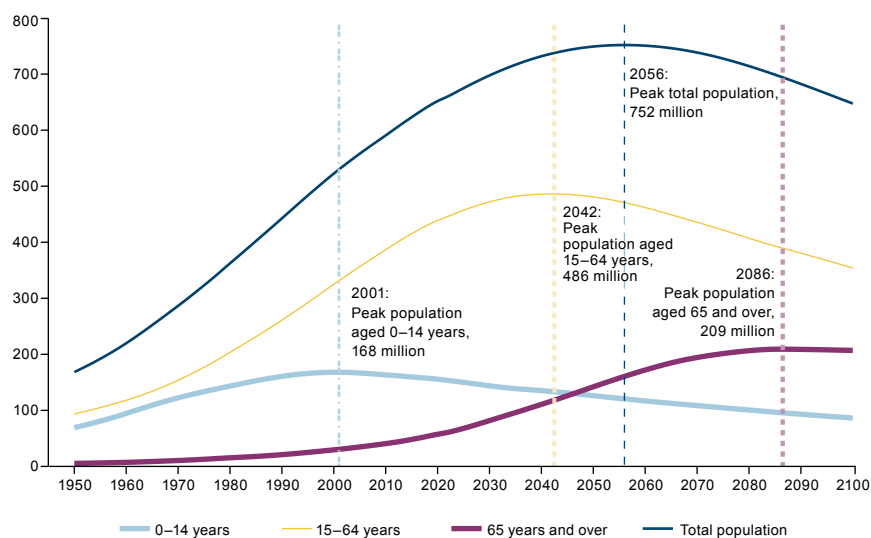
— Growth rate (right scale) — Birth rate — Death rate



Source: Latin American and Caribbean Demographic Centre (CELADE)-Population Division of the Economic Commission for Latin America and the Caribbean (ECLAC), 2022 revision, and United Nations, *World Population Prospects, 2022* [online] <https://population.un.org/wpp/>.

Annual population growth in Latin America and the Caribbean has changed considerably during the demographic transition, slowing significantly in recent decades. This is reflected in the population sizes of age groups (see figure I.2). The population estimates and projections indicate that the population aged 0–14 peaked in 2001, while the population aged 15–64 will continue to grow and peak in 2042. The population aged 65 and over is projected to peak in 2086, at 209 million. Figure I.2 also shows the rapid growth in the population aged 15–64. That population has undergone a dramatic change, as in less than 40 years it has doubled in size (from 220.2 in 1983 to 442.6 million in 2022).

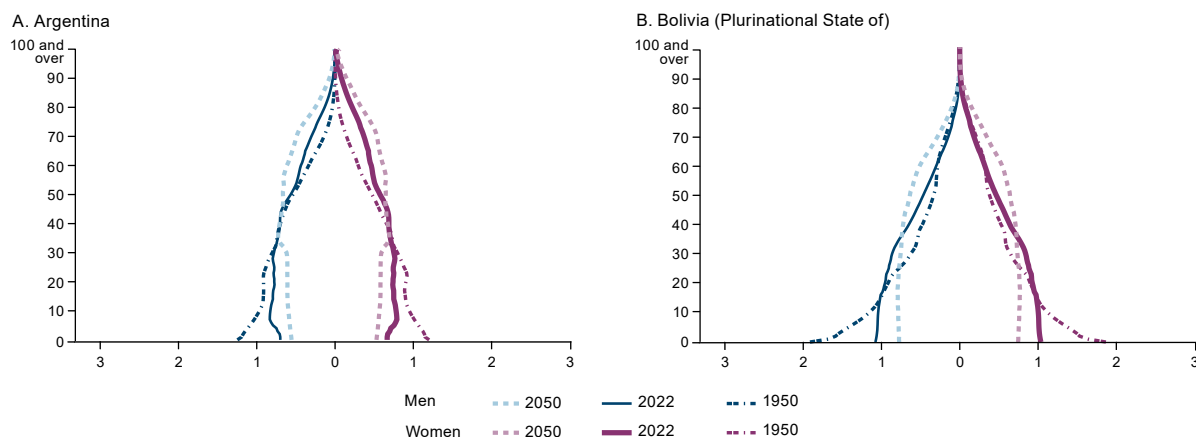
Figure I.2
Latin America and the Caribbean: total population at midyear, by age groups, estimated and projected, 1950–2100
 (Millions of persons)



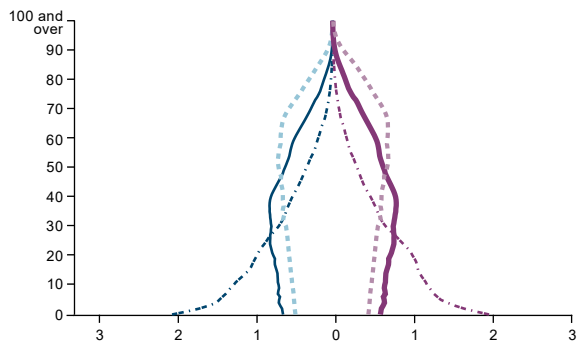
Source: Latin American and Caribbean Demographic Centre (CELADE)-Population Division of the Economic Commission for Latin America and the Caribbean (ECLAC), 2022 revision, and United Nations, *World Population Prospects, 2022* [online] <https://population.un.org/wpp/>.

A comparison of the population pyramids for the 20 Latin American countries in 1950 and 2022 reveals the population changes (see figure I.3). The rapid decline in fertility and mortality is reflected in changes in the age structure of the population: the broad-based population pyramid of all the countries has changed into a structure in which young people and adults form the majority of the population. For many countries, the age groups that account for the largest percentage of the pyramids for 2022 are those of young adults, putting or potentially putting greater pressure on labour markets, owing to the higher number of people of working age or who are entering the labour market. The projected pyramids for 2050 clearly show population ageing, as the 65 and over age group accounts for a significantly larger proportion of the total population in all of the countries of the region.

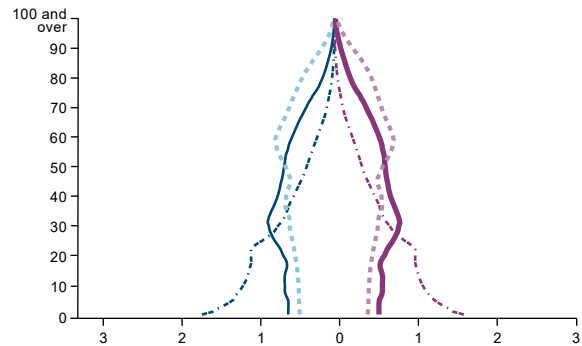
Figure I.3
Latin America (20 countries): age structure of the population, estimated and projected, 1950, 2022 and 2050
 (Percentages)



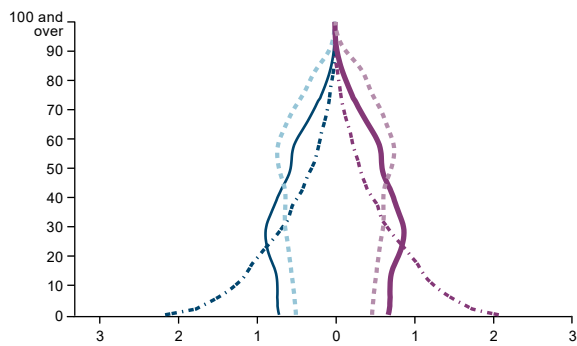
C. Brazil



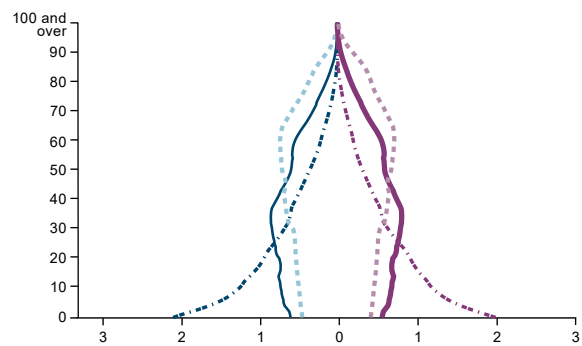
D. Chile



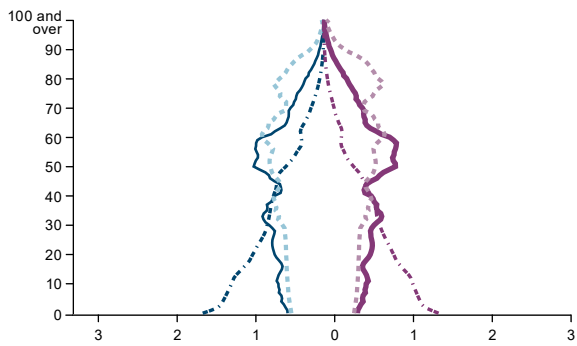
E. Colombia



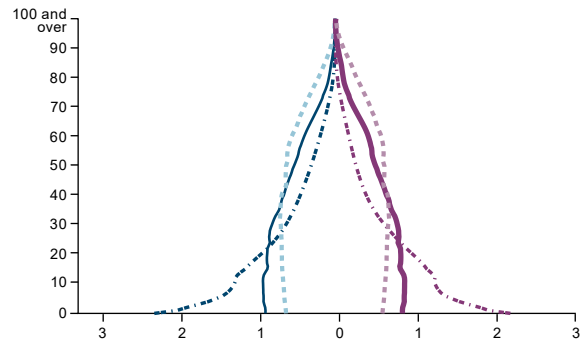
F. Costa Rica



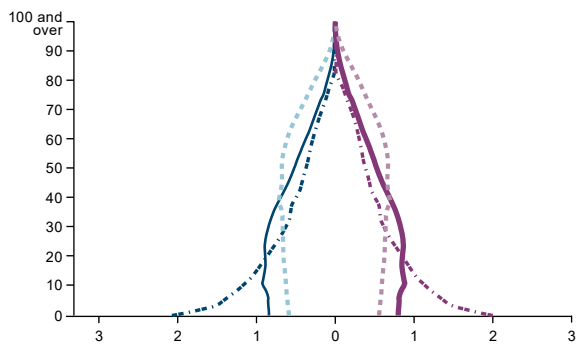
G. Cuba



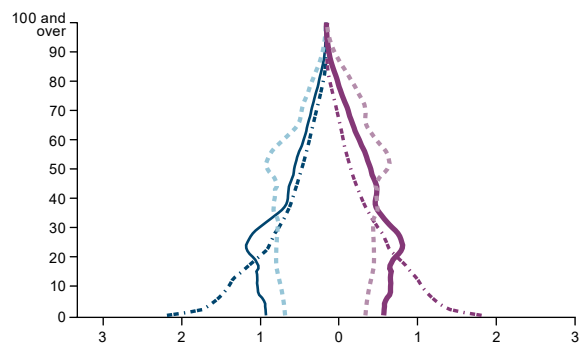
H. Dominican Republic



I. Ecuador

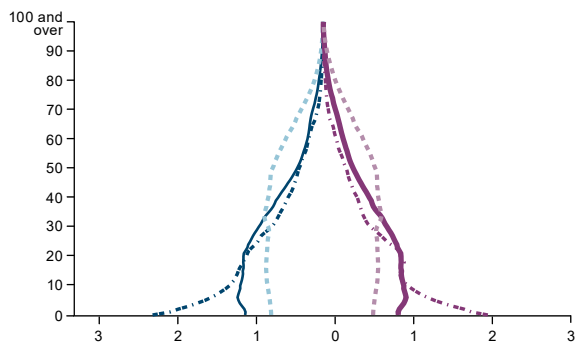


J. El Salvador

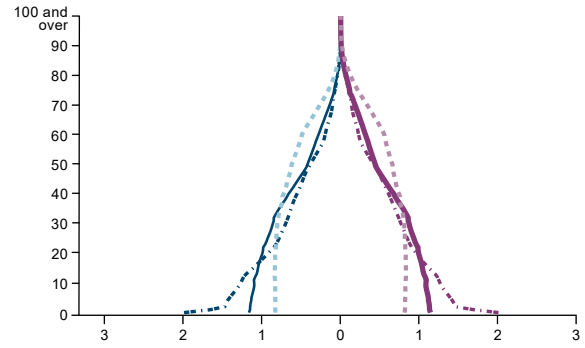


Men - - - 2050 — 2022 ··· 1950
 Women - - - 2050 — 2022 ··· 1950

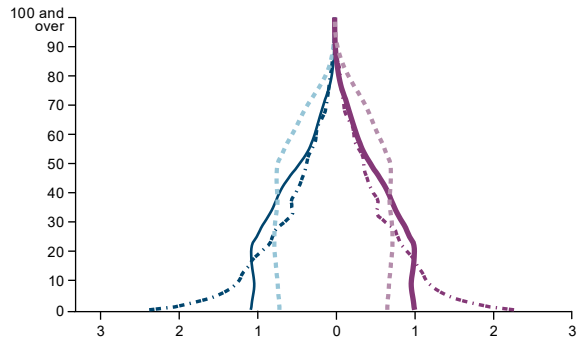
K. Guatemala



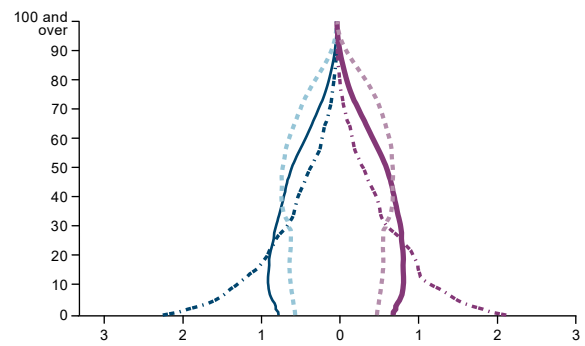
L. Haiti



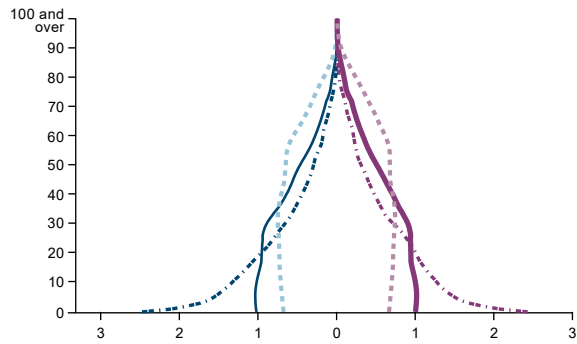
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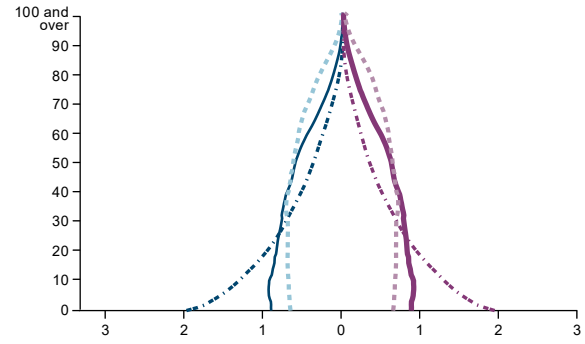
N. Mexico



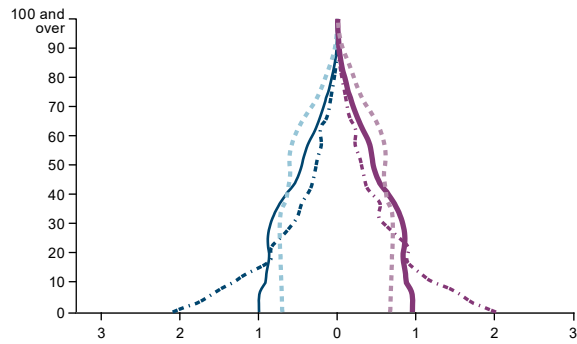
O. Nicaragua



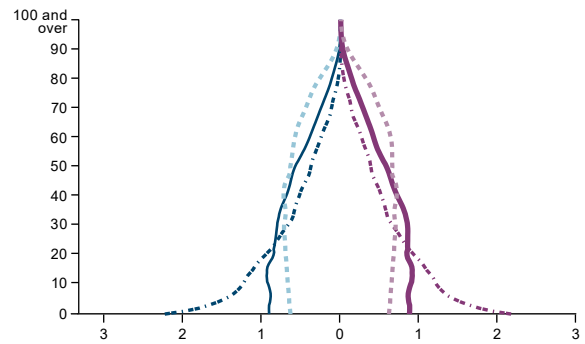
P. Panama



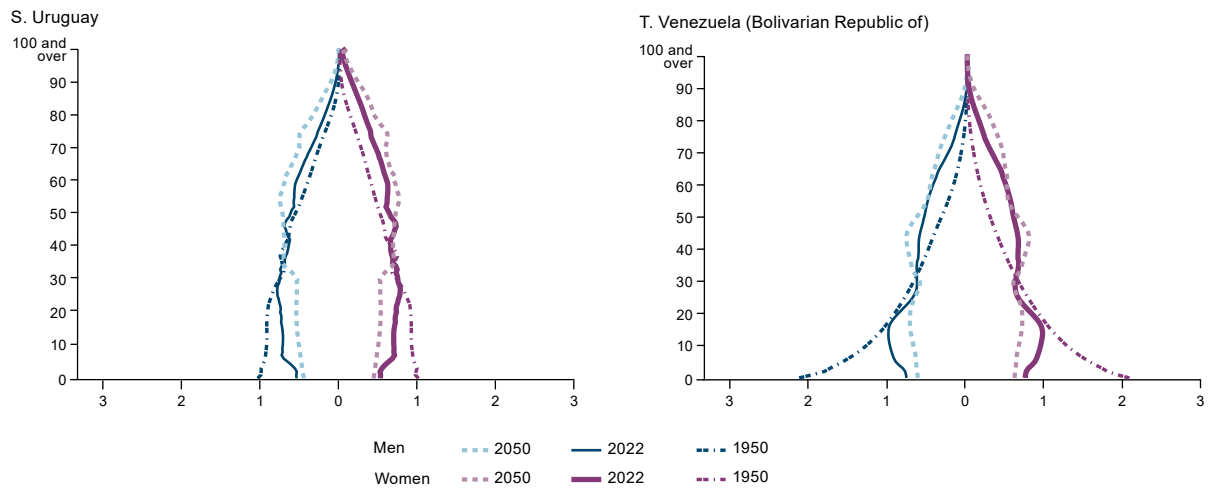
Q. Paraguay



R. Peru



Men - - - 2050 — 2022 ··· 1950
 Women - - - 2050 — 2022 ··· 1950

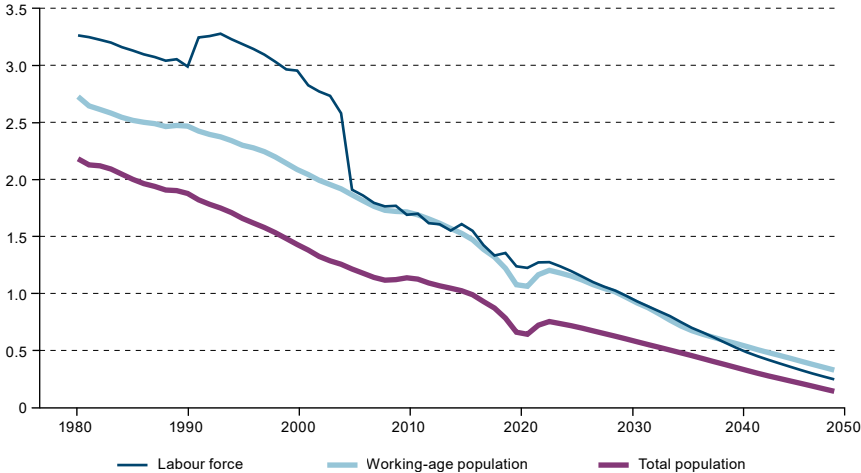


Source: Latin American and Caribbean Demographic Centre (CELADE)-Population Division of the Economic Commission for Latin America and the Caribbean (ECLAC), 2022 revision, and United Nations, *World Population Prospects, 2022* [online] <https://population.un.org/wpp/>.

II. The labour force is growing more quickly than the working-age population

As shown in figure II.1, from 1980 to 2039, the labour force growth is faster than the growth in the working-age population. From the 1990s to 2005, there was rapid growth in the labour force, mainly because of an increase in female labour force participation. From 2005 to 2039, the growth rate for the labour force is very similar to the growth rate for the working-age population (15 years and over). In 2039, the two growth rates are projected to cross, with the labour force growing more slowly than the working-age population, but still more quickly than the total population. The slower growth in the labour force in 2039 is doubtless a result of a decline in labour force participation rates for the 15–19 and 20–24 age groups, linked to greater participation in education. The observed trend from 1980 to 2022 of a shrinking labour force in those age groups is therefore projected to continue through to 2050. In addition to the shrinking labour force at younger ages, another factor contributing to slower annual labour force growth is population ageing. Labour force participation rates are lower at older ages than they are for young adults and, with population ageing, older persons account for a larger proportion of the population, potentially leading to a contraction in the total labour force.

Figure II.1
Latin America (20 countries):^a annual growth rates of total population, working-age population, and labour force, 1980–2050
(Percentages)



Source: Latin American and Caribbean Demographic Centre (CELADE)-Population Division of the Economic Commission for Latin America and the Caribbean (ECLAC), "Labour force estimates and projections: Excel tables. Revision 2023" [online] <https://www.cepal.org/en/subtopics/demographic-projections/latin-america-and-caribbean-population-estimates-and-projections/population-estimates-and-projections-excel-tables>.

^a Argentina, the Bolivarian Republic of Venezuela, Brazil, Chile, Colombia, Costa Rica, Cuba, the Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, the Plurinational State of Bolivia and Uruguay.

In all the countries of the region five-year growth rates for the total population and working-age population slowed over the period covered by the estimates (1980–2020), while in the case of the labour force the situations are different depending on the period analysed (see table II.1). The growth of the total population and of the working-age population in the countries is gradual and monotonic over time, while labour force growth may show more variations depending on the social and economic conditions of each period. In Argentina, for example, labour force growth fluctuates between the five-year periods considered, with growth in some five-year periods outpacing that in the working-age population and in others falling behind.

