

Deaths involving coronavirus (COVID-19) in Scotland

Week 37 (7 to 13 September 2020)



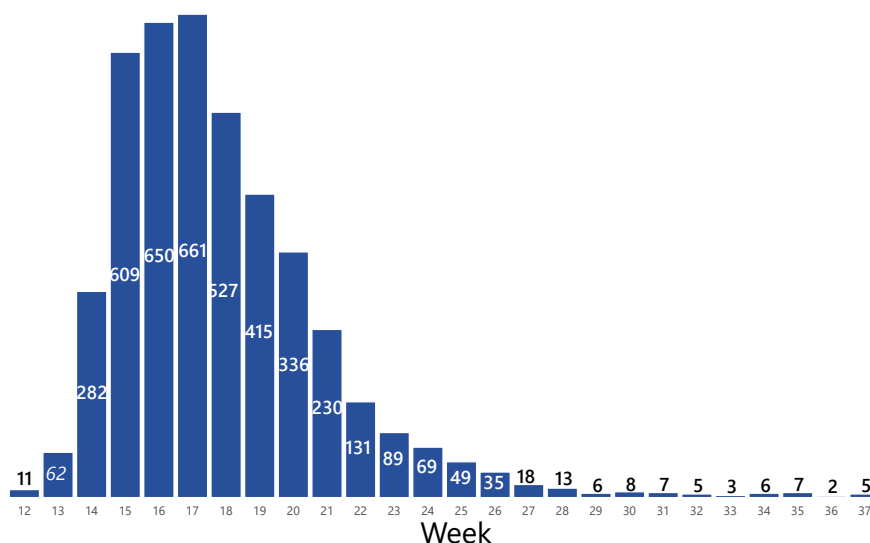
Published on 16 September 2020

This statistical report includes provisional statistics on the number of deaths associated with coronavirus (COVID-19) and the total number of deaths registered in Scotland, for weeks 1 to 37 of 2020

As of 13th September, 4,236 deaths had been registered which mentioned COVID-19

The highest number of COVID-19 deaths were registered in week 17 (20th to 26th April). Deaths have decreased since then to reach a level of 5 in week 37 (7th to 13th September).

Deaths per week involving Covid-19



Most deaths have occurred among the older population

Between weeks 12 and 37 (16th March to 13th September) there were 2,018 (23%) more deaths in the 85+ age group than average. For this age group, 17% (1,834) of deaths involved COVID-19.

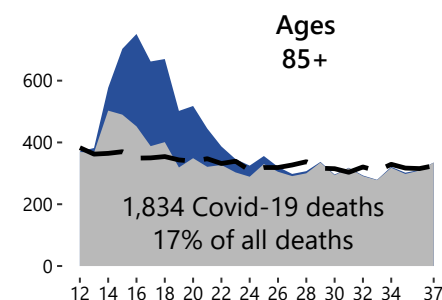
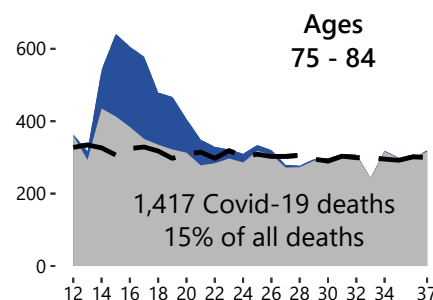
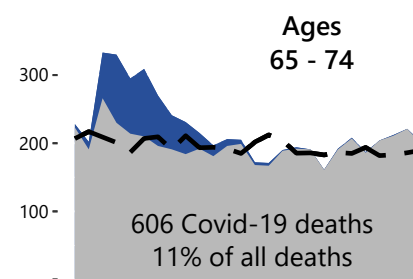
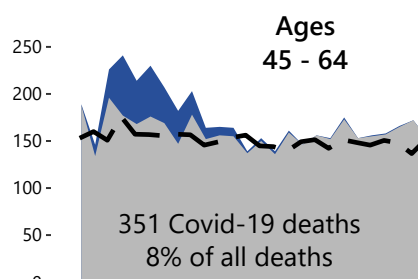
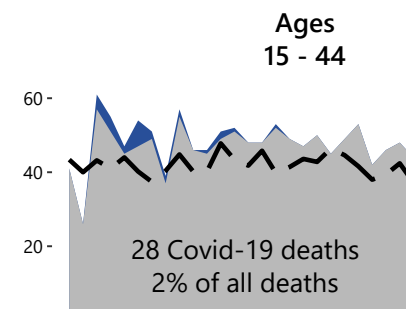
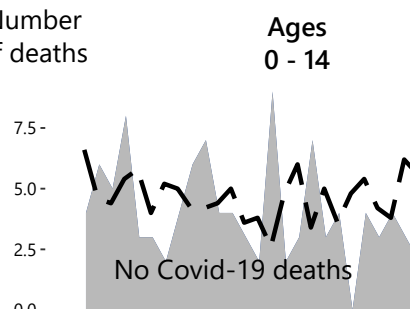
In the same period, there were 1,606 excess deaths in the 75-84 age group (20% above average). 15% of deaths (1,417) in this age group involved COVID-19.

Between the same weeks, there were 687 excess deaths in the 65-74 age group (14% above average). In this age group, 11% of deaths (606) involved COVID-19.

2020 deaths by age

- Deaths involving COVID-19
- Other causes of death
- Average deaths per corresponding week over previous 5 years

Number of deaths



Week number

National Records of Scotland (NRS) are now publishing a comprehensive and detailed analysis of mortality on a monthly basis. This includes analysis of deaths occurring in the previous month, but also includes some key weekly figures based on death registrations up to the Sunday prior to publication. For this report, the weekly analysis covers deaths registered in the period up to week 37 (7th to 13th September 2020) and the monthly analysis is based on deaths occurring up to the end of August 2020.

NRS mortality data (COVID-19 and excess deaths) will continue to be made available on a weekly basis through the [Scottish Government's COVID-19 dashboard](#)

