COVID-19 in Northern Ireland

Vaccination Status of Deaths and Hospitalisations

Updated to Include Weeks 51 to 2 (20th December 2021 to 16th January 2022)

INFORMATION
ANALYSIS
DIRECTORATE

Department of
Health
An Roinn Sláinte
Männystrie O Poustie
www.health-ni.gov.uk

Summary

- The COVID-19 vaccination program for Northern Ireland began in December 2020. By mid January 2022 approximately 2.7 million first and second doses of the vaccine have been administered, with 91% of adults receiving their first dose and 88% receiving their second dose.

- The rollout of the booster vaccinations began in September 2021. By mid January 2022, approximately 0.91 million booster or third doses have been administered.

- Ongoing monitoring of vaccine performance is necessary to support Public Health policy as the vaccination program progresses.

- This report presents the results for Northern Ireland on the vaccination status of patients who have been hospitalised from COVID-19 and of those who have died from COVID-19 since 30th August 2021, and has been updated to include weeks 51 to 2 (20th December 2021 to 16th January 2022).

- The reported vaccination status now includes hospitalised patients who have received their booster or third primary dose. There is currently insufficient data to assess the booster vaccination status of patients who have died from COVID-19. Since 30th August 2021 there were 39 (6.4%) deaths of patients who had received a booster or third dose.

- The rates per 100,000 in the tables and charts shown below are presented as an overall weekly rate for the period from 30th August 2021 to 16th January 2022, and as the total rate over the most recent 4 week reporting period.

- With the rapid rollout of the booster vaccination programme, the number of individuals receiving their booster or third dose increases significantly with each week. For first and second primary doses the vaccinated population has plateaued for all older age groups. The rates per 100,000 population per week were calculated allowing the population denominator to change over time. For the booster or third primary dose the vaccinated population is calculated with a two week lag.

- When calculating the rate per 100,000, small changes in either the number of patients (numerator) or the vaccinated population (denominator) will have a significant effect. As the acceleration of the booster programme continues, rates per 100,000 should be interpreted with additional caution.

Summary

Hospital Admissions since 30th August 2021

- 63% of adult COVID-19 inpatients aged under 50 are unvaccinated. 21% of COVID-19 inpatients aged 50 and over are unvaccinated.

- Unvaccinated individuals aged 50 and over are **5.1 times** (95% confidence interval [4.7, 5.6]) as likely to be admitted to hospital with COVID-19 than individuals vaccinated with two doses.

- When compared to fully vaccinated individuals who have also received their booster or third dose, unvaccinated individuals age 50 and over are **11.3 times** (95% confidence interval [10.0, 12.7]) as likely to be admitted to hospital with COVID-19.

- Fully vaccinated individuals aged 50 and over, who have still to receive their booster are **2.2 times** (95% confidence interval [2.0, 2.4]) as likely to be admitted to hospital with COVID-19 than those who have also received their booster or third dose.

- For adults under 50, whilst the numbers admitted to hospital are lower, an unvaccinated individual is **10.9 times** (95% confidence interval [7.6, 15.6]) as likely to need hospitalisation than fully vaccinated individuals who have also received their booster or third dose.

Hospital Admissions between 20th December 2021 and 16th January 2022

- 47% of adult COVID-19 inpatients aged under 50 are unvaccinated. 20% of COVID-19 inpatients aged 50 and over are unvaccinated.

- Unvaccinated individuals aged 50 and over are 3 times (95% confidence interval [2.4, 3.7]) as likely to be admitted to hospital with COVID-19 than individuals vaccinated with two doses.

- For adults under 50, whilst the numbers admitted to hospital are lower, an unvaccinated individual is 9.5 times (95% confidence interval [6.3, 14.4]) as likely to need hospitalisation than fully vaccinated individuals who have also received their booster or third dose.

Summary

Deaths since 30th August 2021

- 62% of patients aged under 50 who died from COVID-19 were unvaccinated. 19% of patients aged 50 and over who died were unvaccinated.

- Unvaccinated individuals aged 50 and over are **5.4 times** (95% confidence interval [4.4, 6.7]) as likely to die than individuals vaccinated with at least two doses.

Deaths between 20th December 2021 and 16th January 2022

- 25% of patients aged 50 and over who died were unvaccinated.

- Unvaccinated individuals aged 50 and over are 8 times (95% confidence interval [4.9, 13.0]) as likely to die than individuals vaccinated with at least two doses.

