Office for National Statistics

Article

Impact of registration delays on mortality statistics in England and Wales: 2019

An analysis of the time taken to register deaths, by cause of death, area of usual residence, age, sex and certification type.

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1 . Main points

- The median time between a death occurring and being registered (referred to as the “registration delay”) in England and Wales increased from two days in 2001 to four days in 2019, while the number of deaths registered per year remained relatively similar (532,498 in 2001 and 530,841 in 2019).
- In registration year 2019 (meaning deaths registered in the calendar year 2019, regardless of when they occurred), 75.0% of deaths were registered within seven calendar days, compared with 92.7% in registration year 2001.
- In registration year 2019, Wales had a higher percentage (83.2%) of deaths registered within seven days of occurring than any region of England (74.5% in England overall); the proportion of deaths registered within seven days has been higher in Wales than in England since 2003, with the difference increasing over time.
- Within England, the percentage of deaths registered within seven days was highest in the North East (81.6%) and lowest in the South East (68.5%), unchanged from 2018.
- The proportion of coroner-certified deaths registered within seven days reached a low of 15.6% in 2019, less than a quarter of the proportion in 2001 (70.7%); coroner-certified deaths registered within 30 days also decreased (from 81.2% in 2001 to 55.8% in 2019).
- The proportion of deaths registered within seven days was lowest for suicide deaths at 0.2% in 2019 (a decline from 0.6% in 2001), followed by drug-related deaths at 0.8% in 2019 (0.5% in 2001).
- The proportion of deaths registered within seven days was lowest in people aged 15 to 44 years (51.4% in 2001, 33.7% in 2019) and highest in people aged 85 years and over (96.4% in 2001, 80.8% in 2019); this proportion decreased between 2001 and 2019 across all age groups.

This bulletin includes data for registration years 2001 to 2019. Provisional analysis of registration delays for deaths occurring in 2020, including deaths involving the coronavirus (COVID-19), is available in our Deaths involving COVID-19 bulletin.

2 . Registrations delays over time

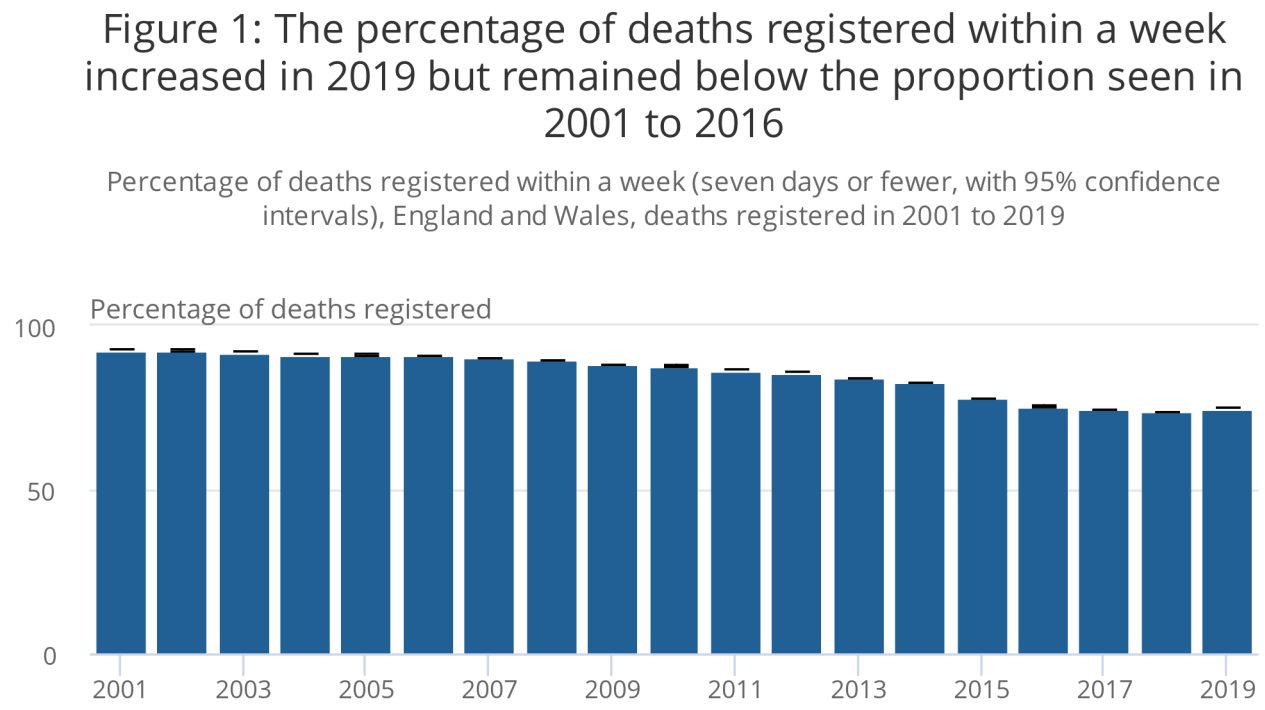
There were 530,841 deaths registered in England and Wales in 2019. Of these deaths, 99.2% were registered within a year (365 days) of occurrence. This means that over 4,000 deaths that were registered in 2019 occurred more than a year prior to being registered.

Since registration year 2001 (the beginning of our analysis), there has been an increase in registration delays when we look at the proportion of deaths registered within seven days of the death occurrence (Figure 1). From 2001 to 2014, there was a gradual decline in the number of deaths being registered within seven calendar days (a week), of approximately 10 percentage points from 92.7% in registration year 2001 to 82.6% in 2014.

This decline became more marked from 2014 onwards, reaching a low of 73.8% of deaths registered within a week in 2018. In 2019 there has been a small but significant increase to 75.0%, but the proportion remained significantly below that seen in earlier years.

Figure 1: The percentage of deaths registered within a week increased in 2019 but remained below the proportion seen in 2001 to 2016

Percentage of deaths registered within a week (seven days or fewer, with 95% confidence intervals), England and Wales, deaths registered in 2001 to 2019



Source: Office for National Statistics – Death registrations

Notes:

1. Figures include deaths of non-residents but exclude neonatal deaths (deaths under 28 days) which are not assigned an underlying cause.

2. Deaths that do not provide enough information to calculate the delay have been excluded.

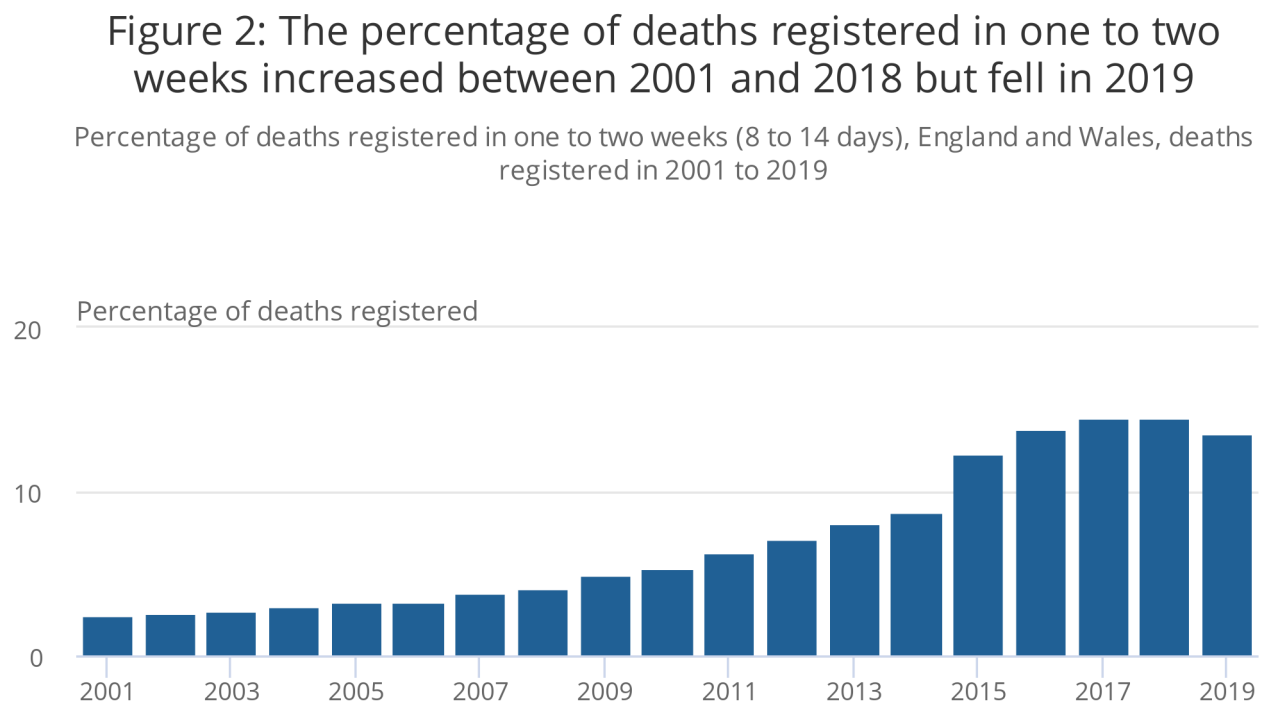
3. Time period within a week means within seven days or fewer.

