Fundación MAPFRE

DEMOGRAPHICS: AN ANALYSIS OF THEIR IMPACT ON INSURANCE ACTIVITY

MAPFRE Economics

Demographics: An analysis of their impact on insurance activity

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Presentation

The changes in demographic trends that have been occurring since the end of the 20th century are characterized by a sustained drop in fertility and mortality rates, and the resulting impact on life expectancy, which in turn influences the composition of the population by age. The positive effect on life expectancy, combined with the drastic drop in fertility rates, have led to a dynamic transition toward more elderly populations, a process that affects developing countries more immediately and markedly, but also emerging countries. These changes have significant repercussions on the economy and health and welfare systems of countries and regions, as shown in the analysis conducted by MAPFRE Economics in the study Fundación MAPFRE is pleased to present, entitled *Demographics: an analysis of their impact on insurance activity*.

To summarize the demographic trends analyzed in the report, MAPFRE Economics has created a synthetic index that offers a relative measurement of insurance potential derived from demographic forces. The *Indicator of insurance potential due to demographic forces* (IPDFI) was estimated for a universe of 179 countries, representing 98.2% of the current world population. Its goal is to assess the relative capacity of each insurance market to take advantage of the opportunities resulting from this process of demographic transition and the evolution of per capita income.

The goal of this new Fundación MAPFRE publication is to identify and promote new economic and social development opportunities associated with demographic challenges, from the perspective of contributing to a greater understanding of topics of special relevance for society, thereby fulfilling its foundational goal of supporting the dissemination of knowledge about topics related to insurance and social welfare.

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Introduction

Major demographic trends and changes in population structures are key aspects in the strategic design and performance of the insurance industry globally, insofar as they allow us to evaluate both the potential of a country's economy and its insurance potential. In this last dimension, birth and mortality rates, life expectancy, migratory movements and their impact on the labor force determine the trends and patterns of demographic behavior that most affect the development of those sectors of the economy related to insurance activity. Thus, these demographic trends determine the composition of the population by age group. This composition, in turn, has a direct impact on variables such as the real-estate stock, vehicle fleet, health expenditures, retirement savings linked to pension systems, credit and the need for death and disability protection, all of which are very relevant variables to the insurance sector.

In this context, this report analyzes these demographic factors and their economic impact at the level of the main regions of the world (North America, Latin America, Asia, Europe and Africa), and for a set of eight selected countries (United States, Mexico, Brazil, United Kingdom, Spain, Germany, Japan and South Korea). Thus, the goal is not just to confirm the global nature of these phenomena, but also to highlight the particularities of these demographic processes and their economic impacts on diverse realities. Finally, in order to summarize these demographic trends and generalize the analysis at a global level, the report proposes a relative measurement indicator for insurance potential based on demographic drivers, estimated for a universe of 179 countries.

We are confident this report will contribute to the analysis of the demographic processes that characterize the world, and the study of their impacts at both the level of certain economic sectors and, finally, of insurance activity.

MAPFRE Economics

Executive summary

Demographics, GDP per capita, population weight and insurance activity

This report suggests that two elements, major demographic trends and changes in the population structure, are fundamental when assessing a country's economic potential and, at the industry level, the potential of its insurance industry. Birth and death rates, life expectancy, migratory movements and their impact on the labor force determine the patterns of behavior and demographic trends that most impact the development of those sectors of the economy related to insurance activity. These demographic trends determine the composition of the population by age group, which has a direct impact on variables such as the housing stock, vehicle fleet, health expenditures, retirement savings linked to pension systems, credit or the need for death and disability protection, all highly relevant variables to the insurance sector.

Thus, the population cohorts 25 years of age or older constitute a demographic factor that directly relates to a country's housing stock, as shown in long-term trend analyses, in which housing stock and its evolution comprise a fundamental element for the development of homeowners' insurance and the associated credit. Meanwhile, the analysis shows that a country's per capita GDP presents a high correlation with the vehicle fleet, particularly with the ratio of vehicles per capita, raising the potential of auto insurance and, in general, the density of Non-Life Insurance (average annual Non-Life insurance premium per person), with 62.1% of its variability explained by the different countries' GDP per capita.

And, as a third especially relevant idea, a country's population weight is significant when determining insurance potential, due to the possibilities it offers to market actors of reaching a sufficient size to benefit from possible economies of scale, by operating in a common currency and language, the greater scope of their distribution networks, a more homogeneous regulatory framework or the investment in technological solutions that support their operations, justified by a sufficient volume of business, among other factors.

Demographics, labor force, GDP per capita and retirement savings potential

The process of population aging is directly related to savings dynamics, in that it reduces the weight of the labor force (people of working age who need to save for retirement) with respect to people who have reached retirement age (people with a need to spend their savings due to the reduced income resulting from leaving the labor market). Thus, the urgency to complement a country's or region's retirement savings depends on the speed with which this ratio falls in the coming years, as the population cohorts that are closest to retirement increase, with the resulting drop in their purchasing power, at a time when the increased budgetary pressure on public pension and health systems will see a drop in contributions while payouts increase. Meanwhile, the savings capacity of these cohorts as a function of their per capita income is particularly relevant. In this sense, insurance activity in the Life insurance business, in which savings-linked insurance products have a high weight, is highly correlated with variability in the level of a country's GDP per capita (in purchasing power parity, PPP), which, according to the correlation analysis

presented in this study, would explain 65.7% of the differences in Life insurance premiums per capita between the respective markets.

Demographics, healthcare spending, GDP per capita and health insurance potential

The increase in healthcare spending, far from being linear, rises sharply with advancing age. In this regard, for example, if the population aging process being experienced in Japan (a country that provides detailed information on this phenomenon) is analyzed as a paradigm, we see that the national health system's healthcare bills charged to municipalities in 2020 for people over 65 years of age represented around 61.6% of their healthcare spending, showing an upward trend throughout the second decade of this century.

Meanwhile, the analysis of the fitted regression line between GDP per capita and healthcare spending per person shows that, among the different factors that help explain the variability of healthcare spending per capita in the different countries, differences in the level of GDP per capita would explain 89.8%, while the rest would be attributable to other factors. Thus, the higher the proportion of people aged 65 and over and the higher the GDP per capita, the greater the potential for healthcare spending growth, which favors the development of private health insurance to supplement a country's mandatory healthcare coverage.

Index of insurance potential due to demographic forces (IPDFI)

As a means of summarizing the demographic trends discussed in this report, a synthetic indicator is presented that provides a relative measure of insurance potential derived from demographic drivers. The *Indicator of insurance potential due to demographic forces* (IPDFI) was estimated for a universe of 179 countries, representing 98.2% of the world's current population. It attempts to assess the relative capacity of each market to take advantage of opportunities arising from this process of demographic transition and the evolution of its per capita income. The IPDFI is constructed based on three intermediate indicators that provide a relative measure of potential, both for auto, property and health insurance activity (Non-Life) and for insurance related to managing private savings (Life).

China has the highest level of insurance potential due to demographic forces, followed by India and the United States. In the cases of China and India, the factor that most contributes to their potential is their population weight, which offsets the lower contribution from the level and growth prospects of their GDP per capita in purchasing power parity. In the case of the United States, the largest contributions stem from the potential for the level of GDP per capita income and the potential for healthcare spending growth, but also from the potential due to the level and growth prospects of its population over the age of 24 over the next two decades, with the help of migratory movements. Brazil and Mexico in Latin America, Turkey and Russia in Europe, Indonesia, Pakistan and Bangladesh in Asia, and Nigeria, Ethiopia and Egypt in Africa, among others, also stand out with high potential (above the 90th percentile of the IPDFI distribution).

The largest economies in Europe come in at a medium-high level of insurance potential due to demographic forces, including countries such as Germany, the United Kingdom, France, Italy and Spain, all of which have high relative values for the potential growth rates of private savings and healthcare spending, as well as the level of GDP per capita in purchasing power parity, which compensate for the lower potential growth of the population over 24 years of age and their lower population weight. This group also includes countries such as Canada and Japan and, in Latin America, Colombia, Argentina and Peru.

Finally, the last section of the report contains a map with the distribution by different percentiles of the potential due to demographic forces for the set of countries considered in the sample, as well as a table with the breakdown by country for each of the partial indicators involved in its composition, together with some position measures that allow for a comparative analysis.

1. Evolution of the main demographic variables

Birth and death rates, life expectancy, migratory movements and their impact on the labor force determine the patterns of behavior and demographic trends that most impact the development of those sectors of the economy related to insurance activity. These demographic trends determine the composition of the population by age group; this composition has a direct impact on variables of relevance for the insurance industry, such as the housing stock, vehicle fleet, healthcare spending, retirement savings linked to pension systems, credit or the need for death and disability coverage.

Meanwhile, the improved productivity of economies and, consequently, of per capita income, is fundamental for the development of the insurance business. Advances in the level of per capita income substantially raise the level of insurance penetration in economies, where increased levels of development stimulate savings, healthcare spending and the demand for asset protection, as well as protection against events that may interrupt or alter the normal operation of their activity.

1.1 Demographic variables considered

1.1.1 Ratio of labor force per person reaching retirement age

One of the key indicators for the purposes of this analysis is the ratio of people of working age (labor force) to each person reaching retirement age, known as the *"support ratio."* This indicator, and its evolution over time, is fundamental when evaluating the dynamics of retirement savings and the need for private supplementation of healthcare coverage, due to the strains placed on public coverage by lower contributions and higher spending as the labor force shrinks and the proportion of people reaching retirement age increases.[1] This demographic indicator (support ratio 20-64/65+) is constructed based on the situation of the labor force, which is considered to be people between the ages of 20 and 64 years, with respect to the population 65 years and older (see Table 1.1.1).

Major demographic trends, with the sustained drop in fertility and mortality rates (and their impact on life expectancy), are leading to a process of demographic transition towards populations with a higher proportion of people in the cohorts reaching retirement age, who are also benefiting from an increase in their life expectancy. This means that this ratio has been on a downward trend for more than four decades (more pronounced in developed economies), and estimates indicate that it will continue to fall significantly in the coming years, as the baby boom generation cohorts reach retirement age. Thus, according to United Nations population estimates, in Western Europe in 1964 there were 4.8 people of working age (between 20 and 64 years old) for every person over 65 years of age, dropping to 2.6 in 2024, and forecasts indicate that it will continue to decline to 1.9 by 2044 and just 1.5 at the end of the century.

Along these lines, if the retirement age is raised to 70, the ratio improves significantly in the coming years, although it will deteriorate more sharply towards the end of the century, with high levels only in most Sub-Saharan African countries and, to a lesser extent, in Central Asia. Thus, according to United Nations population estimates, in Western Europe in 2024 there would be 3.9 people of working age (between 20 and 69 years old) for every person over 70 years of age, falling to 2.6 by 2044 (similar to the current figure considering the age of 65 years), although forecasts indicate that this number

Table 1.1.1
Global: dependency ratios by region, 1964-2094

Dependency ratios (population 20-64 years old / population over 65 years old)

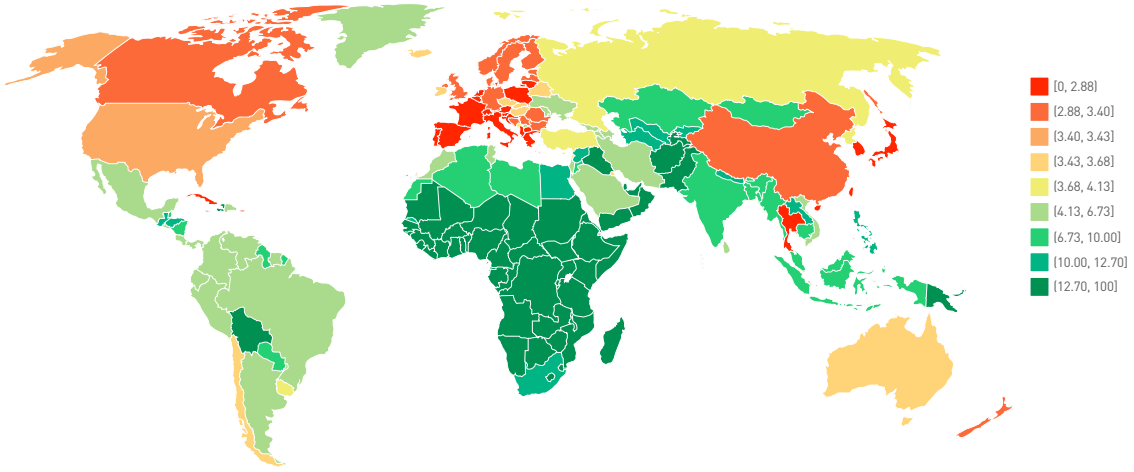
Region	1964	1984	2004	2024	2044	2064	2084	2094
Eastern Africa	15.0	14.0	15.3	15.5	12.3	8.0	5.0	4.1
Middle Africa	13.2	13.7	14.0	15.2	14.0	11.2	7.5	6.0
Northern Africa	12.1	12.7	11.9	9.2	5.9	4.1	3.1	2.7
Southern Africa	12.8	11.7	12.1	10.0	6.9	4.2	3.4	3.1
Western Africa	13.9	13.3	13.9	14.9	12.7	9.8	6.4	5.3
Central Asia	8.8	10.7	9.5	9.1	6.2	4.2	3.4	2.8
Eastern Asia	12.0	9.9	7.1	3.9	2.0	1.4	1.1	1.1
Southern Asia	13.1	11.8	11.2	8.4	5.1	3.1	2.2	2.0
South-Eastern Asia	14.1	11.6	10.1	7.1	4.1	2.9	2.3	2.1
Western Asia	10.1	10.5	11.2	9.7	4.8	3.3	2.6	2.3
Eastern Europe	7.9	5.9	4.4	3.3	2.4	1.8	1.7	1.7
Northern Europe	4.9	4.0	3.8	2.9	2.2	1.8	1.6	1.6
Southern Europe	6.4	4.9	3.6	2.6	1.5	1.3	1.2	1.2
Western Europe	4.8	4.4	3.5	2.6	1.9	1.6	1.5	1.5
Caribbean	11.0	8.0	7.3	5.3	3.4	2.5	2.1	1.9
Central America	13.7	11.7	9.7	7.1	4.0	2.4	1.7	1.6
South America	12.6	10.8	8.7	5.9	3.4	2.2	1.7	1.6
Australia/New Zealand	6.1	5.7	4.8	3.3	2.5	1.9	1.7	1.6
Melanesia	30.3	24.2	17.4	13.8	8.5	5.8	4.2	3.7
Micronesia	13.8	14.8	13.4	6.4	4.3	3.8	2.7	2.4
Polynesia	13.7	13.4	10.3	6.4	3.7	3.0	2.3	2.1
Sub-Saharan Africa	14.1	13.4	14.2	14.7	12.2	8.8	5.8	4.8
Central and Southern Asia	12.9	11.8	11.1	8.5	5.2	3.1	2.2	2.1
Northern America	5.5	5.1	4.9	3.2	2.4	2.0	1.7	1.7

Dependency ratios (population 20-69 years old / population over 70 years old)

Region	1964	1984	2004	2024	2044	2064	2084	2094
Eastern Africa	27.8	25.7	26.6	27.3	21.6	13.7	8.1	6.5
Middle Africa	24.8	25.0	25.6	27.3	24.6	19.6	13.1	10.2
Northern Africa	22.4	22.4	19.8	16.6	9.8	6.1	4.8	3.9
Southern Africa	22.8	20.4	19.3	16.2	10.6	6.4	5.3	4.6
Western Africa	26.6	25.0	25.3	27.2	23.5	17.1	10.9	8.9
Central Asia	15.6	16.3	17.0	17.7	10.2	6.4	5.5	4.2
Eastern Asia	22.8	17.4	11.5	6.4	2.9	1.9	1.6	1.4
Southern Asia	25.5	21.2	19.4	14.8	8.3	4.7	3.2	2.9
South-Eastern Asia	26.7	20.3	17.4	12.5	6.5	4.4	3.4	3.1
Western Asia	17.7	17.0	18.7	16.4	8.0	4.8	3.7	3.3
Eastern Europe	13.8	8.6	7.4	5.6	3.7	2.4	2.5	2.3
Northern Europe	8.2	6.1	5.7	4.3	3.1	2.6	2.2	2.1
Southern Europe	10.9	7.4	5.4	3.9	2.3	1.8	1.7	1.6
Western Europe	8.2	6.0	5.5	3.9	2.6	2.3	2.1	2.0
Caribbean	19.5	13.1	11.6	8.6	5.0	3.8	3.0	2.8
Central America	24.5	18.7	15.5	11.8	6.4	3.7	2.5	2.2
South America	23.1	18.4	14.2	9.8	5.3	3.2	2.4	2.3
Australia/New Zealand	10.0	9.2	7.1	5.1	3.5	2.7	2.3	2.2
Melanesia	53.1	53.2	33.1	26.1	15.0	9.7	6.8	5.8
Micronesia	24.2	26.9	23.1	11.4	6.1	5.9	4.0	3.5
Polynesia	24.0	23.7	18.2	11.0	5.4	4.2	3.3	2.9
Sub-Saharan Africa	26.4	24.7	25.1	26.0	21.5	15.0	9.6	7.8
Central and Southern Asia	24.8	20.9	19.3	14.9	8.4	4.8	3.3	3.0
Northern America	9.2	8.1	7.1	5.1	3.4	2.9	2.4	2.3

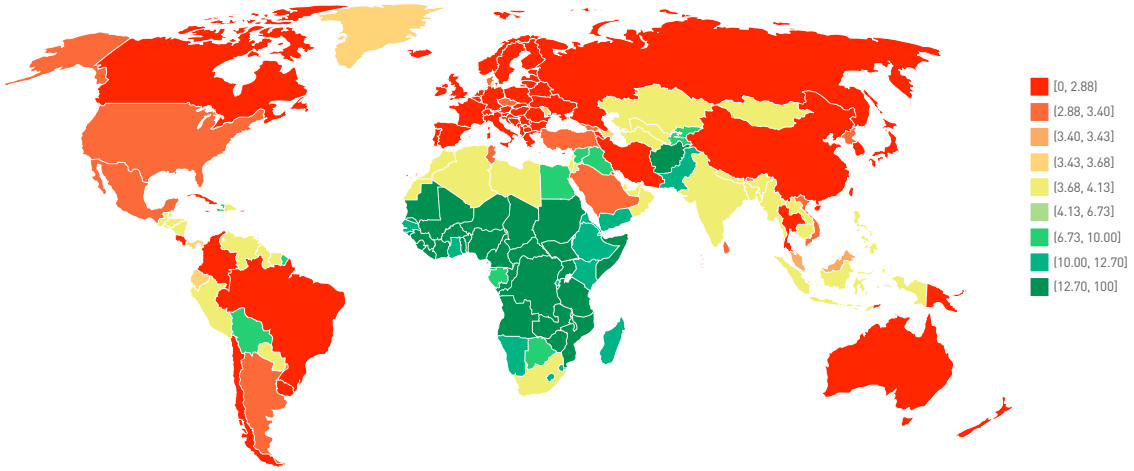
Source: MAPFRE Economics (with data from the United Nations)

Chart 1.1.1-a
Global: ratio of labor force per person at retirement age (20-69/70+), estimated values for 2044



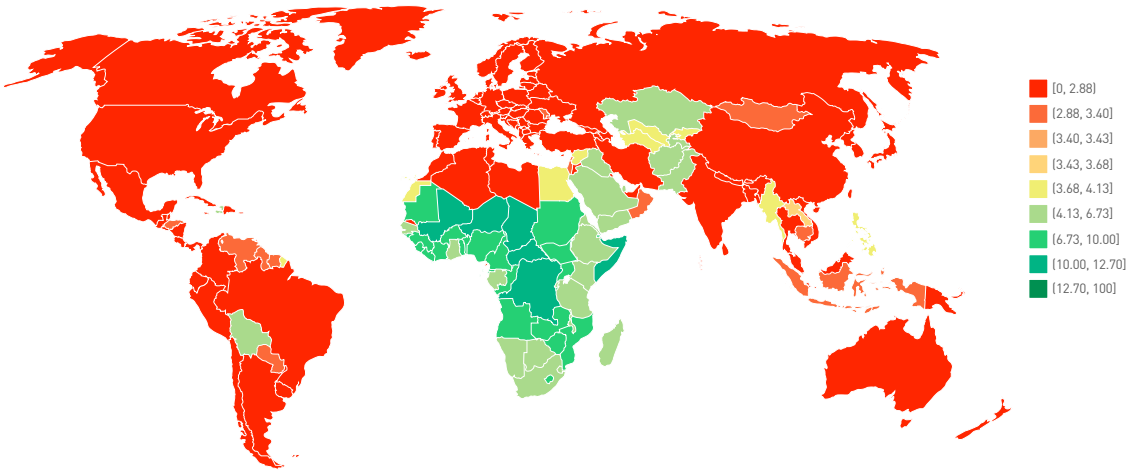
Source: MAPFRE Economics (with data from the United Nations)

Chart 1.1.1-b
Global: ratio of labor force per person at retirement age (20-69/70+), estimated values for 2064



Source: MAPFRE Economics (with data from the United Nations)

Chart 1.1.1-c
Global: ratio of labor force per person at retirement age (20-69/70+), estimated values for 2094



Source: MAPFRE Economics (with data from the United Nations)

will continue to fall to 2.3 in 2064 and 2.0 by the end of the century (see Table 1.1.1 and Charts 1.1.1-a, 1.1.1-b and 1.1.1-c).

1.1.2. Fertility rates

A key aspect in the behavior of the ratio of labor force to persons reaching retirement age has to do with the reduction in fertility rates, which have been converging throughout the 21st century toward a zero growth rate of the world population (see Table 1.1.2). In 2024, United Nations estimates indicate that the global fertility rate is 2.3 births per woman, still above the zero population growth rate (2.1 births per woman), mainly due to high birth rates in all regions of Africa and particularly in Central Africa. However, forecasts indicate that it will have reached that point by mid-century and will continue to fall below that threshold thereafter to 1.9 by the end of the century. Currently, the regions of Southern Europe and East Asia stand out, with 1.3 and 1.2 births per woman, respectively, well below the population replacement rate.

1.1.3. Mortality rates

The demographic pattern of mortality shows a generalized downward trend in the percentage of deaths in practically all population cohorts, which only increases in the oldest age groups. This trend began decades ago with the drop in infant mortality and maternal deaths at birth, not only in the more developed countries but also in emerging countries. Improved hygienic conditions during childbirth and advances in the treatment of infectious diseases (vaccines and antibiotics) explain this pattern of behavior in mortality rates that have led to widespread improvements in life expectancy.

New advances in the prevention and pharmacological treatment of all types of diseases, the construction of medical and hospital infrastructures, as well as water treatment and sanitation in large cities, among other factors, suggest that improvements in life expectancy will continue in the coming years, despite the temporary setback experienced as a result of the

Table 1.1.2
Global: fertility rates (births per woman) by region, 1964-2094

Region	1964	1984	2004	2024	2044	2064	2084	2094
Eastern Africa	7.05	6.97	5.69	4.00	2.91	2.35	2.07	1.98
Middle Africa	6.24	6.71	6.32	5.42	3.87	2.82	2.30	2.15
Northern Africa	6.92	5.57	3.13	2.95	2.41	2.15	1.98	1.93
Southern Africa	6.06	4.69	2.56	2.37	2.03	1.86	1.79	1.75
Western Africa	6.60	6.81	5.90	4.75	3.37	2.59	2.21	2.10
Central Asia	5.63	4.16	2.54	2.84	2.33	2.06	1.92	1.87
Eastern Asia	5.87	2.50	1.56	1.21	1.37	1.45	1.48	1.49
Southern Asia	6.16	4.90	3.17	2.17	1.96	1.85	1.78	1.75
South-Eastern Asia	6.01	4.04	2.46	2.09	1.93	1.82	1.77	1.75
Western Asia	6.21	4.92	3.16	2.52	2.18	1.98	1.87	1.82
Eastern Europe	2.22	2.13	1.31	1.53	1.64	1.69	1.71	1.72
Northern Europe	2.83	1.79	1.73	1.59	1.64	1.67	1.67	1.68
Southern Europe	2.79	1.75	1.38	1.34	1.45	1.50	1.53	1.54
Western Europe	2.68	1.56	1.60	1.63	1.65	1.67	1.67	1.67
Caribbean	5.32	3.16	2.40	2.01	1.89	1.80	1.75	1.74
Central America	6.82	4.40	2.72	1.89	1.76	1.71	1.69	1.68
South America	5.48	3.63	2.26	1.78	1.71	1.69	1.67	1.67
Australia/New Zealand	3.27	1.87	1.82	1.63	1.66	1.67	1.69	1.69
Melanesia	6.17	5.18	4.07	3.04	2.46	2.16	1.99	1.93
Micronesia	6.23	4.28	3.17	2.71	2.29	2.05	1.92	1.87
Polynesia	6.79	4.61	3.25	2.59	2.38	2.19	2.01	1.94
Sub-Saharan Africa	6.66	6.65	5.57	4.38	3.21	2.52	2.16	2.06
Central and Southern Asia	6.15	4.87	3.14	2.19	1.98	1.86	1.78	1.76
Northern America	3.17	1.79	2.00	1.65	1.68	1.69	1.70	1.70
World	5.13	3.55	2.64	2.31	2.19	2.03	1.91	1.86

Source: MAPFRE Economics (with data from the United Nations)

Covid-19[2] pandemic, after the three years of high excess mortality compared to the historical average of the years prior to its outbreak, in early 2020. In any case, this pandemic has once again underscored that while demographic trends in life expectancy are reasonably predictable, they are not free of uncertainty and can change as a result of extreme events such as war, catastrophes (natural or man-made), famine or disease. In addition, the various lines of research open in the fields of genetics and biotechnology could lead to changes that extend human life beyond the limits observed today.

1.1.4. Life expectancy of people reaching retirement age

The patterns and trends in the behavior of mortality rates described in the previous section have led to generalized improvements, both in life expectancy at birth and for all those population cohorts that reach the average age of retirement, considered to be 65 years or 70 years, a trend observed in the retirement age in the most developed countries. Under either of these assumptions, there are generalized increases in the average lifespan of the cohorts reaching these ages (see Table 1.1.4).

1.1.5. Migratory movements

The major trends in population size and age structure are mainly determined by fertility and mortality levels. However, in some countries, international migration has also become a significant determining factor of demographic change. These regions and countries are critical to understanding global population trends. In these cases, net positive migration could help to mitigate, albeit only partially, the natural decline in population due to low birth rates and increased life expectancy.[3]

Table 1.1.4
Global: life expectancy by region, 1964-2094

Life expectancy at 65 years old

Region	1964	1984	2004	2024	2044	2064	2084	2094
Eastern Africa	11.4	11.5	12.2	13.8	14.7	15.8	17.1	17.9
Middle Africa	11.0	11.7	12.3	12.9	13.7	14.2	14.8	15.2
Northern Africa	11.9	12.7	13.9	15.3	17.2	18.8	20.3	21.0
Southern Africa	12.4	13.4	14.6	15.5	15.9	16.5	17.6	18.2
Western Africa	10.5	11.6	11.8	12.6	13.2	13.9	14.7	15.1
Central Asia	12.5	13.4	12.9	14.1	15.3	16.9	18.7	19.6
Eastern Asia	10.6	14.0	16.9	19.1	21.2	23.2	25.1	26.0
Southern Asia	11.5	12.3	13.9	15.9	17.7	19.5	21.2	22.0
South-Eastern Asia	12.2	13.4	14.5	16.2	17.6	19.0	20.5	21.4
Western Asia	13.0	14.0	15.0	17.1	19.1	20.6	21.9	22.7
Eastern Europe	14.8	14.3	13.8	17.1	19.0	20.9	22.6	23.5
Northern Europe	14.4	15.7	18.1	20.7	22.7	24.5	26.3	27.2
Southern Europe	14.4	16.1	18.7	21.0	23.1	25.0	26.9	27.9
Western Europe	14.4	16.0	19.0	21.2	23.2	25.0	26.9	27.8
Caribbean	13.2	14.9	16.5	17.7	19.1	20.0	21.1	21.7
Central America	13.7	15.3	17.3	17.6	19.4	21.1	22.8	23.6
South America	12.9	14.1	16.0	17.8	19.7	21.6	23.3	24.2
Australia/New Zealand	14.0	16.4	19.5	21.9	23.7	25.5	27.2	28.1
Melanesia	10.7	11.9	12.4	13.3	14.1	14.9	16.2	16.9
Micronesia	11.3	13.2	15.8	17.4	18.3	19.0	20.5	21.1
Polynesia	11.8	13.3	15.7	18.1	20.2	22.1	23.5	24.1
Sub-Saharan Africa	11.0	11.8	12.3	13.4	14.2	15.0	15.9	16.4
Central and Southern Asia	11.5	12.4	13.8	15.9	17.6	19.4	21.1	21.9
Northern America	14.8	16.8	18.5	20.5	22.5	24.3	26.0	26.8

Life expectancy at 70 years old

Region	1964	1984	2004	2024	2044	2064	2084	2094
Eastern Africa	8.8	9.0	9.7	10.9	11.6	12.6	13.6	14.3
Middle Africa	8.5	9.1	9.6	10.1	10.7	11.1	11.6	11.9
Northern Africa	9.3	9.9	10.8	12.0	13.6	15.1	16.3	17.1
Southern Africa	9.9	10.8	12.1	12.9	13.2	13.7	14.6	15.1
Western Africa	8.1	8.9	9.1	9.7	10.2	10.8	11.5	11.8
Central Asia	9.6	10.4	10.1	11.0	12.0	13.3	14.9	15.7
Eastern Asia	8.1	10.9	13.4	15.3	17.1	18.9	20.6	21.5
Southern Asia	8.9	9.7	11.0	12.7	14.2	15.8	17.2	17.9
South-Eastern Asia	9.6	10.5	11.4	13.0	14.2	15.3	16.6	17.3
Western Asia	10.2	11.0	11.8	13.6	15.3	16.7	17.8	18.5
Eastern Europe	11.6	11.2	11.0	13.9	15.5	17.1	18.6	19.4
Northern Europe	11.3	12.4	14.4	16.7	18.4	20.0	21.7	22.5
Southern Europe	11.2	12.6	14.9	17.0	18.8	20.5	22.3	23.2
Western Europe	11.2	12.5	15.2	17.2	19.0	20.7	22.4	23.3
Caribbean	10.3	11.8	13.2	14.4	15.7	16.3	17.3	17.8
Central America	10.9	12.2	14.1	14.2	15.6	17.1	18.6	19.3
South America	10.0	11.0	12.6	14.1	15.8	17.4	19.0	19.8
Australia/New Zealand	10.9	13.0	15.6	17.7	19.3	20.9	22.5	23.4
Melanesia	8.2	9.2	9.7	10.4	11.1	11.8	12.9	13.6
Micronesia	8.7	10.3	12.5	14.3	15.0	15.4	16.8	17.3
Polynesia	9.1	10.4	12.3	14.5	16.4	18.2	19.4	19.9
Sub-Saharan Africa	8.5	9.1	9.7	12.2	12.9	13.7	12.6	13.1
Central and Southern Asia	8.9	9.8	10.9	14.5	16.2	17.9	17.1	17.8
Northern America	13.5	13.5	14.8	16.7	18.5	20.1	21.6	22.3

Source: MAPFRE Economics (with data from the United Nations)

International migration occurs for very different reasons in different parts of the world, generally in response to economic, socio-political, geographic and demographic factors, among others. On one hand, there are population movements from developing countries toward more developed economies. Other displacements arise from long-term armed conflicts and people who leave their country fleeing situations of social conflict, violence or persecution to seek protection and a better life. There are also people forced to abandon their homes and move internally or across international borders due to environmental changes or natural disasters. Another numerous group to keep in mind is the migratory flow of international students who seek to obtain an academic degree outside of their country. In general, higher-income countries observe a demographic trend that combines an aging population and demographic growth concentrated in residents of working age coming largely from net international migration.

After a period between 1980 and 2000 in which the demographic growth of high-income countries was mainly due to the natural increase in the population, between 2000 and 2020 international migration contributed more to demographic growth (with a net entry of 80.5 million people) than the difference between births and deaths (66.2 million). Thus, over the coming decades, migration is expected to be the sole driver of demographic growth in high-income countries, while low- and medium-income countries will continue to be driven by more births than deaths.[4] Unfortunately, the scarcity of sufficiently long and small-scale time series statistics on people of migrant origin makes it difficult to forecast the future evolution of migration.

According to the World Migration Report,[5] there were an estimated 280.6 million international migrants globally in 2020. Although this figure has increased steadily in recent decades, far exceeding the estimated 84 million migrants in 1970 and 173 million in 2000, the proportion of migrants compared to the global population has risen only slightly, from 2.3% in 1970 to 3.6% in 2020.

In 2020, Europe was the main destination for migration, with 86.7 million people, of which 44 million were European-born individuals living in other parts of the region. It is followed by Asia with 85.6 million, North America with 58.7 million and Africa with 25 million. In Latin America, the number of international migrants has doubled in the last 15 years to 14.8 million people in 2020, and Oceania is home to around 9 million people from other countries.

The United States is the country with the world's largest foreign-born population and remains the leading destination country for migration, with more than 50.6 million international migrants, mostly from Latin America and the Caribbean (26 million), Asia (18 million) and Europe (7 million). Germany receives the second largest number of migrants, with almost 16 million migrants in 2020, 5.5 million more than in 2015, mainly from Poland, Turkey, Russia, Kazakhstan and Syria. The countries with the next largest foreign populations are Saudi Arabia (with 13.4 million), Russia (11.6 million) and the United Kingdom (9.4 million). Other European countries, such as Spain and Italy, occupy a prominent place as recipients of immigration, with 6.8 and 6.4 million, respectively, mainly from countries such as Romania, Albania, Morocco, Colombia and Ecuador.

In terms of emigration, Asia is the main continent of origin, with 115 million emigrants, of which nearly 18 million come from India, the country with the largest number of emigrants globally. With just over 10 million emigrants, China is the Asian country with the second largest number of people residing in another country and fourth in the world. Although these two countries have very high absolute figures, in proportion to their total population, they are very low. After Asia, Europe is the continent of origin

of the largest number of migrants, with just over 63 million, more than half of whom come from Eastern European countries and, above all, from the Russian Federation, with 10.7 million. In the Americas, Latin America and the Caribbean has 42.9 million emigrants, of which 11.2 million come from Mexico, the country with the second largest diaspora in the world, and its emigrants go mainly to the United States. Venezuela is another of the major countries of origin for migrations in Latin America and the world, with 5.4 million people having moved their residence to another country in 2020, in most cases within the same region. The number of North American emigrants is very small compared to the foreign-born population living in the region, and in 2020 Oceania had the lowest number of migrants outside the region, partly due to the smaller size of its total population.

1.2 Analysis by region

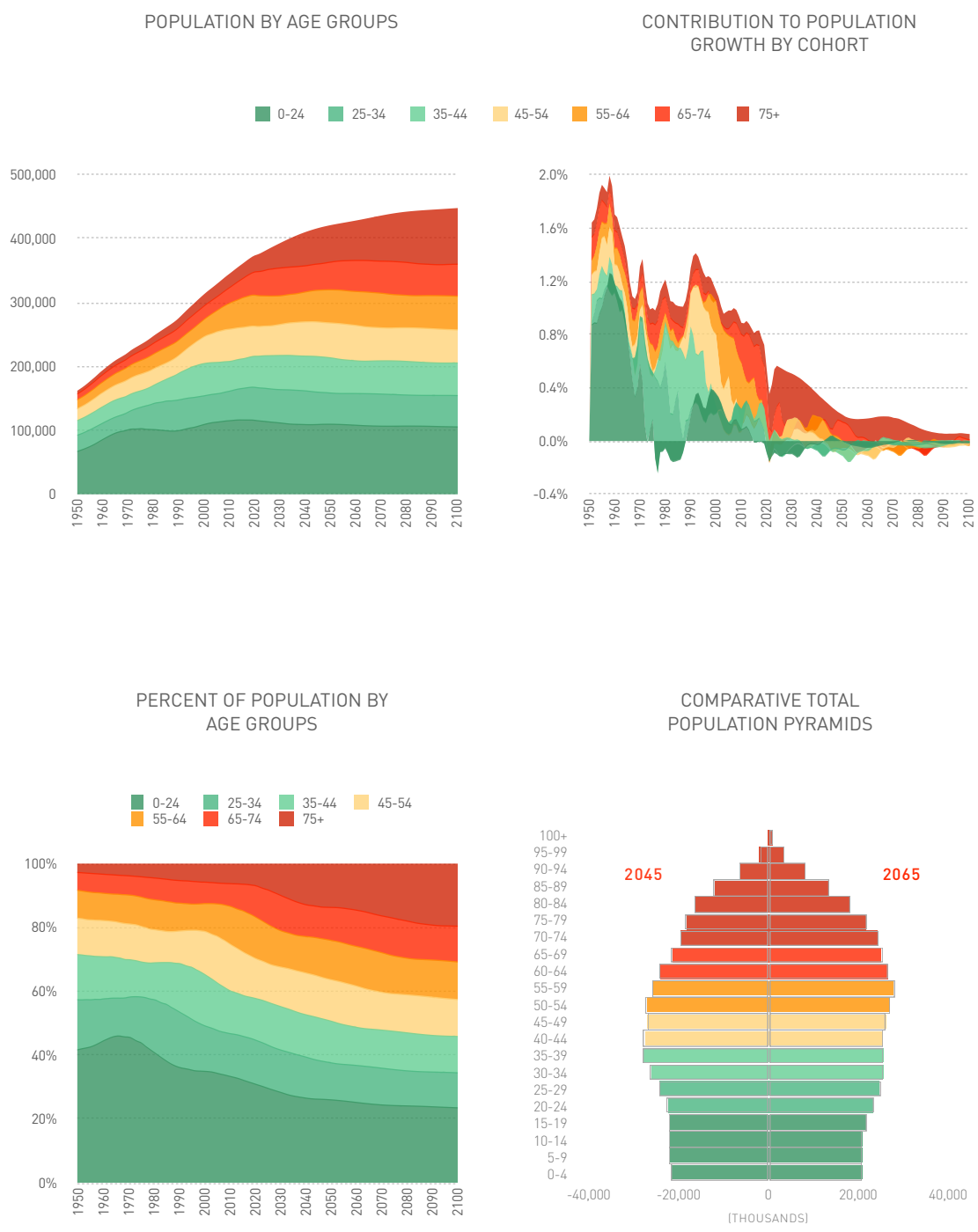
1.2.1 North America

The estimated population of the North American region (United States and Canada) in 2024 is 381 million people,[6] and forecasts indicate that it will reach 416.8 million in 2045, 432.5 in 2065 and 448 by the end of the century (see Chart 1.2.1-a). Within this region, the populations of the United States and Canada currently stand at 341.8 and 39 million, respectively. United Nations forecasts indicate that the population of the United States will reach 371.7 million by 2045, 383.8 million by 2065 and 394 million by the end of the century. Meanwhile, the organization's forecasts indicate that Canada's population will reach 44.9 million by 2045, 48.6 million by 2065 and 53.9 million by the end of the century.

A first demographic aspect to underscore in the North American region is the generalized reduction in mortality rates in the younger and middle-aged cohorts, which only rises at increasingly older ages. If we analyze the number of births compared to the number of deaths, we observe that the United Nations demographic projections for this region indicate that, by 2042, the number of deaths will exceed the number of births. However, the aforementioned forecasts indicate that the population will continue to increase until the end of the century, due to the effect of migratory flows (see Chart 1.2.1-b). It should be noted that the Covid-19 pandemic had a marked effect on mortality rates in the North American region. According to the latest United Nations estimates, the region lost 1.7 years of life expectancy at birth between 2019 and 2021. However, in 2023, life expectancy at birth in the region exceeded 2019 levels and will continue its upward trend until the end of the century, above the world average, according to the agency's forecasts.

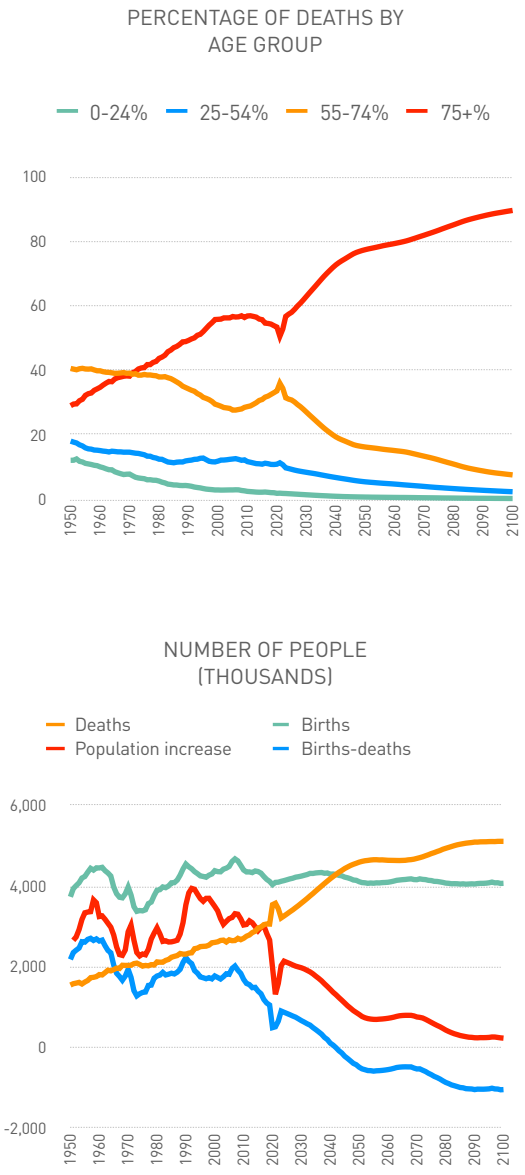
Thus, life expectancy at birth in the North American region increased from 68 to 80.2 years between 1950 and 2024, a gain of 12.2 years over that period. The projections confirm that, in the future, life expectancy at birth in the region could grow at an approximate pace of 1.2 years per decade, to reach over 83.3 years of age by 2045, 85.9 years by 2065, and exceed 90 years of age by the end of the century (see Chart 1.2.1-c). In 2024, life expectancy at 65 years of age (a particularly relevant indicator for the analysis of healthcare spending and pensions) reaches 20.5 years. Projections indicate that by 2045 it will be 22.6 years, by 2065 it will be 24.4 years and by the end of the century it will reach 27.3 years. And as for life expectancy at age 70, in 2024 it stands at 16.7 years. Projections indicate that by 2045 it will be 18.6 years, by 2065 it will be more than 20 years and by the end of the century it is expected to reach 22.8 years. In turn, birth rate projections have shown a sustained drastic decline, falling from numbers close to an average of 3 births per woman in the 1950s to the current value of 1.65. The rate is projected to increase slightly in the coming decades to 1.68 births per woman by 2045 and 1.69 by 2065, remaining at the latter value until the end of this century.

Chart 1.2.1-a
North America: demographic evolution variables



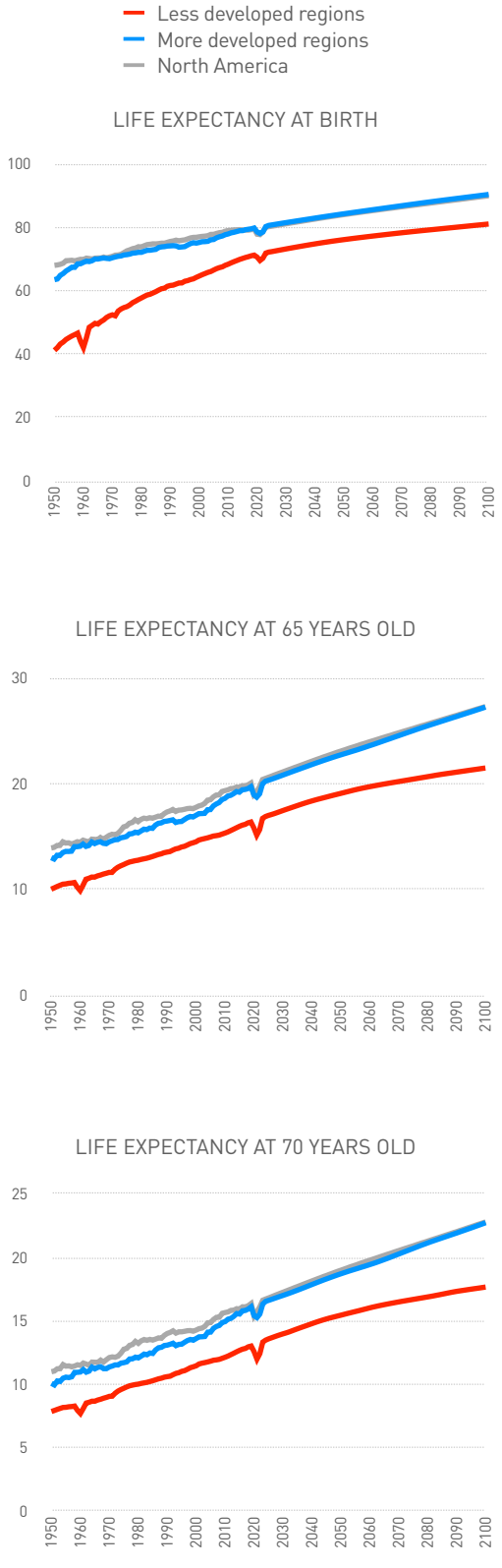
Source: MAPFRE Economics (with data from the United Nations)

Chart 1.2.1-b
North America: mortality data



Source: MAPFRE Economics (with data from the United Nations)

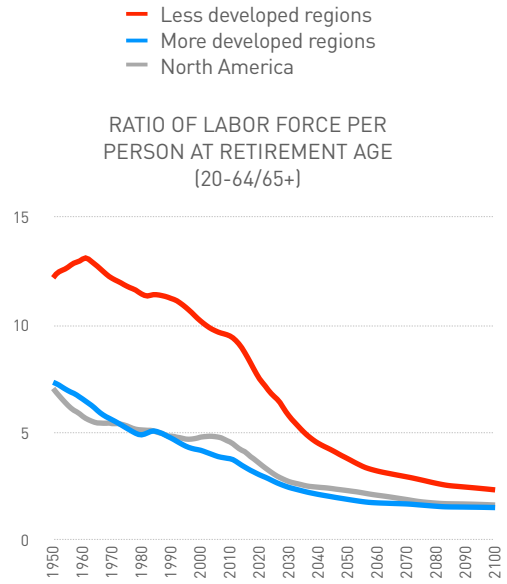
Chart 1.2.1-c
North America: life expectancy

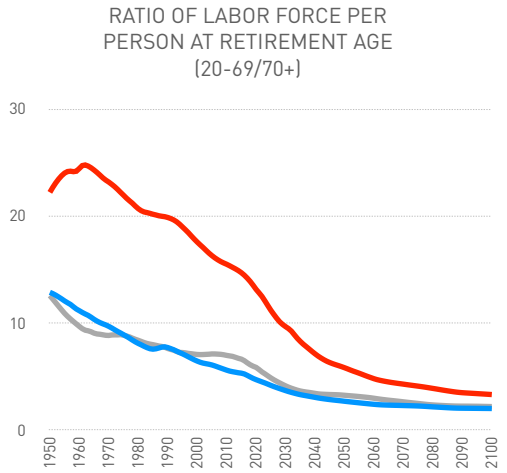


Source: MAPFRE Economics (with data from the United Nations)

The positive effect on life expectancy, combined with drastic drops in the fertility rate, have resulted in a dynamic transition to older populations, a process that affects developed countries, such as the North American region, which falls within the pattern of behavior of advanced economies, more immediately and more sharply, above

Chart 1.2.1-d
North America: dependency data





Source: MAPFRE Economics (with data from the United Nations)

the average of less developed regions (see Chart 1.2.1-d).

It should be noted that this demographic process alters the weight of the different cohorts within the total population over time. Thus, the percentage of people under 25 years of age represented 41.9% of the total population in 1950, falling to 30.2% in 2024 and with forecasts indicating that this weight will continue to decrease in the coming decades to represent 26.4% by 2045, 25% by 2065 and 23.7% by the end of the century. Meanwhile, there is a correlative increase in the weight of the older cohorts, so that people aged 65 and over, who represented 8.1% of the population in 1950 and 12.3% in 2000, now represent 18.3% in 2024 and are expected to account for 23.1% by 2045, 26.7% by 2065 and 30.6% by the end of the century.

