

Excess mortality and Covid-19 related deaths in Northern Ireland: March 2020 to December 2022

Key Points

March 2020 to December 2022

- There were an estimated 4,075 excess deaths from 1 March 2020 to 31 December 2022, 9.0% above expected levels (average deaths for the same period over the last five years). In the same period, there were 5,060 Covid-19 related deaths.
- Excess deaths were highest in April/May 2020, October 2020 to January 2021, July 2021 to November 2021, July 2022 and December 2022. Deaths were below expected levels in March/April 2021, January/ February 2022 and September 2022.
- The majority of Covid-19 related deaths (69.9%) occurred in hospital. The number of Covid-19 related deaths in hospital (3,536) was more than three times larger than estimated excess deaths in hospitals (1,056). In contrast, estimates of excess deaths at home formed the majority of overall excess deaths (3,176 or 77.9% of 4,075).
- Armagh City, Banbridge & Craigavon LGD had the largest estimate of excess deaths (523), accounting for 12.8% of the 4,075 excess deaths in Northern Ireland. It had also the highest excess deaths as a proportion of expected deaths (11.4%), while Belfast LGD had the lowest proportion (4.5%).
- Excess deaths were higher in rural areas (11.9%) compared to urban areas (7.4% above expected levels); excess deaths in rural areas (1,572) outnumbered the Covid-19 related deaths (1,472).

March 2020 to September 2022 – cause of death

- From March 2020 to September 2022, the number of deaths where Covid-19 was found to be the underlying cause (4,028) was higher than excess mortality in this 31-month period (3,661). Noteworthy levels of excess deaths were found for diseases of the digestive system (342 or 16.0% above expected levels) and diabetes (156 or 26.2% above expected levels).
- There were fewer deaths in hospitals, care homes and hospices during this period (negative excess deaths) and more deaths at home and other settings for malignant neoplasms, dementia and Alzheimer’s disease, circulatory and respiratory diseases. Deaths caused by diseases of the digestive system went up in all settings, but most markedly at home (44.3%).
- Excess deaths from diseases of the digestive system were markedly higher for females (17.8%), those aged 75 to 84 years (22.8%) and in the Southern and Western Health & Social Care Trusts (23.3% and 23.6% respectively).
- There was a notable difference in excess deaths due to dementia and Alzheimer’s disease, which were below expected levels in urban areas (-4.3%) and above expected levels in rural and mixed urban/rural areas (9.2%).

Contents

Introduction.....	2
Covid-19 in Northern Ireland	3
Excess mortality methodology	3
Excess deaths – March 2020 to December 2022	5
Excess deaths by age and sex.....	7
Excess deaths by place of death	8
Excess deaths by Local Government District.....	10
Excess deaths – Deprivation	13
Excess deaths by rurality.....	14
Excess deaths by cause of death.....	15
Strengths and limitations	18
Alternative methods.....	19
Annex A – Excess deaths methodology.....	23

Introduction

The Northern Ireland Statistics & Research Agency (NISRA) publishes official statistics on the number of deaths registered in Northern Ireland¹. Due to the coronavirus (Covid-19) pandemic, the NISRA [weekly deaths release](#) has been supplemented with deaths relating to Covid-19, that is, where Covid-19 or suspected Covid-19 was mentioned anywhere on the death certificate, including in combination with other health conditions². Additional analysis has been published, which provides a further breakdown of Covid-19 related mortality rates by age, sex and geographical areas³.

This bulletin reports on excess mortality based on deaths occurring from the start of the pandemic (March 2020) to December 2022 in Northern Ireland, an approach that does not rely on the availability or quality of population estimates or cause of death information. It is for this reason that ‘excess mortality’ is often used as a standard indicator when comparing deaths between countries⁴. This is the fourth bulletin on excess mortality during the pandemic.

This report is an Official Statistics publication and statistics are produced to the high professional standards set out in the [Code of Practice for Official Statistics](#).

The statistics are:

- produced to meet identified user needs;
- well explained and readily accessible;
- produced according to sound methods; and
- managed impartially and objectively in the public interest and are produced free from any political interference.

The production of this report has been supported by the Administrative Data Research Northern Ireland (ADR NI), further details on which are provided in the [background notes](#).

¹ [Official death statistics for Northern Ireland](#)

² See also [Covid-19 related deaths and pre-existing conditions](#)

³ [Covid-19 related deaths in Northern Ireland, March 2020 to October 2021](#)

⁴ For example, see ‘[Understanding excess mortality](#)’ by the Health Foundation

Covid-19 in Northern Ireland

The first confirmed case in Northern Ireland was reported on 28 February 2020⁵. Cases continued to rise in early March and the first Covid-19 related death occurred on 18 March 2020. Based on deaths registered up to 22 February 2023, there have been 5,060 Covid-19 related deaths in Northern Ireland up to 31 December 2022.

The term 'Covid-19 related deaths' used in this bulletin reflects where Covid-19 or 'suspected' or 'probable' Covid-19 was mentioned anywhere on the death certificate, including in combination with other health conditions. A subsection of these deaths, where Covid-19 was found to be the underlying cause of death, are referred to as Covid-19 deaths.

Excess mortality methodology

Excess mortality is considered to be a good measure of the impact of the Covid-19 pandemic, as it does not rely on the availability or interpretation of the (primary and secondary) causes of death. It captures deaths from all causes, which may be related to a range of factors associated with the pandemic, for example, changes in the availability or uptake of health care services including screening and diagnosing, or the impact of 'lock-down' on health. Some of these effects may take months or years to be fully understood.

Excess mortality can be expressed as a number or as a proportion of the expected number of deaths, which in this analysis is defined as the average number of deaths for the same period over the previous five years. For example, if the number of deaths in 2022 was 550 and the average number of deaths over the last five years is 500, then this means that there is an excess of 50 deaths or 10% above expected levels. The estimate of excess deaths allows for any potential under- or over-counting of Covid-19 deaths and is therefore useful when comparing the effect of the pandemic in different populations. Excess deaths are distinctly different from Excess Winter Mortality, which is a measure of seasonality (see overleaf for further detail).

Deaths in 2020 were compared to the average number of deaths in the previous five years, 2015 to 2019. A similar approach for 2021 meant that the 2020 pandemic year is included in the five-year average (2016-2020). Likewise, the reference period for 2022 deaths (2017-2021) includes two pandemic years. This approach is currently used for weekly death statistics in Northern Ireland. Other countries have chosen alternative time periods (see Tables 1a and 1b), which lead to fewer expected deaths and therefore higher excess deaths. Differences between the comparison periods could be amplified in some months, certain geographical areas and age cohorts when deriving excess mortality due to the inclusion of 2020 (and 2021).

A period with excess mortality can be followed by another period where the number of deaths is below expected levels. A period of high mortality rate might reduce the size of the most susceptible population, say the very elderly or those with underlying health problems, leading to fewer deaths compared to previous years in the following period.

⁵ Public Health Agency [Covid-19 surveillance reports](#)

Excess Deaths

Excess mortality is the difference between actual deaths from all causes in a period minus the expected number of deaths. It is therefore a mathematical concept; it is not possible to identify if an individual death was an excess death. For example, to determine the estimate of excess deaths which occurred in Belfast, we look at the number of deaths which occurred in Belfast for the period of interest (March 2020 to December 2022) and subtract from this the average number of deaths in the previous five years. This means that excess deaths may in some cases be a negative number. In contrast, the analysis of Covid-19 related deaths to which this report makes comparisons, is based on individual deaths where Covid-19 was included on the death certificate. These cannot be automatically classed as excess deaths. Therefore, care should be taken when making comparisons between excess deaths and Covid-19 related deaths. Note that in this report, excess deaths are rounded to the nearest whole number. Unrounded figures are presented in the accompanying spreadsheet.

Excess Winter Mortality

Excess Winter Mortality (EWM)⁶ is the difference between the actual number of winter deaths in the four-month period December to March and the expected number of deaths. The latter is the average of the number of deaths in the four-month periods which precede winter (August to November) and follow winter (April to July). As such, it is a measure of seasonality. The latest EWM figures for Northern Ireland relate to the winter of 2021/2022.

Table 1a: Expected deaths for 2021 using different methods

Time period used for average deaths	Average deaths	Compared to 2016-20 average	Used by
2016-2020	16,060	-	NISRA weekly deaths
2015-2019	15,659	-401	Office for National Statistics, National Records of Scotland
2016-2019	15,710	-350	Eurostat

Table 1b: Expected deaths for 2022 using different methods

Time period used for average deaths	Average deaths	Compared to 2017-21 average	Used by
2017-2021	16,077	-	NISRA weekly deaths
2016-2019, 2021	15,679	-398	Office for National Statistics, National Records of Scotland
2016-2019	15,340	-737	Eurostat

The analysis in this report is based on deaths that occurred (based on date of death) from 1 March 2020 to 31 December 2022 (rather than the date the deaths were registered). It compares the number of deaths to the average of equivalent months in the previous five years. To allow for delays in the death registration process, the report takes account of registrations up to 22 February 2023 and builds this period into the five-year average for a more valid comparison. Further information on the methodology is presented in Annex A.

