



COVID-19 Future Path Modelling – Update report, week of 27/05/20

Commissioned by




Europe Economics
Andrew Lilico
27 May 2020

Disclaimer and caveats

The charts that follow and the accompanying data sheet are intended to provide the NAFD and its members with an approximate indication of the range within which deaths in their areas might lie, under a set of plausible scenarios reflecting the very considerable scientific and policy uncertainty at this time. The models use epidemiological and other scientific assumptions drawn from the current literature. However, we do not endorse any specific such assumptions and we have sought to acknowledge and reflect the very considerable scientific debate there is about many aspects of these matters at present.

Our models are not intended to be used to guide NHS planning or government policymaking regarding future phases of the coronavirus crisis. Had our models been designed for that purpose they would have required additional features (eg analysis of ICU usage).

It is both the strength and the weakness of regional modelling that it is more local. It is a weakness in that data is less certain and ranges of uncertainty are higher than for more aggregated analysis. It is also a weakness in this case in that there may be interactions between regions (eg transmission of infection) that we have not modelled explicitly. Key strengths include information for local decision-makers and a recognition of the possibility of localised epidemics even if spread is controlled at a national level.

Disclaimer and caveats (II)

- We note that, as in previous iterations of our model, we assume no automatic / continuous behavioural response, focusing solely on scenarios for the success or otherwise of national policy. In other words our base reproduction rates are exogenous, with the period reproduction rate only dependent on the base reproduction rate (which varies with policy) and the susceptible population. It is likely that in practice behaviour would respond to the level of infection (and the IFR) in the population – eg in London the reproduction rate might rise, relative to our models here, because infection rates are very low, whilst in the North East & Yorks behaviour may bring down the base reproduction rate as infection rates rose.
 - This point could become particularly relevant in future if there were to be regional differentiation in lockdown policies (eg more loosening in London than in the North East, or a second lockdown in the North East if spread accelerated).

Features of this update

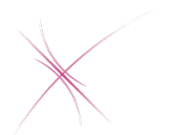
- The regional deaths models in this update change the models presented:
 - The “Oxford” and “Imperial” view models are replaced with a single “view” based on the Public Health England / University of Cambridge IFR and R0 models, with some adjustments applied to bring the models in line with the ONS serology data published on 21 May 2020.
 - With the addition of these more recent data, some features of the models remain unchanged and some differ:
 - It continues to be the case that there is no second peak in London even if national lockdown is less successful. It also continues to be the case that there are significant second peaks in the North East & Yorks and in Scotland even if national lockdown is successful (though second peaks are of course larger with a less successful national policy).
 - Wales now appears to be less vulnerable to a second peak if UK-wide policy is successful.
- To the regional deaths models we add a set of charts for regional active infections, expressed as percentages of each region’s population.

Our regional models allow for a wide variety of region-specific factors

- Different demographics lead to different fatality rates (eg ranging from 0.5% in London to 0.8% in the South West).
- Epidemics start at different dates and spread at different speeds.
- The R_0 in lockdowns are different.
- Post-lockdown R_0 s are different, & hence the post-lockdown logistic progressions (the mathematical shapes of new infections) are different.
- We use not-fully-binding regional herd immunity thresholds.