Key Findings

COVID deaths

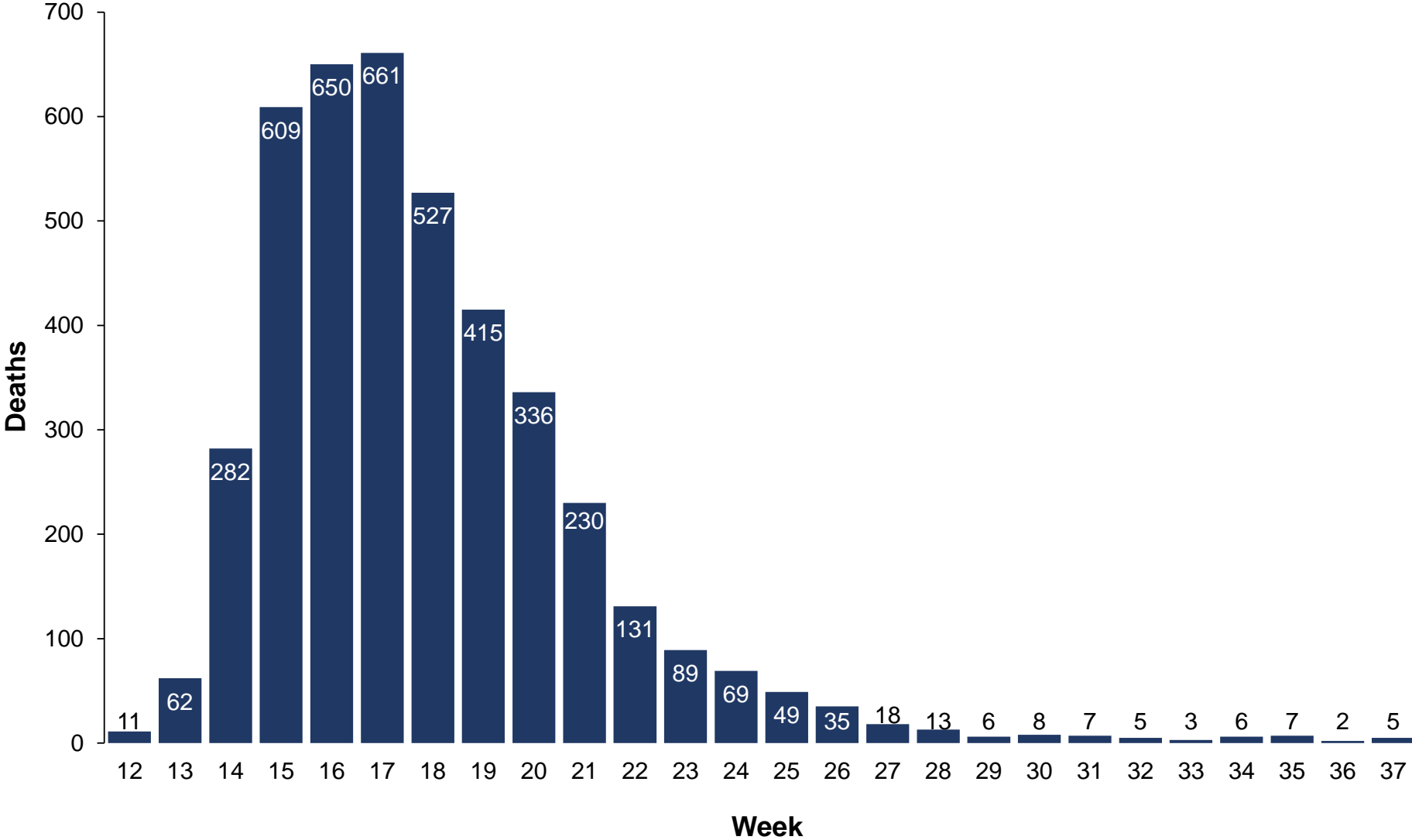
- As at 13th September, there have been a total of 4,236 deaths registered in Scotland where the novel coronavirus (COVID-19) was mentioned on the death certificate. The first mention of COVID-19 in a registered death certificate was the week beginning 16th March 2020.
- Of the total number of deaths registered in week 37 (7th to 13th September), there were 5 where COVID-19 was mentioned on the death certificate, an increase of 3 from the previous week (31st August to 6th September). Since mid-July deaths involving COVID-19 have remained around the same level with some weekly fluctuation.
- 46% of COVID-19 deaths registered to date related to deaths in care homes. 46% of deaths were in hospitals and 7% of deaths were at home or non-institutional settings.
- After adjusting for age, people in the most deprived areas were 2.1 times more likely to die with COVID than those living in the least deprived areas.
- Of those who died with COVID-19 between March and August, 92% had at least one pre-existing condition. The most common main pre-existing condition among those who died with COVID-19 was dementia and Alzheimer's disease (31%), followed by ischaemic heart disease (13%).
- Age-standardised death rates (adjusting for the age-structure of the population) were 43% higher for men than for women (193 vs 136 per 100,000 population for deaths occurring in March - August).

All-cause deaths and excess deaths

- The provisional total number of deaths registered in Scotland in week 37 of 2020 (7th to 13th September) was 1,056.

- The average number of deaths registered in the corresponding week over the previous five years was 1,008. There were 48 (5%) more deaths registered in week 37 of 2020 compared to the average.
- For the period covering weeks 12 – 37, there were 2,263 excess deaths in care homes (37% above average), 3,453 excess deaths at home or in non-institutional settings (47% above average) whilst after an early peak, hospital deaths fell below average levels in week 19 (4th – 10th May) and are now 693 (5%) below average levels for the period covering weeks 12-37.

Figure 1: Weekly deaths involving COVID-19 in Scotland, week 12 to week 37



Why are the NRS number of deaths different from the Scottish Government daily updates?

Put simply - they are two different measures that each have a valuable role in helping to monitor the number of deaths in Scotland involving COVID-19.

Scottish Government daily updates

These are provided by Health Protection Scotland (HPS) and count:

- all people who have had a positive test for COVID-19 and died within 28 days of their first positive test.

These are important because they are available earlier, and give a quicker indication of what is happening day by day and are broadly comparable with the figures released daily for the UK by the Department for Health and Social Care .

NRS weekly death totals

The figures in this publication count:

- all deaths where COVID-19 was mentioned on the death certificate by the doctor who certified the death. This includes cases where the doctor noted that there was suspected or probable coronavirus infection involved in the death.

As a result these weekly totals are likely to be higher than the daily figures - because the daily updates only include those who tested positive for the virus.

Using the complete death certificate allows NRS to analyse a lot of information, such as location of death and what other health conditions contributed to the death. We will start publishing more detailed breakdowns of the figures as soon as possible.

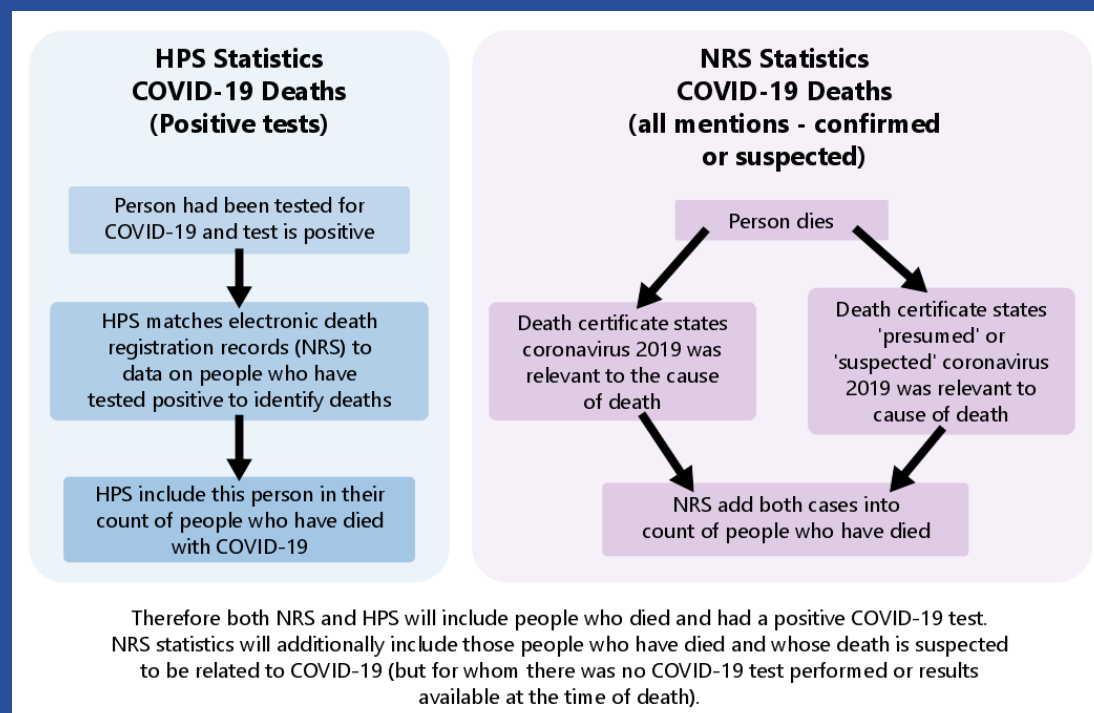
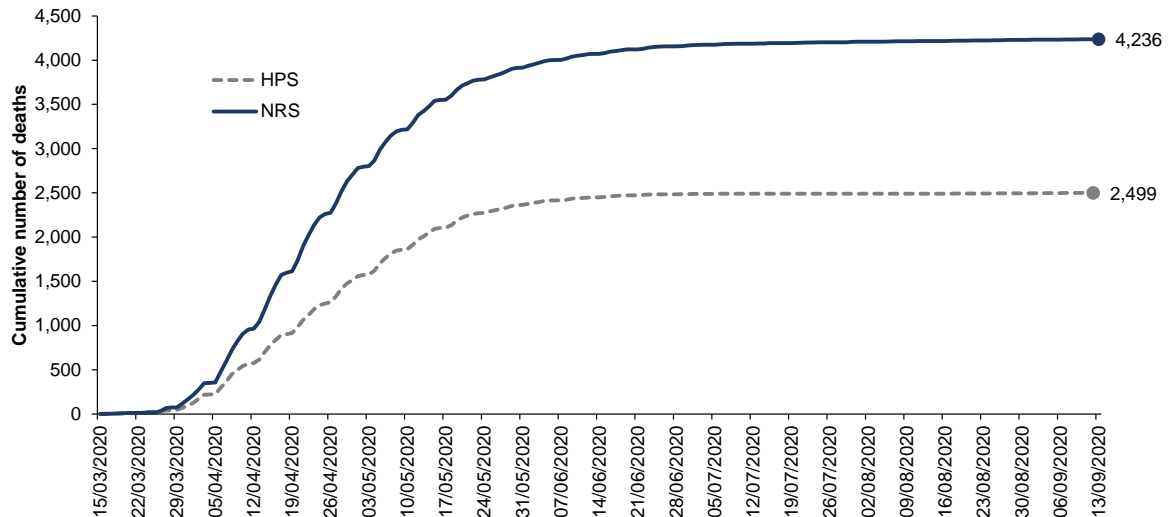


Figure 2 illustrates the differences between the two sets of figures. In the early stages, the figures were closely aligned but over time they have diverged with the NRS figure higher than the HPS figure. This is due to the inclusion of probable and suspected COVID deaths whereas the HPS figure only includes deaths of those who had tested positive for the virus. As the HPS figures count people who died within 28 days of their first positive test, in the more recent period the NRS figures may pick up people who tested positive but died more than 28 days later.

