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A COVID-19 National Core Study

Using in-host models to advise on social care asymptomatic testing strategies

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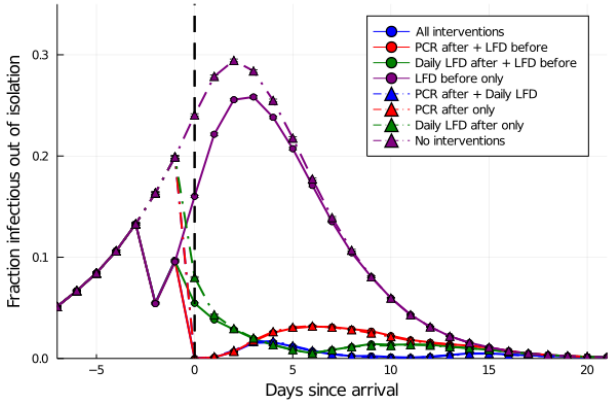
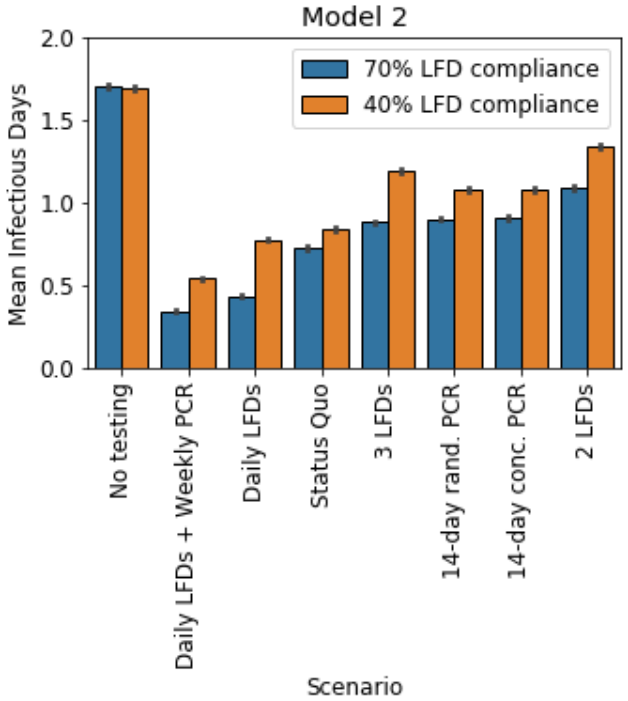
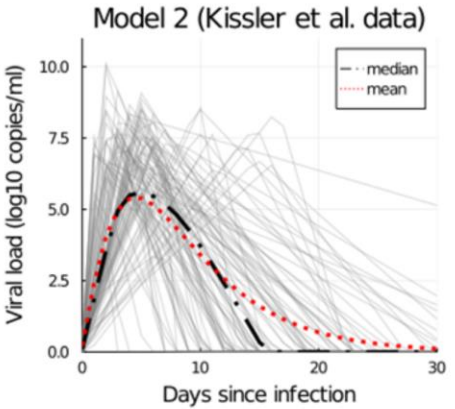
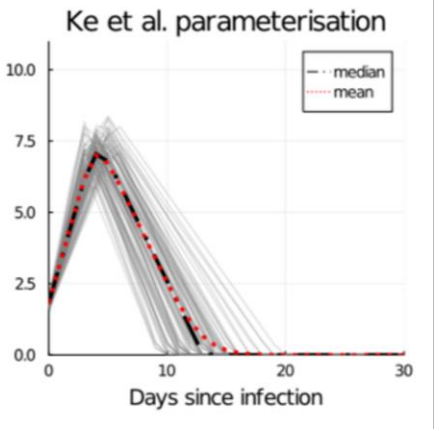
Viral-load-based models









Ke, R et al. 'Daily sampling of early SARS-CoV infection reveals sub-stantial heterogeneity in infectiousness', Medrxiv 2021.

