

SPI-M-O

Medium-Term Projections

19th May 2021

SPI-M-O Medium-term Projections

- **These projections are not forecasts or predictions.** They represent a scenario in which the trajectory of the epidemic continues to follow the trends that were seen in the data up to 17th May. **As a result, they should be considered as counterfactuals of what might have occurred in the absence of the recent relaxations across the UK, such as Step 3 of the Roadmap in England on 17th May.**
- The delay between infection, developing symptoms, the need for hospital care, and death means **they will not fully reflect the impact of policy or behavioural changes in the two to three weeks prior to 17th May.**
- **These projections do not include the effects of any future policy or behavioural changes.**
- **The projections include the impact of vaccines given in the next four weeks.** This has been based on a rollout scenario provided by Cabinet Office for modelling purposes. The rollout of these doses will have limited impact over this timescale, given lags between vaccination and protection, and between infection and hospital admission.
- The projections assume vaccinations are administered according to JCVI's priority order, with 95% coverage in those aged 50 and over, and 90% coverage in the under 50s.
- Modelling groups have used their expert judgement and evidence from [Public Health England](#), [Scottish universities and Public Health Scotland](#) and other published efficacy studies when making assumptions about vaccine effectiveness. A table summarising these assumptions is available in the annex.
- The number of new cases, hospitalisations, and deaths have fallen to very low levels in some nations and regions. Projecting forwards is difficult when numbers fall to very low levels, therefore SPI-M-O have decided to pause producing medium-term projections in areas where this is the case. **The small numbers can also introduce apparent inconsistency as regions are aggregated.**
- Not all modelling groups produce projections for both hospitalisations and deaths so there will be some differences between the models included in the combined projections for each metric.

Metrics:

- **New hospitalisations per day:** Number of individuals admitted with COVID-19 and inpatients newly diagnosed with COVID-19. Data definitions differ slightly across all four nations.
- **New deaths per day (by date of death):** The number of COVID-19 deaths within 28 days of a positive test. Data definitions differ slightly across all four nations.

Modelled projections based on trends to 17th May 2021

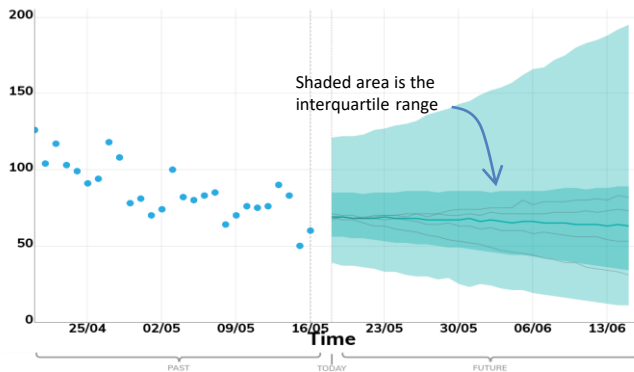
New hospital admissions per day

These projections are based on current trends and will not fully reflect the impact of policy or behavioural changes over the past two to three weeks. They are not forecasts or predictions.

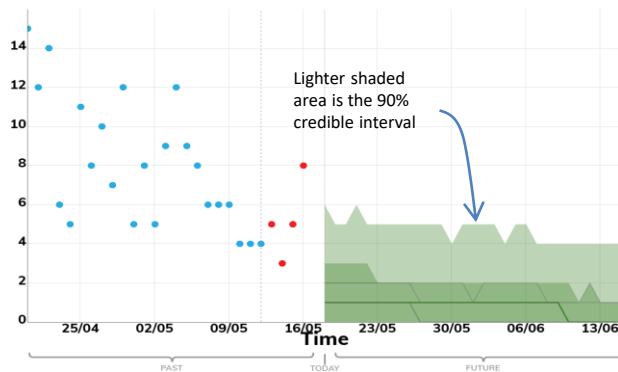
Key

- Real data
- Expected to Increase
- Projection Midpoint
- High and low estimates 5th to 95th percentile
- High and low estimates 25th to 75th percentile
- Models

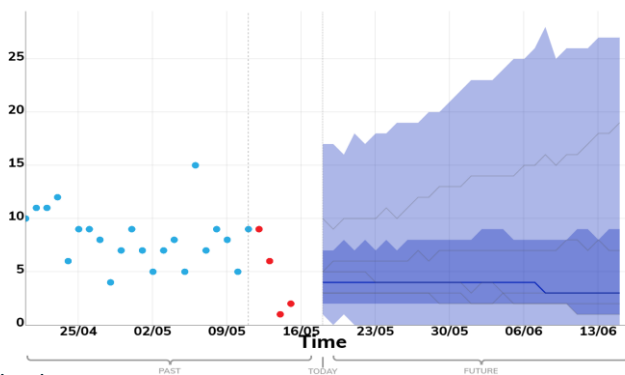
ENGLAND



WALES



SCOTLAND



NORTHERN IRELAND

SPI-M's consensus view is that the number of hospital admissions in Northern Ireland will remain very low over the next four weeks.