4. Registration delays are the difference between the date of death registration and date of death occurrence, therefore a death that occurred and was registered on the same day has a delay of zero days, while a death that was registered on the day following the death occurrence has a delay of one day.

While the proportion of deaths registered within a week (seven days or fewer) has decreased over time (Figure 1), deaths registered in one to two weeks (8 to 14 days) have increased (Figure 2). From registration year 2014 to registration year 2017, there was a steep increase from 8.7% of deaths registered between 8 to 14 days (one to two weeks) in 2014 to 14.5% in 2017. In 2019, unlike the increase seen in deaths registered within a week, the percentage of deaths registered in one to two weeks fell to 13.5%.

Figure 2: The percentage of deaths registered in one to two weeks increased between 2001 and 2018 but fell in 2019

Percentage of deaths registered in one to two weeks (8 to 14 days), England and Wales, deaths registered in 2001 to 2019



Source: Office for National Statistics – Death registrations

Notes:

1. Figures include deaths of non-residents but exclude neonatal deaths (deaths under 28 days) which are not assigned an underlying cause.

2. Deaths that do not provide enough information to calculate the delay have been excluded.

3. The time period 1 to 2 weeks means 8 to 14 days.

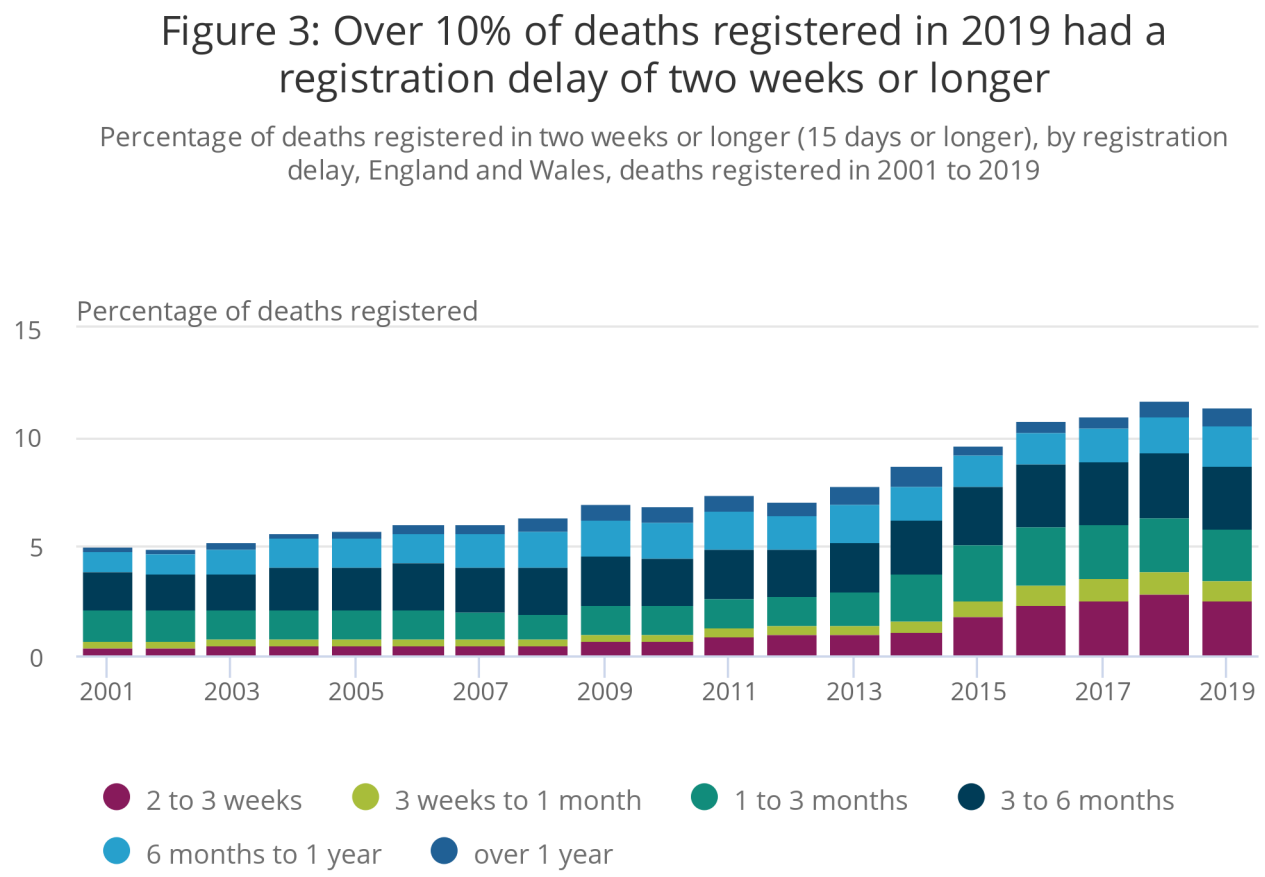
4. Registration delays are the difference between the date of death registration and date of death occurrence, therefore a death that occurred and was registered on the same day has a delay of zero days, while a death that was registered on the day following the death occurrence has a delay of one day.

Between registration years 2001 and 2019, there has been an increase across all registration delay categories of two weeks or longer (Figure 3). The proportion of deaths with a registration delay of two weeks or longer has more than doubled since registration year 2001 (4.9% in 2001, 11.5% in 2019).

In 2019, the proportion of deaths with a registration delay of two weeks or longer decreased for the first time since 2012 but remained higher than registration years 2001 to 2017. This small decrease was driven by a decline in the percentage of deaths registered within two to three weeks (15 to 21 days) of occurrence (2.9% in 2018, 2.6% in 2019).

Figure 3: Over 10% of deaths registered in 2019 had a registration delay of two weeks or longer

Percentage of deaths registered in two weeks or longer (15 days or longer), by registration delay, England and Wales, deaths registered in 2001 to 2019



Source: Office for National Statistics – Death registrations

Notes:

1. Figures include deaths of non-residents but exclude neonatal deaths (deaths under 28 days) which are not assigned an underlying cause.

2. Deaths that do not provide enough information to calculate the delay have been excluded.

3. The time period two to three weeks means 15 to 21 days, three weeks to one month means 22 to 30 days, one to three months means 31 to 91 days, three to six months means 92 to 183 days, six months to one year means 184 to 365 days, over one year means a registration over 365 days after the death occurred.

4. Registration delays are the difference between the date of death registration and date of death occurrence, therefore a death that occurred and was registered on the same day has a delay of zero days, while a death that was registered on the day following the death occurrence has a delay of one day.

While the number and percentage of deaths with a registration delay of more than seven days has increased between 2001 and 2019, this is not explained by an increase in deaths registrations each year. The number of deaths registered in 2019 (530,837) was lower than the number registered in 2001 (532,435).

3 . The impact of cause of death on registration delays

The delay between death occurrence and death registration can differ depending on the cause of death (Table 2 in the accompanying dataset).

Registration delays in the most common causes of death

Since registration year 2001, of the four International Classification of Diseases, Tenth Revision (ICD-10) chapters accounting for most deaths (neoplasms, respiratory, circulatory, mental and behavioural disorders), neoplasms (cancers; Chapter 2) has always had the highest percentage of deaths registered within seven days.

In 2019 registration year, 87.3% of deaths with neoplasm (cancer) as the underlying cause were registered within seven days of the deaths occurring, but similar to the trend seen across deaths overall, this percentage has decreased over time from 97.3% in 2001.