⁶ [Excess winter mortality in Northern Ireland](#)

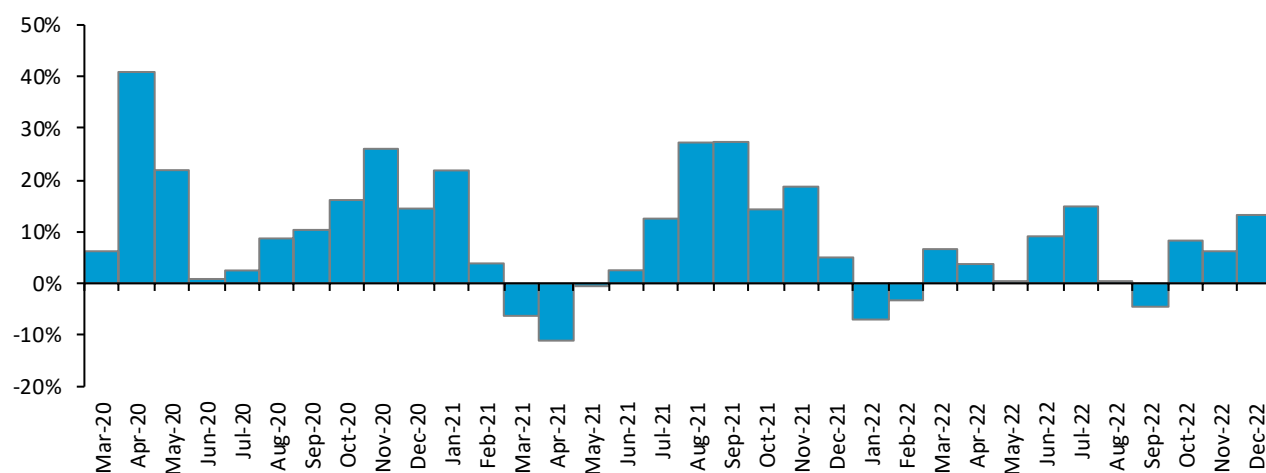
Excess deaths – March 2020 to December 2022

Excess deaths have been reported on a registration date basis in the [weekly death reports](#), and can be derived from [monthly death registrations](#). From March 2020 to December 2022 inclusive, 49,381 deaths were registered, which was 4,004 more (+8.8%) than the average over the previous five years of 45,377 deaths in corresponding months.

By considering deaths which occurred in this 34-month period, including registrations up to 22 February 2023, 48,950 deaths occurred during this time. This figure is lower than the number of registrations (49,381) in the same period, in part due to late registration of deaths – some deaths that occurred in this period will be registered after 22 February 2023. Findings presented in this report account for this registration lag period (see Annex A): excess deaths are estimated to be 4,075 deaths or 9.0% higher than in the previous five years.

Monthly excess deaths figures can be best presented as a proportion of expected deaths, which in this study is represented as the average of the same month in the previous five years (see Figure 1). This would account for seasonal mortality, which is generally higher in winter months.

Figure 1: Excess deaths as proportion of average deaths in the previous five years, by month, March 2020 to December 2022



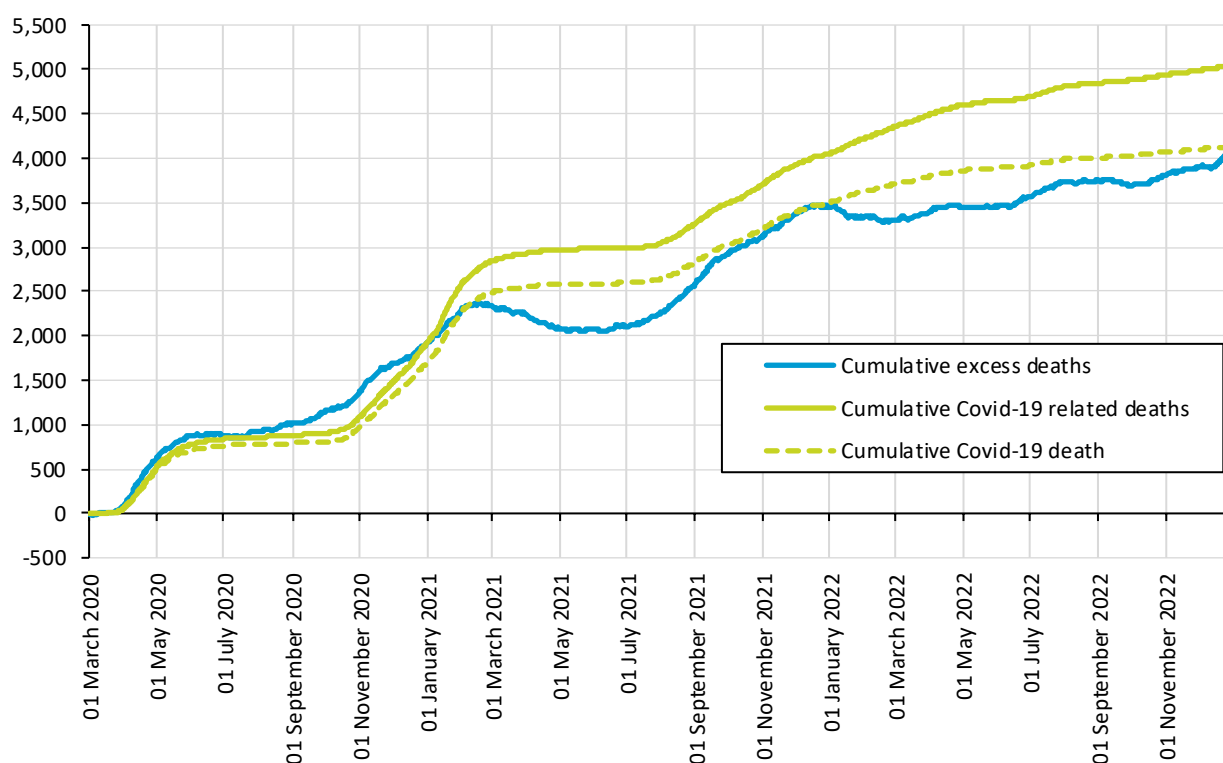
Excess deaths were at their highest at the start of the pandemic, with deaths in April 2020 being 40.8% above expected levels. They remained high in May 2020. During June and July, the number of deaths were at broadly similar levels to the average over the previous five years. For the remainder of 2020, there continued to be more deaths than expected based on the previous five years, and this continued up to February 2021.

From March to May 2021, excess mortality was negative: deaths were lower than expected based on average deaths from 2016 to 2020. This can only in part be explained by the effect of including 2020 in the average death calculation. Negative excess deaths may also have been driven by the high levels of excess deaths in the previous months. Excess deaths rose again from July to September 2021 before falling towards the end of 2021. In the first two months of 2022, deaths were lower than expected. On the whole, excess deaths in 2022 were lower than the previous two years. The main outliers were July and December when deaths were 15.0% and 13.1% above expected levels respectively. The last three months of 2022 showed consistent positive excess mortality, although not at the scale of those in spring 2020, winter 2020/21 and autumn 2021.

Over the period March 2020 to December 2022, there were 4,075 excess deaths, compared to 5,060 deaths that included a mention of Covid-19 on the death certificate. The difference between those two figures is 985 deaths or roughly a fifth (19.5%) of Covid-19 related deaths. Note that this gap would be smaller when considering deaths where Covid-19 is the underlying cause of death. Latest figures suggest that there have been 4,129 deaths up to 31 December 2022 where Covid-19 was the underlying cause of death, and thus still slightly higher than current estimates of excess deaths. Further analysis can be found in the section [excess deaths by cause of death](#).

An alternative presentation of excess deaths is as cumulative totals of daily figures. Starting from 1 March 2020, excess deaths of subsequent days are added. Figure 2 shows the cumulative excess deaths occurring from 1 March 2020 to 31 December 2022, based on registrations up to 22 February 2023. It also presents the cumulative number of Covid-19 related deaths in this period, as well as deaths where Covid-19 was found to be the underlying cause of death (Covid-19 deaths).

Figure 2: Cumulative estimate of excess deaths, Covid-19 related deaths and Covid-19 deaths, March 2020 to December 2022



All series follow a broadly similar pattern: there are three periods with rapid increases of Covid-19 related deaths (April/May 2020, October 2020 to February 2021, and August to December 2021) that also see increases in cumulative excess deaths. There are two periods with relatively few Covid-19 related deaths – July to September 2020 and March to July 2021 – where cumulative excess deaths were respectively relatively flat and even declining⁷. On 2 January 2021, cumulative covid-19 related deaths became larger than cumulative excess deaths and remained so thereafter. In 2022, there were fewer Covid-19 related deaths although they were more evenly spread over the months.

⁷ The Office for National Statistics found a similar decline in England and Wales from March to Jun 2021, see Figure 3 of ‘[Excess mortality and mortality displacement in England and Wales: 2020 to mid-2021](#)’.

Excess deaths by age and sex

Excess deaths can be calculated for sub-populations, for example, based on socio-demographic characteristics and geography. Figure 3 shows both excess deaths and Covid-19 related deaths by age group.

Figure 3: Excess deaths and Covid-19 related deaths, by age group, March 2020 to December 2022

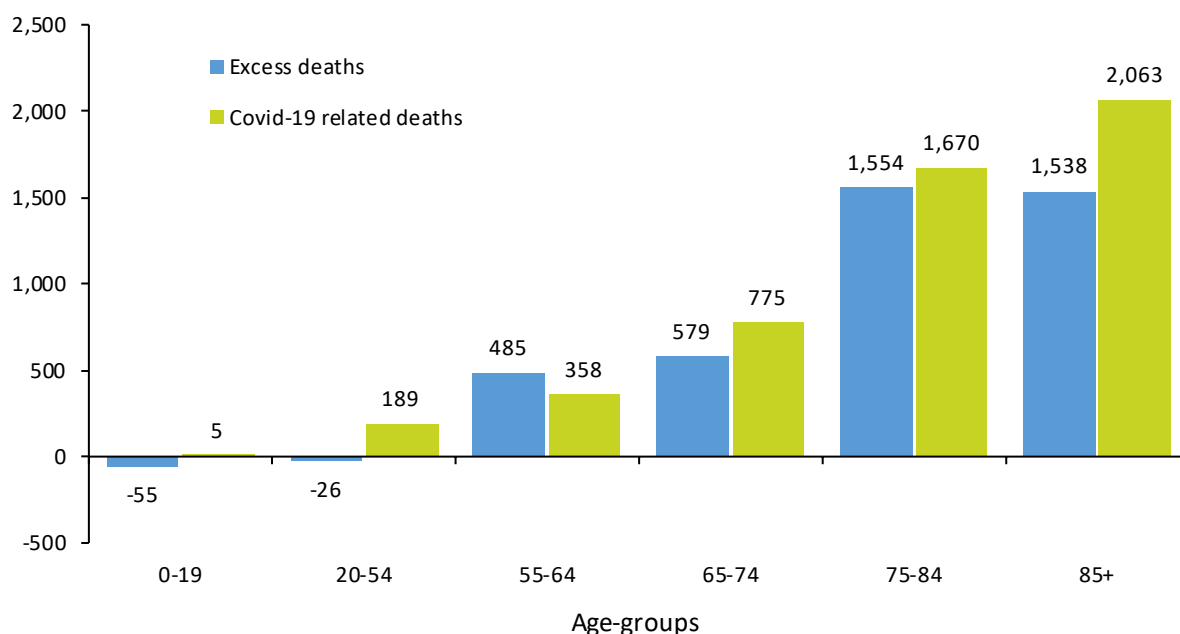


Figure 3 shows that both excess deaths and Covid-19 related deaths increase with age. Around three-quarters of excess deaths (75.9%; 3,092 out of 4,075) and Covid-19 related deaths (73.8%; 3,733 out of 5,060) are accounted for by those aged 75 years and over. Only for the age group 55-64 years were excess deaths (485) higher than Covid-19 related deaths (358).

