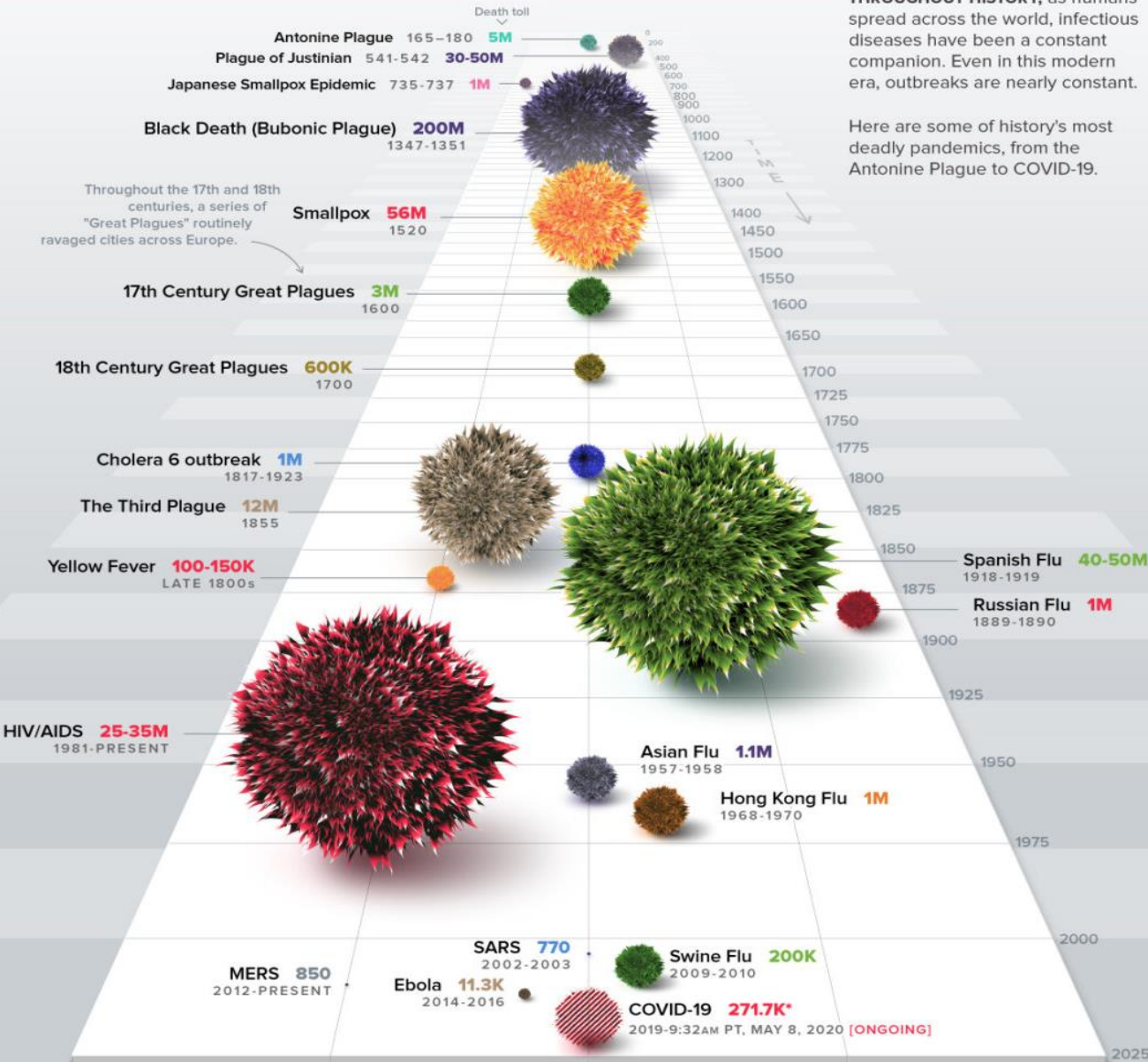


COVID-19 in Northern Ireland

Daily Dashboard Charts & Graphs: 7th October 2020

HISTORY OF PANDEMIC

PAN-DEM-IC (of a disease) prevalent over a whole country or the world.



THROUGHOUT HISTORY, as humans spread across the world, infectious diseases have been a constant companion. Even in this modern era, outbreaks are nearly constant.

Here are some of history's most deadly pandemics, from the Antonine Plague to COVID-19.

Contents

- Introduction
- Understanding measures to 'flatten the curve'
- The Doubling Period
- How do we treat cases and manage testing?
- Doubling cases by country comparisons
- Doubling deaths by country comparisons
- Mortality with 14-day lag
- Rate of change of doubling time (5 days)
- COVID-19 testing overview
- Cumulative total of lab confirmed tests
- COVID-19 Testing Trend Analysis
- COVID-19 Death Details & Setting Details
- COVID-19 Admissions (sus/+ve)
- COVID-19 Admissions (+/ve)
- COVID-19 Inpatients at Midnight
- Confirmed COVID-19 Daily Admissions by Trust
- Hospital Bed Capacity (ICU/General Beds) by COVID-19 status
- COVID-19 Care Home Outbreaks

INTRODUCTION

The difficulties in controlling COVID-19 are due to several factors:

- Its incubation period is relatively long, some five to six days and longer for some.
- Those who are infected become infectious, and infect others, before they display any symptoms or become aware of the disease.
- A significant fraction of cases remain asymptomatic - they never develop symptoms, but they still infect others.

Certain parameters characterise the virus itself, these include:

- **Incubation period** - the time between contracting the infection and the appearance of symptoms
- **Virulence** - the severity of its health effects.
- **Reproduction number** (infectiousness) - the number of new infections each case typically generates, and
- **Case fatality** - the number of infected people that die from the infection

UNDERSTANDING MEASURES TO 'FLATTEN THE CURVE'

COVID-19 infections, like many other viruses, grow exponentially. Fixed rate exponential growth means that the number of cases doubles in a defined amount of time. The doubling time is dynamic and informs us of the impact (or lack of impact) of interventions on epidemic growth. When we talk about '**flattening the curve**', we mean lengthening the doubling period. Flattening the curve, or slowing the rate of growth of new infections, is crucial to the maintenance of capacity in the health sector.

A failure to moderate growth of infections rapidly overwhelms any nation's health systems, hence the need for radical social policy interventions. Flattening the curve, or increasing the doubling period, is achieved through official policies and social behaviours. These range from simple but effective practices such as:

- Washing hands correctly
- Social distancing practices (as recently introduced in many countries including Northern Ireland)
- Cessation of all non-essential activities, and stay-at-home policies (as seen in China & Italy).

All of these policies are designed to reduce the opportunity for transmission of infections – in effect aiming to slow the growth rate. The doubling period therefore is an important barometer of the effects of national policies and behaviours on the impact of the virus. Changes in the doubling period in effect, reflect policy effectiveness.

THE DOUBLING PERIOD

The effect of **doubling period** is best illustrate by comparing for example numbers between Japan and Italy. On 23rd February, Italy reported 132 cases, and Japan reported 144: virtually the same. Japan's doubling period was close to eight days, Italy's was initially less than one day. Infections in Italy were therefore doubling at many times the rate of those in Japan. Eight days later, Italy reported 1,700 cases whilst Japan reported 254. One month later (23rd March), Italy reports more than 50 times the number of cases in Japan, at nearly 60,000 cases to Japan's 1,089.

While it is informative to know both the number of cases and deaths, it is their **growth rate** that matters most. The trajectory is what is most important. This shows the rise in confirmed cases and deaths since the outbreak began. South Korea spread slowed from initial pace and in fact has now plateaued. Northern Ireland Trajectory seems to be tracking similar to that of South Korea albeit with significantly fewer cases and deaths.

The **population of countries** differ significantly but we don't need to adjust for this. If for example we were to adjust for population size and to express confirmed cases or deaths as per million all that would happen is that we would just make larger countries look like their outbreaks aren't quite as bad, and smaller countries look like theirs are much worse. Since the virus spreads exponentially the population is not a limiting factor. Its spread will be determined by the behaviour of individuals and how they mix in their communities. It will tend to spread as the people in cities across the world interact with each other in a similar manner and at a similar rate.

HOW DO WE TREAT CASES AND MANAGE TESTING?

There is the view that the number of **confirmed cases** in a country is a function of the number of tests it conducts. It is important to note despite the focus on testing large numbers of the population we do not actually know the number of people who have coronavirus in the population.

There may be a great many who are symptom free but nevertheless have the virus but just not ever been tested. It is for this reason that we plot laboratory confirmed cases and not simply refer to cases, the true number of which we do not know.

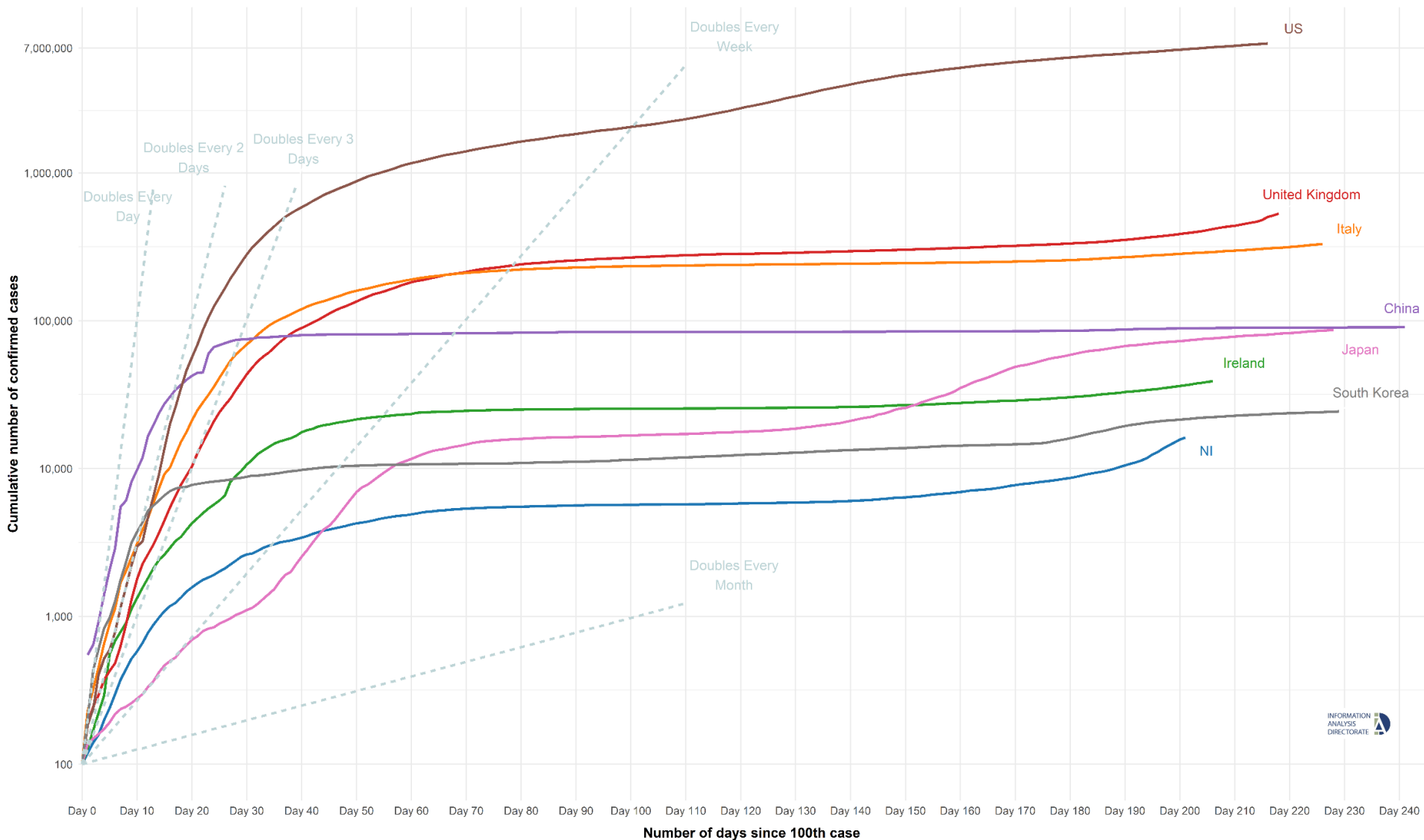


Figure 1: Cumulative number of individuals with a laboratory confirmed test for COVID-19 after the 100th case. The 100th case for all countries are aligned by calculating the first time the cumulative number of positive cases was greater than or equal to 100 and rounding down to exactly 100. Data is not available for China before their 500th case.

