Coronavirus (COVID-19): Analysis

State of the Epidemic in Scotland – 24th September 2021

Background

This report summarises the current situation on the Covid-19 epidemic in Scotland. It brings together the different sources of evidence and data about the epidemic in Scotland at this point in time, why we are at that place, and what is likely to happen next. This summarises the data up to and including 23 September 2021 on Covid-19 in Scotland. This updates the previous publication published on 17 September 2021[1]. The information in this document helps the Scottish Government, the health service and the wider public sector respond to the epidemic and put in place what is needed to keep us safe and treat people who have the virus.

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

Please note that Public Health Scotland experienced technical issues that affected data availability on 16 September 2021. Cases reported on 17 September were based on a 48 hour period and figures provided on 17, 18 and 19 September are not directly comparable to other dates.

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

Key Points

- The reproduction rate R in Scotland, as of 7 September, is estimated as being between 0.8 and 1.1. This is a decrease in the lower and upper limits from last week.
- An average of 4,127 cases were reported per day in the 7 days to 23 September, which is a 21% decrease in reported cases since 15 September.
- There were 458 weekly cases per 100,000 in the week to 20 September (by specimen date), which is a decrease since last week. This is now lower than the most recent peak (824 weekly cases per 100,000 on 6 September) but higher than the peak in July (425 weekly cases per 100,000 recorded on 3 July).
- Case rates have decreased across all age bands in the week to 20 September. As of 20 September, the highest case rates were observed amongst under 20s, followed by 40-59, 20-39, 60-79 and 80+.
- As determined through the latest weekly ONS survey, the estimated proportion of people becoming infected with SARS-CoV-2 in the community in Scotland appears to have levelled off in the last week (week ending 18 September 2021).
- Latest modelled estimates suggest that as of 7 September there were between 219 and 394 new daily infections per 100,000 people in Scotland. This is an increase in the lower and upper limits since last week.
- There were 135 deaths registered in Scotland where coronavirus was mentioned on the death certificate in the week ending 19 September.
- Hospital admissions related to Covid-19 in children are the highest since the start of the pandemic.
- West Dunbartonshire currently has the highest weekly case rate in Scotland reporting 745 cases per 100,000 in the week to 20 September, followed by North Lanarkshire with 620 weekly cases per 100,000, and South Ayrshire with 596 weekly cases per 100,000. All local authorities reported over 100 weekly cases per 100,000 population in the last week. Orkney reported the lowest case rate with 107 weekly cases per 100,000 in the same period.
- Nationwide, levels of Covid-19 in wastewater have fallen since the previous week.
- Hospital and ICU occupancies have plateaued. The scale of any future increase or decrease in hospital occupancy and intensive care use is highly uncertain, and depends on the number of infections.

- Over 4.1 million people in Scotland have been given a first vaccine against SARS-CoV-2, and over 3.8 million have received a second dose by 23 September.
- The Delta variant of concern (VOC-21APR-02, first identified in India), remains the dominant strain in Scotland.

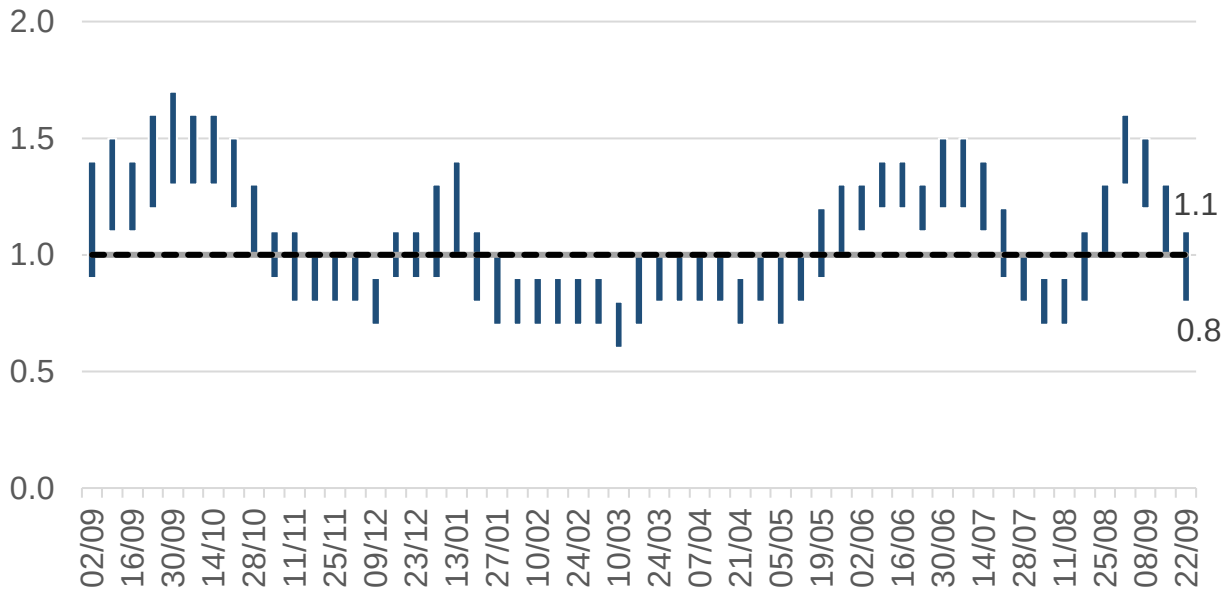
Method

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

The national picture

The latest R value for Scotland, as of 7 September (published on 23 September and using data to 20 September)[2], was between 0.8 and 1.1 (Figure 1), with a growth rate of between -3% and 2%. This is a decrease in the lower and upper limits from last week.

