SPI-M-O
Medium-Term Projections

27th October 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 25th October.**
- The delay between infection, developing symptoms, the need for hospital care, and death means they cannot fully reflect the impact of policy and behavioural changes made in the two to three weeks prior to 25th October.
- **The projections do not include the effects of any future policy or behavioural changes.** The effect of school opening and closing has been included.
- UKHSA estimates that 43,000 people may have been given incorrect negative PCR test results between 2nd September and 12th October, mostly in the South West. Two of the models included in these projections are informed by case data. **As a result, the recent trajectory of the epidemic is less clear and the uncertainty around SPI-M-O's medium-term projections is larger than usual.**
- The course of the epidemic has oscillated in several nations and regions over recent weeks. Producing reliable projections is challenging when the epidemic is fluctuating and trends in different data streams conflict.
- Predicting the peak of the epidemic in a particular nation or region is difficult and prone to large levels of uncertainty. Any changes in behaviour will impact transmission and alter the trends shown in the projections.
- **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 scenario assumes booster doses are administered according to JCVI's advice. The scenario also includes the vaccination programme for 12- to 15-year olds. The continued rollout of doses will have a limited impact over the next three weeks, given lags between vaccination and protection, and between infection and hospital admission.
- 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:

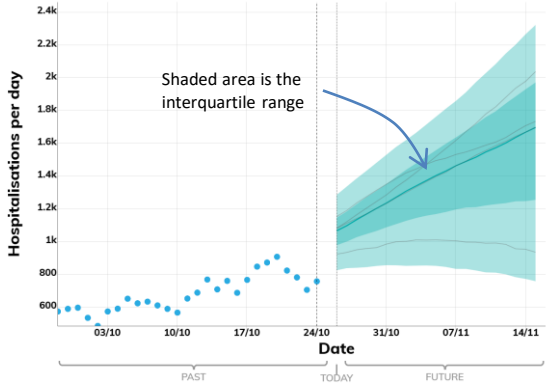
- **New hospitalisations per day:** Number of individuals admitted with COVID-19 and inpatients newly diagnosed with COVID-19. Data definitions differ slightly across all four nations.
- **New deaths per day (by date of death):** The number of COVID-19 deaths within 28 days of a positive test. Data definitions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

Modelled projections based on trends to 25th October 2021

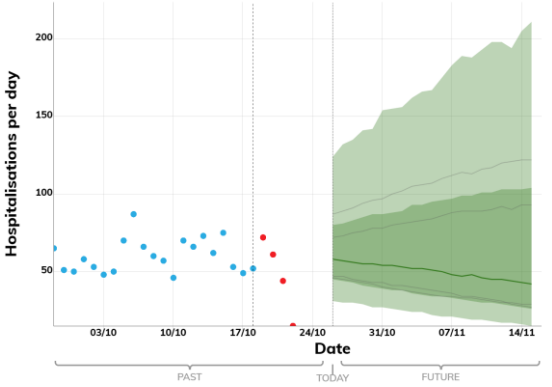
New hospital admissions per day

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.

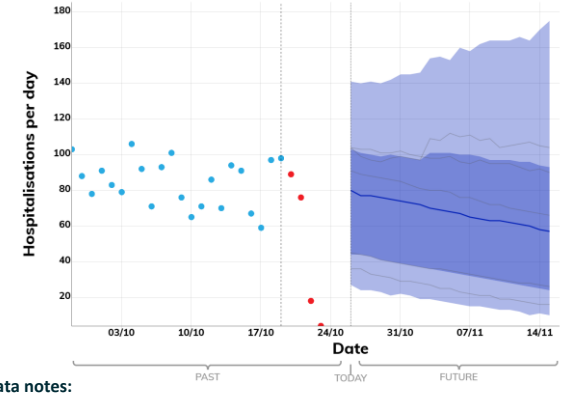
ENGLAND



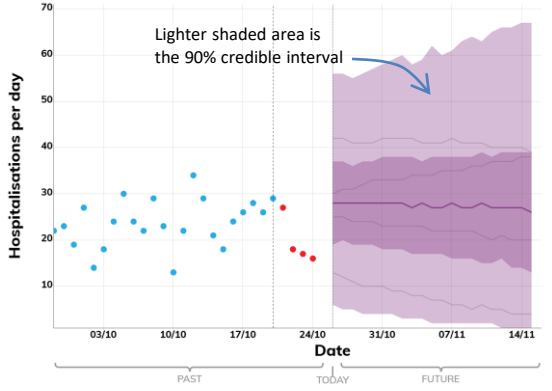
WALES



SCOTLAND



NORTHERN IRELAND



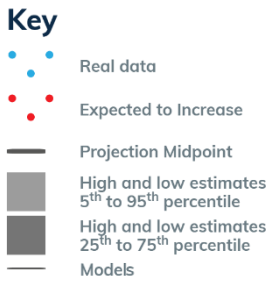
Data notes:

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.



