

Public Health Scotland COVID-19 Statistical Report

As at 26 September 2022

A Management Information release for Scotland

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Translations



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Introduction

This report aims to present accurate, timely and relevant information on the status of the pandemic as we have now transitioned from an emergency response to living with COVID-19.

Public Health Scotland (PHS) monitor a number of key indicators to assess the impact of the virus, including demands on the health system. COVID-19 testing policy changes mean we have now moved to **targeted testing** of specific groups, and because of this, there has been a reduction in the quantity and quality of available testing data. Caution is therefore advised when making comparisons between metrics and comparing trends over time.

This report summarises the current COVID-19 data in Scotland, presenting statistics on estimated infection levels from the **ONS COVID Infection Survey**, which is currently our best understanding of community population prevalence. The report also presents data on wastewater infection levels, reproduction (R) number, reported COVID-19 cases, COVID-19 hospital and ICU admissions and COVID-19 vaccine effectiveness.

Additional information and supporting data can be found in the following places:

- COVID-19 **Statistical Report interactive dashboard**
- **Public Health Scotland COVID-19 Dashboard** updated weekly (Wednesday)
- **Deaths involving coronavirus in Scotland – National Records of Scotland**
- **Coronavirus (COVID-19) Modelling the Epidemic - Scottish Government**
- **Enhanced Surveillance of COVID-19 in Scotland**
- **Hospital Onset COVID-19 Cases in Scotland**
- **Coronavirus (COVID-19) Infection Survey - Office for National Statistics**

Main Points

- In Scotland, in the week ending 13 September 2022, the estimated number of people testing positive for COVID-19 was 98,800 (95% credible interval: 80,300 to 119,100), equating to 1.88% of the population, or around 1 in 55 people (Source: [Coronavirus \(COVID-19\) Infection Survey, UK - Office for National Statistics](#))
- In the latest week ending 25 September 2022, there were 248 new COVID-19 admissions to hospital
- In the week ending 25 September 2022, there were on average 664 patients in hospital with COVID-19, a 5.2% increase from the previous week ending 18 September 2022 (631)
- In the week ending 25 September 2022 there were 8 new admissions to Intensive Care Units (ICUs) with a laboratory confirmed test of COVID-19, a decrease of 9 from the previous week (18 September 2022)
- In the week ending 18 September 2022, there were 40 deaths involving COVID-19 (the same as the previous week) (Source: [National Records of Scotland](#))
- By week ending 25 September 2022, 308,351 eligible adults received a Flu vaccine, 288,199 eligible people received a COVID-19 vaccine and 93.7% of COVID-19 vaccines were co-administered with Flu at the same vaccine appointment
- To date, 45,098 COVID-19 vaccinations have been given in 32,314 pregnancies to 31,903 women, COVID-19 cases occurring in unvaccinated women are much more likely to be associated with a hospital or critical care admission. Among the 149 confirmed cases of COVID-19 in pregnancy occurring in December 2020 to April 2022 that were associated with a critical care admission, 129 (87%) occurred in unvaccinated women

Incidence of Variants of Concern and Variants Under Investigation

On 18 May 2022, the UK Health Security Agency (UKHSA) designated COVID-19 variants Omicron BA.4 and Omicron BA.5 variants of concern (VOCs). This was based on observed growth and Omicron BA.5 is now the predominant variant in Scotland.

Public Health Scotland (PHS) continues to monitor COVID-19 variants of concern, in collaboration with other Public Health Agencies in the UK.

The latest information on the number of such variants detected by genomic analyses across the UK is published by UK Health Security Agency (UKHSA).

Estimated Infection Levels

Infection survey

The Office for National Statistics (ONS) publish results from the COVID-19 Infection Survey which aims to estimate how many people test positive for COVID-19 infection at a given point. The ONS survey results are Scotland's current best understanding of community population prevalence.

The Infection Survey invites private residential households to test whether they have the infection, regardless of whether they have symptoms, using a PCR test. Data are based on confirmed positive COVID-19 test results of those living in private households, excluding those living in care homes or other communal establishments. All data are provisional and subject to revision.

Figure 1 below shows the trend in official weekly reported estimates of the percentage of people living in private residential households in Scotland testing positive for COVID-19.

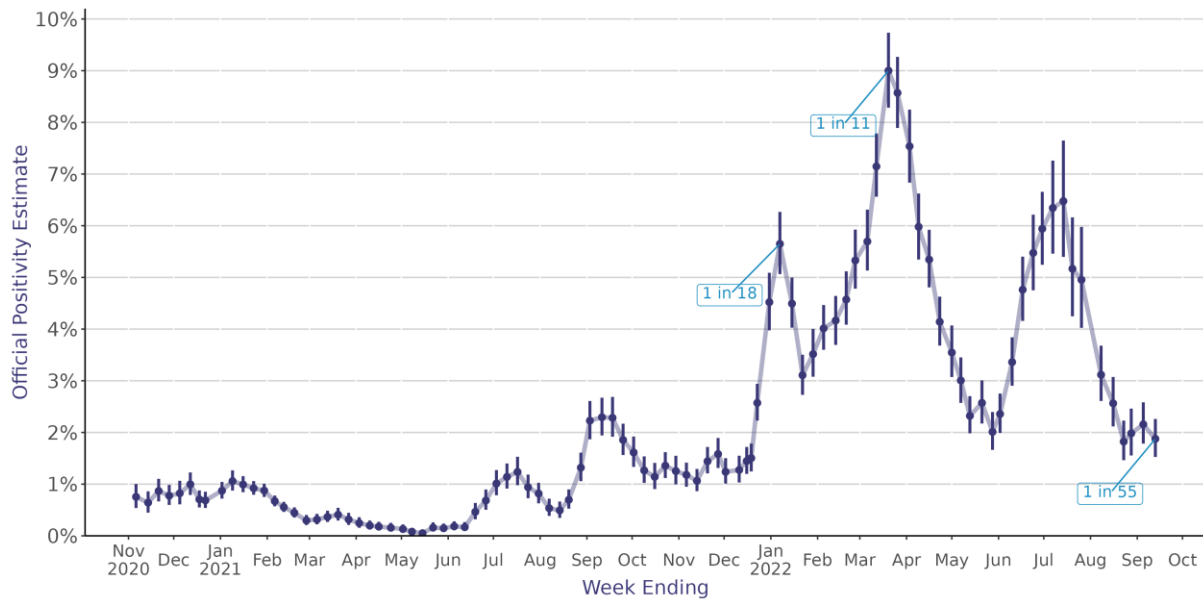
In the most recent week (07 September 2022 to 13 September 2022), the estimated percentage of the population living in private residential households that had COVID-19 was 1.88% (95% credible interval: 1.53% to 2.26%). The percentage of people testing positive for COVID-19 decreased in Scotland in the most recent week.

There is a degree of uncertainty in these estimates as indicated by the credible intervals; results should be interpreted with caution.

In the same week, the ONS estimate that 98,800 people (95% credible interval: 80,300 to 119,100)² living in private residential households in Scotland at any given time had COVID-19. This represents around 1 in 55 people (95% credible interval: 1 in 65 to 1 in 45 people)².

For more details and further breakdowns on the Infection Survey please refer to [**Coronavirus \(COVID-19\) Infection Survey, UK - Office for National Statistics**](#).

Figure 1: Trend of official weekly reported estimates of the percentage of people living in private residential households in Scotland testing positive for COVID-19 (as at 13 September 2022)

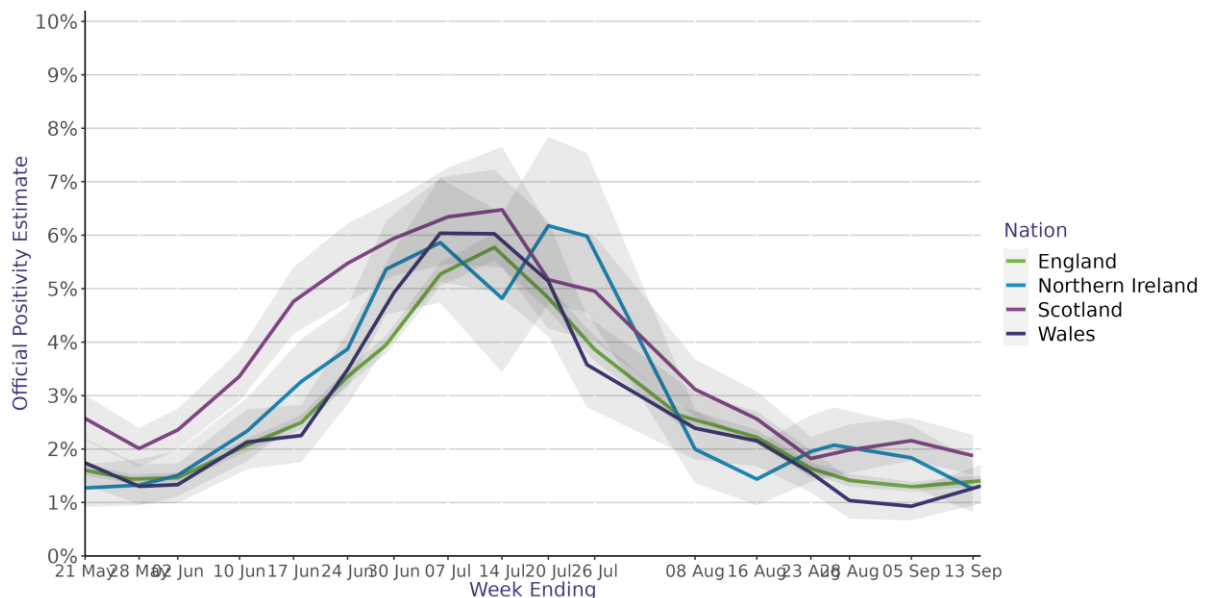


Source: **Coronavirus (COVID-19) Infection Survey, UK - Office for National Statistics.**

2 - 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.

In the same week, estimates for the other nations of the UK can be seen in Figure 2. The percentage of people testing positive for coronavirus (COVID-19) increased in England and Wales, and decreased in Northern Ireland and Scotland in the most recent week.

Figure 2: Trend of official weekly reported estimates of the percentage of people living in private residential households in the UK testing positive for COVID-19, by UK nation (as at 13 September 2022)



Reproduction (R) number

These data are updated every two weeks and will next be refreshed within this report on 05 October 2022.

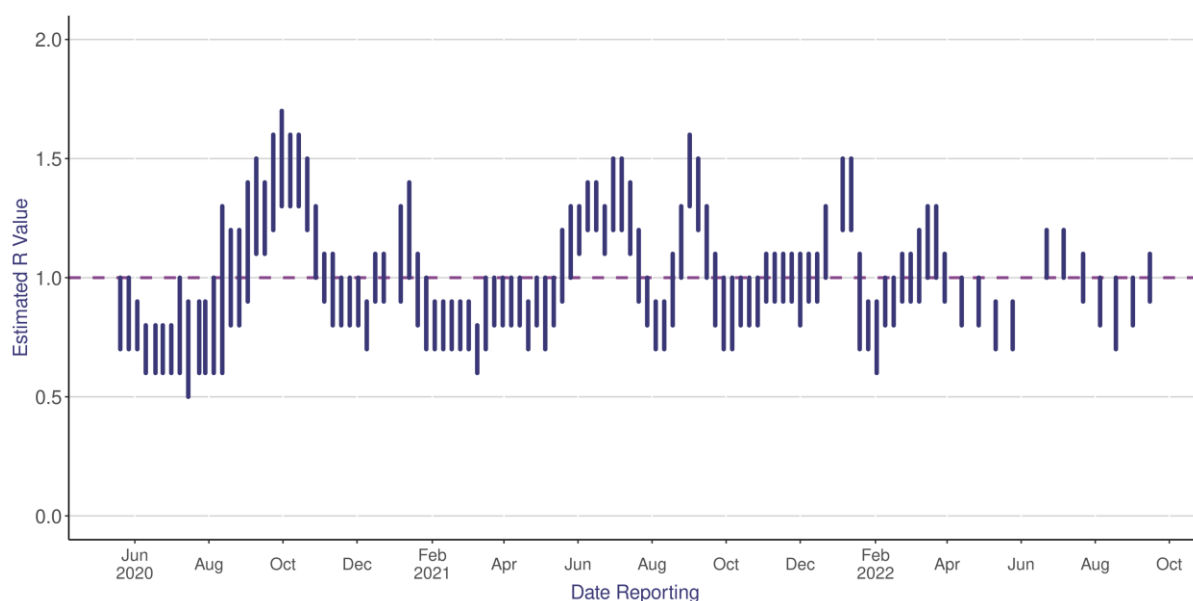
The reproduction (R) number is the average number of secondary infections produced by a single infected person. The R number is a useful measure in assessing if the epidemic is growing or shrinking. If R is greater than one the epidemic is growing, if R is less than one the epidemic is shrinking. The higher the R is above one, the more people an infectious person is likely to further infect.

Please note that R lags by two or three weeks.

Figure 3 below shows the trend of The UK Health Security Agency's (UKHSA) consensus estimate for R in Scotland. As at 30 August 2022 (reported 15 September 2022) the UKHSA's consensus estimate is between 0.9 and 1.1. The lower and upper limits of the R value have increased since the last publication.

For more information, please visit the [UK Government website](#).

