Causes of death statistics

**COVID-19**

COVID-19 is a respiratory infection caused by the novel coronavirus 2 (SARS-CoV-2) virus, first identified in Wuhan, China, in December 2019. It quickly spread across the world, and was declared a Public Health Emergency of International Concern, by the [WHO](https://www.who.int), on 30 January 2020, and characterised as a pandemic on 11 March 2020.

The first cases of COVID-19 in the EU were reported in January 2020, in Denmark, Germany, Spain and France. The first confirmed death due to COVID-19 within the EU was in France in late January 2020, and by the end of March 2020 there had been at least one COVID-19 death in almost all EU Member States.

In 2020, COVID-19 became one of the leading causes of death in the EU, with 438,733 deaths reported, equal to 8% of all deaths. The highest number of deaths from COVID-19 were reported in Italy (78,478 deaths), followed by Spain (74,757 deaths), France (69,328 deaths), Poland (41,469 deaths) and Germany (39,837 deaths) (Figure 1). Belgium, the Netherlands, Romania and Czechia also reported more than 10,000 deaths from COVID-19 in 2020. The lowest number of deaths were recorded in Latvia, Finland, Luxembourg, Estonia, Malta and Cyprus (less than 1,000 deaths). The remaining 12 EU Member States reported between 1,000 and 10,000 deaths from COVID-19.

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Belgium reported the highest standardised death rate from COVID-19 in 2020, with 181.5 deaths per 100 000 inhabitants (Figure 2 and Table 1). The next highest standardised death rates were reported in Slovenia (161.7 deaths per 100 000 inhabitants), Spain (138 deaths per 100 000 inhabitants), the Netherlands (124.7 deaths per 100 000 inhabitants) and Poland (121.1 deaths per 100 000 inhabitants). Bulgaria, Czechia, Croatia and Italy also recorded standardised death rates of over 100 deaths per 100 000 inhabitants. The lowest standardised death rate was reported in Finland, with 9.2 deaths per 100 000 inhabitants. Estonia, Denmark and Cyprus also reported death rates of less than 20 deaths per 100 000 inhabitants. All other EU Member States recorded standardised death rates between 34 and 99.5 deaths per 100 000 inhabitants.
The standardised death rate from COVID-19 was 40 times higher among people aged 65 years and older (‘the elderly’) than among people under 65 (Table 1). Belgium also reported the highest standardised death rate from COVID-19 among people aged 65 years and older, with 872 deaths per 100 000 elderly. Thereafter followed Slovenia, Spain, the Netherlands, Poland and Czechia, which reported over 500 deaths per 100 000 elderly. Also for this age group, Finland reported the lowest standardised death rate with 43.2 deaths per 100 000 elderly inhabitants. The only other EU Member States to report less than 100 deaths per 100 000 people over 65 were Estonia, Cyprus and Denmark.

For those under the age of 65, the highest standardised death rate from COVID-19 was reported by Bulgaria, with 39.6 deaths per 100 000 people under 65 (Table 1). Bulgaria was the only EU Member State to report a standardised death rate of more than 30 deaths per 100 000 people in this age group. Again, Finland reported the lowest standardised death rate with 0.9 deaths per 100 000 inhabitants under 65.
Table 1: Standardised death rates from COVID-19 by age group, 2020 (standardised death rate per 100 000 inhabitants) Source: Eurostat (hlth_cd_asdr2)

Comparing the number of COVID-19 deaths with additional deaths in 2020

Based on the causes of death statistics collected by Eurostat, there were 12 % more deaths (552 293) in the EU in 2020 than the average of the previous four years. In fact, the number of deaths from COVID-19 corresponds to 79.4 % of the estimated additional deaths in the EU in 2020, however this ratio varies greatly between Member States (Figure 3). In Latvia the number of COVID-19 deaths was 70 % higher than the number of estimated additional deaths in 2020. This indicates that, in addition to causing additional deaths, COVID-19 replaced a number of other causes of deaths, which decreased. Belgium, Luxembourg, Sweden, Denmark, the Netherlands, France and Spain also reported higher numbers of COVID-19 deaths, than additional deaths. In Cyprus the number of COVID-19 deaths was less than 30 % of the additional deaths. The ratio was also less than 40 % in Finland and Malta (37.4 % and 37.3 %, respectively).
The only country with fewer deaths reported in 2020 than estimated from the 2016-2019 data was Norway, which actually had 327 fewer deaths (i.e. 0.8 % fewer deaths). Norway reported 415 deaths from COVID-19 in 2020; this suggests that the deaths due to COVID-19 were outweighed by the number of deaths that did not occur from other causes during 2020.