The fan charts show the **90% credible interval and interquartile range** of the combined projections based on current trends. Please note, not all the y axes start from zero on these plots.

The delay between infection, developing symptoms, the need for hospital care, and death means they cannot fully reflect the impact of policy or behavioural changes in the two to three weeks prior to 25th October. **The projections do not include the effects of any future policy or behavioural changes**.

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. The continued rollout of doses will have a limited impact over the next three weeks, given lags between vaccination and protection, and between infection and hospital admission.

UKHSA estimates that 43,000 people may have been given incorrect negative PCR test results between 2nd September and 12th October, mostly in the South West. Two of the models included in these projections are informed by case data. **As a result, the recent trajectory of the epidemic is less clear and the uncertainty around SPI-M-O's medium-term projections is larger than usual.**

Modelled projections based on trends to 25th October 2021

New hospital admissions per day

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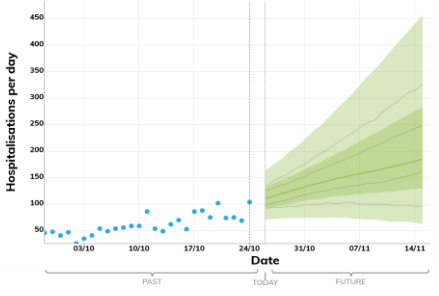
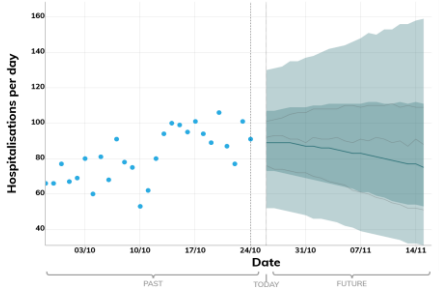
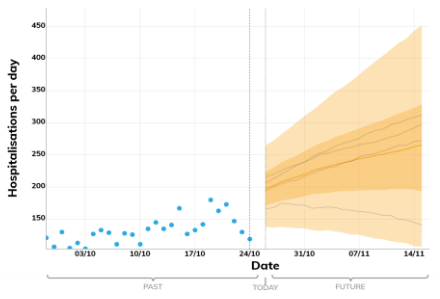
EAST OF ENGLAND



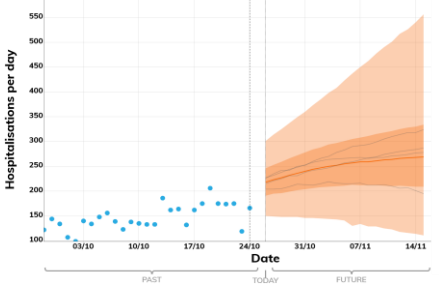
LONDON



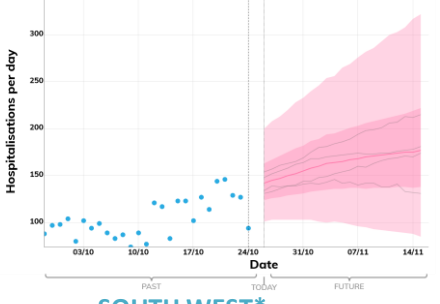
MIDLANDS



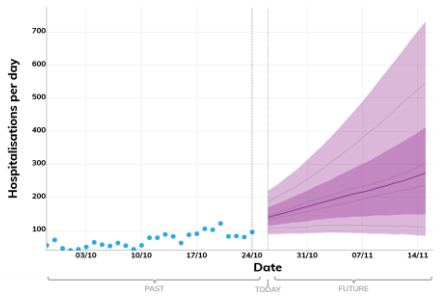
NORTH EAST AND YORKSHIRE



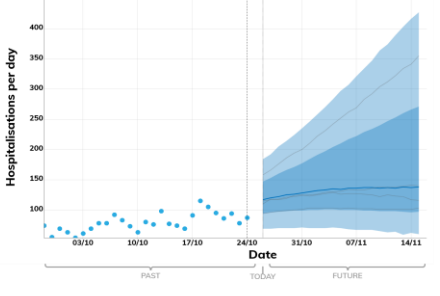
NORTH WEST



SOUTH EAST

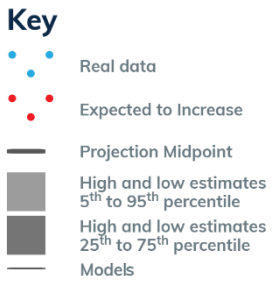


SOUTH WEST*



*Due to the testing issues identified by UKHSA, there is greater uncertainty around this projection.