Regional deaths models



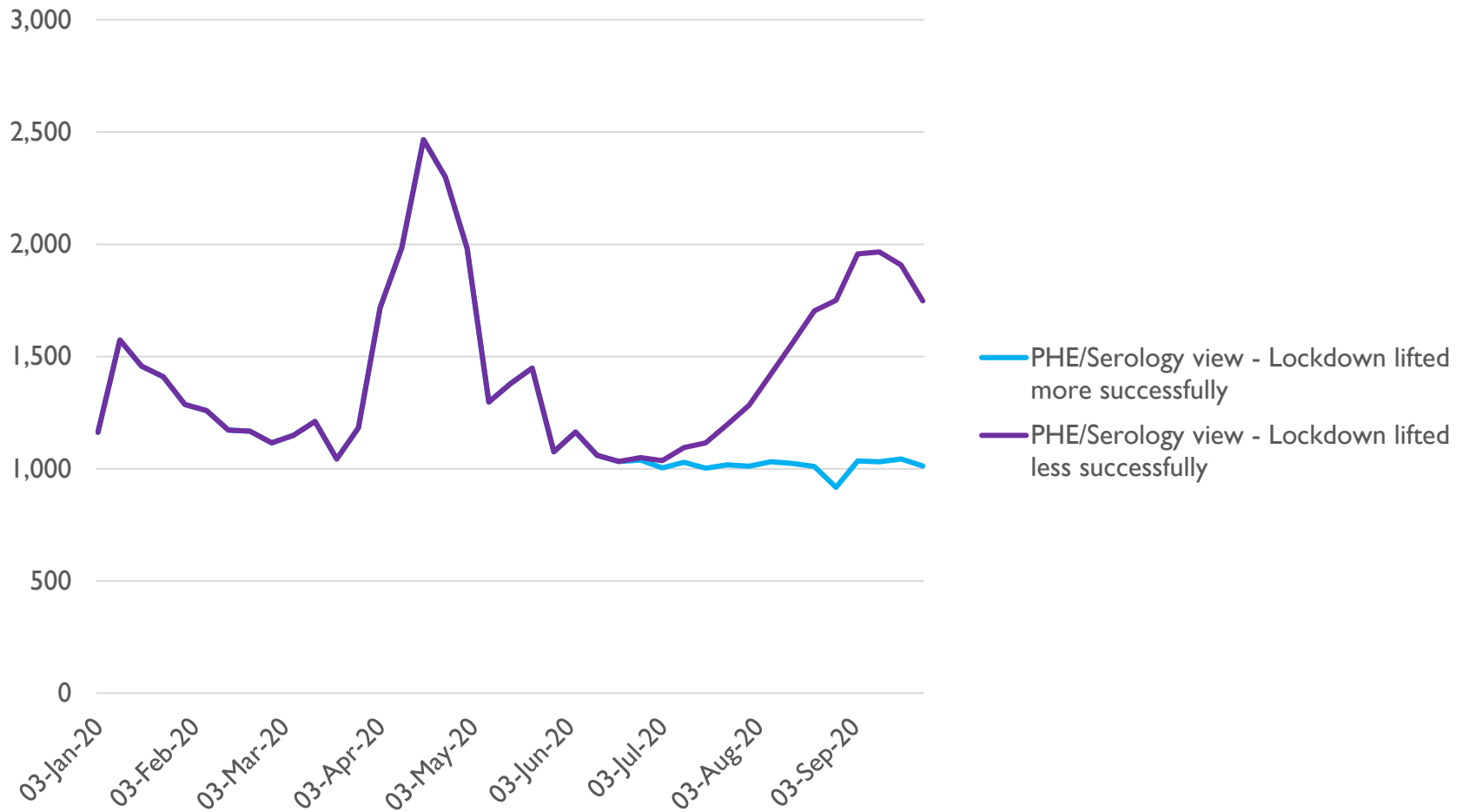
Europe Economics

Commissioned by

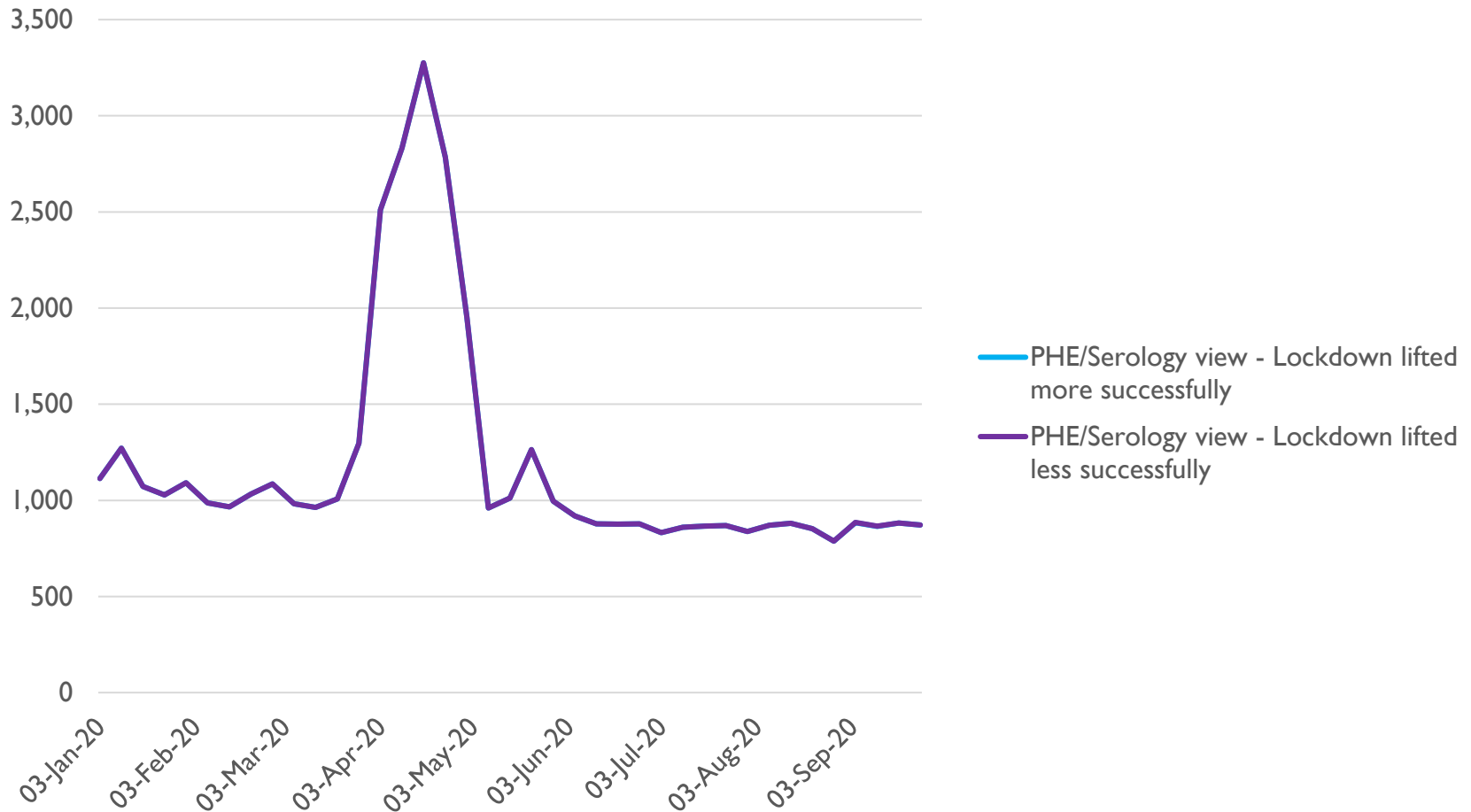


NB All projections are to the final week of September 2020

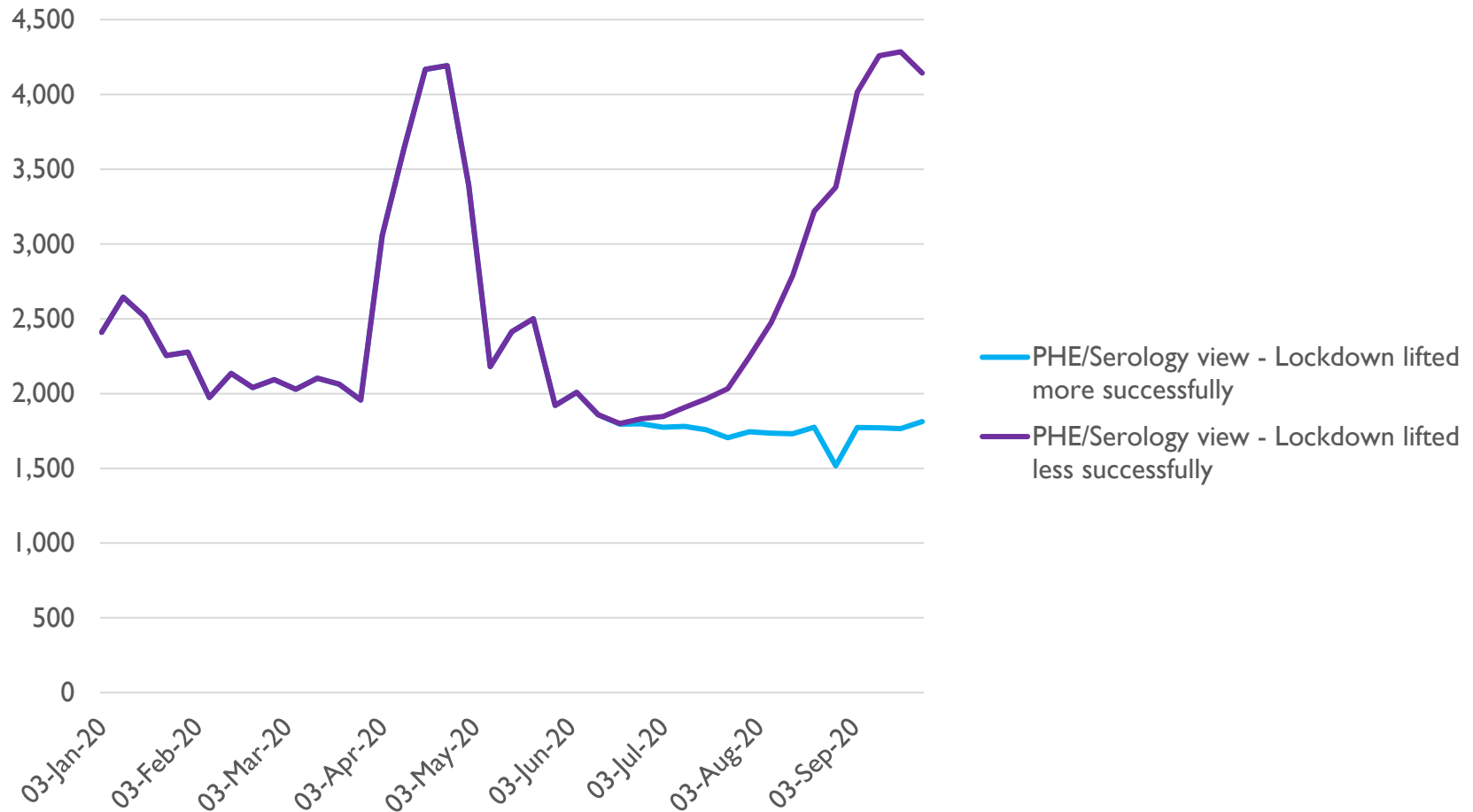
East of England total deaths, all causes



