This article presents statistics on the major causes of death for people aged 65 years and over in the European Union (EU) - in 2016, around four fifths (83.1 %) of all deaths in the EU-28 — some 4.3 million out of 5.1 million — occurred among people aged 65 years and over (hereafter referred to as the elderly).

The article presents information for several major causes of death (defined by the international classification of diseases (ICD) ): two main disease groups linked to the circulatory system, namely ischaemic heart diseases (also known as coronary heart disease, including heart attacks) and cerebrovascular diseases (such as strokes); respiratory diseases (which include chronic lower respiratory diseases or asthma as well as infectious diseases such as influenza or pneumonia); and four groups of malignant neoplasms, namely lung cancer (including cancers of the trachea and bronchus), colorectal cancer, breast cancer and prostate cancer.

This article is one of a set of statistical articles concerning health status in the EU which forms part of an online publication on health statistics.

Frequency of the main causes of death in the EU for the elderly and for younger people

Circulatory diseases were the main cause of death among the elderly

In 2016, circulatory diseases were the main cause of death for the elderly population within the EU-28, while for persons aged less than 65 years, cancer was the leading cause of death.

In 2016, just under two fifths (38.7 %) of all deaths among the elderly population in the EU-28 were from circulatory diseases, compared with almost one quarter (23.8 %) from cancer and less than one tenth (8.9 %) from respiratory diseases. A higher proportion of the total number of deaths among elderly women could be attributed to circulatory diseases (41.2 % compared with 35.7 % for elderly men), whereas a higher share of elderly men (than women) died from cancer (28.4 % compared with 19.7 %) or from diseases of the respiratory system (9.9 % compared with 8.1 %).

By contrast, cancer was the principal cause of death in 2016 for almost half (47.3 %) of all women aged less than 65 years who died in the EU-28; cancer was also the leading cause of death among men aged less than 65 years, accounting for almost one third (31.9 %) of the total number of deaths for this subpopulation. A slightly higher proportion (4.9 %) of women aged less than 65 years died from diseases of the respiratory system (compared with 4.6 % for men). By contrast, nearly a quarter (24.0 %) of men aged less than 65 years died from circulatory diseases, while the corresponding share for women was 16.4 %.
Standardised death rates for the elderly — main causes of death in the EU and the Member States

The data presented in this article are based on standardised death rates. Since most causes of death vary significantly by age and according to sex, the use of standardised death rates facilitates comparisons to be made both over time and between countries, independent of population age structures.

In 2016, the highest EU-28 standardised death rates for the elderly — among the diseases covered by this article — were recorded for ischaemic heart diseases (534 deaths per 100 000 elderly inhabitants), respiratory diseases (384), cerebrovascular diseases (376) and lung cancer (199). Figure 1 shows that in 2016, EU-28 standardised death rates among the elderly were systematically higher than for all persons (and therefore implicitly for younger persons) for all four of these major causes of death of the elderly, as well as for colorectal cancer and the two gender specific causes of death that are also shown.

![Figure 1: Major causes of death, EU-28, 2016](standardised death rates per 100 000 inhabitants)

Note: the three most common causes of death among persons aged 65 years and over are diseases of the circulatory system, cancer and diseases of the respiratory system.

(*) Trachea, bronchus and lung.

Source: Eurostat (online data code: hlth_cd_asdr2)

Figure 1: Major causes of death, EU-28, 2016 (standardised death rates per 100 000 inhabitants)

An analysis across the EU Member States of the three main causes of death in 2016 shows that Denmark and France were the only Member States which did not repeat the pattern observed for the EU-28 aggregate, namely that the highest standardised death rate among elderly persons was recorded for diseases of the circulatory system, followed by cancer and then respiratory diseases (see Table 1); in Denmark and France, the standardised death rates for cancer were higher than those for diseases of the circulatory system.
In the EU-28 as a whole, the standardised death rate for ischaemic heart diseases for elderly persons in 2016 was greater than that for cerebrovascular diseases, 534 deaths per 100 000 elderly inhabitants compared with 376 per 100 000 elderly inhabitants. In 2016, there were six EU Member States, namely, Bulgaria, Greece, France, the Netherlands, Portugal and Slovenia, where the standardised death rate among the elderly for cerebrovascular diseases was higher than the rate for ischaemic heart diseases; this was also the case in Serbia.