Note

- These results should be interpreted in the context of vaccine coverage in the Northern Ireland population (**Figures 1 to 3**). The success of the vaccination programme has resulted in a very small percentage of unvaccinated individuals, particularly for the older age cohorts. When there is a very high vaccine coverage in the population, even with a highly effective vaccine, it is expected that a large proportion of cases, hospitalisations and deaths would occur in vaccinated individuals. This is simply because a larger proportion of the population are vaccinated than unvaccinated and no vaccine is 100% effective. This is especially true because vaccination has been prioritised in individuals who are more susceptible or more at risk of severe disease. Individuals in risk groups may also be more at risk of hospitalisation or death due to non-COVID-19 causes, and thus may be hospitalised or die with COVID-19 rather than because of COVID-19. Death and admissions rates per 100,000 should therefore be interpreted with caution.

Vaccination Status

Methods

- Patients admitted to hospital with COVID-19 are identified using specific Method of Admission Codes. Patients are allocated to an age cohort based on their age at date of admission. Patient records are continually updated by HSC Trusts and thus historical data is subject to revision. Further technical guidance on COVID-19 admissions is [appended](#).

- The number of deaths is as reported to the Public Health Agency where the deceased has had a positive test for COVID-19 and dies within 28 days, whether or not COVID-19 was the cause of death. Patients are allocated to an age cohort based on their age at date of death.

- Further details on the definition of admissions and deaths is provided on the Department of Health COVID-19 [dashboard](#).

- The vaccination status of each patient is determined by matching the admission and deaths cases with the vaccination status of the Patient as recorded on the Northern Ireland Vaccine Management System (VMS). If it is not possible to match an admission or death against the vaccination status of the patient on the VMS then the individual is recorded as 'Missing'.

- A person is deemed vaccinated if the date of vaccination is greater than or equal to 14 days before date of admission, or for deaths, if the date of vaccination is greater than or equal to 14 days before date of specimen. In the charts and tables below, 'Partially Vaccinated' refers to those individuals who have received one dose, 'Fully Vaccinated' refers to those individuals who have received two doses. 'Fully Vaccinated + Booster or Dose 3' refers to those individuals who have received two primary doses plus the booster vaccine or third primary dose.

- The number of vaccinated individuals in the population is taken from the VMS with age cohorts calculated at date of vaccination.

- The calculation of the number of unvaccinated individuals in the population requires an estimate of the total population in each age cohort. This was provided by NISRA based on their 2021 [interim population projections](#).
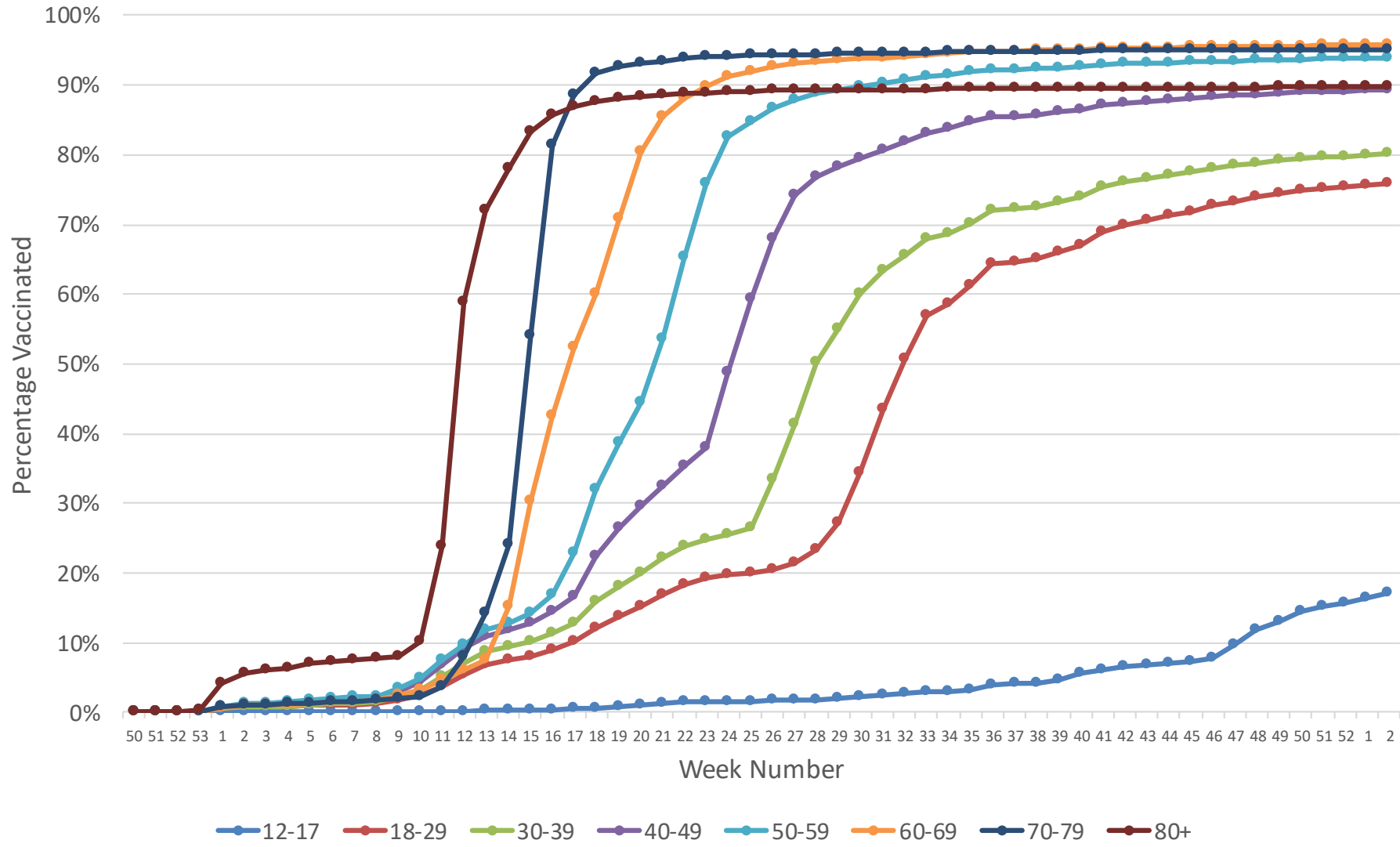
Vaccine Coverage