Table II.1
Latin America (20 countries): estimated growth rate of total population, working-age population and labour force, five-year periods, 1980–2020
(Percentages)

		1980–1985	1985–1990	1990–1995	1995–2000	2000–2005	2005–2010	2010–2015	2015–2020
Latin America	Total population	2.11	1.94	1.79	1.57	1.34	1.15	1.09	0.92
	Working-age population	2.62	2.49	2.40	2.23	2.00	1.78	1.65	1.38
	Labour force	3.22	3.08	3.20	3.08	2.77	1.82	1.63	1.45
Argentina	Total population	1.55	1.50	1.37	1.18	1.05	1.01	1.02	0.81
	Working-age population	1.45	1.67	1.69	1.49	1.38	1.38	1.27	1.09
	Labour force	2.72	2.77	1.56	1.49	2.64	1.74	0.43	1.38
Bolivia (Plurinational State of)	Total population	2.15	2.11	2.00	1.83	1.75	1.73	1.63	1.47
	Working-age population	2.23	2.24	2.30	2.25	2.30	2.32	2.16	1.96
	Labour force	3.41	3.22	3.09	2.68	2.66	2.13	1.84	1.89
Brazil	Total population	2.24	1.94	1.63	1.46	1.21	1.00	0.88	0.77
	Working-age population	2.70	2.49	2.40	2.29	1.96	1.64	1.47	1.19
	Labour force	3.25	3.02	3.57	3.47	2.82	1.20	0.96	1.24
Chile	Total population	1.44	1.59	1.55	1.26	1.05	1.00	0.99	1.54
	Working-age population	2.07	1.98	1.89	1.78	1.79	1.66	1.37	1.88
	Labour force	1.84	1.77	2.51	2.90	2.62	2.42	1.89	2.31
Colombia	Total population	2.27	2.12	1.97	1.73	1.48	1.19	1.00	1.56
	Working-age population	3.06	2.57	2.44	2.36	2.21	2.04	1.75	2.19
	Labour force	4.23	3.65	3.56	3.82	3.35	2.18	2.21	1.11
Costa Rica	Total population	2.76	2.61	2.47	2.15	1.62	1.37	1.15	0.91
	Working-age population	3.15	2.69	2.99	3.05	2.60	2.11	1.70	1.34
	Labour force	3.93	3.47	3.61	3.60	3.86	1.97	2.04	0.48
Cuba	Total population	0.68	0.92	0.56	0.33	0.25	0.08	0.09	-0.07
	Working-age population	2.32	1.81	0.73	0.53	0.73	0.46	0.34	0.13
	Labour force	1.85	1.74	0.95	0.04	0.78	1.31	0.67	0.03
Dominican Republic	Total population	2.18	2.10	1.98	1.64	1.41	1.29	1.25	1.11
	Working-age population	2.96	2.72	2.51	2.31	2.05	1.96	1.71	1.50
	Labour force	3.45	3.23	3.04	2.85	2.26	2.40	2.85	1.71
Ecuador	Total population	2.58	2.43	2.02	1.76	1.73	1.70	1.55	1.65
	Working-age population	3.17	3.01	2.52	2.29	2.39	2.33	2.16	2.35
	Labour force	4.57	4.33	3.74	3.39	3.69	1.51	2.59	2.75

		1980–1985	1985–1990	1990–1995	1995–2000	2000–2005	2005–2010	2010–2015	2015–2020
El Salvador	Total population	1.57	1.92	1.37	0.72	0.27	0.25	0.38	0.20
	Working-age population	1.98	2.28	2.05	1.63	0.96	1.18	1.38	0.82
	Labour force	1.74	2.19	2.21	2.01	1.28	1.60	1.36	0.86
Guatemala	Total population	2.54	2.71	2.63	2.49	2.25	2.04	1.91	1.63
	Working-age population	2.48	2.89	2.94	2.87	2.86	2.97	2.84	2.46
	Labour force	2.63	3.16	3.40	4.05	3.97	4.04	3.82	2.97
Haiti	Total population	2.02	2.07	1.93	1.84	1.72	1.54	1.41	1.36
	Working-age population	1.77	1.78	2.04	2.33	2.46	2.22	1.98	1.82
	Labour force	1.39	1.06	1.14	1.29	1.83	2.51	2.42	2.32
Honduras	Total population	2.99	2.82	2.80	2.71	2.56	2.22	1.90	1.71
	Working-age population	3.12	3.16	3.37	3.38	3.29	3.19	2.99	2.64
	Labour force	3.31	3.31	3.56	3.66	4.56	3.99	3.11	3.62
Mexico	Total population	2.01	1.75	1.92	1.68	1.49	1.30	1.31	0.95
	Working-age population	2.89	2.78	2.77	2.36	2.13	1.94	1.95	1.57
	Labour force	3.21	3.06	3.23	2.77	2.73	2.50	2.45	1.94
Nicaragua	Total population	2.61	2.33	2.21	1.63	1.25	1.42	1.46	1.40
	Working-age population	2.75	2.83	3.09	2.66	2.24	2.36	2.16	1.90
	Labour force	2.69	2.73	3.15	4.08	2.75	2.34	2.73	2.39
Panama	Total population	2.31	2.18	2.06	2.00	1.93	1.84	1.76	1.64
	Working-age population	3.12	2.85	2.64	2.58	2.45	2.23	2.08	2.01
	Labour force	3.65	3.43	3.69	3.45	3.42	2.37	2.87	2.02
Paraguay	Total population	2.77	2.76	2.52	2.14	1.33	1.04	1.37	1.38
	Working-age population	2.96	2.74	2.69	2.79	2.23	1.98	2.09	1.75
	Labour force	3.60	3.57	3.78	4.01	3.16	2.20	2.09	2.29
Peru	Total population	2.42	2.26	2.01	1.73	1.09	0.76	0.99	1.62
	Working-age population	2.89	2.85	2.70	2.56	1.91	1.34	1.39	2.10
	Labour force	4.14	3.97	3.74	3.51	2.61	1.83	1.41	1.85
Uruguay	Total population	0.47	0.60	0.58	0.52	0.15	0.21	0.30	0.15
	Working-age population	0.64	0.83	0.83	0.62	0.37	0.53	0.60	0.49
	Labour force	0.54	1.76	1.76	1.26	0.70	0.80	0.56	-0.17
Venezuela (Bolivarian Republic of)	Total population	2.69	2.53	2.25	2.00	1.76	1.48	1.23	-1.38
	Working-age population	3.30	3.03	2.87	2.65	2.40	1.99	1.66	-1.39
	Labour force	4.34	4.25	3.98	3.70	2.28	1.63	1.80	-1.47

Source: Latin American and Caribbean Demographic Centre (CELADE)-Population Division of the Economic Commission for Latin America and the Caribbean (ECLAC), “Labour force estimates and projections: Excel tables. Revision 2023” [online] <https://www.cepal.org/en/subtopics/demographic-projections/latin-america-and-caribbean-population-estimates-and-projections/population-estimates-and-projections-excel-tables>.

Projections also vary considerably from country to country. In some, the labour force will grow more slowly annually than the working-age population before 2039 (see table II.2). In other countries, the population growth rate is already projected to be negative between 2020 and 2025 (Cuba and Uruguay). Despite the decline in the population of Uruguay over 2020–2025, the labour force is expected to continue to grow, with negative growth only projected to begin in the 2040–2045 period. For the 2045–2050 period, negative labour force growth is also projected for Brazil (from 2040–2045 onward) and for Chile, Costa Rica and Cuba (from 2020–2025 onward).

Table II.2
Latin America (20 countries): projected growth rate of total population, working-age population and labour force,
five-year periods, 2020–2050
(Percentages)

		2020-2025	2025-2030	2030-2035	2035-2040	2040-2045	2045-2050
Latin America	Total population	0.70	0.67	0.55	0.43	0.30	0.19
	Working-age population	1.14	1.08	0.87	0.65	0.51	0.38
	Labour force	1.25	1.11	0.89	0.66	0.45	0.30
Argentina	Total population	0.57	0.57	0.51	0.45	0.36	0.27
	Working-age population	0.99	1.04	0.82	0.58	0.50	0.43
	Labour force	1.29	1.21	1.06	0.79	0.49	0.34
Bolivia (Plurinational State of)	Total population	1.31	1.33	1.20	1.06	0.92	0.79
	Working-age population	1.79	1.79	1.58	1.40	1.25	1.10
	Labour force	2.08	2.05	1.82	1.60	1.40	1.22
Brazil	Total population	0.52	0.46	0.34	0.21	0.09	-0.02
	Working-age population	0.86	0.78	0.62	0.41	0.26	0.12
	Labour force	0.78	0.57	0.36	0.14	-0.06	-0.21
Chile	Total population	0.40	0.25	0.38	0.25	0.11	-0.01
	Working-age population	0.60	0.53	0.64	0.48	0.26	0.08
	Labour force	0.70	0.30	0.47	0.33	0.11	-0.10
Colombia	Total population	0.65	0.57	0.47	0.32	0.18	0.06
	Working-age population	0.97	0.89	0.80	0.61	0.41	0.23
	Labour force	1.16	0.87	0.71	0.55	0.35	0.14
Costa Rica	Total population	0.60	0.57	0.45	0.31	0.17	0.04
	Working-age population	1.09	1.00	0.76	0.48	0.32	0.18
	Labour force	1.23	1.01	0.78	0.50	0.17	-0.05
Cuba	Total population	-0.26	-0.25	-0.33	-0.41	-0.51	-0.63
	Working-age population	-0.09	0.03	-0.15	-0.38	-0.50	-0.61
	Labour force	-0.40	-0.64	-0.62	-0.53	-0.60	-0.82
Dominican Republic	Total population	0.95	0.77	0.64	0.53	0.42	0.32
	Working-age population	1.35	1.25	1.08	0.87	0.68	0.54
	Labour force	1.62	1.40	1.27	1.10	0.90	0.72
Ecuador	Total population	1.08	0.97	0.86	0.73	0.60	0.48
	Working-age population	1.63	1.46	1.21	1.04	0.88	0.72
	Labour force	1.95	1.71	1.46	1.21	0.99	0.79
El Salvador	Total population	0.42	0.39	0.27	0.12	-0.01	-0.13
	Working-age population	0.91	0.89	0.61	0.44	0.31	0.16
	Labour force	1.56	1.29	0.99	0.71	0.48	0.26
Guatemala	Total population	1.42	1.42	1.28	1.12	0.95	0.79
	Working-age population	2.22	2.18	1.89	1.50	1.34	1.18
	Labour force	2.77	2.62	2.30	1.91	1.61	1.38

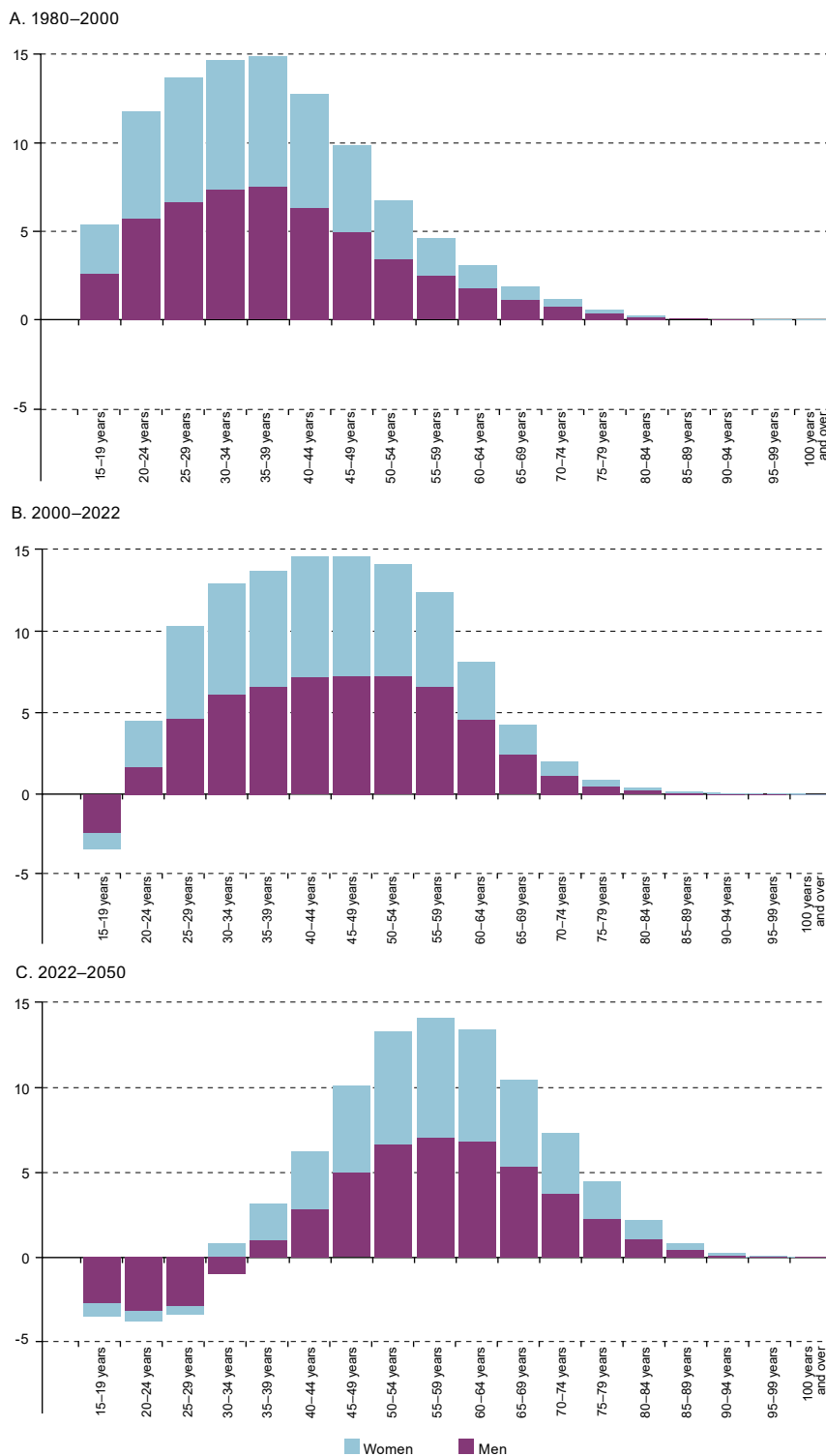
		2020-2025	2025-2030	2030-2035	2035-2040	2040-2045	2045-2050
Haiti	Total population	1.21	1.12	1.01	0.92	0.81	0.70
	Working-age population	1.64	1.60	1.48	1.34	1.15	0.99
	Labour force	2.11	2.02	1.87	1.73	1.53	1.32
Honduras	Total population	1.53	1.41	1.23	1.05	0.89	0.75
	Working-age population	2.16	1.89	1.68	1.50	1.30	1.09
	Labour force	2.62	2.28	1.96	1.71	1.48	1.25
Mexico	Total population	0.67	0.64	0.54	0.41	0.26	0.12
	Working-age population	1.27	1.20	0.91	0.63	0.48	0.35
	Labour force	1.49	1.33	1.04	0.73	0.49	0.32
Nicaragua	Total population	1.38	1.21	1.05	0.91	0.77	0.63
	Working-age population	1.90	1.78	1.58	1.34	1.11	0.93
	Labour force	2.28	2.05	1.81	1.55	1.29	1.05
Panama	Total population	1.32	1.18	1.03	0.89	0.75	0.63
	Working-age population	1.71	1.61	1.37	1.14	0.99	0.85
	Labour force	1.79	1.60	1.41	1.19	0.99	0.84
Paraguay	Total population	1.21	1.09	0.92	0.78	0.66	0.56
	Working-age population	1.48	1.46	1.40	1.20	0.99	0.79
	Labour force	1.73	1.57	1.46	1.30	1.08	0.85
Peru	Total population	1.00	0.94	0.85	0.73	0.62	0.51
	Working-age population	1.46	1.34	1.19	1.06	0.90	0.74
	Labour force	1.42	1.40	1.24	1.06	0.90	0.73
Uruguay	Total population	-0.03	0.00	-0.03	-0.08	-0.16	-0.25
	Working-age population	0.40	0.42	0.19	-0.03	-0.06	-0.11
	Labour force	0.57	0.45	0.30	0.00	-0.24	-0.36
Venezuela (Bolivarian Republic of)	Total population	0.98	1.36	0.84	0.63	0.47	0.36
	Working-age population	1.86	1.93	1.00	0.66	0.74	0.70
	Labour force	1.81	2.26	1.41	0.97	0.80	0.79

Source: Latin American and Caribbean Demographic Centre (CELADE)-Population Division of the Economic Commission for Latin America and the Caribbean (ECLAC), "Labour force estimates and projections: Excel tables. Revision 2023" [online] <https://www.cepal.org/en/subtopics/demographic-projections/latin-america-and-caribbean-population-estimates-and-projections/population-estimates-and-projections-excel-tables>.

Figure II.2 shows the changes in the size of the labour force of the 20 Latin American countries analysed, by age group. Between 1980 and 2000, there was growth in the labour force in all age groups and the growth was greater among women. Between 2000 and 2022, there was a decline in activity in the 15–19 age group in the region, mainly because of their greater participation in secondary and higher education. The labour force in the female population continued to grow rapidly during the period. Between 2022 and 2050, negative growth in the labour force is expected for the ages 15–34, mainly because of a smaller population of these age groups and a continued downtrend in the labour force in these groups owing to higher participation by members in secondary and higher education. The larger rise in the total labour force is again a result of the increase in women's participation in economic activity.

Figure II.2
Latin America (20 countries):^a absolute changes in the labour force, estimated and projected,
1980–2000, 2000–2022 and 2022–2050

(Millions of persons)



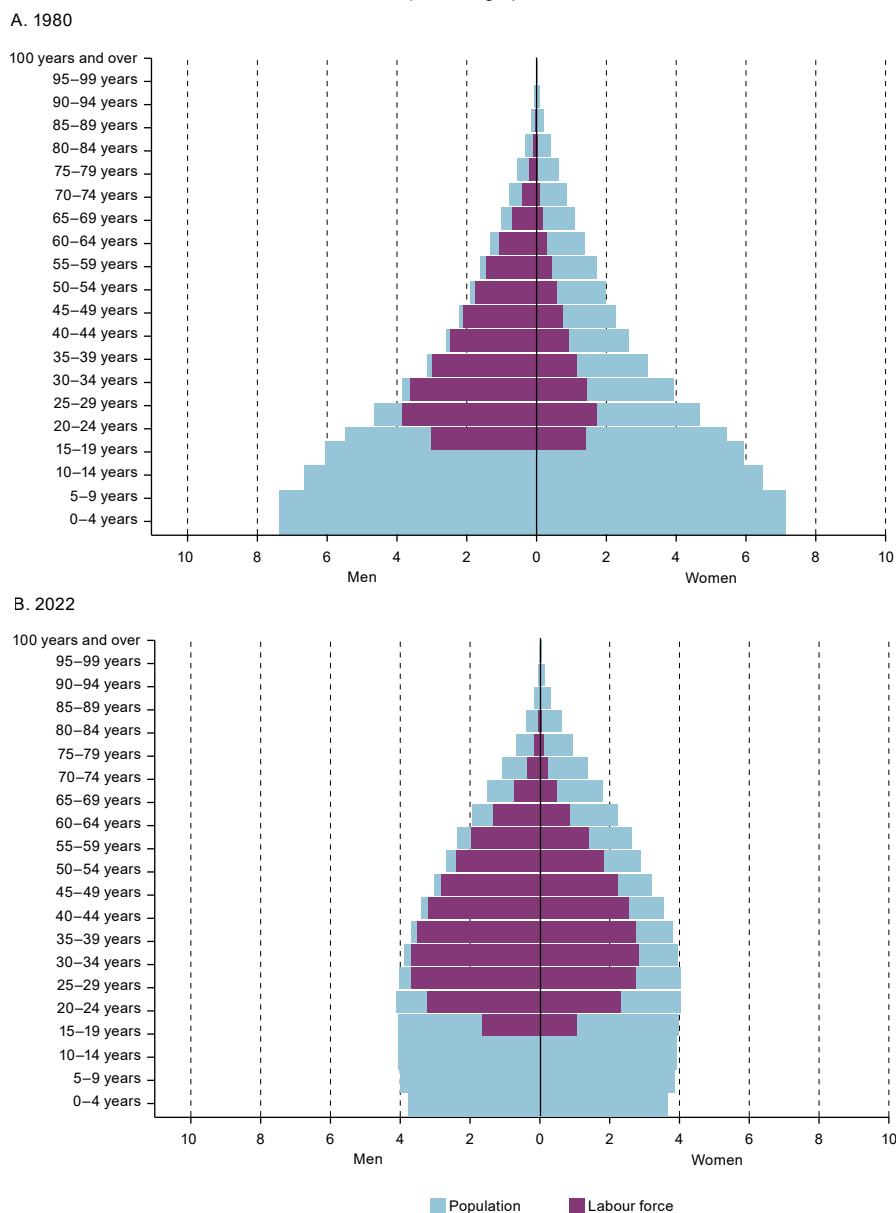
Source: Latin American and Caribbean Demographic Centre (CELADE)-Population Division of the Economic Commission for Latin America and the Caribbean (ECLAC), “Labour force estimates and projections: Excel tables. Revision 2023” [online] <https://www.cepal.org/en/subtopics/demographic-projections/latin-america-and-caribbean-population-estimates-and-projections/population-estimates-and-projections-excel-tables>.
^a Argentina, the Bolivarian Republic of Venezuela, Brazil, Chile, Colombia, Costa Rica, Cuba, the Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, the Plurinational State of Bolivia and Uruguay.

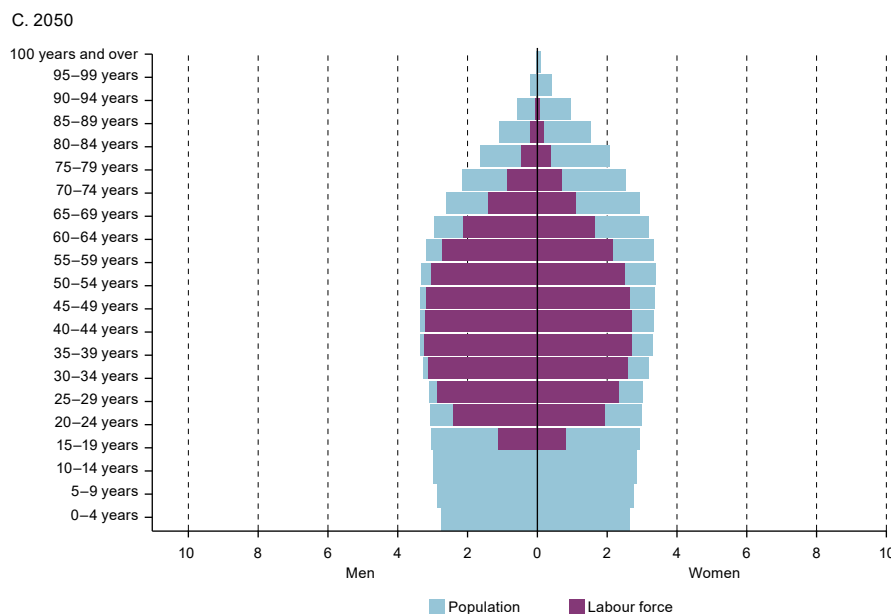
The changes in the age structure of the population tied to the demographic transition can also be seen in the population and labour force pyramids for the periods covered by the estimates (1980–2022) and projections (2050). The pyramids in figure II.3 illustrate the ageing of the overall population and of the labour force. What is being recorded in the region has also been observed in all countries, or will be, depending on their point in the demographic transition. Another noteworthy aspect of this is higher participation in economic activity by women (see the purple area on the right of each pyramid in figure II.3), following a visibly lower rate of participation than men in 1980. In 2022 there is a significant rise, but participation is still lower for women than for men, and for 2050 an increase is projected, but parity is still not reached.

Figure II.3

Latin America (20 countries):^a structure of total population and labour force, by sex and age, 1980, 2022 and 2050

(Percentages)



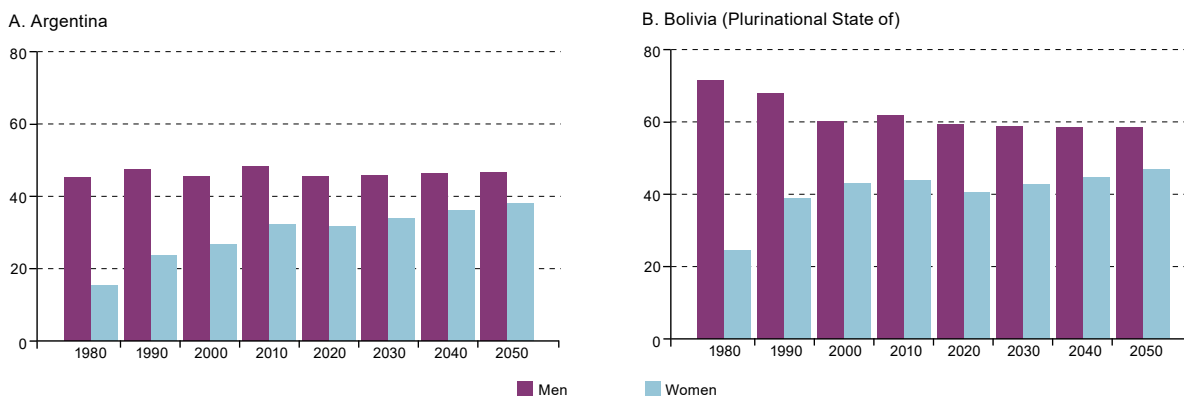


Source: Latin American and Caribbean Demographic Centre (CELADE)-Population Division of the Economic Commission for Latin America and the Caribbean (ECLAC), “Labour force estimates and projections: Excel tables. Revision 2023” [online] <https://www.cepal.org/en/subtopics/demographic-projections/latin-america-and-caribbean-population-estimates-and-projections/population-estimates-and-projections-excel-tables>.

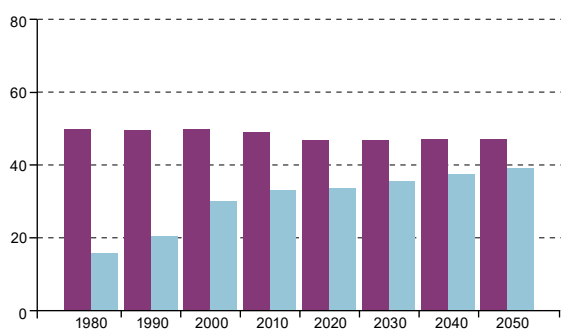
^a Argentina, the Bolivarian Republic of Venezuela, Brazil, Chile, Colombia, Costa Rica, Cuba, the Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, the Plurinational State of Bolivia and Uruguay.