Kissler, S. M. et al PLOS Biology 19(7), e3001333. 2021

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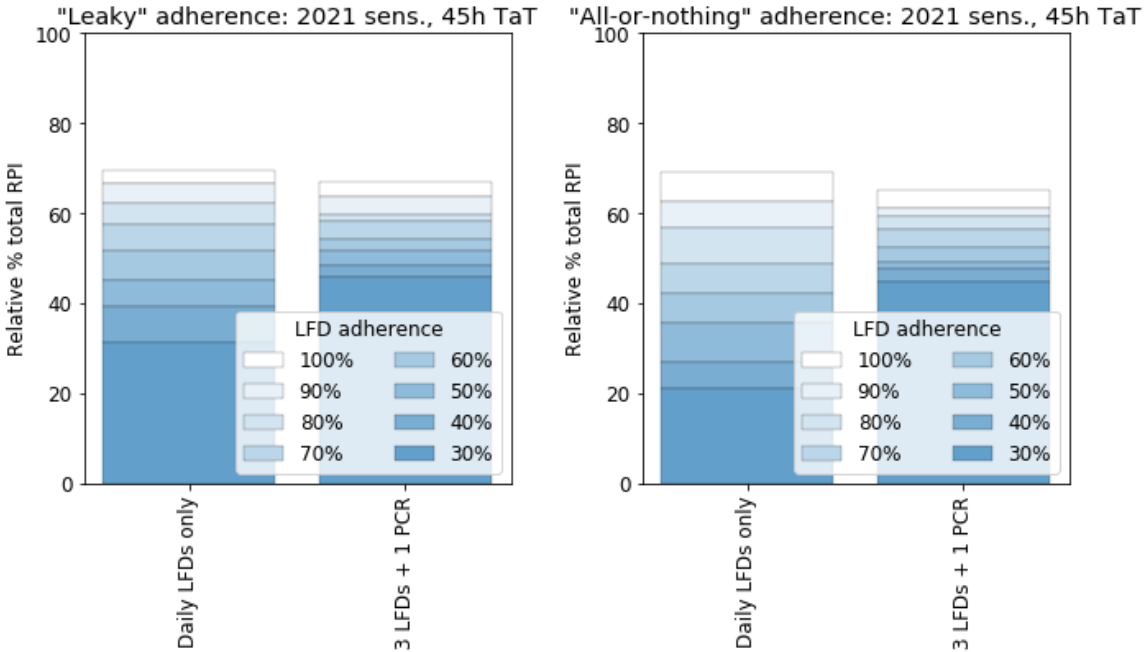
The role of adherence

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



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Conclusions

- Infectious potential is a useful and simple measure for comparing the relative impact of testing interventions on transmission (in a setting)
- Population average models are inadequate for dealing with heterogeneous properties that are correlated
- Mechanism for viral load is useful (two alternative credible models)
- Adherence is key: behavioural insight is needed to interpret the models and make the results useful (this applies to contact behaviour as well as testing behaviour)
- There is (potentially) some value in separating out the reduction in infectiousness from the contact-based models
- Force of infection pressure on settings is critical for real world effectiveness.

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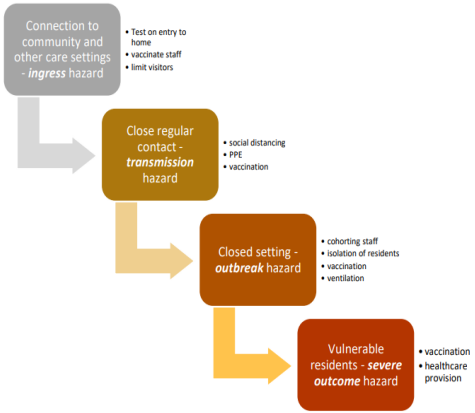

Figure 1: Schematic showing the main hazards to care homes from infectious diseases such as COVID-19, illustrative mitigations are included in adjacent bullet list that may reduce the impact of the risk of the relevant hazard.