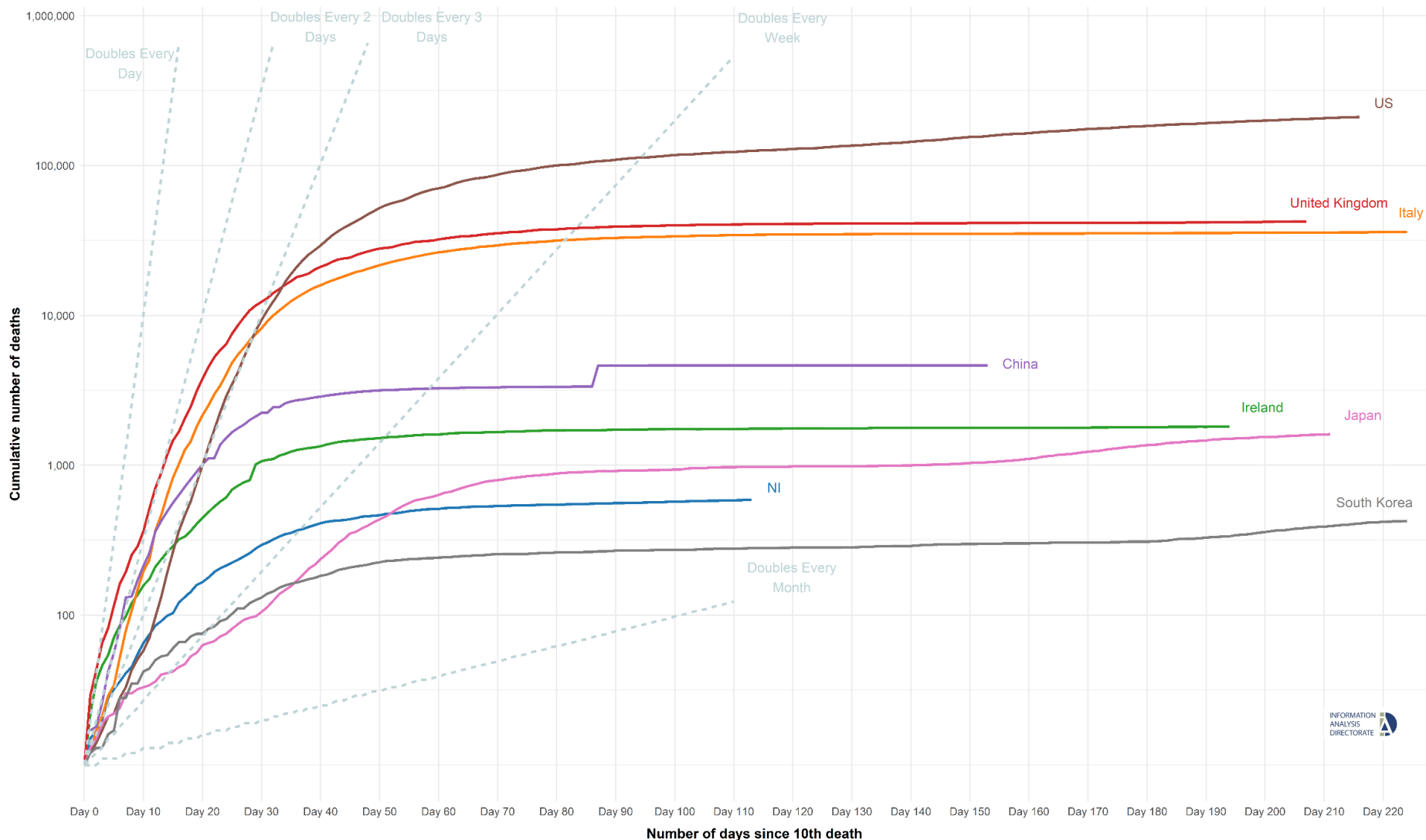


Figure 2: Cumulative number of deaths after the 10th death, where the deceased has had a positive test for COVID-19 and died within 28 days, whether or not COVID-19 was the cause of death. The 10th death for all countries are aligned by calculating the first time the number of deaths was greater than or equal to 10 and rounding down to exactly 10.

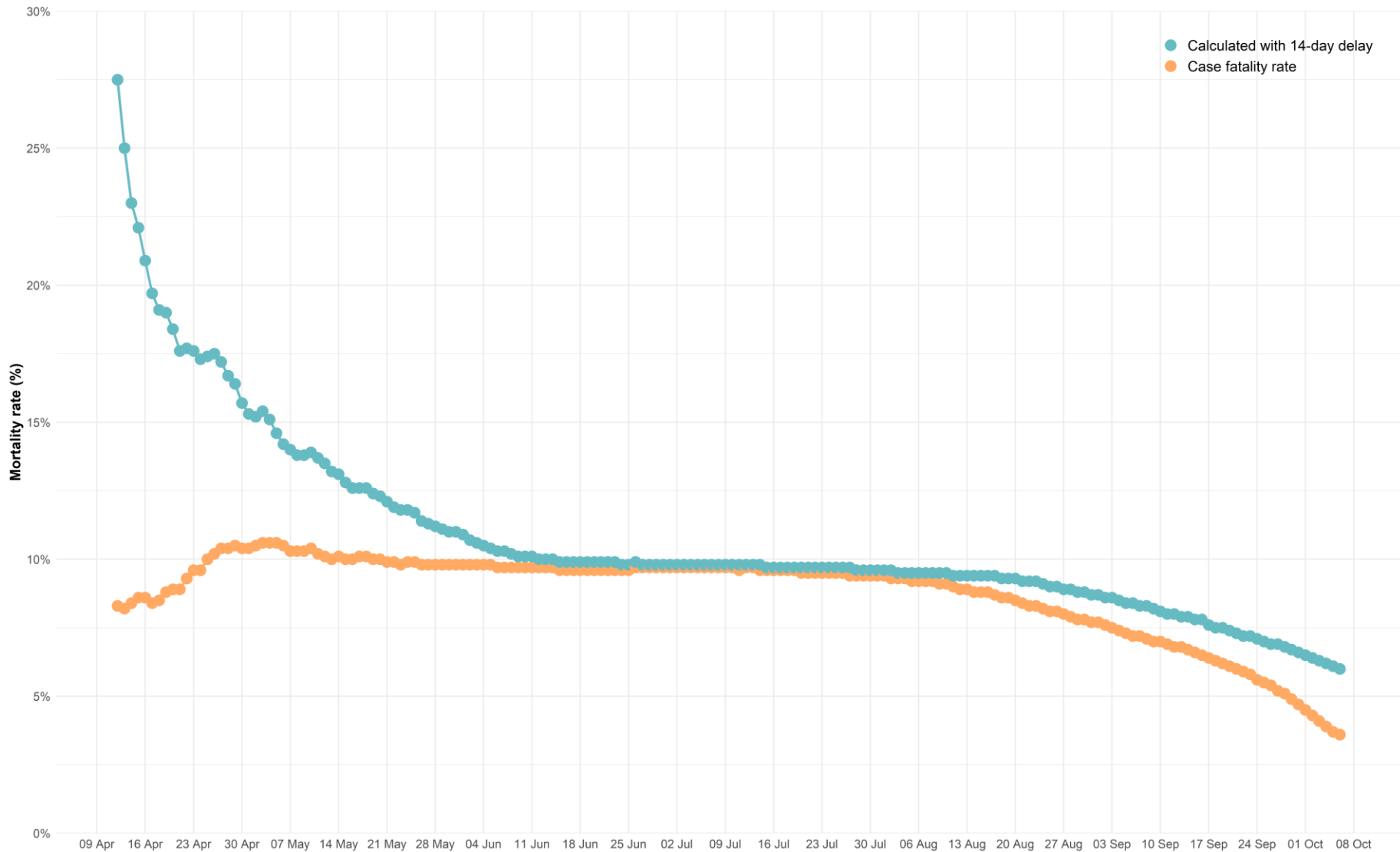


Figure 3: Mortality rate estimates are often based on the number of deaths relative to the number of confirmed cases, however, this isn't representative of the actual death rate, as patients who die on any particular day were infected much earlier. In other words, current deaths belong to the same group of patients that were infected in the past. The maximum incubation period for COVID-19 is assumed to be up to 14 days, therefore the chart below recalculates mortality by dividing the number of cumulative deaths at a specific date by the number of confirmed COVID-19 cases 14 days before.

Doubling Time in the Last 5 Days and Confirmed Cases

Country	Doubling Time (in Days)			Confirmed Cases		
	Last 5 Days	5 Days Before That		Last 5 Days	5 Days Before That	
		Before That	Change		That	Change
Northern Ireland	15.6	18.7	↓ -3.1	3,228	2,195	↑ 1,033
Ireland	55.1	60.5	↓ -5.4	2,376	2,037	↑ 339
United Kingdom	24.6	50.1	↓ -25.5	70,004	30,958	↑ 39,046
Italy	87.3	116.5	↓ -29.2	12,854	9,305	↑ 3,549
China	4558.9	4056.0	↑ 502.9	65	73	↓ -8
Japan	128.9	113.2	↑ 15.7	2,296	2,541	↓ -245
United States	114.7	125.7	↓ -11	223,173	197,988	↑ 25,185
Germany	90.1	95.7	↓ -5.6	11,588	10,513	↑ 1,075
France	38.1	31.4	↑ 6.7	58,750	64,532	↓ -5,782
Spain	59.4	41.7	↑ 17.7	46,803	62,126	↓ -15,323
South Korea	208.7	241.7	↓ -33	401	341	↑ 60

Source: Information & Analysis Directorate | Department of Health | Johns Hopkins CSSE

Data updated: ¹ Wednesday 07 October 2020

Please note: ^a United Kingdom data includes Northern Ireland

Table 1: Comparison of doubling times of confirmed cases in the last five days with the doubling time in the five days before; as well as the number of confirmed cases in the last five days with the number of confirmed cases in the five days before that. The 'change' column compares whether cases doubled faster or slower or remained about the same; or if countries reported more or less or about the same number of cases. The number of confirmed cases in Northern Ireland is doubling at a faster rate (15.6 days) over the last 5 days compared with the doubling rate in the 5 days before that (18.7 days).

COVID-19 Testing overview

IMPORTANT NOTE: Information below refers to the cumulative number of (i) Laboratory Completed Tests (ii) Individuals with a Laboratory Completed Test, and (iii) Individuals with a Positive Laboratory Completed Test. The **daily change** refers to the difference between the cumulative numbers reported today and those reported yesterday. It is **not however possible to generate the daily change on any other testing page**, as data on pages 4 – 7 is based on the date a sample was taken, and the daily change may include samples taken on several days over the last week.

Total Tests

551,558

Includes tests carried out by both HSC Labs and National Initiative

Individuals Tested

382,841

Includes tests carried out by both HSC Labs and National Initiative

Individuals Tested Positive

16,187

Includes tests carried out by both HSC Labs and National Initiative

Individuals Tested Positive in last 7 days

4,417

Includes tests carried out by both HSC Labs and National Initiative

i. Pillar 1 - HSC Trust Laboratory Completed Tests

06 October 2020

227,739

Total Lab Tests

146,983

Individuals Tested

5,846

Individuals Tested Positive

Daily Change

1,999

Total Lab Tests

979

Individuals Tested

59

Individuals Tested Positive

ii. Pillar 2- National Initiative Laboratory Completed Tests (From 29th April onwards)

06 October 2020

323,819

Total Lab Tests

235,858

Individuals Tested

10,341

Individuals

Daily Change

7,795

Total Lab Tests

5,024

Individuals Tested

769

Individuals Tested Positive

Total Laboratory Completed Tests (Pillar 1 & 2)

06 October 2020

551,558

Total Lab Tests

382,841

Individuals Tested

16,187

Individuals Tested Positive

Daily Change

9,794

Total Lab Tests

6,003

Individuals Tested

828

Individuals Tested Positive

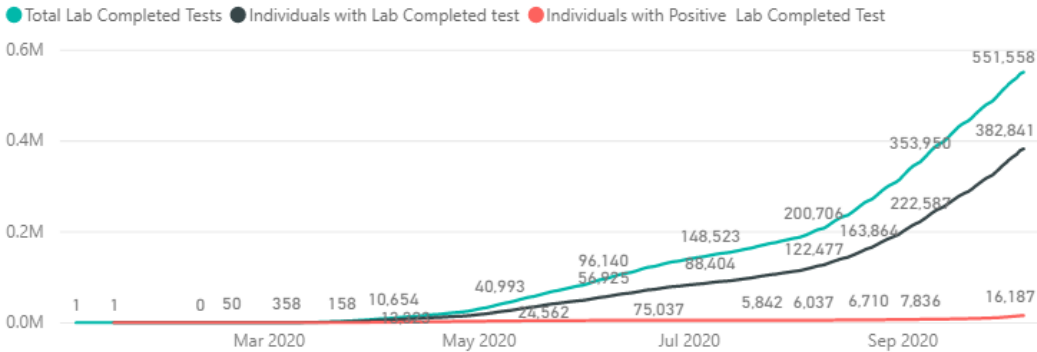
NOTES: Information on Individuals with a laboratory completed test has been revised to ensure that those individuals tested in both Pillar 1 and Pillar 2 are counted ONLY ONCE.

