Public Health Scotland COVID-19 Statistical Report

As at 13 July 2020

REVISION DATE: 22 JULY 2020
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Introduction

On 1 March 2020, the first person in Scotland was tested positive for COVID-19. On 17 March NHS Scotland was placed in an emergency footing by the Cabinet Secretary. Schools have been closed since 20 March and the country has been in lockdown since 23 March. Scotland entered phase one of easing out of lockdown on Friday 29 May, phase two on Friday 19 June and phase three on Friday 10 July.

Since 15 June 2020, Public Health Scotland publishes the total number of results, positive and negative, carried out across any NHSScotland Laboratories and UK Government Regional Testing Centres.

Since the start of the outbreak Public Health Scotland (PHS) has been working closely with Scottish Government and health and care colleagues in supporting the surveillance and monitoring of COVID-19 amongst the population.

This report shows the trends of the number of positive COVID-19 tests in Scotland, and looks at some of the wider impacts of the virus on the healthcare system, comparing recent trends in activity with historic norms. Since 17 June 2020 the report includes data on Test and Protect.

There is a large amount of data being regularly published regarding COVID-19 (for example, Coronavirus in Scotland – Scottish Government and Deaths involving coronavirus in Scotland – National Records of Scotland). This report complements the range of existing data currently available.

The coronavirus pandemic is a rapidly evolving situation. This report provides an analysis of the data up to 13 July 2020. Future reports will provide further data and analysis to contribute to the evidence base around the outbreak.

This publication was revised on 22nd July 2020, this is due to a processing error. Data for NHS Grampian within the test and protect section was report incorrectly. Numbers reported were cumulative instead of weekly.
Main Points

- Between 28 May to 11 July 2020, 864 individuals were recorded in the contact tracing software, from which 2,362 contacts have been traced.

- As at 12 July 2020, there have been 18,365 confirmed COVID-19 cases, equating to 336 confirmed cases per 100,000 population.

- Between 1 March 2020 and 9 July 2020, there had been 5,939 admissions to hospital with a laboratory confirmed test of COVID-19.

- As at 12 July 2020, 528 confirmed COVID-19 patients have been treated in an Intensive Care Unit.

- As at 12 July 2020, 284,447 people in Scotland have tested negative.

- There is emerging evidence of increased risks of serious illness due to COVID-19 in those of South Asian origin, particularly in relation to those needing critical care or dying with 28 days of a positive test.
Public Health Scotland

Results and Commentary

Test and Protect

On 26 May 2020, the Scottish Government set Test and Protect - Scotland’s approach to implementing the ‘test, trace, isolate, support’ strategy. This strategy is designed to minimise the spread of COVID-19.

Public Health Scotland is working closely with the Scottish Government to implement ‘Test and Protect’. Since 28 May 2020, once an individual receives a positive result, a team of contact tracers will then gather details on individuals who have been in contact with the person who tested positive. The contact tracers will then proceed to contact these individuals and advise them to isolate.

The data within this report is the number of contacts which are recorded in the contact tracing software. The figures presented below are developmental and may be updated in subsequent publications. A case is generated by a positive test however an individual can have multiple tests, and all positive results are reported to the contact tracing system so that each result can be assessed by the contact tracer and followed up as required. In many cases, there is no follow up for a repeat positive test (because the person was already contact traced when their first positive result was reported). To reflect this, as of this publication, test and protect data now includes details on the number of individuals whose positive test resulted in contact tracing being undertaken. The number of individuals who tested positive is also more comparable with the figures given in the COVID-19 Confirmed Cases section of this report, which reports on new positive cases.

From 28 May to 12 July 2020, the test and protect figures are:

Cases* – 1,589 (of which 1,555 have completed contact tracing)

Individuals** - 864

Contacts traced – 2,362

*A case is generated for each positive result with a test date on or after 28 May. This includes tests derived from Scottish laboratories and from UK Government laboratories.

**An individual is a unique person whom has had a positive test. An individual can have multiple positive tests which results in multiple cases within the test and protect system. In these figures, each person is only counted once.