Figure 1: R in Scotland over time

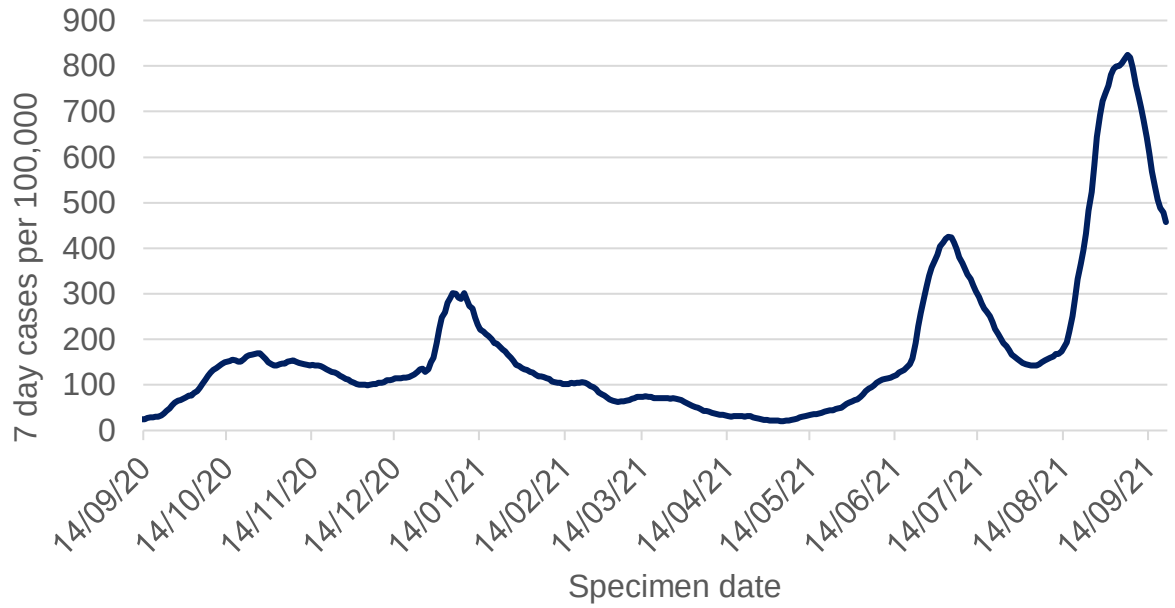


[2] Scottish Government: Coronavirus (COVID-19): modelling the epidemic - gov.scot (www.gov.scot)

An average of 4,127 cases were reported per day in the 7 days to 23 September. This is a 21% decrease from the daily average cases recorded a week earlier to 15 September[3]. In the week 11-17 September 2021, there were 804 cases (PCR testing only) per 100,000 amongst the unvaccinated individuals, compared to 325 cases per 100,000 for those that had been vaccinated with two doses[4]. Our current position is 458 weekly cases per 100,000 in the week to 20 September (by specimen date)[5]. This is lower than the most recent peak of 824 weekly cases per 100,000 on 6 September but higher than the previous peak of 425 weekly cases recorded on 3 July (see Figure 2).

The number of locations where the levels of SARS-CoV-2 in wastewater are monitored has increased to 110 sites around Scotland. In contrast to Covid-19 case records, virus shedding into wastewater is a biological process. This means that wastewater data is unaffected by factors that impact whether testing is done. Nationwide, levels of Covid-19 in wastewater have fallen since the previous week.

Figure 2: Seven day case rate for Scotland by specimen date. Refers to PCR testing only.



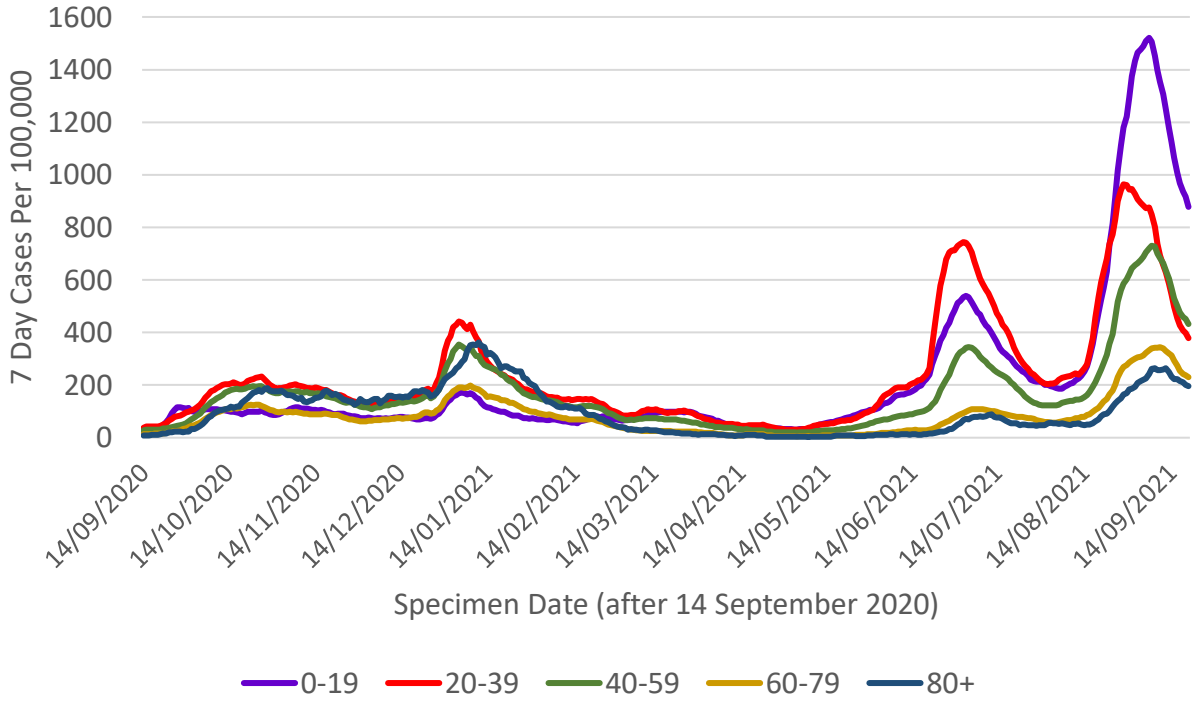
[3] Scottish Government: https://www.gov.scot/publications/coronavirus-covid-19-daily-data-for-scotland/
Due to technical issues data was not available on 16 September and figures provided on 17, 18 and 19 September are not directly comparable to other dates, therefore, users should exercise caution when making week on week comparisons between the period 9-15 September to 17-23 September. For more information see https://www.gov.scot/publications/coronavirus-covid-19-daily-data-for-scotland/

[4] Public Health Scotland COVID19 statistical report

[5] Public Health Scotland Covid dashboard: https://public.tableau.com/profile/phs.covid.19#!/vizhome/COVID-19DailyDashboard_15960160643010/Overview

Case rates have decreased across all age bands in the week to 20 September. As of 20 September, the highest case rates were observed amongst under 20s, followed by 40-59, 20-39, 60-79 and 80+ (Figure 3).

