

Causes of death 2009

Deaths from dementia more than doubled in two decades

A total of 49,904 persons, 25,152 men and 24,752 women, died in 2009. As the population ages dementia is becoming an increasingly widespread cause of death alongside ischaemic heart diseases. In 2009, almost one in two persons who died over the age of 80, died either of ischaemic heart diseases or memory disorders. The number of deaths caused by dementia has more than doubled in two decades.

Deaths by specific causes of death in 1989–2009

	Males				Females			
	1989	1999	2008	2009	1989	1999	2008	2009
TOTAL DEATHS	24 530	24 441	24 451	25 152	24 602	24 927	24 639	24 752
Neoplasms	5 106	5 428	5 782	5 953	4 891	5 017	5 432	5 357
Dementia, Alzheimer's disease	618	925	1 521	1 661	1 489	2 470	3 443	3 828
Ischaemic heart diseases	7 537	6 625	5 913	6 024	6 531	6 356	5 848	5 510
Cerebrovascular diseases	1 955	1 977	1 707	1 756	3 483	3 014	2 539	2 624
Alcohol related diseases and accid. poisoning by alcohol	830	1 159	1 674	1 651	172	269	462	414
Suicides	1 119	954	801	761	295	253	232	273

Ischaemic heart diseases caused 22 per cent of all deaths. Two decades ago, the number of deaths from ischaemic heart diseases was about one-fifth higher.

Neoplasms caused almost equally many deaths as ischaemic heart diseases in 2009. Over the past few decades, the number of deaths from Neoplasms has remained quite stable. Lung cancer was the commonest type of cancer among men which led to death and breast cancer among women. Men's deaths from lung cancer have decreased in the past twenty years. Substantially fewer women than men die of lung cancer, but the number has nearly doubled in the past two decades. The number of deaths from breast cancer has risen slightly in twenty years.

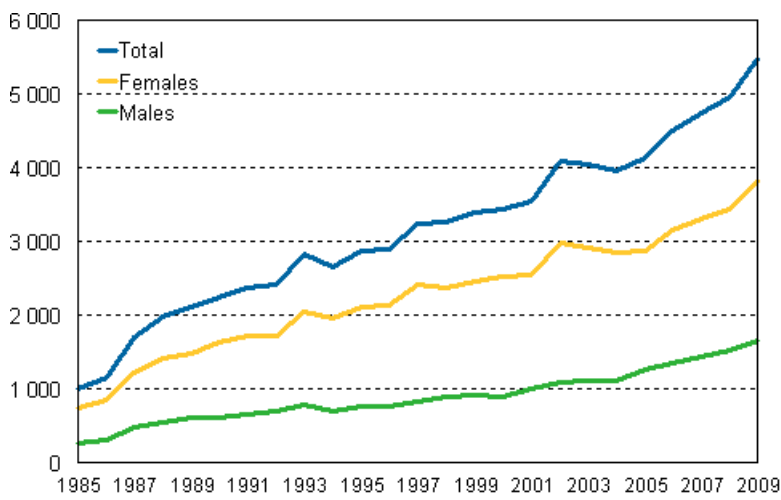
In 2009 there were 5,489 deaths from dementia. About 85 per cent of these deaths met persons aged 80 or over. Those who die from dementia have often multiple sicknesses which complicates classification of the underlying cause of death of aged persons.

The number of alcohol-related deaths has almost doubled in twenty years. The biggest growth was seen half-way into the first decade of the 2000s when the alcohol tax was lowered. In the past few years, the number of alcohol-related deaths has remained almost unchanged and even fallen somewhat.

