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PORTUGUESE LIFE TABLES 2019 - 2021

LIFE EXPECTANCY WAS 80.72 YEARS AT BIRTH AND 19.35 YEARS AT AGE 65

In the 2019-2021 triennium, **life expectancy at birth** was estimated at 80.72 years, and men and women could expect to live up to 77.67 years and 83.37 years, respectively. Compared with 2018-2020, it represents a decrease of about 4.8 months for men and 3.6 months for women, as a result of the increase in the number of deaths in the context of the COVID-19 disease pandemic.

Within a decade, there was a gain of 14.0 months of life for the total population, 14.4 months for men and 11.3 months for women. This increase in female life expectancy at birth resulted mainly from a reduction in mortality among those aged 60 years and over. For men, these gains continued to be mainly due to the decrease of mortality below 60 years.

Life expectancy at age 65, in the period 2019-2021, was estimated at 19.35 years for the total population. Men aged 65 years could expect to live 17.38 years, and women aged 65, 20.80 years, which corresponded to a decrease of 4.6 and 3.7 months, respectively, compared with 2018-2020. In the last ten years, life expectancy at age 65 has increased 5.5 months for men and 7.2 months for women.

Statistics Portugal releases on its website – www.ine.pt – the 2019-2021 complete life tables for Portugal, by sex and for the total resident population, providing the official values of life expectancy for the same period.

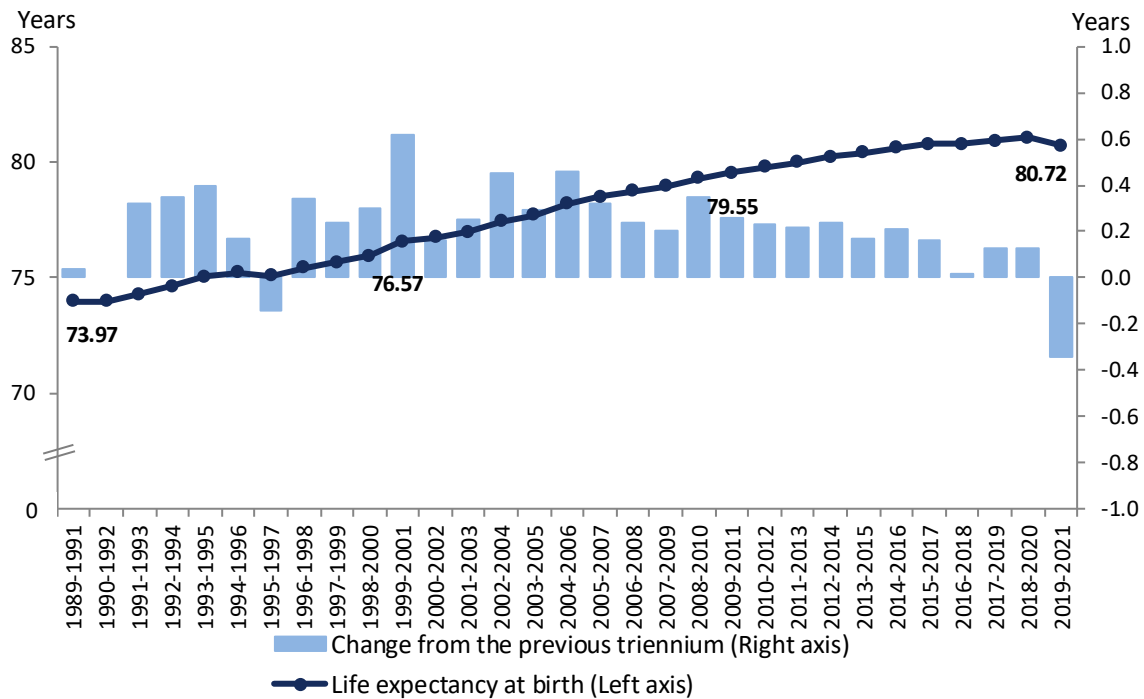
Life expectancy at birth of 80.72 years

Life expectancy at birth for both males and females were estimated at 80.72 years, which corresponded to a reduction of 0.34 years (4.1 months) compared to the previous triennium (81.06 years), as a result of the increase in the number of deaths in the context of the COVID-19 disease pandemic, especially of people aged 60 and over, particularly those aged 65 to 84 years.

The reduction in life expectancy at birth, in the triennium 2019-2021, was equivalent in amplitude to the progress observed over the previous four periods, slipping back to values close to those estimated for 2015-2017 (80.78 years).