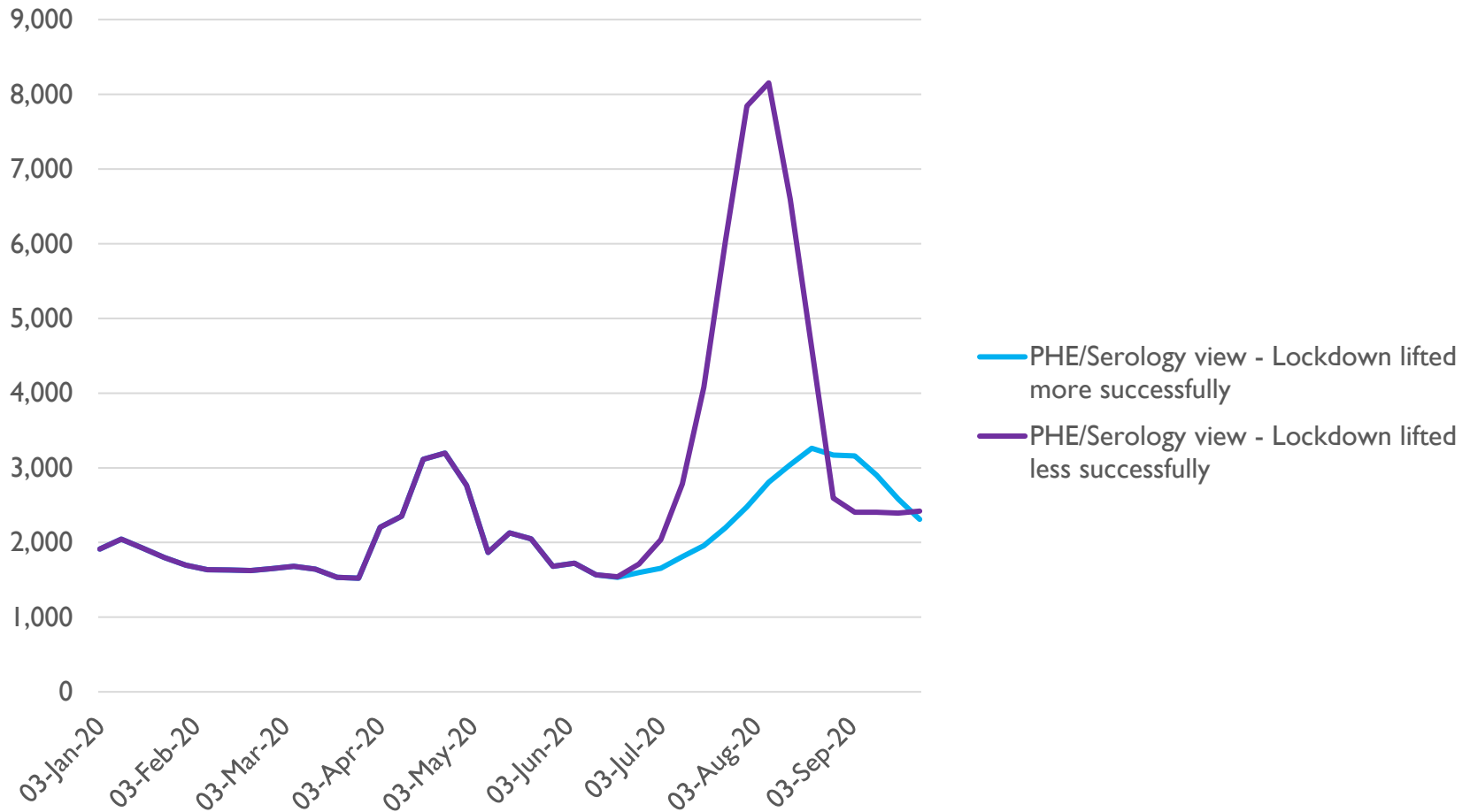
London total deaths, all causes



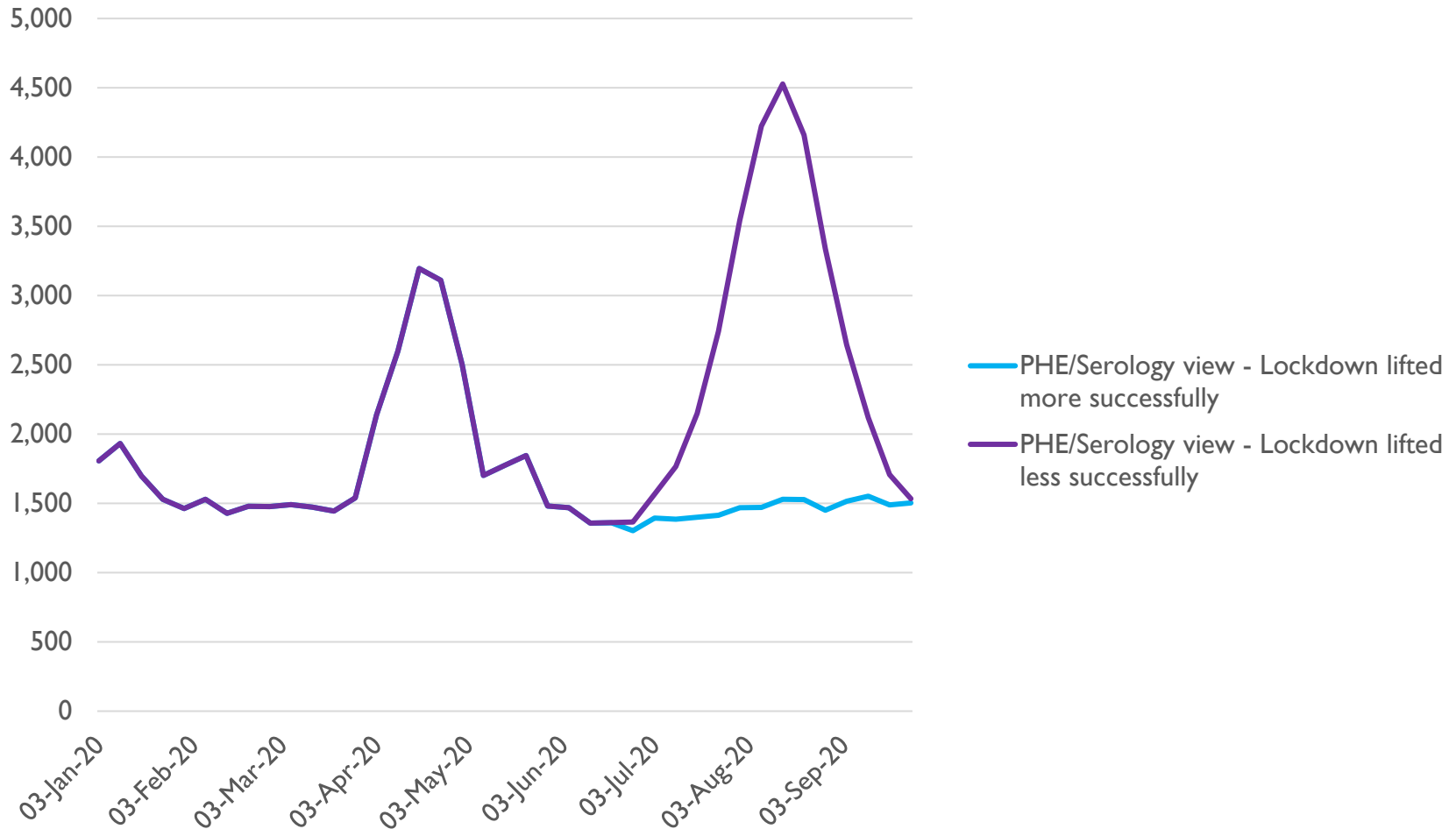
Midlands total deaths, all causes



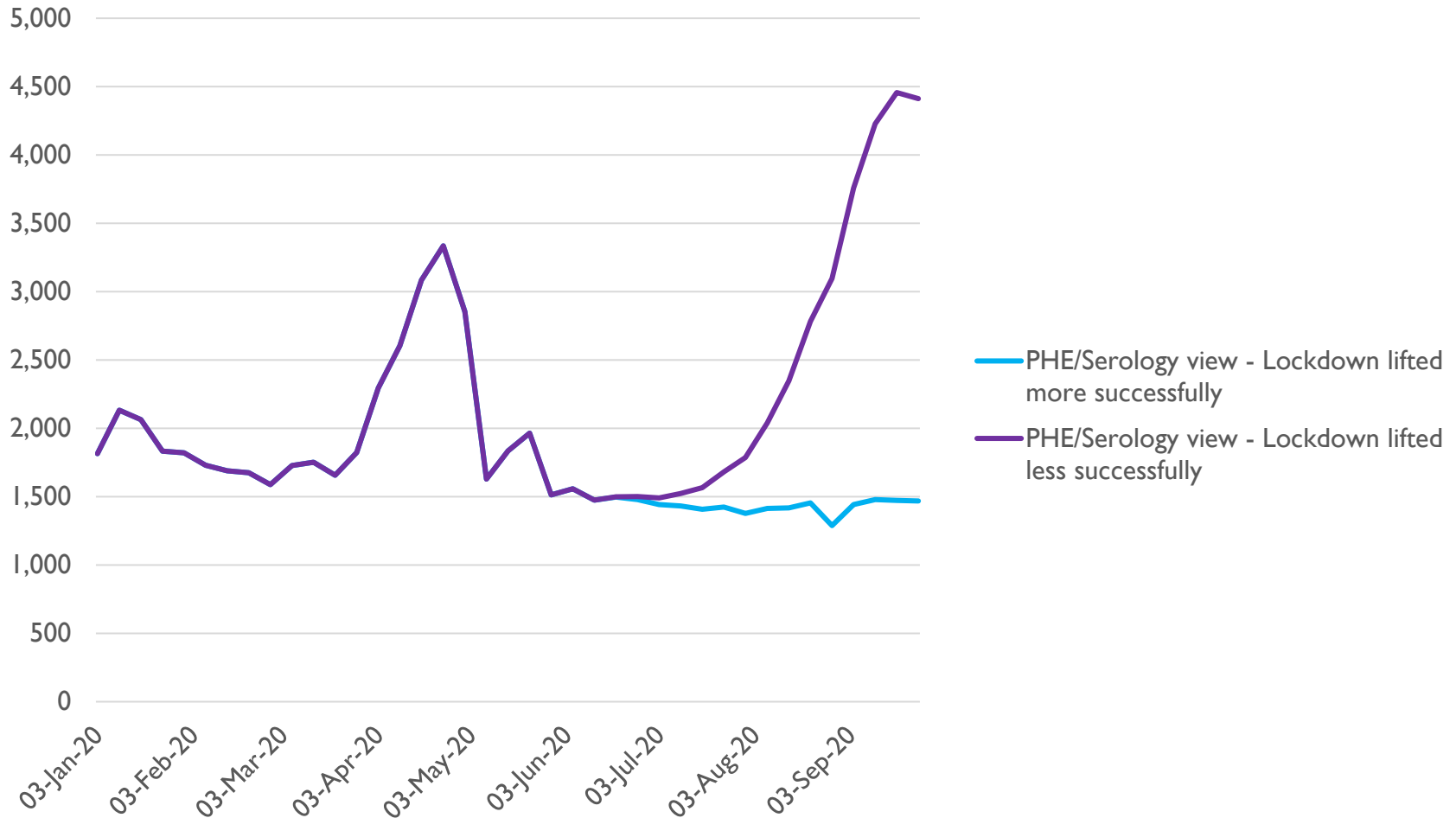
North-East and Yorkshire total deaths, all causes



