

FSO News

14 Health

Neuchâtel, march 2021

Cause of death statistics

Death and its main causes in Switzerland, 2018

In 2018, 67 088 people died in Switzerland. Despite the ageing of the population, generally leading to an increase in deaths, the numbers have thus remained essentially unchanged, with only 134 or 0.2% more deaths in 2018 than in the previous year. The comparison of different causes of death demonstrates the principles of the cause of death statistics, rendering some causes more visible than others. While in women the main cause of death was still cardiovascular disease, the most frequent cause of death in men was cancer.

Today the majority of people in Switzerland are over 80 years of age when they die. The probability of dying at a young age is very small. The infant mortality rate is 33 deaths per 10 000 live births. Fewer than 1 in 12 000 children aged between 3 and 14 years died in 2018. With increasing age, the death rate grows exponentially. Graph G1 depicts this increase on a logarithmic scale. From

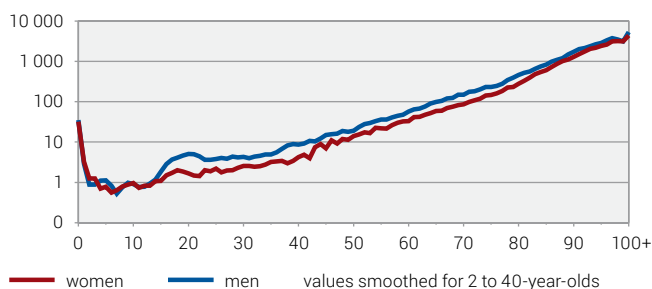
the age of 15 years on, males are more likely to die than females. Between 19 and 27 years of age, men die almost 2.5 times more frequently than women do.

Graph G2 shows the distribution of deaths by age and sex. Less than 1% of the deceased were up to 24 years of age, 1.7% 25 to 44 years, 10.9% 45 to 64 years, 41.4% 65 to 84 years and 45% were older than 85 years.

Mortality rate by age, 2018

Age-specific death rates, per 10 000

G1



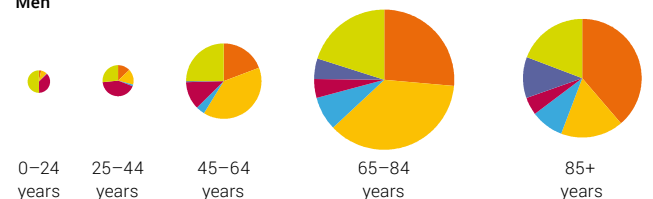
Source: FSO – BEVNAT

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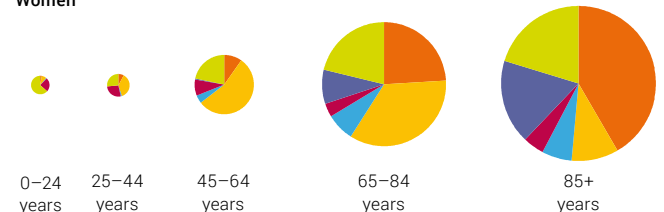
Leading causes of death by age group in 2018

G2

Men



Women



cardiovascular diseases accidents and violent deaths
malignant tumours dementia
respiratory diseases other

areas are proportional to the absolute number of deaths

Source: FSO – Causes of Death Statistics (CoD)

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Because diseases are less common and can be more effectively treated in young people, more old than young people are dying, doing so from diseases that are typical for this age group. Overall, deaths caused by cardiovascular disease are most common. This statement, however, only applies to deaths in total and to women. It does, however, no longer apply to men; in 2018, more men died from cancer than from cardiovascular disease. Overall, for people older than 80 years, cardiovascular disease is still the most common cause of death, while in men aged 40 to 80 and in women aged 30 to 80, cancer is the most common cause of death, followed by cardiovascular disease. External causes, especially accidents and suicide, are the main causes of death in 16 to 40 year old men and in 17 to 28 year old women. In newborns, congenital illnesses and birth-related problems cause 91% of deaths in the first week of life.

