SPI-M-O
Medium-Term Projections

1st September 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 27th August.**

- **The delay between infection, developing symptoms, the need for hospital care, and death means they cannot fully reflect the recent rapid increase in cases in Scotland.** Additionally these projections do not yet fully reflect the impact of policy and behavioural changes made in the two to three weeks prior to 27th August. Predicting the peak of the epidemic in a particular nation or region is difficult and prone to large levels of uncertainty.

- **The projections do not include the effects of any future policy or behavioural changes.** The effect of school opening and closing has been included.

- **The projections include the impact of vaccines given over the next three 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 future uptake in the over 30-year olds is based on the number of vaccines given to date and future weekly uptake in those aged 30 and under is based on the number of first doses administered in the previous week.

- Modelling groups have used their expert judgement and evidence from Public Health England, Scottish Universities & Public Health Scotland, and other published efficacy studies when making assumptions about vaccine effectiveness. A table summarising these assumptions is available in the annex.

- 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.

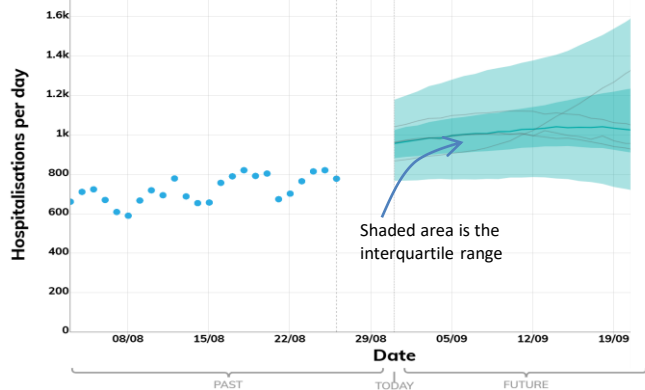# Modelled projections based on trends to 27th August 2021

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.
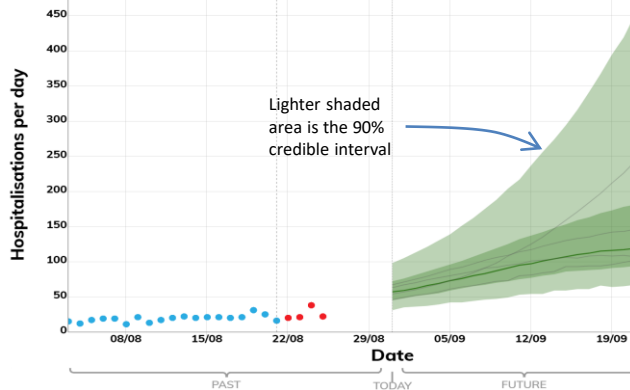
ENGLAND

Shaded area is the interquartile range

WALES

Lighter shaded area is the 90% credible interval
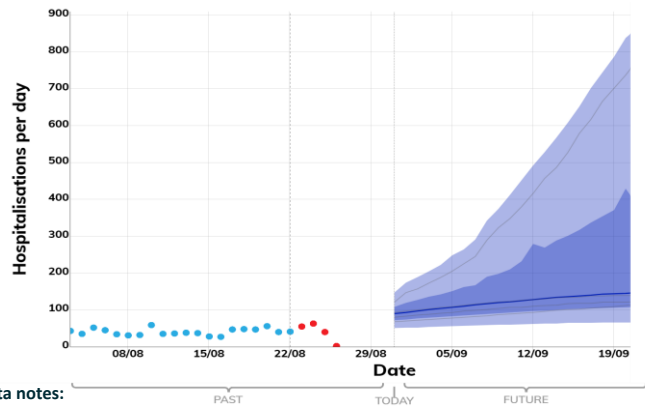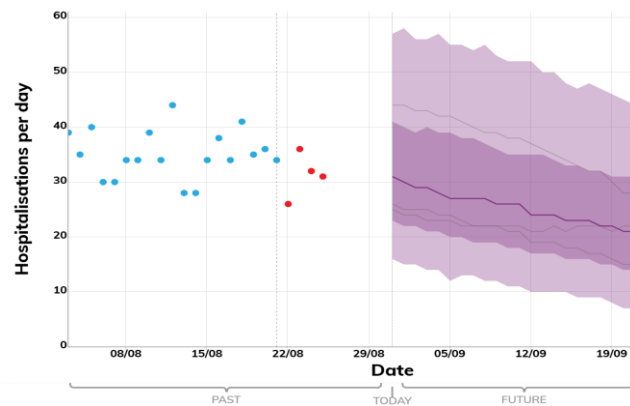
SCOTLAND

