Coronavirus (COVID-19): Analysis

State of the Epidemic in Scotland – 4 March 2022

Background

This report summarises the current situation of the Covid-19 epidemic in Scotland. It brings together the different sources of evidence and data about the epidemic in Scotland at this point in time, why we are at that place, and what is likely to happen next. This updates the previous publication published on 25 February 2022[1]. The information in this document helps the Scottish Government, the health service and the wider public sector respond to the epidemic and put in place what is needed to keep us safe and treat people who have the virus.

This edition of the State of the Epidemic summarises current data on Covid-19 at a national and local level, and how Scotland currently compares to the rest of the UK. It looks at the vaccination program in Scotland and its impact. Information is provided about variants of concern and what impact these may have. Bringing this information together in one place gives the opportunity to better understand the current state of the epidemic in Scotland.

The State of the Epidemic report this week will summarise data up to and including 2 March 2022.

Notice on Cases Data including Reinfections

From 1 March 2022, PHS began reporting on reinfections as part of their daily case data. Previously Covid-19 cases were based on an individual's first positive (PCR or LFD) test result only. The new daily case calculation includes both new infections and possible reinfections. Possible reinfections are defined as individuals who tests positive, by PCR or LFD, 90 days or more after their last positive test. The change has been applied retrospectively to cases and testing data by specimen date since the beginning of the pandemic. This is not the case for reporting date data, where reinfections were added to the total cumulative number of reported cases on 1 March. Methodology for hospital admissions is still being finalised but will be included in the reporting in the next few days. Reinfections will not apply to ICU admissions as they link on all positive tests. Hospital and ICU occupancy will be reviewed accordingly.

[1] Scottish Government: Coronavirus (Covid-19): state of the epidemic - gov.scot (www.gov.scot)

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Summary

The daily positivity estimate from the Covid-19 Infection Survey for Scotland has been increasing in recent weeks, and may be linked to the increasing prevalence of Omicron BA.2. By comparison, the weekly case rate (including reinfections) in Scotland has continued to decrease slightly in the most recent week but remains high compared to previous phases of the pandemic. Nationwide, wastewater Covid-19 RNA levels have remained stable.

The case rates (including reinfections) for those aged 60 or older continued to increase in the most recent week. This is in line with the increasing numbers of Covid-19 cases in care home residents throughout February 2022. By comparison, the Office for National Statistics (ONS) Covid-19 Infection Survey shows that in Scotland there are early signs of an increase in the percentage of the population testing positive for Covid-19 in those around age 30 and those around age 60.

Covid-19 related daily hospital and short stay ICU occupancy have continued to increase in the most recent week. Combined ICU and hospital admissions related to Covid-19 appear to be fluctuating in the most recent month. Since 2 February, the proportion of Covid-19 related hospital admissions have increased among those aged 60 or older, who represented 57% of admissions in the week to 23 February. This age group has also seen increased Covid-19 case rates throughout the same period. The weekly number of Covid-19 deaths registered by NRS increased in the week to 27 February, as there was a higher number of deaths among those aged 75 to 84.

Key Points

- The UK Health Security Agency's (UKHSA) consensus estimate for R in Scotland as at 15 February is between 0.9 and 1.1. Both the lower and upper limits of the R value have remained unchanged since the last published figure.

- As at 15 February, the UKHSA's consensus view was that the incidence of new daily infections in Scotland was between 246 and 526 per 100,000 people.

- The latest growth rate for Scotland as at 15 February was between -1% and 2%. The upper and lower limits have increased since the last published figure.

- As determined through the latest weekly ONS Covid-19 Infection Survey, in Scotland, the percentage of people testing positive for Covid-19 increased in the week 20 to 26 February 2022. In the same week, it is estimated that around 1 in 19 people (95% credible interval: 1 in 20 to 1 in 17) in Scotland had Covid-19 at any given time.

- Nationwide, wastewater Covid-19 RNA levels have been fairly stable without showing any consistent trend in the last three weeks. The week ending on 28

February saw levels of around 64 million gene copies per person per day (Mgc/p/d) compared to 79 Mgc/p/d the previous week.

- By specimen date, the seven-day combined PCR and LFD case rate (including reinfections) continued to decrease slightly in Scotland in the week leading up to 26 February. There were 827 weekly combined PCR and LFD cases per 100,000 population in the week to 26 February, which is a 4% decrease from 860 weekly cases per 100,000 on 19 February and a 9% decrease from three weeks previously (905 on 5 February). This remains a high case rate compared to previous phases of the epidemic in Scotland.

- The week leading up to 26 February continued to see increasing case rates (including reinfections) among age groups 60 and older compared to the week ending 19 February. In the same period, the case rate (including reinfections) has continued to slightly decrease or remain at similar levels for most age groups below 60.

- Weekly number of positive Covid-19 cases for residents in care homes has gone up by 154% from 197 in the week to 6 February to 500 in the week to 27 February. This is lower than the previous peak of 833 weekly cases in the week to 9 January 2022, and 641 weekly cases in the week to 10 January 2021.

- In the week to and including 2 March, Covid-19 hospital occupancy showed an increase of 12% compared to the previous week ending 23 February, while combined ICU occupancy increased by 12% in the same time period.

- Admissions to hospital have fluctuated throughout the last four weeks, with 733 admissions in the week to 26 February. ICU admissions also appear to be fluctuating at low levels, with 20 admissions in the week to 1 March.

- While remaining at a high level, average hospital admissions related to Covid-19 in children and young adults under 22 have decreased in the three-week period to 23 February (100 average weekly admissions), compared to the previous three-week period to 16 February (112 average weekly admissions).

- The overall number of Covid-19 deaths has slightly increased in the week leading up to 27 February. Compared to the previous week ending 20 February, the number of deaths increased by 4%, or 3 deaths, to a total of 79 deaths in the week leading up to 27 February.

- In the week leading up to 26 February 2022, Orkney Islands had the highest combined PCR and LFD weekly case rate (including reinfections) by specimen date, reporting 1,866 cases per 100,000 population, followed by Shetland Islands with 1,858 cases per 100,000. Dumfries and Galloway had the lowest weekly combined LFD and PCR case rate in the same time period, reporting 563 cases per 100,000.

Method

This report brings together a wide range of publically available figures from a range of data sources. These include publications by Scottish Government, Public Heath Scotland, National Records of Scotland and Office for National Statistics along with scientific publications and SAGE and UKHSA summaries where appropriate to summarise the state of the epidemic in Scotland in a given week. We also provide information on public attitudes to the virus from weekly YouGov polling surveys.

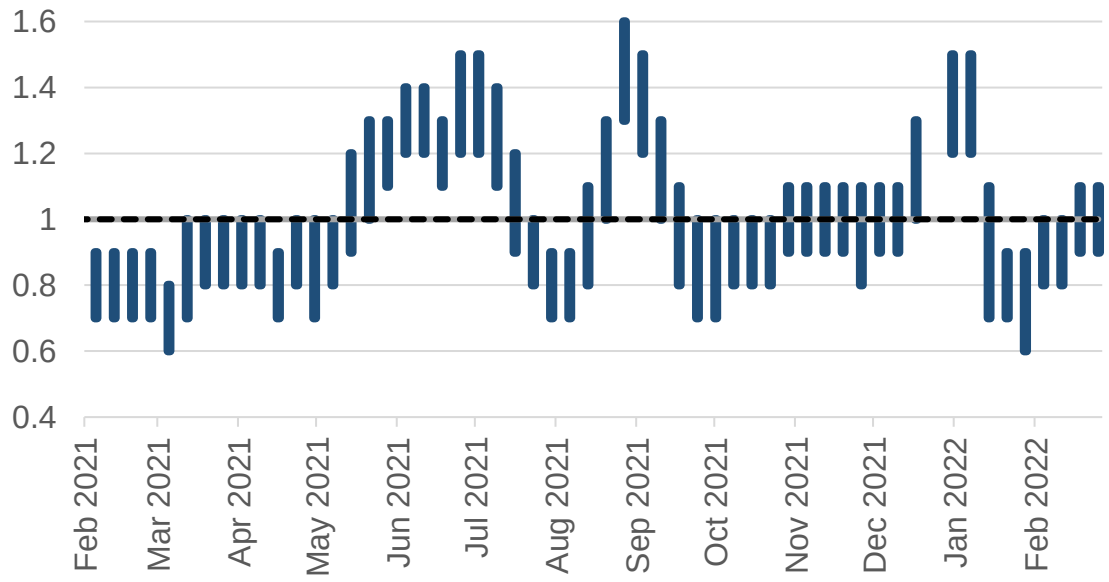
Estimated Infection Levels and Case Numbers

Estimated Infection Levels

The reproduction number (R) is the average number of secondary infections produced by a single infected person. If R is greater than one the epidemic is growing, if R is less than one the epidemic is shrinking. The higher R is above one, the more people one infectious person might further infect other people and so the faster the epidemic grows. **Please note that R is an indicator that lags by two or three weeks.** For more information please visit the UK government website.

The UK Health Security Agency's (UKHSA) consensus estimate for R in Scotland as at 15 February is between 0.9 and 1.1. Both the lower and upper limits of the R value have remained unchanged since the last published figure (**Figure 1**) [2] [3].

Figure 1: R in Scotland over time by publishing week[4]



As at 15 February, the UKHSA's consensus view was that the incidence of new daily infections in Scotland was between 246 and 526 per 100,000 people. This equates to between 13,400 and 28,800 people becoming infected each day in Scotland[5] [6].

[2] Scottish Government: Coronavirus (Covid-19): modelling the epidemic
[3] Using data to 28 February 2022.
[4] No R value was published for the week beginning 27 December 2021 as publications were paused over the festive period. The most recent data point for R is dated 2 March 2022, reflecting the R value as at 15 February.
[5] Using data to 28 February 2022.
[6] Scottish Government: Coronavirus (Covid-19): modelling the epidemic

The growth rate reflects how quickly the numbers of infections are changing day by day. It is an approximation of the percentage change in the number of new infections each day. More information can be found on the UK government website.