Multi-morbidity

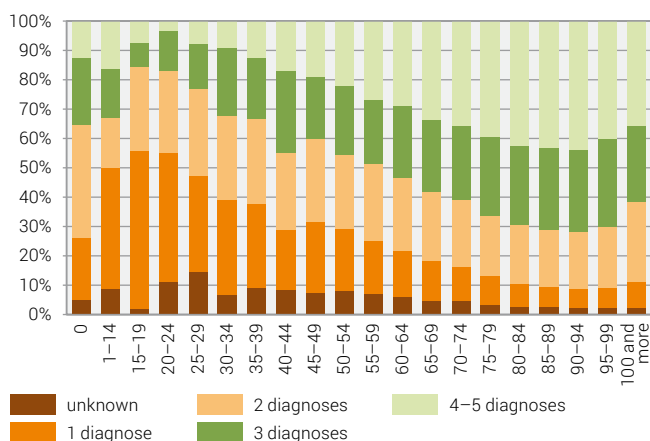
Up to four diagnoses are registered in the cause of death statistics, in exceptional cases up to five. 10% of deaths have one diagnosis, 21% two, 27% three and 37% have four. In 3.6% of deaths, the diagnosis is unknown. The number of diagnoses increases with age (Graph G3), the largest number of diagnoses being registered for 80 to 94 year-olds.

Even if two or more diseases have contributed to a death, only the main diagnosis appears in the usual statistical reports. In 2018, 75 234 secondary diagnoses from a disease group other than the main diagnosis were reported. Several diagnoses from the same disease group, e.g. heart attack and high blood pressure, are only considered once.

The most frequent cause of death was cardiovascular disease, registered with 20 596 deaths in 2018, where cardiovascular disease was the main diagnosis. In 18 698 other cases, who died

Multiple causes of death by age, 2018

G3



Source: FSO – Causes of Death Statistics (CoD)

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from some other main cause, cardiovascular diagnoses were provided as well. Thus, of 39 294 cardiovascular diagnoses, 52.3% were the underlying cause of death and 47.7% were a secondary cause.

Cancer was 17 360 times the main cause of death, corresponding to 90.2% of deaths where cancer was diagnosed. There were 6454 deaths with a main diagnoses of dementia, and an additional 4728 deaths with dementia being a secondary diagnosis. A similar distribution of main and secondary diagnoses is seen in deaths from external causes: 3920 versus 2377.

In contrast, specific infectious diseases were the main cause of only 806 deaths, but were coded as secondary cause in 4243 cases. Additionally, infectious diseases are coded in organ-related chapters of the classification (e.g., pneumonia is coded as J09 to J18 in the chapter of respiratory diseases),

Main and secondary diagnoses, 2018

T1

	Number of main diagnoses	Thereof infectious diseases	Number of secondary diagnoses	% as main diagnosis	% as secondary diagnosis
Cardiovascular diseases	20 596	78	18 698	52.4	47.6
Cancer	17 360	0	1 884	90.2	9.8
Dementia	6 454	0	4 728	57.7	42.3
External causes	3 920	0	2 377	62.3	37.7
Infectious diseases	806	806	4 243	16.0	84.0
Respiratory organs	4 623	1 720	7 674	37.6	62.4
All other diagnoses	12 875	543	30 680	29.6	70.4
Sum of diagnoses	67 088	3 147	75 234	47.1	52.9
Infections in all chapters		3 147	9 254	25.4	74.6

Source: FSO – Cause of Death Statistics (CoD)

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2341 times as main and 6460 times as secondary code. In the 2018 mono-causal report on causes of death, infectious diseases are 806 times the main cause of death, representing only 4.7% of all cases, but are actually mentioned on 12 401 or 18% of all death certificates.

Similarly, diseases of the respiratory organs are main cause only in 38% but secondary cause in 62% of cases. The reason for this is that persons who are weakened by a serious illness often fall ill with pneumonia from which they die. The flu (influenza) also often affects people who are already weakened by another major illness and does therefore often not appear as the main cause of death.