Data by NHS Board is presented in Table 1 for the most recent two weeks. Table 1 shows the number of individuals and the number of contacts by NHS Board. Note that the number of positive cases of COVID-19 in Scotland is low. Therefore, comparisons between NHS Boards should be made with caution due to the small numbers involved and the variation in complexity of cases which the Boards are dealing with at any point in time (e.g. some case will be straight-forward with a low number of contacts to be traced; others will be more complex with a higher number to be traced). These figures will be updated in subsequent weeks to incorporate any additional contacts who had not had their tracing completed by the time the analysis was undertaken.
Table 1: Number of individuals and the number of contacts by NHS Board

<table>
<thead>
<tr>
<th>NHS Board</th>
<th>Week of first positive result</th>
<th>5 Jul – 11 Jul</th>
<th>28 Jun – 04 Jul</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Individual</td>
<td>Contacts</td>
<td>Individual</td>
</tr>
<tr>
<td>Ayrshire &amp; Arran</td>
<td>*</td>
<td>11</td>
<td>*</td>
</tr>
<tr>
<td>Borders</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Dumfries &amp; Galloway</td>
<td>*</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>Fife</td>
<td>*</td>
<td>1</td>
<td>*</td>
</tr>
<tr>
<td>Forth Valley</td>
<td>8</td>
<td>22</td>
<td>8</td>
</tr>
<tr>
<td>Grampian</td>
<td>*</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>Greater Glasgow &amp; Clyde</td>
<td>21</td>
<td>55</td>
<td>11</td>
</tr>
<tr>
<td>Highland</td>
<td>*</td>
<td>12</td>
<td>*</td>
</tr>
<tr>
<td>Lanarkshire</td>
<td>6</td>
<td>17</td>
<td>7</td>
</tr>
<tr>
<td>Lothian</td>
<td>7</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>Orkney</td>
<td>0</td>
<td>0</td>
<td>*</td>
</tr>
<tr>
<td>Shetland</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Tayside</td>
<td>*</td>
<td>9</td>
<td>*</td>
</tr>
<tr>
<td>Western Isles</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Scotland</td>
<td>54</td>
<td>153</td>
<td>62</td>
</tr>
</tbody>
</table>

* Denotes data which has been suppressed due to risk of disclosure.

Figures for 5 July – 11 July are provisional and will be updated in next week’s publication. Figures for 28 June to 4 July have been updated since last week.

Data is extracted Sunday 12 July 2020 at 8pm. Data relates to tests up to 11 July 2020. Weekly data presented from Sunday to Saturday to allow a 24-hour contact period. Figures are provisional and may change as the test and protect tool is updated by contact tracers.

**Future publication plans**

Public Health Scotland are currently working with NHS Boards to introduce a new Case Management System (CMS) for contact tracing in Scotland. NHS Boards are migrating to the new CMS during July and PHS will be increasing the level of information presented during August 2020 (PHS will confirm the exact date in future weekly reports). The CMS will enable a greater level of granularity in the data available to us about contact tracing, including the demographics (for example age, sex, deprivation status) of individuals, and information on the time taken to reach individuals who had tested positive and whose case had been transferred to contact tracing, and time taken to reach their contacts.
COVID-19 Confirmed Cases

This part of the report contains information on positive and negatives cases of COVID-19 that have been confirmed by testing carried out through NHSScotland laboratories and now include those testing at a Regional Testing Centre (RTC) as part of the UK Government testing programme. This includes tests done at the drive through centres, mobile units, and home testing kits.

The total number of people within Scotland who have, or have had COVID-19, since the coronavirus outbreak began is unknown. The number of confirmed cases is likely to be an underestimate of the total number who have, or have had, COVID-19.

As the number of people being tested for COVID-19 increases, the pattern observed in the data within this report may change.

As at 12 July 2020;

• There have been 18,365 people in Scotland who have tested positive, at any site in Scotland (NHS and UK Government Regional Testing centres), for COVID-19 since the start of the outbreak.
• This equates to 336 people per 100,000 population having tested positive for COVID-19.
• There have been 284,447 people in Scotland who have tested negative, at any site in Scotland (NHS and UK Government Regional Testing Centres), since the start of the outbreak.

A person can have multiple tests but will only ever be counted once.

The numbers of confirmed COVID-19 cases, on both a daily and cumulative basis, are shown in Figure 1 and Figure 2 respectively. Figure 1 shows a decreasing 7-day moving average for positive cases across Scotland. There has been a decreasing trend since 23 April 2020 with a current 7-day moving average of around 8.3 cases. This data is monitored and published daily on the Scottish Government Coronavirus website (https://www.gov.scot/coronavirus-covid-19/). The drop in the number of confirmed cases at weekends likely reflects that laboratories are doing fewer tests at the weekend.