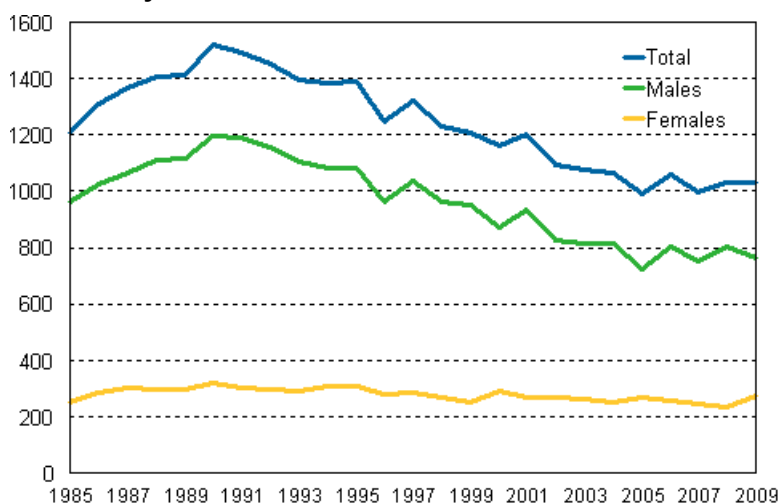
There were 1,034 suicides in Finland in 2009. Three out of four of the persons who committed suicide were men. The number of suicides has remained quite unchanged in the 2000s but fallen clearly from the early 1990s. Persons aged between 45 and 54 committed the largest number of suicides.

Altogether 10,652 men and 3,264 women died at working age (between the ages of 15 and 64). Eighteen per cent of the men who died at working age died of an alcohol-related disease or alcohol poisoning. The cause of death of one in ten of the women who died before retirement age was alcohol-related. Other most widespread causes of death of working-age persons were ischaemic heart diseases among men and breast cancer among women.

Deaths from dementia (incl Alzheimer's disease) 1985–2009



Suicides by sex 1985–2009



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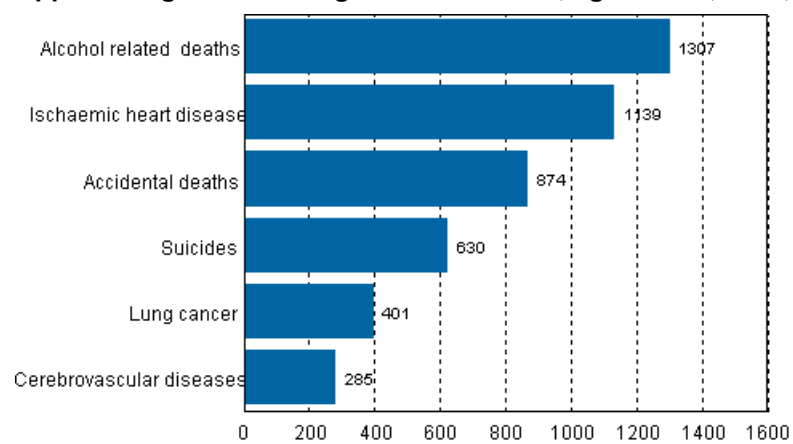
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Appendix table 1. Standard population used in age standardisation

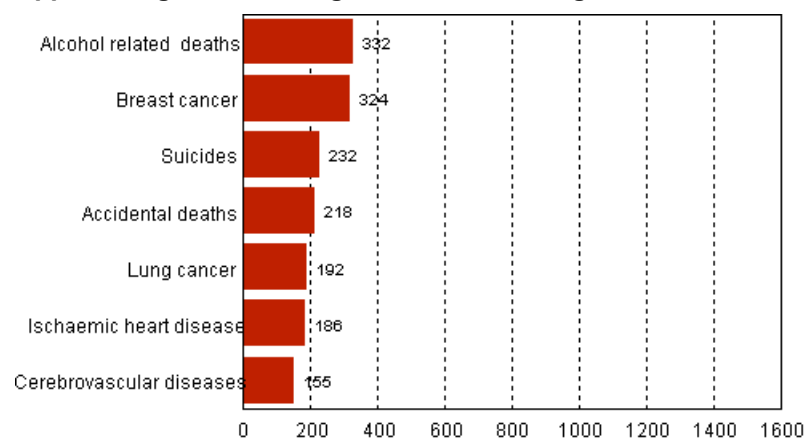
Age group	Total
0	1 305
1-4	5 021
5-9	6 472
10-14	6 772
15-19	7 208
20-24	7 792
25-29	7 871
30-34	7 528
35-39	7 212
40-44	6 860
45-49	5 865
50-54	5 876
55-59	5 553
60-64	5 245
65-69	4 680
70-74	2 932
75-79	2 897
80-84	1 606
85-	1 305
Total	100 000