Figure 2: Cumulative number of deaths involving COVID-19 in Scotland using different data sources 2020



How do these weekly death figures compare with those produced across the rest of the UK?

The figures are produced using same definition as those published by the ONS (for England and Wales) and NISRA (for Northern Ireland), so are broadly comparable.

One minor difference is how the registration weeks are defined:

- Weeks used by ONS and NISRA run from Saturday to Friday
- NRS weeks run from Monday to Sunday (this is the [ISO8601](#) standard week).

In practice, this is likely to have very little impact on comparisons as there are few registrations that take place on Saturdays and Sundays.

You can view the latest weekly figures from ONS for England and Wales [here](#) and their latest monthly analysis [here](#). The latest figures from NISRA for Northern Ireland are available [here](#). The figures for the rest of the UK are a week behind those for Scotland so the equivalent weeks should be compared.

Figure 3: Deaths by week of registration, Scotland, 2020

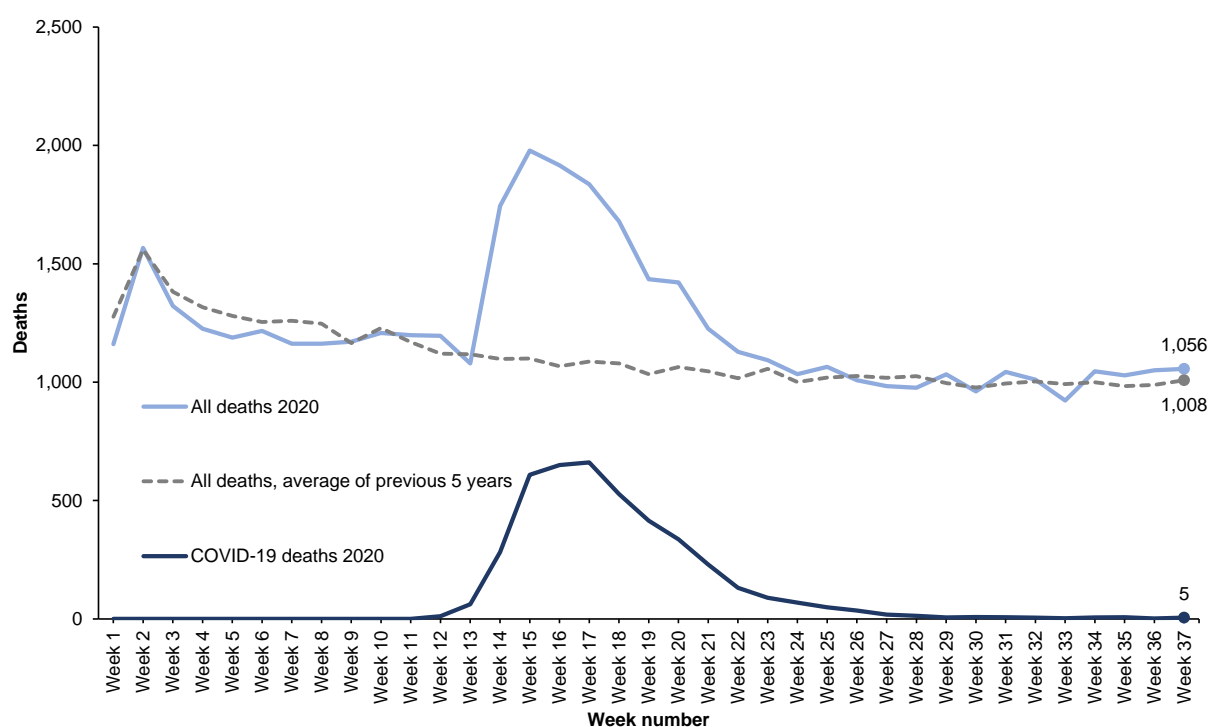


Figure 3 shows that in 2020 up to week 13, the number of weekly registered deaths in Scotland had been broadly in line with the five year average. From week 14 to 22, there was a clear divergence from the five year average. After peaking in week 15, the number of excess deaths has reduced and has been within 7 per cent above or below the average in every week since week 23 (1st to 7th June). For the most recent week (ending 13th September) there were 48 more deaths registered compared to the average for this time of year (5% above average for this week).

What are “Excess Deaths”?

The total number of deaths registered in a week in 2020 minus the average number of deaths registered in the same week over the period 2015 to 2019.

Deaths involving COVID-19 as a percentage of all deaths rose from 16% in week 14 to 36% in week 17, but has not been above 1% since week 28 (6th to 12th July).

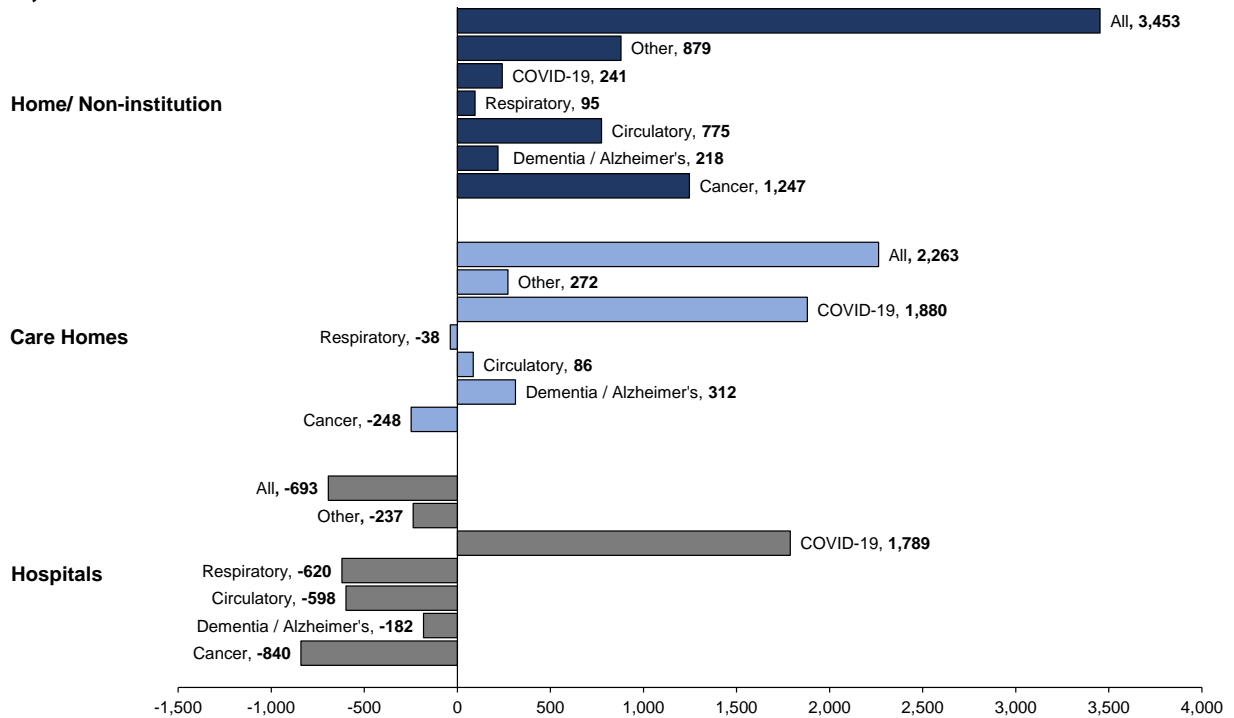
Figure 4 shows the number of excess deaths during weeks 12 to 37 (the period since the first coronavirus death was registered) broken down by location of death and the underlying cause of death.

