National Institute of Economic and Social Research

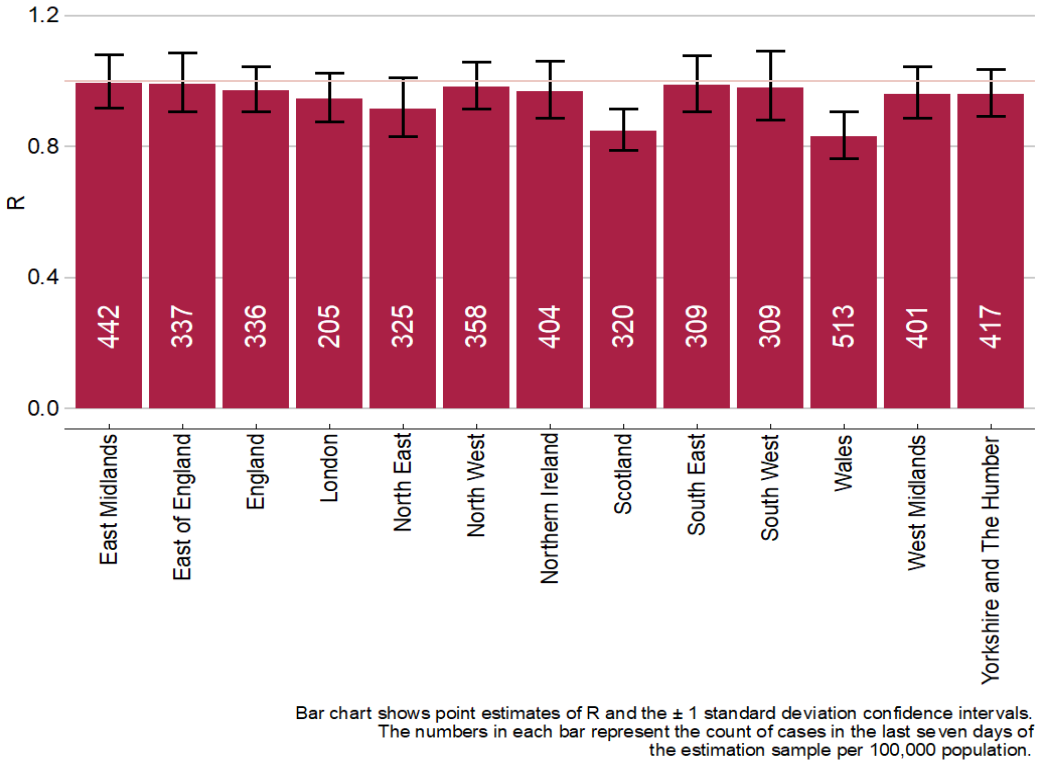
NIESR
Bi-Weekly Covid-19 Tracker

New Cases declining across all regions and nations

Tracker Number 24

7 October 2021

Figure 1 – R: UK Regional R and Seven-day Case Counts per 100,000 Population



Bar chart shows point estimates of R and the ± 1 standard deviation confidence intervals. The numbers in each bar represent the count of cases in the last seven days of the estimation sample per 100,000 population.

Main Points

- We report R estimates and forecasts of new cases and hospital admissions for the nations and regions. *With this tracker we move to a monthly reporting frequency. The next tracker will be released on 4th November.*
- Despite the increased social contact from the reopening of schools and latterly universities, the R number remains below 1 in all UK nations and English regions (Figure 1).
- For the adult population in England we observe a noteworthy compositional change relative to the forecasts made a fortnight ago. The sub-ten age group is expected to decline in new cases over the coming two weeks. The 40-64 age group is likely to see an increase in new cases. Forecasts for all other age groups are higher compared to the previous forecast. The main cause for this would appear to be a spill-over from the school aged population (Figure 2).
- When the compositional change is netted out, new Covid-19 cases are forecast to decline in all English regions (Figure 3). Decreases can be expected in all UK nations (Figure 4).