Figure 3: Seven day case rate in Scotland by age group by specimen date[6]. Refers to PCR testing only.



Not everyone who has the virus will be tested, as many people do not realise they have Covid-19, or they have mild symptoms and do not come forward. Latest modelled estimates suggest that, as at 7 September, the incidence of new daily infections in Scotland was between 219 and 394 new infections per 100,000[7]. This equates to between 12,000 and 21,500 people becoming infected each day in Scotland. This is an increase in the lower and upper limits since last week.

The number of people in hospital with confirmed Covid-19 for less than 28 days peaked at 2,053 on 22 January and decreased to a low of 58 on 6 May[8]. This has since increased and as of 23 September there were 1,057 patients in hospital with Covid-19. This compares to 1,054 people in hospital on 16 September. Daily hospital admissions for people with

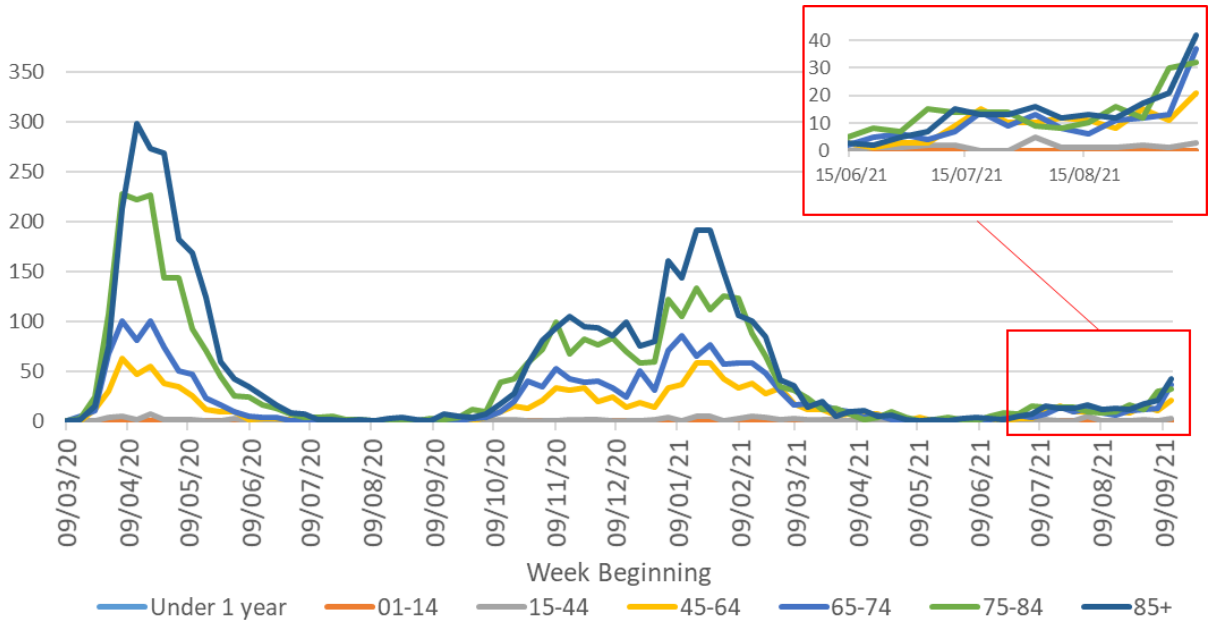
[6] Source: Public Health Scotland
[7] Scottish Government: Coronavirus (COVID-19): modelling the epidemic - gov.scot (www.gov.scot)
[8] Scottish Government: https://www.gov.scot/publications/coronavirus-covid-19-daily-data-for-scotland/

Covid-19 have increased from a low of 6 on 5 May and were at 89 on 19 September[9]. The latest data from PHS shows 938 admissions to hospital for people with confirmed COVID-19 in the week to 19 September compared to 1,085 in the week to 12 September[9]. In the 4 weeks to 17 September 34.1% of acute Covid-19 hospital admissions were in unvaccinated individuals[10]. For context, 91.8% of adults aged 18+ have had at least one dose of the vaccine and vaccinated figures include the elderly and vulnerable groups. Overall, individuals in the oldest age groups were most likely to be hospitalised. In all age groups, the rate of admissions per 100,000 was higher in unvaccinated individuals compared to fully vaccinated individuals in the week to 17 September. Unvaccinated individuals were 3 to 4 times more likely to be in hospital with Covid-19[11].

There were 135 deaths registered where Covid-19 was mentioned on the death certificate in the week to 19 September. This is an increase of 57 (+73%) in the number of deaths from the previous week, and 80% lower than the peak in April 2020 (663 deaths). The proportion of deaths in care homes decreased from 60% in April 2020 to 11% in the week to 19 September, with 15 deaths occurring in care homes[12]. In the week ending 19 September, deaths involving coronavirus have increased in those aged 15-44 (from 1 to 3 deaths), 45-64 (from 9 to 21 deaths), 65-74 (from 11 to 37 deaths), 75-84 (from 16 to 32 deaths) and among those aged 85+ (from 12 to 42) compared to week ending 29 August. Deaths remained at 0 in those aged under 15 in the same period[13] (Figure 4). From 29 December 2020 to 10 September 2021, 83.1% of Covid-19 deaths were in unvaccinated individuals[14].