Appendix figures

Appendix figure1. Leading causes of death, ages 15-64, 2009, men



Appendix figure 2. Leading causes of death, ages 15-64, 2009, women



Quality description of cause of death statistics

1. Relevance of cause of death statistics

In the cause of death statistics statistical information is produced annually on the causes of death of persons permanently resident in Finland. The statistics are compiled on the basis of death certificates on deaths, and the data are supplemented with and verified against data from the Population Information System of the Population Register Centre. Death certificates are archived at Statistics Finland. The cause of death statistics and the archive of death certificates have been operating since 1936.

Cause of death data are used i.a. in health surveys, in allocating health promotion measures and monitoring health as well as in various medical examinations. By combining the data with other data files it is possible to study, for instance, differences in mortality between different population groups. The basis for an investigation of the cause of death is the information on the death certificate. The basis in law for an investigation of the cause of death is the Act on the Investigation of the Cause of Death (1973/459). Furthermore, Regulation (EC) No 1338/2008 of the European Parliament and of the Council of 16 December 2008 on Community statistics on public health and health and safety at work regulates the data produced for Community cause of death statistics. Draft Implementing Regulation regarding this Regulation is in hand.

Definitions

Age-standardized mortality rate indicates the number of deaths per 100,000 persons of the mean population, when the age structure is kept calculatorily unchanged during the reference period. The standardisation is necessary so that changes in mortality not due to the ageing of the population structure or differences in the age structure of regions can be highlighted. The standardation used in cause of death statistics is made by using direct age standardation (Standardized death rate, SDR). The formulae used in the standardation is as follows.

$$SDR = \sum (m_i P_i / P) \times 100\,000$$

m_i = mortality rate at age i

P_i = standard population at age i

P = standard population

Mortality rate indicates the number of deaths in a given age group per mean population in the corresponding age group.

European standard population used in calculation is in Appendix table.

The causes of death included in the statistics have since 1987 been the underlying cause of death, direct cause, intervening causes and contributing causes. Annual cause of death statistics are compiled according to the statistical underlying cause of death.

- The underlying cause of death is the disease which has initiated the series of illnesses leading directly to death, or the circumstances connected with an accident or an act of violence which caused the injury or poisoning leading to death. The underlying cause of death used in statistics (statistical underlying cause of death) is determined according to the selection and application rules of the International Classification of Diseases (ICD-10) compiled by the World Health Organisation (WHO)
- The direct cause of death refers to the disease, failure of injury whose symptoms cause the person to die.
- The intervening cause of death indicates the condition leading from the underlying cause to the direct caus
- The contributing cause of death is recorded in the death certificate. The doctor will report in part II of the death certificate as contributing causes of death the reasons which have adversely affected the development of the condition leading to death and hence contributed to it.

- If the death entails an accident or violence, the death is described with an external cause. Data on the cause is supplemented with data on mortal injuries, poisonings and certain other consequences of external causes.

In the case of stillbirths and infants dying before the age of 28 days the causes of death are the main diseases or conditions in the fetus or infant, other conditions in the fetus or infant and maternal diseases affecting the fetus or infant. Above causes of death can be retrieved from the records in the cause-of-death data base.

Early neonatal mortality refers to the number of deaths during the first week of life relative to the live births during the statistical year.

General death rate indicates the number of deaths per 1,000 or 10 000 persons of the mean population. Infant mortality is calculated by dividing the number of deaths of infants under one year of age by the number of live births during the statistical year. Multiplying the result by 1,000 gives the figure in per mille.

Late neonatal mortality refers to the number of deaths which occur at the age of 7 to 27 days relative to the live births during the statistical year. Maternal mortality covers all deaths which occur during the pregnancy or during 42 days after the end of the pregnancy, regardless of the duration or location of the pregnancy. Included are all deaths of pregnant women due to any pregnancy related cause or a cause exacerbated by pregnancy, but not accidental or violent deaths. Maternal mortality is obtained by dividing the number of maternal deaths by 100,000 live-born children. Neonatal mortality is calculated by dividing the number of deaths during the first week of life by the number of live births during the statistical year and multiplying the result by 1,000.