- Hospital admissions are also forecast to decrease. This is in line with our forecasts a fortnight ago, and of a similar order of magnitude to our forecasts made 4 weeks ago based on data up until the end of August (Figure 5).
- The proportion of those over 16 who have received their first vaccination dose is now 90 per cent; 83 per cent have received their second dose as well. This summary figure conceals important heterogeneity across age brackets (Figure 6). Encouragingly, more than 50 per cent of those under 30 are now fully vaccinated.

"Hospital admissions continue to decrease in line with our forecast of a fortnight ago. Going back four weeks, at a time when official scenarios placed admissions in the range 2,000 to 7,000 at the start of October, we forecast them to be around 1,000 per day. In terms of new cases, the recent increase among the children in England due to schools reopening appear to have spilled over into the adult population. But the compositional changes across age groups net out to a decline in new cases. This holds across all parts of UK. Looking ahead, the factor that next comes into play will be the increased social contact indoors as the weather turns."

Dr Craig Thamotheram
Senior Economist - Macroeconomic Modelling and Forecasting

Results

Figure 2: England Forecasts of New COVID-19 Cases by Age Brackets

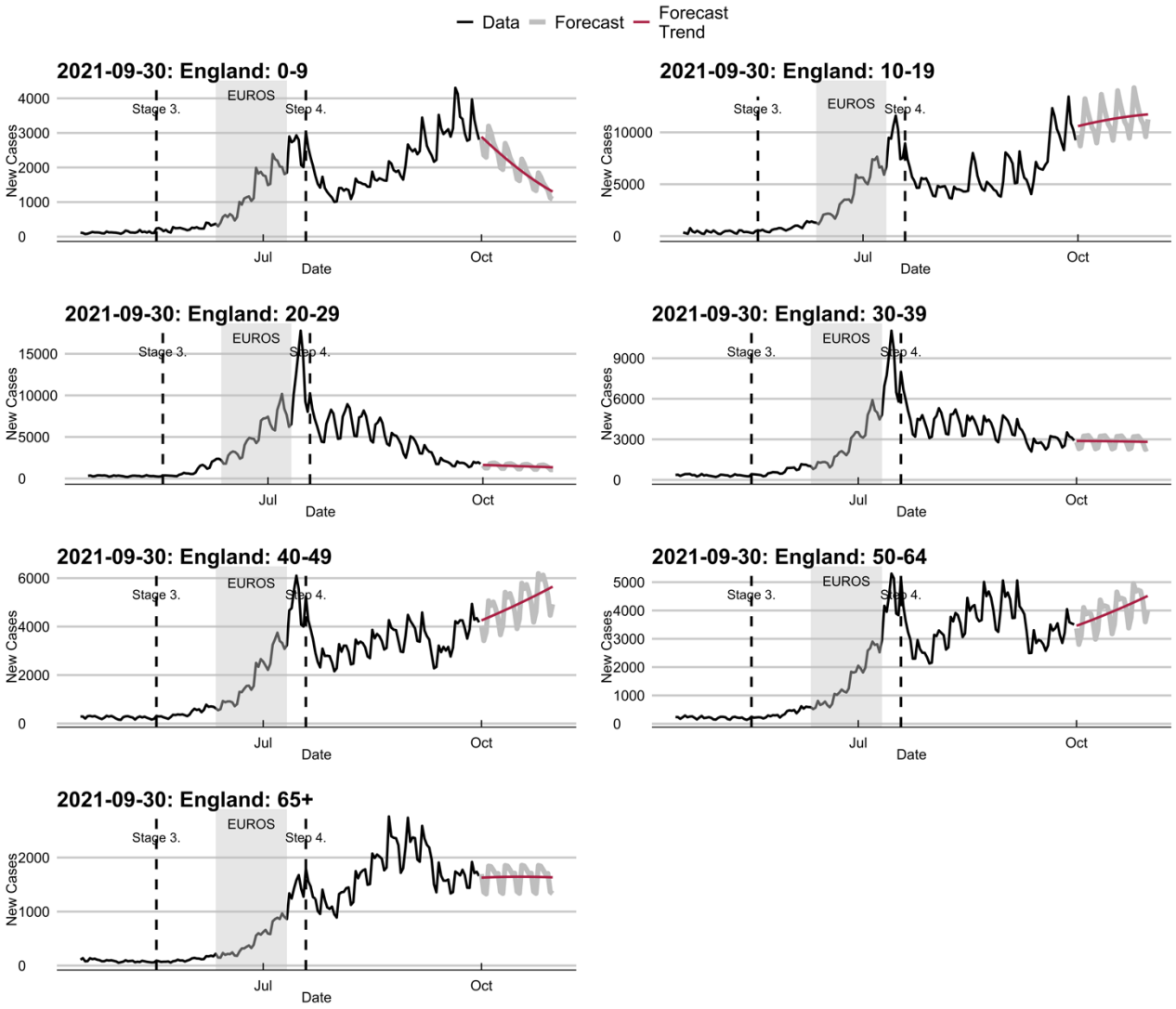


Figure 2 provides forecasts of daily cases of Covid-19 for the period until the end of October for England by age brackets. Relative to forecasts made a fortnight ago, new case forecasts are higher for all age groups apart from the sub-ten group.

Figure 3 provides forecasts of daily cases of Covid-19 for the period until the end of October for the regions of England, based on data released on the 5th October. There are likely to be modest declines in cases for all English regions.