The latest growth rate for Scotland as at 15 February was between -1% and 2%. The upper and lower limits have increased since the last published figure[7] [8].

Covid Infection Survey

The Covid-19 Infection Survey is a UK wide study carried out by the Office for National Statistics (ONS) and the University of Oxford. The survey invites private residential households to test whether they have the infection, regardless of whether they have symptoms, using a PCR test. Participants are also asked to provide a blood sample to test for antibodies. This means the study is unaffected by testing policy changes mentioned at the start of this report.

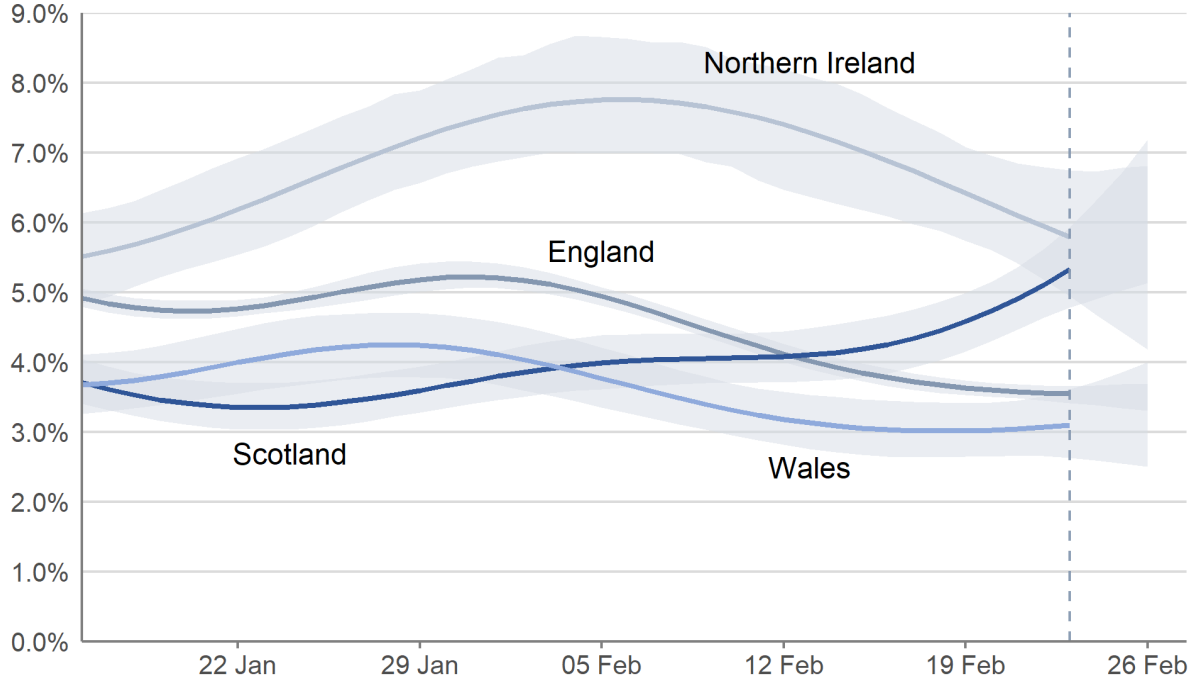
In Scotland, the percentage of people testing positive for Covid-19 increased in the week ending 26 February 2022, as seen in **Figure 2**. The estimated percentage of people testing positive for Covid-19 in the private residential population was 5.33% (95% credible interval: 4.78% to 5.93%)[9], equating to around 1 in 19 people (95% credible interval: 1 in 20 to 1 in 17). The latest peak was the highest since the start of the pandemic: 5.65% recorded in the week to 7 January 2022. This was higher than the two previous peaks of 2.29% recorded in the week to 11 September 2021 and 1.24% recorded in the week to 17 July 2021.

In the week 20 to 26 February 2022, estimates for the other nations of the UK are as follows and can be seen in **Figure 2**:

- In England, the percentage of people testing positive continued to decrease in the most recent week: 3.55% (95% credible interval: 3.41% to 3.65%), equating to around 1 in 30 people (95% credible interval: 1 in 30 to 1 in 25).
- In Wales, the percentage of people testing positive in private residential households decreased in the latest two weeks, but the trend is uncertain in the most recent week. The estimated percentage of people testing positive is 3.10% (95% credible interval: 2.63% to 3.61%), equating to around 1 in 30 people (95% credible interval: 1 in 40 to 1 in 30).
- In Northern Ireland, the percentage of people testing positive decreased in the most recent week: 5.79% (95% credible interval: 4.95% to 6.74%), equating to around 1 in 17 people (95% credible interval: 1 in 20 to 1 in 15).

[7] Using data to 21 February 2022.
[8] Scottish Government: Coronavirus (Covid-19): modelling the epidemic - gov.scot (www.gov.scot)
[9] A **credible interval** gives an indication of the uncertainty of an estimate from data analysis based on a sample population. 95% credible intervals are calculated so that there is a 95% probability of the true value lying in the interval.

Figure 2: Modelled daily estimates of the percentage of the private residential population testing positive for Covid-19 in each of the four nations of the UK, between 16 January and 26 February 2022.

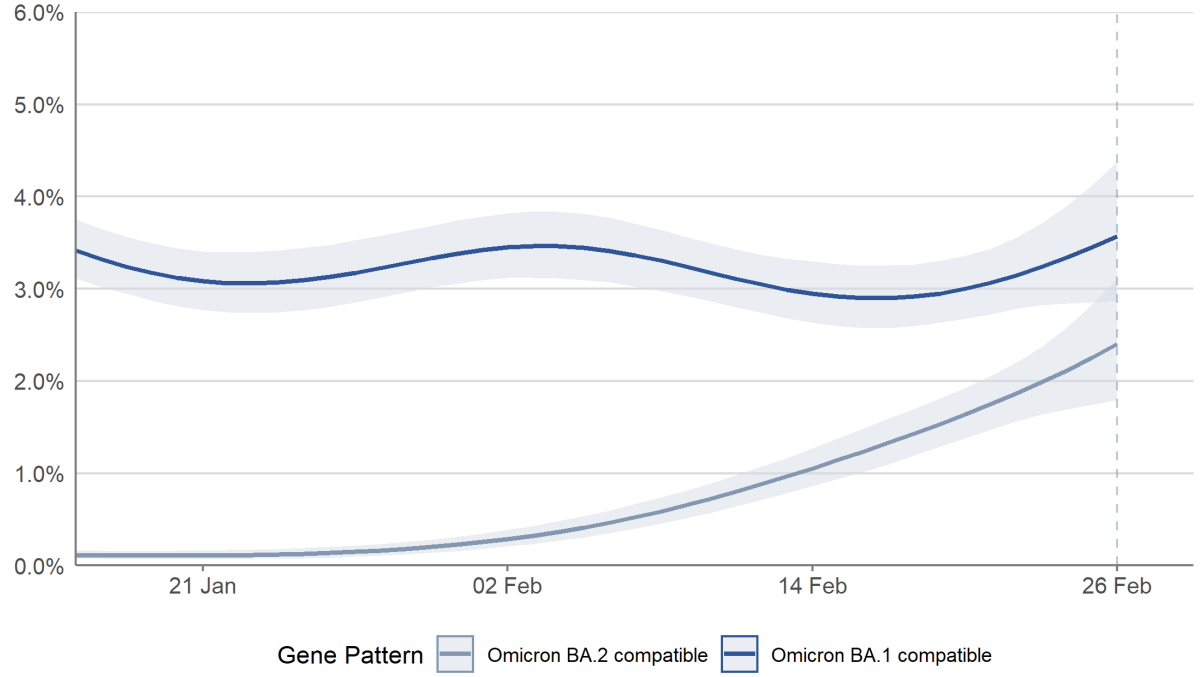


In Scotland, there are signs of an increase in the percentage of the population testing positive for Covid-19 in those around age 30 and those around age 60, in the week ending 26 February 2022. The trend is uncertain for children and younger adults due to wide confidence intervals. Meanwhile, the case rates (including reinfections) for those aged 60 or older continued to increase in the most recent week[10].

This increase in estimated infection levels in Scotland has correlated with the increasing prevalence of the Omicron BA.2 variant in Scotland since early February. According to the Covid-19 Infection Survey, the percentage of people testing positive with cases compatible with Omicron BA.2 in Scotland has increased in the most recent week to 26 February. The percentage of people testing positive with cases compatible with Omicron BA.1 has also increased in the most recent week (**Figure 3**). Omicron BA.2 is likely to have a growth advantage over Omicron BA.1[11].

[10] Scottish Government: Coronavirus (Covid-19): infection survey - gov.scot (www.gov.scot)
[11] UK Government: 23 February 2022 risk assessment for VUI 22JAN-01_BA.pdf

Figure 3: Modelled percentage of positive cases compatible with the Omicron BA.1 variant and Omicron BA.2 variant, based on nose and throat swabs, daily, in Scotland, 16 January 2022 to 26 February 2022.



