Theory vs reality: modelling from the policymaker's perspective

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Conflicting interests

- Deputy Victorian CHO July 2020-June 2021
  - Involved in Victorian roadmap policy but not in commissioning of models in 2020 (DPC)
  - Not formally involved in Victorian policy since mid 2021
- Invited member, AHPPC
- Co-Chair, ATAGI (2018-2021)

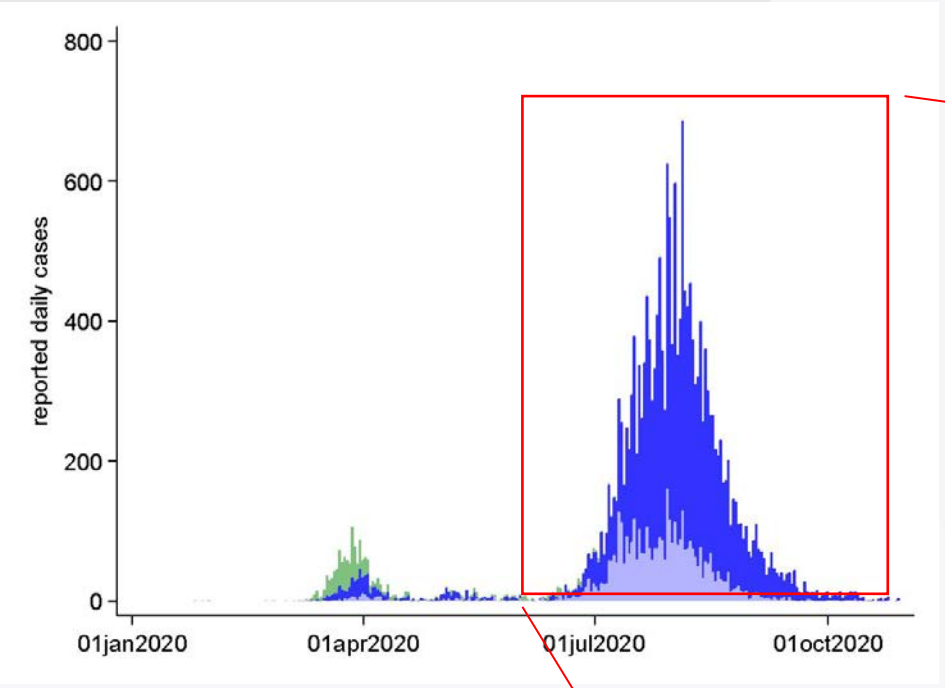
Information current as of 20 January 2020