Figure 3 –Regional Forecasts of New COVID-19 Cases

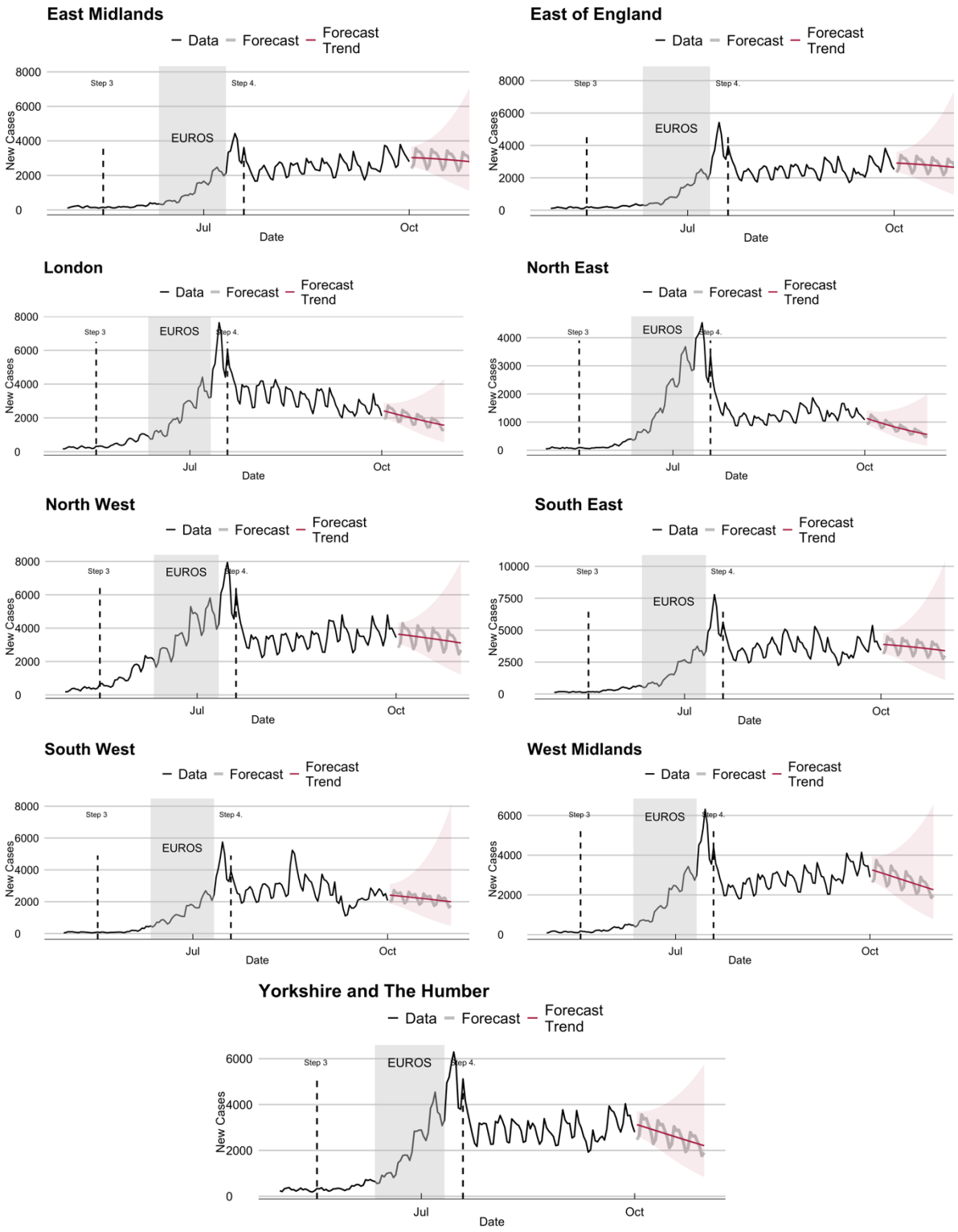