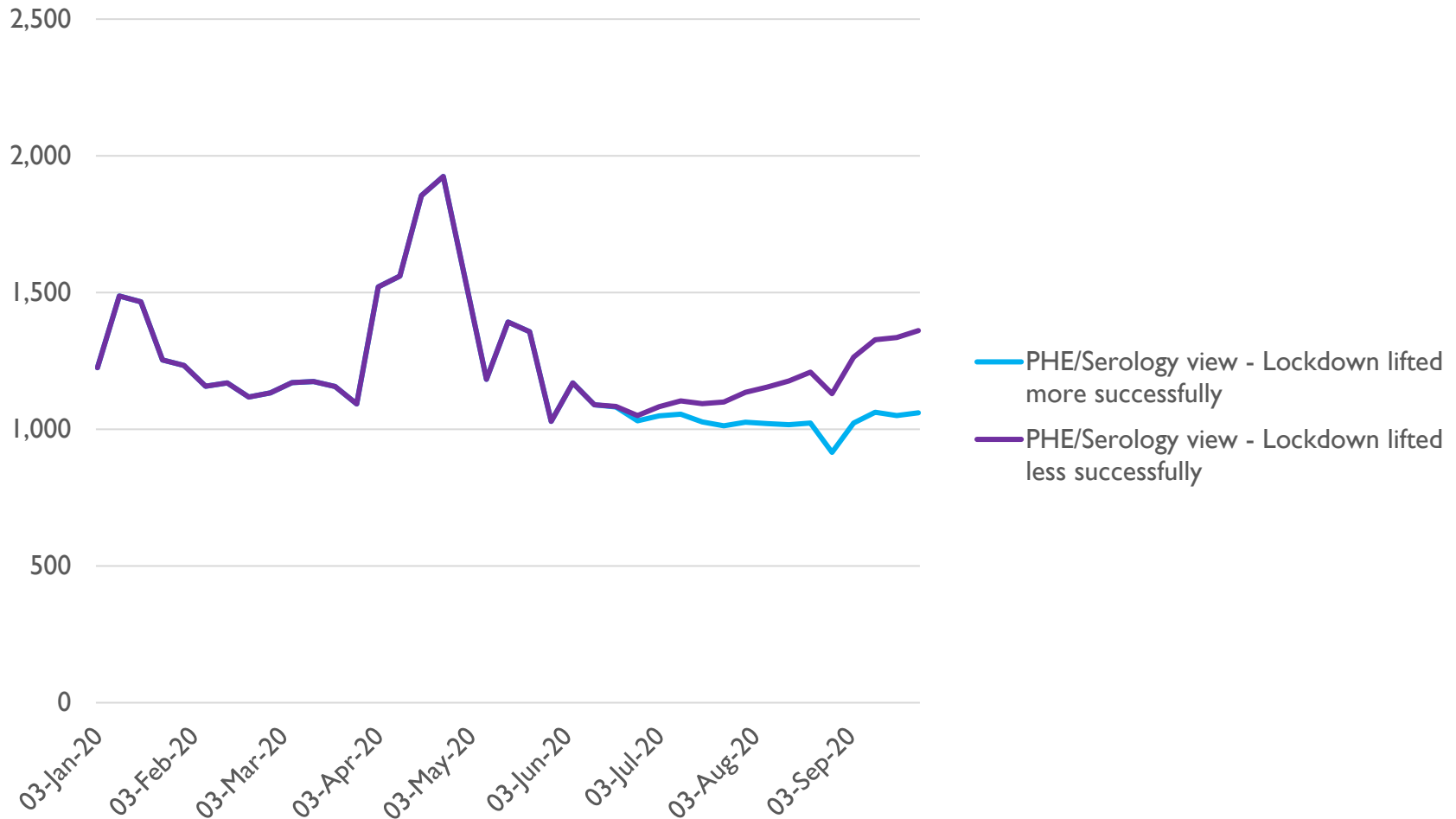
North West total deaths, all causes



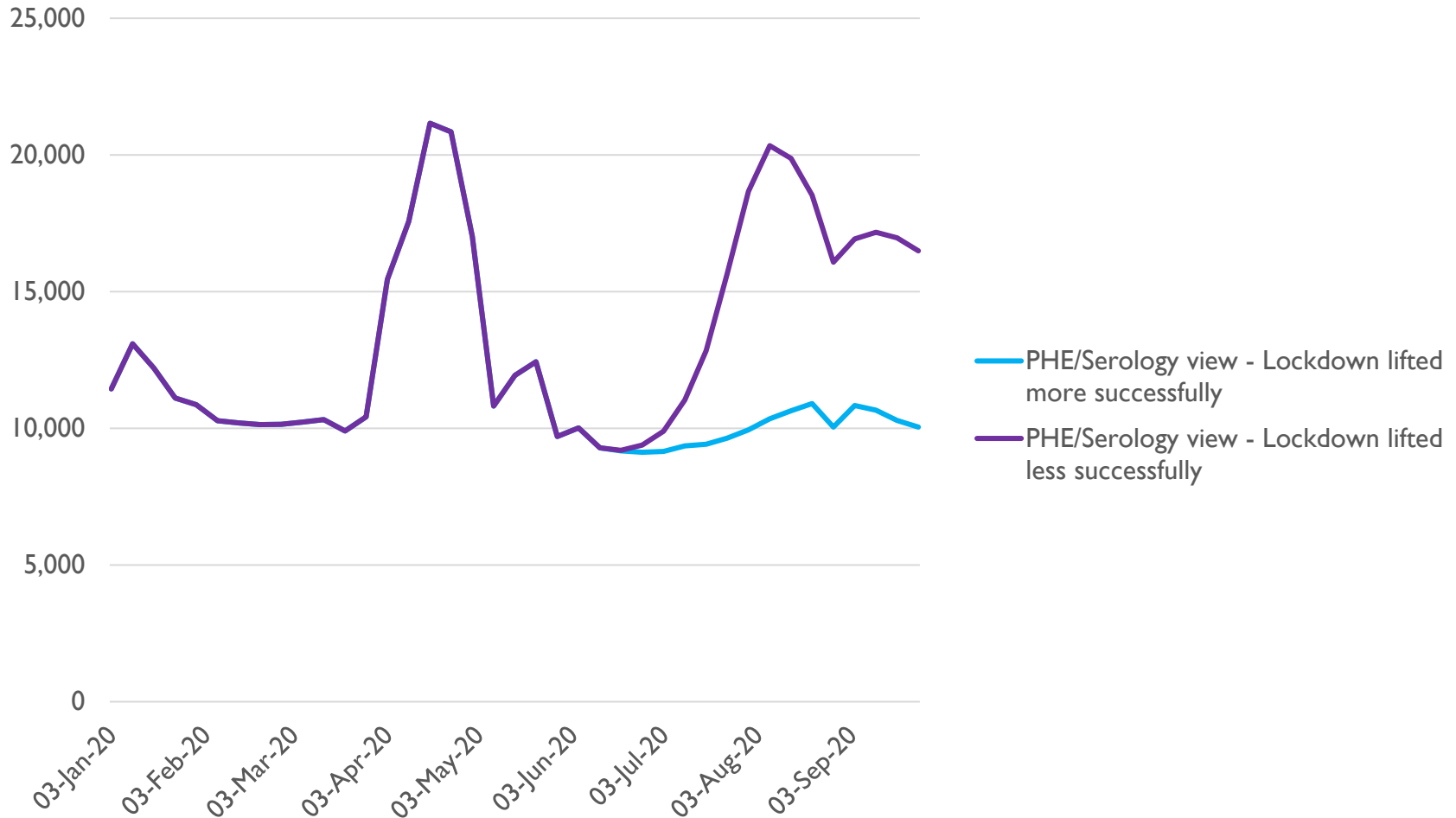
South East total deaths, all causes



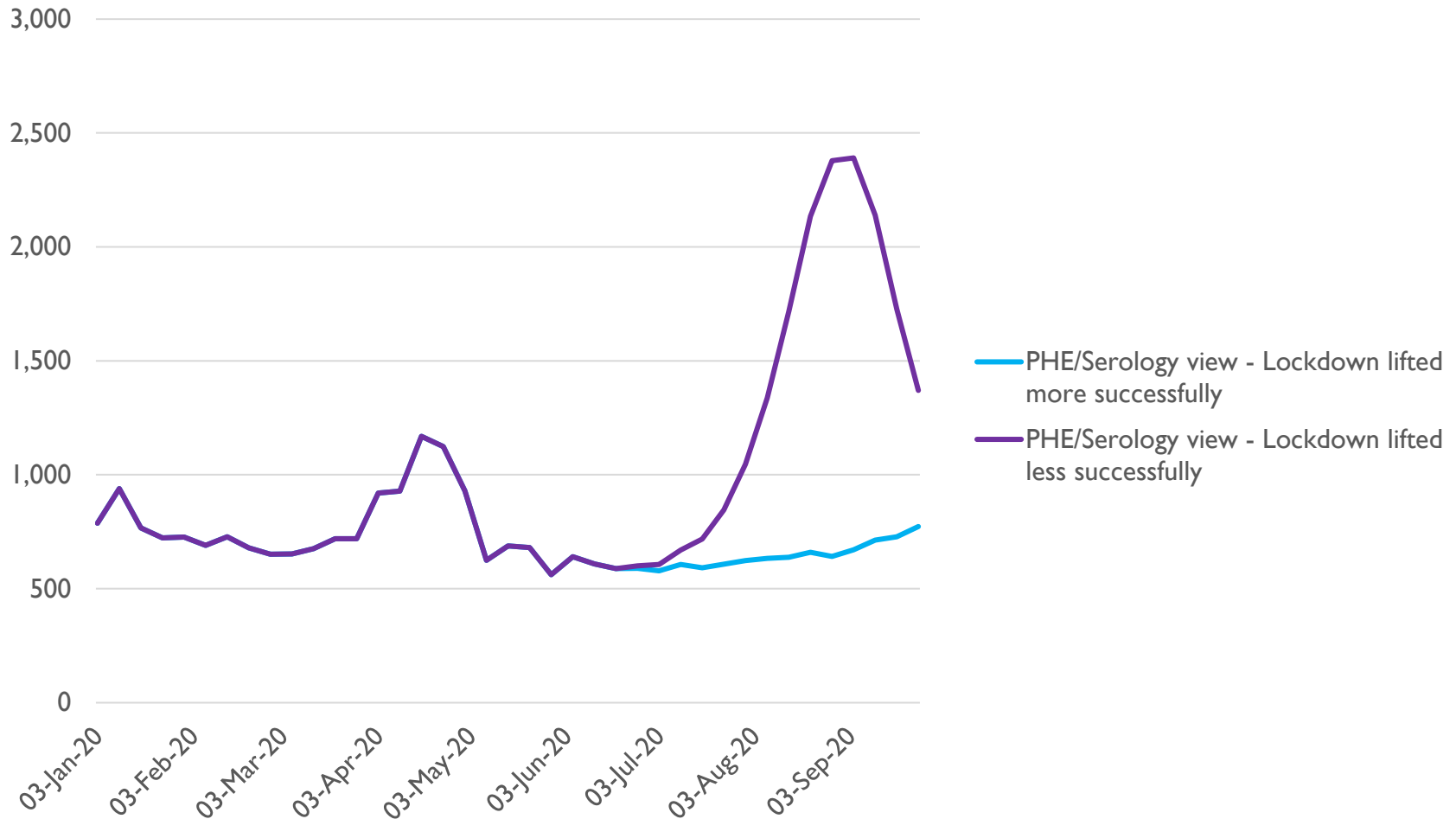
South West total deaths, all causes



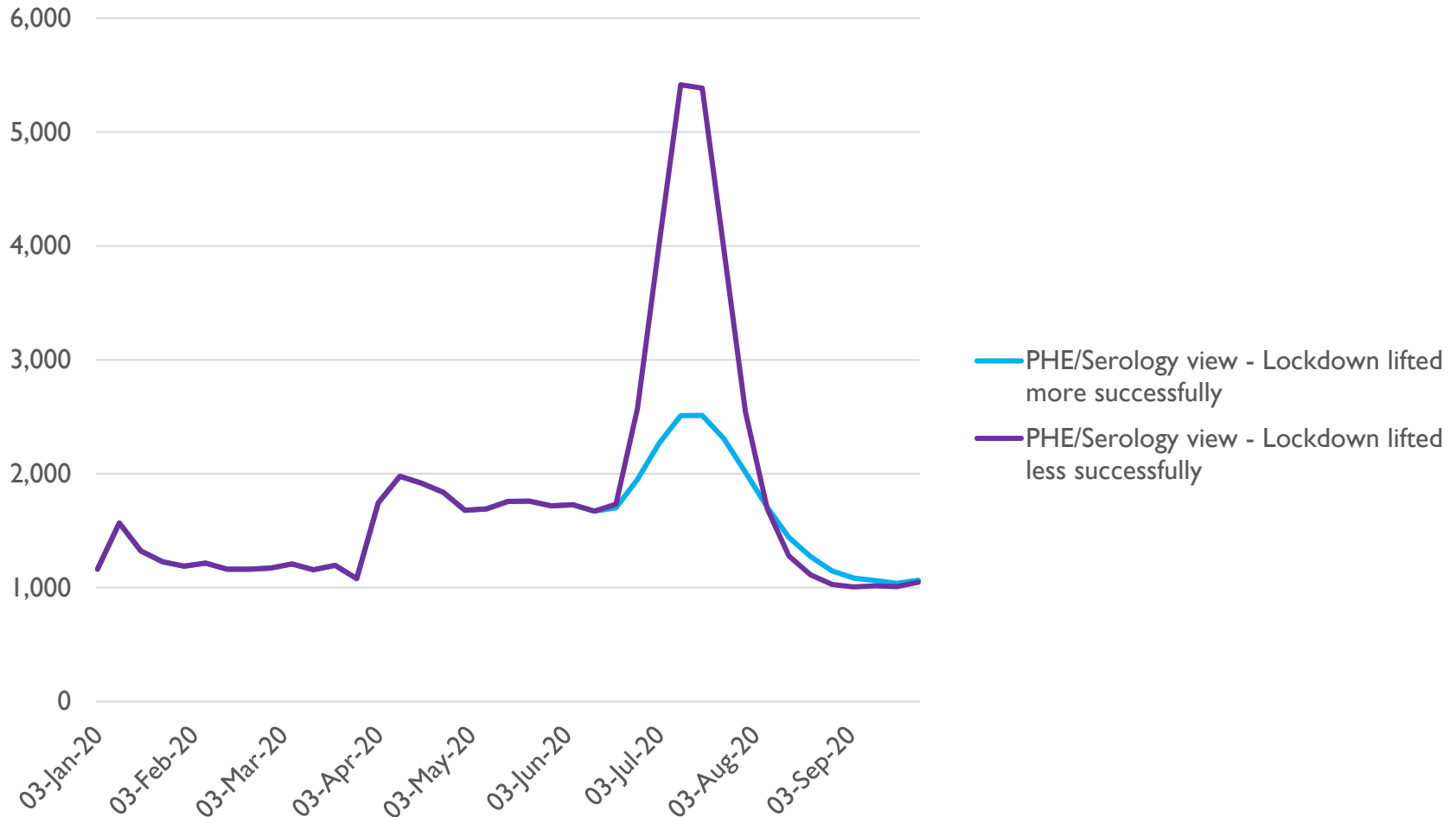