Among all cancers, lung cancer was the most common cause of death among elderly people
Standardised death rates among the EU Member States

Generally, the results for 2016 suggest relatively high standardised death rates among the elderly for circulatory diseases among eastern and Baltic Member States; note, however, that the latest rates for Austria, Germany and Finland were also above the EU-28 average. In Hungary, Latvia, Lithuania and Romania, the standardised death rate among the elderly for circulatory diseases was more than double the EU-28 average (this was also the case in Serbia), while it was nearly three times as high in Bulgaria. This can be contrasted with the situation in France where the standardised death rate among the elderly for circulatory diseases was close to half (55.1 %) the EU-28 average.

There was also considerable variation between the EU Member States in relation to the latest standardised death rates among the elderly for respiratory diseases. In 2016, particularly high death rates were recorded in Ireland, the United Kingdom, Portugal, Denmark and Greece (in each case the rate was between 37 % and 70 % higher than the EU-28 average), while at the other end of the range the death rate in Latvia was around two fifths (39.4 %) of the EU-28 average.

The range in terms of the highest and lowest standardised death rates among the elderly for cancer was relatively narrow among the EU Member States

By contrast, there was a smaller range between the highest and lowest standardised death rates among the elderly for cancer: the rate in Croatia was 27.2 % more than the EU-28 average, whereas the rate in Bulgaria was 77.6 % of the EU-28 average; the standardised death rate for cancer among the elderly was lower in Turkey than in any of the EU Member States.

Developments over time

Standardised death rates for most leading causes of death for the elderly in the EU followed a downward path between 2006 and 2016, most notably in the case of the rates for cerebrovascular diseases and ischaemic heart diseases

Between 2006 and 2016, there was a 32.6 % reduction in EU-28 standardised death rates relating to cerebrovascular diseases for elderly men and a 34.4 % reduction for elderly women — see Figures 2 and 3. Similar declines were recorded in relation to deaths from ischaemic heart disease, where death rates fell by 28.6 % for elderly men and 35.2 % for elderly women. Declining standardised death rates were also recorded for colorectal cancer and diseases of the respiratory system both for elderly men and for elderly women during this period.

By contrast, death rates for lung cancer (including also cancer of the trachea and bronchus) increased between 2006 and 2016 for elderly men by 9.1 % and for elderly women by 59.6 %. The difference in the development for elderly men and elderly women concerned not just the rate of change, but also the direction of its development: the standardised death rate for lung cancer for elderly men in the EU peaked in 2009 and fell slightly every year thereafter, whereas for elderly women the rate increased every year during the period studied.
Turning to the gender specific causes of death shown in Figures 2 and 3, the standardised death rate for breast cancer was 2.1 % lower for elderly women in 2016 than it had been in 2006. For elderly men, the rate for prostate cancer was 12.0 % lower in 2016 than it had been in 2006, having decreased every year but one (2014) during this 10-year period.
Gender differences for standardised death rates among the elderly were highest for lung cancer

In 2016, the gender gap between standardised death rates for elderly men and elderly women was smallest for the two circulatory diseases: the standardised death rate for elderly men was 15.2 % higher than that for elderly women for cerebrovascular diseases and 70.4 % higher for ischaemic heart disease. For respiratory diseases, the standardised death rate for elderly men was nearly twice as high (85.8 % higher) as that for elderly women. However, by far the largest gender difference among the selected causes of death was observed for lung cancer, where the standardised death rate for elderly men was nearly three times as high (184.7 % higher) as that for elderly women.
Figures 5 to 9 illustrate the gender differences for each of the five main causes of death among the elderly that are common to both sexes.

For elderly men and for elderly women, France had the lowest standardised death rates among the EU Member States for ischaemic heart disease and cerebrovascular diseases.