Less than 1% of deaths due to a neoplasm had a registration delay of six months or more (at least 184 days) in 2019 but because of the large numbers of deaths from this cause, this small proportion (0.7%) is equal to over 1,000 deaths.

Causes of death with the longest registration delays

Generally, deaths from external causes (ICD-10 Chapter 20), such as accidental injuries and assaults, are least often registered within seven days of occurrence as they are referred to a coroner. For these causes there was also a decrease in timeliness since 2001, from 18.6% of deaths registered within seven days to 9.9% in 2019 (the lowest proportion in our time series).

In 2019, 26.0% of deaths from external causes had a registration delay between six months and a year, while a further 9.9% took longer than a year to be registered. This results in over 8,000 deaths with a delay of at least six months (184 days). This is because of potentially lengthy inquests, and in some cases the need for a criminal trial, before the cause of death can be determined.

The lengths of registration delays are positively skewed, meaning that a small proportion of deaths have very long delays. The median registration delay reduces the impact of the minority of deaths with long delays on the average. In 2019, the median registration delay for deaths from external causes was 146 days. Using the 90th and 99th percentiles, we can analyse the deaths with very long delays.

In 2019, the top 10% of deaths from external causes with the longest delays had a delay of more than 365 days (90th percentile). In 1% of deaths from external causes, there was at least 916 days (around 2.5 years; 99th percentile) between death occurrence and registration. Median registration delays (with upper and lower quartiles and 90th and 99th percentiles) for other causes of death are available in Table 3 of the accompanying dataset.

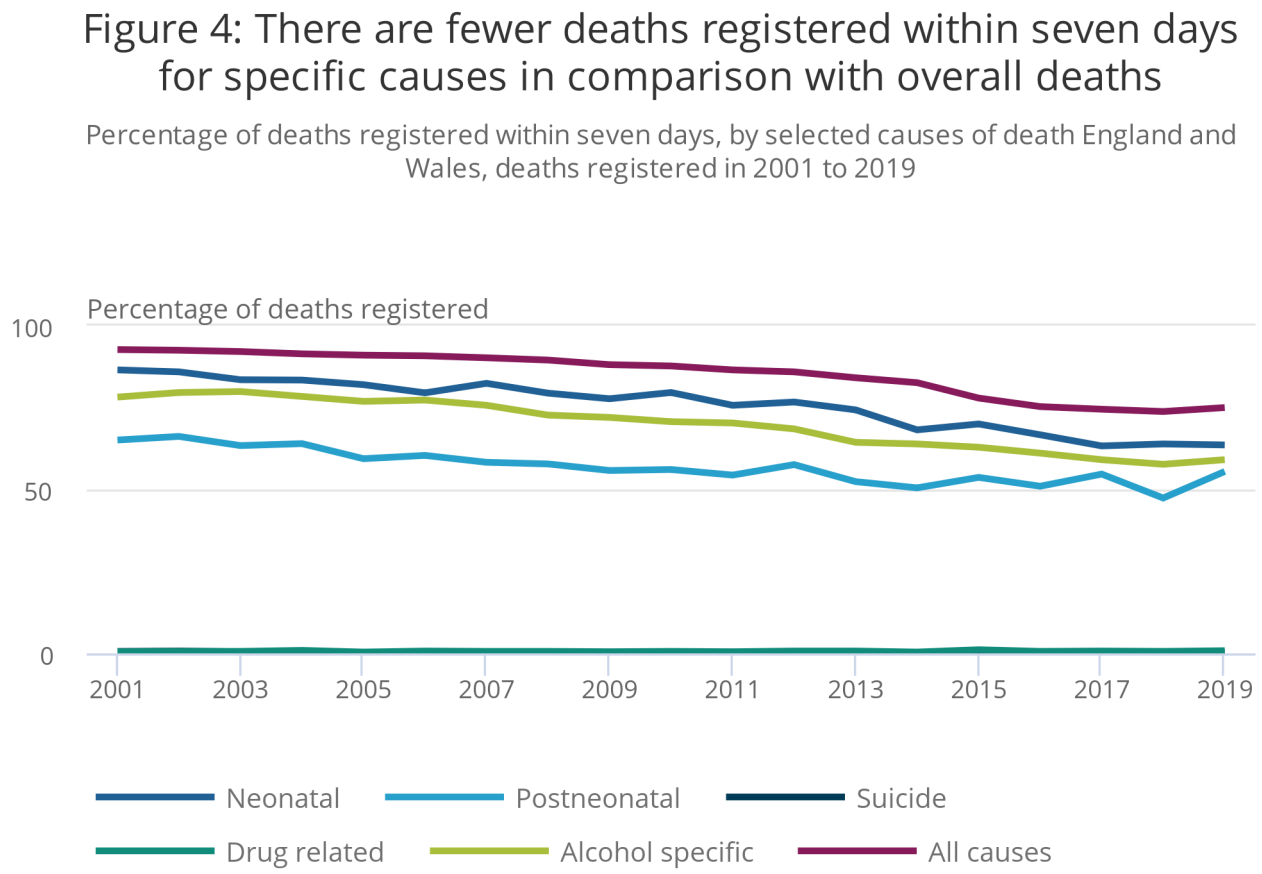
For specific causes of death that require a coroner's inquest (alcohol-specific, suicide, drug-related, neonatal and postneonatal deaths), timeliness decreases greatly in comparison with other causes (Figure 4). In the 2019 registration year, 63.6% of neonatal deaths and 55.5% of postneonatal deaths were registered within seven days of occurrence; deaths from these causes accounted for 2,554 deaths registered in 2019 (1,868 neonatal and 686 postneonatal deaths).

Of the 6,209 alcohol-specific deaths registered in 2019, 59.1% were registered within seven days of occurrence. Drug-related deaths and suicides had the lowest proportions of deaths registered within a week, at 0.8% (of 4,393 drug-related deaths) and 0.2% (of 5,691 suicides) respectively.

In 2019 the proportion of deaths registered within seven days increased compared with 2018 for all of the specific causes of death discussed in this section except neonatal deaths (Figure 4). This is a change from the generally decreasing trend seen since 2001 but despite this, the percentages of deaths registered within seven days in 2019 remain below levels seen in 2001 for all specific causes except drug-related deaths.

Figure 4: There are fewer deaths registered within seven days for specific causes in comparison with overall deaths

Percentage of deaths registered within seven days, by selected causes of death England and Wales, deaths registered in 2001 to 2019



Source: Office for National Statistics – Death registrations

Notes:

1. Figures include deaths of non-residents but exclude neonatal deaths (deaths under 28 days) which are not assigned an underlying cause.