There were 55 negative excess deaths for those aged under 20 years, indicating that the number of deaths in this group in the 34 months from March 2020 to December 2022 was 11.7% lower than the five-year average of previous years. However, the expected number of deaths in this age group was low and were predominately infant deaths and deaths due to external causes⁸, both of which would have longer registration delays as many are referred to the coroner. Also, births since March 2020 have been markedly lower than in the previous five years⁹. Deaths of those aged 20 to 54 could also be affected by registration delay, as nearly a third¹⁰ of deaths in this age group are known to be due to external causes of mortality (for example, traffic accidents, suicide, and drug related deaths).

The estimate of excess deaths for females (1,759) was markedly lower than that for males (2,316), with a smaller difference in the number of Covid-19 related deaths (2,691 males compared to 2,369

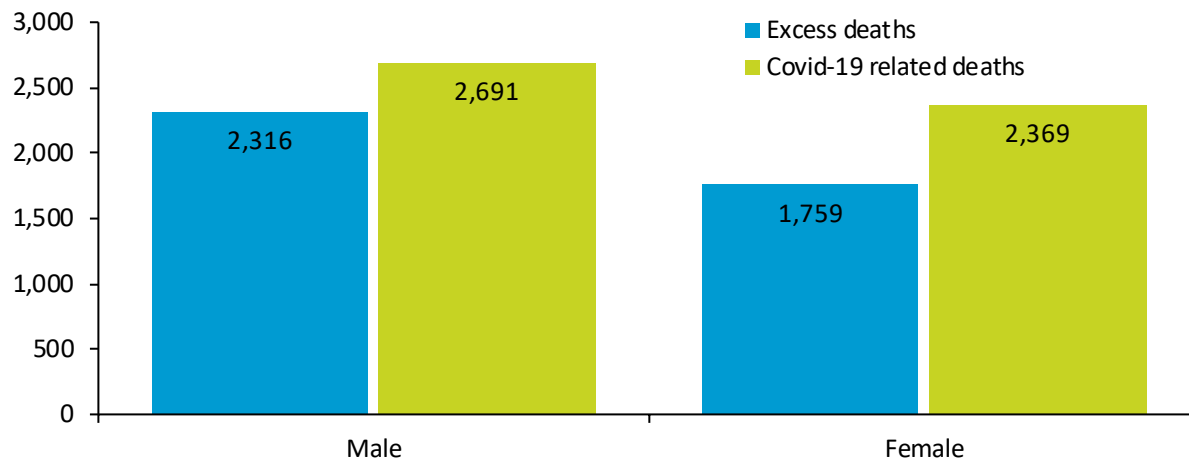
⁸ See Table 6.4 of the [Registrar General Annual Report 2021](#)

⁹ See [monthly birth statistics](#)

¹⁰ Table 6.4 of the [Registrar General Annual Report 2021](#) shows that 29.6% (415 out of 1,404) of deaths aged 20 to 54 years died of external causes.

females – see Figure 4). Deaths of males in the 34-month period were 10.3% above expected levels, compared to 7.6% for females.

Figure 4: Excess deaths and Covid-19 related deaths, by sex, March 2020 to December 2022



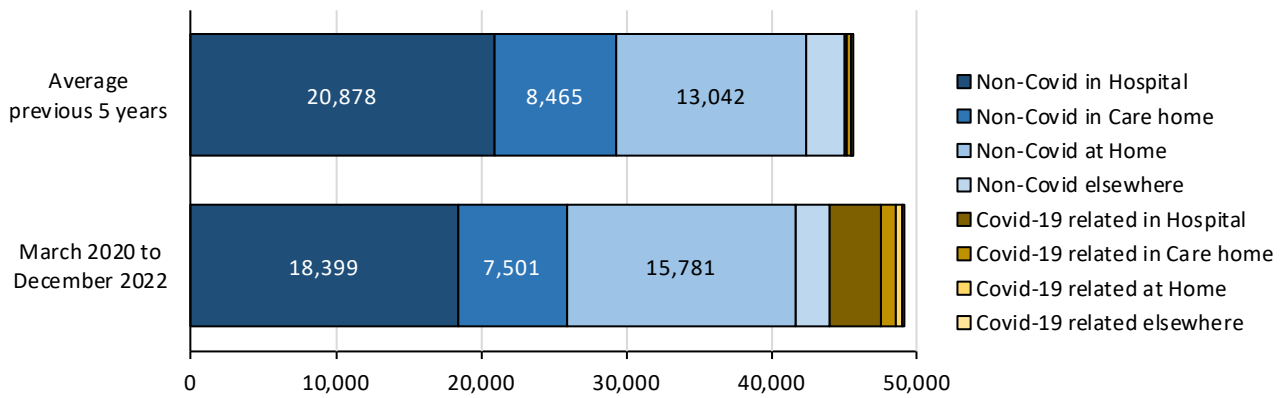
Excess deaths by place of death

Over two-thirds (69.9%) of the 5,060 Covid-19 related deaths from March 2020 to December 2022 occurred in hospital, compared to 20.6% in care homes and 8.7% at home. A small fraction (0.9%) occurred elsewhere, including hospices, non-medical communal establishments and non-domestic settings.

To reiterate, excess deaths methodology considers the difference between actual deaths from all causes in a period minus the expected number of deaths. Figure 6 shows (a) the average number of deaths from March 2020 to December 2022 in the previous five years, broken down by place of death, and (b) deaths from March 2020 to December 2022, broken down by place of death and split into Covid-19 related deaths and non Covid-19 deaths. Note that for the calculation of excess deaths in 2021 and 2022, expected deaths use 2020 and 2021 data as part of the five-year average, and thus include a small number of Covid-19 related deaths.

Figure 5 shows that excess deaths from March 2020 to December 2022 (4,075) – the difference in the overall length of the two bars – were smaller than the number of the Covid-19 related deaths in this period (5,060). It also shows that for deaths that were not Covid-19 related, a shift took place in the number of deaths that occurred in hospitals and to a lesser extent care homes, towards private homes. Combining these effects leads to excess deaths at home being greater than the Covid-19 related deaths at home.

Figure 5: Deaths from March 2020 to December 2022 by place of death, compared to average of previous five years



Excess deaths and Covid-19 related deaths by place of death are shown in Figure 6. Excess deaths in hospitals (1,056) are much lower than the Covid-19 related deaths in hospital (3,536). Care homes also had smaller levels of excess deaths (78) compared to Covid-19 related deaths (1,041). In contrast, the estimate of excess deaths at home (3,176) was around seven times the number of Covid-19 related deaths at home (438) and accounts for 77.9% of the total excess deaths over the period. There were fewer deaths in hospices from March 2020 to December 2022 compared to the previous five years (224 deaths or 15.5% below expected levels).

Figure 6: Excess deaths and Covid-19 related deaths, by place of death, March 2020 to December 2022

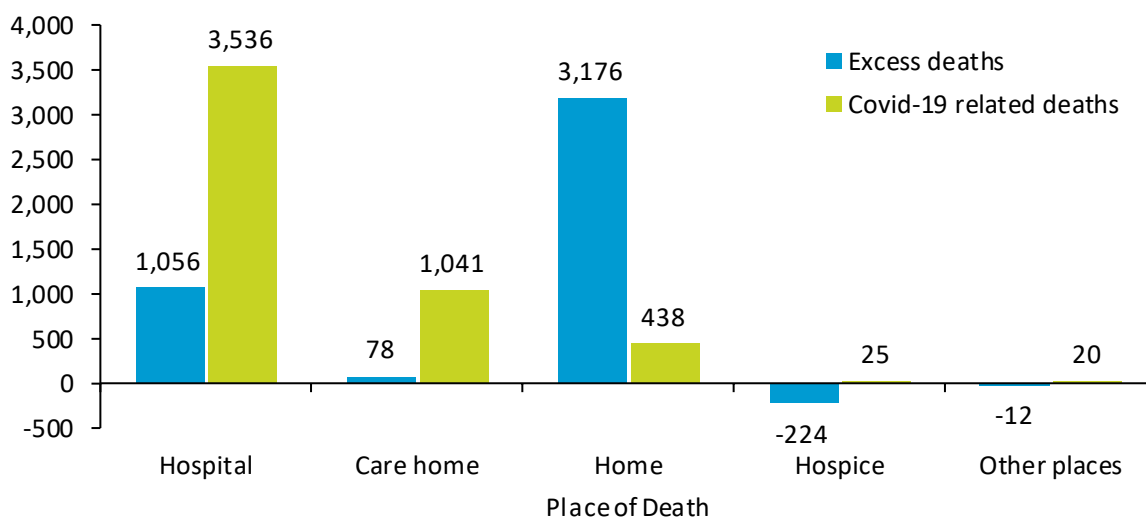
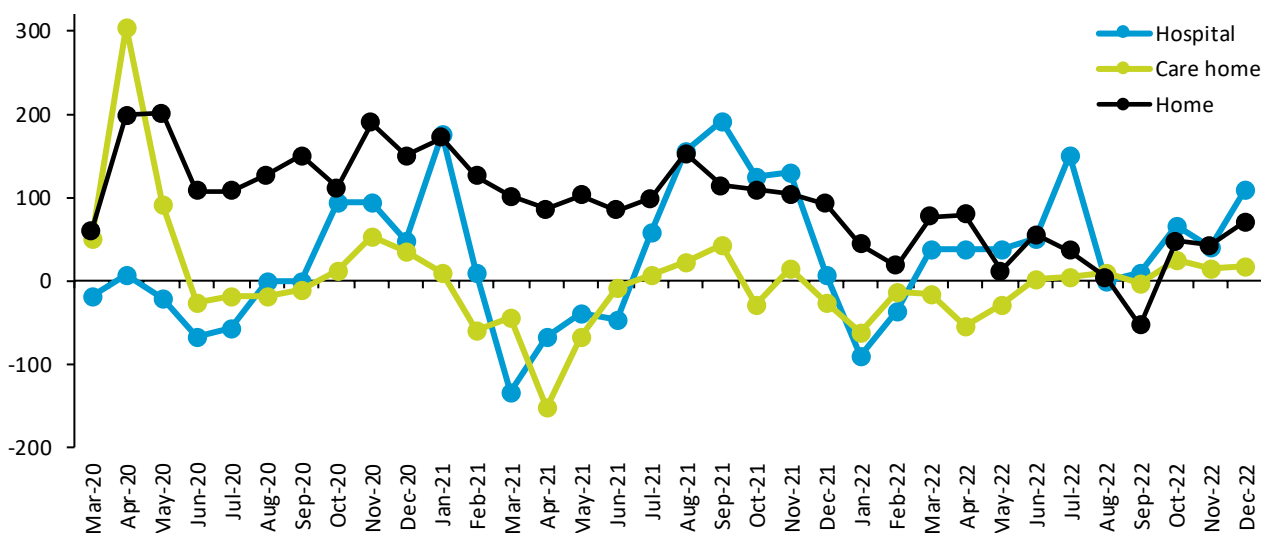