There were 2,263 excess deaths in care homes (37% above average), 3,453 excess deaths at home or in non-institutional settings (47% above average) whilst after an early peak, hospital deaths fell below average levels in week 19 (4th – 10th May) and are now 693 (5%) below average levels for the period covering weeks 12-37.

In care homes and hospitals, COVID-19 was the cause of the majority of excess deaths whilst in home and non-institutional settings there were far fewer excess deaths

involving COVID-19. Cancer, circulatory deaths, and deaths from other causes accounted for most of the excess deaths in these settings. Conversely, in hospital settings there were lower than average numbers of deaths from all causes other than COVID-19.

Figure 4: Excess Deaths by underlying cause of death* and location, weeks 12 to 37, 2020



* ICD-10 codes for cause of death categories are as follows:

Cancer – C00-C97

Dementia and Alzheimer's – F01, F03, G30

Circulatory – I00-I99

Respiratory – J00-J99

COVID-19 – U07

Other – all other codes not mentioned above

What do we mean by “Underlying Cause of Death”?

The figures in this publication focus on deaths where COVID-19 was mentioned on the death certificate (either as the underlying cause or as a contributory factor).

In order to present a comparison of different causes of death, it is better to focus on deaths by underlying cause. This is because several causes can be listed on an individual death certificate so if we include all mentions of each particular cause we would end up with some double counting within our analysis.

The analysis of excess mortality in table 3 and figure 4 is based on deaths where COVID-19 was the underlying cause of death. Therefore the number of deaths to week 37 (3,917) are slightly lower than the number given for COVID-19 deaths elsewhere in this publication (4,236) as they are deaths involving COVID (either as the underlying cause or as a contributory factor).

Of all deaths involving COVID-19 registered by 13th September, it was the underlying cause in 92% of cases (3,917 out of 4,236).

More information on how the underlying cause of death is determined is available on the [NRS website](#).

Where have COVID-19 deaths taken place?

Of the 4,236 deaths involving COVID-19 which were registered to date, 46% related to deaths in care homes. 46% of deaths were in hospitals and 7% of deaths were at home or non-institutional settings.

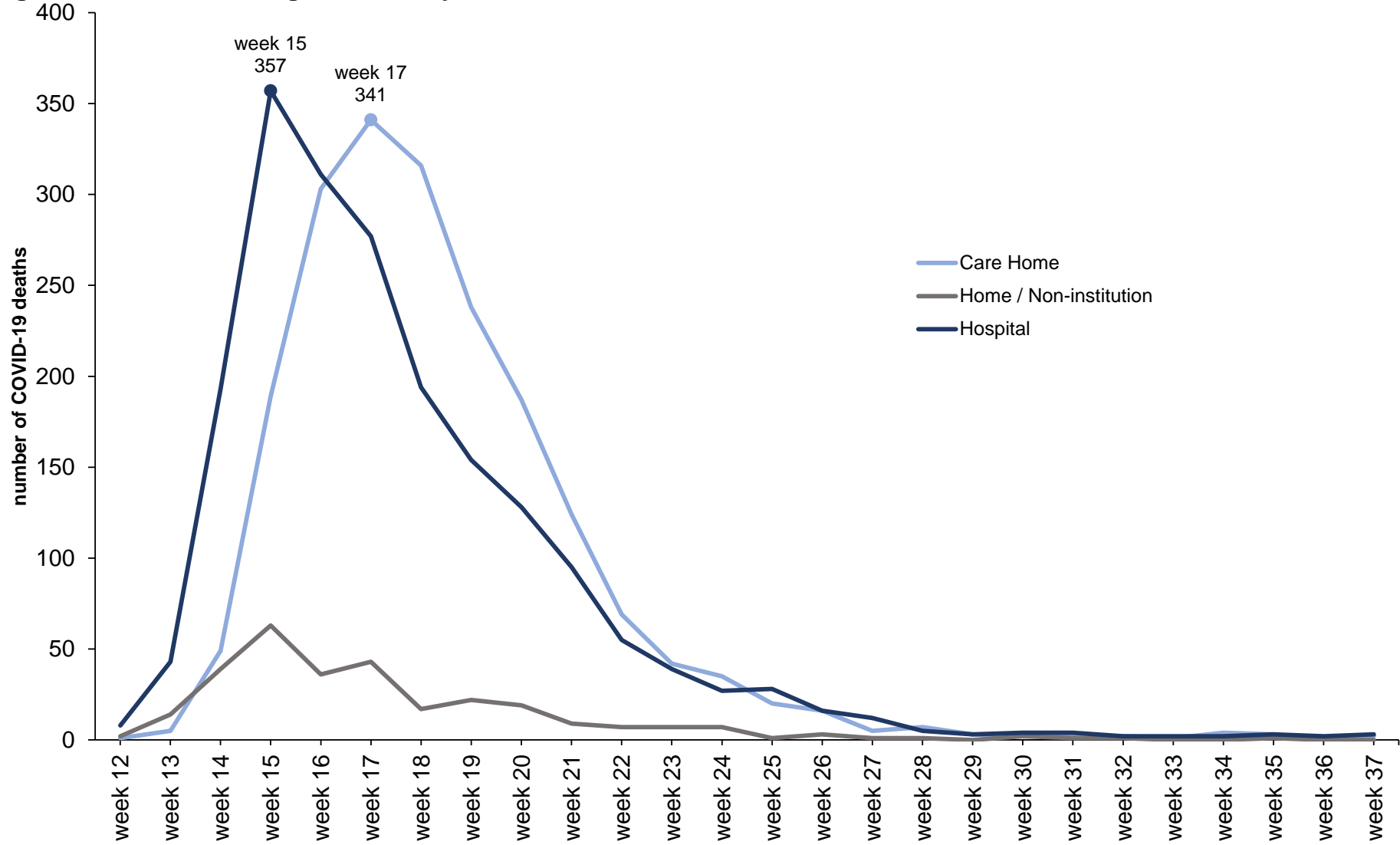
To put these figures into context, in 2019 around 24% of all deaths occurred in care homes, 48% in hospitals and 28% in home or non-institutional settings.

Figure 5 shows the number of deaths involving COVID-19 by location for weeks 12 to 37 in 2020.

In earlier weeks most COVID-19 deaths were occurring in hospitals, but by week 17 more COVID-19 deaths were occurring in care homes. Since week 23 the number of COVID-19 deaths in hospitals and care homes has been broadly similar.

Breakdowns of location of death within health board and council area are available on the [related statistics](#) page of our website.

Figure 5: Deaths involving COVID-19 by location of death, weeks 12 to 37, 2020

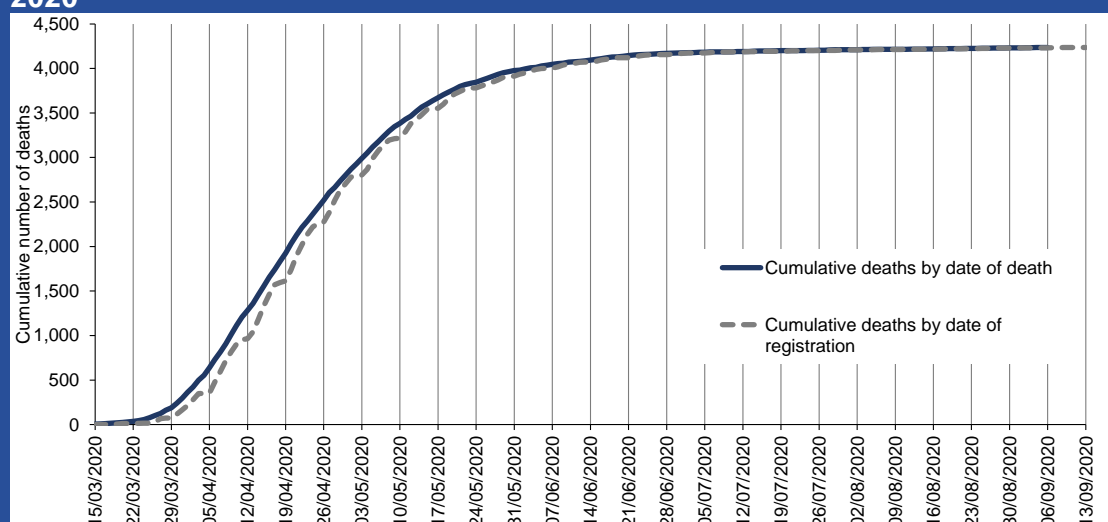


Why focus on date of registration rather than the actual date of death?