The highest standardised death rates from ischaemic heart disease both among elderly men and elderly women were recorded in 2016 in Lithuania, Latvia, Slovakia and Hungary, while the lowest incidences of deaths from ischaemic heart disease both among elderly men and elderly women were registered in France, the Netherlands, Portugal, Spain and Belgium. The incidence of death from ischaemic heart disease was higher for elderly men than for elderly women in each of the EU Member States — see Figure 5 — with the largest gender gap in relative terms recorded in France where the rate for elderly men was 2.4 times as high as that for elderly women. Among the EFTA countries, in Liechtenstein the rate for elderly men was 2.7 times as high as for elderly women while in Iceland it was 2.4 times as high.
With two exceptions, standardised death rates for cerebrovascular diseases were systematically higher for elderly men than for elderly women in 2016 among the EU Member States — see Figure 6. The exceptions were Greece and Cyprus where the rates for elderly men were slightly lower than the rates for elderly women. The largest gender gaps in 2016 were in Estonia and Hungary, where the rates for elderly men were respectively 36 % and 33 % higher than those for elderly women. Bulgaria, Latvia and Romania had the highest standardised death rates for elderly people, both for elderly men and for elderly women. As for ischaemic heart disease, France recorded the lowest standardised death rates for cerebrovascular diseases for elderly men and for elderly women.
For diseases of the respiratory system, Ireland and the United Kingdom reported the highest standardised death rates for elderly women in 2016 and the three Baltic Member States the lowest ones. Among elderly men, the situation was somewhat different as Portugal had the highest rate ahead of Ireland and the United Kingdom, while Finland had the lowest rate, below Latvia. The standardised death rates for diseases of the respiratory system in 2016 were considerably higher for elderly men than for elderly women in all EU Member States, although among the non-member countries shown in Figure 7 Iceland recorded a marginally lower rate for elderly men than for elderly women. In relative terms, the three Baltic Member States had the largest gender gaps, with the rates for men at least three times as high as for women. The narrowest gender gaps, where the rates for elderly men were between 31 % and 44 % higher than for elderly women, were recorded in Denmark, Greece, Sweden, the United Kingdom and Ireland.
The gender gap in the standardised death rates for lung cancer for elderly people varied greatly between the EU Member States: it was narrowest in Sweden and widest in Lithuania.

The incidence of deaths from lung cancer among the EU Member States varied enormously when comparing the rates for elderly men with those for elderly women. For example, in 2016 Sweden had the lowest rate for elderly men, but the sixth highest rate for elderly women, while Austria had the third lowest rate for elderly men and the tenth highest rate for elderly women. By contrast, Latvia had the fifth highest standardised death rate for elderly men, but the fifth lowest rate for elderly women. As a consequence of these very different rankings, there was quite a large range in the gender gaps observed among the EU Member States for the standardised death rate for lung cancer among elderly people in 2016. In relative terms, Lithuania, Latvia and Spain had the largest gender gaps: the rates for men were between 6.5 and 6.9 times as high as for women. The narrowest gender gaps were recorded in the United Kingdom, Ireland, Denmark and Sweden, which were the only Member States where the rate for elderly men was not at least double the rate for elderly women. Most of the non-member countries shown in Figure 8 reported a gender gap between the extremes observed among the EU Member States; the two exceptions were Iceland and Liechtenstein where the standardised death rates for lung cancer were almost the same for elderly men as they were for elderly women.
Croatia, Hungary and Slovakia reported the highest standardised death rates for colorectal cancer for elderly men and for elderly women in 2016 and Slovakia recorded the largest gender gap for this cause of death.

All EU Member States reported higher standardised death rates in 2016 for colorectal cancer among elderly men than among elderly women (see Figure 9). Malta reported the smallest gender gap in relative terms, with the rate for elderly men 12.9% higher than for elderly women. The largest gender gaps in 2016 in relative terms were in Slovakia, Croatia, Spain and Czechia. Two of these — Croatia and Slovakia — along with Hungary recorded the highest standardised death rates for colorectal cancer, both for elderly men and for elderly women. Cyprus and Greece reported the lowest rates for elderly women, while Cyprus, Malta, Finland and Greece reported the lowest rates for elderly men. Among the non-member countries shown in Figure 9, Liechtenstein, Switzerland and Turkey recorded relatively low standardised death rates for colorectal cancer, with the rates for elderly men particularly low in Turkey and Liechtenstein.
Figure 9: Deaths from colorectal cancer among persons aged 65 years and over — standardised death rate, 2016 (per 100,000 inhabitants) Source: Eurostat (hlth_cd_asdr2)

Source data for tables and graphs

- Causes of death — persons aged 65 and over: tables and figures

Data sources

Statistics on the underlying causes of death provide information on mortality patterns. This source is documented in more detail in this background article which provides information on the scope of the data, its legal basis, the methodology employed, as well as related concepts and definitions.

Eurostat began collecting and disseminating mortality data in 1994. Currently data are analysed by:

- a shortlist of 86 causes of death based on the International Statistical Classification of Diseases and Related Health Problems (ICD), developed and maintained by the World Health Organisation (WHO);
- sex;
- age;
- geographical region (NUTS level 2).