NORTHERN IRELAND

The fan charts show the **90% credible interval and interquartile range** of the combined projections based on current trends.

The delay between infection, developing symptoms, the need for hospital care, and death means they cannot fully reflect the recent rapid increase in cases in some nations and regions. Additionally these projections do not yet fully reflect the impact of policy and behavioural changes made in the two to three weeks prior to 27th August. Predicting the peak of the epidemic in a particular nation or region is difficult and prone to large levels of uncertainty

These projections include the potential impact of vaccines to be given over the next three weeks. This has been based on a rollout scenario provided by Cabinet Office for modelling purposes; with uptake in the over 30-year olds based on the number of vaccines given to date and future weekly uptake in those aged 30 and under based on the number of first doses administered in the previous week. These doses will have a limited impact over this timescale, given lags between vaccination and protection, and between infection and hospital admission.

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.
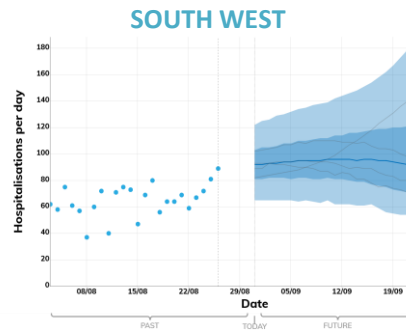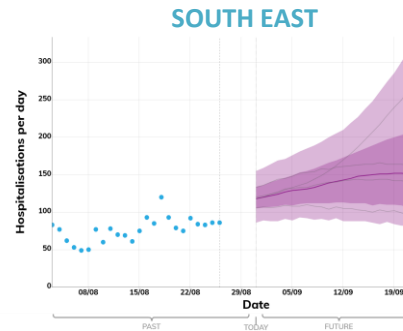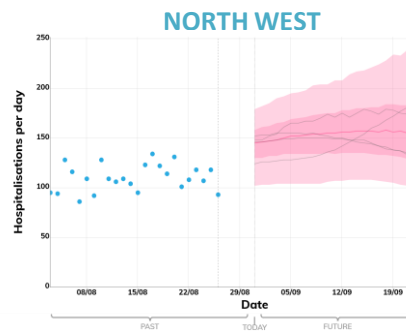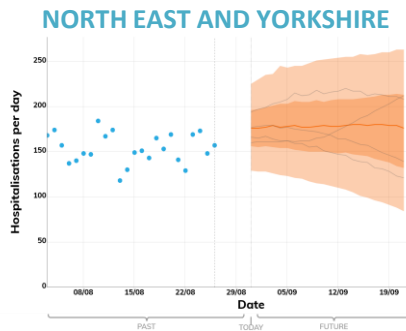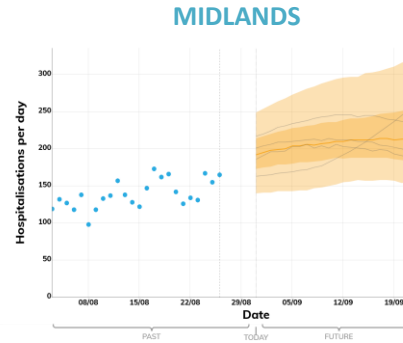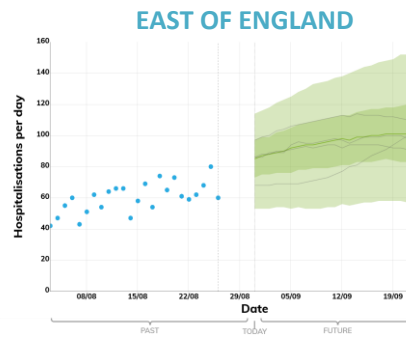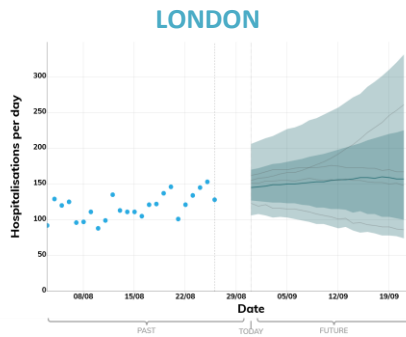
Modelled projections based on trends to 27th August 2021