The figures throughout this report are based on the date a death was registered rather than the date the death occurred. When someone dies, their family (or a representative) have to make an appointment with a registrar to register the death. Legally this must be done within 8 days, although in practice there is, on average, a 3 day gap between a death occurring and being registered.

This therefore means that the latest trend in COVID-19 deaths by date of registration (the NRS headline measure) has a lag of around 3 days when compared with the figures on date of death. Figure 6 below illustrates this – of the 4,231 deaths which were registered by 6th September, all had all occurred by 31st August.

Figure 6: Deaths involving COVID-19, Date of Death vs Date of Registration 2020



This report includes all deaths which were registered by 13th September. There will, however, be deaths which occurred before this date but were not yet registered. In order to include a more complete analysis based on date of death, we need to wait an additional week to allow the registration process to fully complete. The trend based on date of death therefore only includes deaths which occurred by 6th September as the majority of these are likely to have been registered – so although this gives a more accurate picture, it takes more time to compile. However, they are valuable statistics and provide a clearer understanding of the impact and progress of COVID-19, when used alongside the other available daily and operational data.

In Summary

The death count based on **date of registration is more timely** but is incomplete.

The death count based on **date of death is more complete** and gives a more accurate trend on the progress of the virus, but less timely (a one week delay compared to date of registration figures).

DEATHS OCCURRING BETWEEN MARCH AND AUGUST 2020

This section provides an in-depth analysis of all deaths which **occurred** in Scotland between March and August. This is a different basis from the rest of this report which is based on the date deaths were **registered**.

Age-standardised mortality rates

When adjusting for size and age structure of the population, for all deaths involving COVID-19 there were 65 deaths per 100,000 people in March, rising to 583 per 100,000 people in April, before falling to 268 in May and 47 in June. It fell to very low levels in July (9 per 100,000) and August (5 per 100,000). Rates for males were significantly higher than for females (193 compared with 136 per 100,000 people in March to August combined).

Why use age-standardised mortality rates?

Age-standardised mortality rates are a better measure of mortality than numbers of deaths, as they account for the population size and age structure and provide more reliable comparisons between groups or over time. As the probability of death tends to increase with age, changes in the age-distribution of the population could have an effect on any apparent trend shown by numbers of deaths, or crude death rates (dividing the number of deaths by the total population).

Similarly, if two groups' populations have different age-distributions, using age-standardised rates will remove the effect of the differences between the groups and show which one has the higher mortality.

Age-standardised rates are therefore more reliable for comparing mortality over time and between different countries, different areas within a country, deprivation quintiles, and different sexes.

More information on the calculation of age-standardised mortality rates is available on our [website](#).

Looking only at deaths where COVID-19 was the underlying cause, the rates were only slightly lower – reflecting the fact that it was the underlying cause in the vast majority (93%) of deaths involving COVID-19. In the combined data for March to August, the age-standardised mortality rate was 149 per 100,000 people, with a similar differential between males (180) and females (125).

Figure 7a: Age standardised rates for deaths involving COVID-19 by sex, between 1st March 2020 and 31st August 2020

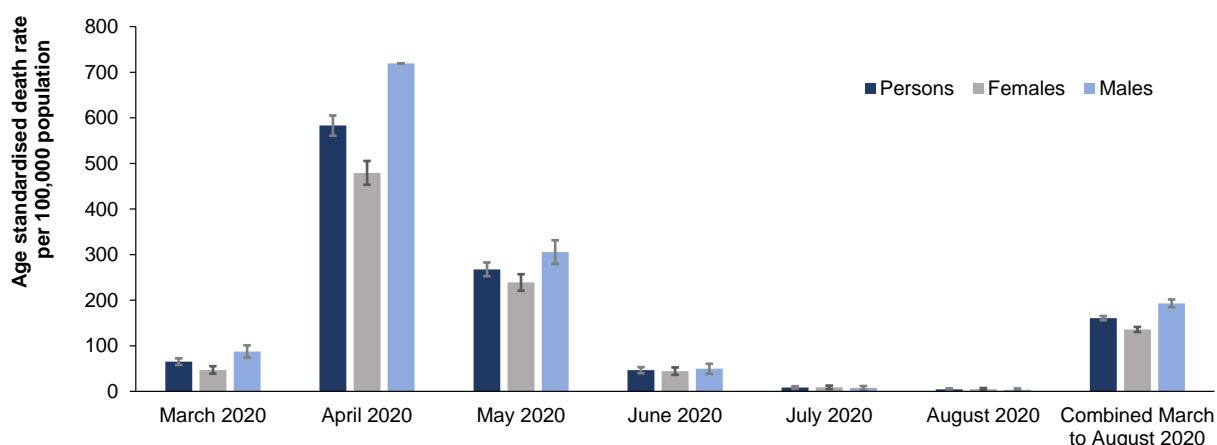
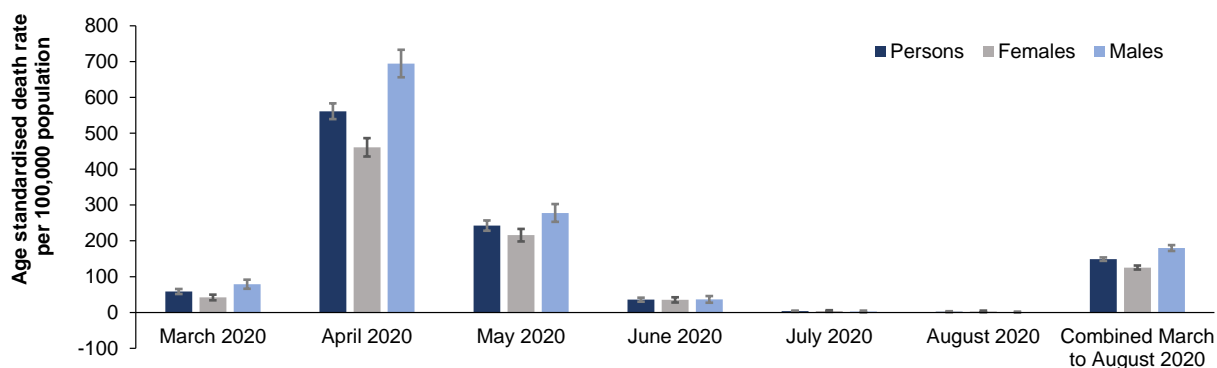


Figure 7b: Age standardised rates for deaths where COVID-19 was the underlying cause, by sex, between 1st March 2020 and 31st August 2020



The age-standardised mortality rate from all causes was 1,257 per 100,000 people in March, 1,782 per 100,000 people in April, 1,294 per 100,000 people in May, 1,023 per 100,000 people in June, 997 per 100,000 people in July and 966 per 100,000 people in August. The April figure is considerably higher than the latest annual figure for 2019 when there were 1,108 deaths per 100,000 population.

