Testing and other interventions in social care settings

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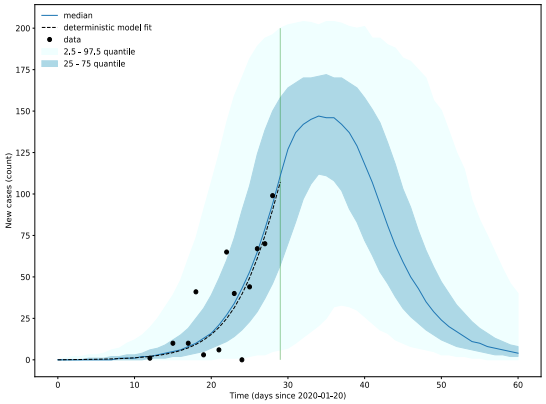
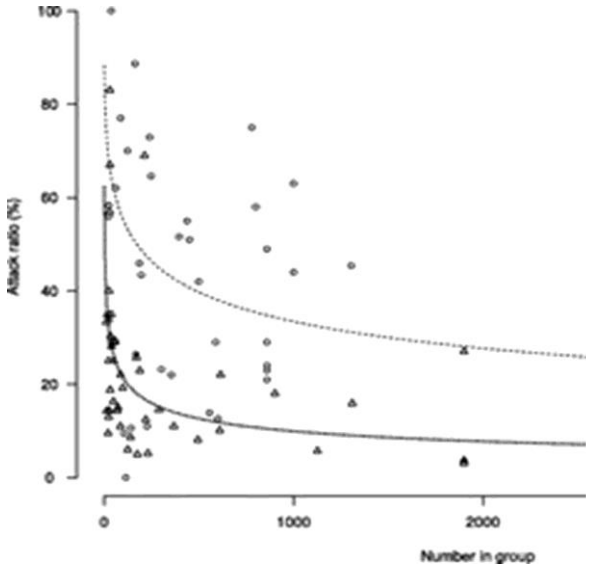
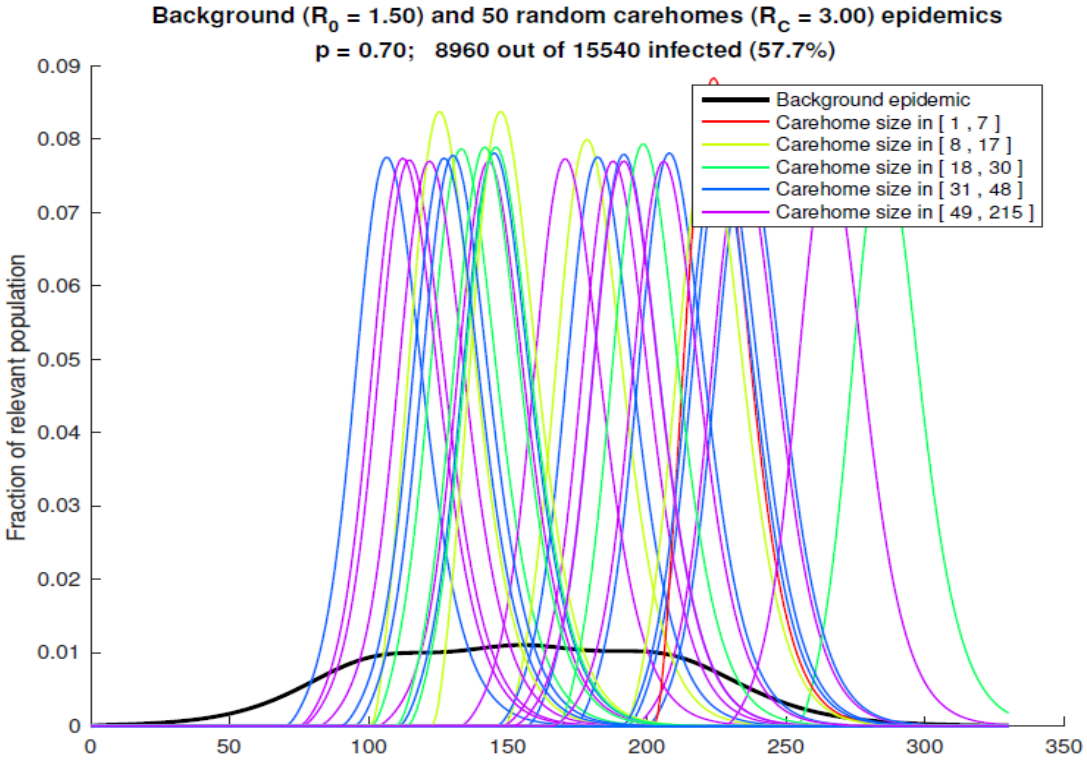
Enclosed Societies

- What did we know before?
- Literature review for Flu.

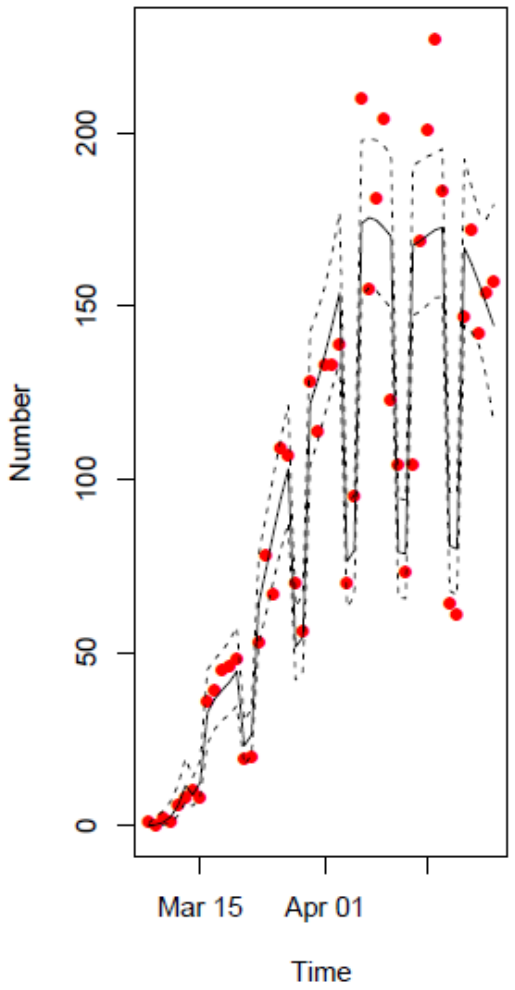


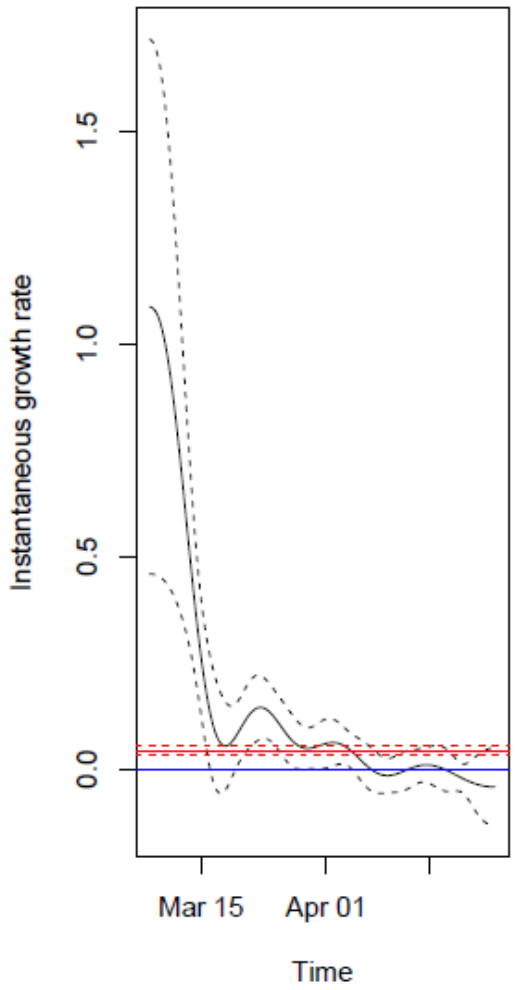




Effect of "cocooning" on numbers in hospitals and deaths (457271 vulnerable people)
(reducing risk of introduction in carehomes)