Figure 3: R estimate in Scotland over time by reporting date



Source: [COVID-19 Modelling the Epidemic](#)

Wastewater analysis

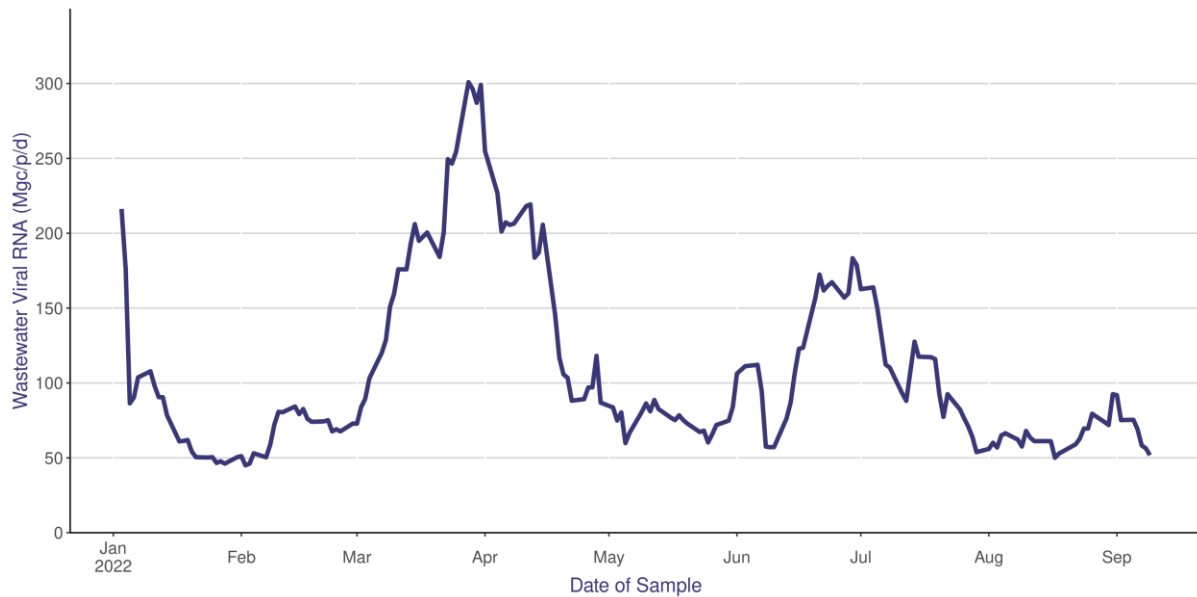
These data are updated every two weeks and will next be refreshed within this report on 05 October 2022.

COVID-19 outbreaks and general trends can be monitored by measuring concentrations of the virus in wastewater. Sewage samples are taken from sample sites across Scotland and used to calculate the number of COVID-19 markers, reported as million gene copies per person per day (Mgc/p/d). Samples are representative of wastewater from between 70-80% of the Scottish population. Data are adjusted for population and environmental factors such as flow through the sewage works, which is affected by rainfall. See [Appendix 2: Wastewater analysis notes](#) for more information.

Figure 4 shows the national running average trends in wastewater COVID-19 from the beginning of 2022. In Scotland, during the period 27 August to 9 September, Wastewater Covid-19 levels remained in the range of 52 to 92 million gene copies

per person per day (Mgc/p/d), compared to the previous two-week period (12 August to 26 August) of 50-70 Mgc/p/d.

Figure 4: Average trends in wastewater COVID-19 from 03 January 2022 to 08 September 2022



Source: [COVID-19 Modelling the Epidemic](#)

Reported COVID-19 Cases

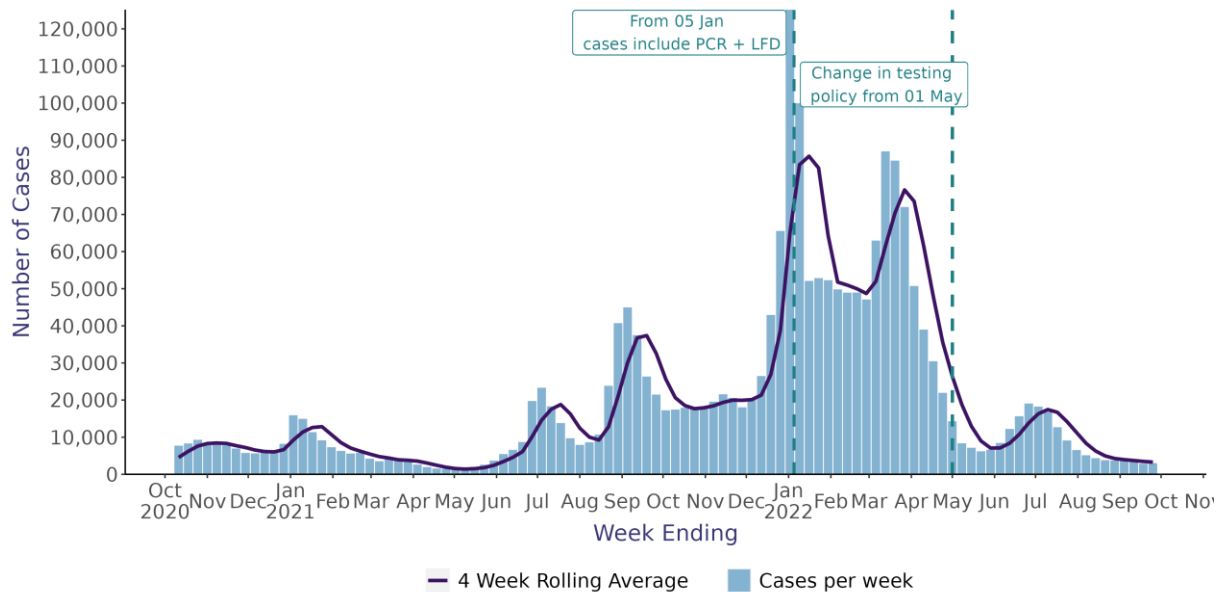
While the ONS COVID-19 Infection Survey is our best understanding of community population prevalence, monitoring the number of reported positive COVID-19 cases offers a valuable early insight into trends of infection rates in Scotland because LFD/PCR data precedes the ONS data by approximately two weeks.

The purpose of COVID-19 testing has now shifted from population-wide testing to reduce transmission, to targeted, **symptomatic testing** in clinical care settings which has led to a reduction in the quantity and quality of available testing data. This makes it difficult to draw any conclusions from these data on community prevalence and caution is therefore advised when making comparisons between metrics and comparing trends over time.

Data are continuously updated, therefore figures for previous weeks may differ from published data in previous weeks' reports. For more information, please see **[Appendix 1: Testing Policy in 2022](#)**.

In the week ending 25 September 2022, there were 3,007 reported positive COVID-19 cases. Figure 5 below shows the weekly trend in positive cases reported with a 4-week average from October 2020 to September 2022.

Figure 5: Number of positive cases per week with 4-week average, by specimen date



1 Correct as at 27 September

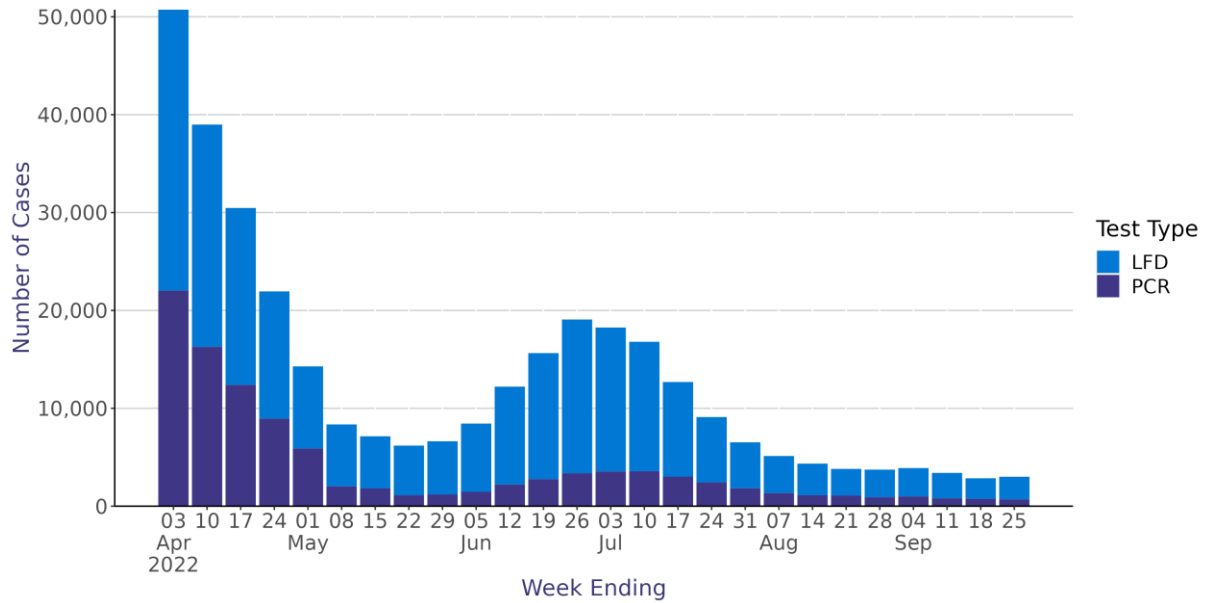
2 Data are continuously updated, therefore, figures for previous weeks may differ from published data in the previous week's report.

Trend data since the start of the outbreak can be found on the Public Health Scotland [COVID-19 Dashboard](#). Additional breakdowns and longer term trends can also be found on the [COVID-19 Statistical Report interactive dashboard](#).

Of the 3,007 positive cases, 2,315 (77%) were reported using an LFD test and 692 (23%) were reported using a PCR (polymerase chain reaction) test. Figure 6 below illustrates the trend of test type used and shows the number of positive PCR and LFD tests recorded have remained low in recent weeks.

Furthermore, 70.7% (2,127) of reported positive cases were taken at home.

Figure 6: Number of cases by test type, week ending 03 April 2022 to 25 September 2022, by reporting date



In the week ending 25 September 2022, 49.6% of the reported cases were assigned to the LFD Universal Offer. These data rely on individuals accurately recording their testing reason via the [gov.uk website](https://www.gov.uk).

Severity of Illness

COVID-19 hospital admissions

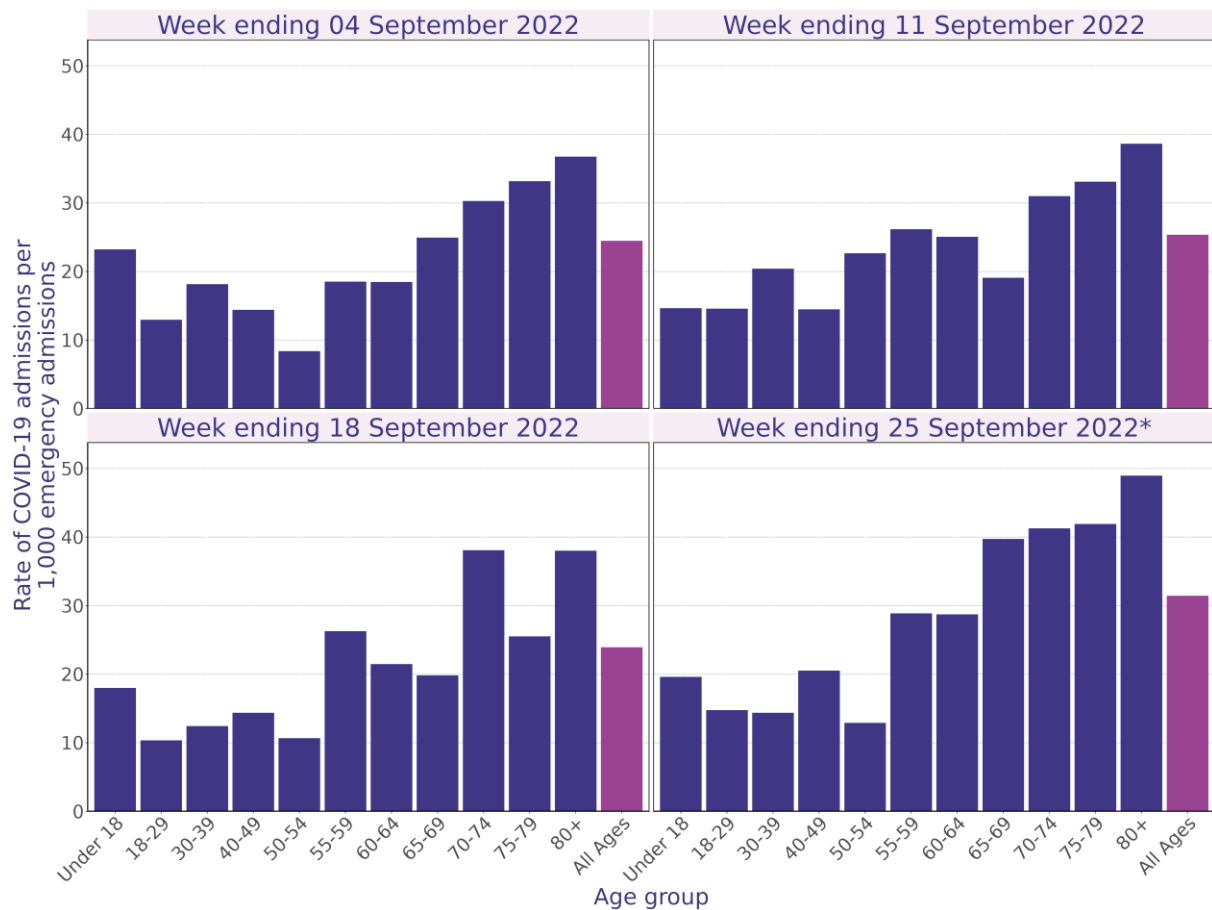
Alongside the estimated infection levels and reported COVID-19 cases presented earlier in the report, it is important to monitor COVID-19 hospital admissions as it is a measure of severe disease and captures pressures facing NHS hospitals.

This section of the report now presents statistics on PCR confirmed community-acquired infections admitted as an emergency to medical specialties (excluding admission types specifying an injury-related admission). This new method is a more robust, real-time indicator of COVID-19 hospital admissions 'because of' COVID-19.

Figure 7 below shows the weekly trend of COVID-19 hospital admissions from week ending 03 January 2021 to 25 September 2022.

In the latest week ending 25 September 2022, there were 248 new COVID-19 admissions to hospital. Hospital admissions for the most recent week are provisional and should be treated with caution. At the time of publication there were no data available for three NHS Boards, and the previous week's figures have been rolled forward. These provisional data will be refreshed next week. More information can be found in [Appendix 3: Notes](#).

Figure 8: Rate of COVID-19 hospital admissions per 1,000 emergency admissions by age band, weeks ending 04 September 2022 to 25 September 2022



Source: RAPID (Rapid and Preliminary Inpatient Data)

* Most recent week of data is marked as provisional. Please refer to [Appendix 3: Notes](#) for explanatory notes regarding RAPID hospital admissions

Denominator data is sourced from RAPID and includes all emergency admissions to hospital for any reason

Length of stay of COVID-19 hospital admissions

While there are a variety of factors influencing the length of time a patient spends in hospital (for instance: age, reason for admission, co-morbidities and hospital pressures), monitoring the length of stay of admissions is important to assess the burden on NHS hospitals.