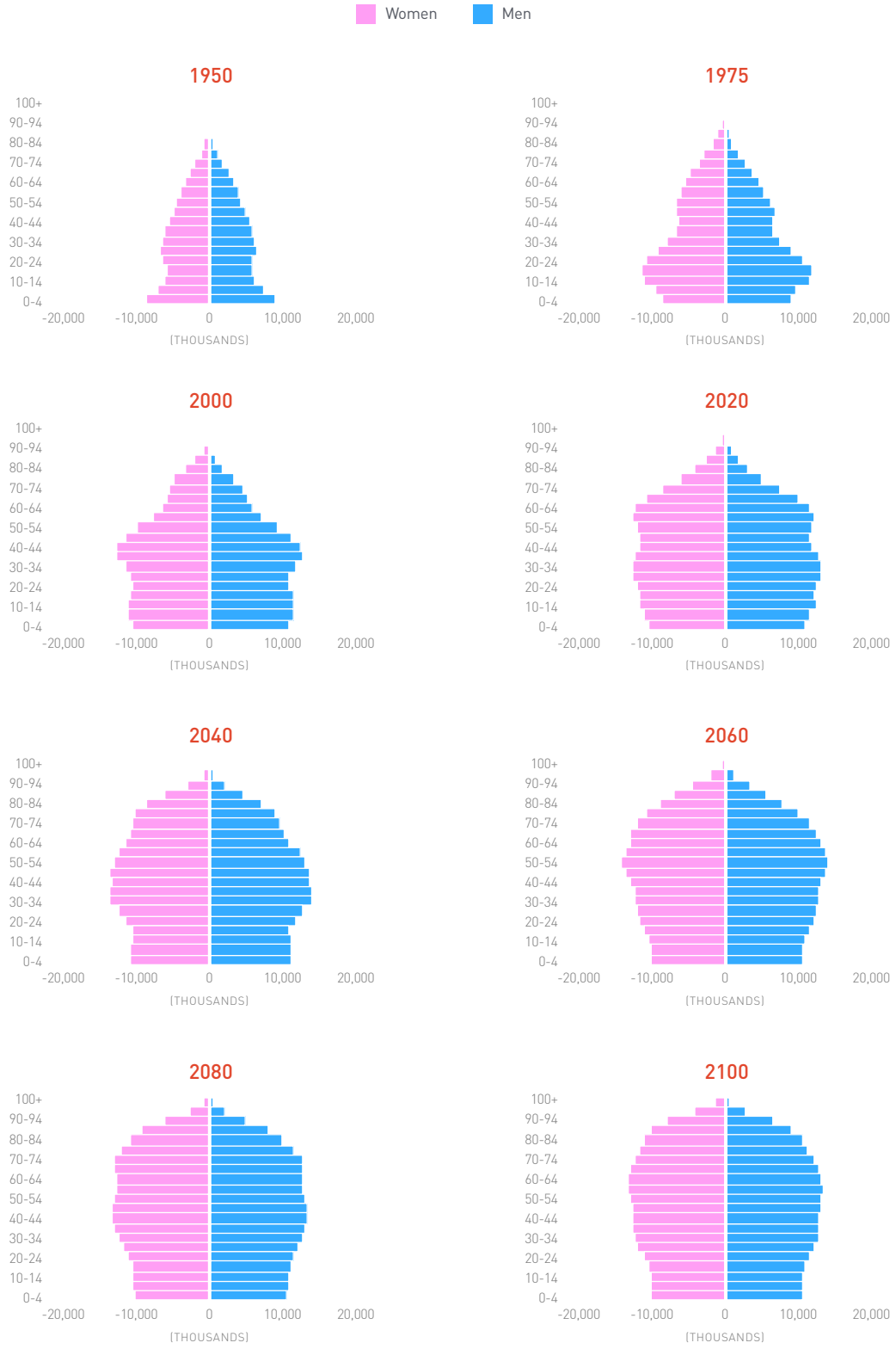
Finally, this process of demographic transition towards more mature societies in the North American region is reducing the labor force while increasing the proportion of people reaching old age, progressively increasing pressure on health and pension systems, especially those with a high weight of pay-as-you-go components. As a result, all these demographic factors foreshadow a progressive aging of the region's population throughout this century, first giving rise to constrictive population pyramids (with a large share of the population at increasingly advanced ages), which are then set to converge into stationary pyramids toward the end of this century (see Chart 1.2.1-e).

1.2.2 Latin America

In the case of the Latin American and Caribbean region, the estimated population in 2024 is 670 million people,[7] and forecasts indicate that it will reach 742.6 million by 2045 and 746.3 million by 2065. The United Nations population estimate for this region peaks in the late 2050s, with 751 million inhabitants, before declining to 647.4 million by 2100. The main factor influencing this result is the decline in the fertility rate, which will be below 2.1 births per woman, the rate necessary to guarantee population replacement in the long term (see Chart 1.2.2-a).

It should be noted that these forecasts are observed in the demographics of the two most populous countries in the region,

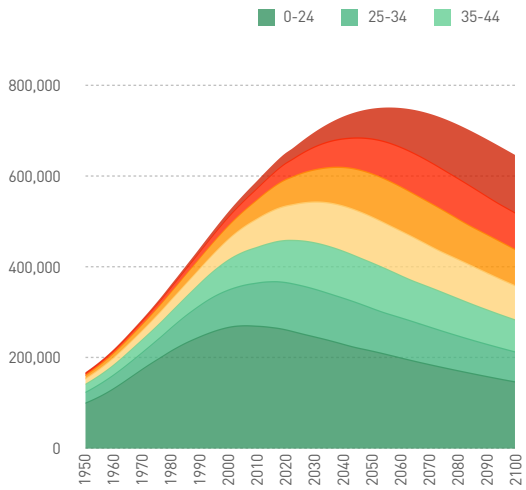
Chart 1.2.1-e
North America: changes in the population pyramid



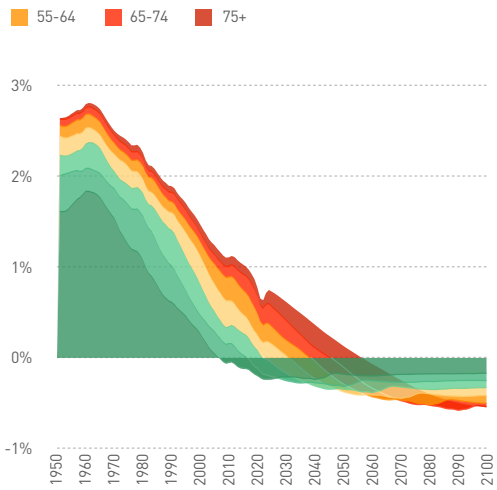
Source: MAPFRE Economics (with data from the United Nations)

Chart 1.2.2-a
Latin America: demographic evolution variables

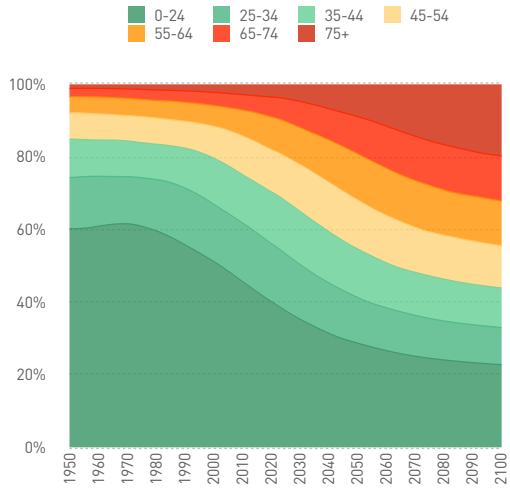
POPULATION BY AGE GROUPS



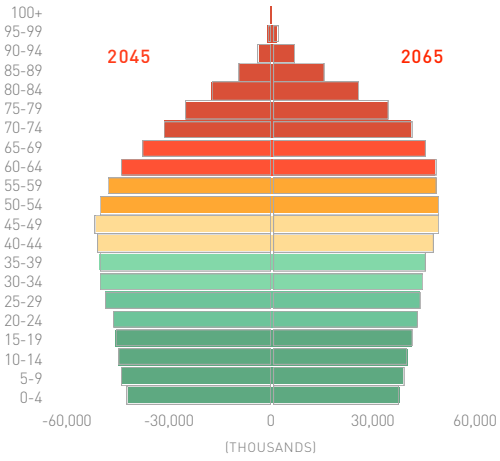
CONTRIBUTION TO POPULATION GROWTH BY COHORT



PERCENT OF POPULATION BY AGE GROUPS



COMPARATIVE TOTAL POPULATION PYRAMIDS



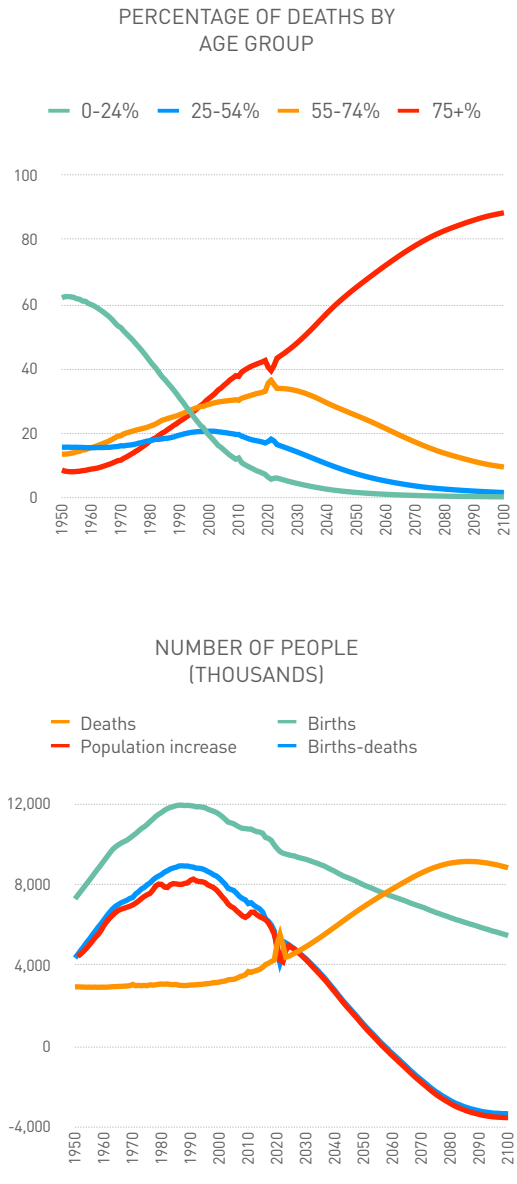
Source: MAPFRE Economics (with data from the United Nations)

Brazil and Mexico, with 217.6 and 129.4 million inhabitants in 2024, respectively. By 2045, Brazil's population is expected to reach 231 million, 223.5 by 2065 and 184.5 by the end of the century. Meanwhile, United Nations forecasts indicate that Mexico's population will reach 142.9 million by 2045, 141.3 million by 2065 and 115.6 million by the end of the century. Brazil and Mexico are followed by the populations of Colombia and Argentina, with 52.3 and 46 million, respectively, in 2024. Forecasts indicate that Colombia's population will reach 56.8 million by 2045, 55.8 million by 2065 and 45.8 million by the end of the century. Moreover, United Nations forecasts indicate that Argentina's population will reach 50.9 million by 2045, 52.2 million by 2065 and 47.6 million by the end of the century. After these countries, Peru and Venezuela currently have populations of around 34.7 and 29.4 million inhabitants, while the rest of the countries in the region have populations of less than 20 million, with Chile, Ecuador and Guatemala having populations of between 18 and 20 million inhabitants.

As is the case in other regions, one demographic aspect to note is the generalized reduction in mortality rates in the younger and middle-aged cohorts, which only rises at increasingly older ages (see Chart 1.2.2-b). As can be seen in this chart when comparing the number of births to the number of deaths, United Nations demographic projections for Latin America indicate that by 2058, the number of deaths will exceed the number of births. As stated above, forecasts indicate that the population of the Latin American and Caribbean region will begin to decline as of 2060, influenced by a decrease in fertility rates that will not be offset by the effect of migratory flows It should be underscored that the Covid-19 pandemic hit the Latin American region especially hard. According to the latest United Nations estimates, the region lost 2.9 years of life expectancy at birth between 2019 and 2021. However, in 2023, life expectancy at birth in the region exceeded 2019 levels and will continue its upward trend until the end of the century, above the world average, according to the agency's forecasts.

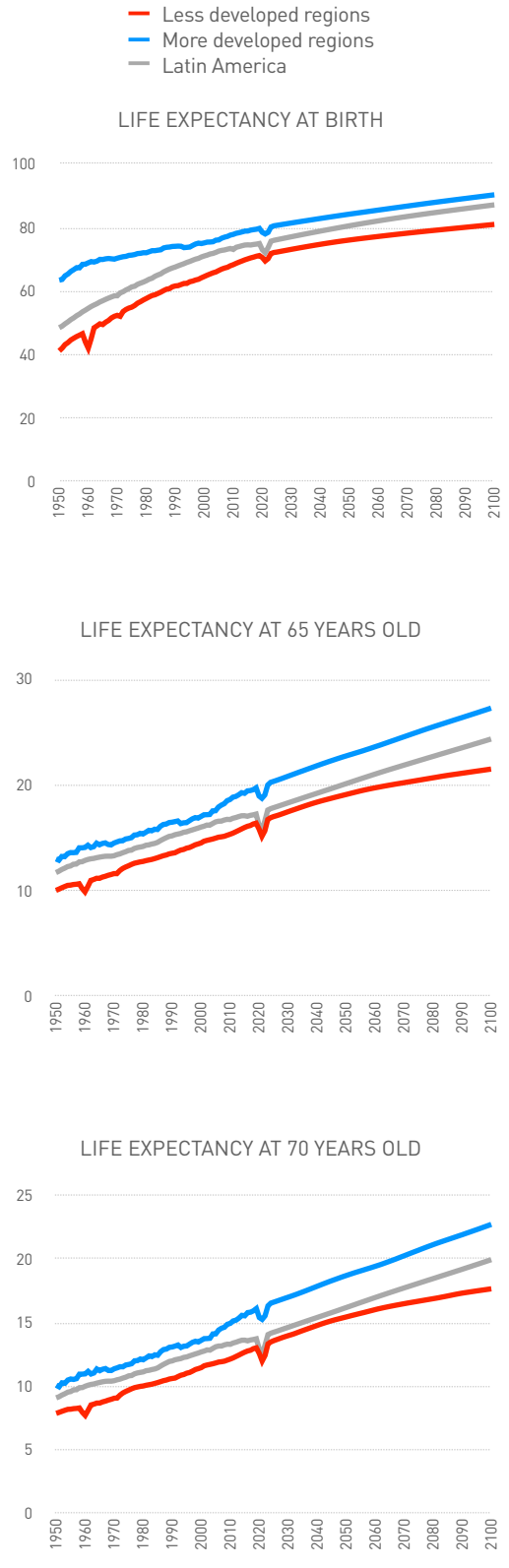
Thus, life expectancy at birth in Latin American increased from 48.6 in 1950 to 76.1 years in 2024, a gain of 27.5 years over that period. The projections confirm that, in the future, life expectancy at birth in the

Chart 1.2.2-b
Latin America: mortality data



Source: MAPFRE Economics (with data from the United Nations)

Chart 1.2.2-c
Latin America: life expectancy



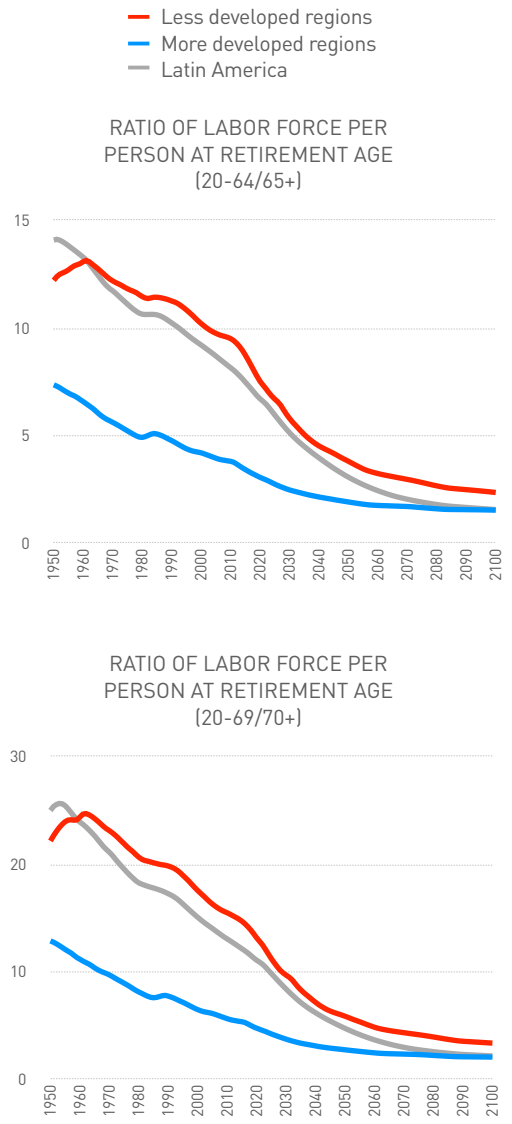
Source: MAPFRE Economics (with data from the United Nations)

region could grow at an approximate pace of 1.4 years per decade, reaching over 79.8 years of age by 2045, 82.9 years by 2065, and exceeding 87 years of age by the end of the century (see Chart 1.2.2-c). Life expectancy at age 65, a particularly relevant indicator for healthcare spending and pensions, will reach 17.8 years in 2024. Projections indicate that it will reach 19.7 years by 2045, 21.5 years by 2065 and 24.3 years by the end of the century. And as for life expectancy at age 70, in 2024 it stands at 14.2 years. Projections indicate that it will be 15.8 years by 2045, 17.4 years by 2065 and 20 years by the end of the century. In turn, birth rate projections have shown a sustained drastic decline, falling from numbers close to an average of 5.8 births per woman in the 1950s to the current value of 1.8. Projections also indicate that this trend will continue in the coming decades, decreasing to 1.74 births per woman by 2045 and 1.70 by 2065, before stabilizing at 1.68 by the end of the century.

As in the case of the North American region analyzed above, in Latin America the positive effect of improved life expectancy, combined with drastic drops in the fertility rate, have led to a dynamic transition towards older populations, a process that affects developed countries more immediately and more markedly, but also this region.

This demographic process alters the weight of the different cohorts within the total population over time. Thus, the percentage of people under 25 years of age represented 60.4% of the total population in 1950, falling to 38.3% in 2024, and with forecasts indicating this percentage will continue to decline in the coming decades to 30.1% by 2045, 26% by 2065 and 22.9% by the end of the century (see Chart 1.2.2-d). Meanwhile, there is a correlative increase in the weight of the older cohorts, so that people aged 65 and over, who represented 3.2% of the population in 1950 and 5.7% in 2000, now represent 9.8% in 2024 and are expected to account for 17%

Chart 1.2.2-d
Latin America: dependency data



Source: MAPFRE Economics (with data from the United Nations)

by 2045, 24.7% by 2065 and 32% by the end of the century.

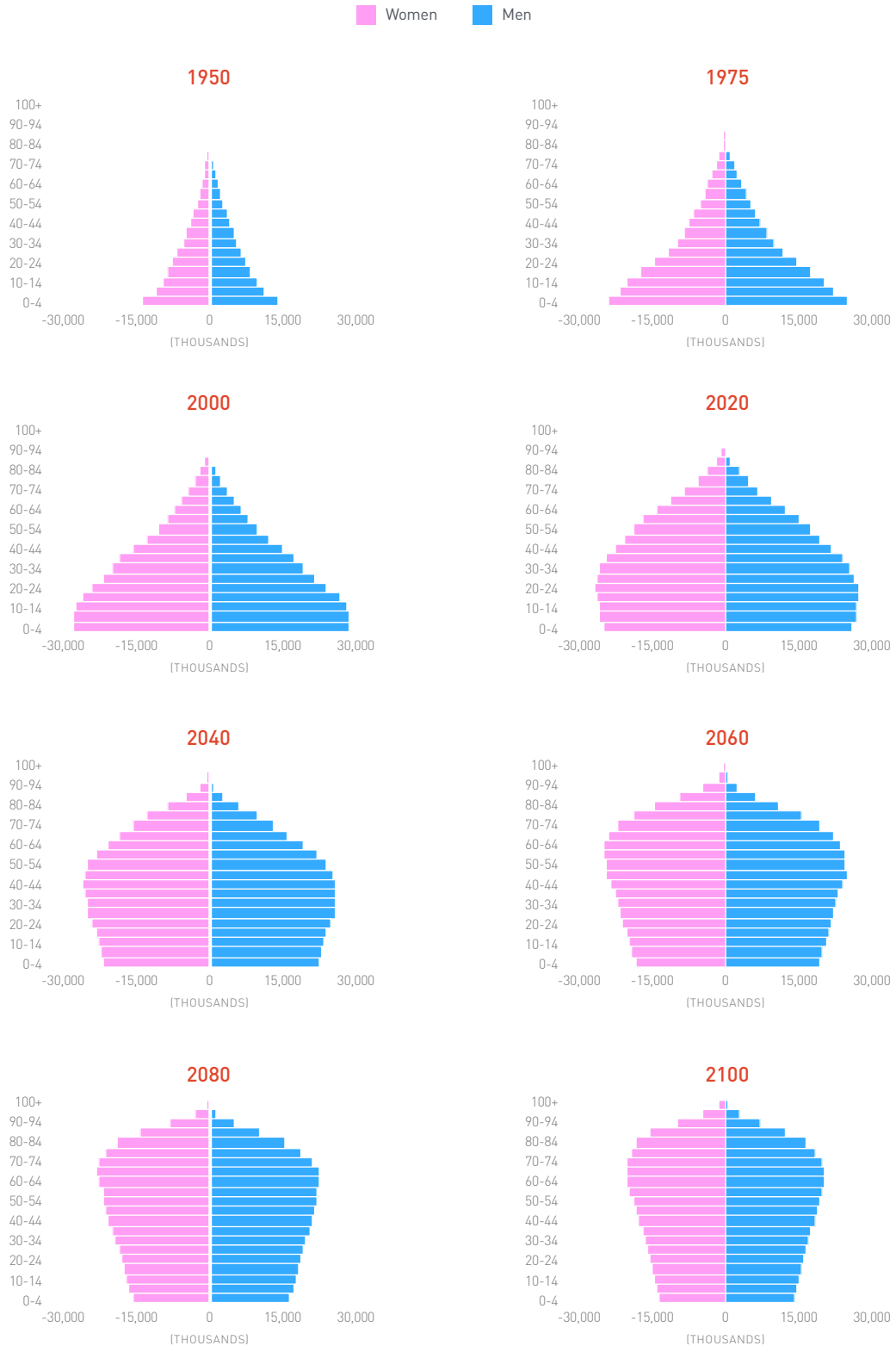
This process of demographic transition toward more mature societies in the Latin American and Caribbean region is reducing the labor force while increasing the proportion of people reaching old age, progressively increasing pressure on health and pension systems, especially those with a high weight of pay-as-you-go components. Thus, all these demographic factors foreshadow a progressive aging of the region's population throughout this century, first giving rise to constrictive population pyramids (with a large share of the population at increasingly advanced ages), which are then set to converge into stationary pyramids toward the end of this century (see Chart 1.2.2-e).

1.2.3 Asia

The estimated population of the Asia region in 2024 is 4.8 billion people,[8] representing 59% of the world's population. Forecasts indicate that by 2045, the region's population will reach 5.249 billion, 5.254 billion by 2065 and 4.674 billion by the end of the century (see Chart 1.2.3-a). India and China are the most populous countries in the region and currently have populations of 1.442 billion and 1.425 billion, respectively. In 2023, India surpassed China in number of inhabitants, becoming the most populous country in the world. Forecasts indicate that India's population will reach 1.646 billion by 2045, 1.697 billion by 2065 and 1.530 billion by the end of the century. Meanwhile, United Nations forecasts indicate that China's population will reach 1.35 billion by 2045, 1.144 billion by 2065 and 767 million by the end of the century. These two countries are followed by the populations of Indonesia and Pakistan, with 280 million and 245 million, respectively, in 2024. Forecasts indicate that by 2045 Indonesia's population will be close to 314 million, 319 million by 2065 and about 297 million by the end of the century. Meanwhile, forecasts indicate that by 2045, Pakistan's population will reach 346 million, surpassing that of Indonesia, will exceed 425 million by 2065 and will reach 487 million by the end of the century, making it one of the countries with the highest population growth forecasts.

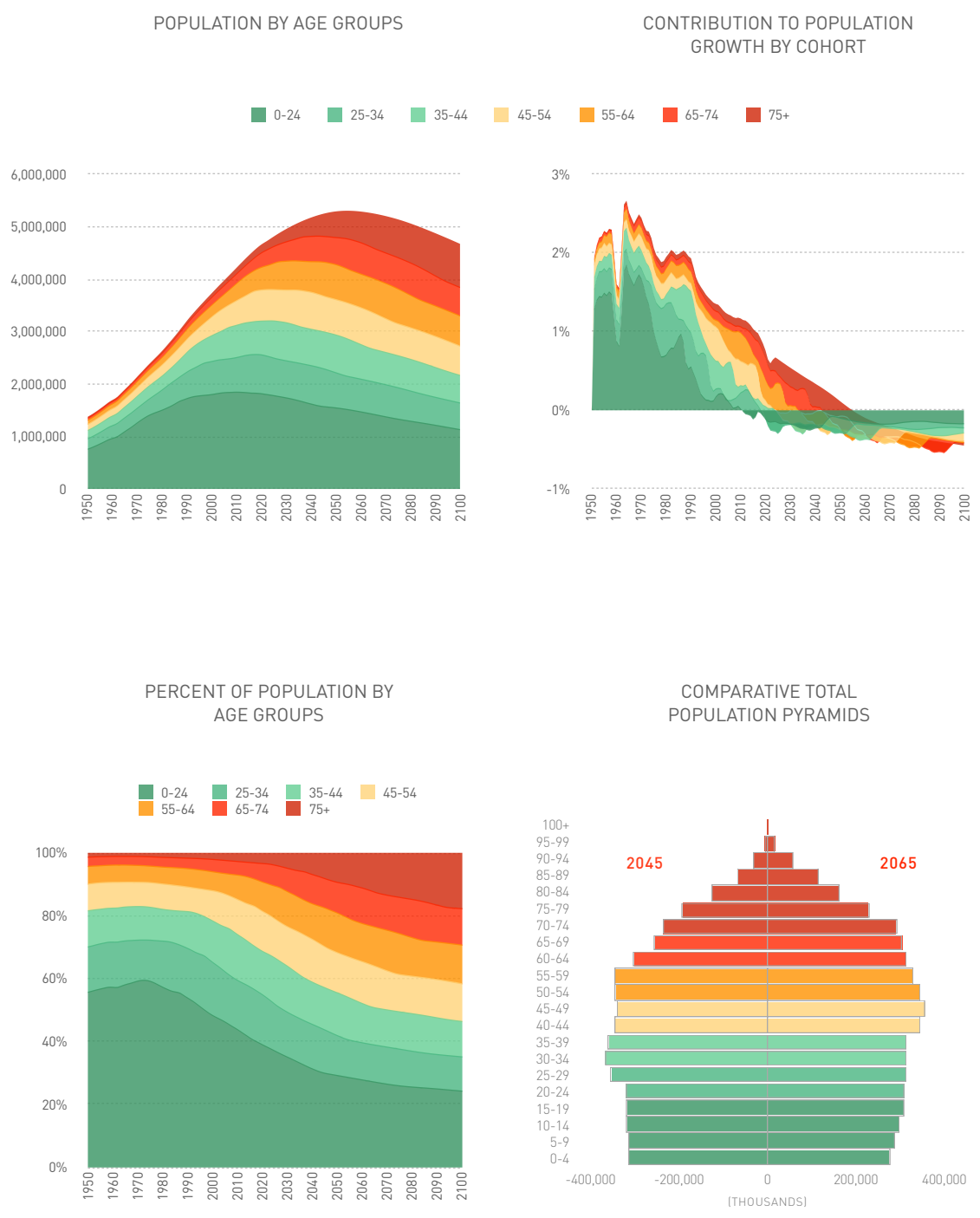
The first demographic aspect to underscore in the Asian region, as in other regions previously analyzed in this report, is the generalized reduction in mortality rates

Chart 1.2.2-e
Latin America: changes in the population pyramid



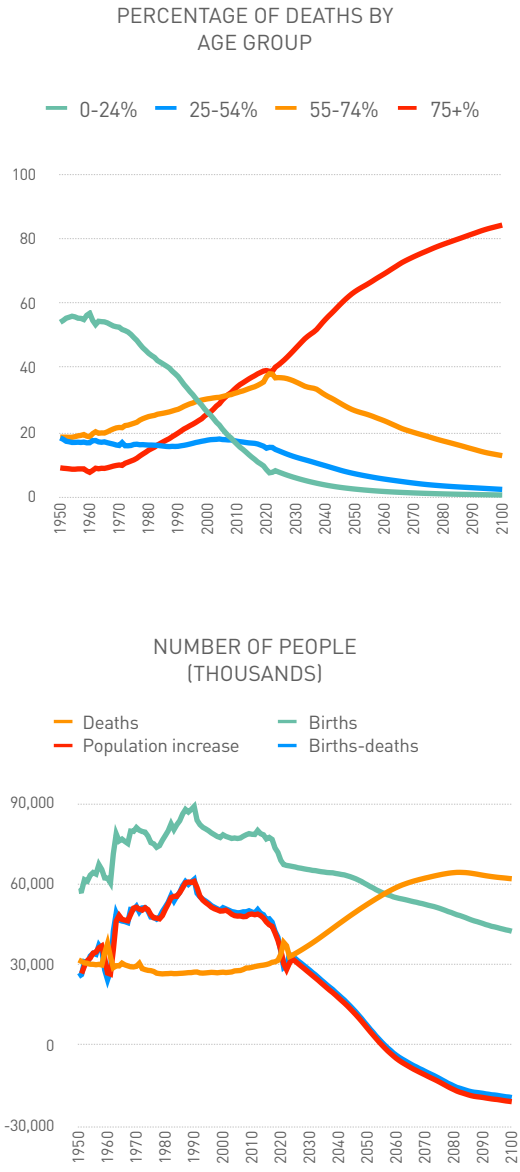
Source: MAPFRE Economics (with data from the United Nations)

Chart 1.2.3-a
Asia: demographic evolution variables



Source: MAPFRE Economics (with data from the United Nations)

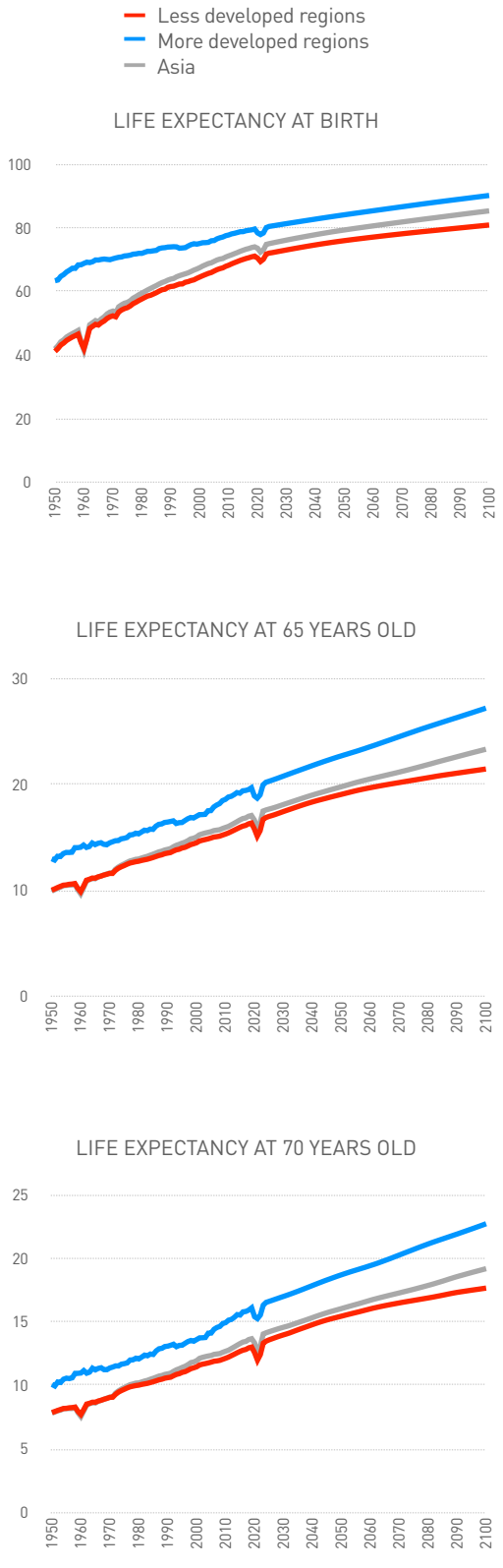
Chart 1.2.3-b
Asia: mortality data



Source: MAPFRE Economics (with data from the United Nations)

in the youngest and middle-aged cohorts, which only increases in the increasingly older population. Likewise, if we analyze the number of births compared to the number of deaths, we observe that United Nations demographic projections for Asia indicate that the number of deaths will exceed the number of births by 2056 (see Chart 1.2.3-b).

Chart 1.2.3-c
Asia: life expectancy



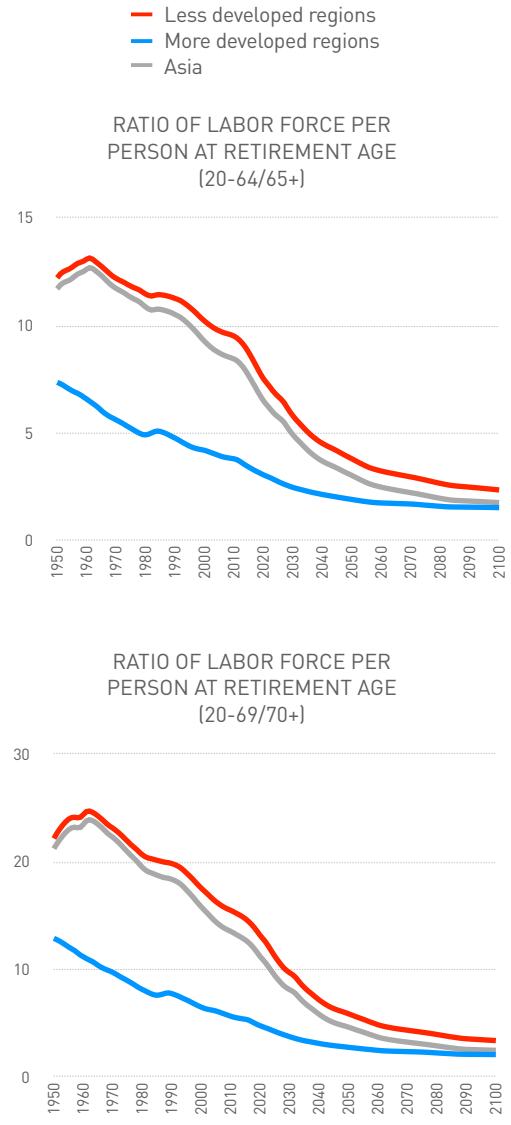
Source: MAPFRE Economics (with data from the United Nations)

As in other regions, the Covid-19 pandemic had a marked effect on mortality rates in Asia. According to the latest United Nations estimates, the region lost 1.7 years of life expectancy at birth between 2019 and 2021. However in 2023, life expectancy at birth in the region surpassed that of 2019, and will continue its growth trend until the end of the century, above the global average. Thus, life expectancy at birth in the region increased from 42 to 75.2 years between 1950 and 2024, a gain of 33.2 years in that period. The projections confirm that, in the future, life expectancy at birth in the Asia region could grow at an approximate pace of 1.3 years per decade, such that it will reach 78.8 years by 2045, 81.4 years by 2065, and surpass 85 years by the end of the century (see Chart 1.2.3-c).

Life expectancy at age 65 (a particularly relevant indicator for healthcare spending and pensions) is 17.6 years in 2024. Projections indicate that by 2045 it will be 19.4 years, by 2065 it will be 20.9 years and by the end of the century it will reach 23.4 years. The life expectancy at 70 indicator stands at 14.1 years in 2024. Projections indicate that it will reach 15.7 years by 2045, 17 years by 2065 and 19.2 years by the end of the century. In turn, birth rates have shown a sustained drastic decline, falling from numbers close to an average of 5.7 births per woman in the 1950s, to the current figure of 1.9. Projections suggest that this trend will continue in the coming decades, declining to 1.85 births per woman by 2045 and 1.78 by 2065, stabilizing at 1.7 by the end of this century.

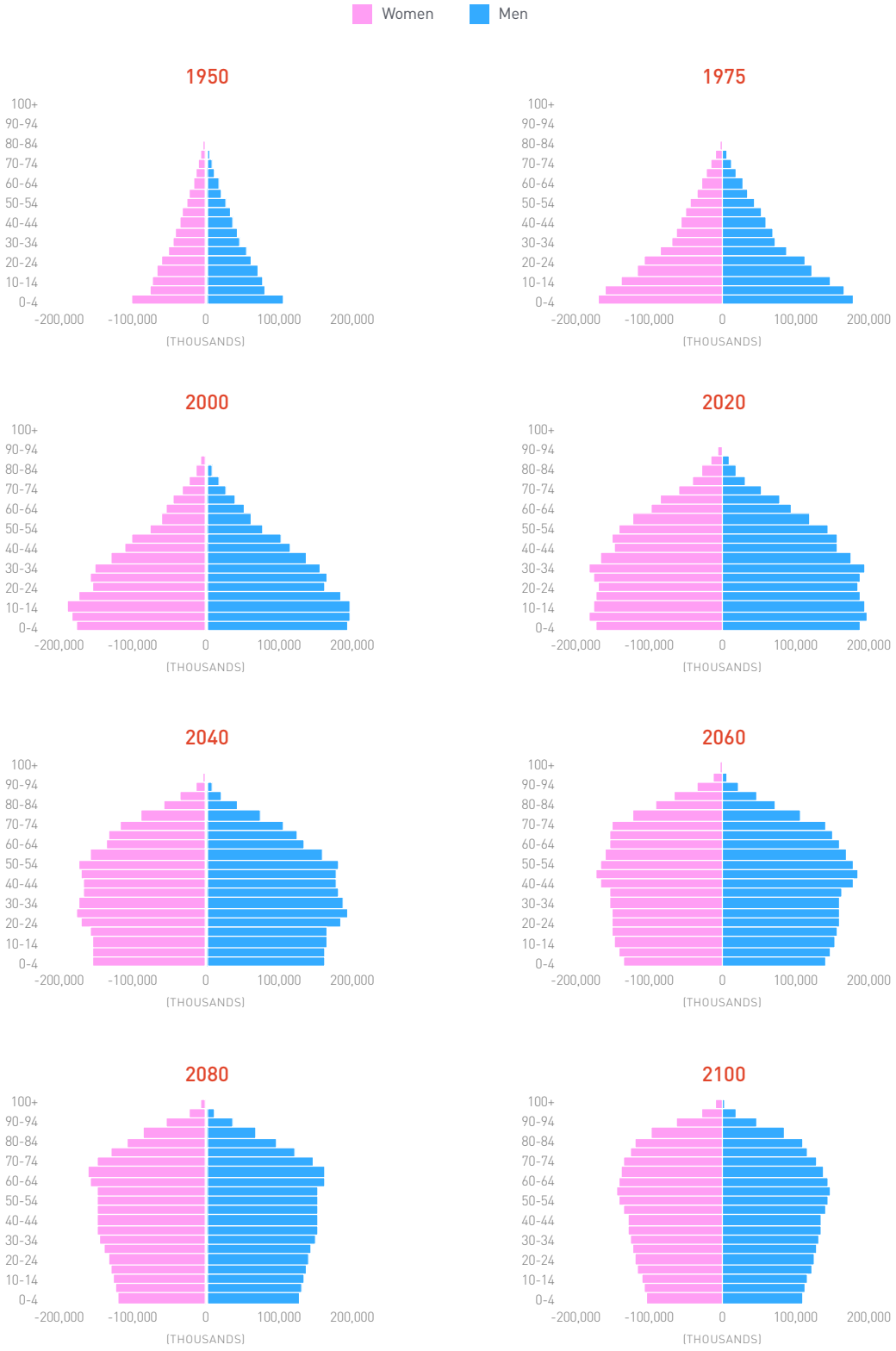
The positive effect on life expectancy, combined with sharp drops in the fertility rate, has led to a dynamic of transition to older populations in the region, a process that affects developed countries more immediately and sharply, but also the Asian region. This demographic process alters the weight of the different cohorts within the total population over time. Thus, the percentage of people under 25 years of age represented 55.8% of the total population in 1950, falling to 37.6% in 2024 and with forecasts indicating that this weight will continue to decline in the coming decades to represent 30.1% by 2045, 27.3% by 2065 and 24.4% by the end of the century. On the other hand, there is a correlative increase in the weight of the older cohorts, such that people aged 65 and over, who represented 4.2% of the population in 1950 and 5.8% in 2000, have come to represent 10.2% in 2024 and are expected to account for 17.4%

Chart 1.2.3-d
Asia: dependency data



Source: MAPFRE Economics (with data from the United Nations)

Chart 1.2.3-e
Asia: changes in the population pyramid



Source: MAPFRE Economics (with data from the United Nations)

by 2045, 23.4% by 2065 and 29.2% by the end of the century (see Chart 1.2.3-d).

In summary, the process of demographic transition toward more mature societies in the Asia region is reducing the labor force while increasing the proportion of people reaching old age, progressively increasing pressure on health and pension systems, especially those with a high weight of pay-as-you-go components. As a result, this set of demographic factors continues to foreshadow a progressive aging of the region's population throughout this century, first giving rise to constrictive population pyramids (with a large share of the population at increasingly advanced ages), which are then set to converge into stationary pyramids toward the end of this century (see Chart 1.2.3-e).

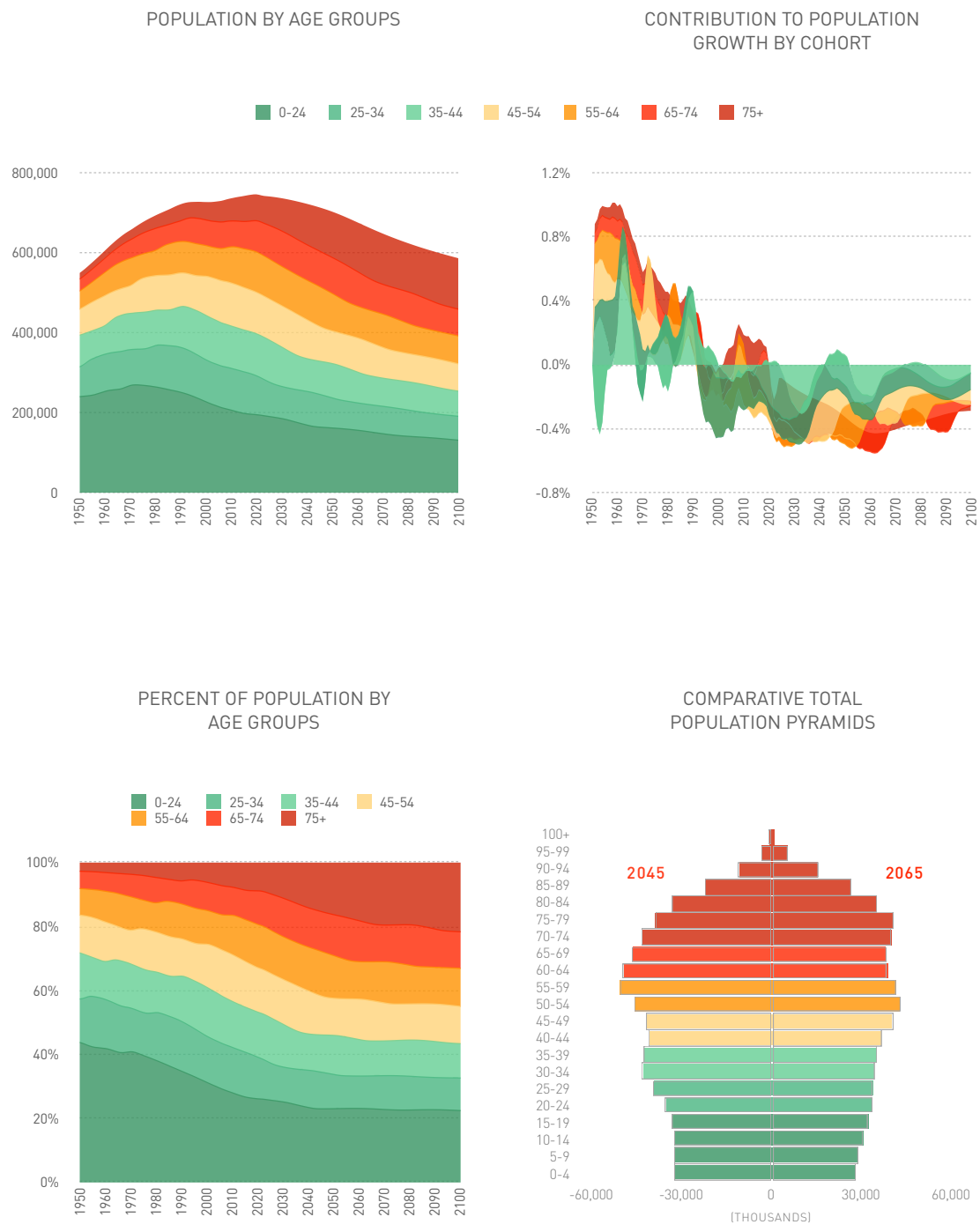
1.2.4 Europe

In 2024, the estimated population of the Europe region is 741.6 million,[9] while forecasts indicate that, from 2028 onwards, the population will begin to decline, reaching 713.6 million by 2045 and 662 million by 2065, ending the century at 586.5 million (see Chart 1.2.4-a). The most populous countries in the region, Russia and Germany, have respective populations of 144 million and 83 million in 2024. Forecasts predict that Russia's population will exceed 135 million by 2045, drop to 125 million by 2065, and end the century at 112 million. Meanwhile, United Nations forecasts indicate that Germany's population will reach 80 million by 2045, 75 million by 2065 and 69 million by the end of the century. Russia and Germany are followed by the populations of the United Kingdom and France, with 68 and 65 million respectively in 2024. Forecasts indicate that by 2045 the population of the United Kingdom will reach 71.3 million, 71.6 million by 2065, to end the century with a demographic decline to 70.5 million inhabitants. Meanwhile, forecasts indicate that by 2045, France's population will reach 66 million, starting to decline after 2057 to 64.4 million by 2065 and 60.8 million by the end of the century.

As in other cases globally, a first demographic aspect to underscore in the region is the generalized reduction in mortality rates in the youngest and middle-aged cohorts, which only increases at increasingly older ages (see Chart 1.2.4-b). In this context, comparing the number of births with the number of deaths, we observe that, since 1993, the number of deaths has exceeded the number of births. Likewise, the fertility rate in European countries is well below that required to ensure long-term population replacement (2.1 children per woman), a figure that has been maintained in recent decades, leading to a further slowdown in the region's population growth and its consequent decline starting in the second decade of this century.

In the European region, the Covid-19 pandemic had a marked effect on mortality rates. According to the latest United Nations estimates, the region lost 2.1 years of life expectancy at birth between 2019 and 2021. However, in 2023, life expectancy at birth in the region exceeded 2019 levels and will continue its upward trend until the end of the century, above the world average, according to the agency's forecasts. Thus, life expectancy at birth in Europe increased from 62.8 to 80 years between 1950 and 2024, a gain of 17.2 years in that period. The projections confirm that, in the future, life expectancy at birth in the region could grow at an approximate pace of 1.3 years per decade, such that it will surpass 83 years of age by 2045, reaching 85.8 years by 2065, and exceeding 90 years of age by the end of the century (see Chart 1.2.4-c). Life expectancy at age 65, which is a particularly relevant indicator for healthcare spending and pensions, is 19.5 years in 2024. Projections indicate that by 2045 it will reach 21.6 years, by 2065 it will be 23.4 years and by the end of the century it will reach 26.8 years. Similarly, life expectancy at age 70 sat at 15.9 years in 2024, and projections indicate it will reach 17.7 years by 2045, 19.2 by 2065 and by the end of the century it is expected to reach 22.3 years.