[9] Public Health Scotland dashboard: COVID-19 Daily Dashboard - PHS COVID-19 | Tableau Public
[10] Public Health Scotland COVID19 statistical report
[11] Public Health Scotland COVID19 statistical report
[12] NRS Scotland: https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/vital-events/general-publications/weekly-and-monthly-data-on-births-and-deaths/deaths-involving-coronavirus-covid-19-in-scotland
[13] ibid
[14] Public Health Scotland COVID19 statistical report

Figure 4: Deaths by age group (weekly total by week beginning, NRS)[12]



How Scotland compares with the rest of the UK

The ONS COVID-19 Infection Survey estimates that in the week 12 to 18 September 2021, the estimated percentage of the community population (private households) testing positive for COVID-19 in Scotland was 2.28% (95% credible interval: 1.92% to 2.69%). In Scotland, the percentage of people testing positive in the community appears to have levelled off in the most recent week from an estimated 2.29% in the week 5 to 11 September. Estimates for the same week in the other UK nations are as follows: 1.14% (95% credible interval: 1.06% to 1.22%) for England, 1.65% (95% credible interval: 1.24% to 2.14%)) for Northern Ireland and 1.67% (95% credible interval: 1.31% to 2.06%) for Wales. This equates to around 1 in 45 people in Scotland, 1 in 90 in England, 1 in 60 in Northern Ireland and 1 in 60 in Wales[15].

The ONS COVID-19 Infection Survey estimated that in the week beginning 23 August 2021, 93.3% (95% CI: 91.9% to 94.4%) of the adult community population in Scotland would have tested positive for antibodies against SARS-CoV-2, as a result of having the infection in the past or being vaccinated. This compares to 93.6% in England (95% CI:

[15] Office for National Statistics: https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/bulletins/coronaviruscovid19infectionsurveypilot/previousReleases

92.5% to 94.5%), 91.2% in Wales (95% CI: 89.5% to 92.7%) and 91.9% in Northern Ireland (95% CI: 88.4% to 94.0%)[16].

An estimated 1.5% of the community population in the UK were experiencing self-reported long Covid symptoms (symptoms persisting for more than four weeks after the first suspected coronavirus (Covid-19) infection that were not explained by something else) in the 4 weeks ending 1 August 2021. In Scotland, 74,000 people (1.41% of the respective population) living in private households self-reported long Covid symptoms for this period. This compares to 1.43% in Wales, 1.53% in England and 1.03% in Northern Ireland[17].

Average daily deaths in Scotland (4 per 1 million population) in the week to 23 September are above Northern Ireland (3 per 1 million), Wales (3 per 1 million), and England (2 per 1 million)[18]. Average daily cases in Scotland (755 per 1 million) in the week to 23 September are below Wales (817 per 1 million), but above Northern Ireland (572 per 1 million) and England (446 per 1 million)[16].

Situation by local authority within Scotland

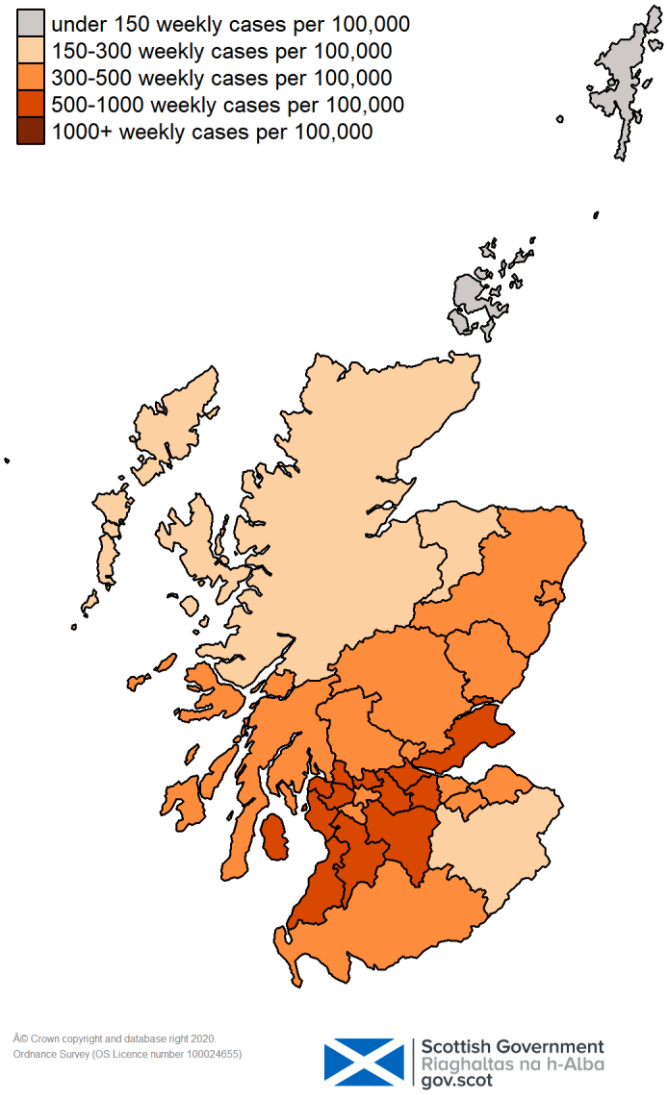
West Dunbartonshire currently has the highest weekly case rate in Scotland reporting 745 weekly cases per 100,000 in the week to 20 September, followed by North Lanarkshire with 620 weekly cases per 100,000, South Ayrshire with 596 weekly cases per 100,000, East Dunbartonshire with 594 weekly cases per 100,000, East Ayrshire with 581 weekly cases per 100,000, and Renfrewshire with 575 weekly cases per 100,000 population. All local authorities reported over 100 weekly cases per 100,000 population in the last week (Table 1). Case rates have decreased across most local authorities over the last week however there are still very high levels of case rates across Scotland (Figure 5). Orkney has the lowest case rate in Scotland, reporting 107 weekly cases per 100,000 in the week to 20 September[19].