*Note that the number of confirmed cases shown for each day may differ slightly from data published on the Scottish Government website. This is because the data below has some cases added retrospectively and assigned to days based on the most up to date records. This has no impact on the overall number of confirmed cases.*
Figure 1: Epidemic curve for first laboratory positive sample for COVID-19 cases by date of specimen with 7 day rolling average (includes NHS Laboratory and UK Govt testing centre data)

Note: Specimen date was not available for historical UK Government Regional Testing centres data between 15 and 25 April. As a sample date is required to report in ECOSS (Electronic Communication of Surveillance in Scotland) these samples were assigned a specimen date in the mid-point within this date range (20 April).

Note: Date refers to the date the sample was received into the PHS Surveillance System.

Figure 2: Cumulative number of confirmed cases

Note: Date refers to the date the sample was received into the PHS Surveillance System.
COVID-19 Admissions into Hospital

This section looks at the profile of admissions into hospital for patients who were either COVID-19 positive up to 14 days before their admission or had a positive result during their stay. COVID-19 related admissions have been identified as the following:

*A patient may have tested positive for COVID-19 14 days prior to admission to hospital, on the day of their admission or during their stay in hospital.*

If a patient has tested positive after their date of discharge from hospital, they have not been included in the analysis. On 1st July 2020, NSS as part of the PHS COVID-19 response published a [report on COVID-19 hospital onset cases in Scotland](#).

Please note that babies admitted to neonatal care or pregnant women admitted to maternity/obstetric settings are not included in this analyses as they are not captured via the RAPID dataset. Data now includes admission to Golden Jubilee National Hospital.

Between 1 March 2020 and 9 July 2020, there had been 5,939 admissions to hospital based on the above definition.

Daily profile of admissions into hospital

Figure 3 shows the daily profile of admissions into acute hospitals. *Data are correct as at the time of data extract at 9am on Sunday 12 July 2020. Data are reviewed and validated on a continuous basis and so may be subject to change.*

**Figure 3: Daily profile of Hospital Admission for those with a positive COVID-19 result and 7 day moving average up to 9 July 2020**
The number of daily admissions increased sharply from 22 March 2020 to more than 200 admissions per day during the 1st week of April. Since then the number of admissions per day into hospital has reduced and, in the two weeks up to 9 July 2020 the average was around 1 admission per day.

Note that there may be a time lag with some data for the most recent days and some of the above figures may change as more data is submitted. Data now includes any positive cases from NHS Laboratories or UK Government regional testing sites.
Patients in Intensive Care

COVID-19 varies in severity from very mild symptoms through to those requiring hospital admission and the most ill who require intensive care treatment and supported ventilation. This section looks at the age and sex profile of those patients who have been admitted into Intensive Care Units (ICU).

Note that this analysis does not include patients in High Dependency Unit (HDU) wards. As this data becomes available, this will be further analysed and published. Also, this analysis only contains adult ICU information.

A total of 528 COVID-19 patients had been admitted into ICU with some staying for more than two weeks.

A report by the Scottish Intensive Care Audit Group (SICSAG) has been published on the Public Health Scotland website. This report provides a more detailed analysis of patients being treated in intensive care units.

Figure 4 shows the trend of patients who in ICU (up to 12 July 2020) with a confirmed laboratory test for COVID-19.

**Figure 4: Number of New COVID-19 Patients Admitted to ICUs, 11 March to 09:00 12 July 2020 (n=528)**

![Graph showing number of new COVID-19 patients admitted to ICUs from 11 March to 12 July 2020](image)

Note: Counts include any patient with a confirmed positive COVID-19 test (confirmed by linkage to ECOSS) taken prior to discharge from an ICU in Scotland. Counts do not include any COVID-19 suspected cases who have not yet been lab confirmed. Therefore, there may be a lag for recent days where patients may still be awaiting the results of COVID-19 tests.

Counts do not include any re-admissions from COVID-19 patients previously admitted to an ICU and re-admitted post discharge; counts are unique patients only.
Individual patients are identified using their CHI number as recorded within the ICU admissions system. There may be a very small number of patients where CHI was not recorded, for whom linkage to ECOSS for COVID-19 status may not have been possible.

Data are correct as at the time of data extract at 9am on Sunday 12 July 2020. Data are reviewed and validated on a continuous basis and so may be subject to change.