2. Deaths that do not provide enough information to calculate the delay have been excluded.

3. Suicide death figures are for persons aged 10 years and over.

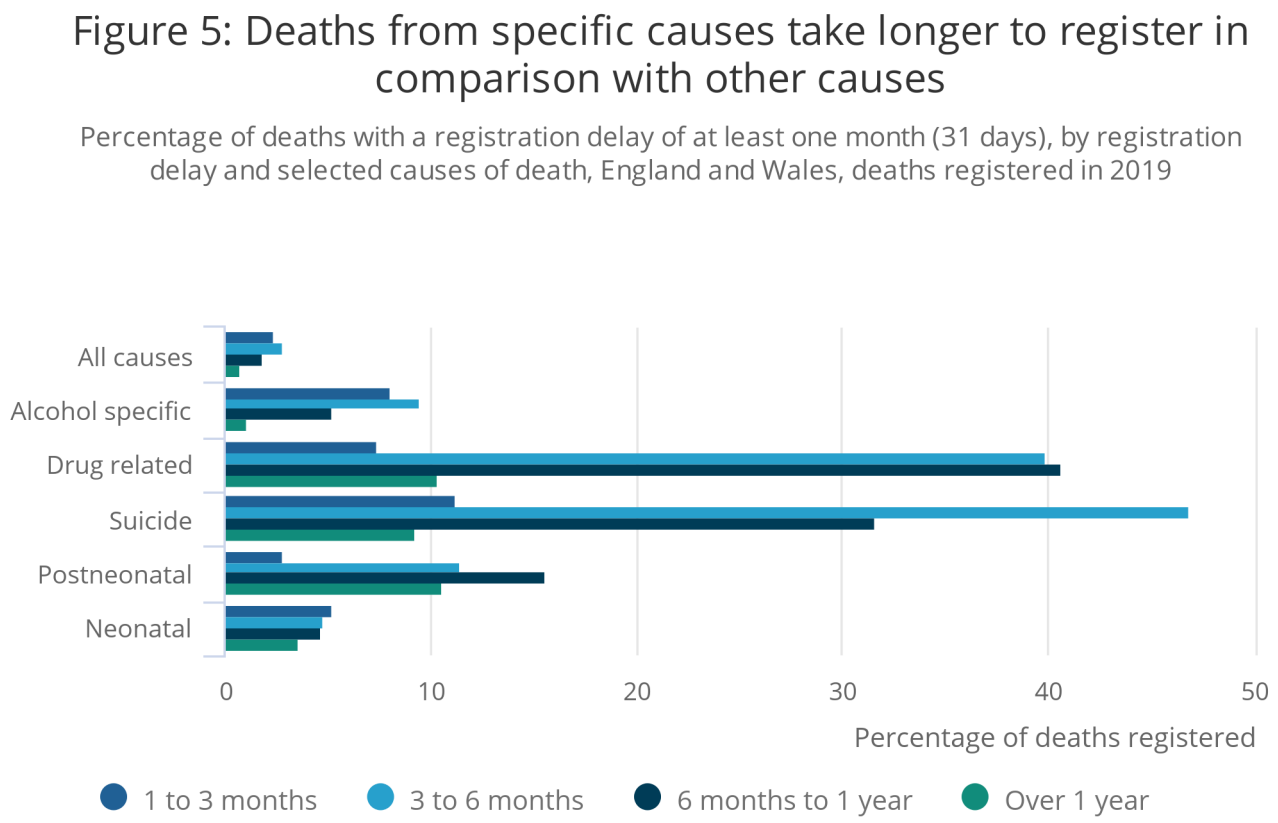
Looking at the proportion of deaths that took over a month to be registered, the specific categories mentioned previously (neonatal, postneonatal, suicide, drug-related and alcohol-specific) have higher registration delays than for all causes combined (Figure 5).

In registration year 2019, most suicide deaths were registered three to six months after the occurrence (46.8%), while for drug-related deaths, the percentage was similar for three to six months (39.9%) and six months to one year (40.6%). In registration year 2019, around one-tenth of suicide and drug-related deaths took longer than one year to be registered (9.3% and 10.3%, respectively). This equated to 528 suicide deaths and 453 drug-related deaths.

More than 93% of suicide and drug-related deaths required both an inquest and post-mortem (this certification type has the longest average registration delays, see Section 4: Registration delays by certification type).

Figure 5: Deaths from specific causes take longer to register in comparison with other causes

Percentage of deaths with a registration delay of at least one month (31 days), by registration delay and selected causes of death, England and Wales, deaths registered in 2019



Source: Office for National Statistics – Death registrations

Notes:

1. Figures include deaths of non-residents but exclude neonatal deaths (deaths under 28 days) which are not assigned an underlying cause.

2. Deaths that do not provide enough information to calculate the delay have been excluded.

3. Please note the time period one to three months means 31 to 91 days, three to six months means 92 to 183 days, six months to one year means 184 to 365 days, over one year means a registration over 365 days after the death occurred.

4. Suicide death figures are for persons aged 10 years and over.

5. Registration delays are the difference between the date of death registration and date of death occurrence, therefore a death that occurred and was registered on the same day has a delay of zero days, while a death that was registered on the day following the death occurrence has a delay of one day.

4 . Registration delays by certification type

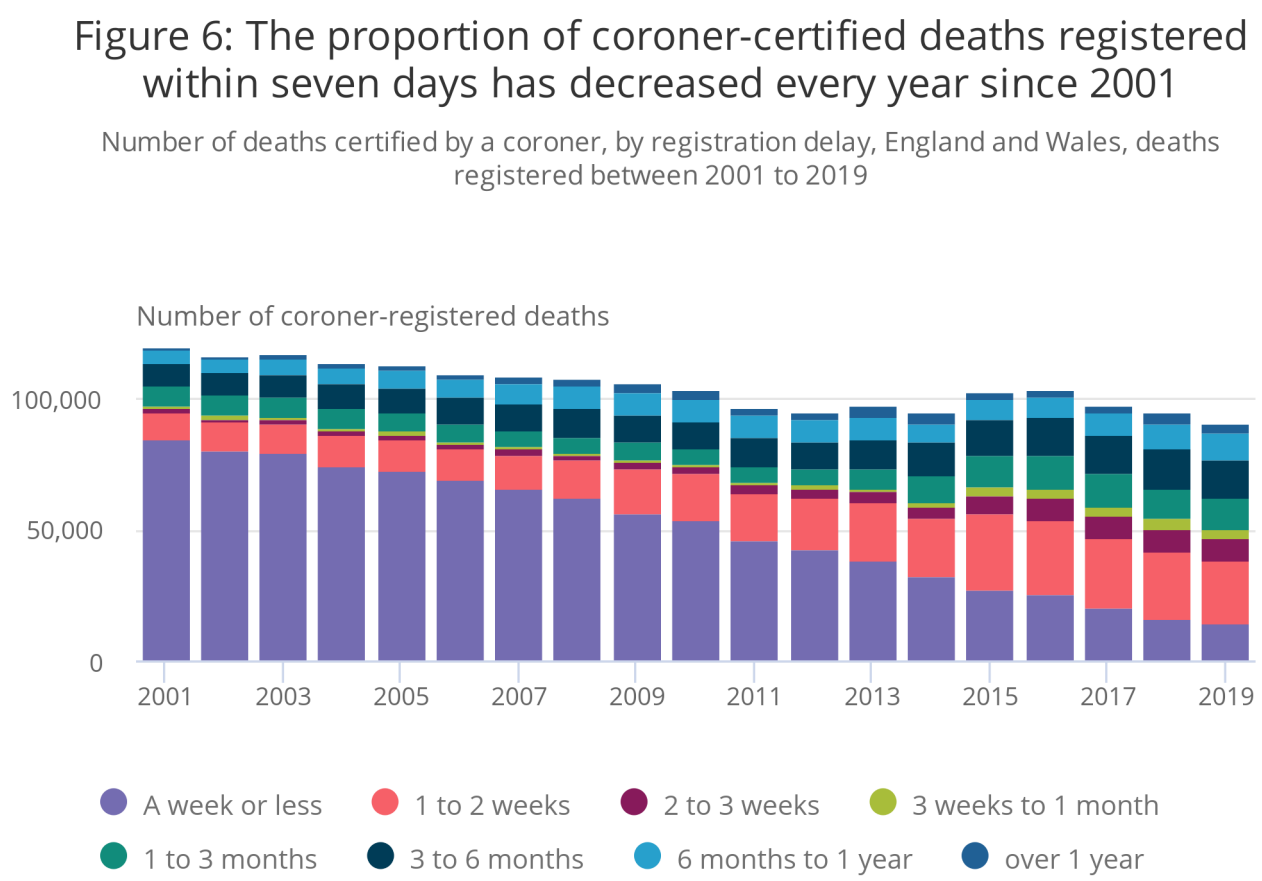
The length of registration delay can vary greatly, with some deaths taking much longer to be registered than the majority. Deaths certified by a coroner after inquest generally take much longer to be registered than the more "routine" deaths certified by a doctor.

A few delays are extremely long – in 2019, the longest time it took a death to be registered was nearly 32 years. Cases such as this tend to be where there is no body of the deceased (but they are presumed to be dead) or a body is found after many years. There are also some special cases where deaths are re-registered later because of a retrial or an official inquiry.

Figure 6 shows the number of coroner-certified deaths by registration delay. Coroner-certified deaths registered within a week (seven days) have decreased by 55 percentage points, from 70.7% in 2001 to 15.6% in 2019. Accounting for this fall, there has been an increase across all other registration delay categories, with a particular increase in delays of one to two weeks (8 to 14 days), from 8.2% in 2001 to 27.0% in 2019.

Figure 6: The proportion of coroner-certified deaths registered within seven days has decreased every year since 2001

Number of deaths certified by a coroner, by registration delay, England and Wales, deaths registered between 2001 to 2019



Source: Office for National Statistics – Death registrations

Notes:

1. Figures include deaths of non-residents but exclude neonatal deaths (deaths under 28 days) which are not assigned an underlying cause.