Wastewater Estimates

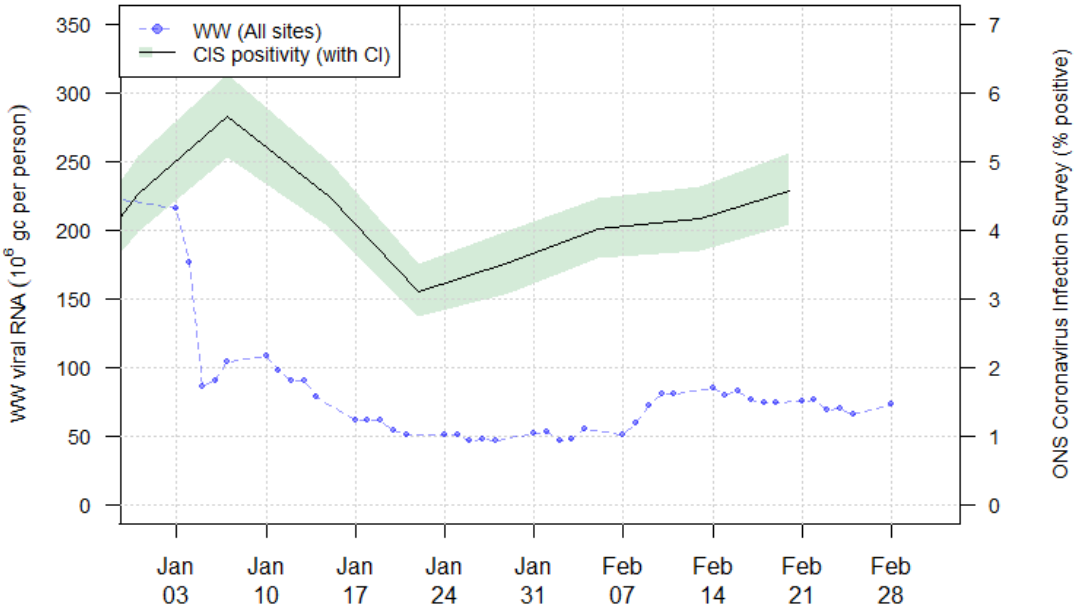
The Scottish Government has been working with the Scottish Environment Protection Agency (SEPA) to detect and analyse fragments of Covid-19 virus RNA in wastewater. The number of locations where the levels of SARS-CoV-2 in wastewater are monitored has increased to 141 sites around Scotland. In contrast to Covid-19 case records, virus shedding into wastewater is a biological process. This means that wastewater data is unaffected by factors that impact whether testing is done.

Nationwide, wastewater Covid-19 RNA levels have been fairly stable without showing any consistent trend in the last three weeks. The week ending on 28 February saw levels of around 64 million gene copies per person per day (Mgc/p/d) compared to 79 Mgc/p/d the previous week[12].

Compared to before December 2021, wastewater Covid-19 levels appear lower than anticipated given the known levels of Covid-19 activity. This effect may be due to the switchover from Delta variants to the new Omicron variant, and their shedding properties. Thus, **Figure 4** shows only data from after the end of 2021, at which point the Omicron variant already represents almost all cases in Scotland. From this, we see a rapid decline from peak levels in early January with stable wastewater viral levels since late January and a slight increase over February[13].

[12] Scottish Government: Coronavirus (Covid-19): modelling the epidemic
[13] Ibid.

Figure 4: National running average trends in wastewater Covid-19 from 31 December 2021 to 28 February 2022, and CIS positivity estimates from 31 December to 20 February 2022[14]



Covid-19 Cases

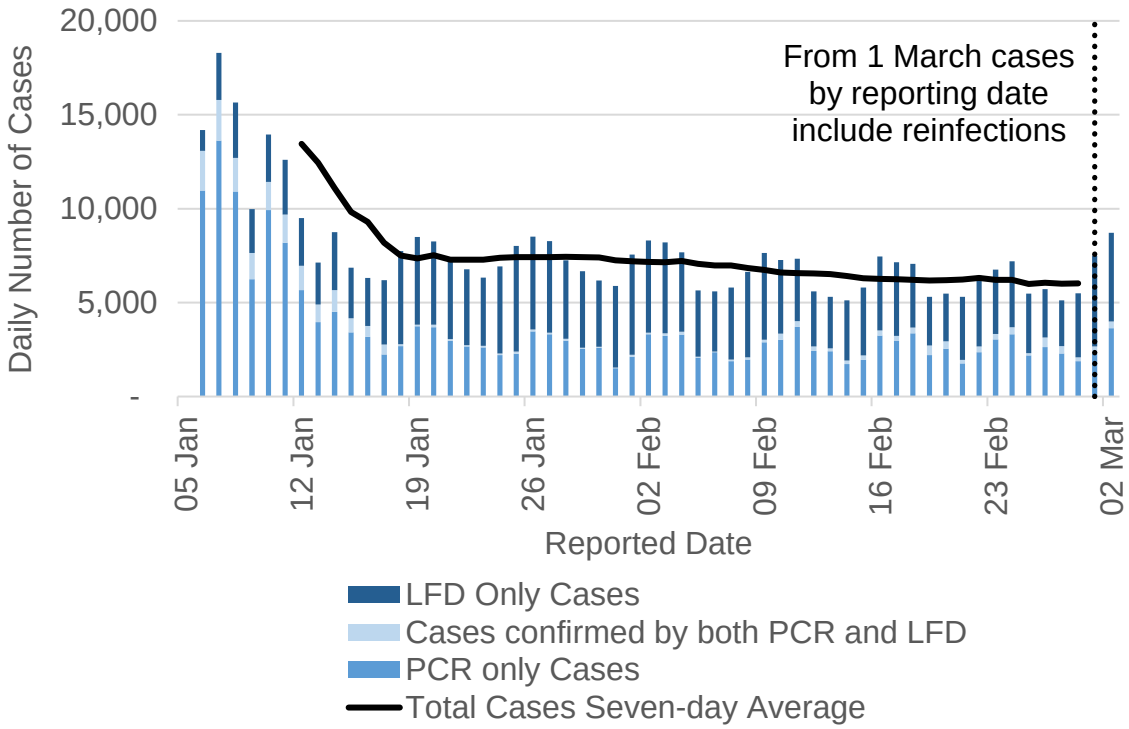
Please note that from 5 January, the Covid-19 case definition includes cases confirmed by either a PCR or LFD test, or both. Comparisons over time need to be made with caution. For more information on the difference between reporting and specimen date, please see this earlier publication.

From March 1, **cases data includes reinfections** (where a person has a positive test 90 days or more since their last positive test). For cases by specimen date, historical daily cases have been retrospectively updated to include reinfections, whereas for cases by reporting date reinfections were added to the total cumulative number on 1 March 2022 and will be included in daily reporting going forward. Reinfections have not been added retrospectively to data by reported date.

By reporting date[15], 6,030 cases (7-day average) were reported per day in the week leading up to 28 February. The seven-day average number of daily reported cases levelled off between mid to late January, and was decreasing at a slow rate until end of February. On 2 March, 8,725 cases (including reinfections) were reported, a slight increase from the previous day. However, the trend must be interpreted with caution due to the inclusion of reinfection cases from 1 March (**Figure 5**)[16].

[14] Scottish Government: Coronavirus (Covid-19): modelling the epidemic
[15] The reporting date is when the result of the test is authorised and released to Public Health Scotland by NHS Scotland and UK Government Regional Testing Laboratories.
[16] Scottish Government: Coronavirus (COVID-19): trends in daily data

Figure 5: PCR and LFD positive daily case numbers by reporting date. Data to 2 March 2022 and reinfections included from 1 March[17].

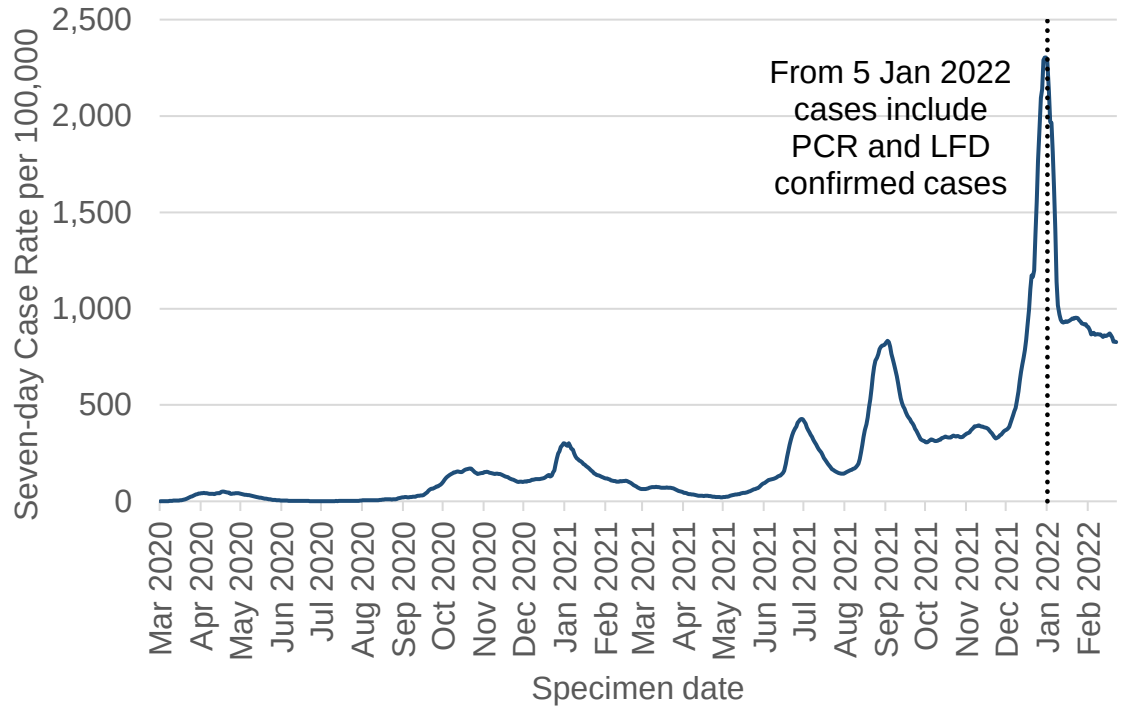


For comparisons over time it is more reliable to look at case rates by specimen date[18]. Up until 5 January, case rates by specimen date were only identifiable for cases confirmed by a PCR test, but following the change in testing policy, case rates by specimen date are now available for cases confirmed either by PCR or LFD test. Comparisons over this time period must be made with caution, as changes might reflect changes in testing behaviour rather than changing infection levels.