In the first report published (6th May), counts shown included any patient who had contact with ICU since 1st March 2020 and had a positive COVID-19 test at any time. This definition was adjusted to reflect reports from SICSAG to only include patients with a positive COVID-19 specimen date prior to discharge from an intensive care unit. Therefore, current data are only comparable to figures previously reported by PHS since 13th May 2020.
COVID-19 Activity in the Community

Before the COVID-19 outbreak, when GP Practices and Dentists are open during the day, NHS 24’s 111 service generally only advises self-care or for people to contact their GP, unless it is immediately life threatening, in which case they contact a 999 Ambulance. When GP Practices and Dentists are closed, NHS 24 can also direct people to Emergency Departments, Minor Injuries Units and Primary Care Out of Hours services for further clinical input, which could involve a Nurse or GP telephoning or visiting the person at home, or arranging attendance at a Primary Care Emergency Centre.

In response to COVID-19, NHS 24 adapted their service provision. People who are concerned about COVID-19, or who experience symptoms, are advised to seek advice from NHS Inform website, the COVID-19 advice helpline or to contact NHS 24’s 111 service if their symptoms worsen and they need clinical advice, following which they may be;

- provided with self-care advice or be asked to contact their own GP
- referred to a COVID-19 community hub for further clinical telephone triage, they may then be asked to attend assessment centre or receive a home visit by a Nurse or Doctor
- referred to acute services via the Scottish Ambulance Service or advised to attend hospital, depending on their symptoms.
NHS 24 Covid-19 Activity

Over and above the existing out of hours 111 phone service, NHS 24 provides a range of additional services by phone and a number of digital platforms. Some of these services have been adapted with dedicated COVID-19 platforms. These phone lines/digital platforms include:

- 24/7 COVID-19 telephone assessment through 111
- NHS inform
- Breathing Space
- Coronavirus Helpline Webchat
- NHS inform Voicebot Calls
- NHS inform Chatbot Session
- Coronavirus Self Help Guides

More information on these services can be found in the Glossary.

COVID-19 Contacts with NHS 24 111 and COVID-19 Advice Helpline

Figure 5 shows the trends in contacts with the 111 service where COVID-19 has been recorded as the reason for a person contacting the service, and also the number of calls to the dedicated COVID-19 advice helpline (this COVID-19 advice helpline information is published daily by the Scottish Government).

There are four distinct peaks in calls to the helpline: one when it first opened, one at a similar time as the announcement that schools were to close, one the following week when lockdown was announced and finally a smaller peak at the end of March when cancer screening was paused. Since then calls have been steadily falling, with lower demand at the weekend for the helpline.

From the 23 March 2020, the 111 service expanded to take calls 24/7 and now directs people with COVID-19 symptoms, who are not triaged to self-care, to the COVID-19 community hubs for further assessment. Contacts to NHS 24 (Monday to Friday 8am – 6pm) which are non COVID-19 related are now referred directly to the patient’s GP. From the 28 March to the 9 April there were over 2,000 COVID-19 daily contacts with the 111 service, which have since reduced to around 470 per day in the last week.
Figure 5: Number of NHS 24 111 COVID-19 contacts and COVID-19 advice Helpline calls
NHS Inform Contacts for COVID-19

NHS inform is Scotland’s digital health and care resource, providing the up to date standardised information on COVID-19 from a health perspective. Information is provided in a range of languages and alternative formats (www.nhsinform.scot/coronavirus).

Figure 6 shows the number of hits to the COVID-19 section of the NHS Inform website. The number peaked on 23 March at around 350,000 hits per day. For the past week the number of hits has been around 27,940 per day on average.

**Figure 6: Number of Hits per day on the COVID-19 section of NHS Inform**

Please note this website is available worldwide and not all contacts are made from within the United Kingdom/Scotland.
COVID-19 Self Help Guides

NHS 24 have developed Coronavirus Self Help Guides in response to the pandemic – a short assessment for initial COVID-19 symptoms with directions for accessing further information or into a service as appropriate. This information is aligned to the 111 triage model. The chart below looks at uptake of these guides showing a peak when lockdown started and a steady fall to just over a thousand from mid-May.

Figure 7: COVID-19 Self Help Guides Completed
COVID-19 Triage Protocol

The COVID-19 Triage Protocol was established to assess the needs of people with suspected Coronavirus infection, and streams people to one of four nationally agreed outcomes:

- Self-care
- Speak to doctor within 4 hours (COVID-19 Community Hub)
- Speak to doctor within 1 hour (COVID-19 Community Hub)
- 999 ambulance

There are additional outcomes used for the standard 111 service.