2. Deaths that do not provide enough information to calculate the delay have been excluded.

3. The time period a week or less means within seven days, one to two weeks means 8 to 14 days, two to three weeks means 15 to 21 days, three weeks to one month means 22 to 30 days, one to three months means 31 to 91 days, three to six months means 92 to 183 days, six months to one year means 184 to 365 days, over one year means a registration over 365 days after the death occurred.

4. Registration delays are the difference between the date of death registration and date of death occurrence, therefore a death that occurred and was registered on the same day has a delay of zero days, while a death that was registered on the day following the death occurrence has a delay of one day.

To reduce the impact these outliers have on the measurement of the average registration delay, we calculate the median registration delay (as well as lower and upper quartiles available in the accompanying dataset).

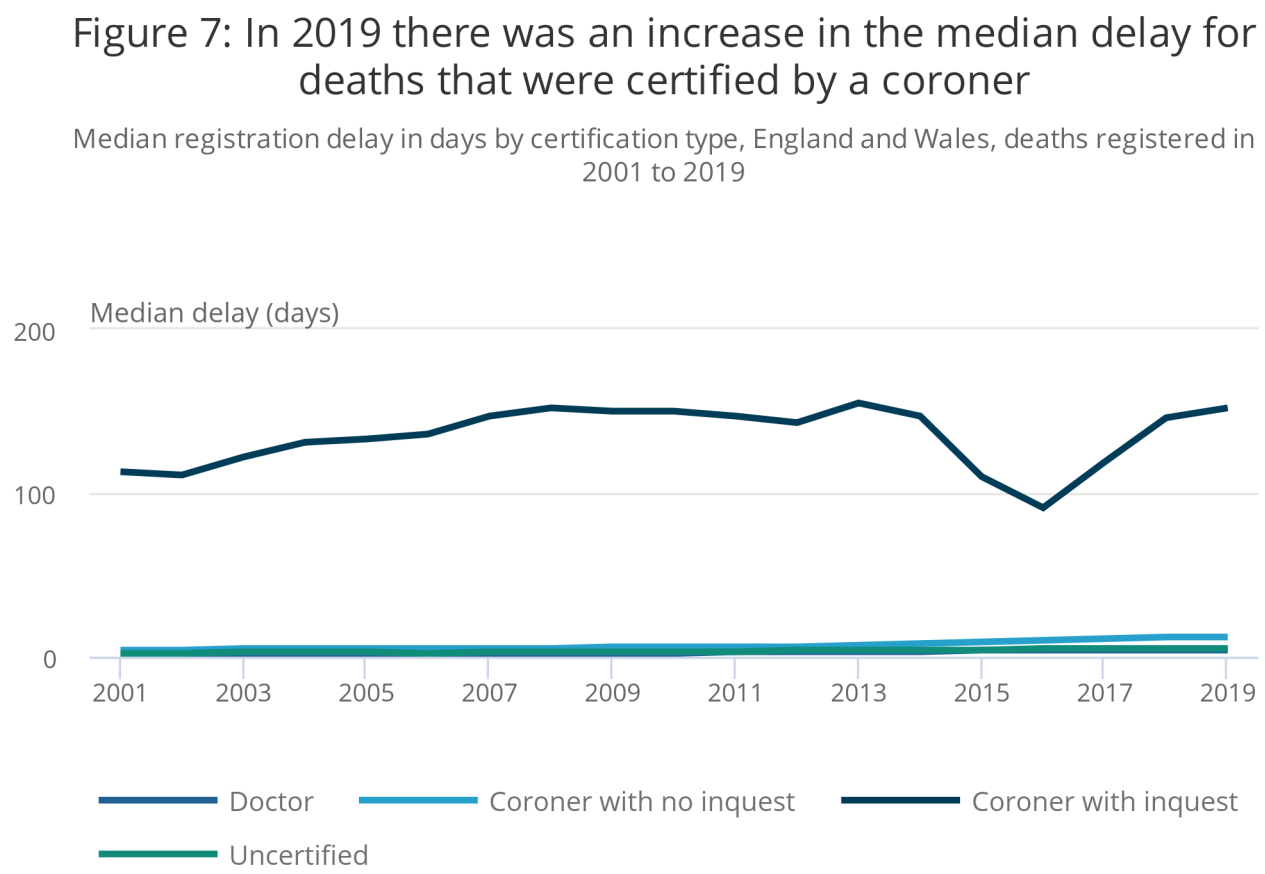
Since registration year 2001, there has been an increase in the proportion of deaths being certified by doctors and therefore a decrease in the number and proportion of deaths being certified by coroners. In registration year 2019, 82.3% of deaths were registered by a doctor, which is higher than any other year since 2001 (77.3%).

But, the number of deaths with an inquest was higher in 2019 (31,228 deaths) than in 2001 (24,218 deaths). This explains the increase in median registration delay for coroner-certified deaths between 2001 and 2016 (Figure 6). In 2019, the median delay for coroner-certified deaths with an inquest was more than 12 times longer than coroner-certified deaths without an inquest (152 days for coroner-certified deaths with an inquest, 12 days for coroner-certified without an inquest).

In 2001, around a fifth (20.1%) of coroner-certified deaths had an inquest, whereas in 2019 more than a third (34.3%) had an inquest, suggesting that the workload per coroner has increased over time. This in turn affects the overall upward trend in registration delays.

Figure 7: In 2019 there was an increase in the median delay for deaths that were certified by a coroner

Median registration delay in days by certification type, England and Wales, deaths registered in 2001 to 2019



Source: Office for National Statistics – Death registrations

Notes:

1. Figures include deaths of non-residents but exclude neonatal deaths (deaths under 28 days) which are not assigned an underlying cause.

2. Deaths that do not provide enough information to calculate the delay have been excluded.

3. Registration delays are the difference between the date of death registration and date of death occurrence, therefore a death that occurred and was registered on the same day has a delay of zero days, while a death that was registered on the day following the death occurrence has a delay of one day.

The decrease in median registration delay for coroner-certified deaths with an inquest between 2014 and 2016 is likely to be because of a change in official guidance around Deprivation of Liberty Safeguards (DoLS) deaths, which are cases where (for example) the deceased was in a locked area to prevent self-harm or accidental injury. The Coroner's Statistics Annual 2018 explains the recent change in average delay as follows:

"This can largely be attributed to DoLS deaths where, in accordance with the Chief Coroner's guidance, in uncontroversial cases, there could be a 'paper inquest', i.e. not decided in open court but on papers without the need for witnesses or a post-mortem - such cases took less time to process and as a result, reduced the average time to process inquests overall. Following the removal of the requirement to report DoLS deaths to coroners in April 2017, there has been an increase in the average time to process an inquest, reversing the downward trend seen in the last few years when there were many DoLS cases."

