Working documents

AGING IN CHILE:
Trends and characteristics of older people and demographic challenges for the population

Authors:
Felipe Hugo Rojas
Luis Rodríguez Canache
Julibeth Rodríguez León

September 2022

INE
Instituto Nacional de Estadísticas · Chile

Authors:
Felipe Hugo Rojas
Luis Rodríguez Canache
Julibeth Rodríguez León

Subdepartment of Demography
Department of Demographic and Social Statistics
Technical Subdirectorate

INE Working Papers are for researchers, academics, students, and the public interested in economic matters, and their purpose is to provide a comprehensive analysis of key conceptual, analytical, and methodological aspects of the statistical products produced by INE and thus to contribute to the exchange of ideas among the different components of the National Statistical System.

The interpretations and opinions expressed in Working Papers belong exclusively to the authors and collaborators. They do not necessarily reflect the official position of INE or any other institution to which the collaborators of the documents belong.

Summary

This document addresses the aging process of the population in Chile from different perspectives. First, approaching this phenomenon on a theoretical-conceptual level, the authors review some of the main international and regional initiatives that have arisen from the global progress of aging and discuss the development of a framework for protecting the rights of older people.

Second, the authors analyze the evolution of aging in the country through different indicators and briefly characterize older people in Chile with three sources of demographic information: population projections, population and housing censuses, and vital statistics.

Finally, the main conclusions of the analysis are presented, as are some of the discussions that arise from the aging process of the population.

Keywords: Aging, demographic transition, older people

Presentation

"As the twentieth century was marked by the demographic transition of Latin America, the twenty-first century will be marked by the aging of the population" (Chackiel, "La dinámica demográfica en América Latina", 2004, p. 65).

The demographic transition in Chile and other countries of the world can be attributed to the transition from high to low levels of mortality and fertility, which has led to the change in the age structure of populations. These changes have influenced the decrease in the proportion of the young population as well as the relative increase in older people, and they have thus resulted in population aging.

The shifting characteristics of the population in Chile over the last hundred years have been determined by and a cause of a series of interacting social changes. The study of aging is thus important because it addresses the issues and opportunities of aging, which are closely linked to the economic and social development of the country, both now and in the future.

Population aging is a demographic phenomenon of worldwide importance, and various global and regional initiatives address the possible positive and negative consequences that this transformation may have for the advancement and well-being of older people, as well as for the social, institutional, economic, and cultural development of countries.

In consideration of the importance of demographic indicators for public planning, the National Statistics Institute (INE) has three sources of information for this working document: yearbooks of vital statistics, population and housing censuses, and population estimates and projections. With these sources, INE seeks to provide a comprehensive picture of the phenomenon of Chile's population aging that can provide a foundation for advancing internal and external research in this area in the future.

Table of contents

List of statistical tables

List of figures

List of illustrations

Introduction

Population aging, population growth, urbanization, and international migration make up the four "mega-trends" that characterize today's world population. Each of these mega-trends will continue to have substantial and lasting impacts on sustainable development at the global and regional levels in the coming decades (United Nations, 2020b).

The extension of human longevity and the reduction of fertility inevitably lead to a change in the age distribution of the population from the younger to the older, a process known as population aging. This process is generally seen as an achievement of humankind because it reflects the advancement of public health, science, and medicine, which have resulted in disease control, injury prevention, and reduction of premature deaths. All of these advances have contributed to an increasing life expectancy and economic and social development of the population.

At the same time, the aging process offers new opportunities for aging populations, whose societies must adapt to this demographic reality and face both present and future challenges driven by population aging. In some regions of the world, the socio-economic conditions of older people are not always optimal, which makes it difficult for them to exercise their rights fully and to enjoy a high quality of life. Similarly, economic, social, and cultural systems are pressured by the irreversible process of population aging and the future challenges that this will bring for the development and well-being of the population (Guzmán, 2002; Cardona & Peláez, 2012; United Nations, 2012; Huenchuan, 2018; Apella, Packard, Zumaeta Aurazo, & Joubert, 2019; United Nations, 2020b).

Chile has also been affected by this phenomenon. The demographic transition of the country in the last hundred years went from high to low fertility and death rates while life expectancy at birth increased. Because of these changes, older people in Chile (particularly the bracket aged 60 and over) make up a larger share within the age structure of the population, representing 18.1% of the total population by 2022 according to the latest population estimates (INE, 2018a). The pace of aging in Chile has gradually expanded. According to institutional projections, the bracket aged 60 and over will almost double by 2050, reaching about a third of the total population of the country (32.1%) (INE, 2018a). This expansion raises the need for statistics that account for the socio-demographic reality of this population group so that public policies can be adjusted to the social and economic needs of an increasingly aging population.

Therefore, the main objective of this working document is *to account for the aging process and the effects of this demographic transformation on the population structure of the country using information from various demographic sources:* population and housing censuses, vital statistics, and population estimates and projections.

Specifically, this working document seeks to *identify and characterize the country's elderly through various demographic dimensions, as well as in their dwellings and households* according to the 2002 and 2017 Population and Housing Censuses. In addition, this document seeks to *account for the aging process* and *its effects on the population structure* from population estimates for the period 1992–2021 and to *present the main causes of death according to sex and age* using vital statistics (2002–2019).

Finally, the authors propose to *analyze trends of aging as projected for the coming decades, as well as the effects on the structure by sex, age, and geographical distribution,* using population projections for the period 2022–2050.

In addition to this characterization, this document seeks to investigate the potential of the main demographic sources for the study of aging, as well as to respond to the increasing demand for information related to this phenomenon while attending to the requirements and concerns of the main international organizations[1] in their approach to population aging now and in the future.

To address these objectives, this document is divided into seven chapters. The first chapter briefly provides background on the process of population aging by defining the basic demographic concepts around this phenomenon, as well as its main stages, effects, and manifestations in the population structure. The theory of demographic transition is used as the articulating axis of this process.

The second chapter contains an overview of aging from an international and regional perspective, and it presents the main international recommendations and initiatives to address population aging.

The third chapter presents the methodological background for this work by defining the unit of analysis and the main demographic indicators used to account for population aging. In addition, the available sources of information for description and characterization are discussed, as are their methodological implications, scope, and limitations.

The fourth chapter analyzes the indicators that account for trends in aging at both the national and regional levels for the period 1992–2021. The various demographic sources available thus summarize the trends in the development of the demographic transition, the indicator of life expectancy at birth, and the changes in the structure of the population, among other indicators.

The fifth chapter briefly characterizes the socio-demographics of older people in Chile, according to information available in the 2002 and 2017 Population and Housing Censuses. The demographic dimensions addressed include gender structure, age distribution, characteristics of housing and households of older people, self-identification as indigenous or native peoples, education, employment status, and the differences between urban and rural areas. In addition, a brief section discusses the main causes of death of older people, according to vital statistics for the period 2010–2019.

The sixth chapter describes the future of aging in the country, mainly according to population projections for the period 2022–2050.

Finally, the last chapter presents the main conclusions of this working document, the debates and challenges that may result from this new demographic reality, and the prospects for future studies on population aging in Chile.

---

[1] Population aging in various regions of the world is considered to be of special interest of international organizations such as the World Health Organization and the United Nations, as well as regional divisions such as UNECE and ECLAC.

1. Conceptual background on demographic aging

Age is one of the structuring axes of life, both biologically and socially, and each stage of the life cycle carries specific opportunities, challenges, and risks. These stages are connected to the demographic phenomena of fertility, mortality, and migration, which in turn are the determinants of the change in the size and composition of the population.

Demographically, population aging is the result of a combination of various elements. The theory of demographic transition is the conceptual framework used to better understand and describe what population aging is, how it occurs, and what effects it has on the population structure. This chapter presents the basic concepts associated with aging, its definition, and its main effects on the structure of the population.

1.1 The concept of population aging

Aging can be addressed from a biological, social, economic, or cultural perspective. As a multidimensional phenomenon, aging has various physical and biological implications, which can be observed in a person's family environment and in social, economic, and cultural systems as well as in the health of the population (Villa & Rivadeneira, 2000; Moya, 2013). Similarly, aging can be understood as an individual or demographic phenomenon.

Aging is a gradual process for individuals as they move through the different stages of the life cycle. Aging is thus a biological, irreversible, and lifelong process (Chackiel, 2000). From a demographic perspective, population aging consists in the change of age structures of the population, which is mainly manifested in the increase in the proportion of older people. A population is thus considered to be aging when the share of older people in the total population is increasing and continues to increase over the years (Villa & Rivadeneira, 2000; Miró, 2003; United Nations, 2012; Rivero-Cantillano & Spijker, 2015).

1.2 Demographic transition and population aging

Demographic aging is generally seen as an inevitable consequence of the transition of a population towards low population growth rates, which in turn result from the transition from high to low fertility and mortality levels (CEPAL, 2008; Goldstein, 2009). This transformation is generally referred to as the **demographic transition** process, which was initially used as a theoretical framework to explain demographic transformations from pre-industrial to modern societies in Europe. Over the decades, this framework has become an important paradigm for explaining the demographic transformations in different regions of the world, as well as the changes in the population structure and the implications for economic and social development from a demographic perspective (Villa & Rivadeneira, 2000; Miró, 2003; CEPAL, 2008; Cotlear, 2011).

The theory of demographic transition accounts for the changes in the population structure that have resulted from the interaction of various components of demographic dynamics, mainly those related to fertility and mortality. As noted by Miró (2003), the level of decline of mortality and fertility has four stages in the demographic transition: **incipient, moderate, full, and advanced**. While in the early and moderate stages mortality slowly declines, and fertility has not yet begun to decline or it is declining slowly. In the full stage both variables are in marked decrease, while in the advanced stage both fertility and mortality tend

to be in balance, showing significant decreases that are sustained over time. In the following years, significant changes in the age structures of most of the countries of Latin America and the consequent advance of the aging of the population have led to new indicators and stages being proposed for the definition of demographic transition. Using fertility rates and life expectancy, these indicators are less affected by the age structure of the population while they more accurately capture the demographic challenges that countries face at each stage of the demographic transition. Under this premise, the four stages of the demographic transition are defined as **moderate, full, advanced, and very advanced** (CEPAL, 2008).

The demographic transition in Latin America is marked by heterogeneity and by the different levels of progress among the countries of the region. However, a striking feature of this process is the speed with which it has occurred when compared with other regions (CEPAL, 2008). In the middle of the twentieth century, improvements in living conditions, hygiene, sanitation, and advances in science and medicine led to significant declines in mortality, especially among the youngest, which affected infant mortality and thus initiated the process of demographic transition in its **early stage** (Chackiel, 2004). When fertility rates are high, the decline in mortality among the youngest results in rapid population growth. These factors result in a young population structure because the mortality of older people remains high (i.e., life expectancy of the population does not exceed 60 years). Under the updated classification of the stages of the demographic transition (CEPAL, 2008), all countries of Latin America have already passed through this stage.

As advances in medicine and living conditions continue to develop, mortality declines gradually, and life expectancy slightly increases to over 60 years. At the same time, various social, cultural, and economic transformations reduce the total fertility rates of the population. Some of the factors that have contributed to the gradual reduction of fertility levels include family planning, the promotion and increased use of contraceptives, the integration of women into the labour market, and cultural changes associated with marriage, family formation, and childrearing. Fertility levels, however, remain above levels of generational replacement[2] and thus these conditions represent a **moderate stage** of demographic transition.

As fertility and infant mortality continue to decline gradually, the age structure of the population begins to age slowly, and it enters the **full stage** of the demographic transition. The mortality of older people slightly declines and life expectancy is approximately seventy years, while the bulk of the population is concentrated in young ages, which increases the size of the economically active population. This situation has been called the "demographic dividend" because of its low levels of demographic dependency of both children under the age of 15 and those over age 60, and this dividend is especially favorable for the economic development of societies (Chackiel, 2000; Cotlear, 2011).

As total fertility rates continue to decline, sometimes even below replacement levels, decreasing mortality levels extend to all age brackets while life expectancy begins to exceed 75 years, which gives way to the **advanced stage** of demographic transition. Life expectancy thus increases considerably, which results in a larger population that tends to live longer and have fewer children. Low levels of fertility and mortality cause important changes in the age structure of the population as the dominant cohorts begin to reach an

---

[2] The level of generational replacement refers to the minimum fertility rate needed for a theoretically closed society (where migration does not exist) to indefinitely maintain its population over time. The total fertility rate (TFR) is normally used to establish the theoretical level of generational replacement. The TFR is a measurement the number of children that each woman would have according to the specific fertility rates when not exposed to the risk of death from the beginning to the end of the fertile period, a figure that is usually approximately 2.1 children per woman.

advancing age and the proportion of older people in the total population begins to expand, thus driving the process of population aging (CEPAL, 2008; Goldstein, 2009; United Nations, 2012).

Finally, the **very advanced stage** of the demographic transition can be seen in countries that lower their fertility levels very early to rates well below replacement level (approximately 1.5 children per woman) and raise life expectancy to nearly 80 years, both of which lead to a sharp decrease in population growth to nearly 0%. The decline in fertility and death rates and the consequent increase in adult survival to later ages are considered the main causes of population aging (Goldstein, 2009; United Nations, 2012).

Some authors have proposed **"a second demographic transition"** in view of the widespread advance of the demographic transition in developed countries (Western Europe, Japan, the United States, and Canada), the sharp drop in fertility levels to levels well below generational replacement, new family and marital patterns, the advancement aging, and increased international immigration. These authors show that the exhaustion of the stages of the "first transition" can account for the demographic processes manifested in most developed countries since the final decades of the last century.

The concept of the second demographic transition was first mentioned by Lesthaeghe and Van de Kaa in 1986 to account for the demographic changes in the industrialized countries during the final decades of the twentieth century, especially those linked to the new reproductive patterns present in these countries. According to Van de Kaa (2002), the difference between the second and the first transition is that the second transition has achieved full control over the fertility levels of the population. Although the prolonged decline in mortality is one of the most important factors in the progress of the first demographic transition, a key component of the second transition is the declining fertility, which reaches levels much lower than that of generational replacement (Van de Kaa, 2002). The factors influencing this dynamic are socio-cultural changes associated with family formation and the reproductive dynamics of the population. These factors include the postponement of marriage and birth of the first child, the reduction in the number of children, the increase in those who do not want to have children, the increase in cohabitation and consensual unions as an alternative to marriage, the increase in divorces, the increased access to contraceptives, and the greater acceptance of abortion (Cabella, Peri, & Street, 2004; Lesthaeghe, 2014).

A second difference between the two transitions is that, under the second demographic transition, fertility falls below replacement levels while the gradual aging of the population evident from the advance of the first transition and the gradual decrease in the economically active population tend to create a demographic imbalance in labour. According to the theory, this imbalance has been compensated in industrialized countries with the increase of international immigration, which reverses the decrease of the population and, in the short term, rejuvenates the population by inserting young workers into the labour market (Van de Kaa, 2002; Diaz Franulic, 2017). A third component of demographic dynamics is migration, which thus plays a greater role in the second demographic transition. Migration tends to be "invisible" in the first transition because fertility and mortality are the key components in demographic transformations and population aging.

Migration may have different implications for population aging in the short and long term as well as at the national level (for example, migration from rural areas to cities) and at the international level (migration between countries). These implications depend on the net balance between immigrants and emigrants both in the place of origin and in the destination of migrants, as well as on the demographic characteristics of the migrant population compared to the non-migrating population (for example, age structure, reproductive patterns, and the intensity and magnitude of migratory flows). These factors vary according

to the particularities of each country and to whether their migratory flows are sustained (CEPAL, 2006; Goldstein, 2009; CELADE, 2010; Reboiras, 2015; United Nations, 2017). The long- and short-term effects of migration on the age structure of the population are thus difficult to predict, especially when considering the volatility and uncertainty associated with migration, which may be strongly influenced by the political, economic, and social context of countries.

Although the theory of the second demographic transition explains the demographic changes of industrialized European countries at the end of the last century, its applicability to non-European regions, such as Latin America, has been an important topic of discussion and debate (Cabella, Peri, & Street, 2004; Vera Veliz, 2012; Lesthaeghe, 2014; Diaz Franulic, 2017). As Díaz Franulic (2017) observed, some of the characteristic elements of the second demographic transition can be seen in Chile. However, the theory of the second demographic transition addresses elements of a culture and values, mainly those that account for changes in the attitudes of the population towards family planning and reproductive behavior, which, according to Lesthaeghe (2014), are associated with "postmodern" values and the search for "individual autonomy". These attitudes are difficult to investigate when using traditional demographic data on births and marriages (Cabella, Peri, & Street 2004).

Investigating the effects that internal and international migration flows may have on population aging requires complex procedures and assumptions, as well as continuity and permanence over time (Reboiras, 2015; United Nations, 2017). To investigate whether Chile has entered a second demographic transition and the changes this may entail for population aging exceeds the scope of this document, but it is a challenging yet interesting topic for future research. For this document, the stages contained in the first demographic transition will be used as an articulating and explanatory framework of the process of population aging.

1.3 Effects of aging on the population structure

One way to demonstrate the different levels of progress in the demographic transition is through a **population pyramid**, which illustrates the composition of a population according to age and sex by grouping women on one side and men on the other and dividing both into five-year age brackets (Goldstein, 2009). Population pyramids can be divided into three basic shapes that account for the different stages of the demographic transition and the levels of aging of the population (see illustration 1):

1. An **expansive pyramid** has a broad base that tapers as it ascends towards older age brackets. The shape of this pyramid is the result of high birth rates and age-related mortality, and it reflects the youth of the population structure and its prospects for growth. The expansive pyramid is associated with countries of low socio-economic development because of their high death rates and uncontrolled birth rate.

2. A **stationary pyramid** has similar levels at all age brackets because birth and death rates have remained unchanged for a long period. This pyramid is associated with countries with a growing level of socio-economic development in which mortality has begun to be controlled while the birth rate remains high. The stationary pyramid is considered the intermediate step between the expansive and constrictive pyramids.

3. A **constrictive pyramid** is wider for older age brackets at the top than for younger age brackets at the base. Its shape is due to the decreasing birth rate and the continuous aging of their population, and its outlook is thus for a decreasing population. This pyramid is associated with countries with a higher level of socio-economic development.

It should be noted there are other forms of pyramids than those mentioned, and they vary by particular concentrations in sex or age, which result from social or climatic events, such as high mortality during wars or natural disasters, the increase in births after the end of crises and wars, and demographic transformations caused by high immigration or international emigration.

Illustration 1: Theoretical examples of population pyramids by stage in the demographic transition
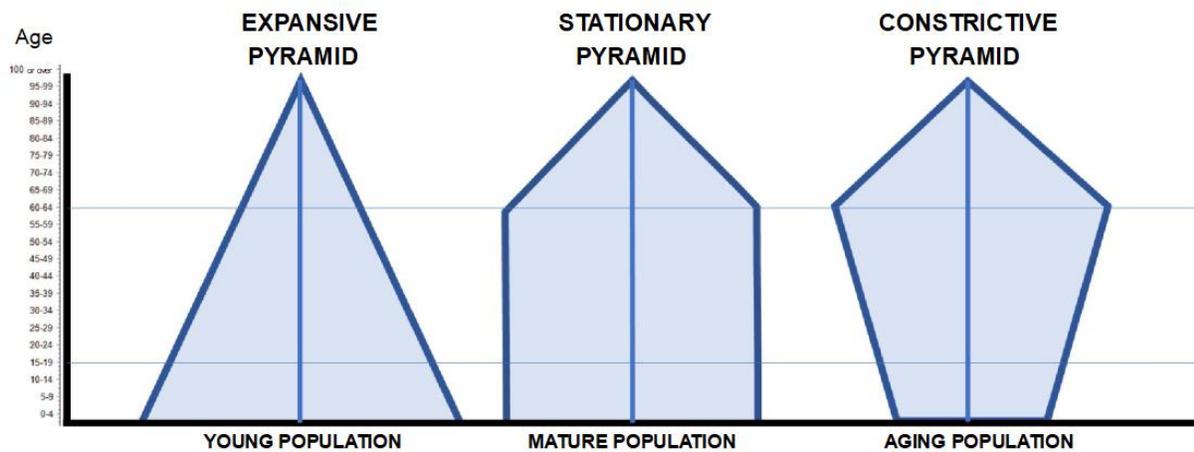
Source: National Statistics Institute (INE), own elaboration

1.4 Stages of population aging

To determine the stages of aging of the countries of the Latin America, a classification has been adopted that uses the total fertility rate and the percentage of people aged 60 or over (Huenchuan, 2018). These indicators were selected because fertility has the greatest impact on the age structure of the population once decline begins and the proportion of people aged 60 and over shows the importance of this bracket within the total population. The stages of aging can thus be classified as follows:

Illustration 2: Classification of the stages of population aging

Incipient Aging	Moderate Aging	Moderately Advanced Aging	Advanced Aging	Very Advanced Aging
•Total fertility rates exceeding 2.7 children per woman and percentages of older people below 10% of the total population	•Total fertility rates ranging from replacement level to 2.5 children per woman and percentages of older people between 6% and 11.5%	•Total fertility rates below replacement level (between 1.7 and 2.08 children per woman) and percentages of older people between 10% and 14%	•Total fertility rates below replacement level (around 1.73 children per woman) and percentages of older people between 15% and 17%	•Total fertility rates below replacement level (around 1.73 children per woman) and percentages of older people near or over 20%

Source: Own elaboration based on Huenchuan (2018).

2. International and regional context of aging

Aging is a global demographic process that can be seen at different scales and intensities in all regions of the world. Whether in the short or medium term, all countries will witness significant social, economic, and cultural changes resulting from population aging, and these changes will significantly influence the development and well-being of the population (United Nations, 2020b). In recent decades, the emergence of several international initiatives to address the phenomenon of aging has underscored its importance as wells as the need of governments to implement measures to ensure the well-being and full exercise of the rights of older people. This chapter reviews the background of aging to account for the scale and relevance of aging as a global phenomenon that will pose significant challenges to governments and that will be a determining factor in the economic and social development of the population.

2.1 Population aging in the world

As noted above, aging is a global demographic phenomenon that most regions of the world are experiencing. According to the United Nations (2020b), aging is one of the most important social transformations of the twenty-first century, especially in regions with more advanced aging and in developing regions where this process is accelerating rapidly. Aging is thus an irreversible demographic process, which differs in its intensity, nuances, and speeds according to the demographic characteristics of each country (Chackiel, 2000; Wong & Palloni, 2009; Saad, 2011; Huenchuan, 2018; United Nations, 2020b).

According to data from the report, "World Population Outlook 2019" of the United Nations (2020b), by 2050, one in six people in the world will be over 65 (equivalent to 16% of the population), more than the proportion of one in eleven (9%) in 2019. In 2018, for the first time in history, people aged 65 and over outnumbered children under 5 worldwide, while by 2050, older people will outnumber children under 15 (United Nations, 2012). According to projections, the number of people aged 80 and over will triple from 143 million in 2019 to 426 million in 2050, and one in four people living in Europe and North America will be 65 or older.

Similarly, life expectancy at birth has increased significantly in every country of the world since the 1950s. While in the period 2010–2015, life expectancy was approximately 78 years in developed countries and 68 years in developing regions, it is predicted that by 2045 to 2050, newborns will have a life expectancy of 83 years in developed regions and 74 years in developing regions (United Nations, 2012).

2.2 Population aging in Latin America and the Caribbean

Because of the different stages of demographic transition in Latin America and the Caribbean, the aging process of the countries is manifested in a heterogeneous manner (Wong & Palloni, 2009). In general, three elements tend to be prominent in the population aging of the region:

(a) First, aging is a widespread yet heterogeneous phenomenon because it can be observed at different levels of progress in all the countries of the region. Although the region as a whole can be considered to be entering an accelerated aging process, the aging process is incipient or moderate in about half of the countries, mainly those with higher levels of poverty (Huenchuan, 2018) (see illustration 3). Among the indicators used to measure the progress of aging, the regional total fertility rate is slightly below

the replacement level (2.05 children per woman) and the regional percentage of older people is 11.8%. Countries such as Uruguay, Barbados, and Cuba are at a very advanced stage of demographic aging with over 20% of the population aged 60 and over and fertility rates below replacement levels.

Argentina, Trinidad and Tobago, and Chile are at an advanced stage with fertility rates below replacement level and percentages of the elderly population ranging from 15% to 17%. Ten countries are at a moderately advanced stage (Antigua and Barbuda, Bahamas, Brazil, Costa Rica, Colombia, El Salvador, Grenada, Jamaica, Saint Vincent and the Grenadines, and Saint Lucia) with percentages of the population aged 60 and over ranging from 10% to 14% and fertility rates approaching generational replacement level.

Belize, Ecuador, Guyana, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, the Dominican Republic, Suriname, and Venezuela are at a moderate stage of aging with percentages of older people ranging from 6% to 11.5% and fertility rates ranging from replacement to 2.5.

Finally, Guatemala, Haiti, and Bolivia are at an early stage of aging with relatively high fertility rates that exceed 2.7 and with an elderly population of 10% or lower.

Illustration 3: Stages of aging in Latin America and Caribbean

Incipient Aging	Moderate Aging	Moderately Advanced Aging	Advanced Aging	Very Advanced Aging
•Guatemala, Haiti, and Bolivia	•Belize, Ecuador, Guyana, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Dominican Republic, Surinam, Venezuela	•Antigua and Barbuda, Bahamas, Brazil, Costa Rica, Colombia, El Salvador, Grenada, Jamaica, Saint Vincent and the Grenadines, Saint Lucia	•Argentina, Trinidad and Tobago, **Chile**	•Uruguay, Barbados, Cuba

Source: Own elaboration based on Huenchuan (2018).

 (b)   Second, the aging of the population in Latin America has been faster than that of other regions, including Europe, because Latin America has witnessed in the span of a few decades the same levels of aging that occurred in Europe over more than 200 years (Guzmán, 2002; Chackiel, 2004; Wong & Palloni, 2009; Huenchuan, 2018). In recent decades, some Latin American countries such as Cuba and Barbados already have reached a higher percentage of their population aged 60 and over than those aged under 15. In the coming years, countries such as Saint Lucia, Trinidad and Tobago, Uruguay, and Chile are projected to have an equal proportion of both age brackets, while Costa Rica, Brazil, Colombia, Antigua and Barbuda, Jamaica, and Saint Vincent and the Grenadines are expected to do so between 2030 and 2035. By 2040, Mexico and Argentina are projected to reach the same proportion of both age brackets, while by 2045 Grenada, El Salvador, Nicaragua, Panama, Ecuador, Peru, and Venezuela will reach this point, and by 2065 all countries in the region are projected to have a higher proportion of people aged over 60 than those aged 15 (Huenchuan, 2018)

 (c)   The third element is related to the future challenges that the rapid process of population aging may generate in the countries of the region. These challenges stem from the current socio-economic fragility in which many older people of the region find themselves (Guzmán, 2002) (Wong & Palloni, 2009)

(Cardona & Peláez, 2012) (United Nations, 2012) (Huenchuan, 2018). Increasing levels of aging will lead to greater economic dependence, the result of a reduced and aging economically active population, which will place greater pressure on social security, health, and pension systems (Chackiel, 2000). A larger population in a situation of dependency will increase the demand for care and health services (Huenchuan, 2011) while increasing the risk of suffering from diseases related to tumors, degenerative diseases, chronic diseases, and disabilities (Santillán, Ribotta, & Acosta, 2016).

2.3 Global and regional initiatives to address population aging

The potential negative consequences of aging are prompting governments and institutions to respond appropriately to address the aging process and to ensure a good quality of life for both the elderly and the general population. The universality and rapidity of the aging of the population has thus generated a number of global and regional initiatives, which have highlighted the potential negative and positive consequences of demographic aging.

In 1982, the United Nations General Assembly convened the first **World Assembly on Aging**, which resulted in the Vienna International Plan of Action on Aging[3]. This plan promotes and encourages the strengthening of the capacities of governments and civil society to effectively address population aging through international and regional cooperation. Among the main points of the action plan are those related to health and nutrition of the elderly as well as the protection and access to consumption, housing, environment, family, social welfare, social security, employment, and education. The action plan also promotes the compilation and analysis of research on population aging as well as its effects and consequences.

In 1991, the United Nations General Assembly adopted the **United Nations Principles for Older Persons**[4], which enshrine and proclaim the rights of the elderly and promote the rights to independence, social participation, attention, care, self-realization, and dignity of this population.

In 2002, the Second World Assembly on Aging adopted the Political Declaration and the **Madrid International Plan of Action on Aging**[5]. The aim of the declaration is to develop and promote international policies on aging by focusing on the opportunities and challenges involved and emphasizing the cultural changes, policies, attitudes, and practices that promote the development, health, well-being, protection, and a favorable environment for people of all ages. Based on this initiative, the World Health Organization (WHO) has developed the "Active Aging" strategy, a proposal that promotes the active participation of the elderly in the economic, cultural, spiritual, occupational, and civic spheres of society. The proposal has also promoted initiatives for improving the physical, mental, and psychological well-being of the population throughout the life cycle while ensuring adequate protection, safety, and security for the elderly (WHO, 2002).

In 2020, the United Nations Assembly declared 2021 to 2030 to be the **Decade of Healthy Aging** in order to support healthy aging and to advance international action and collaboration among governments, civil society, international agencies, professionals, academic institutions, the media, and the private sector to

---

[3] https://www.un.org/es/conferences/ageing/vienna1982
[4] https://undocs.org/es/A/RES/46/91
[5] https://www.un.org/esa/socdev/documents/ageing/MIPAA/political-declaration-sp.pdf

improve the lives of the elderly, their families, and their communities (United Nations, 2020a). This declaration is linked both to the strategies proposed by the Madrid International Plan of Action on Aging of 2002 and to the objectives of the 2030 Agenda for Sustainable Development[6].

The 2030 Agenda consists of seventeen **Sustainable Development Goals** (SDGs), a set of targets and indicators for monitoring. Only SDG 3 on universal health explicitly incorporates age through its effort to "ensure healthy lives and promote well-being for all at all ages". However, other SDGs include efforts that integrate older people or refer to age. SDG 1 has two age-inclusive targets related to reducing the number of people living in poverty and incorporating appropriate measures for social protection. One way to approach the magnitude of the challenge that countries face with SDG 3 is to use the indicator on potential years of life lost, a measure of the impacts of the deaths of the elderly. Among the aims of the SDG 5 on gender equality is to recognize and value care and unpaid domestic work, a topic of great importance for the elderly, who usually receive care and for those who provide care, usually women.

An important regional initiative to address aging was the **First Regional Intergovernmental Conference on Aging**[7] held in 2003, in Santiago, Chile. The conference was part of the follow-up process and plan of action of the Madrid World Assembly on Aging (2002). This first conference resulted in an agreement on a regional strategy for action to protect the rights of the elderly, which includes the creation of conditions of economic security, the social participation and education, the promotion of health and well-being, and the creation of an enabling environment for the full exercise of their rights. Since this first conference, conferences have been held every five years to evaluate, monitor, and update the regional strategy on aging. The next conferences were in 2007[8] (Brasilia, Brazil), 2012[9] (San José, Costa Rica), and 2017[10] (Asunción, Paraguay).

Also relevant is the **"Montevideo Consensus on Population and Development"**(CEPAL, 2013), a document emanating from the first meeting of the Regional Conference on Population and Development, which seeks the complete integration of the population in sustainable development with an equality and a rights-based perspective. In the Montevideo Consensus, the countries recognized the need to evaluate, rethink, and adjust the various social-protection mechanisms in order to respond to the consequences of demographic transformations and the new demands of a constantly changing population. Specifically, chapter C of the consensus focuses on aging, social protection, and the socio-economic challenges that this transformation entails for the countries of the region. Among the priority measures of the consensus are the formulation of policies with a gender perspective that ensure quality aging, equal participation, education, security, social protection, health, and care for the elderly population, as well as the eradication of all forms of discrimination and violence in old age (CEPAL, 2013).

Similarly, the **"Inter-American Convention on the Protection of the Human Rights of Older Persons"**[11] was approved in 2015 by the member states of the Organization of American States (OAS). This convention is the first international instrument that covers a broad spectrum of the rights of older persons to be promoted and protected by governments, including civil, political, economic, social, and cultural rights. The Americas are the only region in the world with this type of convention[12]. Its main objective is to promote,

---

[6] https://www.un.org/sustainabledevelopment/es/objetivos-de-desarrollo-sostenible
[7] https://www.cepal.org/es/eventos/conferencia-regional-intergubernamental-envejecimiento
[8] https://www.cepal.org/es/eventos/segunda-conferencia-regional-intergubernamental-envejecimiento
[9] https://repositorio.cepal.org/bitstream/handle/11362/21534/1/S2012896_es.pdf
[10] https://conferenciaenvejecimiento.cepal.org/4/sites/envejecimiento4/files/c1700615_0.pdf
[11] http://www.oas.org/es/sla/ddi/tratados_multilaterales_interamericanos_A-70_derechos_humanos_personas_mayores.asp
[12] Convention ratified and promulgated by the Chilean government in September 2017 (in Spanish):
http://www.senama.gob.cl/storage/docs/Ratificacion-Conv-Interamericana-Prot-Derechos-Pers-Mayores.pdf

protect, and ensure the recognition and full exercise of all the fundamental human rights of the elderly. These rights include the right to equality and non-discrimination based on age; the right to live with dignity in old age; the right to health care, access to care, and inclusion in the community; and the right of autonomy.

The extent, speed, and possible negative consequences of demographic aging at the global and regional levels have shown the need to develop institutional mechanisms, intergovernmental strategies, and initiatives to address current and future demographic changes. For this reason, it is important to portray socio-demographic circumstances of the elderly in Chile. By making use of available demographic sources on the aging process, we can characterize this population group and evaluate the possible challenges and opportunities that this demographic transformation will have for the well-being of the population, and we can thus channel this change towards a perspective of development, participation, and integration.

3. Methodological background for the analysis and characterization of demographic aging

This chapter reviews the main methodological elements used to describe the aging process and characterize older people. First, those who make up the group of older people are conceptually defined, as is the importance of operational differences within this group for the analysis of its socio-demographic characteristics. Subsequently, the various sources of demographic information used throughout the document are presented, together with their main features and use in the study of population aging. In addition, the main indicators used to account for the characterization, evolution, and change of older people in Chile are briefly described, as are dimensions of analysis that focus on these topics. Finally, the last section presents some methodological considerations and the limitations of the study in light of the sources of information.