COVID-19 Testing Details



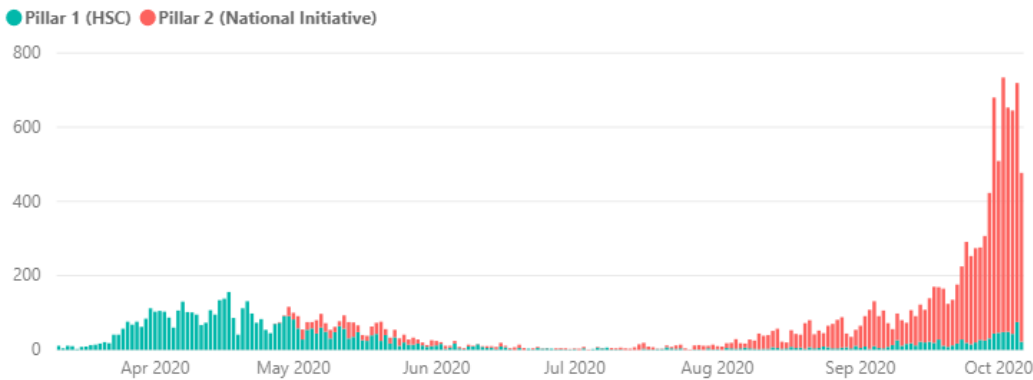
Information below shows (i) the total number of lab completed tests, (ii) individuals with a lab completed test, and (iii) individuals with a positive lab completed test for **both HSC & National Initiative**.

Cumulative Total of Laboratory Completed Tests by Date of Specimen (Pillar 1 & 2)



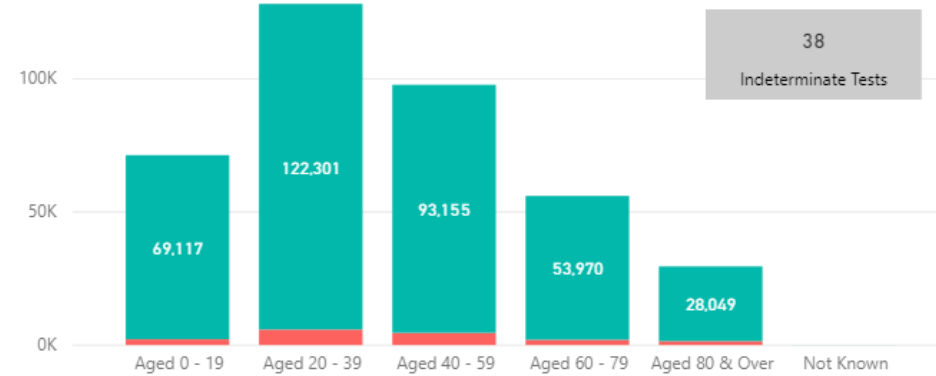
Information below refers to individuals with a positive lab completed test in **both HSC & National Initiative** and is presented below by the date the specimen (sample / swab) had been taken at a testing location, and not the date the laboratory test was completed.

Individuals with Positive Laboratory Completed Test by Pillar and Date of Specimen



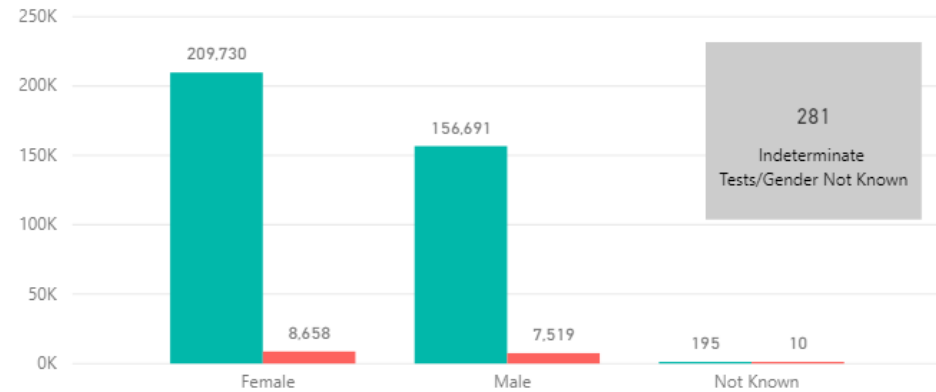
Age Group of Individuals with a Laboratory Completed Test (Pillar 1 & 2)

● Individuals Tested Positive ● Individuals Tested Negative



Gender of Individuals with a Laboratory Completed Test (Pillar 1 & 2)

● Individuals Tested Negative ● Individuals Tested Positive



COVID-19 Testing by LGD



Individuals with laboratory completed tests for the SARS-COV2 Virus in NI refers to both (i) **HSC Trust Labs** and (ii) **National Testing Centres** and is presented below by Local Government District. It is important to note that Local Government Districts assigned as 'Not Known' refer to individuals with insufficient address / postcode details.

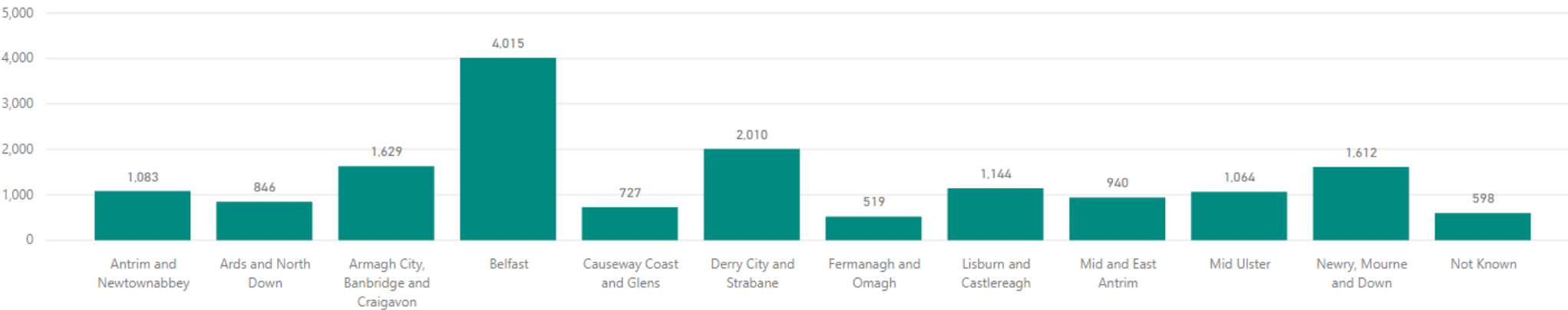
Individuals with a Laboratory Completed Positive Test (Pillar 1 & 2) for SARS-COV2 Virus by Local Government District



Breakdown of Individuals with a Laboratory Completed Test (Pillar 1 & 2) by Local Government District

Local Government District	Total Individuals Tested	Individuals Tested Positive	Individuals Tested Negative	Individuals with Indeterminate Result	Positive Tests per 100k population
Antrim and Newtownabbey	28,463	1,083	27,379	1	759
Ards and North Down	28,633	846	27,785	2	526
Armagh City, Banbridge and Craigavon	41,613	1,629	39,982	2	762
Belfast	76,301	4,015	72,277	9	1,177
Causeway Coast and Glens	23,969	727	23,240	2	504
Derry City and Strabane	34,117	2,010	32,103	4	1,334
Fermanagh and Omagh	20,510	519	19,988	3	444
Lisburn and Castlereagh	29,750	1,144	28,602	4	788
Mid and East Antrim	24,579	940	23,638	1	678
Mid Ulster	26,101	1,064	25,037	0	721
Newry, Mourne and Down	38,794	1,612	37,180	2	895
Not Known	10,011	598	9,405	8	
Total	382,841	16,187	366,616	38	860

Individuals with a Positive Laboratory Completed Test (Pillar 1 & 2) by Local Government District



COVID-19 Testing in the last 7 Days

Information below refers to the number of individuals with a positive laboratory completed test during the **last 7 days** (30 Sept - 06 Oct 2020) compared with the **previous 7 days** (23 Sept - 29 Sept 2020).

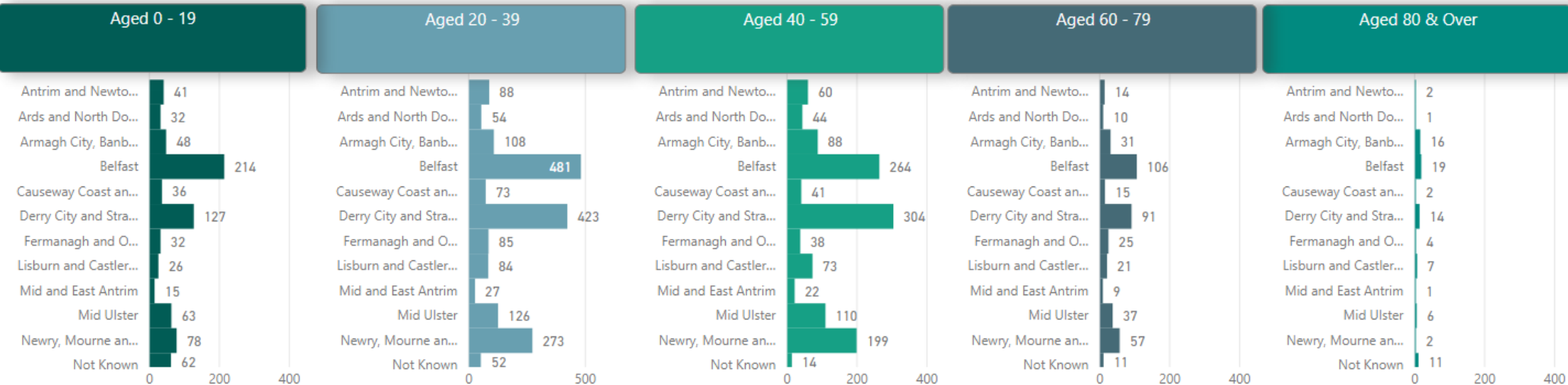
Laboratory Completed Tests during Last 7 Days (30 Sept - 06 Oct 2020) by LGD

Local Government District	+ve Cases Last 7 Days	Last 7 Day Rate per 100K	Individuals Tested Last 7 Days
Antrim and Newtownabbey	205	143.7	2,716
Ards and North Down	141	87.6	2,433
Armagh City, Banbridge and Craigavon	291	136.2	4,113
Belfast	1,084	317.7	8,547
Causeway Coast and Glens	167	115.8	2,425
Derry City and Strabane	959	636.5	6,573
Fermanagh and Omagh	184	157.5	2,543
Lisburn and Castlereagh	211	145.3	2,629
Mid and East Antrim	74	53.4	1,930
Mid Ulster	342	231.8	3,262
Newry, Mourne and Down	609	338.0	5,275
Not Known	150		1,238
Total	4,417	234.7	43,684

Laboratory Completed Tests during Previous 7 Days (23 - 29 Sept 2020) by LGD

Local Government District	+ve Cases Previous 7 Days	Previous 7 Day Rate per 100K	Individ. Tested in Previous 7 Days
Antrim and Newtownabbey	82	57.5	2,446
Ards and North Down	66	41.0	2,654
Armagh City, Banbridge and Craigavon	133	62.2	3,431
Belfast	473	138.6	6,939
Causeway Coast and Glens	92	63.8	2,401
Derry City and Strabane	514	341.1	5,314
Fermanagh and Omagh	79	67.6	2,477
Lisburn and Castlereagh	89	61.3	2,631
Mid and East Antrim	39	28.1	1,970
Mid Ulster	209	141.7	3,563
Newry, Mourne and Down	242	134.3	4,033
Not Known	31		803
Total	2,049	108.9	38,662

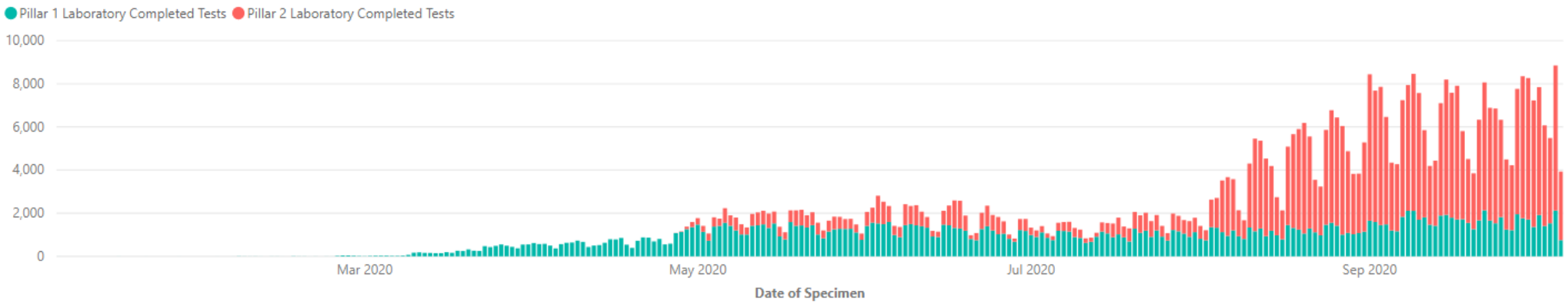
Positive Laboratory Completed Tests during the last 7 days (30 September - 06 October 2020) by LGD



Testing Trend Analysis of Individuals with a confirmed Laboratory completed test for SARS-COV2

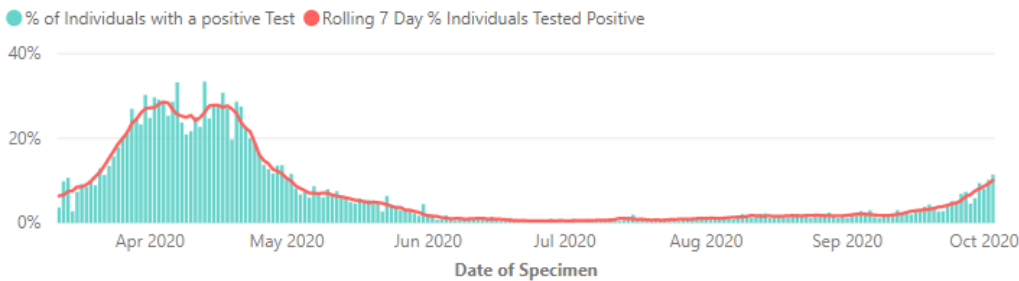
Information below refers to the number of laboratory completed tests (Both HSC & National Initiative) by the date on which the specimen (sample / swab) had been taken at a testing location, and not the date the laboratory test was completed. Whilst this gives the most accurate analysis of how cases progress over time it does mean that the latest days' figures are usually incomplete, so it shouldn't be seen as a sudden large drop in cases.