England total deaths, all causes



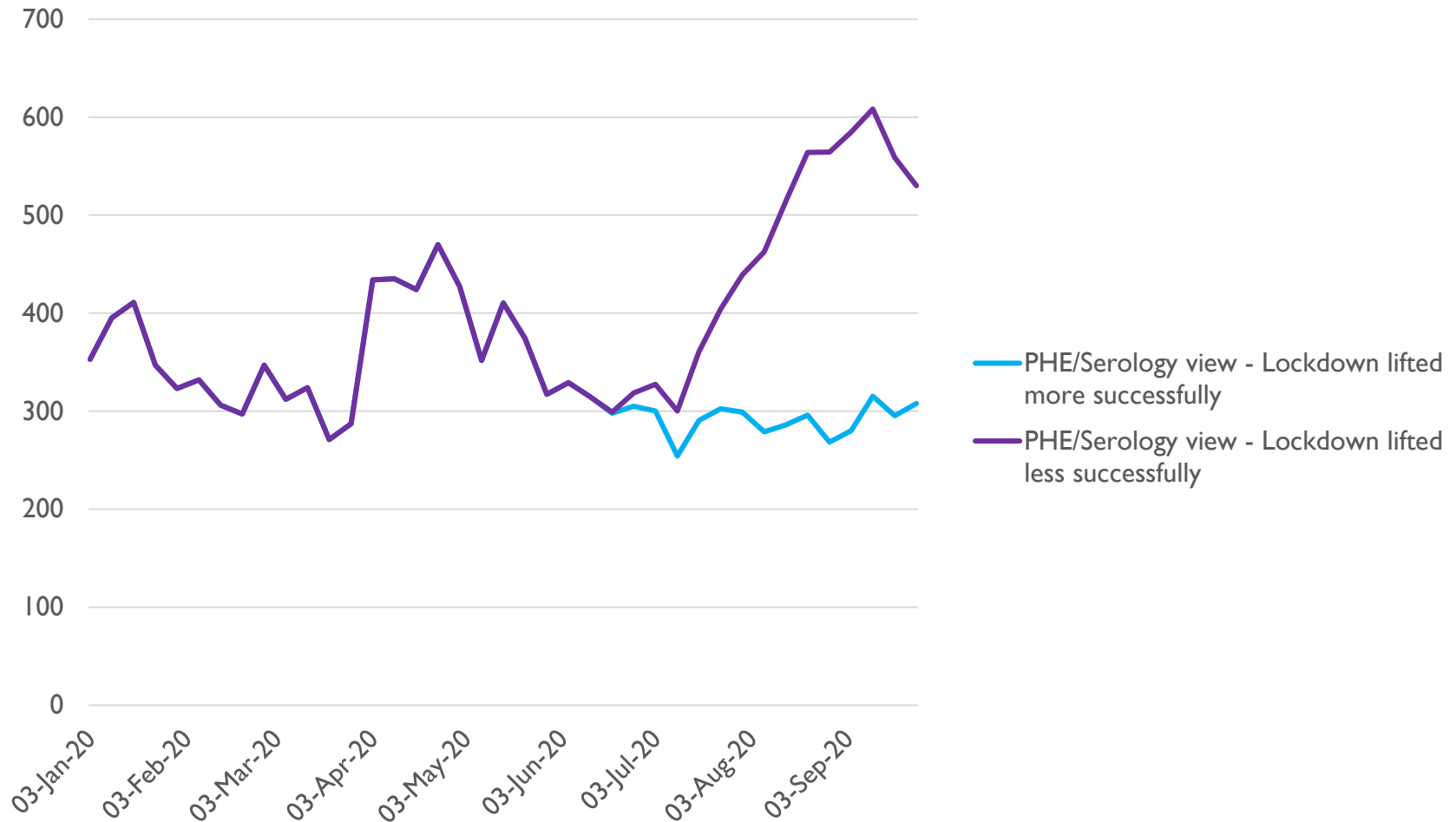
Wales total deaths, all causes



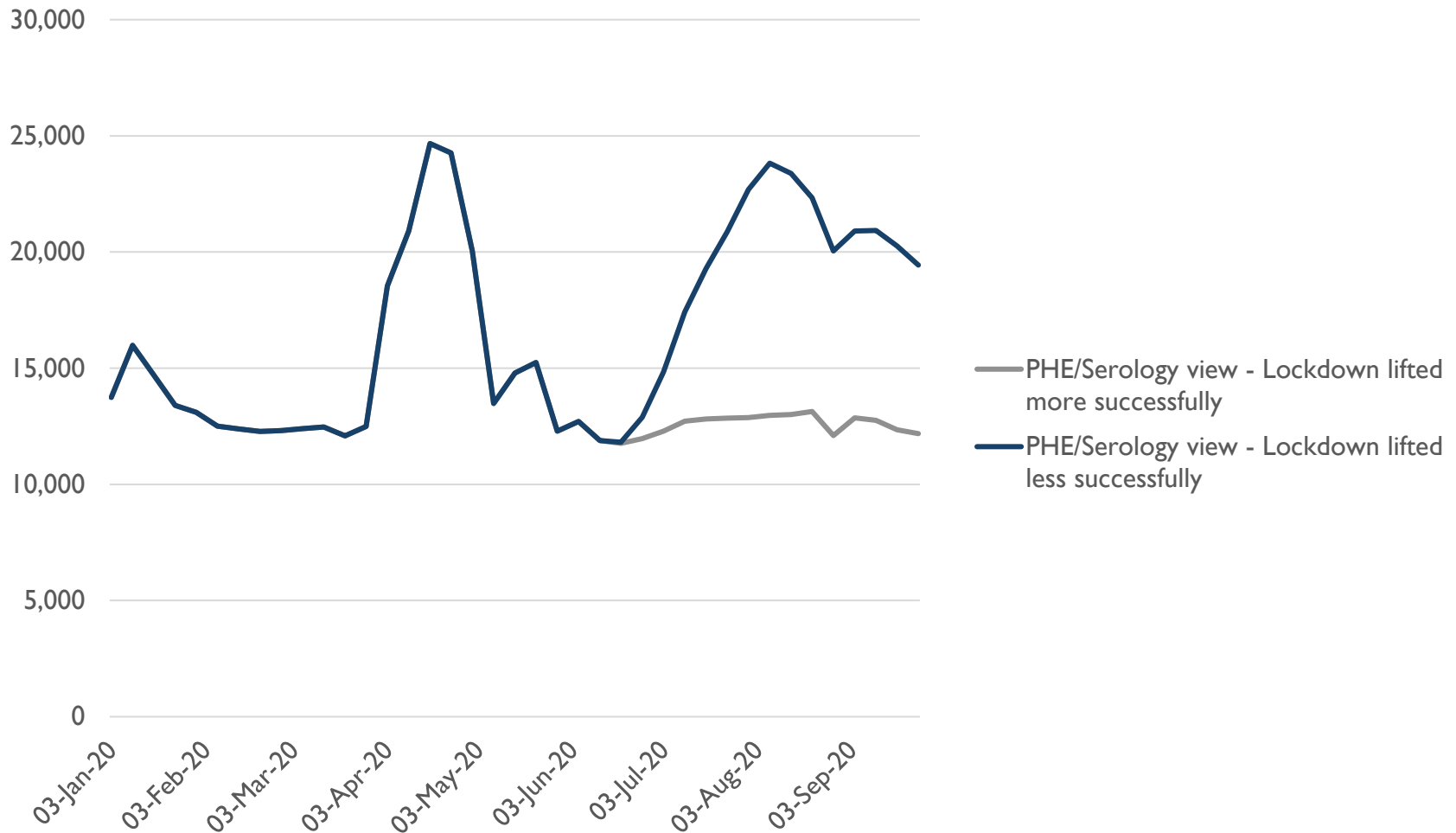
Scotland total deaths, all causes



Northern Ireland total deaths, all causes

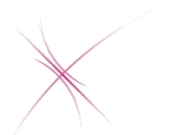


UK total deaths, all causes