Following a sharp drop in the weekly rate of PCR or LFD confirmed Covid-19 cases (including reinfections) after the testing policy change on 5 January, the rate of decrease has slowed since mid-January. By specimen date, the seven-day combined PCR and LFD case rate (including reinfections) continued to decrease slightly in Scotland in the week leading up to 26 February. There were 827 weekly combined PCR and LFD cases per 100,000 population in the week to 26 February, which is a 4% decrease from 860 weekly cases per 100,000 on 19 February and a 9% decrease from three weeks previously (905 weekly cases on 5 February) (**Figure 6**)[19]. This remains a very high case rate compared to previous phases of the pandemic in Scotland.

[17] Scottish Government: Coronavirus (COVID-19): trends in daily data
[18] The specimen date is the date the sample was collected from the patient.
[19] Public Health Scotland: Covid-19 Daily Dashboard

Figure 6: Seven-day combined PCR and LFD case rate (including reinfections) per 100,000 population for Scotland by specimen date. Data to 26 February 2022[20].

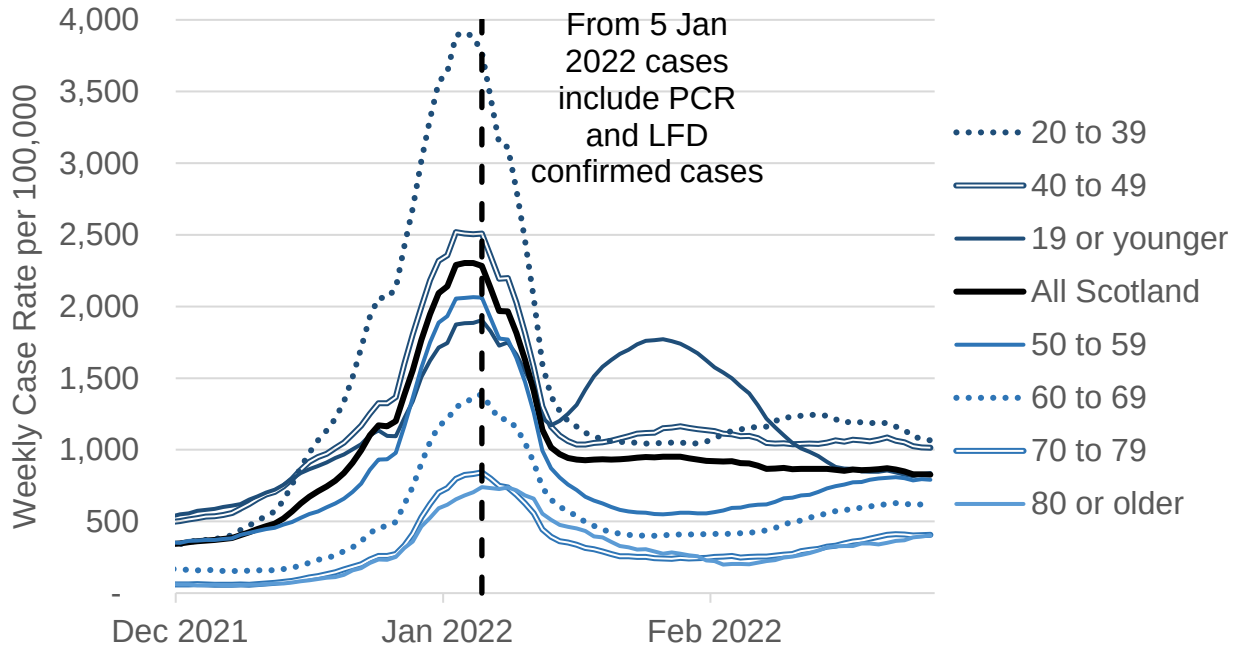


The week leading up to 26 February continued to see increasing case rates (including reinfections) among age groups 60 and older, with the biggest increases seen among those aged 80 or older increasing by 16% and the case rate among those aged 70 to 79 increasing by 7% compared to the week to 19 February [21]. In the same period, the case rate (including reinfections) has continued to slightly decrease or remain at similar levels for most age groups below 60. The exception was a slight increase in case rates among those aged between 2 to 4, 5 to 11 and 12 to 13, ranging between 4% and 12% compared to the previous week ending 19 February (**Figure 7**)[22].

As of 26 February, the highest combined PCR and LFD weekly case rate (including reinfections) by specimen date per 100,000 were observed amongst those aged 20 to 39, followed by those aged 40 to 49, 19 and younger, 50 to 59 and 60 to 69. The lowest weekly case rates were seen among those aged 70 to 79, and 80 or older.

[20] Before 5 January 2022, the case rate includes only positive laboratory confirmed PCR tests.
[21] Ibid.
[22] Public Health Scotland: Covid-19 Daily Dashboard

Figure 7: Weekly total combined PCR and LFD cases (including reinfections) per 100,000 population in Scotland by age group, by specimen date. Data to 26 February 2022[23].



This is in line with the increasing numbers of Covid-19 cases in care home residents throughout February 2022. Weekly number of positive Covid-19 cases for residents in care homes has gone up by 154% from 197 in the week to 6 February to 500 in the week to 27 February. This is lower than the previous peak of 833 weekly cases in the week to 9 January 2022, and 641 weekly cases in the week to 10 January 2021[24].

Due to different case definitions across the UK, comparisons between countries cannot be made at this time. Cases data from Scotland and Northern Ireland includes both PCR and LFD test results. Cases data from Wales includes PCR only results, and cases data from England includes PCR, LFD and LAMP (loop-mediated isothermal amplification) test results.

Additionally, from 31 January 2022, case reporting in England and Northern Ireland has changed to an episode-based definition which includes possible reinfections. From 1 March 2022, multiple infection episodes with a 90-day threshold are also included in cases for Scotland. Public Health Wales has reported cases by 42-day infection episodes throughout the pandemic. It intends to move to a 90-day episode length in the coming weeks. Reported case numbers can be found on the UK Government Dashboard.

Due to the different case definitions outlined above, we have not included case comparisons across the four UK nations using data from the UK Government

[23] Before 5 January 2022, the case rate includes only a positive laboratory confirmed PCR tests.
[24] Scottish Government: Coronavirus (COVID-19): trends in daily data

dashboard in this edition of the report. When these definitions are more aligned we will resume reporting on these comparisons. To compare estimated infection levels in private residential households across the UK, please see the previous section on the Covid-19 Infection Survey.

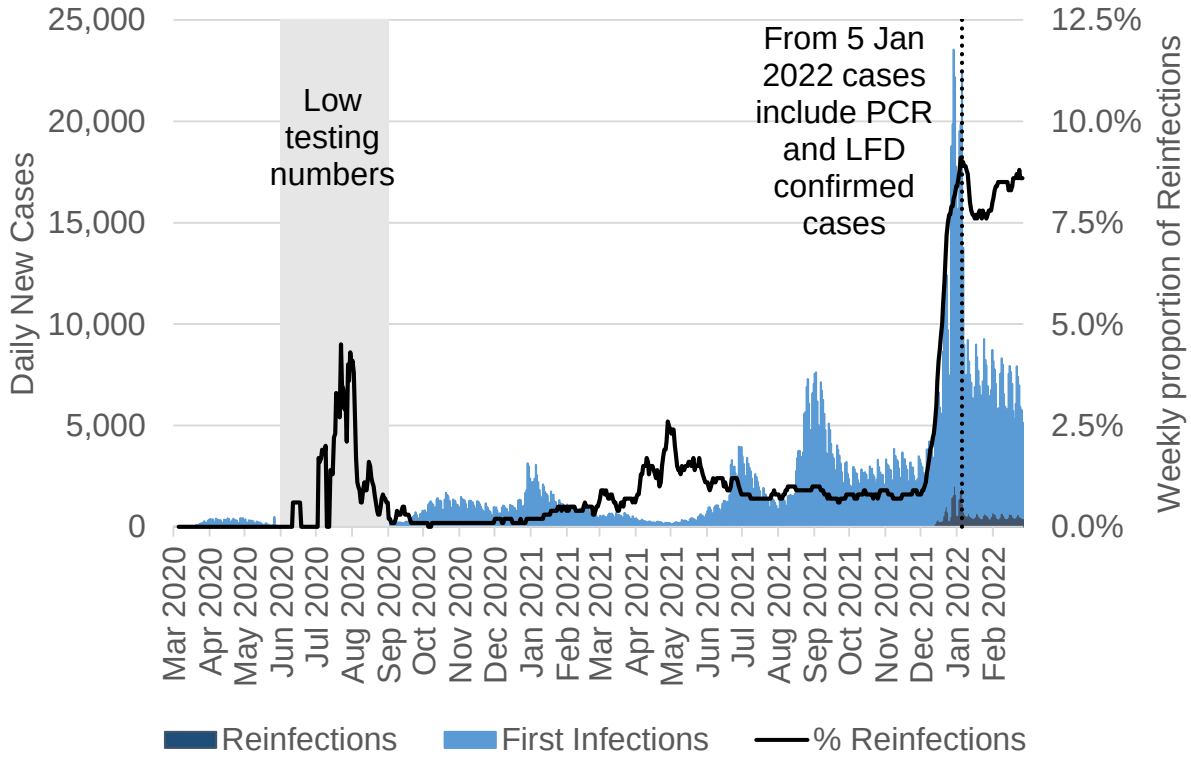
Reinfections

A reinfection is defined as a positive test 90 days or more after a previous positive test. This amount of time is set in order to be able to distinguish between viral persistence of the primary Covid-19 episode and a true reinfection.