3.1 Unit of analysis: older people

The common international methodology for classifying people as elderly establishes a minimum age of 60 years. All people of this age and older are thus considered elderly, which establishes age as the fundamental criterion to differentiate older people from the rest of the population. This criterion enables international comparability, but a minimum age of 65 is also widely used to distinguish older people from the rest of the population as the characteristics and the number of older people can vary considerably among countries as result of their diverse socio-demographic circumstances and different levels of population aging (CEPAL, 2006; United Nations, 2008). In Chile, the age of 60 years is stipulated in Law 19.828 (enacted in 2002), which created the National Service for older people (SENAMA). The law specifies that **all people who have reached the age of 60**, both men and women, are considered elderly.

The expression **"the third stage of life (Spanish: *tercera edad*)"** has often been used to refer to older people. While this stage begins at the age of 60, an important distinction from the previous stages is retirement, which has been established by Chilean law at 60 for women and 65 for men. Although there is a theoretical relationship between age and the biological and social cycles of people, the actual age when people retire is highly variable, in some cases people continue working years after the ages established by law for retirement (Apella, Packard, Zumaeta Aurazo, & Joubert, 2019). In addition, Law 21.144, enacted in 2019, establishes the distinction within the elderly population bracket between the "third" and the **"fourth stage"** of life. An older person of the fourth stage refers to the entire population aged 80 and over (Gerra, 2019), a group associated with a greater loss of functional capacity and a consequent greater need for elderly care.

A great diversity thus exists within elderly population in basic demographic variables such as sex and age as well as their belonging to indigenous or native peoples, the level of education and income, and their health situation and dependence. All of these variables are derived from both internal and external factors that involve the historical, social, and geographical context, as well as the individual circumstances of each person, among other conditioning factors. Therefore, the heterogeneity of the elderly population has often been emphasized while considering that chronological age does not always properly capture the characteristics of older people and that specific characteristics of people recently turning 60 or 80 cannot be assumed (WHO, 2002; SENAMA, 2009; United Nations, 2012; Huenchuan, 2018).

The main unit of analysis for this study therefore is the entire population aged 60 years and over. However, some statistical tables with other groupings or classifications will be used in this document to account for the socio-demographic reality of older people, especially for analyses of the distinction between those aged 60 to 79 and those aged 80 and over, as well as for the identification of the potentially active population and the potentially economically dependent population.

3.2 Sources of information used

3.2.1   Population and housing censuses

Population and housing censuses provide the basis for the investigation of the demographic and socio-economic characteristics of the country's entire population, both at the level of individuals and of their households and dwellings. These censuses represent a "snapshot" of the population of the country at a given moment with which we can analyze how and where the population lives according to various dimensions and geographical levels. Population censuses are the foundation of the national statistical system because they provide information necessary for updating the sample frameworks used for the construction of household statistics, the design and evaluation of public policies, and the development of population estimates and projections, among other aspects of administrative relevance for the country (INE, 2018b).

In order to characterize the country's elderly population socio-demographically, this study considers the last two available censuses (2002 and 2017) [13], which provide a broad temporal spectrum for investigating the transformations of the elderly population and describing their main characteristics at two different moments. The dimensions of analysis available in both censuses considered in this study are the basic variables of sex, age, and geographical distribution by region. Other dimensions include education, belonging to indigenous or native peoples, employment situation, location within an urban or rural area, and the characteristics of housing and households where older people reside.

3.2.2   Vital statistics

Vital statistics are systematized information from administrative records of events that occurred in the country, that is, "vital facts", which include births, marriages, changes in marital status, and deaths. These records provide information about the vital facts themselves as well as about the people involved. The production of vital statistics is a continuous process that has been carried out through a tripartite agreement by the Civil Registration and Identification Service (SRCeI), the National Statistics Institute (INE), and the Ministry of Health (Minsal) since 1982 (INE, 2021a).

From the analysis and study of vital records, it is possible to describe the behavior of two central components of demographic dynamics (fertility and mortality) while capturing the level of population aging. With these components, together with the analysis of migration flows, population estimates and projections can be produced that can make a substantive contribution to the planning and evaluation of public policies related to health, reproduction, and other biological and social aspects of the population (INE, 2020).

---

[13] For more information on the population and housing censuses used in this study, see Volume I of the results of the 2002 Population and Housing Census (INE, 2003) and the Census Report of the 2017 Population and Housing Census (INE, 2018b).

In addition to providing the necessary information to investigate trends in fertility and mortality of the population, vital statistics can be used to analyze a fundamental aspect for the socio-demographic characterization of older people in Chile: the main causes of death and the disaggregation and analysis according to age and sex.

The vital statistics used for the preparation of this document are based on the Vital Statistics Yearbooks for the period 2010–2019; (2019 is the last year of available information) (INE, 2021a).

3.2.3   Population estimates and projections

Population estimates and projections define the size and structure by sex and age of the country's population. They are based on a set of assumptions about the behavior of the components of demographic dynamics, fertility, mortality, and migration, which come from information from various demographic sources, including population censuses and vital statistics. Estimates and projections[14] establish the official population of the country, and they are therefore used in planning public policy, the developing sampling frames for surveys, and assessing basic and future needs in health, education, and housing, among other issues affected by demographic changes.

INE's population estimates and projections are made after the censuses are conducted. The latest available are those based on the last population census of the year 2017, which covers the period 1992–2050 for the habitual resident population at the national level (INE, 2018a) and the period 2002–2035 for the population by region (INE, 2019), commune, and urban or rural commune (INE, 2021b). The shorter periods of regional and communal projections are due to the higher level of uncertainty about the population structure of regions and communes when integrating the component of internal migration. The uncertainty stems from the greater variability of internal migration when compared with mortality and fertility. Internal migration, like international migration, can be heavily influenced by the political, economic, and social circumstances of the country, which can have a greater impact on the variation of regional and communal populations estimated in the long term (INE, 2019).

With population estimates and projections, the present document will analyze the evolution and impact of population aging on the structure of the population at both the national and regional levels according to the assumptions established for the demographic components. It will project the possible demographic transformations that will be observed in the future, if the established assumptions on fertility, mortality, and migration are maintained over time.

3.3 Socio-demographic indicators for the analysis of aging

Several socio-demographic indicators can be used to account for the aging process, the impact of aging on the population structure, and the socio-demographic characteristics of older people. However, the indicators that will be used in this document are limited to those that can be investigated through the sources of information described above, and a wide range of indicators will not be addressed.

---

[14] It should be noted that there is a conceptual and methodological difference between an estimate and a projection. Population estimates refer to the volume of people that a population has or had in the period for which information is available, an estimate that compiles all available information (censuses, vital statistics, and other sources). Projections, on the other hand, present a hypothetical scenario of the future evolution of a population, which is based on its demographic history and assumptions of the future behavior of the components of demographic dynamics (INE, 2018a).

The indicators on demographic aging used in this document can be classified into three groups: indicators that provide information on **the evolution of population aging**, those that account for the **impact of aging on the structure of the population**, and those that describe the **socio-demographic characteristics of older people**.

With the indicators of the first group, we can investigate the factors that explain the process of demographic transition and, therefore, the evolution of population aging. These indicators include fertility and death rates, the analysis of the quantitative and relative increase in the elderly population over time, the age distribution within the elderly population bracket, and the contrast between the different growth rates of the elderly population bracket compared to the other age brackets. Similarly, other indicators on the evolution of aging show the increase in the greater probability of survival of the population at older ages, a process resulting from the reduction of mortality and other factors. These indicators include the increase in the population's life expectancy as well as the average and median ages (CEPAL, 2006).

The aging process is the result of the transformation of the age structure of the population. As mentioned above, this transformation involves the increase in the proportion and relative size of the elderly population compared to other age brackets, which in turn causes the latter to decrease in their proportions. Depending on the level of progress of the demographic transition, these changes will have differing levels of impact on the size of the potentially dependent population and the economically active population, leading to significant transformations in the demographic dependency ratio of both the older population and children (CEPAL, 2006; Goldstein, 2009). Among the indicators that account for this dynamic are the demographic dependency ratio, the relationship of potential support, and the index of population aging. With these indicators, we can investigate the impact that the increase of older people has had in relation to the other age brackets. As mentioned in previous sections, the analysis of population pyramids and their changes over time provides evidence of the progress of aging and its impacts on the age structure of the population (Goldstein, 2009).

Finally, the last group of indicators consists of those used in the socio-demographic characterization of older people, which is key for the design, evaluation, and targeting of various social programs and policies related to older people (CEPAL, 2006). Depending on the sources of information, the dimensions of analysis may be diverse, including social, economic, and cultural dimensions, as well as the health and the environment of older people (SENAMA, 2009). As mentioned above, the indicators and dimensions of characterization of the elderly population considered for this are the last two population and housing censuses (2002 and 2017) and the vital statistics on the main causes of death of older people (2002–2019). Thus, the indicators for characterizing the elderly population are sex ratio, the average number of years of study, their employment situation, their belonging to indigenous or native peoples, their living in urban or rural areas, their relationship with the head of household, the composition of households, the level of overcrowding, the characteristics of housing, and the main causes of death.

Table 1 below lists the groups of indicators used in this study, and it shows the source of data from which they are constructed. A **glossary** is included at the end of this document provides further details on the definitions and calculation of the indicators used.

Table 1: Indicators used in the study

Dimension	Indicator	Source of information
Trends in aging	Crude death rate	Vital statistics, population estimates and projections
	Total fertility rate	
	Absolute and relative size of older people bracket	Population estimates and projections
	Population growth rates differentiated by age bracket	
	Median age of the population	
	Life expectancy at birth	
	Life expectancy at age 60	
Impacts of aging on population structure	Total demographic dependency ratio	
	Demographic dependency ratio of older people	
	Potential support ratio	
	Population aging index	
	Population pyramids	
Characterization of older people, their households, and their dwellings	Sex Ratio	Population censuses
	Median age of the population	
	Average years of study	
	Educational level	
	Employment status in the week before the census	
	Membership in indigenous group	
	Urban or rural area	
	Relationship with the head of household	
	Types of households	
	Crowding index	
	Types of dwelling	
	Sources of water	
	Main causes of death	Vital statistics

Source: National Statistics Institute

3.4 Scope and limitations of the research methodology

As stated above, the methodological inputs used in this document are derived from three different sources of demographic information. Each one of them pursues different objectives and has specific characteristics. These characteristics determine their methodological limitations, which must be specified before analyzing the information.

First, although the sources of information may be contemporaneous, in some periods covered by the study, such as the period 2002–2017, which is used in the three sources of information, the number and size of the elderly population varies according to the source, because, as explained above, each of these pursues different objectives[15]. This disparity means that populations drawn from different data sources are not comparable to each other and that the contrast or population-size analysis must be based exclusively on information from each separate data source. On the other hand, the sources of information are sometimes complementary. For example, population estimates and projections draw on both population censuses and vital statistics for the analysis of demographic components and for the reconciliation process that

---

[15] In this regard, censuses provide a figure for "census omission", which is calculated through population estimates. Similarly, vital statistics are from administrative records that provide information only on the people for whom some service was provided or on the event registered, such as birth, death, or change of marital status.

defines the estimated population (INE, 2018a), while vital statistics use the population provided by estimates and projections for the calculation of various indicators, such as death and fertility rates.

Second, population estimates and projections use different periods according to their geographical disaggregation: the period 1992–2050 for population at the national level and the period 2002–2035 for populations at the regional level. Because of these varying periods and given the importance of geographically disaggregated data at the regional level, different periods are used for the chapter of analysis, according to whether the population projections are disaggregated at the national or regional level.

Given the participation of other state organizations, vital statistics therefore require a set period for various statistical procedures (such as the systematization, codification, and validation of administrative records) to acquire the status of official statistics. This requirement explains why there is a time lag between the occurrence and the recording of vital facts in relation to the production and publication of vital statistics yearbooks. For this study, this time lag for the last figures on the mortality of the population are for the year 2019. This time constraint imposes difficulties for investigating the possible effects that the global pandemic caused by COVID-19 may have had among the main causes of death of the elderly population during the years 2020, 2021, and 2022. It also impedes the analysis of the pandemic's influence on the different components of population dynamics, such as trends related to migration, fertility, and general mortality, as well as its influence on life expectancy and the consequent evolution of population aging. These factors may have been strongly influenced by the pandemic, and their influence might have altered the estimates and projections of aging analyzed in subsequent chapters[16].

Another element in the processing of information and the analysis of the data submitted is the distinction between the place of habitual residence and the place of enumeration of the population, an element that is mainly linked to population censuses[17]. Because population estimates and projections were based on the habitual resident population (INE, 2019), the processing of population censuses according to the habitual residence of older people was chosen in order to maintain harmony in the analysis of data and its regional disaggregation.

Because the censuses carried out in the country up to 2017 are de facto censuses, in which the population was enumerated where the people were present the night before the day of the census, the place of habitual residence does not necessarily coincide with the place where the person was present at that time. Although census questionnaires identify the place of habitual residence of the population at the level of commune, census variables at the levels of household and dwelling, as well as the breakdown between urban and rural areas, are geographically linked according to the place where the population was enumerated. This linkage is important for the management of some variables analyzed in the population

---

[16] Studies are being considered to address the impact of the COVID-19 pandemic on some indicators related to population mortality, such as life expectancy and changes in the main causes of death in the population. This impact, however, does not mean that the population estimates and projections used in this document need to be updated, because the information is insufficient for analyzing the effect of COVID-19 on the other components of the demographic dynamics. This information will be available only after the next population and housing census, which is to be carried out in 2024.

[17] The enumeration of the population in the de facto census counts all people who spent the night in a given dwelling the night before the day of the census, including those who are not habitual residents of the country and those who habitually reside in a dwelling or commune other than the one in which they were enumerated. The place of habitual residence, which was the place where the person has lived or intends to live for at least 6 months according to the last census, may not always coincide with the place where the people were enumerated.

censuses at the level of habitual residence, which may not coincide with the place where people were enumerated at the time of the census. This disparity means that, for the use of census variables at the levels of household and dwelling and for variables that distinguish between urban and rural areas, people who declare that they are not habitual residents of Chile are excluded, as are those who declare that they reside in a place other than the one where they were enumerated.

4. Evolution of aging in Chile 1992–2021

4.1 Advancing demographic transition and the aging of the population

As mentioned in the previous chapters, population aging is a demographic phenomenon that involves a sustained increase in the proportion of the elderly population. Population aging is mainly the consequence of the changes that take place during the demographic transition, where fertility and mortality are the most important demographic components because they have a strong impact on the volume, structure, and growth of the population. As the demographic transition progresses, the evolution of population aging manifests itself in various ways, such as the increase in the life expectancy and median age of the population and the variation in the ratio between the potentially dependent population and the potentially active population.

This chapter examines the evolution of aging in Chile and its effects on the population structure through various indicators that are based on population estimates and projections for the period 1992–2021, a time span of almost thirty years. The demographic transition of Chile began much earlier than this period, and the manifestations of population aging can be observed over a wider time range. However, population aging has become more intense since the beginning of this century, when fertility fell below replacement levels (2.1 children per woman), and the rising life expectancy since that time has been due to the fall in mortality levels at young ages, which in turn has resulted in more people living into their sixties.

Figure 1 shows that since 2000 fertility levels, measured by total fertility rates (TFR), although slightly fluctuating, have been below levels of generational replacement, and they have remained at approximately 1.6 children per woman in the last five years of the observation period (1992–2021).

Figure 1: Total fertility rates (TFR) in Chile, 1992–2021
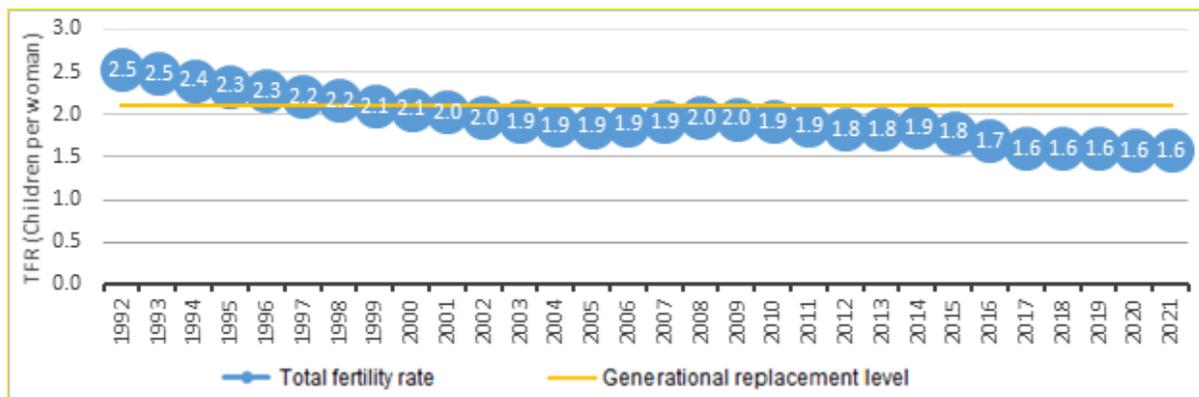
Source: National Population Estimates and Projections based on 2017 Census, National Statistics Institute

Fertility in Chile has significantly declined since the 1960s, a decade when it reached a TFR of 5.4 children per woman (INE, 2006). The reduction of fertility was thus constant for several decades, and this phenomenon can be seen in most countries of Latin America (Chackiel, 2004). The decline in fertility has been influenced by cultural, biological, and economic factors, such as family planning, changes associated with the marriage rates, the widespread use of contraceptives, and the increased employment of women (Bay, Del Popolo, & Ferrando, 2003; Chackiel, 2004). These factors, among others, have led women to have

fewer children during their fertile lives and to postpone the age at which they have their first child. (Rivero-Cantillano & Spijker, 2015; INE, 2019).

Figure 2: Crude death rates (CDR) in Chile, 1992–2021
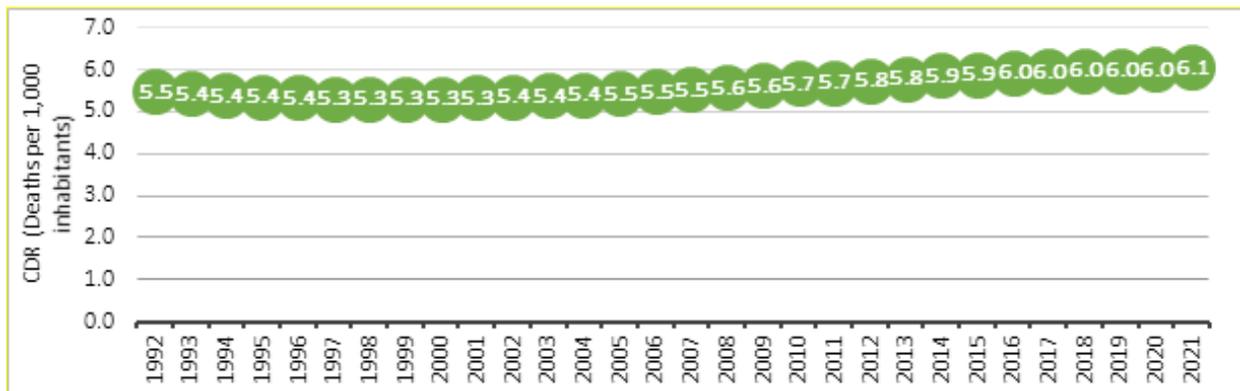
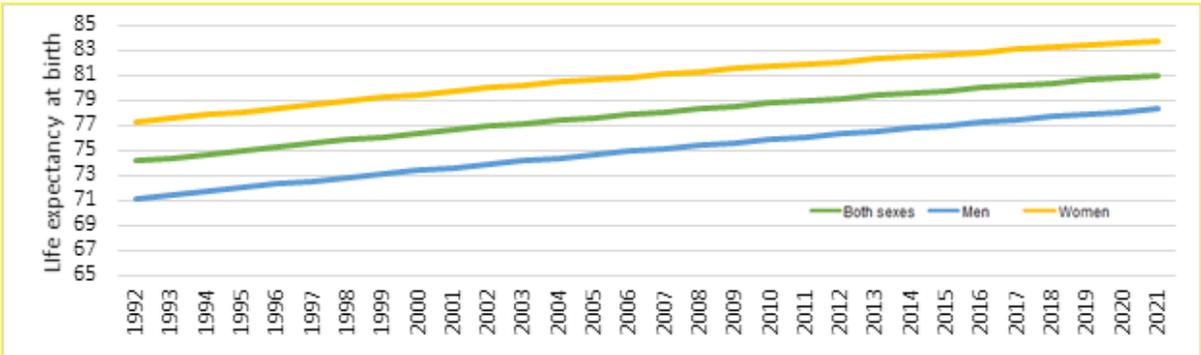Source: National Population Estimates and Projections based on 2017 Census, National Statistics Institute

On the other hand, mortality levels have shown a slight increase over the last few decades (figure 2), with crude death rates (CDR) tending to rise during the period, from 5.5 deaths per 1,000 inhabitants in 1992 to 6.1 deaths by 2021. It is important, however, to consider certain elements that lie behind these figures. The first is that CMR can be strongly influenced by the age structure of the population. A greater number of elderly inhabitants means that there are more people with a higher probability of dying, which has led to a slight increase in this indicator in the last years of observation. A second element is that the historical behavior of mortality has tended downward, so its slight upward movement is a characteristic of the first decades of this century only. In the middle of the twentieth century, when Chile had much higher levels of mortality with CDRs exceeding 11 deaths per 1,000 inhabitants and many of those deaths were at much younger ages (i.e., more infant and young-age deaths) than those of today.

A third element is the main causes of death of the population, which have been changing over time. During the first half of the last century, the main causes of death were parasitic and infectious diseases, such as whooping cough, tuberculosis, tetanus, or typhus, which can easily be prevented today. These diseases have been gradually falling with the advance of medicine and the improve hygiene of the population. During the second half of the twentieth century, diseases of the digestive system and respiratory system also became less prevalent. In contrast, deaths caused by diseases of the circulatory system and by cancer have become more prevalent, and today they are the main causes of more than half of the deaths in Chile (INE, 2021a). Thus, by not dying early from diseases that are now in retreat and by living longer, people are at increased risk of other degenerative diseases, including cancer. Thanks to the improvement of the sanitary, environmental, and epidemiological conditions of the population, as well as to the advancement of medicine, mortality at young ages has significantly decreased. This decrease means that the population as a whole lives longer and that mortality tends to occur in older ages, which, together with a greater proportion of the population of those ages, drives up mortality levels because advanced ages have the highest probabilities of dying (INE, 2021a).

The population's increased survival over the years resulting from the progressive increase in life expectancy at birth can be observed in the average number of years of life in a population of the same birth cohort, which is subject to the same risks of dying (see figure 3). Life expectancy has been steadily increasing, from

74.1 years in 1992 to 81.0 years in 2021, an increase of 6.9 years. On the other hand, the mortality of the population varies not only according to the age of the population but also according to sex. The life expectancy of women rose from 77.2 in 1992 to 83.8 in 2021, an increase of 6.6 years. For men, life expectancy increased more rapidly, from 71.1 in 1992 to 78.3 years in 2021, an increase of 7.2 years. These variations show that the gap in life expectancy between men and women has been narrowing over the years: in 1992, the gap was 6.1 years, but by the end of the observation period, the gap was 5.5 years. This phenomenon can be partially explained by the reduction of external causes of death, such as accidents and violence, which have historically been more common for men than for women. Such external causes have been slowly decreasing in prevalence over the years (INE, 2021a).

Figure 3: Life expectancy at birth, by sex, 1992–2021

Source: National Population Estimates and Projections based on 2017 Census, National Statistics Institute

The aging and survival of the population can also be observed through an analysis of life expectancy at age 60 (figure 4), which is an indicator of the number of years a person who has reached the age of 60 is expected to live. As shown in figure 4, life expectancy for the population aged 60 years has increased over the period, from 19.7 years in 1992 to 24.5 years in 2021, an increase of 4.8 years. For women, the increase is slightly higher (4.9 years), from 21.5 in 1992 to 26.4 years by the end of the period, while for men the increase in life expectancy is 4.7 years, from 18 years in 1992 to 22.7 years by 2021.
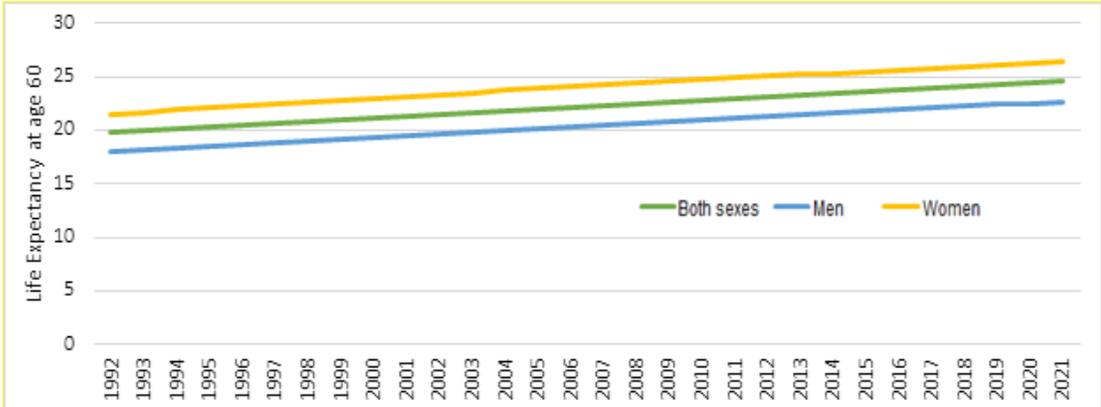
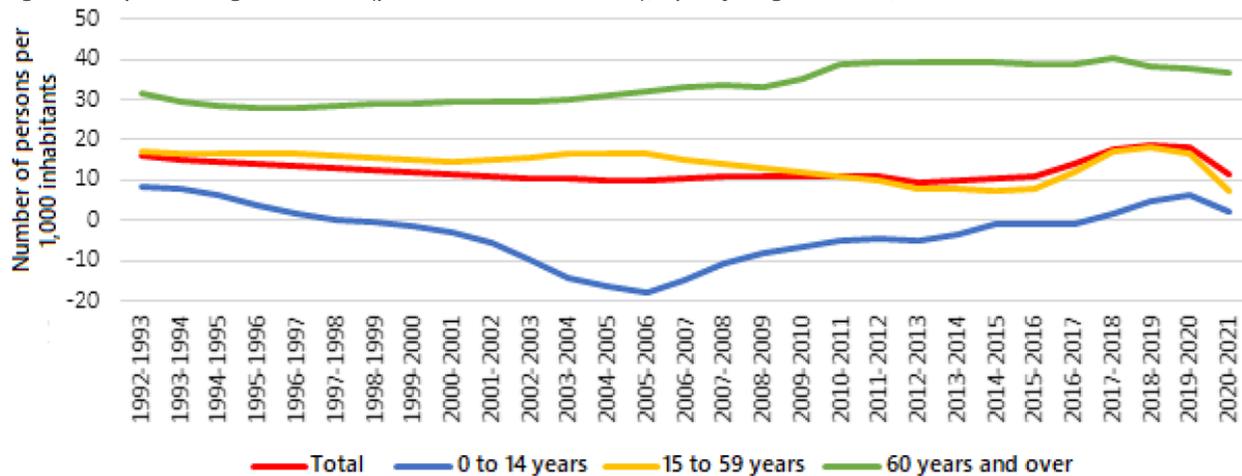Figure 4: Life expectancy at age 60, by sex, 1992–2021

Source: National Population Estimates and Projections based on 2017 Census, National Statistics Institute

The progress of the demographic transition is driven by downward trends in mortality and fertility, and it leads to a decrease in the rate of population growth. Figure 5 shows that, since the end of the last century, the total population growth rate has gradually fallen, reaching its lowest point in 2004–2005, when it was 10.0 people per 1,000 inhabitants. Since that period, the growth rate stabilized until 2015–2016, when the growth rate substantially increased, reaching its highest level in 2018–2019 (18.8 per thousand inhabitants) after which it resumed its downward tendency. The increase in the growth rate during this period can largely be explained by the significant increase in international immigration (mainly of those aged between 20 and 35). Immigration has driven up both the growth rates of the population between the ages of 15 and 59 and the population of those under age of 15, as the population of childbearing age has increased. The latter bracket shows a marked fall in its growth rate since the beginning of the period, and it fell below zero in 1998–1999, reaching its lowest point in the period 2005–2006 (-17.7 people per thousand inhabitants), only to return to positive rates in 2017–2018.

Despite some fluctuations, the population aged 60 and over shows a steady and sustained population growth, maintaining a rate of approximately 30 people per 1,000 inhabitants from 1992 to 2010. The rates for this group were closer to 40 per 1,000 from 2011 until the end of the period, peaking in 2017 to 2018 with a rate of 40.4 people per 1,000 inhabitants. This trend reflects a larger population with a considerably higher growth rate than the national rate and the rates of other age groups, which has accelerated population aging in Chile.

Figure 5: Exponential growth rates (per thousand inhabitants), by major age brackets, 1992–2021

Source: National Population Estimates and Projections based on 2017 Census, National Statistics Institute

Thus, the prolonged effect of declining fertility levels, the reduction in early mortality, and higher life expectancy are the main drivers of the aging process as the proportion of the population of older ages begins to increase its relative proportion among the total population (Goldstein, 2009). The distribution of the population according to large age brackets (figure 6) shows that from 1992 to 2021 the population bracket with the largest relative increase was the bracket aged 60 and over. This bracket was equivalent to 9.5% of the total in 1992, but its proportion had risen to 17.6% by 2021, an increase of 8.1 percentage points. From a population of 1,311,699 in 1992 to 3,472,243 in 2021, the relative increase of this group was 164.7%.

On the other hand, the bracket under age 15 shows a decrease of 10.7 percentage points in their proportion of the total population from 4,085,401 (29.7%) in 1992 to 3,745,665 (19.0%) in 2021, a decrease of 8.3%. For the population aged 15–59, the percentage increase over the period is less pronounced than that of older people, from 60.7% of the total population in 1992 (8,339,962) to 63.3% by 2021 (12,460,455). This increase is equivalent to a rise of 2.6 percentage points in its proportion of the total population and an increase of 49.4% from 1992 to 2021.

Figure 6: Distribution of the population by age brackets, 1992–2021
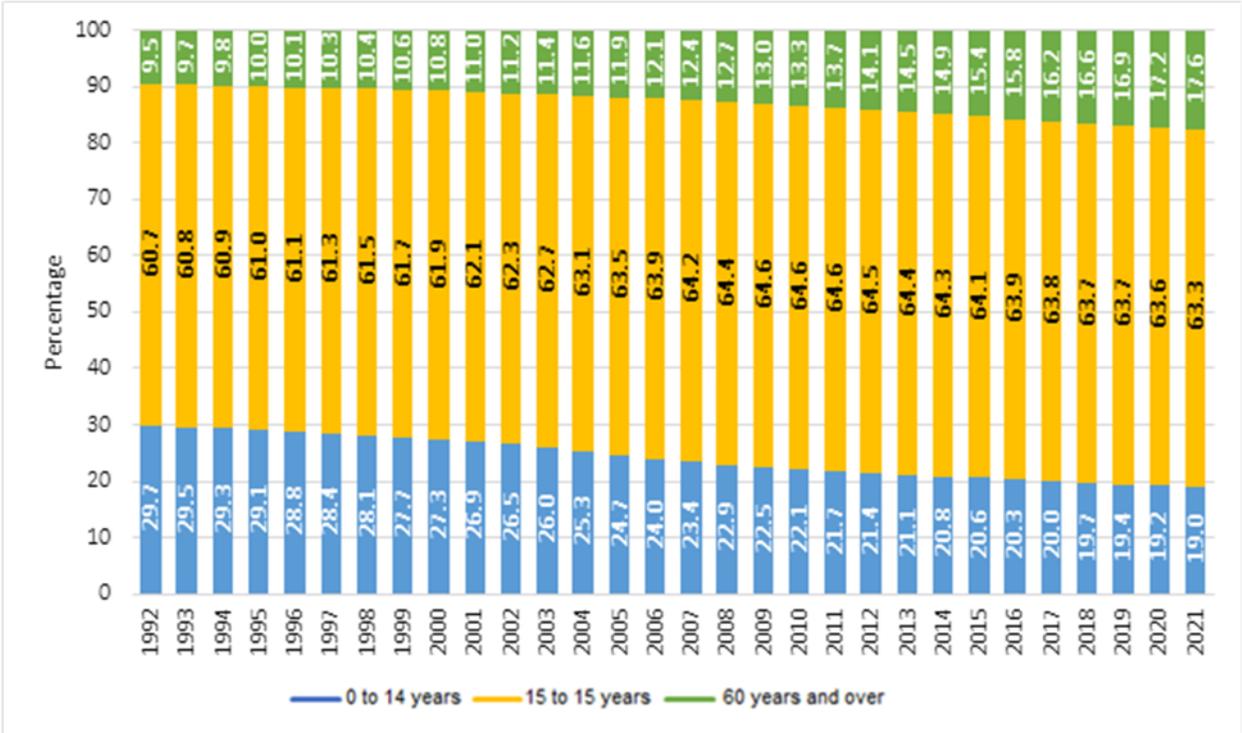
Source: National Population Estimates and Projections based on 2017 Census, National Statistics Institute.
Notes: Because the decimals are rounded, their sums may not add up to 100.

While the proportion of people under the age of 15 remains slightly greater than the of the bracket of people aged 60 and over, the relative increase in the elderly population and the faster growth of this bracket than of other age brackets reflects a marked aging process that has increased over time. The indicators for measuring the level of aging in the countries of the region (see illustration 3 in chapter 2) show that Chile is at an advanced stage of population aging that is rapidly moving to a very advanced stage. Its fertility levels have been below replacement levels for several years and the proportion of people over 60 is approaching 20% of the total population.

One of the manifestations of the progressive increase in the aging of the population is the rise of the median age of the country's population (figure 7), which has increased from 26.2 years in 1992 to 35.5 years in 2021.