Reported outbreaks over time

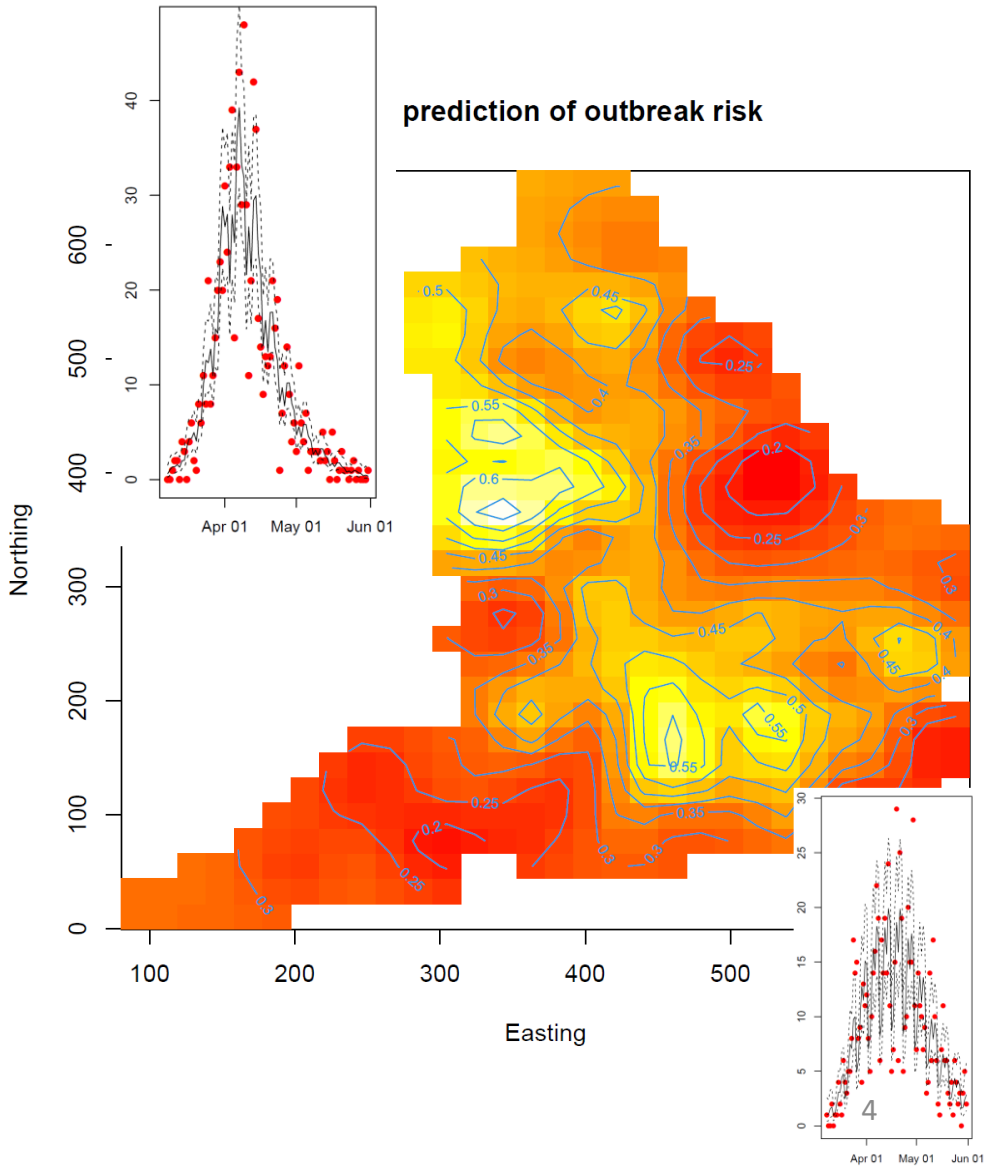




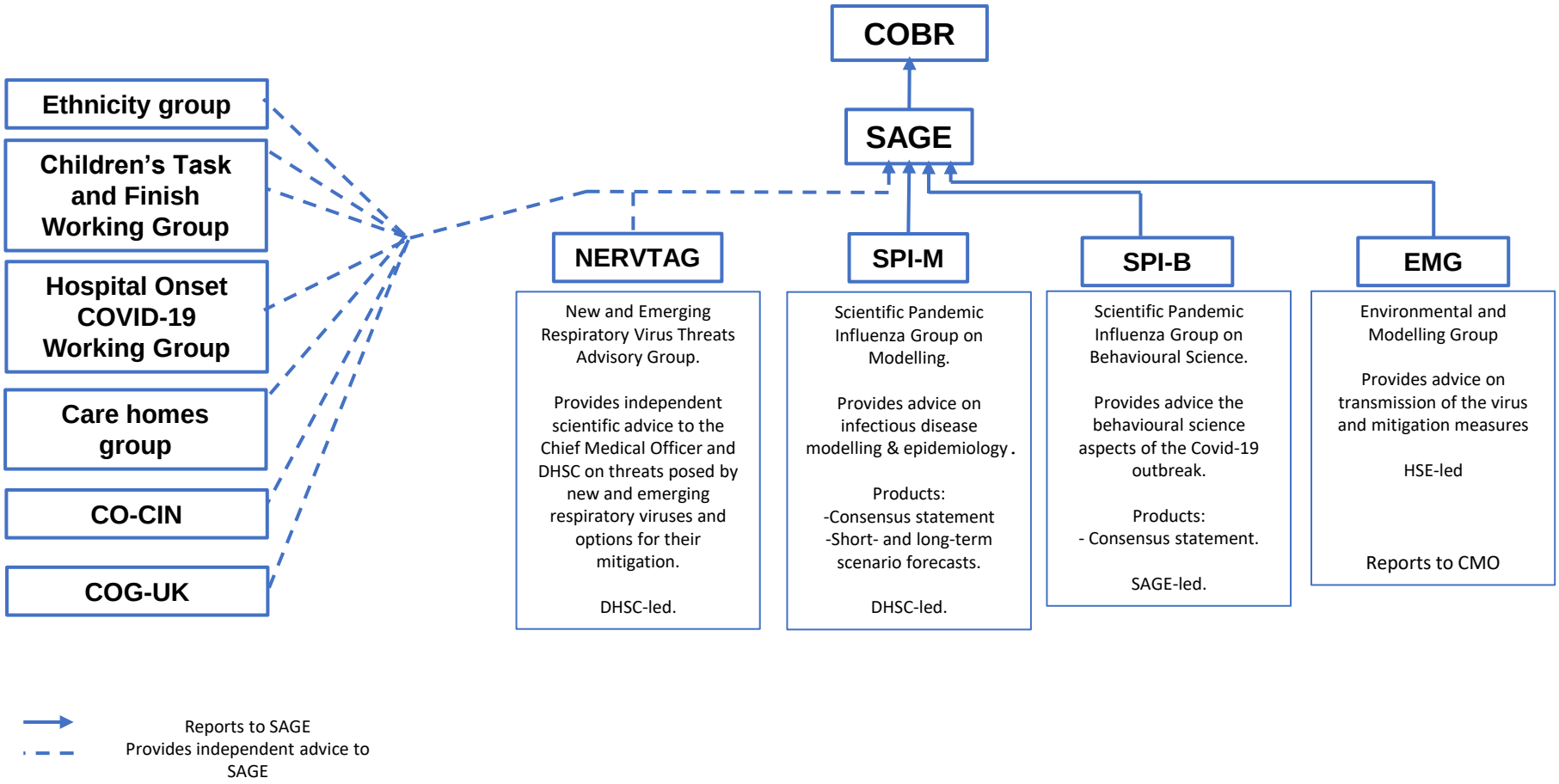
- There are N=15517 care homes in England
- Steady state of 190 outbreaks per day possible.
- With a 5 day generation time and 4 generations of disease and 14 day observation then…
- P=0.41