Laboratory Completed Tests by Date of Specimen (Pillar 1 & 2)



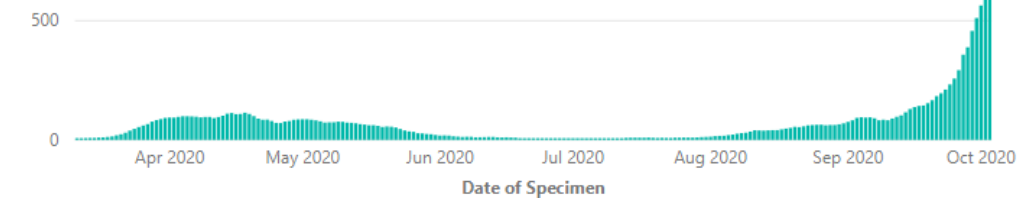
Information below shows the percentage of laboratory completed tests (Both HSC & National Initiative) which were identified as positive by the date the specimen (sample / swab) was taken at a testing location.

Proportion of Laboratory Completed Tests Identified as Positive by Date of Specimen (Pillar 1 & 2)



Information is presented below on the 7-day rolling average of individuals with a positive laboratory completed test (Both HSC & National Initiative), by the date specimen (sample / swab) was taken at a testing location.

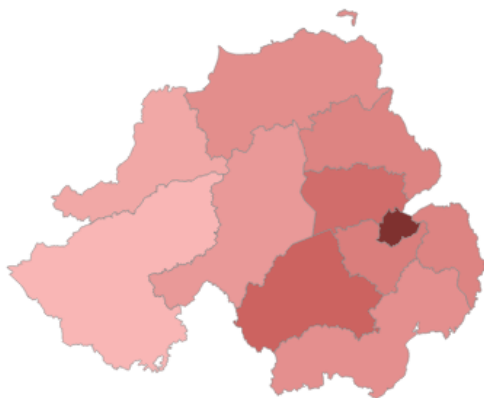
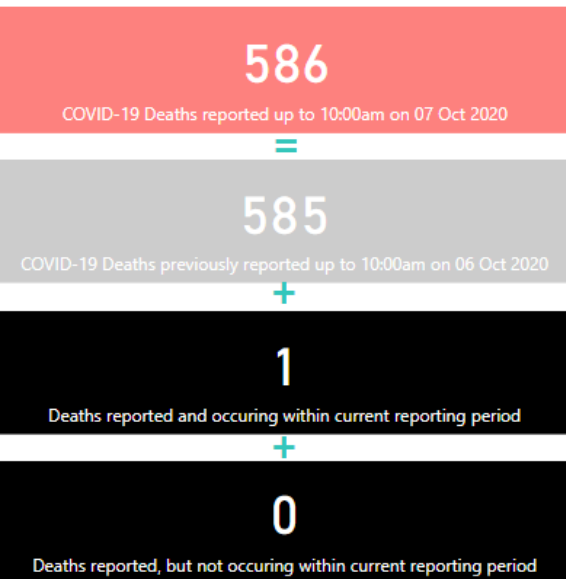
7 Day Rolling Average (mean) of Individuals with Positive Laboratory Completed Tests by Date of Specimen (Pillar 1 & 2)



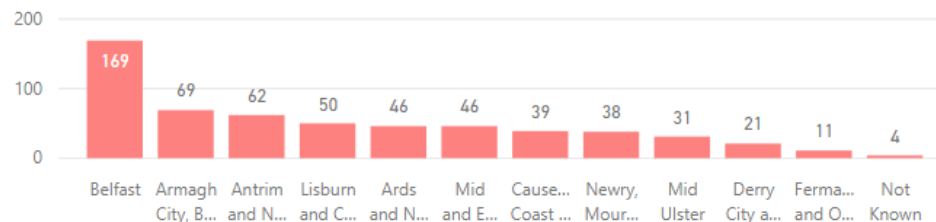
NOTE: Data is not yet available for the National Initiative between 4th - 28th April 2020 and this has resulted in a slight dip in the charts above between 19th - 29th April 2020.

Cumulative COVID-19 Deaths By Local Government District by Age, Gender and Previously Report Deaths and Deaths in Current Reporting Period by Date of Death

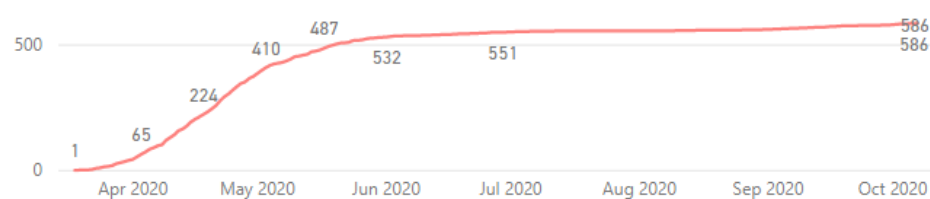
Breakdown of Deaths During Current Reporting Period COVID-19 Deaths by Local Government District



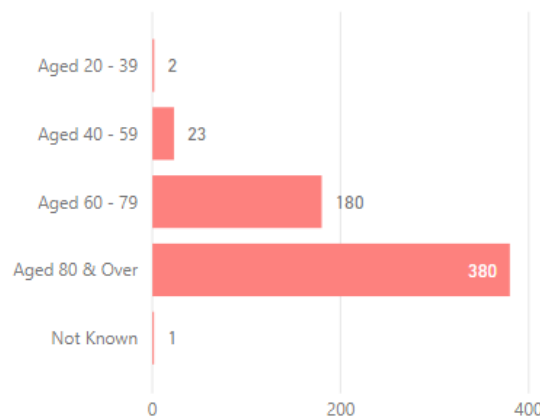
COVID-19 Deaths by Local Government District



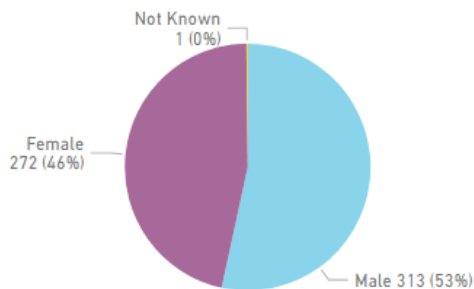
Cumulative COVID-19 Deaths by Date of Death



COVID-19 Deaths by Age Group



COVID-19 Deaths by Gender



Previously Reported Deaths and Deaths in Current Reporting Period by Date of Death



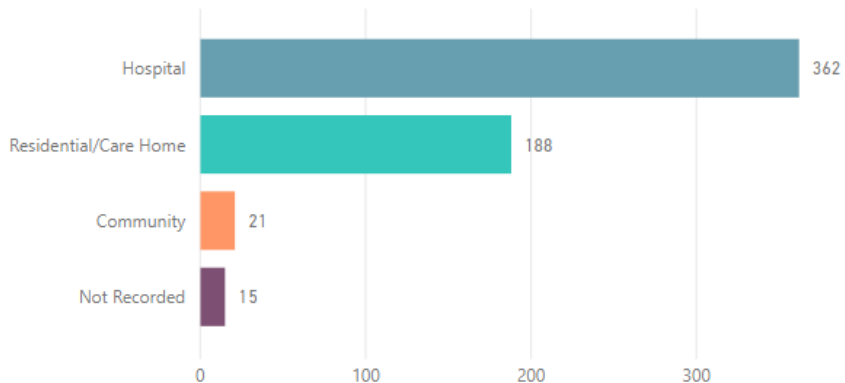
Note 1: Deaths in current reporting period include deaths which will have occurred in that period, along with deaths which have only been reported within that period. For example, A death may occur on Thursday 30th April but not be reported until Saturday 2nd May

Note 2: Current Reporting Period = 10:00 on 06 October 2020 - 10:00 on 07 October 2020

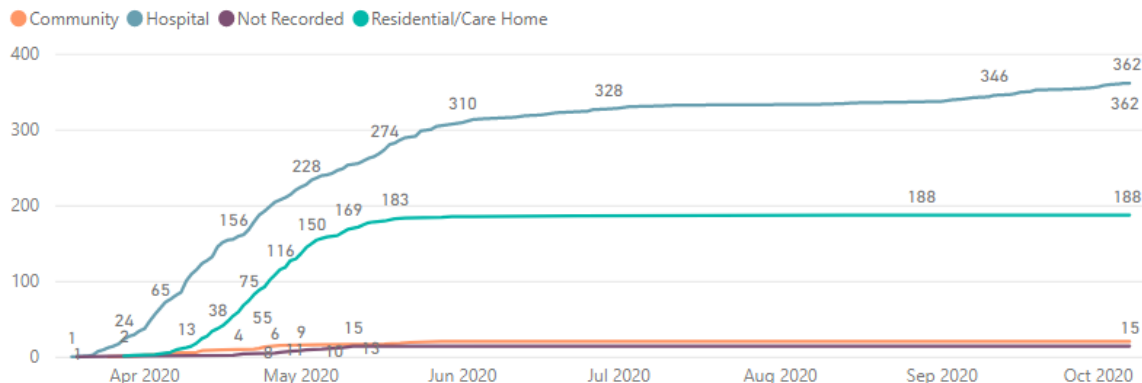
Cumulative COVID-19 Deaths by Death Setting



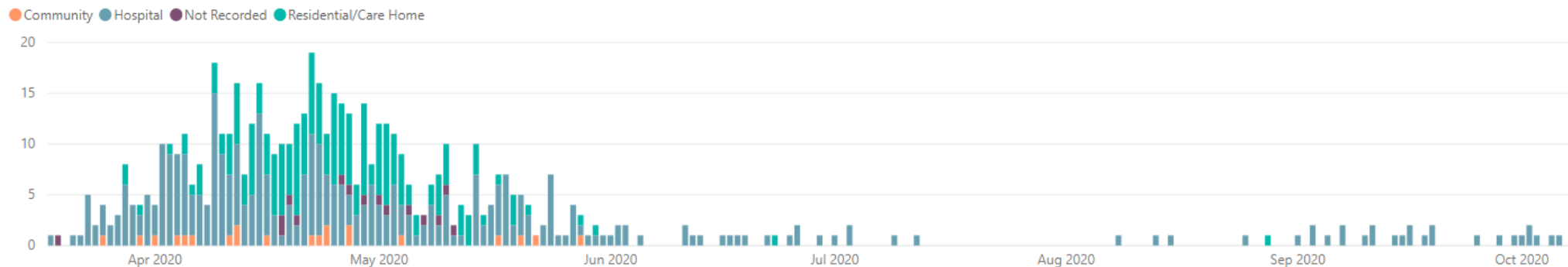
COVID-19 Deaths by Setting



Cumulative COVID-19 Deaths by Date of Death and Setting



COVID-19 Daily Deaths by Date of Death and Setting



Note: The Community setting includes deaths recorded as occurring in Community, Hospice and Other settings. Information displayed reflects deaths reported to the PHA up to the end of the current reporting period, and includes individuals who have had a positive test for COVID-19 and died within 28 days, whether or not COVID-19 was the cause of death. A broader picture on COVID-19 fatalities is provided in the weekly NISRA bulletin which details deaths across hospital and community settings. NISRA figures are derived from the formal process of death registration and may include cases where the doctor completing the death certificate diagnosed suspected cases of COVID-19.