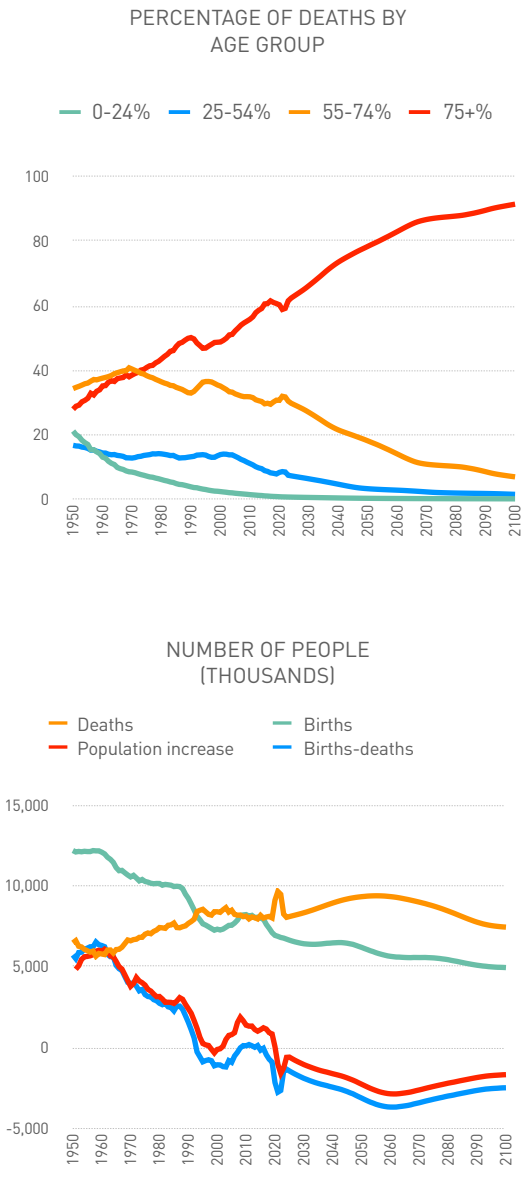
Chart 1.2.4-a
Europe: demographic evolution variables



Source: MAPFRE Economics (with data from the United Nations)

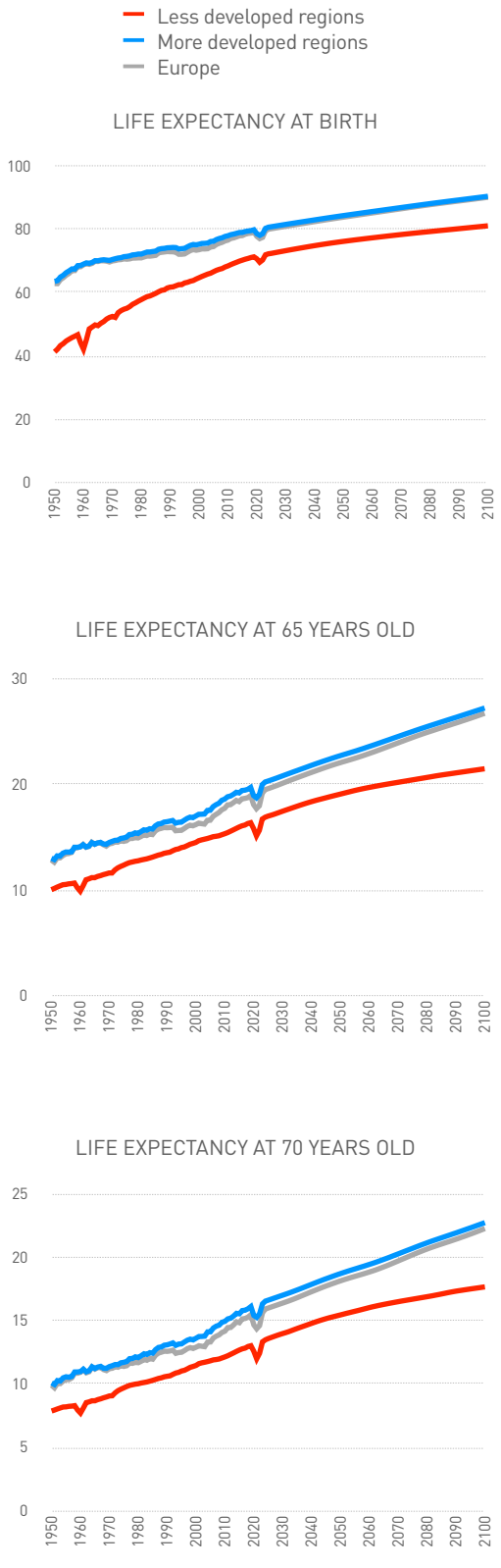
Meanwhile, fertility rates have experienced a drastic and sustained drop, from values close to an average of 2.7 births per woman in the 1950s to the current value of 1.5 in 2024. Forecasts suggest that this trend will reverse slightly and, by 2045, will increase to 1.6 births per woman, with 1.65 in 2065, stabilizing at 1.67 by the end of the century. However, this rate remains well below the rate required to guarantee long-term population

Chart 1.2.4-b
Europe: mortality data



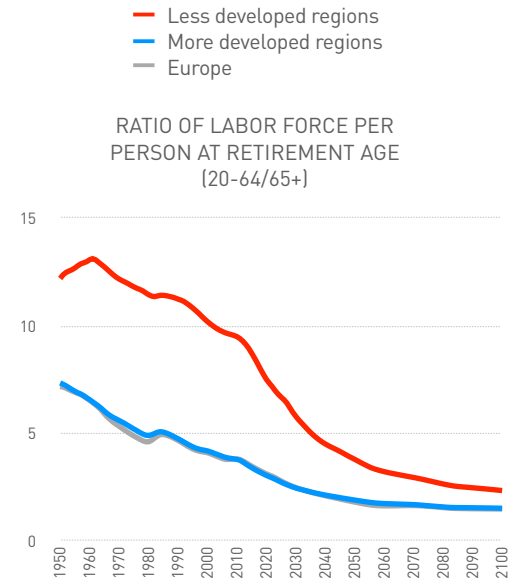
Source: MAPFRE Economics (with data from the United Nations)

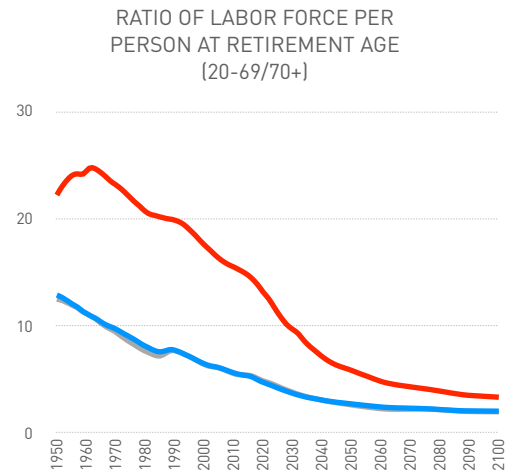
Chart 1.2.4-c
Europe: life expectancy



Source: MAPFRE Economics (with data from the United Nations)

Chart 1.2.4-d
Europe: dependency data





Source: MAPFRE Economics (with data from the United Nations)

replacement (2.1 children per woman).

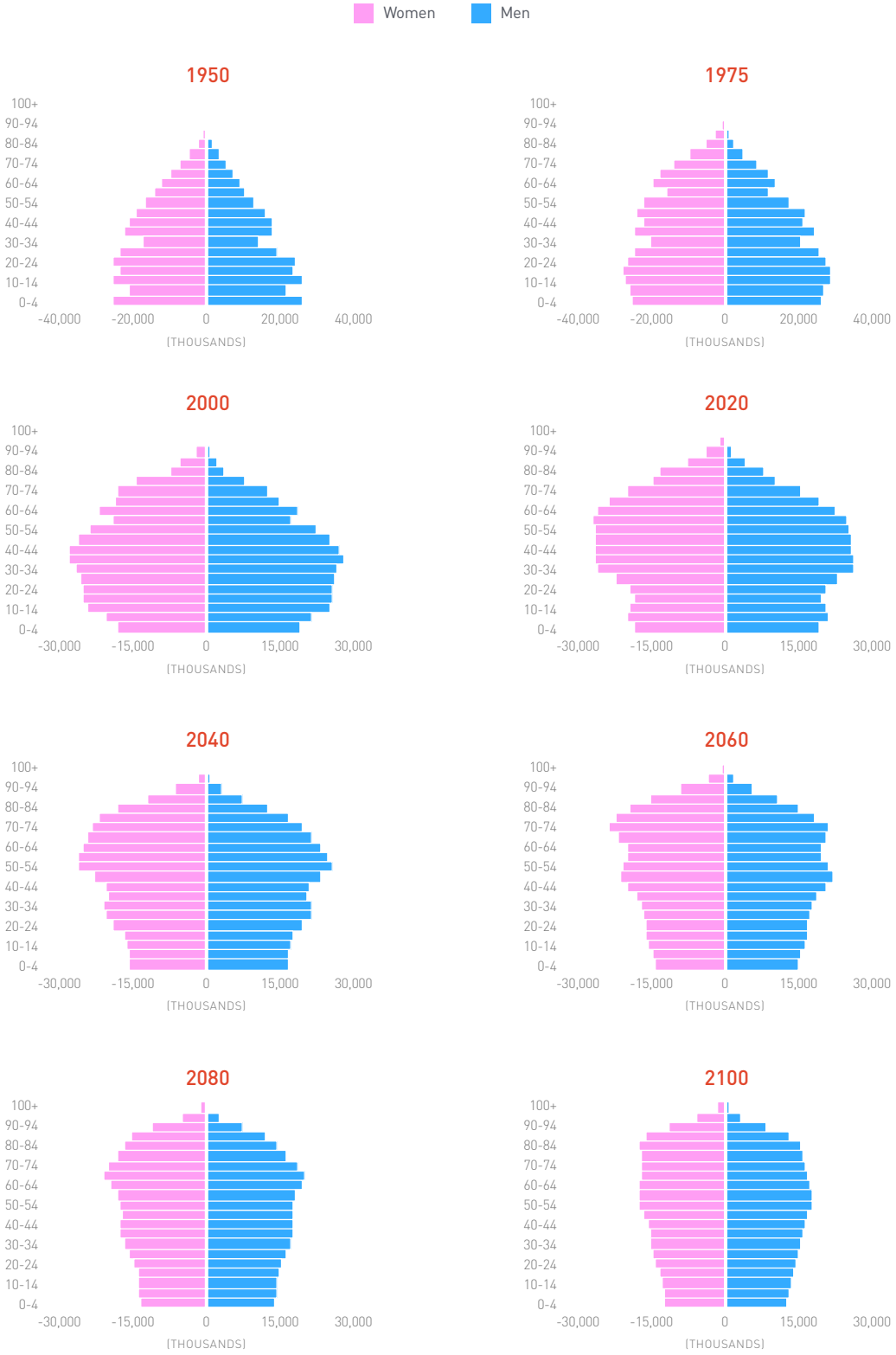
The positive effect on life expectancy, combined with drastic drops in the fertility rate, have resulted in a dynamic transition to older populations, a process that affects developed countries, such as the Europe region, which falls within the pattern of behavior of advanced economies, more immediately and more sharply, above the average of less developed regions. This demographic process alters the weight of the different cohorts within the total population over time. Thus, the percentage of people under 25 years of age represented 44% of the total population in 1950, falling to 26% in 2024, with forecasts indicating that this percentage will continue to fall in the coming decades to 23.2% by 2045 and 2065, and 22.7% by the end of the century. If we compare this process with that of other less developed regions, we see that the percentages are declining more slowly, because in more developed regions the decline in the fertility rate has been occurring for a longer period of time (see Chart 1.2.4-d).

Meanwhile, there is a correlative increase in the weight of the older cohorts, so that people aged 65 and over, who represented 7.9% of the population in 1950 and 14.7% in 2000, now represent 20.4% in 2024 and are expected to account for 27.5% by 2045, 30.8% by 2065 and 32.9% by the end of the century. Thus, the process of demographic transition toward more mature societies in the European region is reducing the labor force while increasing the proportion of people reaching old age, progressively increasing pressure on health and pension systems, especially those with a high weight of pay-as-you-go components. Thus, all these demographic factors foreshadow a progressive aging of the region's population throughout this century, first giving rise to constrictive population pyramids (with a large share of the population at increasingly advanced ages), which are then set to converge into stationary pyramids toward the end of this century (see Chart 1.2.4-e).

1.2.5 Africa

The population of the African region is estimated at 1.495 billion people in 2024[10] and is expected to reach 2.29 billion by 2045. By 2065, the region will double its population to 3.038 billion, reaching 3.924 by the end of the century, making it the region with the highest population growth in the coming

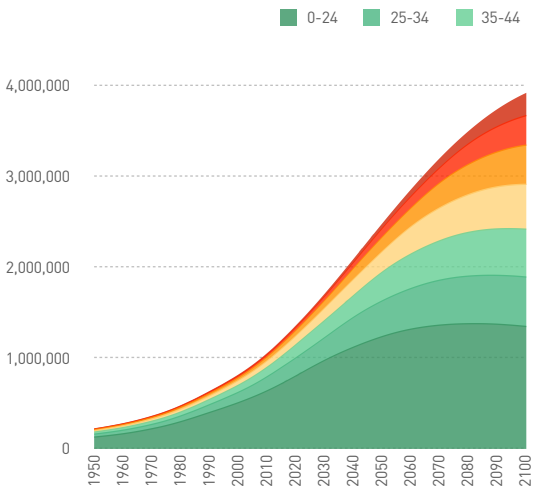
Chart 1.2.4-e
Europe: changes in the population pyramid



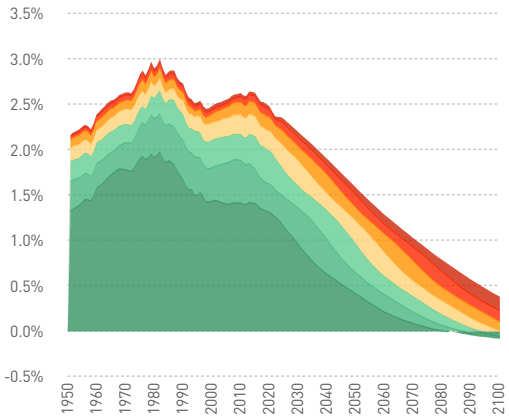
Source: MAPFRE Economics (with data from the United Nations)

Chart 1.2.5-a
Africa: demographic evolution variables

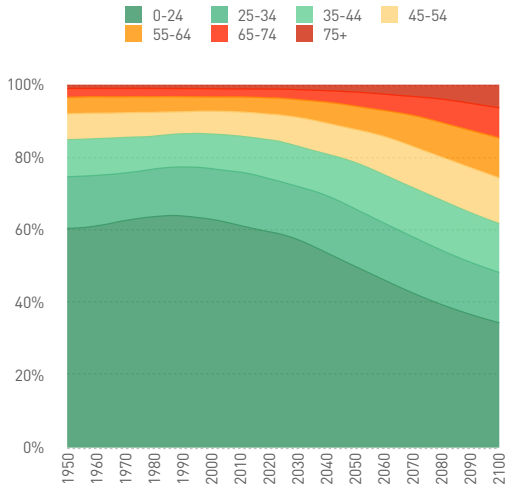
POPULATION BY AGE GROUPS



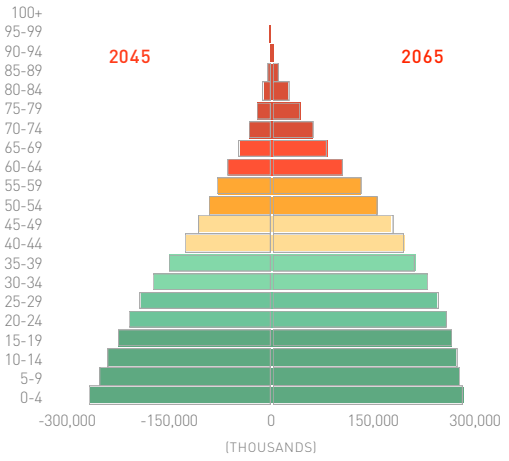
CONTRIBUTION TO POPULATION GROWTH BY COHORT



PERCENT OF POPULATION BY AGE GROUPS



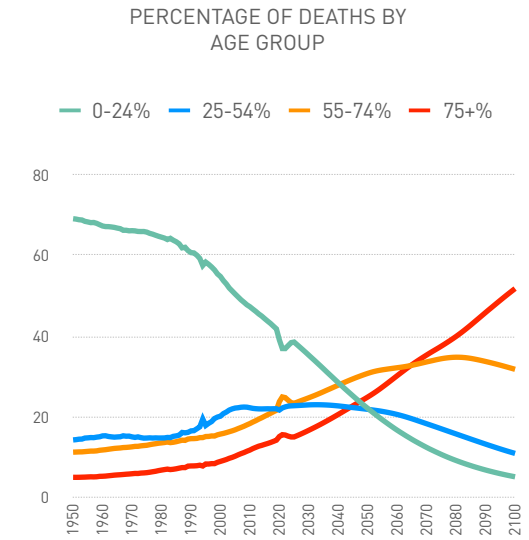
COMPARATIVE TOTAL POPULATION PYRAMIDS

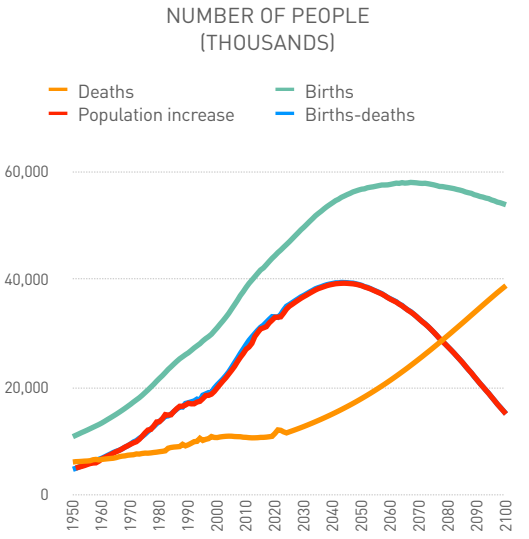


Source: MAPFRE Economics (with data from the United Nations)

decades (see Chart 1.2.5-a). The most populous countries in Africa are Nigeria and Ethiopia, which currently have respective populations of 229 and 130 million inhabitants. United Nations forecasts indicate that Nigeria's population will reach 349.6 million by 2045, 452.5 million by 2065 and 546 million by the end of the century. Meanwhile, forecasts indicate that Ethiopia's population will reach 198.5 million by 2045, 260 million by 2065 and 324 million by the end of the century. They are followed by the populations of Egypt and the Democratic Republic of Congo, with 114.5 and 105.6 million, respectively, in 2024. Forecasts predict that Egypt's population will reach 152 million by 2045, 180.5 million by 2065 and will exceed 205 million by the end of the century. Meanwhile, forecasts indicate that by 2045, the population of the DRC will reach 193 million, 291.4 million by 2065 and 432.4 million by the end of the century. These countries are among the largest contributors to world population growth.

Chart 1.2.5-b
Africa: mortality data



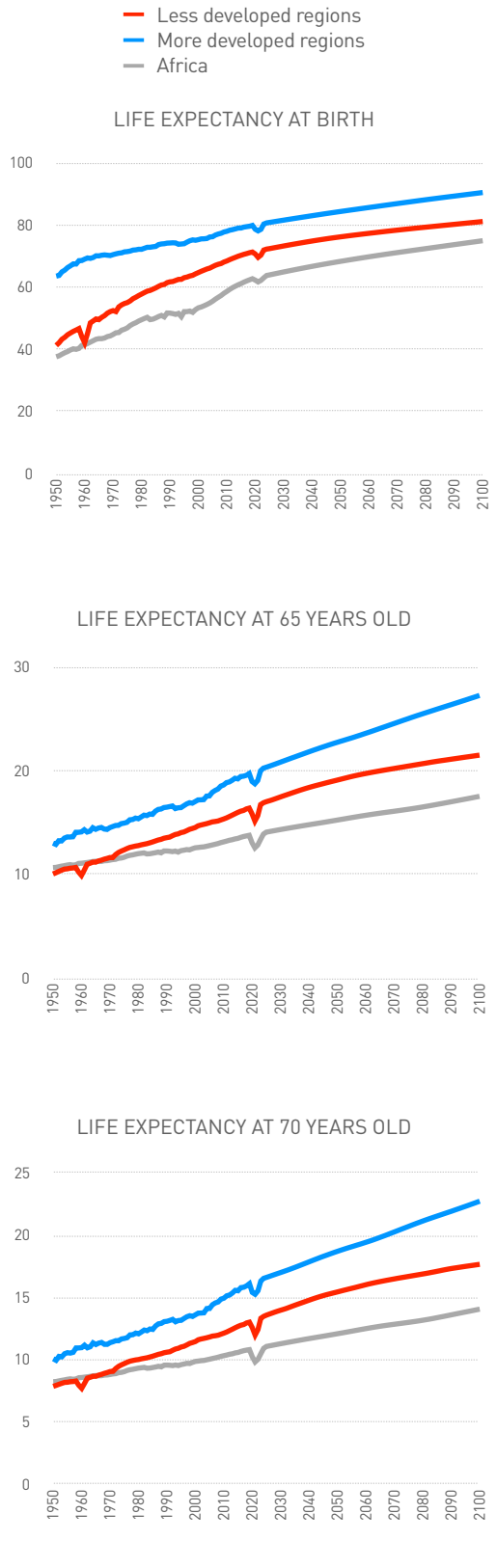


Source: MAPFRE Economics (with data from the United Nations)

The African region is also notable for the overall reduction in mortality rates in younger and middle-aged cohorts, which only increases at increasingly older ages. When analyzing the number of births compared to the number of deaths, we observe that the demographic projections for the region indicate that the number of births will only exceed the number of deaths until the end of the century, maintaining a fertility rate of over 2.1 births per woman until almost the end of the century, enough to maintain the population level (see Chart 1.2.5-b).

Life expectancy at birth in Africa increased from 37.6 to 63.7 years between 1950 and 2024, a gain of 26.1 years over that period. The projections confirm that, in the future, life expectancy at birth in the region could grow at an approximate pace of 1.4 years per decade, reaching over 67.5 years of age by 2045, 70.3 years by 2064 and exceeding 74.9 years of age by the end of the century (see Chart 1.2.5-c). As occurred globally, the Covid-19 pandemic had a significant effect on mortality rates in the African region. According to United Nations estimates, the region lost 1 year of life expectancy at birth between 2019 and 2021. However, in 2023, life expectancy at birth in the region again surpassed that of 2019 and will continue its upward trend until the end of the century according to this organization's forecasts. Life expectancy at age

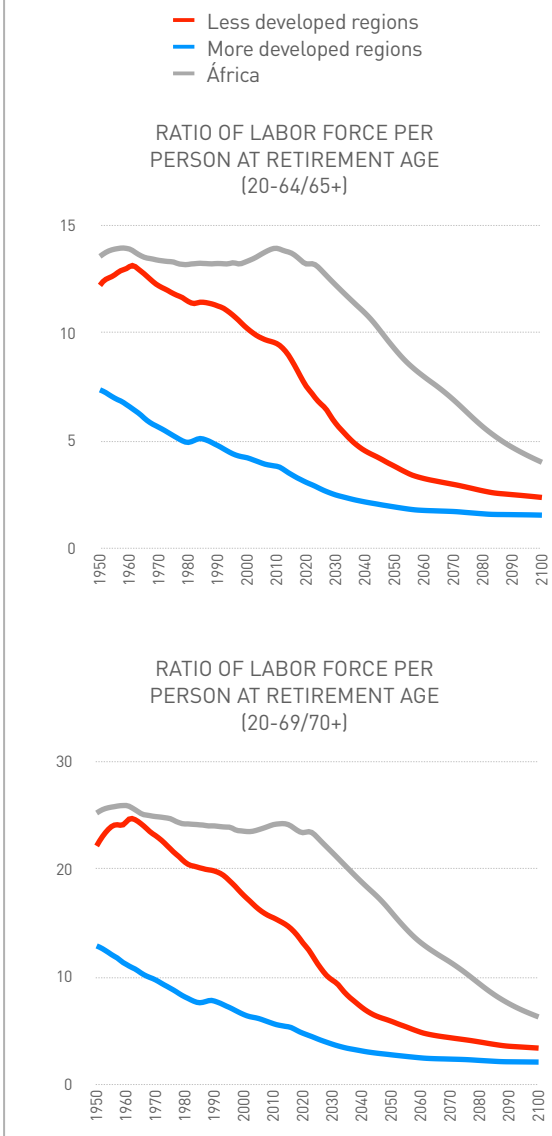
Chart 1.2.5-c
Africa: life expectancy



Source: MAPFRE Economics (with data from the United Nations)

65 (a key indicator for the analysis of healthcare spending and pensions) in 2024 stands at 13.9 years, and projections indicate that by 2045 it will be 15 years, by 2065 it will reach 15.9 years, and by the end of the century it will reach 17.5 years. In 2024, life expectancy at age 70 stood at 10.9 years, and projections indicate that by 2045 it will be 11.9 years, by 2065 it will reach 12.7 years, and by the end of the century it is expected to reach 14.1 years.

Chart 1.2.5-d
Africa: dependency data



Source: MAPFRE Economics (with data from the United Nations)

Chart 1.2.5-e
Africa: changes in the population pyramid

Source: MAPFRE Economics (with data from the United Nations)

In turn, fertility rate projections in Africa have shown a sustained drastic decline, falling from numbers close to an average of 6.6 births per woman in the 1950s, to the current value of 4.1. Projections suggest that this trend will continue in the coming decades, declining by 2045 to 3 births per woman and to 2.4 in 2065, stabilizing at 2 by the end of this century.

The positive effect on life expectancy, combined with drastic drops in the fertility rate, has led to a dynamic transition to relatively older populations. This process, which can be observed in a more pronounced fashion in other regions of the world, is also occurring in Africa, although more slowly due to the large number of young people (see Chart 1.2.5-d). Thus, the percentage of people under 25 years of age represented 60.6% of the total population in 1950, decreasing to 59% in 2024 and with forecasts indicating that this percentage will continue to decrease in the coming decades to 52% by 2045, 44.5% by 2065 and 34.6% by the end of the century. Meanwhile, there is a correlative increase in the weight of the older cohorts, such that people aged 65 and over, who represented 3.3% of the population in 1950 and 3.2% in 2000, have come to represent 3.5% in 2024, and are expected to account for 5.1% by 2045, 7.5% by 2065 and 14.5% by the end of the century.

To summarize, this process of demographic transition toward relatively older societies in the African region is reducing the labor force while increasing the proportion of people reaching old age, progressively increasing pressure on health and pension systems, especially those with a high weight of pay-as-you-go components. Thus, all these demographic factors foreshadow a progressive aging of the region's population throughout this century, first giving rise to constrictive population pyramids (with a large share of the population at increasingly advanced ages), which are then set to converge into stationary pyramids toward the end of this century (see Chart 1.2.5-e).

2. Demographics, housing stock and vehicle fleet: analysis by country

2.1 United States

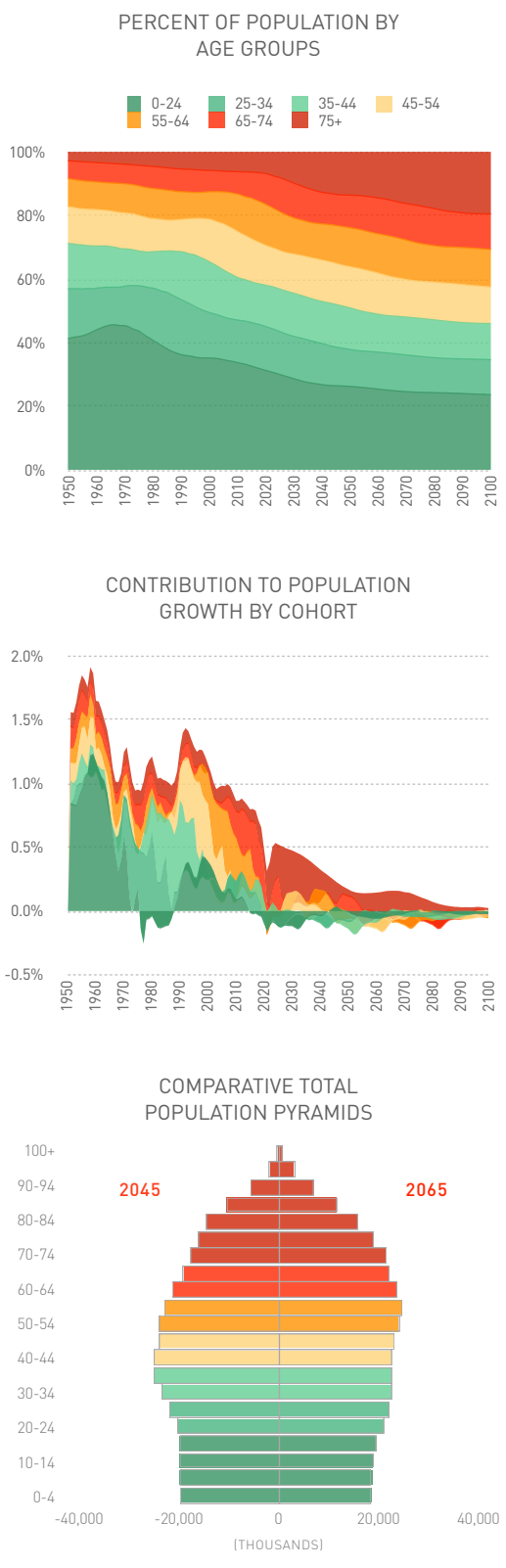
The demographics of the United States are characterized by its diversity and dynamism, influenced by the major demographic trends of the region, particularly immigration throughout its history, the current low birth rates, the drop in mortality rates for all age cohorts (which are increasing only in the oldest age groups) and the resulting process of population aging, accentuated as the "baby boom" generation (common term in the United States for the generation born between 1946 and 1964) reaches retirement age.

Meanwhile, the population of the United States has an uneven distribution throughout its territory. The most populous states include California, Texas and Florida, while areas like the Midwest have seen slower growth, or even a decline in their population.[11] Its major urban areas include cities such as New York, Los Angeles, the San Francisco Bay Area and Chicago, all of which are densely populated. Other cities, such as Austin, Dallas and Houston (in the state of Texas), stand out for having dynamic economies with a relatively lower cost of living. In the state of Florida, the cities of Miami and Orlando are also dynamic cities due to tourism, immigration and a favorable retirement climate for retirees. On the North Pacific side, the city of Seattle (in the state of Washington) stands out as an important center for technology and innovation, with a robust economy driven by large technology companies.

Chart 2.1-a shows the age distribution of the U.S. population from 1950 to the present, as well as forecasts through the end of the century; this information shows the significant increase in the weight of the older age cohorts in the total population. This demographic process alters the weight of the different cohorts within the total population over time. Thus, the percentage of people under 25 years of age represented 41.5% of the total population in 1950, falling to 30.6% in 2024 and with forecasts indicating that this weight will continue to decline in the coming decades to represent 26.7% by 2045, 25.2% by 2065 and 23.9% by the end of the century.

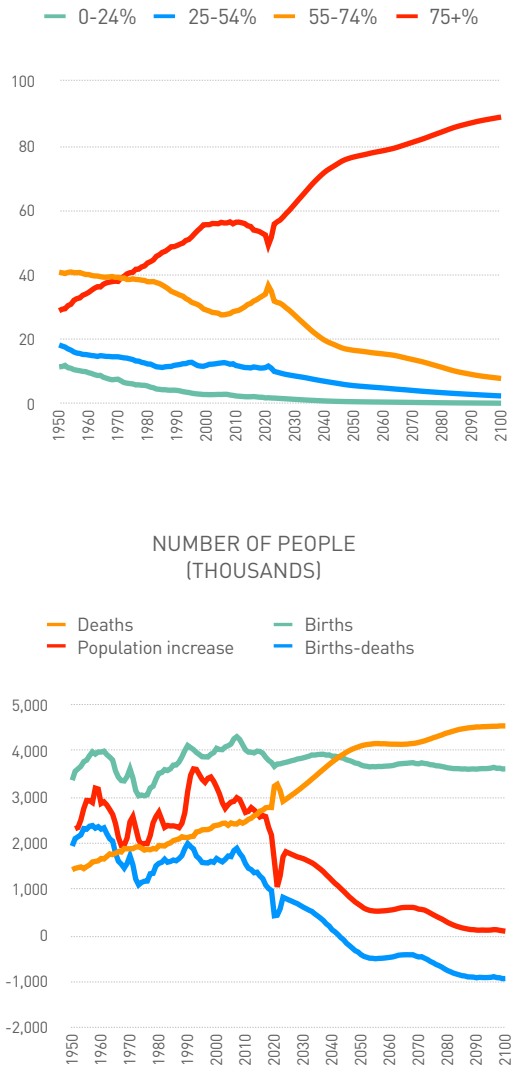
Meanwhile, in terms of the number of births compared to the number of deaths, demographic predictions indicate that, by 2043, the number of deaths will exceed the number of births. Nevertheless, the aforementioned forecasts indicate that the population will continue to increase until the end of the century, due to the effect of migratory flows (see Chart 2.1-b). Likewise, the overall drop in mortality rates has led to a considerable increase in life expectancy (see Chart 2.1-c). Thus, life expectancy at birth in the United States increased from 68.1 to 79.9 years between 1950 and 2024, a gain of 11.8 years over that period, although it is below the life expectancy of other advanced economies. The projections confirm that, in the future, life expectancy at birth in this country could grow at an approximate pace of one year per decade, reaching 83 years of age by 2045, 85.5 years by 2064 and exceeding 89.6 years of age by the end of the century. Life expectancy at age 65, a particularly relevant indicator for healthcare spending and pensions, will reach 20.4 years in 2024. Projections indicate that by 2045 it will be 22.5 years, by 2065 it will be 24.3 years and by the end of the century it will reach 27.1 years. In 2024, life expectancy at 70 years sat at 16.6 years, and projections suggest that it will reach

Chart 2.1-a
United States: demographic evolution variables



Source: MAPFRE Economics (with data from the United Nations)

Chart 2.1-b
United States: mortality data

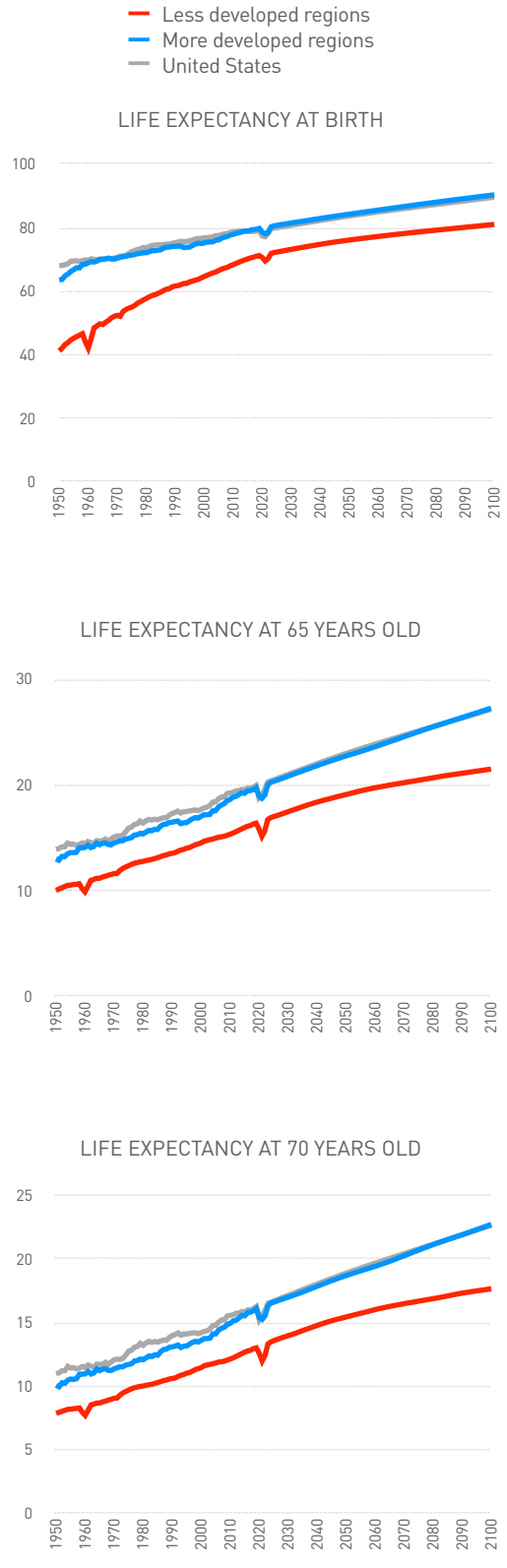


Source: MAPFRE Economics (with data from the United Nations)

18.5 years by 2045, 20.1 years by 2065 and 22.7 years by the end of the century.

The positive effect on life expectancy, combined with drastic drops in fertility rates, have led to a dynamic transition toward older populations, a process that immediately and markedly affects developed countries like the United States, which falls

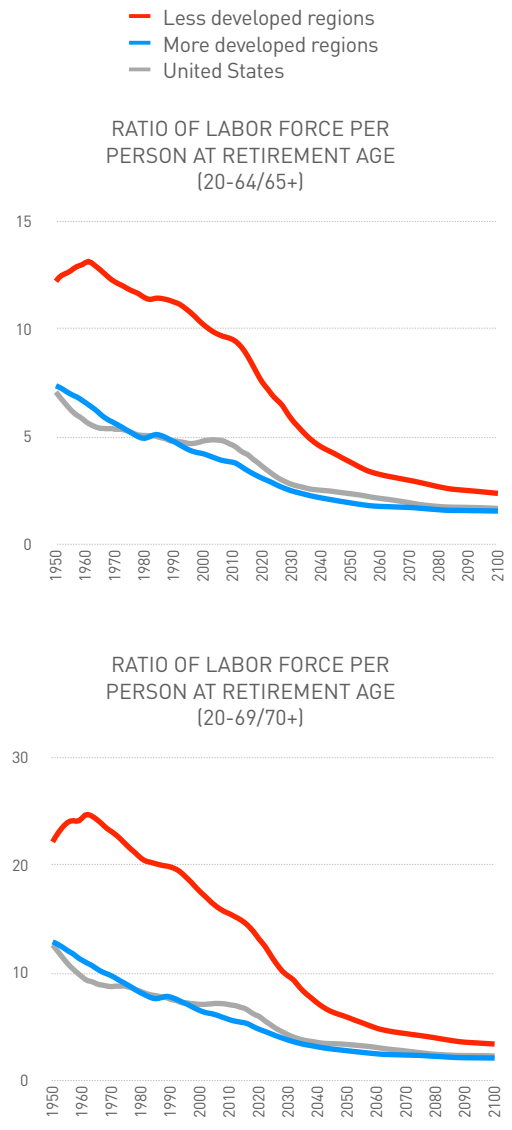
Chart 2.1-c
United States: life expectancy



Source: MAPFRE Economics (with data from the United Nations)

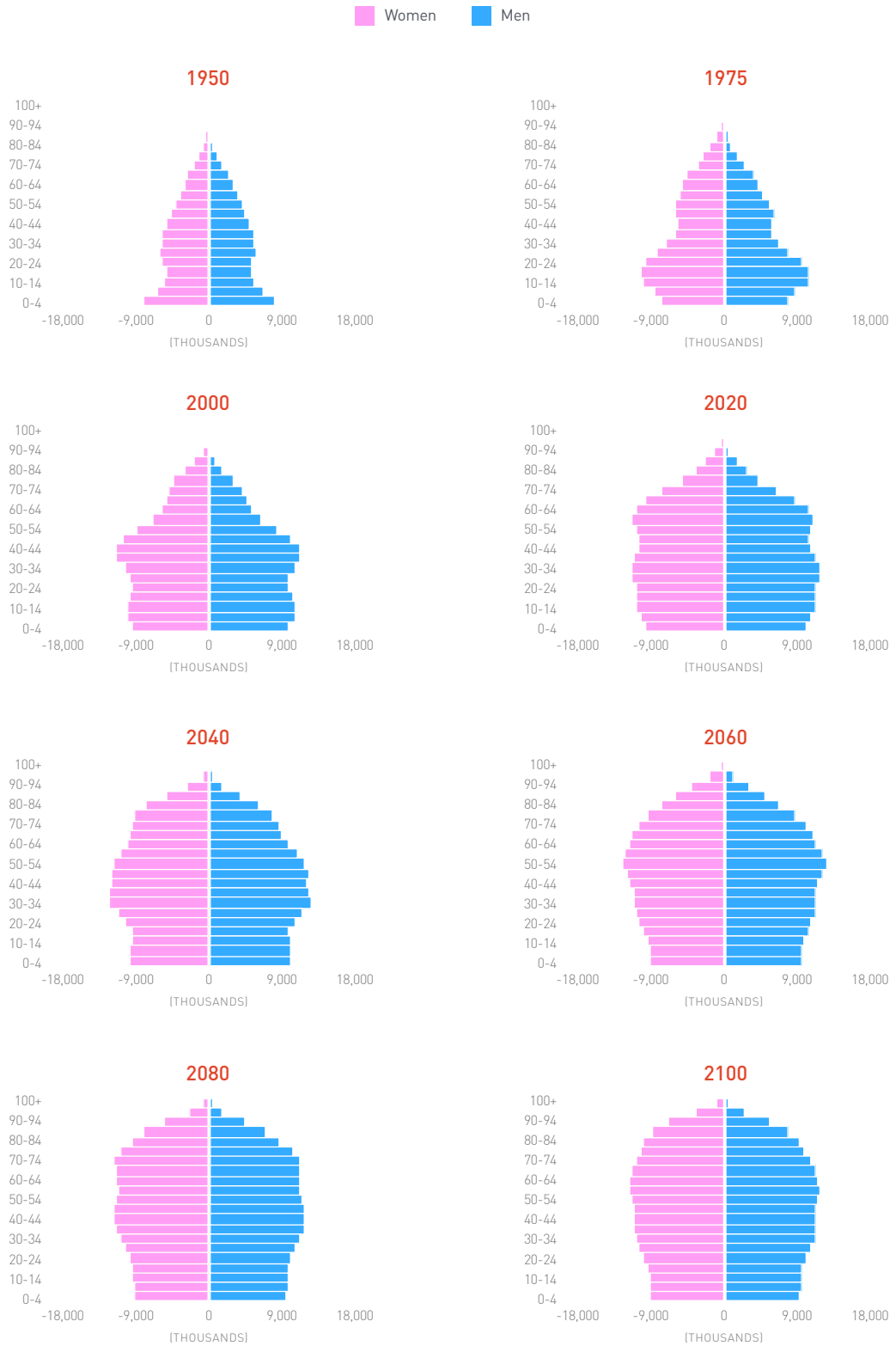
closer to the behavioral pattern of advanced economies and above the average of the less developed regions. Meanwhile, this phenomenon has produced a correlative increase in the weight of the older cohorts in that country, so that people aged 65 and over, who represented 8.2% of the population in 1950, have come to represent 18.1% in 2024 and are expected to account for 22.9% in 2045, 26.4% in 2065 and 30.5% by the end of the century. Thus, this process

Chart 2.1-d
United States: dependency data



Source: MAPFRE Economics (with data from the United Nations)

Chart 2.1-e
United States: changes in the population pyramid



Source: MAPFRE Economics (with data from the United Nations)

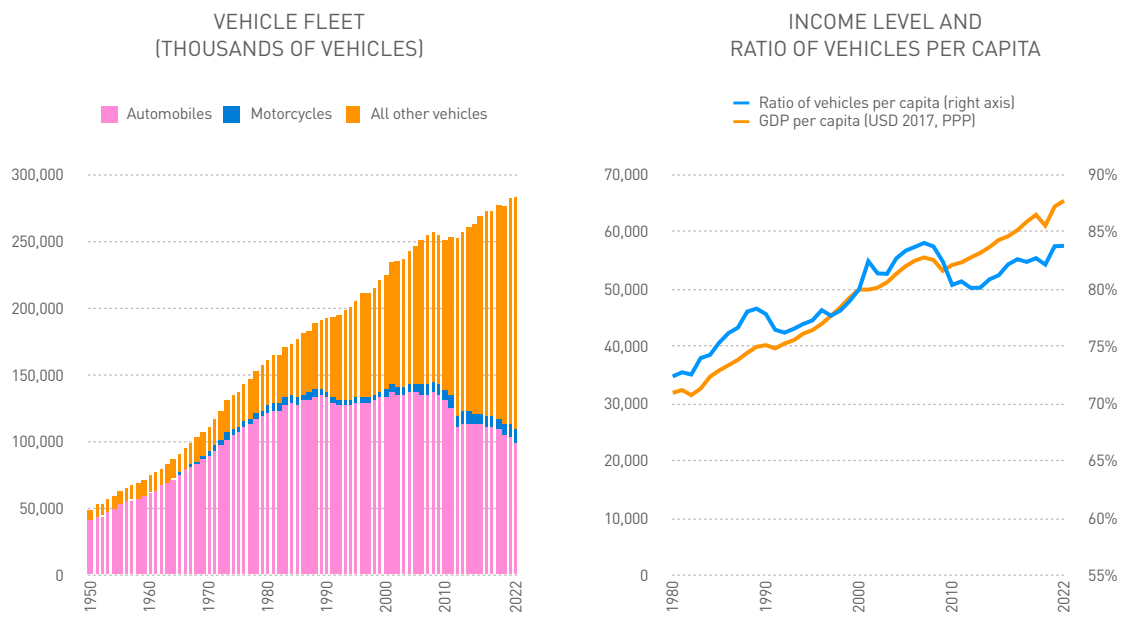
of demographic transition towards more mature societies is reducing the labor force, while at the same time increasing the proportion of people reaching advanced ages, progressively increasing the pressure on healthcare and pension systems (see Chart 2.1.d).