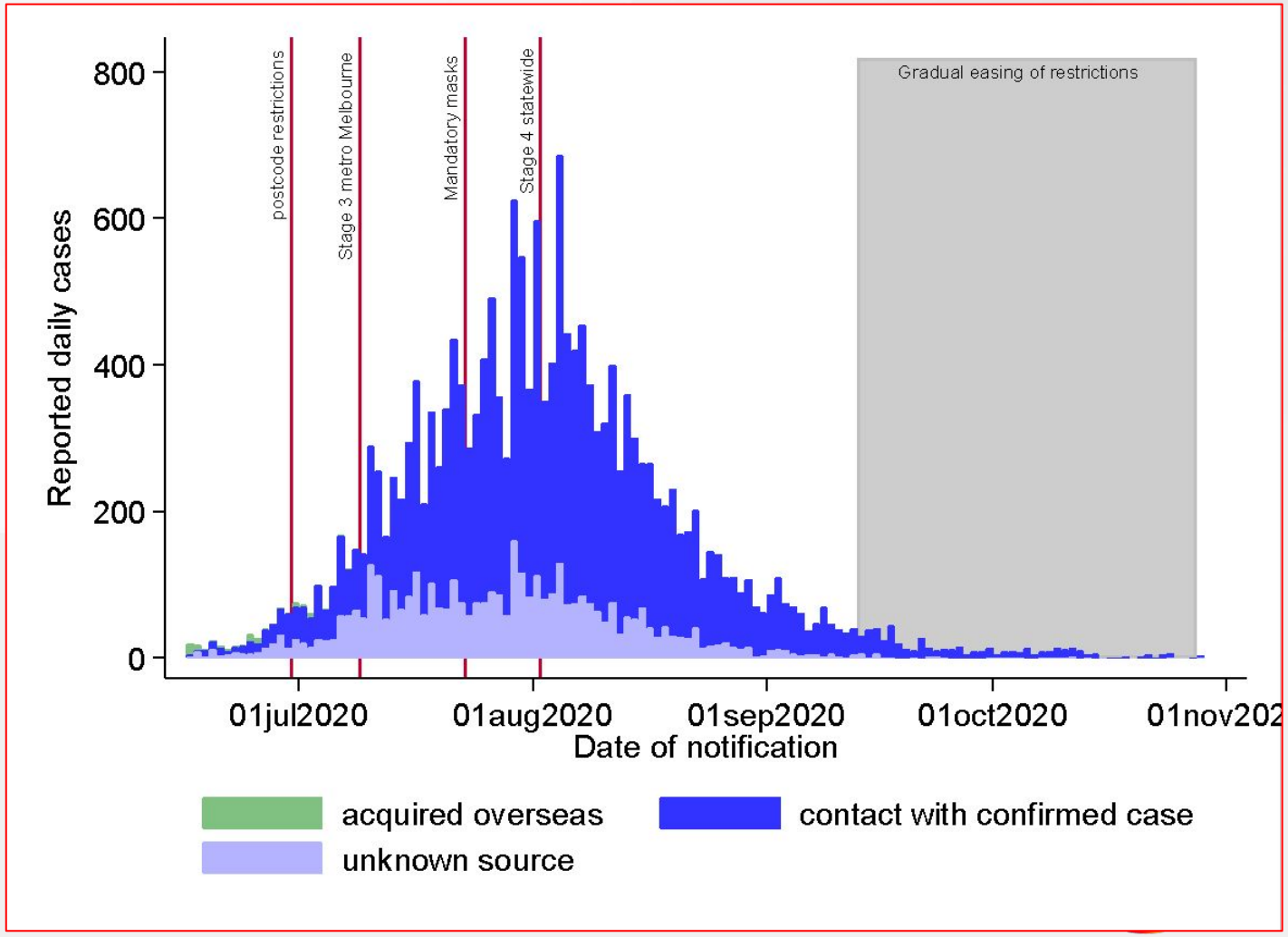
Outline

- Modelling is more like a quantitative thought experiment than a prediction
- Need to be clear on purpose and interpretation, avoid illusion of accuracy
- For policy makers, need to consider assumptions and sensitivity
- Close engagement required to ensure modelled scenarios are feasible and realistic
- “Unknown unknowns” will always change the game
- Governments want different things to academics

Easing of restrictions during Victoria's second wave

- It took stage 4 restrictions to get numbers down;
  - stage 3 restrictions + masks associated with R_eff of about 1
- Tighter restrictions meant shorter duration
- Aim was for broad restrictions to reduce person-to-person interactions
  - limitations on movement, stay at home directions/curfew,
  - limits on gatherings esp indoor/private,
  - "permitted" workplaces