Figure 7: Median age of the population, 1992–2021

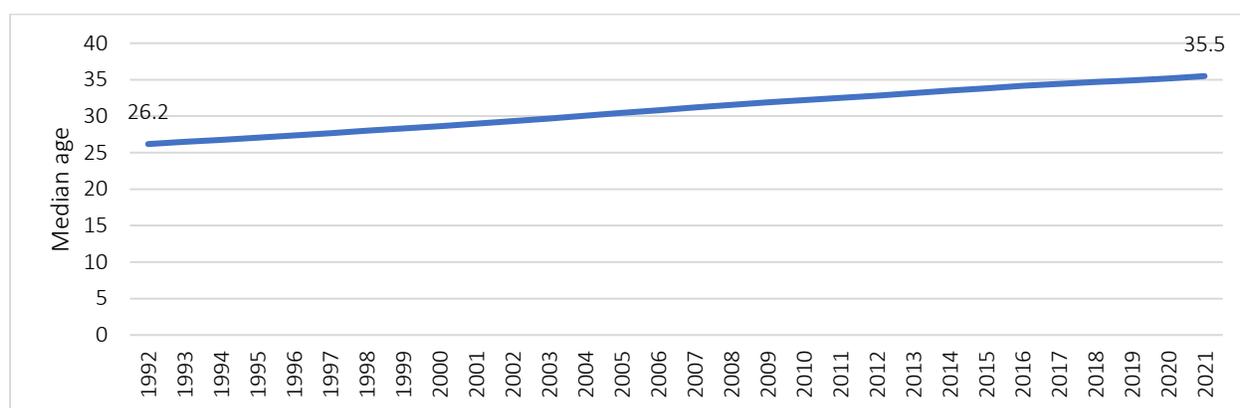

Source: National Population Estimates and Projections based on 2017 Census, National Statistics Institute

In addition, the advanced stage of aging of the population manifests itself within the group of older people, which is considered a process of "aging within the elderly population". Thus, an analysis of the internal distribution of the population aged 60 years and over (table 2) shows that although both the population of those aged 60 to 79 and of those aged 80 and over increase, the latter shows an increase in the proportion among older people, from 11% in 1992 to 16.4% by 2021. Although the proportion of those aged 80 and over increased 5.4 percentage points in the proportion in the total number of older people, the number in this bracket increased almost four times from 1992 to 2021 in absolute terms.

Aging of older people and the increase in the proportion of those 80 and over are also manifested by analyzing the five-year age distributions among older people. Figure 8 shows that the only five-year brackets that decreased in their proportion during the period 1992–2021 are those aged 60–64 and 65–69; the remaining five-year groups increase their proportion among the total number of older people. The most significant drop occurs in those aged 60–64: from 34.4% of the total number of older people in 1992 to 29.2% in 2021, a fall of 5.2 percentage points. Among the five-year brackets increasing their proportion over the period, the highest increases occur in the 80-84 and 85-89 age brackets, whose increases are 1.6 and 1.7 percentage points, respectively.

Table 2: Population of the brackets 60 to 79 years and 80 years and over, 1992–2021

Year	Total population aged 60 and over		Third stage (60-79 years)		Fourth stage (80 years and over)	
	Total	%	Total	%	Total	%
1992	1,311,699	100	1,166,916	89.0	144,783	11.0
1993	1,353,966	100	1,203,159	88.9	150,807	11.1
1994	1,394,676	100	1,237,623	88.7	157,053	11.3
1995	1,434,573	100	1,271,105	88.6	163,468	11.4
1996	1,475,070	100	1,304,879	88.5	170,191	11.5
1997	1,517,002	100	1,339,676	88.3	177,326	11.7
1998	1,560,965	100	1,375,917	88.1	185,048	11.9
1999	1,606,751	100	1,413,389	88.0	193,362	12.0
2000	1,654,195	100	1,451,845	87.8	202,350	12.2
2001	1,703,251	100	1,491,148	87.5	212,103	12.5
2002	1,753,845	100	1,530,869	87.3	222,976	12.7

Year	Total population aged 60 and over		Third stage (60-79 years)		Fourth stage (80 years and over)	
	Total	%	Total	%	Total	%
2003	1,806,325	100	1,571,027	87.0	235,298	13.0
2004	1,861,417	100	1,611,875	86.6	249,542	13.4
2005	1,919,834	100	1,654,108	86.2	265,726	13.8
2006	1,982,142	100	1,698,213	85.7	283,929	14.3
2007	2,048,818	100	1,745,067	85.2	303,751	14.8
2008	2,119,016	100	1,794,036	84.7	324,980	15.3
2009	2,190,635	100	1,843,752	84.2	346,883	15.8
2010	2,268,702	100	1,900,284	83.8	368,418	16.2
2011	2,357,776	100	1,968,820	83.5	388,956	16.5
2012	2,452,441	100	2,044,382	83.4	408,059	16.6
2013	2,551,090	100	2,125,604	83.3	425,486	16.7
2014	2,653,294	100	2,211,642	83.4	441,652	16.6
2015	2,758,908	100	2,301,830	83.4	457,078	16.6
2016	2,867,961	100	2,395,282	83.5	472,679	16.5
2017	2,980,921	100	2,491,810	83.6	489,111	16.4
2018	3,103,713	100	2,596,410	83.7	507,303	16.3
2019	3,224,540	100	2,698,032	83.7	526,508	16.3
2020	3,348,010	100	2,801,176	83.7	546,834	16.3
2021	3,472,243	100	2,904,173	83.6	568,070	16.4

Source: National Population Estimates and Projections based on 2017 Census, National Statistics Institute

Figure 8: Older people by five-year age bracket, percentage of the total aged 60 and over, 1992 and 2021
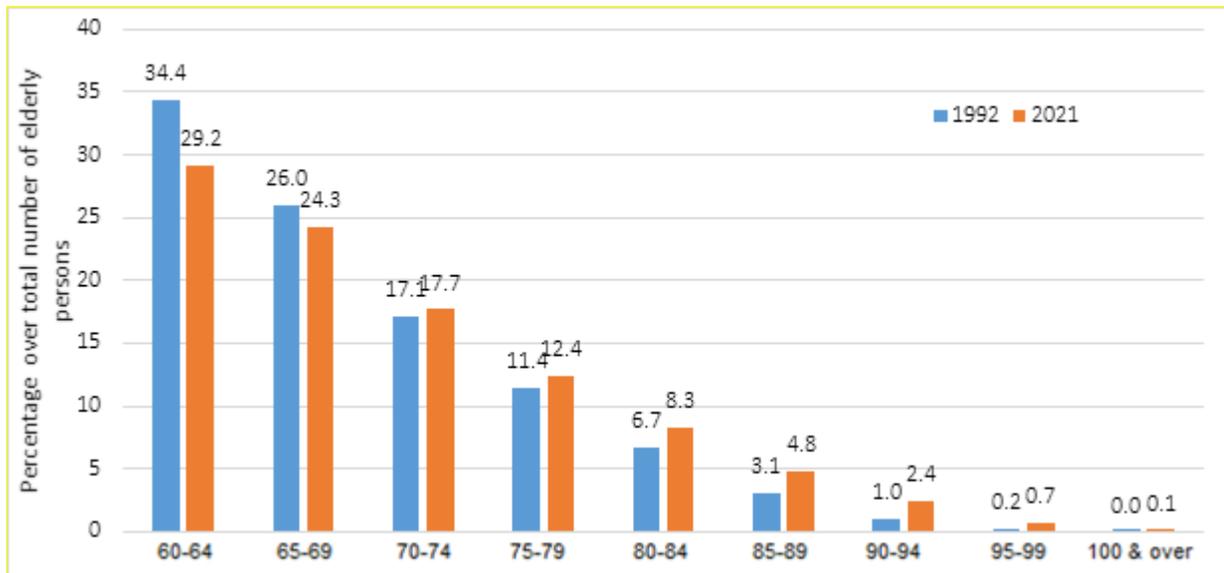
Source: National Population Estimates and Projections based on 2017 Census, National Statistics Institute
Note: Because the decimals are rounded, their sums may not add up to 100.

Figure 9: Total number of people aged 60 and over by sex and sex ratio, 1992–2021
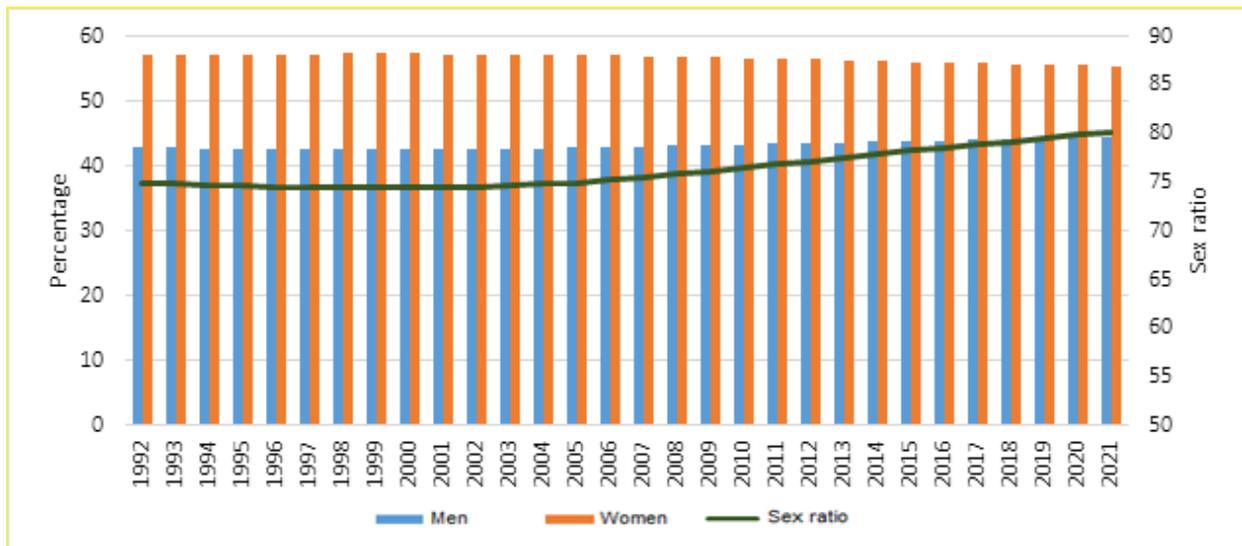
Source: National Population Estimates and Projections based on 2017 Census, National Statistics Institute

Aging has also occurred at different intensities according to the sex of the population. As can be seen from the evolution of life expectancy, the survival gap between men and women has tended to decrease over time, which has been accompanied by an increase in the proportion of men among older people (figure 9). Although in 2021 the population bracket of those aged 60 years and over still had a greater number of women (55.5%) than men (44.5%), the sex ratio shows a gradual increase over the period, rising from 75 men per 100 women in 1992 to 80 men per 100 women in 2021.

Figure 10: Older people (60–79 years) by sex and sex ratio, 1992–2021

Source: National Population Estimates and Projections based on 2017 Census, National Statistics Institute

The gap between men and women has narrowed mainly among those aged 60 to 79, as the population reaching age 80 remains predominantly female. Figures 10 and 11 show the evolution of the ratio between men and women over the period by distinguishing between those aged 60 to 79 and those aged 80 and over. Figure 10 shows that the proportions between elderly men and women have tended towards convergence in recent decades: 43.8% men and 56.2% women in 1992, and 46.2% men and 53.8% women in 2021. The sex ratio, on the other hand, shows an increase of almost 8 points, from 77.9 men for every 100 women at the beginning of the period to 85.7 elderly men for every 100 elderly women in 2021.

For those aged over 80 (Figure 11), the narrowing of the gap between men and women has been much slower than in those aged 60 to 79, and it has remained stable over the period. Figure 11 shows that the majority of people who reach the age of 80 and over are women, who outnumber men almost two to one. Although the total population of those over 80 in 1992 consisted of 64.8% women and 35.2% men, by 2021 the proportion was 63.9% and 36.1%, respectively, a relative decrease in the gap between men and women of only 0.9 percentage points over the past few decades. Similarly, the sex ratio of those aged 80 and over shows only a slight increase, from 54.4 men for every 100 women in 1992 to 56.5 men for every 100 women in 2021, an increase of 2.1 during the period, which is much smaller than the increase in men aged 60 to 79.

Figure 11: People aged 80 years and over by sex and sex ratio, 1992–2021

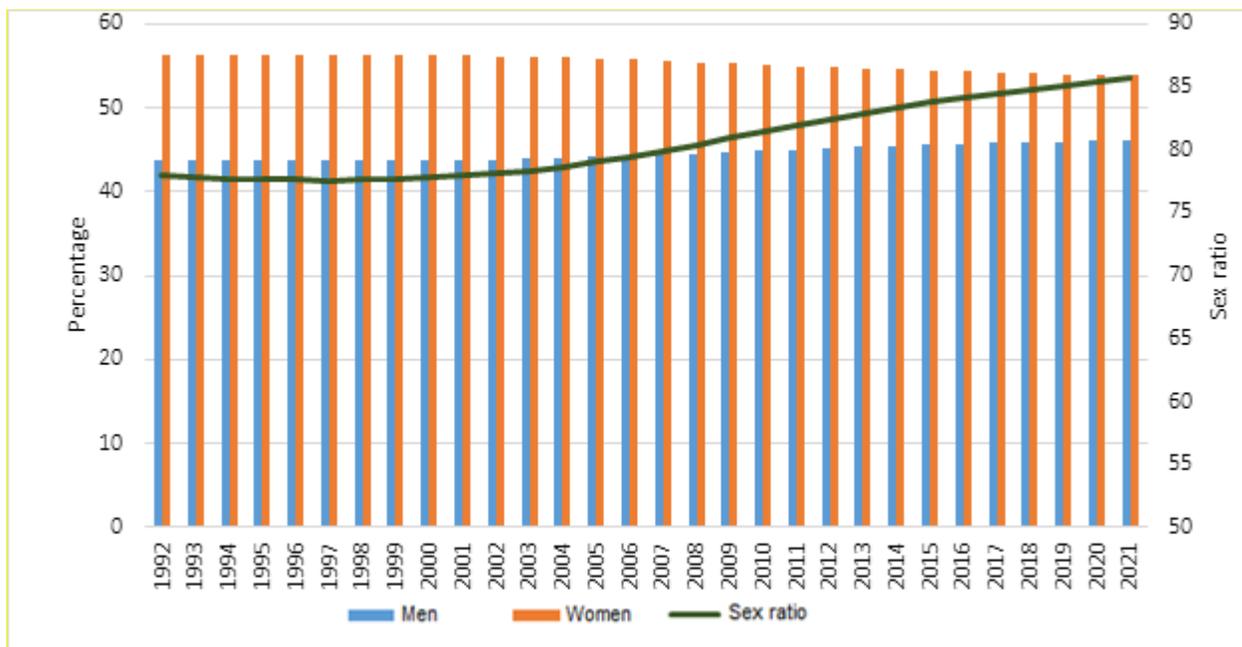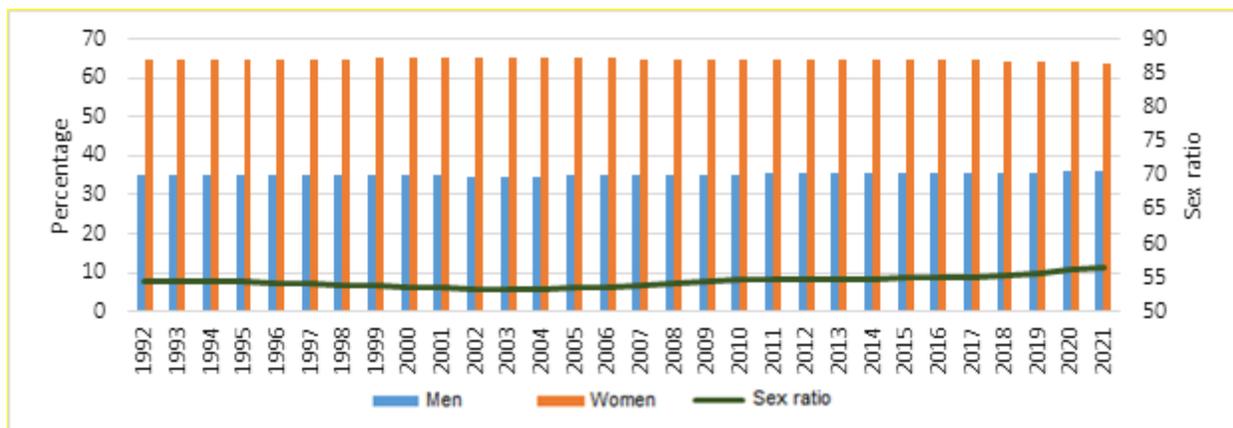Source: National Population Estimates and Projections based on 2017 Census, National Statistics Institute

4.2 Impacts of aging on the population structure

A second dimension of the growth in the proportion of older people is the influence of such growth on other population groups. A related indicator is the aging index, which expresses the relationship between the population aged 60 years and over and the population aged under 15 years. Figure 12 shows that the aging index has increased since 1992. While there were about 32 people aged 60 and over per 100 people aged under 15 in 1992, by the end of the period in 2021 the ratio had increased almost three times with approximately 93 people aged 60 and over per 100 people under 15.

Figure 12: Aging index by sex, 1992–2021

Source: National Population Estimates and Projections based on 2017 Census, National Statistics Institute

According to sex, there were more women aged over 60 than girls under 15 in 2020, when aging index surpassed 100. While there were 37 women aged 60 and over for every 100 girls under 15 in 1992, there were 105 women aged 60 and over for every 100 girls under 15 in 2021. The ratio for men has tripled during the period. However, unlike women, by the end of the period, the ratio still shows a greater number and there were 81 men over 60 for every 100 boys under 15 in 2021.

Figure 13: Population dependency ratio, 1992–2021

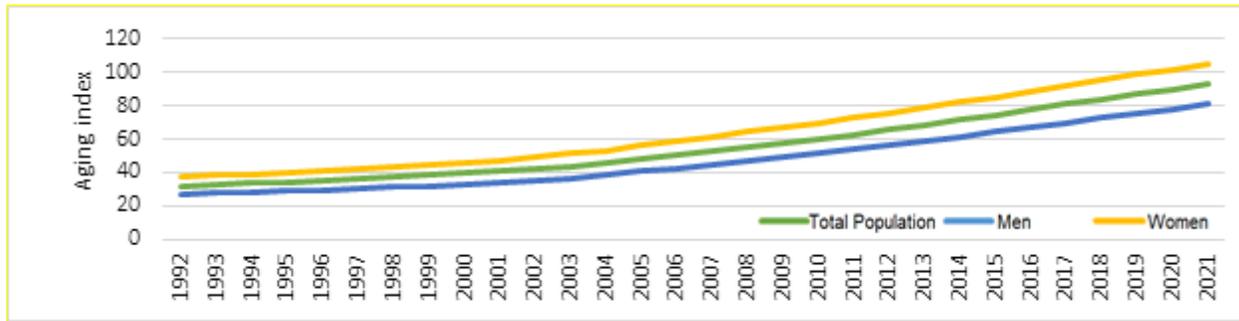Source: National Population Estimates and Projections based on 2017 Census, National Statistics Institute

The effect of aging on the structure of the population is also reflected in the changes that this phenomenon produces in the demographic dependency relationships of the population (figure 13). The demographic dependency ratio expresses the relationship between the potentially active population (people between ages 15 and 64 years) and the potentially dependent population group (people under the age of 15 and people 65 years or older). It thus measures the potential social support between theoretically active and inactive people[18]. The dependency ratio distinguishes between that of older people (population aged 65

---

[18] These definitions are only operational and theoretical within the framework of demographic statistics, and they therefore differ from the definitions used in the labour statistics on employment that INE disseminates, which are based on the guidelines of the International Labour Organisation (ILO). INE's labour statistics include the population over the age of 15 years who may not be economically active as well as those 65 years and older that remain active because the effective retirement age tends to vary in the population according to gender and age, among other factors.

and over per 100 people aged 15-64) and that of younger people (population aged under 15 for every 100 people aged 15-64), which together make up the total dependency ratio.

Figure 13 shows a downward trend in the total demographic dependency ratio from 56.2 potentially dependent people for every 100 potentially active people in 1992 to 46 for every 100 in 2021. During the final years of the period, however, the demographic dependency ratio slightly increased, especially from 2015 onwards, when the downward trend of previous years was reversed.

The downward trend in the dependency ratio of those under 15 during the last decade is due to the fall in this population, which in turn was a result of the decreasing birth rate and a lower number of births, together with the consequent increase of the theoretically active population. In this context, the demographic dependency ratio of those under 15 has shown a gradual downward trend over the period, from 46.5 people aged under 15 for every 100 people between 15 and 64 years in 1992, to 27.8 for every 100 in 2021.

As for the demographic dependency ratio of older people, figure 13 shows a marked and sustained increase during the period, a situation that is consistent with the increase in the population of older people during the last decades. While in 1992 there were 9.8 people aged 65 and over for every 100 people between 15 and 64 years, this ratio has almost doubled by 2021, when there were 18.2 people aged 65 and over for every 100 potentially active people. Because the dependency ratio of younger people maintained a steady downward trend, the slight increase in the total demographic dependency ratio during the last years of the period can be explained in large part by the increase in the dependency ratio of older people.
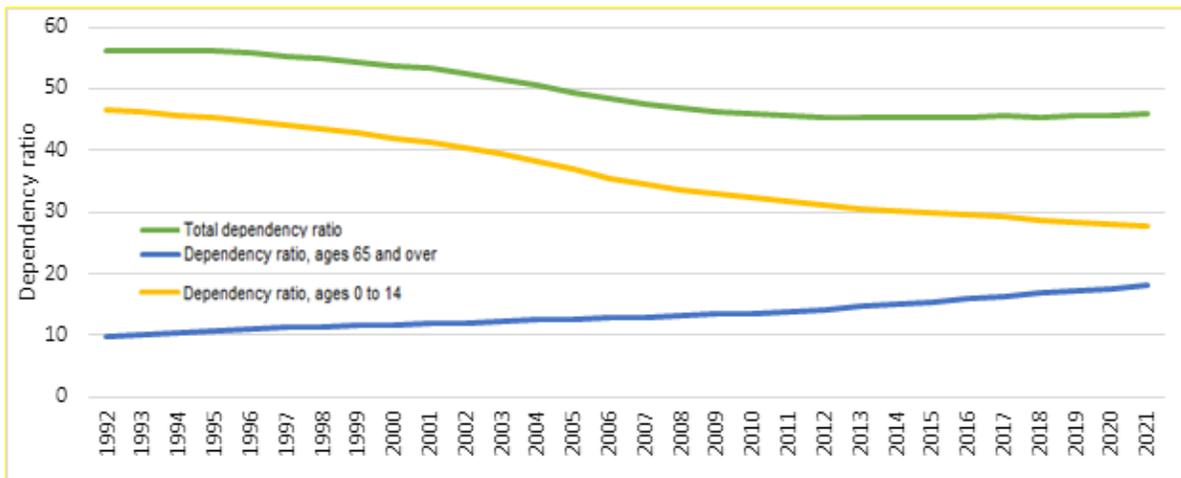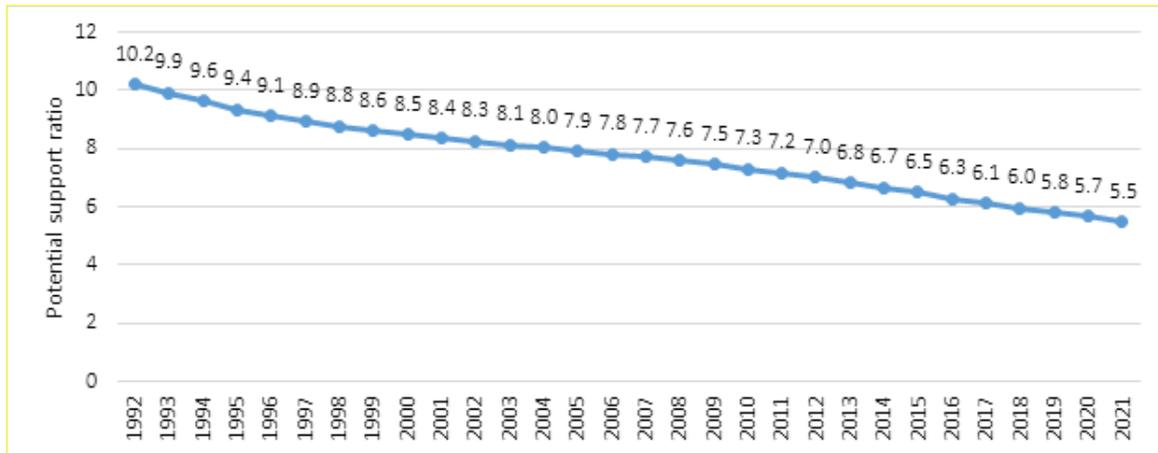
Figure 14: Potential support ratio, 1992–2021

Source: National Population Estimates and Projections based on 2017 Census, National Statistics Institute

When inquiring into the dependency ratio of older people, the potential support ratio (figure 14) is a useful alternative indicator of the potential dependence of the population aged 65 and over because it provides the inverse of the demographic dependency ratio of older people. The potential support ratio establishes how many theoretically active people there are for each theoretically inactive older person in order to show the potential socio-economic support that older people have at a given time. The potential support ratio has thus shown a sustained decrease over the period, from 10.2 potentially active people for each person aged 65 and over in 1992 to 5.5 potentially active people for each person aged 65 and over in 2021. This reduction in the potential support ratio can largely be attributed to the increase in the population aged 65

and over, because the population aged 15–64 did not decrease over the period. Instead, the potentially active population grew more slowly than the population aged over 64 years, which resulted in a fall in the potential support ratio. While the population aged 15–64 remains a large percentage of the total population, the pace of aging and the steady increase in the population aged 65 and over will significantly influence both the demographic dependency ratio and the potential support available to older people.
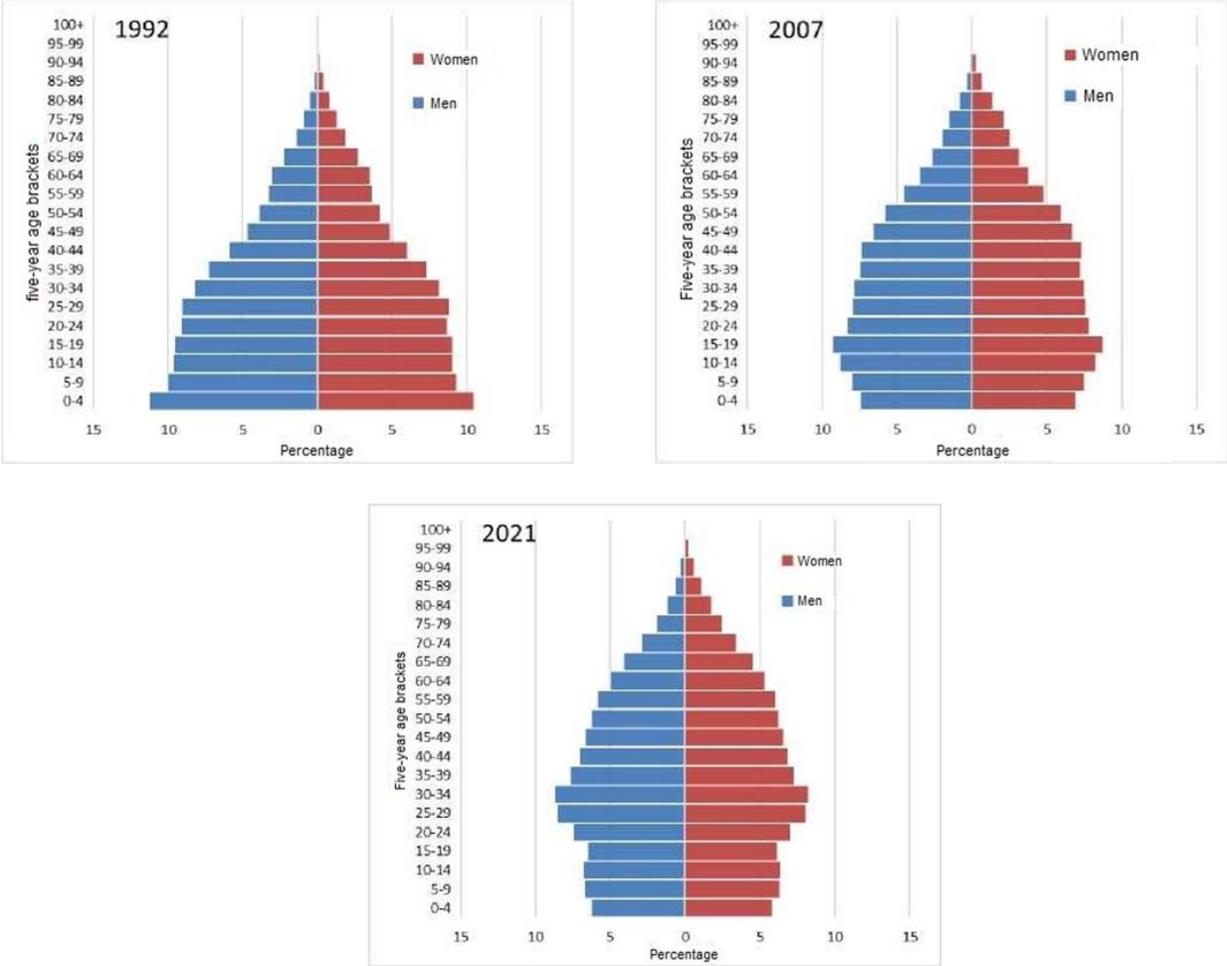
Figure 15: Population pyramids 1992, 2007, and 2021

Source: National Population Estimates and Projections based on 2017 Census, National Statistics Institute

The population pyramids visualize how the population structure has changed with the advance of the demographic transition while accounting for the evolution of the population aging. Figure 15 presents the population pyramids at three different times over the observation period: the years 1992, 2007, and 2021.

The 1992 pyramid resembles a classic or expansive pyramid shape with a broad base that narrows as it advances toward the upper five-year brackets. This pyramid is of a predominantly young population whose largest percentage is in the age bracket 0–4 years. Five-year brackets of those under the age of 15 have the highest percentages of the total population because their proportion of the total population is approximately three times higher than those of people age over 60. Thus, the five-year brackets over 50 years old represent the smallest proportions, and the brackets under 45 years represent the majority of the population.

By 2007, the base of the pyramid began to narrow because of the drop in fertility levels below the levels of generational replacement, which began in the year 2000. A rectangular or stationary shape thus begins to appear in the pyramid in ages below 50. The age bracket 15–19 has the highest percentage of the total population while the bulk of the population is concentrated between the ages of 10 and 54. Although those aged over 60 still have the lowest percentages, they have begun to increase their proportion compared to previous years, which thus accounts for the incipient aging process.

By 2021, the base of the pyramid has considerably narrowed and the rectangular shape of the pyramid extends from its base to 64 years with a slight widening between 25 and 35 years, which are the brackets with the highest percentages of the total population. The majority of the population is concentrated between the ages of 20 and 59, and the proportion of the population between the ages of 60 and 74 has increased considerably because of an accelerated rate of aging and the gradual increase in life expectancy, with more people over the age of 70. Although the proportion of the population aged over 60 is still lower than that of people under 15, both groups have very similar proportions, although the proportion of the young population is steadily declining compared to previous years, thus accounting for the advanced process of population aging.

4.3 Aging in the regions of the country (2002–2021)

At the regional level, the aging of the population has occurred at varying rates, although during the last decades all regions have shown a marked increase in the proportion of the elderly population. Figure 16 shows that in 2002 none of the regions had a population aged 60 and over exceeding 15%. At 13.2%, Valparaíso had the highest percentage, followed by Ñuble (12.5%), La Araucanía (12.1%), and Los Ríos (12.1%). On the other hand, in all regions of the country, with the exception of Magallanes, the population under 15 years of age exceeded 25% of the total. The regions with the highest proportion of this age bracket were Aysén (29.5%), Atacama (29.0%), and Tarapacá (28.3%).

Figure 16: Distribution of population by major age bracket and region of habitual residence, 2002
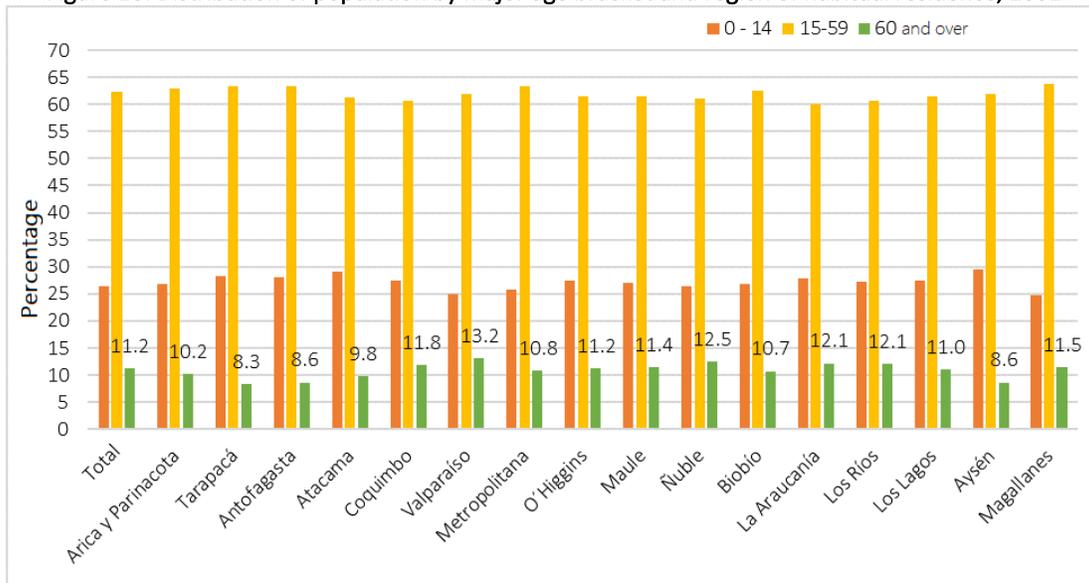
Source: Regional Population Estimates and Projections based on 2017 Census, National Statistics Institute

In contrast, the proportions of the population under 15 had decreased by 2021 (figure 17), while the percentage of older people had increased, and six regions (Valparaíso, O'Higgins, Maule, Ñuble, Los Ríos, and Magallanes) already had a greater percentage of population aged 60 years and over than of the population under 15 years. In 2021, Ñuble became the region with the highest proportion of older people (21.6%), followed by Valparaíso (20.8%), Maule (19.7%), Los Ríos (19.6%), O'Higgins (19.4%), and La Araucanía (19.4%). The most significant increases were in Ñuble (up 9.1 percentage points), Maule (8.3 percentage points), and O'Higgins (8.2 percentage points). For the population aged between 15 and 59, seven regions have shown a slight relative decrease over the period (Arica and Parinacota, Valparaiso, O'Higgins, Maule, Ñuble, Biobío, and Magallanes), while in nine regions the percentage of this group has increased (Tarapacá, Antofagasta, Atacama, Coquimbo, Metropolitan region, La Araucanía, Los Rios, Los Lagos, and Aysén).