The role of infectious diseases

In cause of death statistics, the main cause of death is the disease that occurs at the beginning of the causal chain of events. Infectious diseases are often not at the beginning of the causal chain, but occur as complications later on in the process: A weakened body can no longer defend itself against bacterial or viral pathogens, and terminal pneumonia or sepsis develops.

Infectious diseases are under-represented in standard causes of death reports also for another reason: They are not only coded in the ICD-10 main chapter of infectious diseases (codes A00-B99) but also in other main chapters of the classification (e.g., pneumonia is coded as J09 to J18 in the chapter of respiratory diseases).

Seasonal distribution of deaths in 2018

The number of cases of death is subject to considerable seasonal fluctuation. If the 67 088 deaths of 2018 had been evenly distributed over the months of the year, some 5590 deaths would have occurred in each month. In reality, more people die in the winter half-year, with a maximum of about 6000 deaths in January. In the summer half-year (June to September) markedly fewer people die, namely about 5000 per month. This normal seasonal fluctuation concerns almost exclusively individuals over 65 years of age.

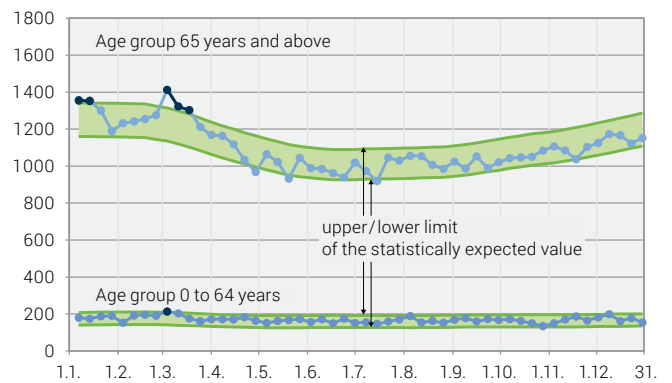
The model used continuously to examine whether there is *excess mortality* relies on data from the past ten years and takes into consideration the ageing of the population, which is expected to lead to 500 more deaths per year. Only persons who have died in Switzerland and were residents are included in the data, i. e. the approximately 600 people with residency in Switzerland who die abroad each year are not considered.

In 2018, 66 300 of these residents have died, corresponding approximately to the number expected based on the 10-year trend, despite a wave of influenza in the spring of the 2018. From May until the end of the year, a lower number of deaths occurred, offsetting the spring excess mortality (Graph G4).

Weekly number of deaths in 2018

G4

Weekly number of deaths



Data status: 19.02.2019

Source: FSO – Cause of Death Statistics (CoD)

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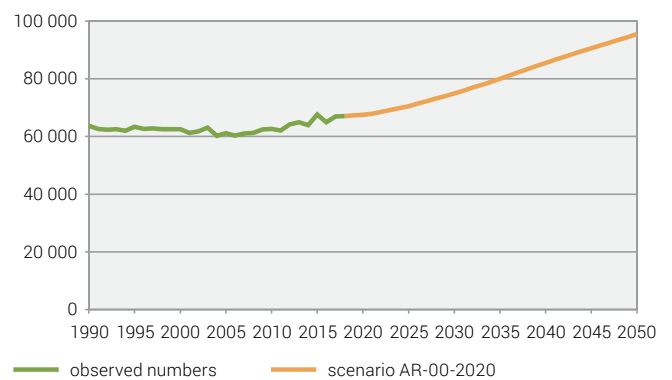
Number of deaths: Trends and forecast

Since the 1980s, approximately 60 000 persons have died annually in Switzerland. The last time the number of deaths was below 60 000 was in 1987. Over the subsequent 20 years, the annual number of deaths was around 62 000 (Graph G5). Due to the high proportion of women among elderly people, more women than men have died each year since 1995.

The FSO's population development scenarios for 2020–2050¹ indicate that the number of deaths will rise over the next years and decades (Graph G5). This is mainly due to the demographic development, namely the increase in the proportion of older people in Switzerland.