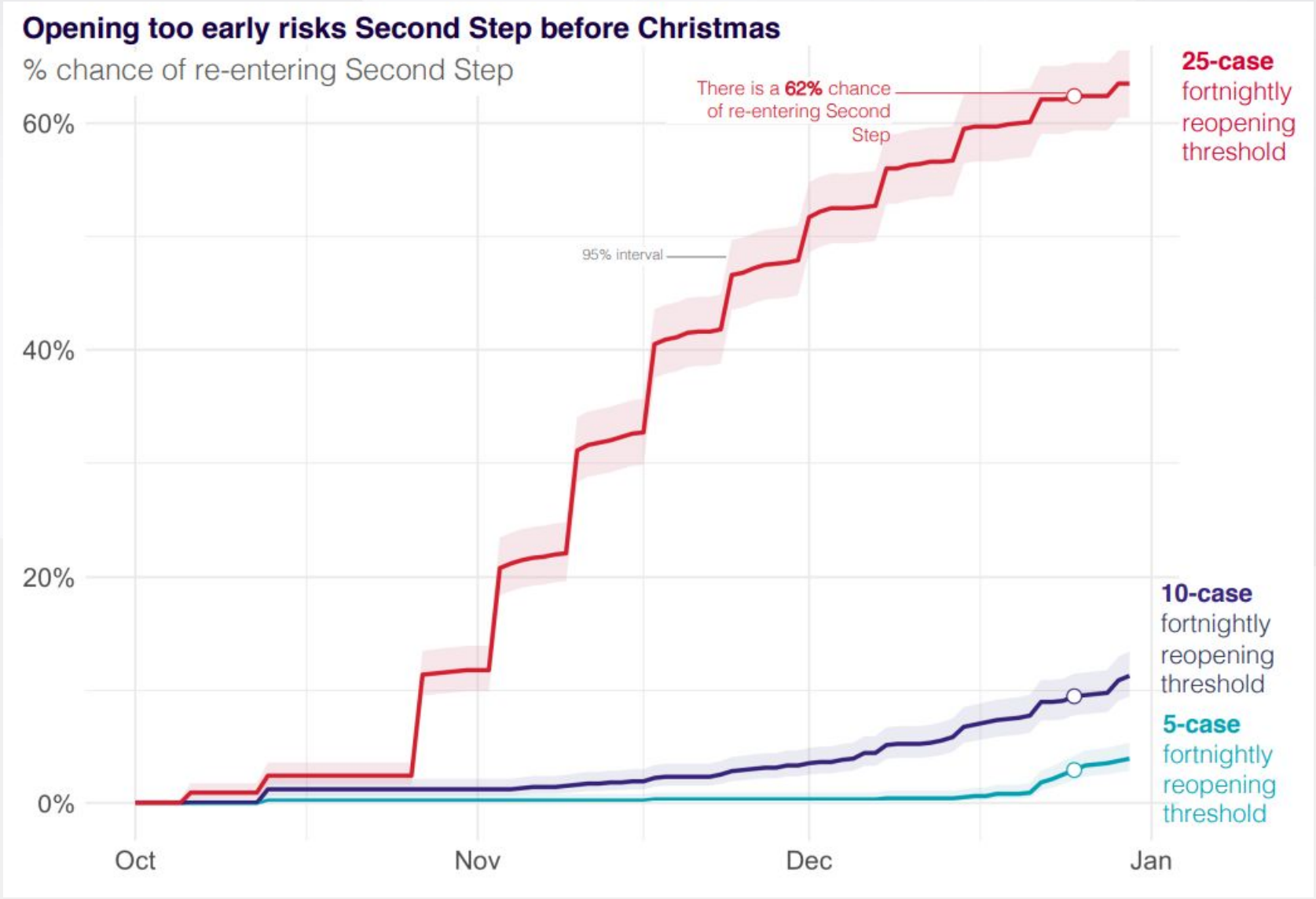

reported daily cases
800
600
400
200
0
01jan2020
01apr2020
01jul2020
01oct2020

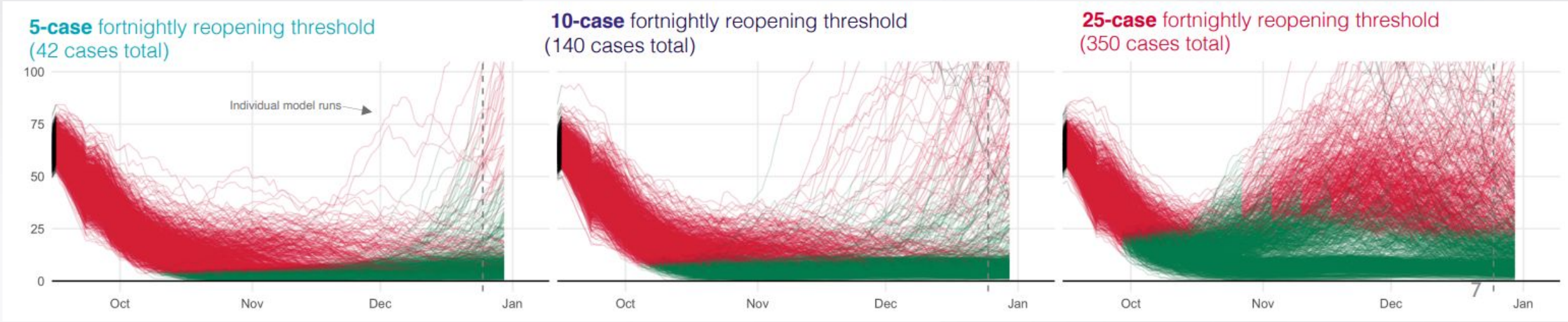

Reported daily cases
800
600
400
200
0
postcode restrictions
Stage 3 metro Melbourne
Mandatory masks
Stage 4 statewide
Gradual easing of restrictions
01jul2020
01aug2020
01sep2020
01oct2020
01nov202
Date of notification
acquired overseas
contact with confirmed case
unknown source

Roadmap considerations and questions

- As numbers came down, possible to start easing but starting with lowest risk activities first
- Timing of easing would affect risk of losing control
- Need to maintain social licence
- Proportionality, burden of disease and control, broader impacts

- What public health and social measures can we relax first?
- When can we go back to the “new normal” without risking a resurgence?


Opening too early risks Second Step before Christmas
% chance of re-entering Second Step
There is a 62% chance of re-entering Second Step
95% interval
25-case fortnightly reopening threshold
10-case fortnightly reopening threshold
5-case fortnightly reopening threshold
60%
40%
20%
0%
Oct
Nov
Dec
Jan



What the model is not currently specified to tell us
• The number of unknown source cases (community transmission or 'mystery cases') which should be core to the decision of whether to ease restrictions.
• The differences in infection rates in geographic areas – including high-risk LGAs and low-risk regional areas.
• The relative risk of catching coronavirus from going to work in certain industries (e.g. abattoir and healthcare workers).
• How the weather might affect transmission risk.
• When a vaccine will be available.
• What the risk of new cases arriving from overseas is.
• Fine details about the testing and tracing system.
• Details about differences in demographic risk outside of students and essential workers.

New modelling from the Burnet Institute confirms that opening fully on September 28 would be dangerous

- If Victoria were to skip to the Final Step of the Roadmap on the 28th of September, there would be a 41% chance of a very large resurgence of coronavirus within four weeks.