Figure 9 below shows the breakdown of length of stay by proportion of all COVID-19 stays in hospital.

In the latest week ending 25 September 2022, 72 stays (43.9%) were greater than or equal to 48 hours, whereas 52 stays (31.7%) were less than 24 hours. Figure 9 below shows the trend over time of length of stay of all hospital stays.

Please note, longer term trends on LOS in all age groups can be found on our [interactive dashboard](#), in the severe illness tab.

Figure 9: Length of stay of COVID-19 admissions in Scotland, weeks ending 03 January 2021 to 18 September 2022

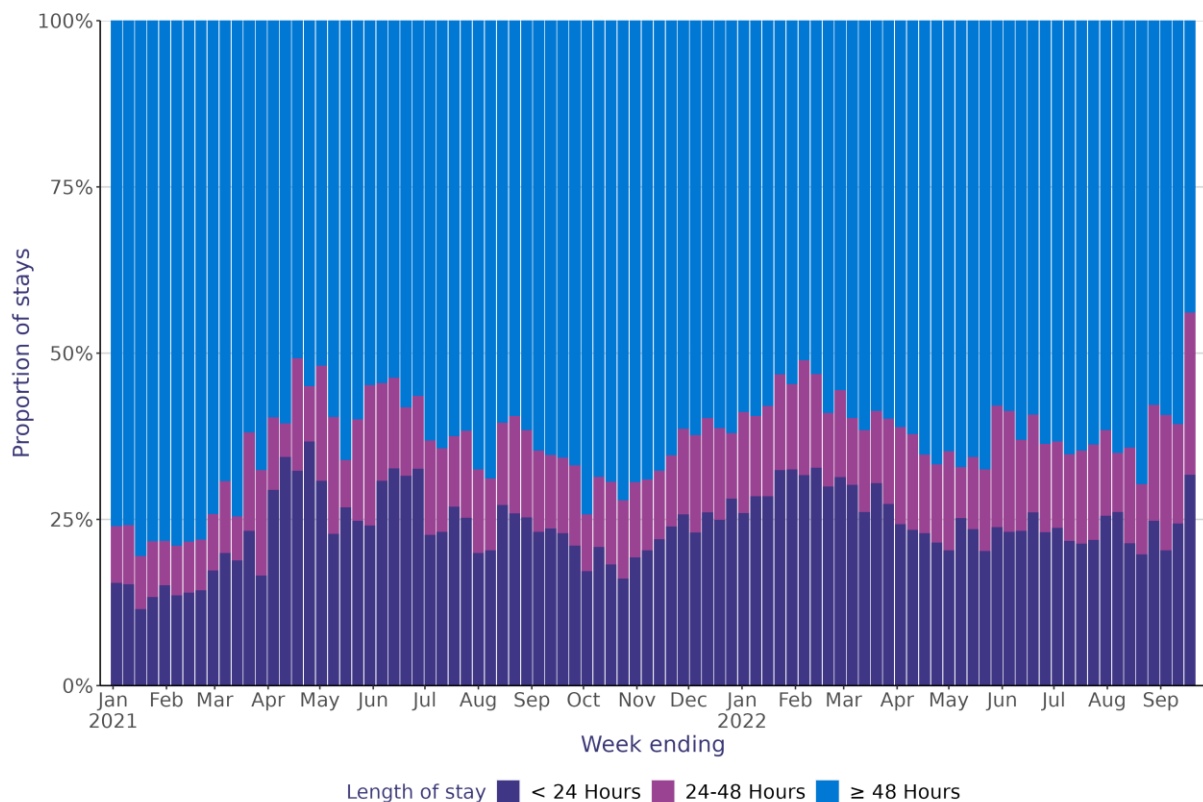
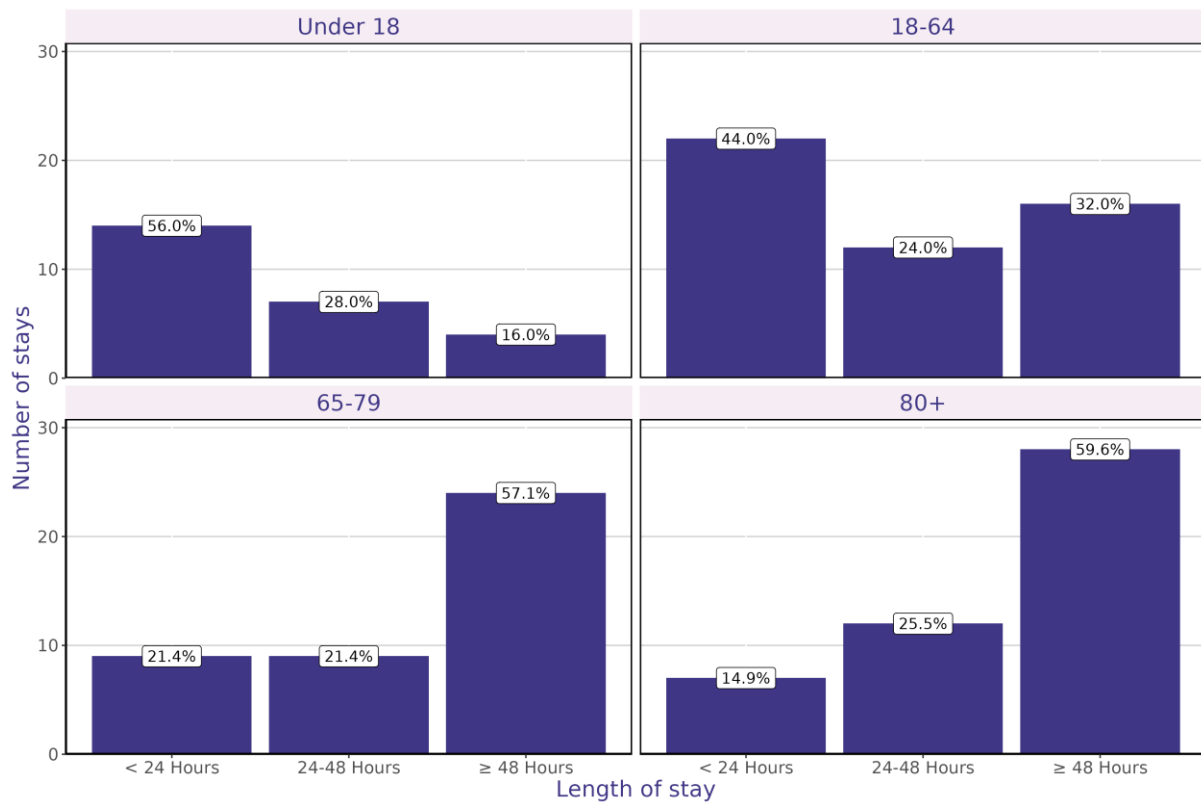


Figure 10 below shows that the length of stay of COVID-19 hospital admissions tends to increase with age. In the latest week, 59.6% of hospital stays in the 80+ age group were equal to or greater than 48 hours, while 56.0% of hospital stays in the Under 18 age group were fewer than 24 hours in length.

Figure 10: COVID-19 hospital admissions by length of stay and age group, week ending 18 September 2022



Source: RAPID (Rapid and Preliminary Inpatient Data)

Please refer to [Appendix 3: Notes](#) for explanatory notes regarding RAPID hospital admissions.

Hospital occupancy (COVID-19 patients in hospital)

The number of COVID-19 patients in hospital is an indicative measure of the pressure on hospitals, as these patients still require isolation from other patients for infection control purposes.

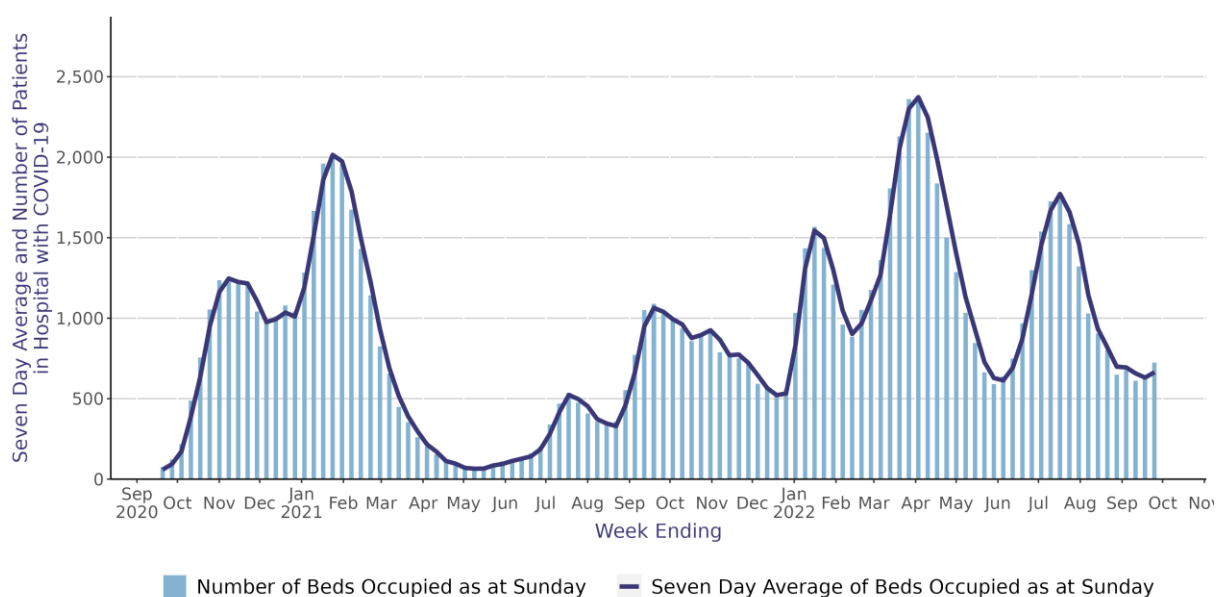
Information is collected from NHS Boards on the number of COVID-19 patients in beds at 8am the day prior to reporting.

Figure 11 shows a snapshot of the number of patients in hospital with COVID-19 along with the seven-day average each Sunday. Following a fall in cases since mid-July, the average number of patients in hospital with COVID-19 has continued to be similar each week throughout September.

In the most recent week ending 25 September 2022, on average there were 664 patients in hospital with COVID-19 which is a 5.2% increase from the previous week ending 18 September 2022, when on average there were 631 patients.

Alternative daily breakdowns of this data are available on the [COVID-19 dashboard](#).

Figure 11: Number of beds occupied with COVID-19 in hospital each Sunday in Scotland from 17 September 2020 to 25 September 2022



Intensive Care Unit (ICU) admissions

The severity of COVID-19 varies from very mild symptoms through to those who require intensive care treatment and supported ventilation. Monitoring the admission frequency to critical care units in Scotland (ICU) is therefore an important measure of the severity of COVID-19. All patients admitted to ICU are routinely tested using a PCR test.

Figure 12 below shows the weekly trend of new SARS-CoV-2 PCR positive admissions to ICU. Following a fall in the number of new ICU admissions since July, the average number of ICU admissions has continued to be similar each week in September.

In the week ending 25 September 2022 there were 8 admissions to ICU, a decrease of 9 from the previous week (18 September 2022) when there were 17 admissions.

Figure 12: Weekly trend of COVID-19 ICU admissions in Scotland

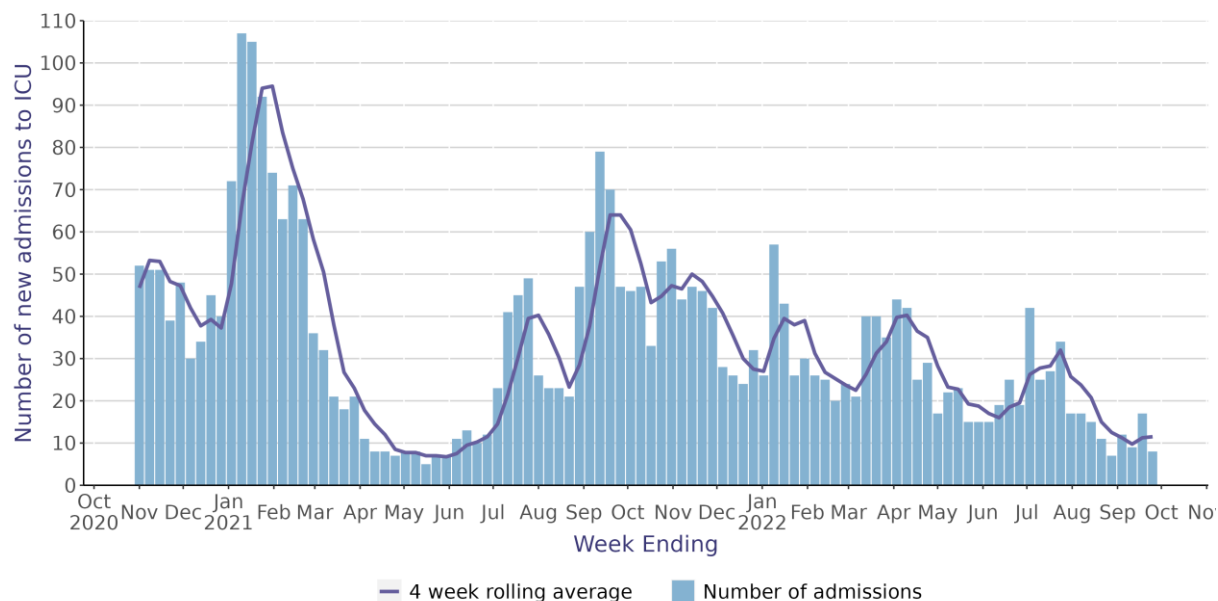


Table 1 below shows the daily average number of patients in ICU and HDU in the week ending 25 September 2022. Over the past week there were on average 209 patients in ICU, of which 6.7% (14 patients) had a positive SARS-CoV-2 result.