Figure 1: First dose cumulative vaccine uptake by week number and age group (December 2020 to 16th January 2022)
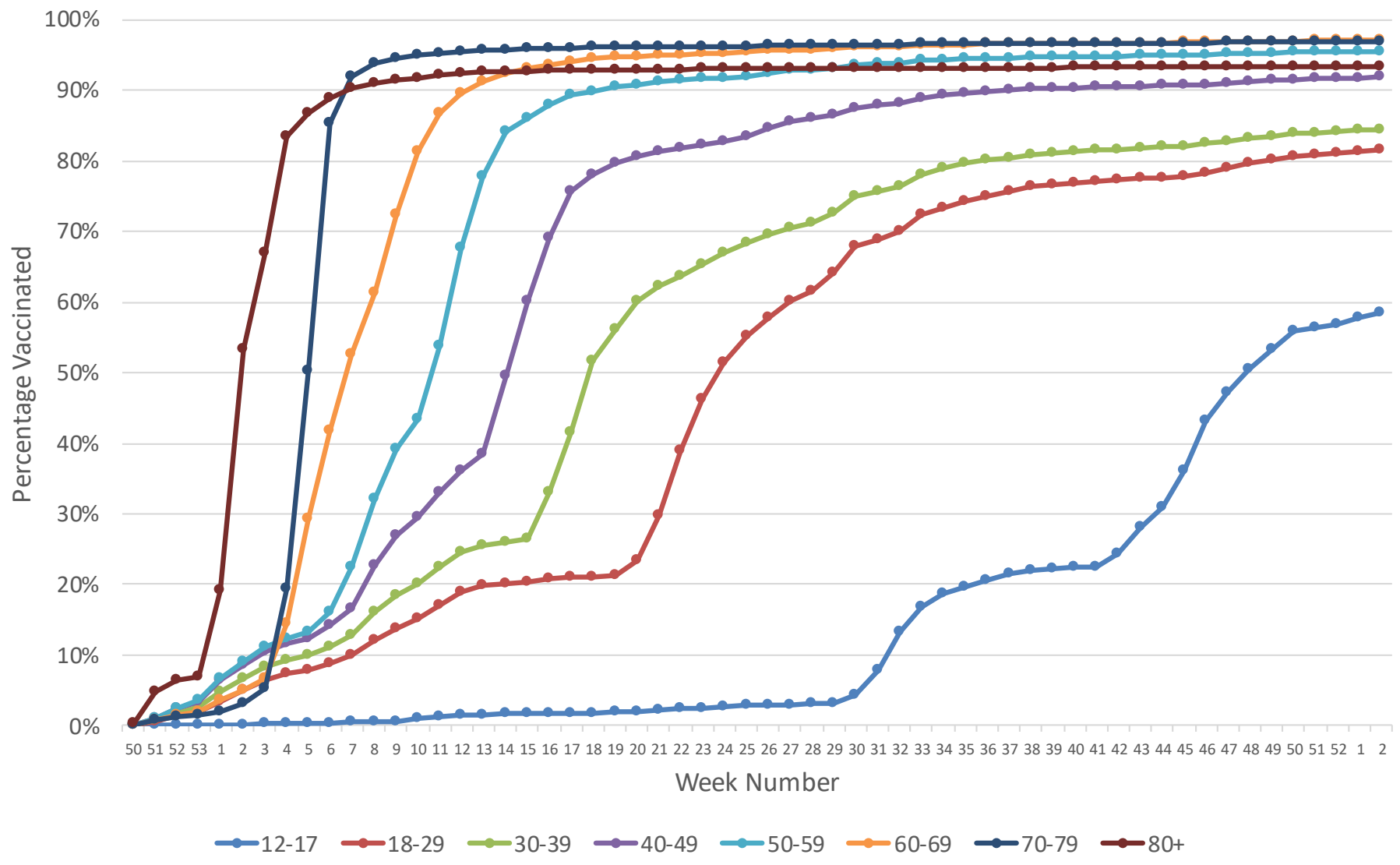