Burnet Institute has modelled what would happen if we eased to the Final Step on the Roadmap to COVID Normal on September 28. Easing restrictions now would mean that bars and clubs could open, all workplaces could return, and small public gatherings could recommence.

Burnet Institute found that opening up too quickly would result in a 41% chance of a third wave within four weeks.

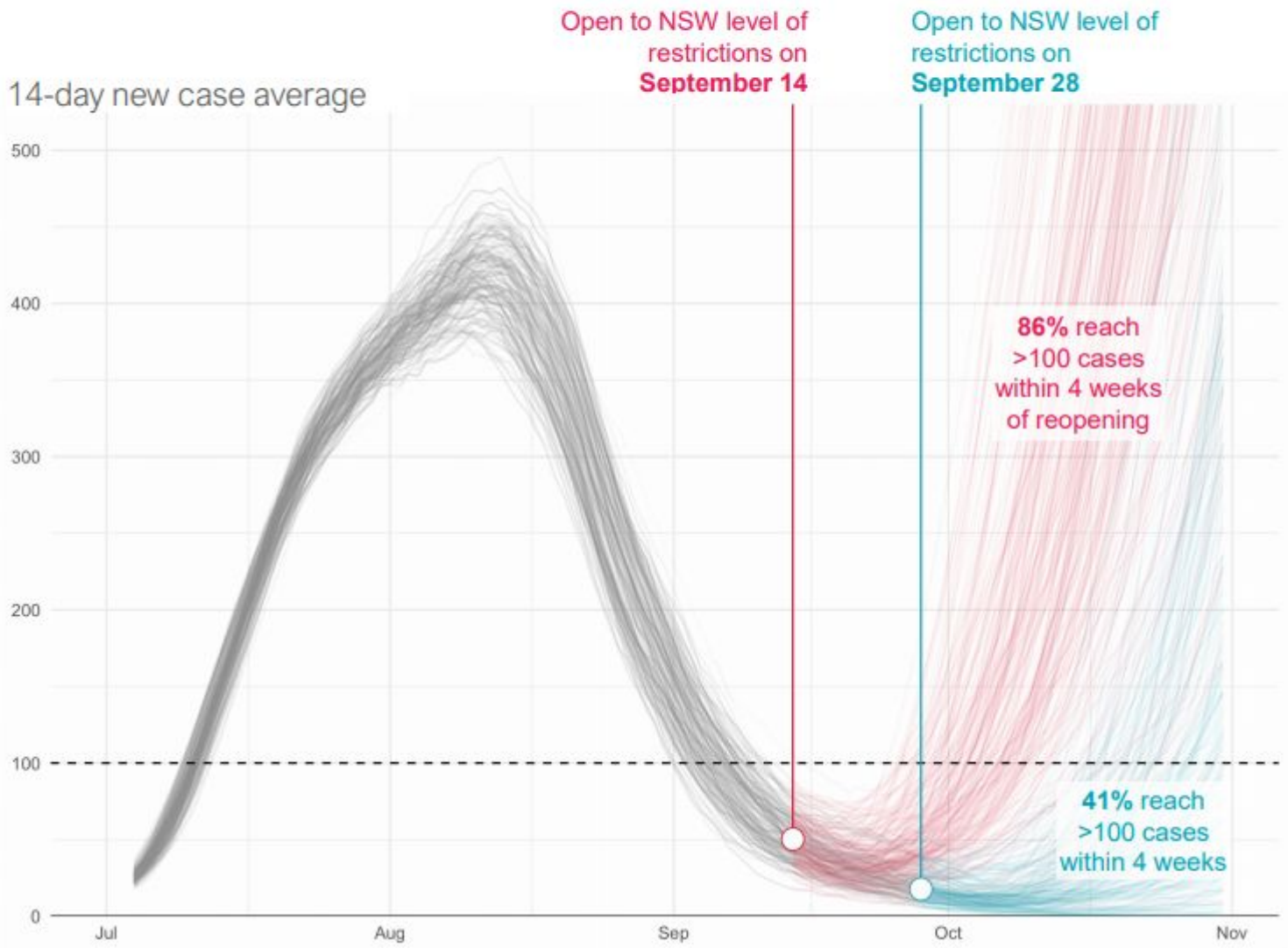
Reopening too soon risks wasting all the sacrifices Victorians have made over the last few months.

Burnet have used a slightly different approach to the University of Melbourne. It is based on data from Victoria's second wave and includes nuanced details about different socialising activities e.g. restaurants, cafes etc.

Burnet recommend:

Easing restrictions slowly.

Using trigger points to decide when to ease restrictions.



