

NIESR

Bi-Weekly Covid-19 Tracker

Back to School - Moderate Rise in New Cases Forecast
Tracker Number 22

9 September 2021

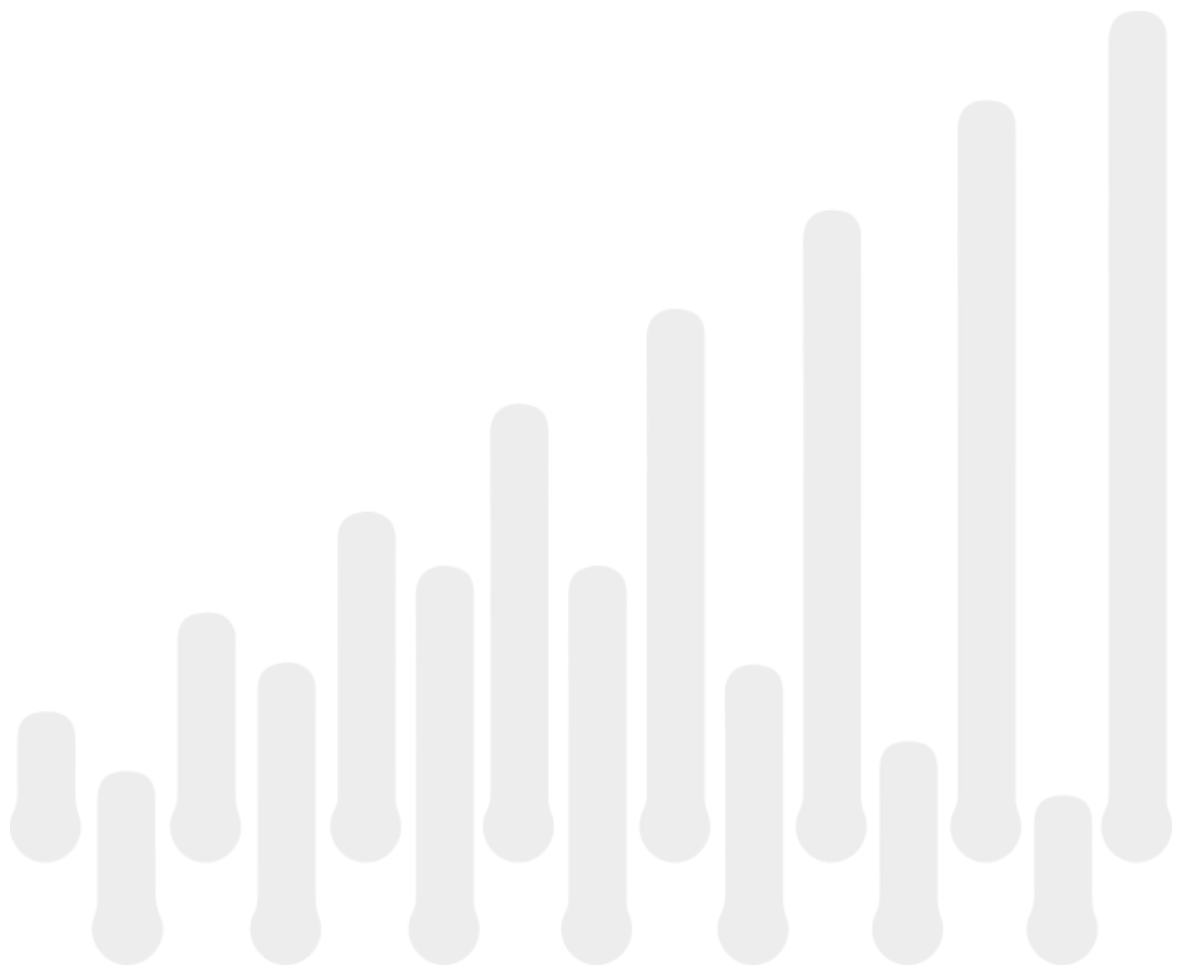
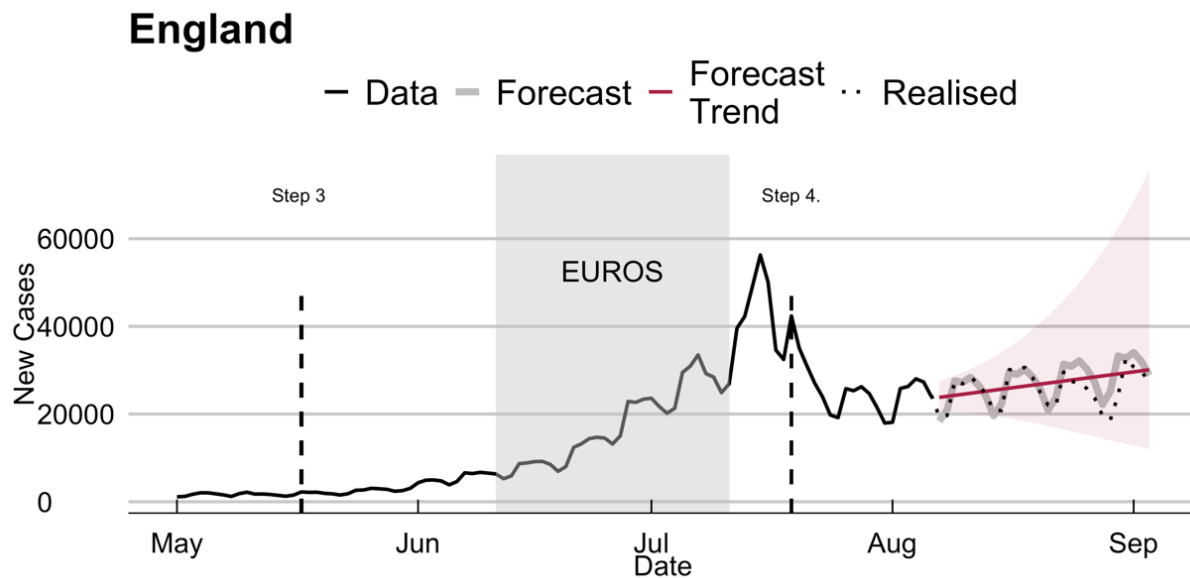