Figure 17: Distribution of population by major age bracket and region of habitual residence, 2021
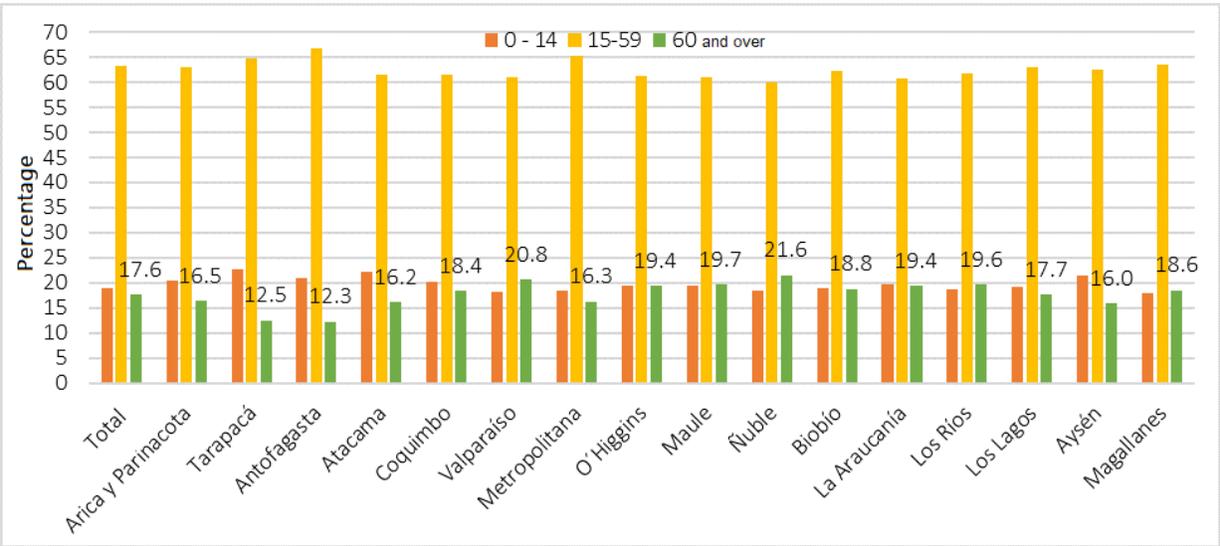
Source: Regional Population Estimates and Projections based on 2017 Census, National Statistics Institute

The increase in the population aged 60 and over has been accompanied by an increased proportion of older people, a phenomenon that has occurred in all regions of the country. Figure 18 shows that, as a percentage of the total number of older people, the population aged 80 years and over increased during the period 2002–2021. At the beginning of the period, the regions with the highest proportion of people older than 79 were Coquimbo (14.1%), La Araucanía (13.4%) and Los Ríos (13.1%), while those with the lowest percentage were Arica and Parinacota (10.2%), Antofagasta (10.2%) and Atacama (10.8%).

Figure 18: Percentage of population in the fourth stage of life (80 years and over) as a proportion of the total elderly population, by region of habitual residence, 2002 and 2021
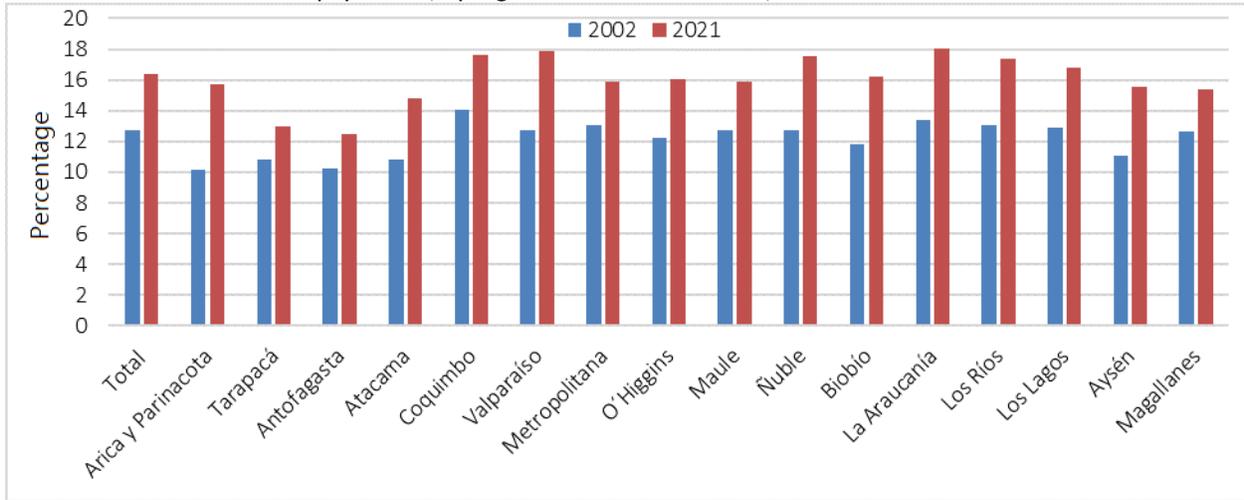
Source: Regional Population Estimates and Projections based on 2017 Census, National Statistics Institute

In all regions, more than 12% of the population was aged 80 and over by 2021, among which the regions of La Araucanía (18.1%), Valparaíso (17.9%), and Coquimbo (17.7%) have the highest proportion, while the lowest proportions can be found in the northern regions of Chile: Antofagasta (12.4%), Tarapacá (13%), and Atacama (14.8%). The largest increases are in the regions of Arica and Parinacota (increase of 5.5 percentage points), Valparaíso (5.2 points) and Ñuble (4.9), while growth was lower in intensity in Tarapacá and Antofagasta (2.2 percentage points) and Magallanes (2.7 points).

Figure 19: Aging index by region of habitual residence, 2002 and 2021[19]
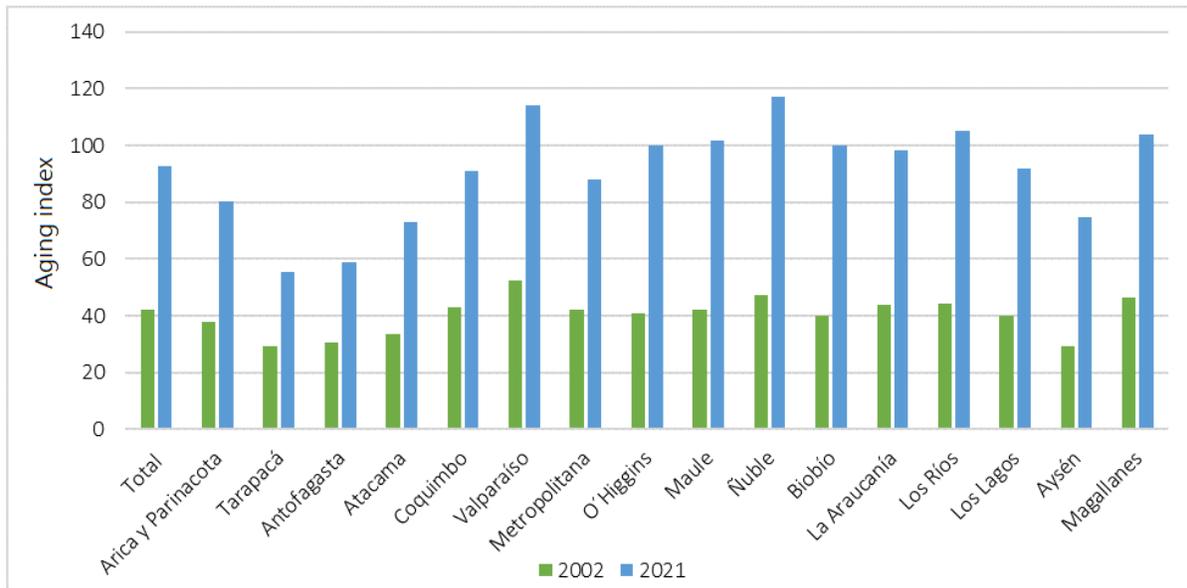
Source: Regional Population Estimates and Projections based on 2017 Census, National Statistics Institute

---

[19] For an analysis of the development of the aging index in each region separately for 2002–2035, see the annexes at the end of this paper.

The regional aging indices in figure 19 represent the number of people over 60 per 100 people under 15 years. All regions show a sustained increase over the entire observation period: since in 2002 no region had more than 60 older people per 100 under 15, while by 2021 all regions, except Antofagasta and Tarapacá, far exceeded that figure. In 2021, the population of older people in six regions was greater than the population of children under 15 years, where there are more than 100 people aged 60 and over for every 100 children under 15 years (Valparaíso, O'Higgins, Maule, Ñuble, Los Rios, and Magallanes). Ñuble and Valparaíso have the highest rates (117.1 and 114.1 older people per 100 younger people), while Tarapacá and Antofagasta have the lowest rates (55.3 and 58.9). In the latter two regions, the elderly population is slightly more than half of the population under 15 and aging has advanced the least compared with the rest of the country.

Figure 20: Demographic dependency ratio by region of habitual residence, 2002–2021

Source: Regional Population Estimates and Projections based on 2017 Census, National Statistics Institute

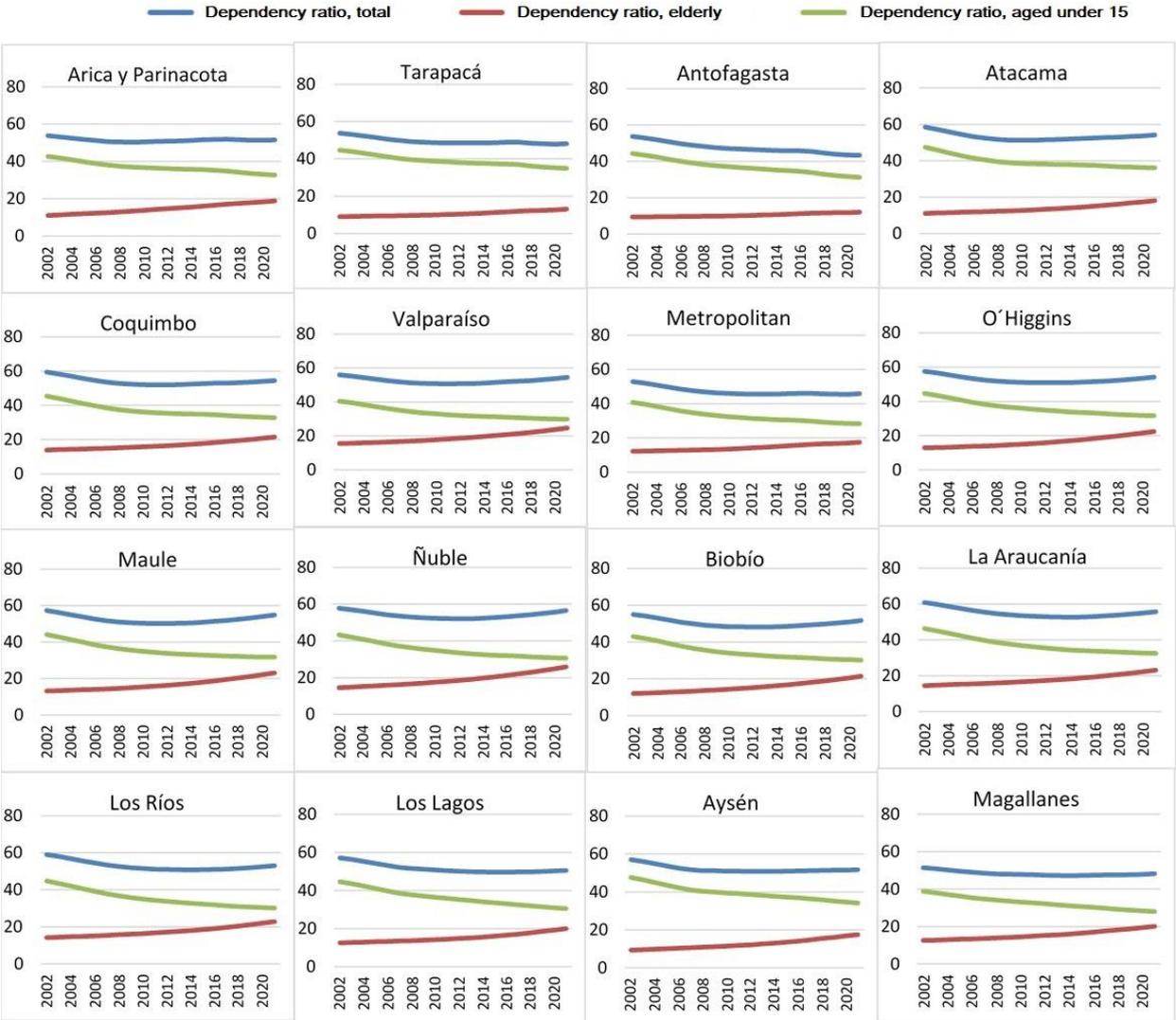In most regions of the country, total demographic dependency slightly increased during the last years of the period. After having experienced a slight downward trend in the previous decades, which was mainly due to the decrease in demographic dependency of children under 15, an increase of varying intensities occurred in all regions of the country (figure 20).

Thus, the slight upward trend in total demographic dependency observed in most regions can largely explained by the increase in the demographic dependency ratio of people aged 65 and over, in contrast to the earlier period, when it can be explained by the dependency ratio of children. The demographic dependency ratio of older people has thus increased in all regions. Even in regions such as Valparaiso and Ñuble, the dependency ratios of older and younger people have become almost equal, and the dependency ratio of the former will surpass the dependency ratio of the latter within the next few years because of the increased proportion of people aged 65 and over and the decrease in the population under 15.

In contrast, the gap between the dependency ratios of older and younger people is still narrowing in some regions in the north of the country, such as Tarapacá, Antofagasta, and Atacama. In these regions, the dependency ratio of younger people fell at a similar rate to that of other regions. The dependency ratio of older people, however, grew more slowly, which has brought a degree of stability to the total dependency ratio in which the upward trend observed in most regions of the country is not yet visible.

5. Characteristics of older people

This chapter provides a brief socio-demographic characterization of older people from two sources: the last two population and housing censuses (2002 and 2017) and vital statistics. The chapter is divided into three sections. The first section provides an analysis of the main socio-demographic characteristics of older people in Chile, including information on their educational level, employment situation, and the self-recognition as indigenous peoples, among other topics. The second section discusses issues related to the households and housing of older people, and the third section provides a brief analysis of the main causes of death of older people according to vital statistics for the period 2010–2019.

5.1   Socio-demographic characteristics of older people

According to the population and housing censuses, by 2002, the habitual resident population of Chile included 11.4% of the population who were aged 60 and over, equivalent to 1,708,335 people (see table 3). By 2017, this population reached 2,816,160 people, rising 64.8% and representing 16.3% of the total population of the country, an increase of 4.9 percentage points. Of the three major age brackets, people aged 60 and over showed the greatest relative increase during the intercensal period, exceeding the relative increase in those aged 15 to 59, whose population expanded by 16.7% while increasing their proportion of the total population from 62.9% in 2002 to 63.7% in 2017. In contrast, the group of people under 15 decreased 10.4% between the two censuses and their proportion of the total population fell 5.8 percentage points, from 25.8% in 2002 to 20% by 2017.

Table 3: Habitual resident population by sex and age bracket, 2002 and 2017 Censuses

Major age brackets	2002 Census						2017 Census					
	Total		Men		Women		Total		Men		Women	
Total	15,051,136	100	7,411,332	100	7,639,804	100	17,327,192	100	8,469,835	100	8,857,357	100
0–14 years	3,881,364	25.8	1,977,542	26.7	1,903,822	24.9	3,468,173	20.0	1,768,490	20.9	1,699,683	19.2
15–59 years	9,461,437	62.9	4,680,419	63.2	4,781,018	62.6	11,042,859	63.7	5,453,413	64.4	5,589,446	63.1
60 years and over	1,708,335	11.4	753,371	10.2	954,964	12.5	2,816,160	16.3	1,247,932	14.7	1,568,228	17.7

Source: 2002 and 2017 Population and Housing Censes, National Statistics Institute
Notes: Because the decimals are rounded, their sums may not add up to 100.

The relative increase in the population aged 60 and over was greater among men, who increased 65.6% between the two censuses, from 753,371 men in 2002 to 1,247,932 in the 2017 census. The relative increase for women 60 and over was 64.2% from 954,964 to 1,568,228 during the intercensal period. The aging process was also more advanced among women: 17.7% belonged to those aged 60 and over compared with 14.7% of men. Although the difference between men aged 60 and over and boys under 15 fell, it was still wider than the difference between women aged 60 and over and girls under 15.

In contrast, the distribution by sex of older people has remained stable during the intercensal period. Men accounted for 44.1% of the total number of older people in the 2002 census and 44.3% in the 2017 census. This distribution shows that older people mainly consisted of women in both censuses, in which women made up 55.7% of the total number of older people in 2017.

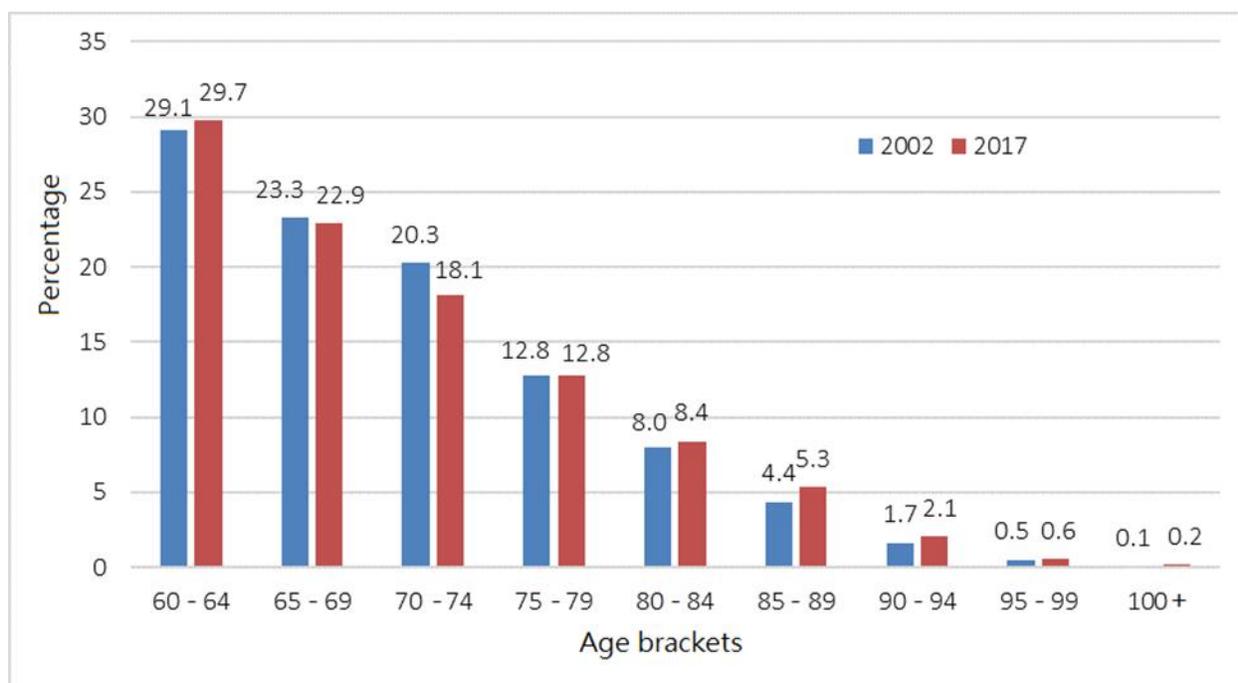Figure 21: Population aged 60 and over by five-year age bracket, 2002 and 2017 Censuses

Source: 2002 and 2017 Population and Housing Censes, National Statistics Institute
Notes: Because the decimals are rounded, their sums may not add up to 100.

Between the 2002 and 2017 censuses, aging occurred among older people. The proportion of people aged 80 and over slightly increased from 14.6% of the total number of older people in 2002 to 16.5% in 2017 (see figure 21). Although all five-year age brackets within the older population have shown an absolute increase between the two censuses and most elderly are among those aged 60–79, the only brackets that decreased in their proportion among the total number of older people were the brackets 65–69 and 70–74, which decreased 0.4 and 2.2 percentage points, respectively. The five-year age bracket with the fastest increase in its proportion was 85–89 years, which increased of 0.9 percentage points between the two censuses. Following was the brackets 60–64 years, which increased 0.6 percentage points.

The number of older people also increased considerably in all regions of the country between the two censuses (see table 4). The Metropolitan Region, followed by Regions of Valparaíso and Biobió, was where the greatest number of older people lived in both 2002 and 2017. In the 2002 census, only five regions had more than 100,000 elderly residents (Valparaíso, Metropolitan Region, Maule, Biobío, and La Araucanía), a figure that has increased to 8 regions by 2017 census, which added the regions of Coquimbo, O'Higgins, and Los Lagos to the list of cities with more than 100,000 older people. The region with the largest relative increase in the population aged 60 and over during the intercensal period was Tarapacá, where the number of older people almost doubled (an increase of 95.8%), although it had the lowest proportion of older people, as will be discussed further below. Tarapacá was followed by the regions of O'Higgins and Coquimbo, whose relative increases were 76.5% and 75%, respectively. On the other hand, the regions with the lowest relative increases of those aged 60 and over were Los Ríos (52.3%), La Araucanía (53.7%), and Magallanes (59.2%).

Table 4: Resident population by region and age bracket, 2002 and 2017 Censuses

Region of habitual residence	2002				2017			
	Total	0–14 years	15–59 years	60 years and over	Total	0–14 years	15–59 years	60 years and over
Total	15,050,796	3,881,339	9,461,158	1,708,299	17,317,519	3,466,827	11,035,946	2,814,746
Arica y Parinacota	188,463	48,780	119,818	19,865	222,779	48,351	139,740	34,688
Tarapacá	236,021	65,514	150,919	19,588	322,238	75,990	207,890	38,358
Antofagasta	481,931	132,455	307,338	42,138	578,117	125,312	383,466	69,339
Atacama	253,205	72,063	155,924	25,218	284,553	65,218	177,991	41,344
Coquimbo	603,133	163,854	368,199	71,080	748,960	161,290	463,251	124,419
Valparaíso	1,530,841	373,478	951,798	205,565	1,783,552	338,767	1,108,036	336,749
Metropolitan Region	6,045,192	1,506,178	3,874,653	664,361	7,028,680	1,357,582	4,587,361	1,083,737
O´Higgins	775,883	209,010	479,396	87,477	902,471	186,780	561,256	154,435
Maule	905,401	240,000	559,879	105,522	1,032,291	209,878	641,314	181,099
Ñuble	436,439	112,978	267,777	55,684	474,238	92,189	292,264	89,785
Biobío	1,423,107	373,879	893,306	155,922	1,545,843	311,000	974,942	259,901
La Araucanía	867,351	236,090	524,103	107,158	940,621	195,878	580,011	164,732
Los Ríos	354,271	94,527	215,928	43,816	376,269	75,291	234,238	66,740
Los Lagos	712,039	191,376	440,577	80,086	816,234	169,540	518,020	128,674
Aysén	89,986	26,025	56,091	7,870	99,410	23,087	62,565	13,758
Magallanes	147,533	35,132	95,452	16,949	161,263	30,674	103,601	26,988

Source: 2002 and 2017 Population and Housing Censes, National Statistics Institute

Notes: Those who did not state their region of habitual residences have been excluded.

The regions of Valparaiso, Ñuble, and Los Ríos had the highest proportions of the population aged 60 and over in both 2002 and 2017 (figure 22). However, in the latest census, Ñuble had the same relative share as the Valparaiso region in relation to the total population of the country (18.9%[20]), followed by Los Ríos (17.7%). Ñuble had the highest percentage growth during the intercensal period, from 12.8% of older people in the 2002 census to 18.9% in 2017, an increase of 6.1 percentage points. Meanwhile, the three regions with the lowest proportion of people over the age of 59 remained the same between the 2002 and 2017 censuses. The regions and their proportions in 2017 were Tarapacá (11.9%), Antofagasta (12.0%), and Aysén (13.8%).

[20] Rounded with more decimals, Ñuble surpassed Valparaíso in the percentage of older people over the total population, according to data from the 2017 Census.

Figure 22: Percentage of older people in total population, by region of residence, 2002 and 2017 Censuses
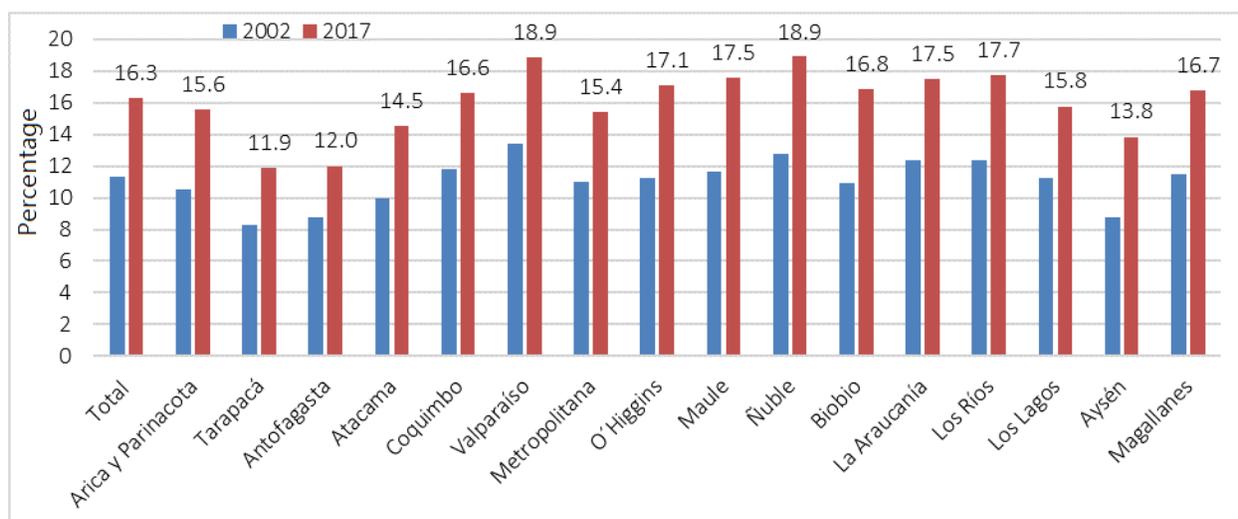

Source: 2002 and 2017 Population and Housing Censes, National Statistics Institute
Notes: Those who did not state their region of habitual residences have been excluded.

Figure 23: Percentage of older people aged 60–79 (third stage) and 80 and over (fourth stage) as a proportion of the total number of older people, by region of residence, 2017 Census
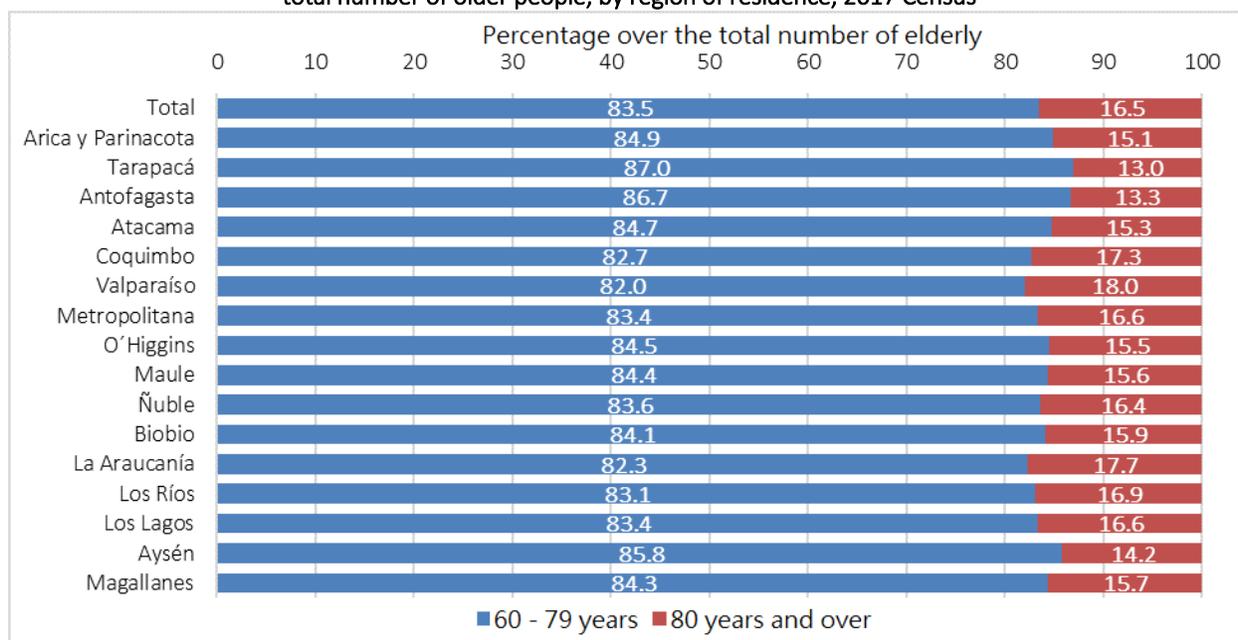
Source: 2017 Census of Population and Housing, National Statistics Institute
Notes: Those who did not state their region of habitual residences have been excluded.

According to the 2017 Census, the proportion of those aged 80 and over (figure 23) exceeded the national level of 16.5% in six regions, and those aged 60 to 79 represented over 80% of the total number of older person and in all regions. The region of Valparaíso had the highest proportion of people aged 80 or over (18%). Following were La Araucanía (17.7%), Coquimbo (17.3%), and Los Ríos (16.9%). On the other hand, the regions with the lowest proportion of people in this age group were Tarapacá (13%), Antofagasta

(13.3%), and Aysén (14.2%). These three regions were also where older people have the lowest median age (figure 24), 66.8, 66.9, and 67.4 years, respectively, although in Aysén the median age increased during the intercensal period, unlike Tarapacá and Antofagasta. The aging process in these three regions accelerated less than in most regions of Chile, where the median age increased compared to the 2002 census. For the 2017 census, the region of Valparaíso had the highest median age (69), followed by La Araucanía (68.9) and Ñuble (68.7).

Figure 24: Median age of older people, by region of residence, 2002 and 2017 Censuses

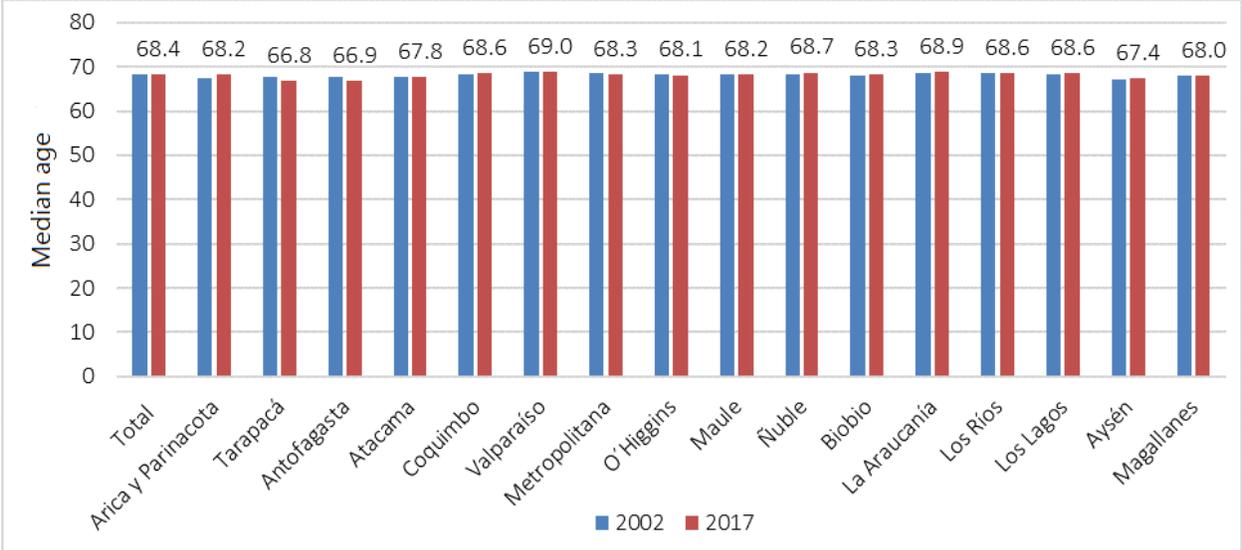Source: 2002 and 2017 Population and Housing Censes, National Statistics Institute
Notes: Those who did not state their region of habitual residences have been excluded.

The highest educational level attained for the majority of older people in Chile was primary education (44.6%), which can be seen in figure 25. Following were those who had completed secondary education (34.5%), and university education (10.3%). The educational levels attained by older people, however, varied markedly according to their age group, which accounts for the greater coverage or better access to education that older people had over the years. Thus, the number of older people who never attended formal education reached a higher percentage among those aged 80 and over (12.1%), a figure that drops to 4.4% among those aged 60 to 79. A similar situation occurs with the secondary education and university education, which have been increasing in percentage among older people over the years. For those in the fourth stage of life, 27.2% received secondary education, while for those aged between 60 and 79 years, the figure stands at 35.9%. For vocational education, 11% of those aged 60 to 79 attained that level of education, but the proportion falls to 6.9% among those aged 80 and over.