The percentage vaccinated is calculated using the 2021 mid-year population projections
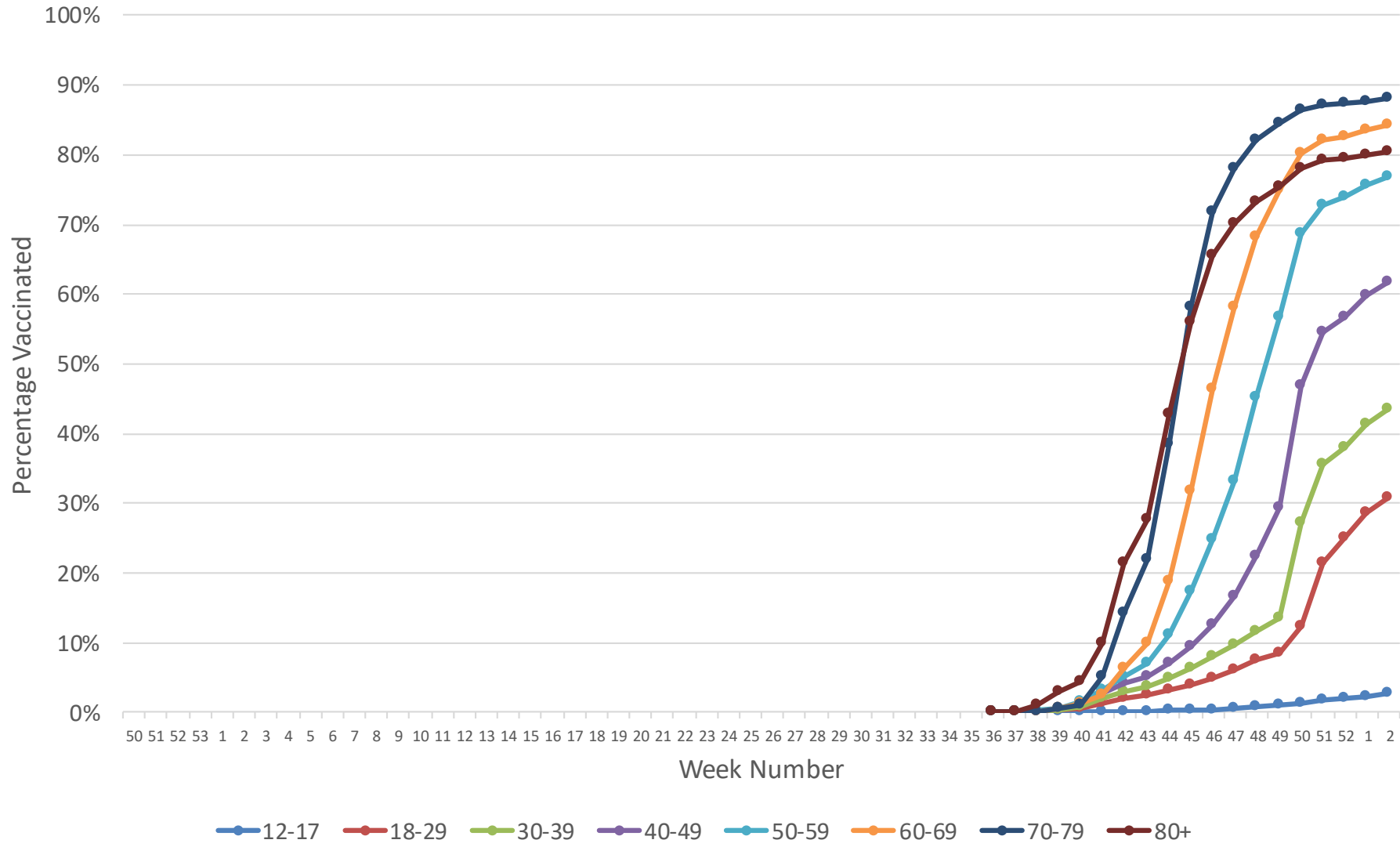
Vaccine Coverage