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.

The fan charts show the **90% credible interval and interquartile range** of the combined projections based on current trends.

The delay between infection, developing symptoms, the need for hospital care, and death means they cannot fully reflect the recent rapid increase in cases in some nations and regions. Additionally these projections do not yet fully reflect the impact of policy and behavioural changes made in the two to three weeks prior to 27th August. Predicting the peak of the epidemic in a particular nation or region is difficult and prone to large levels of uncertainty

These projections include the potential impact of vaccines to be given over the next three weeks. This has been based on a rollout scenario provided by Cabinet Office for modelling purposes; with uptake in the over 30-year olds based on the number of vaccines given to date and future weekly uptake in those aged 30 and under based on the number of first doses administered in the previous week. These doses will have a limited impact over this timescale, given lags between vaccination and protection, and between infection and hospital admission.

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 27th August 2021

New deaths 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.
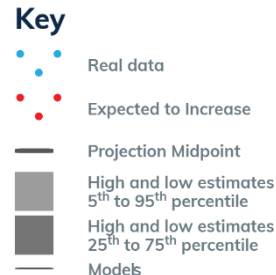
ENGLAND
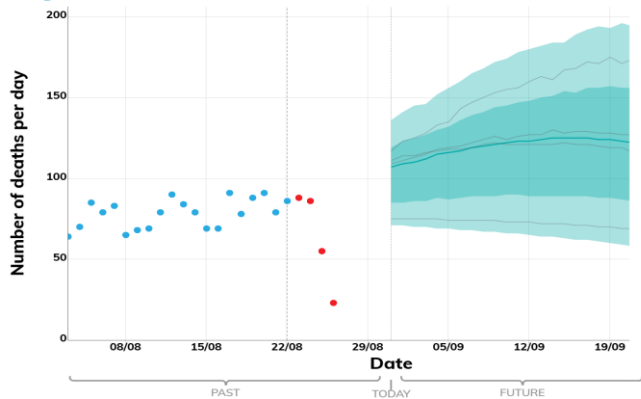
WALES
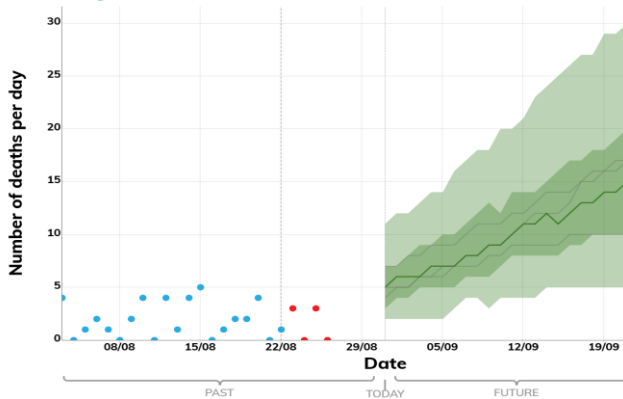
SCOTLAND

NORTHERN IRELAND

It has not been possible to produce a reliable combined projection for the number of deaths in Northern Ireland this week as only two models were available.

The fan charts show the **90% credible interval and interquartile range** of the combined projections based on current trends.