Figure 7 shows excess deaths for each month March 2020 to December 2022 in hospitals, care homes, and at home. Excess deaths in hospitals were around zero or negative from March to September 2020, as well as from February to June 2021, from December 2021 to February 2022 and in August/September 2022: there were fewer deaths in hospital compared to the average number of deaths in hospital in the previous five years. In the most recent three months (October to December 2022), excess deaths in hospital were positive.

Figure 7: Excess deaths, by month and place of death, March 2020 to December 2022



Excess deaths at home have remained at substantial positive levels from April 2020 to December 2021, given that in the previous five years, on average around 350 people died at home each month. In 2022, there were still more deaths at home compared to the 2017-2021 average, although at a lower level than the previous two years, in part due to the inclusion of 2020 and 2021 in the calculation of the five-year average.

Excess deaths in care homes peaked in April 2020 with 305 deaths, indicating that the number of deaths in this month was 126.6% higher than the average number of deaths in the April of the previous five years (241). From June 2021 to December 2022, monthly deaths were around expected levels in care homes. The trough in April 2021 can in part be explained by the peak of April 2020, which together with April deaths in 2016 to 2019 was used to calculate expected deaths.

Excess deaths by Local Government District

NISRA publishes weekly numbers of deaths by Local Government District (LGD) based on the date of registration, providing counts for all deaths and Covid-19 related deaths. Deaths are attributed to Districts based on the usual address of residence¹¹. In this report, for each District, excess deaths are calculated on an occurrence basis, and compared to the number of Covid-19 related deaths. Figure 8 presents both figures as a proportion of the average number of deaths in the previous five years. Figure 9 shows a map of excess deaths relative to average deaths in the previous five years by Local Government Districts, as well as their constituent District Electoral Areas (DEAs), to demonstrate the variability in excess mortality within areas.

Figure 8: Covid-19 related deaths and excess deaths as proportion of average deaths, by Local Government District, March 2020 to December 2022

¹¹ For a small number of deaths where the address is missing or outside Northern Ireland, the place of death is used to allocate to a geographical area.

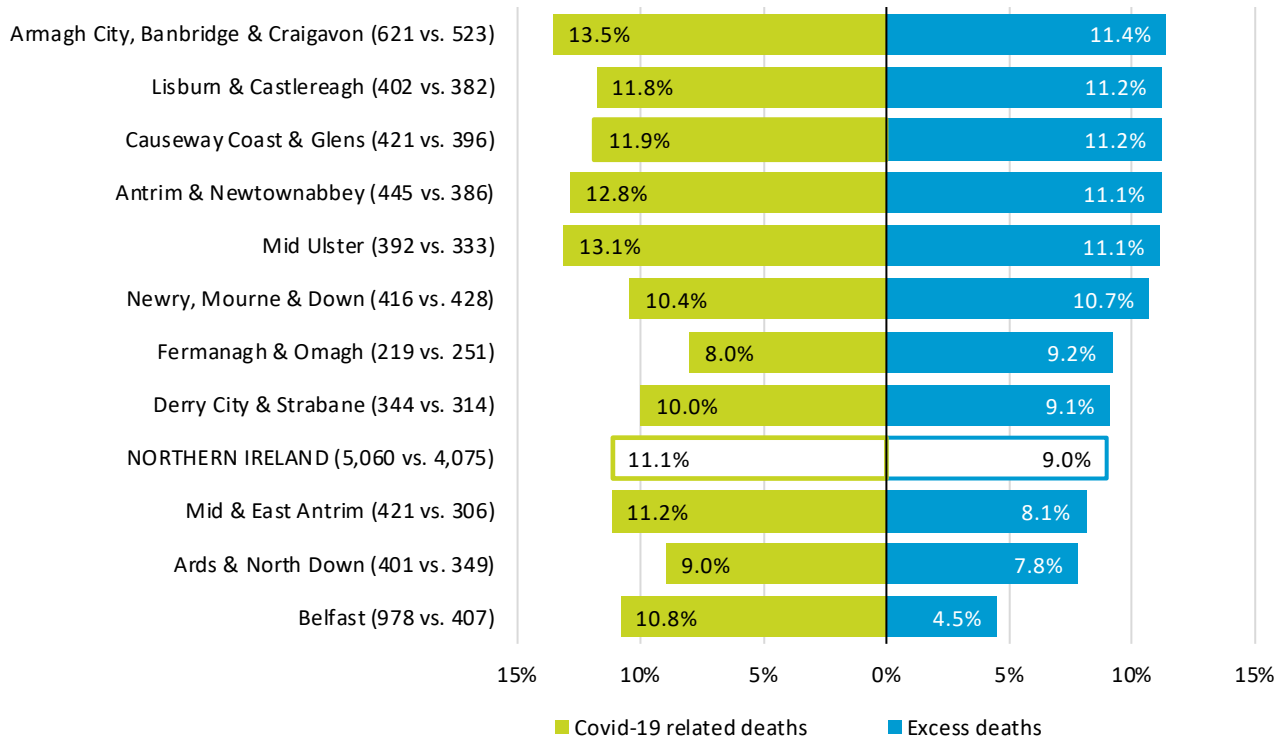
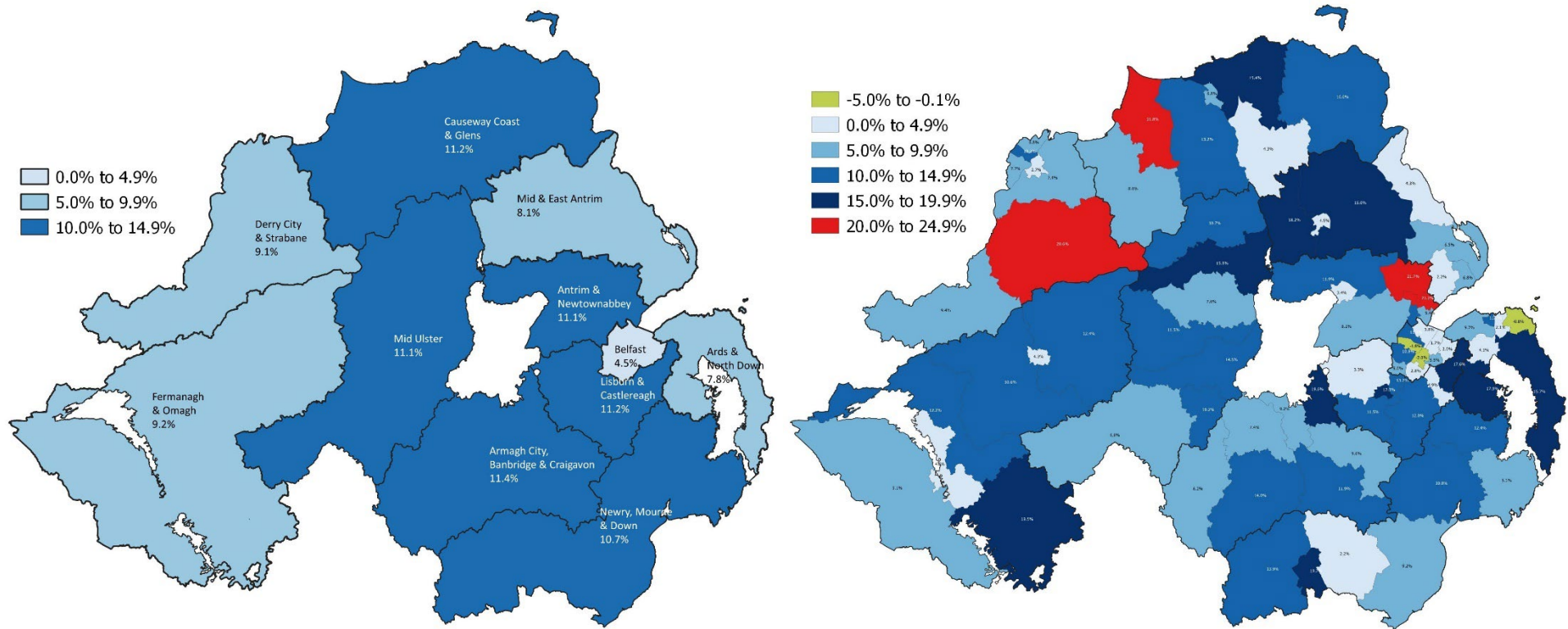


Figure 9: Excess deaths as proportion of average deaths in the previous five years, by Local Government District (left) and District Electoral Areas (right), March 2020 to December 2022