Confirmed COVID-19 Admissions by HSC Trust, Age Group & Patient Status:

Covid-19 Admissions by Admission Date & Occupancy by Date

1,914

Admissions

1,808

Discharged

106

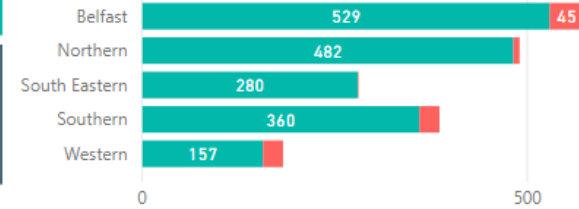
Inpatients

20

Hospitals

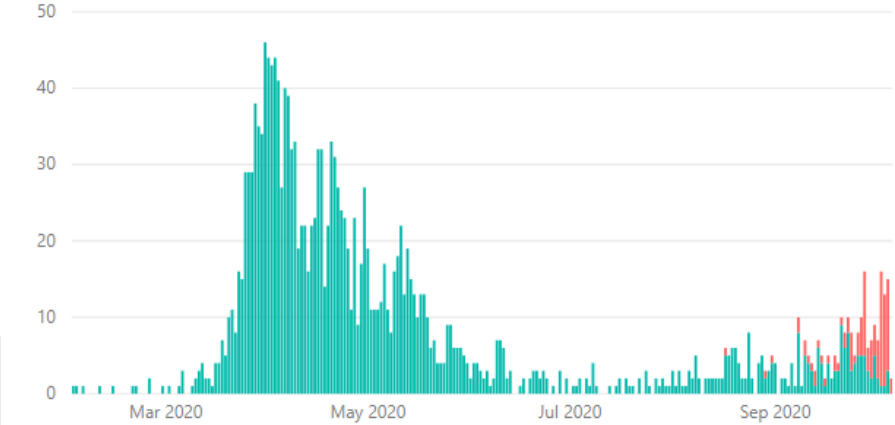
COVID-19 Admissions by Trust & Patient Status

Admission Status ● discharge ● inpatient



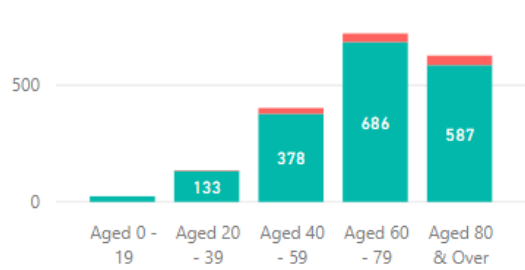
COVID-19 Admissions by Admission Date & Patient Status

Admission Status ● discharge ● inpatient



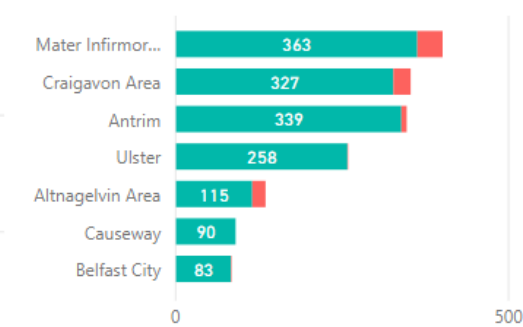
COVID-19 Admissions by Age Group & Patient Status

Admission St... ● discharge ● inpatient



COVID-19 Admissions by Hospital & Patient Status

Admission Status ● discharge ● inpatient



COVID-19 Admissions, Discharges & Inpatients at Midnight for the Last 7 Days

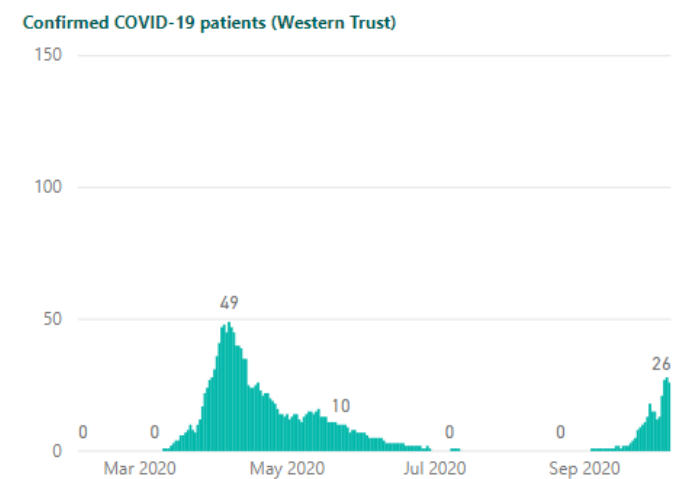
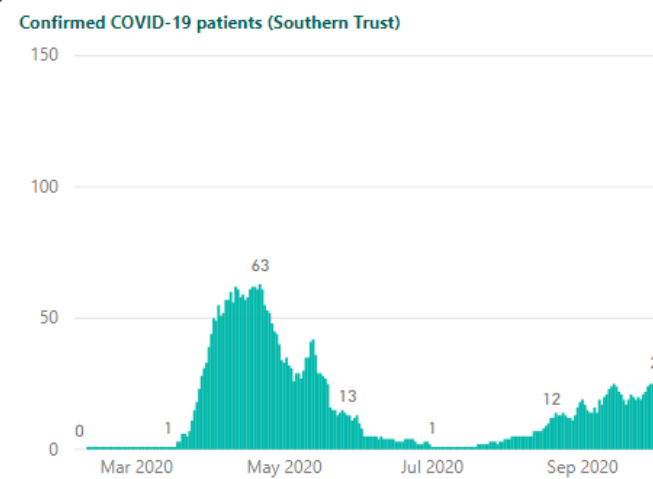
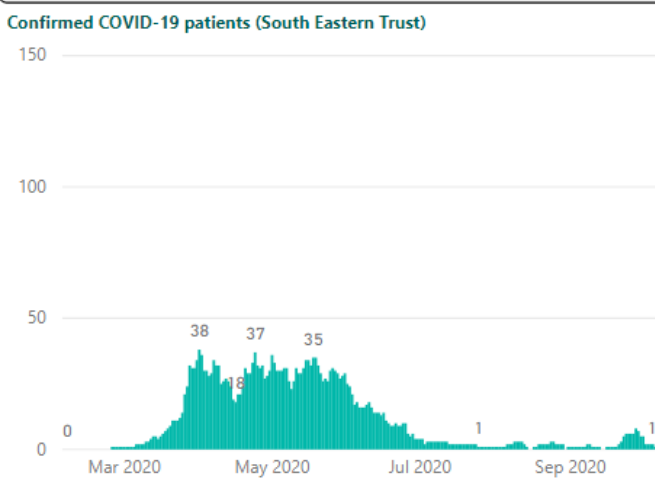
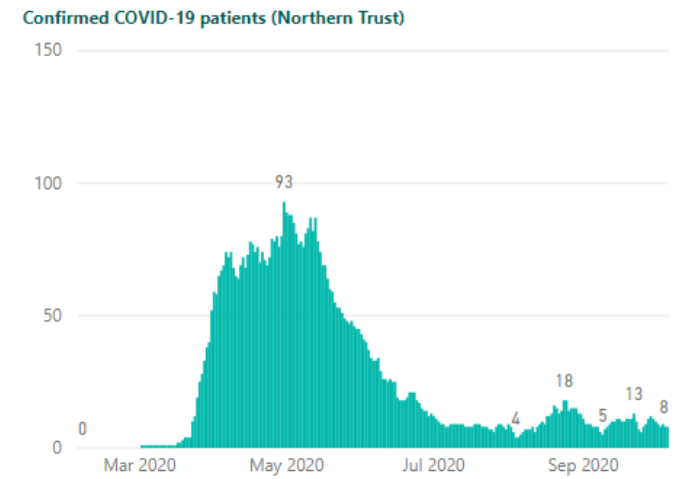
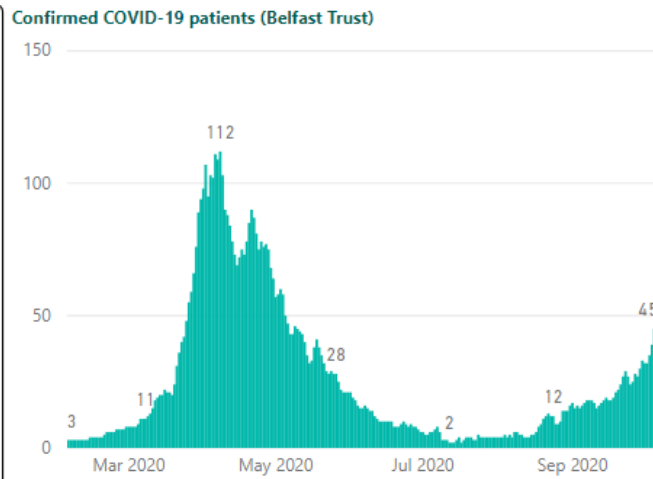
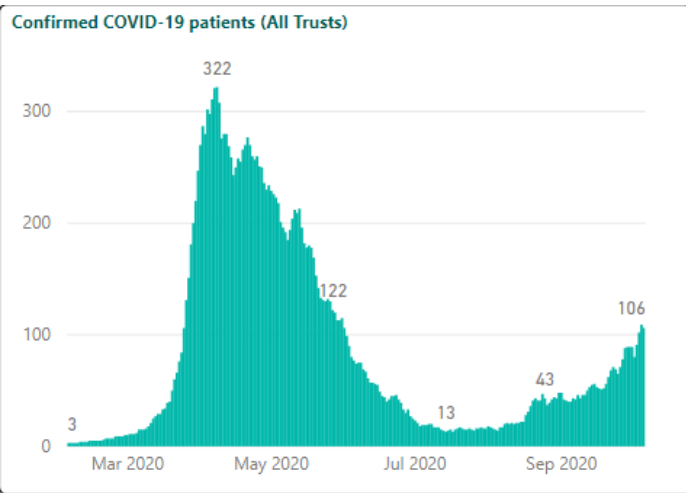
Date	Admissions	Discharged	Inpatients
30 September 2020	1,852	1,763	89
01 October 2020	1,861	1,772	89
02 October 2020	1,868	1,788	80
03 October 2020	1,884	1,793	91
04 October 2020	1,897	1,795	102
05 October 2020	1,912	1,803	109
06 October 2020	1,914	1,808	106