Figure 25: Highest educational attainment of older people, by age bracket, 2017 Census
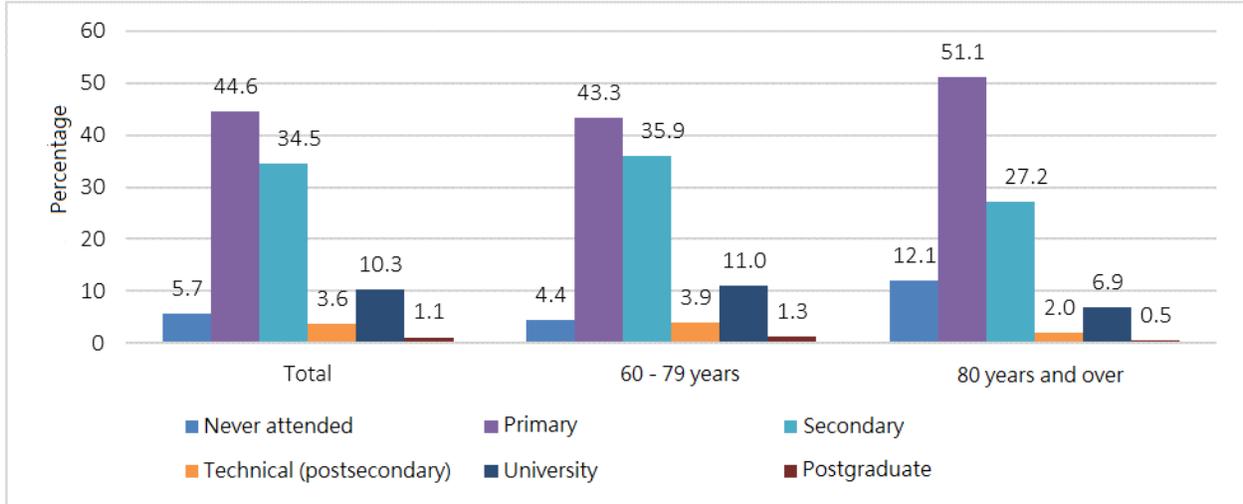
Source: 2017 Census of Population and Housing, National Statistics Institute
Notes: Because the decimals are rounded, their sums may not add up to 100. Those who did not state their highest level of educational attainment have been excluded. The educational levels preprimary and special education have been excluded because of their low prevalence (0.1%).

Figure 26: Highest educational attainment of older people, by sex, 2017 Census
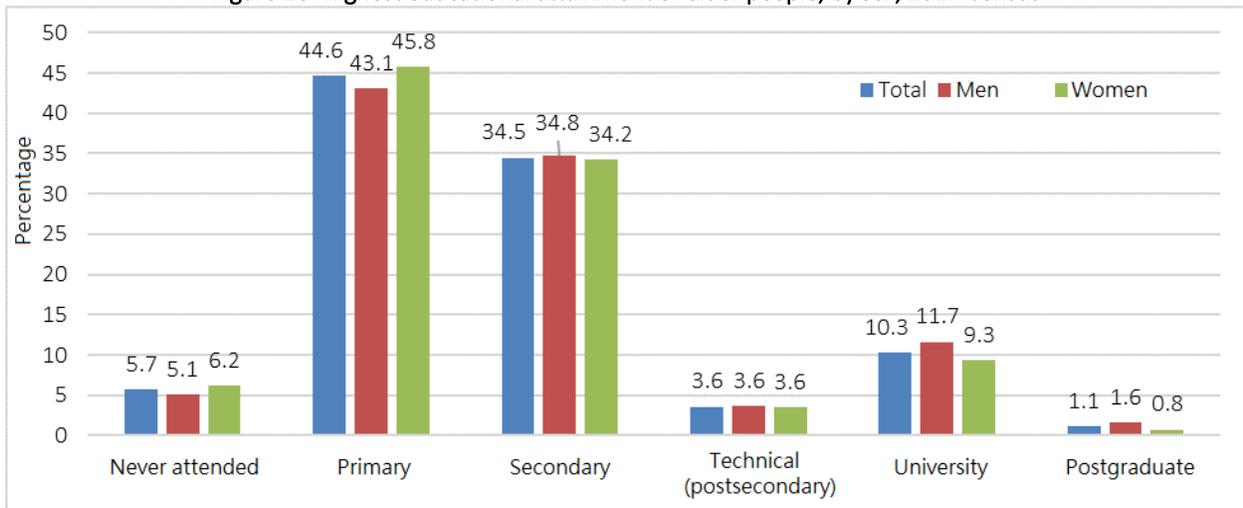
Source: 2017 Census of Population and Housing, National Statistics Institute
Notes: Because the decimals are rounded, their sums may not add up to 100. Those who did not state their highest level of educational attainment have been excluded. The educational levels preprimary and special education have been excluded because of their low prevalence (0.1%).

Some slight differences in the level of education attained by older people based on their sex can be observed in figure 26. Although the percentages of each level are similar between the sexes and the gender gaps narrow among the youngest five-year groups, there is a smaller proportion of women the highest educational levels, including the secondary level (34.2%), university level (9.3%), and postgraduate level (0.8%), where the proportion of men is 34.8%, 11.7%, and 1.6%, respectively. Similarly, a higher proportion of women than of men never attended any formal education (6.2% and 5.1%, respectively). The proportion

of women with primary education as their highest level of educational attainment was 45.8%, while for men this figure was 43.1%.

Figure 27: Average years of study of the older people, by region of residence, 2002 and 2017 Censuses
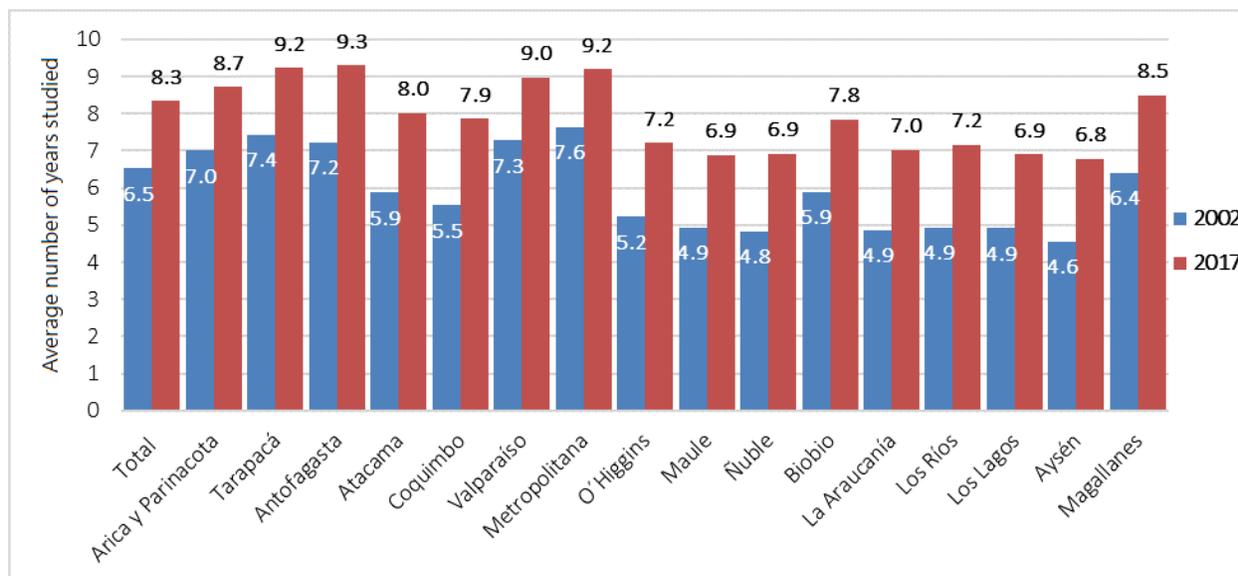
Source: 2002 and 2017 Population and Housing Censes, National Statistics Institute
Notes: Those who did not state their region of habitual residences have been excluded. Those who did not state their highest level of educational attainment have been excluded.

Figure 27 shows that the average years of study of older people has increased between both censuses, from 6.5 years in the 2002 census to an average of 8.3 years for the 2017 census. Similarly, older people in all regions of the country have increased in the number of years of study. By 2002, older people had an average of at least 7 years of study in five regions. The Metropolitan Region (7.6), Tarapacá (7.4), and Valparaíso (7.3) had the highest averages. In contrast, the 2017 census found that most regions exceeded this threshold and that only four regions have averages slightly lower than the 7 years of study: Aysén (6.8 years), Los Lagos, Maule, and Ñuble (the last three with an average of 6.9 years). In the 2017 census, four regions had an average equal to or greater than 9 years of study, and Antofagasta (9.3 years) had the highest level of educational attainment among older people. Following were the Metropolitan Region and Tarapacá (both with an average of 9.2) and Valparaíso with an average of 9.0 years of study.

Figure 28: Older people by employment status in the week before the census, 2017 Census
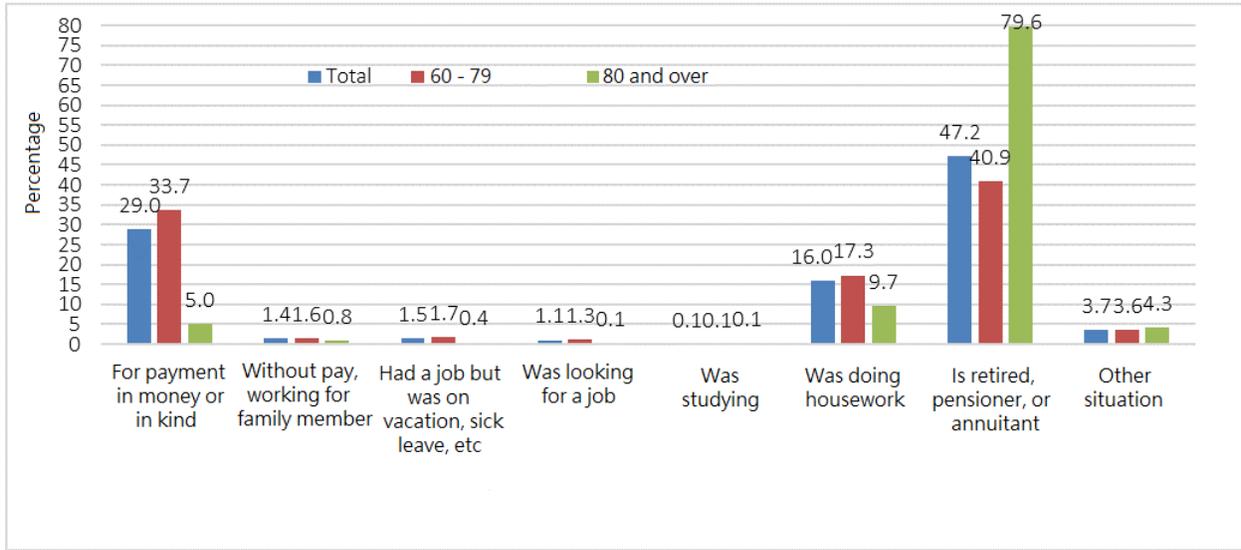
Source: 2017 Census of Population and Housing, National Statistics Institute.
Notes: Because the decimals are rounded, their sums may not add up to 100. Those who did not state their employment status in the week before the census have been excluded.

In the 2017 census, the majority of older people report having been retired the week before the census (47.2%), while 29.0% report having worked for a payment in money or species, and 16.0% report having done chores at home (figure 28). By distinguishing between those aged 60 to 79 and those aged 80 and over, the percentage of retirees increases to 79.6% for people aged 80 and over but decreases to 40.9% for those aged 60 to 79. On the other hand, more than a third of those aged 60 to 79 (33.7%) were working for payment in money or kind, a figure that decreases to only 5% for those aged 80 and over.

Figure 29: Percentage of older people who report feeling that they belong to an indigenous people, by region of residence, 2017 Census

Source: 2017 Census of Population and Housing, National Statistics Institute.
Notes: Those who did not state their feeling of belonging to an indigenous people have been excluded. Those who did not state their region of habitual residences have been excluded.

The percentage of older people who consider themselves to be indigenous was 10.6% in 2017 (figure 29). This percentage varies considerably between the regions of the country. In two regions, (Arica and

Parinacota and La Araucanía), more than a quarter of older people consider themselves indigenous, with 29.7% and 26.8% identifying as such, respectively. Regions with approximately 20% include Los Ríos (20.8%), Aysén (20.6%), Los Lagos (19.5%), and Tarapacá (19.2%). The regions of the central part of the country have the lowest percentages of older people who consider themselves indigenous: Maule (4.3%), Ñuble (4.6%), and O'Higgins (5.5%).

Figure 30: Percentage of older people who consider themselves indigenous, by ethnic group, 2017 Census

Source: 2017 Census of Population and Housing, National Statistics Institute
Notes: Those who did not state their feeling of belonging to an indigenous people have been excluded. Because the decimals are rounded, their sums may not add up to 100.

Of the total number of older people who stated that they belonged to an indigenous people in the 2017 census, the majority identified with the Mapuche people, which accounted for 81.8% of the positive responses (figure 30). Following were those who identified as Aymara (5.7%), Lican Antai (4.7%), and Diaguita (4.2%).

Concerning their relationship with the head of household, 58.5 per cent of older people identified as heads of household, according to the 2002 census (figure 31). This percentage increased slightly in the 2017 census, reaching 59.9%. The percentage of older men who are heads of household showed a slight decrease from 77.6% to 76.0%, while the percentage of older women increased from 43.5% in 2002 to 47.1% in 2017. These trends reflect a slight decrease in the gender gap in the number of heads of household in this age group, from a gap of 34.1 points in 2002 to 28.9 points in 2017. On the other hand, both censuses showed that a majority of women stated that they were wives of the head of household, although the censuses also showed that the gender gap of those stating that they were husbands or wives of the head of household decreased. While the percentage of those who stated that they were husbands or wives of the head of household increased for both sexes, the gender gap decreased by 2 points, from 25.3 points in 2002 to 23.3 in 2017.

Figure 31: Distribution of older people by relationship to head of household, 2002 and 2017 Censuses
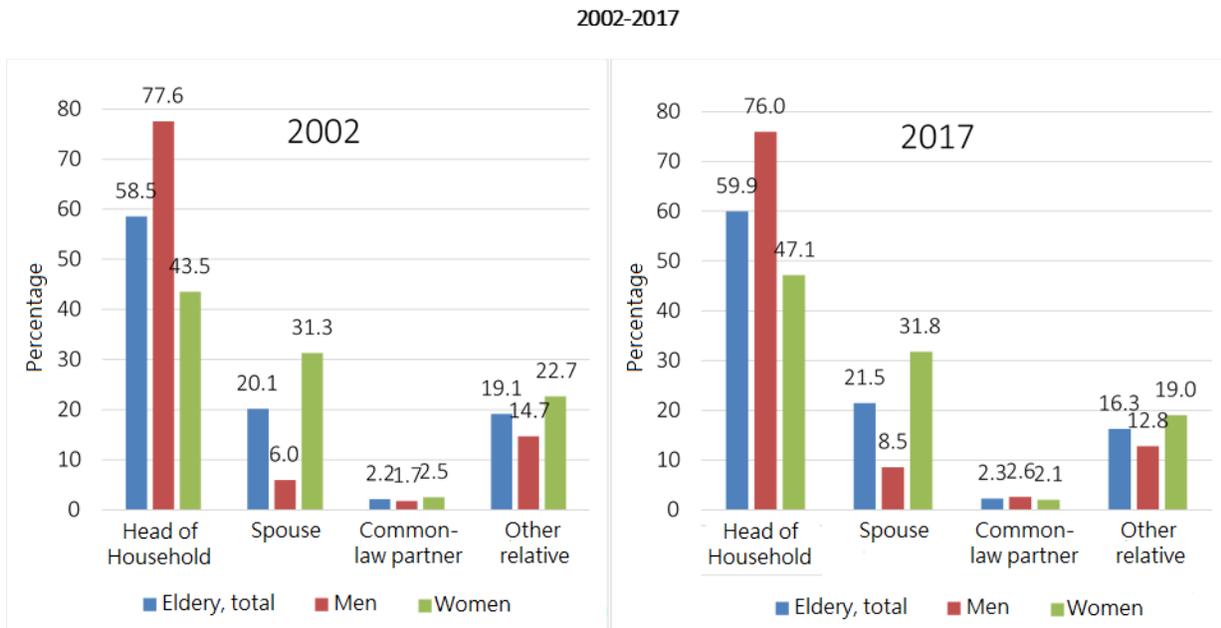
2002-2017

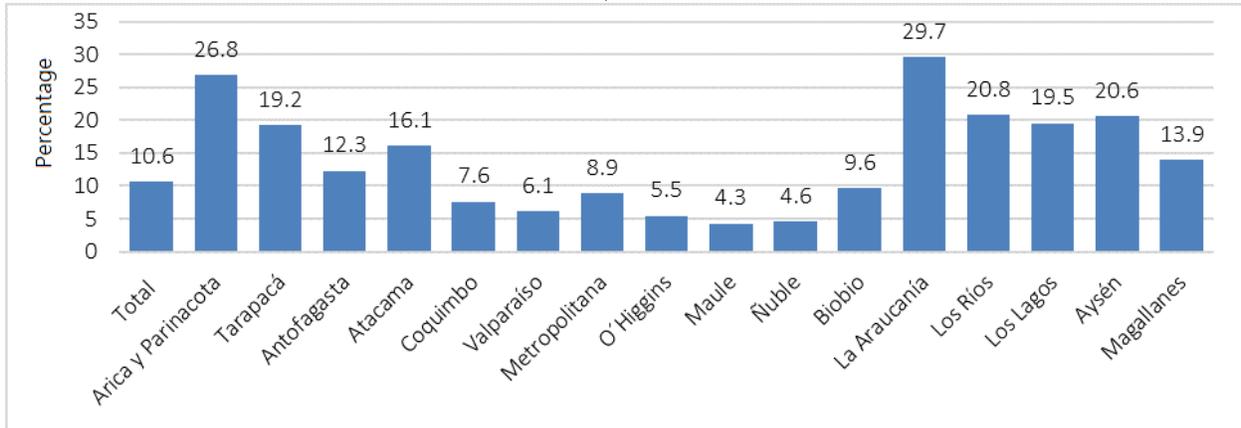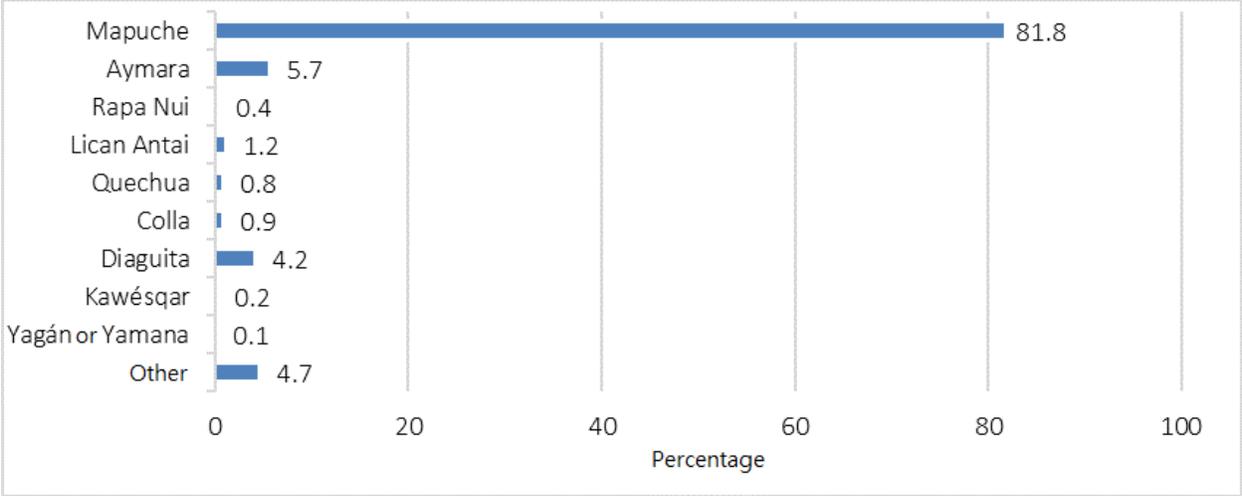Source: 2002 and 2017 Population and Housing Censes, National Statistics Institute.
Notes: Because the decimals are rounded, their sums may not add up to 100.

Figure 32: Distribution of older people by urban and rural area and region of residence, 2017 Census
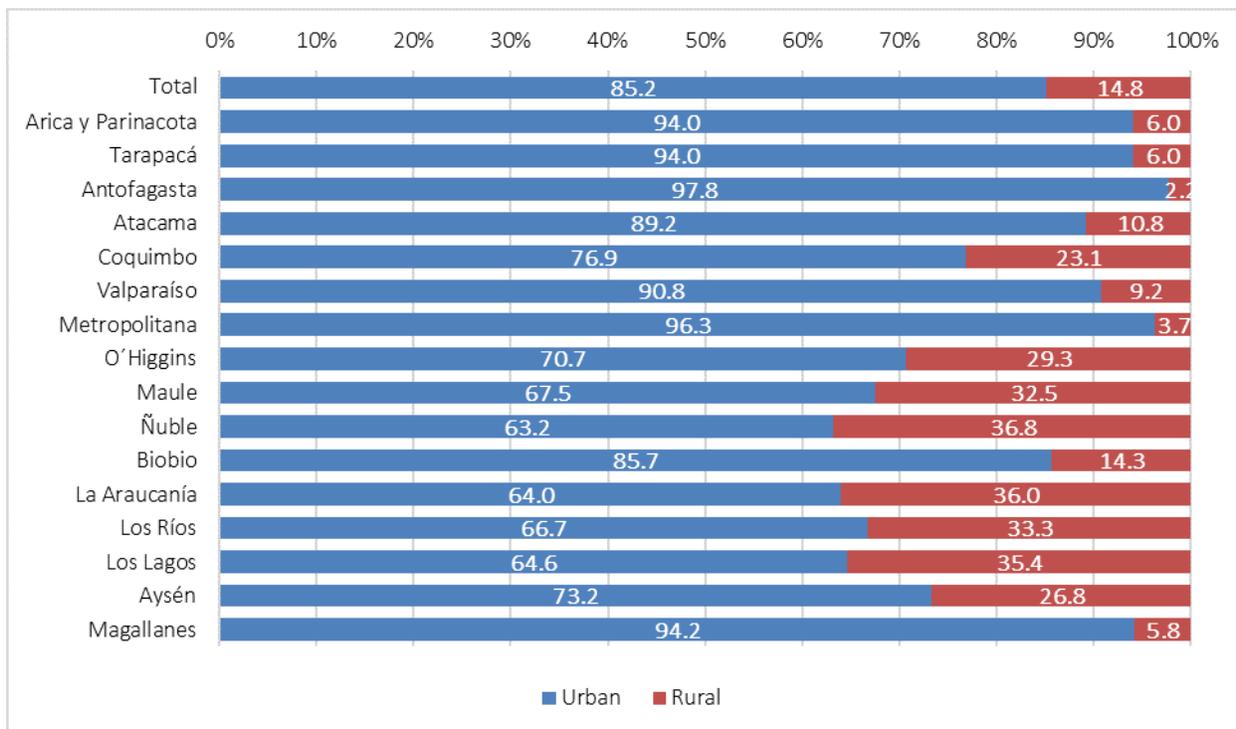
Source: 2017 Census of Population and Housing, National Statistics Institute.
Notes: Older people who stated that they resided in a dwelling or commune different from which they had been enumerated were excluded, which was equivalent to 3.9% of the total elderly population who habitually resided in the country.

Among older people living in the same place where they were enumerated for the 2017 census, 85.2% lived in urban areas and 14.8% lived in rural areas (see figure 32). These percentages vary significantly among regions of the country; the number of older people living in rural areas exceeded 25% in seven regions, and the number living in urban areas exceeded 90% in six regions. Antofagasta had the highest proportion of older people living in urban areas (97.8%), followed by the Metropolitan region (96.3%), and Magallanes (94.2%). On the other hand, Ñuble had the highest proportion of older people living in rural areas (36.8%). Following were La Araucanía (36.0%) and Los Lagos (35.4%).

5.2 Characteristics of the households and housing of older people

A comparison of the 2002 and 2017 censuses shows an increase in households with at least one older person (figure 33). In the 2002 census, 29.4% of households had at least one elderly member. In the 2017 census, this figure increased 5.5 percentage points to 34.9%.

Figure 33: Households by presence of the older people, 2002 and 2017 Censuses
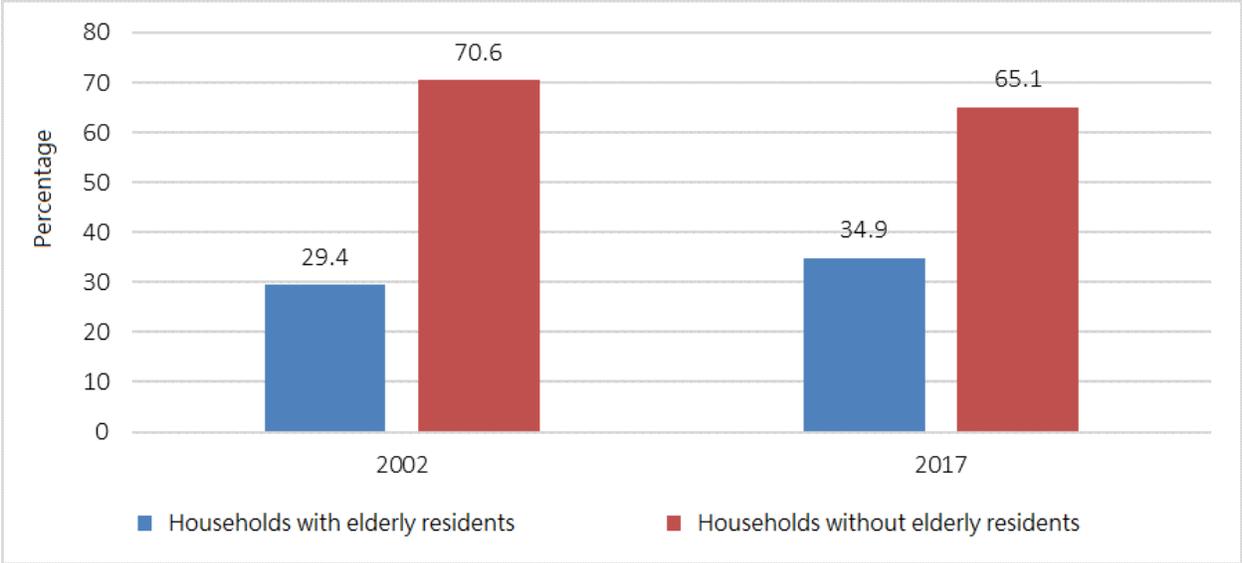
Source: 2002 and 2017 Population and Housing Censes, National Statistics Institute
Notes: Older people who stated that they resided in collective housing and those who stated that they resided in a commune different from which they had been enumerated were excluded.

Figure 34 shows that the majority of older people (43.9%) resided in nuclear-family households, (i.e., households composed of the head of household, a spouse or partner, and their children), according to the 2017 census. Under this classification, which was developed within the framework of the 2017 census, older people in nuclear households may have varying kinship ties, including being the heads of household, the children of the heads of household, their spouses, their fathers, or their mothers (INE, 2018c).

Figure 34: Older people by household type, 2017 Census

Source: 2017 Census of Population and Housing, National Statistics Institute.
Notes: Older people who stated that they resided in collective housing and those who stated that they resided in a commune different from which they had been enumerated were excluded. Because the decimals are rounded, their sums may not add up to 100.

There thus three types of nuclear households. The first is a two-parent household without children (22.4%), which consists of the head of household and his or her spouse or partner. One or both parents may be older people. The second is a nuclear two-parent household with children (14.0%), which consists of the head of household, his or her spouse or partner, and their children. The third is a nuclear single-parent household (7.4%), which consists of the head of household and his or her children, excluding a spouse or partner of the head of the household. The majority of older people in Chile lived with their children, parents, mothers, spouses, or partners. Some older people lived in an extended-family household (29.3%), which consists of a nuclear household and other relatives of the head of household, including grandparents, parents-in-law, sons- and daughter-in-law, or other relatives. In addition, 14.9% of older people lived in single-person households (i.e., households made up of only one older person).
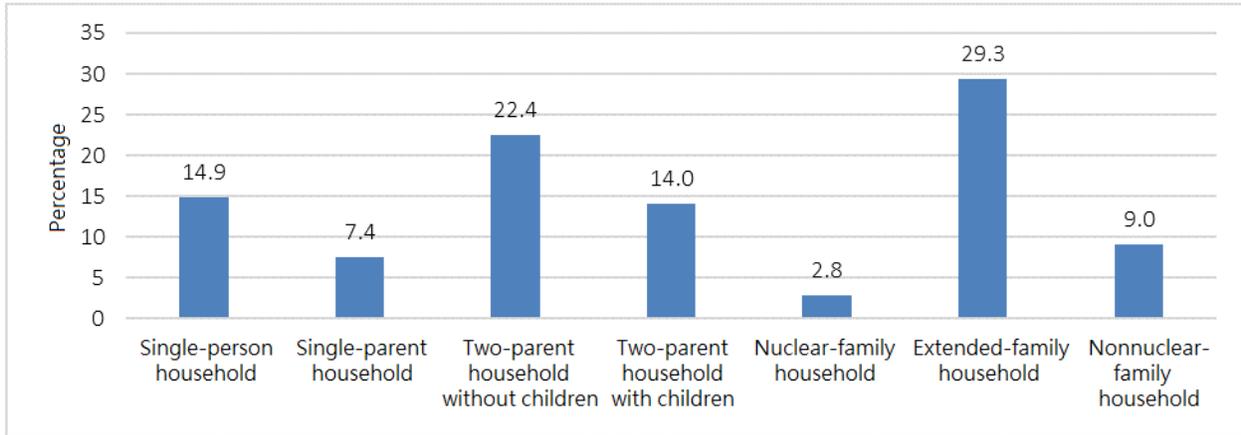
Figure 35: Older people by type of housing, 2017 Census

Source: 2017 Census of Population and Housing, National Statistics Institute
Notes: Older people who stated that they resided in housing different from that in which they were enumerated have been excluded.

Figure 35 shows that most older people lived in a house (88.0%) or an apartment in a building (10.5%). In addition, a small percentage of older people (0.9%) lived in a mediagua, mejora, ranch, or shack.

The 2017 census shows that 4.5% of the country's elderly resided in overcrowded housing, which is defined as 2.5 people or for each room used exclusively for sleeping (see figure 36). This figure varied among the regions of the country. In five regions, it exceeded the national value; Tarapacá had the highest percentage of older people residing in overcrowded housing (7.9%), followed by Arica and Parinacota (6.2%), Antofagasta (6.0%), the Metropolitan Region (5.4%), and Atacama (5.1%). The regions with the lowest percentage of older people in overcrowded housing were Magallanes (2.7%), and Ñuble (3.2%), and Los Lagos (3.2%).

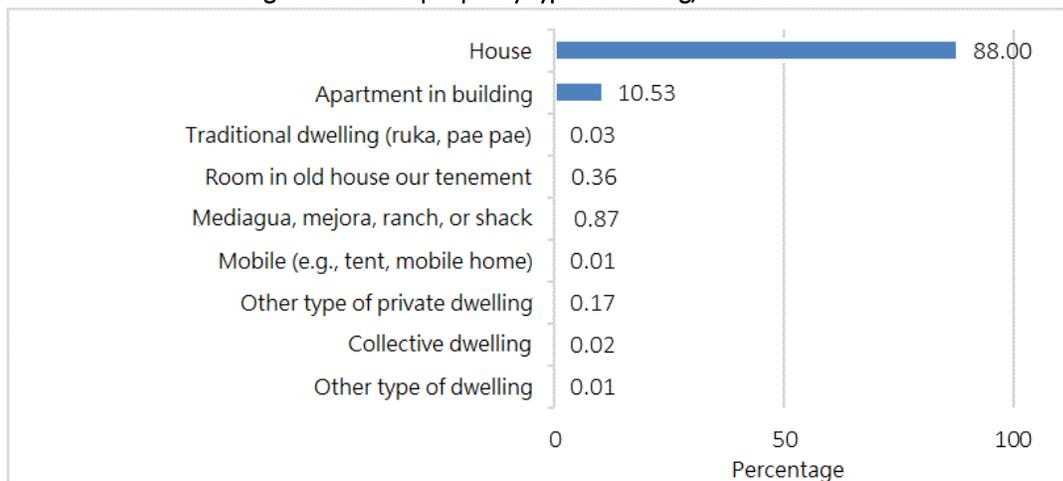Figure 36: Percentage of older people in overcrowded housing, by region of residence, 2017 Census
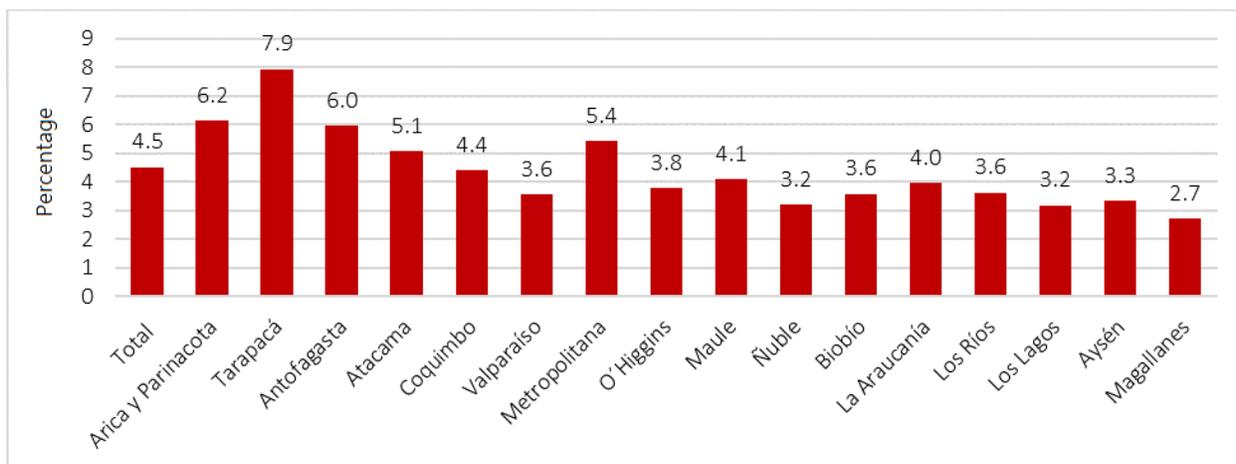
Source: 2017 Census of Population and Housing, National Statistics Institute
Notes: Older people who stated that they resided in collective housing and those who stated that they resided in housing different from which they had been enumerated were excluded. Those who did not state the number of rooms used exclusively as bedrooms have been excluded.