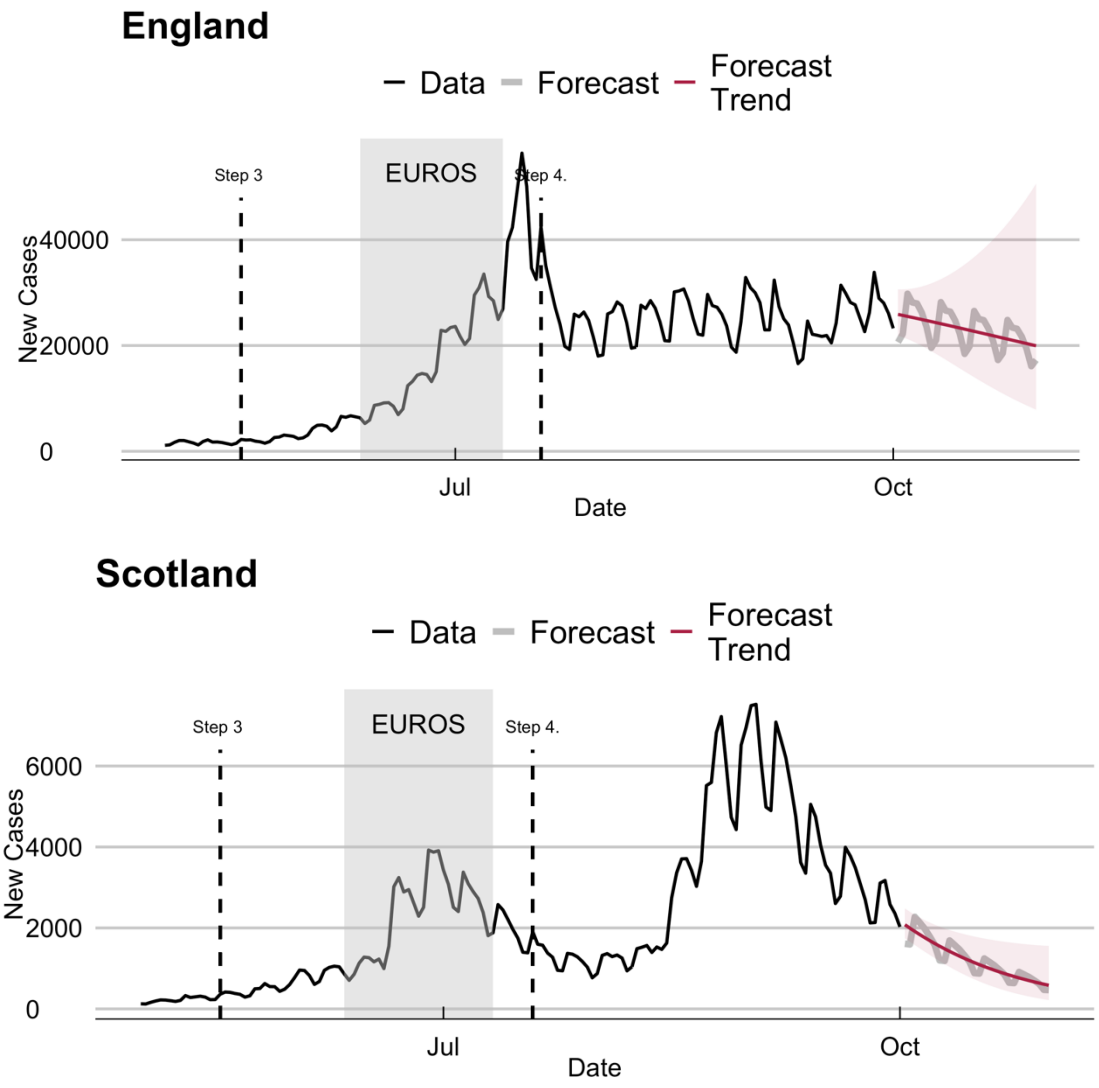
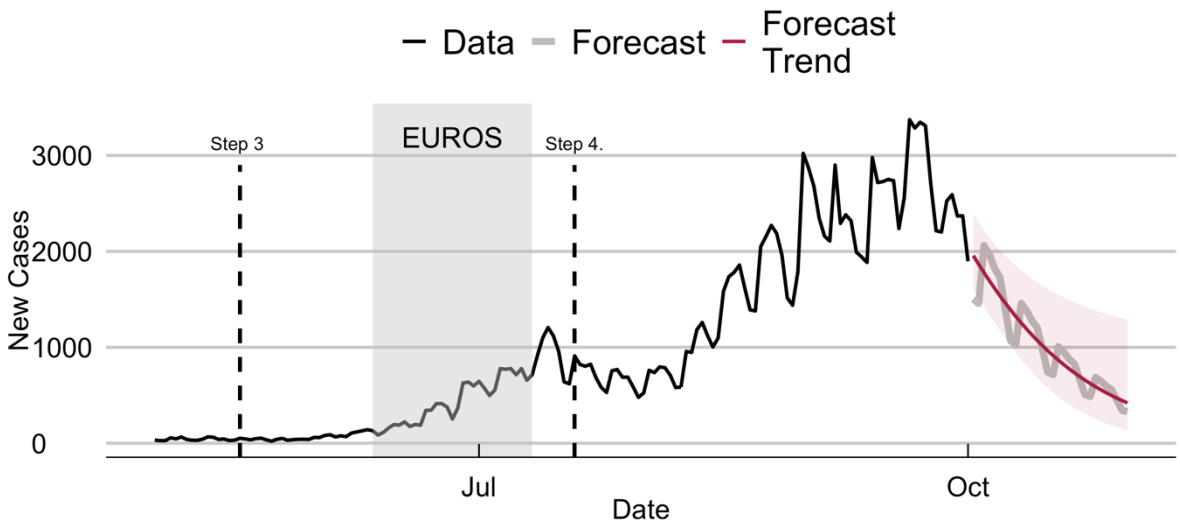