**Map 1: Ratio of COVID-19 deaths and additional deaths, 2020 (%)**

As a result of the COVID-19 pandemic, Eurostat began collecting data on weekly deaths (from all causes) and producing data on excess mortality in April 2020 to support the policy and research efforts related to COVID-19. According to the weekly deaths statistics collected by Eurostat, there were two waves of excess mortality in 2020: the first between March and May 2020 (reaching a 25.2 % excess rate in April) and a second between August 2020 and the end of the year (reaching a 40.0 % excess rate in November, the highest rate for the whole year). For more information, please see the Statistics Explained articles on [Mortality Statistics](#) and [Weekly Death Statistics](#).
Major causes of death in the EU in 2020

In total, 5.18 million deaths of EU inhabitants were reported in the EU in 2020. Around 85% of all deaths in the EU occurred among people aged 65 years and over.

The leading causes of death in EU inhabitants were diseases of the circulatory system and cancer (malignant neoplasms) (Figure 4). The third most frequent cause of death in 2020 was COVID-19, followed by respiratory diseases\(^2\). COVID-19 and respiratory diseases are age-related, with the vast majority of deaths from these diseases recorded among the elderly.

Causes of death by frequency, EU, 2020 (%)

Diseases of the circulatory system include those related to high blood pressure, heart disease and diseases of the veins and arteries. The most common causes of death from diseases of the circulatory system are ischaemic heart disease (such as heart attack) and cerebrovascular diseases (such as stroke) (Figure 5). The most common causes of death from cancer are malignant neoplasms of the trachea, bronchus and lung (hereafter ‘lung cancer’) and malignant neoplasm of the colon, rectosigmoid junction, rectum, anus and anal canal (hereafter ‘colorectal cancer’), followed by breast cancer and prostate cancer. Breast cancer occurs mainly in women and prostate cancer exclusively in men (see further below). Ischaemic heart disease and lung cancer top the list of avoidable deaths in the EU, see also [Preventable and treatable mortality statistics](#).

\(\text{\footnotesize Data on respiratory diseases does not include COVID-19.}\)
Figure 5: Deaths from circulatory diseases and cancer, EU, 2020 (%) Source: Eurostat (hlth_cd_aro)

**Standardised death rate by sex and age**

The causes of death differ between men and women. The EU standardised death rates were higher for men than for women for all of the main causes of death in 2020 with the exception of breast cancer. Breast cancer accounted for 31.4 deaths per 100 000 female inhabitants across the EU in 2020. Differences between women and men in the causes of death are also age related (briefly described below, for more information see [Causes of death statistics by age group](#)).

**Men below 65 years**

The main cause of death of men below 65 years was lung cancer with 20.6 deaths per 100 000 male inhabitants below 65 years (Table 2). This was followed by accidents, with 20.2 deaths, heart attack and COVID-19, with 15.9 and 15.0 deaths respectively per 100 000 male inhabitants below 65 years.

**Women below 65 years**

In women below 65 years, the main cause of death was breast cancer with 12.8 deaths per 100 000 female inhabitants below 65 years (Table 2), followed by lung cancer with 10.8 deaths. COVID-19 was the third leading cause of death among women below 65 with 6.3 deaths per 100 000 females. This was followed by colorectal cancer and cerebrovascular diseases, each with around 5.2 deaths per 100 000 female inhabitants below 65 years.

**Men 65 years and above**

COVID-19 was the main cause of death in men aged 65 years and above with 570.5 deaths per 100 000 elderly
male inhabitants (Table 2), followed by cerebrovascular disease, lung cancer, heart attack, and chronic lower respiratory disease (such as asthma). Prostate cancer caused almost 177 deaths per 100 000 elderly male inhabitants.