PORTUGUESE LIFE TABLES 2019-2021

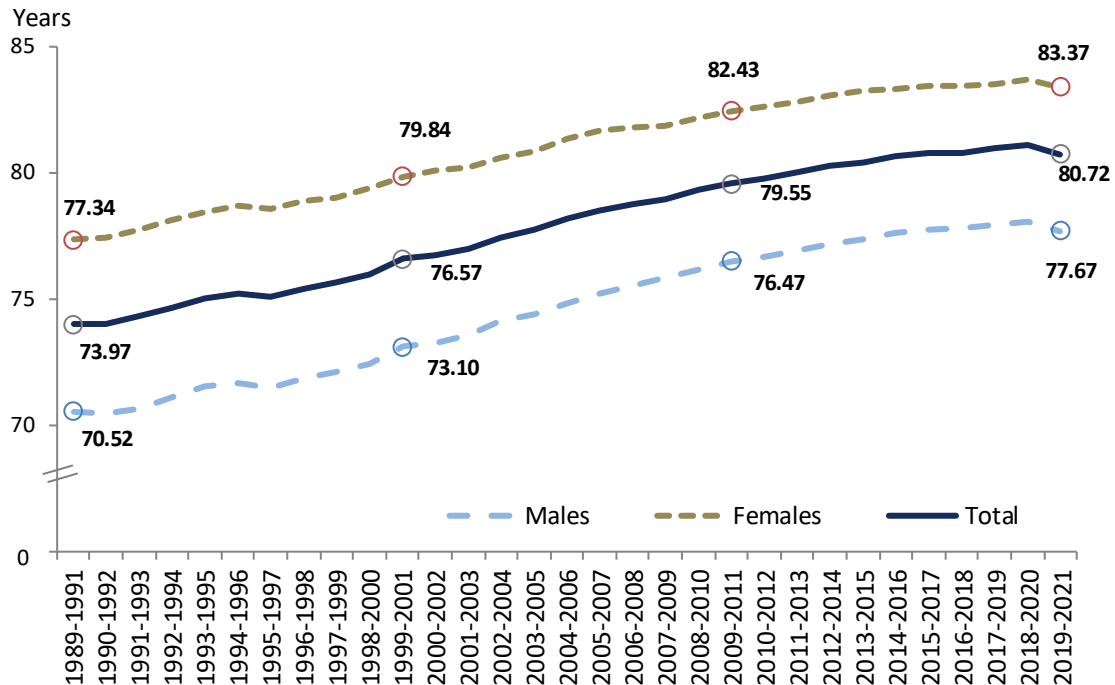
Figure 1. Life expectancy at birth, Portugal, 1989-1991 to 2019-2021



Source: Statistics Portugal, Complete Life Tables.

At birth, men and women could expect to live up to 77.67 years and 83.37 years, respectively. Compared to the estimated values for 2018-2020, it represented a reduction of 0.40 years (4.8 months) and 0.30 years (3.6 months), respectively.

Figure 2. Life expectancy at birth by sex, Portugal, 1989-1991 to 2019-2021



Source: Statistics Portugal, Complete Life Tables.

In the last decade, life expectancy at birth in Portugal has increased by 1.17 years (14.0 months), an increase of 1.20 years (14.4 months) for males and 0.94 years (11.3 months) for females, when compared with the values estimated for 2009–2011. The increase in female life expectancy at birth over the last ten years resulted mainly from a reduction in mortality among those aged 60 years and over. For men, the increase in life expectancy at birth continued to be mainly due to the reduction of mortality below 60 years, particularly among those aged 35 to 59¹.

In 2019-2021, women continued to live longer than men, even though the gap between male and female life expectancy at birth has increased again in this triennium, contrary to the trend of convergence observed until the 2017-2019 triennium. In the last ten years, the gap between male and female life expectancy at birth has narrowed, from 5.96 years in 2009-2011 to 5.70 years in 2019-2021.

In 2019-2021, it is estimated that 36.1% of male live births and 57.3% of female live births will survive to age 85 if they experience the respective age-specific mortality rates of this period for the rest of their life. In 2018-2020, these values were, respectively, 38.3% and 59.1%, for men and women, and in 2009-2011, respectively, 32.3% and 53.1%, for men and women².

¹ Results based on the decomposition of the difference in life expectancy at birth between 2009-2011 and 2019-2021 (see technical note).