Figure 8 illustrates the split of the outcomes and displays the 4 agreed for the COVID-19 Protocol and Community Hub Model launched on 23 March. It shows a peak in COVID-19 records being created at the beginning of April; however it also illustrates that the proportions have changed. For example, the number of people who need to speak to a doctor within 1 hour is similar over time, but the overall percentage has increased with a concurrent drop in the number requiring self-care.

**Figure 8: COVID-19 records by outcome**
COVID-19 Community Hub and Assessment Centres

People may have multiple consultations with a COVID-19 Community Hub and Assessment Centre depending on their pathway of care. For example, upon referral by NHS 24 (or other services) they will be clinically triaged over the telephone by the community hub and they may then go on to have a consultation in person at an assessment centre; this would result in one person having two consultations.

Between the 23 March and 8 July 2020, 84,638 people had a total of 110,334 consultations with COVID-19 Community Hubs and Assessment Centres. (NHS Grampian data included from 01 May 2020 onwards).

Overall COVID-19 related activity was highest on the 7 April with 2,031 consultations

- 78% of all consultations were advice calls.
- 59% of all consultations were with females.
- 28% of all consultations were with people living in the most deprived areas in Scotland.
COVID-19 Community Hub and Assessment Centre, Consultations by Type

Figure 9 shows COVID-19 activity by day of the week broken down by consultation type. A person may contact the Community Hub for advice and then may be asked to come to the Assessment Centre. The number of consultations peaked on 7 April with 2,031, across all types of consultations. Over the past week there have been around 530 consultations per day.

Figure 9: Daily COVID-19 COVID Hubs and Assessment Centre Consultations

Please note
NHS Grampian data included from 01 May 2020.
COVID-19 Contacts with Scottish Ambulance Service

When someone telephones 999 and requests an ambulance, the Scottish Ambulance Service (SAS) record this as an incident. In some cases, multiple phone calls can be received for one incident.

The total number of incidents includes:

- redirecting and referring suitable people to alternative pathways, following telephone triage and advanced triage through a SAS practitioner.
- attended incidents, where a SAS resource (e.g. ambulance, paramedic in a car, specialist paramedic) has arrived at the scene of the incident. Some incidents may be attended by more than one resource.

Following assessment and treatment by SAS crews some patients do not require to be taken to hospital. These patients can be safely left at home with follow up provided by other services including their own GP or GP OOH Services. It is in the patient’s best interest to get the care they require as close to their own home as is feasible.

Scottish Government provide daily provisional updates on the total number of incidents ambulances attend, how many were COVID-19 related and how many people were taken to hospital with suspected COVID-19.

Figure 10 below provides trends of this information, sourced from SAS, from 22 January 2020 to 11 July 2020. It can be seen that pre COVID-19 generally SAS attended around 1,800 incidents each day. However, from the middle of March this reduced to between 1,400 and 1,600. For the last two weeks there were around 1,620 incidents per day.

**Figure 10: Number of all Attended SAS incidents**
Figure 11 shows the number of incidents which are suspected COVID-19. 6 April saw the peak incidents for SAS with 56% of the incidents attended resulting in people being conveyed to hospital.

**Figure 11: Number of SAS suspected COVID-19 incidents by type**

Note: SAS data is currently undergoing data quality checks and includes patients showing COVID-19 symptoms but calling for non-COVID-19 reasons.
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 and on 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 mental or physical consequences of distancing measures.

The surveillance workstream of the 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:

• A&E Attendances
• Hospital admission
• NHS 24 111 completed contacts
• Primary Care Out of Hours Service
• Scottish Ambulance Service
• Cardiovascular
• Immunisation – uptake of first, second and third dose of 6-in-1 vaccine
• MMR Immunisation Data
• Child Health Visitors
• Excess deaths
• Stillbirths and Infant Deaths

New information on the coverage of the child health review offered by Health Visitors to children at 4-5 years of age has been published on the Covid-19 wider impacts dashboard from 15 July 2020. Information on the coverage of the Health Visitor first visit, and the reviews offered to children at 6-8 weeks, 13-15 months, and 27-30 months of age is also provided.

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.
Analysis of COVID-19 Outcomes by Ethnic Group

On the 20 May 2020 Public Health Scotland published an initial analysis of available data on the variation in outcomes by ethnic group among those tested positive for COVID-19. At the time, with data available up to 5 May, the number of hospitalisations was very low for all minority ethnic groups, particularly for severe outcomes resulting in intensive care or death. Results were also affected by low levels of ethnicity recording on the available hospital records. Since this time, improvements have been made to increase the proportion of hospital records with ethnicity recorded that were available for analysis. In addition, the further increase in the number of patients admitted to hospital in the following month has allowed some disaggregation of results for ethnic groups. Absolute numbers remain relatively low for ethnic minority groups however, reflecting the population profile across Scotland, meaning that aggregation of ethnic groups is still required to improve precision of statistical comparisons.