Women 65 years and above

Cerebrovascular disease was the main cause of death in women aged 65 years and above with 319.5 deaths per 100 000 female elderly inhabitants (Table 2). COVID-19 was the second leading cause of death in this group with 311.2 deaths per 100 000 females. Dementia caused 168.5 deaths per 100 000 female inhabitants of this age group, followed by heart attack, breast cancer and chronic lower respiratory diseases.

### Table 2: Main causes of death by age and sex, EU, 2020

(standardised death rate per 100 000 inhabitants)

<table>
<thead>
<tr>
<th>Cause of death</th>
<th>Rate for male inhabitants</th>
<th>Cause of death</th>
<th>Rate for female inhabitants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below 65 years old</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lung cancer(*)</td>
<td>20.59</td>
<td>Breast cancer</td>
<td>12.78</td>
</tr>
<tr>
<td>Accidents</td>
<td>20.22</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heart attack</td>
<td>15.88</td>
<td></td>
<td></td>
</tr>
<tr>
<td>COVID-19(*)</td>
<td>15.02</td>
<td>Colorectal cancer(*)</td>
<td>5.23</td>
</tr>
<tr>
<td>Chronic liver disease</td>
<td>13.97</td>
<td>Cerebrovascular diseases</td>
<td>5.21</td>
</tr>
<tr>
<td>Intentional self-harm</td>
<td>13.55</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age 65 and above</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COVID-19(*)</td>
<td>570.53</td>
<td>Cerebrovascular diseases</td>
<td>319.47</td>
</tr>
<tr>
<td>Cerebrovascular diseases</td>
<td>378.87</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lung cancer(*)</td>
<td>286.85</td>
<td>COVID-19(*)</td>
<td>311.16</td>
</tr>
<tr>
<td>Heart attack</td>
<td>213.66</td>
<td>Dementia</td>
<td>165.51</td>
</tr>
<tr>
<td>Chronic lower respiratory diseases</td>
<td>190.29</td>
<td>Heart attack</td>
<td>110.97</td>
</tr>
<tr>
<td>Prostate cancer</td>
<td>176.97</td>
<td>Breast cancer</td>
<td>103.08</td>
</tr>
<tr>
<td>Chronic lower respiratory diseases</td>
<td>88.97</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(*) Malignant neoplasms of the trachea, bronchus and lung
(1) See section 'Classification of the causes of death' for details on how COVID-19 deaths were calculated.
(1) Malignant neoplasms of the colon, rectosigmoid junction, rectum, anus and anal canal

Source: Eurostat (online data code: hlth_cd_asdr2)

### Developments from 2011-2020

There were declines in the standardised death rates of the leading causes of death\(^3\): cancer (-10 %) and ischaemic heart disease (-22 %), between 2011 and 2020 in the EU (Figure 6). Of the different types of cancer, the death rate of lung cancer decreased by 12 %, and breast cancer and prostate cancer decreased by 7 %. The standardised death rate of transport accidents decreased by 34 % and intentional self-harm by 17 %. The rate of respiratory disease as a cause of death decreased by 6 % and may have been affected by the increase in COVID-19 deaths.

Among the causes of death on the [European shortlist](https://www.eurostat.ec.europa.eu) that declined the most from 2011 to 2020 were human immunodeficiency virus (HIV), tuberculosis and assault. These causes were already among the rarest with a standardised death rate below 0.7 per 100 000.

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\(^3\)Not including COVID-19 as 2020 was the first year countries could report COVID-19 as cause of death.
Causes of death, EU, 2011 and 2020
(standardised death rate per 100 000 inhabitants)

- Cancer
- Ischaemic heart diseases
- Respiratory diseases (*)
- Lung cancer(*)
- Breast cancer
- Prostate cancer
- Intentional self-harm
- Transport accidents

(*) Respiratory diseases does not include COVID-19
(*) Malignant neoplasms of the trachea, bronchus and lung
Source: Eurostat (online data code: hlth_cd_asdr2)

Figure 6: Causes of death, EU - standardised death rate 2011 and 2020 (per 100 000 inhabitants) Source: Eurostat (hlth_cd_asdr2)

Source data for tables and graphs
- Causes of death: 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.