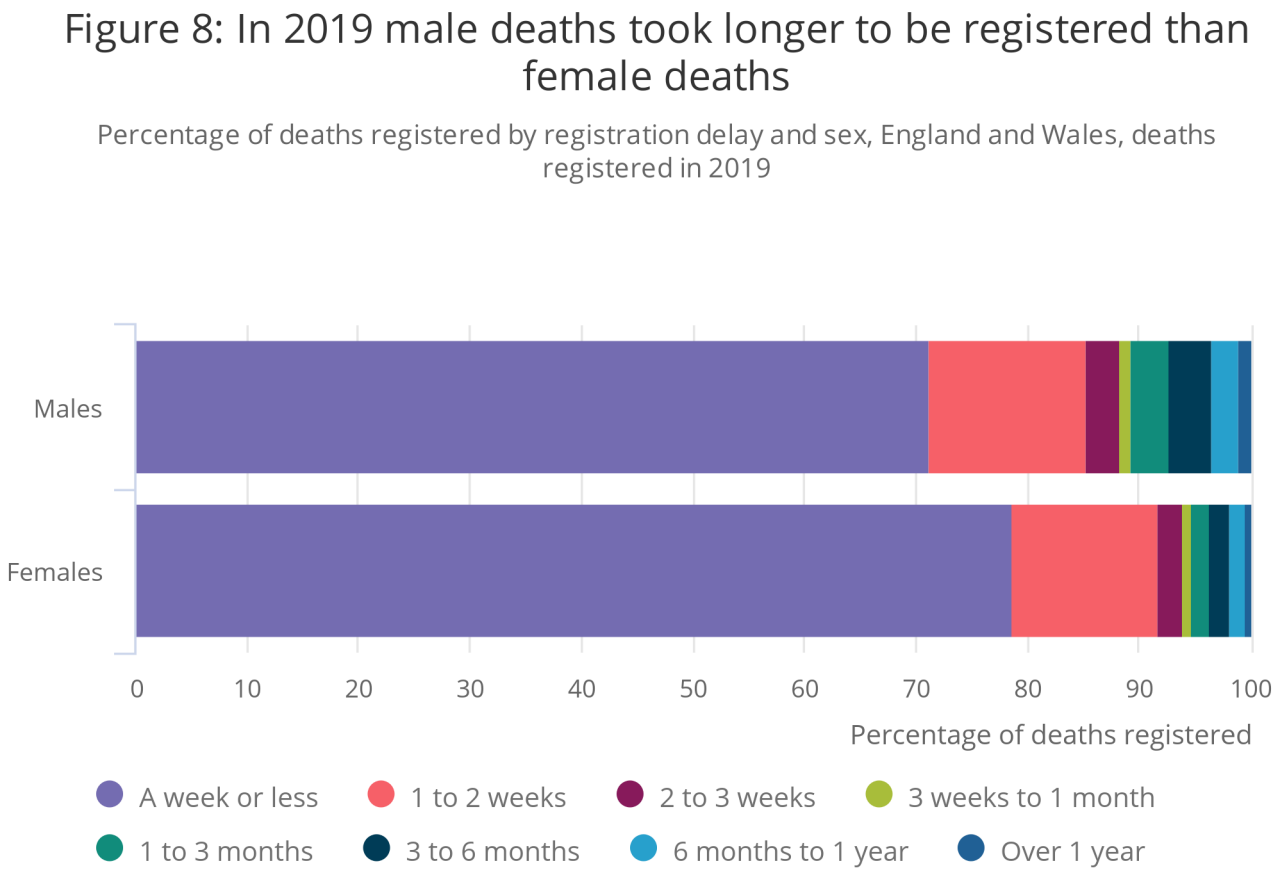
5 . Registration delays by sex and age

To further explore the trends in registration delays and improve the insights we can provide on this important issue, this year we have included analysis by sex and age.

In registration year 2019, the majority of deaths were registered within seven days for both males and females (Figure 8). However, male deaths were less likely to be registered within seven days than females (71.3% and 78.7% respectively), with a higher proportion of male deaths in every other delay category.

Figure 8: In 2019 male deaths took longer to be registered than female deaths

Percentage of deaths registered by registration delay and sex, England and Wales, deaths registered in 2019



Source: Office for National Statistics – Death registrations

Notes:

1. Figures include deaths of non-residents but exclude neonatal deaths (deaths under 28 days) which are not assigned an underlying cause.

2. Deaths that do not provide enough information to calculate the delay have been excluded.

3. The time period a week or less means within seven days, one to two weeks means 8 to 14 days, two to three weeks means 15 to 21 days, three weeks to one month means 22 to 30 days, one to three months means 31 to 91 days, three to six months means 92 to 183 days, six months to one year means 184 to 365 days, over one year means a registration over 365 days after the death occurred.

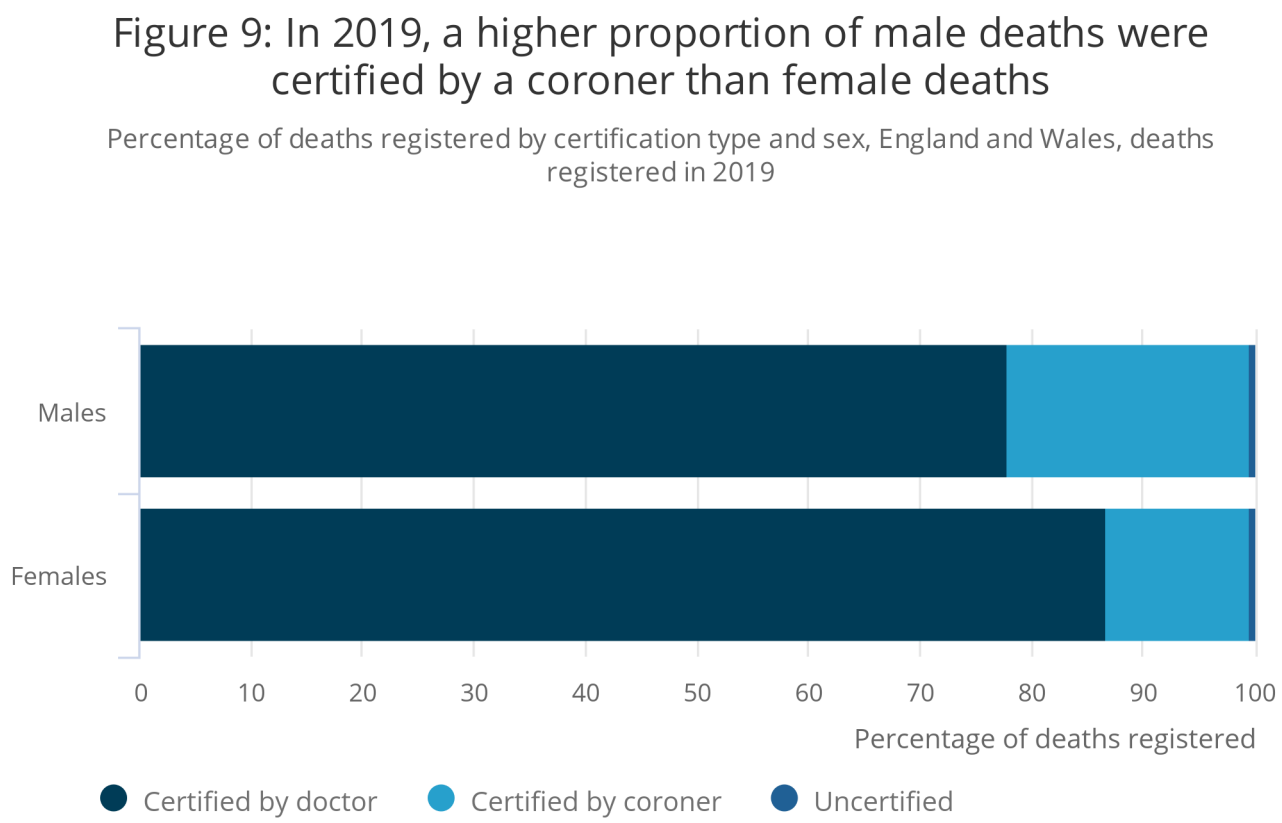
4. Registration delays are the difference between the date of death registration and date of death occurrence, therefore a death that occurred and was registered on the same day has a delay of zero days, while a death that was registered on the day following the death occurrence has a delay of one day.

Looking at cause of death by sex may explain why males have longer registration delays. In the 2019 registration year, 5.4% of male deaths were from external causes, compared with 3.2% of female deaths. Similarly, the suicide rate in 2019 was more than three times higher in males than females (16.9 suicide deaths per 100,000 males, 5.3 suicide deaths per 100,000 females).

Looking at the differences between males and females by certification type can also explain the difference in length of registration delay (Figure 9). In 2019, a higher percentage of male deaths (21.6%) were certified by a coroner than female deaths (12.7%). Deaths certified by a coroner, especially after inquest, typically take longer to be registered than deaths certified by a doctor.

Figure 9: In 2019, a higher proportion of male deaths were certified by a coroner than female deaths

Percentage of deaths registered by certification type and sex, England and Wales, deaths registered in 2019



Source: Office for National Statistics – Death registrations

Notes:

1. Figures include deaths of non-residents but exclude neonatal deaths (deaths under 28 days) which are not assigned an underlying cause.

2. Deaths that do not provide enough information to calculate the delay have been excluded.

When looking at the proportion of deaths that were registered within a week by age group, the trends for males and females are similar over time, so this section will focus on age for males and females combined (data by age group and sex are available in Table 10 of the accompanying dataset). Between 2001 and 2019, the percentage of deaths registered within a week decreased across all age groups (Figure 10).