Perinatal mortality is calculated by dividing the number of stillbirths and deaths during the first week of life by the number of all births during the statistical year. The age during the first week is calculated in hours.

Stillbirths include a fetus or a newborn who shows no signs of life at the time of birth after a pregnancy lasting at least 22 weeks or, when the duration of the pregnancy is unknown, if the newborn weighs at least 500 grams. Miscarriages that occurred at before 22 week of the pregnancy are not regarded as stillbirths.

2. Methodological description of survey

The cause of death statistics data are total data including all deaths in Finland or abroad of persons permanently resident in Finland at the time of their death. Amount of deaths is yearly about 49 000.

Death certificates are issued by physicians. If determining the cause of death requires an autopsy, the death certificate is issued by a forensic pathologist after the information acquired from the autopsy is complete. The physician issuing the death certificate delivers the certificate to the National Institute for Health and Welfare (THL) to the regional unit where the deceased was a resident. A forensic pathologist there checks the correctness of the certificate and the certificates are sent on to Statistics Finland.

At Statistics Finland the death certificate data are compared with data on the deceased obtained from the Population Information System and lists of missing death certificates are sent to THL for monitoring purposes. The data files on causes of death are supplemented with other demographic data from the Population Information System.

From the beginning of 2010 the Provincial State Offices were discontinued and the forensic tasks of the Provincial State Offices were transferred to THL (the National Institute for Health and Welfare). These include the responsibility for checking and monitoring death certificates.

Statistics on stillbirths are made separately; cases of stillbirths are not included in deaths during the year. The coverage of statistics on stillbirths is supplemented with data from the birth register of THL.

3. Correctness and accuracy of data

The data of the cause of death statistics comprise information on causes of death and other background information on the deceased and on the mother of those dead at the age of under 28 days. The information is given on the home page of the cause of death statistics under Tietoluettelot (In Finnish only).

The physician records the cause of death on the death certificate as a code and as text specifying the diagnosis. At Statistics Finland the causes of death are coded mainly on the basis of the diagnosis text. In case the information in the death certificate is deficient, inconsistent or difficult to classify, the information about the event recorded on the death certificate (as free text) or a medical expert will be consulted or more information is requested from the issuer of the death certificate. In cases of alcohol and medicinal poisonings, the additional information used consists of the research results from the register of forensic chemistry. The underlying cause of death is determined from the event information (free text) in the death certificate in about two to three per cent of the cases yearly. Additional information is requested from the issuer of the death certificate in about 200 to 400 cases per year. Around two to three per cent of the cases are handled by a medical expert every year. Additional information is obtained for around 200 to 300 cases per year from the register of forensic chemistry.

In practice, the coverage of the cause of death statistics is around 100 per cent, because the data on death are verified from the Population Information System as well. The number of deaths on which no information on the cause of death is obtained is a good 100 per year. Some of them are deaths abroad, on which only a notification on death is obtained, and some are deaths in Finland, on which a death certificate was not acquired by the compilation time of the statistics.

Causes of death are currently coded according to the ICD-10 classification (International Statistical Classification of Diseases and Related Health Problems, Volume 1-3, WHO Geneva 1992, new edition 2004). The causes of death are coded mainly in the most accurate level of the classification. The death certificate form is confirmed by the Ministry of Social Affairs and Health.

The classification of causes of death has changed several times; the classifications used in different years and the available comparable shortened cause of death classifications are described on the home page of the cause of death statistics under Classifications.

4. Timeliness and promptness of published data

Cause of death data are produced annually and they are completed in the end of the following year. The data are final and describe the deaths during the previous calendar year of persons permanently resident in Finland.