Figure 1 – NIESR Covid-19 Tracker 21 Forecast Performance: New COVID-19 Cases

Note: data until 10th August

Main Points

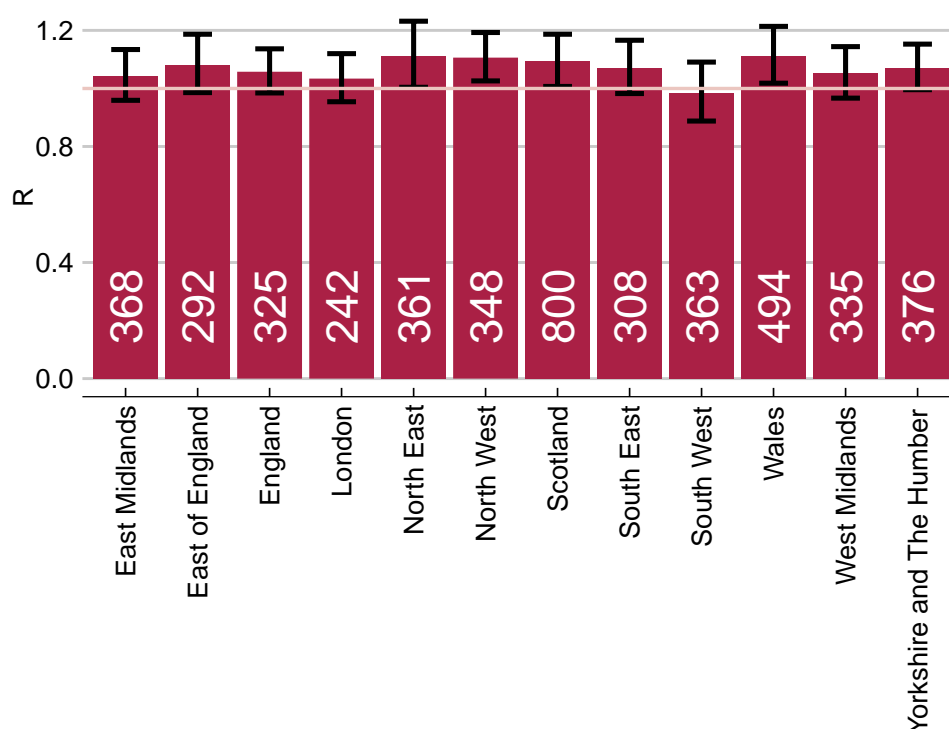
- We resume our bi-weekly series, reporting R estimates and forecasts of new cases and hospital admissions for England and Scotland, after a short summer break. Figure 1 compares our August 12th forecasts of new cases with actual cases for England in the following 4 weeks. This underscores the accuracy of our forecasting method during periods when environmental factors that affect transmission are relatively stable. Similar performance was found in earlier [research](#) after the first lockdown.
- Across nations and regions, the R number remains slightly above 1 apart from the South-West where it is slightly below 1 (Figure 2).
- We forecast modest increases of new Covid-19 cases for all English regions other than South-West (Figure 3). A moderate increase in new Covid-19 cases can be expected for England, and for Scotland (Figure 4).
- Hospital admissions are forecast to increase slightly, just crossing the 1000-per-day mark in the coming week (Figure 5). The rate of increase of hospital admissions can be expected to be lower than the rate of increase of new cases.
- In aggregate, the proportion of those over 16 who have received their first dose is 89 per cent with 80 per cent also receiving their second dose. This summary figure conceals important heterogeneity across age brackets as shown in Figure 6. Importantly, for those under 30 less than 50 per cent are currently fully vaccinated.