Figure 2: Second dose cumulative vaccine uptake by week number and age group (December 2020 to 16th January 2022)

The percentage vaccinated is calculated using the 2021 mid-year population projections

Vaccine Coverage

Figure 3: Booster or third dose cumulative vaccine uptake by week number and age group (December 2020 to 16th January 2022)
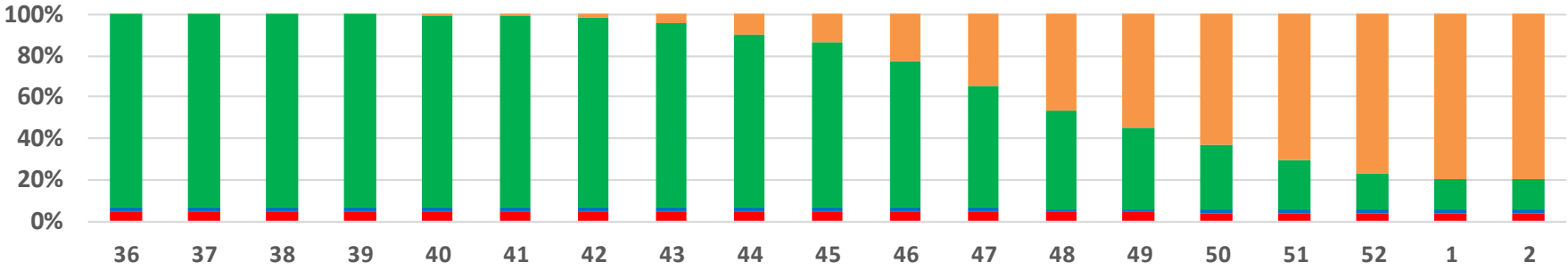

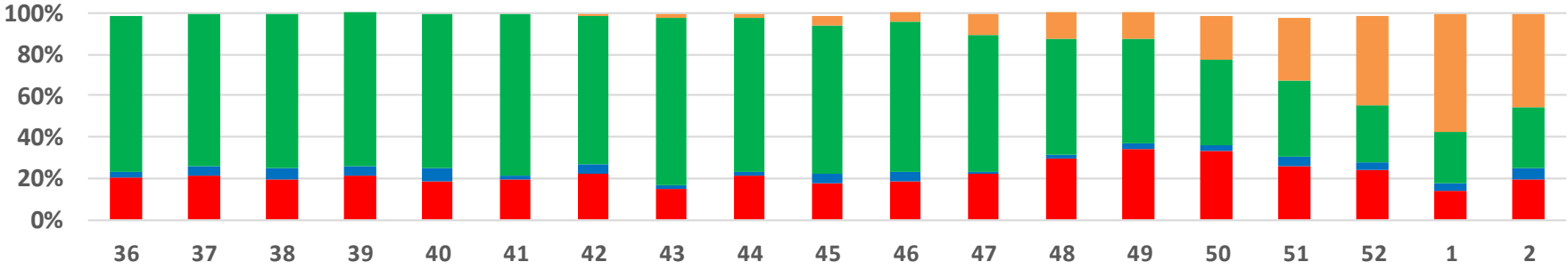The percentage vaccinated is calculated using the 2021 mid-year population projections

Vaccination Status – Hospital Admissions Aged 50 & Over

Figure 4: Percentage of population, hospital admissions and rate per 100,000 by week number and vaccination status between 30th August 2021 and 16th January 2022
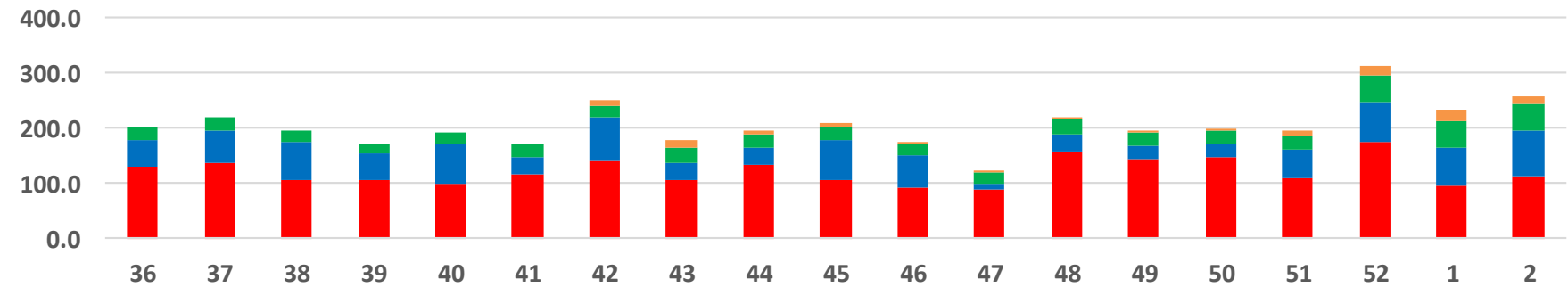
Vaccination Status – Hospital Admissions