Methods/Results - Spatial distribution

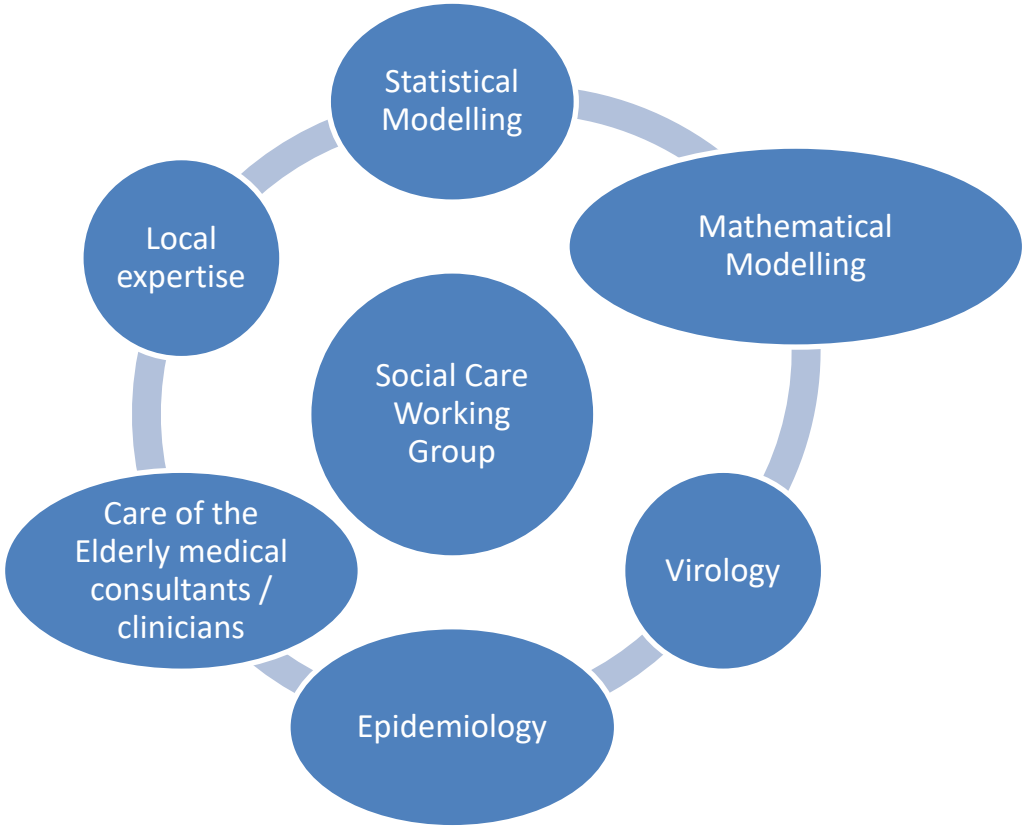
- Presence/absence of outbreaks
- Aims to support decision making
  of DPHs
  - Should they test care homes near
    current outbreaks
  - Or randomly in space.
- 32% National average (at time)
- Use GAM (Gaussian Process)
  with binomial family



Groups feeding into SAGE



Sage Social Care Working Group – Core group & Expertise



- **April 2020:** Group started as 'Sage Care Home Working Group'
- **September 2020:** Wider remit, clearly defined core members & new Terms of Reference.