The increase in the proportion of reinfections seen in late 2021 corresponds to the emergence of the now dominant Omicron BA.1 variant in the UK. The proportion of reinfections in Scotland when Omicron BA.1 was first detected on 29 November[25] was 0.8% percent of total cases. These are cases in individuals for whom it has been 90 or more days since their last positive Covid-19 test. The proportion of reinfections peaked on 4 January, at 9.1%, before decreasing slightly (**Figure 8**).

By specimen date, there was a total number of 3,873 reinfection cases confirmed by either a PCR or LFD test in the week leading up to 26 February. Reinfections represented 8.6% of total reported cases in the most recent week.

Figure 8: Number of PCR and LFD positive cases by episode of infection and specimen date. Data to 26 February 2022.

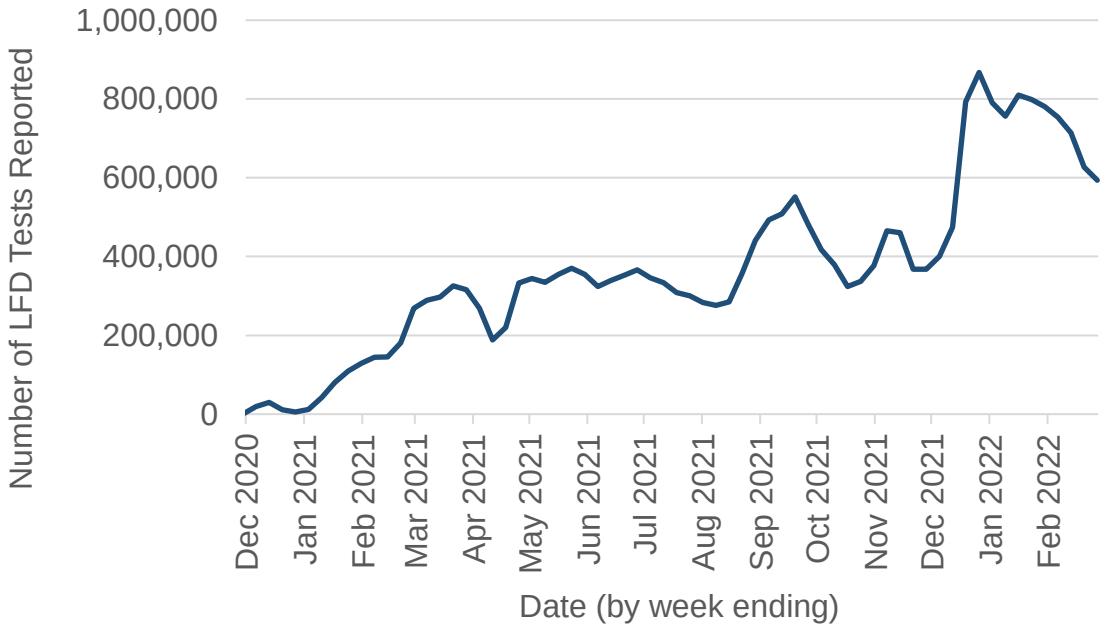


[25] Scottish Government: Omicron variant

LFD Testing

After a decrease in the number of LFD tests that were reported between 27 December 2021 and 9 January 2022, there was a peak in reported LFD tests on 16 January 2022, with 810,225 reported tests[26]. The weekly total of tests reported in the week to 27 February decreased by 5% from the previous week leading up to 20 February. There were 593,828 reported tests in the week ending 27 February (**Figure 9**)[27].

Figure 9: Number of LFD Tests Reported by Week Ending. Data up to the 27 February 2022.



YouGov survey results have shown that on 15 to 16 February, 52% of respondents had taken a LFD/antigen test and 9% a PCR test in the past week[28]. Of those who had taken a LFD/antigen test, 45% recorded the result of their last LFD/antigen test online and 50% did not record the results online[29].

The Scottish Contact Survey asks whether people use LFD tests and if so how often. Approximately 80% of individuals had taken at least one lateral flow test within the last 7 days for the survey pertaining to the 17 February to 23 February[30].

[26] Public Health Scotland: Covid-19 Statistical Report
[27] Ibid.
[28] Results are taken from questions run on behalf of Scottish Government on the YouGov online omnibus survey. Question 'Coronavirus tests typically take two forms – Rapid 'Lateral Flow or LFD' tests (sometimes called Antigen Tests), which give a test result in 30 minutes and are usually self-administered, or PCR Tests mostly conducted at official Test Sites (but also available as a 'Home Kit) – processed by a laboratory, with results available within 48 hours. In both tests, a swab of nose and/or throat is needed. Which of the following applies to you in relation to testing for Covid-19 in the past week (i.e. since 8 February)?'
[29] *Question -Thinking about the LAST lateral flow/antigen test you did in the past week…Which of the following best describes you in relation to that test?* (Base: 518 - All who have taken a Lateral Flow/antigen test in the last week)
[30] Scottish Government: Coronavirus (COVID-19): modelling the epidemic

There are differences in the results from the YouGov and the Scottish Contact Survey (SCS) which may be likely to be due to differences in sampling and methodology. YouGov is an online survey based on an active sample which is representative of the Scottish population with around 1,000 respondents[31]. The SCS[32] is based on a longitudinal survey with a larger sample of around 3,000, with the responses being modelled to represent the Scottish population.

Severe Illness: Hospitalisation, ICU and Deaths

Hospital and ICU Occupancy and Admissions

Following changes in the Covid-19 Case definition and changing testing policies on 5 January 2022, hospital and ICU occupancy figures include patients with Covid-19 cases confirmed by either PCR or LFD from 9 February and onwards.

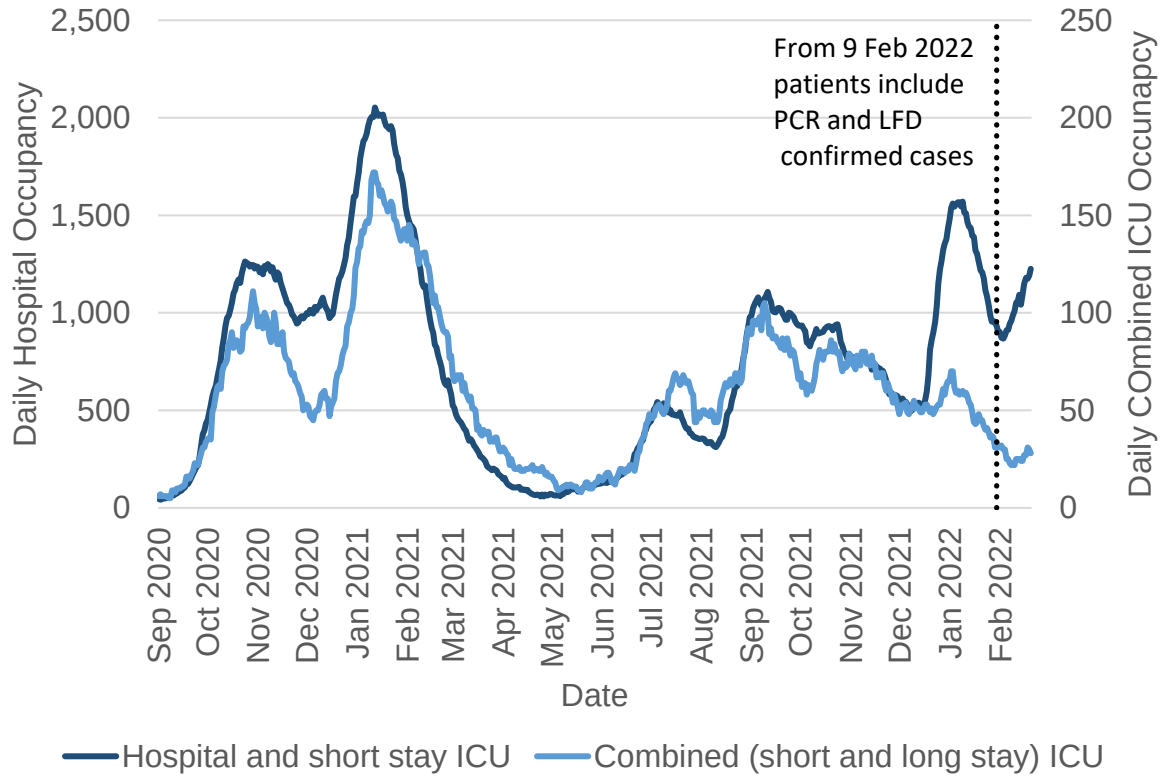
Similarly, Covid-19 admissions to hospital (including for children and young people) now include patients with Covid-19 cases confirmed either by PCR or LFD. Historical figures have been updated retrospectively from 5 January 2022. Please note that admissions to ICU only include PCR confirmed Covid-19 cases.

In the week to and including 2 March, daily Covid-19 hospital occupancy increased. NHS boards reported 1,226 patients in hospital or in short stay ICU on 2 March with recently confirmed Covid-19, compared to 1,093 on 23 February. This is an increase of 133 patients, or 12%, compared to a week previously, and an increase of 314 patients, or 34%, compared to two weeks previously (16 February). This compares with 2,053 patients in hospital at the peak in January 2021 (**Figure 10**).

Combined ICU occupancy (including short and long stay) has increased to 28 patients on 2 March, an increase of 3 patients or 12% compared to a week previously on 23 February. The number of combined ICU occupancy remains lower than the peak of 172 ICU patients recorded in January 2021. There were 16 patients in short stay ICU on 2 March, compared to 11 a week previously (23 February). This is an increase of 5 patients. There were 12 patients in long stay ICU on 2 March, compared to 14 on 23 February (**Figure 10**)[33].