Development of the number of deaths, 1990–2050

G5



Source: FSO – BEVNAT

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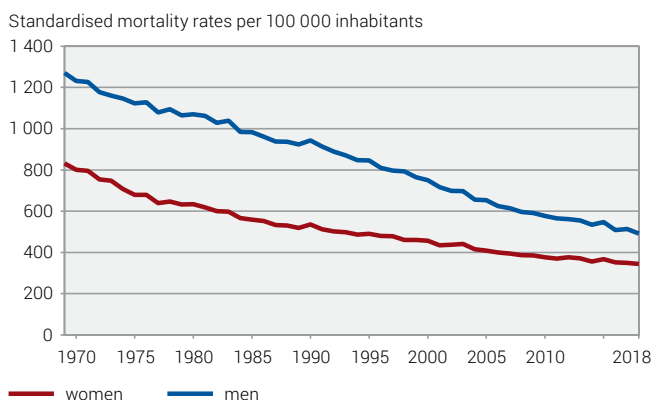
¹ <https://www.bfs.admin.ch/bfs/de/home/statistiken/bevoelkerung/zukuenftige-entwicklung.assetdetail.12847542.html>

Trends in the mortality rate

The standardised mortality rate merges the age-specific mortality rates into one figure while eliminating the effects of the changing age structure of the population over time. The time series shows a considerable decrease over the last few decades (Graph G6). The mortality rate among women decreased faster than the mortality rate among men until 1977. Since then, the annual decrease has somewhat decelerated and rates among men and women have further converged. From 2017 to 2018, the decline in standardised mortality rates was 4.1% in men and 1.3% in women.

Development of mortality in Switzerland, 1969–2018

G6



Source: FSO – Causes of Death Statistics (CoD)

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Trends in potential years of life lost

Premature mortality is measured by the number of *years of potential life lost* (YPLL). In 2018, men lost 101 345 potential years and women 59 943 potential years, corresponding to a change in comparison with 2017 of 2.2% and +6.1% in men and women, respectively.

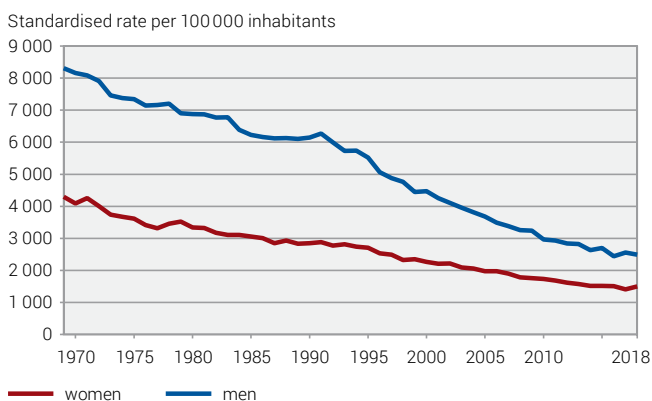
The standardised rate of the YPLL per 100 000 inhabitants has decreased to less than a third in women and to slightly over a quarter in men, compared to 1969 (Graph G7). In the second half of the 1980s, for men this development temporarily came to a halt following the Aids epidemic. Since then, however, it has progressed more rapidly in men than in women. From 2017 to 2018, the YPLL rates have further decreased in men but not in women.

Definition

The years of potential life lost (YPLL) is an indicator used to quantify premature mortality. In order to calculate the YPLL, the total number of deaths in each age group is weighted according to the number of years of life left until the upper reference age of 70 years. If death occurs at the age of 5 years, for example, the number of YPLL is 65. The upper age reference is commonly set at 70 for reasons of comparability (used e.g. by the OECD).

Potential years of life lost, 1969–2018

G7



Source: FSO – Causes of Death Statistics (CoD)

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Cause of death indicators

Causes of death can be reported by various indicators to elucidate different aspects. Table 2 shows eight indicators. The simplest indicators are the absolute number of deaths due to a particular cause and the percentage of all deaths due to that cause. These figures can be directly compared with one another and tell which causes of death are common and which ones are rare. The crude rate puts the number of deaths in relation to the resident population but does not take the age distribution of the population into account. Standardised rates account for this and can therefore be used to compare mortality between years and among different regions. The years of potential life lost (YPLL) indicates premature mortality, pointing out where prevention might be most effective.