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.



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Modelled projections based on trends to 25th October 2021

New deaths per day

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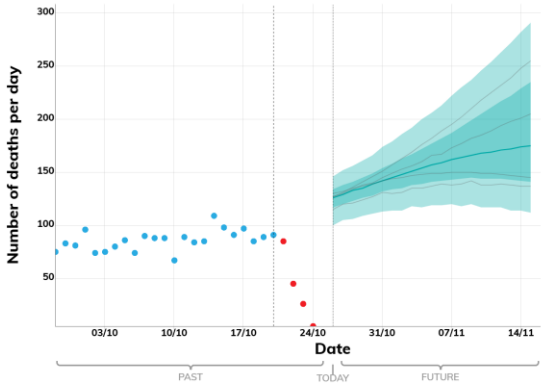
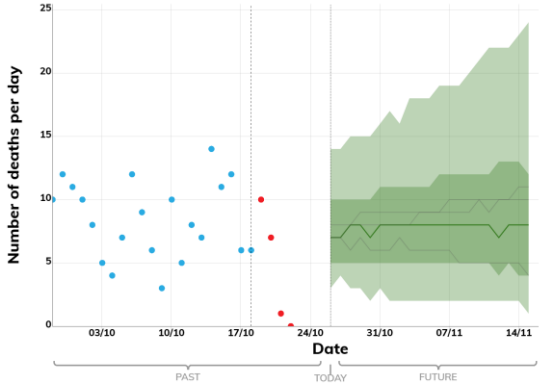
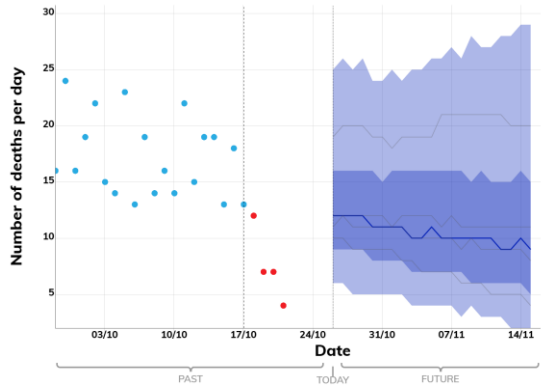
ENGLAND



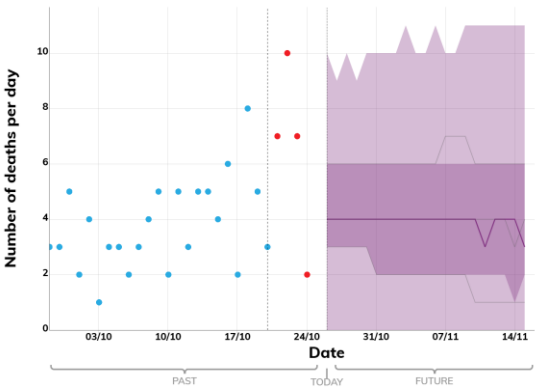
WALES

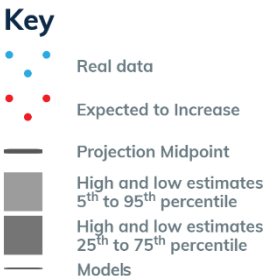


SCOTLAND



NORTHERN IRELAND





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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.

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New deaths per day

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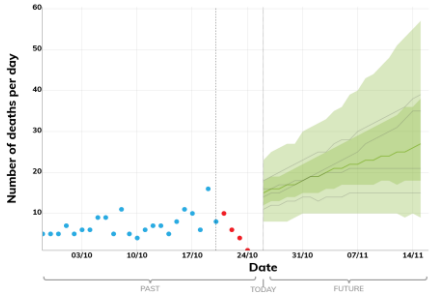
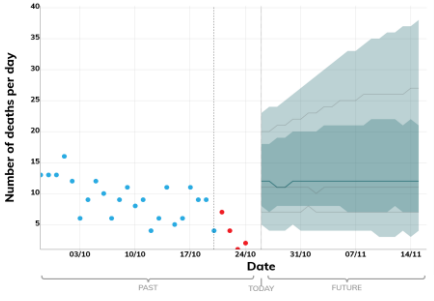
EAST OF ENGLAND



LONDON



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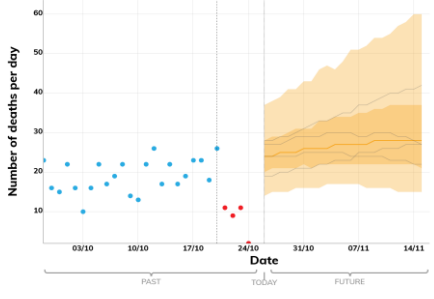