Leading causes of death

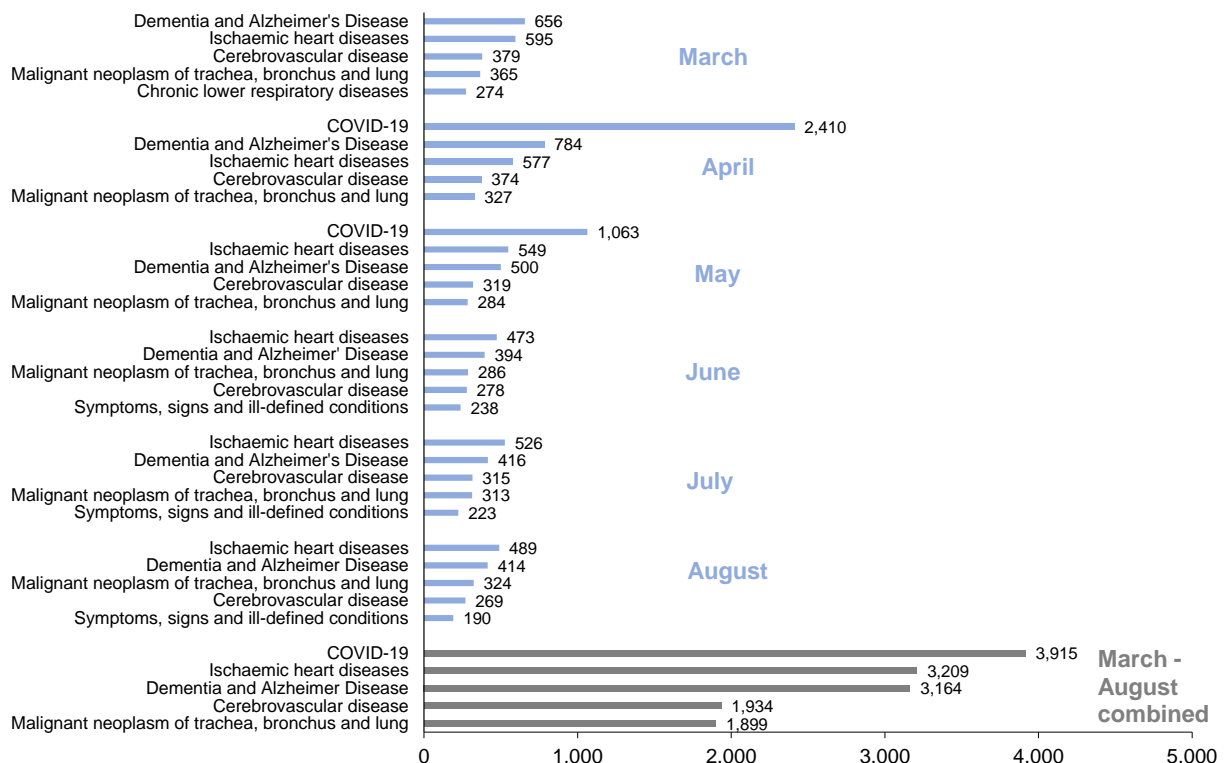
As this analysis compares different causes of death it is based on the underlying cause of death and therefore the figures for COVID-19 only include those deaths where it was the underlying cause rather than all those in which it was mentioned.

Over the period between March and August, the leading cause of death was COVID-19 (3,915 deaths, 12% of all deaths) followed by ischaemic heart disease (3,209, 10%) and dementia and Alzheimer's disease (3,164, 10%).

The leading cause of death analysis is based on a list of causes developed by the World Health Organisation (WHO). There are around 60 categories in total and cancers are grouped separately according to the type of cancer. For example, lung, breast and prostate cancer are all counted as separate causes.

This has changed over the months, with COVID-19 not appearing in the top 5 in March and then becoming the leading cause in both April and May. From June onwards, COVID-19 did not appear in the top 5 leading causes.

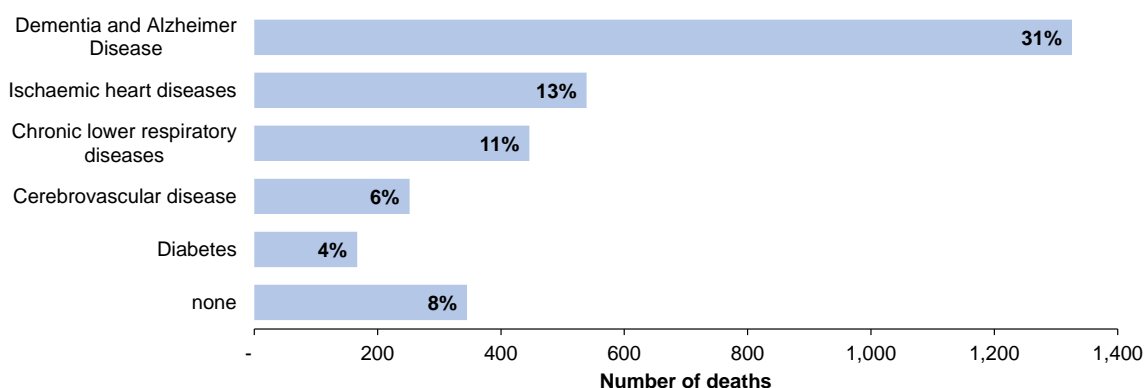
Figure 8: Leading causes of death between 1st March 2020 and 31st August 2020



Pre-existing conditions of people who died with COVID-19

Of the 4,231 deaths involving COVID-19 between March and August 2020, 92% (3,886) had at least one pre-existing condition.

Figure 9: Main pre-existing medical condition in deaths involving COVID-19, between 1st March 2020 and 31st August 2020



The most common main pre-existing condition among those who died with COVID-19 was dementia and Alzheimer’s disease (31%), followed by ischaemic heart disease (13%), chronic lower respiratory diseases (11%), cerebrovascular disease (6%) and diabetes (4%).

Pre-existing conditions are defined as a health condition mentioned on the death certificate which either came before COVID-19 or was an independent contributory factor in the death. Where only COVID-19 was recorded on the death certificate, or only COVID-19 and subsequent conditions caused by COVID-19 were recorded, these deaths are referred to as having no pre-existing conditions.

We have used methodology developed by ONS to determine the main pre-existing condition. This is defined as the one pre-existing condition that is, on average, most likely to be the underlying cause of death for a person of that age and sex had they not died from COVID-19. For more detail on how pre-existing conditions and main pre-existing conditions are derived, refer to the methodology paper.

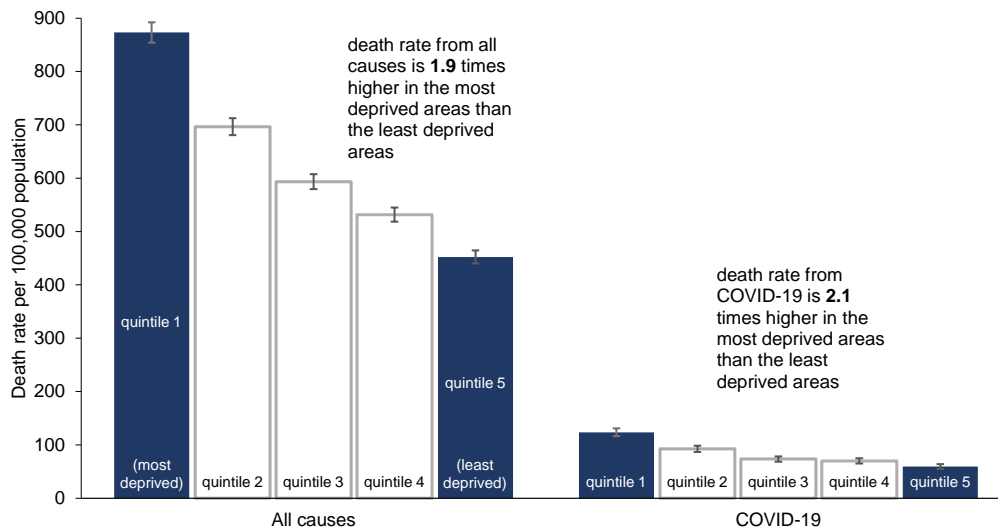
Mortality by deprivation

The age-standardised rate of deaths involving COVID-19 in the most deprived quintile (124 per 100,000 population) was double (2.1 times higher) than in the least deprived quintile (59 per 100,000 population).

The gap was slightly smaller when considering the rate of deaths from all causes (1.9 times higher in the most deprived quintile than in the least deprived quintile).

Deprivation quintiles are based on the Scottish Index of Multiple Deprivation (SIMD). This is an area based measure of deprivation. Quintiles are allocated according to the deceased’s usual place of residence.