[31] The sample is demographically and geographically representative of adults 18+ across Scotland, with circa 1000 responses each week fieldwork is conducted. YouGov apply weighting to the data to match the population profile to adjust for any over/under representations and to maximise consistency from wave to wave. Parameters used include age, gender, social class, region and level of education.
[32] The sample is demographically representative of adults 18+ across Scotland, with circa 3000 responses over two alternating panels. This is modelled to represent the Scottish population.
[33] Scottish Government: Coronavirus (Covid-19): Trends in Daily Data

Figure 10: Patients in hospital (including short stay ICU), and patients in combined ICU with recently confirmed Covid-19, data up to 2 March 2022[34] [35].



Admissions to hospital have fluctuated over the last month. In the week to 26 February there were 733 admissions to hospital for people with confirmed Covid-19, which is a similar figure to four weeks previously, with 719 hospital admissions in the week to 29 January. This is a slight increase of 2% over four weeks and compares to 1,179 weekly hospital admissions during the most recent peak in the week leading up to 10 January (**Figure 11**)[36].

The number of admissions to ICU also appears to be fluctuating. The latest data from PHS shows 20 new Covid-19 patients admitted to ICU in the week to 1 March, compared to 24 four weeks previously in the week to 1 February. This compares to 57 weekly ICU admissions during the most recent peak in early January 2022 (**Figure 11**)[37].

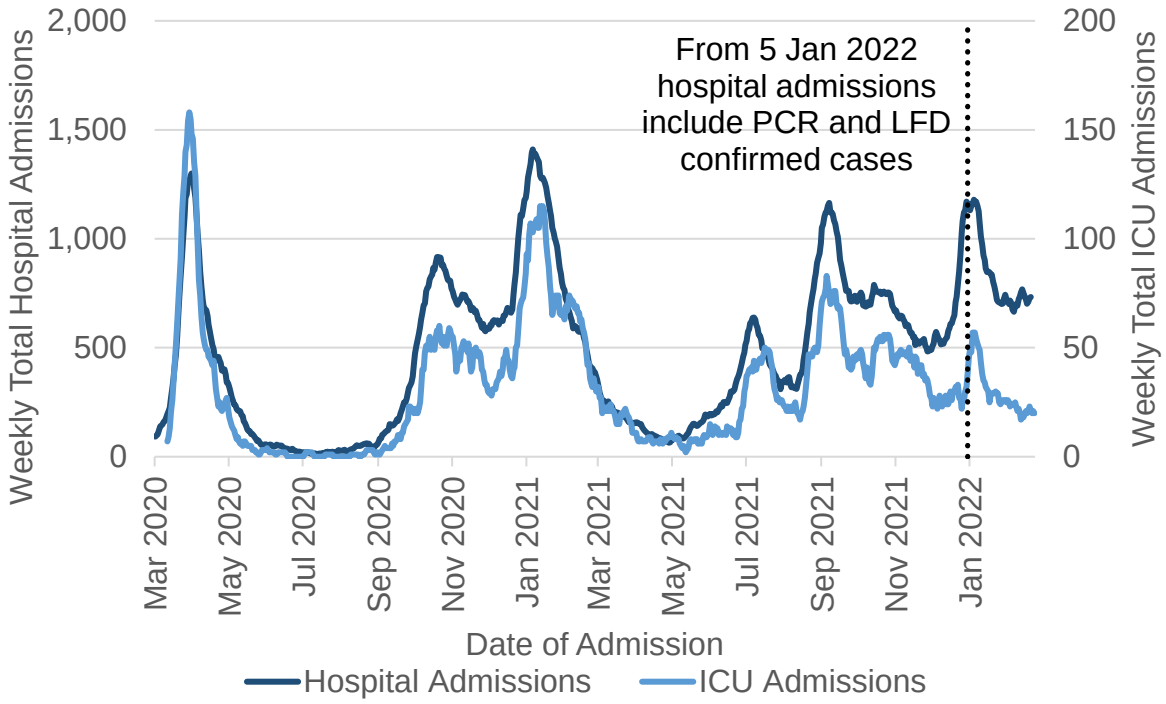
[34] ICU includes combined ICU/HDU figures and both patients with length of stay 28 days or less and with length of stay more than 28 days. Please note that only patients with length of stay 28 days or less in ICU were recorded until 20 January 2021. From 20 January 2021 ICU short and long stay includes both ICU or combined ICU/HDU with length of stay 28 days or less and with length of stay more than 28 days.

[35] Before 9 February 2022, patients were only included if they had a recent positive laboratory confirmed PCR test.

[36] Public Health Scotland: Covid-19 Daily Dashboard

[37] Ibid.

Figure 11: Weekly total of Covid-19 admissions to hospital and ICU with a positive Covid test in Scotland[38] [39] [40].



According to data from Public Health Scotland, the highest number of admissions in the week to 22 February were among those aged 80 and over. In the same week, approximately 57% of the hospital admissions related to patients aged 60 or older. This is an increase from 50% in the week to 1 February[41]. The proportion of patients staying 48 hours or longer was 57% in the week to 15 February, which compares to 48% in the week to 1 February (as reported on 16 February)[42].

According to data from the PHS Education Dashboard, the three-week rolling average number of Covid-19 related hospital admissions for those aged under 22 peaked in the three-week period leading up to 19 January 2022 at an average of 145 admissions, which was higher than previously seen in the pandemic. While remaining at a high level, average hospital admissions related to Covid-19 in children and young adults have decreased by 10% in the three-week period to 23 February (100 average weekly admissions), compared to the previous three-week period to 16 February (112 average weekly admissions). The only age band among children and young people to see an increasing rolling average of hospital admissions in this time period were those aged 12 to 17. These figures refer both to young patients in

[38] Data on hospital admissions goes up to 26 February 2022 and data for admissions to ICU up to 1 March 2022.
[39] Covid-19 related admissions have been identified as the following: A patient's first positive test for Covid-19 up to 14 days prior to admission to hospital, on the day of their admission or during their stay in hospital. If a patient's first positive test is after their date of discharge from hospital, they are not included in the analysis. An admission is defined as a period of stay in a single hospital. If the patient has been transferred to another hospital during treatment, each transfer will create a new admission record.
[40] Before 9 January 2022, hospital admissions were only included if the patient had a recent positive laboratory confirmed PCR test. ICU admissions rely on PCR testing only.
[41] Public Health Scotland: Covid-19 statistical report - 2 March 2022
[42] Public Health Scotland: Covid-19 & Winter Statistical Report - 16 February 2022

hospital because of Covid-19 and with Covid-19, and link to both PCR and LFD test results[43].

While it may be helpful to compare hospital occupancy between the UK nations, any comparisons must be made with caution. Definitions are not consistent across the nations and data are not reported daily by each nation. Data from Scotland, Wales and Northern Ireland is updated retrospectively if errors come to light, while data from England is not revised retrospectively, but instead is corrected in the following day's data update**.** This means Covid-19 death figures are not directly comparable across the four nations. For more information see UK Government website.

The seven-day average hospital occupancy in Scotland per one million people was 207 patients in the week to 1 March 2022. The seven-day average hospital occupancy per 1 million in the same period for other UK nations were as follows[44]:

- England: 151 per one million,
- Northern Ireland: 285 per one million,
- Wales: 182 per one million.

In Scotland, there was a daily average of 19 hospital admissions per one million people in the week leading up to and including 26 February 2022. Seven-day average hospital admissions per one million in the same period for other UK nations were as follows[45]:

- England: 17 per one million,
- Northern Ireland: 19 per one million,
  Wales: 6 per one million.

[43] Public Health Scotland: PHS Covid-19 Education Report
[44] UK Government: Coronavirus (Covid-19) in the UK (accessed 2 March 2022)
[45] Ibid.

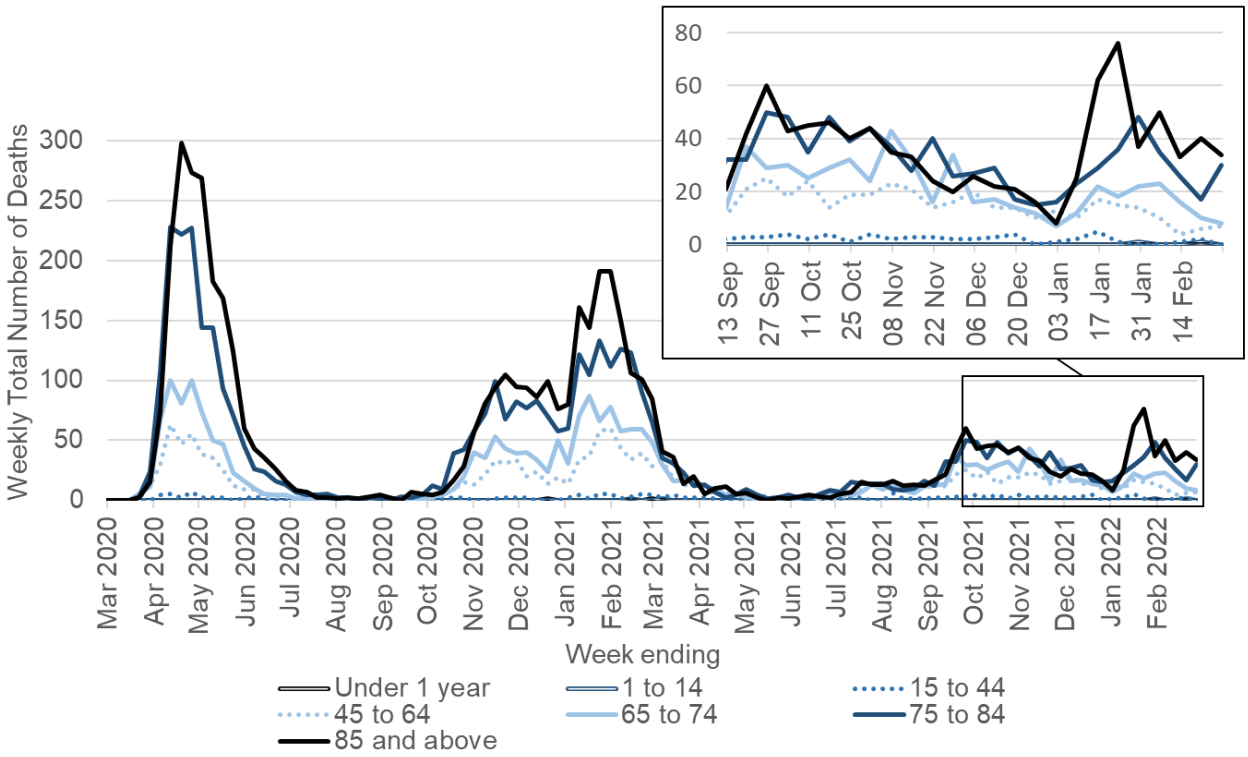
Deaths

After a period of decreasing numbers of Covid-19 deaths throughout the last two months of 2021, the week to 23 January 2022 saw a peak of 146 Covid deaths. This came after three weeks of increasing numbers of deaths, largely consisting of fatalities among those aged 45 or above, as Covid-19 deaths among younger age groups have remained at similar low levels throughout the pandemic.