The fan charts show the **90% credible interval and interquartile range** of the combined projections based on current trends. They cannot account for the impact of policy or behavioural changes in the two to three weeks prior to 17th May, as these will not yet have been reflected in epidemiological data. **As a result, they should be considered as counterfactuals of what might have occurred in the absence of the recent relaxations across the UK, such as Step 3 of the Roadmap in England on 17th May.**

These projections *include* the potential impact of vaccines to be given over the next four weeks. This has been based on a rollout scenario provided by Cabinet Office for modelling purposes; with 95% coverage in those aged 50 and over, and 90% in the under 50s. These doses will have limited impact over this timescale, given lags between vaccination and protection, and between infection and hospital admission.

The projections do not include the effects of any future policy or behavioural changes.

Data notes:

England: Number of patients admitted with confirmed COVID-19 and the number of inpatients diagnosed with COVID-19 in the past 24 hours. Taken from NHSE COVID-19 Situation reports.

Wales: Number of patients admitted with confirmed COVID-19 and inpatients diagnosed with COVID-19. Provided by Public Health Wales.

Scotland: Number of patients who tested positive for COVID-19 in the 14 days prior to admission, on the day of admission, or during their stay in hospital. Readmissions within 14 days of a positive test are excluded. Provided by Public Health Scotland.

Northern Ireland: Number of patients admitted with confirmed COVID-19 and inpatients diagnosed with COVID-19. Provided by Health and Social Care Northern Ireland.

Modelled projections based on trends to 17th May 2021

New hospital admissions per day

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These projections **include the potential impact of vaccines to be given over the next four weeks**. This has been based on a rollout scenario provided by Cabinet Office for modelling purposes; with 95% coverage in those aged 50 and over, and 90% in the under 50s. These doses will have limited impact over this timescale, given lags between vaccination and protection, and between infection and hospital admission.

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Data notes:

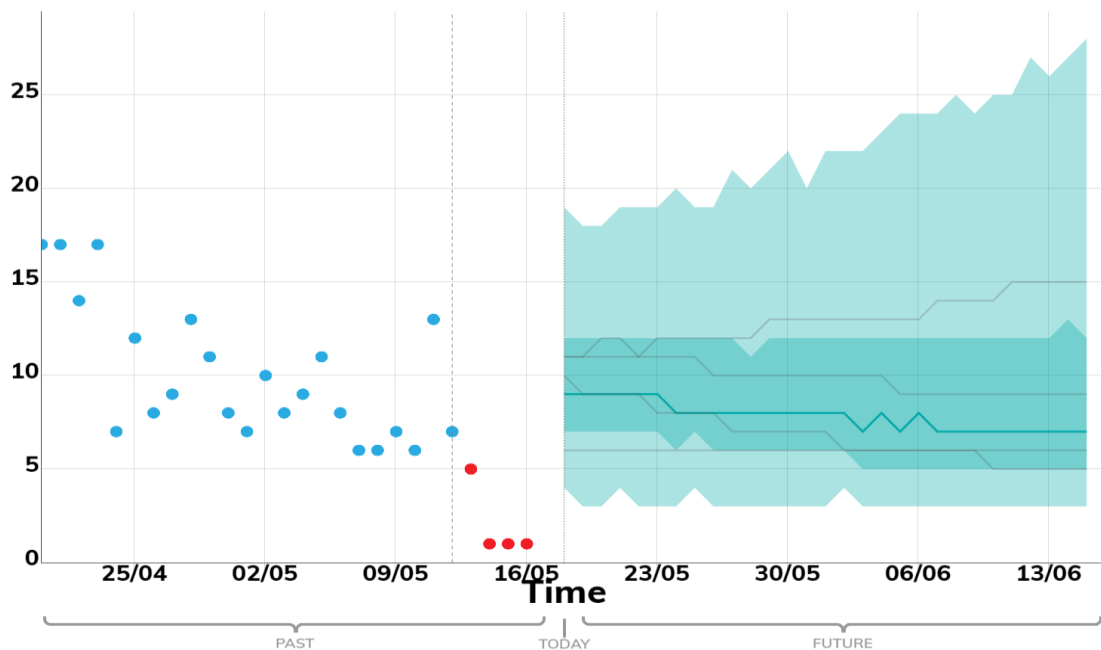
England: Number of patients admitted with confirmed COVID-19 and the number of inpatients diagnosed with COVID-19 in the past 24 hours. The past data is taken from the NHS England COVID-19 Sitreps.