Lastly, changes in the labour force and the differential between men and women can be summarized in the estimated total gross years of working life for each sex. Between 1980 and 2022 there was an increase in working life of 7.5 years in Latin America for both sexes, mainly owing to increased participation by women in the labour market. A further rise of 3.9 years is projected for the period from 2022 to 2050. Figure II.4 shows the total gross years of working life from 1980 to 2050 for men and women in the 20 countries of the region. While gross years of working life for men was unchanged or declined in most countries, for women there was a rapid rise. Even so, it is estimated that men spend more time in the labour force. In 1990, estimated gross years of working life in the region were 51.3 for men and 21.0 for women, while in 2020 they were 49.9 and 32.8, respectively. Therefore, while there was a slight drop in years of working life for men between 1990 and 2020, there was a considerable rise for women (by 11.8 years). Nonetheless, the number for women is still lower than that for men. Values of 50.0 and 35.1 gross years of working life are projected for men and women, respectively, in 2030.

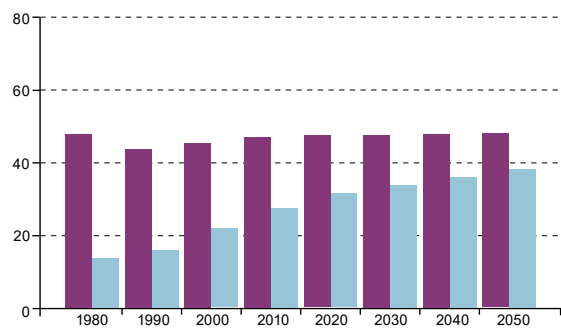
Figure II.4
Latin America (20 countries): gross years of working life, estimated and projected, 1980–2050
(Years)



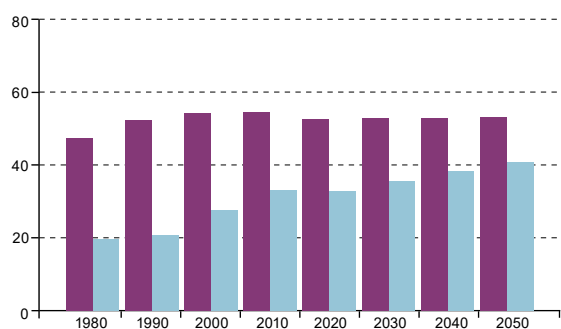
C. Brazil



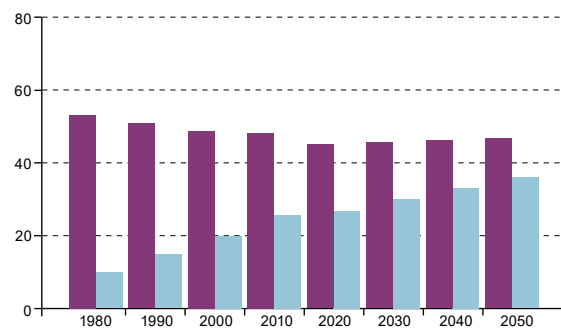
D. Chile



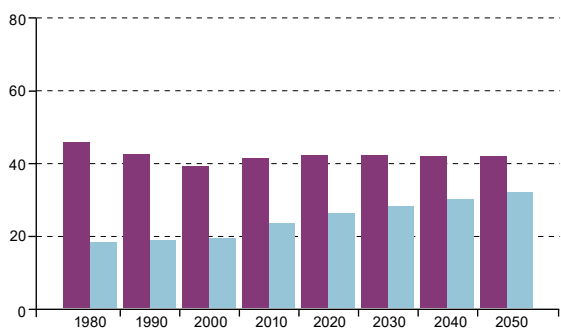
E. Colombia



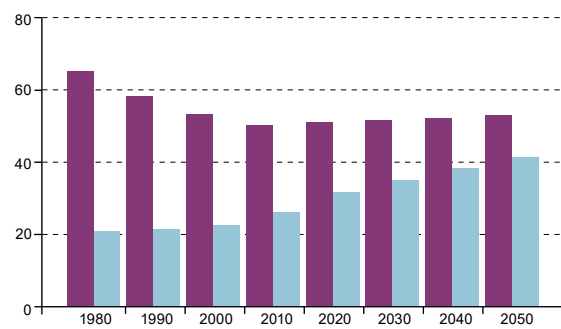
F. Costa Rica



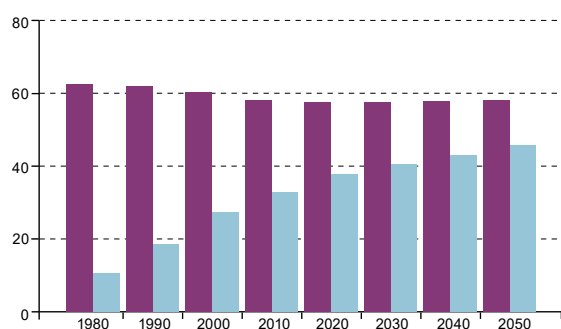
G. Cuba



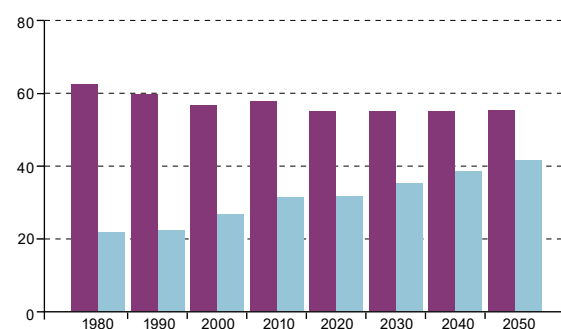
H. Dominican Republic



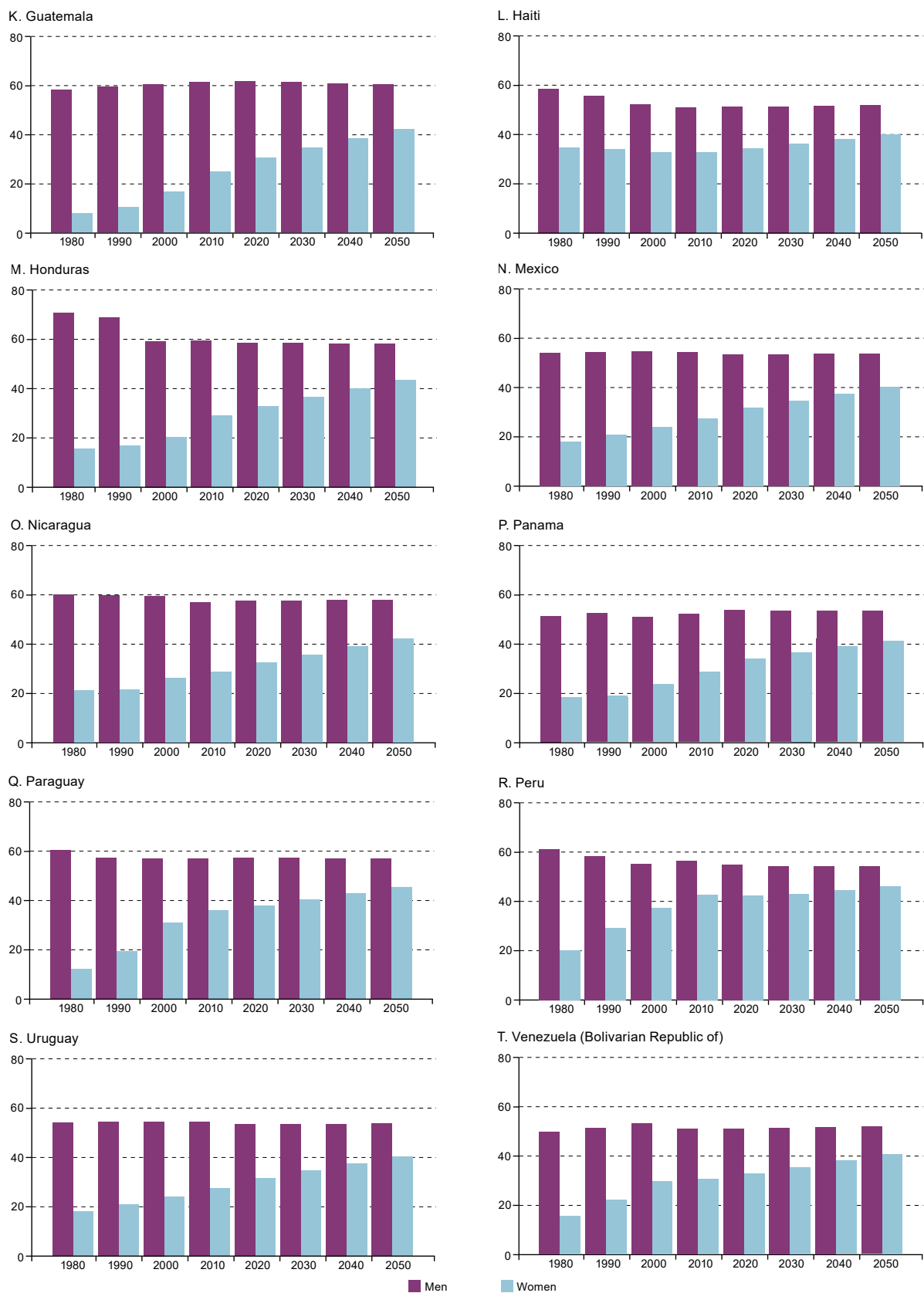
I. Ecuador



J. El Salvador



Men Women

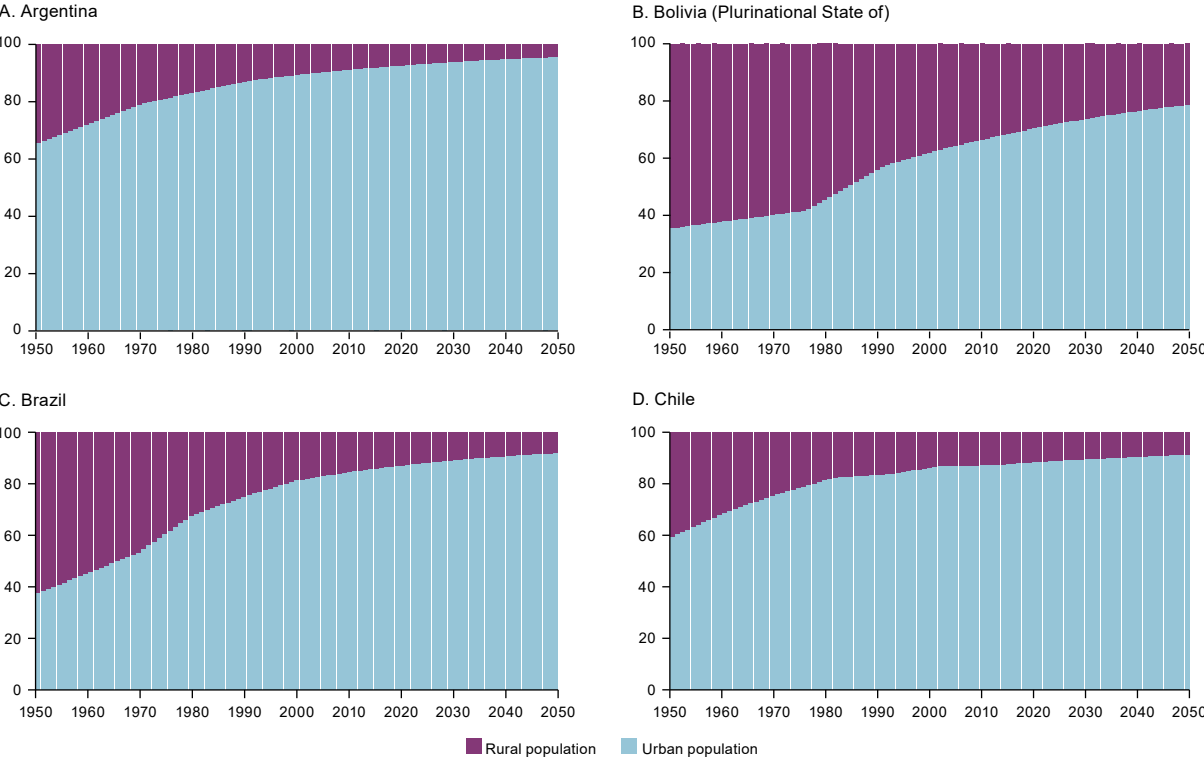


Source: Latin American and Caribbean Demographic Centre (CELADE)-Population Division of the Economic Commission for Latin America and the Caribbean (ECLAC), "Labour force estimates and projections: Excel tables. Revision 2023" [online] <https://www.cepal.org/en/subtopics/demographic-projections/latin-america-and-caribbean-population-estimates-and-projections/population-estimates-and-projections-excel-tables>.

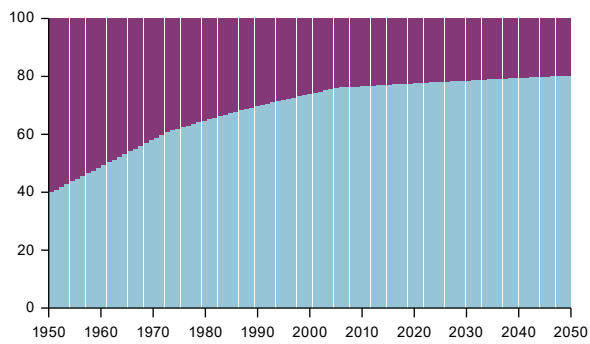
III. Changes in the age structures of the labour forces in urban and rural areas and implications for the dependency ratio

In 1950, the population of Latin America was predominantly rural, with 42% living in urban areas. In just 30 years, the urban population grew to 65% of the total, in 2020 it reached 81% and in 2050 it is projected to hit 86%. Although the definitions of urban and rural are different in each country, and despite a variety of different urbanization processes, it can be said there has been rapid growth of populations in urban areas over the last 70 years throughout the region (see figure III.1).

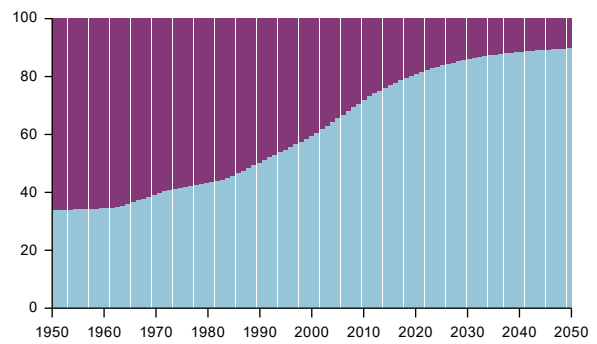
Figure III.1
Latin America (20 countries): proportions of rural and urban populations, estimated and projected, 1950–2050
(Percentages)