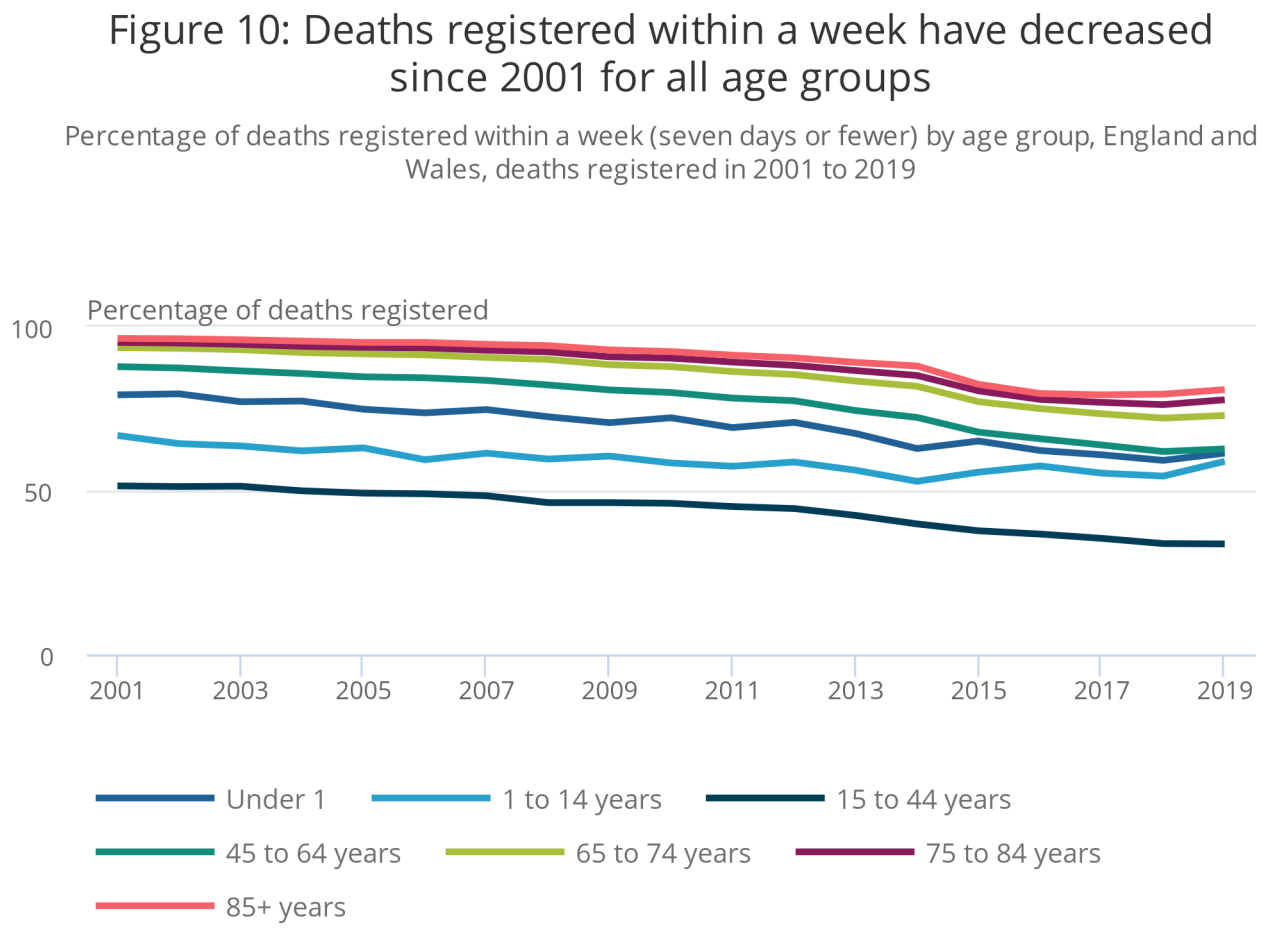
In the older age groups (65 to 74 years, 75 to 84 years and 85 years and over), a higher percentage of deaths were registered within seven days than in the younger age groups. This is likely explained by the causes of death most commonly seen in different age groups. In 2019, the leading cause of death for people aged 5 to 34 years was suicide, while the leading cause for people aged 35 to 49 years was accidental poisoning; these causes of death are more likely to result in a coroner's investigation than the leading causes of death seen in older ages.

Looking at those aged 1 to 14 years, this age group has showed the least change over time. In 2001, 66.8% of deaths were registered within seven days, falling only by eight percentage points to 58.9% in 2019.

Additionally, those aged 15 to 44 years have always had the longest delays throughout the time series but also had the largest percentage decrease in deaths registered within a week. The proportion has decreased by over a third since 2001 (51.4% in 2019, 33.7% in 2001).

Figure 10: Deaths registered within a week have decreased since 2001 for all age groups

Percentage of deaths registered within a week (seven days or fewer) by age group, England and Wales, deaths registered in 2001 to 2019



Source: Office for National Statistics – Death registrations

Notes:

1. Figures include deaths of non-residents but exclude neonatal deaths (deaths under 28 days) which are not assigned an underlying cause.

2. Deaths that do not provide enough information to calculate the delay have been excluded.

3. Time period within a week means within seven days or fewer.

4. Registration delays are the difference between the date of death registration and date of death occurrence, therefore a death that occurred and was registered on the same day has a delay of zero days, while a death that was registered on the day following the death occurrence has a delay of one day.

6 . Registration delays by area

In registration year 2019 in Wales, 83.2% of deaths (27,604 of the 33,183 deaths) were registered within a week (seven days) compared with 74.5% of deaths in England (369,780 of the 496,366 deaths). Except for 2001 and 2002, Wales consistently had a higher proportion of deaths registered within a week than England. Wales also had the highest percentage certified by a doctor (84.2%), which explains the shorter registration delay.

In 2019 in England, the percentage of deaths registered within seven days was highest in the North East (81.6%) and lowest in the South East (68.5%); this remained unchanged from 2018.

The percentage of deaths registered within seven days is similar across the regions of England (Table 1), but there is variation at a more local level. For example, Thanet had the lowest percentage of deaths registered within seven days in 2019 at 40.1% whereas Ryedale had the highest percentage in England (90.2%). Data for local authorities in England and Wales are available in Table 4 of the accompanying dataset.

Comparing local area registration delays in 2001 with 2019 demonstrates how delays have increased over the time series. The area with the lowest proportion of deaths registered within seven days in 2001 (Lambeth, at 83.2%) was more than double the equivalent area in 2019 (Thanet, 40.1%).

Table 1: The proportion of deaths registered within seven days varied across the regions of England and Wales in 2019

Percentage of deaths registered within seven days and percentage of deaths certified by a doctor, registration year 2019

Area	Total number of deaths	% registered within 7 days	% certified by a doctor
England, Wales and Elsewhere	530,837	75.0	82.3
England	496,366	74.5	82.3
North East	28,036	81.6	81.4
North West	72,016	80.4	80.8
Yorkshire and the Humber	52,545	80.4	83.3
East Midlands	45,429	70.3	82.5
West Midlands	54,601	75.2	83.0
East	57,198	70.7	83.7
London	49,007	74.0	80.9
South East	81,234	68.5	81.9
South West	56,300	73.6	83.1
Wales	33,183	83.2	84.2

Source: Office for National Statistics

Notes

1. Geographies are based on boundaries as of August 2020.
2. Figures for England, Wales, and Elsewhere include deaths of non-residents, figures for other geographies are based on usual residents.
3. Deaths that do not provide enough information to calculate the delay have been excluded.
4. Registration delays are the difference between the date of death registration and date of death occurrence, therefore a death that occurred and was registered on the same day has a delay of zero days, while a death that was registered on the day following the death occurrence has a delay of one day.

This article focuses on delays based on registration year, but we have provided some information based on year of occurrence in Table 6 of the accompanying dataset. It is important to note the difference when looking at year of registration and year of occurrence (Table 2).

Table 2: The percentage of deaths that take over a year to be registered is consistent for registration year
Percentage of deaths with a registration delay of over one year, by year of registration and year of occurrence, England and Wales

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Registration year	0.7	0.7	0.7	0.6	0.8	0.9	0.5	0.5	0.5	0.7	0.8
Occurrence year	0.6	0.7	0.7	0.7	0.5	0.4	0.4	0.4	0.3	0.2	0.2

Source: Office for National Statistics

Notes

1. Figures include deaths of non-residents but exclude neonatal deaths (deaths under 28 days) which are not assigned an underlying cause. Neonatal deaths are included in final totals.