The overall number of Covid-19 deaths has increased slightly by 4%, or 3 deaths, to a total of 79 deaths in the week leading up to 27 February, compared to 76 in the week leading up to 20 February. This figure is 88% lower than the peak in 2020, when the week ending 27 April saw a total of 663 deaths where Covid-19 was mentioned on the death certificate[46].

When it comes to Covid-19 related deaths by age groups, there was an increase from 17 to 30 deaths among those aged 75 to 84 deaths in the week to 27 February. Age groups younger than 45 continue to experience low levels of Covid-19 related deaths while the number of deaths are fluctuating at higher levels among those aged 45 and older (**Figure 12**). National Records of Scotland publish a weekly detailed analysis on deaths involving Covid-19 in Scotland in their weekly report[47].

Figure 12: Weekly total number of deaths where Covid-19 was mentioned on the death certificate, by age group. Data to the week ending 27 February 2022.



[46] NRS Scotland: Deaths involving coronavirus (Covid-19) in Scotland
[47] Ibid.

Excess deaths are the total number of deaths registered in a week minus the average number of deaths registered in the same week over the previous five years (excluding 2020). Measuring excess deaths allows us to track seasonal influenza, pandemics and other public health threats. Excess deaths include deaths caused by Covid-19 and those resulting from other causes.

In the week leading up to 27 February, deaths from all causes were 6% below average levels for this time of year. This constitutes the eighth week in a row where deaths were below average[48].

Deaths data from England, Northern Ireland, Scotland and Wales use different methodologies, so they cannot be directly compared. The death figures below are the daily numbers of people who died within 28 days of being identified as a COVID-19 case by a positive test. The definition of a Covid-19 case aligns with the case definition used in each nation. Deaths following a possible reinfection are included from 1 February for England and Northern Ireland, and from 1 March in Scotland. For more information see UK Government website.

There were 2 average daily deaths per one million population in the week leading up to 2 March 2022 in Scotland, by the date the death was reported. In the same time period, average daily deaths for the other UK nations were as follows[49] [50]:

- England: 1 per one million,
- Northern Ireland: 2 per one million,
- Wales: 2 per one million.

Resilience: Vaccinations and Antibody Estimates

Vaccinations

Vaccinations started in Scotland on 8 December 2020 and there has been a very high uptake. Covid-19 vaccines protect most people against severe outcomes of a Covid-19 infection, but some people will still get sick because no vaccine is 100% effective. The current evidence suggests that you may test positive for Covid-19 or be reinfected even if you are vaccinated, especially since the emergence of the Omicron variant in the UK. The major benefit of vaccination against Omicron is to protect from severe disease. For more information, see the PHS weekly report.

By 2 March, over 4.4 million people had received their first dose, an estimated 92.3% of the population aged 12 and older, and almost 4.2 million people had received their second dose, an estimated 86.9% of the population aged 12 and older. Over 3.4

[48] NRS Scotland: Deaths involving coronavirus (Covid-19) in Scotland
[49] Deaths within 28 days of positive test.
[50] UK Government: Coronavirus (Covid-19) in the UK (accessed 2 March 2022)

million people in Scotland had received a third vaccine dose or booster, which is an estimated 71.9% of the population aged 12 and older[51].

For more analysis on vaccination numbers, see previous publications. For daily updates on vaccination numbers, see the PHS Covid-19 Daily Dashboard. Further analysis on vaccinations will be provided in our next weekly release, to align with ONS publications of antibody estimates based on the Covid Infection Survey.

Antibodies Estimates

Estimates on the proportion of people in the private residential population in Scotland that would test positive for antibodies against SARS-CoV-2 are published by the ONS Covid-19 Infection Survey.

The next scheduled release of antibody data from the Covid-19 Infection Survey will be incorporated into our next weekly publication. For information on the most recent estimates, see earlier publications or Covid Infection Survey publications.

Vaccine Effectiveness Against Omicron

The Omicron variant (parent Pango lineage B.1.1.529) can be separated into three main groups: BA.1, BA.2 and BA.3. The original Omicron lineage, BA.1, was dominant in the UK, however, the BA.2 lineage of Omicron is now the dominant variant within Scotland based on unpublished data generated by PHS. Details of risk assessments for both BA.1 and BA.2 carried out by UKHSA can be found on the UK government's website[52] and in the State of the Epidemic reports published on 4 February and 28 January 2022. The latest BA.2 risk assessment update issued on 25 February indicates that BA.2 has a growth advantage compared to BA.1, however it is likely that the clinical severity of BA.2 is similar to that of BA.1[53].

The UKHSA reported that vaccine effectiveness against symptomatic disease, hospitalisation, or mortality with the Omicron variant is lower compared to the Delta variant and that it wanes rapidly. Vaccine effectiveness against all outcomes is restored after the booster dose, with effectiveness against symptomatic disease ranging initially from around 60 to 75% and dropping to around 25 to 40% after 15 weeks. Vaccine effectiveness against hospitalisation after a Pfizer booster started at around 90% dropping to around 75% after 10 to 14 weeks. Moderna booster restored vaccine effectiveness against hospitalisation to around 90 to 95% up to 9 weeks after vaccination. The high level of protection against mortality was also restored after the booster dose with vaccine effectiveness of 95% 2 or more weeks following vaccination for those aged 50 and older[54].

Vaccine effectiveness against symptomatic disease with BA.2 compared to BA.1, showed similar results with BA.1 having an effectiveness of around 10% and BA.2 having an effectiveness of around 18% after 25 or more weeks following the second

[51] Public Health Scotland: Covid-19 Daily Dashboard | Tableau Public
[52] Investigation of SARS-CoV-2 variants of concern: variant risk assessments - GOV.UK (www.gov.uk)
[53] Risk assessment for SARS-CoV-2 variant: VUI-22JAN-01 (BA.2) 23 January 2022 (publishing.service.gov.uk)
[54] Covid-19 vaccine surveillance report - week 9 (publishing.service.gov.uk)

dose. These estimates have large overlapping confidence intervals. The booster dose of vaccine increased effectiveness to around 69% for BA.1 and 74% for BA.2 at 2 to 4 weeks following a booster vaccine. Effectiveness dropped to around 49% for BA.1 and 46% for BA.2 10 weeks after vaccination[55].

More data on vaccine effectiveness against the Omicron variant can be found in the UKHSA vaccine surveillance reports. There is evidence that there is reduced overall risk of hospitalisation for Omicron compared to Delta[56] [57], with the most recent estimate of the risk of presentation to emergency care or hospital admission with Omicron was approximately half of that for Delta[58].

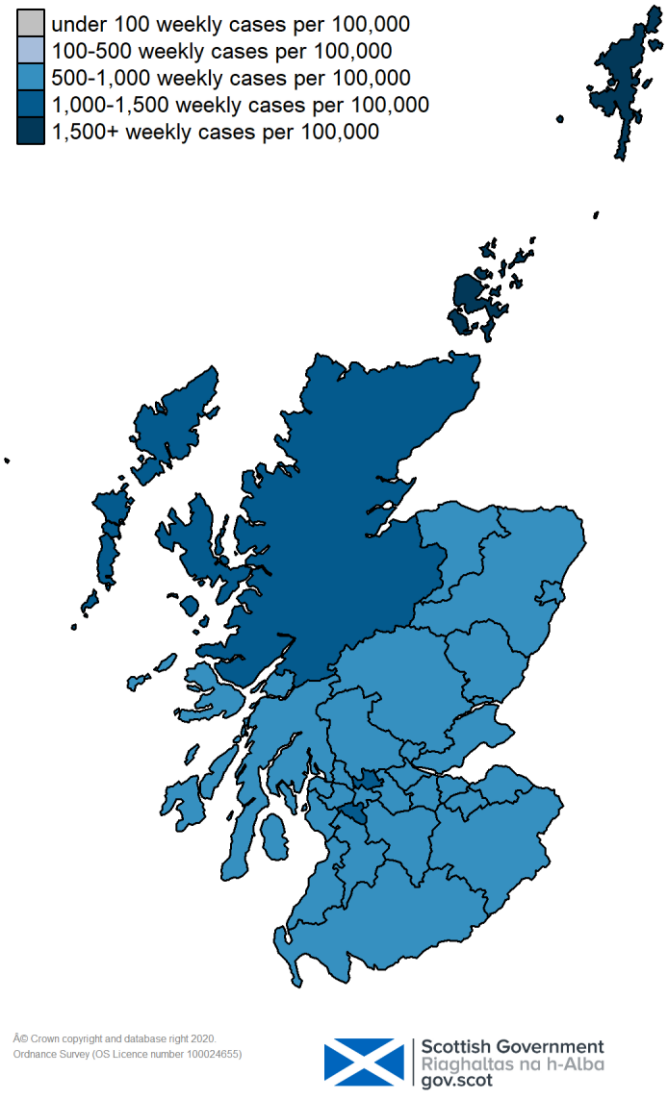
Situation by Local Authority within Scotland

From March 1, cases data includes reinfections (where a person has a positive test 90 days or more since a last positive test). For cases by specimen date, historical cases have been retrospectively updated to include reinfections.