Regional infections models



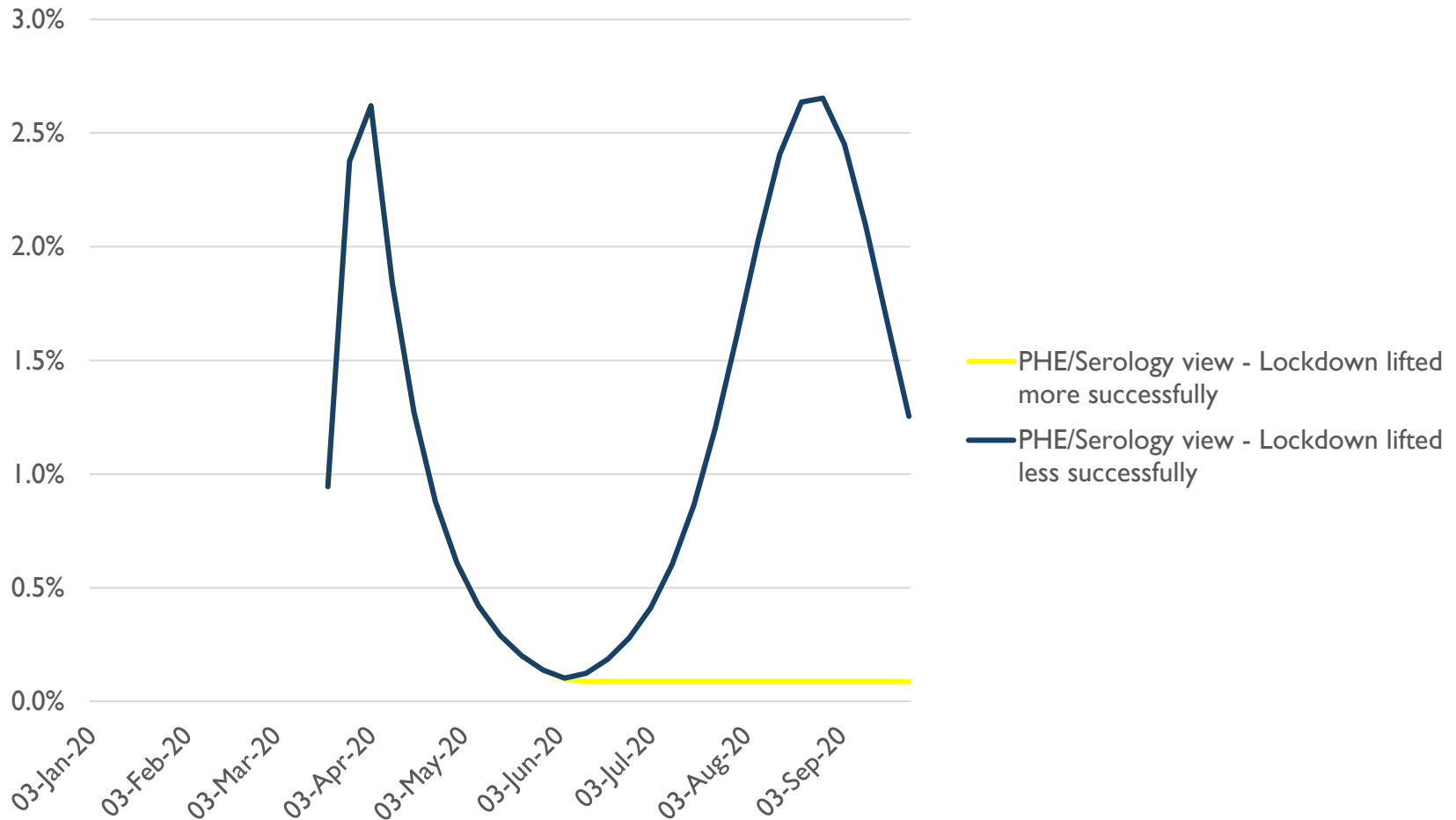
Europe Economics

Commissioned by

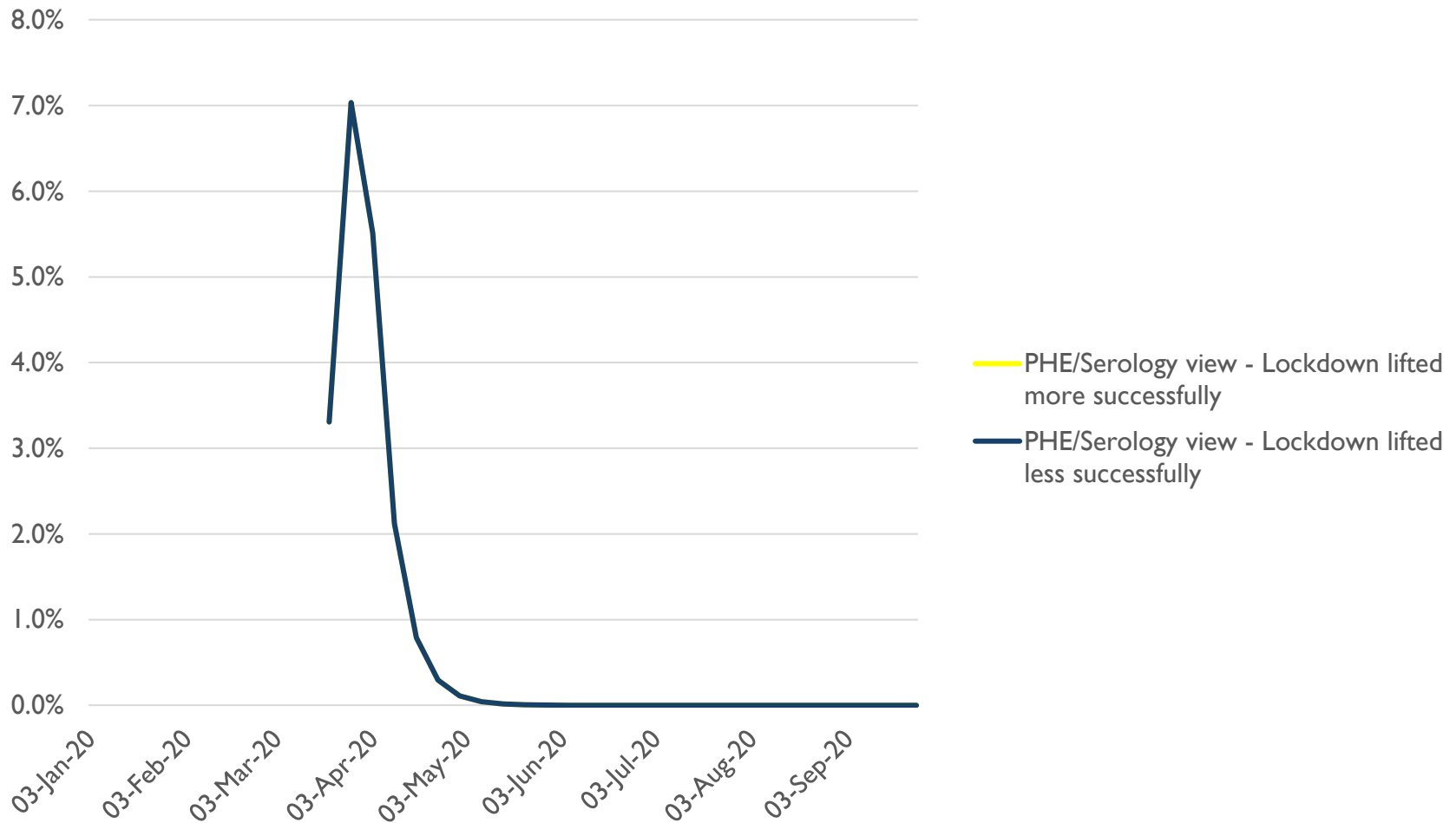


NB All projections are to the final week of September 2020

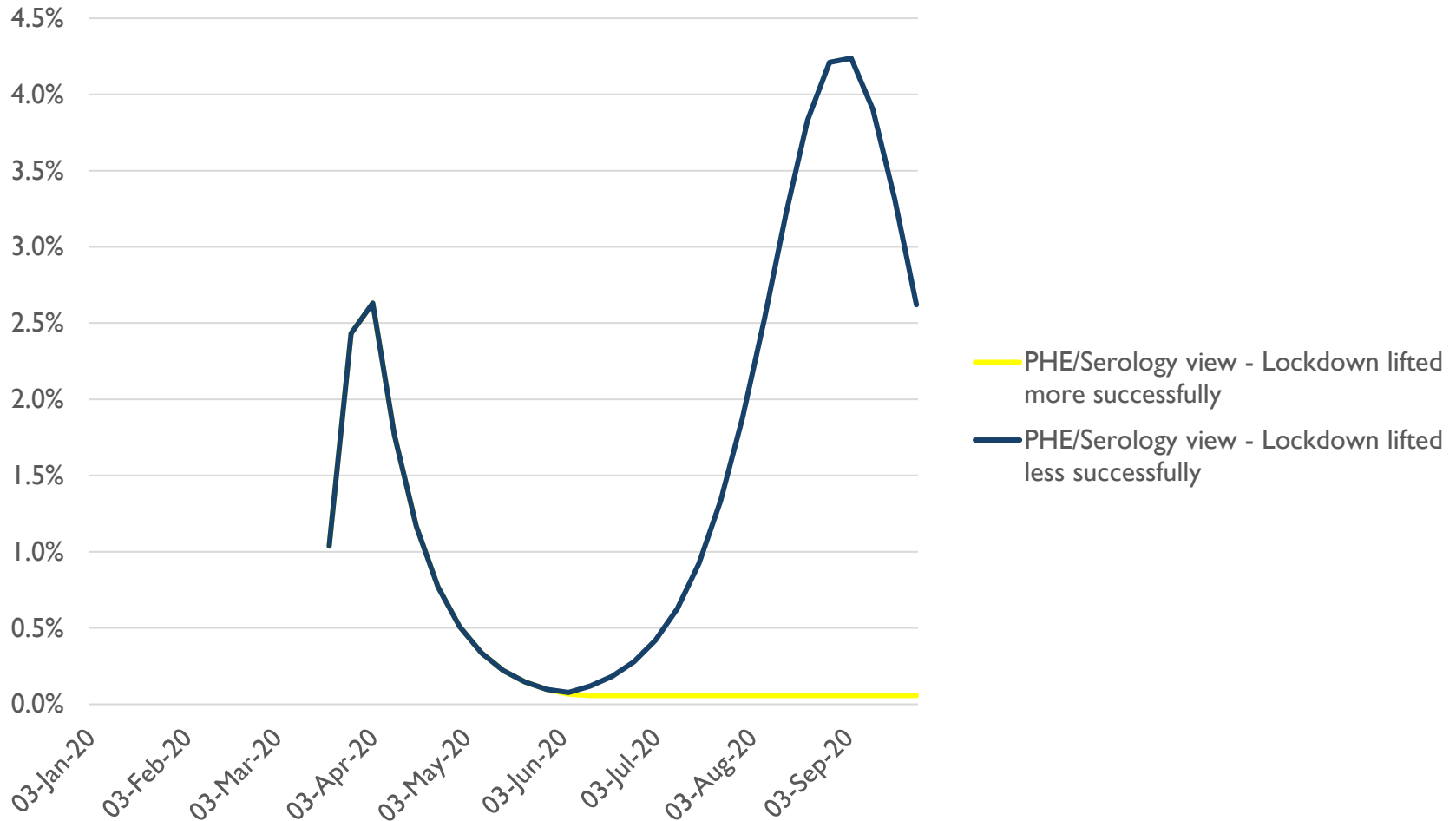
East of England % active COVID-19 infections