2. Deaths that do not contain sufficient information to calculate the delay have been excluded from the analysis. Hence totals do not match those previously published.

3. The time period over one year means a registration over 365 days after the death occurred.

4. Deaths by year of occurrence in this table are based on a subset taken in the autumn of each year. Therefore, the number of death occurrences includes only those that have been registered by the date the subset is taken. The true number of death occurrences will be slightly higher than the numbers reported, especially for the most recent years, as more deaths are registered over time.

5. Data for previous years in this table are not updated annually.

Data based on registration year are seen as complete, which means the numbers of deaths taking over a year to be registered will not need to be revised in following years. However, a death occurrence can be registered at any point after the death, meaning that these numbers will need to be revised each year.

The older years are less likely to change but we would expect the number of deaths taking longer than a year to be registered in more recent years, like 2019, to increase as we receive more death registrations. Since there is no limit to how long it can take a death to be registered, we may never be able to say that we have a complete set of occurrences.

We have published a methodology article outlining a method we have developed to estimate the number of deaths likely to have occurred, based on previous experience of the pattern of registration delays, including the effects of bank holidays. Data based on this estimation method are published in our Deaths registered weekly in England and Wales bulletin.

7 . Impact of registration delays on mortality statistics data

Impact of registration delays on mortality statistics
Dataset | Released 11 December 2020
Data for England and Wales on the time taken to register deaths in 2019, by cause of death, area of usual residence, age, sex and certification type

8 . Glossary

Coroner

A coroner is a public official responsible for the investigation of violent, sudden or suspicious deaths.

Inquest

An inquest is an inquiry into the cause of an unexplained, sudden or violent death held by a coroner.

Registration delay

Mortality statistics are compiled from information supplied when deaths are certified and registered as part of civil registration, a legal requirement. According to the Births and Deaths Registration Act 1953, a death should be registered within five days unless it is referred to a coroner for investigation. Mortality statistics for a given time period can be based on occurrence (death date) or registration (registration date); registration delay is the difference between date of occurrence and date of registration.

Statistical significance

The term "significant" refers to statistically significant changes or differences. Significance has been determined using the 95% confidence intervals, where instances of non-overlapping confidence intervals between estimates indicate the difference is unlikely to have arisen from random fluctuation. In some circumstances, significance has also been tested using z scores. More information about this z test is available in Appendix 1 of the Sullivan guide (PDF, 1.2MB).

95% confidence intervals

A confidence interval is a measure of the uncertainty around a specific estimate. If a confidence interval is 95%, it is expected that the interval will contain the true value on 95 occasions if repeated 100 times. As intervals around estimates widen, the level of uncertainty about where the true value lies increases. The size of the interval around the estimate is strongly related to the number of deaths, prevalence of health states and the size of the underlying population. At a national level, the overall level of error will be small compared with the error associated with a local area or a specific age and sex breakdown. More information is available on our uncertainty pages.

90th and 99th percentiles

A percentile is the value below which a percentage of the data falls. For example, if 90% of the deaths in a dataset have a shorter registration delay than a particular death, that death is at the 90th percentile. If 99% of the deaths have a smaller registration delay than a particular death, that death is at the 99th percentile.

9 . Measuring the data

As a way of measuring the quality of the mortality data, it is important to regularly assess the impact of registration delays. This article looks at what the delay is between the date a death occurred and the date it was registered, how this has changed over time, and what factors influence the delay in registration.

Important information for interpreting these mortality statistics:

- mortality statistics are compiled from information supplied when deaths are certified and registered as part of civil registration, a legal requirement; according to the Births and Deaths Registration Act 1953, a death should be registered within five days unless it is referred to a coroner for investigation

- mortality statistics for a given time period can be based on occurrence (death-date) or registration (registration-date); registration delay is the difference between date of occurrence and date of registration

- this bulletin uses breakdowns of seven calendar days as an alternative to the five days used previously, to allow for deaths that occur on or just before weekends and bank holidays, when it is unlikely that registrations will be recorded until the next working day

- causes of death are coded using the World Health Organization's (WHO) International Classification of Diseases, Tenth Revision (ICD-10)

- for information on how deaths are registered and mortality statistics are produced please see the Quality and methodology section

The mortality publications the Office for National Statistics (ONS) produces are based on death registrations. For the majority of publications we report by the year a death was registered, but there are a limited number of publications that are based on the year a death occurred, or feature tables based on the year a death occurred, for example, excess winter mortality.

Earlier this year we published a methodology article outlining a method we have developed to estimate the number of deaths likely to have occurred, based on previous experience of the pattern of registration delays, including the effects of bank holidays. Data based on this estimation method are published in our Deaths registered weekly in England and Wales bulletin.

The use of registration year data for most of our publications allows the statistics to be produced in a timely way and avoids the need for annual figures to be updated, as deaths that occurred in a completed year are registered subsequently.

Each summer we release an annual bulletin of death registrations, which reports deaths registered in the previous year. The most recent release in 2020 was for deaths registered in 2019. Death registrations are potentially limited in their completeness, as registration delays result in the annual data not showing all death occurrences in a year. For example, the need for a post-mortem can affect how long it takes for a death to be registered, which in some cases can result in a death occurring in one calendar year and then being registered in a subsequent year.

Following the deaths registrations release, in the summer an annual dataset is created based on the date a death occurred rather than was registered. This is used for seasonal analysis of mortality data and several infant mortality outputs.

Details of deaths are received by the Office for National Statistics (ONS) from register offices in England and Wales electronically. Where the deceased was aged 28 days and over, the cause of death is automatically coded for around 80% of records using a software package called IRIS. The remainder of the records are manually coded to the International Classification of Diseases, Tenth Revision (ICD-10) by experienced coders. Deaths that have been certified after an inquest are also manually coded, as the software cannot interpret the free text format used by coroners.

ICD-10 is used to translate diagnoses of diseases and other health problems from words on the death certificate into an alphanumeric code to permit easier storage, retrieval and analysis. Our User guide to mortality statistics provides information on data quality, legislation and procedures relating to deaths. It also provides details of the ONS short list of cause of death codes, using ICD-10.

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10 . Strengths and limitations

The information used to produce mortality statistics is based on details collected when certified deaths are registered by informants with their local registration service. In England and Wales, deaths should ideally be registered within five days of the death occurring, but there are some situations that result in the registration of the death being delayed.

Deaths considered unexpected, accidental or suspicious will be referred to a coroner who may order a post-mortem or carry out a full inquest to ascertain the reasons for the death. The coroner can only register the death once any investigation is concluded and they are satisfied that the death has been thoroughly investigated with a correctly certified cause of death.

The time taken to investigate the circumstances of the death can often result in a death registration exceeding the five-day period. While registration delays are commonly only a few days, they can occasionally extend into years.

Mortality statistics are usually presented based on the number of deaths registered in a period, rather than the number of deaths that occurred in that period. This method is used because there is a requirement for timely data, despite the potential limitation in completeness caused by registration delays.

Unlike the other countries of the UK, there is no system of coroners' inquests in Scotland; instead, unexpected deaths are investigated by an official known as a procurator fiscal. However, Scotland has a slightly different process, which allows up to eight days for the registration of a death, in which time the cause of death for accidental, sudden or suspicious deaths may not yet be established. These deaths are still registered within this period, where cause of death would later be updated in the Register of Corrected Entries (now the Register of Corrections Etc (RCE), following an investigation.

11 . Related links

Predicting total weekly death occurrences in England and Wales methodology
Methodology | Released 29 May 2020
Outlining a way in which we can estimate the total number of deaths that occurred within the latest week in England and Wales.

Deaths registered weekly in England and Wales
Bulletin | Released 8 December 2020
Provisional counts of the number of deaths registered in England and Wales, including deaths involving the coronavirus (COVID-19) pandemic, by age, sex and region, in the latest weeks for which data are available.

Monthly mortality analysis, England and Wales: October 2020
Bulletin | Released 19 November 2020
Provisional death registration data for England and Wales, broken down by sex, age and country. Includes deaths due to COVID-19 and leading causes of death.

Deaths registered in England and Wales: 2019
Bulletin | Released 1 July 2020
Registered deaths by age, sex, selected underlying causes of death and the leading causes of death. Contains death rates and death registrations by area of residence and single year of age.