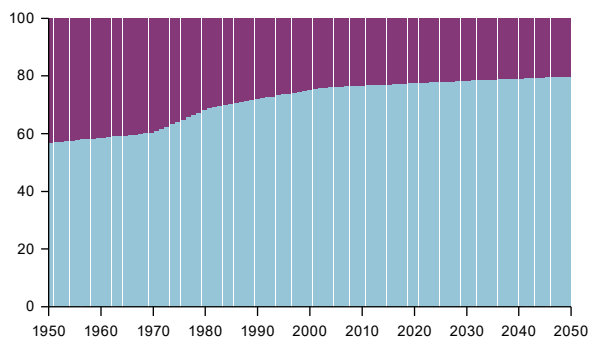
E. Colombia



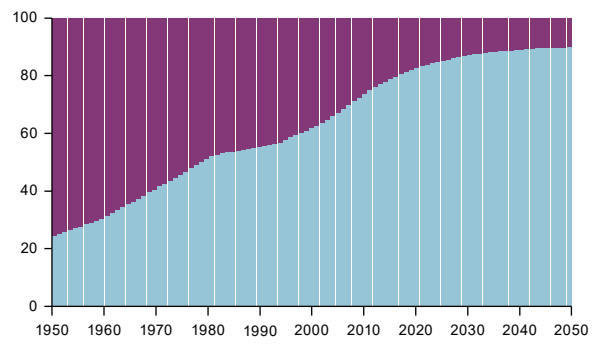
F. Costa Rica



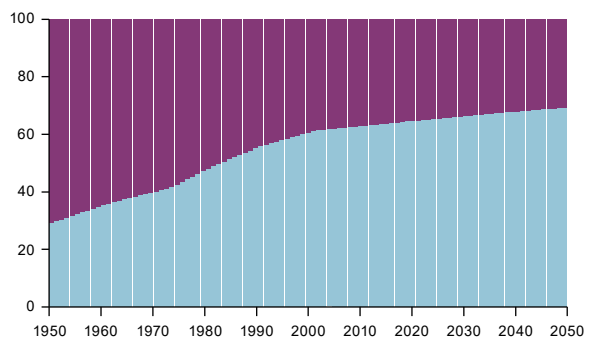
G. Cuba



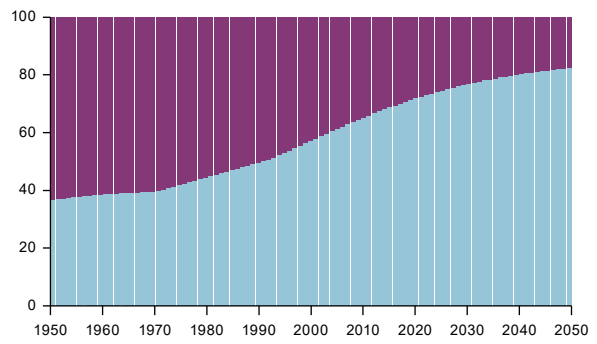
H. Dominican Republic



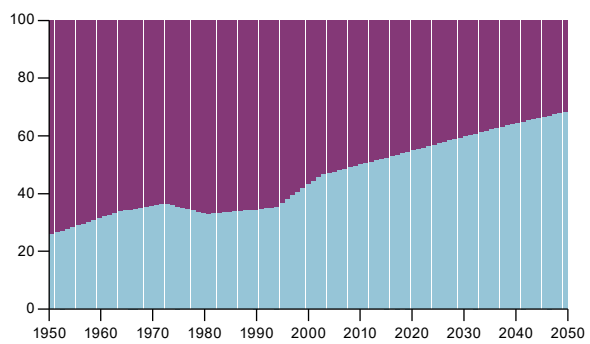
I. Ecuador



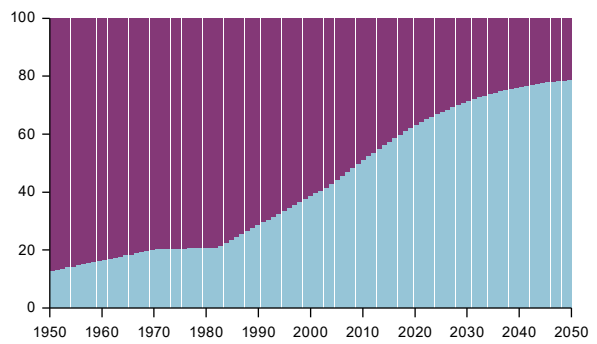
J. El Salvador



K. Guatemala

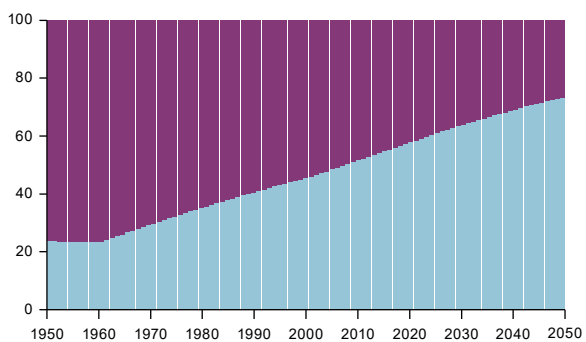


L. Haiti

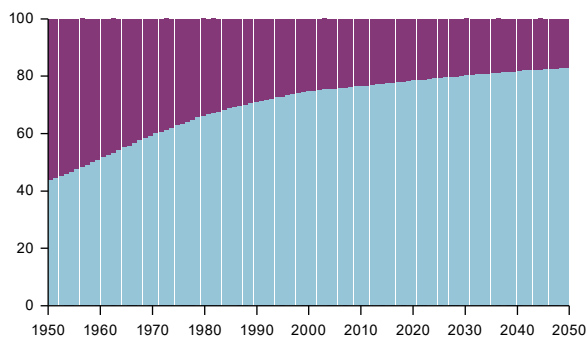


■ Rural population ■ Urban population

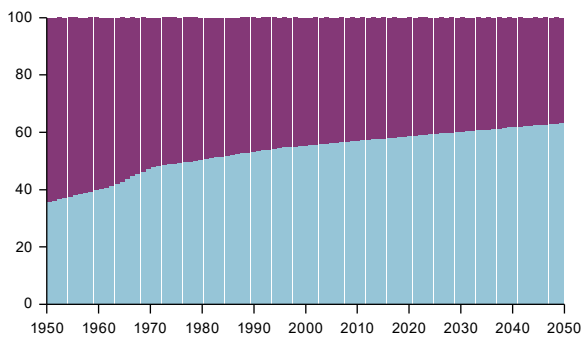
M. Honduras



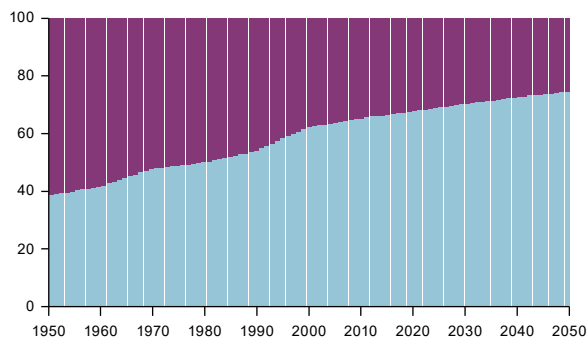
N. Mexico



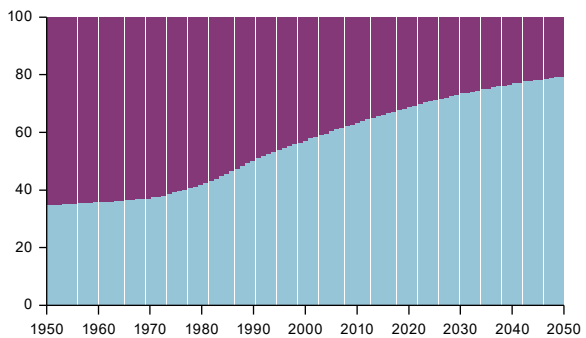
O. Nicaragua



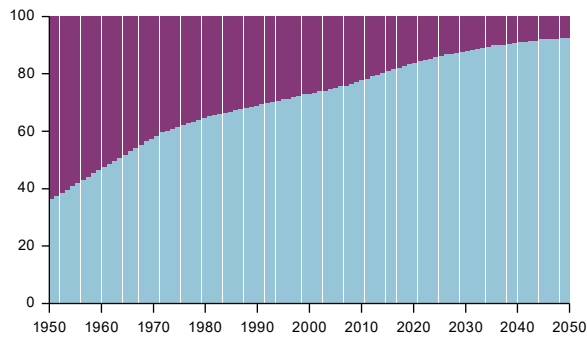
P. Panama



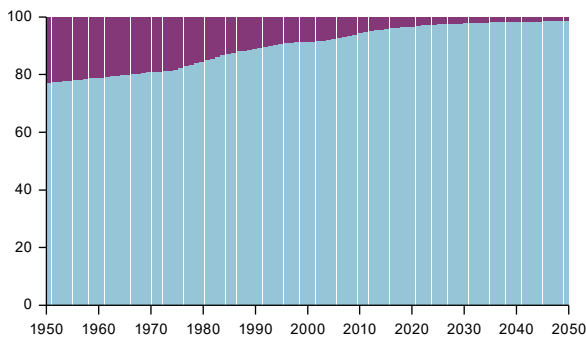
Q. Paraguay



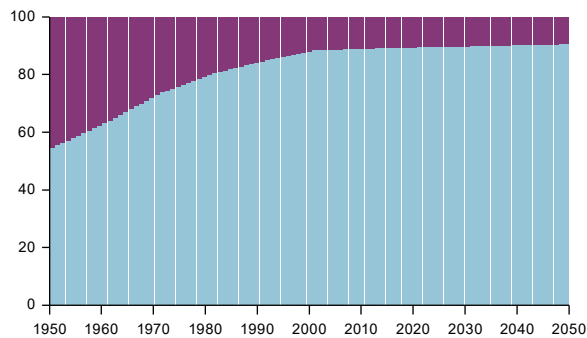
R. Peru



S. Uruguay



T. Venezuela (Bolivarian Republic of)

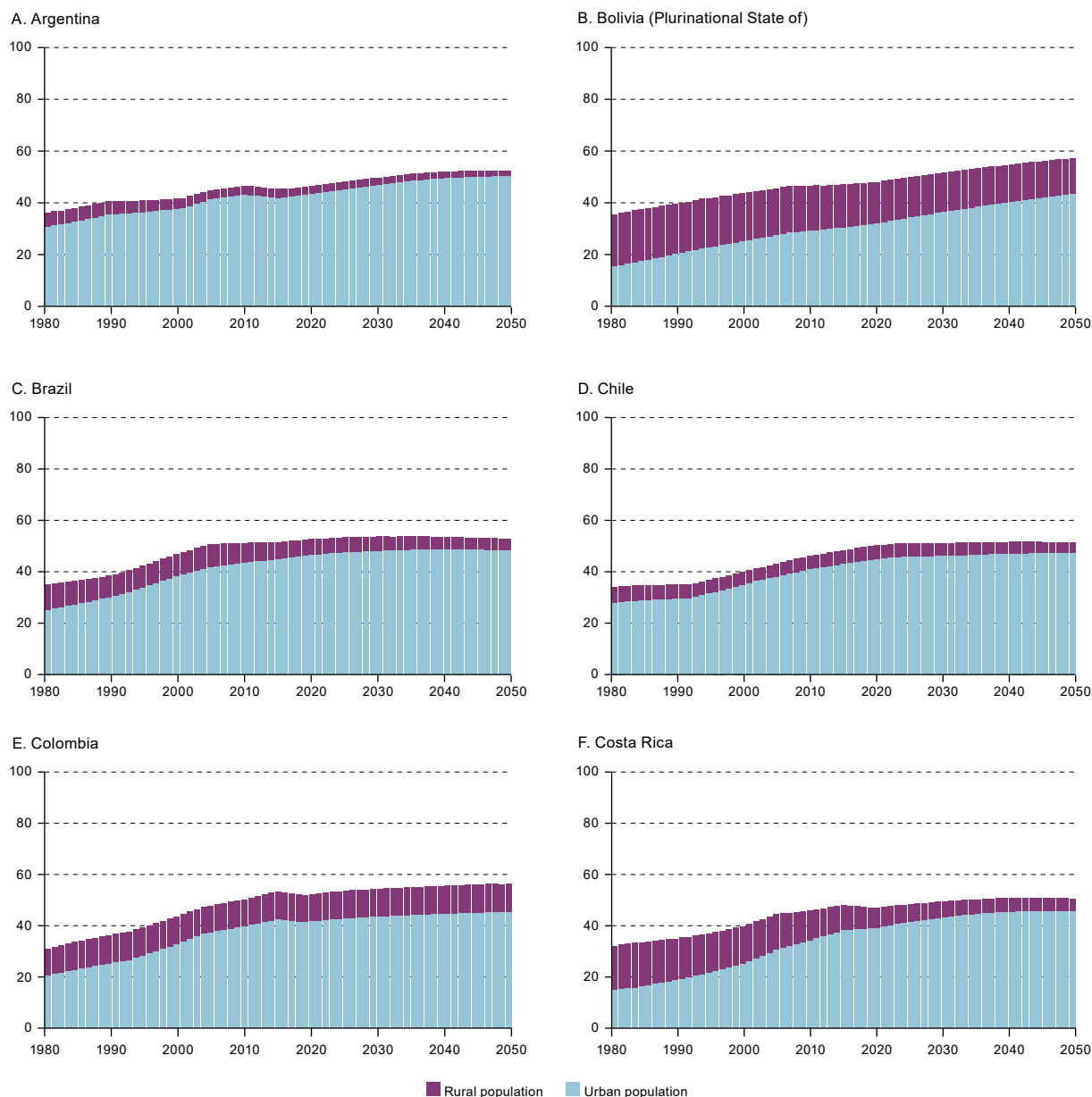


■ Rural population ■ Urban population

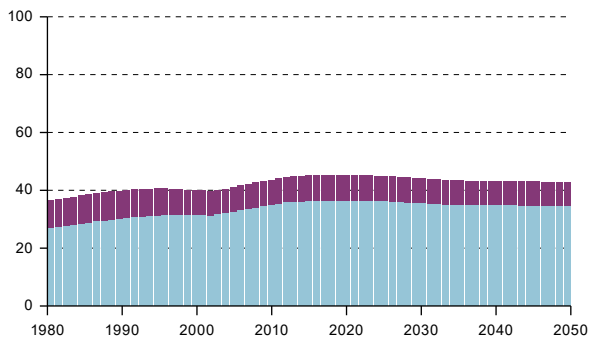
Source: Latin American and Caribbean Demographic Centre (CELADE)-Population Division of the Economic Commission for Latin America and the Caribbean (ECLAC), "Labour force estimates and projections: Excel tables. Revision 2023" [online] <https://www.cepal.org/en/subtopics/demographic-projections/latin-america-and-caribbean-population-estimates-and-projections/population-estimates-and-projections-excel-tables>.

At the same time that the urban population grew in absolute and relative terms, the economically active population also grew in relation to the total population, albeit more slowly. Most of the labour participation is concentrated in urban areas, as shown in figure III.2, although in the past there have been exceptions such as Guatemala and Haiti. Some countries in which rural areas are home to a higher proportion of the population, such as the Plurinational State of Bolivia, Guatemala and Ecuador, also have a larger rural labour force with respect to the overall labour force.

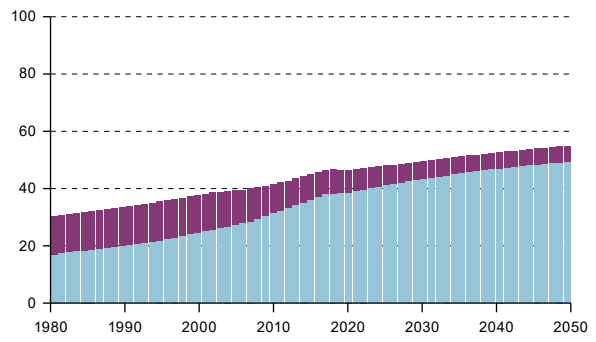
Figure III.2
Latin America (20 countries): proportion of the rural and urban labour force in relation to the total population, estimated and projected, 1980–2050
(Percentages)



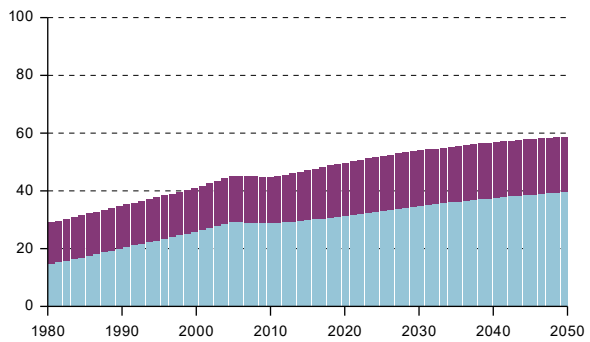
G. Cuba



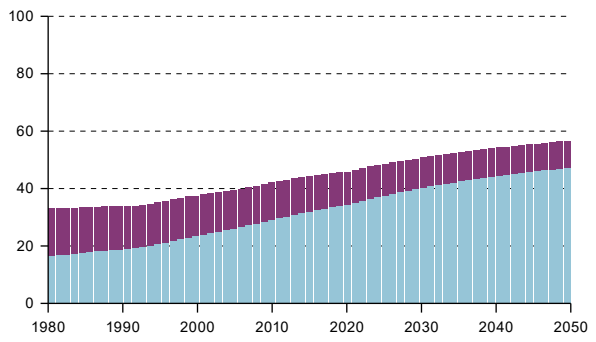
H. Dominican Republic



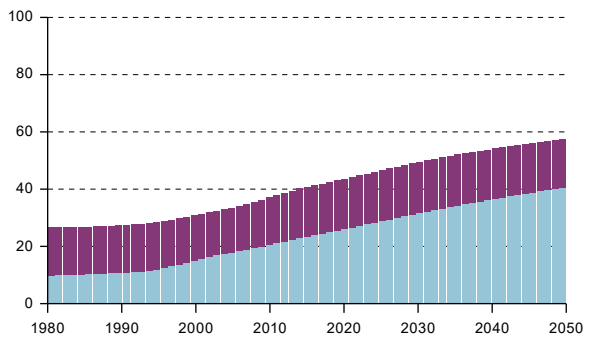
I. Ecuador



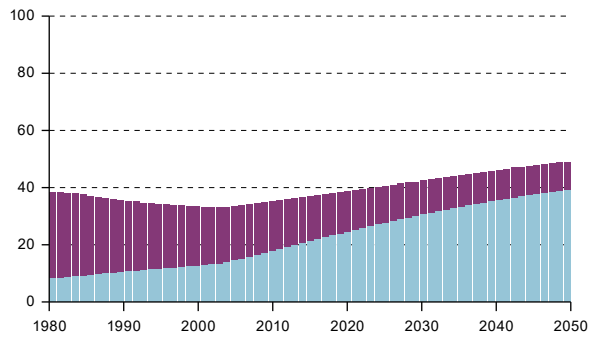
J. El Salvador



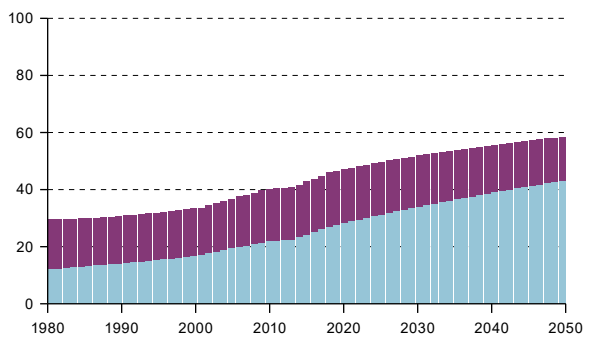
K. Guatemala



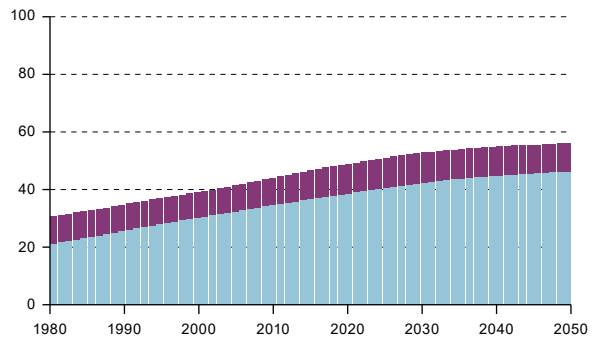
L. Haiti



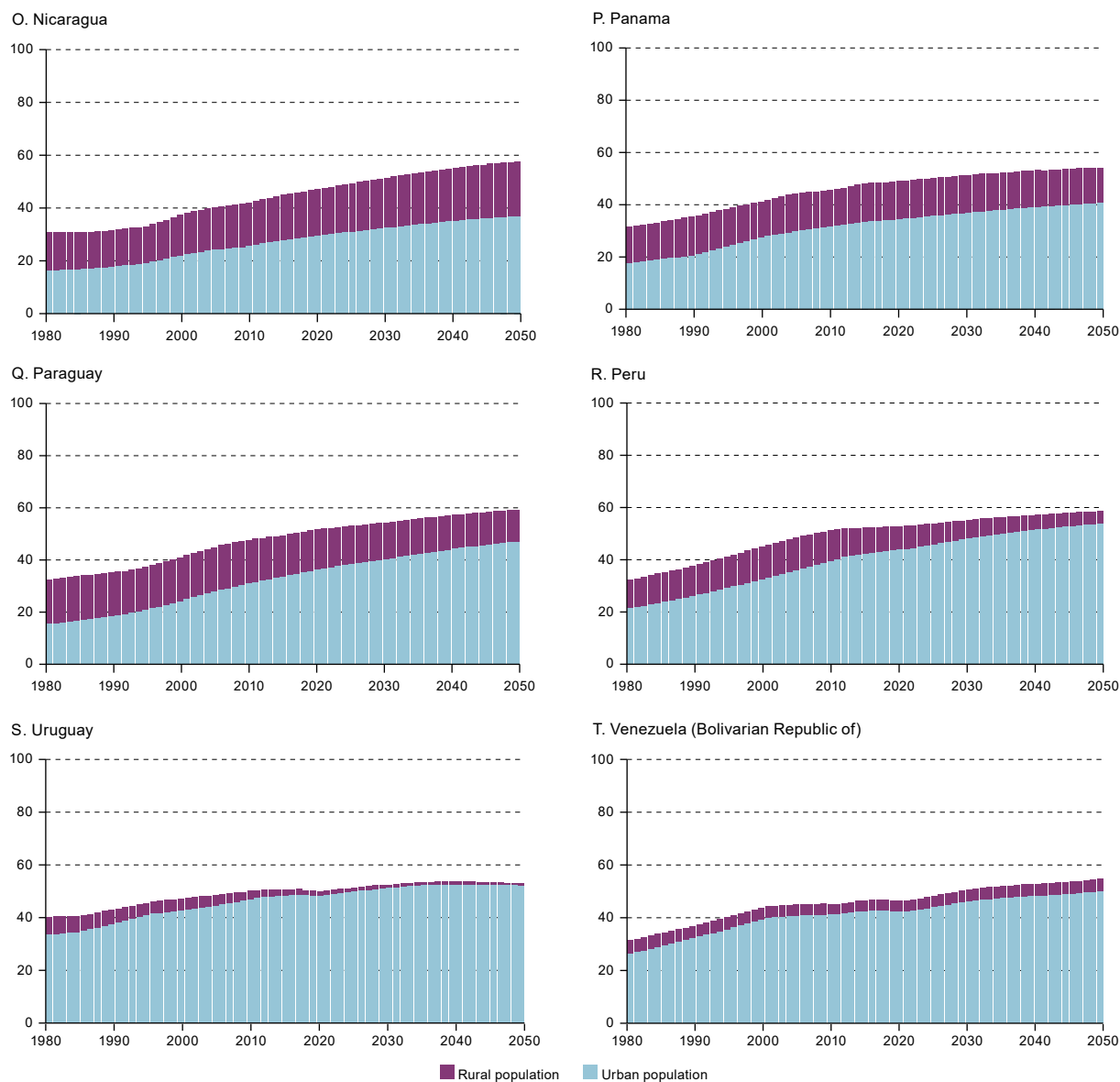
M. Honduras



N. Mexico



■ Rural population ■ Urban population

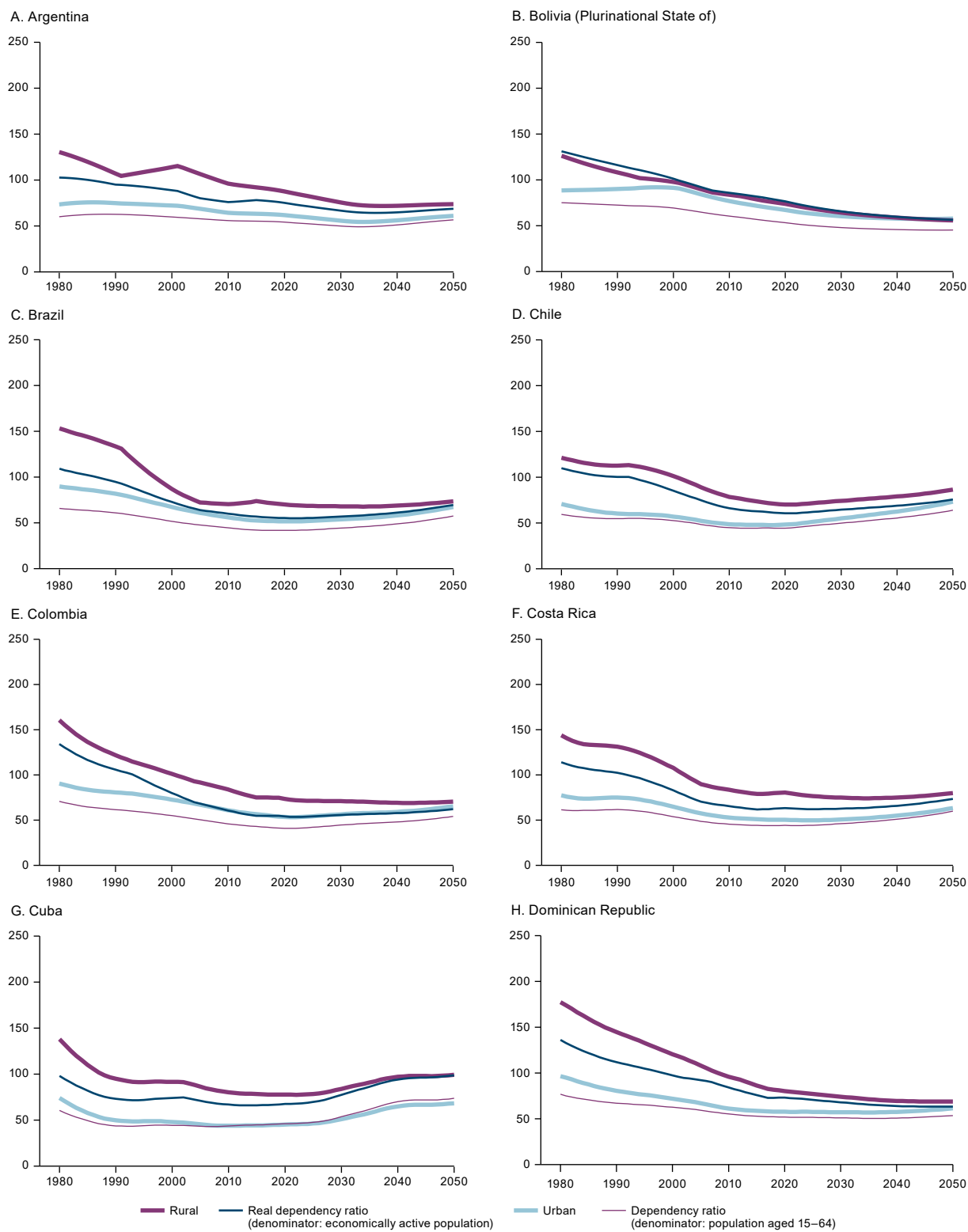


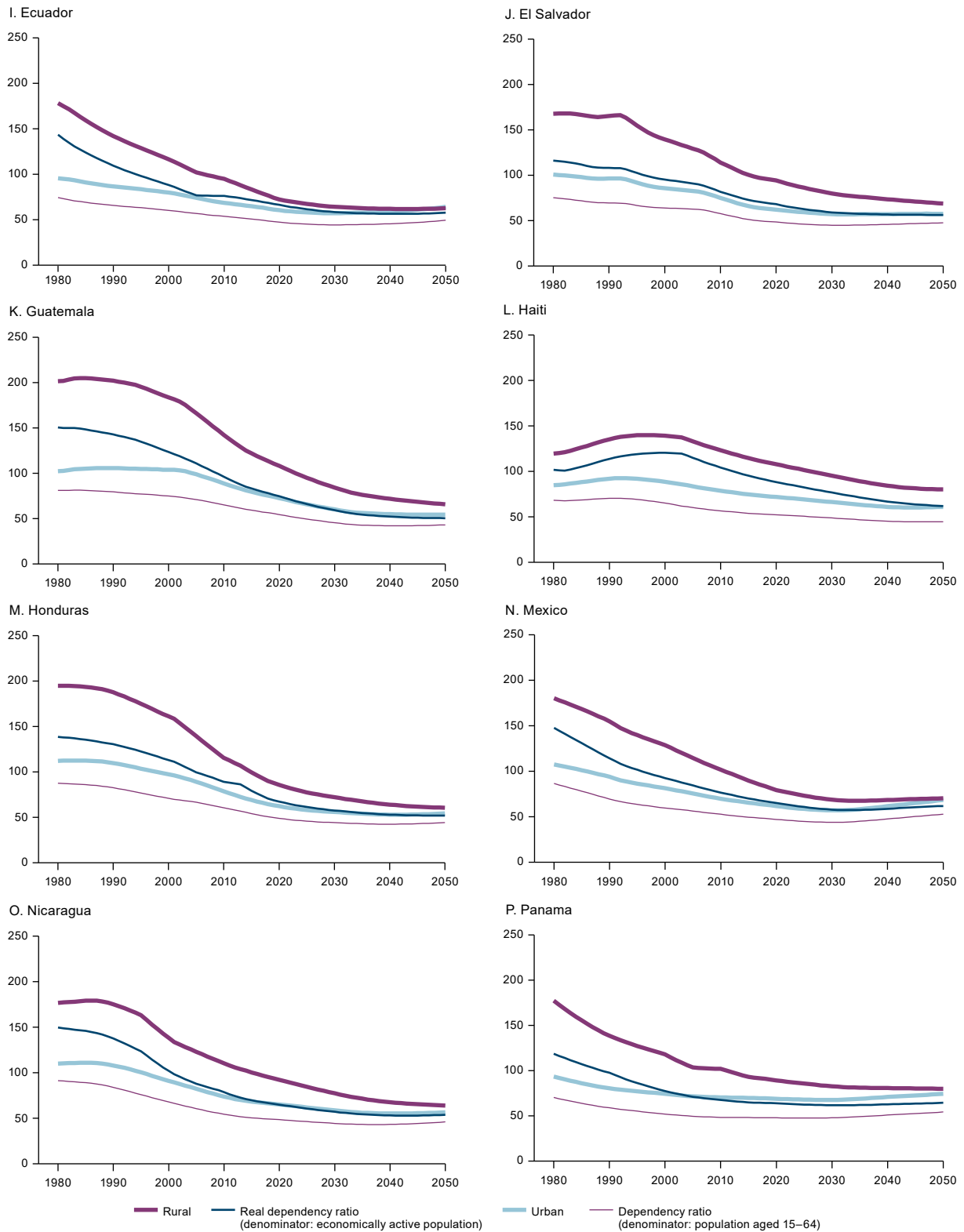
Source: Latin American and Caribbean Demographic Centre (CELADE)-Population Division of the Economic Commission for Latin America and the Caribbean (ECLAC), "Labour force estimates and projections: Excel tables. Revision 2023" [online] <https://www.cepal.org/en/subtopics/demographic-projections/latin-america-and-caribbean-population-estimates-and-projections/population-estimates-and-projections-excel-tables>.