Figure 4 provides forecasts of daily cases of Covid-19 for the period until the end of October for the four nations with data released on the 5th October. The mid-August uptick in cases in Scotland is primarily due to increased testing associated with schools reopening.

Figure 4 – National Forecasts of New COVID-19 Cases



Wales



Northern Ireland

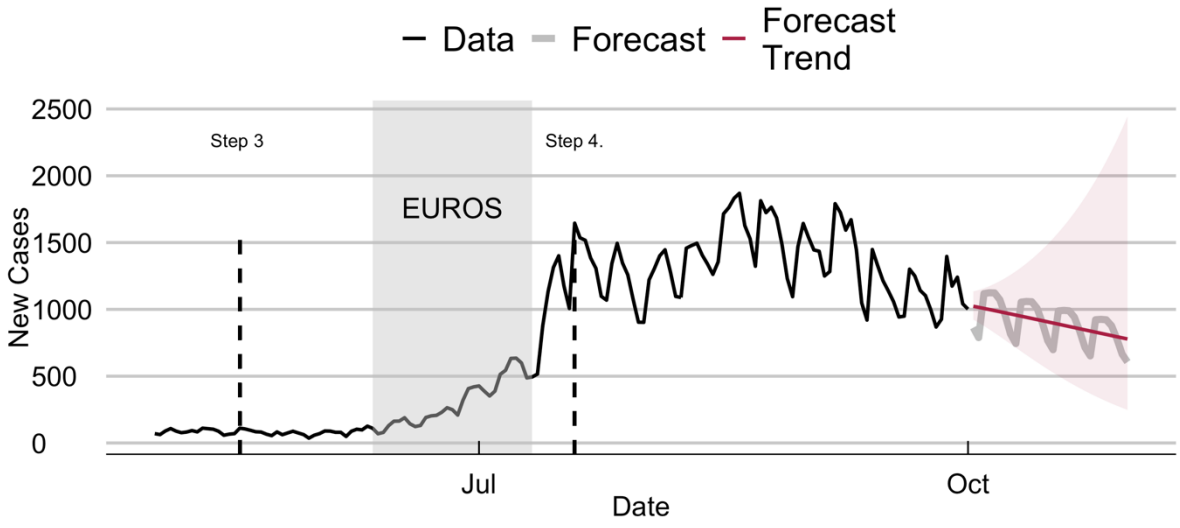


Figure 5 provides forecasts of daily hospital admissions for Covid-19 and highlights the underlying number of new admissions to be expected until the end of October. Hospital admissions continue to decline in line with our previous forecast.