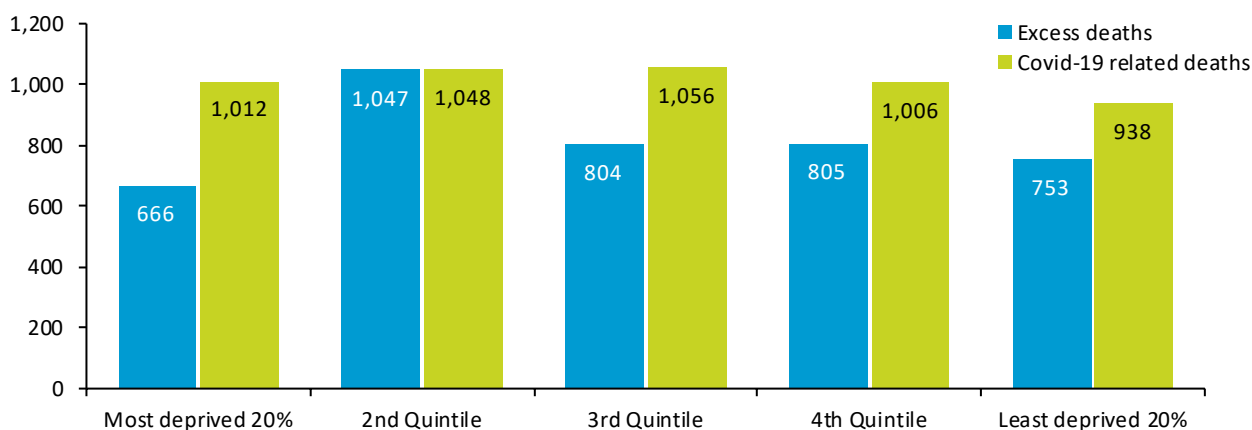
Armagh City, Banbridge & Craigavon LGD had the largest estimate of excess deaths (523), accounting for 12.8% of excess deaths in Northern Ireland (4,075). It also had the highest excess deaths as a proportion of average deaths in the previous five years (11.4%), followed by Lisburn & Castlereagh and Causeway Coast & Glens and Armagh City, Banbridge & Craigavon LGDs (both 11.2%). Belfast LGD had the smallest excess deaths as a proportion of historic deaths (4.5%). Only in Fermanagh & Omagh and Newry, Mourne & Down LGDs did excess deaths exceed the number of Covid-19 related deaths. By contrast, Belfast LGD saw excess deaths (407) being less than half (41.7%) of the number of Covid-19 related deaths (978).

Limavady DEA (21.8%) in Causeway Coast & Glens LGD had the highest relative excess deaths. Ballyclare DEA (21.7%) and Three Mile Water DEA (21.2%) in Antrim & Newtownabbey LGD, as well as Sperrin (20.6%) in Derry City & Strabane LGD had also relative excess deaths greater than 20%. There were three DEAs with fewer than expected deaths (negative excess deaths): Botanic (-2.0%) and Court (-1.8%) in Belfast LGD, and Bangor East & Donaghadee (-0.8%) in Ards & North Down LGD. Further information is available in the accompanying [Excel file](#).

Excess deaths – Deprivation

Excess deaths can also be calculated for grouped small areas with similar characteristics such as Super Output Areas (SOAs) based on their deprivation ranking. Figure 10 shows the excess deaths and Covid-19 related deaths over the period March 2020 to December 2022, for SOAs grouped into deprivation quintiles according to the Northern Ireland Multiple Deprivation Measure 2017.

Figure 10: Excess deaths and Covid-19 related deaths, by deprivation quintiles, March 2020 to December 2022



Excess deaths were highest in the second deprivation quintile and lowest in the most deprived quintile, with the other quintiles at similar levels. The number of Covid-19 related deaths in each quintile were broadly comparable, suggesting that deprivation had no clear effect over the whole period March 2020 to December 2022. In contrast, age-standardised mortality rates (ASMRs) from a separate report¹² showed a clear gradient: the most deprived areas had the highest ASMR for both Covid-19 related deaths and non Covid-19 deaths. This is likely due to higher mortality rate in these areas to start with – least deprived areas have shown a greater increase relative to the five-year average.

¹² Covid-19 related deaths in Northern Ireland, March 2020 to October 2021

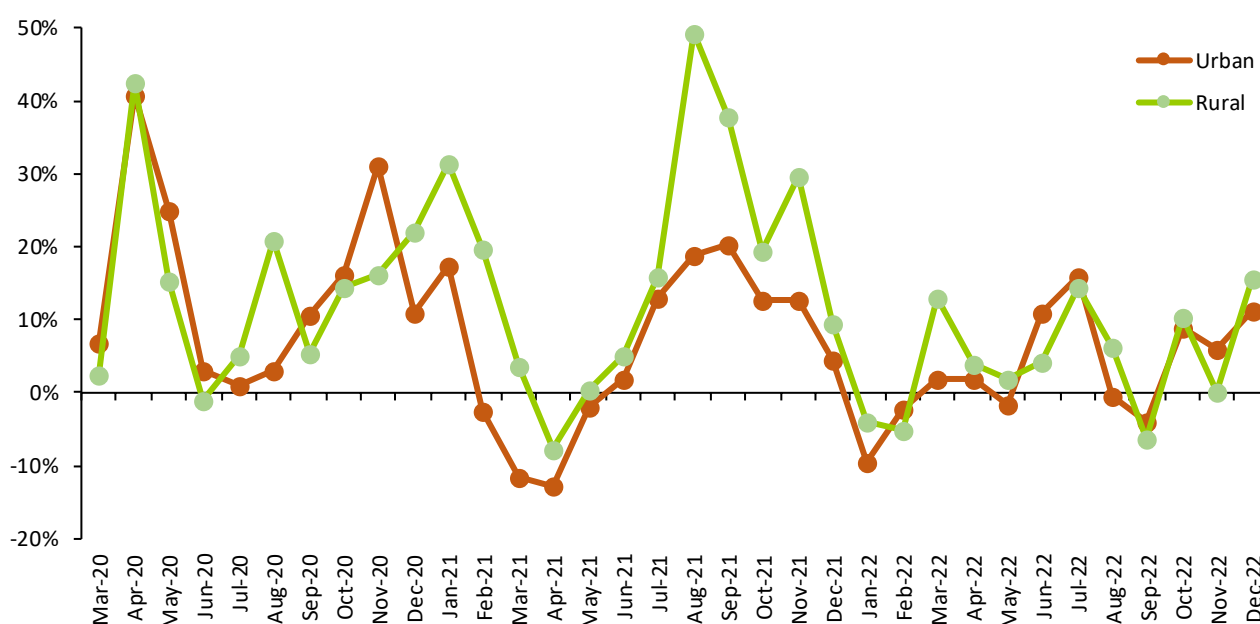
Northern Ireland Multiple Deprivation Measures

The [Multiple Deprivation Measure \(NIMDM 2017\)](#) is a measure of area disadvantage, combining seven separate domains of deprivation. It was used to assign deaths to one of five groups (or quintiles), ranging from most deprived to least deprived, based on usual address of residence. If the usual address of the deceased was not provided or the deceased was resident outside of Northern Ireland, the place of death address was used.

Excess deaths by rurality

Super Output Areas (SOAs) can also be grouped into urban, rural and mixed urban/rural areas¹³. Figure 11 compares excess mortality as a proportion of average deaths between urban and rural SOAs in each month from March 2020 to December 2022.

Figure 11: Excess deaths as a proportion of average deaths, for urban and rural SOAs, by month, March 2020 to December 2022

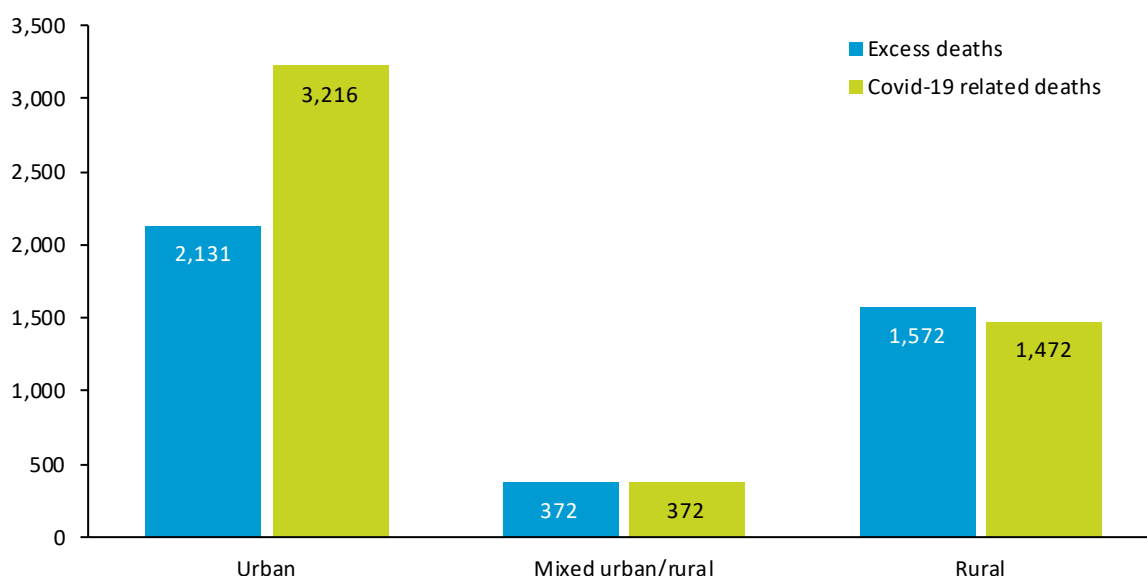


Most noteworthy is that from December 2020 to January 2022, excess deaths as a proportion of expected deaths were consistently higher in rural areas compared to urban areas. From April 2022 onwards, both lines follow a similar pattern. Over the whole 34-month period, excess deaths in rural SOAs (1,572 or 11.9% above expected levels) exceeded the number of Covid-19 related deaths (1,472). In contrast, the number of Covid-19 related deaths in urban areas (3,216) was greater than their excess deaths (2,131 or 7.4% above expected levels) – see Figure 12. This suggests that rural areas were more affected by the indirect effects of the pandemic. Note that in the pre-pandemic years, mortality rates in rural areas were lower than those in urban areas¹⁴. Further analysis would be required to understand the differences between urban and rural areas.