Legal basis for the data collection

There are currently 33 countries submitting the CoD data to Eurostat:
- All 27 EU Member States
- EFTA countries (Iceland, Liechtenstein, Norway and Switzerland)
- Candidate countries and potential candidates (Serbia and Türkiye)

Data are collected at NUTS0 and NUTS2 level.
Classification of the causes of death

Statistics on the causes of death are based on the medical information provided in the death certificate. Causes of death are classified by the 86 causes in the European shortlist which is based on the International Classification of Diseases and Related Health Problems (ICD). When the outbreak of COVID-19 started, the WHO introduced emergency codes in the ICD version 10 (ICD-10) that countries could use to report deaths from COVID-19. In Eurostat's dissemination database, the codes are available as follows:

- U071; COVID-19, virus identified (deaths where COVID-19 has been confirmed by laboratory testing)
- U072; COVID-19, virus not identified (COVID-19, virus not identified)
- U_COV19_OTH; COVID-19 other (COVID-19 death not elsewhere defined)

The data for COVID-19 reported in this article was calculated by adding these three codes, however the data disseminated in Eurostat's dissemination database are separated by code. For more information about ICD-10 codes, click here.

Standardised death rate

The number of deaths from a particular cause of death can be expressed relative to the size of the population. A standardised death rate is adjusted to a standard age distribution. This facilitates comparisons of rates over time and between countries. The European standard population used for the standardisation of crude rates is based on the European Standard Population (ESP) in use since the summer of 2013.

Additional deaths

The number of deaths from all causes increased in 2020 above what could be observed under 'normal' conditions; here defined as the average of the previous four years. The higher the value, the higher the amount of additional deaths compared with the baseline. In the case of a negative value, this means that fewer deaths occurred in a particular time period compared with the baseline period.

Context

Statistics on causes of death are among the oldest medical statistics available. They provide information on developments over time and differences in causes of death between countries. These statistics play a key role in the general information system relating to the state of health in the EU. They may be used to determine which preventive and medical-curative measures or which investment in research might increase the life expectancy of the population.

There is a general lack of comprehensive European morbidity statistics. Therefore, data on causes of death are often used as a tool for evaluating health systems in the EU and policy makers may use them for evidence-based health policy. The EU promotes a comprehensive approach to tackling major and chronic diseases, through integrated action on risk factors across sectors and combined with efforts to strengthen health systems towards improved prevention and control.

COVID-19 pandemic The COVID-19 pandemic highlighted the need to prioritise public health, and strengthen healthcare systems across the EU and globally. In response to the pandemic, the European Commission took a series of actions to contain the spread of the coronavirus, support national health systems and counter the socio-economic impact of the pandemic, at both national and EU level.

This included:
• Supporting research and development in vaccines, and implementing a vaccine strategy.

• Launching the European Health Emergency preparedness and Response Authority (HERA), which aims to prevent, detect, and rapidly respond to health emergencies.

• Participating in COVAX, the world’s facility for fair and universal access to COVID-19 vaccines.

• Laying the foundation for establishing a European Health Union, based on two pillars:
  – A stronger health security framework, and
  – More robust EU agencies.

You can read more about the Commission’s response to the COVID-19 pandemic here.

Other articles

Online publications

• Health in the European Union — facts and figures
• Disability statistics

Causes of death

• Causes of death statistics by age group
• Preventable and treatable mortality statistics

Health status

• Healthy life years statistics
• Mortality and life expectancy statistics

Specific health conditions

• 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

• Health statistics introduced
• Health statistics at regional level — causes of death

Main tables

• Health (t_hlth)

Causes of death (t_hlth_cdeath)
Database

- Health (hlth)

Causes of death (hlth_cdeath)

Dedicated section

- Health

- Population and Demography overview

Methodology

- Causes of death (ESMS metadata file — hlth_cdeath_sims)


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), Health Status indicators, Disease-specific mortality

- Joint OECD / European Commission report Health at a Glance: Europe

- WHO Global Health Observatory (GHO) — Mortality and global health estimates