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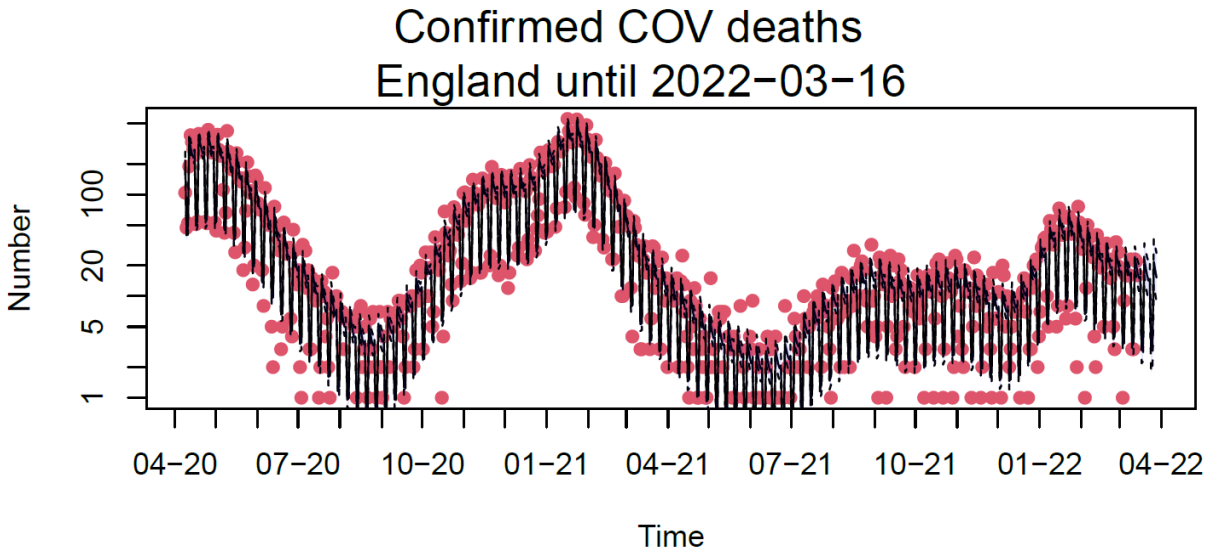
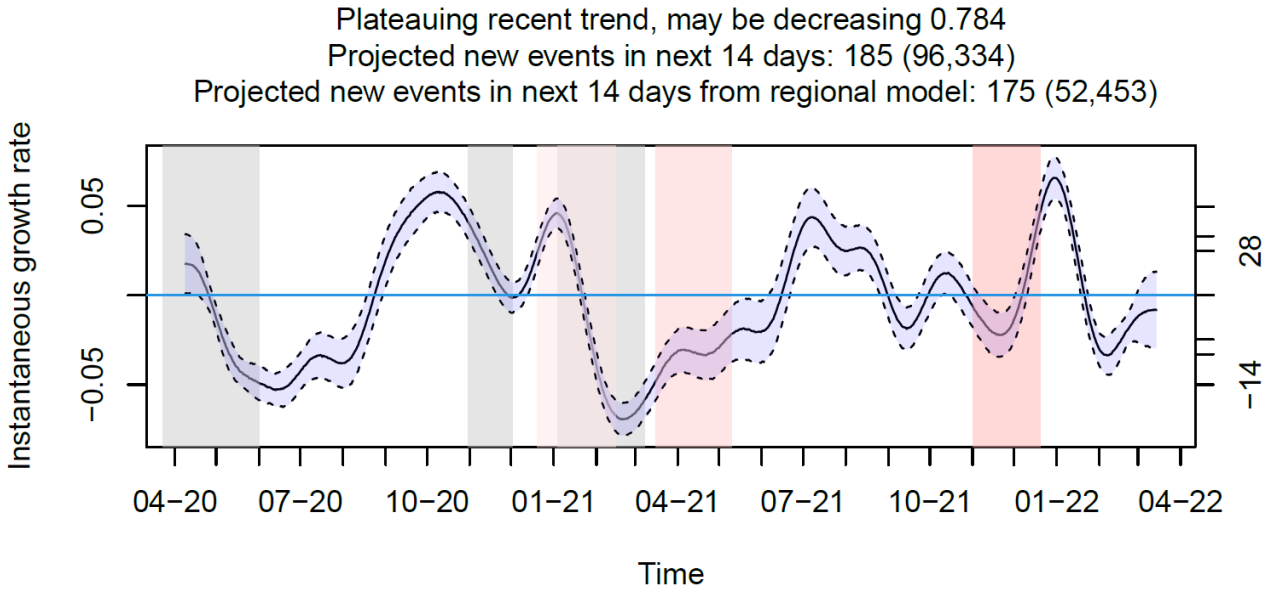
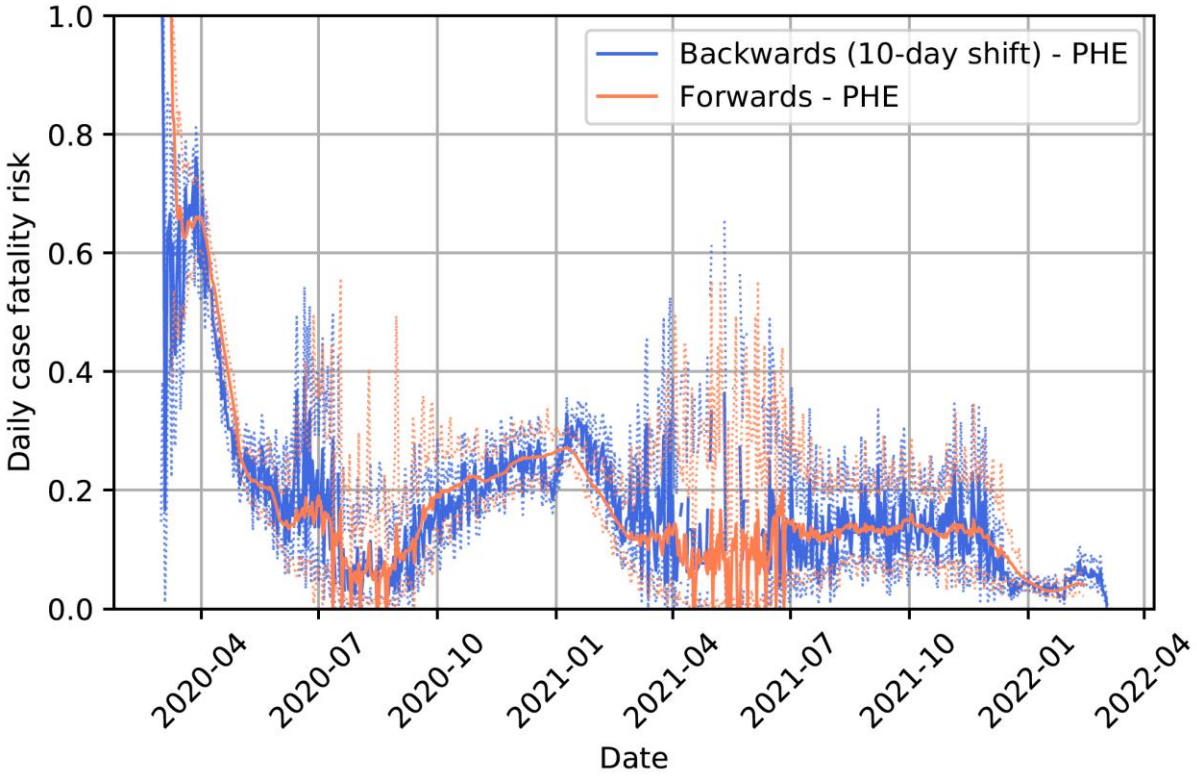
Forecasting





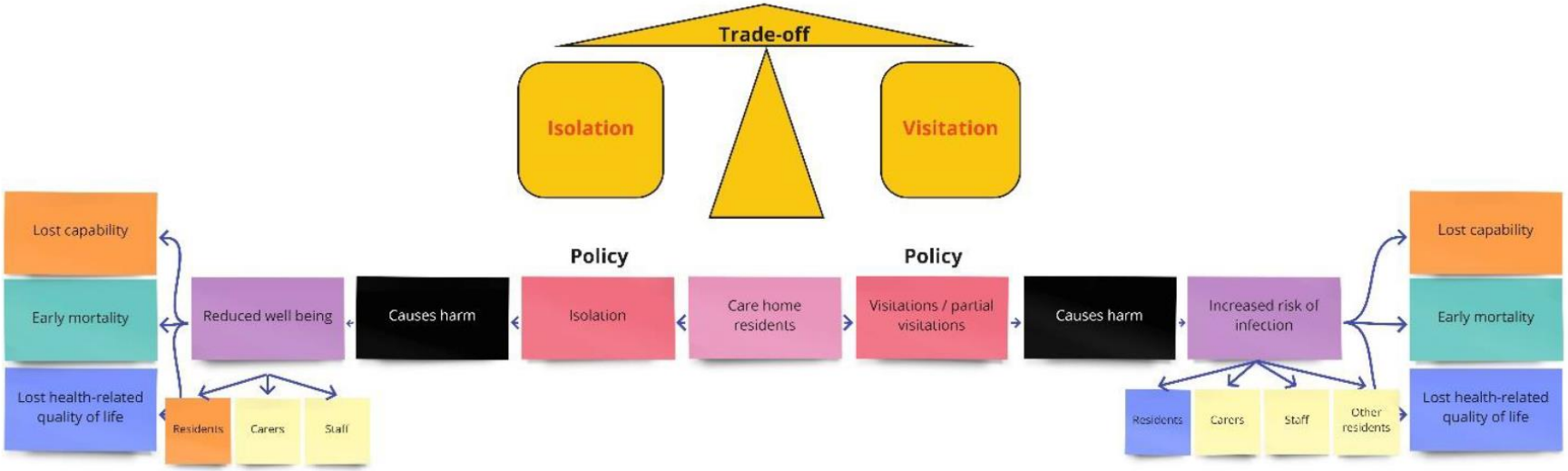
Case fatality ratio within care homes

- Uses CQC death notifications and P1 and P2 positive tests matched to care home location and age
- Allows for delay from positive test to death
- Gives 14% CFR in ‘stable’ data period with appropriate age filters
- Highly variable