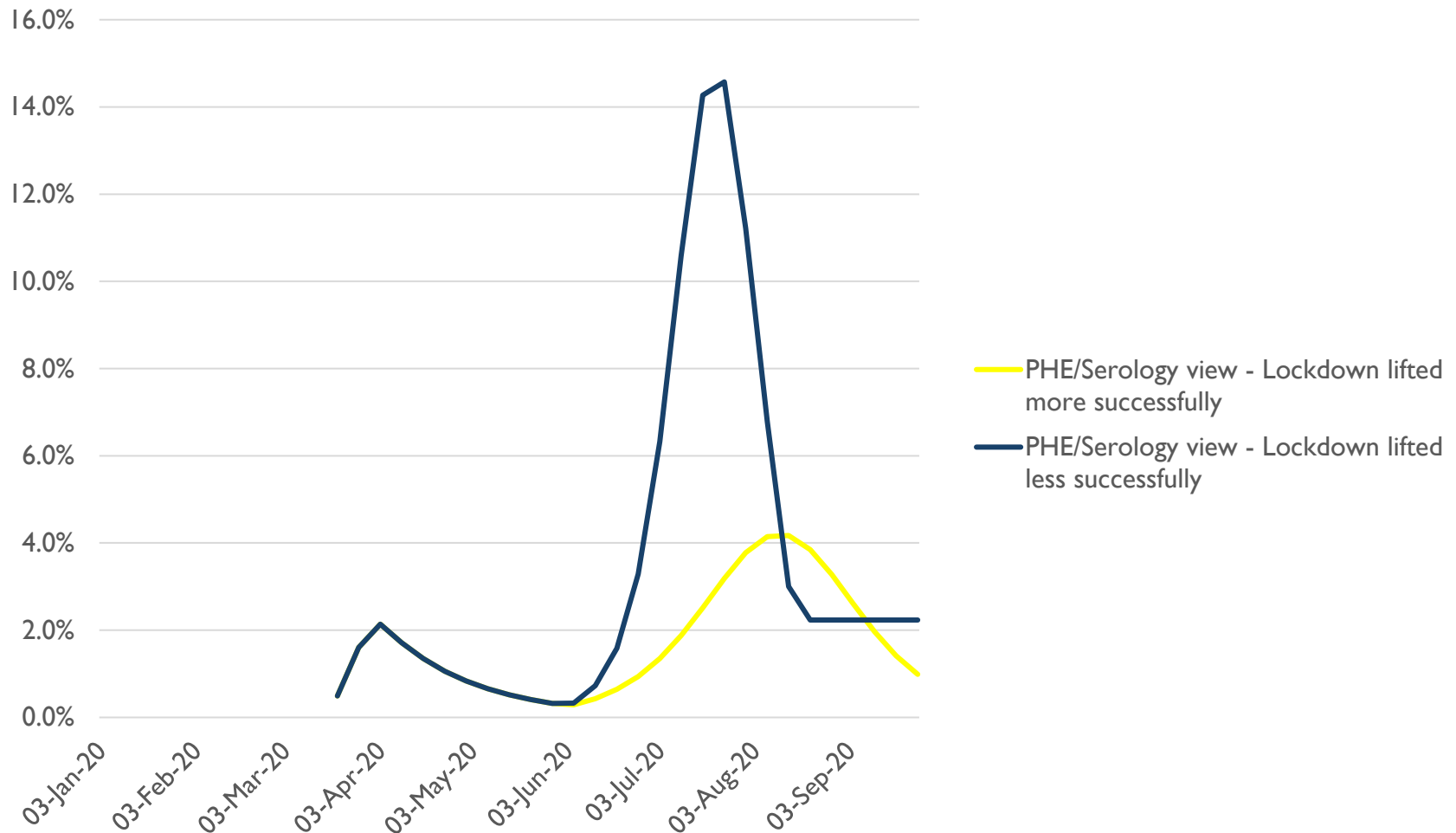
London % active COVID-19 infections



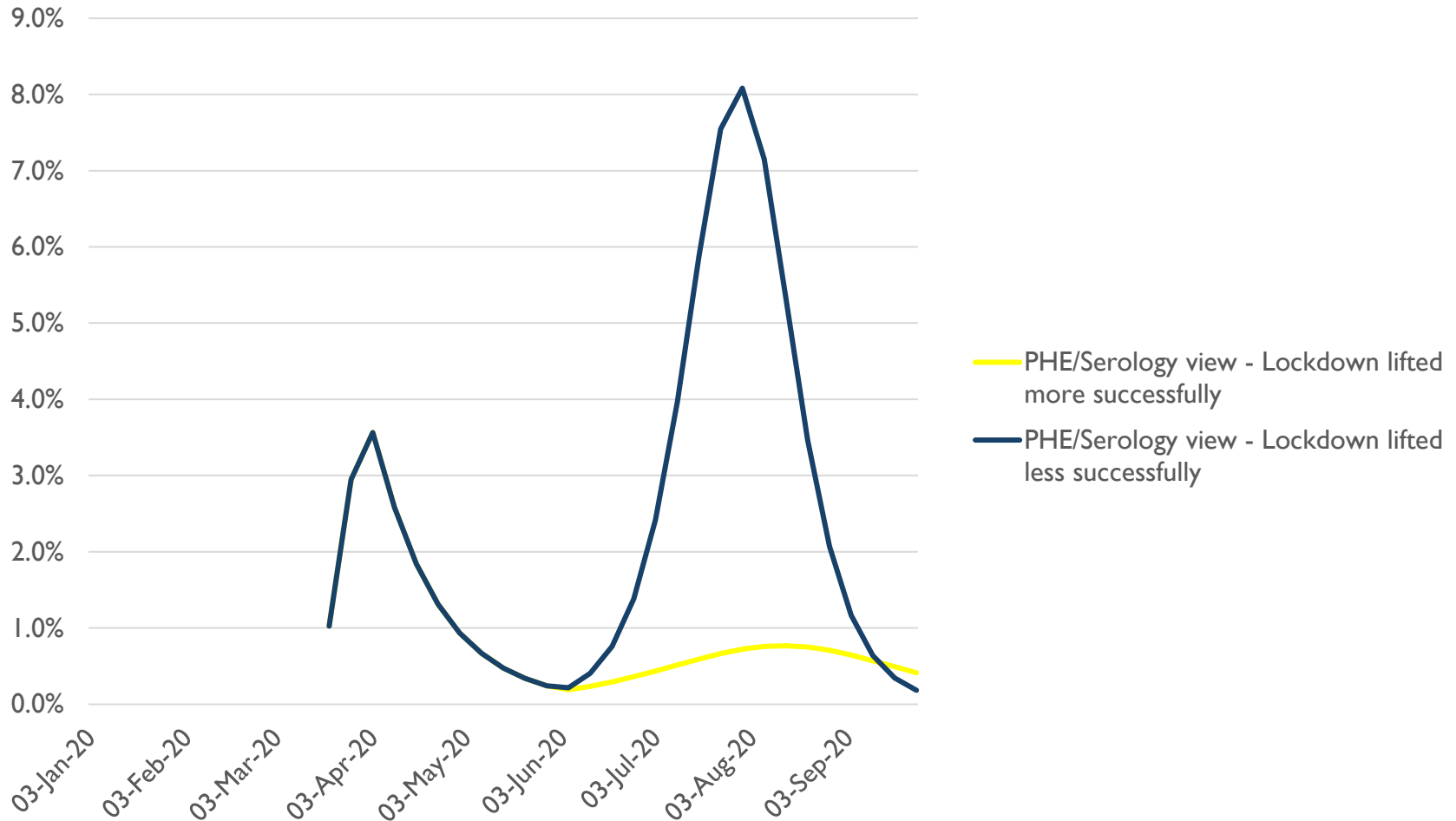
Midlands % active COVID-19 infections



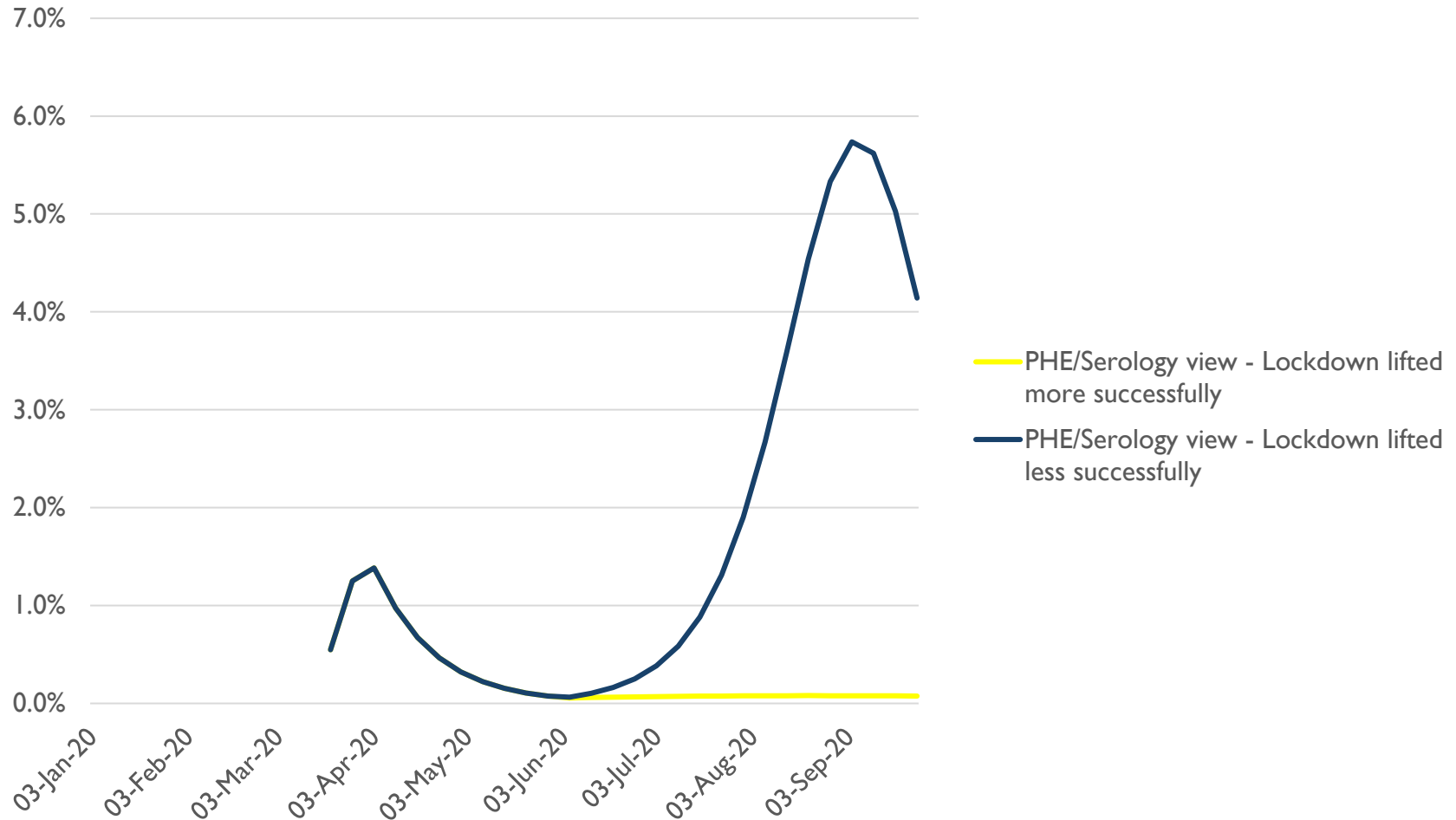
North-East and Yorkshire % active COVID-19 infections