This set of demographic factors continues to foreshadow a progressive aging of the population of the United States throughout this century, first giving rise to constrictive population pyramids (with a large share of the population at increasingly advanced ages), which are then set to converge into stationary pyramids toward the end of this century (see Chart 2.1-e). However, the constrictive pyramid is expected to be less constrictive than in other countries due to the effect of migration. In this regard, the United States is still the main destination for international migration. The U.S. Census Bureau projected that net international migration to the United States would recover in 2022 from the drop caused by the COVID-19 pandemic, adding more than 1 million people to the U.S. population between July 1, 2021 and July 1, 2022, with net international migration being the main driver of population growth.[12] Thus, of the three most populated metropolitan areas in the country, New York has 5.9 million immigrants, representing 29.5% of its population, Los Angeles has 4.2 million (32.4% of its population) and Chicago has 1.7 million (17.7% of its population).[13]

Vehicle Fleet

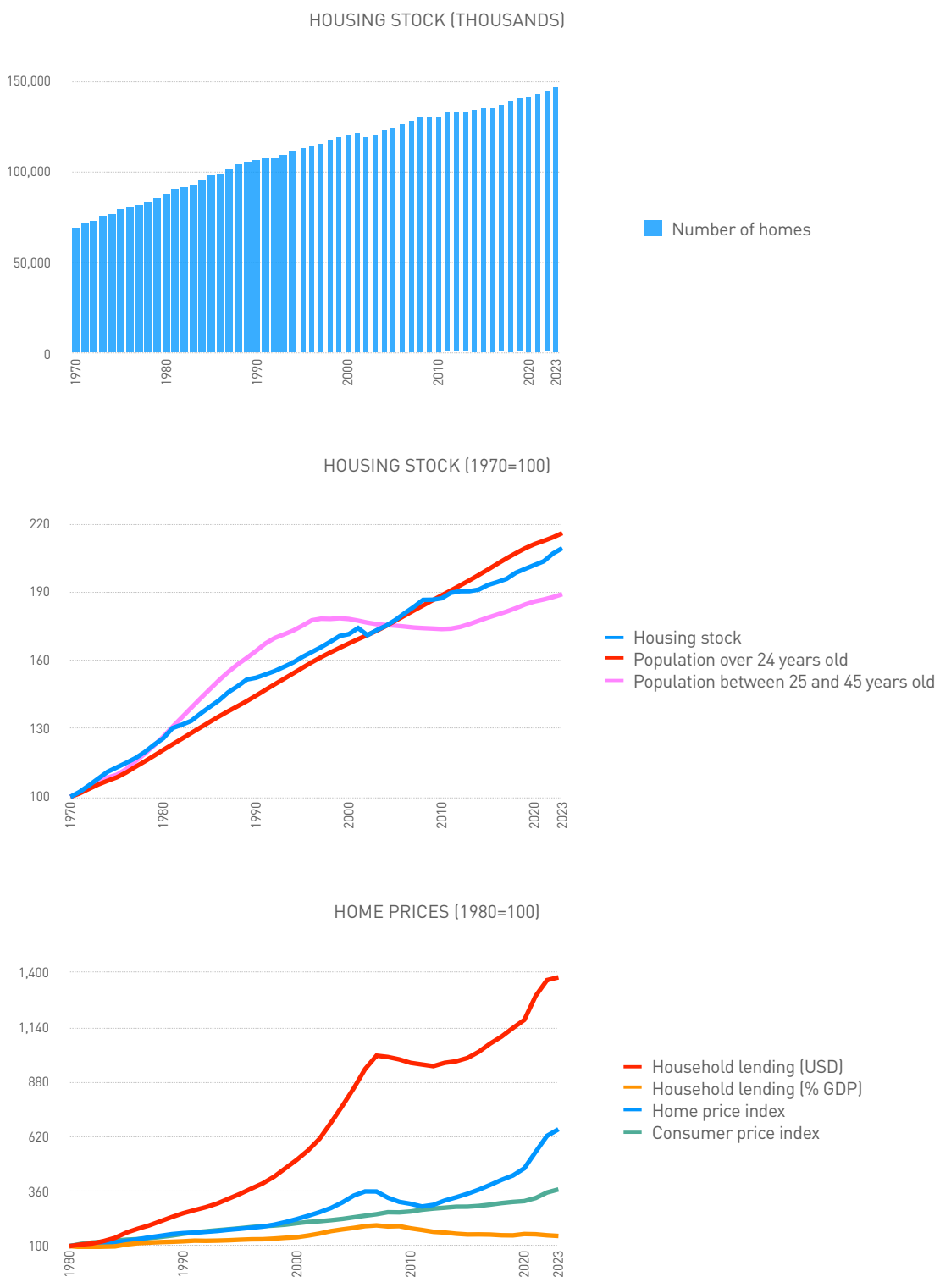
The United States' vehicle fleet is one of the largest in the world, reaching 283.4 million units in 2022, a ratio of 0.8 vehicles per inhabitant. The United States has an extensive network of roads and highway infrastructure, facilitating inter-urban transport. The high percentage of large vehicles in this market is noteworthy, as shown by the decreasing trend in the weight of passenger cars in the vehicle fleet, with a correlative increase in the

Chart 2.1-f
United States: vehicle fleet indicators



Source: MAPFRE Economics (with data from the US Department of Transportations, United Nations, and IMF)

Chart 2.1-g
United States: real estate market indicators



Source: MAPFRE Economics (with data from the United Nations, Haver Analytics, BIS, Census and the Federal Reserve Bank of St. Louis)

category of other vehicles, which has included minivans and personal passenger vans since 1985 (see Chart 2.1-f).

Housing Stock

In the United States, the housing stock in December 2023 was 145.97 million units,[14] more than doubling since 1970. One of the main factors that has contributed to driving the increase in housing stock has been the increasing population of people over 24 years of age during this period. Concurrently, the high demand for housing generated by the effect of population growth, along with the strong expansion of credit to households, have put upward pressure on housing prices, which, over the last four decades, have grown above general inflation; the sole exception to this trend was the period from 2008 to 2012, coinciding with the great economic crisis and the deep credit contraction following the collapse of Lehman Brothers, which originated in the U.S. housing market problems at that time (see Chart 2.1-g).

Population growth estimates produced by the United Nations for the next two decades indicate an increase in the population over the age of 24 in the United States, which could represent 35.1 million people by 2045, so the outlook for this market in the coming years could be very favorable for the insurance industry. The regions and cities in the United States expecting the greatest momentum are mainly in the South and West of the country, regions that have shown considerable growth in both population and housing construction. The state of Texas stands out as a key growth area, with cities such as Austin, San Antonio, Houston, and Dallas-Fort Worth. In the West, Phoenix in Arizona and cities in California, such as Los Angeles and San Diego, are focal points due to continued population growth and new housing construction. In addition, in the state of Florida, cities such as Orlando and Tampa are also recognized for their rapid growth. Growth in these areas is driven by a combination of favorable economic factors and a quality of life that continues to attract new residents. In addition to these areas, other cities such as Nashville, Tennessee; Raleigh and Charlotte, North Carolina, are also experiencing significant growth that could be sustained over the next decade due to its strong economic and demographic foundations.[15]

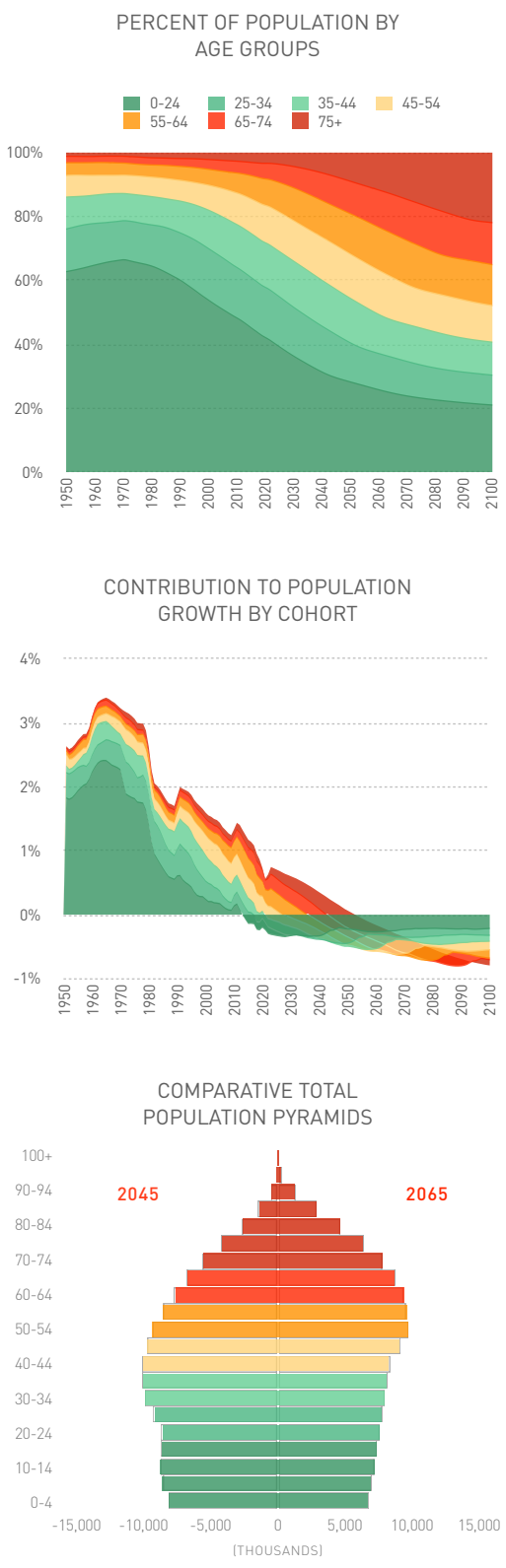
Position in the IPDFI

As presented in the fourth chapter of this report, the United States occupies the number three place in the ranking of the *Indicator of Insurance Potential due to Demographic Forces* (IPDFI) of the 179 countries covered by the indicator, which places this country within the high potential percentile of the distribution (P>90%). In the case of the United States, the greatest contributions to the indicator stem from the potential for the level of GDP per capita and the potential for growth in healthcare spending, but also from the potential due to the level and growth prospects of its population over the age of 24 in the next two decades and from private savings.

2.2 Mexico

According to the latest data published by the United Nations, Mexico ranks tenth among the most populated countries in the world, with 128.5 million inhabitants in 2023. The states with the highest population density include the State of Mexico, Mexico City and Jalisco, while Campeche, Baja California Sur and Colima are the states with the lowest population density.[16] Likewise, the three most significant metropolitan areas in Mexico are Mexico City, Guadalajara and Monterrey, which play an important role in the Mexican economy.[17] Over the last few decades, the birth rate in Mexico has been decreasing and life expectancy has been increasing, which is leading to a gradual process of population aging.

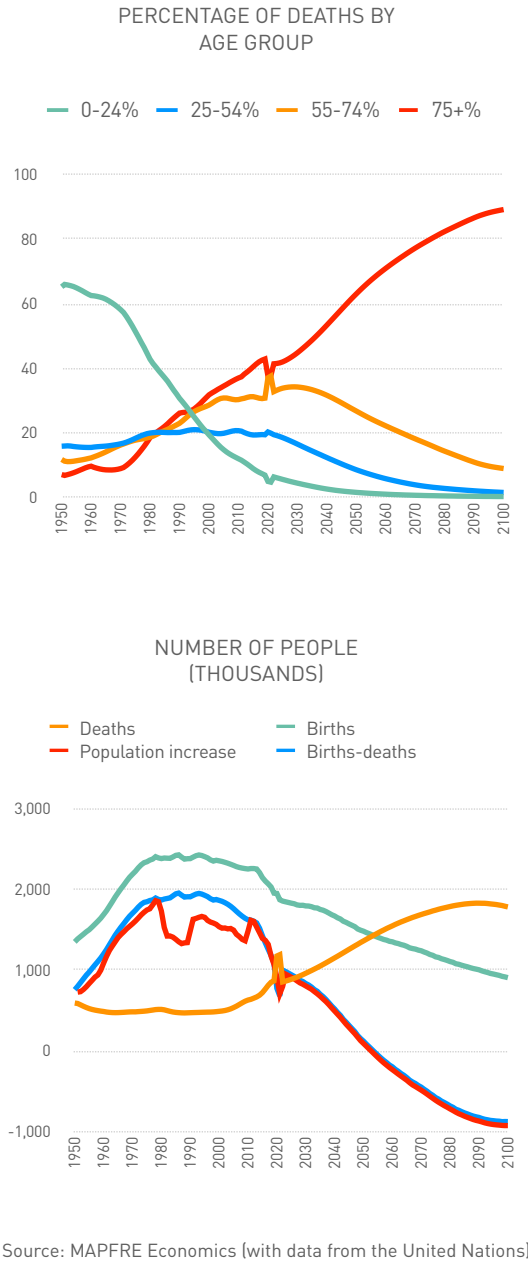
Chart 2.2-a
Mexico: demographic evolution variables



Source: MAPFRE Economics (with data from the United Nations)

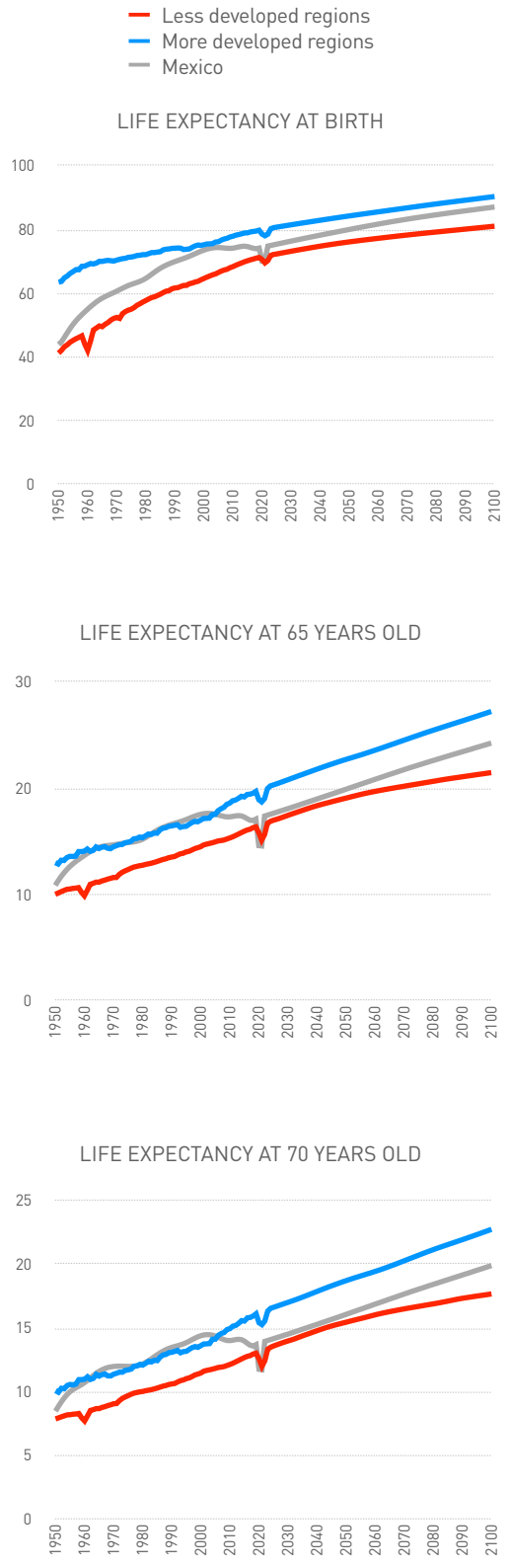
Chart 2.2-a presents the age distribution of the Mexican population from 1950 to the present, as well as forecasts through the end of the century. This information shows a significant increase in the weight of the population over 65 years of age. Over the years, the weight of the different cohorts within the population has been altered by this demographic process. Thus, in 1950,

Chart 2.2-b
Mexico: mortality data



Source: MAPFRE Economics (with data from the United Nations)

Chart 2.2-c
Mexico: life expectancy

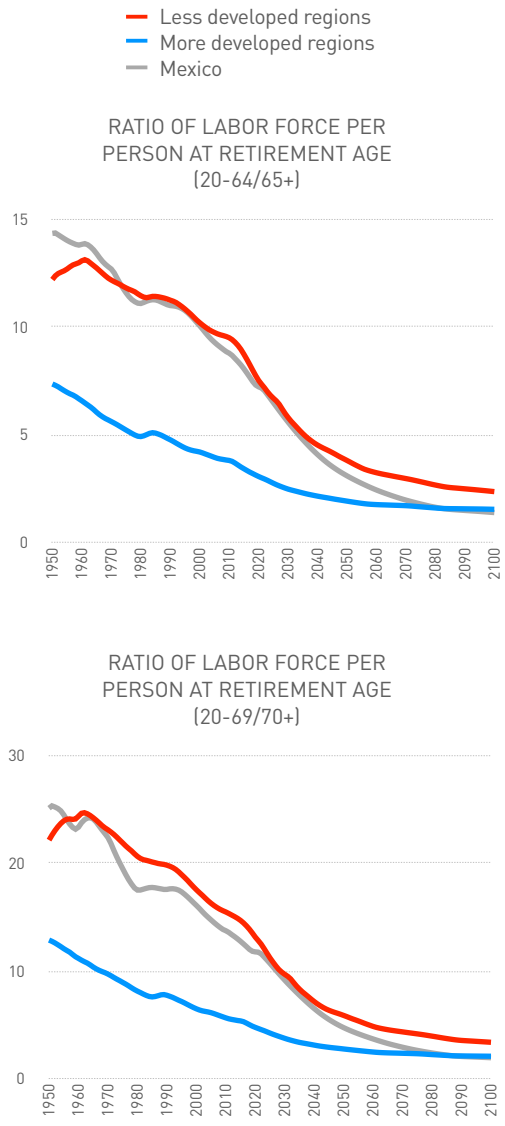


Source: MAPFRE Economics (with data from the United Nations)

the percentage of people under 25 years of age represented 62.9% of the total population, dropping to 40.1% in 2024. Forecasts indicate that this percentage will continue to decline, reaching 29.7% by 2045, 24.9% by 2065 and 21.2% by the end of the century.

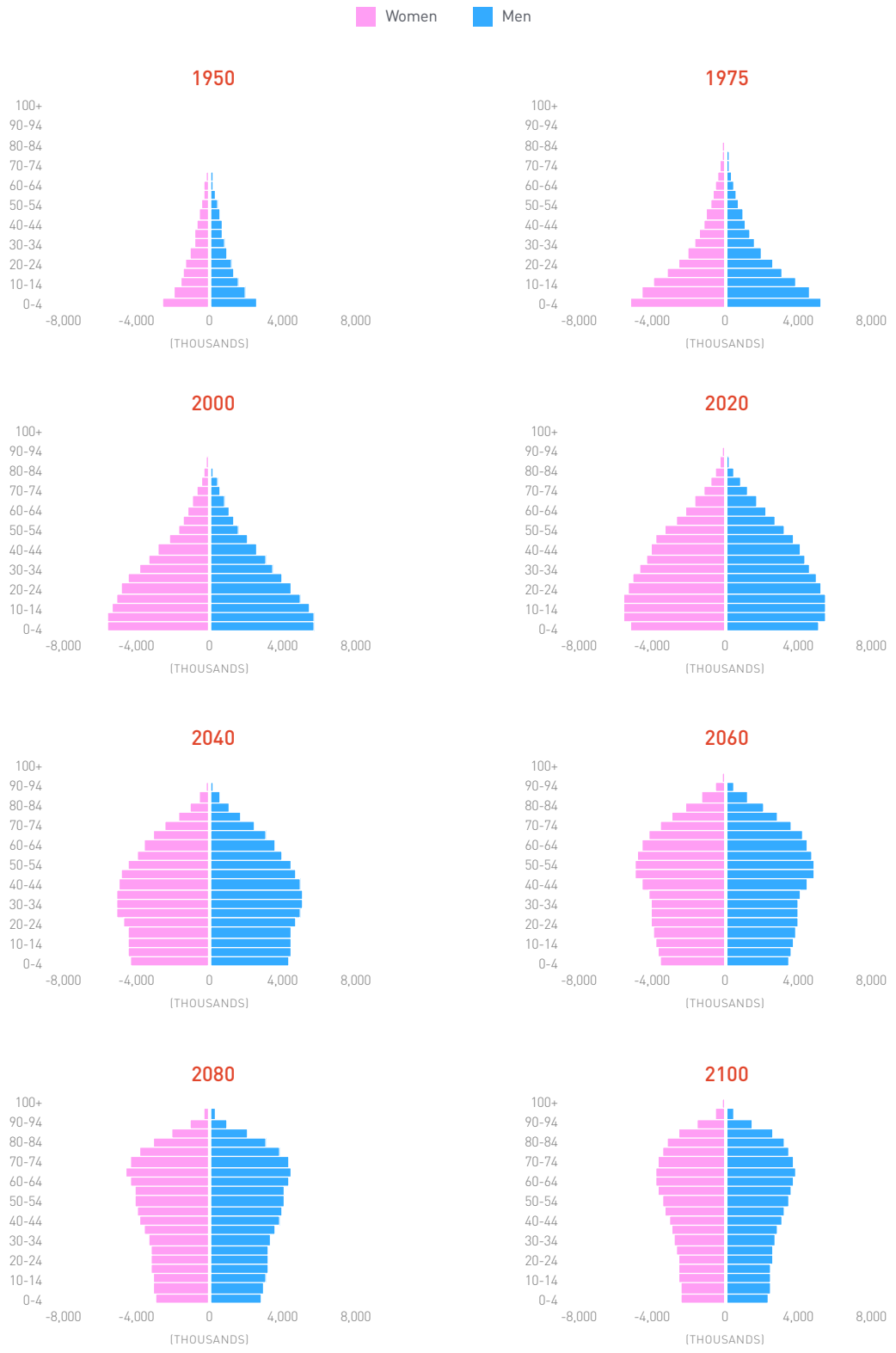
The demographic projections comparing the number of births and the number of deaths

Chart 2.2-d
Mexico: dependency data



Source: MAPFRE Economics (with data from the United Nations)

Chart 2.2-e
Mexico: changes in the population pyramid



Source: MAPFRE Economics (with data from the United Nations)

show that, by 2054, the number of births will be surpassed by the number of deaths. Nevertheless, Mexico's population is expected to continue to grow slightly until mid-century, at which point it will begin to decline progressively (see Chart 2.2-b).

Meanwhile, Chart 2.2-c shows that life expectancy in Mexico has increased notably over recent decades. Thus, life expectancy at birth increased from 44 years in 1950 to 75.2 years in 2024, representing a gain of 31.2 years; looking ahead, projections indicate that life expectancy at birth could reach 79.2 years by 2045, 82.6 years by 2065, and 87.1 years by the end of the century. Likewise, life expectancy at age 65 (which is highly relevant for healthcare spending and pensions) is 17.6 years in 2024, and future estimates show that it will be 19.5 years by 2045, 21.3 years by 2065, and 24.3 years by the end of the century. Life expectancy at age 70 years stands at 14.1 years in 2024, and projections indicate it will reach 15.7 years by 2045, 17.3 years by 2065 and 19.9 by the end of the century.

Overall, the significant declines in fertility rates, combined with the positive effect on life expectancy, have led to a dynamic transition to an older population, in which Mexico is in the middle ground between the more advanced economies and the less developed regions. Thus, there is a correlative increase in the weight of the older cohorts, such that people aged 65 and over, who represented 3% of the population in 1950, have reached 8.9% in 2024, and are predicted to increase to 16.9% by 2045, 25.3% by 2065 and reach 34.9% by the end of the century.

This process of demographic transition to a more mature society in Mexico decreases the labor force, while the proportion of people reaching older ages increases, gradually causing greater pressure on the healthcare and pension systems (see Chart 2.2-d). In conclusion, all these demographic factors predict a progressive aging of the Mexican population throughout this century. Chart 2.2-e, through the population pyramids, shows how the older population is gaining weight over the years, shifting from expansive pyramids to constrictive pyramids towards the end of the century.

Vehicle Fleet

Mexico's vehicle fleet is significant in size and has been progressively increasing, reaching 57.3 million units in 2023. Likewise, the ratio of vehicles per capita has increased from 0.1 in 1980 to 0.4 in 2023 (see Chart 2.2-f). Within the vehicle fleet, automobiles outweigh other vehicles, accounting for 64.6% of the total fleet in 2023, compared to 13.4% for motorcycles.

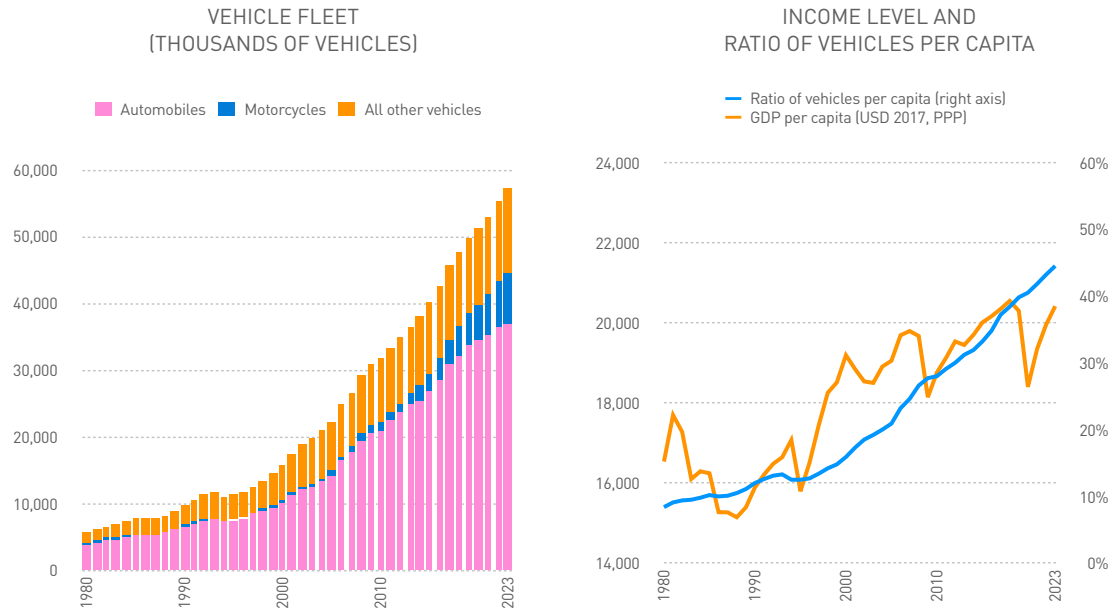
In the latest car insurance statistics report for 2020,[18] Mexico City, Nuevo Léon, the State of Mexico and Jalisco stand out with shares above 8% of the total number of insured cars, while Nuevo León, Puebla, Querétaro and Mexico City have the highest percentage of the ratio of insured cars to cars in circulation, with more than 50% insured vehicles compared to vehicles in circulation. On the other hand, in the state of Guerrero only 7.7% of the vehicles in circulation are insured. In general, the southern states have a lower percentage of participation and a lower ratio than the central and northern states.

Housing Stock

Mexico's housing stock has been increasing over the years, from 16.2 million units in 1990 to 35.5 million in 2022. One of the main factors that has contributed to boosting the housing stock has been the growth of the population over 24 years of age, from 32.4 million in 1990 to 74.8 million in 2022 (see Chart 2.2-g).

For the next two decades, United Nations population growth estimates point to sustained growth in Mexico's total

Chart 2.2-f
Mexico: vehicle fleet indicators

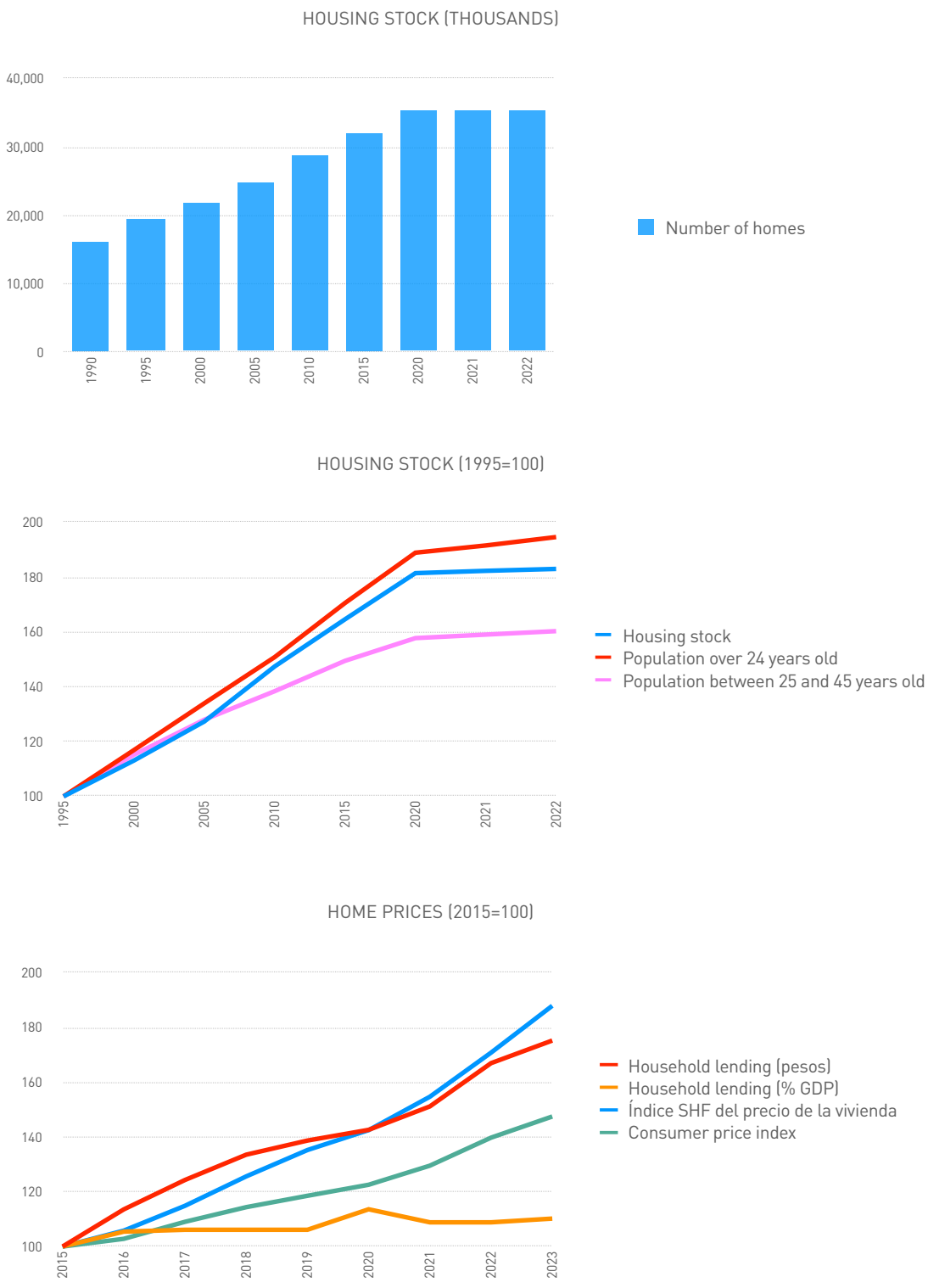


Source: MAPFRE Economics (with data from INEGI, the United Nations and IMF)

population, which would lead to an increase in the number of housing units due to both population aging and a reduction in the average family size as the number of births decreases. Another important factor that directly influences demographic dynamics, and therefore the increase in the number of housing units, is the migration of people in search of better life opportunities.[19] In this sense, the number of foreign-born residents in Mexico has increased considerably in recent decades, from 492,600 people in 2000 to 1.2 million in 2020 (the latest available information). Most of these migrants were born in the Americas, with the United States in first place, followed by Guatemala, Venezuela and Colombia, and in Europe, Spain stands out as the country of origin.[20] In 2022, immigration in the country was marked by the movement of Latin American people who for various reasons sought protection outside their countries of origin, from around 9,000 visitors for humanitarian reasons in 2021 to just over 287,000 in 2022, with the greatest numbers coming from Venezuela and Nicaragua. In 2022, Mexico welcomed 60,219 new temporary residents, an increase of 28.6% over 2021. The United States, Colombia, Cuba, Canada, Argentina and China were the main countries of origin.[21] As discussed above, Mexico is also a country of emigrants, second only to India, with 11.2 million people leaving the country in 2020.

Meanwhile, the Federal Mortgage Society, through the SHF Housing Price Index, detailed that, at a national level, the price of homes with mortgage loans increased by 10.1% in Q4 2023, compared to the previous year. The SHF index is higher than the CPI and household lending index (see Chart 2.2-g). Likewise, for the metropolitan area of the Valley of Mexico, the SHF Index showed an increase of 9.6%, driven by the increase in the price of homes with two bathrooms; in the metropolitan area of Guadalajara, it showed an increase of 11.5%, derived from the price of homes located in downtown areas; in Monterrey, it increased by 11.3%, as a result of the growth in the price of new

Chart 2.2-g
Mexico: real estate market indicators



Source: MAPFRE Economics (with data from the United Nations, Haver Analytics, BIS, INEGI, SHF, and SEDATU)

homes; in Puebla-Tlaxcala, the increase was 7.1%, driven by the price of homes with a parking spot; the Toluca metropolitan area showed 6.9% growth, as a result of the increase in the prices of resale homes; in the Tijuana metropolitan area, there was a 14% increase, due to the increase in the price of homes located in peripheral areas; in the León metropolitan area, home prices rose 9.2%, attributed to the increase in the value of homes with at least two bedrooms; and in the Querétaro metropolitan area, home prices grew 13.6%, due to the increase in the prices of single-family homes.[22]

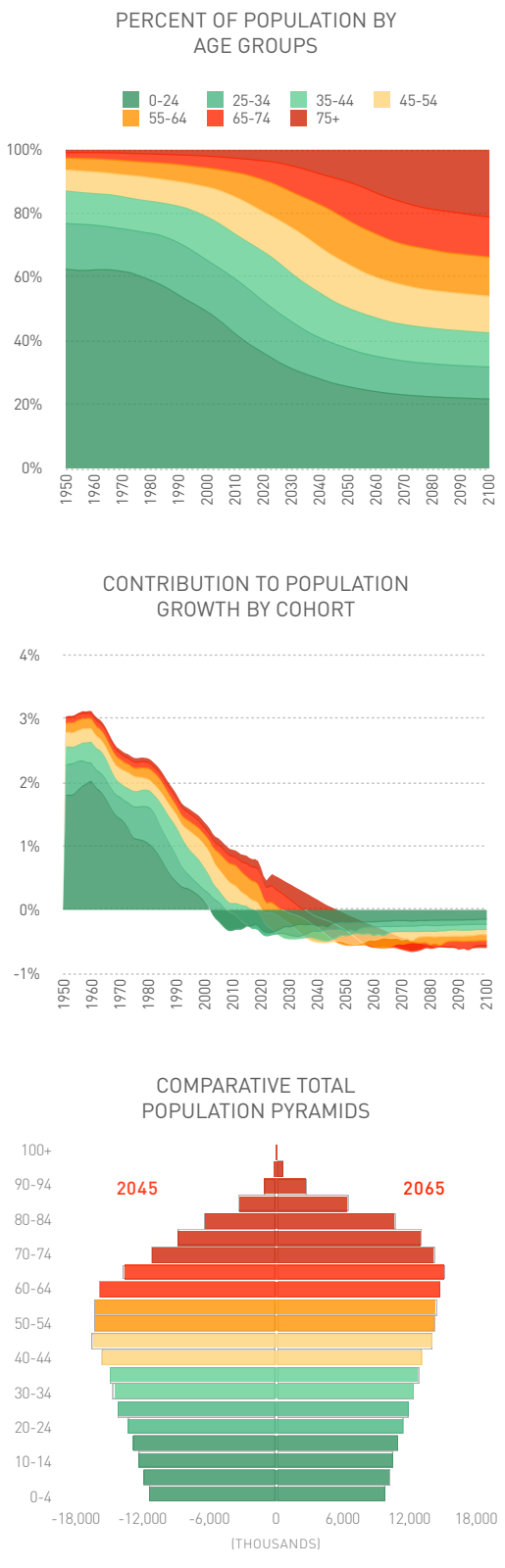
Position in the IPDFI

Mexico ranks 11th in the Indicator of Insurance Potential due to Demographic Forces (IPDFI) of the 179 countries covered by this index, which places it in the high potential percentile of the distribution (P>90%). In the case of Mexico, its partial indicators, such as growth potential of the population over 24 years of age over the next two decades, potential GDP per capita PPP, and growth in private savings and healthcare spending are well-balanced and all show a medium potential. However, the largest contribution comes from its demographic weight compared to that of other countries, which raises it to the upper end of the range of insurance potential due to demographic forces.

2.3 Brazil

Brazil is the most populous country in Latin America, with approximately 216.4 million inhabitants in 2023, according to United Nations estimates. Its demographics are diverse, influenced by historical migratory movements: first Portuguese colonizers, as well as African slaves after the settlement of the colony in the 16th century, and then, progressively, Italian, Portuguese, Spanish and German immigrants and, more recently, Venezuelans. This demographic redistribution was detrimental to the native indigenous population, which gradually

Chart 2.3-a
Brazil: demographic evolution variables



Source: MAPFRE Economics (with data from the United Nations)

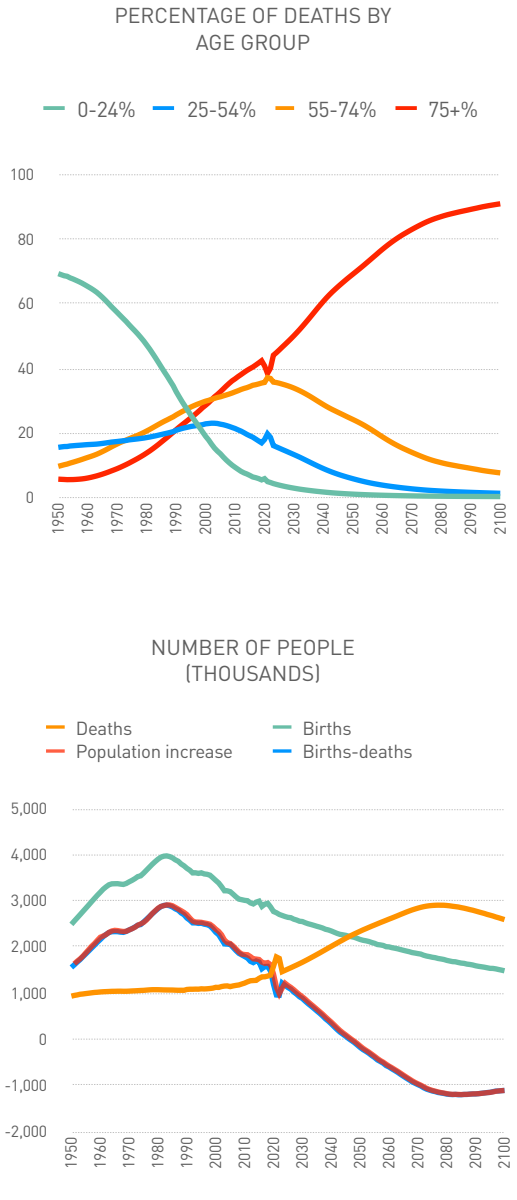
decreased and geolocated mainly in the northwest of the country. On the other hand, the rapid decline in the birth rate since 1960 and the increase in life expectancy have fostered the advance of the population aging process (see Chart 2.3-a).

The population in Brazil unevenly distributed, concentrated mainly in coastal areas. States such as São Paulo, Minas Gerais and Rio de Janeiro are the most populated, while the least populated areas are in the Center-West and North, where population density has shown a downward trend in recent years.[23] The main urban centers are the metropolitan regions of São Paulo (20.7 million), Rio de Janeiro (12 million) and Belo Horizonte (5.1 million), where the first two stand out as the main financial centers in Latin America, together with Mexico City and Santiago de Chile. Other cities such as Brasilia (the political center and capital of the country), as well as Salvador de Bahia, Fortaleza and Belo Horizonte stand out for having dynamic economies due to tourism, the concentration of agricultural and mineral industries, as well as the automotive industry.

In the distribution by age groups from 1950 to the present, and in the forecasts through the end of the century, we observe an exponential increase in the weight of the older age cohorts in the total population. This demographic process alters the weight of the different cohorts within the total population over time. Thus, the percentage of people under 25 years of age represented 62.7% of the total population in 1950, falling to 34.3% in 2024 and with forecasts indicating that this weight will continue to decline in the coming decades to represent 26.8% by 2045, 23.7% by 2065 and 22.0% by the end of the century. Likewise, a comparative analysis of the number of births vs. the number of deaths provides demographic projections indicating that by 2047, the number of deaths will surpass the number of births. In this regard, the aforementioned forecasts indicate that Brazil's population will begin to decline after that year and the small migratory flows it may receive will not compensate for this drop (see Chart 2.3-b).

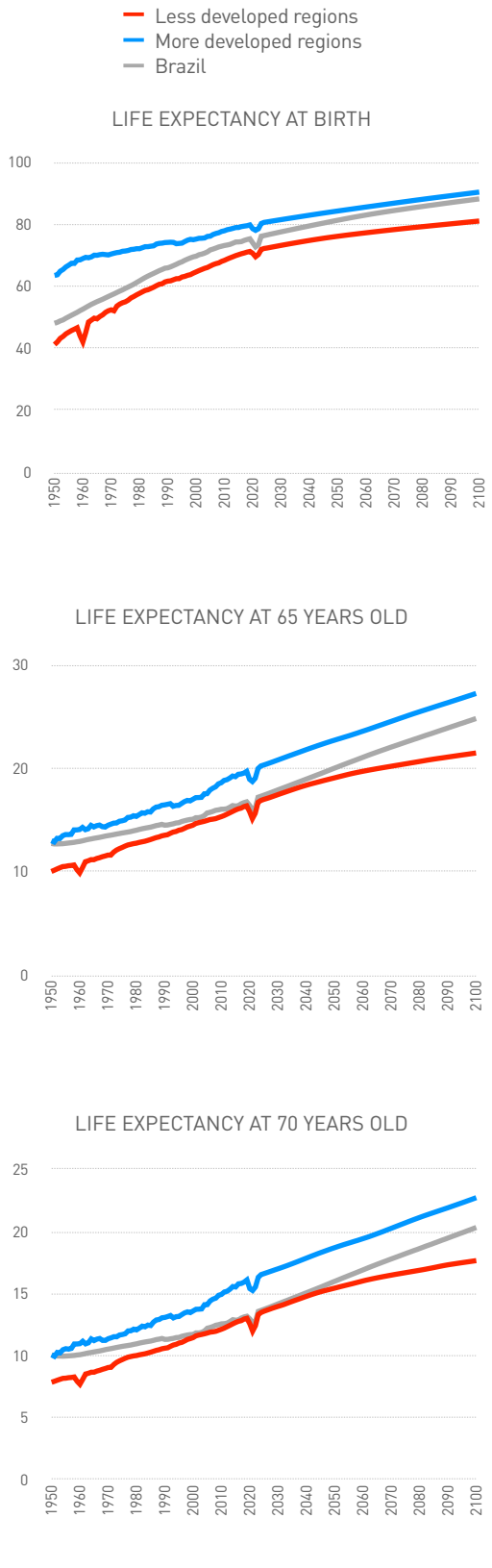
The overall reduction in mortality rates, on the other hand, has led to a considerable increase in life expectancy (see Chart 2.3-c). Thus, life expectancy at birth in Brazil increased from 48.1 to 76.4 years between

Chart 2.3-b
Brazil: mortality data



Source: MAPFRE Economics (with data from the United Nations)

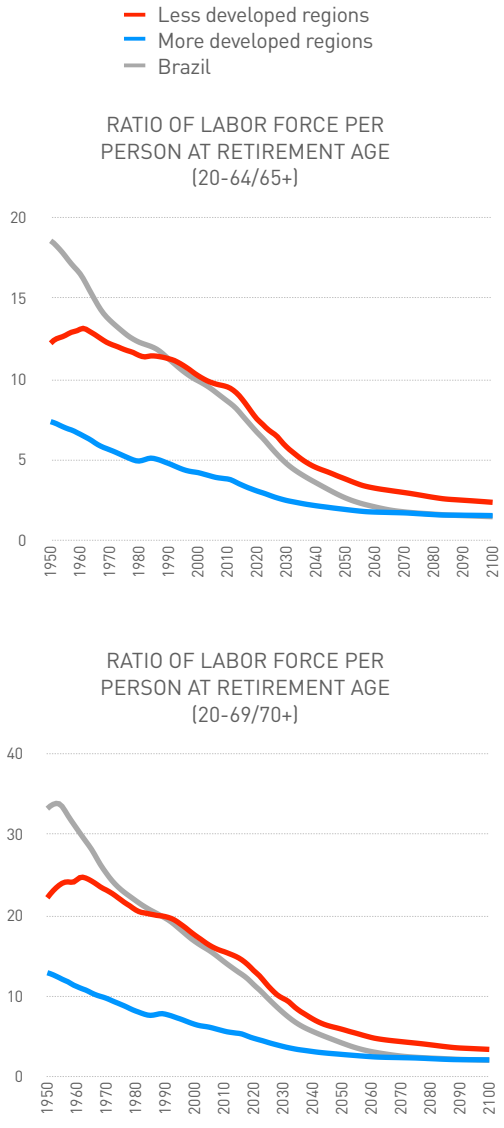
Chart 2.3-c
Brazil: life expectancy



Source: MAPFRE Economics (with data from the United Nations)

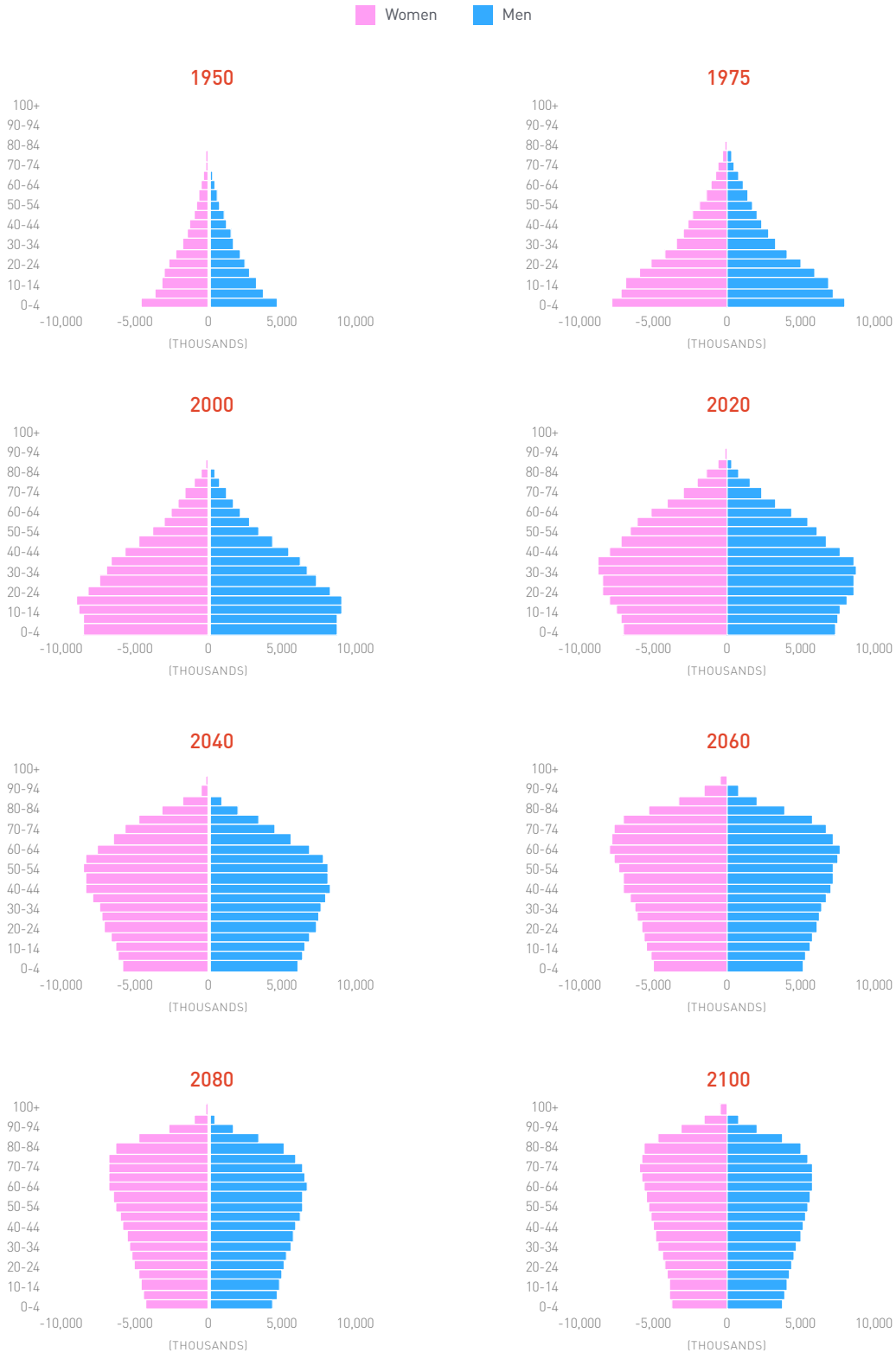
1950 and 2024, a gain of 28.3 years in that period, approaching the average of developed countries. Projections confirm that, in the future, life expectancy at birth in the region will grow at a decreasing rate, reaching 80.4 years by 2045, 83.6 years by 2064 and 88.2 years by the end of the century. Life expectancy at age 65, which is a particularly relevant indicator for healthcare spending and pensions, reached 17.3 years in 2024, and projections indicate that it will

Chart 2.3-d
Brazil: dependency data



Source: MAPFRE Economics (with data from the United Nations)

Chart 2.3-e
Brazil: changes in the population pyramid



Source: MAPFRE Economics (with data from the United Nations)

be slightly less than 20 years by 2045, 21.5 years by 2064, and 24.8 years by the end of the century. Finally, the life expectancy at age 70 stands at 13.7 years in 2024, and projections indicate that it will reach 15.5 years by 2045, 17.4 years by 2065, and 20.3 years by the end of the century.