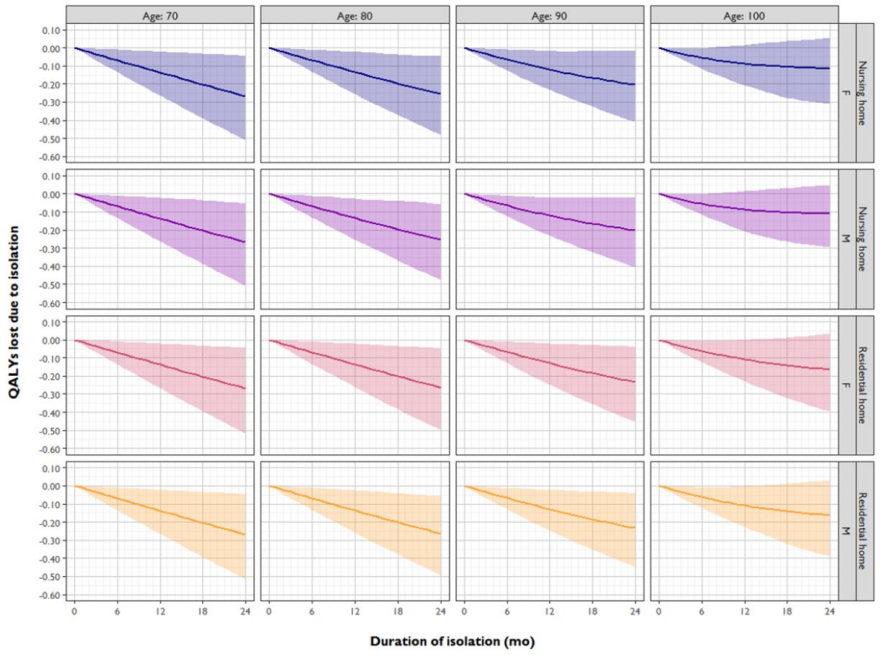


How do we create a visitor policy that is safe but enables residents to see their family? ***Alexander Thompson***

- Potential harm caused by isolation
- Homes in different areas of high / low prevalence
- Each individual and family member may have a different view on safety vs quality of life.



Quality adjusted Life Years…



But does the QALY capture necessary impacts on wider wellbeing and health (ASCOT).

Need to integrate with epidemic models

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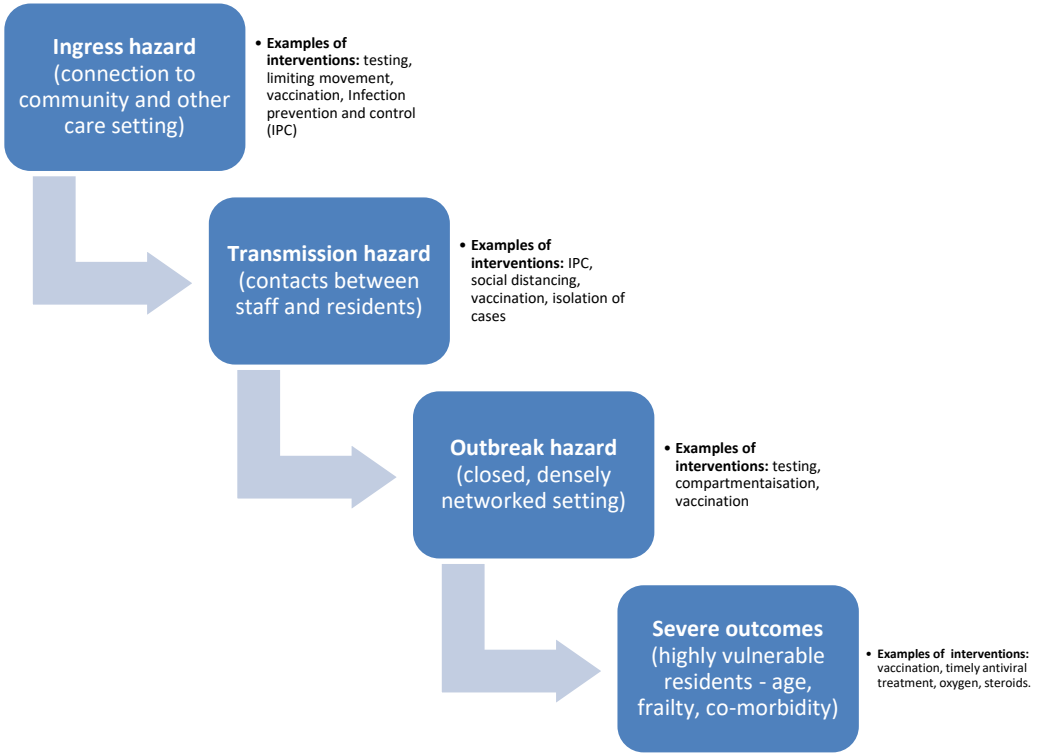
Hazard profiling



Complex mitigation parameter space

Ingress

- Vaccination of residents, staff and visitors
- Isolate or cohort infectious or potentially infectious residents
- Avoid symptomatic people visiting
- Financial support for staff to isolate
- Test residents on admission and on return from hospital, test visitors and staff
- Avoid cross-deployment of staff, limit or stop inward/outward visits, accommodate staff separately from family

Transmission

- Vaccination of residents, staff and visitors
- Isolate or cohort people with symptoms or confirmed infection
- Optimize ventilation
- PPE
- Financial support for staff to isolate
- Facilities to reduce fomite transfer (e.g laundries) and quarantine materials and equipment
- Test residents on admission and on return from hospital, test staff and visitors
- Mask use by staff and visitors
- Social distancing where possible, limit close interactions between residents, limit visitor numbers

Size of outbreaks

- Vaccination of residents, staff and visitors
- Isolate or cohort infectious residents
- Cohort staff to infected/uninfected residents
- Financial support for staff to isolate
- Social distancing where possible, limit interactions between residents
- Repeat rounds of testing to determine whether onward transmission still occurring, further limit visitor numers

Severe outcomes

- Vaccination of residents, staff & visitors.
- Antiviral treatment for residents and staff with infection
- Supportive care in the care home including oxygen, fluids, and steroids
- Admission to hospital if appropriate
- Rehabilitation and management of long COVID

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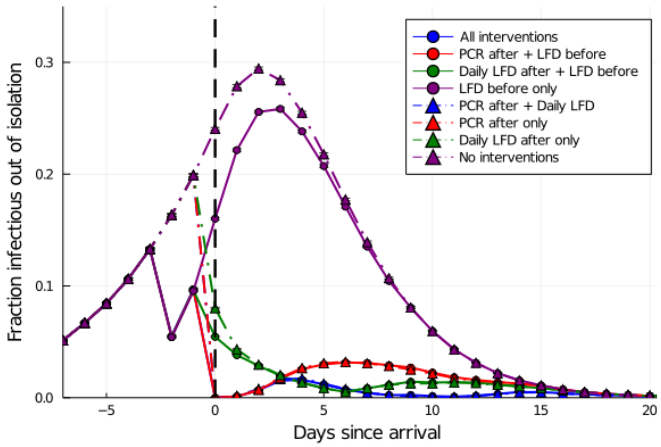
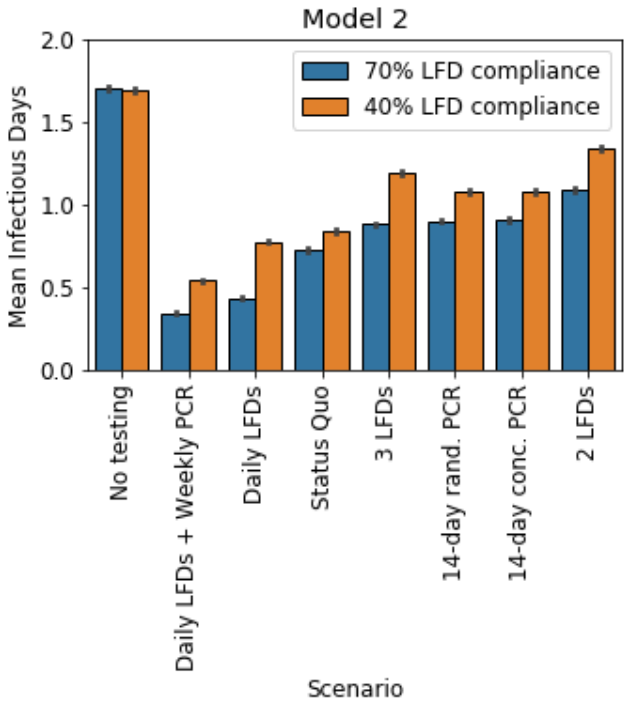
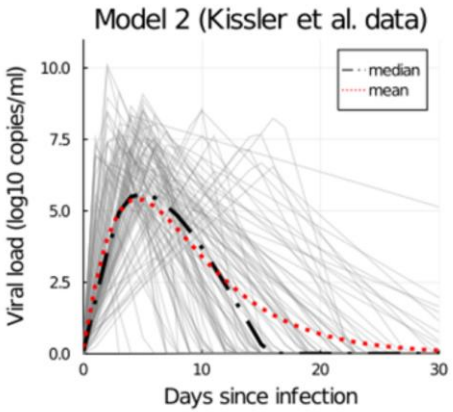
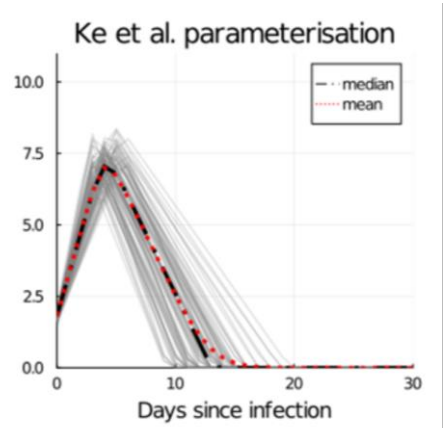
Viral-load-based models