As shown in table 5, the majority of older people (91.9%) resided in dwellings that obtain drinking water through the public network, according to the 2017 Census. Following were dwellings that obtain water through a well or waterwheel (4.7%) and those who obtain water through a river, stream, channel, estuary, or lake (2.1%). In seven regions of the south-central zone of the country (Maule, Ñuble, Biobío, La Araucanía, Los Rios, Los Lagos, and Aysén), the percentage of older people who obtained water through the public network did not exceed 90%; the lowest percentages are La Araucanía (73.4%) and Los Lagos (75.6%). The regions where over 10% of older people residing in dwellings that obtained water through wells or waterwheels are Ñuble (16.5%), Los Lagos (13.8%), and La Araucanía (12.7%). On the other hand, the regions with the highest percentages of older people in dwellings that obtained water through river, stream, channel, estuary, or lake were Los Ríos (12.4%), Aysén (12.4%), Los Lagos (9.2%), and La Araucanía (8.9%). The regions with the highest percentage of older people in dwellings that obtain water through water trucks were La Araucanía (5.0%), Coquimbo (4.5%), and Atacama (3.8%).

Table 5: Older people by source of water and region of residence, 2017 Census

| Region of residence	Total	Public system	Well or water wheel	Tanker truck	River, spring, stream, channel, lake, etc.
Nationwide total	100	91.9	4.7	1.3	2.1
Arica y Parinacota	100	95.7	1.6	1.7	1.1
Tarapacá	100	96.3	1.0	1.6	1.2
Antofagasta	100	98.3	0.1	1.3	0.3
Atacama	100	93.8	1.4	3.8	0.9
Coquimbo	100	90.4	3.6	4.5	1.5
Valparaíso	100	94.5	3.6	1.5	0.4
Metropolitan region	100	98.2	1.4	0.2	0.2
O´Higgins	100	95.3	3.4	0.9	0.5
Maule	100	88.0	8.0	1.5	2.5
Ñuble	100	77.8	16.5	3.0	2.7
Biobío	100	89.1	6.8	1.1	3.0
La Araucanía	100	73.4	12.7	5.0	8.9
Los Ríos	100	77.7	8.8	1.1	12.4
Los Lagos	100	75.6	13.8	1.4	9.2
Aysén	100	84.8	2.6	0.2	12.4
Magallanes	100	95.8	1.7	0.7	1.7

Source: 2017 Census of Population and Housing, National Statistics Institute

Notes: Older people who stated that they resided in collective housing and those who stated that they resided in housing different from which they had been enumerated were excluded. Those who did not state the source of water in their dwellings have been excluded.

5.3 Main causes of death of older people 2010–2019

As noted in previous chapters, mortality is closely related to the processes of demographic transition and population aging. As early mortality decreases, life expectancy increases and more people reach later ages, thereby increasing the proportion of people over age 60. These processes, together with fewer births and smaller populations of younger people resulting from decreased fertility, drive the process of population aging.

Consequently, a greater number of people in advanced age means that a greater number of population exposed to the risks of dying from of the natural process of biological deterioration and of the accumulation over their lifetime of diseases and conditions caused by environmental factors. Except for extraordinary situations such as war or natural disasters, the deaths of the population are usually concentrated in the older population. This can be seen more clearly in figure 37, which shows the proportion of deaths of people aged 60 and over on the total annual deaths in the country in the period 2010–2019. Since 2010, deaths of older people account for more than 76% of the total deaths registered in the country, a figure that increased throughout the period and reached 80.0% by 2019.

Figure 37: Percentage of deaths of older people over the total number of deaths, by sex, 2010–2019
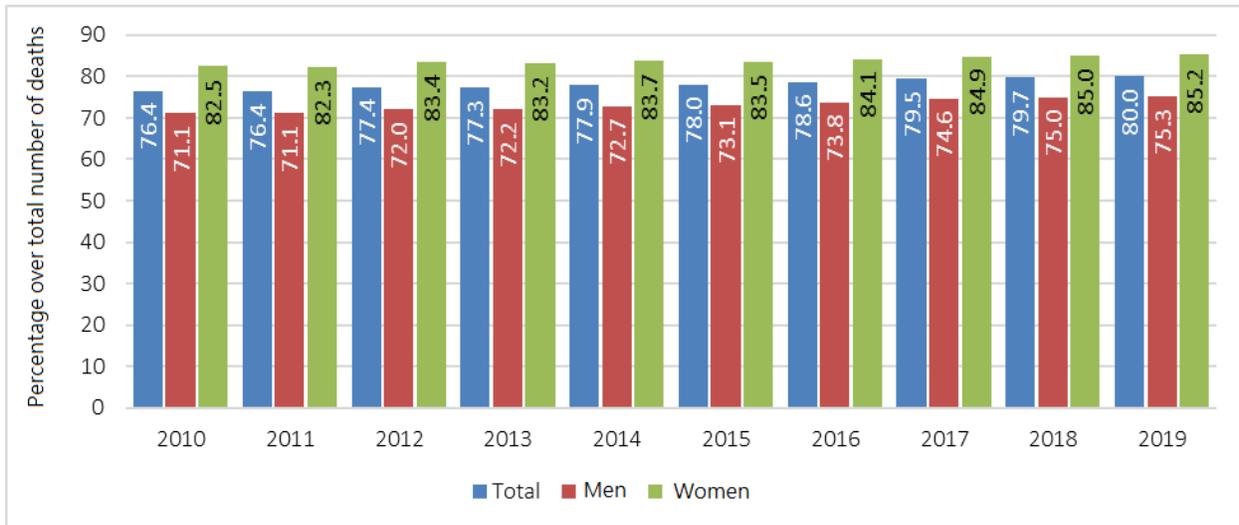
Source: Vital Statistics 2010–2019, National Statistics Institute.
Notes: In the calculation of the percentages, the deaths of people of unknown sex and age have been excluded.

Mortality varies according to the sex of the population, and the life expectancy of women is higher than that of men. Deaths of older women accounted for more than 85% of all female deaths in 2019, exceeding by approximately 10 percentage points the proportion of older men, who will account for 75.3% of all male death in the same year. The gender gap has been gradually decreasing over the past few years, from 11.4 percentage points in 2010, which reflected the faster increase in the proportion of older men's deaths over total deaths (4.2 points) than in older women's deaths over total deaths (2.7 points).

Figure 38: Percentage of deaths of older people by age bracket, 2010–2019
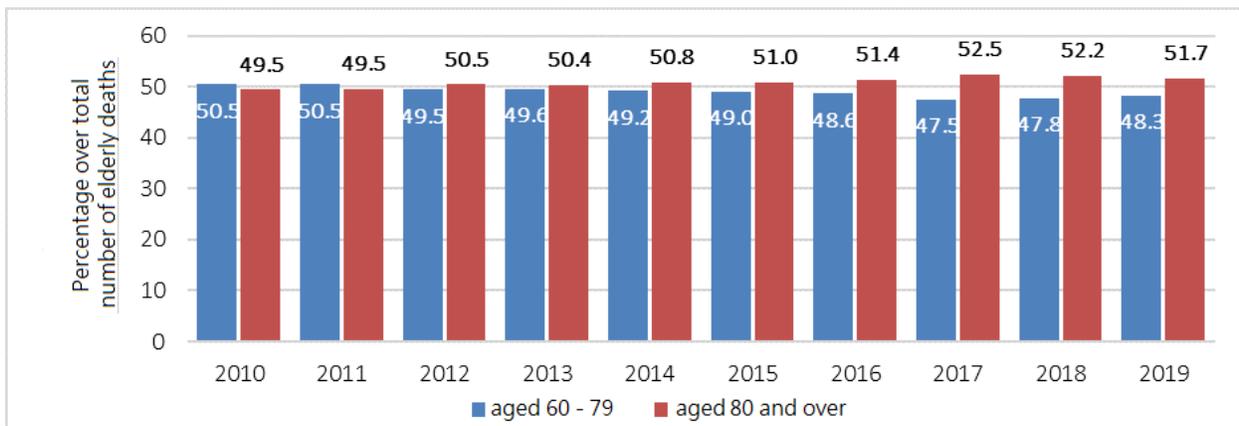
Source: Vital Statistics 2010–2019, National Statistics Institute.

As to differences in the number of deaths of older people according to age bracket (figure 38), the proportion of deaths of older people aged 80 and over has been increasing over the last few years and, since 2012, the number of deaths in this bracket has been greater than for those aged 60 to 79. Thus, by 2019, the majority (51.7%) of older people who die were aged 80 years and older.

As to the differences in the number of deaths of ages 60 to 79 and ages 80 and over, sex is an important factor (figure 39). A higher proportion of men can be observed in deaths of those aged 60 to 79, where the death rate is 140 men per 100 women. For older people who died at age 80 or over, a contrary relationship is observed: the sex ratio is approximately seventy men for every 100 women, which shows that more women died in this bracket.

Figure 39: Sex ratio of deaths among older people, by age bracket, 2010–2019
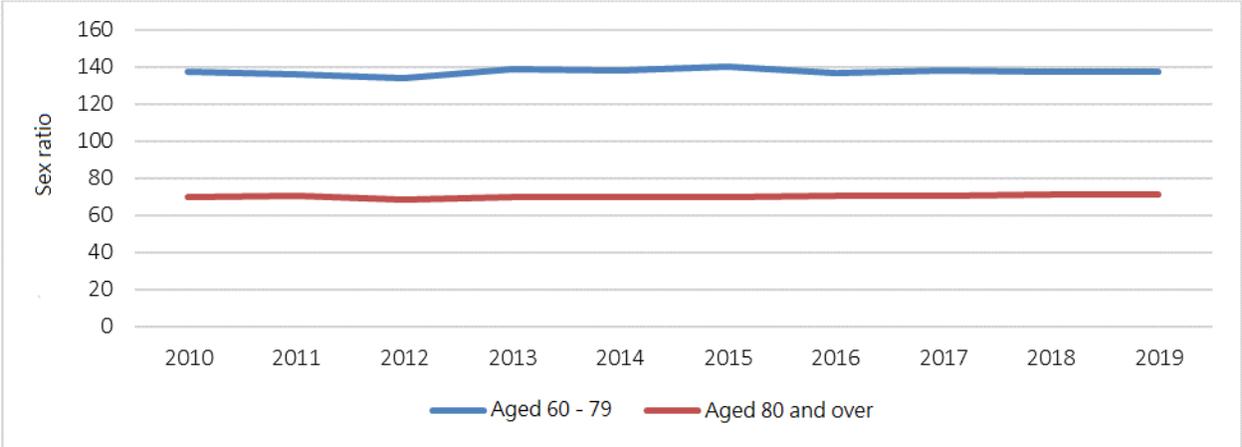
Source: Vital Statistics 2010–2019, National Statistics Institute

Analyzing the causes of death of older people becomes particularly relevant not only because this bracket represents about 3 out of 4 deaths in Chile, but also because it illustrates the medical and technological advances over time as well as changes in the population's lifestyle and general health. Such analysis can thus guide sound public health policies by focusing on reducing death from the various causes among the elderly population. The analysis of causes of death enables the investigation of the changes observed in the epidemiological profile of the population, which has a profound impact on population aging and on the stages of demographic transition because these changes strongly influence the mortality patterns of the population (INE, 2021a).

Figure 40: Deaths of older people according to major groups of causes, 2010 and 2019
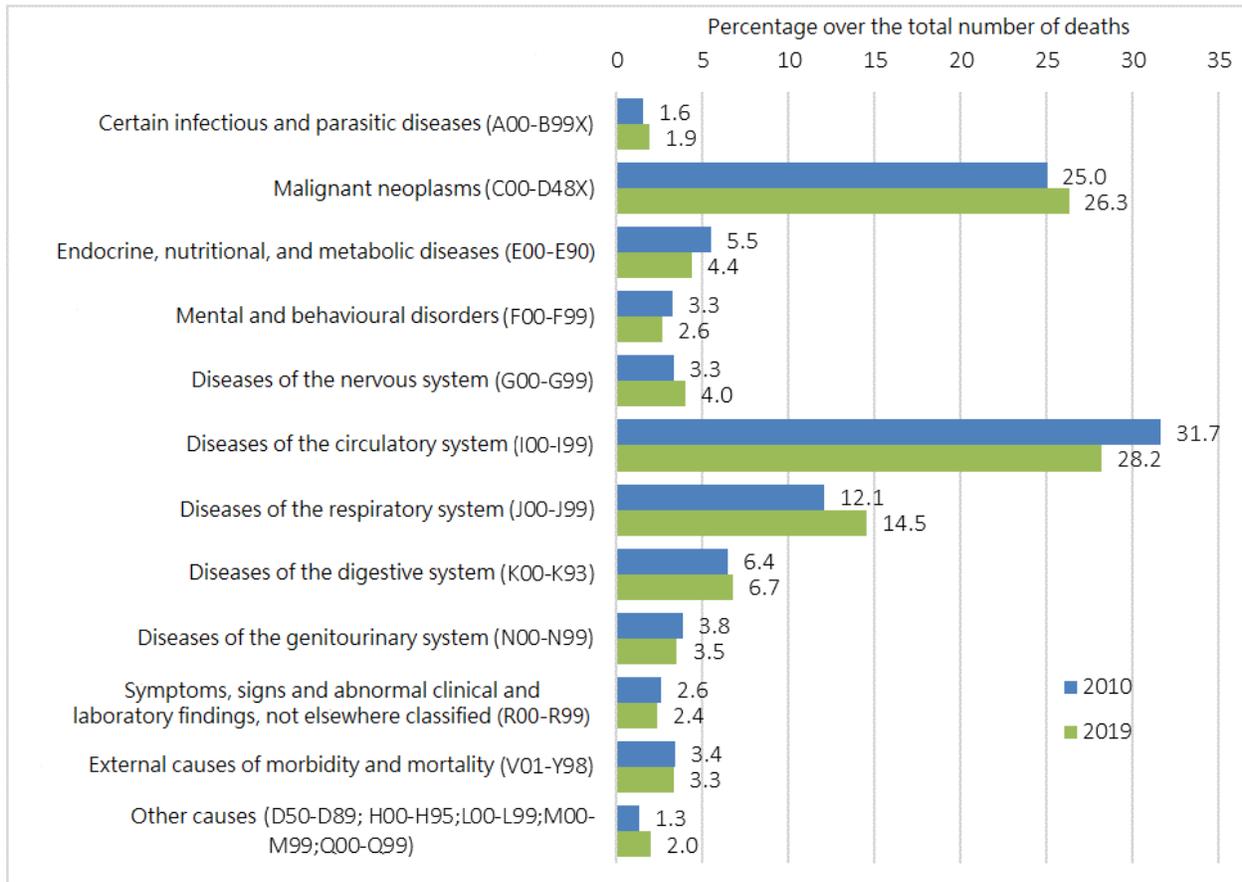
Source: Vital Statistics 2010–2019, National Statistics Institute
Notes: Because the decimals are rounded, their sums may not add up to 100.

Figure 40 shows that, for the years 2010 and 2019, the leading cause of death[21] of older people was diseases of the circulatory system, which represented 28.2% of total deaths of people aged 60 and over in 2019. This group of causes, which includes cerebrovascular diseases and hypertensive and acute myocardial infarction, fell slightly as proportion of total deaths compared to 2010, when it stood at 31.7%.

Second, there are causes of death associated with malignant tumors, which have increased their proportion in total mortality from 25.0% in 2010 to 26.3% in 2019. Among these causes are lung, stomach, prostate, gall bladder, and colon cancers, which have gradually increased during the last decades. By 2019, they were the main cause of death, so they are likely to remain so in the coming years for the population aged 60 years and over (INE, 2021a).

The third major cause of death of older people is found in diseases of the respiratory system, which have increased from 12.1% in 2010 to 14.5% in 2019. Pneumonia, influenza, and other chronic diseases of the lower respiratory tract are noteworthy examples of diseases of this group.

[21] The latest international classification of causes of death is the tenth revision, known as ICD-10 (PAHO, 1995). This revision, which came into effect in more economically developed countries on January 1, 1993, was adopted by Chile in 1997 to statistically classify mortality by cause of death, and it is still used currently (INE, 2021).

The fourth leading cause of death among older people is diseases related to the digestive system, such as gastric ulcers, cirrhosis, and other chronic liver diseases. These causes of death have slightly increased their incidence among deaths from 2010 (6.4%) to 2019 (6.7%).

Figure 41: Main groups of causes of death of older people, by sex, 2019
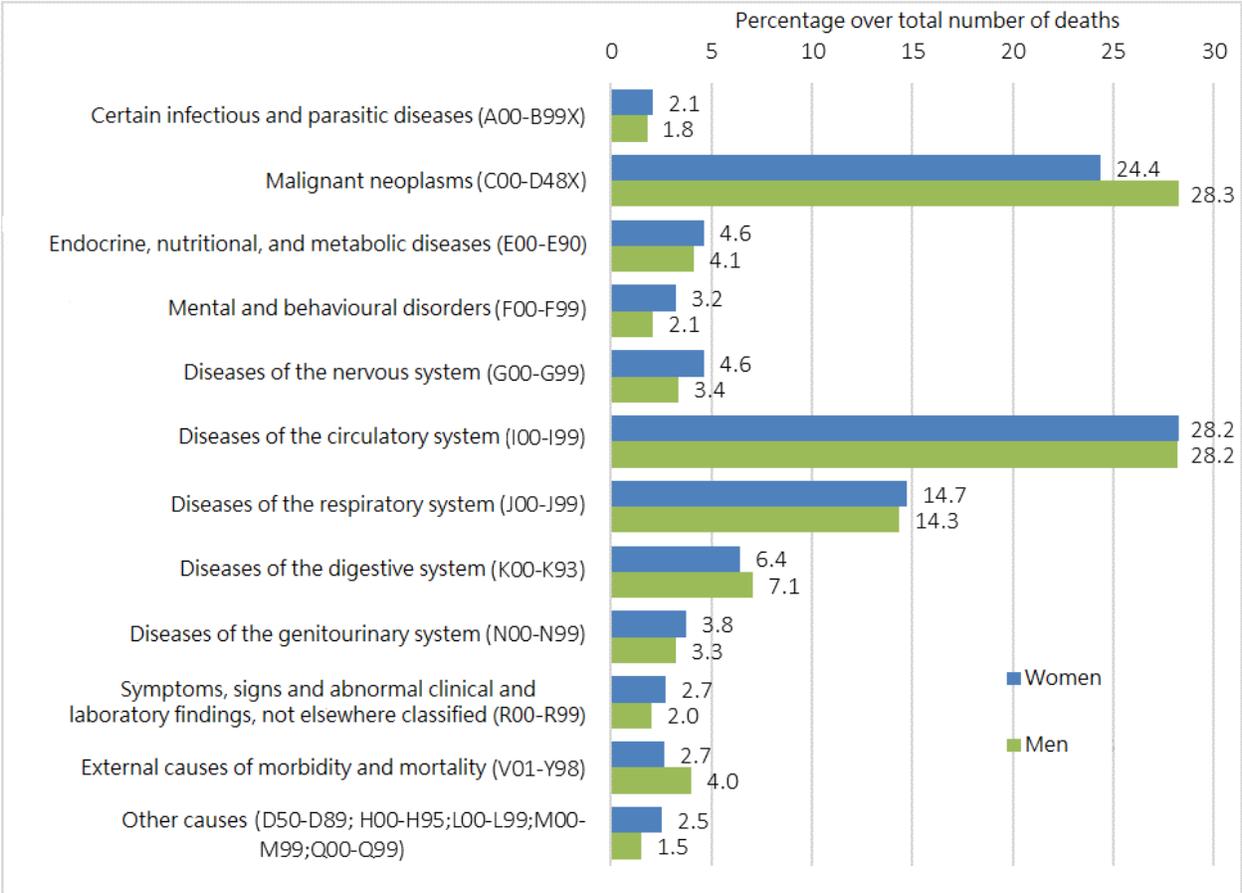
Source: Vital Statistics 2019, National Statistics Institute
Notes: Because the decimals are rounded, their sums may not add up to 100.

The main causes of death of older people in 2019 also show a significant differentiation according to sex. Figure 41 shows that the leading cause of death among older men in 2019 was diseases caused by malignant tumors, which accounted for 28.3% of total deaths, for the first time slightly exceeding diseases of the circulatory system, which are the second most common cause of death (28.2%).

For older women, diseases of the circulatory system continue to be the leading cause of death (28.2%), which was followed by diseases related to malignant tumors (24.4%). Respiratory diseases were the third most common cause of death among elderly men and women, accounting for 14.3% and 14.7% of deaths, respectively.

The fourth most common cause of death, diseases of the digestive system, was found in both men and women, but they were somewhat more frequent among men (7.1% of deaths) than among women (6.4% of deaths).

An important difference is that deaths that are due to external causes were the sixth most common cause of death among older men (4.0%). Examples of this cause of death include accidents (transportation, accidental falls, and exposure to smoke or flames), assaults and homicides, and self-inflicted injuries and suicides. Although this group of causes of death has slightly decreased in recent years, it has historically had a greater incidence among men than among women, and it is especially common among young men, who have greater risk of dying from these causes. This group of causes of death was tenth among women (2.7%). These causes are considered preventable, or easier to prevent than other causes. Although these causes of death are still present among older people, they decrease in prevalence over the years.

6. Future prospects

This chapter provides a prospective view of the changes expected in the future (the period 2022–2050) of the population structure according to data from the projections based on 2017 Census. These changes include the intensification of aging and the sustained increase of the older population as well as the impact that this process will have on the demographic structure at the national and regional levels[22].

6.1 Development of population aging (2022–2050)

The main drivers of the advances stage of population aging in Chile are the demographic trends noted in the preceding chapters. These trends are the increase in life expectancy that resulted from the decrease in mortality at young ages and the sustained decrease in the total fertility rate. Together with the various components of the demographic dynamics, these indicators make it possible to construct various hypothetical assumptions and scenarios that together constitute population projections. With these projections, we can investigate how the population structure will change in addition to how and at what rate the aging of the population will continue.

Chapter 4 noted that the country's fertility levels measured by the total fertility rate (TFR) have been steadily declining. Since the turn of the century, the TFR has been below the theoretical level of generational replacement of 2.1 children per woman. In 2022, the TFR stood at 1.58 children per woman (see figure 42). Although TFRs are projected to rise slightly in the coming decades, they will be stable and remain below replacement level with an estimated 1.67 children per woman by 2050.

Figure 42: Total fertility rates (TFR) in Chile, 2022–2050
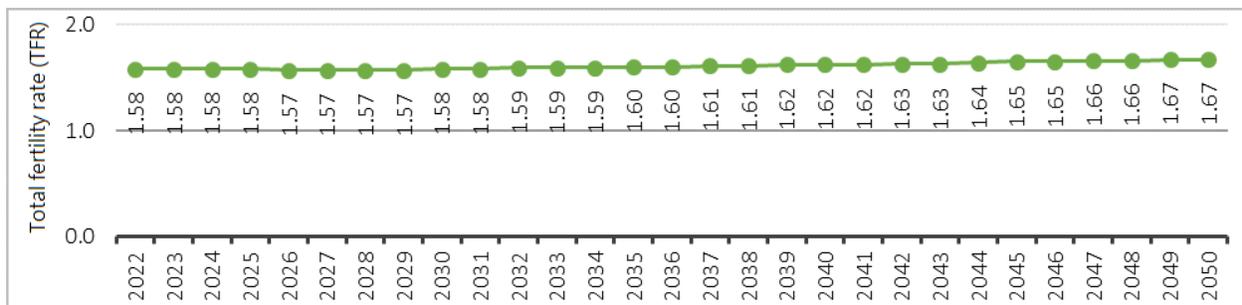
Source: National Population Estimates and Projections based on 2017 Census, National Statistics Institute

---

[22]It is important to remember that population estimates and projections represent a hypothetical scenario of what might happen to the structure of that population if certain events occur, specifically if fertility, mortality, and internal and international migration follow the trends that evidence from available sources suggests will occur. In other words, projections carry an implicit degree of uncertainty, and they will inevitably differ to a greater or lesser extent from actual population change in the future (INE, 2019).

Figure 43: Life expectancy at birth, by sex, 2022–2050
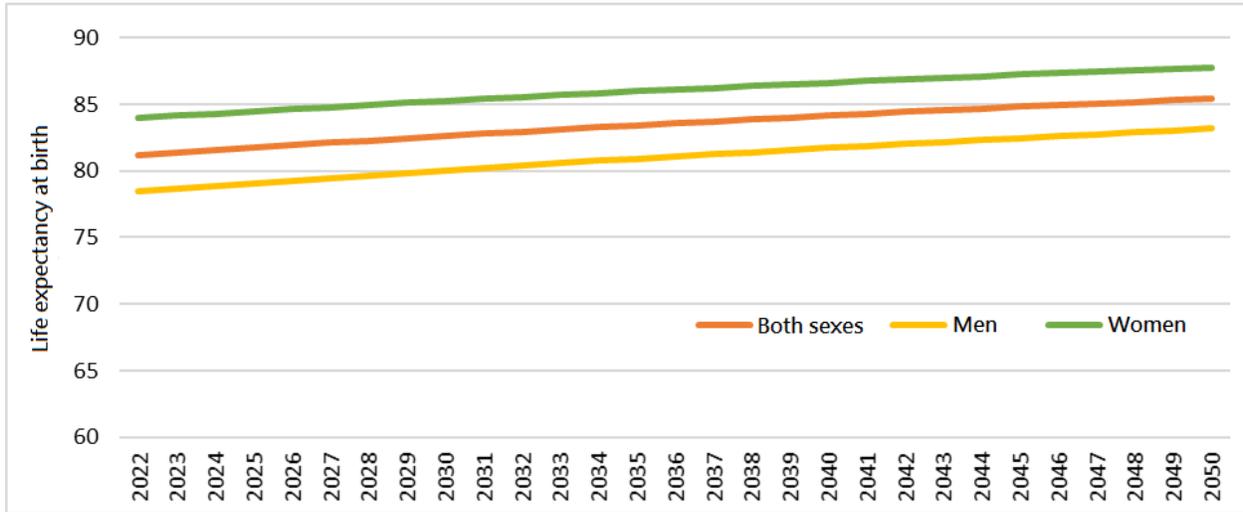
Source: National Population Estimates and Projections based on 2017 Census, National Statistics Institute

The fall in mortality at young ages will remain constant. The population will thus continue to live longer and life expectancy will continue to increase (figure 43). Life expectancy is projected to be 85.4 years by 2050, an increase of 4.2 years in the period 2022–2050. By 2030, the life expectancy of men will exceed 80 years, and it will be 83.2 years by 2050. The gap between men and women will continue to narrow. Although women will have a life expectancy of 87.8 years (4.5 years longer than that of men), the gap will decrease one year from the gap of 5.5 years observed in 2022.

Figure 44: Exponential growth rates (in thousands), by major age brackets, 2022–2050

Source: National Population Estimates and Projections based on 2017 Census, National Statistics Institute.

As previously noted, the stages of the demographic transition have low levels of population growth, which is due to the reduction in fertility and mortality levels, among other factors. These projections thus point to a sustained decrease in population growth rates over the coming decades (see figure 44). In 2022, the total growth rate was 7.6 people per 1,000 residents, but by 2050, this rate will be near 0.2, which is

approaching zero population growth. Because total fertility rates have been below replacement levels for several decades and the population's life expectancy will exceed 80 years by around 2030, the country will be entering a very advanced stage of demographic transition within the next few decades.

Growth rates, however, behave differently across age groups of the population. The growth rate is already negative for people under 15 years of age, and, despite slight swings, it will continue to decline in the coming decades. The variation of the population of those between 15 and 59 is projected to be negative by the 2030s, and it will continue to decrease towards 2050 (-10.5 people per 1,000 residents), a figure which is even lower than that of the population under 15 (-4.0). For people aged 60 and over, while a downward trend is projected, it will remain positive in 2050, with a projected rate of 20.2 people per 1,000.

Figure 45: Percentage of the population by major age brackets, 2022–2050
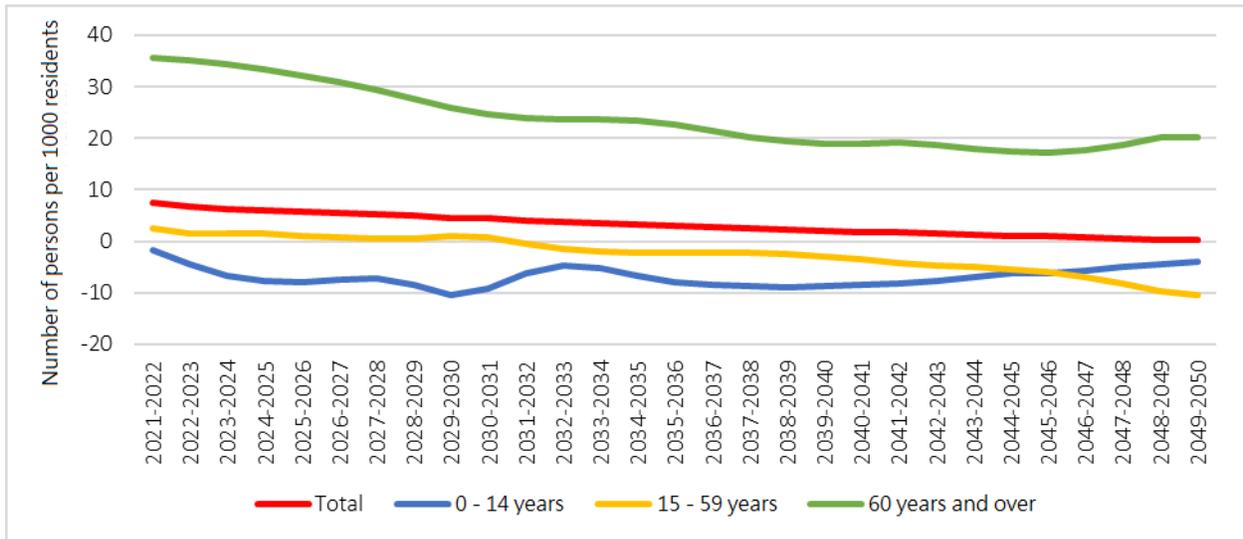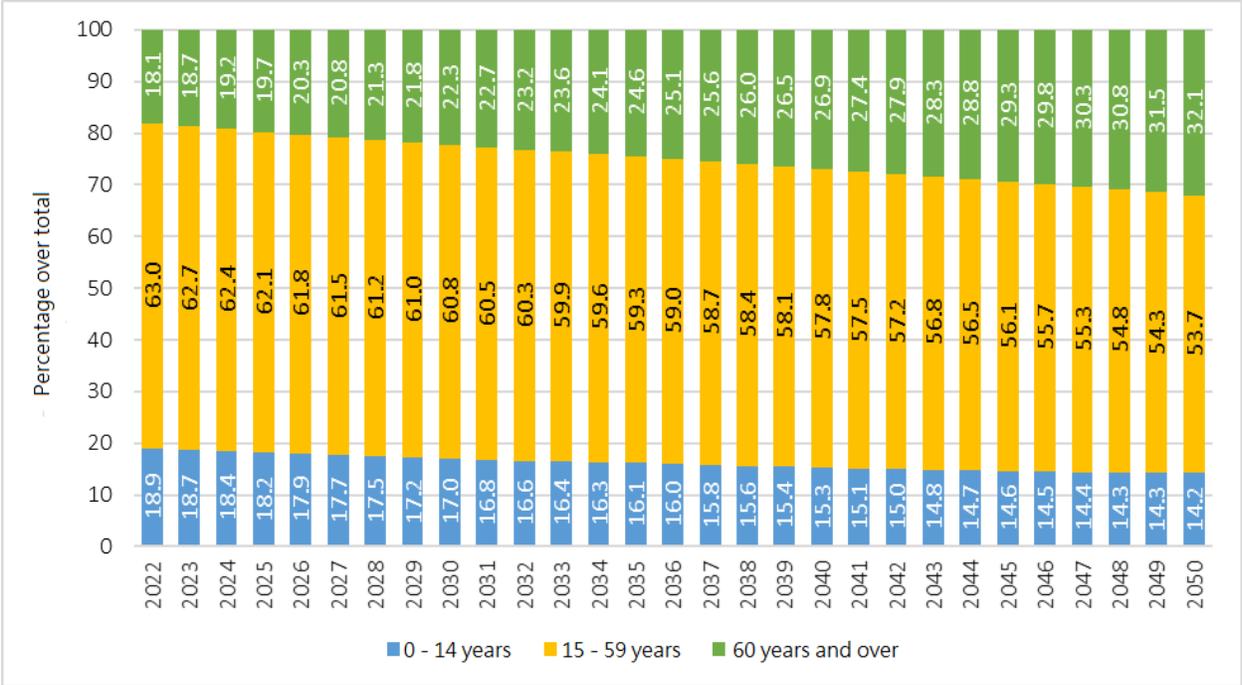

Source: National Population Estimates and Projections based on 2017 Census, National Statistics Institute
Note: Because the decimals are rounded, their sums may not add up to 100.

The trend towards negative growth rates in the age groups below 60 will lead to an intensification of population aging in the coming decades, and the proportion of older people will continue to increase towards 2050 (figure 45). By 2024, the proportion of older people will exceed the percentage of people under 15 (19.2% and 18.4%, respectively). By 2026, the population aged 60 and over will represent more than 20% of the population, and Chile will thus enter a very advanced stage of population aging, according the classification describe above. By 2046, the number of older people will be double the number of those under age 15, the former reaching nearly one-third of Chile's total population (32.1%) by 2050.

The median age of the population will continue to increase over the years (figure 46), and it is projected to exceed 40 years by 2031 and to reach 47 years by 2050. During the period 2022–2050, the median age of the population will increase by 11.1 years.