¹³ [Review of the Statistical Classification and Delineation of Settlements](#)

¹⁴ See the [Health inequalities annual report 2021](#), published by the NI Department of Health

Figure 11: Excess deaths and Covid-19 related deaths, for urban, mixed urban/rural and rural SOAs, March 2020 to December 2022



Excess deaths by cause of death

All deaths are coded in accordance with the International Statistical Classification of Diseases, Injuries and Causes of Death, (ICD) (Tenth Revision). Classification of the underlying cause of death is done by reference to the death certificate and additional information from the certifying doctor. Excess deaths can be calculated for specific causes of deaths. This helps understand the reasons for the difference between excess deaths and Covid-19 related deaths, when broken down by age groups or geographical areas.

At the time of writing (March 2022), the coding of all deaths registered up to 31 December 2022 has been completed. From the 4,609 deaths that occurred in the last three months of 2022, 559 (12.1%) were registered in 2023 and hence the coded underlying cause of death is not yet available. Therefore, this analysis looks at deaths that occurred over a 31-month period (March 2020 to September 2022) to allow for three months for deaths to be registered and their causes of death to be coded. The underlying cause of death was not available for a small number (138 of the 44,341 deaths) that occurred in this period and that were registered after 31 December 2022, up to 22 February 2023. These may be coroner's cases where it takes a longer period to establish the circumstances surrounding the death.

Table 2 shows excess deaths by cause of death for March 2020 to September 2022, which had 3,661 excess deaths, 8.9% above average deaths during the same period over the previous five years.

Table 2: Excess deaths as a proportion of average deaths in the previous five years, by cause of death, March 2020 to September 2022 (31 months)

ICD codes	Underlying cause of death	Excess deaths	Excess as proportion of five-year average deaths (%)
U07	Covid-19	3,262 ¹⁵	-
C01-C97	Malignant neoplasm	292	2.5
E10-E14	Diabetes	156	26.2
F01, F03, G30	Dementia and Alzheimer's disease	20	0.4
I00-I99	Diseases of circulatory system	69	0.7
J00-J99	Diseases of respiratory system	-796	-15.9
K00-K93	Diseases of digestive system	342	16.0
N00-N39	Diseases of urinary system	20	3.1
V01-Y98	External causes	-117	-5.1
-	Other causes	275	7.5
-	Uncoded cause of death	138	-
-	Total	3,661	8.9

The number of deaths where Covid-19 was found to be the underlying cause (4,028) was higher than total excess mortality in this period (3,661). Noteworthy excess deaths were found for diabetes (156 or 26.2% above historical levels) and diseases of the digestive system (342 or 16.0% above historical levels). There were 796 fewer deaths from diseases of the respiratory system from March 2020 to September 2022 compared to the same period in the previous five years (negative excess deaths). Care should be taken when interpreting excess deaths from external causes, as these may be most affected by long registration delays and therefore more of such deaths occurring in this time period will not yet have been registered.

Table 3 shows the excess deaths by main cause of death group as a proportion of average deaths in the previous five years (relative excess deaths) over the period from March 2020 to September 2022, broken down by place of death, age, sex, urban/rural, deprivation and Health & Social Care Trust (HSCT). The accompanying tables to this report provide a further breakdown of underlying causes.

For malignant neoplasms, dementia and Alzheimer's disease, circulatory and respiratory diseases, the number of deaths in hospitals, care homes and hospices were lower during the pandemic (negative excess deaths) and were higher for deaths at home and other settings. Deaths caused by diseases of the digestive system went up in all settings, but still most markedly at home (44.3%).

¹⁵ There were 1,693 Covid-19 deaths in March to December 2020. This number became part of the five-year average to calculate excess deaths in 2021: a fifth of these deaths became expected Covid-19 deaths in 2021. Also, Covid-19 deaths for January to September in 2020 (808) and 2021 (1,335) were part of the five-year average to calculate excess deaths in 2022: a fifth of these combined numbers became expected Covid-19 deaths in January to September 2022. Excess Covid-19 deaths (3,262) was calculated as all Covid-19 deaths (4,028) minus expected Covid-19 deaths: $1,693/5 + (808+1,335)/5$.

Table 3: Excess deaths as a proportion (%) of average deaths in the previous five years, by cause of death, March 2020 to September 2022 (31 months) by (a) place of death, (b) sex, (c) age, (d) urban/rural (e) deprivation and (f) Health & Social Care Trust

Group	Malignant neoplasm (C01-C97)	Dementia and Alzheimer disease (F01, F03, G30)	Diseases of circulatory system (I00-I99)	Diseases of respiratory system (J00-J99)	Diseases of digestive system (K00-K93)	All causes
Hospital	-13.0	-11.7	-6.5	-20.0	10.4	4.4
Care home & hospice	-14.1	-6.3	-9.2	-30.0	4.3	-2.1
Home & other	26.5	46.6	14.2	6.6	44.3	23.5
Males	2.8	-0.1	1.7	-14.8	14.2	10.4
Females	2.2	0.7	-0.3	-17.0	17.8	7.4
Aged 0-74	-1.8	-2.1	2.1	-7.4	14.4	6.4
Aged 75-84	5.1	4.9	-1.7	-13.4	22.8	11.4
Aged 85 and over	8.9	-1.3	1.6	-22.7	13.0	9.4
Urban	0.2	-4.3	-0.1	-16.0	15.5	7.3
Rural & mixed	6.2	9.2	2.0	-15.7	17.2	11.7
Most deprived	1.3	-2.2	0.5	-12.8	12.5	7.8
Quintile 2	3.6	4.7	1.4	-15.1	21.2	10.4
Quintile 3	3.0	0.2	0.7	-22.5	21.9	8.5
Quintile 4	3.3	3.3	-1.5	-12.2	12.8	9.5
Least deprived	1.3	-3.8	2.7	-17.4	11.9	8.3
Belfast HSCT	-1.9	-11.5	-0.5	-16.7	4.6	4.4
Northern HSCT	2.3	6.8	1.2	-10.4	17.4	10.7
South Eastern HSCT	5.5	-2.1	2.7	-17.6	16.1	9.0
Southern HSCT	4.0	4.8	-3.8	-18.0	23.3	10.6
Western HSCT	3.4	5.9	4.3	-20.0	23.6	10.2
TOTAL	2.5	0.4	0.7	-15.9	16.0	8.9

Relative excess mortality was generally higher for males than females, with the exceptions of dementia and Alzheimer's disease (-0.1% vs. +0.7%) and diseases of the digestive system (14.2% vs. 17.8%). Regarding the latter, cirrhosis and other diseases of liver was the main driver of that difference with excess deaths for females being 33.2% higher than expected levels compared to 14.4% for males.

Relative excess mortality was highest for those aged 75 to 84 years (11.4%). Compared to other age groups, this was most evident for deaths due to dementia and Alzheimer's disease (4.9%) and diseases of the digestive system (22.8%). There were fewer deaths due to malignant neoplasms as expected for those aged under 75 in contrast to excess deaths for those aged 75 and over. Deaths from respiratory diseases were lower than expected in all age groups, and most notable for those aged 85 and over (-22.7%).

Rural and mixed urban/rural areas had higher relative excess mortality than urban areas (11.7% vs. 7.3%) in the period March 2020 to September 2022. There was a notable difference in deaths due to dementia and Alzheimer's disease, which were below expected in urban areas (-4.3%) and above expected in rural and mixed urban/rural areas (9.2%).

Belfast HSCT had the lowest relative excess mortality (4.4%) with all causes in Table 3 being below the Northern Ireland level. Deaths due to dementia and Alzheimer's disease in Belfast HSCT were 11.5% below expected levels. This mirrors the findings when comparing urban and rural areas. There was a large variation in the relative excess mortality of diseases of the digestive system, ranging from 4.6% in Belfast HSCT to 23.3% and 23.6% in the Southern and Western HSCTs respectively.

Strengths and limitations

Death statistics form a high-quality data source, given the legal requirement of timely registration of all deaths that occurred in Northern Ireland, which is administered by a District Registrar, electronically recorded and managed by the General Register Office and quality assured by statisticians in NISRA¹⁶.

The excess mortality methodology does not require information on the cause of death. It allows for a disaggregating of excess deaths by age, sex, place of death, geographical location and cause of death, as demonstrated in this report. The excess deaths calculation does not require population estimates either; the underlying assumption is that the population is stable in both size and age distribution.

The Northern Ireland population was not the same as in the previous five years, with annual increases of around 0.5% and an ageing population¹⁷. Using the average number of deaths in the previous five years would therefore underestimate the expected number of deaths and thus overestimate excess deaths. Some [alternative methods](#) may be used to counter this.

¹⁶ See [Quality and Methodology Information \(QMI\) for Northern Ireland death statistics](#)

¹⁷ NISRA produces official [population statistics for Northern Ireland](#)

There is a variation in the number of deaths between years due to, for example, seasonal weather. In the years 2015 to 2019, for which the five-year average of 12,776 deaths was used as a baseline, the number of deaths ranged from 12,421 to 13,113 for the 10-month period March to December (see accompanying tables). Again, the 1,906 excess deaths in 2020 was much greater than the magnitude of such annual variation.

There are still a number of unknowns in the analysis of excess mortality during the pandemic. Firstly, the pandemic has not finished: there was a booster vaccination programme in the Autumn of 2022, continued pressure on the health service, unknown health outcomes for those who have recovered from Covid-19, and the possibility of new variants. Secondly, there will have been deaths that occurred up to December 2022, but which have not yet been registered or where coding of cause of death has not been completed.

Alternative methods

An earlier paper¹⁸ used detailed population estimates to derive age-standardized mortality rates (ASMRs) for all causes and Covid-19 related deaths only. It derived age-specific mortality rates and applied these to a standard, but hypothetical population of 100,000 people with a fixed age distribution ([Revised European standard Population 2013](#)). This method can also be used to derive pre-pandemic ASMRs for several years, which can serve as a comparator to ASMRs over the period March 2020 to December 2022. This is commonly presented as relative excess ASMR, the percentage increase/decrease in deaths in this standard population.

