FACT SHEET

Longevity, Health, Well-being

Health: the greatest asset

Demographic developments in Europe today are characterized by aging populations. Fewer children are being born and at the same time people are living longer. However, this demographic change does not necessarily mean more problems. The consequences of this process depend strongly on people's health status. According to the World Health Organization, health is central to the happiness and well-being of people and crucial for economic progress – since healthy populations live longer and are more productive. Improving the health of a population is therefore one of the most important and effective ways to cope with the challenges of aging societies.

Average life expectancy

Life expectancy – at birth or at a given age – is usually understood as indicator for the health status of a population. However, the complexity of the indicator is often underestimated. Ultimately, it describes a purely hypothetical lifespan under the assumption, that the age-specific probabilities of dying of a given year remain constant forever. However, these reflect not only the current health status of people but are also

> Because of increased mortality due to COVID-19, life expectancy in Austria decreased by around -0.5 years in 2020 compared to 2019. In 2021 it remained unchanged at this level.

affected by other factors such as the population composition, e.g. according to the level of education or the proportion of active or ex-smokers in different age groups. Hence, average life expectancy is applicable to people who are born or alive today only to a limited extent, what can lead to misleading conclusions.

International differences

In an international comparison according to UN data, Austria is currently in 25th place (for both sexes 2015/20: 81.35) in respect to life expectancy. The difference to the leader Japan is -3.08 (84.48) and to the last place Central African Republic +28.68 (52.67) years. In 1950/55, Austria was still 20th place, but the international differences were much greater at that time: Austria had a difference of -6.26 (66.54) to number one Norway (72.80) and +38.58 to Mali (26.96) at the bottom.

Trends in life expectancy

In almost all industrialized countries, life expectancy has been increasing almost continuously for over 100 years. Whether this development will continue in the future is a subject of controversial debate among scientists. The "optimists" expect a continuously strong, nearly linear increase. The "pessimists" do not assume a life expectancy decline, but they expect the increase to slow down and the trend to flatten. As a matter of fact, the pace of increase has somewhat declined over the last 20-30 years. Ultimately, the future trends in life expectancy will depend primarily on whether a biological limit of

the human lifespan exists. While pessimists are convinced of such a limit, optimists assume that there is no limit for the human lifespan.

Impact factors

Research suggests that around 25% of today's differentials in life expectancy, mortality and health are caused by genetic factors, 25% by the environment (economic, social and cultural factors), and 50% can be attributed to lifestyle. Health behavior, especially smoking, but also the consumption of alcohol and other drugs, diet, physical activity, utilization of medical care and services, general risk-taking (e.g. road traffic), (social) stress and health risks at work play a role here.

Gender paradox

Even though women have a higher remaining life expectancy than men at any age, they spend a larger proportion of their total life in poor health – a phenomenon that has been labelled the "gender paradox". However, these opposite differences between women and men in health and mortality are not as conclusive as the term might imply. In the ERC project HEMOX we found, that gender differences in healthy life years vary considerably across age groups, social contexts and most notably the used health indicator. In addition, men rate their health problems in surveys less severe than women. This difference in health reporting behavior also contributes to the statistics on gender differences in healthy life years.
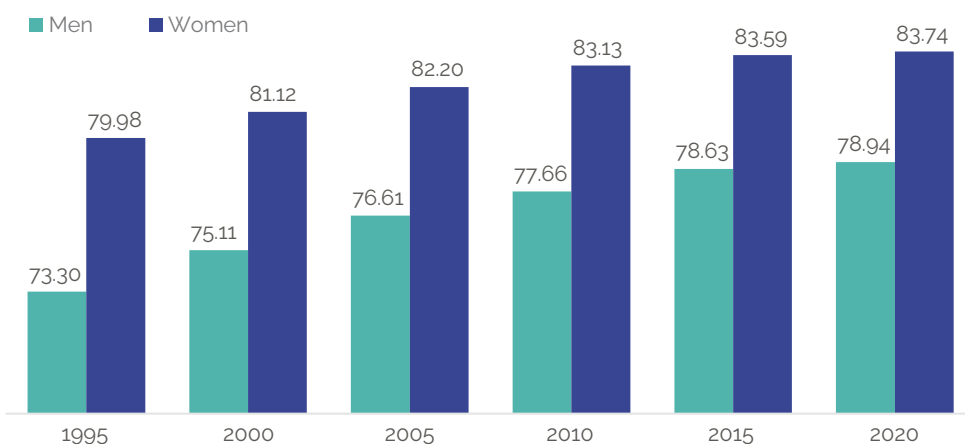
Gender differences in live expectancy

The cloister study uses the life data recorded in archives of religious communities and a health survey carried out among Catholic order members with the aim of finding the key for the so-called "successful aging", i.e. for a long life spent in good health. This study provided important contributions to the understanding of the causes of gender differences in life expectancy. Today, women in Austria have an advantage in life expectancy of almost 5 years compared to men. The cloister study has shown that only 1 of these 5 years is determined by biological factors, such as genetic and hormonal differences between the sexes. The remaining 4 years are caused by non-biological factors, most notably smoking.

More information: Cloister Study and HEMOX Project

Life expectancy (years) in Austria 1995-2020

Source: Statistik Austria

	Men	Women
1995	73.30	79.98
2000	75.11	81.12
2005	76.61	82.20
2010	77.66	83.13
2015	78.63	83.59
2020	78.94	83.74

The role of education

In addition to improved hygiene, medical innovations and advances in health-related behaviors, also structural changes in the populations have contributed to almost continuous gains in life expectancy, particularly increases in the average educational level. A study on several industrialized countries has shown that changes in the population composition by educational attainment alone accounted for between 15 and 40 percent of the increase in life expectancy between 1990 and 2010. This suggests, that education policies can also be seen as indirect health policies.