Change in Admissions & Discharges by HSC Trust

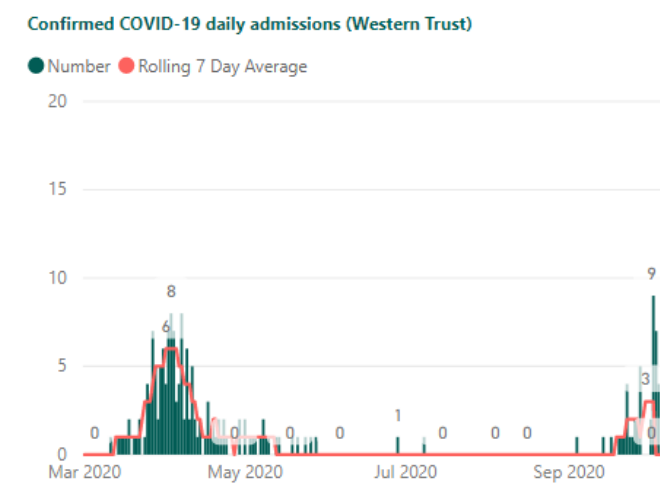
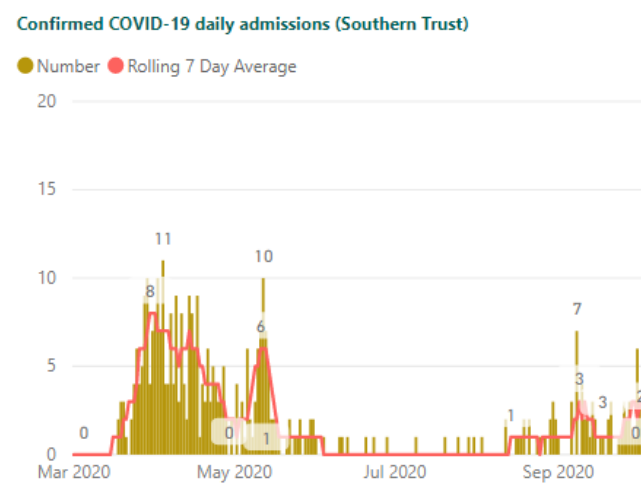
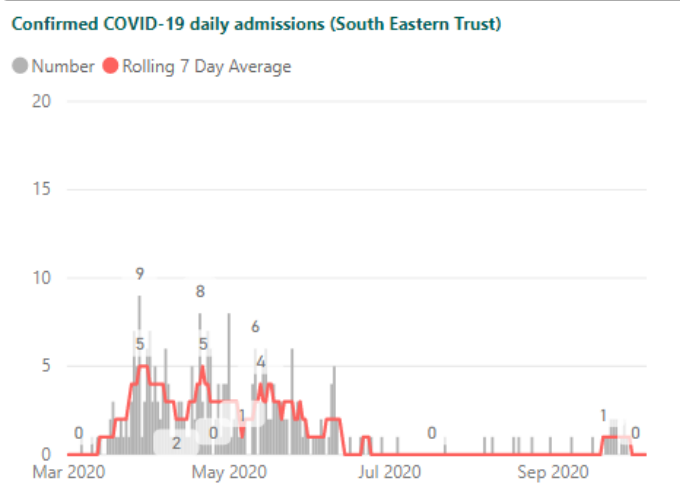
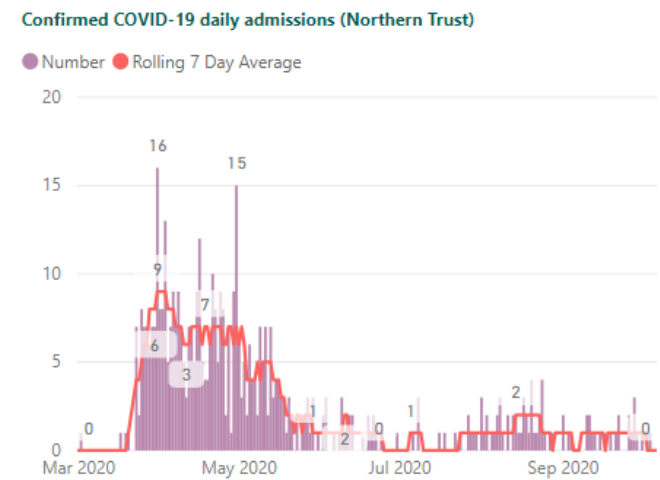
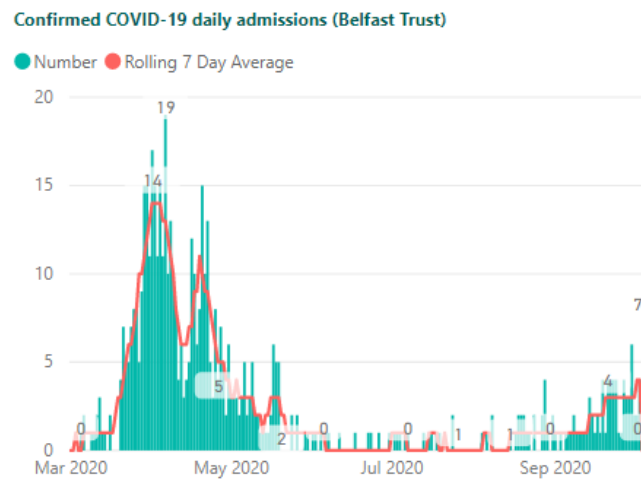
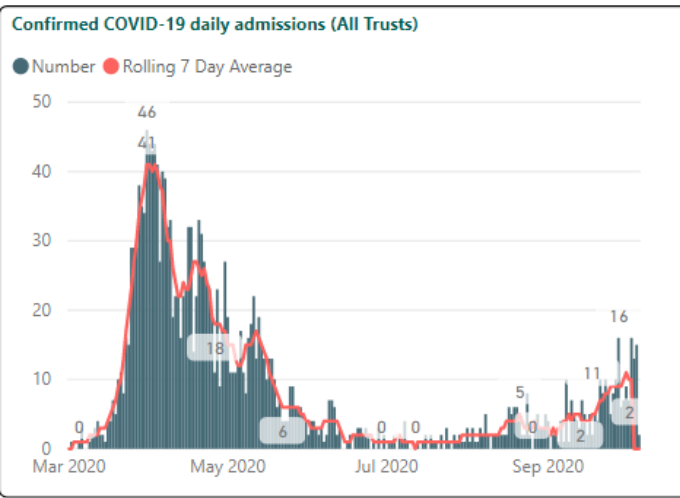
HSC Trust	Admissions in Last 7 Days	Discharges in Last 7 Days	Admissions in Last 14 Days	Discharges in Last 14 Days
Belfast	25	10	45	27
Northern	3	7	10	15
South Eastern	0	6	10	12
Southern	19	18	30	24
Western	22	11	37	16
Total	69	52	132	94

Note 1: Discharges include: discharge under medical grounds, self-discharge or death
Note 2: Admissions data is sourced from a live administrative system which is continually being amended and updated, as such previous days' admission data may be revised.

COVID-19 Inpatients by HSC Trust: Confirmed COVID-19



Confirmed COVID-19 Daily Admissions by HSC Trust



ICU Bed Capacity: ICU COVID-19 suspected and positive, ICU Other and ICU Beds Available, ICU 5-day Rolling Average and Ventilator Use in ICU.

93

Total ICU Beds

14

ICU Covid Occupied

60

Other ICU Occupied

19

Unoccupied Beds

45

Total Ventilated Patients

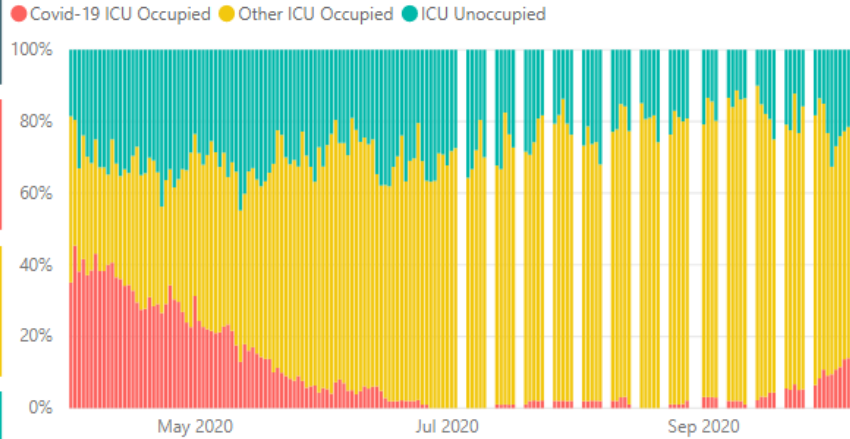
11

Covid-19 Ventilated

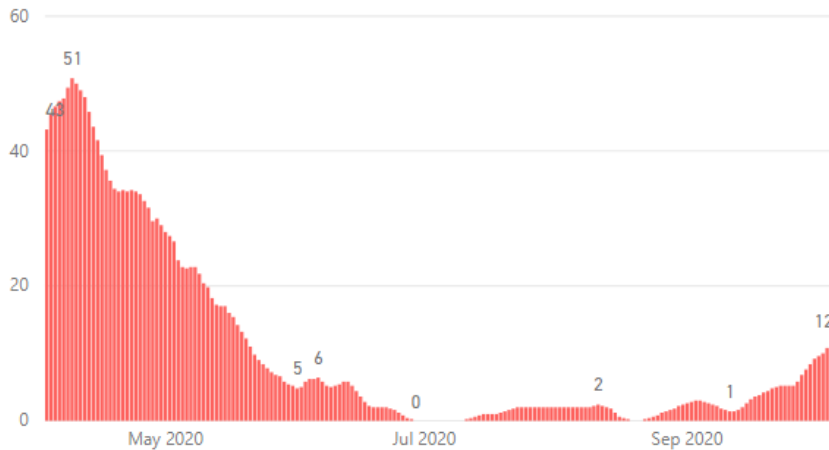
34

Non Covid-19 Ventilated

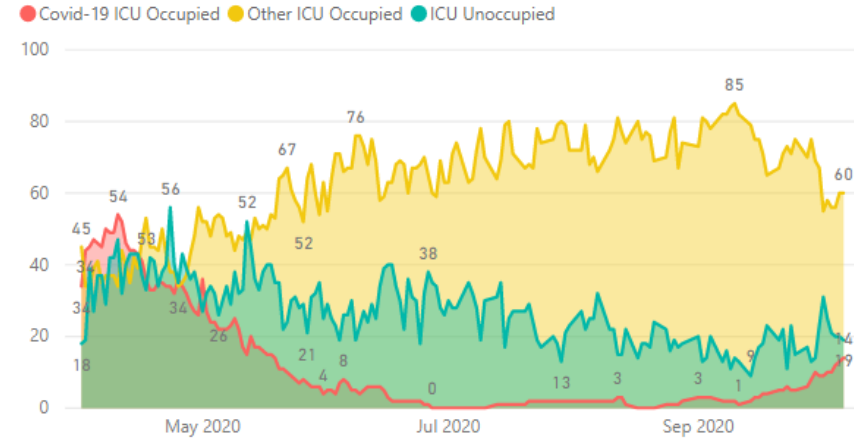
% of ICU Beds Covid-19 Occupied, Other Occupied and Unoccupied



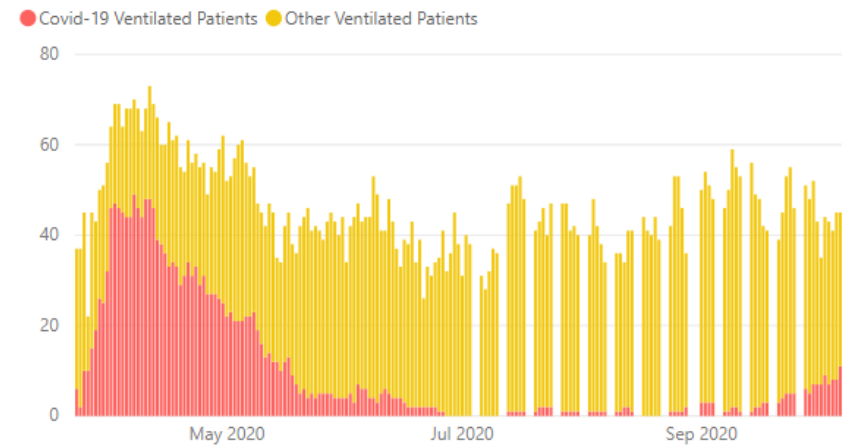
Covid-19 ICU Bed Occupancy : 5 Day Rolling Average