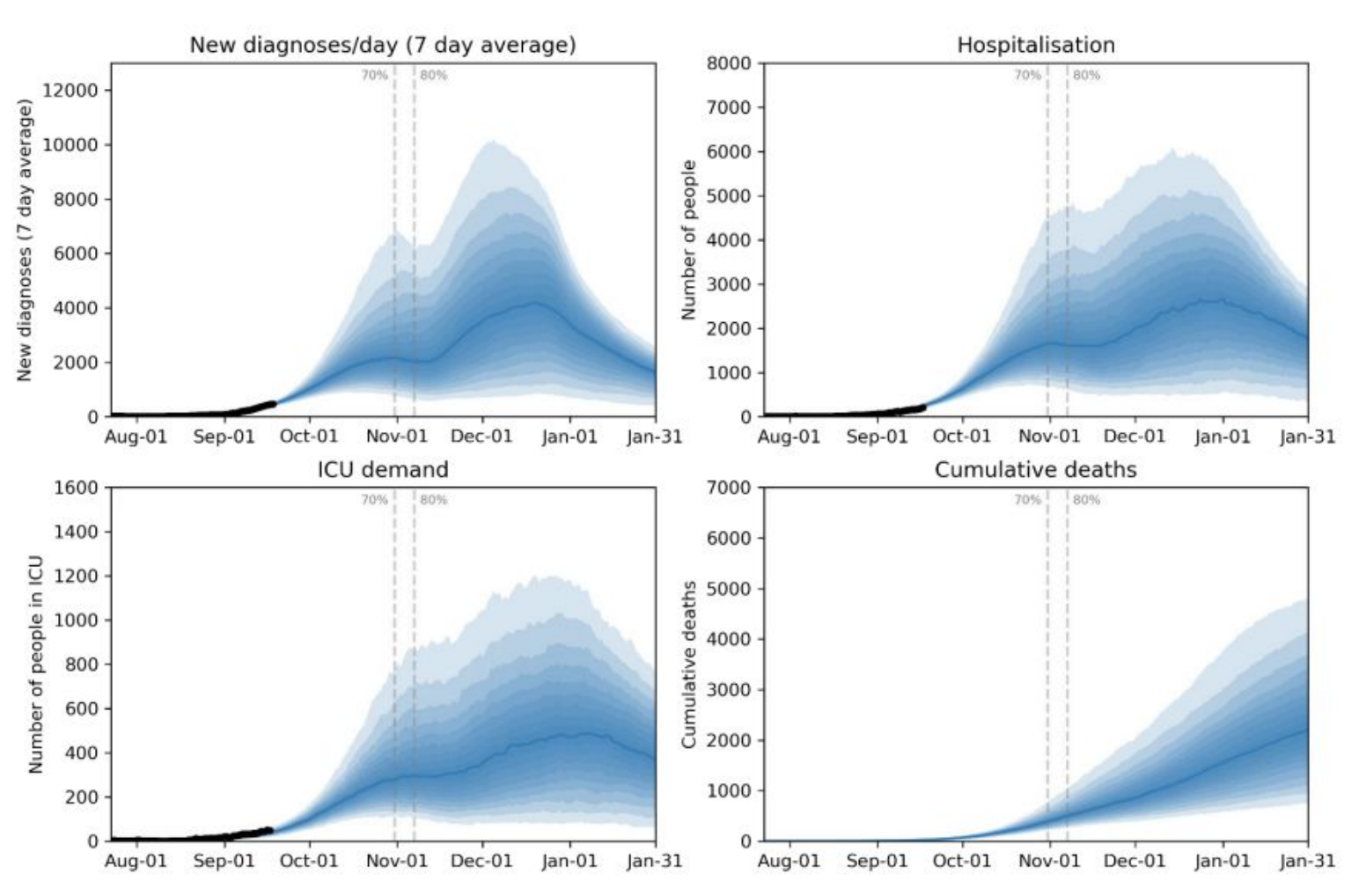
	Pre-stage 3 21 June (start of model)	Stage 3 Phased in from 2 July	Mandatory masks 23 July	Stage 4 5 August	Model scenarios Easing of restrictions on different dates
Schools	Open	Restrictions		Closed	Open
Workplaces	COVIDSafe plans	Restrictions		Heavier restrictions	COVIDSafe plans
Socialising	Limits on gathering sizes	No home visits		Curfew and outdoor limits	Limits on gathering sizes
Community sport	Going	Cancelled			Going
Pubs and bars	4 sq m rule	Closed			4 sq m rule
Cafes and restaurants	4 sq m rule	Take-away only			4 sq m rule
Places of worship	4 sq m rule	Closed			4 sq m rule
Childcare	Open			Closed	Open
Public parks	Open			Playgrounds closed	Open
Public transport	Demand reduced indirectly				
Large events	Banned				
Entertainment venues	Closed				
Masks	No masks		Mandatory		

Table 1: Policy changes included in the model simulations.

