

# Description of data sources for deaths due to COVID-19

**This fact sheet describes the reporting framework for the number of COVID-19 deaths that statistics produced by the National Board of Health and Welfare and the Public Health Agency of Sweden are based on.**

## Deaths due to COVID-19 according to The National Board of Health and Welfare's cause-of-death register

The National Board of health and Welfare measures deaths via the cause-of-death register. The cause-of-death register is updated annually as stipulated. The register contains all deaths recorded in the Swedish population, and, since 2012, it has also included deaths that have occurred within Sweden's borders from amongst individuals who were not registered as living in Sweden. It is the underlying cause of death that has been presented annually since 1961 in the National Board of Health and Welfare's cause-of-death statistics.

For each death that occurs in Sweden, a *death certificate* and a *cause-of-death certificate* must be completed by a doctor. The National Board of Health and Welfare receives information from two different sources.

- *The death certificate* is submitted to the Swedish Tax Agency no later than the first weekday following the death, and, in some cases, it is sent to the Police. The Swedish Tax Agency then notifies the authorities and certain other interested parties, such as banks, about the death certificates it receives. The notifications received by The National Board of Health and Welfare contain information that a death has occurred, along with certain administrative details about the deceased, such as Swedish personal identity number, sex, age and place of national registration.
- *The cause-of-death certificate* should be sent to the National Board of Health and Welfare within three weeks of the time of death. In the certificate, the doctor describes the aspect of the illness or injury that the cause of death could most clearly be attributed to, as well as other illnesses or circumstances that may have contributed to the occurrence. If the cause-of-death certificate is incomplete, The National Board of Health and Welfare will request supplementary information in order for the material to be as high quality as possible.

Diagnoses in the *cause-of-death certificate* are given according to the WHO ICD10 classification system, in keeping with the rules that apply for categorising causes of death. The illness or injury that set in motion the process that culminated in the death is classified as the underlying cause of death. Factors contributing to the death may also be recorded.

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## Data on laboratory-confirmed deaths with COVID-19 (The Public Health Agency of Sweden)

Mortality statistics that are presented by the Public Health Agency of Sweden consist of individuals who have received a laboratory-confirmed COVID-19 diagnosis and have been reported as deceased in the SmiNet database. SmiNet is an electronic monitoring system for notifications received in accordance with the Communicable Diseases Act. Attending physicians and laboratories report information about confirmed cases of COVID-19 via the system. The regional Centre for Disease Control can also add information to SmiNet about the infected person (e.g. date of death).

Information in SmiNet about which individuals have died originates from notifications received and special links to the Swedish Tax Agency's information on deceased individuals. Notifications made to SmiNet from attending physicians sometimes include information that the individual has died, along with the date of death. Death data in SmiNet can be supplemented later by attending physicians and infection control practitioners. In addition to these notifications, the Public Health Agency of Sweden regularly cross-checks confirmed cases of COVID-19 against death data held by the Swedish Tax Agency with the help of Swedish personal identity numbers. Deaths that occur within 30 days of testing for COVID-19 are reported to regional Centres for Disease Control, which subsequently review the deaths and update information about the cases in SmiNet with the dates of death. Counting individuals who have died within 30 days following diagnosis is a recognised method used for seasonal influenza when the exact cause of death is unknown. The Public Health Agency of Sweden has evaluated this measurement used in the case of influenza and found it to be an acceptable measure of mortality.

During the April 6-17 period, approximately 30 percent of deaths had been reported within 24 hours, 50 percent within 48 hours and about 90 percent within a week – the delay due to the manual SmiNet entries.

During the COVID-19 pandemic, the Public Health Agency of Sweden has daily presented statistics on the number of deaths involving individuals diagnosed with laboratory-confirmed COVID-19 per day and cumulatively; nationally as well as distributed by region.

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## Excess mortality (the Public Health Agency of Sweden)

In order to supplement data on the number of deaths, the Public Health Agency of Sweden also analyses data from the Swedish Tax Agency on the number of deaths in Sweden each week (regardless of cause) using a statistical model. The model compares the so-called all-cause mortality with that normally expected for the time of year. Deaths over the expected value are termed excess mortality and may have various causes, such as extremely hot or cold weather, or high intensity of influenza or COVID-19 infection etc. Analyses are carried out both nationally and regionally, as well as for specific age groups. Excess mortality is presented in the Public Health Agency of Sweden's weekly COVID-19 reports, and is documented within the European EuroMOMO network.

Reporting delays mean that it is too soon to be able to estimate excess mortality for the period considered below. Analyses will take place in the coming weeks.

## Differences and similarities between the authorities' statistics

As of 21 April 2020, 1,491 cause-of-death certificates had been submitted to the National Board of Health and Welfare for mortalities where COVID-19 was the underlying cause of death. Of these, 82 percent (1,228 of the 1,491) had laboratory-confirmed COVID-19, according to SmiNet. Over the same period, cause-of-death certificates have been received for 1,326 confirmed cases of COVID-19 amongst deaths entered in SmiNet. For 4.5 percent of cases of confirmed COVID-19 in SmiNet, the cause-of-death certificate shows that there was an underlying cause of death other than COVID-19 (59 of the 1,326 received cause-of-death certificates). This preliminary data shows that, as a whole, statistics from SmiNet generally agree with those based on cause-of-death certificates that have thus far been received by the National Board of Health and Welfare. Data from these sources may change in the future due to reporting delays.

Differences that can be observed are due to the origin of the statistics. Not everyone who dies due to COVID-19 is included in the Public Health Agency of Sweden's statistics because only those with laboratory-confirmed COVID-19 are registered in SmiNet. Those who have tested positive for COVID-19 and subsequently died from other causes are not included in the National Board of Health and Welfare's statistics on the number of deaths due to COVID-19. The cause-of-death certificates, on the other hand, include individuals who were diagnosed with COVID-19 without it necessarily being verified by laboratory testing.

In the long term, the statistics from the National Board of Health and Welfare provide a verified medical record of causes of death, and these are Sweden's official statistics on causes of death. The Public Health Agency of Sweden's tracking of the SmiNet death data and excess mortality models provides an overview of the current situation, which is needed in order to, for example, monitor the effect of disease-control measures taken in society and forecast developments of

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the pandemic. In the long term, the cause-of-death register provides a complete record of individuals who have died with COVID-19 as the stated cause of death.

### **Additional information**

The National Board of Health and Welfare's website

<https://www.socialstyrelsen.se/coronavirus-covid-19/>

<https://www.socialstyrelsen.se/statistik-och-data/register/alla-register/dod-sorsaksregistret/>

The Public Health Agency of Sweden's website

<https://www.folkhalsomyndigheten.se/smittskydd-beredskap/utbrott/aktu-ellautbrott/covid-19/>

<https://www.folkhalsomyndigheten.se/folkhalsorapportering-statistik/statistika-o/sjukdomsstatistik/covid-19-veckorrapporter/>

EUROMOMO

<https://www.euromomo.eu/>

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