[16] Office for National Statistics: Coronavirus (COVID-19) Infection Survey, antibody and vaccination data, UK - Office for National Statistics
[17] Office for National Statistics: https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/bulletins/prevalenceofongoingsymptomsfollowingcoronaviruscovid19infectionintheuk/2september2021
[18] UK Government: Deaths in the UK | Coronavirus in the UK (data.gov.uk)
[19] Public Health Scotland Covid dashboard: https://public.tableau.com/profile/phs.covid.19#!/vizhome/COVID-19DailyDashboard_15960160643010/Overview

Table 1: Total new weekly cases per 100,000 population to 20 September 2021, in order of prevalence

Local authority	Total new cases in the week, per 100,000 population	Change since previous week
West Dunbartonshire	745	-292
North Lanarkshire	620	-225
South Ayrshire	596	-105
East Dunbartonshire	594	-84
East Ayrshire	581	-145
Renfrewshire	575	-228
North Ayrshire	560	-214
Falkirk	526	-108
Inverclyde	516	-372
Fife	516	-199
Dundee City	512	-228
South Lanarkshire	509	-201
West Lothian	500	-263
Stirling	491	-150
Midlothian	491	-221
East Renfrewshire	488	-412
Glasgow City	483	-236
Clackmannanshire	476	-160
Aberdeenshire	437	-162
Argyll and Bute	409	-128
Perth and Kinross	381	-24
Aberdeen City	380	-134
Dumfries and Galloway	345	-82
City of Edinburgh	333	-225
East Lothian	307	-152
Angus	304	-126
Highland	293	-129
Scottish Borders	283	-140
Moray	207	-34
Na h-Eileanan Siar	166	53
Shetland Islands	122	-109
Orkney Islands	107	-94
Scotland	458	-185

Figure 5: Map of weekly new positive cases per 100,000 people in Scotland



The most recent modelling predicts, based on data up to 20 September, that for the week commencing 3 October 2021, there are 29 local authorities which are expected to exceed 50 cases per 100,000 population with at least 75% probability. Of these, 2 local authorities (South Ayrshire and Stirling) are expected to exceed 300 cases per 100,000 with at least 75% probability. There are no local authorities which are expected to exceed 500 cases per 100,000 population with at least 75% probability[20].

[20] Scottish Government: Coronavirus (COVID-19): modelling the epidemic - gov.scot (www.gov.scot)

Children and Education

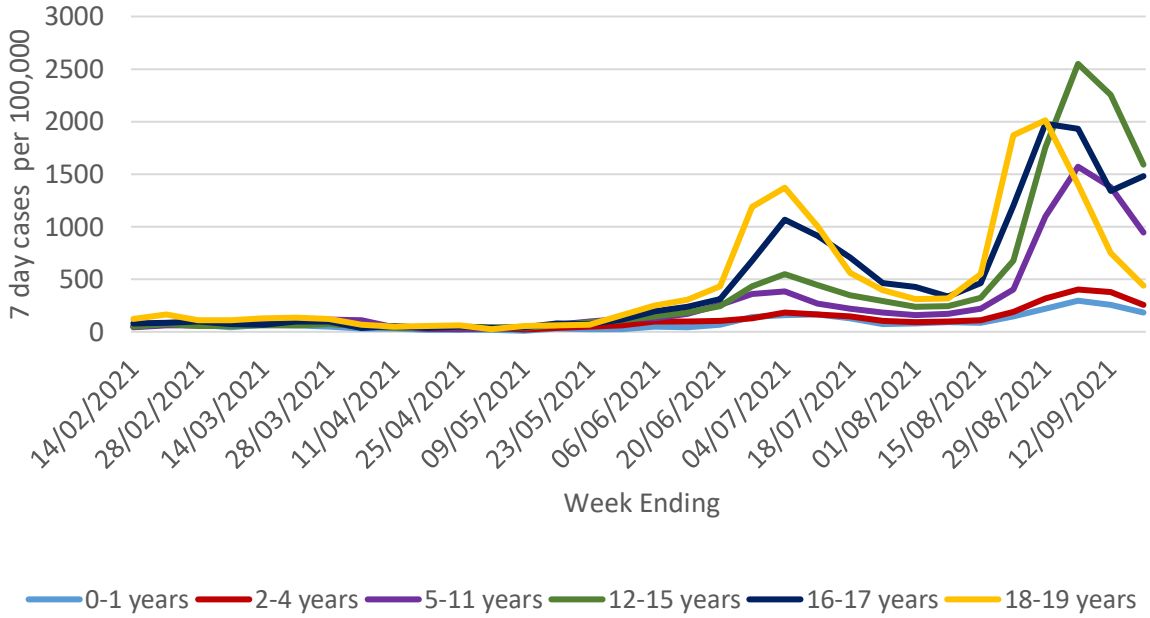
Schools have resumed in Scotland and the majority of children and young people had returned to full time education by the week ending 20 August.

Over the last week there was a decrease in the total number of Covid-19 cases in young people aged under 20, which has decreased from 14,268 cases in the week to 12 September to 10,428 cases in the week ending 19 September. 7 day cases per 100,000 have also decreased in all age groups in the week ending 19 September except for the 16-17 year olds (Figure 6). The percentage of cases made up of children under 12 was just under 44% (4,570 cases) compared to just under 47% (6,650 cases) in the previous week[21].

The rate of testing decreased amongst all age groups in the week ending 19 September. Test positivity rates have decreased in all age groups, except for 12-15 and 16-17 year olds in the same period. The proportion of positive cases who report having been in an education setting in the 7 day period prior to the onset of symptoms has increased slightly to 20.1% in week ending 19 September, from 18.3% of positive cases in the previous week. Hospital admissions (3 week rolling average) in children increased across all age groups except for 18-19 year olds in the period 26 August to 15 September compared to the previous three-week period (19 August – 8 September). Hospital admissions related to Covid-19 in children have risen for 4 consecutive weeks and are the highest since the start of the pandemic.