Annual data are provided in absolute numbers, as crude death rates and as standardised death rates. Since most causes of death vary significantly by age and according to sex, the use of standardised death rates improves comparability over time and between countries as death rates can be measured independently of the population’s age structure.

In April 2011, European Commission Regulation (EU) No 328/2011 as regards statistics on causes of death was adopted specifying in detail the variables, analyses (breakdowns) and metadata that EU Member States should deliver.
For country specific notes on this data collection, please refer to this background information document.

Death certificates

Statistics on causes of death are based on two pillars: medical information contained on death certificates, which may be used as a basis for ascertaining the cause of death; and the coding of causes of death following the WHO-ICD system. All deaths in the population are identified by the underlying cause of death, in other words 'the disease or injury which initiated the train of morbid events leading directly to death, or the circumstances of the accident or violence which produced the fatal injury' — a definition adopted by the World Health Assembly.

The validity and reliability of statistics on causes of death rely, to some degree, on the quality of the data provided by certifying physicians. Inaccuracies may result for several reasons, including:

- errors when issuing the death certificate;
- problems associated with the medical diagnosis;
- the selection of the main cause of death;
- the coding of the cause of death.

Sometimes there is ambiguity in the cause of death: besides the illness leading directly to death, the medical data on the death certificate should also contain a causal chain linked to the suffering of the deceased. Other substantial health conditions may be indicated, which did not have a link to the illness leading directly to death, but which may have unfavourably affected the course of a disease and thus contributed to the fatal outcome. Indeed, there is sometimes criticism that the coding of only one illness as a cause of death appears more and more unrealistic in view of increasing life expectancy and associated changes in morbidity. For a majority of the deceased aged 65 and over the selection of just one out of a number of possible causes of death may be somewhat misleading. For this reason, some of the EU Member States have started to consider multiple-cause coding. Eurostat has supported EU Member States in their efforts to develop a joint automated coding system called IRIS for the improvement and better comparability of causes of death data in Europe.

Revised European standard population

The number of deaths from a particular cause of death can be expressed relative to the size of the population. A standardised (rather than crude) death rate can be compiled which is independent of the age and sex structure of a population: this is done as most causes of death vary significantly by age and according to sex; the standardisation of death rates facilitates comparisons over time and between countries.

The European standard population was used for the standardisation of crude death rates back to 1976. It became clear that the standard population should be adapted to reflect changes in the age-structure of the EU’s population since the mid-1970s. A revised European standard population (ESP) was agreed with the EU Member States and EFTA countries in the summer of 2013. This was based on population projections that were made in 2010 covering the period 2011-2030.

Context

Statistics concerning causes of death among persons aged 65 years and over (the elderly) are of increasing interest. A dramatic change in the nature and delivery of healthcare over the past century has resulted in much longer life spans and a greater prevalence of chronic illnesses. This in turn has led to increased demand on healthcare systems, particularly for long-term care. Public health programmes throughout the EU are often targeted at reducing mortality among people aged less than 65 years through preventive measures, for example, the promotion of healthier lifestyles through improved nutrition, lower tobacco and alcohol consumption, an increase in physical activity or a reduction of professional risk.

The percentage of the population aged 65 and over in the EU-28 is projected (according to Eurostat 2018 base year projections) to increase, on average, from 19.7 % of the total population in 2018 to 29.1 % of the total by 2058, thereafter stabilising for around 10 years before rising again to reach 31.3 % by 2100.
Other articles

Online publications
- Health in the European Union – facts and figures
- Disability statistics

Causes of death
- Causes of death statistics

Health status — selected diseases and related health problems
- Cardiovascular diseases statistics
- Cancer statistics
- Cancer statistics - specific cancers
- Respiratory diseases statistics
- Mental health and related issues statistics
- Accidents and injuries statistics

Methodology
- Causes of death statistics - methodology

General health statistics articles
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- Mortality and life expectancy statistics
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Main tables
- Health (t_hlth)

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Database
- Health (hlth)

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Dedicated section
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Methodology
- Causes of death statistics (ESMS metadata file — hlth_cdeath_esms)
External links

- European Commission — Directorate-General for Health and Food Safety — Non-communicable diseases
- European Commission, Directorate-General for Health and Food Safety — European Core Health Indicators (ECHI), ECHI 13 Disease-specific mortality
- Joint OECD / European Commission report Health at a Glance: Europe
- WHO Global Health Observatory (GHO) — Mortality and global health estimates