Figure 5 – UK Forecast of Daily Covid-19 Hospital Admissions

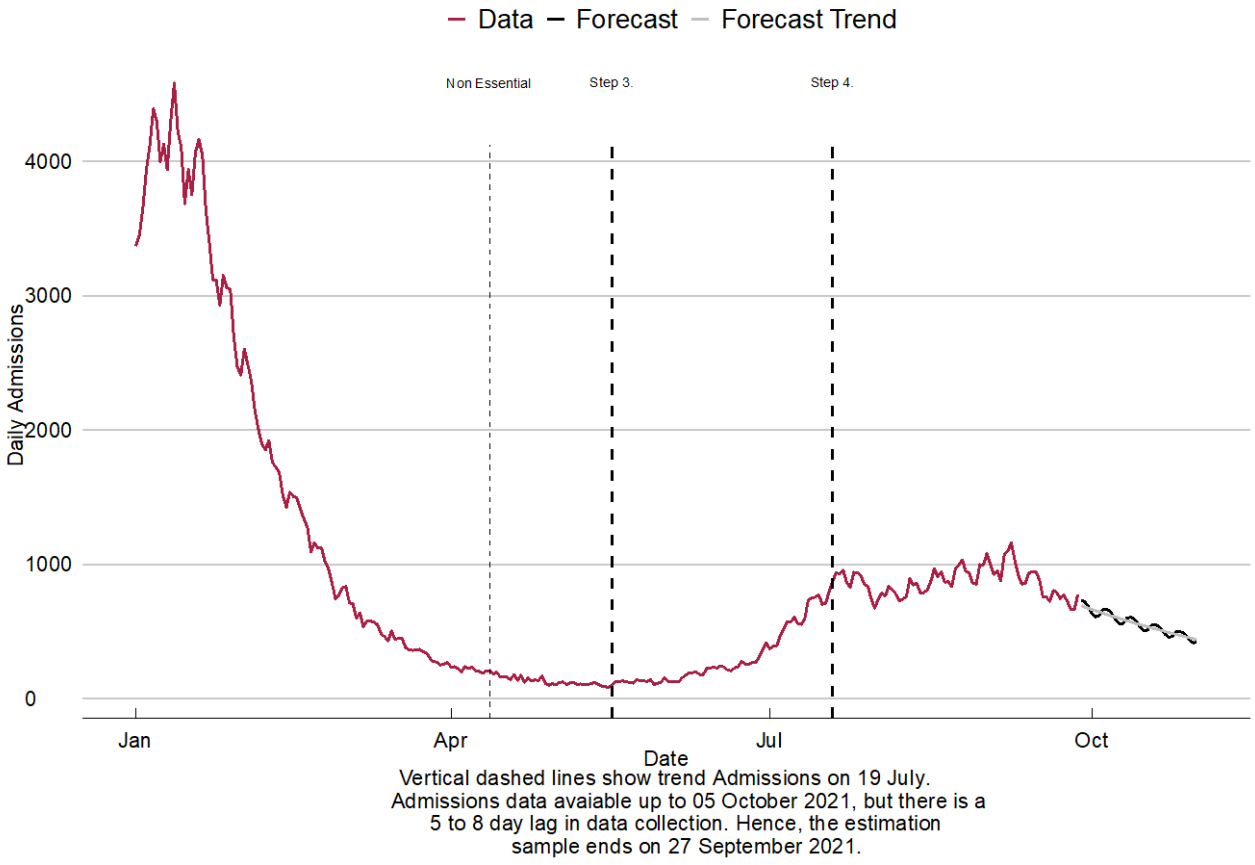
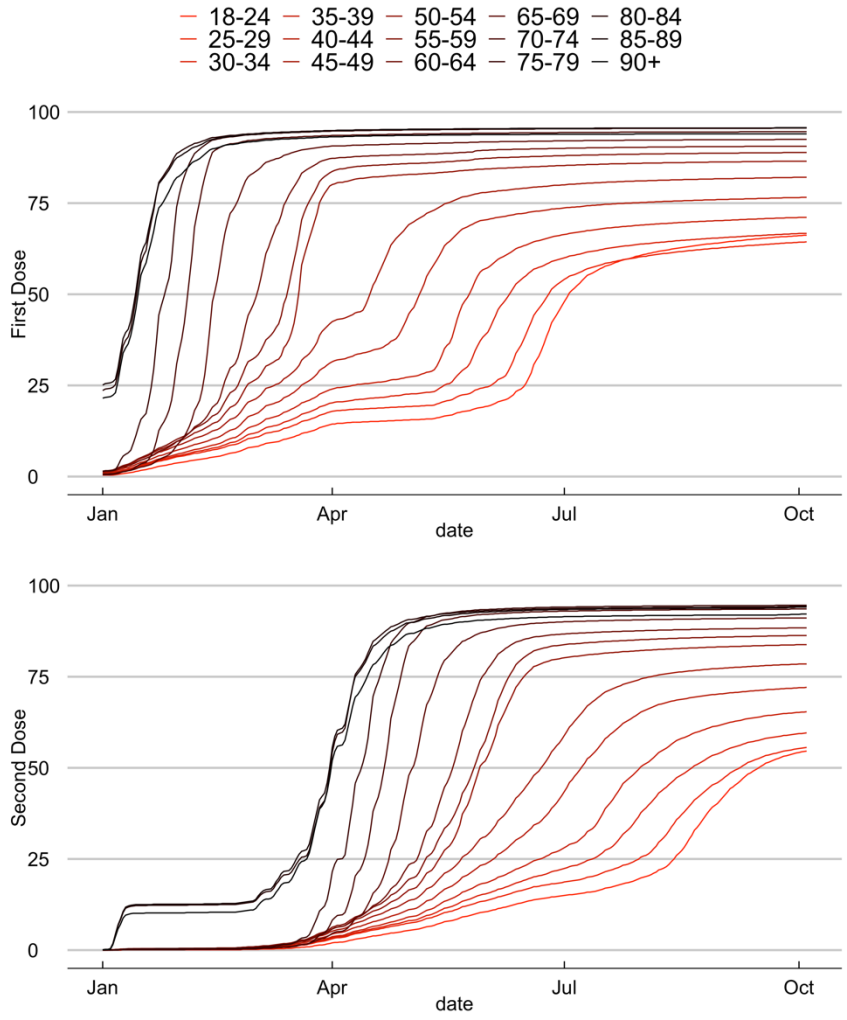


Figure 6 provides data on the percentage of England's adult population that has been vaccinated broken down by age groups. It highlights the fact that the older population have now been fully vaccinated for a duration consistent with levels of antibody waning according to sero-prevalence research. However, at least 50 per cent of the younger age groups are now fully vaccinated.

Figure 6 – England Vaccination Percentages by Age Brackets



Background

NIESR aims to set out projections of the future path of the Covid-19 epidemic in the United Kingdom, its constituent nations and the regions of England, based on current policies.