Figure 10: Age-standardised death rates by SIMD quintile between 1st March 2020 and 31st August 2020

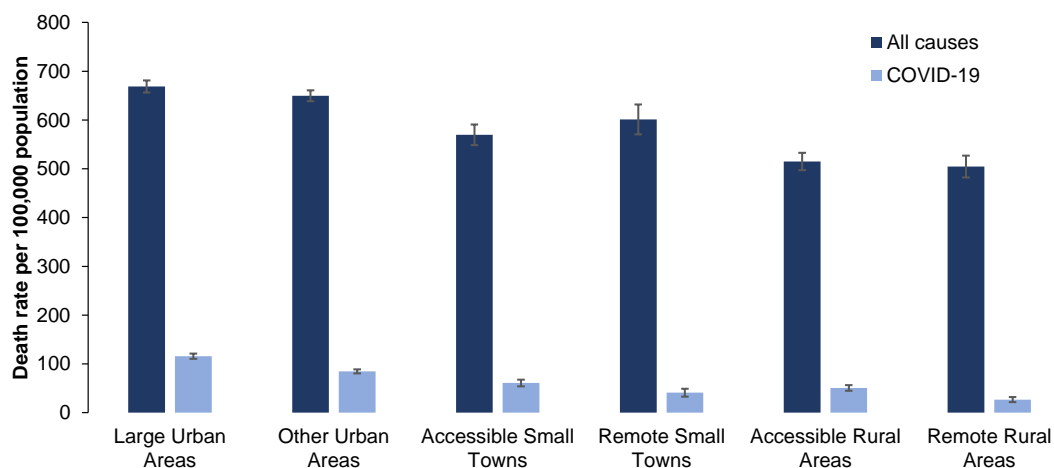


Mortality by urban rural classification

The age-standardised rate for deaths involving COVID-19 was over 4 times higher in large urban areas (116 deaths per 100,000 population) than in remote rural locations (27 per 100,000 population).

The gap was substantially smaller when considering the rate of deaths from all causes (1.3 times higher in large urban areas than in remote rural areas).

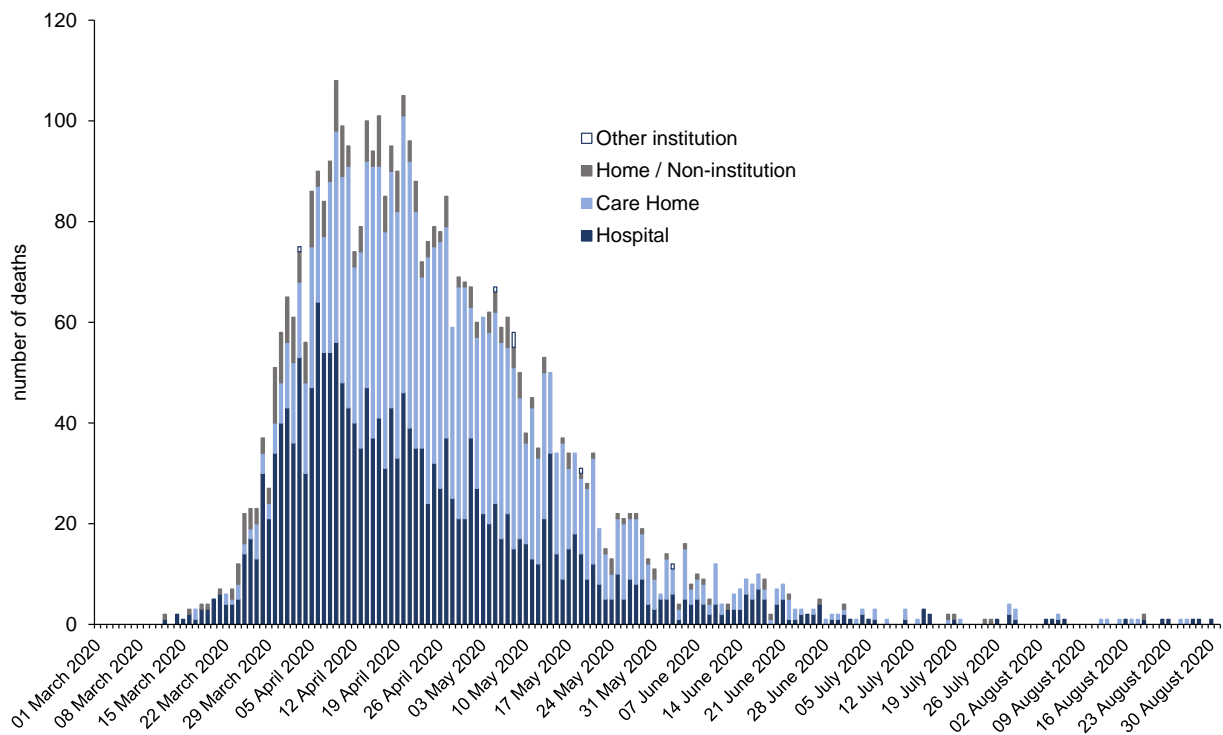
Figure 11: Age-standardised death rates by urban rural classification between 1st March 2020 and 31st August 2020



Daily deaths by location of death

During March and the first half of April, the majority of deaths involving COVID-19 took place in hospitals, but from mid-April onwards there were more deaths in care homes. Hospital deaths peaked on 6th April and have been reducing since then. Care home deaths continued to increase until 20th April and then began to decrease. Deaths in all locations are now very low.

Figure 12: Daily deaths by location, COVID-19 deaths between 1st March 2020 and 31st August 2020

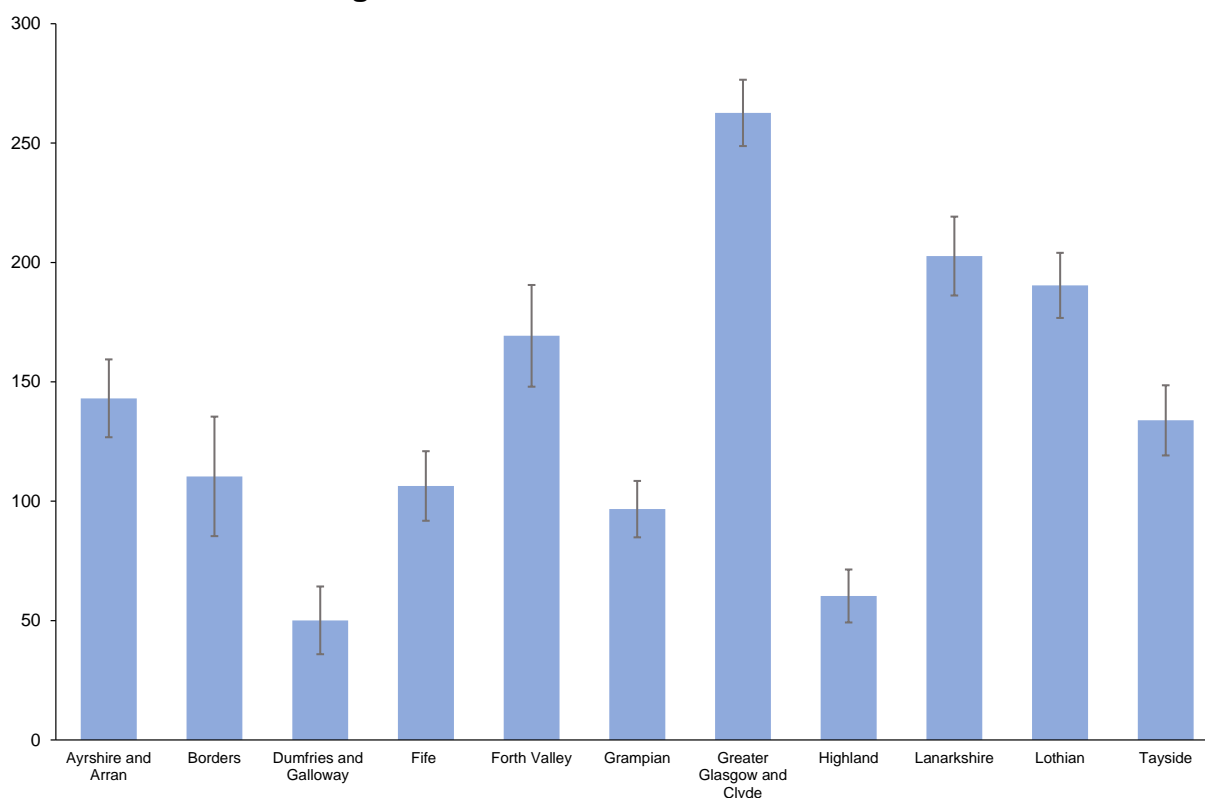


Age-standardised rates by health board and council area

Figure 13 shows that Greater Glasgow and Clyde had the highest rate of all health boards, followed by Lanarkshire and Lothian.