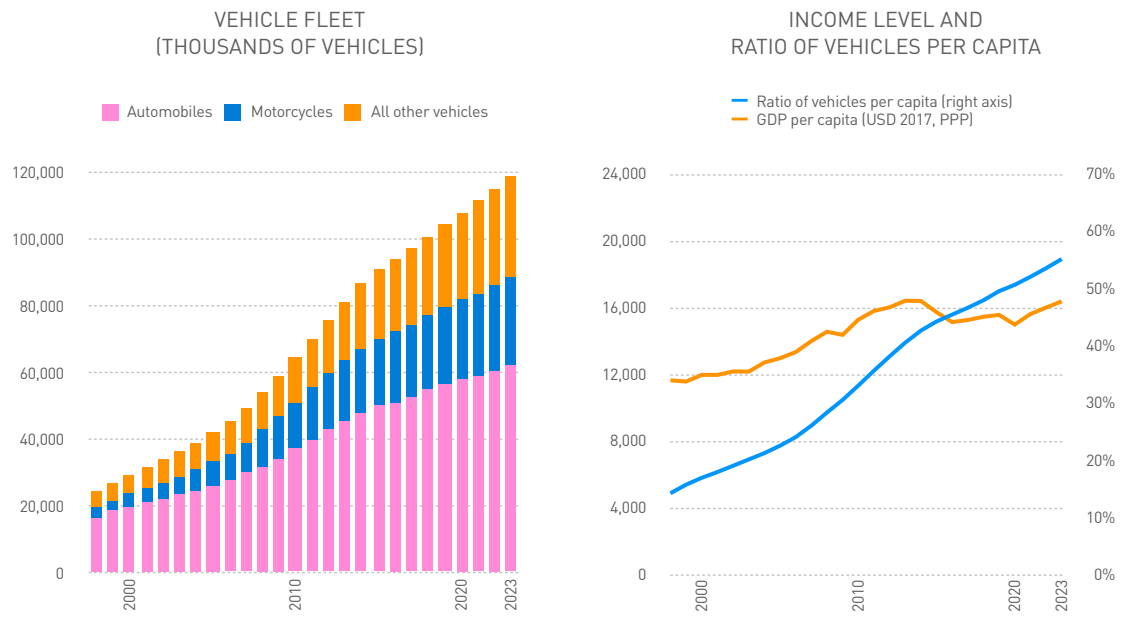
The positive effect on life expectancy, coupled with an increasingly lower fertility rate, has led to a dynamic of transition towards older populations; this process affects developed countries more immediately and sharply, but also the Latin American regions, where they should not be expected to converge with the behavioral pattern of advanced economies later than, for example, the case of North America. Moreover, in the specific case of Brazil, there is a correlative increase in the weight of the older cohorts, such that people aged 65 and over who represented 2.4% of the population in 1950 have come to represent 10.6% in 2024 and are expected to account for 19.3% by 2045, 28.2% by 2065 and 33.5% by the end of the century (see Chart 2.2-d).

Thus, the process of demographic transition toward more mature societies worldwide, and specifically in Latin America and Brazil, is reducing the labor force while increasing the proportion of people reaching old age, progressively increasing pressure on health and pension systems, especially those with a high weight of pay-as-you-go components. Thus, these demographic factors continue to foreshadow a progressive aging of Brazil's population throughout this century, first giving rise to constrictive population pyramids (with a large share of the population at increasingly advanced ages), to begin the process of convergence toward stationary pyramids towards the end of this century (see Chart 2.3-e).

Vehicle Fleet

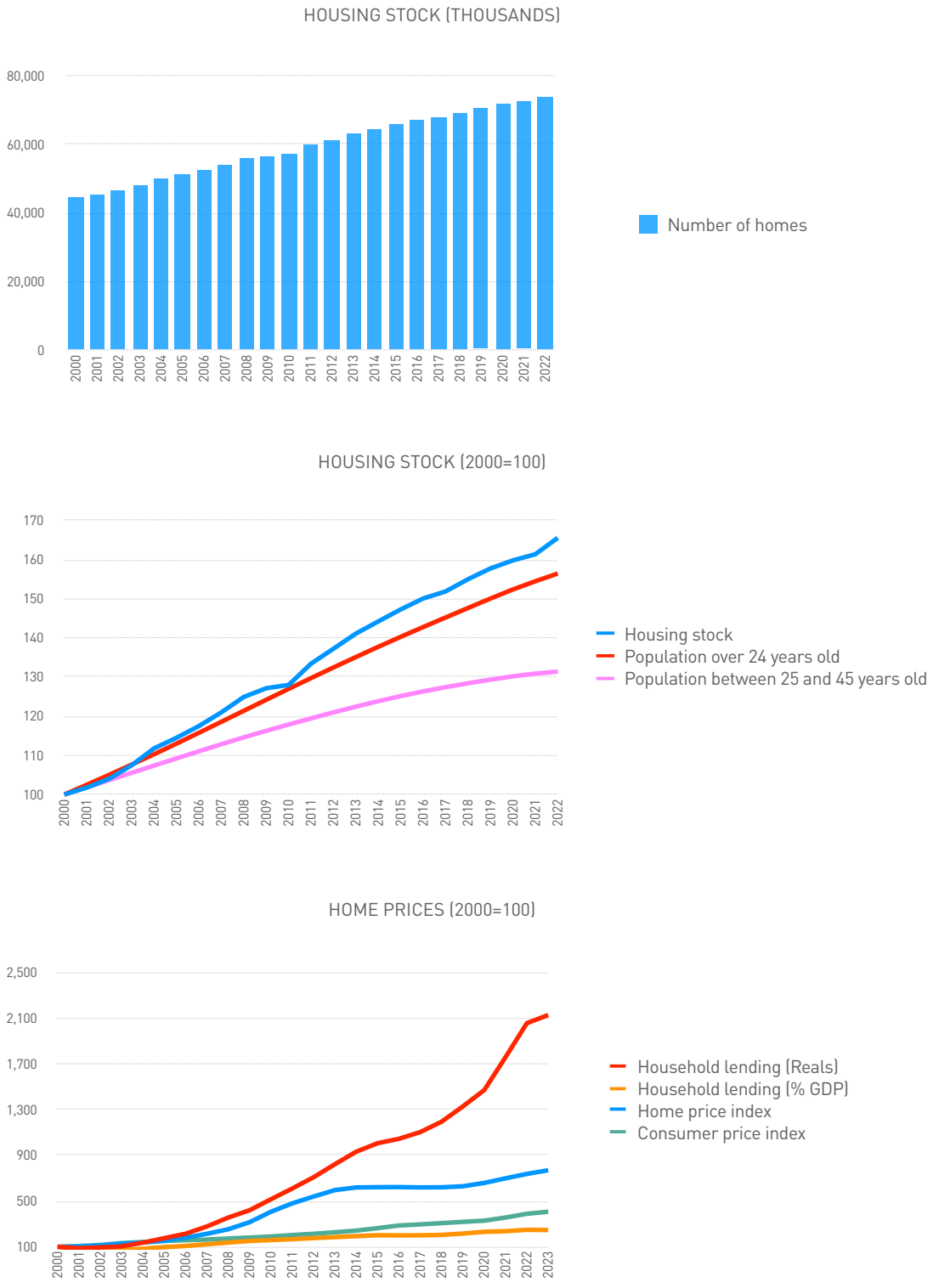
Brazil's vehicle fleet is one of the largest in Latin America, standing at 119 million units in 2023, a ratio of 0.7 vehicles per inhabitant. Brazil has an extensive roadway network of approximately 1.6 million kilome-

Chart 2.3-f
Brazil: vehicle fleet indicators



Source: MAPFRE Economics (with data from SENATRAN, Ministerio dos Transportes, the United Nations, and IMF)

Chart 2.3-g
Brazil: real estate market indicators



Source: MAPFRE Economics (with data from the United Nations, Haver Analytics, BIS, IBGE, and SIDRA)

ters; however, only 12.4% are paved roadways.[24] The elevated weight of motorcycles in this market is notable, increasing from 10.4% in 1998 to 22.6% in 2023. Similarly, a slight increase in the proportion of large vehicles is observed (19.5% in 1998 and 25.6% in 2023), in contrast to the notable decrease in the weight of light passenger vehicles, from 70% in 1998 to 51.8% in 2023 (see Chart 2.3-f).

Housing Stock

In Brazil, the housing stock at December 2022 (last available data) was 74.1 million units,[25] having grown 65.5% since 2000. One of the main factors that has contributed to driving housing stock growth has been the increase in the population over 24 years of age in that period, which has grown 56.4% over the same time period, from 89.0 million in 2000 to 139.2 million in 2022. At the same time, the high housing demand generated by the effect of population growth, along with the strong expansion of household lending, has pushed housing prices up, growing steadily faster than the overall price index since 2005 (see Chart 2.3-g).

Population growth estimates produced by the United Nations for the next two decades indicate that the population older than 24 years in Brazil will grow to 26 million people by 2045; therefore the forecasts for this market in the coming years, which are highly relevant for the insurance industry, continue to be favorable. The regions and cities in Brazil expected to be the most dynamic are located in the Central-West and North of the country, according to 2060 population growth forecasts published by the IBGE. However, in the Southwest, São Paulo stands out as the state with the greatest population growth between 2022 and 2060, with close to 3.6 million more inhabitants, in contrast to the State of Rio de Janeiro which expects barely any growth (0.52%) in the same period. In the Central-West, Goiás stands out, with growth of 1.8 million, while in the South, Santa Catarina is notable, with 1.6 million, also isolated from the other Southern states expecting little growth or even reductions in their populations. Finally, two states stand out in the North, Amazonas and Pará (clearly differentiated from their neighbors which are not expected to grow), with each growing by 1.4 million people by 2060 compared to 2022. The growth in these areas is driven by a combination of favorable economic factors and a quality of life that continues to attract new residents, concentrated in major urban centers within their respective regions.[26]

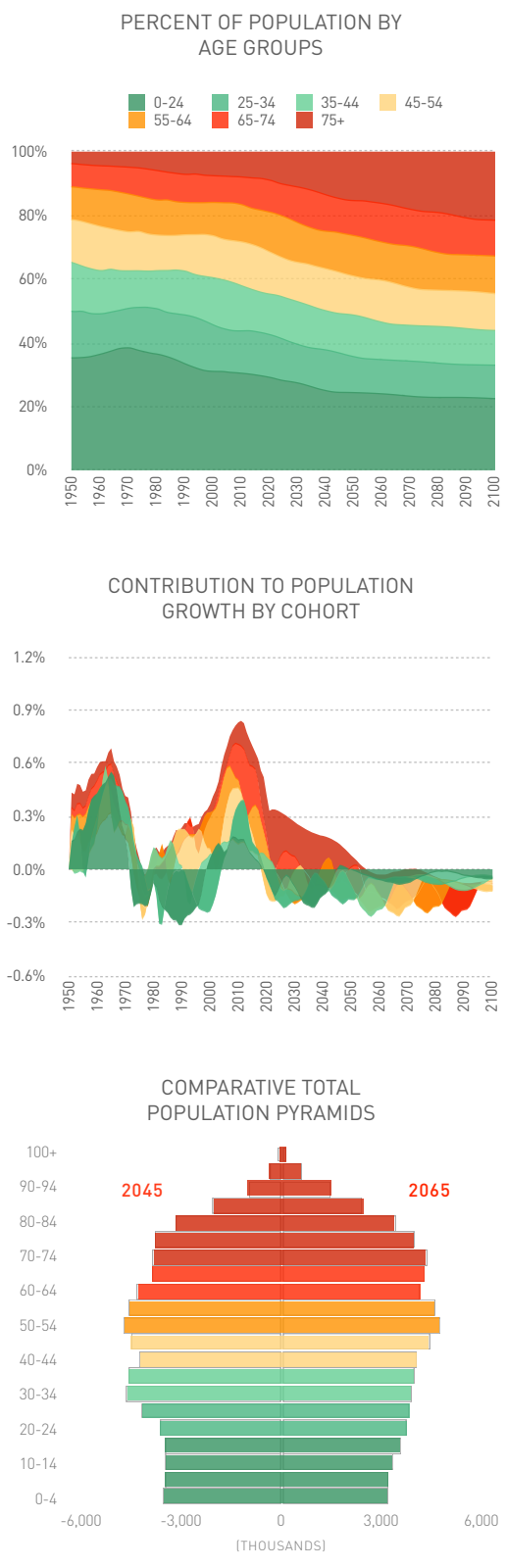
Position in the IPDFI

From the perspective of insurance potential due to demographic forces (measured in this report through the IPDFI), Brazil ranks 6th among the 179 countries covered by the indicator, which places it within the high potential percentile of the distribution (P>90%). In Brazil's case, the greatest contribution to the indicator comes from its demographic weight, which raises it to the upper end of the range of insurance potential due to demographic forces. It is also positively influenced by the balance in its partial indicators, such as the growth potential of the population over 24 years of age over the next two decades, the potential for GDP per capita (in purchasing power parity), the growth of private savings and the growth of healthcare spending, which are above the 50th percentile.

2.4 United Kingdom

The United Kingdom's economy is one of the most important in the world by GDP volume.[27] Due to the large number of immigrants of diverse origins, its population stands out for its multiracial nature.[28] Likewise, as is generally the case in advanced economies, low birth rates and increased life expectancy are leading to a

Chart 2.4-a
United Kingdom: demographic evolution



Source: MAPFRE Economics (with data from the United Nations)

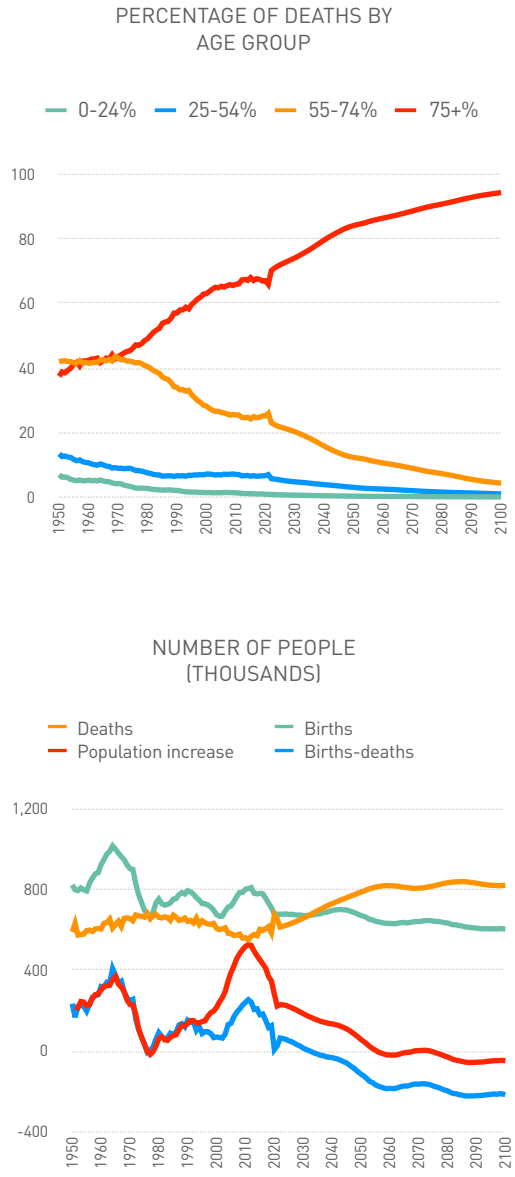
progressive aging of the population. Moreover, the population distribution is imbalanced throughout its territory. Among the most populated areas are England, notably London, which is a city with great economic and cultural influence.

In Chart 2.4-a, which shows the distribution of the UK's population by age, we observe the weight of the different cohorts within the population over time. In 1950, the percentage of people under 25 years of age represented 35.5% of the total population, dropping to 28.5% in 2024. Forecasts indicate that this percentage will continue to drop progressively to 22.7% at the end of the century. Likewise, there is a correlative increase in the weight of the older cohorts, such that people aged 65 and over, who represented 10.8% of the population in 1950, have increased to 19.8% in 2024, and are expected to continue to grow to 32.6% by the end of the century.

The data published by the United Nations, shown in Chart 2.4-b, demonstrate that, starting in 2033, the number of deaths will surpass the number of births and will continue to do so through the end of the century. Chart 2.4-c shows that life expectancy in the UK has been increasing steadily over the years, and is slightly higher than in more advanced economies and less developed regions. Thus, life expectancy at birth increased from 68.6 years in 1950 to 82.5 years in 2024, a gain of 13.9 years, and projections indicate that it will continue to rise to 91.7 years by the end of the century. Life expectancy at age 65 is of particular relevance for pensions and healthcare spending. In 2024, it reached 20.8 years, and future estimates have it increasing progressively to 27.8 years by the end of the century. Similarly, life expectancy at 70 years will have similar growth, increasing from 16.8 years in 2024 to 23.1 years in 2100.

Meanwhile, immigration to the United Kingdom, which reached record levels in 2022, driven by global events taking place

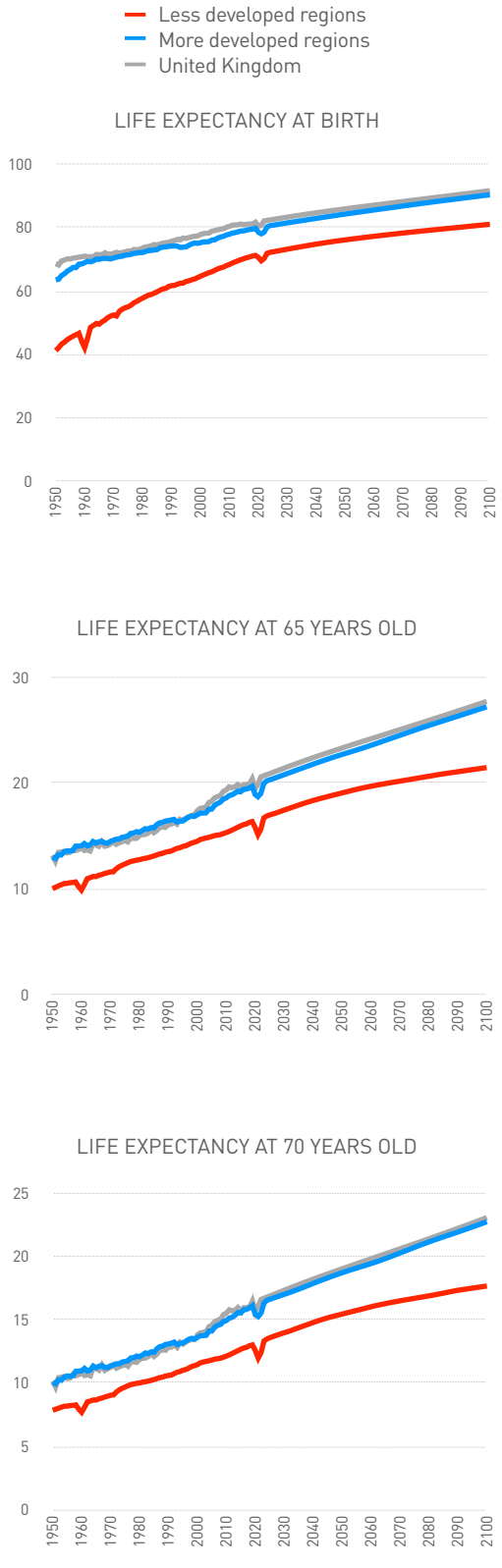
Chart 2.4-b
United Kingdom: mortality data



Source: MAPFRE Economics (with data from the United Nations)

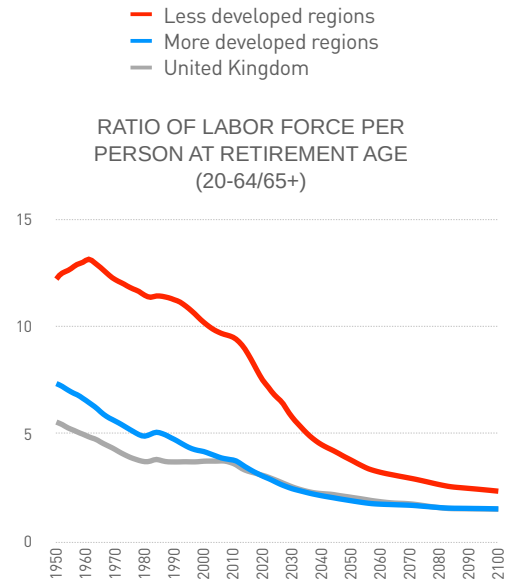
that year, such as the war in Ukraine, and by the increase in international students after pandemic restrictions were lifted, could slow the aging process. Long-term immigration (more than 12 months) increased up to 1.2 million people, while emigration rose to 557,000 people, an estimated net migration increase of 606,000 individuals.[29]

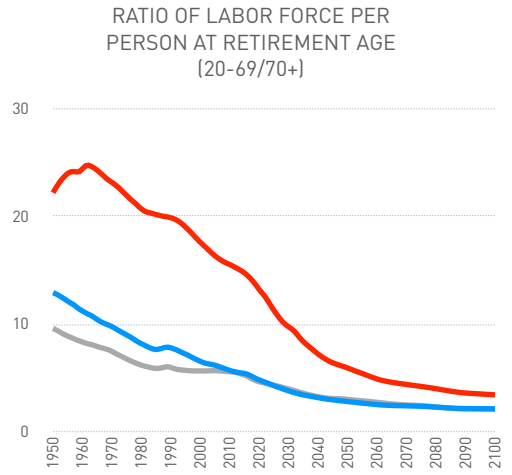
Chart 2.4-c
United Kingdom: life expectancy



Source: MAPFRE Economics (with data from the United Nations)

Chart 2.4-d
United Kingdom: dependency data





Source: MAPFRE Economics (with data from the United Nations)

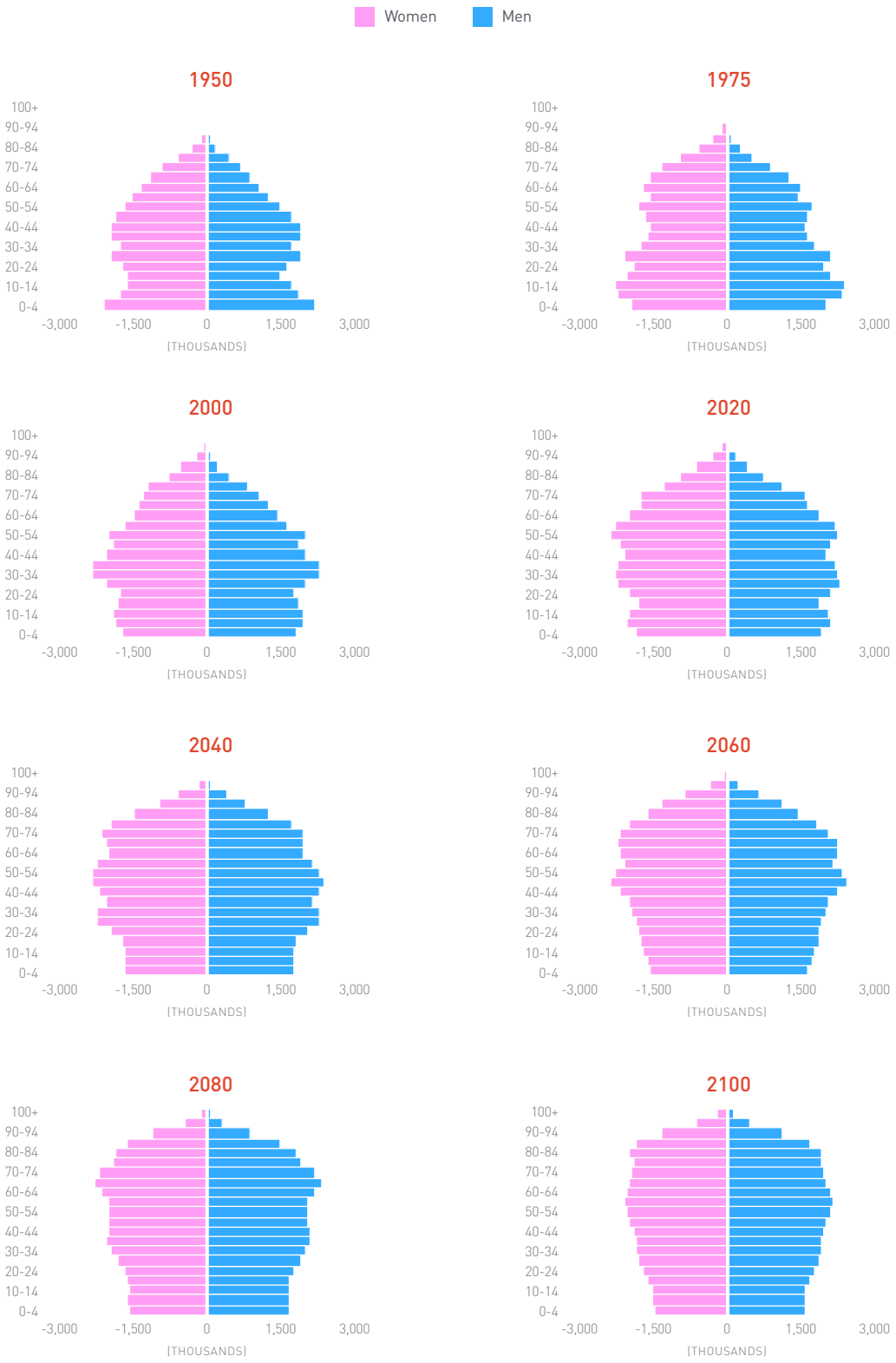
Meanwhile, in 2021, the non-UK born population was estimated to be 9.6 million and the non-British population was estimated to be 6 million. India is the most common country of birth outside of the United Kingdom and the most common non-British nationality is Polish. The city of London still has the highest estimated proportion of population not born in the United Kingdom (37%) and non-British population (21%).[30] However, these migratory movements are included in the forecasts, so unless there are significant deviations from the estimates of these migratory movements, which are always subject to high uncertainty, or from fertility and mortality rates, everything points to an increase in pressure on the healthcare and pension systems, due to a reduction in the labor force and an increase in the percentage of people reaching advanced ages (see Chart 2.4-d). So, to summarize, the drop in the number of births, combined with the positive effect on life expectancy, is leading to a more elderly population, giving rise to constricted population pyramids (see Chart 2.4-e).

Vehicle Fleet

The vehicle fleet in the United Kingdom totaled 35 million units in 2023, which represents a ratio of 0.5 vehicles per inhabitant,[31] making it the country with the fourth largest vehicle fleet in Europe.[32] Likewise, the ratio of motorcycles to automobiles reached its maximum value in 2023 (4.4%), confirming an increasing trend since 2019 (3.9%). Except for 2017 and 2020, the growth of motorcycles and automobiles has always been favorable, notably the 7.8% growth in motorcycles and 1.2% growth in automobiles in 2023 (see Chart 2.4.-f).

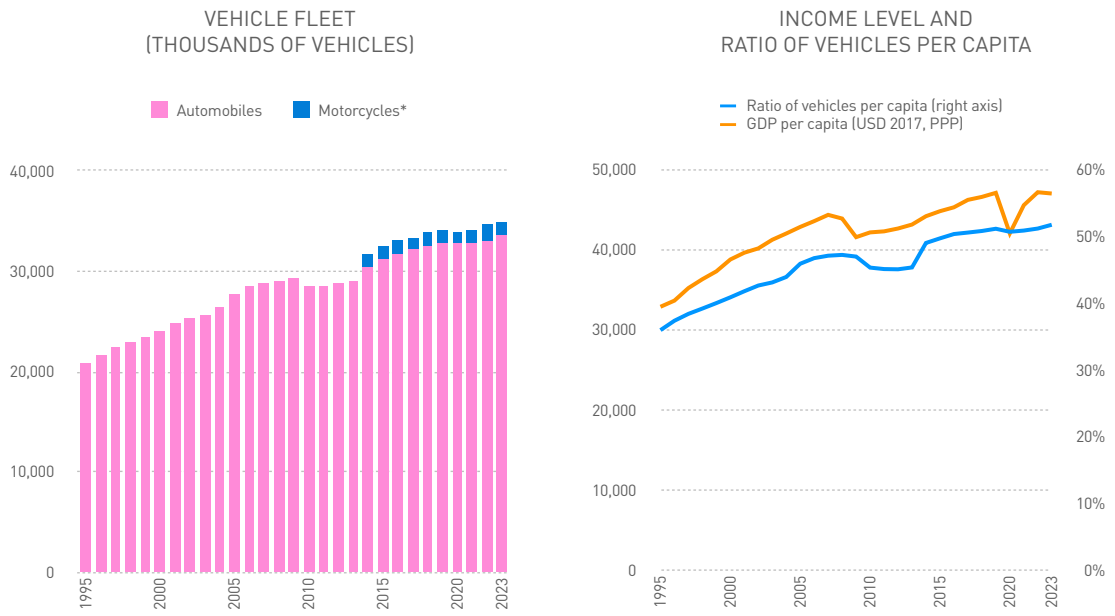
From the report published by the European Automobile Manufacturers' Association (ACEA), we conclude that the average age of cars in the United Kingdom in 2022 is 10.3 years (12.3 years on average in the European Union), making it one of the countries in Europe with the lowest age of the vehicle fleet. Meanwhile, household lending has grown notably by 26 percentage points in the 2014-2020 period, well above the growth of the automobile fleet (9%) or disposable income (12%).

Chart 2.4-e
United Kingdom: evolution of the population pyramid



Source: MAPFRE Economics (with data from the United Nations)

Chart 2.4-f
United Kingdom: vehicle fleet indicators



Source: MAPFRE Economics (based on GOB.UK, United Nations, and IMF data)
*Data only available from 2014 on

Housing Stock

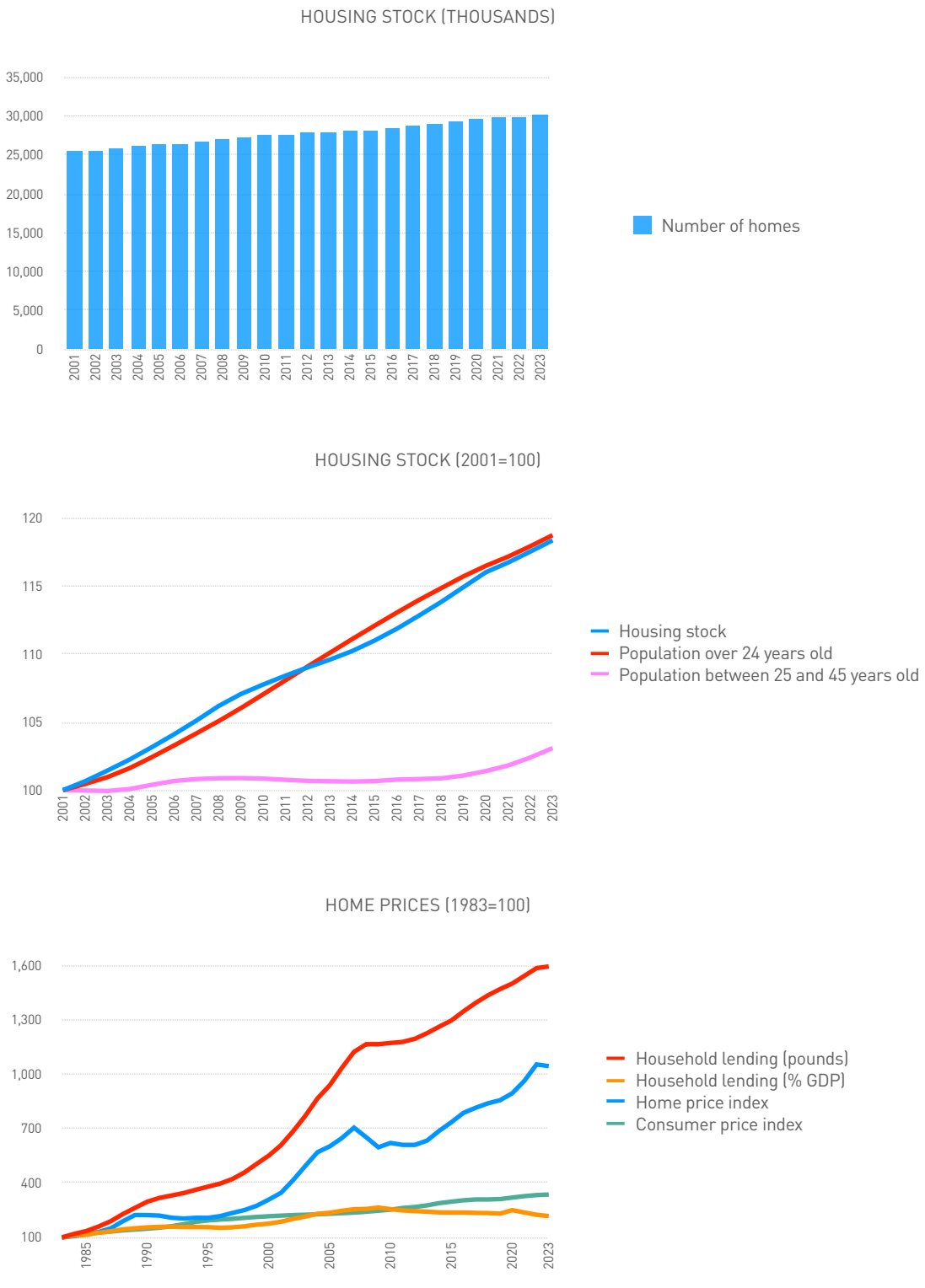
In the United Kingdom, the housing stock at December 2023 totaled 30 million units, 18.4% higher than the value observed since 2001. This increase in the number of housing units is due, among other factors, to the growth in the population over 24 years of age, which has increased from 40.6 million in 2001 to 48.3 million in 2023.

Meanwhile, the housing price index is below household lending, which means that credit growth is higher than housing price and consumer price index growth (see Chart 2.4-g). Despite the easing of growth in 2023, explained in part by a drop in price indexes for construction materials,[33] the increase in housing prices in recent years is a response to growing demand and a supply shortage. There are also government programs, such as the "Help to buy" program, which facilitate purchases through guarantees and which, together with the aforementioned increase in credit and low interest rates, have led to higher prices.[34] The private housing sector in the United Kingdom is expected to continue to grow, reaching annual growth between 3% and 5% in the coming years. Cities like London, Cambridge and Oxford recorded the highest housing prices in 2022.[35]

Position in the IPDFI

The United Kingdom ranks 22nd in the Indicator of Insurance Potential due to Demographic Forces (IPDFI) among the 179 countries it analyzes. This places the United Kingdom within the medium-high potential percentile of the distribution (P>75%<90%). The lowest contribution comes from the growth potential over the next two decades of its population over 24 years of age (which is located in the medium-low potential range), with the rest of the partial indicators, such as income level, GDP per capita, potential growth in healthcare spending and private savings, at values within the medium-high potential range.

Chart 2.4-g
United Kingdom: real estate market indicators



Source: MAPFRE Economics (with data from the United Nations, Haver Analytics, BIS, and the Office for National Statistics)

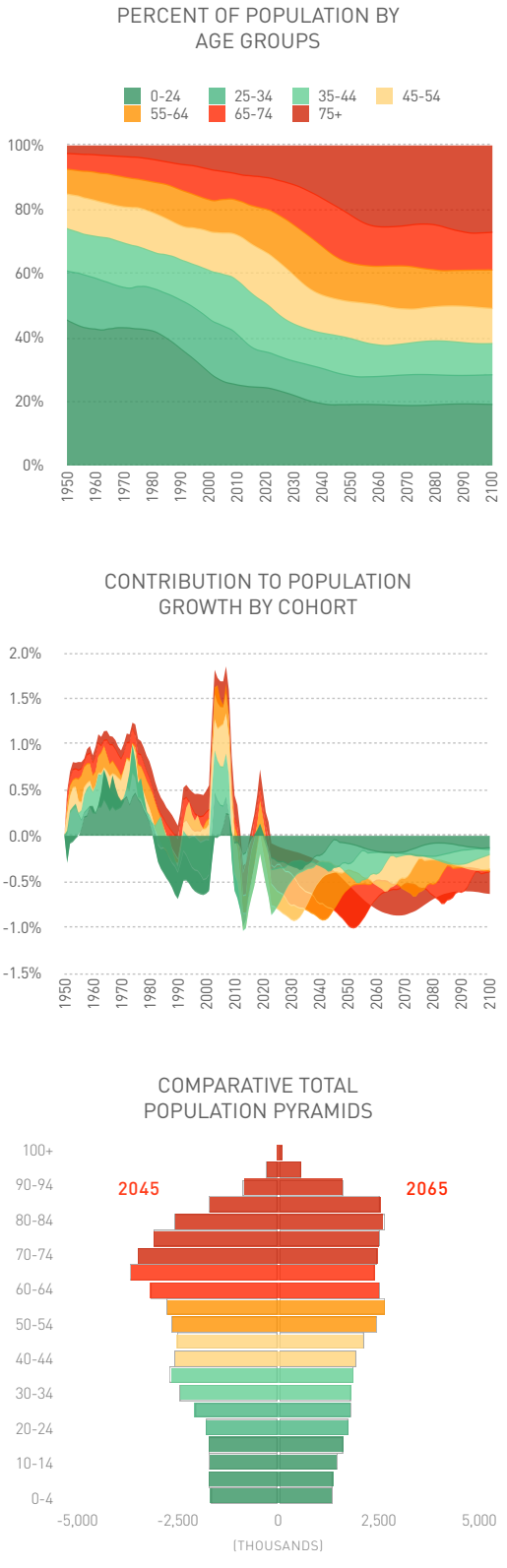
2.5 Spain

The United Nations data and forecasts reveal the general problem of aging of the Spanish population. The low birth rate and increased life expectancy have led Spain to an accentuated process of population aging.[36] Spain also shows an uneven population distribution throughout its territory, where the most populated areas are Andalusia, Catalonia and Madrid.[37] Moreover, Madrid and Barcelona are among the three largest metropolitan regions in the European Union in 2023 and these, together with Amsterdam, experienced the highest relative growth rates, with a population increase of 5%.[38]

Chart 2.5-a illustrates the age distribution of the Spanish population by age from 1950 to the present, as well as forecasts through the end of the century. This information shows the weight of the different cohorts within the total population over time. Thus, in 1950, the percentage of people under 25 years of age represented 45.7% of the total population, dropping to 23.8% in 2024. Forecasts indicate that this percentage will continue to drop, reaching 19.2% by 2045, 19.1% by 2065 and will increase slightly to 19.3% by the end of the century.

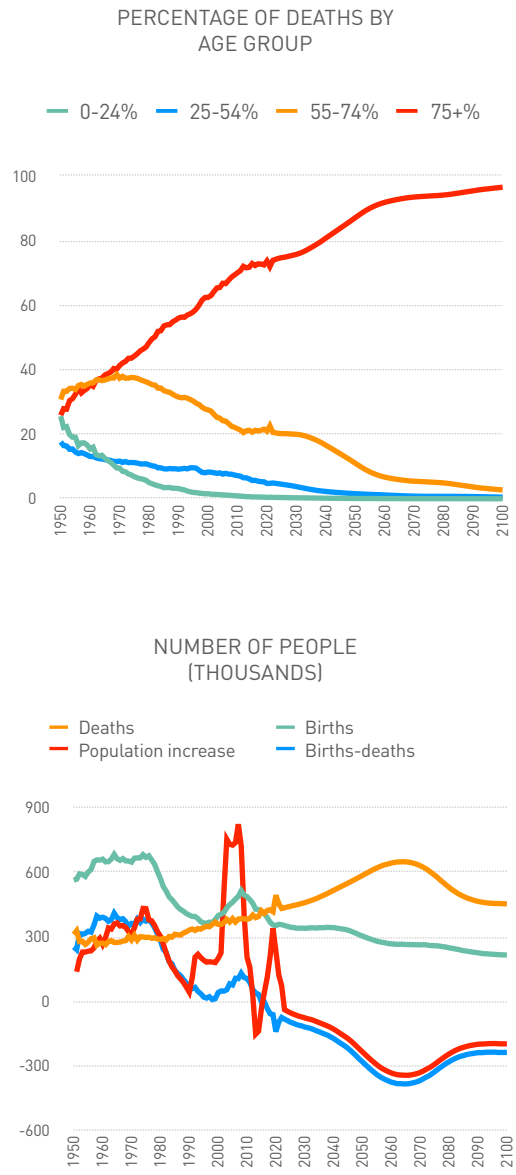
Comparing the number of births to the number of deaths, we observe that currently, the number of deaths exceeds births in Spain, and according to demographic projections, will continue this way until the end of the century (see Chart 2.5-b). Chart 2.5-c also shows that life expectancy in Spain has increased considerably due to the reduction in mortality rates, placing Spain above the most advanced economies and the less developed regions of the world. Life expectancy at birth increased from 61.8 years in 1950 to 84.2 years in 2024, a gain of 22.4 years, and projections indicate that life expectancy at birth could reach 86.8 years by 2045, 89.2 years by 2065, and 93.3 years by the end of the century.

Chart 2.5-a
Spain: demographic evolution variables



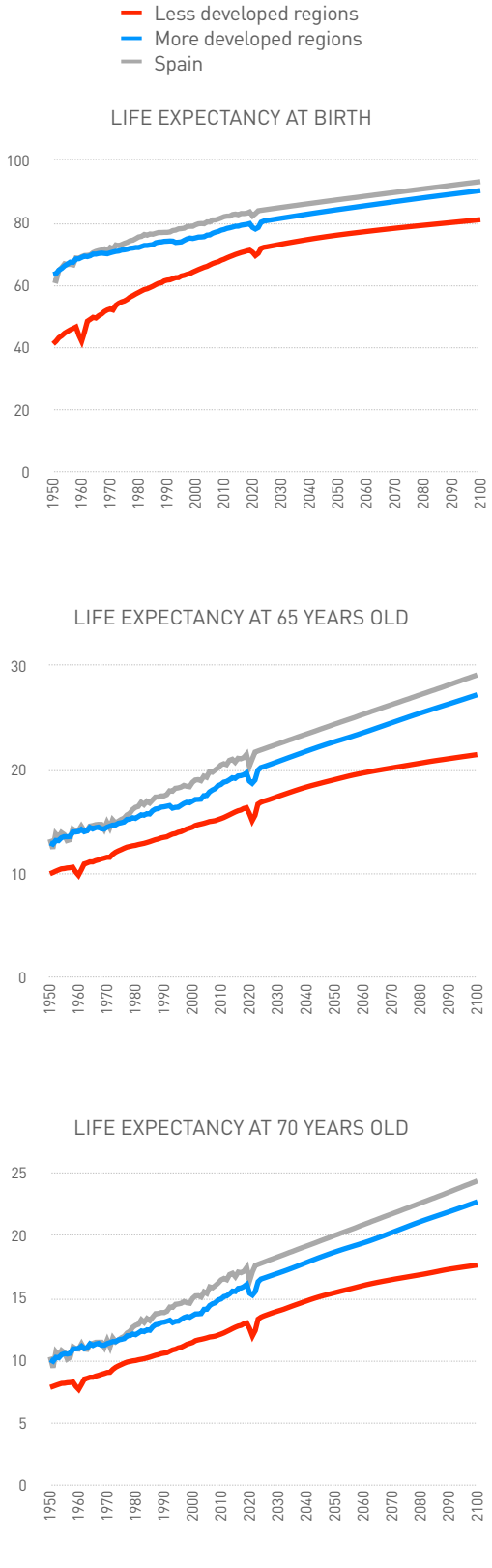
Source: MAPFRE Economics (with data from the United Nations)

Chart 2.5-b
Spain: mortality data



Source: MAPFRE Economics (with data from the United Nations)

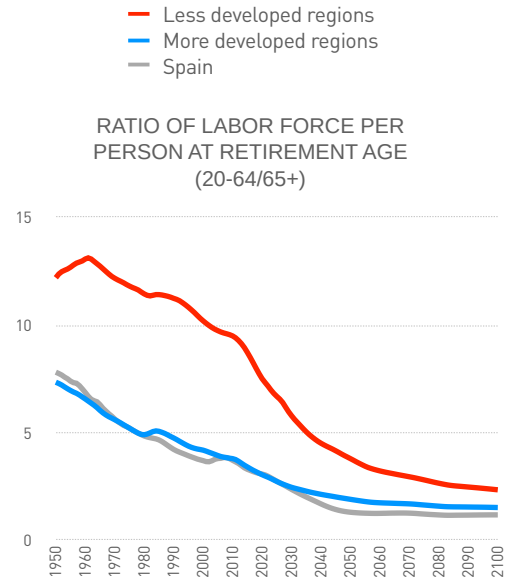
Chart 2.5-c
Spain: life expectancy

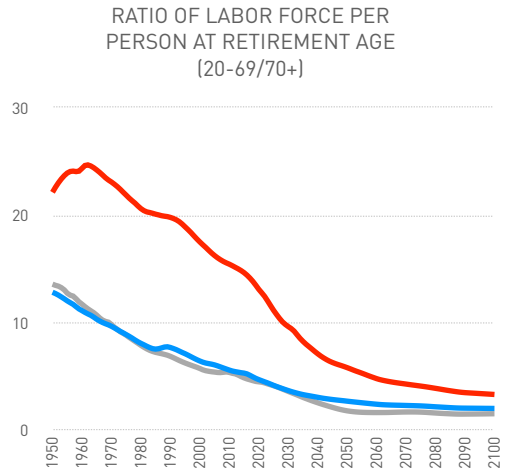


Source: MAPFRE Economics (with data from the United Nations)

Meanwhile, life expectancy at age 65 is a particularly relevant indicator for healthcare spending and pensions. In the case of Spain, in 2024, this indicator reached 21.9 years and future estimates indicate that it will be 23.9 years by 2045, 25.8 years by 2065 and 29.2 years by the end of the century. Life expectancy at age 70 is 17.8 years in 2024 and is projected to

Chart 2.5-d
Spain: dependency data





Source: MAPFRE Economics (with data from the United Nations)

reach 19.6 years by 2045, 21.3 years by 2065 and 24.4 years by the end of the century.

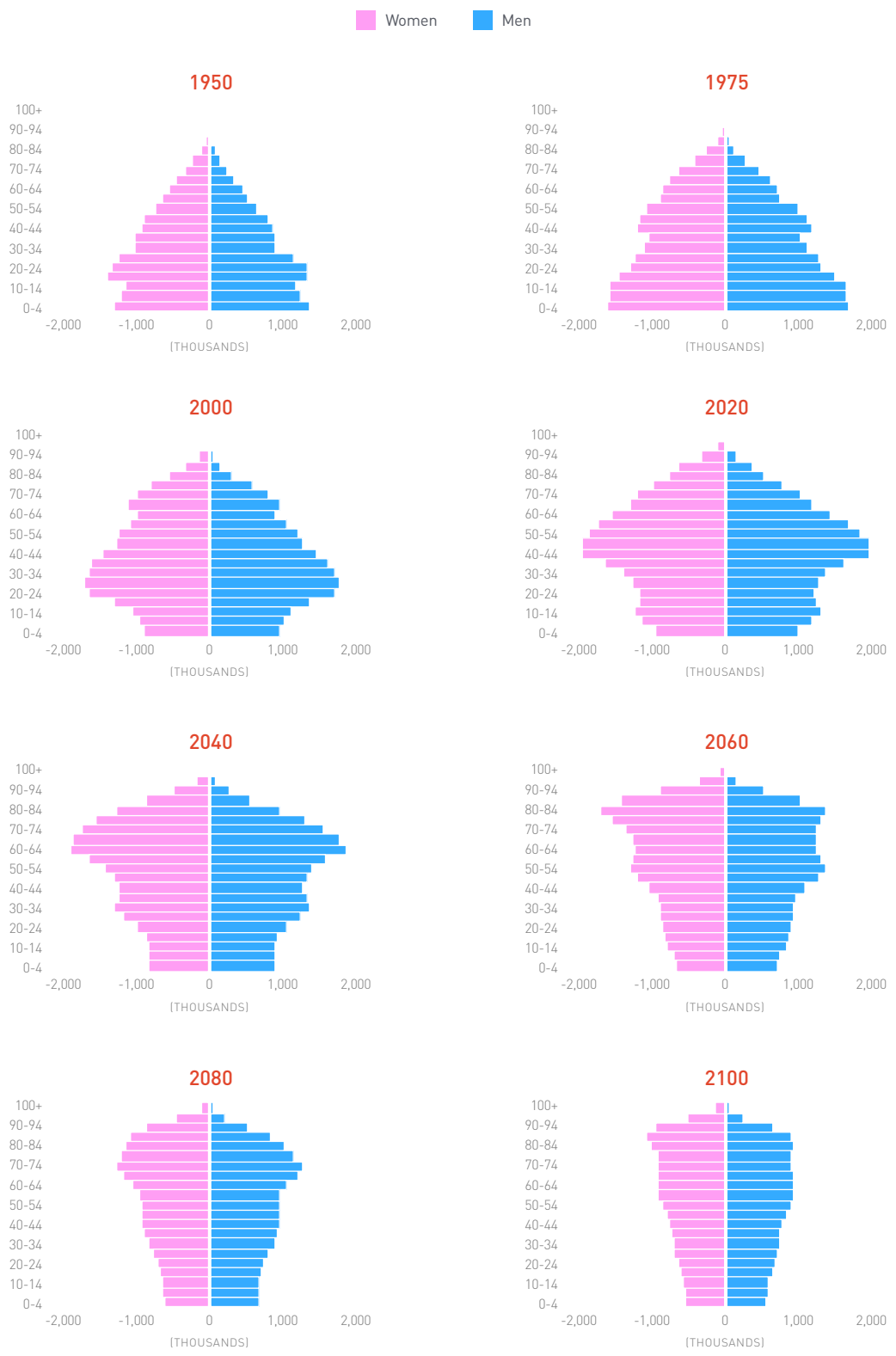
Similarly, there is a correlative increase in the weight of the older age cohorts, such that people aged 65 and over represented 7.2% of the population in 1950, reaching 21.2% in 2024 and forecasting an increase to 34.7% by 2045, 37.4% by 2065, and reaching 38.7% by the end of the century. Thus, this demographic transition will progressively increase the pressure on the health and pension systems, due to Spain's transition to a more mature society, where the labor force is shrinking while the proportion of people reaching advanced ages increases (see Chart 2.5-d).