NIESR has been producing weekly updates on Thursdays, projecting new cases and estimating the R number using a class of time series models developed by Prof. Andrew Harvey and Dr. Paul Kattuman of Cambridge University; see Harvey and Kattuman (2020a). From June 3, 2021 onwards NIESR have been producing fortnightly updates on Thursdays, focusing on monitoring whether sudden increases observed are local spikes or are indicative of the start of a new wave.

The models generate forecasts by extracting changing trends from historical data. They are relatively simple and transparent, and their specifications can be assessed by standard statistical test procedures. The advantage of the time series approach is that it can adapt very quickly to the most recent information and hence produce timely estimates. This flexibility enables the effects of changes in policy, virus mutations and human behaviour to be tracked. The models are data driven and so are different from the structural models used by epidemiologists which rely on assumptions about transmission and behaviour; see Avery et al (2020).

A description of the methods used to produce these estimates and an evaluation of their forecasting performance can be found in Harvey, Kattuman, and Thamotheram (2021).

Data

Data: COVID-19 confirmed cases and deaths data are sourced from https://coronavirus.data.gov.uk

Data on Covid-19 cases are reported by the government by 'specimen date' and by 'published date'. Specimen cases relate to the date when the sample was taken from the person being tested, while published cases relate to the first date when they are included in the published numbers. At the present time we regard the specimen date data as a more reliable indicator of the trend in new cases. The model based on specimen dated observations has better captured the effect of the sharp increase in testing on the day that schools reopened and also suffers less from data errors or revisions.

On 27 March 2021, 850 historic cases were removed due to a laboratory processing error. This affected specimen date data between 23 and 25 March in local authorities primarily in the North East and Yorkshire. The cumulative total number of people tested positive was revised down on 27 March 2021. Historic published date totals have not been changed. The downward correction on 27th March is mixed with the positive upward revisions of cases as more test results are returned over time making it impossible to date these corrections accurately. Thus, we cannot back out on which day these corrections were made. For published data, we choose to remove 300, 300 and 250 cases on 24, 25 and 26th of March respectively.

Between 2nd to the 5th April significant disruption to cases and deaths for Wales and Northern Ireland occurred. This was corrected on the 6th April but with a 48-hour reporting period. As the last date in the estimation sample for specimen cases is April 2nd we will decide how to account for this change in next week's forecast. We leave published cases unchanged.

On April 9th rapid LF tests that are confirmed as negative by Polymerase Chain Reaction (PCR) test within 3 days were removed. For published cases, we set 9th April as missing as no correction is applied to the historic data by Public Health England

Caveat

The model relies on historical data and does not incorporate future outlined changes in the underlying environment. Thus, it is important to read the forecasts in this context. For example, the current forecasts make no assumptions about the effect of reopening non-essential retail on increasing transmissions. On the other hand, the effect of the vaccine program will be in the opposite direction.

Authors

Professor Andrew Harvey is Emeritus Professor of Econometrics at the University of Cambridge and a Fellow of Corpus Christi College. He has published over 100 articles and is the author of four books: *The Econometric Analysis of Time Series* (1981), *Time Series Models* (1981), *Forecasting. Structural Time Series Models and the Kalman Filter* (1989) and *Dynamic models for Volatility and Heavy Tails* (2013). He is a Fellow of the British Academy and the Econometric Society.

Dr Paul Kattuman is a reader in Economics at Cambridge University. He has been a Senior Research Fellow at the University of Cambridge Department of Applied Economics, and a lecturer in economics at Durham. He has held Visiting Professorships at Université Paris 12 and Paris-Est Créteil and was appointed Grupo Santander Visiting Professor at Universidad Complutense de Madrid. He was visiting Faculty Scholar at the Kennedy School of Government, and at the Department of Statistics, both at Harvard University.

Dr Craig Thamotheram is a Senior Economist at NIESR. Prior to joining NIESR, he studied Engineering at Imperial and obtained a PhD in Economics at Warwick. He has work experience as a post-doc in macro and financial econometrics.

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Notes for Editors

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