The delay between infection, developing symptoms, the need for hospital care, and death means they cannot fully reflect the recent rapid increase in cases in some nations and regions. Additionally these projections do not yet fully reflect the impact of policy and behavioural changes made in the two to three weeks prior to 27th August. Predicting the peak of the epidemic in a particular nation or region is difficult and prone to large levels of uncertainty

These projections include the potential impact of vaccines to be given over the next three weeks. This has been based on a rollout scenario provided by Cabinet Office for modelling purposes; with uptake in the over 30-year olds based on the number of vaccines given to date and future weekly uptake in those aged 30 and under based on the number of first doses administered in the previous week. These doses will have a limited impact over this timescale, given lags between vaccination and protection, and between infection and hospital admission.

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.

Modelled projections based on trends to 27th August 2021

New deaths 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.
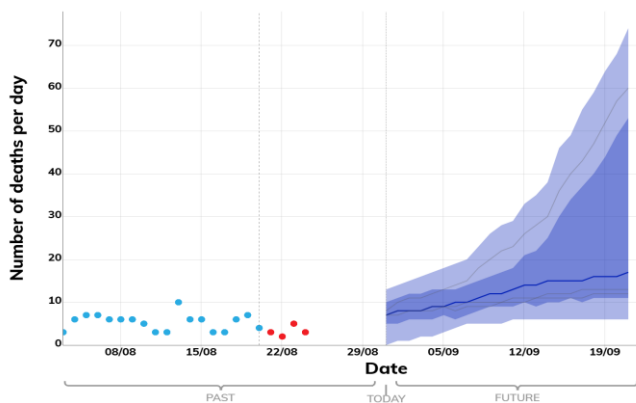
LONDON

EAST OF ENGLAND

MIDLANDS

NORTH EAST AND YORKSHIRE

NORTH WEST

SOUTH EAST

SOUTH WEST

The fan charts show the **90% credible interval and interquartile range** of the combined projections based on current trends.

The delay between infection, developing symptoms, the need for hospital care, and death means they cannot fully reflect the recent rapid increase in cases in some nations and regions. Additionally these projections do not yet fully reflect the impact of policy and behavioural changes made in the two to three weeks prior to 27th August. Predicting the peak of the epidemic in a particular nation or region is difficult and prone to large levels of uncertainty

These projections include the potential impact of vaccines to be given over the next three weeks. This has been based on a rollout scenario provided by Cabinet Office for modelling purposes; with uptake in the over 30-year olds based on the number of vaccines given to date and future weekly uptake in those aged 30 and under based on the number of first doses administered in the previous week. These doses will have a limited impact over this timescale, given lags between vaccination and protection, and between infection and hospital admission.

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.

Annex: SPI-M-O Vaccine Effectiveness Assumptions

Table 1: Vaccine reduction in risk of hospitalisation or death [3]		Imperial [2] (Death)	Imperial [2] (Severe disease)	Manchester [1]	Warwick [2] (Death)	Warwick [2] (Hospitalisation)	PHE/ Cambridge [2]	Scottish Government [2]
Pfizer-BioNTech	1 Dose	85%	85%	75%	90%	90%	78%	91%
	2 Doses	95%	95%	75%	98%	98%	97%	98%
Oxford-AstraZeneca	1 Dose	80%	80%	75%	81%	81%	78%	88%
	2 Doses	95%	90%	75%	95%	94%	97%	98%
Moderna	1 Dose	85%	85%	75%	90%	90%	78%	90%
	2 Doses	95%	95%	75%	98%	98%	97%	98%

Table 2: Vaccine reduction in risk of infection [3]		Imperial [2]	Manchester [1]	Warwick [2]	PHE/ Cambridge [2]	Scottish Government [2]
Pfizer-BioNTech	1 Dose	33%	75%	56%	31%	68%
	2 Doses	85%	75%	80%	80%	90%
Oxford-AstraZeneca	1 Dose	33%	75%	34%	31%	62%
	2 Doses	58%	75%	64%	80%	78%
Moderna	1 Dose	33%	75%	56%	31%	68%
	2 Doses	85%	75%	80%	80%	90%

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

[1] Manchester's model does not split vaccine effectiveness by vaccine type or different doses.
[2] Imperial, Warwick, PHE/Cambridge & Scottish Government's vaccine effectiveness assumptions are for the B.1.617.2 (delta) variant.
[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.