Meanwhile, migratory movements are helping to slow down this population aging process, considering that Spain receives the second largest number of immigrants in the European Union after Germany. Spain's migratory balance with foreign countries was positive by 727,005 people in 2022 (1,258,894 people from abroad established their residence in our country and 531,889 people left Spain), the highest balance in the last 10 years. By nationality, Colombian, with 152,634, Ukrainian (85,978) and Venezuelan (72,086) nationalities stood out. By cities, Madrid (78,181), Barcelona (45,858) and Valencia (15,603) obtained the highest migratory balance.[39] However, unless there are significant deviations from the expected trends in birth rates, mortality and migratory flows, these demographic factors included in the projections continue to indicate a progressive aging of the Spanish population throughout this century, giving rise to a constrictive population pyramid, which is not expected to reverse until the end of the century (see Chart 2.5-e).

Vehicle Fleet

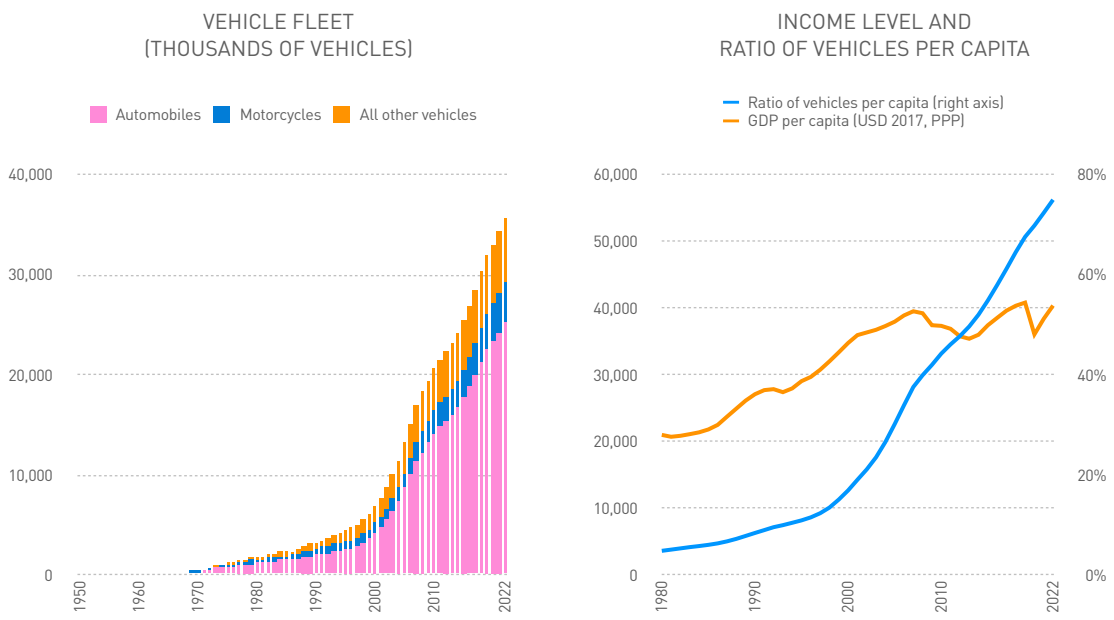
Spain has an extensive network of road and highway infrastructures, thus facilitating intercity transportation. Chart 2.5-f shows that in 2022, Spain's vehicle fleet totaled 35.7 million units, where the ratio of vehicles per inhabitant increased from 0.05 in 1980 to 0.75 in 2022. The high weight of automobiles over other vehicles is noteworthy, reaching 70.7% of the total fleet in 2022, compared to 11.2% for motorcycles.

Chart 2.5-e
Spain: changes in the population pyramid



Source: MAPFRE Economics (with data from the United Nations)

Chart 2.5-f
Spain: vehicle fleet indicators



Source: MAPFRE Economics (with data from the Traffic Office, United Nations, and IMF)

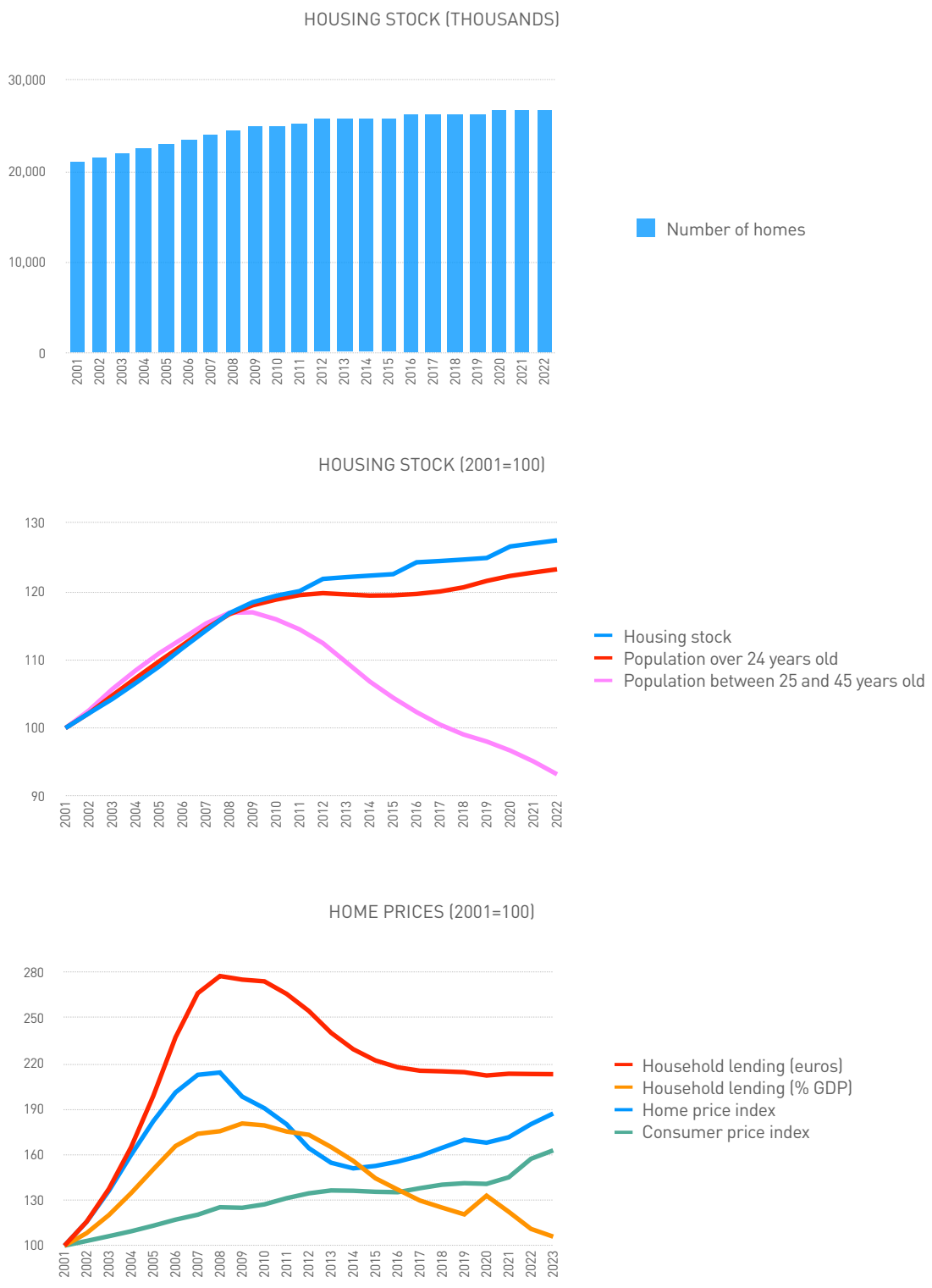
Finally, the average age of the vehicle fleet reached 14.2 years in 2023, and vehicles over 20 years old exceed 20% of the total, making it difficult to meet decarbonization targets.[40] Diesel continues to dominate the vehicle fleet, with 60.3% of the total number of passenger vehicles in 2023, although this fuel has residual behavior with 2.5% of the total number of registrations[41] for that year. Finally, it should be noted that in 2023, the electric vehicle fleet advanced slowly, with passenger vehicles representing 1.3% of the total fleet.[42]

Housing Stock

In 2022, the housing stock in Spain totaled 26.8 million units, an increase of 0.3% over the previous year, although still well below the 2.2% growth that took place before the 2008 economic crisis (see Chart 2.5-g). By autonomous communities, the greatest concentration of housing stock is found in Andalusia, Catalonia, the Community of Valencia and the Community of Madrid, with the metropolitan area of Madrid, and the cities of Barcelona and Valencia having the highest number of housing units.[43]

One of the main factors that has possibly helped boost the housing stock is the growth in the population over the age of 24, which has increased from 29.2 million in 2001 to 36.1 million in 2023. In addition, the high demand for housing in the years prior to the 2007 housing crisis, fueled by the strong expansion of household lending following Spain's entry into the euro, pushed up housing prices well above the general inflation rate, a process that was reversed after the outbreak of the crisis, only recovering the growth path in 2014 (see the aforementioned Chart 2.5-g). United Nations population growth estimates for the next two decades point to a 4.6% decrease in Spain's total population, but with an increase in the number of households due to aging and a reduction in the average family size.

Chart 2.5-g
Spain: real estate market indicators



Source: MAPFRE Economics (with data from the United Nations, Haver Analytics, BIS, and the Ministry of Transportation and Sustainable Mobility)

Position in the IPDFI

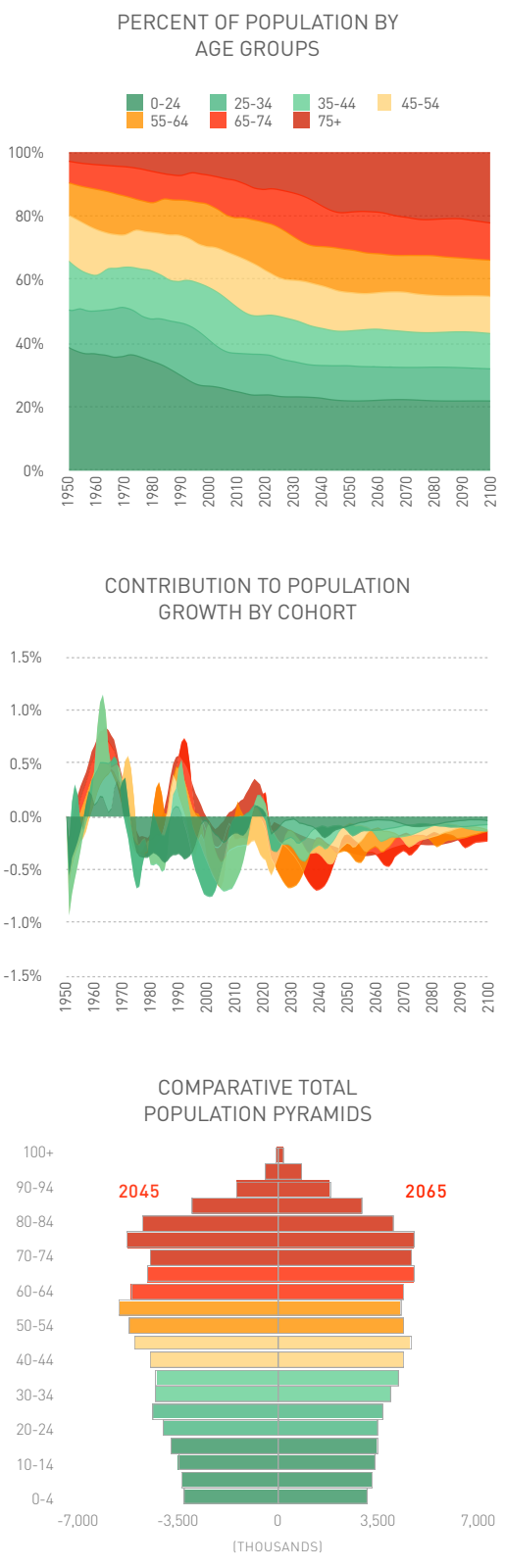
Spain is 35th in the ranking of insurance potential due to demographic forces measured through the IPDFI among the 179 countries covered by the indicator, which places this country within the medium-high potential percentile of the distribution (P>75%<90%). The largest contributions come from the high growth potential of healthcare spending and the medium-high growth potential of private savings, as well as the level of GDP per capita, which offset the lower potential due to demographic weight and outlook.

2.6 Germany

Germany is the second most populous country in Europe and the 19th in the world. Germany's demographic development is characterized by low birth rates, declining population and increasing life expectancy, resulting in a gradual aging of the population. The growth in the share of immigrants or children of immigrants is faster than in other developed countries, but still not enough to prevent the continuous reduction of the German population since 2003, because the number of deaths is higher than the number of births, a phenomenon that immigration is not able to offset. Graph 2.6-a shows the age distribution of the German population from 1950 to the present and forecasts through the end of the century. This graph shows the significant increase in the weight of the population over 65 years of age.

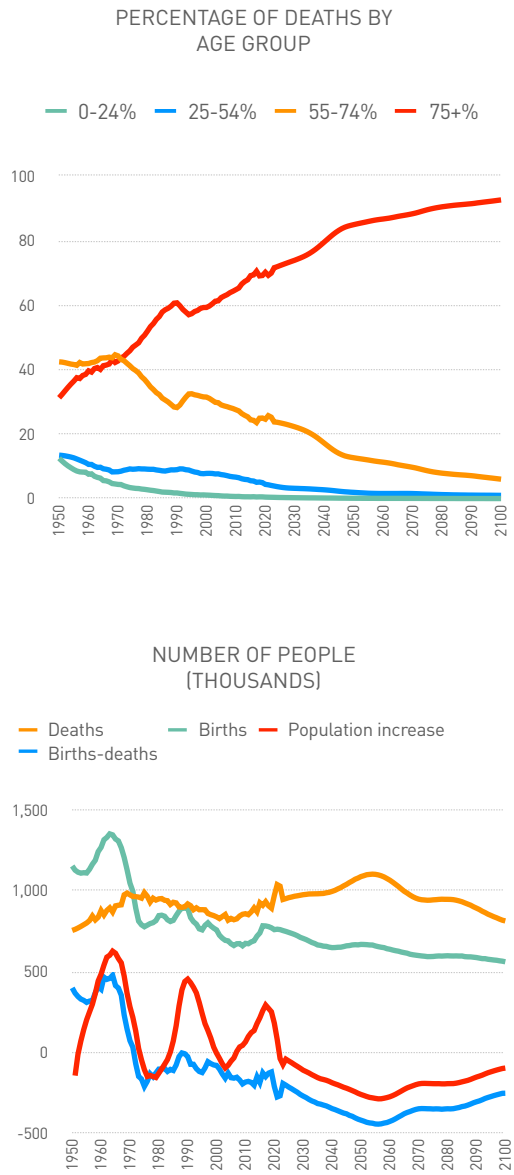
Demographic developments in Germany vary considerably between regions. While some *länder* are experiencing a steady decline in population, others are growing. Rural regions, especially in the eastern *länder*, are experiencing more rapid demographic changes, aggravated by internal migration processes within the country. These areas are also affected by migratory processes that take place within the country.

Chart 2.6-a
Germany: demographic evolution variables



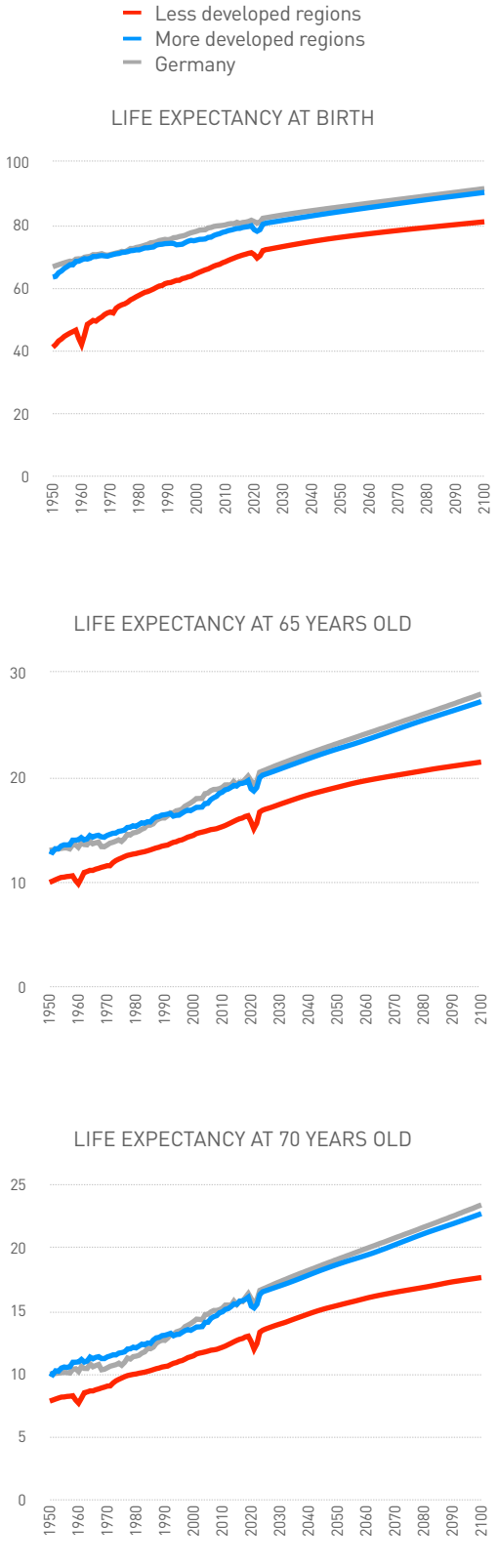
Source: MAPFRE Economics (with data from the United Nations)

Chart 2.6-b
Germany: mortality data



Source: MAPFRE Economics (with data from the United Nations)

Chart 2.6-c
Germany: life expectancy



Source: MAPFRE Economics (with data from the United Nations)

Meanwhile, Germany exhibits uneven population distribution throughout its territory. The most populated areas include North Rhine-Westphalia, Bavaria and Baden-Württemberg, while the eastern regions have experienced population decline. Berlin, in particular, is one of the largest and most densely populated metropolitan areas in Europe. Other

significant urban areas include Munich and Hamburg, which also play important roles in the German economy.

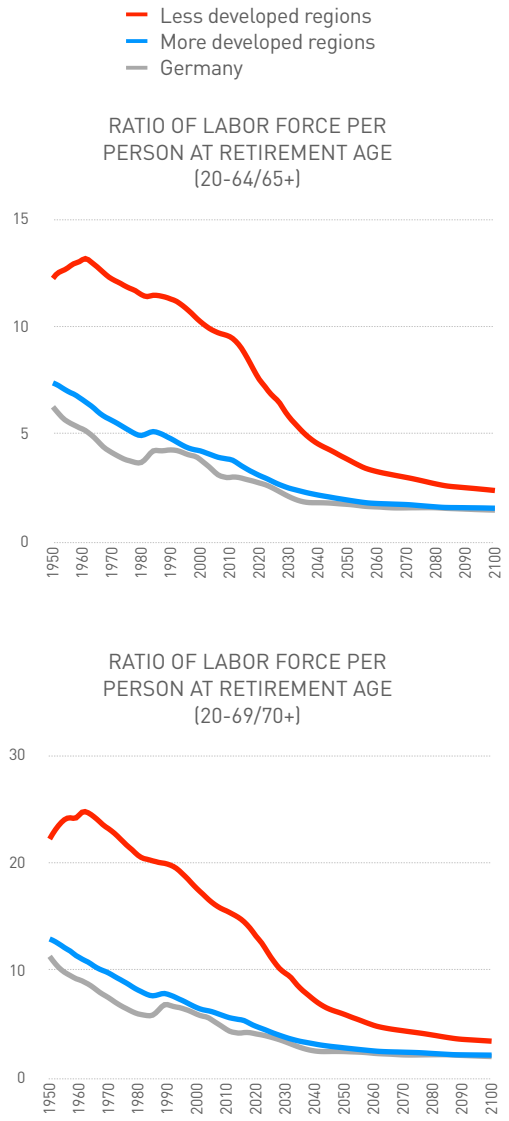
Demographic change in Germany is altering the age distribution of the population. The percentage of people under 25 years of age has decreased from 38.8% in 1950 to 23.6% in 2024. This trend is expected to continue, reaching 22.3% in 2045, and to remain close to this number through the end of the century. These changes reflect the progressive aging of the population in Germany.

After the baby boom of the 1960s, there was a rapid decline in the birth rate and, since the mid-1970s, the fertility rate has remained at a level of 1.4 children per woman.[44] A comparison of the number of births with the number of deaths presented in Chart 2.6-b shows that, since 1972, demographic projections indicate that the number of deaths will exceed the number of births. However, according to United Nations projections, the course of this process is expected to gradually reverse from 2060 onwards to a situation of zero population growth, taking into account net inward migratory movements and a better balance between the number of deaths and births.

Life expectancy in Germany is increasing, as in other developed countries, by almost one year every 10 years (life expectancy at age 65 in 2022). This statistical increase is largely due to the decline in infant and child mortality, while for more than six decades, the age of the elderly has been rising sharply. This development is a consequence of economic well-being, improved working conditions, as well as progress in medicine. Thus, life expectancy at birth increased from 66.8 years in 1950 to 82.3 years in 2024, representing a gain of 15.5 years (see Chart 2.6-c).

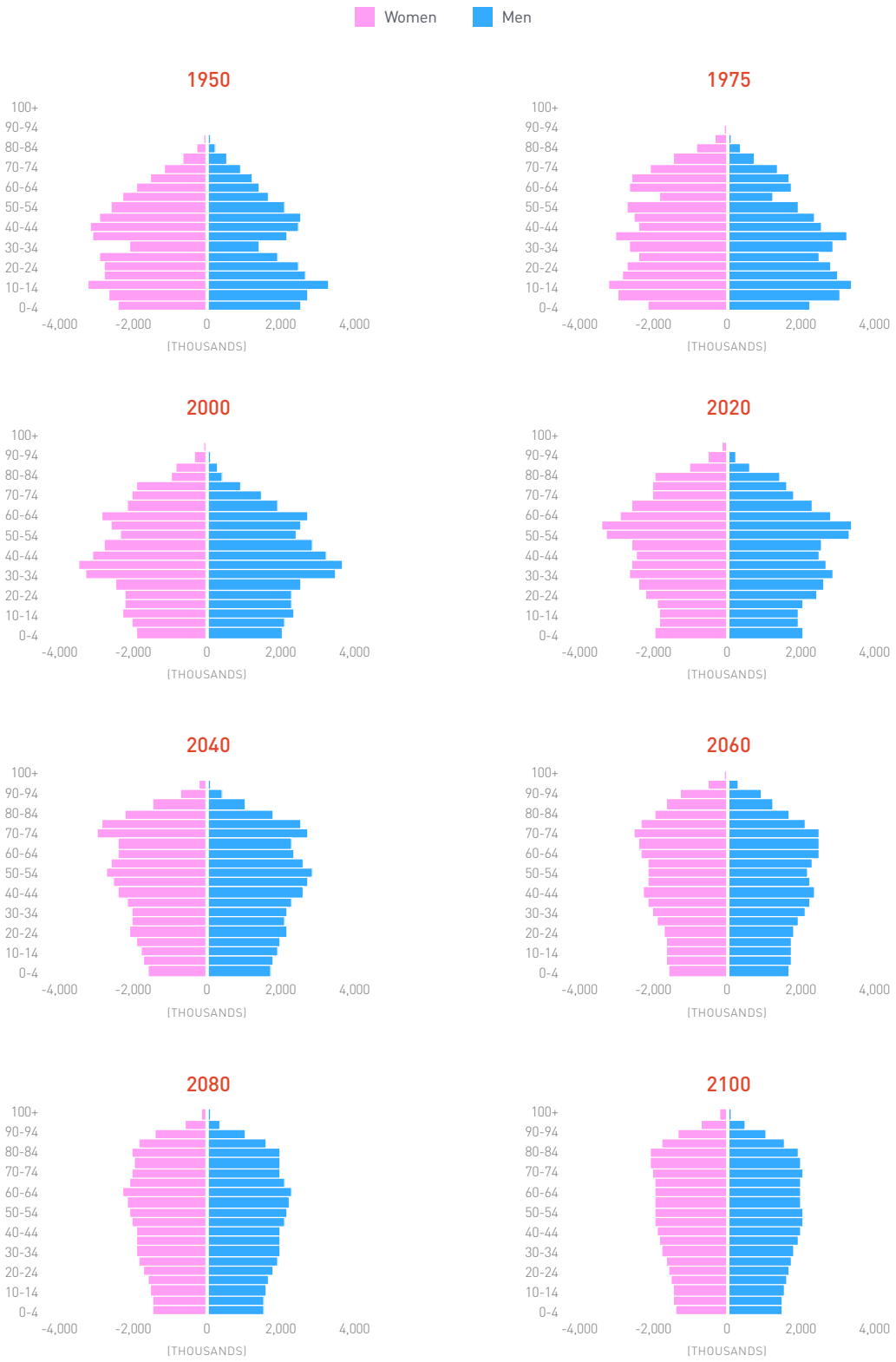
The fact that more and more people have a longer life expectancy implies a continuous increase in the cost of healthcare or care measures for dependent persons. Medical and technical progress and therapy options are also accompanied by rising costs, while the number of people in the workforce who can finance the healthcare and long-term care system from their income will become increasingly smaller. In this regard, there is a correlative increase in the weight of the older cohorts, such that people aged 65 and over, who represented 9.5% of the

Chart 2.6-d
Germany: dependency data



Source: MAPFRE Economics (with data from the United Nations)

Chart 2.6-e
Germany: changes in the population pyramid



Source: MAPFRE Economics (with data from the United Nations)

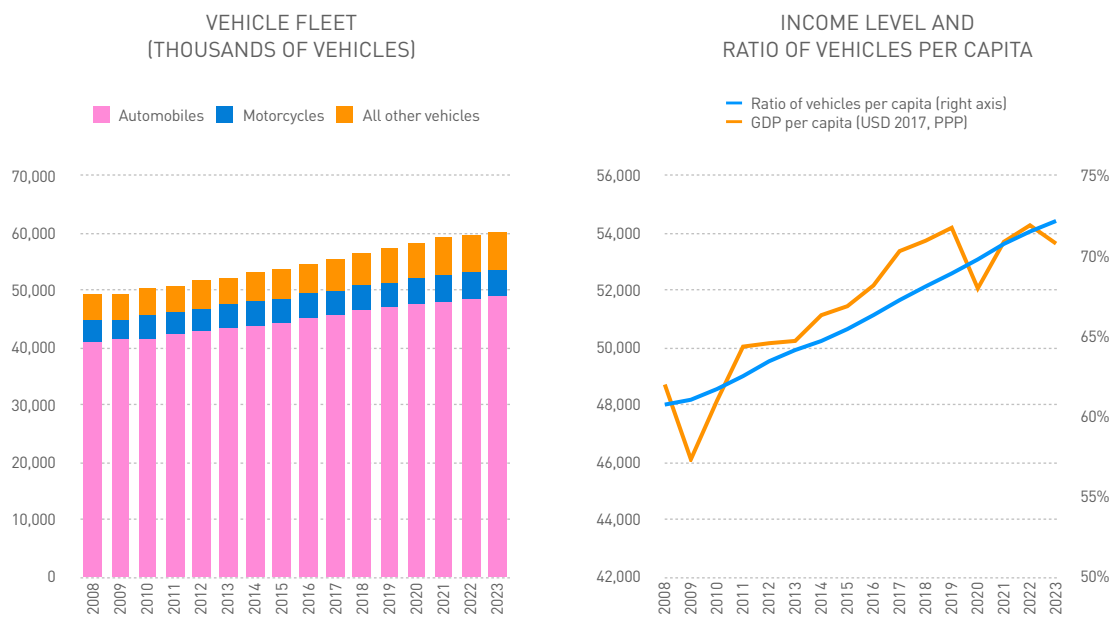
population in 1950, now represent 23.2% in 2024, and are expected to account for 29.9% by 2045, 32.2% by 2065 and 33.7% by the end of the century. Finally, due to population aging, the dependency ratio (ratio of dependent population to working-age population) in Germany is expected to increase inversely to the labor force ratio, which may have implications for the pension system and long-term economic sustainability (see Chart 2.6-d).

In short, the process of demographic transition toward more mature societies in the European region is reducing the labor force while increasing the proportion of people reaching old age, progressively increasing pressure on health and pension systems, especially those with a high weight of pay-as-you-go components. Thus, all these demographic factors foreshadow a progressive aging of Germany's population throughout this century, first giving rise to constrictive population pyramids (with a large share of the population at increasingly advanced ages), which are then set to converge into stationary pyramids toward the end of this century (see Chart 2.6-e).

Vehicle Fleet

Germany's vehicle fleet is one of the largest in Europe and the world, amounting to 60.1 million units in 2023, or a ratio of 0.7 vehicles per inhabitant. It is characterized by high vehicle density, with a wide variety of makes and models present on German roads. Some 81.1% of the vehicles are automobiles, while only 8.2% are motorcycles. The German automobile industry is recognized worldwide for the quality and innovation of its vehicles. Moreover, the roadway infrastructure in this country is extensive and well maintained, which contributes to the population's mobility and to economic development. The correlation of vehicles and per capita income is notable, reflecting the country's strong automobile industry (see Chart 2.6-f).

Chart 2.6-f
Germany: vehicle fleet indicators



Source: MAPFRE Economics (with data from the Federal Motor Transport Authority, United Nations, and IMF)

Housing Stock

In Germany, the housing stock at December 2022 totaled 43.4 million units. One of the main factors that has contributed to growing the housing stock has been urbanization and the growth of the population over 24 years of age in that period. The high housing demand, generated by population growth and migration toward urban areas, along with the strong expansion of household lending, has driven housing prices up in recent decades, with growth above the consumer price index since 2016, especially in cities like Berlin and Munich (see Chart 2.6-g).

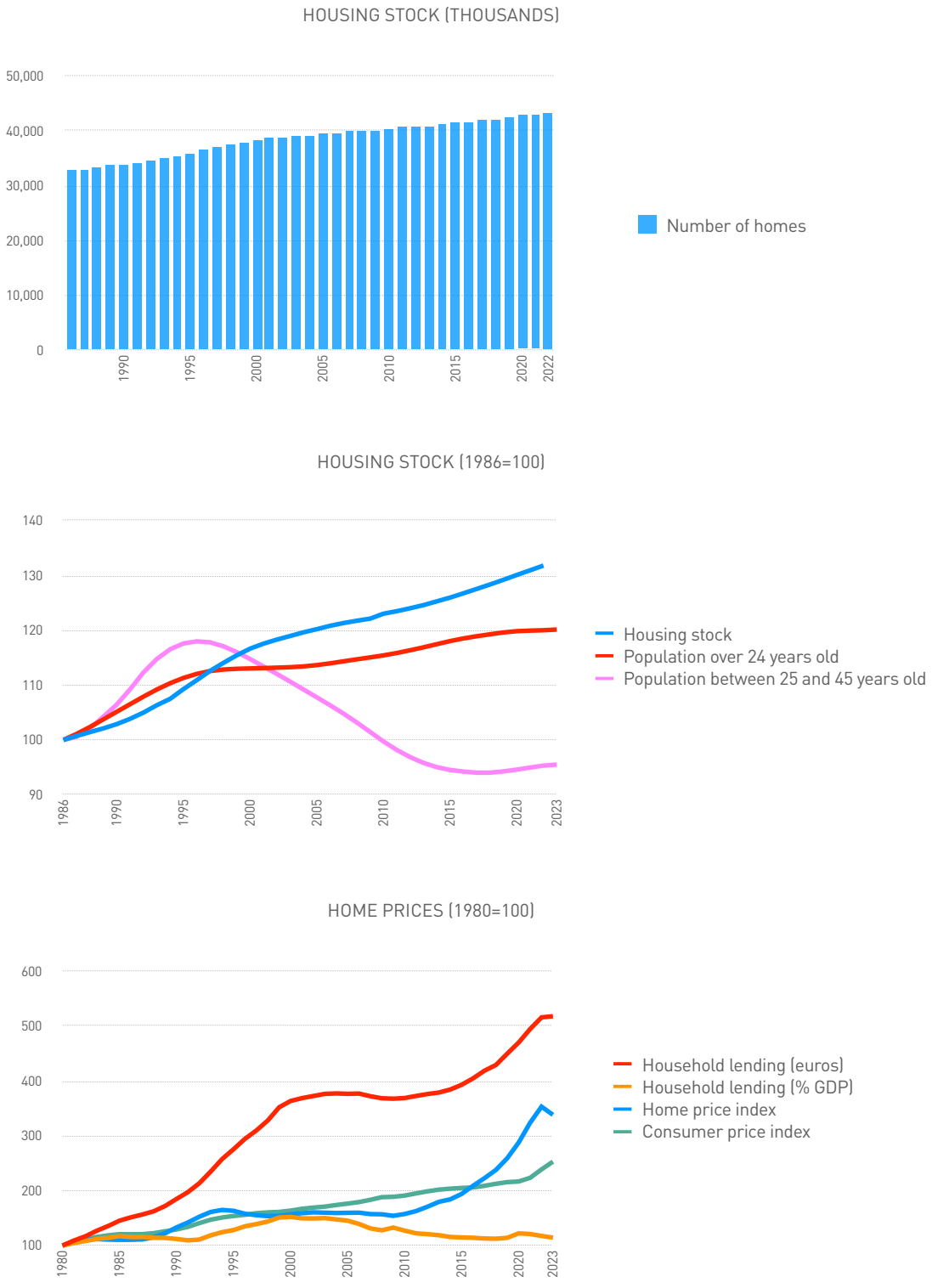
United Nations population growth estimates for the coming decades point to a decline of the population over 24 years of age in Germany, stabilizing at the end of the century, but with an increase in the number of households due to aging and a reduction in average family size. In fact, in 2023, 41.1% are single-person households and 33.5% are two-person households, while in 1991 these percentages were 32.9% and 31.0%, respectively.[45] In addition, 19% of families are single-parent households, a figure which increases to 24.8% in the new *Länders* (including Berlin). The most dynamic regions and cities in Germany are mainly in the metropolitan area of Berlin and in the cities of Munich and Hamburg. These areas have shown considerable growth in both population and home construction, due to the concentration of economic opportunities and a high quality of life; in 2022, the population of Berlin was 3.6 million, in Hamburg 1.8 and in Munich 1.6 million.

In addition to these cities, other areas such as North Rhine-Westphalia, Bayern and Baden-Württemberg are also experiencing significant growth, mainly because net immigration has increased considerably due to refugee movements from Ukraine (net immigration in 2022 was 1.5 million people compared to 0.3 million people in 2021).[46] In this regard, Germany is the country that receives the second highest number of immigrants, after the United States. Thus, its population increased by 1.1 million people in 2022, to 84.4 million people. The substantial increase in net immigration, to 1,455,000 people, has played a significant role in this evolution, while the natural growth of the population was negative. Berlin, the most populous city in the country, has experienced extremely dynamic growth since 2011. In 2022, the city had a population increase of 77,779 people. While the number of Germans decreased to 2,920,902 (-14,539) people, the number of foreigners increased to 834,349 (+92,318) people, increasing the proportion of foreign residents over the total population to 22.2%.

According to demographic projections produced by the Berlin Senate on the city and its districts, it is estimated that the city will have around 3.888 million people in 2025, around 140,000 more people than in 2018, and 3.9 million people by the end of 2030. With about 1.9 million inhabitants, Hamburg is the second largest city in Germany. According to forecasts by the Northern Statistical Office, Hamburg's population will increase to 2.024 million in 2040, and the two-million-person limit will be exceeded for the first time in 2030. This sustained population growth is based on expected migration gains, estimated at around 85,100 people by 2040, which more than offsets the negative natural population balance expected for this period.[47]

With respect to Munich, Germany's third largest metropolis with around 1.5 million inhabitants, the team of experts at the Bavarian State Statistical Office expects the Munich metropolitan region to continue to grow in the future. In 2042, the state capital is expected to have about 1.6 million inhabitants, that is, 91,000 more people (6.0%).[48] By the end of 2023, 30.1% of Munich residents were foreigners and another 18.5% were German citizens who had migrated from a foreign country.

Chart 2.6-g
Germany: real estate market indicators



Source: MAPFRE Economics (with data from the United Nations, Haver Analytics, BIS, and the Federal Statistics Office)

Position in the IPDFI

Germany ranks 20th in the Indicator of Insurance Potential due to Demographic Forces (IPDFI) among the 179 countries covered by the indicator. This places this country within the medium-high potential percentile of the distribution (P>75%<90%). The smallest contribution comes from the growth potential of its population over 24 years of age over the next two decades (which is located in the minimum potential range), while the greatest potential comes from the growth of healthcare spending and the rest of the partial indicators, such as the level of GDP per capita and private savings, values that are located in the medium-high potential range.

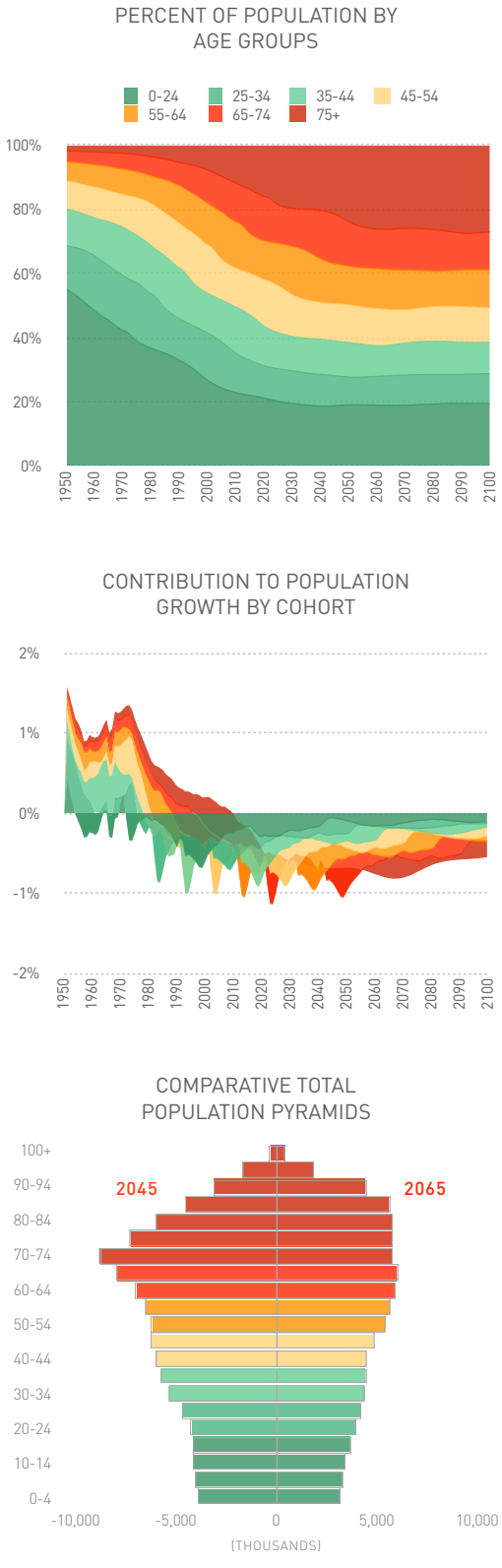
2.7 Japan

Japan's demographics are characterized by a high rate of aging, which has become more pronounced in recent decades, and by a negative population growth rate, which means more deaths and fewer births. Thus, for the first time since the return of Okinawa to Japanese sovereignty in 1972, the Japanese population decreased in all prefectures in 2023.[49]

Japan is divided into 47 prefectures or territorial jurisdictions: 43 rural prefectures, two urban (Osaka and Kyoto), Tokyo and the province of Hokkaido. The population is concentrated in Tokyo and its metropolitan area, Kanagawa, Osaka and Aichi, while the rural regions have experienced a decline in population. Tokyo, in particular, is one of the largest and most densely populated metropolitan areas in the world, due to Japan's orography (with 67% of its surface area made uninhabitable by mountainous and forested areas).

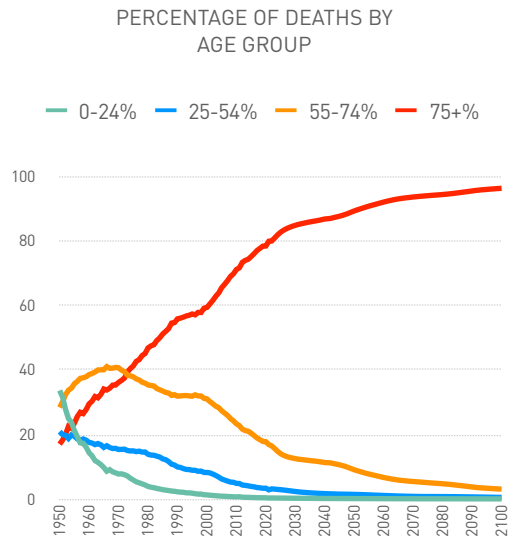
In 2020, the metropolis of Tokyo had the largest population of Japan's 47 prefectures, with 14.05 million inhabitants, followed in decreasing order by the prefectures of Kanagawa, Osaka, Aichi, Saitama, Chiba, Hyogo and Hokkaido. The 8

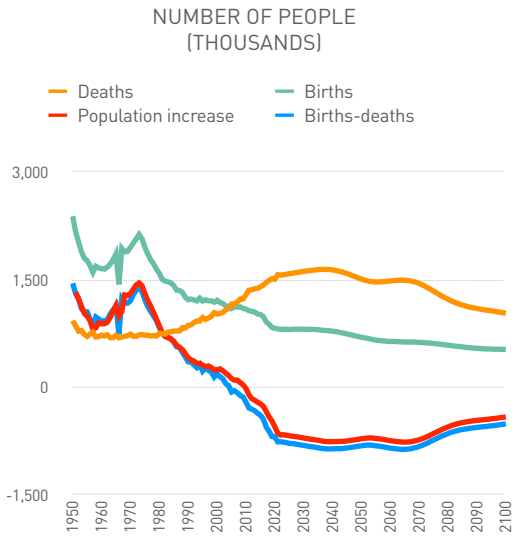
Chart 2.7-a
Japan: demographic evolution variables



Source: MAPFRE Economics (with data from the United Nations)

Chart 2.7-b
Japan: mortality data





Source: MAPFRE Economics (with data from the United Nations)

most populated prefectures totaled 63.98 million inhabitants and accounted for more than 50% (50.7%) of the total population. In addition, the population density in Tokyo was the highest among Japan's prefectures, at 6,402.6 people per square kilometer. This figure was almost 19 times higher than the national average (338.2 persons per square kilometer).

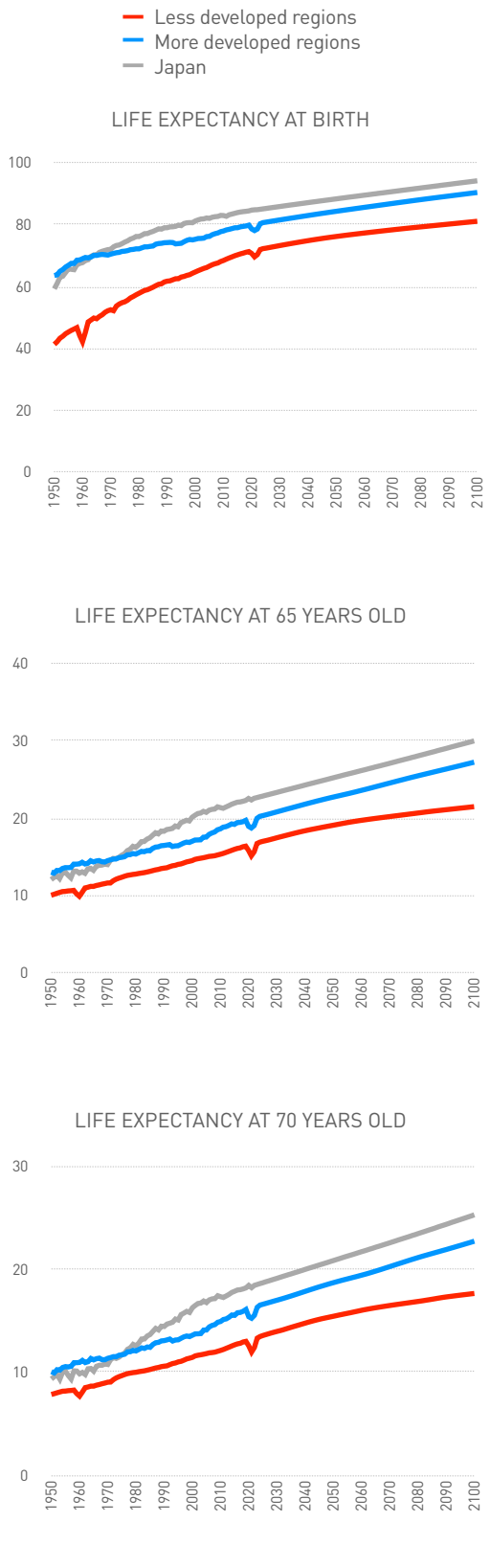
In 2020, there were 12 cities in Japan with a population of one million or more. Their total population exceeded 30 million, a figure equivalent to 24.0% of the national total. The largest single city was the metropolis of Tokyo, with 9.73 million citizens. It was followed in decreasing order by the cities of Yokohama (3.78 million), Osaka (2.75 million) and Nagoya (2.33 million).[50]

Chart 2.7-a shows the age distribution of the Japanese population from 1950 to the present, as well as forecasts through the end of the century. This information shows a significant increase in the weight of the population over 75 years of age. This demographic process alters the weight of the different cohorts within the total population over time. In 1950, the percentage of people under 25 years of age represented 55.1% of the total population, dropping to 20.6% in 2024. Forecasts indicate that this percentage will continue to decrease until 2045, reaching 19% and remaining close to this level until the end of the century.

Meanwhile, comparing the number of births with the number of deaths, we observe a negative natural balance since 2005, and demographic projections indicate that this negative trend will continue until the end of the century. Thus, Japan's population is expected to decline gradually due to low birth rates and limited immigration (see Chart 2.7-b). Life expectancy in Japan, meanwhile, has increased considerably due to lower mortality rates. Life expectancy at birth increased from 59.2 years in 1950 to 85.1 years in 2024, representing a gain of 25.9 years. Projections indicate that life expectancy at birth could reach 87.7 years by 2045, 90.1 years by 2065, and 94.2 years by the end of the century (see Chart 2.7-c).

Life expectancy at age 65 (a particularly relevant indicator for healthcare spending and pensions) reached 22.8 years in 2024. Projections indicate that by 2045 it will be 24.8 years, by 2065 it will be 26.6 years and by the end of the century it will reach 30 years.