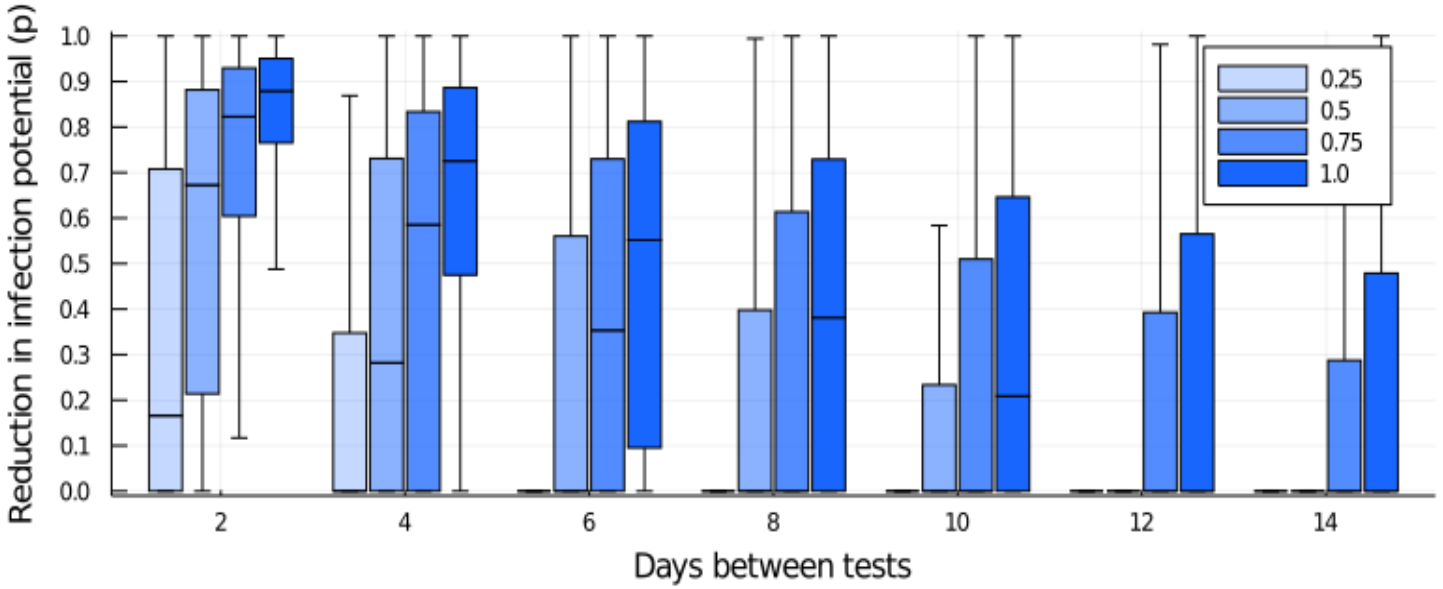




Ke, R et al. 'Daily sampling of early SARS-CoV-2 infection reveals substantial heterogeneity in infectiousness', Medrxiv 2021.
Kissler, S. M. et al PLOS Biology 19(7), e3001333. 2021

Testing

- Behaviour and acceptance is critical to efficacy for testing.
- Sensitivity and specificity vary over time



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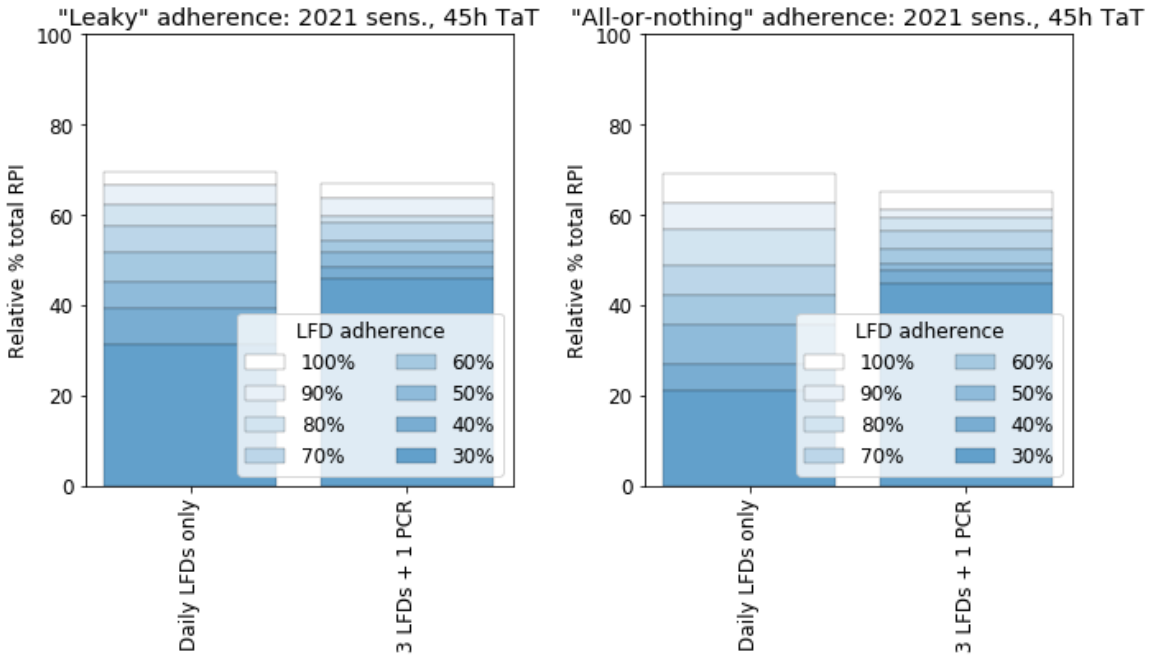
The role of adherence

Type of adherence matters:

Leaky: Everyone takes next test with same probability

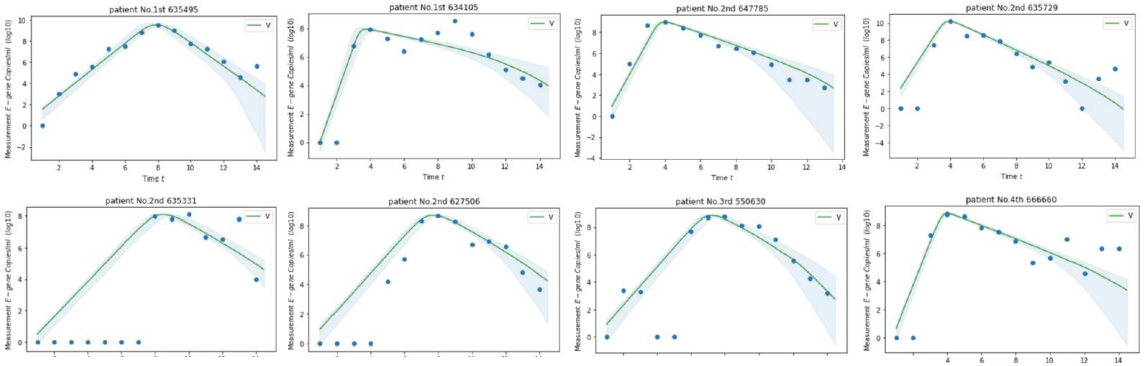
AoN: Fraction of people do all tests, fraction do none

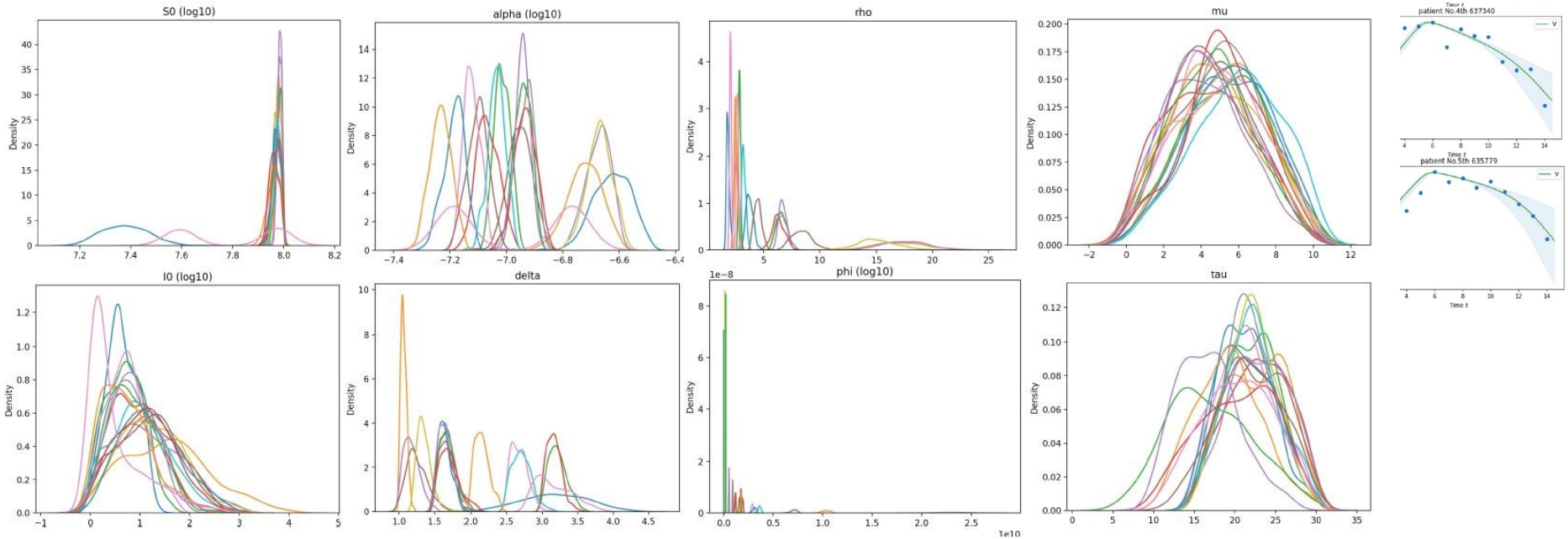
Strategies with high frequency are most affected by this difference