[21] Public Health Scotland: PHS COVID-19 Education report (shinyapps.io)

Figure 6: Seven day case rate in Scotland by age group by specimen date for children (week ending 19 September). Refers to PCR testing only.



Looking ahead

Changes in patterns of mixing and adherence to restrictions will impact on future case numbers. The Scottish Contact Survey measures times and settings that people mix where they could potentially spread Covid-19. Average contacts have decreased by 6% in the last two weeks (comparing surveys pertaining to 2 September - 8 September and 16 September - 22 September) with a current level of 5 daily contacts.

Contacts within the work have decreased by approximately 17% whereas contacts in the other setting (contacts outside home, school and work) have increased by 6% in the last two weeks. Contacts within the home have remained at a similar level over the same period.

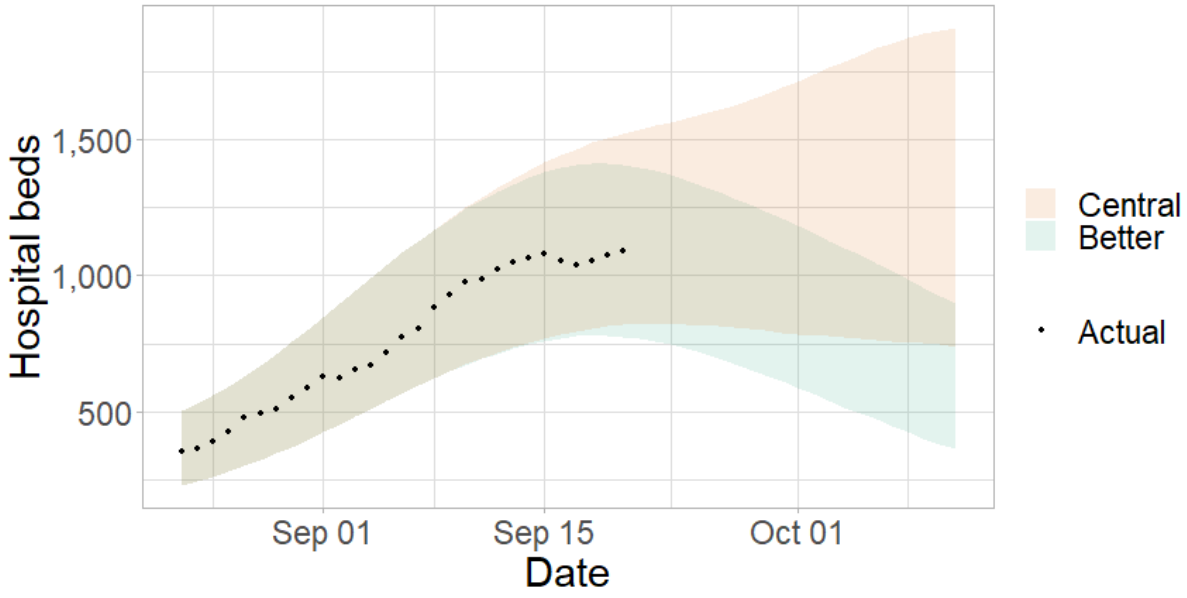
Although overall adult contacts have decreased, mean contacts for those within the 18-28 age group and individuals 60 and over have increased contacts within the last two weeks, all other age groups have reported a decrease by at least 17%. Increases in contacts are largely driven by contacts within the other setting (contacts outside home, school and work).

The proportion of individuals visiting a pub or restaurant increased from approximately 46% to 49% with individuals visiting a healthcare facility decreasing from 20% to 17% in the last two weeks.

Self-reported compliance with the current regulations and guidance has decreased since January but remains at a high level. On 21-22 September, 68% of people reported 'complete' or 'almost complete' compliance[22].

Hospital and ICU occupancies have plateaued. The scale of any future increase or decrease in hospital occupancy and intensive care use is highly uncertain, and depends on the number of infections (Figure 7)[23].

Figure 7: Medium term projections of modelled hospital bed demand, from Scottish Government modelling[24]



[22] Results are taken from questions run on behalf of Scottish Government on the YouGov online omnibus survey. The sample is demographically and geographically representative of adults 18+ across Scotland, with c. 1000 responses each week. Fieldwork took place on 21-22 September with a total sample size of 1005 adults. 'Complete' or 'almost complete' compliance refers to respondents who rated themselves 6 or 7 on a scale of 1-7 for the question: *Thinking about ALL of the guidance on what to do and what not to do during the Coronavirus pandemic (including distancing, protection measures and all restrictions)...On a scale of 1-7, where 1 is 'Not at all' and 7 is 'Completely', to what extent do you feel you are following the regulations and guidance?*