Issues encountered

- Consistency between restrictions ("why can't I do x when I can do y?")
- Difficult to unpick individual interventions (eg was a curfew necessary?)
- Everyone thinks their workplace/activity is low risk
- “Public health paradox” – cases averted not visible
- Easy to pick holes in modelling – “all models are wrong”

Victorian modelling - 2021



Burnet COVASIM
Released 19 Sept
Purpose: to explore potential impact of various re-opening scenarios

Under current settings, risk of exceeding hospital capacity

Testing vaccinated people may reduce peak

Reducing non-household transmission could reduce peak

Many uncertainties noted

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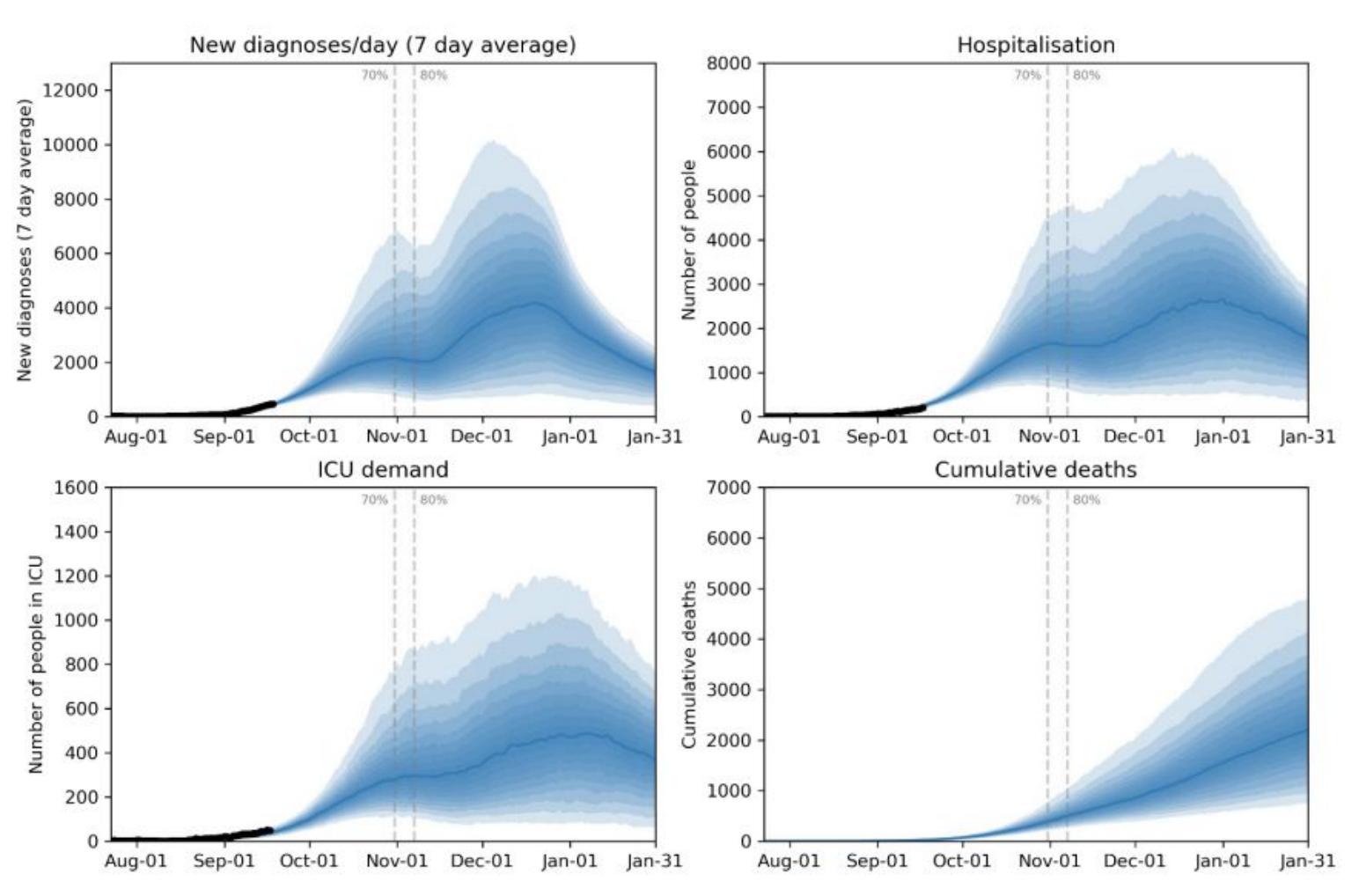
Victorian modelling