5. Accessibility and transparency/clarity of data

Data are produced yearly under the topic Health on the home pages the cause of death statistics and are released on Statistics Finland's StatFin database. Data are provided on the whole country, by region and by hospital district. The cause of death statistics are produced according to the underlying cause of death. Cause of death data are available since 1936 in publications and from 1969 as time series in the database. The variables in the time series file are described on the home pages of the cause of death statistics under Tietoluettelot (in Finnish only). Tailored statistics and research data can be made from the file for customer needs. A licence to use Statistics Finland's data files is required for research data and statistics produced by municipality. An application for a licence to use the data can be found on Statistics Finland's home page. The cause of death data can also be combined with other data files, such as longitudinal data of population censuses and employment statistics.

The cause of death data is published also in interational databases:

— in Health statistics in nordic countries, <http://nomesco-da.nom-nos.dk/>

— in Eurostat Public Health databas

http://epp.eurostat.ec.europa.eu/portal/page/portal/health/public_health/data_public_health/database

— in WHO databases, f. ex. European Health for all database,
<http://www.euro.who.int/en/what-we-do/data-and-evidence/databases/>

Statistics Finland maintains the Finnish Archive of death certificates. The archive contains the death certificates of Finnish residents since 1936. Copies of death certificates and unit level data on causes of death are released from the archives for the purposes specified in the Act on the Inquest into the Cause of Death (459/1973). These purposes cover the releasing of data to 1) the deceased person's next of kin, 2) a pension institution or to the authorities, 3) for scientific research or statistical surveys.

Instructions for requesting death certificates and on the procedures of requesting a license to use statistical data are available on the home page of Statistics Finland's Archive of death certificates.

6. Comparability of statistics

Statistics on cause of death have been compiled since 1936; the years 1936 to 1968 exist only in printed publications. The classification of causes of death has changed several times. The classifications of causes of death used in the classification of the basic data and the existing comparable shortened classifications are described on the home page of the cause of death statistics under Classifications.

The longest comparable time series classification (54 categories) is from 1969 onwards. Statistics following this classification are available in Statistics Finland's StatFin database under the topic Health.

Other Statistics Finland's statistics describing the mortality rate and causes of death are vital statistics, statistics on road traffic accidents and occupational accident statistics.

In vital statistics the numbers of deaths are presented i.a. by gender, age and area. The number of deaths differs by some ten cases yearly from their number in the cause of death statistics. The difference is due i.a. to the fact that the vital statistics data do not include deaths registered after the compilation time of the statistics concerned (after January of the following year). On the other hand, the vital statistics can also contain deaths from the five previous years on which information about the death is obtained during the compilation time of the vital statistics (in January of the following year).

Statistics on road traffic accidents concern the number of deaths in road traffic. The data are obtained from the information system of the police. The coverage of these statistics is checked against the data of the cause of death statistics. The numbers of the statistics on road traffic accidents deviate from those in the cause of death statistics by some tens of cases each year. The deviation is caused by the following differences in statistical criteria:

- The statistics on road traffic accidents contain all deaths in traffic in the area of Finland, whereas the cause of death statistics include all deaths of the permanent population of Finland occurring either in Finland or abroad.
- The cause of death statistics are compiled on the basis of the day of the death, but the time period of the statistics on road traffic accidents is the day of the accident and at most the 30 following days.
- In the cause of death statistics suicides committed in traffic are included in suicides, in the statistics on road traffic accidents they are regarded as road traffic accidents.

Occupational accident statistics are compiled on the basis of information on insurance activities and the statistics include all those accidents at work on which insurance institutions have paid compensation. By contrast, in the cause of death statistics the information on occupational accidents is derived from death certificates as defined by the physician. The number of deaths from occupational accidents differs very little from the figures in the cause of death statistics.

7. Coherence and consistency/uniformity

The cause of death statistics are the only comprehensive statistics on causes of death in Finland. Statistics Finland's vital statistics are exhaustive statistics on the numbers of deaths.

When using the cause of death statistics it should be noted that mortality and the frequency of causes of death are strongly dependent on age. For that reason age standardisation is used in the statistics when

comparing mortality differences between different time periods and areas. In the cause of death statistics the age standardised mortality figure is calculated most often per 100,000 persons.

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Inquiries

Helena Korpi 09-1734 3605

Irmeli Penttilä 09-1734 3253

Director in charge:

Jari Tarkoma

kuolemansyyt@stat.fi

www.stat.fi

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