Figure 46: Median age of the population, 2022–2050
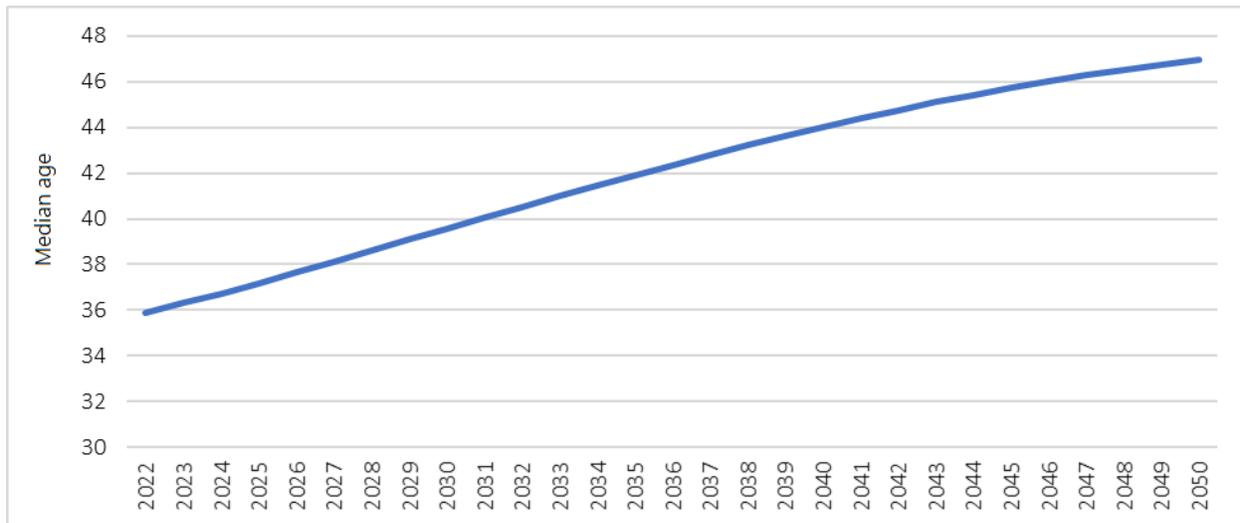
Source: National Population Estimates and Projections based on 2017 Census, National Statistics Institute

Table 6: Population of older people aged 60 to 79 and aged 80 and over, 2022–2050

Year	Total population aged 60 and over		Older people aged 60 to 79		Older people aged 80 and over	
	Total	%	Total	%	Total	%
2022	3,598,554	100	3,008,269	83.6	590,285	16.4
2023	3,727,325	100	3,113,533	83.5	613,792	16.5
2024	3,857,662	100	3,218,863	83.4	638,799	16.6
2025	3,988,537	100	3,322,579	83.3	665,958	16.7
2026	4,119,061	100	3,423,479	83.1	695,582	16.9
2027	4,248,417	100	3,520,414	82.9	728,003	17.1
2028	4,375,235	100	3,612,664	82.6	762,571	17.4
2029	4,497,889	100	3,700,019	82.3	797,870	17.7
2030	4,615,701	100	3,778,400	81.9	837,301	18.1
2031	4,730,407	100	3,846,613	81.3	883,794	18.7
2032	4,844,364	100	3,910,913	80.7	933,451	19.3
2033	4,960,280	100	3,974,686	80.1	985,594	19.9
2034	5,078,913	100	4,039,563	79.5	1,039,350	20.5
2035	5,199,245	100	4,104,713	78.9	1,094,532	21.1
2036	5,318,170	100	4,167,226	78.4	1,150,944	21.6
2037	5,433,726	100	4,225,550	77.8	1,208,176	22.2
2038	5,545,125	100	4,279,506	77.2	1,265,619	22.8
2039	5,654,025	100	4,330,864	76.6	1,323,161	23.4
2040	5,762,672	100	4,381,564	76.0	1,381,108	24.0
2041	5,873,528	100	4,433,422	75.5	1,440,106	24.5
2042	5,986,689	100	4,486,447	74.9	1,500,242	25.1
2043	6,099,491	100	4,538,440	74.4	1,561,051	25.6
2044	6,210,007	100	4,588,289	73.9	1,621,718	26.1
2045	6,318,731	100	4,637,222	73.4	1,681,509	26.6
2046	6,428,548	100	4,688,699	72.9	1,739,849	27.1

Year	Total population aged 60 and over		Older people aged 60 to 79		Older people aged 80 and over	
	Total	%	Total	%	Total	%
2047	6,543,541	100	4,747,337	72.5	1,796,204	27.5
2048	6,667,687	100	4,817,992	72.3	1,849,695	27.7
2049	6,804,349	100	4,905,081	72.1	1,899,268	27.9
2050	6,942,883	100	4,998,302	72.0	1,944,581	28.0

Source: National Population Estimates and Projections based on 2017 Census, National Statistics Institute

The number of people aged 60 to 79 years will continue to increase during the period 2022–2050 and it will continue to represent a greater proportion of the population than those aged 80 and over. The proportion of the former will however tend to decrease over time, occupying a smaller percentage of the total number of older people, from 83.6% in 2022 to 72.0% in 2050 (table 6), when there will be nearly five million people of aged 60 to 79. Meanwhile, the number of those aged 80 and over will more than triple its number during this period, and this population will represent slightly less than one third (28.0%) of the total number of older people, accounting for nearly 2 million people.

Figure 47: Percentage of older people by five-year age bracket, 2022–2050
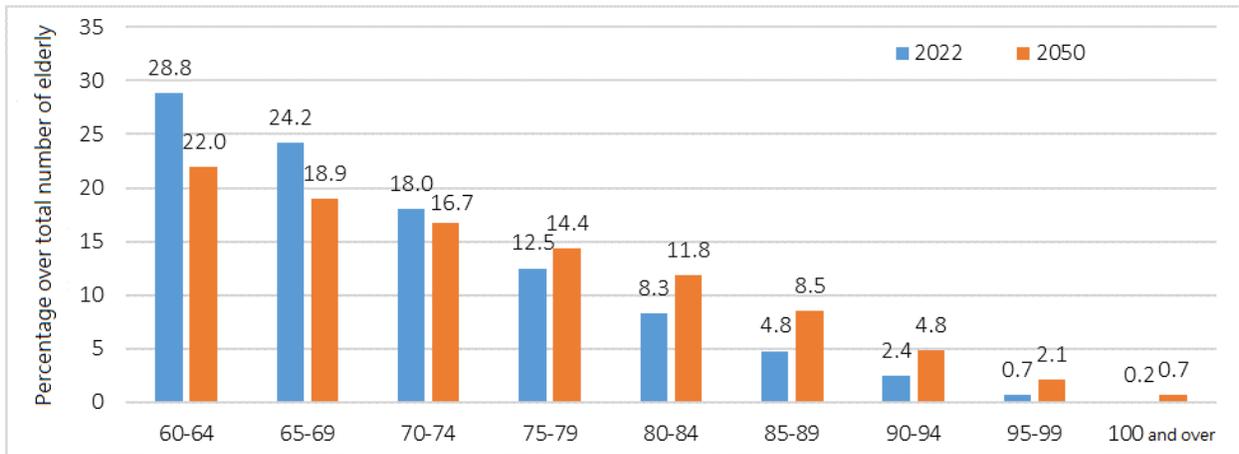
Source: National Population Estimates and Projections based on 2017 Census, National Statistics Institute
Note: Because the decimals are rounded, their sums may not add up to 100.

The five-year age brackets of the older population will also undergo significant changes by 2050 (figure 47). Although the five-year brackets between 60 and 74 years of age will still represent the highest percentages among the total number of older people, these brackets will be the only five-year age brackets that will decrease in proportion in the period 2022–2050 while the five-year brackets between 75 and 100 and over will increase in their percentages. The most important decrease will be in the bracket 60–64 years, which will represent 22.0% of the total number of older people by 2050, a decrease of 6.8 percentage points compared to 2022. On the other hand, the greatest increase will be in older people the bracket 85 to 89, which will increase by 3.7 percentage points.

Older people are projected to remain mainly women, although the proportion of men will continue to increase and the sex gap will narrow in future decades. An analysis of the sex ratio of older people (figure 48) shows a marked increase in the proportion of older men during the period 2022–2050. The index rises

to 86.9 men per 100 older women by the end of the period, an increase of approximately 6 percentage points compared to 2022.

The number of men will continue to rise among those aged 60 to 79 and the gap between men and women will be smaller: 94.1 men for every 100 women in 2050, an increase of approximately 8 percentage points since 2022. For people aged 80 and over, the gap between the male and female ratio will narrow even faster: from 57.0 men per 100 women in 2022 to 70.7 men per 100 women by 2050, an increase of 13.7 percentage points.

Figure 48: Sex ratio of older people by age bracket, 2022–2050
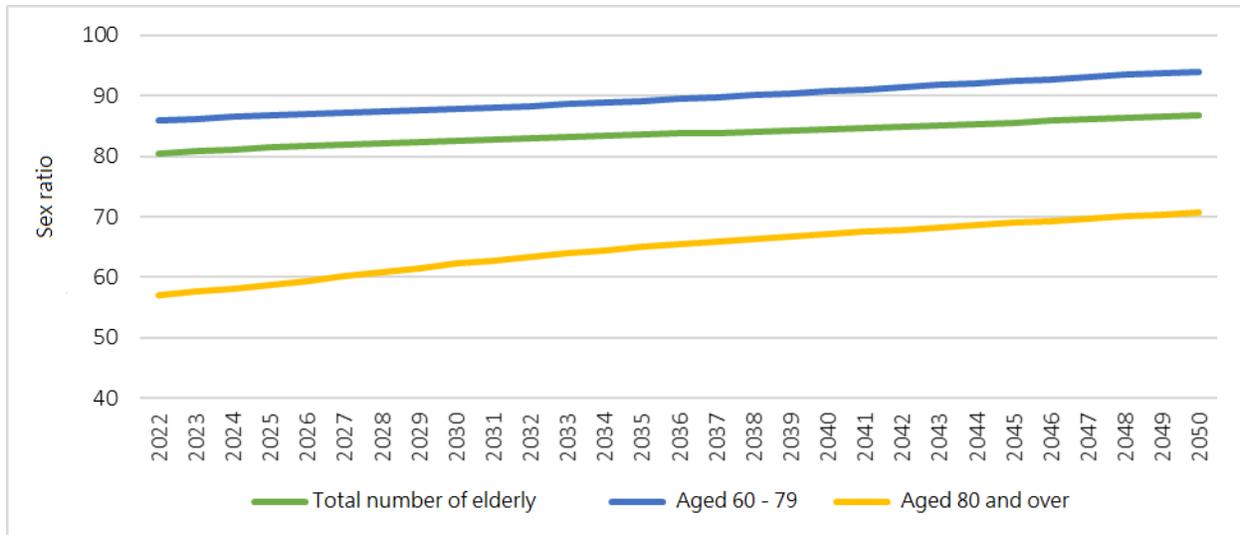
Source: National Population Estimates and Projections based on 2017 Census, National Statistics Institute

6.2 Impacts of aging on the population structure (2022–2050)

Sustained progress in the number of older people will result in profound changes in the composition and structure of the country's population. Together with the decrease in children under 15 and those aged 15 to 59, the increase in the proportion of people aged 60 and over will significantly change dependency relationships, and these changes will have an impact on the mechanisms of sustainability, protection, social security, and care that will have to be strengthened for the aging society.

The index of population aging index for future decades (figure 49) shows a larger elderly population than the population of those under the age of 15. Within two years, it is estimated that there will be more people aged 60 and over than people under 15. The index of population aging for 2023 is 100.1 people aged 60 and over for every 100 people under 15. There are already more women aged 60 and over than girls under 15. In 2022, the index of population aging for women will be 108.6 older women per 100 girls under 15. This shift is projected to happen in 2027 for men, when there will be 103.9 older men per 100 boys under 15. The elderly population is projected to be two times greater than that of people under 15 by 2050, when the projected aging index will be 226.2 older people per 100 younger people. For women, the index will be 246.8 older women for 100 girls under age 15. For men, the index will be 206.4 older men per 100 boys under 15.

Figure 49: Aging index by sex, 2022–2050

Source: National Population Estimates and Projections based on 2017 Census, National Statistics Institute
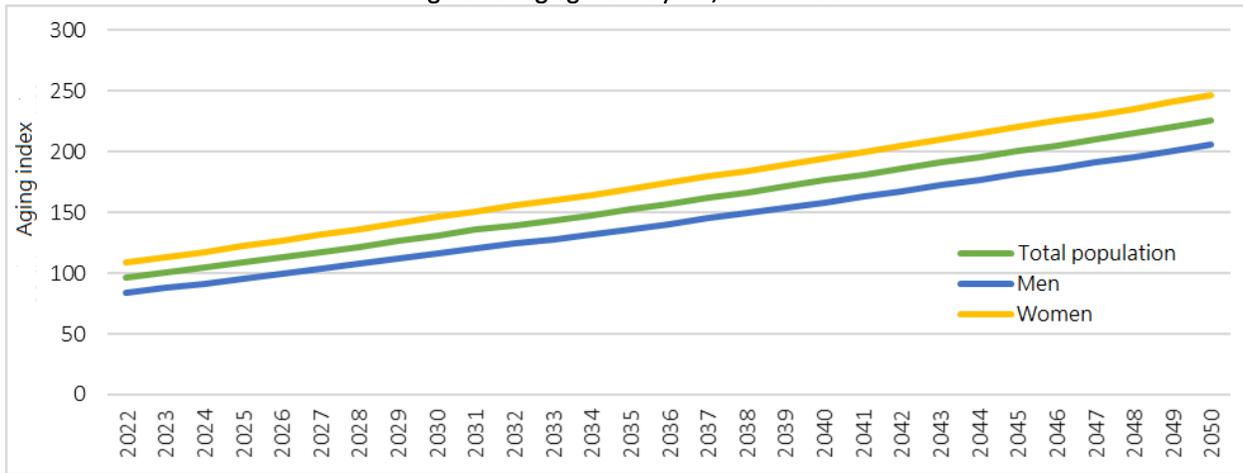
Figure 50: Demographic dependency ratio, 2022–2050
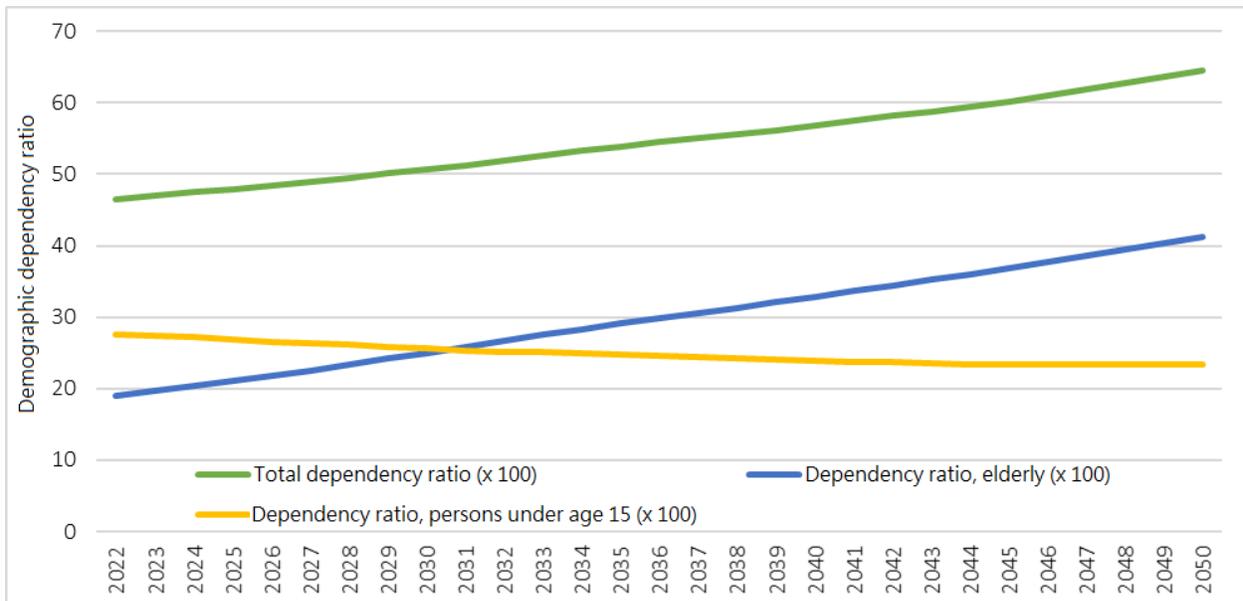
Source: National Population Estimates and Projections based on 2017 Census, National Statistics Institute

The sustained decline in the potentially active population (15–64 years), together with an increase in the potentially dependent population (under age 15 years and aged 65 years and over) will continue to expand the overall demographic dependency ratio. The fourth chapter discusses how this indicator, which had been slowly falling, began to increase again towards 2010 because of the demographic dependency of older people. For future decades, the total demographic dependency ratio is projected to increase further from 46.6 potentially dependent people per 100 potentially active people in 2022 to 64.6 potentially dependent people per 100 potentially active people in 2050 (figure 50). The reason for the sustained increase in this indicator will continue to be the dependency ratio of older people, which will double during the period: from 18.9 people aged 65 and over per 100 aged 15–64 in 2022 to a ratio of 41.2 people aged 65 and over

per 100 people aged 15–64 2050. The dependency ratio of those under 15 will continue its gradual decline over the years. It will be exceeded by the dependency ratio of older people by 2031, when there will be a greater number of people aged 65 and over than people under 15. The dependency ratio of those under 15 will therefore be 23.4 people per 100 people aged 15–64 years in 2050, a dependency ratio 17.8 points lower than that of people over the age of 64.

Figure 51: Potential support ratio, 2022–2050

In contrast to the dependency ratio of older people, the potential support ratio (figure 51) expresses how many theoretically active people there will be for each theoretically inactive person; it thus shows the potential socio-economic support that older people will have in future decades. This indicator gradually falls, which means that older people will have a lower level of potential support over the years. The indicator will fall by more than half from 2022, when there will be 5.3 potentially active people for each older person, to a ratio of 2.4 theoretically active people for each person aged 65 and over in 2050.

Future changes in the structure and composition of the population are visualized graphically in the three-point population pyramids over the period ending in 2050 (figure 52). By 2022, the pyramid has a narrow base that becomes narrower for ages under 20. The majority of the population will be between ages 25 and 39, and the five-year brackets in this range represent the highest percentage of the population. The five-year age brackets of those aged over 60 have a classic pyramidal shape with an even lower proportion than those for children under 15 and with a higher proportion of women.

Figure 52: Population pyramids 2022, 2035, and 2050
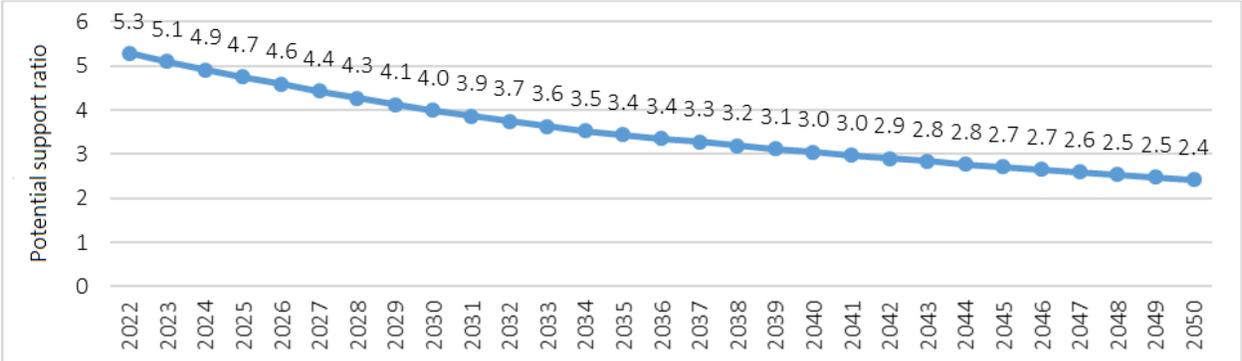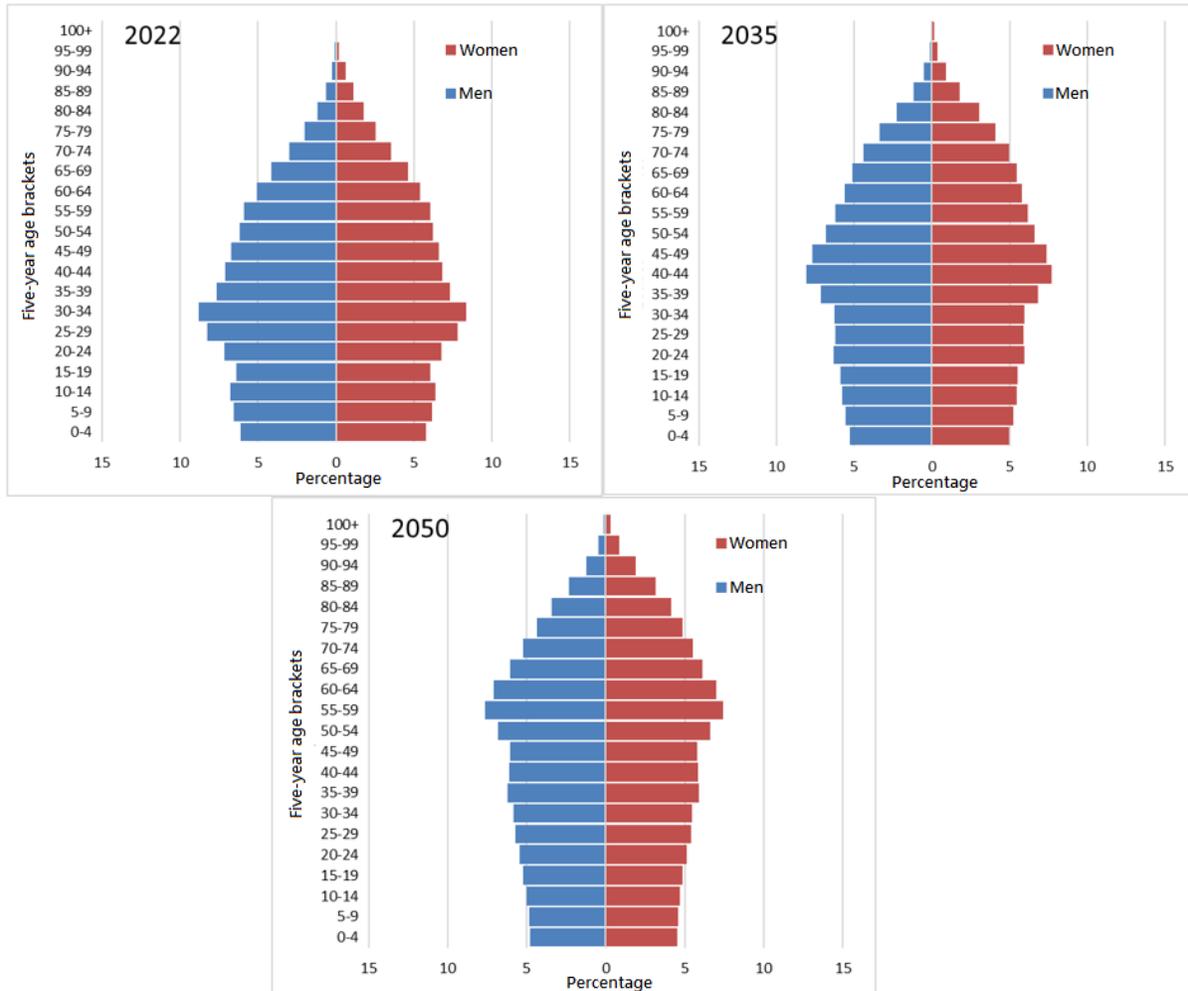

Source: National Population Estimates and Projections based on 2017 Census, National Statistics Institute

By 2035, when the country is projected to have entered a very advanced stage of population aging, the narrowing of the base of the pyramid deepens considerably and the rectangular silhouette of the pyramid extends from its base to 34 years. The majority of the population will be concentrated between the ages of 35 and 59. The proportion of the population between the ages of 60 and 79 will increase considerably because of the accelerated pace of aging in which a there will be more people over the age of 60 than under 15. Similarly, there will be a greater concentration of men between the ages of 60 and 69, which will nearly equal the percentages of women in the same age brackets.

By 2050, the majority of the population will be in the five-year age brackets between 50 and 64 years old, and the bracket 60 to 64 years will represent second highest proportion for both men and women. The pyramid is rectangular between ages 30 to 49, and it has a regressive, or inverted, shape for ages 30 and under because of the negative population growth at that time. While the population over age 60 will continue to have more women, especially from the age of 75 years onwards, the 60–74 age bracket will have similar proportions of both men and women because of the higher number of men reaching the ages 60 to 79.

6.3 Aging in the regions of the country (2022–2035)

Population aging at the national level will also be present at the regional level, although at different levels of intensity. By 2035, the majority of the country's regions are projected to have more than 20% older people (figure 53), with the exception of Antofagasta and Tarapacá, where the proportion is projected to be 17.1% and 17.5%, respectively. The Ñuble region will be the region with the highest percentage of older people, where this group will account for almost a third (31.4%) of the total of the region's residents. The second most elderly region will be both O'Higgins and Los Ríos, whose percentage of older people will be 28.0%. They will be followed by the regions of Valparaíso and Maule, whose percentages will both be 27.9%.

Figure 53: Percentage of population by major age brackets and region of habitual residence, 2035
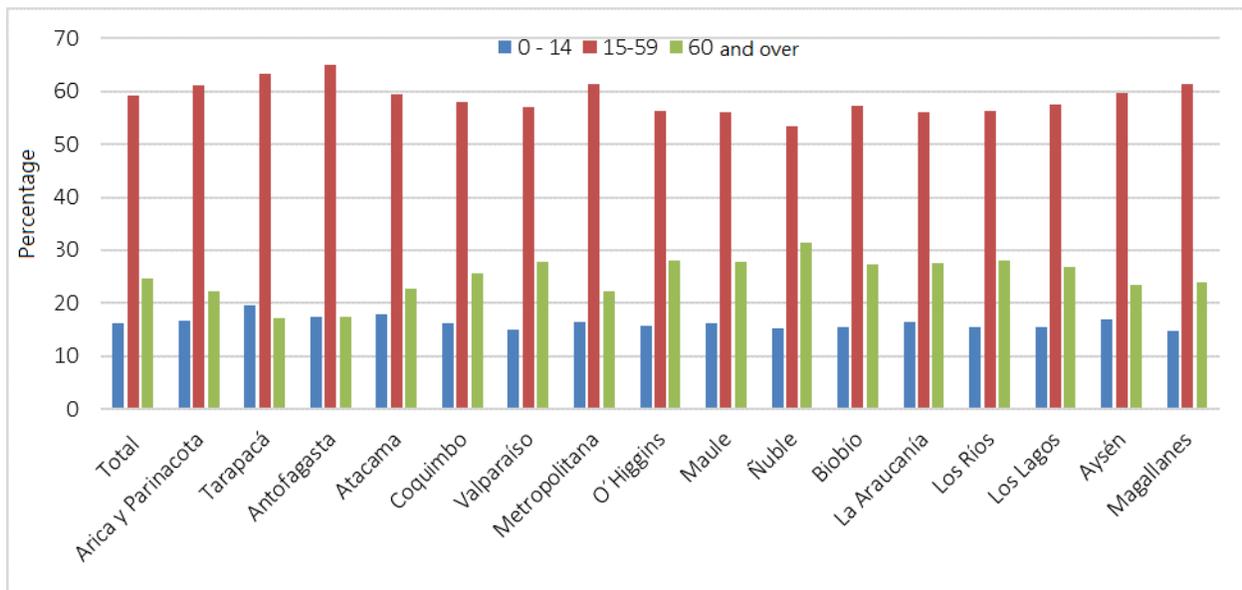
Source: Regional Population Estimates and Projections based on 2017 Census, National Statistics Institute.

The proportion of older people aged 80 and over as a percentage of the total number of older people will increase in all regions of Chile (figure 54). While in 2022, none of the regions will have over 20% of the population aged 80 and over, by 2035, twelve regions will have exceeded that threshold. With almost a quarter of the population (24.8%), the Valparaíso region will have the highest proportion of the population aged 80 ad over. Following will be Coquimbo (23.0%) and Ñuble (23.0%). Antofagasta will still be the region with the lowest proportion of older people aged 80 and over (13.7%), followed by Tarapacá (17.6%) and Atacama (18.4%).

Figure 54: Percentage of population in the fourth stage of life (80 years and over) as a proportion of the total elderly population, by region of habitual residence, 2022 and 2035
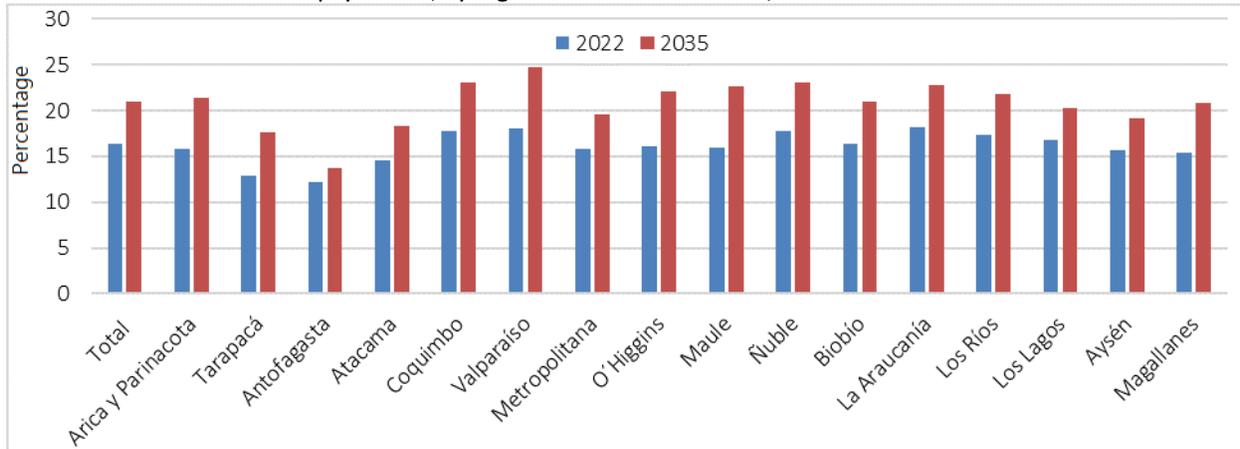
Source: Regional Population Estimates and Projections based on 2017 Census, National Statistics Institute.

Figure 55: Aging index by region of habitual residence, 2022 and 2035[23]
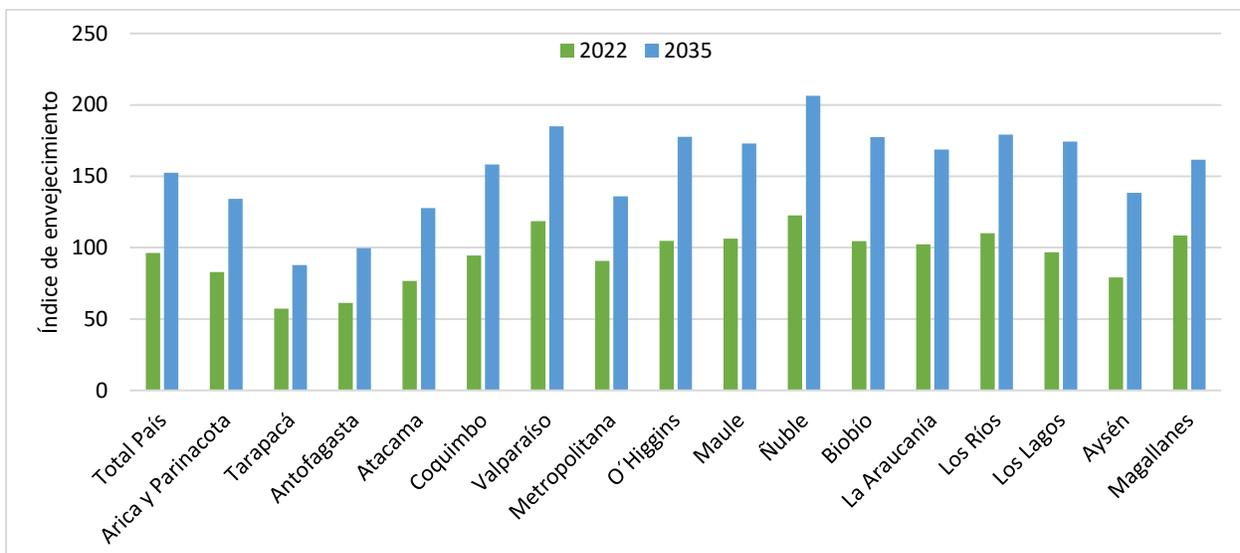
Source: Regional Population Estimates and Projections based on 2017 Census, National Statistics Institute

By 2035, most regions are projected to have a greater number of older people than of people under 15 (figure 55). The figures in the annex show that the aging index (an indicator that expresses the number of older people per 100 people under 15 years of age) will continue to increase over the projected period, while the proportion of older people in each of the regions will continue to increase and the proportion of younger people will decrease. By 2022, eight regions will have an aging index that exceeds 100 older people per 100 people under 15 (Valparaíso, O'Higgins, Maule, Ñuble, Biobío, La Araucanía, Los Ríos, and Magallanes). By 2023, Los Lagos will be included among these regions, followed by Coquimbo (2024), the

---

[23] For an analysis of the development of the aging index in each region separately for 2002–2035, see the annexes at the end of this paper.

Metropolitan Region (2025), the regions of Arica and Parinacota and Aysén (2027), and Atacama (2028). For more details, see the annex.

By 2035, Antofagasta and Tarapacá will be the only regions with a greater number of people under 15 than the number of older people. Antofagasta will have an aging index of 99.6 and Tarapacá 87.9, although this proportion will tend towards parity in the short term, as in all other regions of Chile. In 2035, Ñuble will continue to be the region with the highest rate of aging, with 206.3 older people for every 100 under the age of 15, and Ñuble will be the only region where there will be twice the number of people aged 60 as those under 15. Following are Valparaíso (185.0) and Los Ríos (179.3).