Table 1: Average number of patients in ICU and HDU by SARS-CoV-2 result, week ending 25 September 2022

SARS-CoV-2 Result	7 day average ICU patients	7 day average HDU patients
Positive	14 (6.7%)	10 (5.3%)
Negative	143 (68.4%)	108 (57.4%)
Unknown	52 (24.9%)	70 (37.2%)
Total	209 (100.0%)	188 (100.0%)

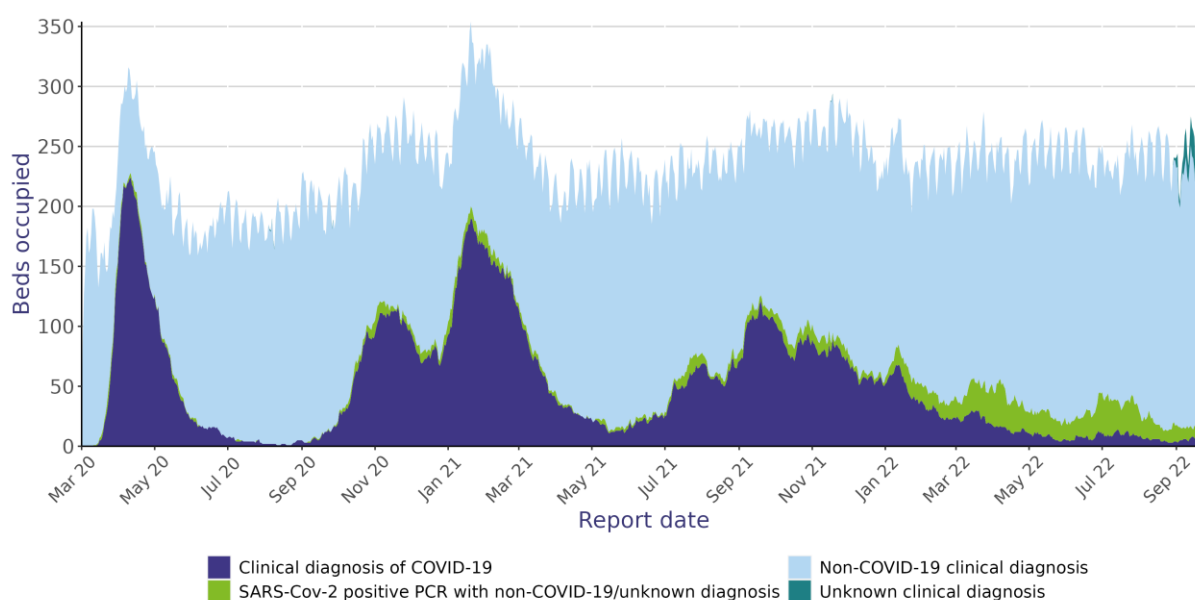
Intensive Care Unit (ICU) occupied beds

Figure 13 below shows the daily trend in the number of ICU beds by SARS-CoV-2 PCR status and the clinical diagnosis on ICU admission from the start of the

pandemic to 25 September 2022. Most ICU SARS-CoV-2 inpatients have a non-COVID-19 or unknown clinical diagnosis, and those with a clinical diagnosis of COVID-19 remain low.

All data are recorded in the Scottish Intensive Care Society Audit Group (SICSAG) database and extracted from WardWatcher. Every Monday, a full extract up until the most recent Sunday is taken from WardWatcher. Therefore, any subsequent changes that are made locally following that extract, will be reflected in future reports. See [Appendix 3: Notes](#) for further definitions.

Figure 13: Daily number of ICU beds occupied by patients by SARS-CoV-2 PCR status³ and clinical diagnosis from 01 March 2020 to 25 September 2022



³ In the SARS-Cov-2 PCR positive with non-COVID-19/unknown diagnosis group, the diagnosis is unknown in less than 5% of patients

Deaths involving COVID-19

National Records of Scotland publish weekly information on deaths involving COVID-19. These are deaths where COVID-19 has been identified as being involved in the death by a doctor, either as the underlying cause of death or as a contributory cause of death.

In the week ending 18 September 2022, there were 40 deaths where COVID-19 was mentioned on the death certificate (with or without laboratory diagnosis). Of these deaths, there were 16 (40%) deaths where COVID-19 was the underlying cause of death. The number of deaths involving COVID-19 has generally remained steady in recent weeks.

There were 0 fewer deaths in the week ending 18 September 2022 compared to the week prior (40 deaths in the week ending 11 September 2022).

In addition to reporting on the number of deaths involving COVID-19, National Records of Scotland publish excess mortality statistics. This is another important measure as it presents seasonal variation in deaths and describes the difference between the number of deaths in the current year and the 'expected number of deaths'.

Further breakdowns of deaths involving COVID-19 and excess mortality can be found on [NRS website](#).

COVID-19 Vaccine

On 08 December 2020, a COVID-19 vaccine developed by Pfizer BioNTech was first used in the UK as part of national immunisation programmes. The AstraZeneca (Vaxzevria) vaccine was also **approved for use** in the national programme, and rollout of this vaccine began on 04 January 2021. Moderna (Spikevax) vaccine was approved for use on 08 January 2021 and rollout of this vaccine began on 07 April 2021. These vaccines have met strict standards of safety, quality and effectiveness set out by the independent Medicines and Healthcare Products Regulatory Agency (MHRA).

For the latest information on COVID-19 vaccines, including information on eligibility, please see our **[COVID-19 vaccine information and resources pages](#)**.

Information on uptake across the vaccine programme is available on a weekly basis via the **[PHS COVID-19 Dashboard](#)**, every Wednesday at 12pm. This provides a cumulative picture of the position nationally and locally.

The dashboard provides total uptake nationally with breakdowns by **Joint Committee on Vaccination and Immunisation (JCVI)** age based cohorts and non-age based cohorts for priority groups 1-9.

The vaccination content of this weekly publication is kept under continual review and specific editions have contained more in-depth analyses of uptake by particular groups or characteristics, including uptake by ethnicity and deprivation category, for teachers, for prisoners and for pregnant women.

Flu and COVID-19 Winter 2022 Vaccinations

The Winter 2022 Flu & COVID-19 vaccine programmes commenced at the start of September 2022. Following advice from the Joint Committee on Vaccination and Immunisation (JCVI), **eligible groups** are being invited for vaccination at different times during September and October. Therefore, the data in this publication reflect the numbers among those groups who have been invited for vaccination and for whom this has been recorded.

The data presented indicate the estimated uptake of seasonal Flu (Adult 18+) and COVID-19 vaccines from the current living Scotland population up to week 38 (week ending 25th September 2022). Data on flu vaccine uptake for the childhood, including the schools' programme will be available in future weeks.

Table 1: Number of Flu and COVID-19 vaccinations administered to eligible adults in Scotland by week to end of week 38, 2022*

Week Ending	Flu (Adult 18+)	COVID-19
11/09/2022	66,593	66,781
18/09/2022	62,260	61,461
25/09/2022	179,498	159,957
Total	308,351	288,199

Source: National Clinical Data Store

Date of extraction: 26/09/2022

*Figures are representative of the current living Scottish population. Deaths and leavers from Scotland have been removed.

Further information available in [winter covid and vaccination dashboard](#).

Co-administration

People **eligible** for a COVID-19 vaccine can also be given a Flu vaccine at the same vaccination appointment. Of the 288,199 people vaccinated for COVID-19 by week 38 (week ending 25th September 2022), 93.7% were vaccinated for Flu at the same vaccination appointment.

Table 2: Total number of influenza and COVID-19 vaccinations administered to eligible adults in Scotland to week 38, 2022*

JCVI Group	Flu (Adult 18+)	COVID-19
Aged 65+	202,363 (18.2%)	185,548 (17.4%)
Current residents of care homes for older adults**	19,994 (70.1%)	19,158 (69.5%)

* Figures are representative of the current living Scottish population. Deaths and leavers from Scotland have been removed.

Other cohorts currently being invited for vaccination (including health and social care staff, pregnant women, and those at clinical risk) will be presented in future weeks. The number of vaccines given to these eligible groups is presented in the total number of vaccinations.

** Individuals currently living in Scotland and identified as permanent residents in a care home for older adults within the Community Health Index (CHI) database. The CHI extract is updated on a monthly basis, the latest extract was taken 14th September 2022. This cohort is a subset of 65+.

Vaccine Effectiveness

Please note this is the last week that the Vaccine Effectiveness Section will be published in the weekly COVID-19 statistical report. From next week, this section will be located on the [PHS website](#) within the [COVID-19 vaccine surveillance webpages](#).

Public Health Scotland (PHS) in collaboration with **EAVE II – Early Pandemic Evaluation and Enhanced Surveillance of COVID-19** is monitoring the effectiveness of all approved COVID-19 vaccines in Scotland and their impact on infections and serious outcomes. Even with a highly effective vaccine, some vaccinated individuals will develop COVID-19 and have severe outcomes of infection.

Vaccine effectiveness is a scientific method used to measure how well a vaccine protects people against infection, symptoms, hospitalisation, and death. PHS uses methods to account for complicated vaccine and test data and better understand risk factors for COVID-19 such as age, sex, prior infection, co-morbidities, socio-economic status, time since vaccination, and virus variant. This method is the most robust way to measure how well a vaccine is working.

Vaccinated individuals can still be infected with COVID-19

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 COVID-19 vaccination is to protect from severe disease, see below. For the latest COVID-19 guidance, please visit the [NHS Inform website](#).

COVID-19 vaccines protect most people against severe outcomes, but some people will still get sick because no vaccine is 100% effective

Evidence suggests the COVID-19 vaccines are very effective at preventing a severe outcome of COVID-19. COVID-19 **hospitalisations** and **deaths** are strongly driven by older age, with most deaths occurring in those over 70 years old and those

with multiple other illnesses. Overall, you are **less likely to be hospitalised if you are vaccinated with a booster.**

Vaccine effectiveness against symptomatic disease

Analyses from Scotland show that the booster and third dose of the COVID-19 vaccines are associated with 57% reduced risk of symptomatic infection with the Omicron variant compared to those who are more than 25 weeks post-second dose of COVID-19 vaccine. However, vaccine effectiveness against symptomatic infection for the Omicron variant is thought to wane (reduce) over time. In children and adolescents (12-18 years old), a **study from the USA** during the Omicron period estimated effectiveness of two doses of Pfizer (Comirnaty) against symptomatic infection was approximately 60% in the two to four weeks following dose two. This decreased to between 17-29% two months after the second dose. Studies comparing the Omicron variant sub-lineages known as BA.1 and **BA.2 (VUI-22JAN-01)** show no difference in vaccine effectiveness against symptomatic disease (**1, 2, 3, 4**).

To note, the studies described above do not account for severity of symptoms. For example, one person may only have mild symptoms such as a runny nose for one day and another person severe symptoms such as long-term fatigue and breathing issues. These people would have different outcomes of infection, but they would both be recorded as having symptoms. This could result in an under or overestimate of vaccine effectiveness.

Vaccine effectiveness against hospitalisation

A number of studies have found high levels of vaccine protection against COVID-19 hospitalisation with the Alpha and Delta variants (**1, 2, 3, 4**). Vaccine effectiveness against hospitalisation with the **Omicron variant** is slightly lower than the Delta variant, but the booster or third dose of COVID-19 vaccine still provides excellent **protection against COVID-19 related hospitalisation.**

If people test COVID-19 positive on admission to hospital, it may not be the primary reason for admission, and instead an incidental finding. This causes a problem when trying to calculate vaccine effectiveness against COVID-19 hospitalisation as

inclusion of incidental cases may result in lower estimates than reality. To try and account for this issue, the **UK Health Security Agency (UKHSA)** have conducted **studies using stricter definitions of COVID-19 hospitalisation** to identify patients hospitalised with severe respiratory disease and found that vaccine effectiveness estimates against COVID-19 hospitalisation are high, with less evidence of vaccine waning over time since vaccination.

In Finland, they are able to exclude incidental COVID-19 hospital admissions from their analysis, and a **study** (preprint) of over 70 year olds found the COVID-19 vaccine was approximately 90% effective against COVID-19 hospitalisation in the first few months following vaccination during the emergence of the Omicron variant.

In the USA, a **study** published in July 2022 examined emergency department/urgent care visits and hospitalisations with a COVID-19 like illness across 10 states between 18 December 2021 and 10 June 2022. They evaluated the vaccine effectiveness of two, three, and four doses of COVID-19 vaccine (Pfizer (Comirnaty) or Moderna (SpikeVax) compared with unvaccinated adults aged 18+, excluding individuals who are immunocompromised. Vaccine effectiveness against hospitalisation and emergency department/urgent care visits was lower during the Omicron BA.2 period than the BA.1 period. However, a third vaccine dose was associated with a higher vaccine effectiveness against emergency department/urgent care encounters and hospitalisation with a COVID-19 like illness during both periods. Similarly, a fourth dose increased this vaccine effectiveness finding further among eligible adults aged 50 and over.

A collaborative study from Brazil and Scotland, observed waning vaccine protection of Pfizer (Comirnaty) against symptomatic COVID-19 infection among adolescents aged 12–17 years in Brazil and Scotland from 27 days after the second dose. However, protection against severe COVID-19 outcomes (hospitalisation or death) remained high (greater than 80%) at 98 days or more after the second dose in the Omicron-dominant period for Brazil. The analysis of severe COVID-19 outcomes was restricted to Brazil due to the small number of severe outcomes in adolescents aged 12–17 years Scotland.

A **study in Singapore** conducted between 01 January and 08 April 2022 (when Omicron variant was spreading rapidly) assessed incidences of COVID-19-related hospitalisations among children aged 5-11 years who were either unvaccinated, vaccinated with one Pfizer (Comirnaty) dose or vaccinated with two Pfizer (Comirnaty) doses. Vaccine effectiveness against hospitalisation was highest at 82.7% in children with two doses, compared with 42.3% in children with one dose of Pfizer (Comirnaty).

Omicron BA.4 and Omicron BA.5 were designated as variants of concern on 18 May 2022 on the basis of an apparent growth advantage over the previously dominant Omicron BA.2 variant. Omicron BA.5 is now the **predominant circulating variant** in the UK. **A study in England** (preprint) estimated the vaccine effectiveness against hospitalisation following infection with Omicron sub-lineages BA.4 and BA.5 in those that received four doses of a COVID-19 vaccine. Compared to BA.2, there was no evidence of reduced vaccine effectiveness against hospitalisation for BA.4 or BA.5.