As previously, this analysis focussed on the risk of a more serious outcome due to COVID-19, requiring hospitalisation or intensive care or dying within 28 days following a positive swab test result. A positive test result alone is unlikely to be an interpretable outcome to compare among population groups due to policy changes that have affected eligibility for testing regardless of symptomatic status.

Table 2 shows the number patients affected by ethnic group updated with data as at 8 June. Ethnic group was available for 5,416, or 85% of, these patients. Among these, ethnic minority groups accounted for 3% of those affected, only slightly lower than the 4% recorded at the 2011 census.

Table 2 COVID-19 hospitalisation outcome by ethnic group

<table>
<thead>
<tr>
<th>Ethnic Group</th>
<th>count</th>
<th>%</th>
<th>Rate Ratio</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>5273</td>
<td>97.36</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Black/Caribbean/African</td>
<td>20</td>
<td>0.37</td>
<td>1.61</td>
<td>(0.97, 2.67)</td>
</tr>
<tr>
<td>Chinese</td>
<td>7</td>
<td>0.13</td>
<td>0.58</td>
<td>(0.27, 1.27)</td>
</tr>
<tr>
<td>South Asian</td>
<td>64</td>
<td>1.18</td>
<td>1.46</td>
<td>(1.09, 1.97)</td>
</tr>
<tr>
<td>Mixed or Other Ethnic Group</td>
<td>52</td>
<td>0.96</td>
<td>1.9</td>
<td>(1.38, 2.62)</td>
</tr>
<tr>
<td>Total*</td>
<td>5416</td>
<td>100</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Excludes 940 cases with refused or unknown ethnicity

South Asian ethnic groups (Pakistani, Indian and Bangladeshi) accounted for just over 1% of patients, similar to the proportion of the population recorded at the last census. Further disaggregation of the Black/Caribbean/African and South Asian ethnic groups is shown in the supplementary Excel tables accompanying this report, alongside the population proportions from the 2011 census for comparison.
Given that more up to date population estimates are not yet available, a valid comparison group was selected from contemporary GP registration records, matching each COVID-19 patient to 10 controls by age and sex within the same practice. This allowed the different demographic profile of ethnic minority groups to be taken account of, since these groups tend to be younger on average than the White group. This ‘case-control’ method is described in more detail in the Appendix of the weekly report from 20 May and is based on an epidemiological study set up within PHS to help identify risk factors for severe COVID-19 from medical records and support further risk stratification of the population (McKeigue et al., 2020).

Based on this method, Table 3 shows rate ratios which compare the incidence rate of hospitalisation or death from confirmed COVID-19 across different ethnic groups relative to the White group. These account for differences in the age and sex within these groups through matching. A value higher than 1 indicates a higher rate, and a value lower than 1 a lower rate, relative to the White group. Rates were estimated to be around 50% higher in both the Black/Caribbean/African and South Asian groups in comparison with the White group. However, taking account of the uncertainty in these estimates using confidence intervals, means there is less certainty that the higher rate for the Black/Caribbean/African group cannot be explained by chance due to the relatively small numbers of cases. Lower rates were observed in the Chinese group, though with only 7 cases over the period, we cannot be confident this reflects an actual reduced risk in the population.

To investigate further these findings, other factors understood to affect the risk of being tested positive for COVID-19 were included in the statistical models. Living in more deprived areas (based on the Scottish Index of Multiple Deprivation quintiles) and care home residence were both independently associated with a higher risk of a serious illness, but did not explain the higher rates in these minority ethnic groups.