Number of ICU Beds Covid-19 Occupied, Other Occupied and Unoccupied



Covid-19 Ventilated Patients and Other Ventilated Patients



General Bed Capacity: Available & Occupied Beds and COVID-19 Bed Occupancy

3,659

Beds Available

85%

% Beds Occupied

3,126

Total Occupied Beds

91

Covid-19 Occupied Beds

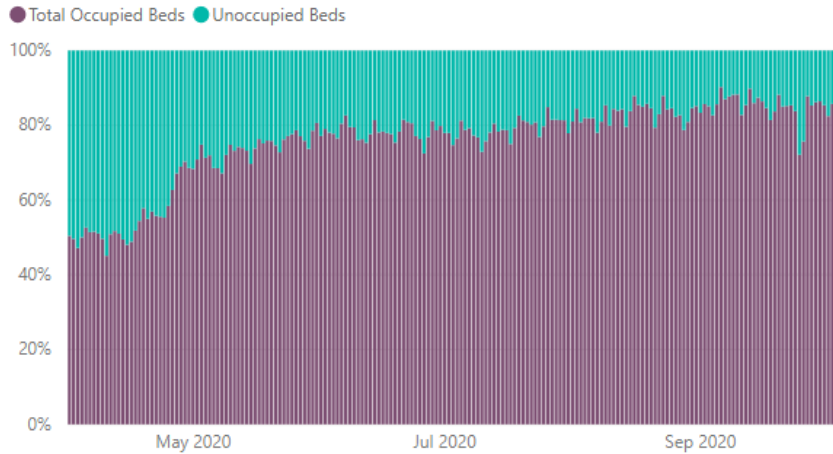
3,035

Other Occupied Beds

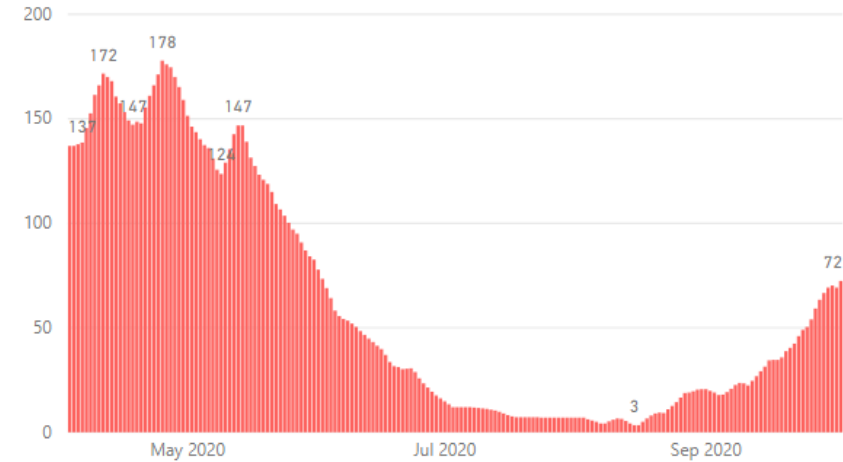
533

Unoccupied Beds

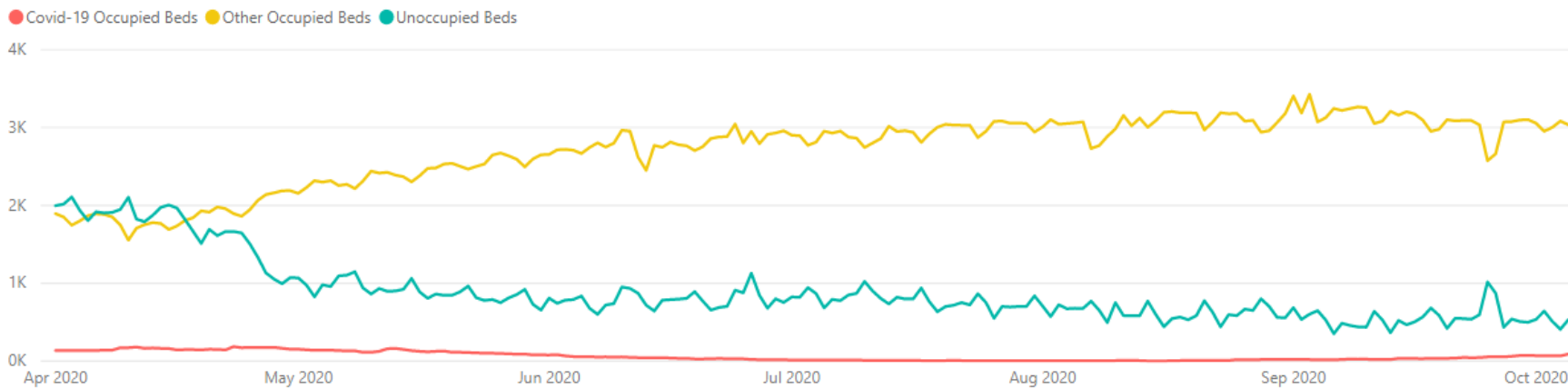
General Bed Occupancy - % Occupied and Unoccupied



Covid-19 General Bed Occupancy : 5 Day Rolling Average by Date



General Bed Occupancy - Covid-19 Occupied, Non Covid-19 Occupied and Unoccupied Beds



COVID-19 Care Home Total Acute Respiratory Outbreaks: Active Cases Confirmed COVID-19, Suspected COVID-19 and Closed Outbreaks.

255

Total Acute Respiratory Outbreaks

34

Confirmed COVID-19

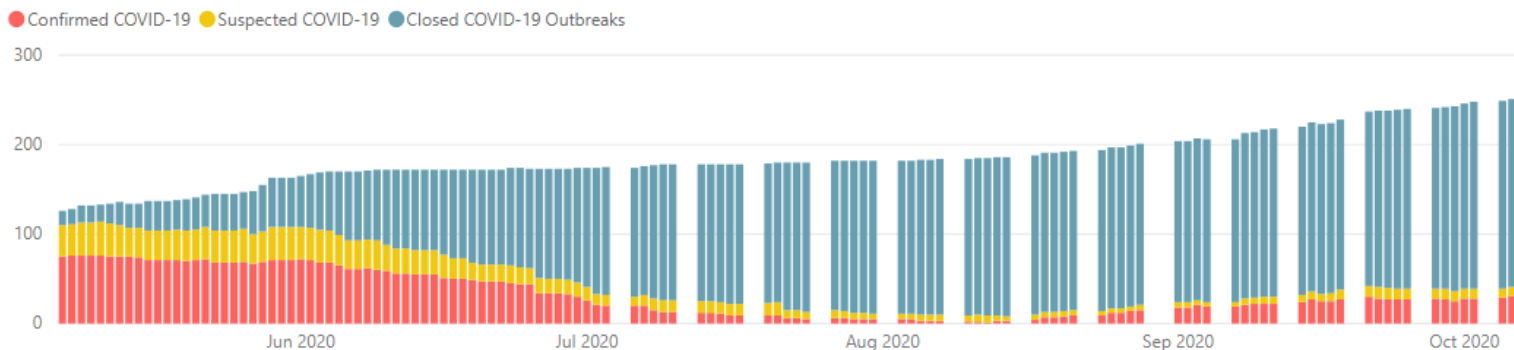
9

Suspected COVID-19

212

Closed COVID-19 Outbreaks

Confirmed COVID-19, Suspected COVID-19 and Closed COVID-19 Outbreaks by Reporting Date



Key Definitions

Suspected case of COVID-19*

Any resident (or staff) with symptoms of COVID-19 (high temperature or new continuous cough), or new onset of influenza like illness or worsening shortness of breath.

*Symptoms may be more nuanced in older people with co-morbidities in care homes who may present with Flu Like Illness (FLI), respiratory illness, new onset confusion, reduced alertness, reduced mobility, or diarrhoea and sometimes do not develop fever. This may be true for COVID-19, so such changes should alert staff to the possibility of new COVID infection

Confirmed case of COVID-19

Any resident (or staff) with laboratory confirmed diagnosis of COVID-19.

Outbreak definition

Two or more cases in a facility which meet the case definition of a possible or confirmed case of COVID-19, within a 14-day period among either residents or staff in the care home **Note:** In a situation where a care home is reporting one possible case, the duty room in PHA will arrange for a swab to be undertaken for the symptomatic patient. If the test results for the single case is positive or any additional cases are reported during the monitoring period then further testing is advised for all staff and residents in line with the new guidance for testing.

Declaring the End of an Outbreak/outbreak closed

An outbreak can be declared over when there are no new cases for 14 days after symptom onset of most recent case.

TECHNICAL NOTES: COVID-19 TESTING (1)

COVID-19 cases are identified by taking specimens from people at testing centres across Northern Ireland and sending these specimens to laboratories to be tested. If the test is positive, this is referred to as a Laboratory Completed Test. The information currently reported by DoH refers ONLY to the number of laboratory completed tests for the SARS-COV2 virus at 9am each day for the 4 HSC Trust laboratories listed below.

- Regional Virus Laboratory (Belfast);
- Antrim Testing Laboratory (commenced 23/03/2020);
- Craigavon Area Testing Laboratory (commenced 28/03/2020); and,
- Altnagelvin Area Testing Laboratory (commenced 03/04/2020).

Prior to testing commencing at Antrim, Craigavon Area and Altnagelvin, all laboratory completed tests for the SARS-COV2 virus in Northern Ireland were carried out by the Regional Virus Laboratory in Belfast.

National Testing Centres

Alongside testing by HSC Trust laboratories, there is a programme of testing for the SARS-COV2 virus being carried out at National Testing Centres (mainly for Health Care / Key Workers) by appointment only; although, information on the outcome of samples (swabs) taken at these National Testing Centres is not presented in this dashboard. Samples taken at National Testing Centres will be sent to laboratories for analysis and will be reported as a laboratory completed test in due course. They should NOT be added to the **Completed** laboratory results presented above.

Currently, the National Testing Centres in NI are located at the following sites: the SSE Arena, City of Derry Rugby Club and Craigavon Test Centre.

DATA PROVISION

Daily extracts based on laboratory completed tests completed and authorised by each HSC laboratory are provided to the DoH at 9am, and refer to the position at the end of the previous working day. Data on authorised completed laboratory results for the Regional Virus Laboratory are provided via a secure data link at 12 midday and 18:30pm each day, whilst data on authorised completed laboratory results for the remaining laboratories (Altnagelvin, Craigavon Area and Antrim) are available to download from the Regional Data Warehouse at 4am each day.

TECHNICAL NOTES: COVID-19 TESTING (2)

DATA QUALITY

Data is currently provided by the 4 HSC laboratories in two separate ways; (i) a data extract from RVL Belfast, and (ii) a data extract for Antrim, Craigavon Area and Altnagelvin laboratories via the Regional Data Warehouse.

Quality assurance of this data is undertaken by the DoH using a combination of automated and semi-automated programmes, with manual checking both before and post processing. Data from each source are merged and duplicate reports are generated to identify any duplicate test records based on 'Specimen Number' (RVL) or 'Ascension Number' for other laboratories. Duplicate tests are then removed from the data at this stage.

Data quality issues around completeness of Health Care Number, Date of Birth, and Postcode have limited our ability to identify both duplicate tests and individuals tested. However, this has improved over recent weeks and the information from the start of February 2020 is refreshed each day to take account of this.

It is also important to note that the information being reported by the DoH are derived from data extracts of LIVE Laboratory systems, and may therefore be revised or updated in subsequent data extracts. These revisions may improve issues around the completeness of the recording of the key variables above, but they may also provide information on additional tests for an individual that produced a positive laboratory completed result, having previously tested negative. For these cases, the positive result will now be included and any previous negative results excluded from the report on individuals tested.

DATA REPORTING

Information provided by each HSC Trust Laboratory enables the DoH to report on the following:

- Number of individuals with a laboratory completed test for SARS-COV2 Virus;
- Number of individuals with a laboratory completed positive test for SARS-COV2 Virus;
- Number of individuals with a laboratory completed negative test for SARS-COV2 Virus; and,
- Total number of laboratory completed tests for SARS-COV2 Virus.

Data Presented by Date of Specimen

The data items listed above are presented by the date the specimen (swab) was taken from the individual being tested, rather than the date the laboratory tested, completed and authorised the result. Whilst this gives the most accurate analysis of how cases progress over time it does mean that the latest days' figures are usually incomplete, so it shouldn't be seen as a sudden large drop in cases.

It is also important to note that most testing to date has been offered to those in hospital with a medical need as well as HSC key workers, rather than the general population, many with mild symptoms. So completed cases represent the typical population of people with severe disease, rather than all of those who get infected.

TECHNICAL NOTES: COVID-19 TESTING

Local Government District (LGD)

Laboratory completed tests are aggregated to Local Government Districts, though a number of cases cannot be matched to this geographical area due to missing / incorrect postcodes. For this reason the LGD count will not add up to the total number of individuals tested for Northern Ireland.

KEY TERMS USED

Individuals Tested

Refers to the number of individuals who have had a laboratory completed test for the SARS-COV2 Virus since February 2020. If an individual has had more than one test for the SARS-COV2 Virus, only the first laboratory completed positive test result will be reported, with all other results of laboratory completed tests excluded, regardless of when the test took place.

Cumulative Individuals Tested

Refers to the total number of individuals who have had a laboratory completed test for the SARS-COV2 Virus since February 2020. This information is presented by the date the specimen (sample / swab) had been taken at a testing location, and does not refer to the date on which the laboratory completed and authorised the result of the test.

Total Tests

Refers to the total number of laboratory completed tests for the SARS-COV2 Virus. If an individual has had more than one laboratory completed test, each result will be counted.

Cumulative Total Tests

Refers to the total number of completed authorised laboratory tests for the SARS-COV2 Virus since February 2020. This information is presented by the date the specimen (sample / swab) had been taken at a testing location, and does not refer to the date on which the laboratory completed and authorised the result of the test.

TECHNICAL NOTES: COVID-19 TESTING

Laboratory Completed Test

Refers to the final stage of the testing process, whereby a specimen / sample (swab) has been taken at a testing location, the specimen / sample has been booked and processed by a laboratory, and a result been completed and authorised by a laboratory technician.

Laboratory completed results for each of the HSC Trust Laboratories will be listed as one of the following; with only positive, negative and indeterminate results being included in individuals tested and total tests.

- Positive;
- Negative;
- Indeterminate;
- Not Tested (not included in individuals tested and total tests); or,
- Invalid (not included in individuals tested and total tests).

TECHNICAL NOTES: DEATHS

Death extracts are provided daily to the DOH detailing the count of deaths reported to the PHA where the deceased has had a positive test for COVID-19 and died within 28 days, whether or not COVID-19 was the cause of death. PHA sources include reports by healthcare workers (e.g. HSC Trusts, GPs) and information from local laboratory reports. Local Government Districts are defined by the deceased's residential setting. Interpretation of the figures should take into account that totals by date of death, particularly for recent prior days, are likely to be updated in future releases.

DATA QUALITY

Data is refreshed each day to include any deaths that have been reported during the current reporting period (from 10.00 am one day previous until 10.00 am on the day of reporting). Deaths submitted by HSC Trusts after 10.00am will be reported in the Daily COVID report for the following day. There may also be deaths reported to the PHA a number of days after the death occurred. Data will be refreshed and revisions to previous reported figures by date of death will be provided in the latest report.