Common misinterpretations

Expect 4000 cases/day in Dec

Expect 2000 people in hospital in early Nov and 2500 by Jan

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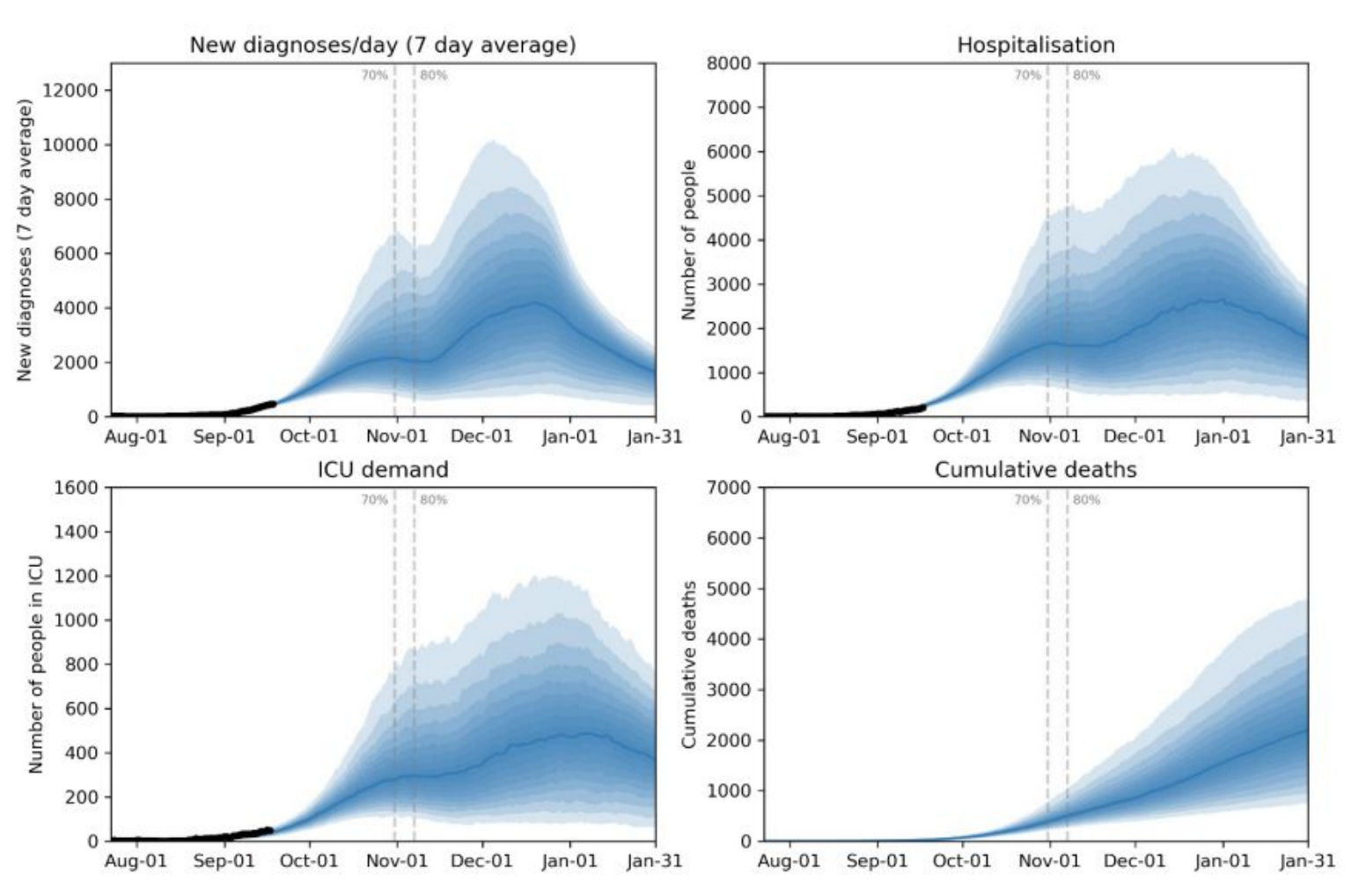
Victorian modelling



Main messages

Could be a bad summer – may need to tighten restrictions

Considerable range between best and worse case scenarios

Need operational plan for up to 100,000 cases, 4000 hospitalisations, 800 ICU patients

Ratio between new diagnoses, hospitalisation and ICU important to watch – vaccination likely to have impact, hospital LOS important parameter

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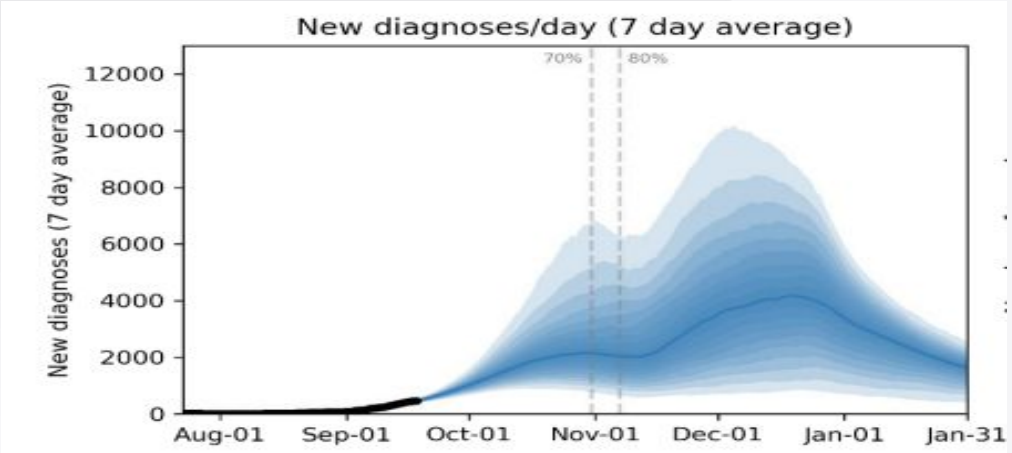