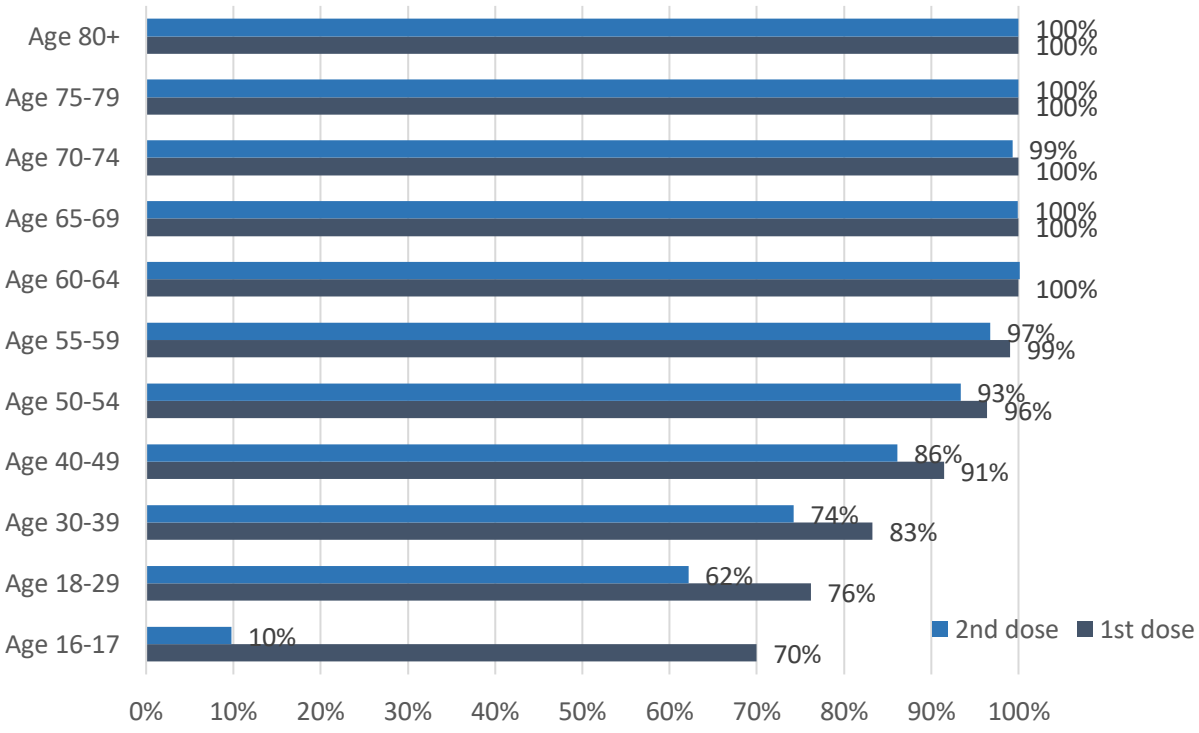
[23] Scottish Government: Coronavirus (COVID-19): modelling the epidemic - gov.scot (www.gov.scot)

[24] The difference between the scenarios: 'Central' assumes that infections have plateaued. 'Better' assumes that infections continue to fall. This week only 'Better' and 'Central' scenarios have been included as there has been an improvement and 'Worse' is less likely. 'Worse' may return in future projections. All scenarios are based on current vaccine roll-out plans and efficacy assumptions.

Vaccinations are continuing across the priority groups and 91.2% of the 16+ population in Scotland has now been vaccinated with the first dose[25]. The first vaccines were administered on Tuesday 8 December and 4,166,056 people had received their first dose by 23 September 2021[26]. By age group, almost 100% of individuals aged 55+, 96% of those aged 50-54, 91% of those aged 40-49, 83% of those aged 30-39, 76% of those aged 18-29, and 70% of those aged 16-17 have received their first vaccination (Figure 8).

Almost 100% of individuals aged 60+, 97% of those aged 55-59, 93% of those aged 50-54, 86% of those aged 40-49, 74% of those aged 30-39, 62% of those aged 18-29, and 10% of those aged 16-17 have received their second dose. Overall, 3,818,428 people (83.9% of those aged 16 and over) had received their second dose by 23 September[27]. There remains a low level of deaths amongst the vaccinated individuals (Figure 4).

Figure 8: Estimated percentage of adults vaccinated by 23 September 2021



[25] Scottish Government: Coronavirus (COVID-19): modelling the epidemic - gov.scot (www.gov.scot)
[26] Scottish Government: https://www.gov.scot/publications/coronavirus-covid-19-daily-data-for-scotland/
[27] Public Health Scotland Covid dashboard: https://public.tableau.com/profile/phs.covid.19#!/vizhome/COVID-19DailyDashboard_15960160643010/Overview

The proportion of people surveyed who said they have been vaccinated for Covid-19 is high. 91% of all respondents have already received at least their first vaccine dose. Of those not vaccinated (and small base must be noted), 13% report they are likely to be vaccinated when a vaccine becomes available to them[28].