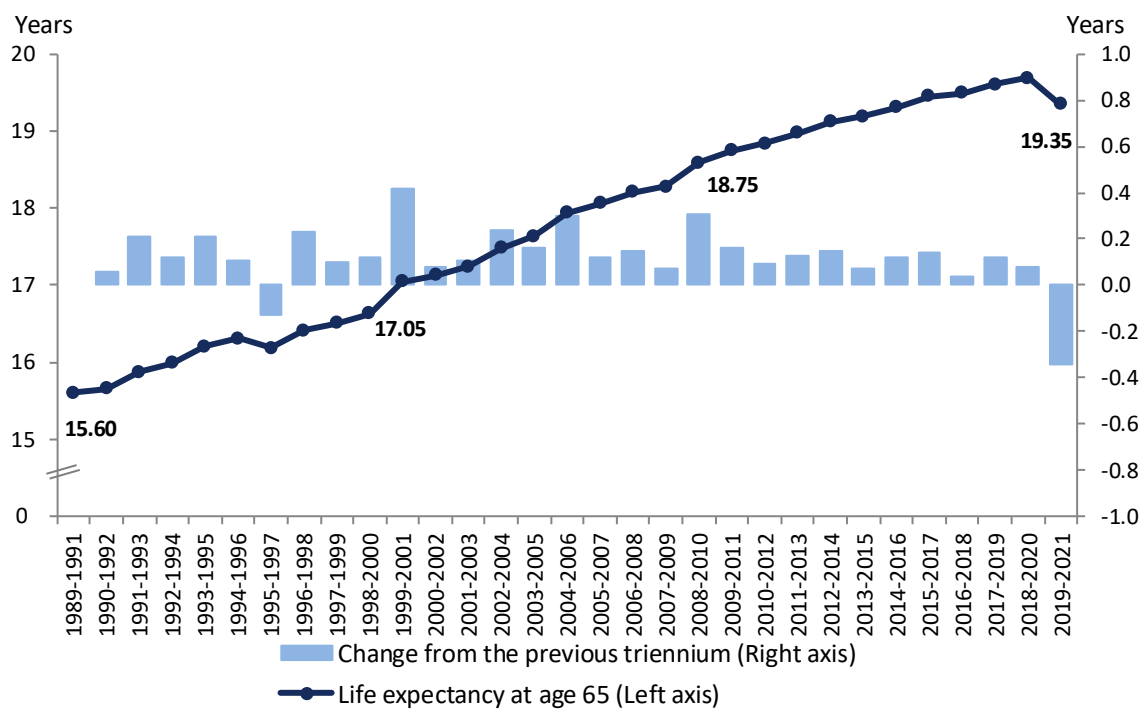
² Values are taken from the survival function (l_x) of the life table (see technical note).



Life expectancy at age 65 of 19.35 years

In 2019-2021, life expectancy at age 65 was estimated at 19.35 years for the total population, 17.38 years for men and 20.80 for women, which corresponded to decreases of 0.34 years (4.1 months) for the total population, 0.38 years (4.6 months) for men and 0.31 years (3.7 months) for women, compared to the estimated values for the period 2018-2020. The reduction in life expectancy at age 65, in the triennium 2019-2021, was equivalent to the progress observed over the last five years, returning to values close to those estimated for 2014-2016 (19.31 years).

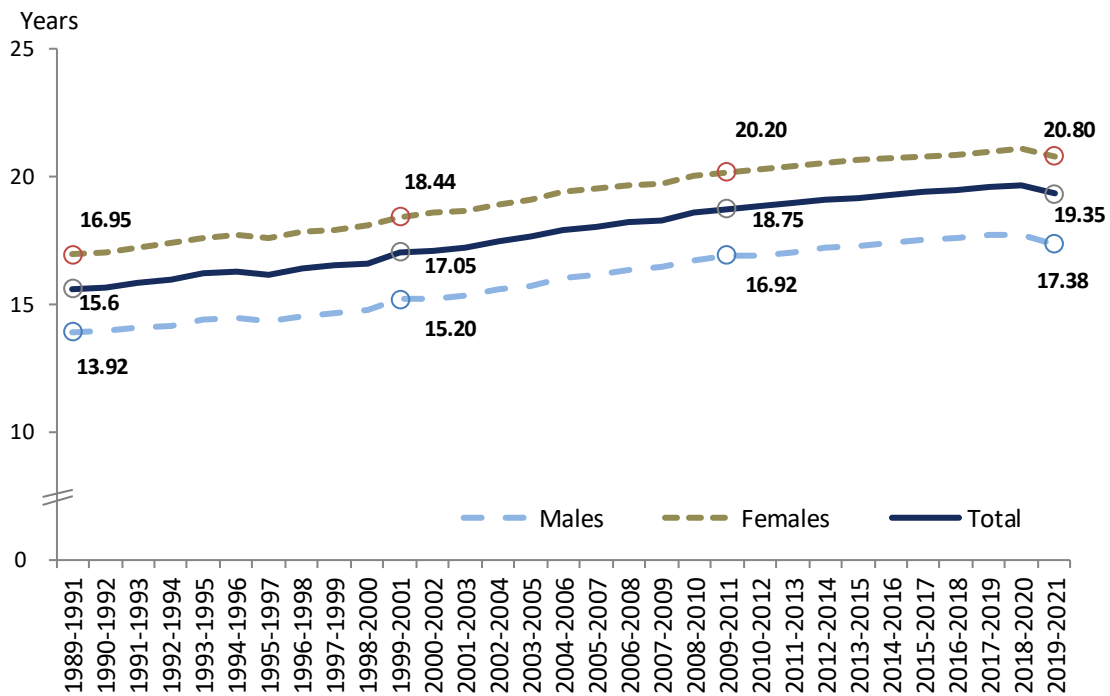
Figure 3. Life expectancy at age 65, Portugal, 1989-1991 to 2019 – 2021



Source: Statistics Portugal, Complete life tables.