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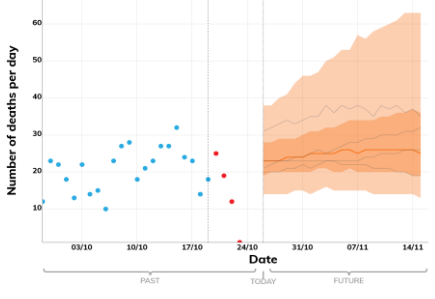

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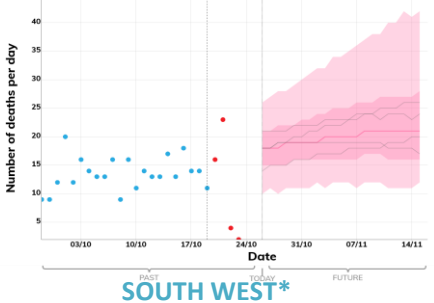
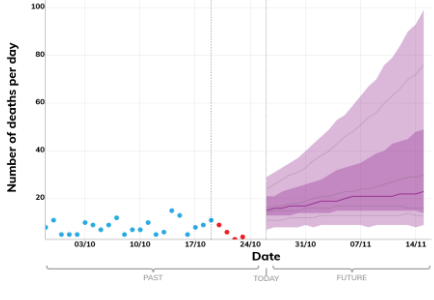
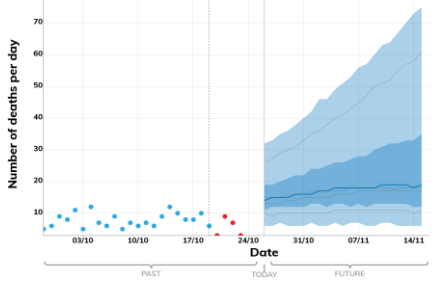


SOUTH EAST



SOUTH WEST*



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Data Notes:
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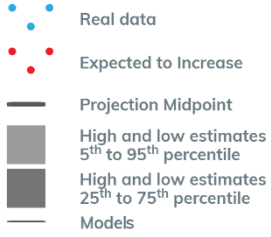
Key



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Annex: SPI-M-O Vaccine Effectiveness Assumptions

Table 1: Vaccine reduction in risk of hospitalisation or death [1]								
		Imperial [2] (Death)	Imperial [2] (Severe disease)	Manchester [3]	Warwick [2,4] (Death)	Warwick [2,4] (Hospitalisation)	PHE/ Cambridge [2]	Scottish Government [2]
Pfizer-BioNTech	1 Dose	85%	85%	75%	80%	80%	78%	80%
	2 Doses	95%	95%	75%	98%	95%	97%	95%
Oxford-AstraZeneca	1 Dose	80%	80%	75%	80%	80%	78%	80%
	2 Doses	95%	90%	75%	98%	95%	97%	95%
Moderna	1 Dose	85%	85%	75%	80%	80%	78%	80%
	2 Doses	95%	95%	75%	98%	95%	97%	95%

Table 2: Vaccine reduction in risk of infection [1]						
		Imperial [2]	Manchester [3]	Warwick [2,4]	PHE/ Cambridge [2]	Scottish Government [2]
Pfizer-BioNTech	1 Dose	33%	75%	55%	31%	55%
	2 Doses	85%	75%	85%	80%	75%
Oxford-AstraZeneca	1 Dose	33%	75%	45%	31%	40%
	2 Doses	58%	75%	70%	80%	65%
Moderna	1 Dose	33%	75%	55%	31%	75%
	2 Doses	85%	75%	85%	80%	85%

Table 3: Vaccine reduction in onward transmission, in addition to reduction from lower infection risk [1]						
		Imperial [2]	Manchester [3,5]	Warwick [2,4]	PHE/ Cambridge [2,5]	Scottish Government [2]
Pfizer-BioNTech	1 Dose	40%	-	30%	-	29%
	2 Doses	40%	-	30%	-	40%
Oxford-AstraZeneca	1 Dose	40%	-	30%	-	37%
	2 Doses	40%	-	30%	-	44%
Moderna	1 Dose	40%	-	30%	-	29%
	2 Doses	40%	-	30%	-	40%

[1] 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.
[2] Imperial, Warwick, PHE/Cambridge & Scottish Government's vaccine effectiveness assumptions are for the B.1.617.2 (delta) variant.
[3] Manchester's model does not split vaccine effectiveness by vaccine type or different doses.
[4] Warwick's model considers a range of scenarios for the partial waning of vaccine effectiveness. The results from these scenarios are then combined to form their projection.
[5] The Manchester and PHE/ Cambridge models do not include a reduction in the risk of onwards transmission after receiving either vaccine.