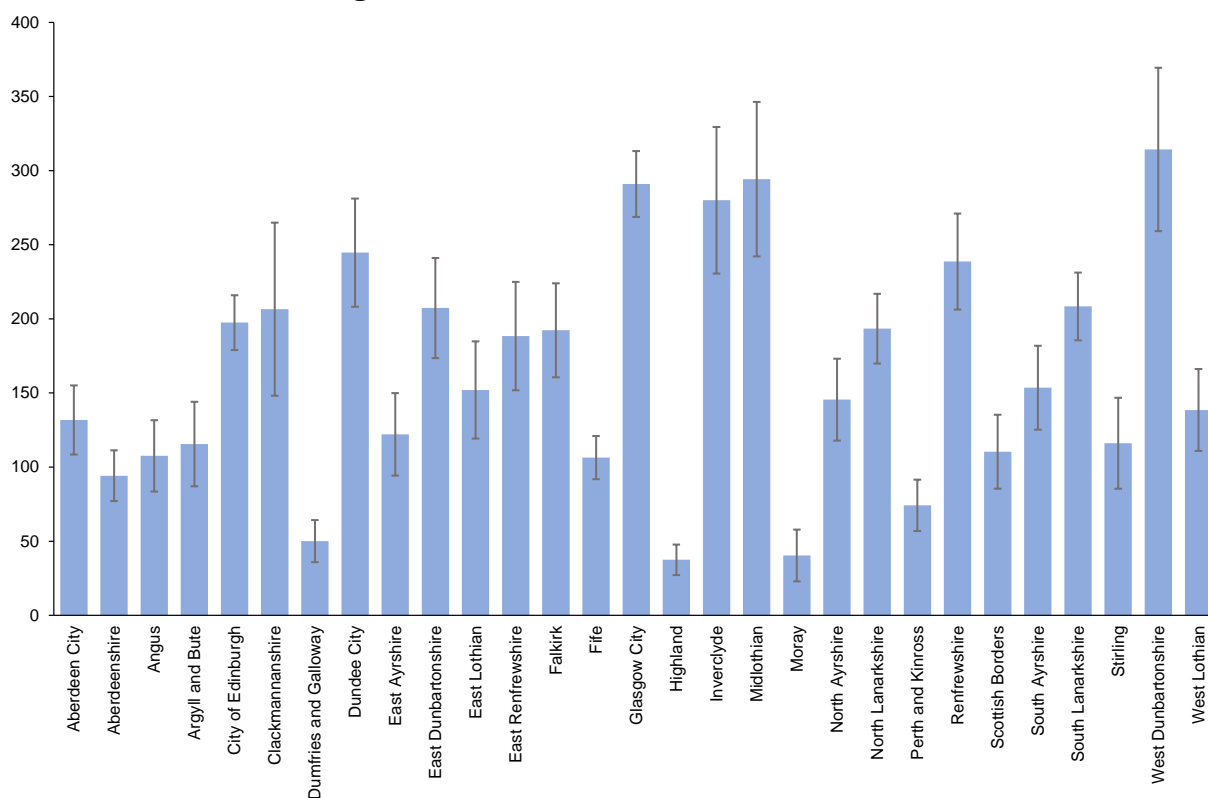
Figures are not shown for Orkney and Shetland as the number of deaths involving COVID-19 are too low to calculate robust age-standardised rates. There were no COVID-19 deaths in Western Isles.

Figure 13: age standardised rates for deaths involving COVID-19 between 1st March 2020 and 31st August 2020 in NHS health boards



West Dunbartonshire had the highest age-standardised death rate of all council areas, closely followed by Midlothian, Glasgow City and Inverclyde. Highland, Moray and Dumfries and Galloway had the lowest rates (in addition to Orkney and Shetland whose numbers were too low to calculate rates) and Na h-Eileanan Siar where there were no deaths (Figure 14).

Figure 14: Age-standardised rates for deaths involving COVID-19 between 1st March 2020 and 31st August 2020 in Council areas



COVID-19 deaths by occupation

Analysis by major occupation group (of deaths involving COVID-19 of people aged 20-64 years old) showed that the highest number of deaths occurred among ‘process, plant and machine operatives’ (44 deaths and an age-standardised death rate of 26 per 100,000 population). For context, there were 233 deaths across all occupations, with a rate of 10.3 per 100,000 population. (Table 10)

Compared to the average death rate (of deaths involving COVID-19) for all occupations, health care workers had a lower death rate (6.4 per 100,000 population) whilst social care workers had a higher rate (14.4 per 100,000 population) although due to the small numbers these differences were not significant.

It is important to note that these are the occupations as stated on the death certificate. It does not mean that the individuals contracted the virus while at work, merely that this was their occupation at the time of their death.

COVID-19 deaths at a small area level

A breakdown of deaths involving COVID by intermediate zone is available in table 11. Intermediate zones are a statistical geography that sit between datazones and local authorities. There are 1,279 intermediate zones covering the whole of Scotland and their populations ranges between 2,500 and 6,000.

How do NRS compile these statistics?

- Weekly figures are based on the date of registration. In Scotland deaths must be registered within 8 days but in practice, the average time between death and registration is around 3 days.
- Figures are allocated to weeks based on the ISO8601 standard. Weeks begin on a Monday and end on a Sunday. Often weeks at the beginning and end of a year will overlap the preceding and following years (e.g. week 1 of 2020 began on Monday 30 December 2019) so the weekly figures may not sum to any annual totals which are subsequently produced.
- Figures in the second half of this report (page 14 onwards) are based on date of death rather than date of registration.
- Deaths involving COVID-19 are defined as those where COVID-19 is mentioned on the death certificate, either as the underlying cause of death or as a contributory cause. Cause of death is coded according to the International Statistical Classification of Diseases and Related Health Conditions 10th Revision (ICD-10). The relevant codes included in this publication are U07.1 and U07.2.
- Figures include deaths where 'suspected' or 'probable' COVID-19 appears on the death certificate.
- Data are provisional and subject to change in future weekly publications. The data will be finalised in June 2021. Reasons why the data might be revised later include late registration data being received once the week's figure have been produced or more information being provided by a certifying doctor or The Crown Office and Procurator Fiscal Service (COPFS) on the cause of death.
- Certain user enquiries for ad-hoc analysis related to COVID-19 deaths have been published on our [website](#).

Index of available analysis on registered deaths involving COVID-19

Breakdown	Frequency	When Added	Latest Period Covered	Date Last Published
Age group	Weekly	8 th April 2020	Week 37	14 th September 2020
Sex	Weekly	8 th April 2020	Week 37	14 th September 2020
Location	Weekly	15 th April 2020	Week 37	14 th September 2020
Health Board	Weekly	8 th April 2020	Week 37	14 th September 2020
Local Authority	Weekly	22 nd April 2020	Week 37	14 th September 2020
Excess deaths by cause	Weekly	22 nd April 2020	Week 37	14 th September 2020
Excess deaths by cause and location	Weekly	17 th June 2020	Week 37	14 th September 2020
Age-standardised mortality rates – Scotland	Monthly	13 th May 2020	August	14 th September 2020
Age-standardised mortality rates – sub-Scotland	Monthly	17 th June 2020	March – August combined	14 th September 2020
Leading causes of death	Monthly	13 th May 2020	August	14 th September 2020
Pre-existing conditions	Monthly	13 th May 2020	August	14 th September 2020
Deprivation	Monthly	13 th May 2020	March - August combined	14 th September 2020
Urban Rural	Monthly	13 th May 2020	March - August combined	14 th September 2020
Daily occurrences by location of death	Monthly	13 th May 2020	August	14 th September 2020
Occupation	Monthly	17 th June 2020	March - August combined	14 th September 2020
Intermediate Zone	Monthly	17 th June 2020	March - August combined	14 th September 2020
Ethnic Group	One-off	8 th July 2020	March to mid-June	8 th July 2020

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