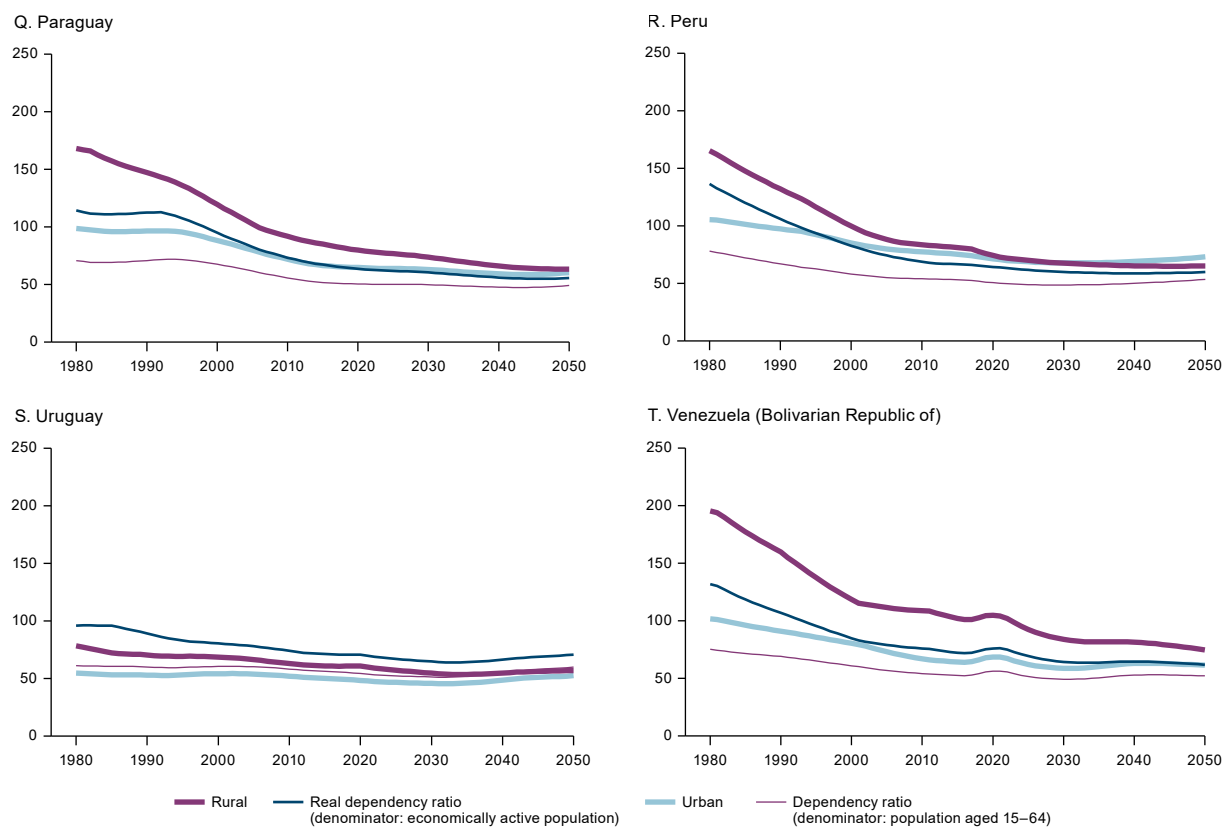
To estimate the economic dependency burden, other than the dependency ratio (which only takes into account the age structure of the population), it is also useful to analyse the real (or effective) dependency ratio (which takes into account the population in the labour force in the denominator). The latter includes as economically active not only people of working age, but all people who are linked to the labour market, whether employed or actively offering labour (Chackiel, 2000). The estimates and projections show that these two ratios will converge in the future, mainly owing to a reduction in the percentage of the population aged 0–14, an increase in the working age population (15–64 years) and growth in the economically active population. In all the countries, the overall dependency ratio has reached—or is close to—its lowest level, and will stabilize for at least the next 30 years. It is therefore vital to seize this opportunity to improve the population's qualifications and prepare for a process of rapid ageing. Figure III.3 shows the patterns in the dependency ratio and real dependency ratio for urban and rural populations. As shown, in the past, the real dependency ratio of rural areas was higher than that for urban areas in all the countries. However, more recently and for the period covered by the projections, the ratios for urban and rural areas are tending to convergence and are similar in most of the countries.

Figure III.3
Latin America (20 countries): dependency ratio and real dependency ratio, urban and rural, estimated and projected, 1980–2050

(Per 100)







Source: Latin American and Caribbean Demographic Centre (CELADE)-Population Division of the Economic Commission for Latin America and the Caribbean (ECLAC), "Labour force estimates and projections: Excel tables. Revision 2023" [online] <https://www.cepal.org/en/subtopics/demographic-projections/latin-america-and-caribbean-population-estimates-and-projections/population-estimates-and-projections-excel-tables>.

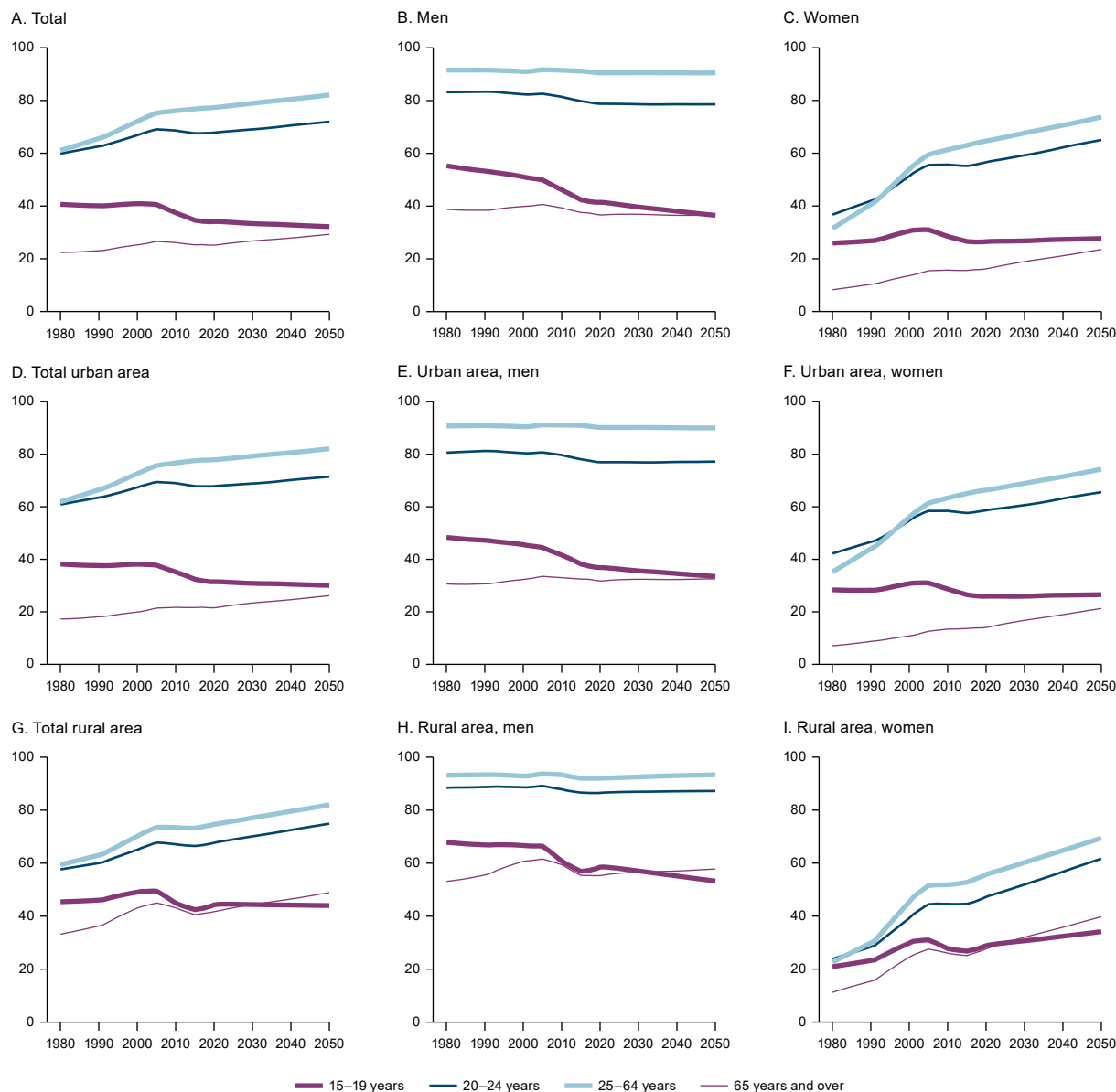
Note: Dependency ratio = ((population aged 0–14 + population aged 65 and over) / population aged 15–64) × 100. Real dependency ratio = ((population aged 0–14 years + population aged 65 and over) / economically active population aged 15 and over) × 100.

Lastly, it is important to note that the proportion of the total population accounted for by the labour force varies over time in the different age groups. The male labour force aged 25–64 has been steady at around 90% of the total persons in the age group and is projected to remain stable in the future. However, over the past decade, the participation rates for men aged 15–19 and 20–24 have declined, as has, albeit less so, the rate for the population aged 65 and over. Female labour force participation has increased in all age groups, albeit with a slight dip among 15–19 year-olds over the last decade (see figure III.4). Although the labour force of women aged 25–64 years is projected to continue growing, if historical trends persist, it will reach 73% of the age group in 2050, still almost 20 percentage points below the equivalent male rate. These conditions illustrate the urgent need to continue to develop gender equality policies on economic autonomy.

Figure III.4 also shows the differences in the labour force by age groups and areas of residence. While for the 15–19 age group there are no significant differences between the behaviour of urban and rural areas, for the 65 and over age group there is generally a higher percentage of people in the labour force in rural areas compared to urban areas. More specifically, the participation rate for women aged over 65 is much higher in rural areas than in urban areas. In the case of the 20–24 age group, participation is also higher in rural areas, possibly because of a lower rate of participation in higher education. Lastly, there are no significant differences between urban and rural areas in the 25–64 age group. In general, the greatest differences in rates by age and their variations over time are more closely tied to sex than to area of residence.

Figure III.4
Latin America (20 countries):^a labour force by age group and area of residence, 1980–2050

(Percentages of the total population in each age group)



Source: Latin American and Caribbean Demographic Centre (CELADE)-Population Division of the Economic Commission for Latin America and the Caribbean (ECLAC), “Labour force estimates and projections: Excel tables. Revision 2023” [online] <https://www.cepal.org/en/subtopics/demographic-projections/latin-america-and-caribbean-population-estimates-and-projections/population-estimates-and-projections-excel-tables>.

^a Argentina, the Bolivarian Republic of Venezuela, Brazil, Chile, Colombia, Costa Rica, Cuba, the Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, the Plurinational State of Bolivia and Uruguay.

IV. Concluding remarks

Structural changes in the labour force and projections for it present radically different future scenarios by age groups and sex, and by urban and rural areas, posing a number of questions concerning areas such as labour, education and health.

In the 2000–2010 period, Latin America’s labour force grew by an average of 5.6 million people per year. For 2010–2022 the estimated average annual growth was 4.5 million people, for 2022–2032 an average of 3.9 million people is projected, and for 2040–2050 an average of 1.5 million people. In particular, a sharp decline in the growth of the labour force aged under 30 is expected to dampen overall labour force growth between 2022 and 2050.

Analysis of average annual growth in the labour force by sex reveals faster growth in the female labour force in both urban and rural areas. By area of residence, there is expansion of the urban labour force for both sexes. Meanwhile, time spent economically active, measured in gross years of working life, will rise by just over 11 years from an estimated 33.5 years in 1980 to a projected 45 years in 2050. However, there are large differences by sex: between 1980 and 2050, gross years of working life is projected to decline from 51.7 to 50.5 years for men but to climb from 16.7 to 39.9 years for women.

There are some key aspects to these trends: (i) labour force growth is slowing, but absolute numbers of persons remain high, which poses a significant job creation challenge for the countries of the region; (ii) there are irrefutable structural changes by sex and age in the pattern of labour force growth; (iii) more time spent economically active, especially in the case of women, means more demand for jobs; and (iv) labour force growth is different in urban and rural areas, and is generally faster in the former.

Population dynamics clearly have a direct impact on the labour market owing to the pressure from growth in the working-age population, rising female labour force participation rates, population ageing and urbanization. In view of the population and labour force trends analysed in this *Demographic Observatory*, the region needs to improve productivity, increase economic growth and create more and better jobs to absorb a larger labour force, with a different age structure, with more women and older people in the labour market and more gross years of working life, especially in urban areas. Demographic trends also have an impact on pension systems, whose financial sustainability is under threat from population ageing. Access to pension systems will depend not only on the form of employment, but also on stability of employment over time and whether workers enter the formal or informal labour market.

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Annexes

Annex A1

Methodology for projecting and estimating urban and rural population and labour force figures

Population projections are a necessary input for economic and social development plans, enabling them to account for demographic trends in the population as both a productive (labour) force and a consumer of goods and services.

It is essential that countries have access to national projections disaggregated by sex, age group and area of residence. These inherently valuable projections can be further disaggregated to provide useful information for national and subnational planning and to more accurately assess future demand for basic services (e.g. health, pensions, care, housing and education) and the likely supply of available labour.

This annex contains a description of the methodology used by the Latin American and Caribbean Demographic Centre (CELADE)-Population Division of Economic Commission for Latin America and the Caribbean (ECLAC) for urban and rural population projections and for national, urban and rural labour force projections, disaggregated by sex and age group, for the 20 countries of Latin America.

At its core, the methodology is simple, flexible, replicable and easy for the countries to adopt. Given the scarcity and variable quality of available information in the countries of the region, the feasibility of applying more sophisticated methodologies is limited. In addition, as a regional document, the *Demographic Observatory* requires procedures that enable projections to be carried out on a near-simultaneous basis for many countries and to produce consistent results across countries.

A. Methodology for urban and rural population projections, by sex and age group

This section contains a description of the procedure used for projecting urban and rural population figures, disaggregated by sex and five-year age group, for the 20 countries of Latin America.

The projections cover the period 1950–2100, and results are presented by calendar year and five-year age group. The urban population refers to the population defined as such in population censuses. The definitions used in each census are based on differing criteria (in some cases, quantitative only; in others, qualitative only; and in others, a combination of both). As a result, the comparability of figures among countries or censuses is imperfect. This should be taken into account in the interpretation of results.

These projections have been carried out using logistic models that calculate the probable trajectory of the urban percentage of the population, disaggregated by sex and age group.

Building on the region's historical data, countries were grouped into five categories according to historical values for the urban percentage of the population, in particular the values recorded in each country's most recent available census (or the most recent census used as a pivot point in the relevant logistic adjustment). It was necessary to establish new country groupings, because some countries that had been in the same category in the previous revision now had divergent urbanization rates. For each grouping, two reference points were set: (i) a theoretical minimum limit (lower asymptote), fixed in the distant past, where the urban percentage is less than the lowest recorded historical value, and (ii) a theoretical maximum (upper asymptote), or the limit that the urban percentage approaches (see table A1.1).

The data from the 2010 and 2020 census rounds necessitated changes to the initial methodology. The data from those census years, where possible, were designated as pivots.

The selection of the pivot urban percentages and theoretical limits took into account various hypotheses regarding the possible social and economic development trends of each country and of the five country groups.

Lastly, the rural population was calculated as the difference between the total population figures projected by CELADE-Population Division of ECLAC¹ and the urban population figures calculated on the basis of the projected urban percentages, for every year from 1950 to 2100.

¹ From the 2022 edition of the *Demographic Observatory*.

Table A1.1
Lower and upper asymptotes, by sex and country level of urbanization
(Percentages)

Urbanization level of second pivot (Percentages)	Men		Women	
	Asymptotes			
	Lower	Upper	Lower	Upper
≥ 90	33	98	35	99
≥ 80 and < 90	26	95	28	96
≥ 70 and < 80	20	90	22	91
≥ 50 and < 70	20	85	22	87
< 50	10	80	13	82

Source: Latin American and Caribbean Demographic Centre (CELADE)-Population Division of the Economic Commission for Latin America and the Caribbean (ECLAC).

1. Use of the logistic function

As stated above, the annual urban and rural populations for the period 1950–2100 were calculated on the basis of the projected urban percentages of the population, disaggregated by sex. The urban population was then calculated by applying the projected urban percentages to the total population, by sex, using the component method. The rural population was calculated by subtracting the urban population from the total population.

The United Nations (1975) proposed using the logistic function to project urban percentages. This assumes a constant difference between urban and rural growth rates, which produces a logistic progression of the urban percentage of the population, where the lower asymptote equals 0 and the upper asymptote equals 100. The application of this technique to the countries of the region en masse presented some challenges:

- (i) For many countries, in particular those with high initial urbanization, the projected urban percentage of the population at the end of the period was exceedingly high;
- (ii) For some countries with low levels of urbanization, the rapid rate of urban growth between the two most recent censuses produced an exaggerated increase in the urban percentage of the population, surpassing the levels in the more urbanized countries by the end of the estimate period (2100). Inconsistent definitions, disparities in census quality and cyclical circumstances can all affect the inter-census growth rate.

To address these challenges, the countries were divided into five groups, each with an adjusted logistic curve and distinct lower and upper asymptotes (see table A.1). The logistic function is given below.

$$\% U_t = K_1 + \frac{K_2}{1 + e^{a+bt}}$$

where,

$\% U_t$	=	urban percentage of the population at point in time t
K_1	=	lower asymptote
$K_1 + K_2$	=	upper asymptote
a, b	=	parameters
t	=	time

The asymptotes for the region's countries in each of the five categories were determined on the basis of historical and current urbanization levels, which are linked to the economic and social development of each country. Tables A1.2 and A1.3 show the asymptotes and pivots for men and for women in each of the 20 countries of Latin America. Having obtained the values of K_1 and K_2 , the urban percentages at two points in time are used to determine the values of the two remaining parameters. The urban percentages used for that purpose—in other words, the pivots—were from the two most recent censuses.

Table A1.2
Latin America (20 countries): asymptotes and pivot points used to project the urban percentage of the population for men, by country

Country	Asymptotes		Pivot 1		Pivot 2	
	Lower	Upper	Year	Value	Year	Value
Argentina	33	98	2001.4	88.5	2010.3	90.3
Bolivia (Plurinational State of)	20	85	2001.2	61.0	2012.4	65.9
Brazil	26	95	2000.1	80.0	2010.1	83.2
Chile	26	95	2001.8	85.5	2016.8	86.8
Colombia	20	90	2005.4	74.1	2017.9	75.7
Costa Rica	20	90	1983.9	42.6	2010.9	71.6
Cuba	20	90	2002.2	74.5	2012.2	75.0
Dominican Republic	20	90	2002.3	62.1	2010.4	72.8
Ecuador	20	85	2001.4	60.2	2010.4	62.0
El Salvador	20	85	1992.2	49.2	2006.9	61.8
Guatemala	20	85	2002.4	45.5	2018.1	53.4
Haiti	10	80	1971.2	17.9	2002.5	39.3
Honduras	20	85	2001.1	44.2	2013.1	51.8
Mexico	20	90	2009.9	76.1	2019.7	78.3
Nicaragua	20	85	1994.8	52.5	2004.9	54.1
Panama	20	85	1999.9	60.5	2009.9	63.6
Paraguay	20	85	1992.2	50.0	2002.2	56.4
Peru	26	95	1993.0	69.4	2017.3	81.8
Uruguay	33	98	1995.9	89.2	2011.2	93.7
Venezuela (Bolivarian Republic of)	26	95	1990.3	82.9	2011.3	87.8

Source: Latin American and Caribbean Demographic Centre (CELADE)-Population Division of the Economic Commission for Latin America and the Caribbean (ECLAC).

Table A1.3
Latin America: asymptotes and pivot points used to project the urban percentage of the population for women, by country

Country	Asymptotes		Pivot 1		Pivot 2	
	Lower	Upper	Year	Value	Year	Value
Argentina	35	99	2001.4	90.3	2010.3	91.8
Bolivia (Plurinational State of)	22	87	2001.2	63.8	2012.4	68.8
Brazil	28	96	2000.1	82.4	2010.1	85.5
Chile	28	96	2001.8	87.7	2016.8	88.7
Colombia	22	91	2005.4	77.7	2017.9	78.7
Costa Rica	22	91	1983.9	46.4	2010.9	73.9
Cuba	22	91	2002.2	77.2	2012.2	78.6
Dominican Republic	22	91	2002.3	65.2	2010.4	75.7
Ecuador	22	87	2001.4	62.0	2010.4	63.5
El Salvador	22	87	1992.2	51.8	2006.9	63.6
Guatemala	22	87	2002.4	46.8	2018.1	54.2
Haiti	13	82	1971.2	22.5	2002.5	42.4
Honduras	22	87	2001.1	47.7	2013.1	55.1
Mexico	22	91	2009.9	76.8	2019.7	78.9
Nicaragua	22	87	1994.8	56.1	2004.9	57.9
Panama	22	87	1999.9	64.0	2009.9	66.7
Paraguay	22	87	1992.2	54.0	2002.2	60.5
Peru	28	96	1993.0	70.8	2017.3	82.9
Uruguay	35	99	1995.9	92.3	2011.2	95.5
Venezuela (Bolivarian Republic of)	28	96	1990.3	85.3	2011.3	89.8

Source: Latin American and Caribbean Demographic Centre (CELADE)-Population Division of the Economic Commission for Latin America and the Caribbean (ECLAC).

This methodology is no substitute for more refined techniques (such as the component method) that account for possible changes in the fertility and mortality rates among urban and rural populations, as well as migration flows. However, it has the advantage of being simple and only requiring population data by area of residence at two points in time. It is worth remembering that, for many countries of the region, the data needed to apply these more sophisticated methods are not available. Moreover, any variation in results between different methods would not be significant in the short term (e.g. 10 years).

2. Urban and rural population, by age group

The previous subsection covers the method of projecting the total urban percentage of the population, by sex, and of calculating on that basis the urban population, which was then subtracted from the total population to arrive at the rural population. This subsection covers the methodology for carrying out the corresponding projections by five-year age group.

First, the urban population, by sex and age group, must be calculated for the given historical period. In the case of the estimates and projections of CELADE-Population Division of ECLAC, this corresponds to the period from 1950 to the year of the most recent available census data. To proceed with the calculation, the following information is required: (i) total population of each country, by sex and age group, adjusted for the historical period, and (ii) urban percentages of the population, by sex and age group, for the years of the censuses used in the study.

Once the urban percentages of the population for the census years have been determined, they must be assessed and, if necessary, adjusted. This is done by applying a simple moving average, such that when the adjusted percentages are applied to the adjusted total population, the urban percentage of the population, by sex, is equal to the percentage given in the original source.

This process yields a set of urban percentages, by sex and age group. Linear interpolation fills in the remaining percentages for each calendar year in the estimate period.

Projections by age group also rely on the logistic function. They should equal the previously projected total urban percentage of the population. To that end, the United Nations method is applied in the manner described below.

- Projected total urban and rural populations can be used to calculate the average annual growth rates of both populations and, thus, the difference between the two rates:

$$d = r_u - r_R$$

- Then, for each age group, the urban percentage of the population (at point in time t) is projected using the following formula:

$$\% U_{(t)} = \frac{\% U_{(0)} \cdot 100e^{dt}}{100 - \% U_{(0)} (1 - e^{dt})}$$

where,

$U_{(t)}$ = urban percentage of population at point in time t

$U_{(0)}$ = urban percentage of population at initial point in time 0

- Next, the projected populations of each age group are added up. If the sum does not equal the previously calculated total population (there is always a marginal discrepancy), it is prorated accordingly.
- This process is repeated for each year in the projection period.

B. Labour force estimates and projections for urban and rural areas, by sex and age

CELADE-Population Division of ECLAC labour force projections have been prepared for urban and rural areas, by sex, five-year age group and calendar year. They cover the period 1980–2050.

The minimum age used in the analysis of participation in economic activity is not the same for all countries of the region. Bearing this in mind, and in pursuit of a more homogeneous data set to facilitate comparisons between countries, the minimum age for labour force data considered in this edition has been set at 15 years. Studies with a narrower focus may be better equipped to analyse labour force participation in younger age groups.

The labour force refers to the population classified as such in the population censuses or household surveys of each country. The set of questions through which this population tends to differ between censuses and surveys. Surveys are considered better able to capture labour force data, because surveyors are better trained, the set of questions used to determine labour force participation is more extensive, the respondents are selected on the basis of suitability and the time periods covered differ from census periods. However, surveys can also be compromised by sampling design and produce greater inconsistencies when results are disaggregated. These factors have all been taken into account in the selection of sources considered in this study.

The baseline year for labour force projections is the most recent pivot year estimated on the basis of the censuses or surveys considered, which varies from country to country depending on the sources of the data compiled for the study.

First, refined rates of participation were analysed² for each data source (census or survey), by sex and area of residence. Then, with a view to smoothing the estimates, pivot years were selected on the basis of the average rates, by sex, age and area of residence, taken from each of the sources used. Linear interpolation between the estimated pivots produced rates by sex, age and area of residence for each year of the estimate period. The sources and pivot years for each country are provided in a later section.

An analysis of the data compiled shows a sharp increase in the labour force participation rate among women between 1980 and 2000, in particular in rural areas. This could be explained by the crises and economic adjustment measure that affected the majority of the countries in the region, forcing members of the household who had historically not been in the labour force to join it in order to boost household income. However, the correlation between women entering the labour market in greater numbers and women's shifting role in society cannot be dismissed. Another equally significant consideration is that more recent sources have more accurately captured the economically active population of women, in particular since 2000.

Basing the methodology on participation rates for urban and rural areas avoids the issue of internal migration, because the methodology uses population estimates and projections by area of residence.

The process of projecting participation rates involves interpolating the rates by age group, sex and area of residence at the beginning of the projection and the “model” rates that each country would reach at a given point in time. The model participation rate structures are determined by area of residence for each country, in particular the estimated participation rates among men and women for 2100.