Vaccine effectiveness against death

Evidence has shown that vaccination is highly effective in protecting against death from COVID-19. A small number of COVID-19 deaths are still expected in vaccinated people, especially in vulnerable individuals where the vaccine or the immune response may not have been effective.

A study in Israel found that adults who had received their Pfizer (Comirnaty) booster dose five months after their second dose had a 90% lower risk of mortality due to COVID-19 than adults who hadn't received their booster dose five months after their second dose.

Data from **UKHSA** also shows a vaccine effectiveness of approximately 85-98% against mortality two weeks to three months following a primary course of Pfizer (Comirnaty), with a COVID-19 booster of either Pfizer (Comirnaty) or Moderna (Spikevax), when compared to unvaccinated people.

A study of electronic health records in **Portugal** (preprint) found that for Omicron BA.5, vaccine effectiveness was 77% and 88% against COVID-19 hospitalization

and death respectively, in individuals that had received a booster. For Omicron BA.2, vaccine effectiveness was 93% and 94% against COVID-19 hospitalization and death respectively, for boosted individuals. Although less effective compared with Omicron BA.2, COVID-19 booster vaccination still offers substantial post-infection protection against severe outcomes following Omicron BA.5 infection.

Vaccine effectiveness in at-risk groups

Care Home Residents

A study from England (VIVALDI) found the COVID-19 vaccines were 85% effective against COVID-19 hospitalisations and 94% against COVID-19 death among care home residents between two and 12 weeks after the second dose. This declined to 54% against hospitalisations and 63% against death from 12 weeks after the second dose. However, a booster vaccination restored protection with vaccine effectiveness estimated to be 90% against hospitalisations and 98% against death among care home residents.

In Israel, a study of people living in long-term care facilities compared those who had received a fourth dose of Pfizer (Comirnaty) vaccine to those who had received a third dose over the same time period. They found that those with a fourth dose had a 34% increase in protection against infection, 64% to 67% increase in protection against hospitalizations for mild-to-moderate and severe illness, and a 72% increase in protection against death up to four months after vaccination compared to those that had three doses. Another **study from Israel** found similar observations with a fourth dose of Pfizer (Comirnaty) conferring high protection against COVID-19 hospitalization and death among residents of long-term care facilities during the Omicron variant wave.

A study in Canada found similar improvements in protection when looking at over 60s in long term care facilities. A fourth dose improved protection against infection, symptomatic infection, and severe outcomes during an Omicron dominant period, compared to those with three doses.

Older Age Groups

Evidence from studies in Israel in over 60s who have had a fourth dose show greater protection than those who have only had three doses, with reduction in severe infection, hospitalisation, and death due to COVID-19 (1, 2, 3, 4, 5). A **study** in Singapore showed similar results, finding that eligible adults over 80 who had received a fourth dose of Pfizer (Comirnaty) or Moderna (Spikevax) had additional protection against symptomatic infection, hospitalisation, and severe illness compared with those who had only received three doses. This study was conducted for the period April to June 2022 when the Omicron variant was dominant.

Other vaccine studies

A review by UKHSA shows that people who have had one or more doses of a COVID-19 vaccine are less likely to develop long COVID-19 than those who remain unvaccinated. In addition, a **UK study** found a 12.8% decrease in incidence of long-covid after a first dose of vaccine, with further reductions after a second dose.

Vaccine effectiveness summary

UKHSA publish a summary of current vaccine effectiveness in their monthly COVID-19 vaccine surveillance report. **The latest evidence** can be found below, which suggests the COVID-19 booster/third dose vaccine lowers your risk of a severe outcome compared to the second dose.

The Office for National Statistics (ONS) has also published research into the **risk of testing positive** for COVID-19 by vaccination status and **deaths involving COVID-19 by vaccination status**.

Figure 14: UKHSA consensus estimates of vaccine effectiveness against BA.1 or BA.2 Omicron for two and three doses of COVID-19 vaccine compared to unvaccinated individuals

Vaccine product for primary course	Outcome	Second dose: 0 to 3 months	Second dose: 4 to 6 months	Second dose: 6+ months	Booster dose: all periods	Booster dose: 0 to 3 months	Booster dose: 4 to 6 months	Booster dose: 6+ months
AstraZeneca	All Infection	30% (20 to 40%)	0 to 30% (range only)	0% (0 to 10%)	See individual periods	40% (30 to 50%)	20% (10 to 30%)	0% (0 to 10%)
	Symptomatic	40% (30 to 50%)	20% (5 to 30%)	5% (0 to 5%)	See individual periods	60% (50 to 70%)	40% (30 to 50%)	10% (0 to 20%)
	Hospitalisation	85% (60 to 90%)	70% (50 to 75%)	65% (45 to 85%)	See individual periods	90% (85 to 95%)	85% (85 to 95%)	70% (50 to 85%)
	Mortality	Insufficient data	Insufficient data	Insufficient data	See individual periods	90% (85 to 98%)	Insufficient data	Insufficient data
	Transmission	Insufficient data	Insufficient data	Insufficient data	Insufficient data	Insufficient data	Insufficient data	Insufficient data
Moderna	All Infection	30% (20 to 40%)	0 to 30% (range only)	30% (10 to 50%)	See individual periods	40% (30 to 50%)	20% (10 to 30%)	0% (0 to 10%)
	Symptomatic	55% (35 to 75%)	30% (15 to 35%)	15% (10 to 20%)	See individual periods	65% (55 to 75%)	40% (30 to 50%)	10% (0 to 20%)
	Hospitalisation	85 to 95% (range only)	75 to 85% (range only)	55 to 90% (range only)	See individual periods	85 to 95% (range only)	Insufficient data	Insufficient data
	Mortality	Insufficient data	Insufficient data	Insufficient data	Insufficient data	Insufficient data	Insufficient data	Insufficient data
	Transmission	Insufficient data	Insufficient data	Insufficient data	Insufficient data	Insufficient data	Insufficient data	Insufficient data
Pfizer	All infection	30% (20 to 40%)	0 to 30% (range only)	20% (10 to 30%)	See individual periods	40% (30 to 50%)	20% (10 to 30%)	0% (0 to 10%)
	Symptomatic	50% (30 to 65%)	20% (15 to 30%)	15% (10 to 15%)	See individual periods	65% (55 to 75%)	45% (35 to 55%)	10% (0 to 20%)
	Hospitalisation	90% (85 to 95%)	80% (75 to 85%)	70% (55 to 90%)	See individual periods	90% (85 to 95%)	85% (85 to 95%)	70% (50 to 85%)
	Mortality	Insufficient data	Insufficient data	Insufficient data	See individual periods	90% (85 to 98%)	Insufficient data	Insufficient data
	Transmission	Insufficient data	Insufficient data	Insufficient data	0 to 25% (range only)	Insufficient data	Insufficient data	Insufficient data

Booster data is based on use of the Moderna or Pfizer vaccines as a booster. This table provides overall estimates but there may be variation by age group or other clinical or demographic factors.

Figure 15: UKHSA consensus estimates of vaccine effectiveness against BA.1 or BA.2 Omicron for a fourth dose of COVID-19 vaccine compared to 6+ months since the third dose*

Vaccine product of fourth dose (second booster)	Outcome	Fourth dose: all periods	Fourth dose: 0 to 3 months	Fourth dose: 4 to 6 months	Fourth dose: 6+ months
Any**	All infection	Insufficient data	40% (30 to 50%)	20% (10 to 30%)	Insufficient data
Any**	Symptomatic	Insufficient data	40% (30 to 50%)	20% (10 to 30%)	Insufficient data
Any**	Hospitalisation	Insufficient data	50% (40 to 60%)	Insufficient data	Insufficient data
Any**	Mortality	Insufficient data	Insufficient data	Insufficient data	Insufficient data

*Note: This table is relative VE of 4th doses against 6+ months since the third dose

**Any refers to Pfizer or Moderna only

Key: Confidence rating scale

High Confidence	Evidence from multiple studies which is consistent and comprehensive
Medium Confidence	Evidence is emerging from a limited number of studies or with a moderately level of uncertainty
Low Confidence	Little evidence is available at present and results are inconclusive

COVID-19 Infection in Pregnant Women and Neonates

Confirmed cases of COVID-19 in pregnant women and neonates

Data and commentary on confirmed cases of COVID-19 in pregnancy have been included in previous versions of this report published on **6 October 2021**, **3 November 2021**, **8 December 2021**, **2 February 2022**, **9 March 2022**, and **11 May 2022** (with the May report providing information on cases of COVID-19 in pregnancy occurring up to the end of March 2022). This report provides updated data on this topic, covering cases of COVID-19 in pregnancy occurring up to the end of April 2022.

This report provided information on confirmed cases of COVID-19 in neonates (babies up to 28 days old) on **2 February 2022**, **9 March 2022**, and **11 May 2022**. This report provides updated data on this topic, covering cases of COVID-19 in neonates occurring up to the end of April 2022.

This report also includes a separate section on **COVID-19 Vaccination in Pregnancy**.

Guidance on testing for COVID-19 **changed from April 2022 onwards**. From mid-April 2022, individuals in the community with no symptoms of COVID-19 were no longer encouraged to undertake twice weekly LFD tests. From the end of April 2022, individuals in the community with symptoms of COVID-19 were no longer asked to take a PCR test, and community-based testing centres were closed. Testing has remained available for certain groups however, for example healthcare workers and individuals requiring admission to hospital.

The data on the numbers of pregnant women and neonates with COVID-19 presented here are based on the results of viral testing. The changes to the availability of testing outlined above mean that data for May 2022 onwards would substantially underestimate the actual number of infections, and the data would not

be comparable to that for previous months. Data is therefore only presented for COVID-19 cases occurring up to the end of April 2022.

These data are produced from the **COVID-19 in Pregnancy in Scotland (COPS) study** which has undertaken surveillance and research on COVID-19 infection and vaccination in pregnant women throughout the pandemic. The COPS study finishes at the end of September 2022; hence this is the last planned publication on COVID-19 infection and vaccination in pregnancy in this format. Plans are ongoing to monitor the uptake of COVID-19 and flu vaccinations offered to pregnant women as part of the autumn 2022 booster programme.

How have we identified confirmed cases of COVID-19 in pregnancy for this report?

To identify women with confirmed COVID-19 in pregnancy, we have linked national SARS-CoV-2 viral PCR and (for 6 January 2022 onwards) LFD testing data to the COVID-19 in Pregnancy in Scotland (COPS) study pregnancy cohort, which includes a record of all pregnancies in Scotland from 1 March 2020 (the start of the pandemic) onwards.

Detailed information on the data sources and methodology used has been provided in previous versions of this report, and notes are also included in the Excel data tables that accompany this report. Additional information on the COPS study is available on the study [website](#).

In brief, up to 5 January 2022, confirmed cases of COVID-19 were identified by a positive SARS-CoV-2 viral PCR test result. From 6 January 2022 onwards, confirmed cases have been identified by a positive SARS-CoV-2 viral PCR test result or a positive LFD test result (unless the positive LFD result was followed by a negative viral PCR result within 48 hours).

This change reflects a change to the [national guidance on testing](#) and is in line with the approach to reporting of confirmed cases used [across Public Health Scotland](#). Up to and including 5 January 2022, anyone with a positive LFD test result was asked to take a follow up PCR test to confirm the result. From 6 January 2022 onwards, asymptomatic individuals with a positive LFD test result were no longer

asked to take a follow up PCR test - the positive LFD test result was considered sufficient to indicate confirmed infection for isolation and contact tracing purposes.

As outlined above, the availability of LFD and PCR testing for asymptomatic and symptomatic individuals was **reduced from mid-April 2022 onwards**, hence this report covers infections occurring up to the end of April 2022 only.

For any individual, the date that their first positive test sample was collected has been taken as the date of onset of their first episode of COVID-19. Subsequent positive tests taken <90 days after a first positive test have been discounted. To allow for the possibility of re-infection, if an individual has a positive test taken ≥ 90 days after their first positive test, this has been taken as the date of onset of their second episode of COVID-19, with the clock then reset as for the first episode, and so on.

Confirmed cases of COVID-19 have been identified as occurring in pregnancy if the date of onset of the episode of COVID-19 occurred at any point from the date of conception (at 2⁺⁰ weeks gestation) to the date the pregnancy ended, inclusive. To minimise the chance that we have identified a case of COVID-19 as occurring 'in pregnancy' when it actually occurred after a pregnancy has ended, we have discounted any cases with date of onset at 44⁺⁰ weeks gestation or over. It is very likely that these women have completed their pregnancy, but the end of pregnancy record has not yet been received by PHS.

As identification of confirmed cases of COVID-19 in pregnancy depends on SARS-CoV-2 viral test results, the proportion of all COVID-19 infections that have been detected as a confirmed case will depend on the availability, take up, and accuracy of testing, and (for 6 January 2022 onwards) the proportion of all positive LFD results that are logged on the UK Gov website.

How have we identified the hospital and critical care admission status of women with confirmed COVID-19 in pregnancy?

We have linked national hospital discharge records to the pregnancy and viral testing data to identify women who were admitted to hospital around the date of onset of their COVID-19. Admissions to general acute units (SMR01 records) and maternity units (SMR02 records) have both been included. We have also linked national adult

critical care (SICSAG) records to identify women who were admitted to critical care around the date of onset of their COVID-19. Completed admissions to all intensive care units (ICUs) and general (non-obstetric) high dependency units (HDUs) across Scotland have been included. Completed admissions to the 7 obstetric HDUs that contribute data to SICSAG (collectively covering around 60% of deliveries in Scotland) have also been included.

If a woman has an episode of COVID-19 with an associated (general or critical care) admission, it cannot be assumed that the admission was due to the COVID-19. The woman may have had COVID-19 then a subsequent unrelated admission, for example for delivery of her baby. Alternatively, a woman may be incidentally found to have COVID-19 following routine testing after admission for an unrelated reason. Routine SARS-CoV-2 testing of all individuals admitted to hospital as a planned or emergency patient was instigated across Scotland from **December 2020**.

How have we identified the vaccination status of women with confirmed COVID-19 in pregnancy?