Healthy life expectancy

Today, "healthy life expectancy" has replaced average life expectancy as key indicator of a population's health status. It reflects the number of healthy life years that a person will live based on current health and mortality conditions in the population. However, adding the health dimension to life expectancy increases the complexity of the indicator significantly. Healthy life expectancy varies considerably more due to its high methodological sensitivity, including, among others, the definition of health, the choice of data sources, and specific technical aspects.

Compression and expansion of morbidity

For many people, the most important question is probably whether the life years gained through increasing life expectancy are primarily spent in good or poor health. In this context, two opposing theoretical models have been proposed:

1. A longer life results in more years spent primarily in poor health, the so called "expansion of morbidity", and

2. Additional life years go hand in hand with a postponement of health issues to later ages, the so called "compression of morbidity".

The empirical evidence to date supports both hypotheses, depending on which health indicators are considered. While in Austria the trends in life years spent in good general health follow the compression-scenario, trends in chronic health problems show an expansion of morbidity. In the case of limitations due to health problems, both, the years spent in poor health as well as those spent in good health increase approximatively to the same extent as the total life expectancy, hence, neither compression nor expansion is indicated.

Longer life, longer working life?

With the aging of populations and an increase in life years, the question of the effective retirement age becomes even more important. Many European governments have already raised official retirement ages, and the labor force participation of people aged 50+ has strongly increased, especially among women. But is the health potential to work longer also increasing with the years of life? Research shows that there are significant differences between subpopulations. The health potential (expected number of years in good health) varies significantly between persons with different levels of education and by gender, which should be taken into account.

New measures of aging

While life expectancy is increasing around the world and people are staying healthy longer, the traditional measure for aging has remained unchanged: People are usually classified as "old" at age 60 or 65. This has significant consequences on social security systems and labor markets. We have developed "The Characteristics Approach to the Measurement of Population Aging" which – for the first time in measuring aging – considers not only people's chronological age but also their health, physical and cognitive abilities, and other characteristics. The "prospective old-age threshold" is a good example of application of this approach. It defines people as being old not at a fixed age but at the age when remaining life expectancy is 15 years or less. From this perspective, if the life expectancy increases also the old-age threshold increases, and thus, people are considered old at more advanced ages. More information: Re-Aging Project.

An indicator to measure quality of life

A good life is more than mere survival. Therefore, the "Years of Good Life indicator (YoGL)" accounts also for the quality of life-years lived, i.e. whether individuals are simultaneously not living in absolute poverty, free from cognitive and physical limitations, and report to be generally satisfied with their lives. Unlike many other indicators, YoGL can be assessed for flexibly-defined sub-populations and over long-time horizons, allowing for intergroup comparisons over time. Most importantly, though, YoGL can serve as a criterion for assessing the sustainability of policy interventions.

More information: EmpoweredLifeYears Project.

Hypothetical example of compression and expansion of morbidity

Suppose that the total life expectancy today is 70 years, of which 50 years are spent in good health and 20 years in poor health. If life expectancy increases to 90 years, in the optimistic "compression" scenario, all life years gained are spent in good health and the number of years spent in poor health are reduced ("compressed") to 10 years. By contrast, in the pessimistic "expansion" scenario, the number of life years spent in good health do not increase and all life years gained are spent exclusively in poor health.

	Good health	Poor health
Reference-scenario	50	20
Compression of morbidity	80	10
Expansion of morbidity	50	40

Life expectancy (years)
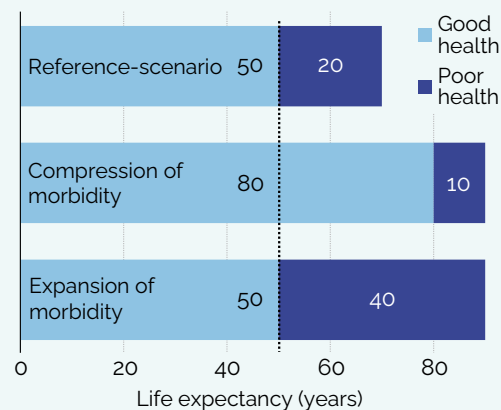
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• Luy M, et al. (2020) Life expectancy: frequently used, but hardly understood. Gerontology 66(1): 95-104.

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• Sanderson W, Scherbov S (2013) The characteristics approach to the measurement of population aging. Popul. Dev. Rev. 39(4): 673-685.

• Weber D, Loichinger E (2022) Live longer, retire later? Developments of healthy life expectancies and working life expectancies between age 50–59 and age 60–69 in Europe. European Journal of Ageing 19:75–93.

RESEARCH PROJECTS

• Determinants of Longevity and Ageing in Good Health (DELAG) https://delag.eu/

• German-Austrian Cloister Study, and The male-female health-mortality paradox (HE-MOX): cloisterstudy.eu

• Reassessing Aging from a Population Perspective (Re-Aging): https://iiasa.ac.at/projects/reassessing-aging-from-population-perspective-re-ageing

• The Demography of Sustainable Human Wellbeing (EmpoweredLifeYears) https://iiasa.ac.at/projects/demography-of-sustainable-human-wellbeing

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