In the week leading up to 26 February 2022, Orkney Islands had the highest combined PCR and LFD weekly case rate (including reinfections) by specimen date, reporting 1,866 cases per 100,000 population, followed by Shetland with 1,858 cases per 100,000. Dumfries and Galloway had the lowest weekly combined LFD and PCR case rate in the same time period, reporting 563 cases per 100,000. The total combined LFD and PCR weekly case rates by specimen date per 100,000 had increased in 13 local authorities in the week leading up to 26 February 2022 compared with the weekly case rate leading up to 19 February 2022, while 19 local authorities saw a decrease in the same period (**Figure 13**)[59].

[55] Covid-19 vaccine surveillance report - week 9 (publishing.service.gov.uk)
[56] University of Edinburgh: Severity of Omicron variant of concern and vaccine effectiveness against symptomatic disease
[57] Imperial College Covid-19 response team: Report 50: Hospitalisation risk for Omicron cases in England
[58] UK Health Security Agency: SARS-CoV-2 variants of concern and variants under investigation
[59] Public Health Scotland: Covid-19 Daily Dashboard

Figure 13: Weekly total LFD or PCR case rates (including reinfections) per 100,000 people in Local Authorities across Scotland on 26 February 2022 by specimen date.



Please note that the following local authority hotspot modelling uses data to 28 February 2022 from several academic groups to give an indication of whether a local authority is likely to experience high levels of Covid-19. This has been compiled via UKHSA into a consensus. **The modelled weekly case rate below is not directly comparable to the weekly case rate reported in the section and figure above.**

The local authority modelling has not been compiled via UKHSA into a consensus this week and is based on one modelling group. In less populated regions in which case numbers are small, there is a greater variation in model estimates, and hence increased uncertainty. This has led to Orkney Islands and Shetland Islands not being included this week.

Modelled rates of positive tests per 100,000 indicate that for the week commencing 13 March, all 30 of the local authorities included are expected to exceed 50 cases per 100,000 with at least 75% probability. The same 30 local authorities are also expected to exceed 100 cases per 100,000, with at least 75% probability.

Seven local authorities are expected to exceed 500 cases per 100,000, with at least 75% probability. These are Argyll and Bute, East Dunbartonshire, East Renfrewshire, Highlands, Moray, North Ayrshire and South Lanarkshire. There are no local authorities which are expected to exceed 1,000 cases per 100,000 with at least 75% probability[60].

Looking ahead

Scottish Contact Survey

Changes in patterns of mixing and adherence to restrictions will impact on future case numbers. The Scottish Contact Survey measures times and settings that people mix where they could potentially spread Covid-19. Average contacts from the most recent Panel A cohort of the Scottish Contact Survey (week ending 23 February) indicate an average of 3.8 contacts. This is a 14% decrease compared to the previous Panel A of the survey (week ending 9 February).

Mean contacts within the other setting (contacts outside home, school and work) have decreased by 34% within the last two weeks. Contacts within the home and work have remained at a similar levels over the same period. Those within the 18-39 age groups have reported the biggest decrease in contacts, by at least 26%. This was largely driven by a reduction in contacts in the other setting for those in the 18-29 age group and in the work setting for those within the 30-39 age group.

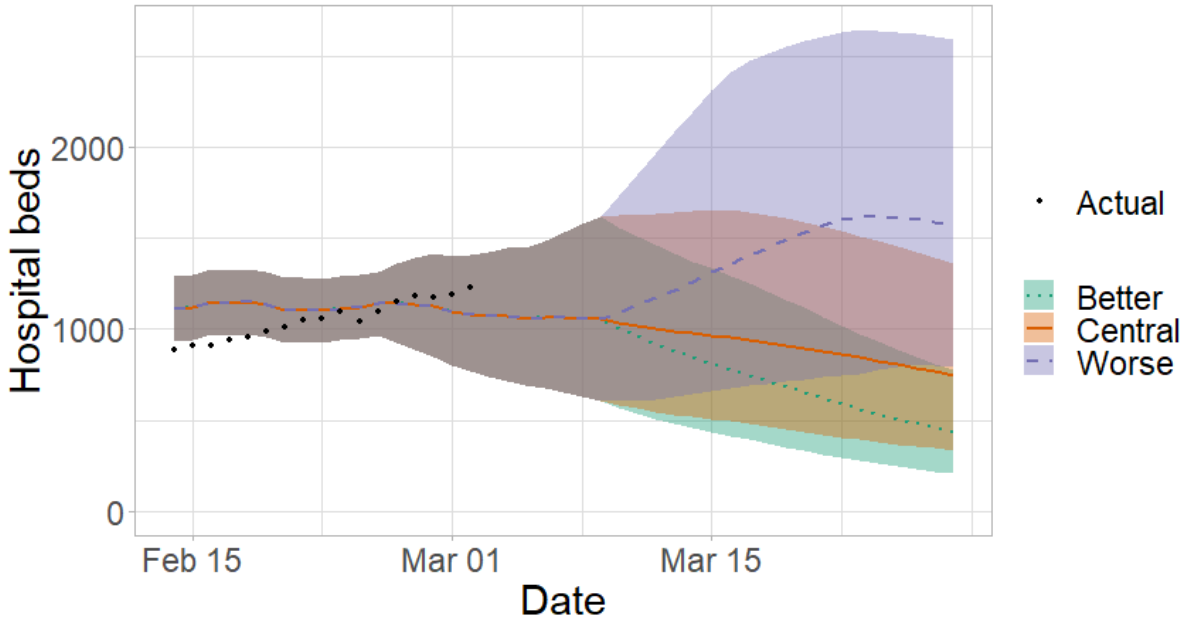
Modelling the Epidemic

The latest Modelling the Epidemic report includes projections over the next four weeks for new daily infections in Scotland. The ‘Central’ scenario assumes that transmissibility remains at current levels. ‘Worse’ assumes a higher transmissibility for Covid-19, whereas ‘Better’ assumes a lower transmissibility. With this taken into account, it is estimated that daily infections may be up to 20,000 in late March. However, the future trajectory of infections is uncertain[61].

Figure 14 shows the impact of the daily infection projections on the number of people in hospital. The modelling includes all hospital stays, whereas the actuals only include stays up to 28 days’ duration that are linked to Covid-19. There continues to be uncertainty over hospital occupancy in the next four weeks.

[60] Scottish Government: Coronavirus (Covid-19): modelling the epidemic
[61] Ibid.

Figure 14: Medium term projections of modelled hospital bed demand, from Scottish Government modelling, based on positive test data reported up to 28th February.



Long Covid

According to the Office for National Statistic (ONS), long Covid is defined as symptoms persisting more than four weeks after the first suspected coronavirus (Covid-19) episode that are not explained by something else.

The ONS Covid-19 Infection Survey estimated that 1,528,000 people (95% confidence interval: 1,488,000 to 1,569,000) in the private residential population in the UK (2.36% of the respective population; 95% CI: 2.30% to 2.43%) reported experiencing long Covid over the four-week period ending 31 January 2022[62].

In Scotland, over the same period, an estimated 119,000 people (95% CI: 108,000 to 130,000) in the private residential population (2.26% of the respective population; 95% CI: 2.05% to 2.46%) reported experiencing long Covid of any duration. This compares to 2.40% in England (95% CI: 2.33% to 2.46%), 2.32% in Wales (95% CI: 2.07% to 2.58%) and 1.80% in Northern Ireland (95% CI: 1.52% to 2.08%)[63].

Weekly modelled estimated for Scotland are also usually published in the Modelling the Epidemic report, which can be found here. However, a report on the rate of long Covid-19 has not been included this week. This will resume again once updated estimates of self-reported long Covid-19 prevalence amongst those infected with the less severe Omicron variant become available.

[62] Office for National Statistics: Prevalence of ongoing symptoms following coronavirus (Covid-19) infection in the UK
[63] Ibid.

Next steps

The Scottish Government continues to work closely with Public Health Scotland, modelling groups, Office of National Statistics (ONS), Scottish Environment Protection Agency (SEPA) and YouGov to monitor what is happening across Scotland.

Each week this report will provide an overview of the current Covid-19 situation in Scotland. This will include real time data on case rates, hospitalisations and deaths and how Scotland's figures compare to those from the rest of the UK.

The report will continue to report on combined PCR and LFD Covid-19 cases (including reinfections data), data from the Covid-19 Infection Survey and Covid-19 wastewater estimates to bring an insight in to the pandemic.

Modelling can tell us where the epidemic is likely to be heading. Local data and data by age group can highlight where problems arise, which can help in addressing some of these issues. In the coming weeks the roll out of the vaccine will continue to be monitored along with the impact of this on case rates, hospital admissions and deaths among different age cohorts.

Investigations are ongoing by NERVTAG, SPI-M, SAGE, UK Health Security Agency (UKHSA), and Public Health Scotland regarding the impact of new variants and of vaccination; this will be reflected here as work is undertaken.

This publication will be available in accessible HTML on the gov.scot website

The views expressed in this report are those of the researchers and do not necessarily represent those of the Scottish Government or Scottish Ministers.

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