Determining these model rates is one of the challenges of this methodology. The model rates have been updated in each revision. As more data has been compiled on labour force participation disaggregated by sex, age and area of residence, distinct patterns have emerged for different countries. It has become clear that using one model participation rate structure for all countries could produce abrupt variations in participation rates. For this edition, each country's trends were analysed to determine its future structure of participation rates, by age group, for urban and rural populations. These structures envisage a lower participation rate among people under the age of 20, who could stay in education longer, and a higher participation rate among the population aged 20–80, and participation rates very similar to those observed among older age groups. The future structure for each country was determined using the participation rates for men, as they are higher than women's rates and, moreover, they tend to be more accurately reflected in the sources used.

² The refined rate of participation was defined as the economically active population (labour force) aged 15 years and older as a percentage of the total population aged 15 years and older.

Therefore, the structures reflect the following assumptions:

- (i) Labour force participation among the population aged 15–19 is expected to be lower in the future, because this age group is expected to stay in education longer;
- (ii) Increased life expectancy at birth and new ways of working (such as telecommuting and reduced hours) are expected to increase labour force participation among the population aged 20–79;
- (iii) Gender equality in labour force participation is expected to increase. To achieve this equality, the future structure, designed on the basis of participation rates among men, for urban and rural areas of residence, would be realized in 2100.

The assumptions are general and can be adapted to each country according to the national trends observed in the various sources.

Population census and household survey information (available to ECLAC) show a variety of distinct trends in the countries of the region, which made it necessary to revise the methodology used in previous editions. In light of this diversity of experience, it is unlikely that the countries of the region will arrive at similar model labour force participation structures; hence, distinct model structures have been generated to adapt to the experience of each country and thus account for the variability of trends seen in the data.

One limitation of the methodology is that it uses the definitions of urban and rural areas and the labour force according to the criteria established in each source included in the analysis. These definitions can vary over time and among sources and countries. This variation can compromise the comparability of data over time and among countries, which will not always be reliable. Equally concerning are gaps in the ability to capture census data according to sex, age and area of residence; sampling error in surveys; and the comparatively limited data on women's labour participation in sources predating 2000, in particular in rural areas.

Differences in definitions and sources can have an even greater effect on estimating labour force participation among women. Caution must therefore be exercised when considering historical growth rates in the period under analysis, in particular between the years 1980 and 2000. Despite having been estimated on the basis of the data sources analysed, trends for these years may be influenced by different measurement criteria or improvements made over time in the ability to accurately capture labour force participation data. The understanding of women's labour force participation is undeniably influenced by social and cultural factors, and historical rates are often underestimated, especially in rural areas.

The above-mentioned issues of data comparability and quality are evident in the fluctuation of participation rates among men and women by area of residence. This observation underlay the selection of data sources for use in the estimation of participation rates and in building the model labour force participation structures.

These issues notwithstanding, the labour force estimates and projections for the period 1980–2050 enable the analysis of the impacts, disaggregated by age group, sex and area of residence, of changes in labour force participation and urbanization, as well as of demographic changes, both historical and projected, for each country of the region.

Annex A.2 contains a list of the sources of available data, indicating which sources were used in the estimates and model structures generated for each country.

Annex A2

A. Notes and sources of data on each country

The estimates and projections of total population figures, by sex and age group, for each of the 20 countries of Latin America between 1950 and 2100, are those carried out by the United Nations Population Division and CELADE-Population Division of ECLAC and published in *World Population Prospects 2022*.³ The urban and rural population projections (1950–2100) and labour force projections (1980–2050) were prepared by CELADE-Population Division of ECLAC using the above-described methodology. The data sources, population censuses and housing surveys available to ECLAC are set out below, together with the particularities of the labour force estimates and projections for each country using the proposed methodology.

1. Argentina

Labour force estimates and projections

(i) Data sources considered

- National population censuses of 1980, 1991, 2001 and 2010
- Permanent household surveys of 1990, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2016, 2017, 2018, 2019, 2020 and 2021 (surveys only cover urban areas)

(ii) Estimates and projections of labour force participation rates for men and women in urban areas, by age group

Estimate period 1980–2019. Participation rate estimates were prepared by age group for the following pivot years: 1980, 1990, 2001, 2005, 2010, 2015 and 2019. For 1980, the adjusted rates from the 1980 population census were used; for 1990, the rates were estimated by taking the average of the rates from the 1990 permanent household survey and the 1991 census; for 2001, the rates were estimated by taking the average of the 2000, 2001 and 2002 permanent household survey rates and the 2001 census rates; for 2005, the rates were estimated by taking the average of the 2004, 2005 and 2006 permanent household survey rates; for 2010, the rates were estimated by taking the average of the 2009, 2010 and 2011 permanent household survey rates and the 2010 census rates;⁴ for 2015, the rates were estimated by taking the average of the 2013, 2014, 2016 and 2017 permanent household survey rates; and for 2019, they were estimated by taking the average of the 2017, 2018, 2019, 2020 and 2021 permanent household surveys. Labour force participation rates for the calendar years 1980–2019 were estimated via linear interpolation between the pivot estimates.

Projection period 2019–2050. Labour force participation rates were projected via linear interpolation between the estimated rates for 2019 and the model rates established for the urban population of Argentina. The projection methodology assumed that the established model structure would be achieved in 2100.

(iii) Estimates and projections of labour force participation rates for men and women in rural areas, by age group

Estimate period 1980–2010. Participation rate estimates were prepared by age group for the following pivot years: 1980, 1990, 2001 and 2010. For 1980, the adjusted rates from the 1980 population census were used; for 1990, the 1991 census rates were used; for 2001, the 2001 census rates were used; and for 2010, the 2010 census rates were used. Labour force participation rates for the calendar years 1980–2010 were estimated via linear interpolation between the pivot estimates.

Projection period 2010–2050. Labour force participation rates were projected via linear interpolation between the estimated rates for 2010 and the model rates established for the rural population of Argentina. The projection methodology assumed that the established model structure would be achieved in 2100.

³ See [online] <https://www.cepal.org/es/subtemas/proyecciones-demograficas/america-latina-caribe-estimaciones-proyecciones-poblacion>.

⁴ For 2010, the rates were estimated by assigning greater weight to the census rates, as the permanent household survey rates were lower than the census rates.

(iv) Labour force

The estimated and projected labour force participation rates, by sex, age group and area of residence, were applied to the population, by sex, age and urban or rural area, to yield the labour force figures, by sex, age and area of residence. The overall total labour force and totals by sex were calculated by addition.

Model labour force participation rate structure of the urban population of Argentina, by age group

For the 15–19 age group, the minimum recorded rate from among the sources was used; for the 20–24, 80–84, 85–89, 90–94, 95–99 and 100+ age groups, the average of the recorded rates was used; and for the remaining age groups, the maximum rates recorded between 1980 and 2021 were used. The model was prepared on the basis of the participation rates for men, as they are higher than women's rates.

Model labour force participation rate structure of the rural population of Argentina, by age group

For the 15–19 age group, the minimum recorded census rate was used; for the 20–24, 80–84, 85–89, 90–94, 95–99 and 100+ age groups, the average of the recorded rates was used; and for the remaining age groups, the maximum rates recorded since 1980 and 2021 were used. The model was prepared on the basis of the participation rates for men, as they are higher than women's rates.

2. Bolivarian Republic of Venezuela**(i) Data sources considered**

- National population censuses of 1981, 1990, 2001 and 2011
- Permanent household surveys of 2000, 2001, 2002, 2003, 2004, 2005, 2007, 2008, 2009, 2010, 2011, 2012, 2013 and 2014

In the specific case of the Bolivarian Republic of Venezuela, national estimates and projections of the labour force, by sex and age, were prepared using data from household surveys that are not disaggregated according to urban or rural area of residence. Then, labour force estimates and projections by sex, age and area of residence were prepared using population census data, and these were then adjusted on the basis of the household surveys.

(ii) Estimates and projections of labour force participation rates for men and women at the national level, by age group

Estimate period 1980–2013. Participation rate estimates were prepared by age group for 1981, 2001, 2002, 2003, 2004, 2005, 2007, 2008, 2009, 2010, 2011, 2012 and 2013. For 1981, the adjusted rates from the 1981 population census were used; and for the period 2001–2013, the average of the permanent household survey rates from three consecutive years was used. Labour force participation rates for the calendar years 1980–2000 were estimated via linear extrapolation and interpolation between the estimated rates for 1981 and 2001.

Projection period 2014–2050. Labour force participation rates were projected via linear interpolation between the 2013 rate estimates and the model rates established for the national population of the Bolivarian Republic of Venezuela. The projection methodology assumed that the established model structure would be achieved in 2100.

(iii) Estimates and projections of labour force participation rates for men and women in urban areas, by age group (initial figures)

Estimate period 1980–2011. Participation rate estimates were prepared by age group for 1981, 1990, 2001 and 2011. The adjusted rates from the respective population censuses of 1981, 1990, 2001 and 2011 were used. Labour force participation rates for the calendar years 1980–2011 were estimated via linear extrapolation and interpolation between the estimated rates for 1981, 1990, 2001 and 2011.

Projection period 2012–2050. Labour force participation rates were projected via linear interpolation between the 2011 rate estimates and the model rates established for the urban population of the Bolivarian Republic of Venezuela. The projection methodology assumed that the established model structure would be achieved in 2100.

(iv) Estimates and projections of labour force participation rates for men and women in rural areas, by age group (initial figures)

Estimate period 1980–2011. Participation rate estimates were prepared by age group for 1981, 1990, 2001 and 2011. The adjusted rates from the respective population censuses of 1981, 1990, 2001 and 2011 were used. Labour force participation rates for the calendar years 1980–2011 were estimated via linear extrapolation and interpolation between the estimated rates for 1981, 1990, 2001 and 2011.

Projection period 2012–2050. Labour force participation rates were projected via linear interpolation between the 2011 rate estimates and the model rates established for the urban population of the Bolivarian Republic of Venezuela. The projection methodology assumed that the established model structure would be achieved in 2100.

(v) Adjustments to urban and rural labour force participation rates on the basis of national rates

The estimated and projected labour force participation rates, by sex, age group and area of residence, were applied to the population, by sex, age and urban or rural area, to yield the labour force figures, by sex, age and area of residence. The total labour force was calculated as the sum of the urban labour force and the rural labour force. The proportional urban and rural shares of the labour force were calculated by taking the initial urban and rural labour force figures as a percentage of the total national labour force derived from the sum of the two forces. These percentages were then applied to the national estimates and projections based on the household surveys to determine the final labour force estimates and projections for the urban and rural populations.

(vi) Labour force

The estimated and projected labour force participation rates, by sex, age group and area of residence, were applied to the population, by sex, age and urban or rural area, to yield the labour force figures, by sex, age and area of residence. The overall total labour force and totals by sex were calculated by addition.

Model structure of the national labour force participation rates of the Bolivarian Republic of Venezuela, by age group

For the 15–19, 80–84, 85–89, 90–94, 95–99 and 100+ age groups, the average of the household survey rates was used. For the remaining age groups, the maximum rates recorded between 2000 and 2014 were used. The model was prepared on the basis of the participation rates for men, as they are higher than women's rates.

Model structure of the urban labour force participation rates of the Bolivarian Republic of Venezuela, by age group (initial figures)

For the 15–19, 80–84, 85–89, 90–94, 95–99 and 100+ age groups, the average of the 1981, 1990, 2001 and 2011 population census rates was used. For the remaining age groups, the maximum population census rates were used. The model was prepared on the basis of the participation rates for men, as they are higher than women's rates.

Model structure of the rural labour force participation rates of the Bolivarian Republic of Venezuela, by age group (initial figures)

For the 15–19, 80–84, 85–89, 90–94, 95–99 and 100+ age groups, the average of the 1981, 1990, 2001 and 2011 population census rates was used. For the remaining age groups, the maximum population census rates were used. The model was prepared on the basis of the participation rates for men, as they are higher than women's rates.

3. Brazil

Labour force estimates and projections

(i) Data sources considered

- National population censuses of 1980, 1991, 2000 and 2010
- National household surveys (Pesquisa Nacional por Amostra de Domicílios (PNAD)) of 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020 and 2021

(ii) Estimates and projections of labour force participation rates for men and women in urban areas, by age group

Estimate period 1980–2019. Participation rate estimates were prepared by age group for the following pivot years: 1980, 1991, 2001, 2005, 2010, 2015 and 2019. For 1980, the adjusted rates from the 1980 population census were used; for 1991, the adjusted 1991 census rates were used; for 2001, the rates were estimated by taking the average of the 2000 census rates and the 2001, 2002 and 2003 PNAD rates; for 2005, the average of the 2003, 2004, 2005, 2006 and 2007 PNAD rates was used; for 2010, the rates were estimated by taking the average of the 2010 census rates and the 2008, 2009, 2011 and 2012 PNAD rates; for 2015, the average of the 2013, 2014, 2015, 2016 and 2017 PNAD rates was used; and for 2019, the average of the 2018 and 2019 PNAD rates was used. Labour force participation rates for the calendar years 1980–2019 were estimated via linear interpolation between the pivot estimates.

Projection period 2020–2050. Labour force participation rates were projected via linear interpolation between the estimated rates for 2019 and the model rates established for the urban population of Brazil. The projection methodology assumed that the established structure would be achieved in 2100.

(iii) Estimates and projections of labour force participation rates for men and women in rural areas, by age group

Estimate period 1980–2015. Participation rate estimates were prepared by age group for the following pivot years: 1980, 1991, 2001, 2005, 2010 and 2015. For 1980, the adjusted rates from the 1980 population census were used; for 1991, the adjusted 1991 census rates were used; for 2001, the rates were estimated by taking the average of the 2000 census rates and the 2001, 2002 and 2003 PNAD rates; for 2005, the average of the 2003, 2004, 2005, 2006 and 2007 PNAD rates was used; for 2010, the average of the 2008, 2009, 2011 and 2012 PNAD rates was used; and for 2015, the average of the 2013, 2014, 2015, 2016 and 2017 PNAD rates was used. Labour force participation rates for the calendar years 1980–2015 were estimated via linear interpolation between the pivot estimates.

Projection period 2016–2050. Labour force participation rates were projected via linear interpolation between the estimated rates for 2015 and the model rates established for the urban population of Brazil. The projection methodology assumed that the established model structure would be achieved in 2100.

(iv) Labour force

The estimated and projected labour force participation rates, by sex, age group and area of residence, were applied to the population, by sex, age and urban or rural area, to yield the labour force figures, by sex, age and area of residence. The overall total labour force and totals by sex were calculated by addition.

Model labour force participation rate structure of the urban population of Brazil, by age group

For the 15–19 age group, the minimum recorded rate from among the sources was used; for the 20–24, 80–84, 85–89, 90–94, 95–99 and 100+ age groups, the average of the recorded rates was used; and for the remaining age groups, the maximum rates recorded between 1980 and 2021 were used. The model was prepared on the basis of the participation rates for men, as they are higher than women's rates.

Model labour force participation rate structure of the rural population of Brazil, by age group

For the 15–19 age group, the minimum recorded rate from among the sources was used; for the 20–24, 80–84, 85–89, 90–94, 95–99 and 100+ age groups, the average of the recorded rates was used; and for the remaining age groups, the maximum rates recorded between 1980 and 2021 were used. The model was prepared on the basis of the participation rates for men, as they are higher than women's rates.

4. Chile

Labour force estimates and projections

(i) Data sources considered

- National population censuses of 1982, 1992, 2002 and 2017
- National household surveys of 2000, 2003, 2006, 2009, 2011, 2013, 2015, 2017 and 2020

(ii) Estimates and projections of labour force participation rates for men and women in urban areas, by age group

Estimate period 1980–2017. Participation rate estimates were prepared by age group for the following pivot years: 1982, 1992, 2002, 2010 and 2017. For 1982, the adjusted rates from the 1980 population census were used; for 1992, the adjusted 1992 census rates were used; for 2001, the rates were estimated by taking the average of the 2002 census rates and the 2001 and 2003 national household survey rates; for 2010, the average of the 2006, 2009, 2011 and 2013 national household survey rates was used; and for 2017, the rates were estimated by taking the average of the 2017 census and the 2015, 2017 and 2020 national household survey rates. Labour force participation rates for the calendar years 1980–2017 were estimated via linear extrapolation and interpolation between the pivot estimates.

Projection period 2018–2050. Labour force participation rates were projected via linear interpolation between the estimated rates for 2017 and the model rates established for the urban population of Chile. The projection methodology assumed that the established model [structure would be achieved in 2100.

(iii) Estimates and projections of labour force participation rates for men and women in rural areas, by age group

Estimate period 1980–2017. Participation rate estimates were prepared by age group for the following pivot years: 1982, 1992, 2002, 2010 and 2017. For 1982, the adjusted rates from the 1980 population census were used; for 1992, the adjusted 1992 census rates were used; for 2001, the rates were estimated by taking the average of the 2002 census rates and the 2001 and 2003 national household survey rates; for 2010, the average of the 2006, 2009, 2011 and 2013 national household survey rates was used; and for 2017, the rates were estimated by taking the average of the 2017 census and the 2015, 2017 and 2020 national household survey rates. Labour force participation rates for the calendar years 1980–2017 were estimated via linear extrapolation and interpolation between the pivot estimates.

Projection period 2018–2050. Labour force participation rates were projected via linear interpolation between the estimated rates for 2017 and the model rates established for the rural population of Chile. The projection methodology assumed that the established structure would be achieved in 2100.

(iv) Labour force

The estimated and projected labour force participation rates, by sex, age group and area of residence, were applied to the population, by sex, age and urban or rural area, to yield the labour force figures, by sex, age and area of residence. The overall total labour force and totals by sex were calculated by addition.

Model labour force participation rate structure of the urban population of Chile, by age group

For the 15–19 age group, the minimum recorded rate from among the sources was used; for the 20–24, 80–84, 85–89, 90–94, 95–99 and 100+ age groups, the average of the recorded rates was used; and for the remaining age groups, the maximum rates recorded between 1980 and 2021 were used. The model was prepared on the basis of the participation rates for men, as they are higher than women's rates.

Model labour force participation rate structure of the rural population of Chile, by age group

The model assumes that the population under the age of 20 would have a lower rate of participation. For the 15–19 age group, the minimum recorded rate from among the sources was used; for the 20–24, 80–84, 85–89, 90–94, 95–99 and 100+ age groups, the average of the recorded rates was used; and for the remaining age groups, the maximum rates recorded between 1980 and 2021 were used. The model was prepared on the basis of the participation rates for men, as they are higher than women's rates.

5. Colombia

(i) Data sources considered

- National population censuses of 1985, 1993, 2005 and 2018
- National household surveys of 2002, 2003, 2004, 2005, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020 and 2021

(ii) Estimates and projections of labour force participation rates for men in urban areas, by age group

Estimate period 1980–2019. Participation rate estimates were prepared by age group for the following pivot years: 1985, 1993, 2004, 2010, 2015 and 2019. For 1985, the adjusted rates from the 1985 population census were used; for 1993, the adjusted 1993 census rates were used; for 2005, the average of the 2002, 2003, 2004 and 2005 national household survey rates was used; for 2010, the average of the 2008, 2009, 2010, 2011 and 2012 national household survey rates was used; for 2017, the average of the 2013, 2014, 2015, 2016 and 2017 national household survey rates was used; and for 2019, the rates were estimated by taking the average of the 2018 census rates and the 2018, 2019, 2020 and 2021 national household survey rates. Labour force participation rates for the calendar years 1980–2019 were estimated via linear extrapolation and interpolation between the pivot estimates.

Projection period 2020–2050. Labour force participation rates were projected via linear interpolation between the estimated rates for 2019 and the model rates established for the urban population of Colombia. The projection methodology assumed that the established model structure would be achieved in 2100.

(iii) Estimates and projections of rural labour force participation rates

– Labour force participation rates for men, by age group

Estimate period 1980–2019. Participation rate estimates were prepared by age group for the following pivot years: 1985, 1993, 2004, 2010, 2015 and 2019. For 1985, the adjusted rates from the 1985 population census were used; for 1993, the adjusted 1993 census rates were used; for 2005, the average of the 2002, 2003, 2004 and 2005 national household survey rates was used; for 2010, the average of the 2008, 2009, 2010, 2011 and 2012 national household survey rates was used; for 2017, the average of the 2013, 2014, 2015, 2016 and 2017 national household survey rates was used; and for 2019, the rates were estimated by taking the average of the 2018 census rates and the 2018, 2019, 2020 and 2021 national household survey rates. Labour force participation rates for the calendar years 1980–2019 were estimated via linear extrapolation and interpolation between the pivot estimates.

Projection period 2020–2050. Labour force participation rates were projected via linear interpolation between the estimated rates for 2019 and the model rates established for the rural population of Colombia. The projection methodology assumed that the established model structure would be achieved in 2100.

– Labour force participation rates for women, by age group

Estimate period 1980–2019. Participation rate estimates were prepared by age group for the following pivot years: 1985, 2004, 2010, 2015 and 2019. For 1985, the adjusted rates from the 1985 population census were used; for 2005, the average of the 2002, 2003, 2004 and 2005 national household survey rates was used; for 2010, the average of the 2008, 2009, 2010, 2011 and 2012 national household survey rates was used; for 2017, the average of the 2013, 2014, 2015, 2016 and 2017 national household survey rates was used; and for 2019, the average of the 2018, 2019, 2020 and 2021 national household survey rates was used. Labour force participation rates for the calendar years 1980–2019 were estimated via linear extrapolation and interpolation between the pivot estimates.

Projection period 2020–2050. Labour force participation rates were projected via linear interpolation between the estimated rates for 2019 and the model rates established for the rural population of Colombia. The projection methodology assumed that the established model structure would be achieved in 2100.

(iv) Labour force

The estimated and projected labour force participation rates, by sex, age group and area of residence, were applied to the population, by sex, age and urban or rural area, to yield the labour force figures, by sex, age and area of residence. The overall total labour force and totals by sex were calculated by addition.

Model labour force participation rate structure of the urban population of Colombia, by age group

For the 15–19, 80–84, 85–89, 90–94, 95–99 and 100+ age groups, the average of the population census and national household survey rates was used. For the remaining age groups, the maximum rates recorded between 1985 and 2021 were used. The model was prepared on the basis of the participation rates for men, as they are higher than women's rates.

Model labour force participation rate structure of the rural population of Colombia, by age group

For the 15–19, 80–84, 85–89, 90–94, 95–99 and 100+ age groups, the average of the population census and national household survey rates was used. For the remaining age groups, the maximum rates recorded between 1985 and 2021 were used. The model was prepared on the basis of the participation rates for men, as they are higher than women's rates.

6. Costa Rica**(i) Data sources considered**

- National population censuses of 1984, 2000 and 2011
- National household surveys of 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020 and 2021

(ii) Estimates and projections of labour force participation rates for men and women in urban areas, by age group

Estimate period 1980–2020. Participation rate estimates were prepared by age group for the following pivot years: 1984, 2000, 2005, 2010, 2015 and 2020. For 1984, the adjusted rates from the 1984 population census were used; for 2000, the rates were estimated by taking the average of the 2000 census rates and the 2000 and 2001 national household survey rates; for 2005, the average of the 2003, 2004, 2005, 2006 and 2007 national household survey rates was used; for 2010, the rates were estimated by taking the average of the 2010 census rates and the 2008, 2009, 2010, 2011 and 2012 national household survey rates; for 2015, the average of the 2013, 2014, 2015, 2016 and 2017 national household survey rates was used; and for 2020, the average of the 2018, 2019, 2020 and 2021 national household survey rates was used. Labour force participation rates for the calendar years 1980–2020 were estimated via linear extrapolation and interpolation between the pivot estimates.

Projection period 2021–2050. Labour force participation rates were projected via linear interpolation between the estimated rates for 2019 and the model rates established for the urban population of Costa Rica. The projection methodology assumed that the established model structure would be achieved in 2100.

(iii) Estimates and projections of labour force participation rates for men in rural areas, by age group

Estimate period 1980–2020. Participation rate estimates were prepared by age group for the following pivot years: 1984, 2000, 2005, 2010, 2015 and 2020. For 1984, the adjusted rates from the 1984 population census were used; for 2000, the rates were estimated by taking the average of the 2000 census rates and the 2000 and 2001 national household survey rates; for 2005, the average of the 2003, 2004, 2005, 2006 and 2007 national household survey rates was used; for 2010, the rates were estimated by taking the average of the 2010 census rates and the 2008, 2009, 2010, 2011 and 2012 national household survey rates; for 2015, the average of the 2013, 2014, 2015, 2016 and 2017 national household survey rates was used; and for 2020, the average of the 2018, 2019, 2020 and 2021 national household survey rates was used. Labour force participation rates for the calendar years 1980–2020 were estimated via linear extrapolation and interpolation between the pivot estimates.