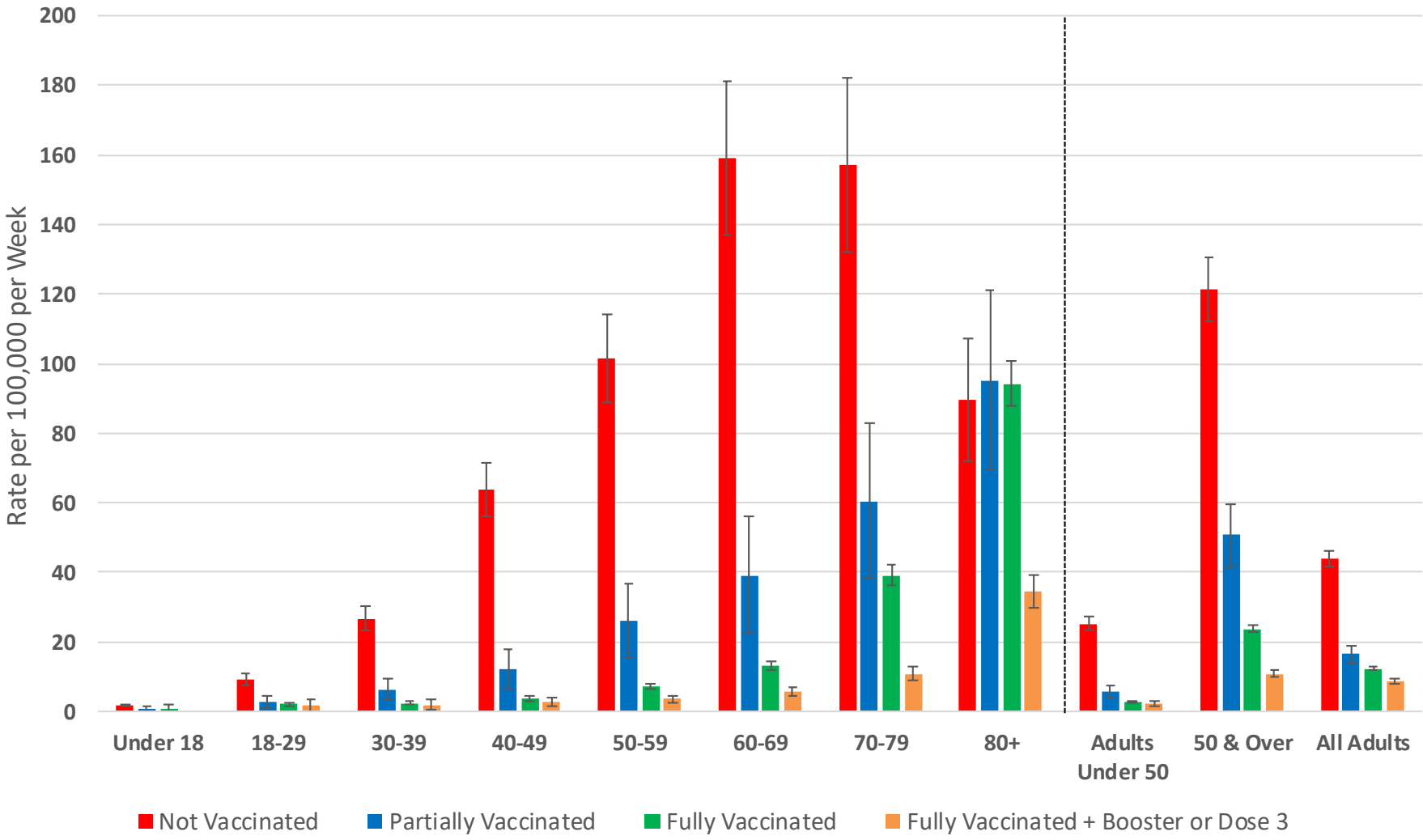## Table 1a: COVID-19 cases admitted to hospital between 30th August 2021 and 16th January 2022

Age Cohort	Not Vaccinated	Missing	Partially Vaccinated (1 dose)	Fully Vaccinated (2 doses)	Fully Vaccinated + Booster or Dose 3	Total Admissions	Rates Admitted to Hospital per Week per 100,000			
							Not Vaccinated	Partially Vaccinated	Fully Vaccinated (2 doses)	Fully Vaccinated + Booster or Dose 3
Under 18	114	0	6	2	0	122	1.6	0.7	0.8	0.0
18-29	104	1	10	69	5	189	9.4	2.7	2.0	1.8
30-39	225	4	17	79	8	333	26.7	6.4	2.4	1.9
40-49	268	4	17	124	18	431	63.8	12.1	3.7	2.8
50-59	250	5	23	249	39	566	101.4	26.0	7.1	3.6
60-69	201	7	21	335	65	629	159.0	39.2	13.1	5.6
70-79	150	9	28	637	116	940	157.0	60.5	39.1	10.8
80+	99	9	53	803	200	1164	89.4	95.3	94.3	34.6
Adults Under 50	597	9	44	272	31	953	25.2	5.6	2.7	2.3
50 & Over	700	30	125	2024	420	3299	121.4	50.9	23.7	10.8
All Adults	1297	39	169	2296	451	4252	44.0	16.4	12.4	8.6