A similar approach would be to apply age-specific mortality rates from the reference period to the population estimates of the at-risk period. It would return an expected number of deaths rather than a rate, which could be directly compared to the observed number of deaths. This approach is similar to that used for population projections.

Both these methods rely on the availability of population estimates. At present, estimates up to mid-2020 are still based on the 2011 Census, adjusted for ageing, births, deaths and migration. They also form the basis for the 2018- and 2020-based population projections. The [mid-2021 population estimates](#) are based on the 2021 Census results, with adjustments made for the 101 days between Census Day (21 March) and mid-year (30 June). In due course, rebased population estimates for 2012 to 2020 and new estimates for 2022 will be released that take account of the 2021 Census results. Once a consistent set of population estimates is available, excess mortality analyses that account for a changing population can be employed. Care should be taken when using projected populations, as they are driven by projected number of deaths that may differ from observed number of deaths.

Population estimates for Super Output Areas (SOAs) are only available up to mid-2020. The introduction of a [new small area statistical geography for the 2021 Census](#) means that SOA-level estimates will not be rebased, nor new estimates for mid-2021 onwards being created. Excess mortality analysis that account for the size and age structure of the population by deprivation or rurality cannot be carried out in the absence of updated population estimates by SOA.

¹⁸ [Covid-19 related deaths in Northern Ireland, March 2020 to October 2021](#)

NISRA is participating in a new [cross-UK initiative](#) to take stock of methodologies to calculate expected and excess deaths. Along with the current five-year averages and proposed methods that account for the size and age composition of the population, this work will also look at several modelling techniques.

Background notes

The information used to produce statistics on deaths occurring in Northern Ireland is based on registrations recorded on the Northern Ireland General Register Office's Registration System (NIROS). Daily extracts of registration records from NIROS are processed by the NISRA Vital Statistics Unit.

Deaths involving Covid-19 are defined as those where Covid-19 was 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 (Covid-19, virus identified) and U07.2 (Covid-19, virus not identified).

Super Output Areas (SOA)

Northern Ireland is split into 890 spatial areas known as [Super Output Areas \(SOAs\)](#), with an average population of around 2,100 people. The number of SOAs in each of the 11 Local Government Districts (LGDs) varies, ranging from 49 in Fermanagh & Omagh LGD to 174 in Belfast LGD.

Multiple Deprivation Measure (NIMDM, 2017)

The [Northern Ireland Multiple Deprivation Measure 2017 \(NIMDM 2017\)](#) is a measure of multiple deprivation at the Super Output Area (SOA) level. It is comprised of seven distinct domains of deprivation which can be recognised and measured separately. The overall MDM is conceptualised as a weighted area level aggregation of these specific domains of deprivation.

Urban-Rural Classification

The [Review of the Statistical Classification and Delineation of Settlements](#) (March 2015) defined the boundaries of towns and villages. It also provided a default definition for urban areas (settlements with a population of 5,000 and over) and rural areas (smaller settlements and open countryside, as well as banded drive-times. Further detail can be found from the NISRA website.

Administrative Data Research Northern Ireland (ADR NI)

Administrative Data Research Northern Ireland (ADR NI) is funded by the Economic & Social Research Council (ESRC) and is a partnership between the Administrative Data Research Centre Northern Ireland (ADRC NI, comprising Queen's University Belfast and Ulster University), and the Northern Ireland Statistics and Research Agency (NISRA). Together they support the acquisition, linking and analysis of administrative data sets, developing cutting-edge research to improve knowledge, policymaking and public service delivery.

Links to relevant publications

A range of data and analysis on Covid-19 in Northern Ireland and its effect on the economy and society can be accessed from the [NISRA website](#).

Other relevant publications include:

- [Weekly death registrations in Northern Ireland](#)
- [Covid-19 related deaths and pre-existing conditions in Northern Ireland: March 2020 to November 2021](#)
- [Covid-19 deaths and equality: March 2020 to November 2021](#)
- [Covid-19 related deaths in Northern Ireland: March 2020 to October 2021](#)
- [Covid-19 statistics](#) (Department of Health)
- [Coronavirus \(Covid-19\) cases and risk in the UK](#)
- [Covid-19 health surveillance monitor](#) (Ireland)
- [Deaths registered weekly in England & Wales](#)
- [Excess deaths in England and Wales: March 2020 to December 2022](#)
- [Weekly data on deaths registered in Scotland](#)
- [COVID-19 deaths and cases statistics](#) (Central Statistics Office, Ireland)
- [Vital statistics](#) (Central Statistics Office, Ireland)

List of Tables

Data accompanying this bulletin are available from the NISRA website in [Excel format](#). The spreadsheet includes the following tables.

Table	Title
Table 1	Deaths by month for 2015-2022, and calculation of excess deaths
Table 2	Excess deaths and Covid-19 related deaths
Table 3	Excess deaths and Covid-19 related deaths, by Sex and 5-year age band
Table 4	Excess deaths and Covid-19 related deaths, by sex and age group
Table 5	Excess deaths and Covid-19 related deaths, by place of death
Table 6	Excess deaths and Covid-19 related deaths, by month and place of death
Table 7	Excess deaths and Covid-19 related deaths, by Local Government District
Table 8	Excess deaths and Covid-19 related deaths, by District Electoral Area
Table 9	Excess deaths and Covid-19 related deaths, by deprivation quintile
Table 10	Excess deaths and Covid-19 related deaths, by month, in urban, mixed urban/rural and rural areas
Table 11	Excess deaths and Covid-19 related deaths, by year, for rural, urban and mixed urban/rural areas
Table 12	Excess deaths and Covid-19 related deaths, by underlying cause of death
Table 13	Excess deaths and Covid-19 related deaths, by underlying cause of death and place of death
Table 14	Excess deaths and Covid-19 related deaths, by underlying cause of death and year
Table 15	Excess deaths and Covid-19 related deaths, by underlying cause of death and sex
Table 16	Excess deaths and Covid-19 related deaths, by underlying cause of death and age group
Table 17	Excess deaths and Covid-19 related deaths, by underlying cause of death and urban/rural
Table 18	Excess deaths and Covid-19 related deaths, by underlying cause of death and Health Trust
Table 19	Excess deaths and Covid-19 related deaths, by underlying cause of death and deprivation quintile
Table 20	Excess deaths and Covid-19 related deaths, by Assembly Area
Table 21	Excess deaths and Covid-19 related deaths, by drivetime to Belfast
Table 22	Excess deaths and Covid-19 related deaths, by Travel to Work Area

Contact Details

We welcome feedback from users, please contact NISRA Vital Statistics, Northern Ireland Statistics and Research Agency, Colby House, Stranmillis Court, Belfast, BT9 5RR.

E-mail: demography@nisra.gov.uk

Telephone: +44 (0)300 200 7836

Twitter: [@NISRA](https://twitter.com/NISRA)

<https://www.nisra.gov.uk/statistics>



Annex A – Excess deaths methodology

‘Excess deaths’ is the difference between the observed number of deaths and the expected number of deaths.

WHO definition of Excess Death/Mortality:

“Mortality above what would be expected based on the non-crisis mortality rate in the population of interest. Excess mortality is thus mortality that is attributable to the crisis conditions. It can be expressed as a rate (the difference between observed and non-crisis mortality rates), or as a total number of excess deaths.”

(ODI/HPN paper 52, 2005, Checchi and Roberts)

The first key question for determining excess deaths is to define the expected number of deaths.

There are broadly three different methods:

1. Number of deaths based on historic population estimates and projected mortality rates (see Table A.1). The 2018-based population projection is the best comparator, as the 2020-based interim projections had already incorporated deaths data from the early part of the pandemic and incorporated expert views on short-term mortality (up to 2024) to account for the impact of the coronavirus.
2. Advanced modelling methods can be used to account for seasonality in deaths and corrects for delays in the collection and processing of death data. A well-known example is the [EuroMOMO project](#), which provides weekly excess deaths for a number of European countries, including Northern Ireland. Modelling is also used by the US [National Centre for Health Statistics](#), and [Our World in Data](#).
3. The number of deaths during a similar period in previous years. NISRA’s weekly deaths statistics report uses the average number of deaths in the previous 5 years. This approach does not require population estimates, although it implicitly assumes that the population has been relatively stable and no other events in that period, such as extreme weather or major disease outbreaks, had a measured impact on the number of deaths.

Table A1.: Observed deaths compared to projected deaths according to 2018-based and 2020-based population projections, mid-2019 to mid-2022

Time period	Observed deaths	Projected deaths (2018-based)	Projected deaths (2020-based)
Mid-2019 to mid-2020	16,715	16,184	-
Mid-2020 to mid-2021	17,049	16,374	16,791
Mid-2021 to mid-2022	17,530	16,584	17,550
Mid-2019 to mid-2022	51,294	49,142	-
Mid-2020 to mid-2022	34,579	32,958	34,341

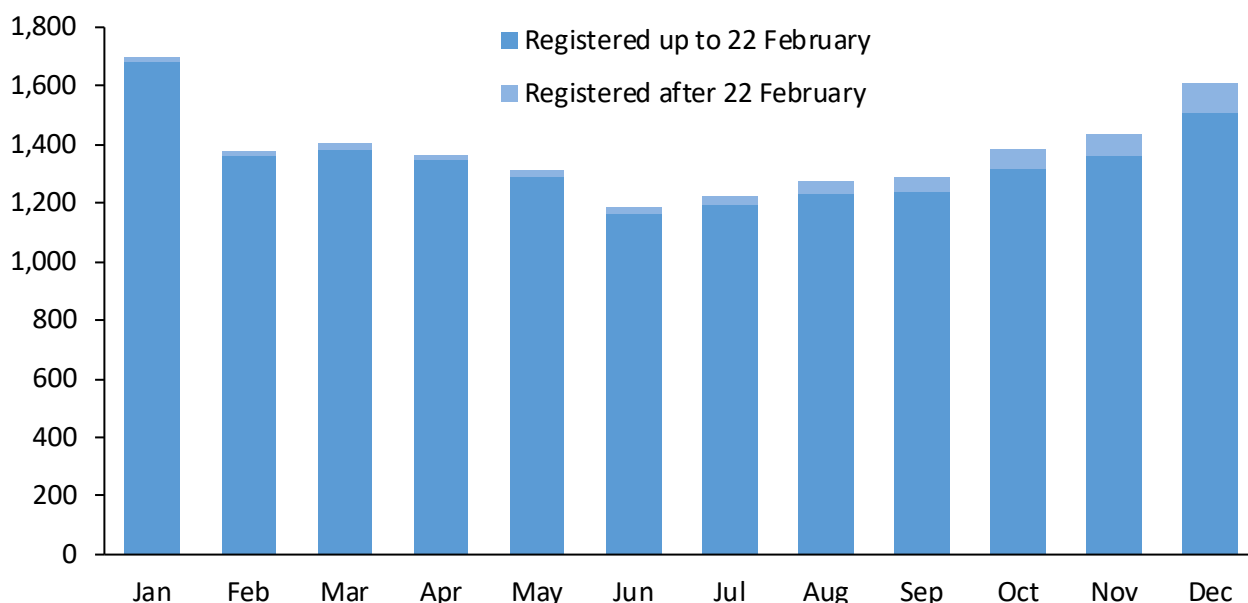
Most NISRA publications on deaths are based on the date of registration. All statistics remain provisional until the publication of the Registrar General Annual report. The advantage of this is that death statistics can be finalised and are not subsequently affected by late registrations. Weekly death statistics are reported on a registration and occurrence basis. Most deaths are registered within five days of the death occurring, but it could be considerably longer if a case is referred to the coroner.