Projection period 2021–2050. Labour force participation rates were projected via linear interpolation between the estimated rates for 2019 and the model rates established for the rural population of Costa Rica. The projection methodology assumed that the established model structure would be achieved in 2100.

(iv) Labour force

The estimated and projected labour force participation rates, by sex, age group and area of residence, were applied to the population, by sex, age and urban or rural area, to yield the labour force figures, by sex, age and area of residence. The overall total labour force and totals by sex were calculated by addition.

Model labour force participation rate structure of the urban population of Costa Rica, by age group

For the 15–19, 80–84, 85–89, 90–94, 95–99 and 100+ age groups, the average of the population census and national household survey rates was used. For the remaining age groups, the maximum rates recorded between 1984 and 2021 were used. The model was prepared on the basis of the participation rates for men, as they are higher than women's rates.

Model labour force participation rate structure of the rural population of Costa Rica, by age group

For the 15–19, 80–84, 85–89, 90–94, 95–99 and 100+ age groups, the average of the population census and national household survey rates was used. For the remaining age groups, the maximum rates recorded between 1984 and 2021 were used. The model was prepared on the basis of the participation rates for men, as they are higher than women's rates.

7. Cuba**(i) Data sources considered**

- National population censuses of 1981, 2002 and 2012

(ii) Estimates and projections of labour force participation rates for men and women in urban areas, by age group

Estimate period 1980–2012. Participation rate estimates were prepared by age group for the following pivot years: 1981, 2002 and 2012. For 1981, the adjusted rates from the 1981 population census were used; for 2002, the adjusted rates from the 2002 population census were used; and for 2012, the adjusted rates from the 2012 population census were used. Labour force participation rates for the calendar years 1980–2012 were estimated via linear extrapolation and interpolation between the pivot estimates.

Projection period 2013–2050. Labour force participation rates were projected via linear interpolation between the estimated rates for 2012 and the model rates established for the urban population of Cuba. The projection methodology assumed that the established model [structure would be achieved in 2100.

(iii) Estimates and projections of labour force participation rates for men and women in rural areas, by age group

Estimate period 1980–2012. Participation rate estimates were prepared by age group for the following pivot years: 1981, 2002 and 2012. For 1981, the adjusted rates from the 1981 population census were used; for 2002, the adjusted rates from the 2002 population census were used; and for 2012, the adjusted rates from the 2012 population census were used. Labour force participation rates for the calendar years 1980–2012 were estimated via linear extrapolation and interpolation between the pivot estimates.

Projection period 2013–2050. Labour force participation rates were projected via linear interpolation between the estimated rates for 2012 and the model rates established for the rural population of Cuba. The projection methodology assumed that the established model structure would be achieved in 2100.

(iv) Labour force

The estimated and projected labour force participation rates, by sex, age group and area of residence, were applied to the population, by sex, age and urban or rural area, to yield the labour force figures, by sex, age and area of residence. The overall total labour force and totals by sex were calculated by addition.

Model labour force participation rate structure of the urban population of Cuba, by age group

For the 15–19, 80–84, 85–89, 90–94, 95–99 and 100+ age groups, the average of the population census rates was used. For the remaining age groups, the maximum rates recorded between 1982 and 2012 were used. The model was prepared on the basis of the participation rates for men, as they are higher than women's rates.

Model labour force participation rate structure of the rural population of Cuba, by age group

For the 15–19, 80–84, 85–89, 90–94, 95–99 and 100+ age groups, the average of the population census rates was used. For the remaining age groups, the maximum rates recorded between 1982 and 2012 were used. The model was prepared on the basis of the participation rates for men, as they are higher than women's rates.

8. Dominican Republic**(i) Data sources considered**

- National population censuses of 1981, 1993, 2002 and 2010
- Permanent household surveys of 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020 and 2021

(ii) Estimates and projections of labour force participation rates for men and women in urban areas, by age group

Estimate period 1980–2020. Participation rate estimates were prepared by age group for the following pivot years: 1981, 2002, 2007, 2012, 2017 and 2020. For 1981, the adjusted rates from the 1981 population census were used; for 2002, the rates were estimated by taking the average of the 2002 census rates and the 2000, 2001, 2002, 2003 and 2004 permanent household survey rates; for 2007, the average of the 2005, 2006, 2007, 2008 and 2009 permanent household survey rates was used; for 2012, the average of the 2010, 2011, 2012, 2013 and 2014 permanent household survey rates was used; for 2017, the average of the 2015, 2016, 2017, 2018 and 2019 permanent household survey rates was used; and for 2020, the average of the 2020 and 2021 permanent household survey rates was used. Labour force participation rates for the calendar years 1980–2021 were estimated via linear extrapolation and interpolation between the pivot estimates.

Projection period 2021–2050. Labour force participation rates were projected via linear interpolation between the estimated rates for 2020 and the model rates established for the urban population of the Dominican Republic. The projection methodology assumed that the established model structure would be achieved in 2100.

(iii) Estimates and projections of labour force participation rates for men and women in rural areas, by age group

Estimate period 1980–2020. Participation rate estimates were prepared by age group for the following pivot years: 1981, 2002, 2007, 2012, 2017 and 2020. For 1981, the adjusted rates from the 1981 population census were used; for 2002, the rates were estimated by taking the average of the 2002 census rates and the 2000, 2001, 2002, 2003 and 2004 permanent household survey rates; for 2007, the average of the 2005, 2006, 2007, 2008 and 2009 permanent household survey rates was used; for 2012, the average of the 2010, 2011, 2012, 2013 and 2014 permanent household survey rates was used; for 2017, the average of the 2015, 2016, 2017, 2018 and 2019 permanent household survey rates was used; and for 2020, the average of the 2020 and 2021 permanent household survey rates was used. Labour force participation rates for the calendar years 1980–2021 were estimated via linear extrapolation and interpolation between the pivot estimates.

Projection period 2021–2050. Labour force participation rates were projected via linear interpolation between the estimated rates for 2020 and the model rates established for the rural population of the Dominican Republic. The projection methodology assumed that the established model structure would be achieved in 2100.

(iv) Labour force

The estimated and projected labour force participation rates, by sex, age group and area of residence, were applied to the population, by sex, age and urban or rural area, to yield the labour force figures, by sex, age and area of residence. The overall total labour force and totals by sex were calculated by addition.

Model labour force participation rate structure of the urban population of the Dominican Republic, by age group

For the 15–19, 80–84, 85–89, 90–94, 95–99 and 100+ age groups, the average of the population census and household survey rates was used. For the remaining age groups, the maximum rates recorded between 1981 and 2021 were used. The model was prepared on the basis of the participation rates for men, as they are higher than women's rates.

Model labour force participation rate structure of the rural population of the Dominican Republic, by age group

For the 15–19, 80–84, 85–89, 90–94, 95–99 and 100+ age groups, the average of the population census and household survey rates was used. For the remaining age groups, the maximum rates recorded between 1981 and 2021 were used. The model was prepared on the basis of the participation rates for men, as they are higher than women's rates.

9. Ecuador

(i) Data sources considered

- National population censuses of 1982, 1990, 2001 and 2011
- Permanent household surveys of 2001, 2003, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2016, 2017, 2018, 2019, 2020 and 2021

(ii) Estimates and projections of labour force participation rates for men and women in urban areas, by age group

Estimate period 1980–2020. Participation rate estimates were prepared by age group for the following pivot years: 1982, 1990, 2001, 2005, 2010, 2015 and 2020. For 1982 and 1990, the adjusted rates from the population censuses of 1982 and 1990 were used; for 2001, the rates were estimated by taking the average of the 2001 census rates and permanent household survey rates; for 2005, the average of the 2003, 2005 and 2006 permanent household survey rates was used; for 2010, the rates were estimated by taking the average of the 2011 census rates and the 2008, 2009, 2010, 2011 and 2012 permanent household survey rates; for 2015, the average of the 2013, 2014, 2015, 2016 and 2017 permanent household survey rates was used; and for 2020, the average of the 2018, 2019, 2020 and 2021 permanent household survey rates was used. Labour force participation rates for the calendar years 1980–2020 were estimated via linear extrapolation and interpolation between the pivot estimates.

Projection period 2021–2050. Labour force participation rates were projected via linear interpolation between the estimated rates for 2020 and the model rates established for the urban population of Ecuador. The projection methodology assumed that the established model structure would be achieved in 2100.

(iii) Estimates and projections of rural labour force participation rates

– Labour force participation rates for men, by age group

Estimate period 1980–2020. Participation rate estimates were prepared by age group for the following pivot years: 1982, 1990, 2001, 2005, 2010, 2015 and 2020. For 1982 and 1990, the adjusted rates from the population censuses of 1982 and 1990 were used; for 2001, the rates were estimated by taking the average of the 2001 census rates and permanent household survey rates; for 2005, the average of the 2003, 2005 and 2006 permanent household survey rates was used; for 2010, the rates were estimated by taking the average of the 2011 census rates and the 2008, 2009, 2010, 2011 and 2012 permanent household survey rates; for 2015, the average of the 2013, 2014, 2015, 2016 and 2017 permanent household survey rates was used; and for 2020, the average of the 2018, 2019, 2020 and 2021 permanent household survey rates was used. Labour force participation rates for the calendar years 1980–2020 were estimated via linear extrapolation and interpolation between the pivot estimates.

Projection period 2021–2050. Labour force participation rates were projected via linear interpolation between the estimated rates for 2020 and the model rates established for the rural population of Ecuador. The projection methodology assumed that the established model structure would be achieved in 2100.

– Labour force participation rates for women, by age group

Estimate period 1980–2020. Participation rate estimates were prepared by age group for the following pivot years: 1982, 1990, 2001, 2005, 2010, 2015 and 2020. For 1982 and 1990, the adjusted rates from the population censuses of 1982 and 1990 were used; for 2001, the rates were estimated by taking the weighted average of the 2001 census rates (weight = 2) and permanent household survey rates (weight = 1) (it was necessary to use a weighted average because without it, women's labour participation would be overestimated in the 2001 survey relative to the rest of the sources); for 2005, the average of the 2003, 2005 and 2006 permanent household survey rates was used; for 2010, the rates were estimated by taking the average of the 2011 census rates and the 2008, 2009, 2010, 2011 and 2012 permanent household survey rates; for 2015, the average of the 2013, 2014, 2015, 2016 and 2017 permanent household survey rates was used; and for 2020, the average of the 2018, 2019, 2020 and 2021 permanent household survey rates was used. Labour force participation rates for the calendar years 1980–2020 were estimated via linear extrapolation and interpolation between the pivot estimates.

Projection period 2021–2050. Labour force participation rates were projected via linear interpolation between the estimated rates for 2020 and the model rates established for the rural population of Ecuador. The projection methodology assumed that the established model structure would be achieved in 2100.

(iv) Labour force

The estimated and projected labour force participation rates, by sex, age group and area of residence, were applied to the population, by sex, age and urban or rural area, to yield the labour force figures, by sex, age and area of residence. The overall total labour force and totals by sex were calculated by addition.

Model labour force participation rate structure of the urban population of Ecuador, by age group

For the 15–19, 80–84, 85–89, 90–94, 95–99 and 100+ age groups, the average of the population census and household survey rates was used. For the remaining age groups, the maximum rates recorded between 1982 and 2021 were used. The model was prepared on the basis of the participation rates for men, as they are higher than women's rates.

Model labour force participation rate structure of the rural population of Ecuador, by age group

For the 15–19, 80–84, 85–89, 90–94, 95–99 and 100+ age groups, the average of the population census and household survey rates was used. For the remaining age groups, the maximum rates recorded between 1982 and 2021 were used. The model was prepared on the basis of the participation rates for men, as they are higher than women's rates.

10. El Salvador**(i) Data sources considered**

- National population censuses of 1992 and 2007
- Permanent household surveys of 1995, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2009, 2010, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020 and 2021

(ii) Estimates and projections of labour force participation rates for men and women in urban areas, by age group

Estimate period 1980–2020. Participation rate estimates were prepared by age group for the following pivot years: 1992, 2001, 2005, 2010, 2015 and 2020. For 1992, the adjusted rates from the 1992 population census were used; for 2001, the average of the 2000, 2001 and 2002 permanent household survey rates was used; for 2005, the rates were estimated by taking the average of the 2007 census rates and the 2003, 2004, 2005, 2006 and 2007 permanent household survey rates; for 2010, the average of the 2009, 2010 and 2012 permanent household survey rates was used; for 2015, the average of the 2013, 2014, 2015, 2016 and 2017 permanent household survey rates was used; and for 2020, the average of the 2018, 2019, 2020 and 2021 permanent household survey rates was used. Labour force participation rates for the calendar years 1980–2020 were estimated via linear extrapolation and interpolation between the pivot estimates.

Projection period 2021–2050. Labour force participation rates were projected via linear interpolation between the estimated rates for 2020 and the model rates established for the urban population of El Salvador. The projection methodology assumed that the established model structure would be achieved in 2100.

(iii) Estimates and projections of labour force participation rates for men and women in rural areas, by age group

Estimate period 1980–2020. Participation rate estimates were prepared by age group for the following pivot years: 1992, 2001, 2005, 2010, 2015 and 2020. For 1992, the adjusted rates from the 1992 population census were used; for 2001, the average of the 2000, 2001 and 2002 permanent household survey rates was used; for 2005, the rates were estimated by taking the average of the 2007 census rates and the 2003, 2004, 2005, 2006 and 2007 permanent household survey rates; for 2010, the average of the 2009, 2010 and 2012 permanent household survey rates was used; for 2015, the average of the 2013, 2014, 2015, 2016 and 2017 permanent household survey rates was used; and for 2020, the average of the 2018, 2019, 2020 and 2021 permanent household survey rates was used. Labour force participation rates for the calendar years 1980–2020 were estimated via linear extrapolation and interpolation between the pivot estimates.

Projection period 2021–2050. Labour force participation rates were projected via linear interpolation between the estimated rates for 2020 and the model rates established for the rural population of El Salvador. The projection methodology assumed that the established model structure would be achieved in 2100.

(iv) Labour force

The estimated and projected labour force participation rates, by sex, age group and area of residence, were applied to the population, by sex, age and urban or rural area, to yield the labour force figures, by sex, age and area of residence. The overall total labour force and totals by sex were calculated by addition.

Model labour force participation rate structure of the urban population of El Salvador, by age group

For the 15–19, 80–84, 85–89, 90–94, 95–99 and 100+ age groups, the average of the population census and household survey rates was used. For the remaining age groups, the maximum rates recorded between 1992 and 2021 were used. The model was prepared on the basis of the participation rates for men, as they are higher than women's rates.

Model labour force participation rate structure of the rural population of El Salvador, by age group

For the 15–19, 80–84, 85–89, 90–94, 95–99 and 100+ age groups, the average of the population census and household survey rates was used. For the remaining age groups, the maximum rates recorded between 1992 and 2021 were used. The model was prepared on the basis of the participation rates for men, as they are higher than women's rates.

11. Guatemala**(i) Data sources considered**

- National population censuses of 1981, 1994, 2002 and 2018
- Permanent household surveys of 2000, 2006 and 2014

(ii) Estimates and projections of labour force participation rates for men and women in urban areas, by age group

Estimate period 1980–2014. Participation rate estimates were prepared by age group for the following pivot years: 1981, 1994 and 2014. For 1981 and 1994, the adjusted rates from the respective 1981 and 1994 population censuses were used; and for 2014, the adjusted rates from the 2014 permanent household survey were used. Labour force participation rates for the calendar years 1980–2020 were estimated via linear extrapolation and interpolation between the pivot estimates.

Projection period 2015–2050. Labour force participation rates were projected via linear interpolation between the estimated rates for 2020 and the model rates established for the urban population of Guatemala. The projection methodology assumed that the established model structure would be achieved in 2100.

(iii) Estimates and projections of labour force participation rates for men and women in rural areas, by age group

Estimate period 1980–2014. Participation rate estimates were prepared by age group for the following pivot years: 1981, 1994 and 2014. For 1981 and 1994, the adjusted rates from the respective 1981 and 1994 population censuses were used; and for 2014, the adjusted rates from the 2014 permanent household survey were used. Labour force participation rates for the calendar years 1980–2020 were estimated via linear extrapolation and interpolation between the pivot estimates.

Projection period 2015–2050. Labour force participation rates were projected via linear interpolation between the estimated rates for 2020 and the model rates established for the urban population of Guatemala. The projection methodology assumed that the established model structure would be achieved in 2100.

(iv) Labour force

The estimated and projected labour force participation rates, by sex, age group and area of residence, were applied to the population, by sex, age and urban or rural area, to yield the labour force figures, by sex, age and area of residence. The overall total labour force and totals by sex were calculated by addition.

Model labour force participation rate structure of the urban population of Guatemala, by age group

For the 15–19, 80–84, 85–89, 90–94, 95–99 and 100+ age groups, the average of the population census and household survey rates was used. For the remaining age groups, the maximum rates recorded between 1981 and 2018 were used. The model was prepared on the basis of the participation rates for men, as they are higher than women's rates.

Model labour force participation rate structure of the rural population of Guatemala, by age group

For the 15–19, 80–84, 85–89, 90–94, 95–99 and 100+ age groups, the average of the population census and household survey rates was used. For the remaining age groups, the maximum rates recorded between 1981 and 2018 were used. The model was prepared on the basis of the participation rates for men, as they are higher than women's rates.

12. Haiti**(i) Data sources considered**

- National population censuses of 1982 and 2003
- Household surveys on living conditions following the earthquake (*Enquête sur les conditions de vie des ménages après le séisme*) of 2007 and 2012. The surveys were used as a control. It is considered reasonable that projections based on the 2003 census data using the proposed methodology will result in refined participation rates that are somewhat higher than the survey rates.

(ii) Estimates and projections of labour force participation rates for men and women in urban areas, by age group

Estimate period 1980–2003. Participation rate estimates were prepared by age group for the following pivot years: 1982 and 2003. For 1982 and 2003, the adjusted rates from the respective 1982 and 2003 population censuses were used. For 1980 and 1981, the 1982 estimates were used. Labour force participation rates for the calendar years 1982–2003 were estimated via linear interpolation between the pivot estimates.

Projection period 2004–2050. Labour force participation rates were projected via linear interpolation between the estimated rates for 2003 and the model rates established for the urban population of Haiti. The projection methodology assumed that the established model [structure would be achieved in 2100.

(iii) Estimates and projections of labour force participation rates for men and women in rural areas, by age group

Estimate period 1980–2003. Participation rate estimates were prepared by age group for the following pivot years: 1982 and 2003. For 1982 and 2003, the adjusted rates from the respective 1982 and 2003 population censuses were used. For 1980 and 1981, the 1982 estimates were used. Labour force participation rates for the calendar years 1982–2003 were estimated via linear interpolation between the pivot estimates.

Projection period 2004–2050. Labour force participation rates were projected via linear interpolation between the estimated rates for 2003 and the model rates established for the rural population of Haiti. The projection methodology assumed that the established model structure would be achieved in 2100.

(iv) Labour force

The estimated and projected labour force participation rates, by sex, age group and area of residence, were applied to the population, by sex, age and urban or rural area, to yield the labour force figures, by sex, age and area of residence. The overall total labour force and totals by sex were calculated by addition.

Model labour force participation rate structure of the urban population of Haiti, by age group

For the 15–19, 80–84, 85–89, 90–94, 95–99 and 100+ age groups, the average of the population census and household survey rates was used. For the remaining age groups, the maximum rates recorded in 1982 and 2003 were used. The model was prepared on the basis of the participation rates for men, as they are higher than women's rates.

Model labour force participation rate structure of the rural population of Haiti, by age group

For the 15–19, 80–84, 85–89, 90–94, 95–99 and 100+ age groups, the average of the population census and household survey rates was used. For the remaining age groups, the maximum rates recorded in 1982 and 2003 were used. The model was prepared on the basis of the participation rates for men, as they are higher than women's rates.

13. Honduras

(i) Data sources considered

- National population censuses of 1988, 2001 and 2013
- Permanent household surveys of 2001, 2004, 2005, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2018 and 2019

(ii) Estimates and projections of labour force participation rates for men and women in urban areas, by age group

Estimate period 1980–2018. Participation rate estimates were prepared by age group for the following pivot years: 1988, 2001, 2005, 2010, 2013 and 2018. For 1988, the adjusted rates from the 1988 population census were used; for 2001, the rates were estimated by taking the average of the 2001 census rates and permanent household survey rates; for 2010, the average of the 2009, 2010 and 2011 permanent household survey rates was used; for 2013, the rates were estimated by taking the average of the 2013 census rates and the 2011, 2012, 2013, 2014 and 2015 permanent household survey rates; and for 2018, the average of the 2016, 2018 and 2019 permanent household survey rates was used. The estimated participation rates were held constant for the period 1980–1988. Labour force participation rates for the calendar years 1988–2018 were estimated via linear interpolation between the pivot estimates.

Projection period 2019–2050. Labour force participation rates were projected via linear interpolation between the estimated rates for 2020 and the model rates established for the urban population of Honduras. The projection methodology assumed that the established model structure would be achieved in 2100.

(iii) Estimates and projections of labour force participation rates for men and women in rural areas, by age group

Estimate period 1980–2018. Participation rate estimates were prepared by age group for the following pivot years: 1988, 2001, 2005, 2010, 2013 and 2018. For 1988, the adjusted rates from the 1988 population census were used; for 2001, the rates were estimated by taking the average of the 2001 census rates and permanent household survey rates; for 2010, the average of the 2009, 2010 and 2011 permanent household survey rates was used; for 2013, the rates were estimated by taking the average of the 2013 census rates and the 2011, 2012, 2013, 2014 and 2015 permanent household survey rates; and for 2018, the average of the 2016, 2018 and 2019 permanent household survey rates was used. The estimated participation rates for 1988 were held constant for the period 1980–1988. Labour force participation rates for the calendar years 1988–2018 were estimated via linear interpolation between the pivot estimates.

Projection period 2019–2050. Labour force participation rates were projected via linear interpolation between the estimated rates for 2020 and the model rates established for the rural population of Honduras. The projection methodology assumed that the established structure would be achieved in 2100.

(iv) Labour force

The estimated and projected labour force participation rates, by sex, age group and area of residence, were applied to the population, by sex, age and urban or rural area, to yield the labour force figures, by sex, age and area of residence. The overall total labour force and totals by sex were calculated by addition.

Model structure of labour force participation rates of the urban population of Honduras, by age group

For the 15–19, 80–84, 85–89, 90–94, 95–99 and 100+ age groups, the average of the population census and household survey rates was used. For the remaining age groups, the maximum rates recorded between 1988 and 2019 were used. The model was prepared on the basis of the participation rates for men, as they are higher than women's rates.

Model structure of labour force participation rates of the rural population of Honduras, by age group

For the 15–19, 80–84, 85–89, 90–94, 95–99 and 100+ age groups, the average of the population census and household survey rates was used. For the remaining age groups, the maximum rates recorded between 1988 and 2019 were used. The model was prepared on the basis of the participation rates for men, as they are higher than women's rates.

14. Mexico

(i) Data sources considered

- National population censuses of 1980, 1990, 2000, 2010 and 2020
- Permanent household surveys of 2000, 2002, 2004, 2006, 2008, 2010, 2012, 2014, 2016, 2018 and 2020

(ii) Estimates and projections of labour force participation rates for men and women in urban areas, by age group

Estimate period 1980–2020. Participation rate estimates were prepared by age group for the following pivot years: 1980, 2000, 2010, 2015 and 2020. For 1980, the adjusted rates from the 1980 population census were used; for 2000, the rates were estimated by taking the average of the 2000 census rates and the 2000 and 2002 permanent household survey rates; for 2010, the average of the 2006, 2008, 2010, 2012 and 2014 permanent household survey rates was used; for 2015, the average of the 2012, 2014, 2016 and 2018 permanent household survey rates was used; and for 2020, the 2020 permanent household survey rates were used. Labour force participation rates for the calendar years 1980–2020 were estimated via linear interpolation between the pivot estimates.

Projection period 2021–2050. Labour force participation rates were projected via linear interpolation between the estimated rates for 2020 and the model rates established for the urban population of Mexico. The projection methodology assumed that the established model structure would be achieved in 2100.