Table 1b: COVID-19 cases admitted to hospital between 20th December 2021 and 16th January 2022

Age Cohort	Not Vaccinated	Missing	Partially Vaccinated (1 dose)	Fully Vaccinated (2 doses)	Fully Vaccinated + Booster or Dose 3	Total Admissions	Rates Admitted to Hospital per 100,000			
							Not Vaccinated	Partially Vaccinated	Fully Vaccinated (2 doses)	Fully Vaccinated + Booster or Dose 3
Under 18	41	0	3	2	0	46	11.5	4.9	9.3	0.0
18-29	37	0	4	38	4	83	72.8	25.9	23.9	8.8
30-39	41	1	5	34	7	88	102.9	45.9	26.4	9.7
40-49	45	0	7	25	16	93	224.3	116.0	24.6	14.2
50-59	42	1	5	46	30	124	352.5	122.9	69.0	17.0
60-69	51	4	8	30	53	146	823.0	304.0	93.5	32.3
70-79	25	4	6	56	87	178	514.9	248.1	431.0	67.3
80+	24	0	14	70	150	258	418.0	475.4	724.1	228.5
Adults Under 50	123	1	16	97	27	264	111.1	49.4	24.9	11.7
50 & Over	142	9	33	202	320	706	494.6	273.5	166.4	59.8
All Adults	265	10	49	299	347	970	190.3	110.0	58.6	45.3

Vaccination Status – Hospital Admissions per 100,000

Figure 5: Rate per week per 100,000 COVID-19 cases admitted to hospital between 30th August 2021 and 16th January 2022, with 95% confidence intervals

Vaccination Status – Deaths

Table 2a: COVID-19 deaths within 28 days of a positive test between 30th August 2021 and 16th January 2022

| Age Cohort	Not Vaccinated	Missing	Partially Vaccinated	Fully Vaccinated (at least 2 doses)	Total Deaths	Death Rates per 100,000 per Week		
						Not Vaccinated	Partially Vaccinated	Fully Vaccinated (at least 2 doses)
Adults Under 50	13	0	0	8	21	0.5	0.0	0.1
50-59	13	1	5	20	39	5.3	5.6	0.4
60-69	28	0	2	54	84	22.2	3.7	1.5
70-79	33	3	9	126	171	34.5	19.5	4.7
80+	38	7	21	244	310	34.3	37.8	17.1
50 & Over	112	11	37	444	604	19.4	15.1	3.6
All Adults	125	11	37	452	625	4.2	3.6	1.9

Table 2b: COVID-19 deaths within 28 days of a positive test between 20th December 2021 and 16th January 2022

Age Cohort	Not Vaccinated	Missing	Partially Vaccinated	Fully Vaccinated (at least 2 doses)	Total Deaths	Death Rates per 100,000		
						Not Vaccinated	Partially Vaccinated	Fully Vaccinated (at least 2 doses)
Adults Under 50	3	0	0	0	3	2.7	0.0	0.0
50-59	3	0	1	3	7	25.2	24.6	1.2
60-69	9	0	0	9	18	145.2	0.0	4.6
70-79	3	0	0	25	28	61.8	0.0	17.6
80+	7	0	3	26	36	121.9	101.9	34.5
50 & Over	22	0	4	63	89	76.6	33.2	9.6
All Adults	25	0	4	63	92	18.0	9.0	4.9

* Age cohorts below 50 are not provided to avoid potential disclosure of individual details.