DATA REPORTED

Data is reported in the following ways:

- Total number of deaths reported up to the end of the current reporting period
- Total number of deaths reported in the current reporting period
- Total number of deaths reported up to the end of the current reporting period, split by Local Government District (LGD)
- Total number of deaths reported up to the end of the current reporting period, split by Gender
- Total number of deaths reported up to the end of the current reporting period, split by Age Group
- Daily updated counts of deaths reported split by date of death

TECHNICAL NOTES: ADMISSIONS

The Patient Administrative System (PAS) is a patient level administrative data source that provides information on patient care delivered by health and social care hospitals in Northern Ireland. Data from PAS are routinely uploaded to the Regional Data Warehouse, which is managed by the Business Service Organisation (BSO).

Data Quality

A daily download is taken at 08:30 from the Admissions and Discharges universe of the Regional Data Warehouse reflecting admissions as of midnight prior to the download date. Patients admitted with suspected or confirmed COVID-19 are identified using specific Method of Admission Codes (CR or CC) and Specialty Codes (COVS or COVC). Method of Admission codes are only used for non-elective patients only.

Information is constantly being revised as records are updated by HSC Trusts and therefore figures for historical dates may change. When technical issues arise or errors in the data are discovered, the HSCB email to inform DOH.

Admission / Discharges

A patient may be admitted more than once, for example:

- Admitted on two or more separate occasions
- Admitted to hospital A within one HSC Trust and later transferred and admitted to hospital B in a different HSC Trust. The admission to hospital B will be recorded as a new admission.

Consequently, patients may also be discharged more than once and these discharges will be included in the discharge total.

Internal Transfers

If a patient with suspected or confirmed COVID-19 is transferred between hospitals within the same HSC Trust they are admitted using a CR/CC Method of Admission Code. The Method of Discharge is recorded as ID – Internal Discharge.

The Belfast Trust identifies confirmed /suspect COVID-19 patients by using the specialty codes (COVC or COVS). Any internal transfers will be admitted using the IA Method of Admission Code.

Internal transfers are not counted as new admissions and only the final admission record will be counted for these patients.

TECHNICAL NOTES: ADMISSIONS

Inpatients / Hospitalisations

Number of people currently in hospital with confirmed or suspected COVID-19 at midnight, taking into account new admissions and subtracting deaths and discharges.

Discharges + Inpatients \neq Admissions

Inpatients are counted according to the hospital the patient is physically present in, this can lead to the total inpatient figure and the total discharge figure not summing to the total admissions figure. For example, a patient is admitted to hospital A and later discharged from hospital A and transferred to hospital B within the same HSC Trust. This is an internal transfer, therefore an admission and discharge would be counted for hospital A but no admission or discharge would be counted for hospital B. The patient may however be counted as an inpatient at hospital B. Consequently the admissions total for hospital B will not be equal to the sum of discharges and inpatients for hospital B.

The alternative to this would be to count all internal admissions but this double counts patients if / when they are transferred between hospitals and would provide an inflated figure for admissions and discharges.

Definitions

Admission: Any person admitted to hospital with suspected or confirmed COVID-19, excluding internal admissions.

Inpatient / Hospitalisation: Any person admitted to hospital with suspected or confirmed COVID-19 that has not been discharged or died.

Discharge: Any person admitted to hospital with suspected or confirmed COVID-19 that has subsequently been discharged or died., excluding internal transfers.

Date/Time Stamp: Midnight

Specialty: COVS or COVC

Method of Admission: CR: Suspected COVID-19 or CC: Confirmed COVID-19

TECHNICAL NOTES: ADMISSIONS

There is a lag of up to eight months in the clinical coding of diagnoses on patient records. Therefore, at the start of the pandemic two new admission codes were created which did not need to be clinically coded to enable the identification of and reporting on all COVID-19 patients admitted to hospital. Any patient presenting with COVID-19 like symptoms was coded as CR – Suspect COVID, and swabbed for testing. Once a positive test result was obtained the code was changed to CC – Confirmed COVID19. HSC Data Standards Guidance on the topic was shared with Trusts. As well as facilitating reporting, these codes were also used operationally on wards to make sure staff were aware of symptomatic patients. If a CR patient's lab result was negative they remained coded as CR on the hospital system in order to continue to alert staff to the nature of their symptoms. In many cases, these patients did not actually have COVID-19, meaning that the CR code over-represented the actual number of patients.

The views of clinical and operational colleagues based in hospitals who provided input and feedback to the dashboard was that the use of the CR codes may not be helpful to the public understanding of the true number of COVID patients in hospital because, despite guidance, the CR code was not always used consistently across wards and hospitals and was not changed once a patient had a negative test.

Given that all patients admitted to hospital are **now swabbed and there is better coding of confirmed cases much earlier in the process than at the beginning of the pandemic**, on 27th May the decision was taken that it was no longer appropriate to include the CR codes and that reporting of them should cease. New pages focusing only on confirmed (CC) cases were developed and these were presented together with the confirmed/suspected combined charts and tables for a short transition period to maintain transparency and to enable users to see the relationship between the two data sets of data. This commenced on 1st June and this addition to the dashboard was welcomed by clinical colleagues and other users. Following this transition period it was announced on the 8th June on the notes section of the dashboard that reporting of suspected cases (CR) would cease from 10th June. From 10th June reporting focused on confirmed cases only.

TECHNICAL NOTES: BED OCCUPANCY

The Department sources data on Intensive Care Units from the CCANI network each day. A conference call is held between CCANI staff and Trust staff to gather this information at 9.30am each morning.

CCaNNI provide the data to the Department as excel spreadsheets, providing the ICU and ventilation position for each Intensive Care Unit as of the morning of reporting. The ICU capacity presented includes additional surge capacity available on the day of reporting. The spreadsheets includes for each Unit (including Paediatric and Cardiac ICU):

- the number of available ICU beds;
- the number of beds occupied by Covid-19 confirmed patients;
- the number of beds occupied by Covid-19 suspected patients; and
- the total number of beds occupied.

The Department sources data on General Beds Occupancy from the Health and Social Care Board (HSCB) each day. Trusts are required to submit information on the number of beds occupied, available and closed within each of their hospital sites to the HSCB at 10.30am each morning to reflect data from the previous day. Within this return, Trusts provide the total bed complement of the hospital site, the number of beds closed, the number occupied by Covid-19 patients, the total number occupied and the number still available.

DATA QUALITY

Quality assurance of this data is undertaken by the DoH using a combination of automated and semi-automated programmes, with manual checking both before and post processing. When occupancy data is received into the Department, a member of staff checks that the figures presented in both files appear complete. Any discrepancies are raised with the data supplier to seek clarification or revision. Data files are then appended to relevant 'master' files which contain a record of previous returns. Sense checks are undertaken to ensure internal consistency and clarification is sought from the supplier if data looks missing or erroneous. Data for ICU is reported based on the date that the CCaNNI network collated the information and data for general beds is based on the occupancy position on the day prior to reporting.

Given that the information is collated from teams in each Trust responsible for the management of ICU beds, it is believed to be an accurate reflection of ICU capacity on any given day. It presents a static picture at a point in time and is not revised retrospectively unless an error is discovered in the data or a change to the methodology used to produce the information is required. Any such changes will be alerted to users.

TECHNICAL NOTES: BED OCCUPANCY

General beds occupancy is derived from a live Patient Administration System and is subject to revision as patient records are updated. Data provided by HSCB is re-run for three consecutive days for each day of reporting to capture any updates to the Patient Administration System, however the data presented within this Dashboard is based on the initial run date of the data and therefore doesn't include updates made to PAS on subsequent days.

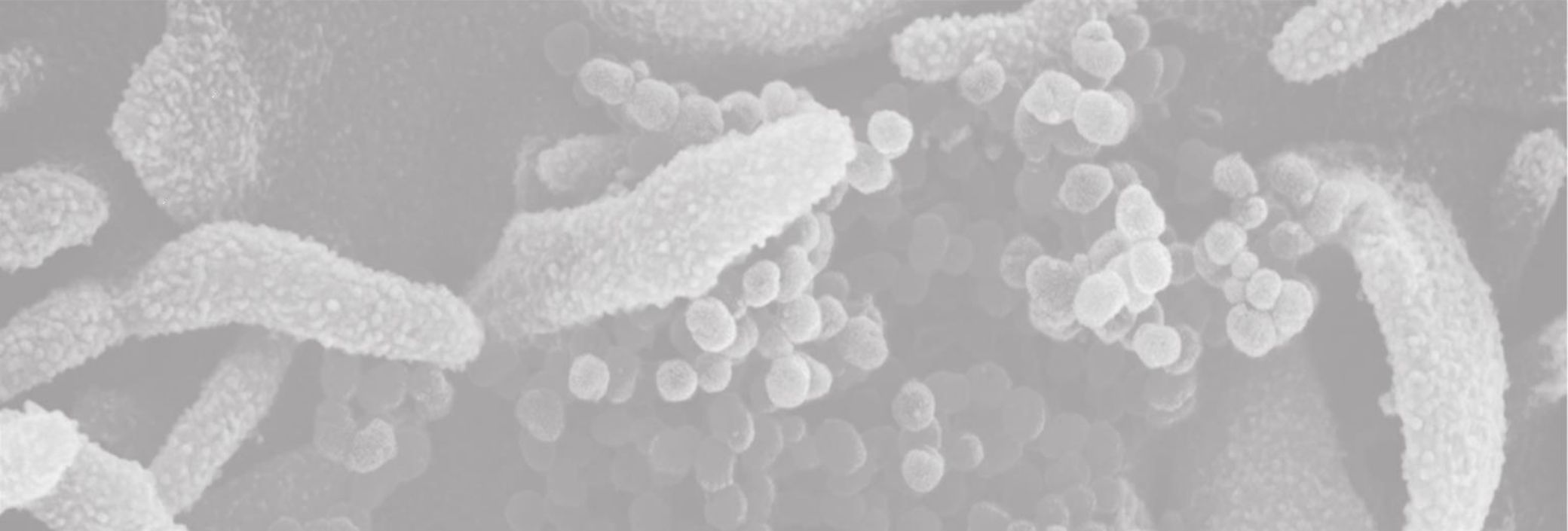
Both data sources are considered to be management information and are therefore provisional and subject to revision.

DATA REPORTING

Information provided by the CCaNNI network and HSCB enables the Department to report on the number of patients occupying ICU and general beds each day, how many patients are ventilated, how many of these patients have suspected or confirmed Covid-19 and how many beds are still available across the region. Charts are presented to show the daily occupancy levels as well as 5 day rolling averages which help to smooth the variations in daily data. From Wednesday 24th June onwards, all general and ICU beds data displayed on this dashboard refer to confirmed covid-19 patients only. Prior to 13th April 2020, ventilator data presented includes both suspected and confirmed covid-19 patients. From 13th April onwards, ventilator data includes confirmed covid-19 patients only.

TECHNICAL NOTES: DASHBOARD UPDATES

DATE ANNOUNCED	CHANGE TO DASHBOARD
08 May 2020	From 8th May Admissions and Inpatient numbers will be broken down into confirmed and suspected COVID-19 cases.
11 May 2020	From 11th May additional charts on a rolling 5 day average occupancy rate in G&A / ICU Beds are now available.
13 May 2020	From 13th May, information on the rate of positive lab completed tests per 100,000 population has been included.
28 May 2020	From 28th May information on COVID-19 death settings and historical trend analysis of COVID-19 care home outbreaks have been added to the dashboard.
01 June 2020	From 1st June, additional pages have been added for COVID-19 testing trend analysis (7 day rolling average of positive tests & percentage of all tests identified as positive) and additional information on COVID-19 admissions. Ongoing validation of admissions data has resulted in revised figures being published from 1st June.
09 June 2020	From 10th June 2020 data on suspected COVID-19 patient admissions and inpatients will be removed from the dashboard and reporting will focus on confirmed cases only.
12 June 2020	From 15th June 2020, information will be presented on the numbers of ventilated COVID / Non-COVID patients. We will also include a breakdown of COVID / Non COVID general bed occupancy.
23 June 2020	From 25th June all beds and ventilation data will focus on confirmed COVID-19 cases only.
23 June 2020	From 26th June reporting will commence on the outcomes of laboratory completed tests at National Testing Centres.
26 June 2020	Change to Reporting Frequency-From week commencing 29th June the COVID-19 dashboard will no longer be updated at weekends.
06 July 2020	From 6th July a page detailing deaths reported on the Saturday and Sunday of each weekend will be added. This will be updated each Monday on the dashboard.
26 August 2020	From 26th August information on admissions and discharges within the last 7 and 14 days has been added to page 10 of the dashboard.
03 September 2020	From 2nd September an additional page was added on laboratory completed tests by LGD during the most recent and previous 7 days, and a breakdown of positive tests by age group and LGD.



INFORMATION
ANALYSIS
DIRECTORATE



Department of
Health

An Roinn Sláinte

Mánnystrie O Poustie

www.health-ni.gov.uk