We have linked national vaccination records to the pregnancy and viral testing data to identify the vaccination status of women at the date of onset of their COVID-19.

Vaccination status has been defined as:

- Unvaccinated for women with no COVID-19 vaccination prior to the date of onset of COVID-19, or with one dose of vaccination ≤ 21 days prior to the date of onset
- Vaccinated (1 dose) for women with one dose of vaccination > 21 days prior to the date of onset of COVID-19, or two doses of vaccination with the second dose ≤ 14 days prior to the date of onset
- Vaccinated (2 doses) for women with two doses of vaccination with the second dose > 14 days prior to the date of onset of COVID-19, or three doses of vaccination with the third dose ≤ 14 days prior to the date of onset
- Vaccinated (3 or more doses) for women with three or more doses of vaccination with the third dose > 14 days prior to the date of onset of COVID-19

Vaccinations given during or prior to pregnancy are included. The time lags included in the definitions above reflect the time required after vaccination for the immune response, and hence protection against infection or severe disease, to develop.

Number of confirmed cases of COVID-19 in pregnancy

For this publication, we have used the COPS pregnancy cohort as updated in late-August 2022 linked to records of SARS-CoV-2 viral testing results for PCR and LFD samples taken on up to and including 30 April 2022.

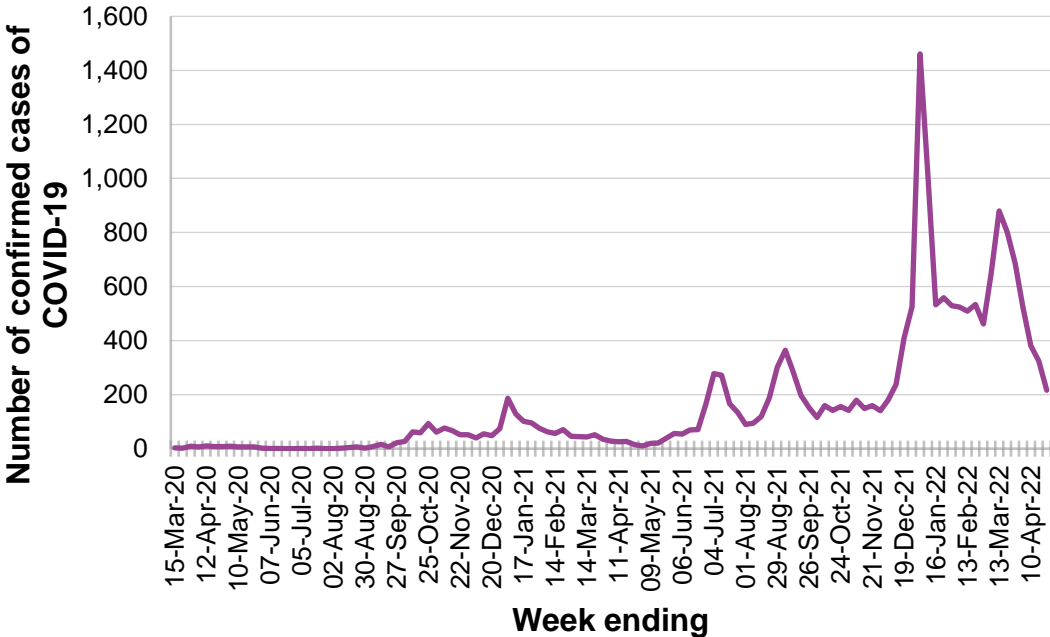
As at late-August 2022, the COPS cohort included 189,912 pregnancies in 163,422 women in Scotland from the start of the COVID-19 pandemic on 1 March 2020 to end of April 2022. Among these, we have identified a total of 18,564 confirmed cases of COVID-19 in pregnancy with date of onset from 1 March 2020 up to 30 April 2022, in 18,315 pregnancies in 18,264 women.

The COPS pregnancy cohort will be incomplete for recent months; hence these figures are provisional.

Detailed data is provided in a [supporting Excel file](#) that accompanies this publication and is also available through the [Scottish Health and Social Care Open data platform](#).

The number of confirmed cases of COVID-19 in pregnancy has varied over time, reflecting sequential waves of infection in the general population, and also increasing access to testing (and hence increasingly complete ascertainment of cases). Small numbers of confirmed cases of COVID-19 in pregnant women were seen in the first wave of infection in March to May 2020. Subsequent peaks in case numbers have been seen in October 2020 and January, July, and September 2021. Further peaks (by far the highest to date) were seen in late December 2021-early January 2022 and mid-March 2022, reflecting the spread of the Omicron viral variant.

Figure 16: Weekly number of confirmed cases of COVID-19 in pregnancy, March 2020 to April 2022, Scotland



Of the 18,564 total confirmed cases of COVID-19 in pregnancy, 6,575 (35%) occurred (i.e., had date of onset) in the first trimester of pregnancy (at 2⁺⁰ to 13⁺⁶ weeks gestation); 6,840 (37%) occurred in the second trimester (at 14⁺⁰ to 27⁺⁶ weeks gestation); and 5,149 (28%) occurred in the third trimester (at 28⁺⁰ weeks gestation or over).

Overall, 2,688 (14%) of the 18,564 total cases were associated with a hospital admission, and 159 (1%) were associated with a critical care admission. Cases occurring later in pregnancy were much more likely to be associated with a hospital or critical care admission than cases occurring in early pregnancy. This reflects the fact that admission is generally more common in later pregnancy (due to complications of pregnancy unrelated to COVID-19 and/or for delivery), and also that COVID-19 is more likely to cause severe maternal disease and/or pregnancy complications in later pregnancy.

Of the 17,862 confirmed cases of COVID-19 in pregnancy occurring in December 2020 (the month the COVID-19 vaccination programme started in Scotland) to April

2022 inclusive, 6,694 (37%) have occurred in unvaccinated women, 1,479 (8%) in women who have received one dose of vaccination, 5,160 (29%) in women who have received two doses, and 4,529 (25%) in women who have received three doses or more.

The proportion of confirmed cases of COVID-19 in pregnancy occurring in previously vaccinated individuals has increased over time. This is an inevitable consequence of the vaccination programme being rolled out and an increasing proportion of the population being vaccinated. It is also likely that the current COVID-19 vaccines are less effective at preventing asymptomatic or mild infection with the Omicron viral variant than with previous variants. However, it should be emphasised that the current COVID-19 vaccines remain highly effective at preventing severe COVID-19 disease.

Cases occurring in unvaccinated women are much more likely to be associated with a hospital or critical care admission than cases occurring in partially or fully vaccinated women. Among the 149 confirmed cases of COVID-19 in pregnancy occurring in December 2020 to April 2022 inclusive that were associated with a critical care admission, 129 (87%) occurred in unvaccinated women.

Rate of confirmed COVID-19 in pregnancy

Based on the late-August 2022 refresh of the COPS cohort, 36,416 women in Scotland had an ongoing pregnancy at the start of April 2022 and 1,217 (3,342 per 100,000) women had confirmed COVID-19 in pregnancy during April 2022.

For the duration of the pandemic to date, the monthly rate of confirmed COVID-19 seen in pregnant women has been very similar to that seen in the general female population of reproductive age (i.e., all women aged 18 to 44 years inclusive) (comparator data available on request).

For the majority of the pandemic, the rate of confirmed COVID-19 in pregnancy was generally higher in younger, compared to older, pregnant women, and in pregnant women living in more, compared to less, deprived areas of Scotland. These patterns have been less evident however from around December 2021 onwards, when Omicron became the dominant variant in Scotland. For the majority of the pandemic

to date, there was no clear pattern in the rate of confirmed COVID-19 in pregnancy in women from different ethnic groups. However, again since Omicron has been dominant, more recently the infection rate has been higher in women with White ethnicity, compared to women from South Asian; Black, Caribbean, or African; and Other or mixed ethnic groups.

Babies' outcomes following maternal confirmed COVID-19 in pregnancy

Based on the late-August 2022 refresh of the COPS cohort, a total of 12,778 babies have been born to date following the mother having confirmed COVID-19 at any stage during that pregnancy up to end April 2022. 12,738 of the babies were live births (born at any gestation) and 40 were stillbirths (born at 24⁺⁰ weeks gestation or over). 24 of the live born babies subsequently died in the neonatal period (within 28 days of birth). This gives an extended perinatal mortality rate for babies born following maternal confirmed COVID-19 at any stage during pregnancy of 5/1,000 total births ([40+24]/12,778, 95% confidence interval [CI] 3.9 to 6.4/1,000).

1,982 of the 12,778 babies were born within 28 days of the date of onset of the mother's COVID-19 infection. 1,963 of these babies were live births (with 7 subsequent neonatal deaths) and 19 were stillbirths, giving an extended perinatal mortality rate for babies born within 28 days of confirmed COVID-19 during pregnancy of 13.1/1,000 total births (95% CI 8.8 to 19.5/1,000).

It cannot be assumed that stillbirths and neonatal deaths following confirmed COVID-19 during pregnancy are related to the mother's infection. Stillbirths and neonatal deaths unfortunately occur for a wide range of reasons, and it is important to take the background rate of mortality into account when considering the rates seen among births following infection. For example, the overall extended perinatal mortality rate seen among all births registered in 2020 was 6.3/1,000 total births ([198 stillbirths+100 neonatal deaths]/47,007 total births, 95% CI 5.7 to 7.1/1,000).

1,047 of the 12,738 live births following maternal confirmed COVID-19 at any stage during pregnancy were delivered preterm, i.e., at <37⁺⁰ weeks gestation, giving a preterm rate in this group of 8.2% (95% CI 7.8 to 8.7). 237 of the 1,963 live births born with 28 days of maternal confirmed COVID-19 during pregnancy were delivered

preterm, giving a preterm rate in this group of 12.1% (95% CI 10.7 to 13.6).). For comparison, the overall preterm rate seen among live births in financial year 2019/2020 was 8.4% (4,086/48,571 live births, 95% CI 8.2 to 8.7)

Public Health Scotland is conducting detailed analyses on the outcomes of women and babies following COVID-19 in pregnancy through the **COPS study**. These detailed analyses aim to provide accurate estimates of any excess risks associated with infection. In the meantime, in line with what is known from the **international research evidence**, the preliminary data presented above suggests that COVID-19 in pregnancy may be associated with an increased risk of perinatal mortality and preterm birth, in particular among babies born shortly after the onset of maternal infection.

How have we identified confirmed cases of COVID-19 in neonates for this report?

The COVID-19 in Pregnancy in Scotland (COPS) study database includes a record of all pregnancies in Scotland from 1 March 2020 (the start of the pandemic) onwards. Records containing the woman's CHI number (the unique patient identifier used on all health records in Scotland) are included in analyses.

NHS live birth (LB) notification records are used to identify the subset of these pregnancies that have ended in the birth of one or more live babies. NHS LB notifications are sent from maternity services to NHS Board child health departments on a daily basis. The child health departments use the notifications to create a record for each baby on the national child health information system. This then enables babies to receive invitations for child health reviews and routine immunisations. The number of babies with an NHS LB notification record is very close to the total number of live births registered by law with National Records of Scotland. A very small number of babies who die very soon after birth (before that day's notifications have been sent) will not be notified.

This publication is based on the late-August 2022 update of the COPS database and provides information on babies born up to end April 2022. By late-August 2022, NHS LB notification records for babies born up to end April 2022 will be complete, and

hence we would expect this month's version of the COPS database to include almost all live births occurring up to end April 2022.

All NHS LB notification records include the baby's CHI number, and this is included in the COPS study database. This means that subsequent health records relating to the baby can then be linked to their (and by extension their mother's) record within the COPS study database.

To identify confirmed cases of COVID-19 in neonates, we have linked national SARS-CoV-2 viral PCR and (for 6 January 2022 onwards) LFD testing data to records for live births within the COPS study database. As for pregnant women, up to 5 January 2022, confirmed cases of COVID-19 in neonates have been identified by a positive SARS-CoV-2 viral PCR test result. From 6 January 2022 onwards, confirmed cases have been identified by a positive SARS-CoV-2 viral PCR test result or a positive LFD test result (unless the positive LFD result was followed by a negative viral PCR result within 48 hours).

For any baby, the date that their first positive test sample was collected has been taken as the date of onset of their first episode of COVID-19. Confirmed cases in neonates have been identified as those with date of onset within 28 days of birth (i.e., day 0 to day 27 inclusive, with day 0 being the baby's date of birth). As subsequent positive tests taken <90 days after a first positive test are discounted, each baby can only have one confirmed episode of COVID-19 with onset in the neonatal period. The proportion of all neonatal COVID-19 infections that have been detected as a confirmed case will depend on the availability, take up, and accuracy of testing, and (for 6 January 2022 onwards) the proportion of all positive LFD results that are logged on the UK Gov website.

How have we identified the maternal vaccination status of neonates with confirmed COVID-19?

Maternal COVID-19 vaccination may provide babies with some protection against SARS-CoV-2 infection, as maternal antibodies made following vaccination cross the placenta to the baby (and are therefore present in the baby's blood after birth), and are also present in breastmilk. We have used the linked records in the COPS study

database to determine the vaccination status of the mothers of neonates with confirmed COVID-19. Vaccination status has been determined as at the date of delivery (the baby's date of birth). The same definitions of vaccination status have been used as shown in the section on "How have we identified the vaccination status of women with confirmed COVID-19 in pregnancy?" above. Maternal vaccinations given during or prior to pregnancy have been included.

Confirmed COVID-19 in neonates

For this publication, we have used the COPS study database as updated in late-August 2022 linked to records of SARS-CoV-2 viral testing results for PCR and LFD samples taken on up to and including 30 April 2022.

As at late-August 2022, the COPS database included a total of 189,912 pregnancies in 163,422 women in Scotland from the start of the COVID-19 pandemic on 1 March 2020 to end of April 2022. 153,835 of the pregnancies had completed, and 36,078 were ongoing at this date. 101,858 of the completed pregnancies had ended in a delivery (delivery of one or more live or stillborn baby/babies), with 103,074 live babies being born.

Among these live births, we have identified a total of 194 confirmed cases of COVID-19 in neonates from 1 March 2020 up to 30 April 2022.