(iii) Estimates and projections of labour force participation rates for men and women in rural areas, by age group

Estimate period 1980–2020. Participation rate estimates were prepared by age group for the following pivot years: 1980, 2000, 2010, 2015 and 2020. For 1980, the adjusted rates from the 1980 population census were used; for 2000, the rates were estimated by taking the average of the 2000 census rates and the 2000 and 2002 permanent household survey rates; for 2010, the average of the 2006, 2008, 2010, 2012 and 2014 permanent household survey rates was used; for 2015, the average of the 2012, 2014, 2016 and 2018 permanent household survey rates was used; and for 2020, the 2020 permanent household survey rates were used. Labour force participation rates for the calendar years 1980–2020 were estimated via linear interpolation between the pivot estimates.

Projection period 2021–2050. Labour force participation rates were projected via linear interpolation between the estimated rates for 2020 and the model rates established for the rural population of Mexico. The projection methodology assumed that the established model structure would be achieved in 2100.

(iv) Labour force

The estimated and projected labour force participation rates, by sex, age group and area of residence, were applied to the population, by sex, age and urban or rural area, to yield the labour force figures, by sex, age and area of residence. The overall total labour force and totals by sex were calculated by addition.

Model labour force participation rate structure of the urban population of Mexico, by age group

For the 15–19, 80–84, 85–89, 90–94, 95–99 and 100+ age groups, the average of the population census and household survey rates was used. For the remaining age groups, the maximum rates recorded between 1980 and 2020 were used. The model was prepared on the basis of the participation rates for men, as they are higher than women's rates.

Model labour force participation rate structure of the rural population of Mexico, by age group

For the 15–19, 80–84, 85–89, 90–94, 95–99 and 100+ age groups, the average of the population census and household survey rates was used. For the remaining age groups, the maximum rates recorded between 1980 and 2020 were used. The model was prepared on the basis of the participation rates for men, as they are higher than women's rates.

15. Nicaragua

(i) Data sources considered

- National population censuses of 1995 and 2005
- Permanent household surveys of 2001, 2005, 2009 and 2014

(ii) Estimates and projections of labour force participation rates for men and women in urban areas, by age group

Estimate period 1980–2014. Participation rate estimates were prepared by age group for the following pivot years: 1995, 2001, 2005, 2009 and 2014. For 1995, the adjusted rates from the 1995 population census were used; for 2001, the adjusted rates from the 2001 permanent household survey were used; for 2005, the rates were estimated by taking the average of the 2005 census rates and permanent household survey rates; for 2009, the adjusted rates from the 2009 permanent household survey were used; and for 2014, the adjusted rates from the 2014 permanent household survey were used. The 1995 participation rate estimates were used for the calendar years 1980–1995. Labour force participation rates for the period 1995–2014 were estimated via linear interpolation between the pivot estimates.

Projection period 2015–2050. Labour force participation rates were projected via linear interpolation between the estimated rates for 2014 and the model rates established for the urban population of Nicaragua. The projection methodology assumed that the established model structure would be achieved in 2100.

(iii) Estimates and projections of labour force participation rates for men and women in rural areas, by age group

Estimate period 1980–2014. Participation rate estimates were prepared by age group for the following pivot years: 1995, 2001, 2005, 2009 and 2014. For 1995, the adjusted rates from the 1995 population census were used; for 2001, the adjusted rates from the 2001 permanent household survey were used; for 2005, the rates were estimated by taking the average of the 2005 census rates and permanent household survey rates; for 2009, the adjusted rates from the 2009 permanent household survey were used; and for 2014, the adjusted rates from the 2014 permanent household survey were used. The 1995 participation rate estimates were used for the calendar years 1980–1995. Labour force participation rates for the period 1995–2014 were estimated via linear interpolation between the pivot estimates.

Projection period 2015–2050. Labour force participation rates were projected via linear interpolation between the estimated rates for 2014 and the model rates established for the rural population of Nicaragua. The projection methodology assumed that the established model structure would be achieved in 2100.

(iv) Labour force

The estimated and projected labour force participation rates, by sex, age group and area of residence, were applied to the population, by sex, age and urban or rural area, to yield the labour force figures, by sex, age and area of residence. The overall total labour force and totals by sex were calculated by addition.

Model labour force participation rate structure of the urban population of Nicaragua, by age group

For the 15–19, 80–84, 85–89, 90–94, 95–99 and 100+ age groups, the average of the population census and household survey rates was used. For the remaining age groups, the maximum rates recorded between 1995 and 2014 were used. The model was prepared on the basis of the participation rates for men, as they are higher than women's rates.

Model labour force participation rate structure of the rural population of Nicaragua, by age group

For the 15–19, 80–84, 85–89, 90–94, 95–99 and 100+ age groups, the average of the population census and household survey rates was used. For the remaining age groups, the maximum rates recorded between 1995 and 2014 were used. The model was prepared on the basis of the participation rates for men, as they are higher than women's rates.

16. Panama

(i) Data sources considered

- National population censuses of 1980, 1990, 2000 and 2010
- Permanent household surveys of 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2011, 2013, 2014, 2015, 2016, 2017, 2018, 2019 and 2021

(ii) Estimates and projections of labour force participation rates for men and women in urban areas, by age group

Estimate period 1980–2020. Participation rate estimates were prepared by age group for the following pivot years: 1980, 1990, 2000, 2005, 2010, 2015 and 2020. For 1980 and 1990, the adjusted rates from the respective 1980 and 1990 population censuses were used; for 2000, the rates were estimated by taking the average of the 2000 census rates and the 2000, 2001 and 2002 permanent household survey rates; for 2005, the average of the 2003, 2004, 2005, 2006 and 2007 permanent household survey rates was used; for 2010, the rates were estimated by taking the average of the 2010 census rates and the 2008, 2009 and 2011 permanent household survey rates; for 2015, the average of the 2013, 2014, 2015, 2016 and 2017 permanent household survey rates was used; and for 2020, the average of the 2018, 2019 and 2021 permanent household survey rates was used. Labour force participation rates for the calendar years 1980–2020 were estimated via linear interpolation between the pivot estimates.

Projection period 2021–2050. Labour force participation rates were projected via linear interpolation between the estimated rates for 2014 and the model rates established for the urban population of Panama. The projection methodology assumed that the established model structure would be achieved in 2100.

(iii) Estimates and projections of labour force participation rates for men and women in rural areas, by age group

Estimate period 1980–2020. Participation rate estimates were prepared by age group for the following pivot years: 1980, 1990, 2000, 2005, 2010, 2015 and 2020. For 1980 and 1990, the adjusted rates from the respective 1980 and 1990 population censuses were used; for 2000, the rates were estimated by taking the average of the 2000 census rates and the 2000, 2001 and 2002 permanent household survey rates; for 2005, the average of the 2003, 2004, 2005, 2006 and 2007 permanent household survey rates was used; for 2010, the rates were estimated by taking the average of the 2010 census rates and the 2008, 2009 and 2011 permanent household survey rates; for 2015, the average of the 2013, 2014, 2015, 2016 and 2017 permanent household survey rates was used; and for 2020, the average of the 2018, 2019 and 2021 permanent household survey rates was used. Labour force participation rates for the calendar years 1980–2020 were estimated via linear interpolation between the pivot estimates.

Projection period 2021–2050. Labour force participation rates were projected via linear interpolation between the estimated rates for 2014 and the model rates established for the rural population of Panama. The projection methodology assumed that the established model structure would be achieved in 2100.

(iv) Labour force

The estimated and projected labour force participation rates, by sex, age group and area of residence, were applied to the population, by sex, age and urban or rural area, to yield the labour force figures, by sex, age and area of residence. The overall total labour force and totals by sex were calculated by addition.

Model labour force participation rate structure of the urban population of Panama, by age group

For the 15–19, 80–84, 85–89, 90–94, 95–99 and 100+ age groups, the average of the population census and household survey rates was used. For the remaining age groups, the maximum rates recorded between 1980 and 2021 were used. The model was prepared on the basis of the participation rates for men, as they are higher than women's rates.

Model labour force participation rate structure of the rural population of Panama, by age group

For the 15–19, 80–84, 85–89, 90–94, 95–99 and 100+ age groups, the average of the population census and household survey rates was used. For the remaining age groups, the maximum rates recorded between 1980 and 2021 were used. The model was prepared on the basis of the participation rates for men, as they are higher than women's rates.

17. Paraguay

(i) Data sources considered

- National population censuses of 1982, 1992 and 2002
- Permanent household surveys of 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020 and 2021

(ii) Estimates and projections of labour force participation rates for men and women in urban areas, by age group

Estimate period 1980–2020. Participation rate estimates were prepared by age group for the following pivot years: 1982, 1992, 2002, 2006, 2010, 2015 and 2020. For 1982 and 1992, the adjusted rates from the respective 1982 and 1992 population censuses were used; for 2002, the rates were estimated by taking the average of the 2002 census rates and the 2001, 2002 and 2003 permanent household survey rates; for 2006, the average of the 2004, 2005, 2006, 2007 and 2008 permanent household survey rates was used; for 2010, the average of the 2008, 2009, 2010, 2011 and 2012 permanent household survey rates was used; for 2015, the average of the 2013, 2014, 2015, 2016 and 2017 permanent household survey rates was used; and for 2020, the average of the 2018, 2019, 2020 and 2021 permanent household survey rates was used. The estimated rates for 1982 were used for the calendar years 1980–1982. Labour force participation rates for the calendar years 1982–2020 were estimated via linear interpolation between the pivot estimates.

Projection period 2021–2050. Labour force participation rates were projected via linear interpolation between the estimated rates for 2020 and the model rates established for the urban population of Paraguay. The projection methodology assumed that the established model structure would be achieved in 2100.

(iii) Estimates and projections of labour force participation rates for men and women in rural areas, by age group

Estimate period 1980–2020. Participation rate estimates were prepared by age group for the following pivot years: 1982, 1992, 2002, 2006, 2010, 2015 and 2020. For 1982 and 1992, the adjusted rates from the respective 1982 and 1992 population censuses were used; for 2002, the rates were estimated by taking the average of the 2002 census rates and the 2001, 2002 and 2003 permanent household survey rates; for 2006, the average of the 2004, 2005, 2006, 2007 and 2008 permanent household survey rates was used; for 2010, the average of the 2008, 2009, 2010, 2011 and 2012 permanent household survey rates was used; for 2015, the average of the 2013, 2014, 2015, 2016 and 2017 permanent household survey rates was used; and for 2020, the average of the 2018, 2019, 2020 and 2021 permanent household survey rates was used. The estimated rates for 1982 were used for the calendar years 1980–1982. Labour force participation rates for the calendar years 1982–2020 were estimated via linear interpolation between the pivot estimates.

Projection period 2021–2050. Labour force participation rates were projected via linear interpolation between the estimated rates for 2020 and the model rates established for the rural population of Paraguay. The projection methodology assumed that the established model structure would be achieved in 2100.

(iv) Labour force

The estimated and projected labour force participation rates, by sex, age group and area of residence, were applied to the population, by sex, age and urban or rural area, to yield the labour force figures, by sex, age and area of residence. The overall total labour force and totals by sex were calculated by addition.

Model labour force participation rate structure of the urban population of Paraguay, by age group

For the 15–19, 80–84, 85–89, 90–94, 95–99 and 100+ age groups, the average of the population census and household survey rates was used. For the remaining age groups, the maximum rates recorded between 1982 and 2021 were used. The model was prepared on the basis of the participation rates for men, as they are higher than women's rates.

Model labour force participation rate structure of the rural population of Paraguay, by age group

For the 15–19, 80–84, 85–89, 90–94, 95–99 and 100+ age groups, the average of the population census and household survey rates was used. For the remaining age groups, the maximum rates recorded between 1982 and 2021 were used. The model was prepared on the basis of the participation rates for men, as they are higher than women's rates.

18. Peru

(i) Data sources considered

- National population censuses of 1981, 1993, 2007 and 2017
- Permanent household surveys of 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020 and 2021

(ii) Estimates and projections of labour force participation rates for men and women in urban areas, by age group

Estimate period 1980–2021. Participation rate estimates were prepared by age group for the following pivot years: 1981, 2002, 2007, 2012, 2017 and 2021. For 1981, the adjusted rates from the 1981 population census were used; for 2002, the average of the 2000, 2001, 2002, 2003 and 2004 permanent household survey rates was used; for 2007, the rates were estimated by taking the average of the 2007 census rates and the 2005, 2006, 2007, 2008 and 2009 permanent household survey rates; for 2012, the average of the 2010, 2011, 2012, 2013 and 2014 permanent household survey rates was used; for 2017, the rates were estimated by taking the average of the 2017 census rates and the 2015, 2016, 2017, 2018 and 2019 permanent household survey rates; and for 2021, the adjusted rates from the 2021 permanent household survey were used. Labour force participation rates for the calendar years 1980–2021 were estimated via linear extrapolation and interpolation between the pivot estimates.

Projection period 2022–2050. Labour force participation rates were projected via linear interpolation between the estimated rates for 2021 and the model rates established for the urban population of Peru. The projection methodology assumed that the established model structure would be achieved in 2100.

(iii) Estimates and projections of labour force participation rates for men and women in rural areas, by age group

Estimate period 1980–2021. Participation rate estimates were prepared by age group for the following pivot years: 1981, 2002, 2007, 2012, 2017 and 2021. For 1981, the adjusted rates from the 1981 population census were used; for 2002, the average of the 2000, 2001, 2002, 2003 and 2004 permanent household survey rates was used; for 2007, the average of the 2005, 2006, 2007, 2008 and 2009 permanent household survey rates was used; for 2012, the average of the 2010, 2011, 2012, 2013 and 2014 permanent household survey rates was used; for 2017, the average of the 2015, 2016, 2017, 2018 and 2019 permanent household survey rates was used; and for 2021, the adjusted rates from the 2021 permanent household survey were used. Labour force participation rates for the calendar years 1980–2021 were estimated via linear extrapolation and interpolation between the pivot estimates.

Projection period 2022–2050. Labour force participation rates were projected via linear interpolation between the estimated rates for 2021 and the model rates established for the rural population of Peru. The projection methodology assumed that the established model structure would be achieved in 2100.

(iv) Labour force

The estimated and projected labour force participation rates, by sex, age group and area of residence, were applied to the population, by sex, age and urban or rural area, to yield the labour force figures, by sex, age and area of residence. The overall total labour force and totals by sex were calculated by addition.

Model labour force participation rate structure of the urban population of Peru, by age group

For the 15–19, 80–84, 85–89, 90–94, 95–99 and 100+ age groups, the average of the population census and household survey rates was used. For the remaining age groups, the maximum rates recorded between 1981 and 2021 were used. The model was prepared on the basis of the participation rates for men, as they are higher than women's rates.

Model labour force participation rate structure of the rural population of Peru, by age group

For the 15–19, 80–84, 85–89, 90–94, 95–99 and 100+ age groups, the average of the population census and household survey rates was used. For the remaining age groups, the maximum rates recorded between 1981 and 2021 were used. The model was prepared on the basis of the participation rates for men, as they are higher than women's rates.

19. Plurinational State of Bolivia

Labour force estimates and projections

(i) Data sources considered

- National population censuses of 1976, 1992, 2001 and 2012
- National employment survey of 1996
- Household surveys of 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020 and 2021

(ii) Estimates and projections of labour force participation rates for men and women in urban areas, by age group

Estimate period 1980–2020. Participation rate estimates were prepared by age group for the following pivot years: 1976, 1994, 2001, 2007, 2012, 2016 and 2020. For 1976, the adjusted rates from the 1976 population census were used; for 1994, the rates were estimated by taking the average of the 1992 census rates and the 1996 national employment survey rates; for 2001, the rates were estimated by taking the average of the 2001 census rates and the 2000, 2001 and 2002 household survey rates; for 2007, the average of the 2004, 2005, 2006, 2007, 2008 and 2009 household survey rates was used; for 2012, the rates were estimated by taking the average of the 2012 census rates and the 2011, 2012 and 2013 household survey rates; for 2016, the rates were estimated by taking the average of the 2014, 2015, 2016 and 2017 household survey rates; and for 2020, it was calculated as the average of the 2018, 2019, 2020 and 2021 household survey rates. Labour force participation rates for the calendar years 1980–2020 were estimated via linear interpolation between the pivot estimates.

Projection period 2021–2050. Labour force participation rates were projected via linear interpolation between the estimated rates for 2020 and the model rates established for the urban population of the Plurinational State of Bolivia. The projection methodology assumed that the established model structure would be achieved in 2100.

(iii) Estimates and projections of labour force participation rates for men in rural areas, by age group

Estimate period 1980–2020. Participation rate estimates were prepared by age group for the following pivot years: 1976, 1994, 2001, 2007, 2012, 2016 and 2020. For 1976, the adjusted rates from the 1976 population census were used; for 1994, the rates were estimated by taking the average of the 1992 census rates and the 1996 national employment survey rates; for 2001, the average of the 2000, 2001 and 2002 household survey rates was used; for 2007, the average of the 2004, 2005, 2006, 2007, 2008 and 2009 household survey rates was used; for 2012, the rates were estimated by taking the average of the 2011, 2012 and 2013 household survey rates; for 2016, the rates were estimated by taking the average of the 2014, 2015, 2016 and 2017 household survey rates; and for 2020, it was calculated as the average of the 2018, 2019, 2020 and 2021 household survey rates. Labour force participation rates for the calendar years 1980–2020 were estimated via linear interpolation between the pivot estimates.

Projection period 2021–2050. Labour force participation rates were projected via linear interpolation between the estimated rates for 2020 and the model rates established for the rural population of the Plurinational State of Bolivia. The projection methodology assumed that the established model structure would be achieved in 2100.

(iv) Labour force

The estimated and projected labour force participation rates, by sex, age group and area of residence, were applied to the population, by sex, age and urban or rural area, to yield the labour force figures, by sex, age and area of residence. The overall total labour force and totals by sex were calculated by addition.

Model labour force participation rate structure of the urban population of the Plurinational State of Bolivia, by age group

For the 15–19 age group, the minimum recorded rate from among the sources was used; for the 20–24, 80–84, 85–89, 90–94, 95–99 and 100+ age groups, the average of the recorded rates was used; and for the remaining age groups, the maximum rates recorded between 1976 and 2021 were used. The model was prepared on the basis of the participation rates for men, as they are higher than women's rates.

Model labour force participation rate structure of the rural population of the Plurinational State of Bolivia, by age group

For the 15–19 age group, the minimum recorded rate from among the sources was used; for the 20–24, 80–84, 85–89, 90–94, 95–99 and 100+ age groups, the average of the recorded rates was used; and for the remaining age groups, the maximum rates recorded between 1976 and 2021 were used. The model was prepared on the basis of the participation rates for men, as they are higher than women's rates.

20. Uruguay

(i) Data sources considered

- National population censuses of 1985, 1996 and 2011
- Permanent household surveys of 2000, 2001, 2002, 2003, 2004, 2005, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020 and 2021

(ii) Estimates and projections of labour force participation rates for men and women in urban areas, by age group

Estimate period 1980–2020. Participation rate estimates were prepared by age group for the following pivot years: 1985, 1996, 2002, 2007, 2012, 2017 and 2020. For 1985 and 1996, the adjusted rates from the respective 1985 and 1996 population censuses were used; for 2002, the average of the 2000, 2001, 2002, 2003 and 2004 permanent household survey rates was used; for 2007, the average of the 2004, 2005, 2007, 2008 and 2009 permanent household survey rates was used; for 2012, the rates were estimated by taking the average of the 2011 census rates and the 2010, 2011, 2012, 2013 and 2014 permanent household survey rates; for 2017, the average of the 2015, 2016, 2017, 2018 and 2019 permanent household survey rates was used; and for 2020, the average of the 2020 and 2021 permanent household survey rates was used. The 1985 rate estimate was used for calendar years 1980–1985. The labour force participation rates for the period 1985–2020 were estimated via linear interpolation between the pivot estimates.

Projection period 2021–2050. Labour force participation rates were projected via linear interpolation between the estimated rates for 2020 and the model rates established for the urban population of Uruguay. The projection methodology assumed that the established model structure would be achieved in 2100.

(iii) Estimates and projections of labour force participation rates for men and women in rural areas, by age group

Estimate period 1980–2020. Participation rate estimates were prepared by age group for the following pivot years: 1985, 1996, 2007, 2012, 2017 and 2020. For 1985 and 1996, the adjusted rates from the respective 1985 and 1996 population censuses were used; for 2007, the average of the 2007, 2008 and 2009 permanent household survey rates was used; for 2012, the rates were estimated by taking the average of the 2011 census rates and the 2010, 2011, 2012, 2013 and 2014 permanent household survey rates; for 2017, the average of the 2015, 2016, 2017, 2018 and 2019 permanent household survey rates was used; and for 2020, the average of the 2020 and 2021 permanent household survey rates was used. The 1985 rate estimate was used for calendar years 1980–1985. The labour force participation rates for the period 1985–2020 were estimated via linear interpolation between the pivot estimates.

Projection period 2021–2050. Labour force participation rates were projected via linear interpolation between the estimated rates for 2020 and the model rates established for the rural population of Uruguay. The projection methodology assumed that the established model structure would be achieved in 2100.

(iv) Labour force

The estimated and projected labour force participation rates, by sex, age group and area of residence, were applied to the population, by sex, age and urban or rural area, to yield the labour force figures, by sex, age and area of residence. The overall total labour force and totals by sex were calculated by addition.

Model labour force participation rate structure of the urban population of Uruguay, by age group

For the 15–19, 80–84, 85–89, 90–94, 95–99 and 100+ age groups, the average of the population census and household survey rates was used. For the remaining age groups, the maximum rates recorded between 1985 and 2021 were used. The model was prepared on the basis of the participation rates for men, as they are higher than women's rates.

Model labour force participation rate structure of the rural population of Uruguay, by age group

For the 15–19, 80–84, 85–89, 90–94, 95–99 and 100+ age groups, the average of the population census and household survey rates was used. For the remaining age groups, the maximum rates recorded between 1985 and 2021 were used. The model was prepared on the basis of the participation rates for men, as they are higher than women's rates.

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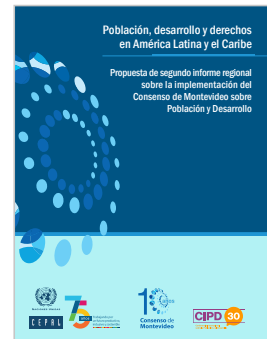
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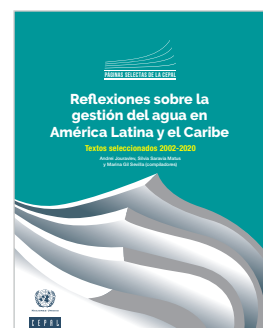
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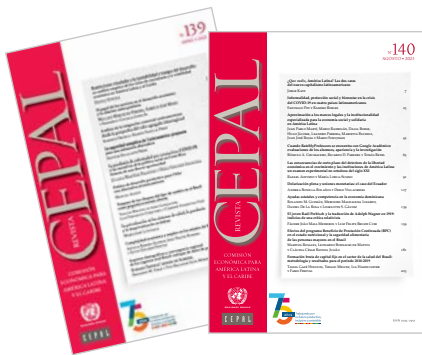
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In this edition of the *Demographic Observatory*, the impact of population dynamics is illustrated through an analysis of selected indicators of labour force estimates and projections by sex, age and area of residence for the 1980–2050 period in the 20 countries of Latin America, using the 2023 Revision prepared by the Latin American and Caribbean Demographic Centre (CELADE)-Population Division of the Economic Commission for Latin America and the Caribbean (ECLAC). The analysis highlights that structural changes in the labour force over the 1980–2022 period and projections through to 2050 show markedly different scenarios depending on age group, sex, and urban or rural area. This has implications for public policy in areas such as labour, education, health and care. The report also outlines the methodology applied and the data sources used to produce the estimates and projections.

Labour force estimates and projections for urban and rural populations and by sex and by age groups for the 1950–2100 period are available at [online] <https://www.cepal.org/en/subtopics/demographic-projections/latin-america-and-caribbean-population-estimates-and-projections/population-estimates-and-projections-excel-tables>.



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ECONOMIC COMMISSION FOR LATIN AMERICA AND THE CARIBBEAN
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ISBN 978-92-1122139-8



9 789211 221398

Printed at United Nations, Santiago
Sales No.: E.23.II.G.17 • LC/PUB.2023/26-P/Rev.1
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