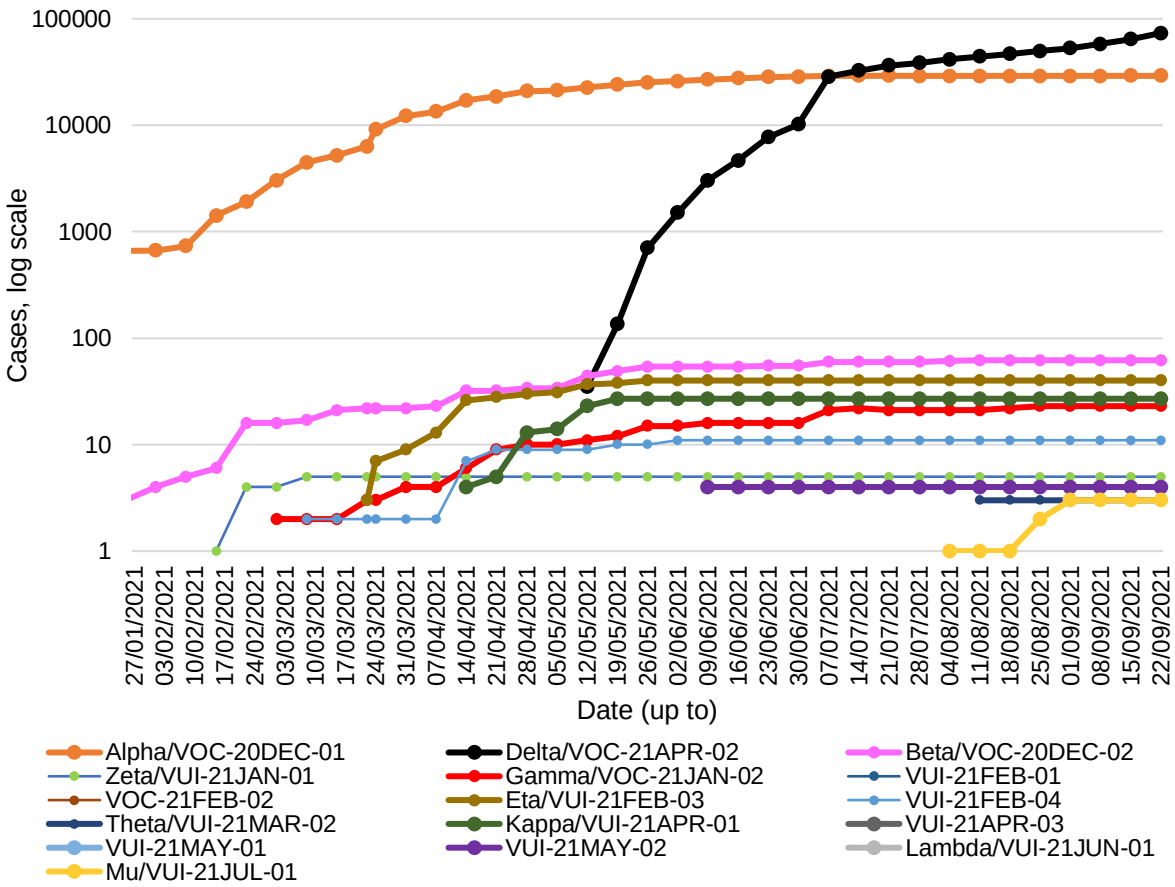
How the virus is changing

The variant of concern Delta, also referred to as VOC-21APR-02 (first identified in India) is more transmissible than Alpha variant [29] [30] [31]. It quickly replaced Alpha (VOC-20DEC-01), first identified in the UK, as the dominant strain in Scotland, and 73,496 cases have now been identified as Delta to 22 September 2021.

To date there are five 'variants of concern' (VOCs) and eleven 'variants under investigation' (VUIs)[32]. There is a concern that some of these new variants may partially escape immunity, from both natural infection and from vaccines currently being deployed and we are monitoring the evidence on this[33] [34] [35]. Up to 22 September there have been 62 genomically confirmed cases of the variant Beta/VOC-20DEC-02 (first detected in South Africa), and 23 cases of Gamma in Scotland. Genomically confirmed cases of other VOCs and VUIs remain low, there have been no new cases of other VOCs or VUIs in the last week (Figure 10). There remains uncertainty regarding the impact of the Delta variant on severity of illness, treatment or reinfections. As more data is analysed we shall become more certain of the impact of Delta on infections, hospitalisations and disease severity and long term vaccine protection effects.

[28] Source: YouGov online survey. Total sample size on 21-22 September was 1005 adults. Sample size for those who have not yet received their first vaccine was 56 adults. *'Likely' to be vaccinated refers to respondents who rated themselves 8 to 10 on a scale of 0-10 for the question: How likely or unlikely are you to be vaccinated for COVID-19 when a vaccine becomes available to you? (Please select a number between 0 and 10, where 0 means 'extremely unlikely' and 10 means 'extremely likely')*
[29] S1236_Eighty-nineth_SAGE.pdf (publishing.service.gov.uk)
[30] Risk assessment for SARS-CoV-2 variant: VOC-21APR-02 (B.1.617.2) (publishing.service.gov.uk)
[31] S1284_SAGE_92_minutes.pdf (publishing.service.gov.uk)
[32] Variants: distribution of cases data - GOV.UK (www.gov.uk)
[33] Brief note on SARS-CoV-2 variants (publishing.service.gov.uk)
[34] Brief note on SARS-CoV-2 B.1.351 - 27 January 2021 (publishing.service.gov.uk)
[35] Brief note on SARS-CoV-2 variant of concern P.1 (publishing.service.gov.uk)

Figure 9: Variants detected in Scotland by sequencing (data up to 22 September and reported weekly[36]



How well vaccines work

A large study from the University of Oxford and Office of National Statistics shows that with Delta, Pfizer-BioNTech and Oxford-AstraZeneca vaccines still offer good protection against new infections, but effectiveness is reduced compared with Alpha[37]. Public Health England analysis shows that vaccines are highly effective against hospitalisation from Delta variant with similar vaccine effectiveness against hospitalisation seen with the Alpha and Delta variants at 93% and 96% respectively after two doses of vaccine. There was a 14% absolute reduction in vaccine effectiveness against symptomatic disease after a single vaccine dose with Delta compared to Alpha, and a smaller 10% reduction in effectiveness after 2 doses. Vaccine effectiveness against symptomatic disease is high for both Alpha (89%) and Delta after two doses (79%)[38]. EAVE II data from Scotland also shows that

[36] Variants: distribution of cases data - GOV.UK (www.gov.uk)
[37] New studies — Nuffield Department of Medicine (ox.ac.uk)
[38] COVID-19 vaccine surveillance report - week 34 (publishing.service.gov.uk)

both the Oxford–AstraZeneca and Pfizer–BioNTech Covid-19 vaccines are effective in reducing the risk of SARS-CoV-2 infection and Covid-19 hospitalisation in people with the Delta variant, but effectiveness against infection appeared to be diminished when compared to those with Alpha[39]. The vaccine effectiveness expert committee recently published their consensus view on the effectiveness of different vaccines on infections, symptomatic disease, and severe disease [40].

Next steps

The Scottish Government continues to work closely with Public Health Scotland and modelling groups to monitor what happens following the high number of cases in Scotland this week and how this effects the course of the epidemic.

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

Modelling can tell us where the epidemic is likely to be heading. Local data and data by age group can highlight where problems arise, which can help in addressing some of these issues. In the coming weeks the roll out of the vaccine will continue to be monitored along with the impact of this on case rates and deaths among different age cohorts. Investigations are ongoing by NERVTAG, SPI-M, SAGE, Public Health England and Public Health Scotland regarding the impact of new variants and of vaccination; this will be reflected here as work is undertaken.

[39] SARS-CoV-2 Delta VOC in Scotland: demographics, risk of hospital admission, and vaccine effectiveness - The Lancet
[40] VEEP: Vaccine effectiveness table, 27 August 2021 - GOV.UK (www.gov.uk)

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