Using viral PCR and LFD testing data alone (i.e., all test records, not just records that have linked to the COPS study database), shows that there has been an overall total of 196 confirmed cases of COVID-19 in neonates between 1 March 2020 and 30 April 2022. There are various reasons why confirmed infections identified through testing data only may not be identified through the COPS study database. For example, if the date of birth is incorrect in the testing data, the infection may be incorrectly assigned to the neonatal period, or if the baby's CHI number is not available within the testing data, their record will not be linked to their COPS record. Overall, however, this shows that the number of neonatal infections identified in the COPS database is very close to the number identified through testing data alone.

Detailed data from the COPS study is provided in a [supporting Excel file](#) that accompanies this publication, and is also available through the [Scottish Health and Social Care Open data platform](#).

The rate of COVID-19 in neonates is much lower than the rate seen among pregnant women, however small peaks have been seen in the neonatal infection rate in line with the sequential waves of infection seen in pregnant women and the general adult population. The highest rate of COVID-19 in neonates seen to date was in January 2022, with similarly high levels in March 2022, reflecting the most recent waves of infection associated with the Omicron viral variant.

Among the 194 confirmed cases of COVID-19 in neonates, 23 (12%) had date of onset during the early neonatal period (day 0 to day 6 inclusive, with day 0 being the baby's date of birth) and 171 (88%) had date of onset during the late neonatal period (day 7 to day 27 inclusive). It is not possible to definitively infer how a baby acquired their SARS-CoV-2 infection from this. However, the fact that most infections had date of onset in the late neonatal period is in line with other evidence that suggests that most neonatal infections are acquired after birth, rather than before or at birth.

Among the 182 confirmed cases of COVID-19 in neonates that occurred between December 2020 (the month the vaccination programme started in Scotland) and April 2022, 134 (74%) of the babies were born to a mother who was unvaccinated at the time of delivery.

Data on COVID-19 infection in pregnant women and neonates from other UK nations

No data on confirmed cases of COVID-19 in pregnant women or neonates is routinely published for England, Wales, or Northern Ireland.

From the start of the pandemic, the UK Obstetric Surveillance System (**UKOSS**) has been collecting data from hospitals across the UK on pregnant women with COVID-19 who are admitted to hospital. Information is not routinely published by UKOSS, however a number of [research papers](#) based on the collected data are publicly available.

Similarly, the British Paediatric Surveillance Unit (**BPSU**) has been collecting data on neonates with confirmed COVID-19 who are being cared for in hospital, and research papers based on the collected data (for example see [here](#)) are publicly available.

COVID-19 Vaccination in Pregnancy

Data and commentary on COVID-19 vaccination in pregnancy have been included in previous versions of this report published on **14 July 2021**, **1 September 2021**, **6 October 2021**, **3 November 2021**, **8 December 2021**, **2 February 2022**, **9 March 2022** and **11 May 2022**. This report provides updated data on this topic, covering vaccinations given in pregnancy up to the end of July 2022.

This report also includes a separate section on **Confirmed cases of COVID-19 in pregnant women and neonates**.

These data are produced from the **COVID-19 in Pregnancy in Scotland (COPS) study** which has undertaken surveillance and research on COVID-19 infection and vaccination in pregnant women throughout the pandemic. The COPS study finishes at the end of September 2022; hence this is the last planned publication on COVID-19 infection and vaccination in pregnancy in this format. Plans are ongoing to monitor the uptake of COVID-19 and flu vaccinations offered to pregnant women as part of the autumn 2022 booster programme.

Advice for women on COVID-19 vaccination in pregnancy

COVID-19 vaccination is the safest and most effective way for women to protect themselves and their babies against severe COVID-19. The Royal College of Obstetricians and Gynaecologists (RCOG) and the Royal College of Midwives **recommend** that pregnant women receive their COVID-19 vaccination. Information for patients on COVID-19 vaccination in pregnancy is available on **NHS inform** and from the **RCOG**.

Policy on COVID-19 vaccination in pregnancy

The Joint Committee on Vaccination and Immunisation (**JCVI**) advises the UK and devolved governments on immunisation. Advice from the JCVI on COVID-19 vaccination for pregnant women has changed over time, as evidence has accumulated on both the risks of COVID-19 disease in pregnancy, and the safety and effectiveness of COVID-19 vaccinations in pregnancy.

Details have been provided in previous version of this report. In summary, when the vaccination programme started in Scotland on 8 December 2020, the JCVI did not recommend COVID-19 vaccination in pregnancy, due to the lack of evidence on safety and effectiveness at that time. On **30 December 2020**, the JCVI updated their guidance to note that women in the highest risk groups that were being called for vaccination at that point, and who happened to be pregnant, could be offered vaccination during pregnancy. In practice this mainly affected pregnant health and social care workers at high risk of occupational exposure to infection, and pregnant women with underlying health conditions conferring clinical vulnerability to severe COVID-19 disease. On **16 April 2021**, the JCVI issued further guidance, confirming that all women called for vaccination due to being in any priority group (including the 'phase 2' groups covering all adults aged 18-49 years) should be offered vaccination, regardless of pregnancy status. In other words, from this time, pregnant women were offered vaccination at the same time as non-pregnant women, based on their age and clinical risk group.

More recently, on **16 December 2021**, the JCVI added pregnant women to the list of groups considered clinically vulnerable to COVID-19 disease, and hence prioritised for vaccination (priority group 6). In response to this, the **Chief Medical Officer** for Scotland asked NHS Boards to consider ways to further increase provision of vaccination for pregnant women, for example by establishing dedicated antenatal vaccination clinics.

In **July 2022**, the JCVI published guidance on the autumn 2022 COVID-19 vaccine booster programme. This noted that **pregnant women would be one of the priority groups offered an autumn booster**. The booster programme started in September 2022. As this report provides data on vaccinations given up to the end of July 2022, it will not include any vaccines given through the autumn booster programme.

Up to date recommendations from the JCVI on COVID-19 vaccination are available in Immunisation against Infectious Disease (the '**Green Book**'), published by the UK Department of Health and Social Care.

How have we identified COVID-19 vaccinations given to pregnant women for this report?

To identify women vaccinated against COVID-19 in pregnancy, we have linked national vaccination data to the COVID-19 in Pregnancy in Scotland (COPS) study pregnancy cohort, which includes a record of all pregnancies in Scotland from 1 March 2020 (the start of the pandemic) onwards.

Detailed information on the data sources and methodology used has been provided in previous versions of this report, and notes are also included in the Excel data tables that accompany this report. Additional information on the COPS study is available on the study [website](#).

In brief, COVID-19 vaccinations have been identified as occurring in pregnancy if they were given at any point from the date of conception (at 2⁺⁰ weeks gestation) to the date the pregnancy ends, inclusive. To minimise the chance that we have identified a vaccination as occurring 'in pregnancy' when it actually occurred after a pregnancy has ended, we have discounted any vaccinations that were showing as delivered at 44⁺⁰ weeks gestation or over. It is very likely that these women have completed their pregnancy, but the end of pregnancy record has not yet been received by PHS.

Number of COVID-19 vaccinations given to pregnant women

For this publication, we have used the COPS database as updated in late-August 2022 linked to records of vaccinations delivered on up to and including 31 July 2022.

As at late-August 2022, the COPS database included a total of 201,892 pregnancies among 171,431 women in Scotland from 1 March 2020 (the start of the pandemic) onwards, and 148,443 pregnancies in 134,043 women from 1 December 2020 (the month the COVID-19 vaccination programme started) onwards. Among these, we have identified a total of 45,098 COVID-19 vaccinations given in 32,314 pregnancies to 31,903 women from the start of the COVID-19 vaccination programme on 8 December 2020 up to 31 July 2022.

The COPS pregnancy cohort will be incomplete for recent months; hence these figures are provisional.

Detailed data is provided in a [supporting Excel file](#) that accompanies this publication, and is also available through the [Scottish Health and Social Care Open data platform](#).

Of the 45,098 total vaccinations given in pregnancy, 13,893 (30.8%) were first doses, 15,058 (33.4%) were second doses, 15,990 (35.5%) were third doses, and 157 (0.3%) were fourth doses.

Small peaks in the number of first dose vaccinations given in pregnancy were seen in January and March 2021, likely representing vaccination of health and care workers, and clinically vulnerable women, respectively. A more substantial peak in first dose vaccinations was then seen in early June 2021, reflecting the time when vaccination was being offered to the general young adult population. As would be expected given the recommended gap between first and second doses of vaccination, a substantial peak in second dose vaccinations was then seen in early August 2021. Small numbers of first and second dose vaccinations have continued to be given to pregnant women up to the end of July 2022, reflecting the fact that vaccination [remains available](#) to anyone who was not vaccinated when initially invited for whatever reason.

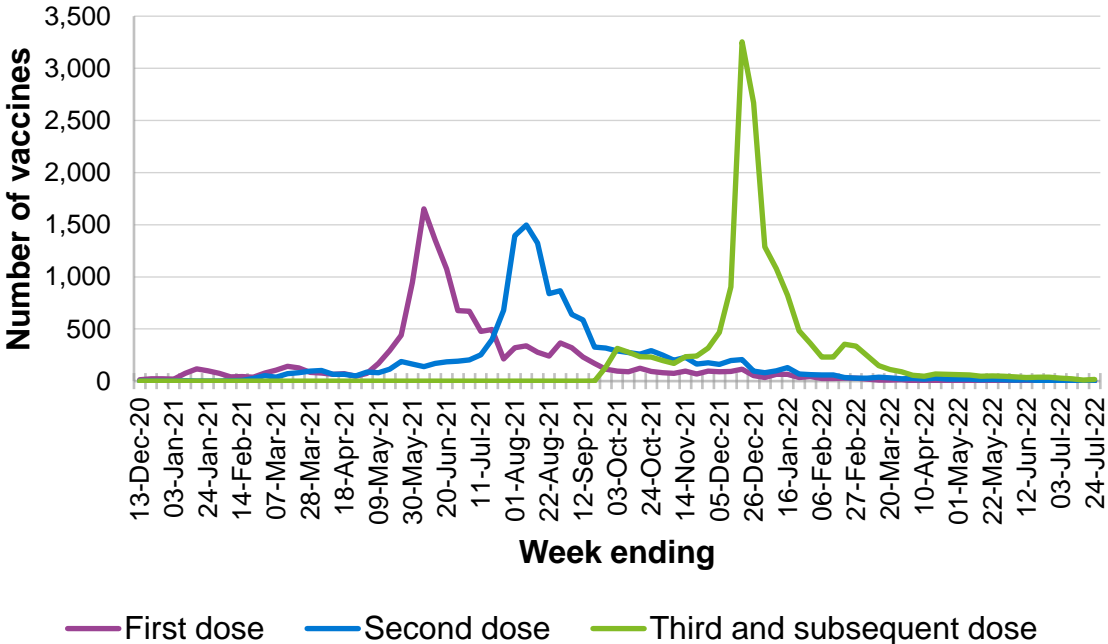
Third primary doses of vaccination have been offered to immunosuppressed individuals from September 2021. Booster doses have also been offered from September 2021. Booster doses were offered 6 months following the end of the primary immunisation course to individuals in the initial vaccination priority groups 1-9 (health and care workers, clinically extremely vulnerable and clinically vulnerable individuals, and all adults aged 50 years or over) from [September 2021](#), then to all adults aged 40-49 years from [15 November 2021](#). In response to the emergence of the Omicron variant, the offer of a booster dose was extended to all adults aged 18-39 from [29 November 2021](#) and to young people aged 16-17 from [22 December 2021](#), with boosters for all groups (including previously eligible groups) available from 3 rather than 6 months following the end of the primary immunisation course from this time. On [21 February 2022](#), the JCVI recommended that second boosters

should be provided to immunosuppressed individuals (and older adults) from 6 months after their initial booster.

As would be expected from the above, a small number of third doses of vaccination were given in pregnancy in September, October, and November 2021, with a substantial peak in third dose vaccinations then seen in December 2021. A small number of 4th doses are recorded from December 2021 onwards, representing boosters following a third primary dose in the immunosuppressed group. No 5th doses (representing 2nd boosters for the immune suppressed groups), have been recorded in pregnancy as yet.

As noted above, from September 2022 the autumn COVID-19 vaccination booster programme will be rolled out to clinically at-risk groups, including pregnant women. However, the autumn booster programme had not begun in the timeframe covered by this report.

Figure 17: Number of COVID-19 vaccines given in pregnancy by dose, December 2020 to July 2022, Scotland



Of the 45,098 total vaccinations given in pregnancy, 17,218 (38%) vaccinations were given in the first trimester of pregnancy (at 2⁺⁰ to 13⁺⁶ weeks gestation); 16,846

(27%) were given in the second trimester (at 14⁺⁰ to 27⁺⁶ weeks gestation); and 11,034 (24%) were given in the third trimester (at 28⁺⁰ weeks gestation or over). 33,443 (74%) of the vaccinations given were Pfizer/BioNTech; 9,489 (21%) were Moderna; and 2,166 (5%) were Oxford/AstraZeneca.

Uptake of COVID-19 vaccination among pregnant women

Based on the late-August 2022 refresh of the COPS database, 35,208 women in Scotland had an ongoing pregnancy at the start of July 2022, and 97 (0.3%) women received any COVID-19 vaccination during pregnancy in July 2022 ('monthly uptake of vaccination').

For the duration of the pandemic to date, the monthly uptake of vaccination has generally been higher in older, compared to younger, pregnant women. Monthly uptake has generally been higher in pregnant women living in less, compared to more, deprived areas of Scotland. Monthly uptake has also generally been lower among pregnant women with Black, Caribbean, or African ethnicity compared to pregnant women with White; South Asian; or Other or mixed ethnicity, although all of these patterns have been less evident in recent months due to low numbers of vaccination being delivered.

From the start of the vaccination programme in December 2020 until August 2021, the monthly uptake of vaccination among pregnant women was considerably lower than that seen in the general female population of reproductive age (i.e., all women aged 18 to 44 years inclusive) (comparator data available on request). From September 2021 to July 2022, monthly uptake in pregnant women and in the general female population have been more similar, although uptake among pregnant women remains consistently below that in the general female population.