By 2035, the demographic dependency ratio within each region (figure 56) will increase in the number of potentially dependent people (under 15 and people aged 65 and over) compared to those potentially active (15 to 64). This indicator will thus increase over the next few decades, either because of the decrease in potentially active people or because of the increase in dependent people.

What is important about the increase in the total demographic dependency ratio during this period is that in most regions the dependency ratio of older people will make up a greater part of the total dependency ratio, surpassing that of people under 15, whose trend is clearly downwards in all regions. This trend in the dependency ratio will happen more quickly in regions that are aging more rapidly, such as Ñuble and Valparaiso, where the dependency ratio of older people will exceed that of minors in 2025 and 2026, respectively. In most regions however, this shift will not occur until the beginning of the 2030s (Coquimbo, O'Higgins, Maule, Biobío, Araucanía, Los Rios, Los Lagos, and Magallanes). In Arica and Parinacota, the Metropolitan Region, and Aysén, this shift will not occur until 2035.

In Tarapacá, Antofagasta, and Atacama, on the other hand, this shift is projected to occur after 2035, a year when there will still be a greater prevalence of the dependency ratio for people under 15 years instead of those over 64.

By 2035, Ñuble will be the region with the highest total demographic dependency ratio, with 74.5 potentially dependent people for every 100 potentially active, followed by Maule (67.9) and La Araucanía (67.6).

Figure 56: Demographic dependency ratio by region of habitual residence, 2022–2035.
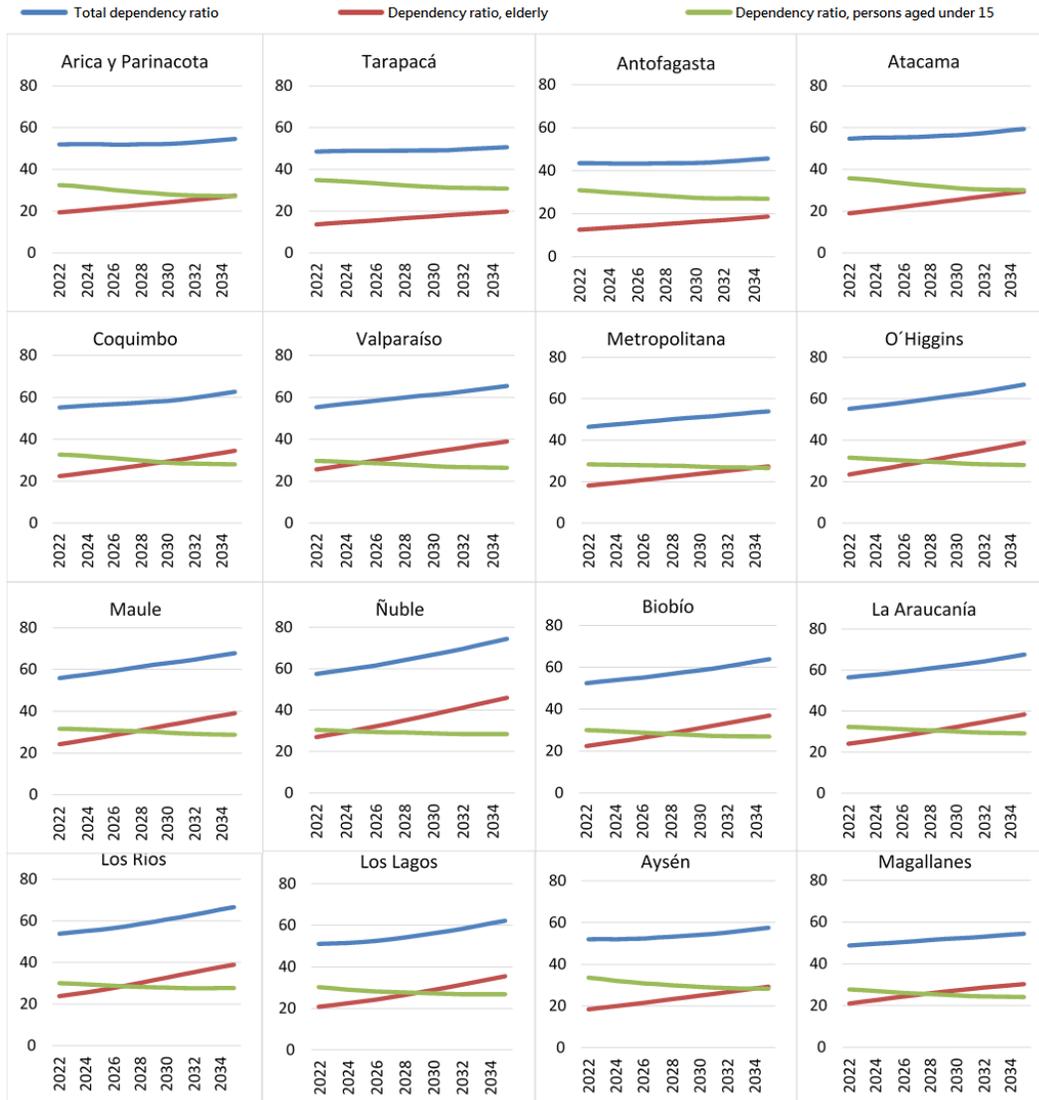
Source: Regional Population Estimates and Projections based on 2017 Census, National Statistics Institute.

7. Conclusions

The decreases in fertility and in young-age mortality and the consequent advance of the demographic transition in Chile have influenced the growth in life expectancy, which, together with other socio-economic, epidemiological, and demographic factors, has increased the proportion of people aged 60 and over. This demographic phenomenon is called population aging, and Chile is currently at an advanced stage in this process.

Aging is an international phenomenon that is underway in a large number of countries at various levels of progress and intensities (CEPAL, 2008; Cotlear, 2011; Huenchuan, 2018; United Nations, 2020b). Aging has given rise to various initiatives, both global and regional, which have raised the alarm about the social and economic implications of an aging demographic structure. These initiatives have emphasized the protection of the rights of older people, and they have invited governments and society in general to take measures to ensure the economic and social sustainability of countries living under this new demographic reality. In addition, they have encouraged the development of policies that guarantee the well-being of older people. The recognition of the challenges and opportunities that aging can bring for countries stems from the problems they face today in this area. Future projections that are based on this scenario of population change and age structure are of fundamental importance for planning reforms and policies focused on the economic and social well-being of countries and their citizens (Cardona & Peláez, 2012; Huenchuan, 2018; Huenchuan, 2019).

Aging in Chile has brought about a series of demographic transformations, some of which have been discussed throughout this document through the indicators that measure them. The demographic aging index shows a larger population that has now almost matched that of people under 15, and women aged 60 and over now outnumber girls under 15. In recent years, the total demographic dependency ratio has reversed its downward trend, and it is beginning to gradually increase because of the expansion in the number of people aged 65 and over compared to those of potentially active ages. On the other hand, a greater number of people are reaching the fourth stage of life (age 80 and over), and this group has tripled over the last 30 years.

Aging shows the varying levels of progress in the regions. Although the proportion of older people has increased over the last decades in all regions, the number of older people has already surpassed the number of those under 15 in some regions. In all regions, the number of people aged 80 and over has steadily increased, and in most regions, the total population dependency ratio has increased because of the growth of those aged 65 and over. By 2035, the proportion of people aged 60 and over will be approximately 20% in almost every region, and older people will outnumber those under 15 in the majority of regions.

All these transformations show a population that is very near to entering a very advanced stage of population aging, which, according to projections, will be a reality by the 2030s. While the country will maintain a positive population growth rate over the next few decades, by 2050 there will already be a negative growth trend in the population. Life expectancy is projected to exceed 85 years, and the proportion of people over 60 will continue to increase until they account for almost one third of the country's total, of whom approximately two million will be 80 or over. By that time, the proportion of older people will be twice as high as the proportion of people under 15. The progressive increase in the

demographic dependency ratio will mainly be due to the number of people over 64 relative to those in potentially active ages, which will result in a significant reduction in the potential support ratio of older people over the years.

The socio-demographic characteristics of older people in Chile vary according to sex, age, and place of residence. Data from the 2017 Census show that older people have acquired higher levels of education over time, increasing their average number of years of study. The data also show that a significant proportion of older people reported that they worked in the week preceding the census. The self-identification rate of older people with indigenous peoples differs considerably among the regions of the country. The percentage of older people who identify as indigenous in rural areas is over 30% in some regions of the country.

The proportion of households with the presence of older people increased between the 2002 and 2017 Censuses, as has the proportion of older people who are recognized as heads of such households. Although the majority of older people resided in nuclear or extended households according to the 2017 Census, a large percentage (20%) of people aged 60 and over lived in single-person households, a figure that increased since the 2002 Census.

According to the 2017 Census, 4.5% of the country's elderly resided in overcrowded housing, and this percentage was higher in some regions of the country. Although the percentage of older people living in households obtaining drinking water through the public network exceeded 90% nationally, this percentage was below 80% in some regions.

As the population ages and life expectancy increases, elderly deaths account for an increasing proportion of the country's total deaths. Elderly deaths accounted for approximately 80% of the total deaths recorded in 2019. With more people dying after age 60, the main causes of these deaths have changed. Deaths due to malignant tumors (which have been gradually increasing over the years) and diseases of the circulatory system are the most frequent causes of the deaths of older people.

It is important to note that the characteristics described above do not necessarily lead to greater vulnerability by themselves, but they might lead to higher levels of vulnerability when those aged 60 to 79 and those aged 80 and over have a greater need for assistance and care, increased disability, reduced mobility, fewer connectivity mechanisms, no support networks, and no environment or infrastructure suitable for their full development and participation in society, among many other conditions that may affect their physical and subjective well-being and the full exercise of their rights (WHO, 2002; SENAMA, 2009).

Discussions on the consequences of increased aging have tended to focus on a dual perspective of the collective and the individual. From a collective perspective, aging poses a challenge for governments, which must adopt measures and implement institutional, social, economic, political, and cultural alternatives to face the present and future effects of demographic aging (WHO, 2002; Cardona & Peláez, 2012; CEPAL, 2008). From this perspective, population aging can bring opportunities and challenges for society that involve redefining the functions concerning families, the labor market, and the state, as well as undertaking concrete measures in the short, medium, and long term (Guzmán, 2002; Chackiel, 2004; Huenchuan, 2018).

Suggested measures for maximizing the benefits and reducing the risks of aging include the strengthening of social protection systems in old age (especially the pension mechanisms that enable older people to live a dignified and independent life); the provision health care and long-term care services that address

disability, dependency, and other determinants associated with demographic aging; and the creation of inclusive infrastructure and environments for older people (WHO, 2002; Chackiel, 2004; United Nations, 2008; Cardona & Peláez, 2012); Apella, Packard, Zumaeta Aurazo, & Joubert, 2019; CEPAL, 2021). In addition, it is important to establish protection programs that can be sustained over long periods to prevent poverty, reduce inequality, and promote the social inclusion of older people (United Nations, 2020b).

An important aspect of aging is the possible exhaustion of the so-called "first demographic dividend", which, as explained in the initial chapters, creates a favorable dependency ratio for the reduction of poverty levels, increased social investment, and economic growth. This demographic dividend occurs when the bulk of the population is in potentially active ages (between 15 and 64 years) while the population under 15 and over 65 years, who are considered as potentially dependent, are a sustainable proportion for people of working age, as well as a sustainable level of dependency for health, education, pensions, and social security systems.

Although Chile will continue to have a favorable dependency ratio in the coming decades, the demographic dependency ratio has tended downwards since 2010, which can mainly be attributed to the decline in fertility and the decrease in the proportion of those under 15 in the total population. The demographic dependency ratio has thus gradually increased, and it will continue to do so in the coming decades. This increase can largely be explained by aging and the consequent increase in the population aged 65 and over as well as by the gradual fall in the proportion of people of working age. These factors will lead to the end of the first demographic dividend, when the sustainability of health and social welfare systems will be under pressure from increased demand for care and protection that will be required with the relative increase of older people.

Some discussions have thus focused on the creation of public policy proposals that seek not only to take advantage of what remains of the first demographic dividend but also to develop policy perspectives focused on what has been called the "second demographic dividend" (Huenchuan, 2018; Apella, Packard, Zumaeta Aurazo, & Joubert, 2019). The second demographic dividend will require the promotion of various mechanisms to take advantage of the decrease in the resources needed for the care of the population under 15, which will tend to decrease over time. Using this opportunity to promote public policies focused on strengthening the institutions needed to cope with aging and the demands that such demographic change will lead to social, economic, and cultural improvements.

Suggested measures in this regard focus on various aspects. On the one hand, it will be necessary to invigorate a workforce that will decrease in size over the years, which at the same time will face greater pressure from the need to sustain the health, pension, and social security systems that will be sorely needed for an increasing proportion of older people (CEPAL, 2008; CEPAL, 2021). In this area, special emphasis has been placed on investment in human capital and continuing education of the population, in parallel with the promotion of innovation, which would maintain a higher productivity of the workforce as its numbers fall over time (Huenchuan, 2018).

On the other hand, some proposals for maintaining the productivity of the economically active population focus on gradually increasing the retirement age and promoting employment among young people, older people, and other groups who are traditionally excluded from the labor force. Other proposals focus on supporting policies in accordance with family circumstances that promote gender equality in care work in both in the public and private spheres and that contribute to greater integration of women into the labour market. Measures in these areas have also focused on increasing or maintaining certain levels of fertility in

order to increase the proportion of young population in the short and medium term through the encouragement of child-bearing and shared childcare by parents as wells as by state institutions and agencies so that being a parent is compatible with insertion into the labour market (Goldstein, 2009; Huenchuan, 2018; Apella, Packard, Zumaeta Aurazo, & Joubert, 2019; CEPAL, 2021).

Within this conversation, the impact that migration can have on mitigating the effects of demographic aging must also be considered. The theory of the second demographic transition (Van de Kaa, 2002) asserts that the imbalance caused by the change in the age structure of the population has tended to be compensated in most developed countries by the incorporation of foreign workers, which has increased the flow of immigration for certain, usually unskilled, jobs. The migrant population, which mainly consists of economically active people, can thus contribute to introducing young workers into the labour market and, in the medium term, to rejuvenate the age structure and mitigate the effects of aging (Van de Kaa, 2002; Diaz Franulic, 2017). To do this, migration policies should be promoted that not only support the arrival of foreign workers for certain jobs but also ensure their integration and that of their families in an orderly and regulated manner in the social, economic, and cultural spheres of the host country. In addition, such polices must consider the effects that international migration might have on increasing aging in the long term (Goldstein, 2009).

On an individual level, the increasing life expectancy and the increasing number of older people will require securing the resources required for the productivity of a shrinking workforce and ensuring the sustainability of health, care, social welfare, and welfare systems for the growing number of older people. The diversity of circumstances of older people should be noted, as each individual's situation upon entering old age is the result of a cumulative process, which results from one's life trajectory, lifestyle, and resources, as well as the environment in which they developed throughout their life. All of these aspects are fundamental for determining the mechanisms with which each older person can cope with old age (WHO, 2002; Goldstein, 2009; Huenchuan, 2019).

If longer lives were accompanied by longer and continuous periods of frailty and disability, population aging would be a much greater challenge because retirement ages could not be increased sufficiently to cope with the aging process. What would thus matter in the long term is not the ratio of people at different ages, the size of the labor force, or its productivity levels, but the proportion of those who are in good health and able to produce compared to those in poorer health or in need of help (Goldstein, 2009). The promotion of personal savings and healthy lifestyles, as well as mechanisms of protection and inclusion throughout all stages of life, not only in the initial or final stages, are essential for the sustainability of economic and social systems in the current irreversible context of aging and demographic change.

Most of the proposals on aging also emphasize that aging must be considered a natural and positive consequence of the development and advancement of societies. Aging should thus be understood as an opportunity in which the participation of older people in all areas of society should be welcomed, encouraged, and respected. The potential benefits derived from their experiences and wisdom accumulated throughout their life trajectories must be recognized (United Nations, 2008). Society as a whole can benefit from the participation of older people in different areas, and their views must be considered when planning of current and future development policies, which must create optimal spaces for such participation and integration.

As explained in the previous chapters, the aim of this study is to provide a general and comprehensive overview of the state of progress of the aging process, as well as some of the basic socio-demographic

characteristics of older people in Chile. A number of more detailed studies could be made in the future from the available sources of demographic information.

One of these is to investigate the impact that COVID-19 had as a main cause of death of older people and as a factor in the levels of mortality of the population, the years of life potentially lost, and the changes that this can mean in life expectancy. As noted in the initial chapter, this variable is fundamental for establishing the stages of progress of both the demographic transition and aging.

The effects caused by the global pandemic must also be studied in conjunction with components of demographic dynamics beyond mortality, including fertility and the internal and international migration patterns that may have been substantially altered during the pandemic. Observing the dynamics of these components, we can construct the assumptions on which population estimates and projections are based. Consequently, the patterns of aging may also have undergone important changes.

Considering the diversity in the advance of aging in the regions of the country, as well as the differences in the demographic characteristics of older people residing in each of them, it would be interesting conduct research in greater depth on other dimensions with a regional or even communal focus. The next population and housing census offers opportunities to consider dimensions that were not available in the 2017 Census because of its abbreviated nature. The next census will also provide new estimates and demographic projections with which we can obtain new insights on the progress of population aging.

Finally, various research projects, initiatives, and surveys from academia, civil society, and state agencies address other socio-economic and cultural aspects that are not covered in the demographic information sources reviewed in this document, which are important for assessing the quality of life and well-being of the growing number of older people in the country. These efforts are of paramount importance for the development of social programs and policies that contribute to the well-being of older people and society as a whole, and they are important to planning for a society that is changing and a population that is aging. The work of various social actors is fundamental to a planning process in which all voices, especially those of older people, must be heard.

References

Apella, I. R., Packard, T. G., Zumaeta Aurazo, M., & Joubert, C. J. (2019). *"Retos y oportunidades del envejecimiento en Chile".* Santiago de Chile: The World Bank.

Bay, G., Del Popolo, F., & Ferrando, D. (2003). *"Determinantes próximos de la fecundidad. Una aplicación a los países latinoamericanos".* Santiago, Chile: CEPAL, Serie Población y Desarrollo, N° 43.

Cabella, W., Peri, A., & Street, M. C. (2004). "¿Dos orillas y una transición? La segunda transición demográfica en Buenos Aires y Montevideo en perspectiva biográfica". *Congreso de la Asociación Latinoamericana de Población, ALAP*.

Cardona, D., & Peláez, E. (2012). Envejecimiento poblacional en el siglo XXI: Oportunidades, retos y preocupaciones". *Salud Uninorte, Vol. 28 N°2*, 335-348.

CELADE. (2010). "Migración y Envejecimiento". *Boletín 8, Envejecimiento y Desarrollo en América Latina y El Caribe*.

CEPAL. (2006). *"Manual sobre indicadores de calidad de vida en la vejez".* Santiago, Chile: Centro Latinoamericano y Caribeño de Demografía (CELADE), División de Población de CEPAL, Naciones Unidas.

CEPAL. (2008). *"Transformaciones demográficas y su influencia en el desarrollo en América Latina y el Caribe".* Santiago, Chile: Comisión Económica para América Latina y el Caribe, CEPAL, Naciones Unidas.

CEPAL. (2013). *"Consenso de Montevideo sobre Población y Desarrollo. Primera reunión de la Conferencia Regional sobre Población y Desarrollo de América Latina y El Caribe".* Santiago: CEPAL, Naciones Unidas.

CEPAL. (2021). *"Las dimensiones del envejecimiento y los derechos de las personas mayores en América Latina y El Caribe".* Santiago, Chile: CEPAL, Naciones Unidas.

Chackiel, J. (2000). "El envejecimiento de la población latinoamericana: ¿hacia una relación de dependencia favorable?". *CELADE, Serie Población y Desarrollo, Divisón de Población de CEPAL*.

Chackiel, J. (2004). *"La dinámica demográfica en América Latina"* . Santiago, Chile: Serie Población y Desarrollo N°52, Centro Latinoamericano y caribeño de demografía, CELADE, División de Población de CEPAL, Naciones Unidas.

Cotlear, D. (2011). Population Aging: Is Latin America Ready? En D. Cotlear, *Population Aging: Is Latin America Ready?* (págs. 1-38). Washington, D.C.: The World Bank.

Diaz Franulic, C. (2017). Migración internacional, envejecimiento poblacional y segunda transición demográfica, ¿hacia dónde va Chile? *Notas de Población N° 105*, 221-257.

Gerra, P. (2019). *"El concepto de cuarta edad; realidad demográfica y respuestas de política pública. Los casos de España, Alemania y Uruguay".* Biblioteca del Congreso Nacional de Chile (BCN).

Goldstein, J. (2009). "How populations age". En P. Uhlenberg, *International Handbook of Population Aging* (págs. 7-18). Springer Science & Business Media.

Guzmán, J. M. (2002). *Envejecimiento y desarrollo en América Latina y el Caribe.* Santiago, Chile: Serie Población y Desarrollo 28, Centro Latinoamericano y Caribeño de Demografía, CELADE, División de Población de CEPAL, Naciones Unidas.

Huenchuan, S. (2011). *"La protección de la salud en el marco de la dinámica demográfica y los derechos".* Santiago, Chile: Comisión Económica para América Latina y el Caribe, CEPAL. Serie Población y Desarrollo.

Huenchuan, S. (2018). *"Envejecimiento, personas mayores y Agenda 2030 para el Desarrollo Sostenible: perspectiva regional y de derechos humanos".* Santiago, Chile: Libros de la CEPAL N°154, Comisión Económica para América Latina y el Caribe, CEPAL.

Huenchuan, S. (2019). *"Recomendaciones para incorporar a las personas mayores en la Agenda 2030 para el Desarrollo Sostenible".* México: CEPAL, Naciones Unidas.

INE. (2003). *"Censo 2002 Resultados, Volumen I, Población País-Región".* Santiago, Chile: Instituto Nacional de Estadísticas.

INE. (2006). *"La fecundidad en Chile, situación reciente".* Santiago, Chile: Instituto Nacional de Estadísticas.

INE. (2018a). *"Estimaciones y Proyecciones de la población de Chile 1992-2050, Total País, Metodología y principales resultados".* Santiago, Chile: Instituto Nacional de Estadísticas, Subdepartamento de Demografía.

INE. (2018b). *"Memoria del Censo 2017".* Santiago, Chile: Insituto Nacional de Estadísticas.

INE. (2018c). *"Glosario por temática. Censo 2017".* Santiago, Chile: Instituto Nacional de Estadísticas.

INE. (2019). *"Estimaciones y Proyecciones de Población de la población de Chile 2002-2035, Regiones y Áreas urbano-rural".* Santiago, Chile: Insituto Nacional de Estadísticas, Subdepartamento de Demografía.

INE. (2020). *"Resultados de indicadores de calidad para el análisis de las Estadísticas Vitales en el Instituto Nacional de Estadísticas".* Santiago, Chile: Instituto Nacional de Estadísticas, Subdepartamento de Demografía.

INE. (2021a). *"Anuario de Estadísticas Vitales, período de información 2019".* Santiago, Chile: Instituto Nacional de Estadísticas.

INE. (2021b). *"Estimaciones y proyecciones de la población de Chile 2002-2035, comuna urbano-rural. Documento metodológico".* Santiago, Chile: Instituto Nacional de Estadísticas.

Lesthaeghe, R. (2014). "The second demographic transition: A concise overview of its development". *Proceedings of the National Academy of Sciences 111 (51)*, 18112-18115.

Miró, C. (2003). "Transición demográfica y envejecimiento demográfico". *Papeles de Población. Vol 9 (N°35)*, 9-28.

Moya, O. (2013). "Sobre envejecimiento, vejez y biopolítica: Algunos elementos para la discusión". *Revista Contenido: Arte, Cultura y Ciencias sociales*, 68-85.

Reboiras, L. (2015). "Migración internacional y envejecimiento demográfico en un contexto de migración sur-sur: El caso de Costa Rica y Nicaragua". *CEPAL, Serie Población y Desarrollo N°110*.

Rivero-Cantillano, R., & Spijker, J. (2015). "Del rejuvenicimento al enjevecimiento de la población ¿o viceversa?: Chile en el contexto de América Latina , 1950-2050". *Notas de Población N°10*, 127-155.

Saad, P. (2011). "Demographic Trends in Latin America and the Caribbean". En D. Cotlear, *Population Aging: Is Latin America ready?* (págs. 43-75). Washington, D.C.: The World Bank.

Santillán, M., Ribotta, B., & Acosta, L. (2016). "Las posibilidades de las fuentes de información sociodemográficas para el monitoreo del derecho a la salud de las personas mayores en la Argentina, 1999-2013". *Notas de Población N° 102*, 95-121.

SENAMA. (2009). *"Las personas mayores en Chile. Situación, avances y desafíos del envejecimiento y la vejez".* Santiago, Chile: Servicio Nacional del Adulto Mayor.

United Nations. (2008). *"Guía para la aplicación nacional del plan de acción internacional de Madrid sobre el envejecimiento".* New York: Naciones Unidas.

United Nations. (2012). *"Aging in the twenty-First century: A celebration and A Challenge".* New York: United Nations Population Fund (UNFPA).

United Nations. (2017). *"World Population Ageing 2017".* New York: United Nations, Departmen of Economic and Social Affairs.

United Nations. (2020a). "United Nations Decade of Healthy Aging (2021-2030)". *United Nations General Assembly 75th session, Global Health and foreign policy* (pág. 4). New York: United Nations.

United Nations. (2020b). *"World Population Ageing 2019".* New York: United Nations, Department of Economic and Social affairs, Population Division.

Van de Kaa, D. (2002). "The idea of a second demographic transition in industrialized countries". *Birth N°35*, 45.

Vera Veliz, X. (2012). "Hacia o en la segunda transición demográfica? Los cambios poblacionales de Chile explicados desde un enfoque de género". *Revista Anales, N°3*, 107-125.

Villa, M., & Rivadeneira, L. (2000). "El proceso de envejecimiento de la población en América Latina y El Caribe: Una expresión de la transición demográfica". *Encuentro latinoamericano y caribeño sobre las personas de edad* (págs. 25-47). Santiago: CEPAL, Naciones Unidas.

WHO. (2002). *"Active Aging: A Policy Framework".* New York: World Health Organization.

Wong, R., & Palloni, A. (2009). "Aging in México and Latin América". En P. Uhlenberg, *"International Handbook of Population Aging"* (págs. 231-252). Springer.

Glossary

Aging index: The number of people aged 60 or over for every 100 children under the age of 15. The index is calculated by dividing the total number of people aged 60 years and over by the total number of people aged under 15 years and multiplying the result by 100.

Average number of years of study: An indicator of the total number of years of study that a person has completed, according to the last year completed and the highest level of formal education attained.

Crude birth rate: The frequency with which live births occur in a given period per thousand inhabitants. This indicator measures the number of births per thousand inhabitants in a given period.

Crude death rate: The frequency of death over a given period. This indicator measures the number of deaths per thousand inhabitants in a given period.

Demographic dependency ratio of children: This indicator shows the number of children per 100 people of potentially active age. It is calculated by dividing the population aged 0–14 by the population aged 15–64 and multiplying the result by 100.

Demographic dependency ratio of older people: This indicator shows the population of those aged over 64 per 100 people of potentially active age. It is calculated by dividing the population aged over 64 by the population aged 15 to 64 years and multiplying the result by 100.

Growth rate: The ratio of the average annual population increase over a given period to the average population over the same period, which is based on the estimates of births, deaths, and migration. This indicator measures the number of people, which increases when positive and decreases when negative per thousand inhabitants in a given period.

Life expectancy at age 60: The average number of years remaining to live for those aged 60, who are subjected at all remaining ages to the mortality risks of the period under study.

Life expectancy at birth: A function that comes from the life table representing the average number of years a newborn is expected to live under the conditions of mortality for a given period.

Median age: A statistical measure of position expressed as the age that divides the population into two groups of equal number, leaving the same number of people below and above.

Older person: For the purposes of this paper and as stipulated in Law 19.828 enacted in 2002, all people who have reached the age of 60 are considered older people. In addition, Law 21.144, enacted in 2019, establishes the distinction among older people between **those aged 60 and 79 years** (the third stage of life) and **those aged 80 and over** (the fourth stage of life).

Percentage of dwellings with overcrowding: The percentage of private occupied dwellings where an elderly person resides and where there are more 2.5 people per each room that is used exclusively as a bedroom. It is calculated by dividing the total number of people residing in the dwelling by the number of rooms used exclusively as bedrooms.

Potential support ratio: A ratio that expresses the proportion of potentially active people and potentially dependent older people. It is the proportion of the population aged 15 to 64 over the population aged 65 and over; it is the inverse of the dependency ratio of older people.

Sex ratio: The ratio of the number of males to females in a population, which is expressed as the number of males per 100 females. It is calculated by dividing the number of men by the number of women and multiplying the result by 100.

Total demographic dependency ratio: A demographic indicator of potential economic dependency that measures the population in potentially inactive ages compared to the population in potentially active ages, regardless of their situation in the labour force. It is calculated by adding the number of people aged 0–14 to the population aged 65 or over, dividing the result by the population aged 15–64, and multiplying by 100.

Total fertility rate: A summary measure of the number of children that each woman would have according to the specific fertility rates if she were not exposed to the risk of death from the beginning to the end of the fertile period.

Type of household: This classification is constructed from question 7 of the census questionnaire: "What is your relationship with the head of household?" The types cover the following categories:

> **Composite household:** A household with a nucleus (nuclear household) that also includes non-relatives of the head of household. Other relatives of the head of the household may or may not be part of this type of household.

> **Extended household:** A household with a nucleus (nuclear household) that also includes other relatives of the head of the household.

> **Household without a nucleus:** A household without a nucleus (nuclear household) that consists of other relatives or non-relatives of the head of household.

> **Single-parent household:** A household that consists only of the head of household and his or her children.
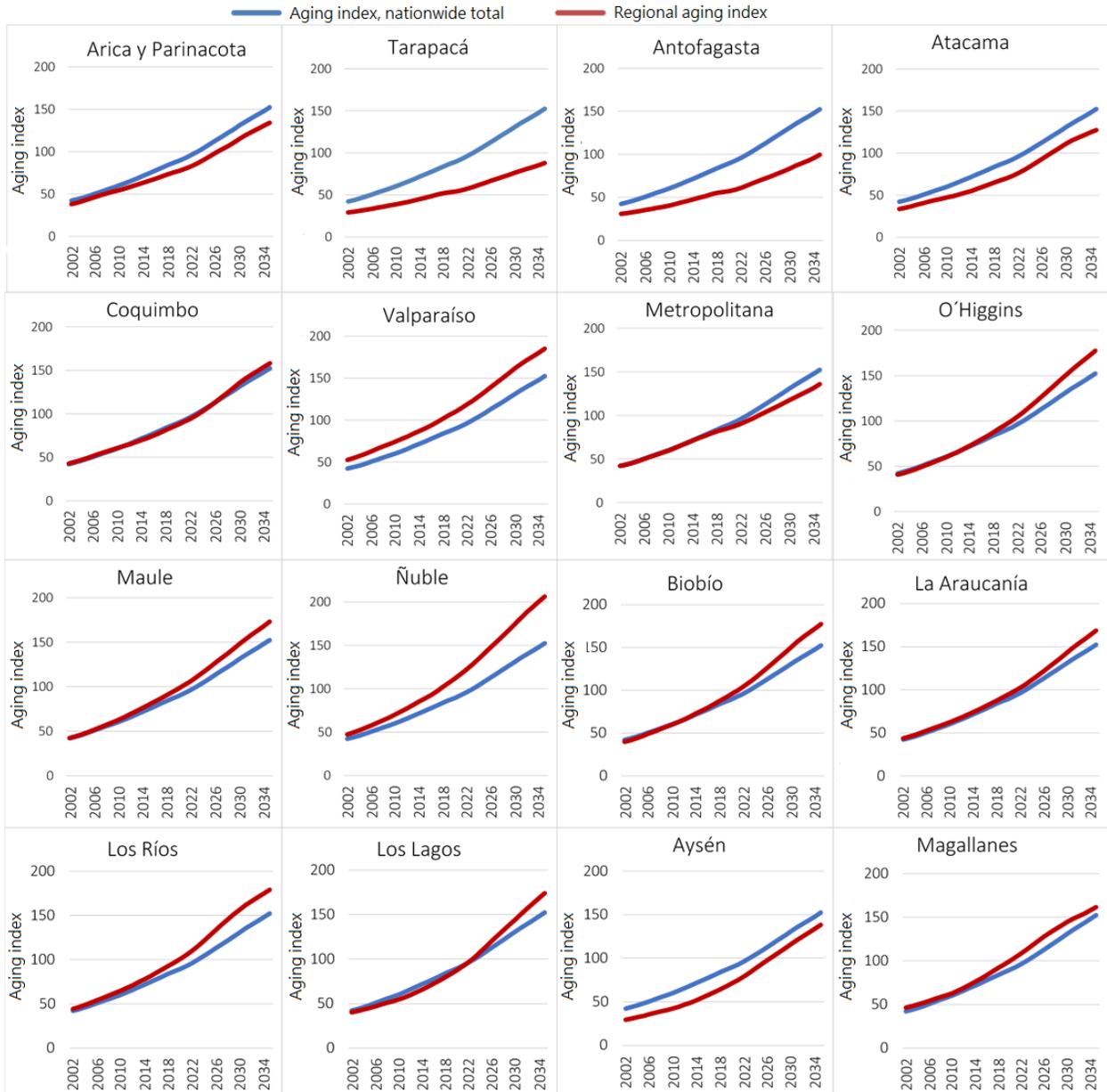
> **Single-person household:** A household whose only member is the head of the household.

> **Two-parent nuclear household with children:** A household whose only members are the head of household; his or her spouse, de facto cohabitant, or cohabitant by civil union; and their children, the children of the head of household, or the children of the partner of the head of household.

> **Two-parent nuclear household without children:** A household whose only members are the head of household and a spouse, de facto cohabitant, or cohabitant by civil union.

Annexes

Figure 57: Index of aging by region of habitual residence and nationwide total, 2022–2035

Source: National Population Estimates and Projections based on 2017 Census, National Statistics Institute