“Looking back, our forecasts of new cases for England from 4 weeks ago have performed well (Figure 1). This was during a period when environmental factors that affect transmission have remained relatively constant. We found similar performance in our previous [research](#) during the first lock-down. However, as schools return and transmission conditions change, we can expect to see an increase in cases in England due to the increased testing in schools as was observed in Scotland through the last half of August. It is reassuring that whilst trend new cases have remained high, hospital admissions due to Covid-19 have remained around 1000 per day and are only forecast to increase modestly over the next few weeks.”

Dr Craig Thamotheram
Senior Economist - Macroeconomic Modelling and Forecasting

Results

Figure 2 – 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.

Figure 2 provides R number estimates and the case rates per 100,000 population, for the nations of the UK and for English regions, based on specimen date data series released on 7th September 2021. We discard data for the last 3 days due to data revisions in that time window. It shows that across nations and regions the R number remains slightly above 1 apart from the South-West where it is slightly below 1.

Figure 3 provides forecasts of daily cases of Covid-19 for the period until mid- September for the regions of England. It shows a modest increase of cases for all English regions other than the South-West with data released on the 7th September.

Figure 3 – Regional Forecasts of New COVID-19 Cases

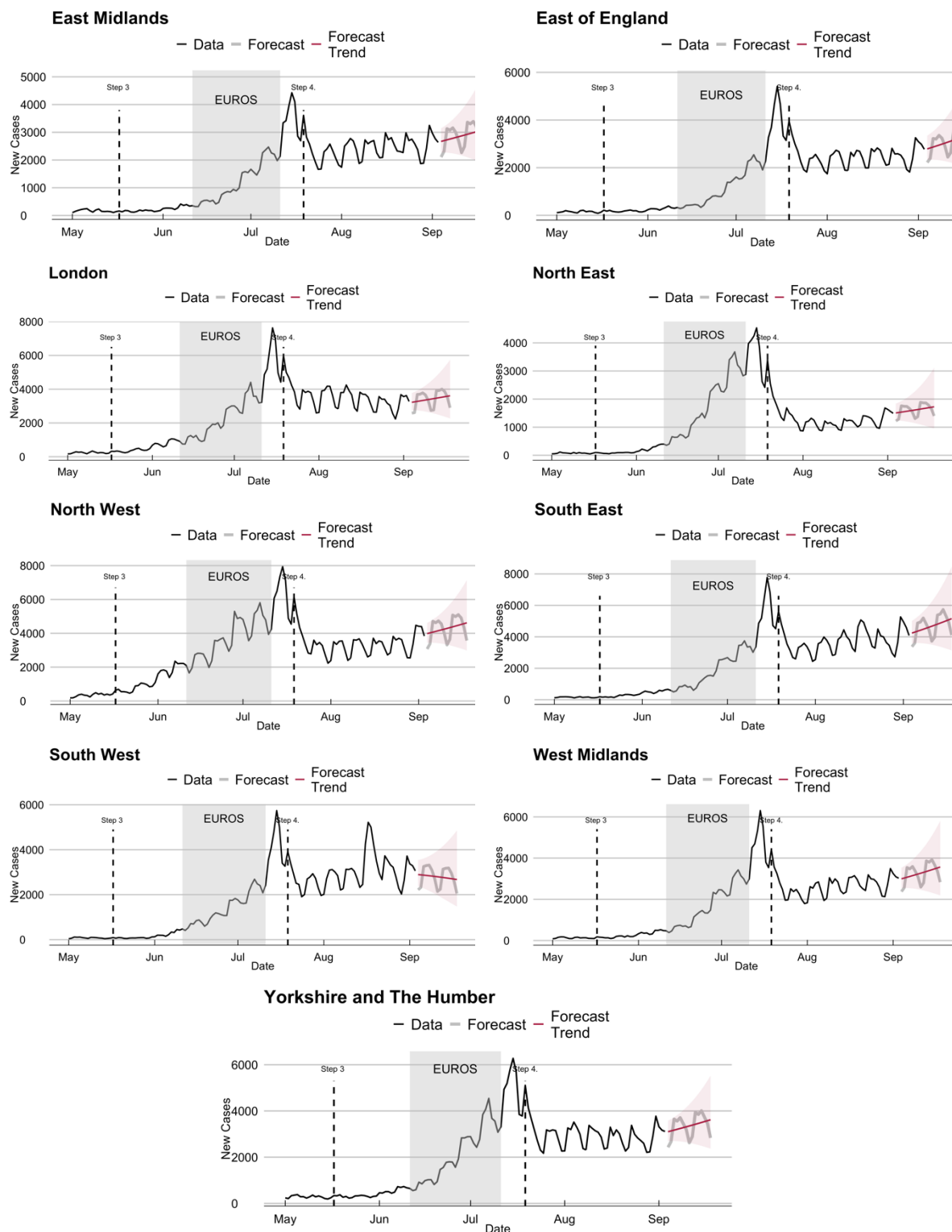


Figure 4 provides forecasts of daily cases of Covid-19 for the period until mid-September for England and Scotland with data released on the 7th September. The uptick in cases in mid-August for Scotland is primarily due to increased testing associated with schools reopening.