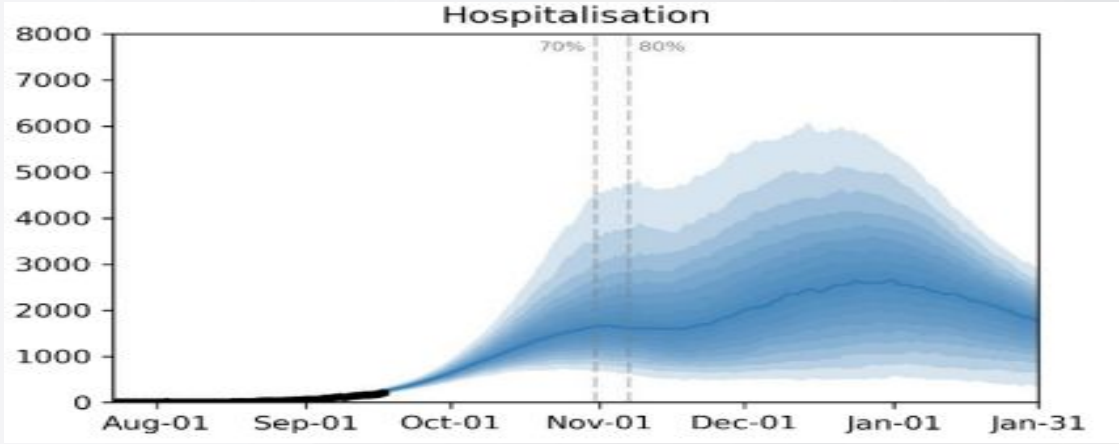

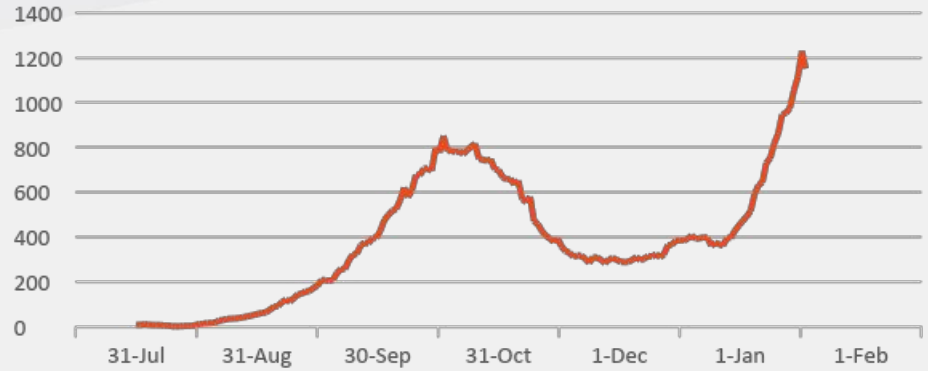

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Current situation

- Omicron (since mid Dec)
  - Vaccination and previous infection provide limited protection
  - Considerably less severe
- Underascertainment of cases
  - saturation of testing system,
  - delayed results,
  - RAT vs PCR; RAT supply shortage
  - Demographics of cases changing
- Pillars of control all being challenged
  - Public health and social measures
  - Vaccination
  - Test, trace, isolate, quarantine (TTIQ)

What does the community expect from policy?

- Consistency and clarity
- Transparency
- Competence/impartiality
- Accessibility
- Fairness

Role in modelling in policy

- Best at “what if?” questions
- Qualitative vs quantitative interpretations – illusion of precision
- Fit for purpose
- Just complex enough to capture main processes
- Explicit assumptions and sensitivity analyses where appropriate
- More confident if models (esp different approaches) broadly agree

What does Government want?

- A clear answer, or at least options for actions
- Realistic scenarios and interventions; implementable policy
- Timely provision of advice
- Trust - no leaking of decisions not yet announced, reliability, experience
- Outputs that can be communicated to variety of stakeholders
- Relevant factors considered – impact, equity, cost etc
- Robust methodology that can be defended
- Assumptions and sensitivity analyses clear

Modelling for policy-makers

- How can we provide data, while ensuring appropriate governance, oversight and interpretation?
- What models are out there?
  - How do we know they are robust?
  - What questions do/will they answer?
- How do we balance responsiveness and timeliness, with rigor and transparency?
- How can we better anticipate future questions?
- How to best integrate advice from all discipline areas?
- How best to communicate to all stakeholders?

Acknowledgements

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