Vaccination Status – Deaths per 100,000

Figure 6: Rate per 100,000 per week COVID-19 deaths within 28 days of a positive test between 30th August 2021 and 16th January 2022, with 95% confidence intervals
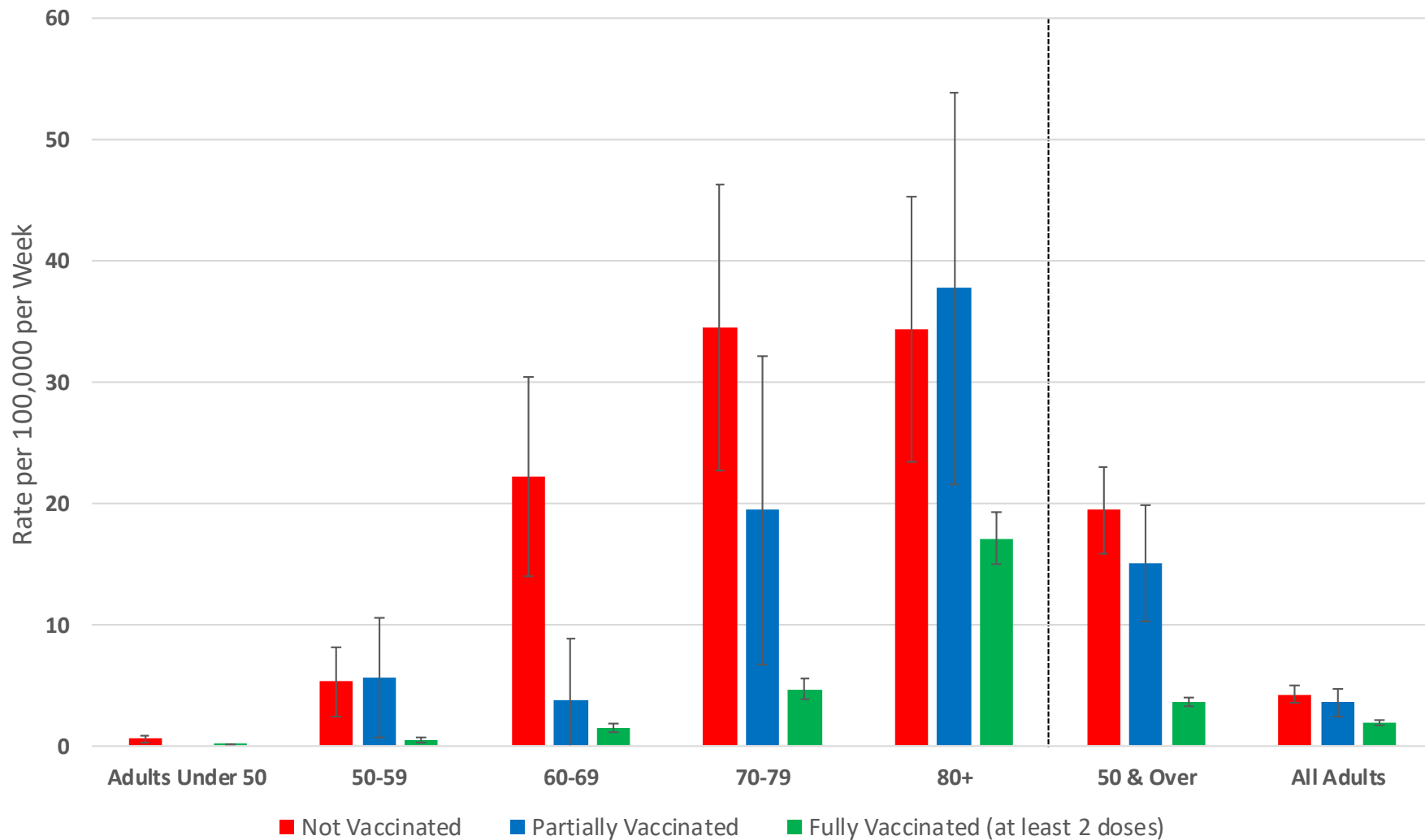
Appendix
Technical Guidance on COVID-19 Admissions (1)

- 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

- The Department sources data on COVID-19 admissions and inpatients from the Regional Data Warehouse. Up to the 1st December 2020, a daily download was taken at 08:30 from the Admissions & Discharges universe of the Regional Data Warehouse reflecting admissions as of midnight prior to the download date. From 2nd December 2020 two additional daily downloads are taken from; (i) Recent Admissions & Discharges universe which includes data for the two most recent days, and (ii) Admissions & Discharges Specialty universe which is used to identify a number of inpatients in the Belfast HSC Trust. Data from each of these sources are merged and duplicate records are removed from the data.

- Patients admitted with confirmed COVID-19 are identified using the specific Method of Admission Codes (CC, CE or CS) or Specialty Code (COVC). These codes are used for any patient admitted to hospital with confirmed COVID-19. If an inpatient tests positive for COVID-19 the Method of Admission code is revised to one of the confirmed coronavirus codes above. If an inpatient tests positive for COVID-19 and then subsequently tests negative the Method of Admission code remains as one of the confirmed coronavirus codes above.

- 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.

Appendix
Technical Guidance on COVID-19 Admissions (2)

Admissions / 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 confirmed COVID-19 is transferred between hospitals within the same HSC Trust they are admitted using the CC, CE or CS Method of Admission Codes. The Method of Discharge is recorded as ID – Internal Discharge.

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

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

INFORMATION
ANALYSIS
DIRECTORATE

Department of
Health
An Roinn Sláinte

Männystrie O Poustie

www.health-ni.gov.uk

E-mail: statistics@health-ni.gov.uk