Figure 4 – National Forecasts of New COVID-19 Cases

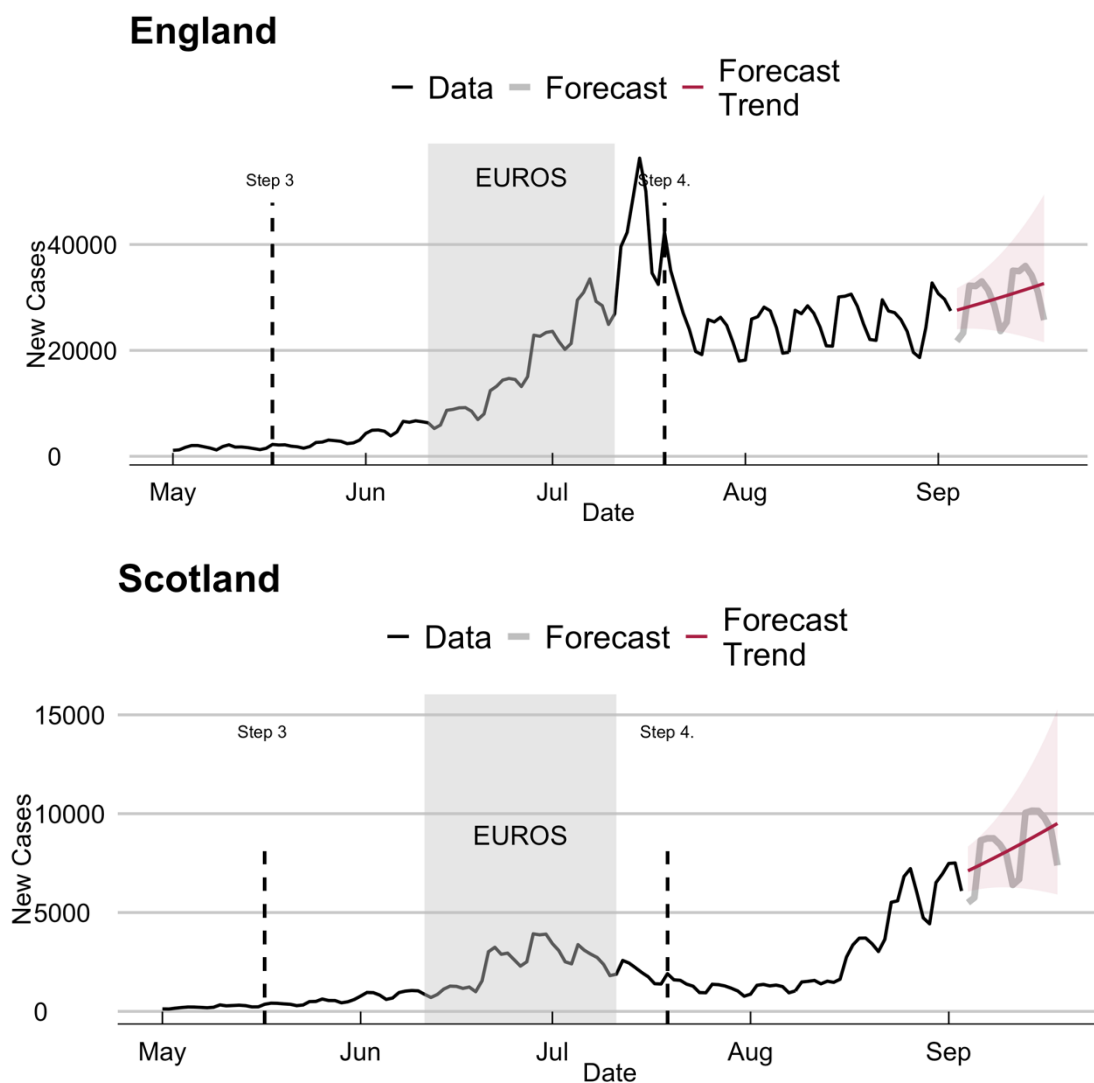


Figure 5 provides forecasts of daily hospital admissions for Covid-19 and highlights the underlying number of new admissions to be expected until the end of September.

The rate of increase of hospital admissions can be expected to be lower than the rate of increase of news cases. This must be attributed primarily due to the high level and effectiveness of vaccination.