Table 3 shows results when the analysis is restricted to COVID-19 patients with the most severe outcomes, i.e. admission to an intensive care unit (ICU) or died within 28 days following a positive test result. Ethnic group was available for 2,521, or 86% of, these patients. Of these, 2% were from an ethnic minority group.
### Table 3 COVID-19 severe disease outcome by ethnic group (admission to ICU or death)

<table>
<thead>
<tr>
<th>Ethnic Group</th>
<th>count</th>
<th>%</th>
<th>Rate Ratio</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>2,474</td>
<td>98.14</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Black/Caribbean/African</td>
<td>4</td>
<td>0.16</td>
<td>1.02</td>
<td>(0.35, 2.96)</td>
</tr>
<tr>
<td>Chinese</td>
<td>2</td>
<td>0.08</td>
<td>0.43</td>
<td>(0.10, 1.81)</td>
</tr>
<tr>
<td>South Asian</td>
<td>25</td>
<td>0.99</td>
<td>1.58</td>
<td>(0.99, 2.51)</td>
</tr>
<tr>
<td>Mixed or Other Ethnic Group</td>
<td>16</td>
<td>0.63</td>
<td>1.6</td>
<td>(0.91, 2.81)</td>
</tr>
<tr>
<td>Total*</td>
<td>2,521</td>
<td>100</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Excludes 413 cases with refused or unknown ethnicity

The rate of severe disease was estimated to be around 60% higher among South Asians in comparison with the White Group. Due to the very small numbers in the Black/Caribbean/African and Chinese groups, it was not possible to estimate rates with any certainty for these groups. Table 4 summarises the results of further analyses of the data for the South Asian group adjusting for other potential explanatory factors.

### Table 4 Comparison of rates of severe disease among South Asians relative to the White group

<table>
<thead>
<tr>
<th>Explanatory factors</th>
<th>Rate ratio</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjusted for age, sex and GP practice</td>
<td>1.58</td>
<td>(0.99, 2.51)</td>
</tr>
<tr>
<td>Adjusted for age, sex, GP practice, deprivation quintile and care home residence</td>
<td>1.68</td>
<td>(1.03, 2.74)</td>
</tr>
<tr>
<td>Adjusted for age, sex, GP practice, deprivation quintile, care home residence and diabetic status</td>
<td>1.44</td>
<td>(0.88, 2.37)</td>
</tr>
</tbody>
</table>

Increased rates were not explained by differences in deprivation or residential care home status. There was some evidence that some of the increased risk may be accounted for by a higher rate of diabetes among South Asians but there was uncertainty in estimates of rates.

Above estimates are consistent with the definition of severe disease used in the initial report on ethnicity based on confirmed positive cases. The effect of including, in addition, all registered deaths with a probable or suspected cause of COVID-19 from NRS was further explored. After adjusting also for diabetes the higher rate among South Asians was less apparent (rate ratio of 1.24, with 95% CI from 0.76 to 2.00, based on 3692 cases).
Strengths and Limitations of this Analysis

The analysis reported is an update of the analysis first published on 20 May. In this update we have been able to identify the ethnicity for a higher proportion of patients recorded on available health records. This has required linking across inpatient and outpatient records for up to 10 years previously. This, and the accumulation of additional positive test results during May and June has meant that the rates of serious illness due to COVID-19 can be estimated with more precision and with greater confidence in their validity.

Since numbers of patients within ethnic minority groups broadly reflects the relatively low proportion in the population in Scotland at large (4% at the last census), the absolute numbers of cases in some ethnic minority groups are still very low, particularly for more severe disease outcomes. This limits the ability to make reliable statistical comparisons between ethnic groups and has necessitated the grouping of some ethnic groups. The group labelled ‘Other’ for example is shown for completeness but consists of a variety of smaller ethnic groups and is therefore difficult to interpret. We hope to be able to provide more specific data on these groups in future analyses. However, in the supplementary tables we show results after further disaggregation within the Black/Caribbean/African and South Asian groups. We recognise also that the White group includes a number of smaller constituent ethnic groups including White Irish and White Polish. Previous work however suggests that recording of some of these groups may not be of reliable quality at present (Knox et al, 2019).

Despite improvements in the completeness of ethnicity data, there remained around 15% of COVID-19 patients for whom ethnicity is missing, either because the patient refused or it was not recorded. This reflects the level of completeness of ethnicity on routine hospital records more generally and PHS continues to work with NHS Boards to maximise the recording of ethnicity on hospital records. The Scottish Government has set up the Expert Reference Group on COVID-19 and Ethnicity an aim of the group is to recommend how to improve the quality of data and evidence available on ethnicity. PHS has made a number of proposals to the group for improvements. As an initial step, the NHS Scotland Acting Chief Executive wrote to NHS Board Chief Executives on 23 June 2020 to remind them of the importance of collecting timely and complete data on ethnicity in medical records, highlighted during this pandemic.