During the Covid-19 pandemic, changes were made to the usual process of certifying and registering a death which have been enabled by the Coronavirus Act 2020, which came into effect on 25 March 2020. This could lead to fewer cases being referred to coroners, and informants registering deaths by phone rather than in person. There is some evidence that these changes are leading to a shorter lag between the date of death and the date of registration.

The analysis in this report is based on deaths that occurred from 1 March 2020 to 31 December 2022, comparing deaths in this period to the average of the previous 5 years. It is recognised that there could be deaths that occurred in this period, but that have not yet been registered. This is most likely for the more recent months.

This analysis includes deaths registered up to 22 February 2023, therefore allowing for 29 working days after the end of December to register deaths. Deaths that occurred in the same period of the previous years have had more time to be registered and the analysis adjusts for this. Figure A has broken down the average number of deaths in 2017-21 into those that were registered within 29 working days of the following year, and those that have been registered since. It shows that this effect of registration delay was largest for the most recent months.

Figure A: Average deaths in 2017-21, by month and registration cut-of date



Based on these figures, there are three possible approaches in deriving excess deaths in these four months:

1. Deaths which occurred in March 2020 to December 2022 and registered by 22 February 2023 (48,950), compared to the average number of deaths occurring over the same months of the previous five years and which have been registered to date (thus including late registrations) (45,490). This results in 3,460 excess deaths, or 7.6% above the five-year average;
2. Deaths which occurred in March 2020 to December 2022 and registered by 22 February 2023 (48,950), compared to the average number of deaths occurring over the same months in the previous five years, including death registrations up to 29 working days of the following year (44,875). This results in 4,075 excess deaths, or 9.1% above that five-year average; or
3. Adjusting the number of deaths occurring between March 2020 and December 2022 to account for late registrations and compare this to the average number of deaths in the previous five years which has been registered to date.

The first approach is most likely to result in an underestimate of excess deaths, as the number of deaths during the pandemic that have yet to be registered will be greater than late registrations in the same period of the previous five years. The second approach could provide an overestimate if the changes¹⁹ in the certification and registration of deaths have reduced the lag between occurrence and registration.

Finally, the third approach would rely on assumptions being made on the method of adjustment. This adjustment could be done by applying the observed difference from the five-year average, either in levels (615 deaths) or as a proportion (1.4%). This would still not capture a possible reduction in the registration lag and may require different adjustments for different populations. For example, drug-related deaths or suicides will commonly go through the coroner and could have a long registration lag: such deaths are typically seen in young males and urban deprived areas²⁰.

To put the possible measures of excess death into context, excess deaths based on deaths registered from March 2020 to December 2022 was 4,004²¹, and the number of Covid-19 related deaths that registered in this period was 5,035. These figures align more with the second approach, suggesting that the impact of late registration was sizable. It was decided to use the second approach to estimate excess deaths, but to present this excess as a proportion of historical deaths registered to date: the 4,075 excess deaths are 9.0% higher than the five-year average of 45,490 deaths. This methodology is demonstrated in Tables A.2 through A.4 on the next two pages.

¹⁹ These changes include registration by telephone rather than in person, and fewer cases referred to the coroner (when the deceased has not been seen by their GP in the last 28 days, and died of natural causes). Further detail on these changes are in the background notes (page 2) of the [weekly deaths report](#).

²⁰ See [Drug-related Deaths in Northern Ireland: Socio-Demographic Analyses](#)

²¹ This figure is taken from the [monthly death statistics](#).

Table A.2: Deaths by month and year of death, 2015-2020 (March to December)

Month	2015	2016	2017	2018	2019	Average 2015-19 (A)	Average 2015-19 at cut-off (B)	2020 (C)	Excess Deaths (C - B)	As proportion of average 2015-19 (C - B) / A
March	1,395	1,338	1,371	1,494	1,359	1,391.4	1,388.0	1,473	85.0	6.1%
April	1,275	1,229	1,208	1,255	1,368	1,267.0	1,263.6	1,781	517.4	40.8%
May	1,234	1,235	1,281	1,171	1,296	1,243.4	1,241.4	1,515	273.6	22.0%
June	1,241	1,208	1,166	1,154	1,210	1,195.8	1,191.8	1,202	10.2	0.9%
July	1,127	1,237	1,209	1,158	1,197	1,185.6	1,182.6	1,212	29.4	2.5%
August	1,101	1,204	1,179	1,192	1,189	1,173.0	1,169.0	1,270	101.0	8.6%
September	1,210	1,173	1,218	1,185	1,193	1,195.8	1,191.0	1,316	125.0	10.5%
October	1,289	1,297	1,353	1,235	1,302	1,295.2	1,290.8	1,501	210.3	16.2%
November	1,224	1,338	1,355	1,173	1,402	1,298.4	1,294.4	1,633	338.6	26.1%
December	1,454	1,548	1,652	1,405	1,599	1,531.6	1,525.2	1,744	218.8	14.3%
March-Dec	12,550	12,807	12,992	12,422	13,115	12,777.2	12,737.8	14,647	1,909.2	14.9%

Table A.3: Deaths by month and year of death, 2016-2021

Month	2016	2017	2018	2019	2020	Average 2016-20 (A)	Average 2016-20 at cut-off (B)	2021 (C)	Excess deaths (C - B)	As proportion of average 2016-20 (C - B) / A
January	1,338	1,371	1,494	1,359	1,524	1,602.0	1,598.0	1,948	350.0	21.8%
February	1,229	1,208	1,255	1,368	1,338	1,359.6	1,353.6	1,406	52.4	3.9%
March	1,235	1,281	1,171	1,296	1,473	1,407.0	1,400.6	1,312	-88.6	-6.3%
April	1,208	1,166	1,154	1,210	1,781	1,368.2	1,360.8	1,209	-151.8	-11.1%
May	1,237	1,209	1,158	1,197	1,515	1,299.6	1,293.2	1,286	-7.2	-0.6%
June	1,204	1,179	1,192	1,189	1,202	1,188.0	1,182.0	1,212	30.0	2.5%
July	1,173	1,218	1,185	1,193	1,212	1,202.6	1,195.4	1,346	150.6	12.5%
August	1,297	1,353	1,235	1,302	1,270	1,206.8	1,196.2	1,525	328.8	27.2%
September	1,338	1,355	1,173	1,402	1,316	1,217.0	1,207.0	1,540	333.0	27.4%
October	1,548	1,652	1,405	1,599	1,501	1,337.6	1,328.6	1,520	191.4	14.3%
November	1,338	1,371	1,494	1,359	1,633	1,380.2	1,368.8	1,627	258.2	18.7%
December	1,229	1,208	1,255	1,368	1,744	1,589.6	1,575.4	1,655	79.6	5.0%
Jan-Dec	15,602	16,034	15,810	15,836	17,509	16,158.2	16,059.8	17,586	1,526.4	9.4%

Source: NISRA

Table A.4: Deaths by month and year of death, 2017-2022

Month	2017	2018	2019	2020	2021	Average 2017-21 (A)	Average 2017-21 at cut-off (B)	2022 (C)	Excess deaths (C - B)	As proportion of average 2017-21 (C - B) / A
January	1,371	1,494	1,359	1,524	1,948	1,695.2	1,681.2	1,561	-120.2	-7.1%
February	1,208	1,255	1,368	1,338	1,406	1,378.2	1,362.8	1,319	-43.8	-3.2%
March	1,281	1,171	1,296	1,473	1,312	1,401.8	1,384.2	1,478	93.8	6.7%
April	1,166	1,154	1,210	1,781	1,209	1,364.2	1,345.8	1,399	53.2	3.9%
May	1,209	1,158	1,197	1,515	1,286	1,309.8	1,288.4	1,292	3.6	0.3%
June	1,179	1,192	1,189	1,202	1,212	1,188.8	1,162.0	1,268	106.0	8.9%
July	1,218	1,185	1,193	1,212	1,346	1,224.4	1,194.4	1,378	183.6	15.0%
August	1,353	1,235	1,302	1,270	1,525	1,271.0	1,227.2	1,234	6.8	0.5%
September	1,355	1,173	1,402	1,316	1,540	1,290.4	1,237.0	1,179	-58.0	-4.5%
October	1,652	1,405	1,599	1,501	1,520	1,382.2	1,319.2	1,433	113.8	8.2%
November	1,371	1,494	1,359	1,633	1,627	1,438.0	1,364.8	1,455	90.2	6.3%
December	1,208	1,255	1,368	1,744	1,655	1,611.0	1,510.4	1,721	210.6	13.1%
Jan-Dec	16,034	15,810	15,836	17,509	17,586	16,555.0	16,077.4	16,717	639.6	3.9%

Source: NISRA