Coverage of COVID-19 vaccination by the time of delivery

3,631 women delivered their baby (or babies in the case of a multiple pregnancy) in July 2022. 2,842 (78%) of the women delivering in July 2022 had received at least one dose of COVID-19 vaccination prior to delivery, with 2,636 (73%) of the women having received at least two doses, 1,733 (48%) having received three or more doses.

As would be expected, the percentage of women delivering their baby in each month who have been vaccinated before the date of delivery ('coverage of vaccination by delivery') increased from the start of the vaccination programme in December 2020 until around April 2022. From April 2022 onwards, very little increase has been seen in the percentage of women who have received any vaccination before delivery, however small increases have continued to be seen in the percentage of women have received two or more vaccines before delivery.

To date, the coverage of vaccination by delivery has been higher in women from older, compared to younger, age groups. Coverage of vaccination by delivery has been higher in women living in the least, compared to the most, deprived areas of Scotland. Coverage of vaccination by delivery has also been lower in women with Black, Caribbean, or African ethnicity compared to women with White; South Asian; or Other or mixed ethnicity.

To date, vaccination coverage has been considerably lower among women delivering their babies than among the general female population of reproductive age. By the end of July 2022, 88% of all women aged 18 to 44 years inclusive had received at least one dose of vaccination, with 83% having received at least two doses, and 67% having received three doses (comparator data available on request). Coverage of any vaccination in the general female population increased rapidly up to July 2021, and subsequently increased very slowly from August 2021 onwards. By contrast, coverage among women delivering their babies has continued to increase steadily up to end April 2022, hence the gap in coverage between pregnant women and all women of reproductive age is reducing over time.

Babies' outcomes following maternal COVID-19 vaccination in pregnancy

Based on the late-August 2022 refresh of the COPS cohort, a total of 24,008 babies have been born to date following the mother receiving COVID-19 vaccination at any stage during that pregnancy up to end July 2022. 23,942 of the babies were live births (born at any gestation) and 66 were stillbirths (born at 24⁺⁰ weeks gestation or over). 41 of the live born babies subsequently died in the neonatal period (within 28 days of birth). This gives an extended perinatal mortality rate for babies born

following maternal COVID-19 vaccination at any stage during pregnancy of 4.5/1,000 total births ([66+41]/23,942, 95% confidence interval [CI] 3.7 to 5.4/1,000).

2,949 of the 24,008 babies were born within 28 days of the date of the mother's COVID-19 vaccination. 2,941 of these babies were live births (with 10 subsequent neonatal deaths) and 8 were stillbirths, giving an extended perinatal mortality rate for babies born within 28 days of COVID-19 vaccination during pregnancy of 6.1/1,000 total births (95% CI 3.7 to 9.8).

It cannot be assumed that stillbirths and neonatal deaths following COVID-19 vaccination during pregnancy are related to the mother's vaccination. Stillbirths and neonatal deaths unfortunately occur for a wide range of reasons, and it is important to take the background rate of mortality into account when considering the rates seen among births following vaccination. For example, the overall extended perinatal mortality rate seen among births registered in 2020 was 6.3/1,000 total births ([198 stillbirths+100 neonatal deaths]/47,007 total births, 95% CI 5.7 to 7.1/1,000).

1,790 of the 23,942 live births following maternal COVID-19 vaccination at any stage during pregnancy were delivered preterm, i.e., at <37⁺⁰ weeks gestation, giving a preterm rate in this group of 7.5% (95% CI 7.1 to 7.8). 248 of the 2,941 live births born with 28 days of maternal COVID-19 vaccination during pregnancy were delivered preterm, giving a preterm rate in this group of 8.4% (95% CI 7.4 to 9.5). For comparison, the overall preterm rate seen among live births in financial year 2019/2020 was 8.4% (4,086/48,571 live births, 95% CI 8.2 to 8.7).

Public Health Scotland is conducting detailed analyses on the safety of COVID-19 vaccination in pregnancy through the **COPS study**. In the meantime, in line with what is known from the **international research evidence**, the preliminary data presented above shows no increased risk of perinatal mortality or preterm birth following COVID-19 vaccination in pregnancy. This finding contrasts to the relatively high rates of perinatal mortality and preterm birth seen among babies born soon after COVID-19 infection in pregnancy (see separate section in this report on **Confirmed cases of COVID-19 in pregnant women and neonates**). Vaccination remains the safest and most effective way for women to protect themselves and their babies against COVID-19 infection.

Data on COVID-19 vaccination in pregnancy from other UK nations

Data published by the UK Health Security Agency shows that among women in England delivering their baby in May 2022, 73.2% had received at least one dose of COVID-19 vaccination prior to delivery, and 66.9% had had at least 2 doses (see the [COVID-19 vaccine weekly surveillance report](#)). The UKHSA report also provides information on birth outcomes (preterm delivery, low birthweight, and stillbirth) among vaccinated and unvaccinated women.

Data published by Public Health Wales shows that among women in Wales delivering their baby in May 2022, 81% had received at least one dose of COVID-19 vaccination prior to delivery and 77% had received at least two doses. (See the latest [Monthly enhanced surveillance report](#) available through the Vaccination tab on the [Public Health Wales Rapid COVID-19 surveillance dashboard](#)).

These data for England and Wales are based on linkage of national maternity and vaccination records.

For comparison, this report shows that 76.8% of women who delivered in Scotland in May 2022 had received at least one dose of COVID-19 vaccination prior to delivery and 70.0% had at least two doses.

No data on COVID-19 vaccination in pregnancy is currently available for Northern Ireland.

Wider Impact of COVID-19

The COVID-19 pandemic has direct impacts on health as a result of illness, hospitalisations and deaths due to COVID-19. However, the pandemic also has wider impacts on health, healthcare, and health inequalities. Reasons for this may include:

- Individuals being reluctant to use health services because they do not want to burden the NHS or are anxious about the risk of infection.
- The health service delaying preventative and non-urgent care such as some screening services and planned surgery.
- Other indirect effects of interventions to control COVID-19, such as changes to employment and income, changes in access to education, social isolation, family violence and abuse, changes in the accessibility and use of food, alcohol, drugs and gambling, or changes in physical activity and transport patterns.

More detailed background information on these potential impacts is provided by the Scottish Public Health Observatory in a section on [Covid-19 wider impacts](#).

The surveillance work stream of the Public Health Scotland social and systems recovery cell aims to provide information and intelligence on the wider impacts of COVID-19 on health, healthcare, and health inequalities that are not directly due to COVID-19. The [wider impact dashboard](#) can be viewed online and includes the following topics:

- Hospital and unscheduled care; Accident and Emergency attendances; NHS 24 completed contacts; Out of hours cases; Scottish Ambulance Service; Excess deaths and Outpatient appointments
- Healthcare for cardiovascular disease; Cancer and Injuries
- Healthcare for mental health
- Women booking antenatal care and Termination of pregnancy
- Healthcare for birth and babies and Child health

- Substance use

These analyses are based on a selected range of data sources that are available to describe changes in health service use in Scotland during the COVID-19 pandemic. More detailed information is available at NHS Board and Health and Social Care Partnership (HSCP) level.

Contact

Public Health Scotland

phs.covid19data&analytics@phs.scot

Further Information

COVID surveillance in Scotland

Scottish Government

Dashboard by Public Health Scotland

National Records Scotland

UK and international COVID reports

Public Health England

European Centre for Disease Prevention and Control

WHO

Weekly National Seasonal Respiratory Report:

[Weekly national seasonal respiratory report - Week 37 2022 - Weekly national seasonal respiratory report - Publications - Public Health Scotland](#)

Next Release

The next release of this publication will be 05 October 2022.

Open Data

Data from this publication is available to download from the [Scottish Health and Social Care Open Data Portal](#).

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Appendices

Appendix 1: Testing Policy in 2022

Please note the following changes to testing policy in 2022:

- Prior to 05 January 2022, reported cases consisted only of positive Polymerase Chain Reaction (PCR) tests
- From 05 January 2022, reported cases included both PCR and Lateral Flow Device (LFD) positive tests. See [here](#) for more information
- From 01 March 2022, reported cases included episodes of reinfection at least 90 days after initial infection. Prior to this date, COVID-19 cases were based on an individual's first positive test only. More information is available on the PHS website [here](#)
- From mid-April 2022, as part of the Scottish Government's **Test and Protect transition plan**, asymptomatic testing was no longer recommended
- Symptomatic PCR testing was still available, and LFD testing was still encouraged for hospital and care home visitors, those who had been in close contact with a case and to allow cases to finish their isolation after 7 days
- 01 May 2022 marks the beginning of updated testing policy. The purpose of COVID-19 testing has now shifted from population-wide testing to reduce transmission, to targeted testing. Therefore, reported cases will primarily include clinical care settings, health and social care workforce, surveillance and outbreak response

Appendix 2: Wastewater Analysis Notes

In May 2020, the Scottish Environment Protection Agency (SEPA) began exploratory work to pinpoint fragments of coronavirus' ribonucleic acid (RNA) in local wastewater

samples. In contrast to COVID-19 case records, virus shedding into wastewater is a biological process, meaning wastewater data is unaffected by factors that impact whether testing is done. Sewage samples are taken by Scottish Water from 116 sample sites across Scotland from the sewage network (wastewater treatment works). Composite samples are built up over a period of time. The amount of unique fragments of viral DNA within known volumes of the sample is calculated, outputting a number which can be used to calculate the number of COVID markers in each sample which is reported as million gene copies per litre (Mgc/p/d). Site level wastewater level can show substantial degree of variability, especially when prevalence of COVID-19 is high. An average and standard deviation is taken for three samples. Household drainage water is mixed with water from other urban sources, meaning composite samples will contain rainwater which dilutes the sample. Therefore, this variability is accounted for by controlling for rainfall.

Appendix 3: Notes

Case Definition

From 01 March 2022, PHS now include episodes of reinfection within COVID-19 reporting. Prior to this date COVID-19 cases were based on an individual's first positive test result only. The new daily calculation includes both new infections and possible reinfections. Possible reinfections are defined as individuals who tests positive, by PCR (polymerase chain reaction) or LFD (lateral flow device), 90 days or more after their last positive test. This update to reporting will ensure that PHS's surveillance data reflects underlying transmission rates. More information is available on the PHS website [here](#).

RAPID (Rapid and Preliminary Inpatient Data)

Hospital admissions 'with' COVID-19 are defined as: A patient's first positive PCR or LFD test of the episode of infection (including reinfections at 90 days or more after their last 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.

The number reported does not take into account the reason for hospitalisation. Therefore, people that were admitted for a non-COVID-19 related reason (and tested positive upon admission) may be included.

RAPID is a weekly submission of people who have been admitted and discharged to hospital. From 27 June 2022, RAPID submissions are made on a weekly basis. This change has been made as the pandemic has moved away from the emergency response to effective management of the virus, so Health Boards have returned to pre-pandemic submission schedules.

Hospital admissions for the most recent week may be incomplete for some Boards and should be treated as provisional and interpreted with caution. Where no data are available at the time of publication, the number of admissions for the previous week will be rolled forward for affected Boards. Missing data will either be due to a board not submitting on time or there being zero COVID-19 admissions in the latest week. These provisional data will be refreshed the following week.

Further, figures are subject to change as hospital records are updated. It can take on average 6-8 weeks before a record is finalised, particularly discharge details.

These data include admissions to acute hospitals only and do not include psychiatric or maternity/obstetrics specialties. In the data presented here, an admission is defined as a period of stay in a single hospital. There may be multiple admissions for a single patient if they have moved between locations during a continuous inpatient stay (CIS), or if they have been admitted to hospital on separate occasions.

Hospital Inpatients

Number of patients in hospital with recently confirmed COVID-19, identified by their first positive LFD test (from 5 January 2022) or PCR test. This measure (available from 11 September 2020 and first published 15 September 2020) includes patients who first tested positive in hospital or in the 14 days before admission. Patients stop being included after 28 days in hospital (or 28 days after first testing positive if this is after admission). Further background on this new approach is provided in [this Scottish Government blog](#).

This is based on the number of patients in beds at 8am the day prior to reporting, with the data extract taken at 8am on the day of reporting to allow 24 hours for test results to become available. If boards have not submitted by 8am on Monday, the most recent available data will be rolled over and used as a proxy for the missing dates. Where a patient has not yet received a positive test result they will not be included in this figure. Patients who have been in hospital for more than 28 days and still being treated for COVID-19 will stop being included in this figure after 28 days.

All patients in hospital, including in intensive care, and community, mental health and long stay hospitals are included in this figure.

ICU Admissions

COVID-19 related ICU admissions have been identified as the following: A patient who has tested positive for COVID at any time in the 21 days prior to admission to ICU, or who has tested positive from the date of admission up to and including the date of ICU discharge.

ICU Occupancy

Clinical diagnosis of COVID-19 comprises patients admitted with a clinical diagnosis of confirmed or suspected COVID-19 disease recorded in WardWatcher regardless of SARS-CoV-2 PCR test status. The clinical diagnosis is the main reason that the patient is admitted to ICU and is coded by ICU clinicians.

SARS-CoV-2 PCR +ve with non-COVID-19/unknown diagnosis comprises patients with a positive SARS-CoV-2 PCR test who have been admitted with a non-COVID-19 clinical diagnosis or missing diagnosis recorded in WardWatcher at the time of data extraction. Less than 5% of all patients in this group have an unknown diagnosis at the time of data extraction, although this proportion is likely to be higher in the most recent week.

Non-COVID-19 clinical diagnosis comprises patients with a negative SARS-CoV-2 PCR test and who have been admitted with a non-COVID-19 clinical diagnosis recorded in WardWatcher.

Unknown clinical diagnosis comprises patients with a negative SARS-CoV-2 PCR test who are missing a clinical diagnosis recorded in WardWatcher at the time of data extraction. Please see the most recent [Scottish Intensive Care Society Audit Group COVID-19 report](#) for more information.

Appendix 4: Early Access Details

Pre-Release Access: Under terms of the “Pre-Release Access to Official Statistics (Scotland) Order 2008”, PHS is obliged to publish information on those receiving Pre-Release Access (“Pre-Release Access” refers to statistics in their final form prior to publication). The standard maximum Pre-Release Access is five working days. Shown below are details of those receiving standard Pre-Release Access.

Standard Pre-Release Access:

Scottish Government Health Department

NHS Board Chief Executives

NHS Board Communication Leads