We cannot be certain that the estimates reported by the fact that ethnicity was not available for 100% of patients. Given that ethnic minorities accounted for 4% of the population according to the last census, this would be the case even if only a small proportion were missing or inaccurate. As a check of the sensitivity of results to missing data, we also repeated the analyses using a proxy measure of ethnicity for 100% of records derived from patient names. This uses software that was developed using algorithms built from a world-wide database that covered names and ethnic groups in a wide range of countries (Onolytics) as described in our initial analysis on 20 May.

This analysis has focussed on the more serious outcomes due to the infection and does not explain whether different ethnic groups are more or less likely to become infected in the first
place. This would require more representative population-based testing to avoid possible biases due to selection of individuals for testing, for example as eligibility criteria have changed. It may have been possible for individuals to have been hospitalised but not have a positive result so it is likely that any bias is reduced by for the more severe outcome resulting in intensive care or death.

NRS published an analysis of all deaths involving COVID-19 on 8 July. This used ethnicity recorded during the death registration process supplemented by ethnicity on linked census records for the majority of the 8.4% of people for whom ethnicity was missing. They concluded that the results showed that COVID-19 was a relatively more common cause of death for people in the South Asian ethnic group, across all causes of death, compared to people in the White ethnic group. This was after allowing for differences in age, sex, deprivation and urban/rural classification. Based on their analysis however they were not able to say that relatively more of the South Asian population in Scotland have died from COVID-19 since it did not take account of underlying death rates among ethnic groups in the population. There is evidence that overall death rates are lower in many ethnic minority groups in Scotland (Bhopal et al, 2018). Our analysis aimed to directly compare risks of a serious COVID-19 outcome, including death, with the general population using a comparison group of individuals drawn from the general population.

Conclusions
PHS has updated the analysis of hospitalisations and more severe outcomes among people who have tested positive for COVID-19. Further cases have accumulated since the previous analysis and improvements have been made to ensure ethnicity was available for a higher proportion of these patients.

There is emerging evidence of increased risks of serious illness due to COVID-19 in those of South Asian origin, particularly in relation to those needing critical care or dying with 28 days of a positive test.

There was some evidence that some of the increased risk of the most severe outcomes may be accounted for by diabetes and the raised risks were less apparent when COVID-19 deaths in those never testing positive were included. Quantifying these raised risks is difficult however as estimates are uncertain due to small numbers.

For other minority ethnic groups, numbers were too small for confidence in estimates. Further analysis using data for additional emerging cases may help to increase certainty in estimates and clarify risks.
Contact
Public Health Scotland
phs.statsgov@nhs.net

Further Information
COVID surveillance in Scotland
Scottish Government
Daily Dashboard by Public Health Scotland National Records of Scotland

UK and international COVID reports
Public health England
European Centre for Disease Prevention and Control
WHO
International Severe Acute Respiratory Emerging Infection Consortium.

The next release of this publication will be 22 July 2020.

Open data
Data from this publication is available to download from the Scottish Health and Social Care Open Data Portal.

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Let us know what you think about this publication via. the link at the bottom of this publication page on the PHS website.
Appendices

Appendix 1 – Background information

In late December 2019, the People’s Republic of China reported an outbreak of pneumonia due to unknown cause in Wuhan City, Hubei Province.

In early January 2020, the cause of the outbreak was identified as a new coronavirus. While early cases were likely infected by an animal source in a ‘wet market’ in Wuhan, ongoing human-to-human transmission is now occurring.

There are a number of coronaviruses that are transmitted from human-to-human which are not of public health concern. However, COVID-19 can cause respiratory illness of varying severity. Currently, there is no vaccine and no specific treatment for infection with the virus.

On the 30 January 2020 the World Health Organization declared that the outbreak constitutes a Public Health Emergency of International Concern.

Extensive measures have been implemented across many countries to slow the spread of COVID-19. In the UK the current recommendations are for everyone to stay at home as much as possible and severely restrict their interactions with others outside the household.

Further information for the public on COVID-19 can be found on NHS Inform.
Appendix 2 – PHS and Official Statistics

About Public Health Scotland (PHS)

PHS is a knowledge-based and intelligence driven organisation with a critical reliance on data and information to enable it to be an independent voice for the public’s health, leading collaboratively and effectively across the Scottish public health system, accountable at local and national levels, and providing leadership and focus for achieving better health and wellbeing outcomes for the population. Our statistics comply with the Code of Practice for Statistics in terms of trustworthiness, high quality and public value. This also means that we keep data secure at all stages, through collection, processing, analysis and output production, and adhere to the ‘five safes’.