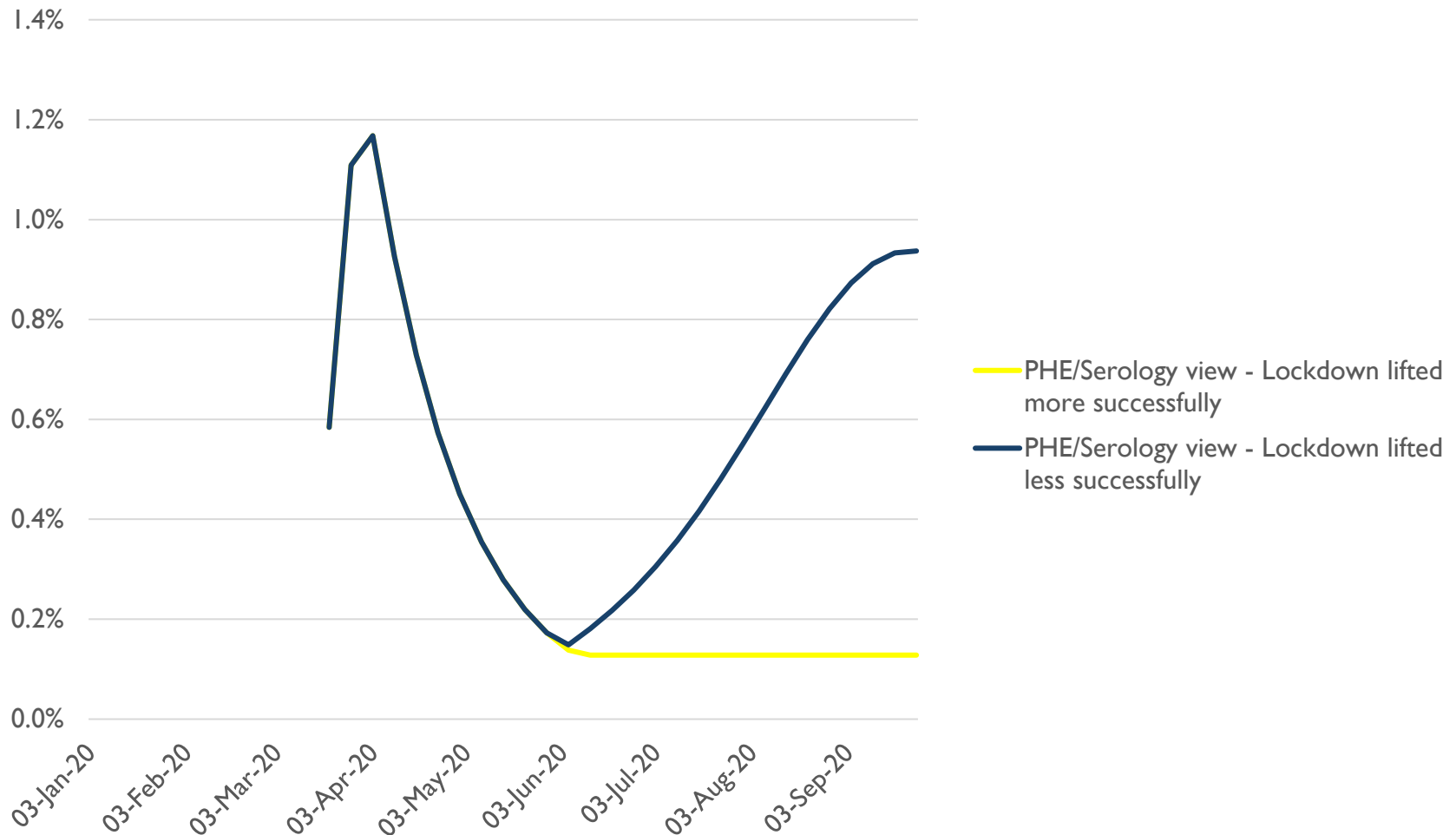
North West % active COVID-19 infections



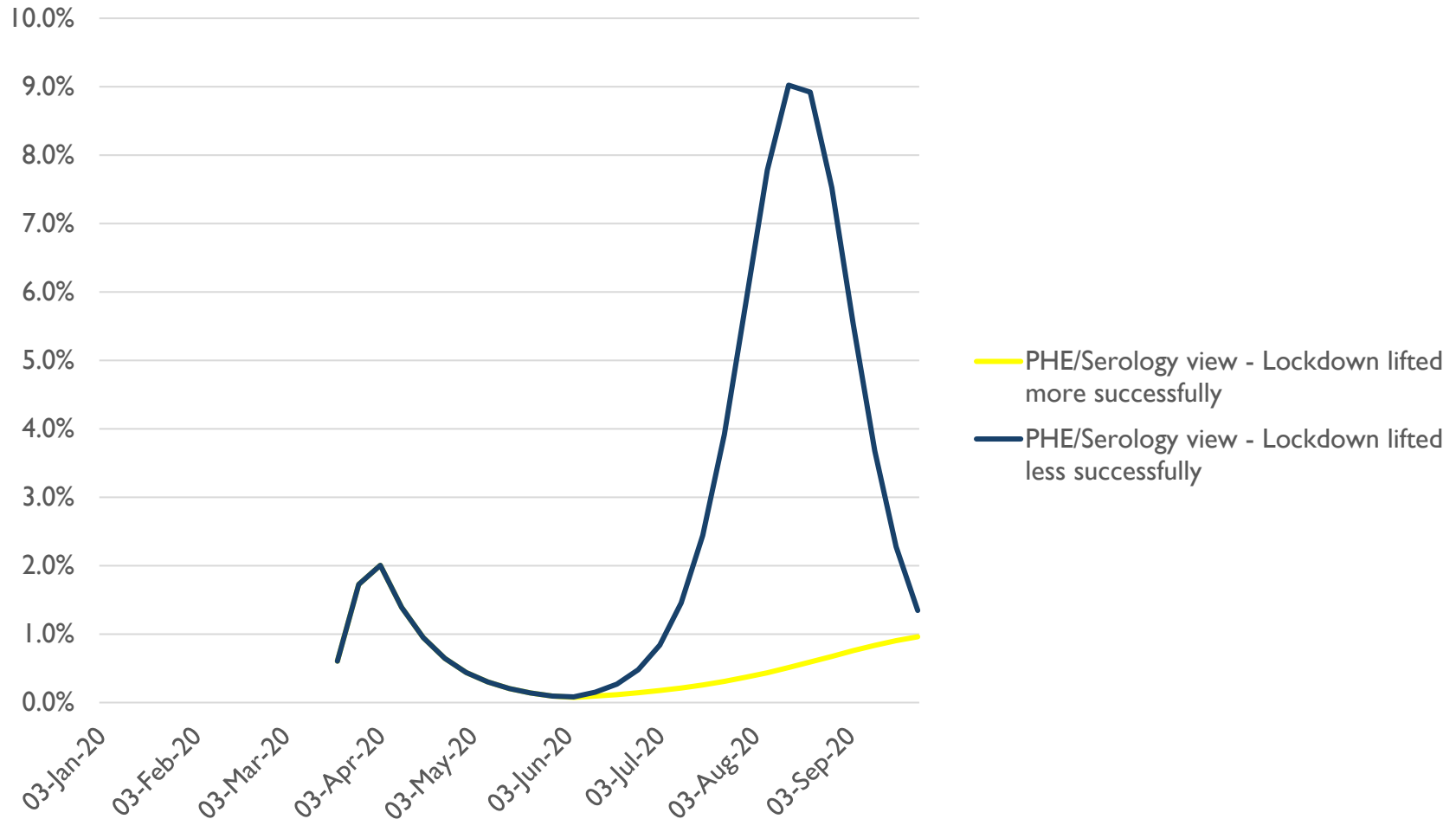
South East % active COVID-19 infections



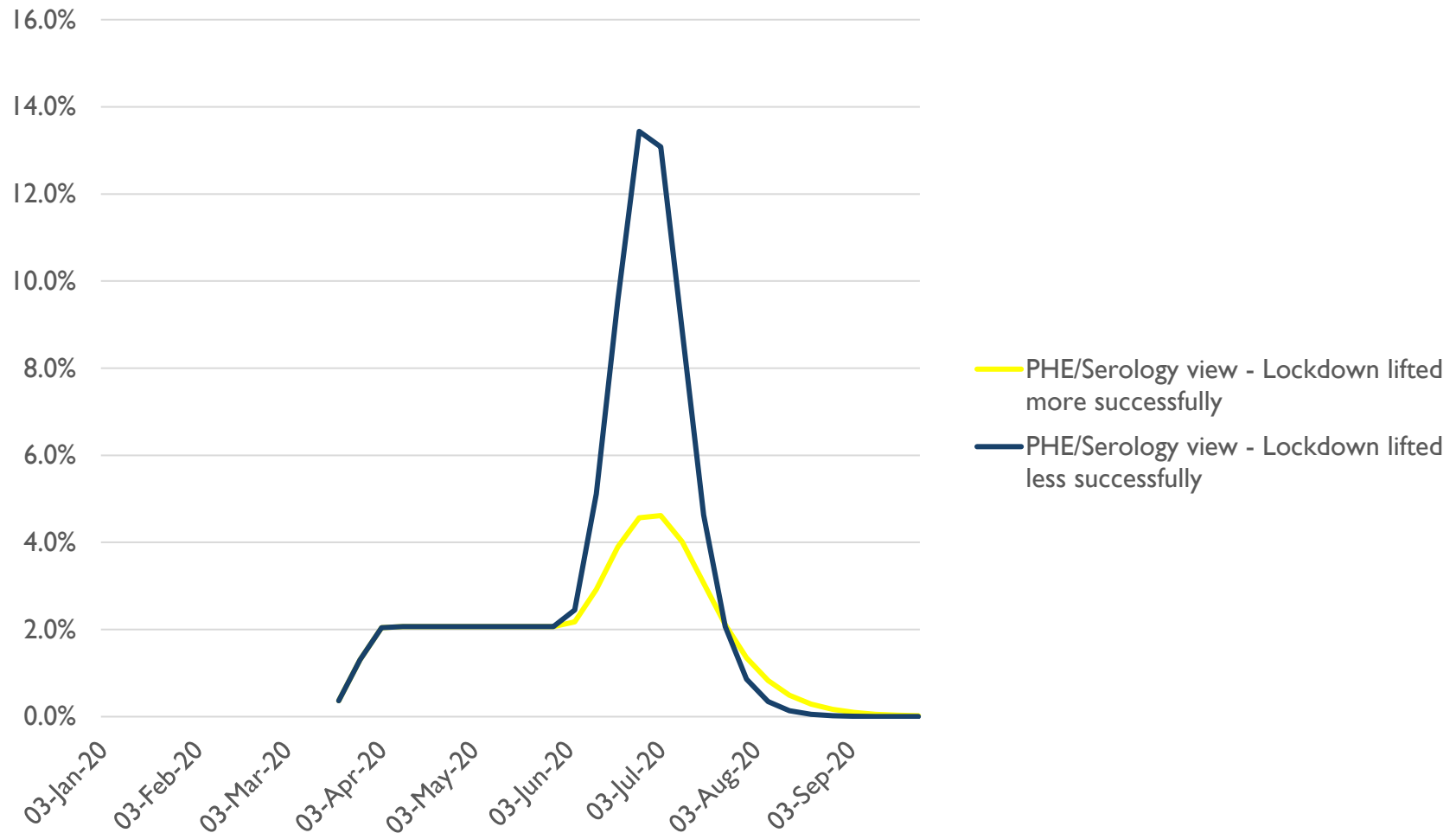
South West % active COVID-19 infections



Wales % active COVID-19 infections



Scotland % active COVID-19 infections



Northern Ireland % active COVID-19 infections