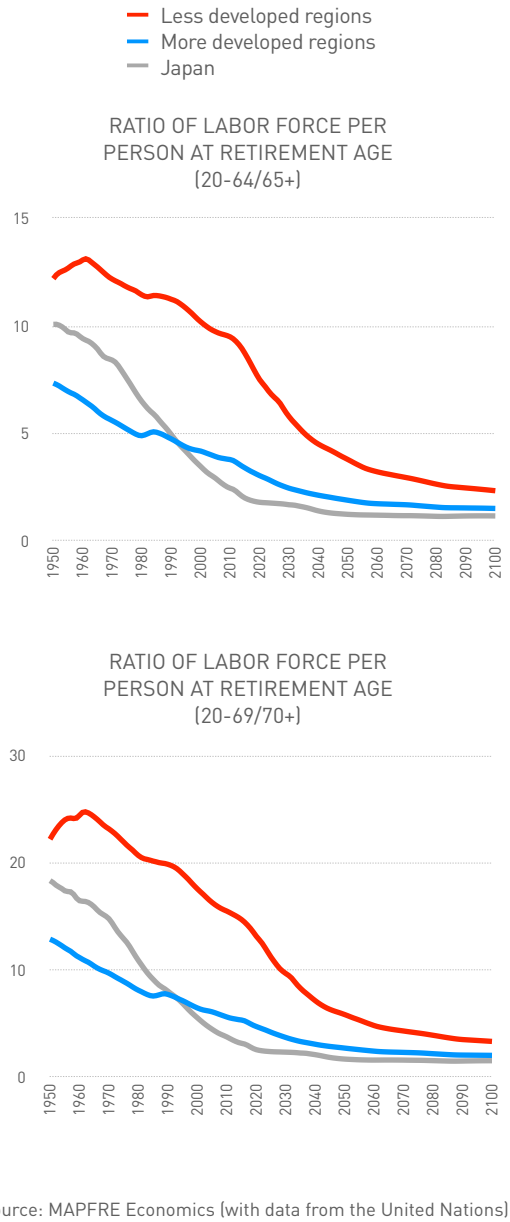
Chart 2.7-c
Japan: life expectancy



Source: MAPFRE Economics (with data from the United Nations)

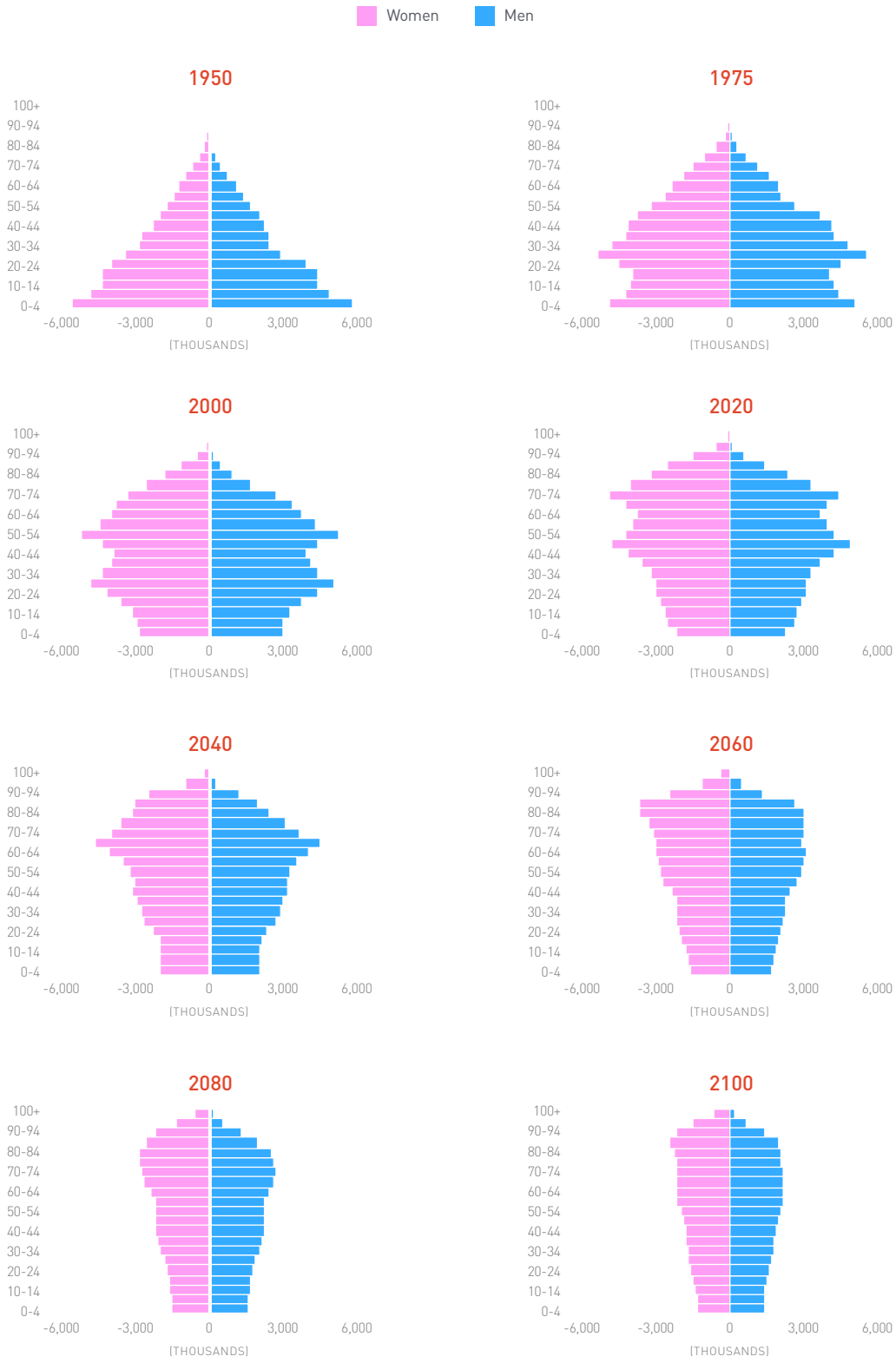
In 2024, life expectancy at 70 years was 18.6 years, and projections indicate that it will reach 20.4 years by 2045, 22.2 years by 2065 and 25.3 years by the end of the century. Thus, the positive effect on life expectancy, combined with the drastic drops in fertility rates, have led to a dynamic of transition toward an older population. This process affects Japan more immediately and sharply, given its high level of development. Meanwhile, there is a correlative increase in

Chart 2.7-d
Japan: dependency data



Source: MAPFRE Economics (with data from the United Nations)

Chart 2.7-e
Japan: changes in the population pyramid



Source: MAPFRE Economics (with data from the United Nations)

the weight of the older cohorts in Japan, such that people aged 65 and over, who represented 4.9% of the population in 1950, now represent 30.2% in 2024 and are expected to account for 36.7% by 2045, 38.6% by 2065 and will remain very close to this number through the end of the century (see Chart 2.7-d).

In an analysis from a regional perspective, in 2020, the population was 38.0 million in the Kanto major metropolitan area, 19.2 million in the Kinki major metropolitan area, and 9.2 million in the Chukyo major metropolitan area. The total population of these three major metropolitan areas reached 66.4 million, representing 52.6% of Japan's population. Based on the foregoing, the population density in the Kanto metropolitan area was 2,804.7 persons per square kilometer; in the Kinki main metropolitan area, it was 1,464.9 persons per square kilometer; and in the Chukyo main metropolitan area, it was 1,323.0 persons per square kilometer.

Japan, along with South Korea, are two dominant migrant-receiving destinations within Asian countries. However, foreign residents represent only about two to three percent of the total population in each of the countries, which is considerably lower than the percentages in some European countries: Switzerland (29%), Sweden (20%), Austria (19%) and Germany (19%). The estimated population of Japan as of October 2022 was 124.9 million, a decrease of 556,000 from the previous year, the twelfth consecutive year in which the population decreased and the sixteenth in which the natural population change was negative. The migration balance of the Japanese population was negative for two consecutive years and that of the foreign population was positive for the first time in two years. The foreign population reached 2.7 million at that date, representing 2.2% of the total population. Among Japan's three major metropolitan areas, the Greater Tokyo area (which includes Tokyo, Saitama, Chiba and Kanagawa prefectures) recorded an influx of 126,515 people in 2023, some 26,996 more than the previous year. In contrast, in the Nagoya metropolitan area (Aichi, Gifu and Mie prefectures) and in the Osaka metropolitan area (Osaka, Kyoto, Hyogo and Nara prefectures) the capitals lost 18,321 and 559 inhabitants, respectively.[51]

In summary, the process of Japan's demographic transition to a more mature society is reducing the labor force while increasing the proportion of people reaching old age, progressively increasing the pressure on the healthcare and pension systems. This set of demographic factors continues to foreshadow a progressive aging of Japan's population throughout this century, first giving rise to constrictive population pyramids (with a large share of the population at increasingly advanced ages), which are then set to converge into stationary pyramids toward the end of this century (see Chart 2.7-e).

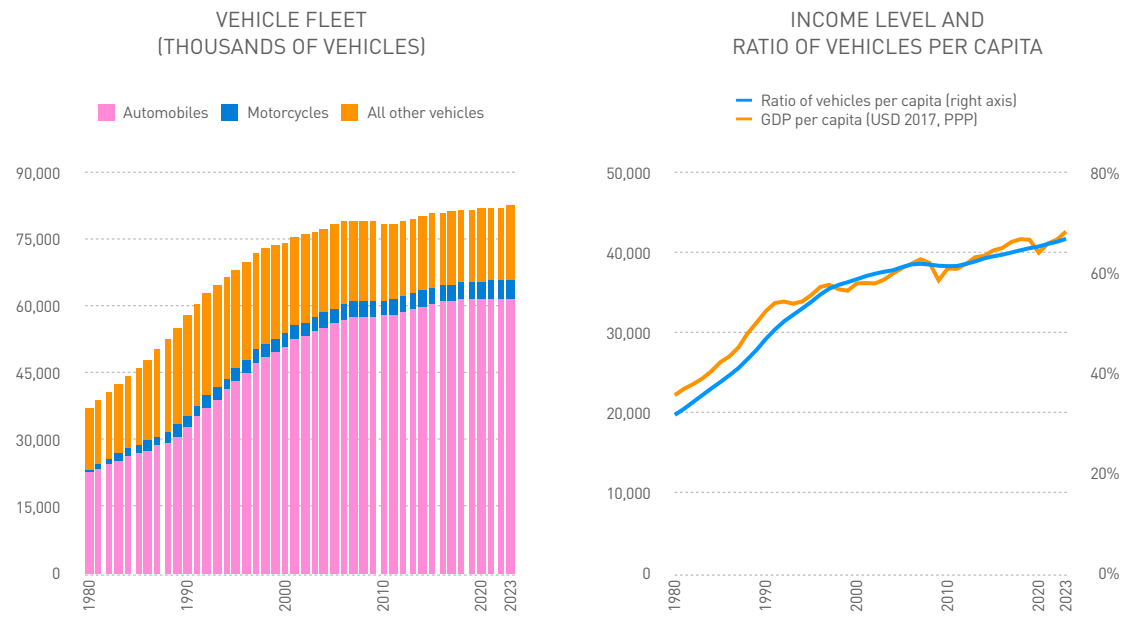
Vehicle Fleet

Japan's vehicle fleet is one of the largest in the world, totaling 82.4 million units in 2023, a ratio of 0.7 vehicles per inhabitant (see Chart 2.7-f). Japan has an extensive road and highway infrastructure network, facilitating intercity transportation. However, it should also be noted that the higher the population density of a country, the shorter the average distance traveled, and it has one of the lowest fatality rate loss ratios with 4 fatalities per 1,000,000 inhabitants. The weight of small and compact vehicles (67% in 2022) in this market is noteworthy, given the limited size of cities and the high cost of parking. Analyzed by prefecture, Fukui, with 170.9 vehicles per 100 households, has the highest vehicle density, compared to Tokyo (42.1), which has the lowest figure.[52]

Housing Stock

In Japan, the housing stock as of December 2018 stood at 62.4 million, an increase of 2 million (2.9%) since 2013 (see Chart 2.7-g).

Chart 2.7-f
Japan: vehicle fleet indicators

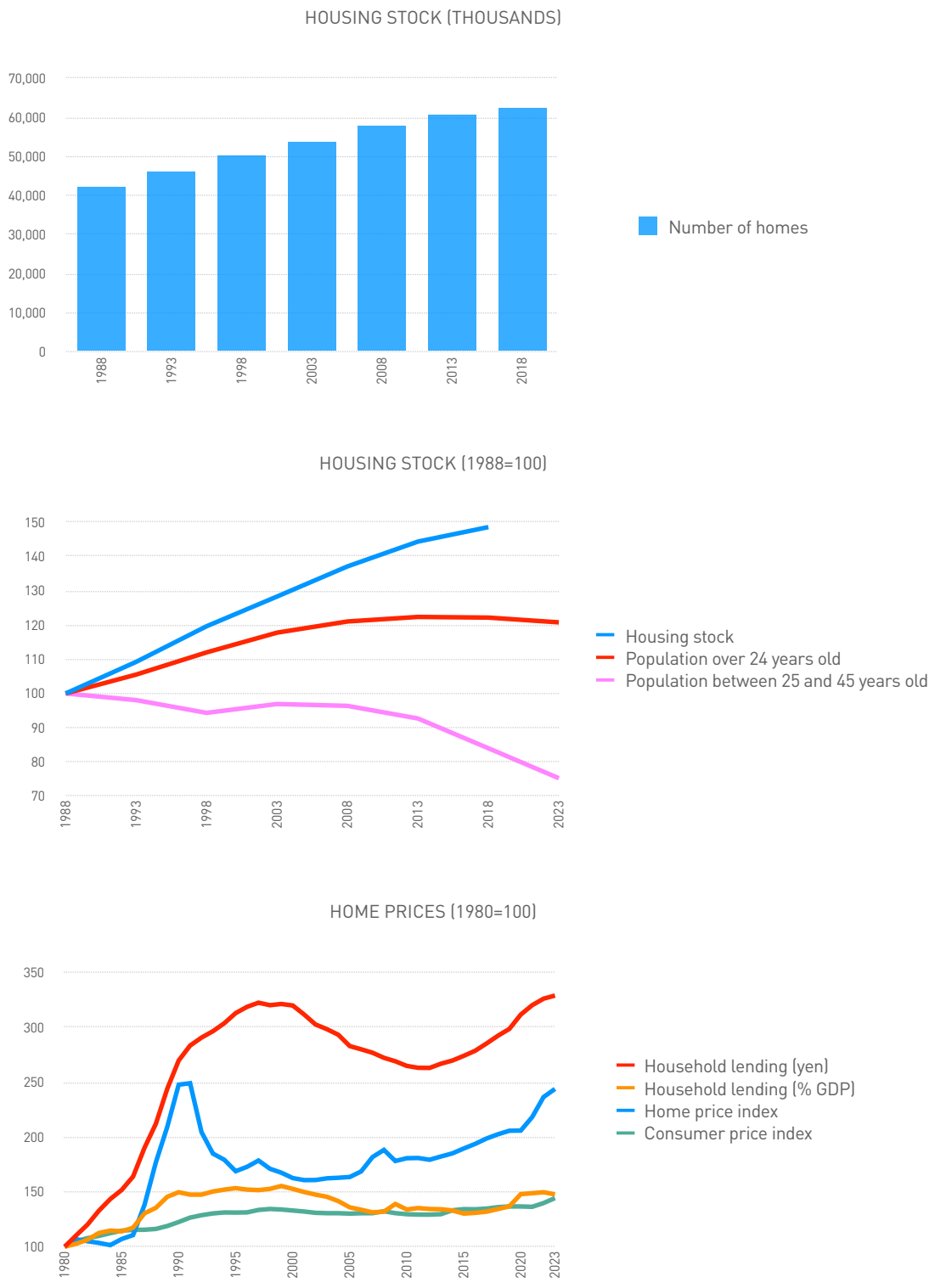


Source: MAPFRE Economics (with data from the Automobile Inspection and Registration Information Association, AIRIA, United Nations, and IMF)

The number of households was 54 million, which represents a surplus of 8 million in the number of dwellings over the number of households. Meanwhile, the number of vacant homes increased by 0.3 million, up 3.6% from 2013, to 8 million. This vacancy rate represented 13.6% of the total number of housing units, the highest proportion in history.[53] One of the main factors contributing to the growth in housing stock has been reduced interest rates and the increase in the number of people telecommuting in the wake of the pandemic.[54]

Population growth estimates produced by the United Nations for the next two decades point to a decrease in Japan's total population, but an increase in the number of households due to aging and a reduction in average family size. The most dynamic regions and cities in Japan are mainly located in the Tokyo metropolitan area and in the cities of Osaka and Nagoya. These areas have experienced considerable growth in housing construction, due to the economic measures implemented by the Japanese government after the financial bubble burst in the early 1990s, which encouraged the deregulation of construction in order to take advantage of unused land. As a result, it is now possible to build a higher volume of apartments than during the bubble and there has been a boom in high-rise buildings housing many more apartments, especially in large cities. The amendment of the Urban Planning Law in 2000 opened the door to deregulation, allowing local governments to develop new residential land at their discretion in urban control areas in the suburbs of large cities. As a result, in many municipalities the demand for use has shifted to agricultural land in urban control areas instead of developable areas, the development and equipping of which should be prioritized. The sustained growth of the Real Estate Price Index since 2013, particularly in single-family homes since April 2020, is due to the lack of labor and materials in the construction sector, which drives up the prices of resale apartments as the price of new construction rises.

Chart 2.7-g
Japan: real estate market indicators



Source: MAPFRE Economics (with data from the United Nations, Haver Analytics, BIS, and Statistics Japan)

Growth in these areas is driven by favorable economic factors and a quality of life that continues to attract new foreign residents, whose number increased by 289,498 (10.7%) to 2,993,839, mainly due to the relaxation of restrictions on entry into the country imposed as a control measure in response to the new coronavirus, according to the demographic movement survey based on the basic registration of residents, published by the Ministry of Internal Affairs and Communications, as of January 1, 2023. The figure increased in all prefectures and is the highest since 2013, when the foreign resident count was included in the statistics.[55]

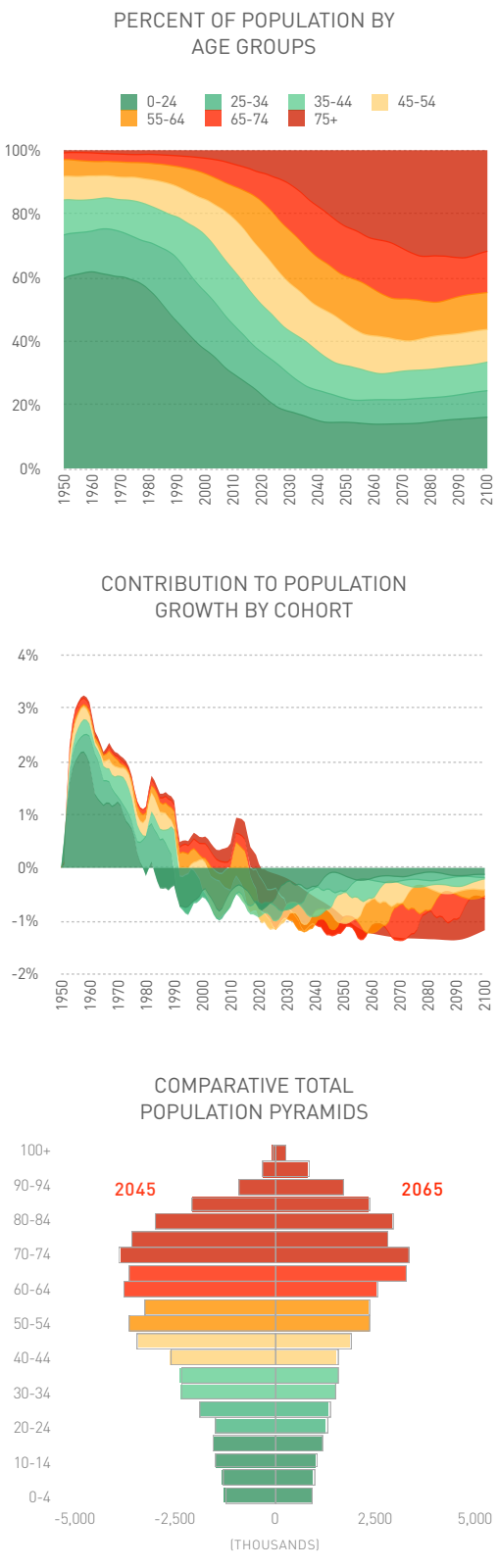
Position in the IPDFI

Japan ranks 19th in insurance potential due to demographic forces as measured by IPDFI among the 179 countries covered by the indicator, placing Japan within the mid-high potential percentile of the distribution (P>75%<90%). The lowest contribution to the indicator comes from the growth potential of its population over 24 years of age in the next two decades, which is high in number of people but is expected to decrease, placing it in the minimum potential range of this index, while the highest potential comes from the growth of healthcare spending, which is at the high level (P>90%), and the level of GDP per capita, which is at a medium-high level. Japan's private savings potential remains in the mid-level range.

2.8 South Korea

South Korea has a population of about 52 million and demographics marked by a rapidly aging population and one of the lowest birth rates in the world. Throughout its recent history, the country has experienced a significant reduction in birth rates and an increase in life expectancy, which has resulted in a marked process of population aging. The baby boom generation in South Korea, consisting of those born between 1955 and 1963, has reached advanced ages, playing a crucial role in this phenomenon.

Chart 2.8-a
South Korea: demographic evolution variables



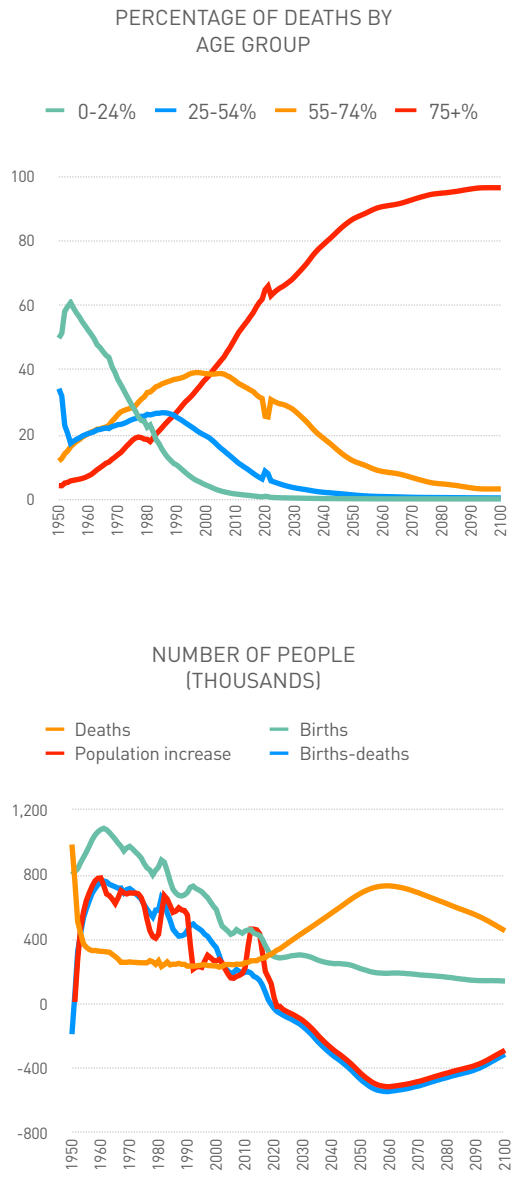
Source: MAPFRE Economics (with data from the United Nations)

This country has an uneven population distribution throughout its territory. The most populated areas include the capital region, Seoul, as well as the metropolitan areas of Busan and Incheon, while the rural regions have experienced a decrease in population as a result of the intense industrialization process that took place at the end of the last century. Seoul, in particular, is one of the largest and most densely populated metropolitan areas in the world, with 10 million inhabitants. Other significant urban areas include Busan (population 3.5 million) and Incheon (population 2.9 million), which also play important roles in the South Korean economy.

Chart 2.8-a shows the age distribution of the population of South Korea from 1950 to the present, as well as projections through the end of the century, in which the significant increase in the weight of the older age cohorts in the total population is evident. This demographic process alters the weight of the different cohorts within the total population over time. Thus, the percentage of people under 25 years of age represented 59.9% of the total population in 1950, falling to 20.6% in 2024, with forecasts indicating that this weight will continue to decrease in the coming decades to 14.8% by 2045, 14.3% by 2065, with a slight increase at the end of the century to 16.4%.

An analysis of the number of births compared to the number of deaths shows that, since 2019, the number of deaths exceeds the number of births, leading to a gradual decline in the population, which is expected to continue throughout the century until it reaches 24 million in 2100 (see Chart 2.8-b). Meanwhile, the overall drop in mortality rates has led to a considerable increase in life expectancy (see Chart 2.8-c). Thus, life expectancy at birth in South Korea increased from 21.3 to 84.3 years between 1950 and 2024, a gain of 63 years over that period. Projections confirm that in the future, life expectancy

Chart 2.8-b
South Korea: mortality data

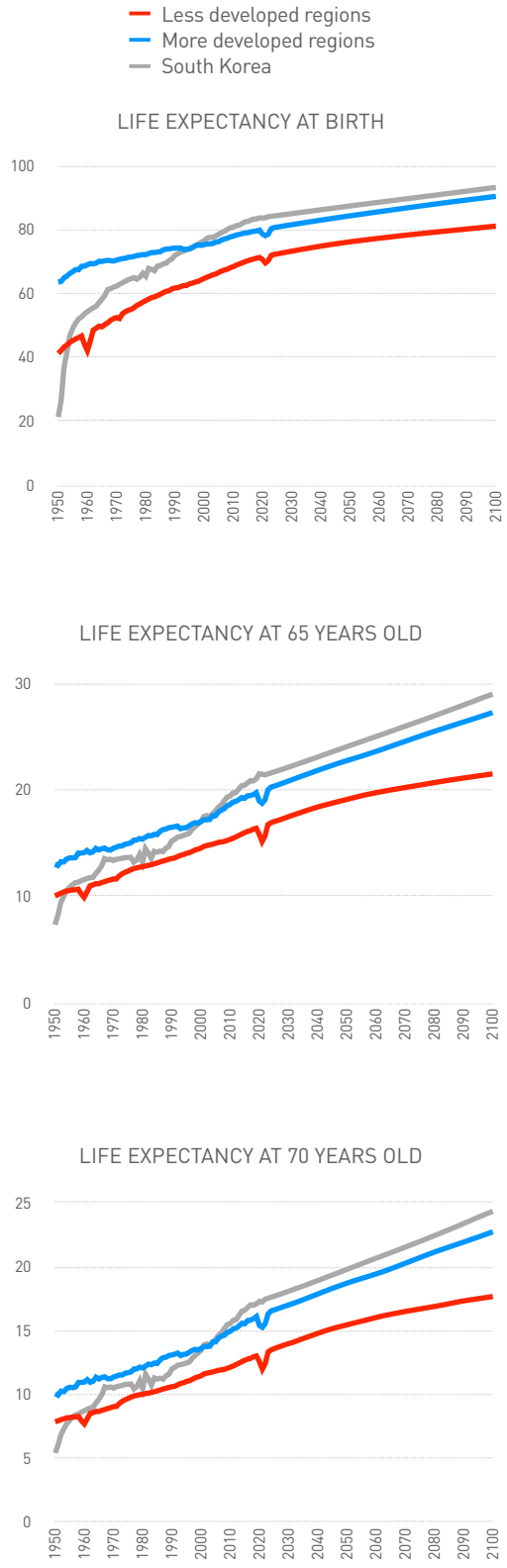


Source: MAPFRE Economics (with data from the United Nations)

at birth in the region could grow at an approximate pace of one year per decade, reaching 86.8 years by 2045, 89.1 years by 2065 and exceeding 93.2 years of age by the end of the century.

Life expectancy at age 65, an indicator that is relevant to the analysis of future healthcare spending and pensions, is 21.6

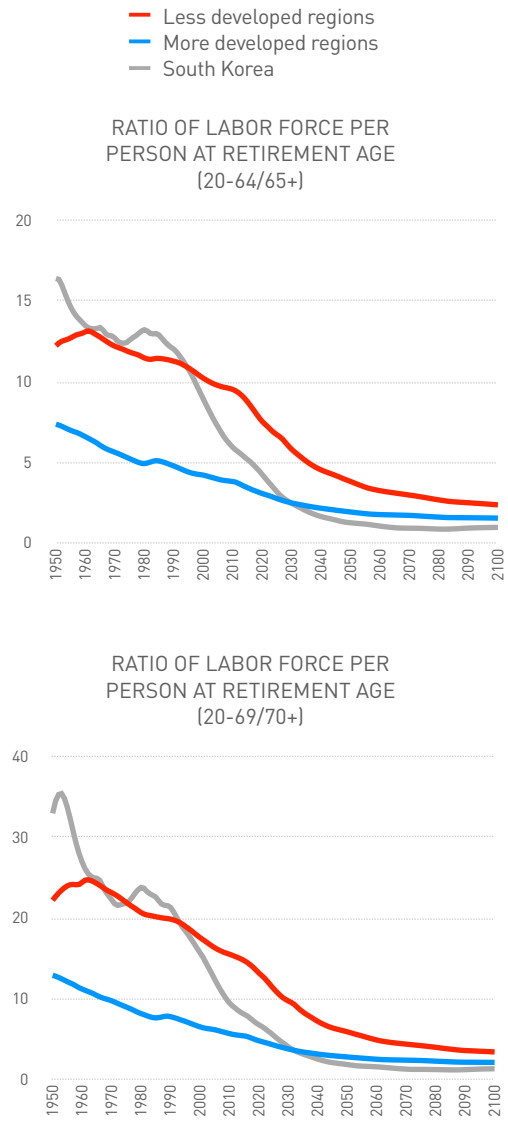
Chart 2.8-c
South Korea: life expectancy



Source: MAPFRE Economics (with data from the United Nations)

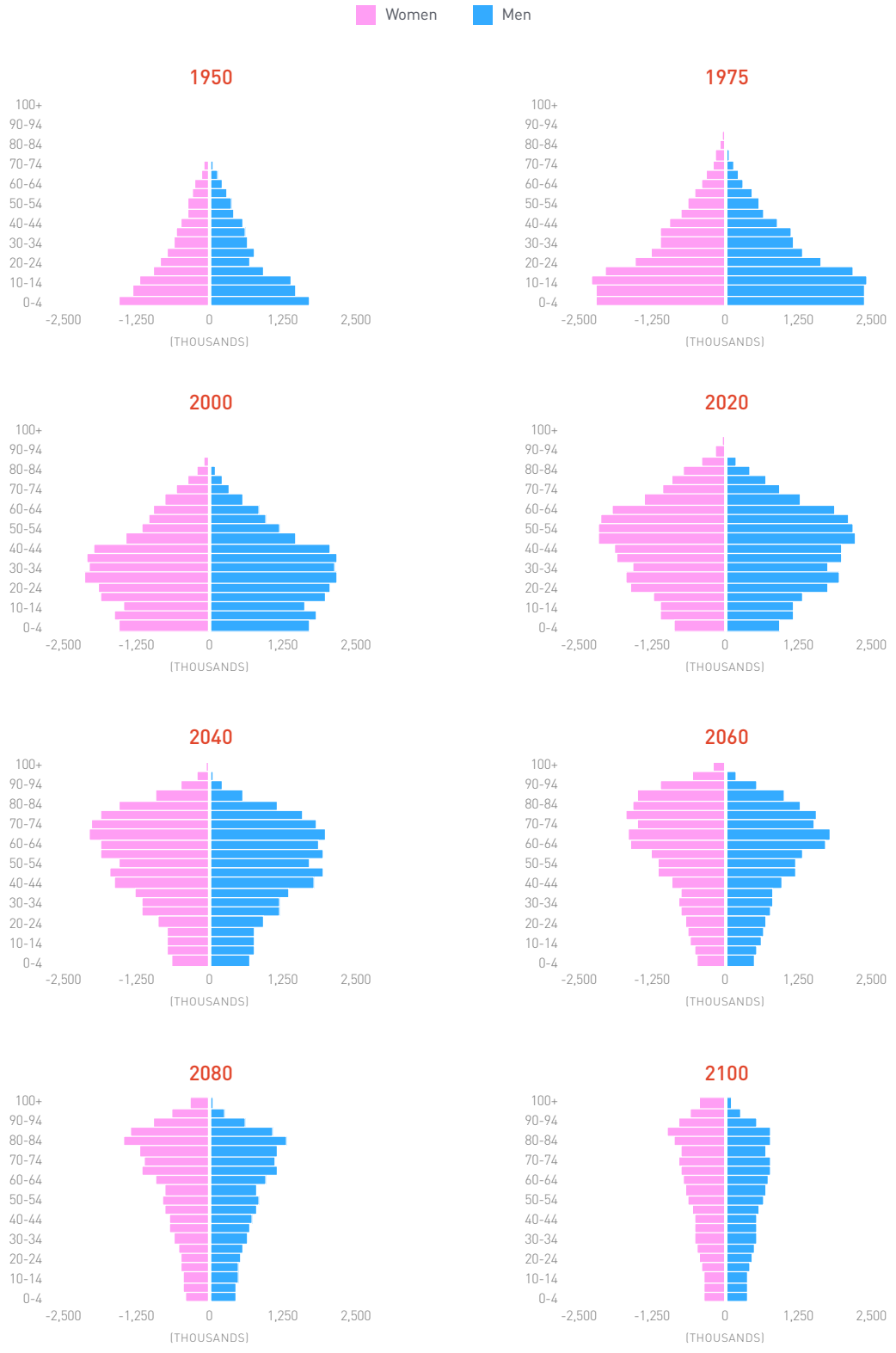
years in 2024. Projections indicate that by 2045 it will be 23.6 years, by 2065 it will be 25.5 years and by the end of the century it will reach 29 years. In 2024, life expectancy at 70 years of age stands at 17.6 years, and projections indicate that it will reach 19.4 years by 2045, 21.1 years by 2065 and 24.3 years by the end of the century. The positive effect on life expectancy, combined with drastic drops in the fertility rate, has led to a dynamic transition to older populations, a

Chart 2.8-d
South Korea: dependency data



Source: MAPFRE Economics (with data from the United Nations)

Chart 2.8-e
South Korea: changes in the population pyramid



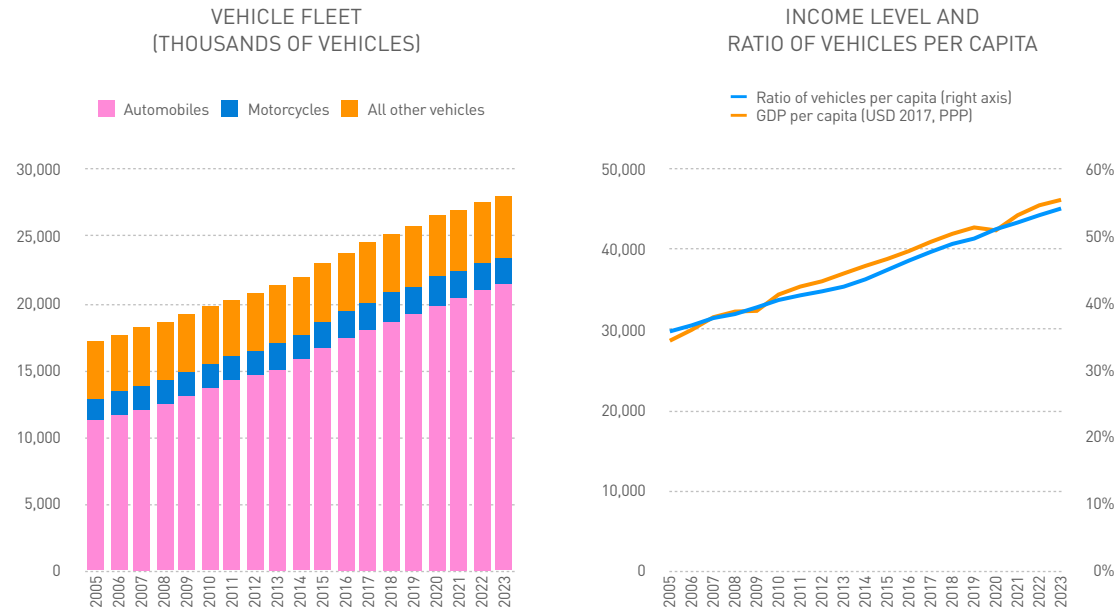
Source: MAPFRE Economics (with data from the United Nations)

process that affects developed countries more immediately and sharply, but also South Korea, which is closer to the pattern of behavior of advanced economies, above the average of less developed countries (see Chart 2.8-d). Meanwhile, there is a correlative increase in the weight of the older cohorts, such that those aged 65 and over, who represented 2.7% of the population in 1950, account for 19.3% in 2024 and are expected to account for 36.6% by 2045, 45.9% by 2065 and 44.4% by the end of the century.

In short, this process of demographic transition toward more mature societies in the case of South Korea is reducing the labor force while increasing the proportion of people reaching old age, progressively increasing pressure on health and pension systems, especially those with a high weight of pay-as-you-go components. Migratory movements could help slow this process. Thus, according to the 2022 population census, South Korea had a population of 51,692,272 that year, of which 1,752,346 were foreigners, up 6.2% from the previous year. China, Vietnam and Thailand are among the main countries of origin of immigrants to South Korea. The most populated cities are Seoul, with 9.4 million inhabitants (366,454 foreigners), followed by Busan with 3.3 million (54,914 foreigners) and Incheon, with nearly 3 million (99,212 foreigners).

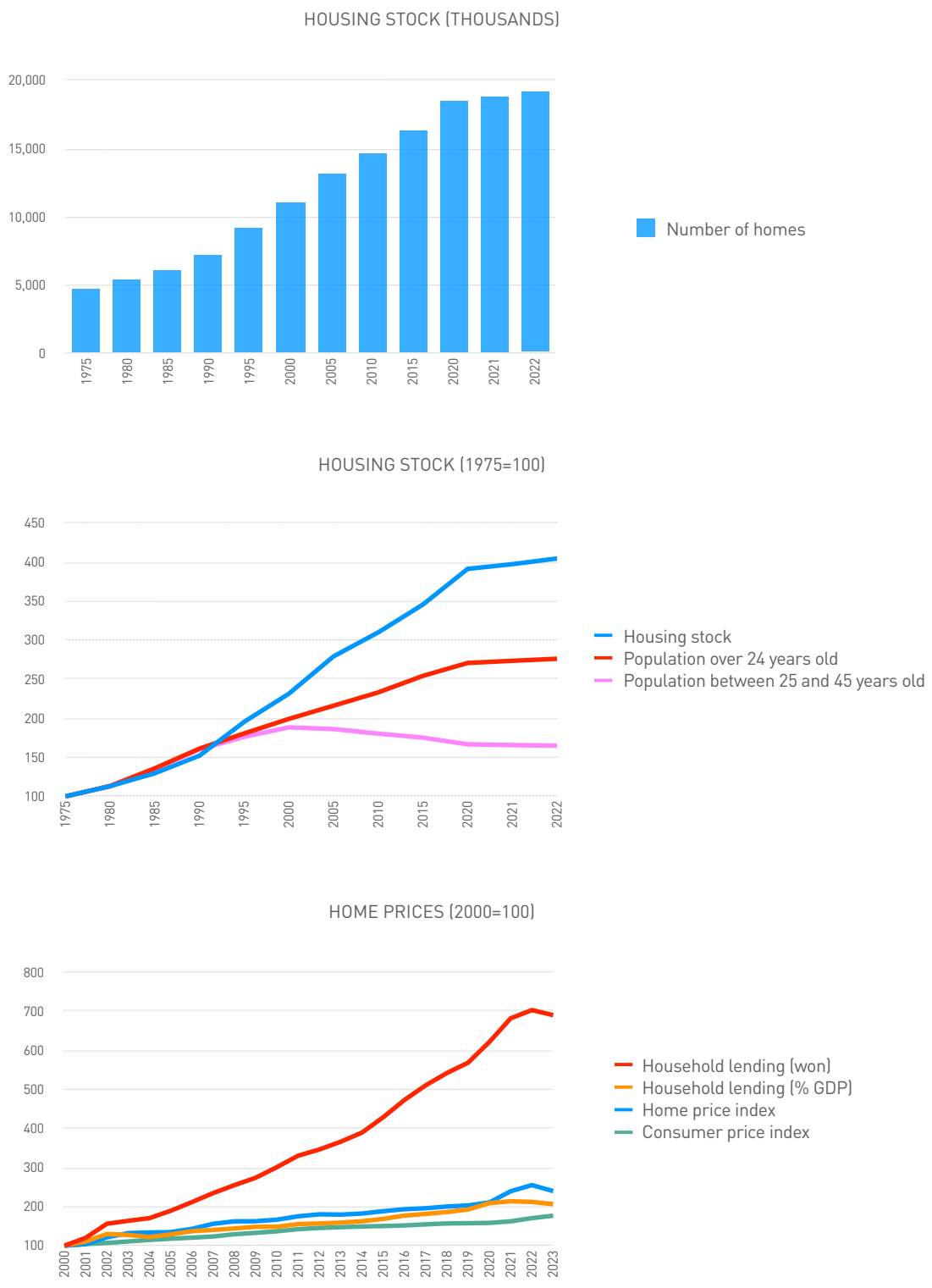
In any case, United Nations estimates already include forecasts of migratory flows, so there would have to be very significant deviations from their forecasts, which are always subject to a high degree of uncertainty, or from fertility or mortality rates, to alter the trends described. All these demographic factors foreshadow a progressive aging of South Korea's population throughout this century, first giving rise to constrictive population pyramids (with a large share of the population at increasingly advanced ages),

Chart 2.8-f
South Korea: vehicle fleet indicators



Source: MAPFRE Economics (with data from the Ministry of Land, Infrastructure and Transport, United Nations, and IMF)

Chart 2.8-g
South Korea: real estate market indicators



Source: MAPFRE Economics (with data from the United Nations, Haver Analytics, BIS, and Statistics Korea, Housing Census)

which are then set to converge into stationary pyramids toward the end of this century (see Chart 2.8-e).

Vehicle Fleet

South Korea's vehicle fleet is sizable at approximately 26 million units in 2023 (excluding motorcycles), a ratio of 0.5 vehicles per inhabitant, lagging behind other countries with similar income levels. The country has an extensive road and highway infrastructure network, facilitating intercity transportation. The weight represented by sedan-type vehicles in this market is noteworthy, at 82.4%, mainly manufactured domestically (see Chart 2.8-f).

Housing Stock

South Korea's housing stock totaled 19.16 million units[56] as of December 2022, up 1.8% (343,958 units) from 2021. Apartments total more than 12 million units, accounting for 64% of the total housing stock, up 2.7% over 2021. In addition to the economic situation, the performance of the South Korean housing market is strongly conditioned on government intervention, whose policies have influenced the performance of this sector over the years. After several years of continuous growth, South Korea's housing market prices began to slow in early 2022, when the nationwide home sales price index dropped by -4.7%, maintaining that trend in 2023 (-3.6%) and in the first few months of 2024, influenced by rising interest rates and tighter mortgage lending conditions (see Chart 2.8-g). In order to minimize pressure on the economy and credit market and to keep inflation under control, the Bank of Korea has raised its prime rate several times since 2021 and it has remained stable at 3.5% since January 2023.

Population growth estimates produced by the United Nations for the next two decades point to a decrease in South Korea's total population. Meanwhile, an increase in the number of single-person households is expected due to a reduction in the average family size. However, real home prices are expected to adopt a downward trend around 2040, when the number of households will peak. The decline may be somewhat delayed in the metropolitan area, while the downward trend is likely to appear earlier in regional areas.[57]

The most dynamic regions and cities in South Korea are mainly located in the Seoul metropolitan area and in the cities of Busan and Incheon. These areas have shown considerable growth in both population and housing construction. In addition to these areas, other cities such as Daegu and Daejeon are also experiencing significant growth that could be sustained over the next decade.

Position in the IPDFI

South Korea ranks 28th in insurance potential due to demographic forces measured through the IPDFI, among the 179 countries covered by the indicator. This places South Korea within the medium-high potential percentile of the indicator distribution (P>75%<90%). The smallest contribution comes from the growth potential of its population over 24 years of age over the next two decades, which is in the minimum potential range of this index, while the greatest potential comes from the growth of healthcare spending, private savings and the level of GDP per capita, all of which are at a medium-high level (P>75%).

3. Demographics: industry impact analysis

3.1 Demographics and retirement savings

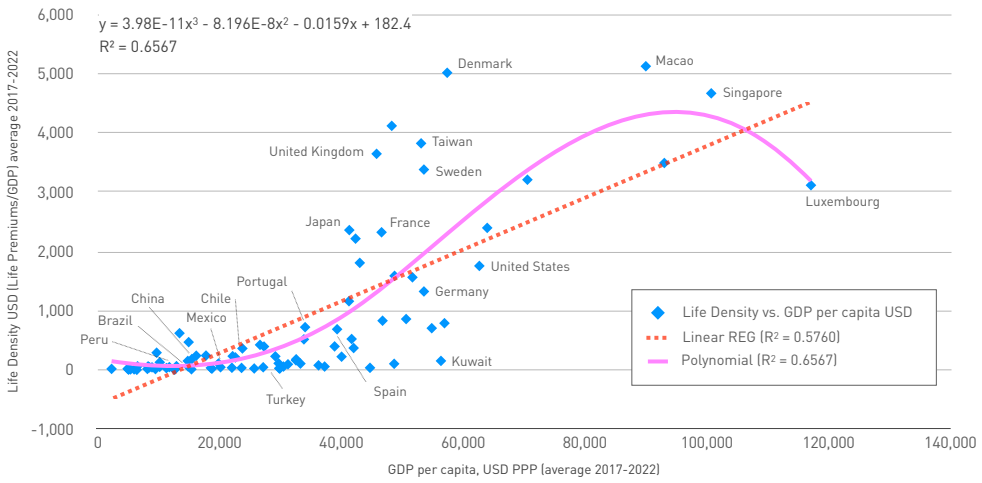
Labor force and retirement savings potential

One of the demographic factors directly related to savings dynamics is the process of *population aging*. This is because this demographic phenomenon reduces the weight of the labor force (people of working age with a need to save for retirement) with respect to people reaching retirement age (people with a need to withdraw savings due to the drop in income caused by leaving the labor market). Thus, the need to supplement retirement savings in a given country or region will depend on both the current level of the ratio of the labor force to people reaching retirement age ("support ratio"), and the speed at which this ratio will decline in the coming years, as the cohorts of the population that are closer to retirement with the resulting drop in their purchasing power increase.

GDP per capita and Life savings insurance potential

Another relevant factor is the saving capacity of these cohorts as a function of their per capita income. In this regard, Life insurance activity, in which savings-linked insurance products play an important role, is highly correlated with a country's per capita income level (see Chart 3.1-a). Thus, the analysis of the fitted regression line between GDP per capita and Life insurance density (average annual Life insurance premium per person) shows a high level of correlation between the two variables, as in the Non-Life insurance line. It is evident that the best fit is obtained with the fifth-degree polynomial function whose formula is included in Chart 3.1-a, resulting in a coefficient of determination of 0.6567 (significantly higher than the linear regression of 0.5760).