Over the last ten years, life expectancy at age 65 has risen by 0.46 years (5.5 months) for males and by 0.60 years (7.2 months) for females. In 2019-2021 the difference in life expectancy at age 65 between men and women was 3.42 years.

Figure 4. Life expectancy at age 65 by sex, Portugal, 1989-1991 to 2019-2021



Source: Statistics Portugal, Complete life tables.



TECHNICAL NOTE

Complete life table for Portugal 2019-2021

The life table is a mathematical model of demographic analysis composed by a set of functions which provide a basis for measuring longevity in a given population and for making probabilistic judgments about the evolution of mortality with age and time. It is based on age-specific probabilities of dying estimates obtained from the observed number of deaths and the estimated population exposed to the risk of death in a given period of time, for which it is a period life table. Thus, the life table functions represent the experience of a hypothetical cohort of 100,000 live births (called the radix of the table) through their entire life under the assumption that they are subject to the observed schedule of age-specific mortality rates in a given period of time. The life table for Portugal is referred to as a complete since it contains data for every single year of age from birth to the last applicable age.

The functions of the complete life table are:

- Probability of dying (q_x): Probability that a person aged x exactly will die before reaching age $(x + 1)$;
- Survivors at exact age x (l_x): Number of survivors to exact age x of the initial cohort of 100,000 live births (radix of the table);
- Deaths between the exact ages x and $(x + 1)$ (d_x): Number of the initial cohort dying between the exact ages x and $(x + 1)$;
- Person-years lived between exact ages x and $(x + 1)$ (L_x): Number of person-years lived by the survivors of the initial cohort between exact ages x and $(x + 1)$;
- Person-years lived above age x (T_x): Total number of person-years lived by survivors after age x ;
- Life expectancy at age x (e_x): The average number of years a person can expect to live from exact age x .

The Complete Life Table for Portugal, which is produced annually, has a reference period of 3 years. The probabilities of dying are obtained by the ratio between the number of deaths by age of individuals from two generations (defined by the year of birth) who reach that age in the three consecutive years of reference of the table and the population exposed to the risk of death of those same generations in the same period, which softens the effects on the survival function caused by atypical fluctuations in the population's mortality behaviour. More precisely, in the 2019-2021 table, when calculating the probability of dying at the exact age x , data on the number of deaths at the exact age x that occurred in 2019 from generation 2019- x (lower Lexis triangle), the total number of deaths at exact age x occurred in 2020 (Lexis square), and deaths at exact age x occurred in 2021 from generation 2021- $x + 1$ (upper Lexis triangle) were considered.

In the most advanced ages (over 85 years), due to the variability in the probabilities of dying at these ages, the method proposed by Denuit and Goderniaux (2005) is applied for smoothing and extrapolation to the last applicable age (closing age of the life table).

Life expectancy at birth, one of the most important longevity indicators provided by the life table, is a well-known summary measure of mortality, widely employed in comparisons through time and between populations. When analysing changes in life expectancy at birth or studying differences in life expectancy between two populations, it is useful to estimate the contributions



of the various age groups that explain them. In the present exercise, the variation of life expectancy values at birth between 2009-2011 and 2019-2021 was analysed using the method proposed by Andreev, E. M., Shkolnikov, V. M., & Begun, A. (2002).

References:

Andreev, E. M., Shkolnikov, V. M., & Begun, A. (2002). Algorithm for decomposition of differences between aggregate demographic measures and its application to life expectancies, healthy life expectancies, parity-progression ratios and total fertility rates. *Demographic Research*, 7, 499-522.

Denuit, M., & Goderniaux, A. C. (2005). Closing and projecting lifetables using log-linear models. *Bulletin of the Swiss Association of Actuaries*, 1, 29-49.

DEFINITIONS

Life expectancy at birth: The mean number of years that a new-born child can expect to live if subjected throughout his life to the current mortality conditions (age specific probabilities of dying).

Life expectancy at age 65: The mean number of years still to be lived by a person who has reached the exact age 65, if subjected throughout the rest of his life to the current age specific probabilities of dying.

Detailed methodological information available at: www.ine.pt, option Products, Metadata system.

Detailed statistical information available at: www.ine.pt, option Products, Statistical data, database, theme Population, Subtheme Mortality and life expectancy: [Complete life tables, Portugal, 2019-2021](#).