Modelled projections based on trends to 17th May 2021

New deaths per day

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ENGLAND



Key

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- High and low estimates 5th to 95th percentile
- High and low estimates 25th to 75th percentile
- Models

The fan charts show the **90% credible interval and interquartile range** of the combined projections based on current trends. They cannot account for the impact of policy or behavioural changes in the two to three weeks prior to 17th May, as these will not yet have been reflected in epidemiological data. **As a result, they should be considered as counterfactuals of what might have occurred in the absence of the recent relaxations across the UK, such as Step 3 of the Roadmap in England on 17th May.**

These projections **include** the potential impact of vaccines to be given over the next four weeks. This has been based on a rollout scenario provided by Cabinet Office for modelling purposes; with 95% coverage in those aged 50 and over, and 90% in the under 50s. These doses will have limited impact over this timescale, given lags between vaccination and protection, and between infection and hospital admission.

The projections do not include the effects of any future policy or behavioural changes.

The number of deaths have fallen to very low levels in the Scotland, Wales, Northern Ireland and regions of England. Projecting forwards is difficult when numbers fall to very low levels, therefore SPI-M-O have decided to pause producing medium-term projections where this is the case. SPI-M's consensus view is that the number of deaths in Scotland, Wales, Northern Ireland and all NHS England regions will remain very low over the next four weeks.

Data Notes:

The number of COVID-19 deaths (by date of death) within 28 days of a positive test.

The past data for England is taken from the PHE line list of deaths. The past data for Scotland, Wales, and Northern Ireland is taken from the Coronavirus (COVID-19) in the UK dashboard on Gov.uk.

Annex: SPI-M-O Vaccine Effectiveness Assumptions

| Table 1: Vaccine reduction in risk of hospitalisation or death [3] | | | | | | |
|--|---------|----------|----------------|-------------|----------------|---------------------|
| | | Imperial | Manchester [1] | Warwick [2] | PHE/ Cambridge | Scottish Government |
| Pfizer-BioNTech | 1 Dose | 80% | 75% | 80% | 80% | 91% |
| | 2 Doses | 95% | 75% | 90% | 95% | 95% |
| Oxford-AstraZeneca | 1 Dose | 80% | 75% | 80% | 80% | 88% |
| | 2 Doses | 80% | 75% | 90% | 95% | 93% |
| Moderna | 1 Dose | 80% | 75% | 80% | 80% | 90% |
| | 2 Doses | 95% | 75% | 90% | 95% | 95% |

| Table 2: Vaccine reduction in risk of infection [3] | | | | | | |
|---|---------|----------|----------------|-------------|----------------|---------------------|
| | | Imperial | Manchester [1] | Warwick [2] | PHE/ Cambridge | Scottish Government |
| Pfizer-BioNTech | 1 Dose | 65% | 75% | 60% | 65% | 65% |
| | 2 Doses | 86% | 75% | 73% | 85% | 70% |
| Oxford-AstraZeneca | 1 Dose | 63% | 75% | 60% | 65% | 65% |
| | 2 Doses | 63% | 75% | 73% | 65% | 70% |
| Moderna | 1 Dose | 65% | 75% | 60% | 65% | 65% |
| | 2 Doses | 86% | 75% | 73% | 85% | 70% |

| Table 3: Vaccine reduction in onward transmission, in addition to reduction from lower infection risk [3] | | | | | | |
|---|---------|----------|----------------|---------|--------------------|-------------------------|
| | | Imperial | Manchester [4] | Warwick | PHE/ Cambridge [4] | Scottish Government [4] |
| Pfizer-BioNTech | 1 Dose | 45% | - | 50% | - | - |
| | 2 Doses | 45% | - | 50% | - | - |
| Oxford-AstraZeneca | 1 Dose | 45% | - | 40% | - | - |
| | 2 Doses | 45% | - | 50% | - | - |
| Moderna | 1 Dose | 45% | - | 50% | - | - |
| | 2 Doses | 45% | - | 50% | - | - |

[1] Manchester's model doesn't split vaccine effectiveness by vaccine type or different doses.

[2] Warwick's vaccine effectiveness assumptions are based on a weighted average of the three vaccines (Pfizer-BioNTech, Oxford-AstraZeneca and Moderna).

[3] The assumed delay between vaccination and protection varies between 10 and 21 days for dose 1 and between 7 and 21 days for dose 2 across the modelling groups.

[4] The Manchester, PHE/Cambridge and Scottish Government models do not include a reduction in the risk of onwards transmission after receiving either vaccine.