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

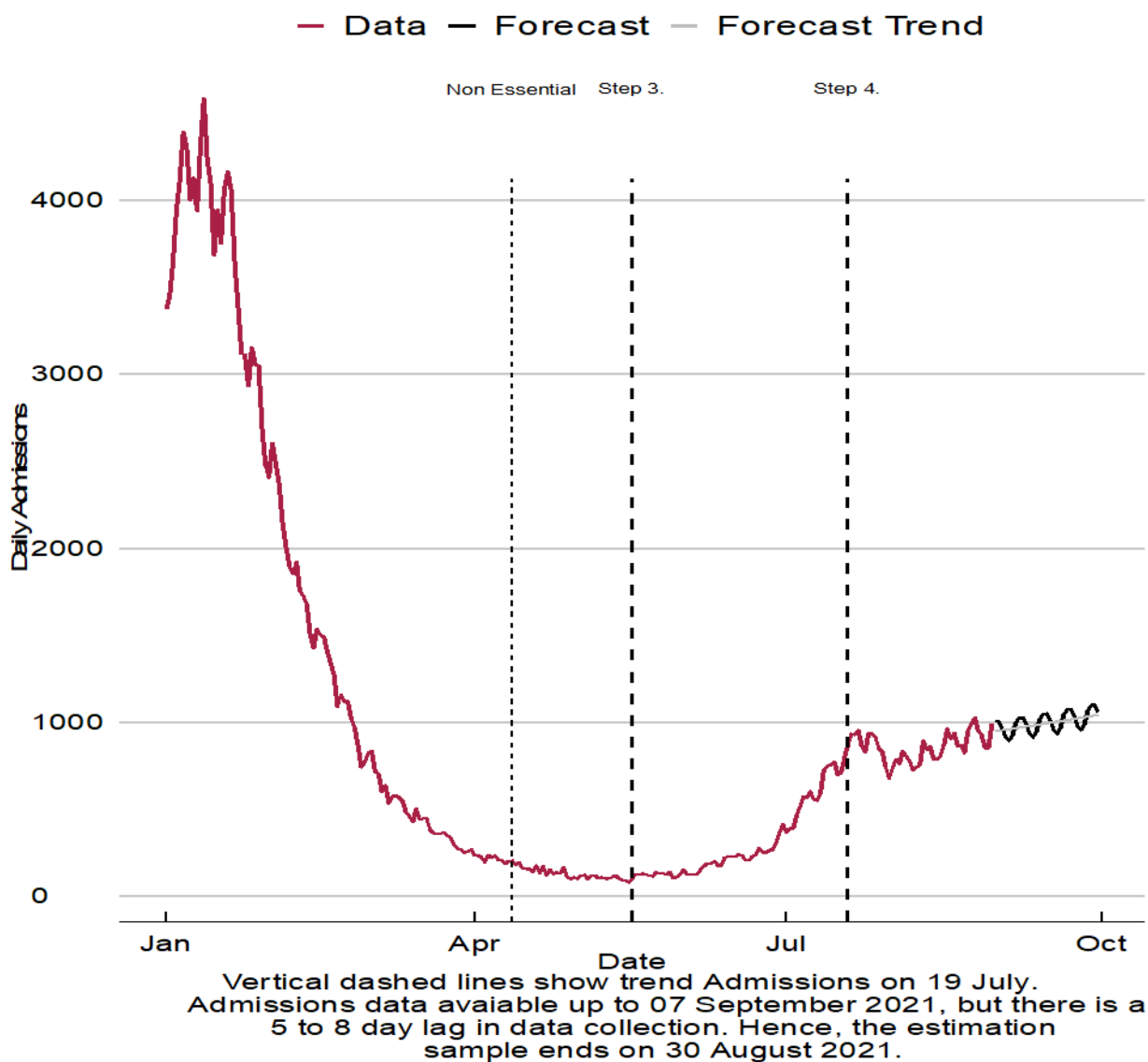
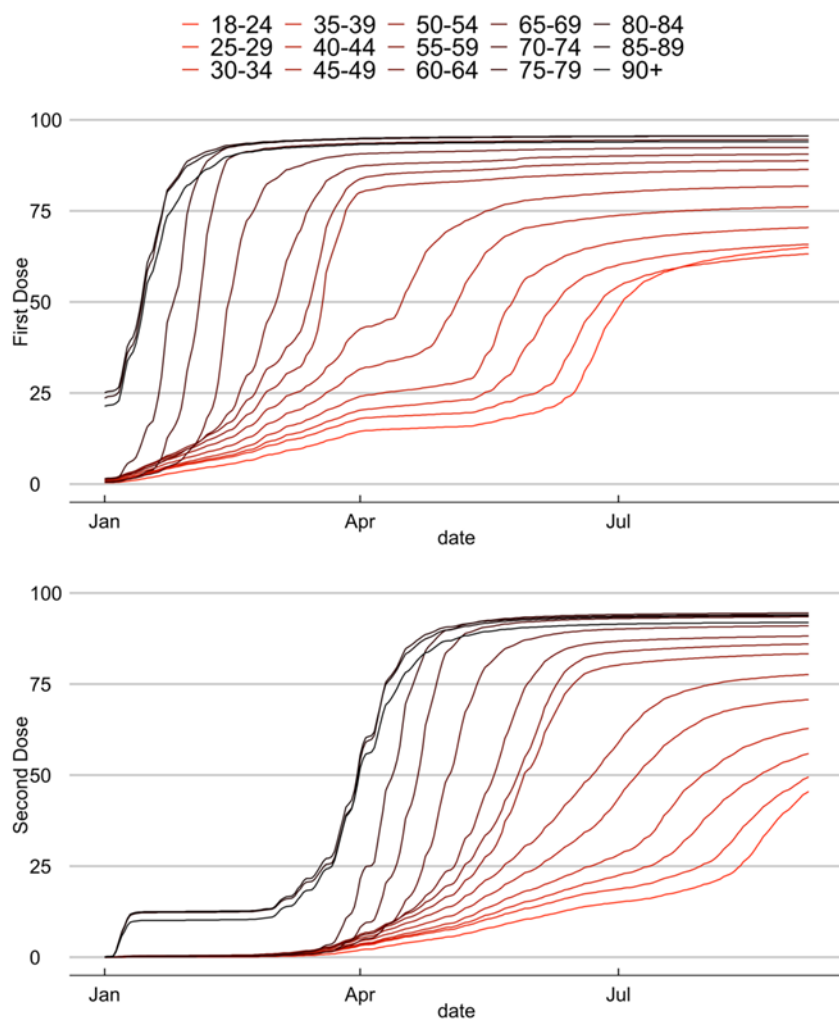


Figure 6 provides data on the percentage of England’s adult population that has been vaccinated broken down by age groups. It highlights the larger unvaccinated proportion of the younger adult population at the point of reopening, and the fact that the older population have now been fully vaccinated for a duration consistent with levels of antibody waning according to sero-prevalence [research](#).

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 Thamoheram 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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