Chart 3.1-a
Fitted regression line: GDP per capita (USD PPP) vs. Life premiums per capita (USD)



Source: MAPFRE Economics

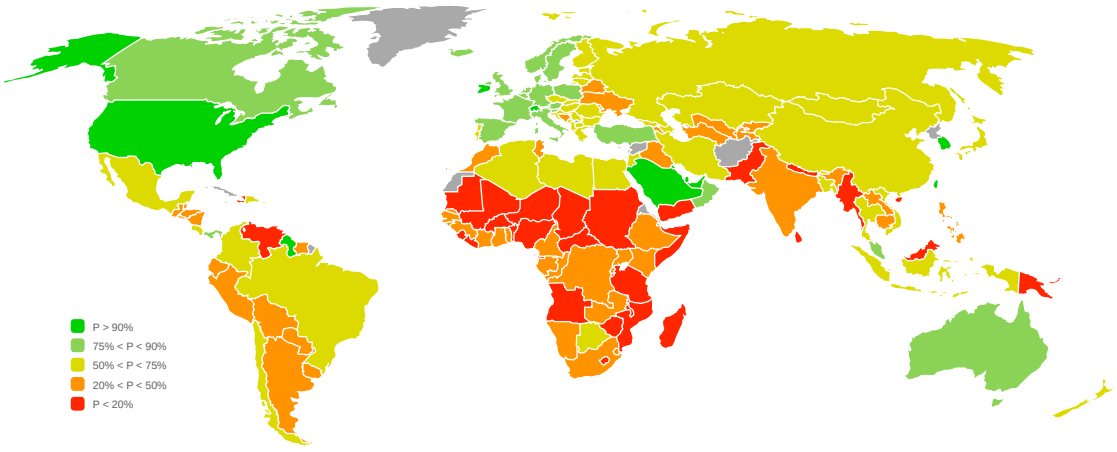
The above implies that, among the different factors that influence the explanation of the average premium per person per year in a country's life insurance policies, the level of GDP per capita available would explain 65.67%, while the rest would be attributable to other factors. Moreover, the fact that the best fit is achieved with the polynomial function shown in Chart 3.1-a implies that increases in the level of GDP per capita have a greater effect on Life insurance the higher the country's income level, especially when a certain threshold (around 16,000 dollars in purchasing power parity, PPP) is exceeded; this positive elasticity is maintained up to very high levels of GDP per capita, at which point growth in GDP per capita no longer leads to growth in the level of Life insurance density and, in some countries, a certain decline may even be observed (approximately above 90,000 dollars of GDP per capita in PPP). It should be noted that this effect is also observed in the analysis of the Non-Life insurance segment, although it is less pronounced.

Based on the two previous factors (GDP per capita USD PPP and ratio of labor force per person of retirement age), an indicator has been constructed to measure the *growth potential of private savings* comparatively for a universe of 179 countries, under the rationale that the higher the GDP per capita (first factor) and the higher the ratio of labor force per person of retirement age (second factor), the higher the savings potential of a country's population. In addition, the faster the ratio of labor force per person of retirement age falls in the coming years, the greater the potential need for savings of its population compared to that of the other countries analyzed, considering a time horizon of two decades (from 2024 to 2045) and based on United Nations population projections (third factor).

Thus, the private savings growth potential index (see Chart 3.1-b) has been constructed as a weighted average of the cited factors, with the following weights:

- Ratio of labor force per person of retirement age or "support ratio" 2024 (20-64/65+), weighted by a factor of 1.
- Projected 2024-2045 average annual change in the support ratio (20-64/65+), weighted by a factor of 2, because of the importance of the rate of decline of this ratio to retirement savings.

Chart 3.1-b
Geography of the potential for growth in private savings



Source: MAPFRE Economics

- Level and growth potential of per capita income (PPP), weighted by a factor of 4, taking into account the high correlation found between the growth of a country's per capita income and the development of Life savings products.

3.2 Demographics and healthcare spending

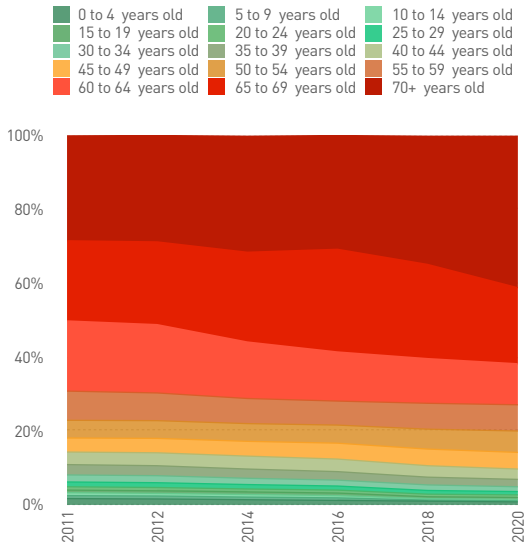
Healthcare spending and age

The two main factors that determine the magnitude of health spending in a given country are: (i) age and (ii) the per capita income level of its population. Far from being linear, healthcare spending increases sharply with advancing age. In this sense, the process of population aging experienced by the world's economies (led by the most developed economies) has prompted the compilation of highly granular information on the countries experiencing it to the greatest extent, as is the case of Japan. Thus, as a reference, according to the information compiled and published by local Japanese authorities on the healthcare billing of the national healthcare system by municipalities, in 2020 healthcare spending by people over 65 years of age represented about 61.6% of the total, showing an increasing trend throughout the decade available, stemming from the population aging process of people in these cohorts[58] (see Chart 3.2-a).

Healthcare spending and GDP per capita

Another highly relevant factor in a country's healthcare spending level has to do with the per capita income level of its population (see Chart 3.2-b). The fitted regression line analysis between GDP per capita and healthcare spending per capita shows a high level of correlation between the two variables. The best fit is obtained with the third degree polynomial function whose formula is included in Chart 3.2-b, resulting in a coefficient of determination of 0.8981 (higher than the linear regression of 0.8397).

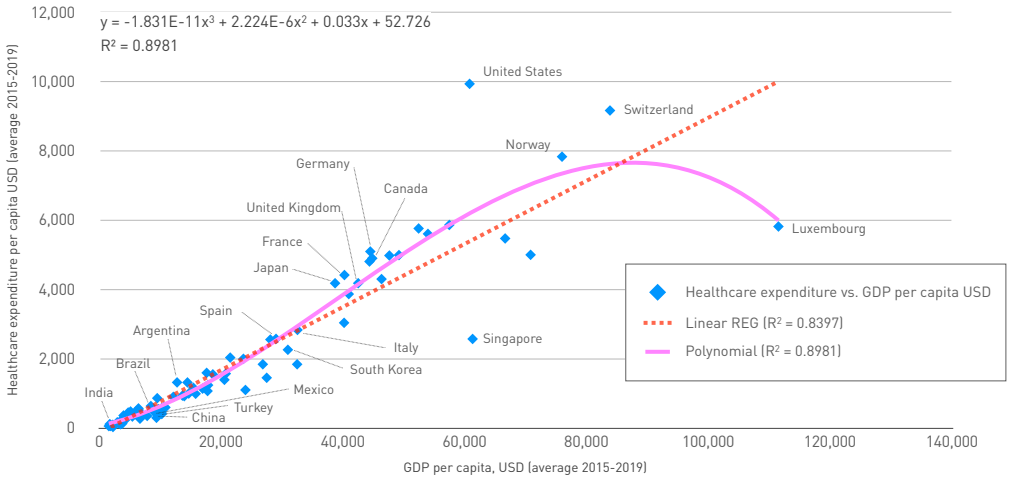
Chart 3.2-a
Japan: healthcare expenditure of Japanese municipalities by age group
(hospital and outpatient healthcare billing; %)



Source: MAPFRE Economics (with data from the Japanese Health Ministry related to the payment of invoices by municipalities for national health insurance)

This suggests that, among the different factors that influence the explanation of a country's healthcare spending per capita, the level of available GDP per capita would explain 89.81%, while the rest would be attributable to other factors. The fact that the best fit is achieved with the polynomial function shown in Chart 3.2-b implies that increases in the level of GDP per capita have a proportionally greater effect on healthcare spending per capita as a country's income level rises, especially until a certain threshold is reached (around 45,000 dollars per capita, PPP). Once this threshold is reached, the growth in healthcare spending per person and GDP per capita behaves in a linear fashion up to very high levels of GDP per capita, at which point growth in GDP per capita no longer leads to growth in the level of healthcare spending per capita and, in some countries, there is even a certain decline (above approximately 90,000 dollars of GDP per capita).

Chart 3.2-b
Fitted regression line: GDP per capita (USD) vs. healthcare expenditure per capita (USD)



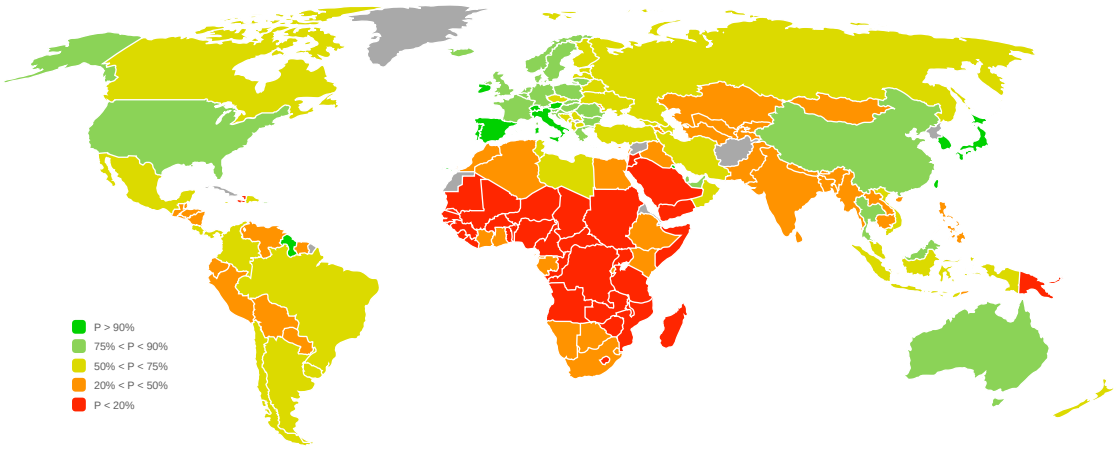
Source: MAPFRE Economics

Healthcare spending growth potential

Based on the foregoing, considering GDP per capita and the proportion of people aged 65 or over and the forecasts for both magnitudes for the coming years, an indicator has been constructed to measure the *potential for growth in healthcare spending per capita*. This indicator is comparative for the universe of 179 countries, and based on the rationale that the higher the proportion of people aged 65 or over and the higher the GDP per capita, the greater the potential for healthcare spending growth, which favors the development of private health insurance to supplement a country's mandatory healthcare coverage (see Chart 3.2-c).

The *index of potential for healthcare expenditure growth* was constructed on the

Chart 3.2-c
Geography of the potential for healthcare expenditure growth



Source: MAPFRE Economics

basis of a weighted average with the following magnitudes and weighting factors:

- Percentage of population 65+ 2024, weighted by a factor of 1.
- 2024-2045 change in population 65+ (percentage points), weighted by a factor of 2.
- Level and growth potential of per capita income,[59] weighted by a factor of 2.

3.3 Demographics, per capita income and insurance activity

GDP per capita and insurance activity

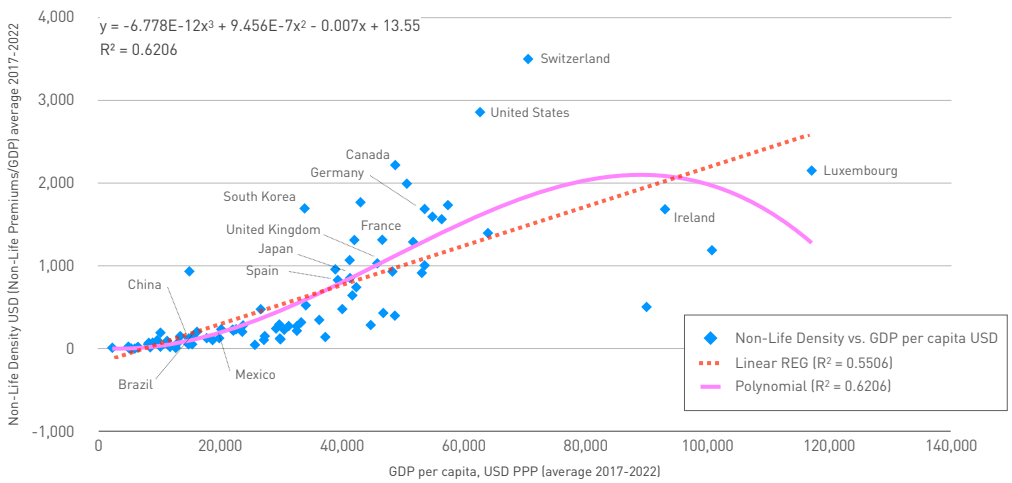
As indicated above, the income level or GDP per capita is an economic (and demographic) factor that is highly correlated with all lines of business in a country's insurance industry at the aggregate level, both in the Non-Life insurance segment, including health insurance (see Chart 3.3-a), and in the Life insurance segment.

In this regard, the analysis of the fitted regression line between GDP per capita and Non-Life insurance density (average annual Non-Life insurance premium per person) shows that there is a high level of correlation between the two variables. It is evident that the best fit is obtained with the third degree polynomial function whose formula is included in Chart 3.3-a, resulting in a coefficient of determination of 0.6206 (higher than the linear regression of 0.5506). The foregoing implies that, among the various factors that influence the explanation of the average premium contracted per person per year in Non-Life Insurance in a country, the disposable GDP per capita would explain 62.06%, while the rest would be attributable to other factors.

Similarly, long series trend analyses of the countries studied in depth in this report have also shown that a country's GDP per capita is highly correlated with its vehicle fleet, particularly with the ratio of vehicles per capita, raising the potential for auto insurance (see Chart 3.3-b).

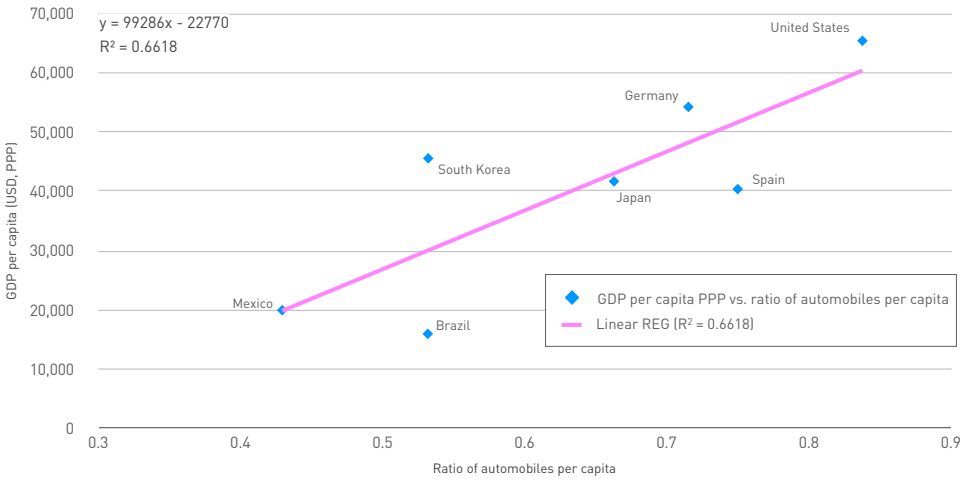
- Thus, under this rationale and for the purposes of constructing the synthetic indicator presented in the following section of this report, a measure of *potential GDP per capita and its growth* has

Chart 3.3-a
Fitted regression line: GDP per capita (USD PPP) vs. Non-Life premiums per capita (USD)



Source: MAPFRE Economics

Chart 3.3-b
Fitted regression line: income per capita USD-PPP vs. ratio of automobiles per inhabitant



Source: MAPFRE Economics

been developed as the weighted average of the following indicators:

- 2024 GDP per capita, in purchasing power parity (PPP) weighted by a factor of 10.
- 2019-2024 annual average variation of GDP per capita (PPP), weighted by a factor of 5.
- 2025-2029 annual average variation of GDP per capita (PPP), according to forecasts from the International Monetary Fund (IMF),[60] weighted by a factor of 1. It should be noted that this component receives a lower weighting than the other two, due to the greater uncertainty of the forecasts with respect to the estimate of the current data and the evolution of historical data.

Demographic growth of the population cohorts over 24 years of age

Population cohorts aged 25 and over constitute a demographic factor that is directly related to a country's housing stock, as shown in the long series trend analyses included in the country-specific demographic study in the second section of this report. Moreover, the housing stock and its evolution are fundamental to the development of home insurance and related borrowing. Thus, under this rationale, and for the purposes of constructing the synthetic indicator presented in the following section of this report, a measure of *potential by population weight* (over 24 years of age) has been prepared as the weighted average of the following indicators:

- 2024 population 25+, weighted by a factor of 1.
- 2024-2045 demographic growth population 25+, weighted by a factor of 1.

Population weight

Finally, a country's population size is an important factor in determining the potential of its insurance market, due to the possibilities it offers market players of reaching sufficient size to benefit from possible economies of scale, operating in a common currency, the greater scope of their distribution networks and a more

homogeneous regulatory framework, among other factors. Thus, under this rationale and for the purposes of constructing the synthetic indicator presented in the following section of this report, a comparative measure of *potential by population weight* has been prepared for a universe of 179 countries, as the weighted average of the following indicators:

- Population weight in 2024 (percentage of world population), weighted by a factor of 2.

- Population weight by 2045 (percentage of world population), according to United Nations forecasts,[61] weighted by a factor of 1.

- Change in population weight between 2024 and 2045 (pp), weighted by a factor of 1.

4. The age of societies and their insurance potential

Key demographic trends, as well as the modification in their structure due to changes in the weight of the different population cohorts, are a fundamental element to consider when assessing the potential of a country's economy and, at the industry level, of its insurance industry. These population dynamics, along with the level of per capita income, as we have seen, can have a significant and favorable influence on the development of the main lines of business in the insurance industry.

4.1 Indicator of insurance potential due to demographic forces

Accordingly, this section proposes the construction of a synthetic indicator (the *Indicator of Insurance Potential due to Demographic Forces*, IPDFI), based on the three intermediate indicators explained below, which provide a relative measurement of potential, taking as a reference the relative measurements of potential both for auto and property insurance activity and for insurance related to the management of private savings and health insurance (see Chart 4.1).

Index of auto and property insurance potential (IPSP)

This first intermediate indicator is the result of calculating the geometric mean of the following potential indicators (explained in the third section of this report):

$$IPSP = \sqrt[3]{a \cdot b \cdot c}$$

Where:

a = potential by population weight

b = demographic growth potential (over 24 years)

c = potential by per capita income and its growth

Index of health insurance potential (IPSS)

This second intermediate indicator is the result of calculating the geometric mean of the following potential indicators:

$$IPSS = \sqrt[2]{a \cdot e}$$

Where:

a = potential by population weight

e = potential for healthcare expenditure growth

Index of savings insurance potential (IPSA)

Finally, the third of the intermediate indicators is the result of calculating the geometric mean of the following potential indicators:

$$IPSA = \sqrt[2]{a \cdot g}$$

Where:

a = potential by population weight

g = potential for growth in private savings

Thus, the IPDFI has been constructed as a weighted average of the three intermediate indicators discussed above, as follows:

$$IPDFI = \frac{IPSP \cdot p_1 + IPSS \cdot p_2 + IPSA \cdot p_3}{p_1 + p_2 + p_3}$$

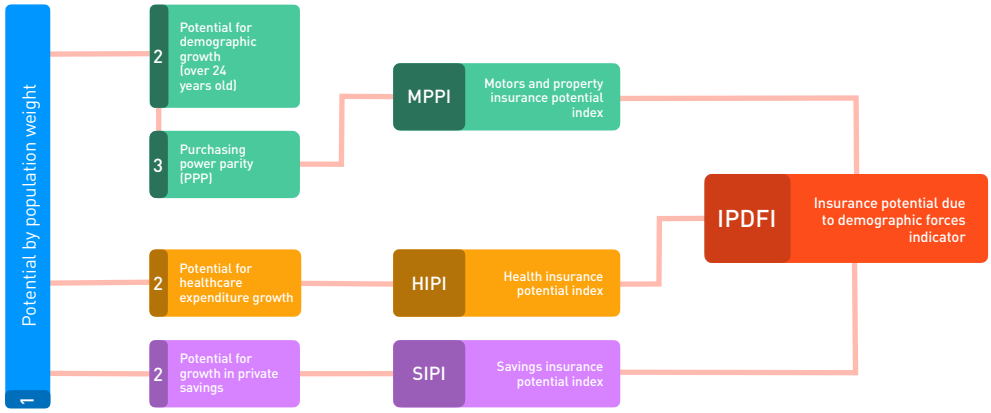
Where:

p_1 = weighting for IPSP, equal to 1

p_2 = weighting for IPSS, equal to 1

p_3 = weighting for IPSA, equal to 2

Chart 4.1
Diagram of IPDFI construction



Source: MAPFRE Economics

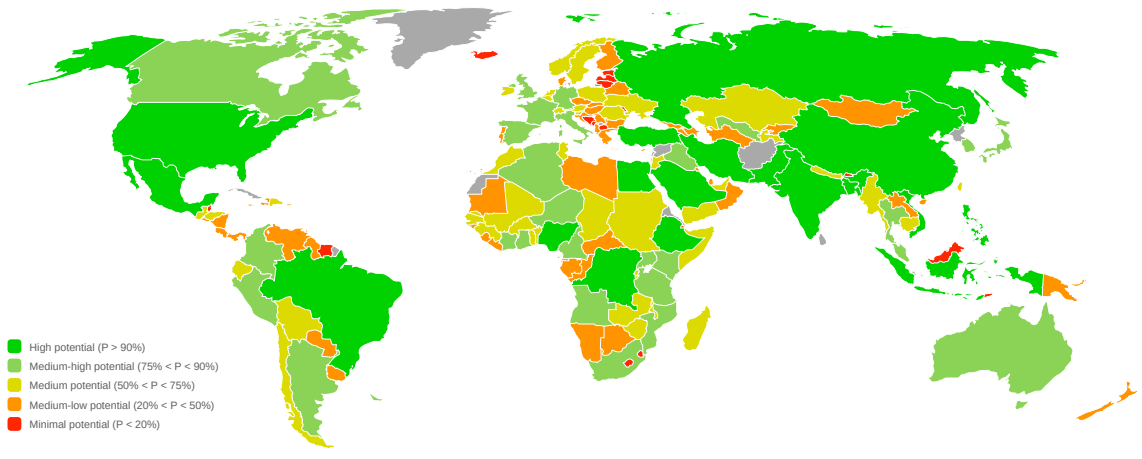
Thus, the savings component has been assigned a weighting equal to the sum of the weighting of the auto and property components and the health component. As a result, auto, property and health (Non-Life) insurance have a weighting equivalent to savings (Life) insurance, as is customary in more developed insurance markets. Finally, to facilitate comparison, the result of this indicator has been scaled so that the IPDFI presents values between 0 and 100 (0 for the country with the lowest potential and 100 for the country with the highest potential).

In summary, the *Indicator of Insurance Potential due to Demographic Forces* (IPDFI) synthesizes the results of the three previous intermediate indicators, offering a relative comparison to assess the insurance potential due to demographic forces of insurance activity for the 179 countries that make up the sample analyzed.

4.2 IPDFI Ranking

Table 4.2-a and Chart 4.2 present the construction data and the geographical map of

Chart 4.2
IPDFI geography



Source: MAPFRE Economics

Table 4.2-a
Global ranking of the insurance potential due to demographic forces indicator (IPDFI)

	Country	*Potential by population weight* (a)	*Potential for demographic growth (over 24 years old)* (b)	*Purchasing power parity and its growth (PPP)* (c)	Motors and property insurance potential index (MPPI) ($d=\sqrt[3]{a \cdot b \cdot c}$)	*Potential for healthcare expenditure growth* (e)	Health insurance potential index (HIPI) ($f=\sqrt[2]{a \cdot e}$)	*Potential for growth in private savings* (g)	Savings insurance potential index (SIPI) ($f=\sqrt[2]{a \cdot g}$)	Insurance potential due to demographic forces indicator (IPDFI)
1	China	68.9	97.2	29.0	57.9	59.1	63.8	37.3	50.7	**100.0**
2	India	100.0	100.0	19.5	57.9	30.6	55.3	29.5	54.3	**99.4**
3	United States	21.7	42.2	63.1	38.7	60.9	36.4	52.2	33.7	**63.7**
4	Indonesia	18.8	43.4	21.7	26.1	32.8	24.8	32.2	24.6	**44.8**
5	Pakistan	24.1	63.5	12.5	26.7	14.2	18.5	19.4	21.7	**39.6**
6	Brazil	13.2	37.5	21.5	22.0	41.3	23.4	31.5	20.4	**38.5**
7	Nigeria	25.4	66.4	10.2	25.8	10.7	16.5	18.8	21.9	**38.5**
8	Bangladesh	12.3	45.8	20.4	22.5	32.4	19.9	32.4	19.9	**36.8**
9	Ethiopia	14.4	67.5	16.2	25.1	16.1	15.2	25.7	19.3	**35.2**
10	Egypt	10.3	50.5	21.4	22.3	24.4	15.8	30.3	17.6	**32.8**
11	Mexico	8.5	39.5	23.5	19.9	39.2	18.2	33.0	16.7	**31.9**
12	Philippines	10.0	47.8	18.7	20.8	24.8	15.7	28.3	16.8	**31.3**
13	Turkey	5.6	34.5	39.0	19.6	51.2	16.9	44.8	15.8	**30.4**
14	Dem. Rep. of Congo	15.2	72.8	10.1	22.3	9.1	11.8	16.3	15.7	**29.3**
15	Russia	6.8	19.3	33.8	16.5	46.0	17.7	33.9	15.2	**28.9**
16	Saudi Arabia	3.0	42.2	52.2	18.8	63.4	13.9	73.4	14.9	**27.9**
17	Vietnam	6.1	31.1	23.1	16.4	39.8	15.7	32.2	14.1	**26.9**
18	Iran	5.7	34.7	22.2	16.4	41.6	15.4	34.5	14.1	**26.8**
19	Japan	5.0	12.2	41.9	13.7	64.1	17.9	38.2	13.8	**26.4**
20	Germany	4.2	16.6	49.6	15.1	62.4	16.1	44.2	13.6	**26.0**
21	Tanzania	8.9	70.6	12.4	19.8	12.4	10.5	20.7	13.6	**25.7**
22	United Kingdom	4.0	24.8	44.6	16.4	54.1	14.8	40.0	12.7	**25.3**
23	France	3.6	21.3	45.7	15.2	56.9	14.4	40.5	12.1	**24.0**
24	Kenya	5.6	59.3	14.9	17.1	16.1	9.5	27.5	12.4	**23.0**
25	Uganda	6.0	75.2	11.4	17.2	10.5	7.9	25.2	12.3	**22.2**
26	Thailand	3.6	21.2	23.0	12.1	56.7	14.4	32.6	10.9	**21.5**
27	Canada	2.7	29.0	44.7	15.2	52.7	12.0	39.8	10.4	**21.5**
28	South Korea	2.4	16.2	47.2	12.2	82.1	13.9	51.0	11.0	**21.4**
29	Iraq	5.0	61.4	11.8	15.3	16.8	9.1	26.4	11.4	**21.1**
30	Italy	2.6	13.1	44.1	11.5	72.0	13.8	43.7	10.8	**20.9**
31	Algeria	3.7	43.1	17.6	14.1	32.8	11.0	30.2	10.6	**20.6**
32	Colombia	3.3	32.1	20.9	13.0	40.5	11.6	31.7	10.2	**20.1**
33	South Africa	4.5	37.0	15.6	13.7	22.1	9.9	25.3	10.6	**20.0**
34	Malaysia	2.5	36.2	35.2	14.7	41.8	10.2	40.7	10.0	**20.0**
35	Spain	2.3	16.9	40.4	11.7	71.4	12.9	43.3	10.0	**19.9**
36	Australia	1.9	31.3	50.2	14.5	54.0	10.2	43.8	9.2	**19.2**
37	Ivory Coast	3.5	64.3	14.9	14.9	14.3	7.0	27.9	9.8	**18.5**
38	Argentina	3.0	32.2	23.1	13.1	35.2	10.3	27.2	9.0	**18.5**
39	Niger	4.7	79.8	10.3	15.7	8.8	6.4	17.3	9.1	**17.9**
40	Angola	5.0	69.8	7.7	13.9	9.1	6.7	18.1	9.5	**17.7**
41	Mozambique	4.3	68.9	10.1	14.4	10.3	6.7	19.9	9.3	**17.6**
42	Ghana	3.4	54.4	12.9	13.4	16.4	7.5	24.7	9.2	**17.5**
43	Uzbekistan	2.8	38.2	18.3	12.5	24.7	8.3	28.8	9.0	**17.3**
44	Peru	2.5	38.2	17.7	12.0	31.6	9.0	26.9	8.3	**16.7**
45	Cameroon	3.5	64.6	10.9	13.5	11.7	6.4	22.4	8.8	**16.7**

Table 4.2-a (continued)
Global ranking of the insurance potential due to demographic forces indicator (IPDFI)

	Country	*Potential by population weight* (a)	*Potential for demographic growth (over 24 years old)* (b)	*Purchasing power parity and its growth (PPP)* (c)	**Motors and property insurance potential index (MPPI)** ($d=\sqrt[3]{a \cdot b \cdot c}$)	*Potential for healthcare expenditure growth* (e)	**Health insurance potential index (HIPI)** ($f=\sqrt[2]{a \cdot e}$)	*Potential for growth in private savings* (g)	**Savings insurance potential index (SIPI)** ($f=\sqrt[2]{a \cdot g}$)	**Insurance potential due to demographic forces indicator (IPDFI)**
46	Morocco	2.7	36.1	15.2	11.4	30.4	9.1	26.1	8.4	**16.6**
47	Taiwan	1.2	15.5	60.1	10.4	80.6	9.8	58.1	8.3	**16.4**
48	Myanmar	3.5	30.4	8.6	9.7	23.1	9.0	21.9	8.7	**16.1**
49	Poland	1.7	9.6	42.8	8.9	57.8	10.0	40.9	8.4	**15.8**
50	Madagascar	3.5	61.7	7.8	11.8	12.4	6.5	20.5	8.4	**15.7**
51	Zambia	2.5	68.5	10.3	12.2	12.1	5.6	30.0	8.7	**15.7**
52	Yemen	3.7	63.0	4.9	10.4	9.9	6.0	20.5	8.7	**15.0**
53	Mali	3.3	72.9	8.5	12.7	8.6	5.3	18.2	7.7	**14.9**
54	Burkina Faso	2.7	66.7	10.4	12.4	11.1	5.5	21.3	7.6	**14.8**
55	United Arab Emirates	0.7	26.4	71.4	10.8	56.6	6.2	92.1	7.9	**14.6**
56	Kazakhstan	1.6	32.4	30.6	11.6	30.6	6.9	31.7	7.0	**14.5**
57	Senegal	2.2	65.9	12.7	12.3	14.2	5.6	23.8	7.2	**14.4**
58	Sudan	5.7	62.8	1.7	8.4	7.0	6.3	12.4	8.4	**14.0**
59	Netherlands	1.0	18.1	54.9	9.9	61.4	7.8	47.4	6.8	**14.0**
60	Nepal	2.3	43.3	12.4	10.7	19.7	6.7	21.0	6.9	**13.8**
61	Malawi	2.5	70.2	7.8	11.1	9.6	4.9	19.5	7.0	**13.4**
62	Chad	2.5	70.1	7.2	10.9	8.2	4.5	20.4	7.2	**13.2**
63	Chile	1.2	24.7	27.3	9.2	49.4	7.6	34.1	6.3	**13.1**
64	Guatemala	1.6	53.1	15.7	10.9	21.5	5.8	25.7	6.3	**13.0**
65	Israel	0.8	40.9	44.2	11.4	41.9	5.9	38.9	5.6	**12.7**
66	Benin	1.7	63.3	13.8	11.4	13.1	4.7	22.3	6.2	**12.7**
67	Ukraine	1.7	12.3	17.8	7.1	44.2	8.6	23.7	6.3	**12.5**
68	Somalia	2.5	71.6	7.5	11.0	7.8	4.4	15.7	6.3	**12.5**
69	Ecuador	1.4	39.4	15.8	9.4	31.4	6.5	26.8	6.0	**12.4**
70	Rwanda	1.5	60.0	15.0	11.1	14.8	4.8	23.5	6.0	**12.4**
71	Burundi	1.6	71.4	12.5	11.4	12.0	4.5	21.8	6.0	**12.3**
72	Switzerland	0.6	22.5	65.9	9.4	71.4	6.3	56.6	5.6	**12.0**
73	Sweden	0.7	24.2	51.7	9.5	54.1	6.1	42.8	5.4	**11.7**
74	Belgium	0.7	19.6	51.1	8.7	59.6	6.3	44.9	5.5	**11.6**
75	Guinea	1.6	63.4	12.3	10.7	11.8	4.3	18.6	5.4	**11.5**
76	Cambodia	1.2	36.9	16.3	9.0	25.2	5.5	26.3	5.7	**11.5**
77	Singapore	0.4	21.7	93.9	9.0	100.0	6.0	81.7	5.4	**11.5**
78	Romania	0.9	8.8	39.0	6.7	55.0	6.9	38.8	5.8	**11.2**
79	Ireland	0.3	27.7	96.8	9.6	85.5	5.3	78.3	5.1	**11.1**
80	Dominican Republic	0.8	34.9	28.5	9.2	36.9	5.4	35.1	5.2	**11.1**
81	Jordan	0.9	45.4	15.7	8.7	26.8	5.0	33.6	5.6	**11.0**
82	Tajikistan	1.0	50.6	16.9	9.4	19.6	4.4	28.5	5.3	**10.8**
83	Zimbabwe	1.7	61.2	8.1	9.6	9.8	4.1	16.5	5.4	**10.8**
84	Bolivia	1.0	44.7	13.2	8.5	19.2	4.5	24.2	5.0	**10.2**
85	Honduras	0.9	48.9	13.1	8.3	22.2	4.5	28.1	5.0	**10.1**
86	Austria	0.5	16.0	51.0	7.3	65.3	5.6	47.1	4.8	**10.0**
87	Tunisia	0.8	31.3	14.7	7.3	36.3	5.5	26.9	4.7	**9.9**
88	Togo	1.0	58.2	12.0	8.9	13.1	3.7	22.5	4.8	**9.8**
89	Norway	0.4	27.0	60.2	8.5	61.6	4.8	50.7	4.3	**9.7**
90	South Sudan	1.2	67.3	7.2	8.2	11.5	3.6	19.5	4.7	**9.5**

Table 4.2-a (continued)
Global ranking of the insurance potential due to demographic forces indicator (IPDFI)

	Country	*Potential by population weight* (a)	*Potential for demographic growth (over 24 years old)* (b)	*Purchasing power parity and its growth (PPP)* (c)	**Motors and property insurance potential index (MPPI)** ($d=\sqrt[3]{a \cdot b \cdot c}$)	*Potential for healthcare expenditure growth* (e)	**Health insurance potential index (HIPI)** ($f=\sqrt[2]{a \cdot e}$)	*Potential for growth in private savings* (g)	**Savings insurance potential index (SIPI)** ($f=\sqrt[2]{a \cdot g}$)	**Insurance potential due to demographic forces indicator (IPDFI)**
91	Czech Republic	0.6	14.6	39.7	6.9	50.9	5.4	36.4	4.5	**9.4**
92	Libya	0.5	41.4	22.6	7.9	36.7	4.4	39.1	4.5	**9.4**
93	Hong Kong	0.4	15.3	54.8	6.7	84.4	5.5	53.3	4.4	**9.3**
94	Kuwait	0.3	33.0	38.3	7.3	78.3	4.9	62.5	4.4	**9.3**
95	Azerbaijan	0.6	27.8	20.5	7.1	37.4	4.8	32.1	4.4	**9.2**
96	Denmark	0.4	20.4	57.9	7.6	57.9	4.6	47.7	4.2	**9.1**
97	Oman	0.4	40.5	30.3	7.8	31.7	3.5	48.9	4.4	**8.9**
98	Portugal	0.5	11.1	39.0	5.9	63.8	5.5	39.3	4.3	**8.8**
99	Sierra Leone	0.9	59.4	9.7	8.0	12.3	3.3	20.9	4.3	**8.8**
100	Qatar	0.2	25.8	79.0	7.4	60.2	3.4	100.0	4.4	**8.7**
101	Panama	0.4	38.9	38.3	8.1	44.6	4.0	41.3	3.8	**8.7**
102	Laos	0.6	43.9	15.5	7.4	21.8	3.6	27.5	4.1	**8.5**
103	Greece	0.5	10.7	35.6	5.6	61.7	5.3	36.7	4.1	**8.4**
104	Papua New Guinea	1.0	50.0	4.8	6.1	13.3	3.6	22.6	4.7	**8.4**
105	Nicaragua	0.6	44.3	14.9	7.2	25.7	3.8	28.0	4.0	**8.4**
106	New Zealand	0.3	26.6	41.6	7.3	51.9	4.2	39.3	3.7	**8.3**
107	Central African Rep.	0.8	76.9	12.6	9.2	8.9	2.7	13.7	3.3	**8.2**
108	Paraguay	0.5	38.7	18.1	7.2	26.0	3.7	27.4	3.8	**8.1**
109	Mauritania	0.6	67.4	13.1	8.1	13.1	2.8	21.2	3.6	**8.0**
110	Turkmenistan	0.5	38.5	18.4	7.1	23.7	3.5	27.3	3.7	**7.9**
111	Hungary	0.4	6.6	39.6	4.8	53.7	4.8	38.0	4.0	**7.8**
112	Congo	0.7	59.5	8.1	6.9	11.9	2.9	22.7	4.0	**7.8**
113	Kyrgyzstan	0.6	44.2	12.3	6.9	18.7	3.3	23.3	3.7	**7.8**
114	Venezuela	2.2	40.8	0.0	0.1	19.2	6.5	13.1	5.4	**7.7**
115	Costa Rica	0.3	29.6	27.9	6.5	46.9	3.9	35.2	3.4	**7.6**
116	Haiti	0.9	42.4	4.4	5.6	12.9	3.5	17.5	4.0	**7.5**
117	Finland	0.3	16.1	45.9	6.0	53.0	3.9	38.4	3.3	**7.3**
118	Liberia	0.6	60.9	9.1	6.9	11.4	2.6	19.1	3.4	**7.1**
119	Belarus	0.4	9.2	24.8	4.6	43.4	4.2	27.9	3.4	**6.9**
120	El Salvador	0.4	31.0	17.6	5.9	30.5	3.4	26.5	3.1	**6.8**
121	Mongolia	0.3	41.0	20.7	6.2	31.3	2.9	34.8	3.1	**6.7**
122	Slovakia	0.3	10.3	37.2	4.6	56.0	3.8	38.8	3.2	**6.5**
123	Botswana	0.2	46.6	21.6	6.1	23.5	2.3	33.1	2.8	**6.1**
124	Gambia	0.3	66.6	10.9	6.1	13.2	2.0	25.2	2.8	**6.0**
125	Gabon	0.2	51.1	19.1	6.2	19.8	2.2	28.5	2.6	**6.0**
126	Bahrain	0.1	30.6	46.9	5.3	50.6	2.3	60.5	2.5	**5.5**
127	Serbia	0.3	3.3	30.6	3.0	52.2	3.7	32.7	2.9	**5.5**
128	Uruguay	0.2	20.5	27.4	4.6	42.5	2.7	29.5	2.3	**5.2**
129	Namibia	0.2	47.3	13.1	5.3	15.3	1.9	22.8	2.3	**5.2**
130	Guinea-Bissau	0.2	60.6	11.7	5.4	13.1	1.7	23.3	2.3	**5.1**
131	Macao	0.0	30.0	99.5	5.3	92.3	2.1	84.1	2.0	**5.0**
132	Georgia	0.2	11.0	30.7	3.8	41.1	2.6	31.3	2.3	**4.8**
133	Croatia	0.2	5.2	41.6	3.2	56.9	3.0	38.2	2.4	**4.8**
134	Guyana	0.0	29.5	100.0	5.1	70.5	1.8	82.1	1.9	**4.7**
135	Bulgaria	0.2	0.4	35.3	1.5	55.4	3.5	35.2	2.8	**4.7**

Table 4.2-a (continued)
Global ranking of the insurance potential due to demographic forces indicator (IPDFI)

	Country	*Potential by population weight* (a)	*Potential for demographic growth (over 24 years old)* (b)	*Purchasing power parity and its growth (PPP)* (c)	**Motors and property insurance potential index (MPPI)** ($d=\sqrt[3]{a \cdot b \cdot c}$)	*Potential for healthcare expenditure growth* (e)	**Health insurance potential index (HIPI)** ($f=\sqrt[3]{a \cdot e}$)	*Potential for growth in private savings* (g)	**Savings insurance potential index (SIPI)** ($f=\sqrt[3]{a \cdot g}$)	**Insurance potential due to demographic forces indicator (IPDFI)**
136	Equatorial Guinea	0.2	54.8	10.8	4.7	13.9	1.6	23.9	2.1	**4.6**
137	Luxembourg	0.0	27.8	97.9	4.9	86.1	1.9	79.7	1.8	**4.5**
138	Slovenia	0.1	12.5	43.3	3.8	62.6	2.5	41.7	2.1	**4.5**
139	Puerto Rico	0.1	9.2	34.5	3.4	57.0	2.7	34.2	2.1	**4.5**
140	Cyprus	0.1	24.1	47.4	4.4	59.1	2.1	45.9	1.9	**4.5**
141	Armenia	0.1	16.0	28.2	3.9	40.0	2.3	29.6	2.0	**4.4**
142	Albania	0.1	12.6	24.7	3.3	48.9	2.4	29.9	1.9	**4.2**
143	Jamaica	0.1	18.5	16.2	3.3	36.2	2.1	30.3	1.9	**4.1**
144	Bosnia and Herzegovina	0.1	8.3	23.9	3.0	48.0	2.5	28.6	1.9	**4.0**
145	Moldova	0.1	7.3	24.1	2.9	31.4	2.1	25.5	1.9	**3.9**
146	Swaziland	0.1	47.5	17.7	4.4	16.7	1.3	23.5	1.5	**3.8**
147	North Macedonia	0.1	14.2	23.9	3.2	47.0	2.1	30.6	1.7	**3.8**
148	Djibouti	0.1	43.8	16.7	4.0	22.6	1.4	29.1	1.6	**3.8**
149	Trinidad and Tobago	0.1	18.5	26.6	3.3	45.4	1.9	33.5	1.6	**3.6**
150	Lesotho	0.2	37.0	7.4	3.6	10.1	1.3	15.5	1.6	**3.6**
151	Lithuania	0.1	1.5	42.2	1.8	57.8	2.3	39.6	1.9	**3.5**
152	Mauritius	0.1	16.9	30.5	3.2	48.8	1.7	35.8	1.5	**3.4**
153	Timor-Leste	0.1	51.2	10.6	3.9	13.5	1.2	16.2	1.3	**3.4**
154	Brunei Darussalam	0.0	29.7	57.7	3.5	62.6	1.2	62.4	1.2	**3.1**
155	Fiji	0.1	31.7	19.4	3.3	22.6	1.2	25.9	1.2	**3.0**
156	Estonia	0.1	8.5	36.5	2.6	52.0	1.7	34.7	1.4	**3.0**
157	Bhutan	0.0	35.4	19.3	3.2	30.6	1.2	31.1	1.2	**2.9**
158	Solomon Islands	0.1	56.3	6.9	3.1	12.7	1.0	20.9	1.3	**2.8**
159	Maldives	0.0	27.8	36.0	3.0	52.1	1.2	51.9	1.2	**2.8**
160	Comoros	0.1	51.2	7.4	3.1	13.0	1.0	18.1	1.2	**2.7**
161	Cape Verde	0.0	39.9	16.2	2.9	30.3	1.1	30.8	1.1	**2.7**
162	Malta	0.0	15.0	53.7	2.7	62.8	1.2	47.6	1.1	**2.6**
163	Iceland	0.0	23.8	53.9	2.9	59.0	1.1	48.4	1.0	**2.5**
164	Bahamas	0.0	28.5	37.3	2.8	50.2	1.0	43.6	1.0	**2.5**
165	Suriname	0.0	31.8	15.5	2.7	27.9	1.0	26.1	1.0	**2.4**
166	Latvia	0.1	0.6	36.0	1.1	50.7	1.7	33.4	1.4	**2.4**
167	Belize	0.0	46.3	15.4	2.7	26.4	0.9	29.2	0.9	**2.3**
168	Montenegro	0.0	14.3	29.3	2.2	44.5	1.1	30.7	0.9	**2.1**
169	Vanuatu	0.0	59.0	5.1	2.2	10.9	0.6	17.4	0.8	**1.8**
170	Samoa	0.0	42.7	10.3	1.9	17.1	0.5	20.3	0.6	**1.5**
171	Barbados	0.0	15.3	21.4	1.5	44.9	0.7	27.6	0.5	**1.3**
172	Kiribati	0.0	45.0	11.8	1.6	16.5	0.3	24.0	0.4	**1.1**
173	Seychelles	0.0	23.6	36.9	1.2	50.6	0.3	44.9	0.3	**0.8**
174	Granada	0.0	25.8	22.1	1.2	31.5	0.3	26.4	0.3	**0.8**
175	Micronesia	0.0	36.5	11.6	1.1	19.3	0.3	20.3	0.3	**0.7**
176	Tonga	0.0	36.5	12.2	1.1	18.7	0.2	20.3	0.3	**0.7**
177	Antigua and Barbuda	0.0	24.3	25.2	0.8	50.2	0.2	36.0	0.2	**0.5**
178	St. Vincent and the Grenadines	0.0	20.6	22.2	0.7	38.9	0.2	29.9	0.1	**0.4**
179	Aruba	0.0	14.8	45.2	0.2	63.0	0.0	44.5	0.0	**0.0**

Source: MAPFRE Economics

Table 4.2-b
Levels of potential: Insurance potential due to demographic forces indicator (IPDFI)
(percentile analysis)

Levels of potential	*Potential by population weight* (a)	*Potential for demographic growth (over 24 years old)* (b)	*Purchasing power parity and its growth (PPP)* (c)	Motors and property insurance potential index (MPPI) ($d=\sqrt[3]{a \cdot b \cdot c}$)	*Potential for healthcare expenditure growth* (e)	Health insurance potential index (HIPI) ($f=\sqrt[2]{a \cdot e}$)	*Potential for growth in private savings* (g)	Savings insurance potential index (SIPI) ($f=\sqrt[2]{a \cdot g}$)	Insurance potential due to demographic forces indicator (IPDFI)
P = 100%; Maximum potential	100.0	100.0	100.0	57.9	100.0	63.8	100.0	54.3	**100.0**
P = 90%; High potential (P > 90%)	5.7	66.8	51.8	16.6	62.7	14.9	49.2	13.9	**26.5**
= 75%; Medium-high potential (P > 75%)	2.7	51.2	38.6	12.1	53.4	7.7	39.2	8.7	**16.6**
P = 50%; Medium potential (P > 50%)	0.7	36.5	21.4	8.0	32.8	4.5	30.0	4.7	**9.5**
P = 20%; Medium-low potential (P > 20%)	0.1	16.9	11.8	3.3	13.4	1.9	22.4	1.9	**4.1**
P = 0%; Minimal potential	0.0	0.4	0.0	0.1	7.0	0.0	12.4	0.0	**0.0**

Source: MAPFRE Economics

the IPDFI, with the estimation results for 179 markets. In Chart 4.2, these results have been grouped by color into five groups by percentile of the indicator according to their potential (high, medium-high, medium, medium-low and low). As this information shows, the highest level of insurance potential due to demographic forces is found in China, followed by India and the United States. For China and India, a major contributing factor to their potential is their population weight, which offsets the lower contribution of their level and growth prospects of per capita GDP in purchasing power parity (PPP). For the United States, the largest contributions come from the potential due to the level of GDP per capita income and the potential for growth in healthcare spending, but also from the potential for the level and growth prospects of its population over the age of 24 over the next two decades. Nigeria and Ethiopia in Africa, Pakistan, Indonesia and Japan in Asia, Brazil and Mexico in Latin America, as well as Turkey and Russia in Europe, among others, also stand out with medium-high potential (above the 75th percentile of the IPDFI distribution).

The major European economies rank at a medium-high level of insurance potential due to demographic forces (percentile >75%-90%), including Germany, the United Kingdom, France, Italy and Spain, all of which have high relative values for the potential for growth in private savings and healthcare spending indicators, as well as for the level of GDP per capita in PPP, which offset the lower potential due to the growth of the population over 24 years of age and their lower population weight. This group also includes countries such as Canada and, in Latin America, Colombia and Argentina.

Finally, in order to facilitate comparison, Table 4.2-b shows the values of the position measurements considered most representative for the Indicator of Insurance Potential due to Demographic Forces (IPDFI) and for all the partial indicators involved in its construction, classifying them according to their potential as high (percentile > 90%), medium-high (percentile >75%-90%), medium (percentile >50%-75%), medium-low (percentile >20%-50%) and low (percentile <=20%).

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