The average age at death clearly demonstrates that different health problems occur at different phases of life. Among men, the widest gap occurs between external causes (especially accidents and suicides) and dementia. On average, men die from dementia at 86 years of age, whereas accidental deaths or suicides occur at 22 years or even earlier in life. As a consequence, only 0.3% of the lost potential life years are lost to dementia, compared to 26.6% lost to external causes.

Among women, the widest gap is between dementia and cancer. Their average age at death from dementia is 88 years and that from cancer is 74 years. Women lose 0.4% of potential years of life to dementia but 45.1% to cancer. The age at which men and women die from accidents differs greatly, as frequent falls at old age among women are not infrequently fatal.

Indicators for the main causes of death, 2018

T2

Cause of death (main diagnosis)	Number	% of all deaths	Crude rate ¹	Standardised rate ²	PYLL abs ³	% of PYLL	PYLL stand. rate ⁴	Average age at death (years)
Men								
Total	32 398	100.0	764.6	492.1	101 345	100.0	2 280.0	76.5
Cardiovascular diseases	9 418	29.1	222.3	134.6	15 600	15.4	331.2	80.7
Cancer	9 545	29.5	225.3	149.1	29 557	29.2	630.5	74.0
Respiratory diseases	2 395	7.4	56.5	33.8	2 885	2.8	61.0	80.8
External causes	2 233	6.9	52.7	40.0	26 924	26.6	661.1	64.5
Dementia	2 004	6.2	47.3	26.3	305	0.3	6.1	85.8
all other diagnoses	6 803	21.0	160.6	108.2	26 074	25.7	590.5	73.7
Women								
Total	34 690	100.0	805.4	344.4	59 943	100.0	1 374.0	82.1
Cardiovascular diseases	11 178	32.2	259.5	91.4	5 159	8.6	112.8	86.9
Cancer	7 815	22.5	181.4	101.1	27 031	45.1	587.9	74.3
Respiratory diseases	2 228	6.4	51.7	21.1	2 072	3.5	45.9	83.3
External causes	1 687	4.9	39.2	20.4	10 964	18.3	282.1	75.7
Dementia	4 450	12.8	103.3	33.5	233	0.4	4.5	88.4
all other diagnoses	7 332	21.1	170.2	76.9	14 484	24.2	341.2	80.5

¹ Crude rate: Number of deaths per 100,000 inhabitants.

² Standardised rate: Direct age-standardisation with European standard population 1980.

³ YPLL: Potential years of life lost in persons dying before age 70.

⁴ YPLL standardised rate: YPLL per 100,000 inhabitants, age-standardised.

Missing data

For 3.6% of deaths in 2018 the cause of death is unknown. This is either because no diagnosis could be made or because the diagnosis was not communicated to the FSO. Information is incomplete for 2.7% of deaths occurring in Switzerland (99% of all deaths) and for 91.9% of deaths occurring abroad (1% of all deaths). The percentage of unknown causes of death decreases from around the age of 45 years onwards.

Further information on the cause of death statistics on the internet:

www.statistik.ch → Look for statistics → 14 – Health → State of health → Mortality, causes of death

Data source and methods

The Swiss Cause of Death Statistics were introduced in 1876. They are based on the medical cause of death certificates. Diagnoses are recorded in plain medical language, the subsequent coding being based on the ICD-10 and conducted by the Federal Statistical Office according to the rules defined by the WHO. All collected data are treated anonymously and in strictly confidentially and are subject to the provisions of the Federal Data Protection Act of 19 June 1992 (SR 235.1). Publications on the cause of death statistics relate to persons who were resident in Switzerland, i. e. who were part of the permanent resident population, independent of their nationality and place of death.

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