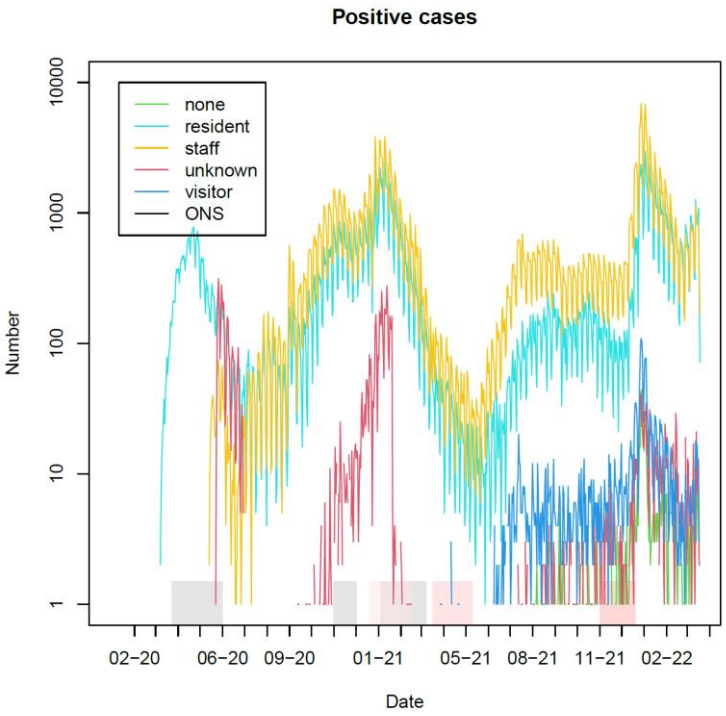
Results of within host model

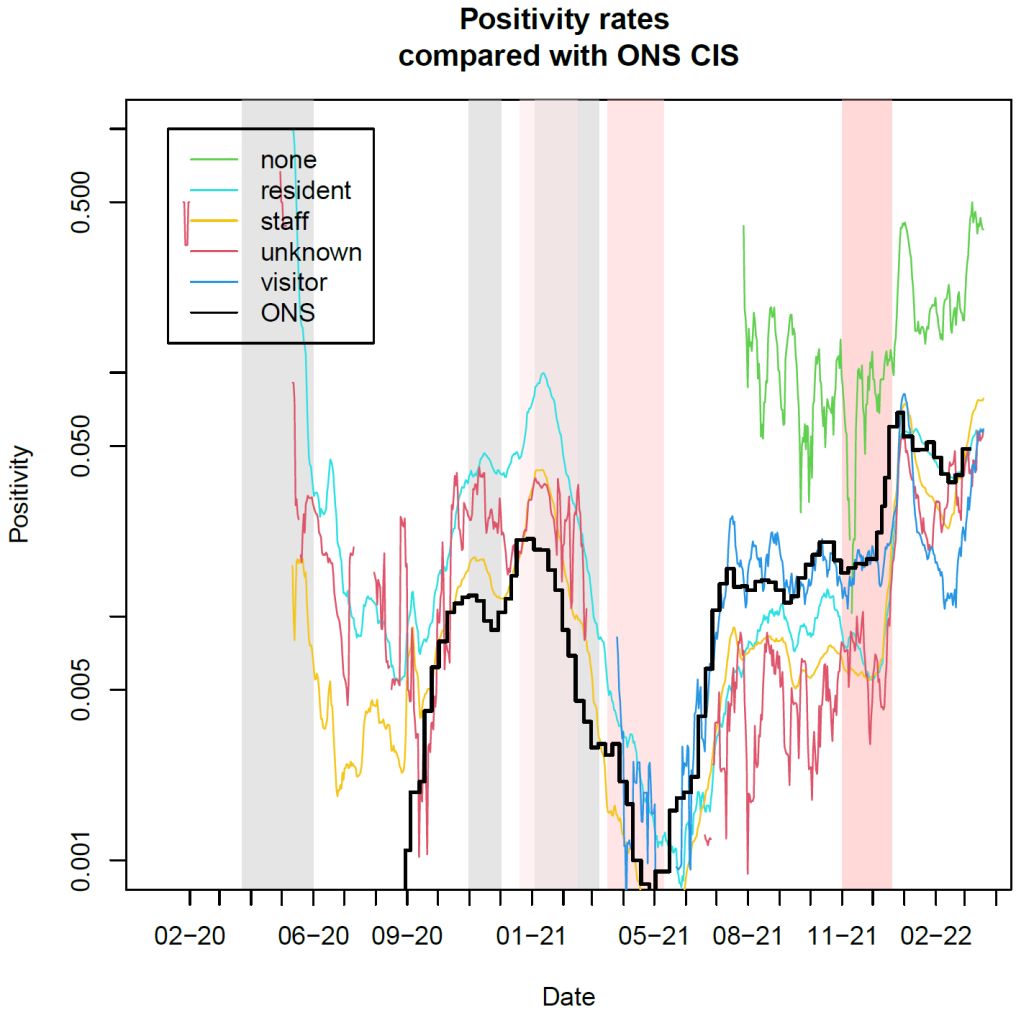
credit interval for simplified model.



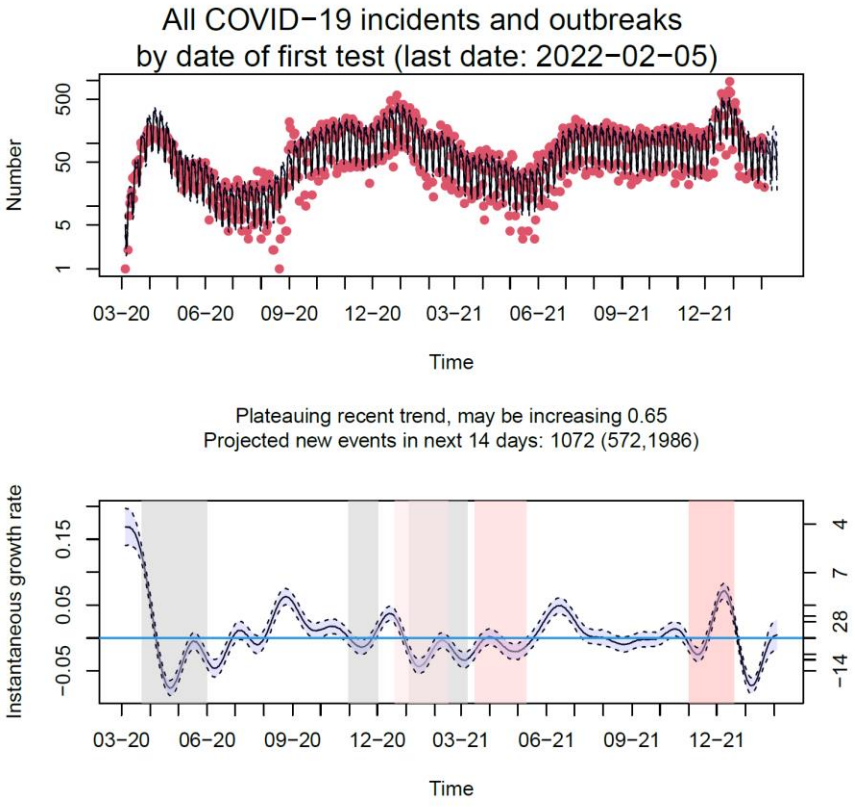


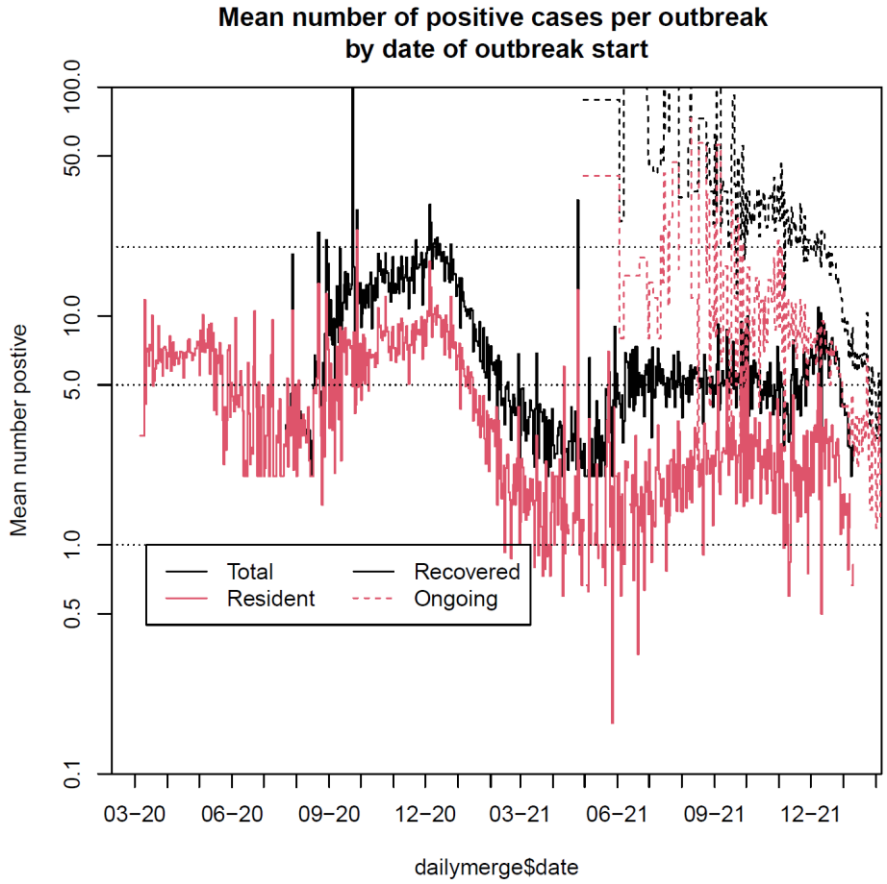
Correlation with ONS CIS





Transmission





Summary

- Data was weak…
- … got better but not perfect. Currently few negatives reported.
- Hard to evaluate specific interventions
- Eager to build in future research and look at acceptability
- Testing residents may not be viable
- Home care and other settings critical.
- Staff data linked to workplaces adds value.
- Timescales for reporting are short!

Acknowledgements

- Data: UKHSA, DHSC and CQC

- University of Manchester COVID-19 Modelling group (co-leads: Thomas House + Lorenzo Pellis; Luke Webb for spatial modelling; Chris Overton for CFR; Heather Riley extending model; Alex Thompson for health economics work; Carl Whitfield testing effiacy)
- DHSC analytical teams (Aikaterini Giannadou, Leo Hawthorne and Jenny Neuburger)
- SAGE Care Home Sub-group (Steve Willner, secretariat; Eamonn O'Moore/Jenny Harries, co-chair)

Funding/Affiliations

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