



Sounding the alarm: a post-COVID-19 curve for suicide

Preliminary results from systems modelling:
North Coast Primary Health Network



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Background

The results presented below have been generated from a system dynamics model to support mental health services planning and suicide prevention in the North Coast NSW region.

The model was developed in partnership with the North Coast Primary Health Network and will contribute to work being undertaken by the North Coast Collective, an approach which seeks to embed a regional collaborative model in addressing mental health needs across the continuum. In addition to health service providers, the Collective involves range of community stakeholders including people with lived experience of mental ill-health and suicidal behaviour.

Early work sounding the alarm

The national implications were derived from preliminary results from indicative regional models where we ran two scenarios:

- **Scenario 1:** A Conservative scenario that assumes an unemployment rate of 11.1%, with youth unemployment reaching 24.0% (and at 10% reduction in social connectedness)
- **Scenario 2:** A more pessimistic scenario that assumes the unemployment rate will reach as high as 15.9%, with youth unemployment reaching 34.8% (with a 20% reduction in social connectedness)

As an example: The outputs of the North Coast model estimated the following:

- **Suicide deaths** in the region would increase by 23% (that's an additional 113 deaths) over the next five years under the conservative scenario. This could get as high as a 53% increase in suicide deaths (an additional 261 deaths) under the more pessimistic estimates of unemployment.
- **Suicide attempts** (self-harm hospitalisations) in the region would increase by 20.4% (that's an additional 1,289) self-harm hospitalisations under the conservative scenario. This could get as high as a 46.9% increase in self-harm hospitalisations (an additional 2,959 hospitalisations) under the more pessimistic scenario over the next 5 years
- **Mental health related Emergency Department presentations** in the region would increase 15.2% (that's an additional 6,482 mental health related ED presentations) over the next five years under the conservative scenario. This could get as high as 34.5% (an additional 14,770 mental health related ED presentations) in the region over the next 5 years which will have broader impacts on the health system.

To re-purpose existing detailed and robust mental health systems models to support decision making nationally (as the Doherty Institute did for COVID-19) and for other regional hotspots around Australia requires a serious national commitment and investment.

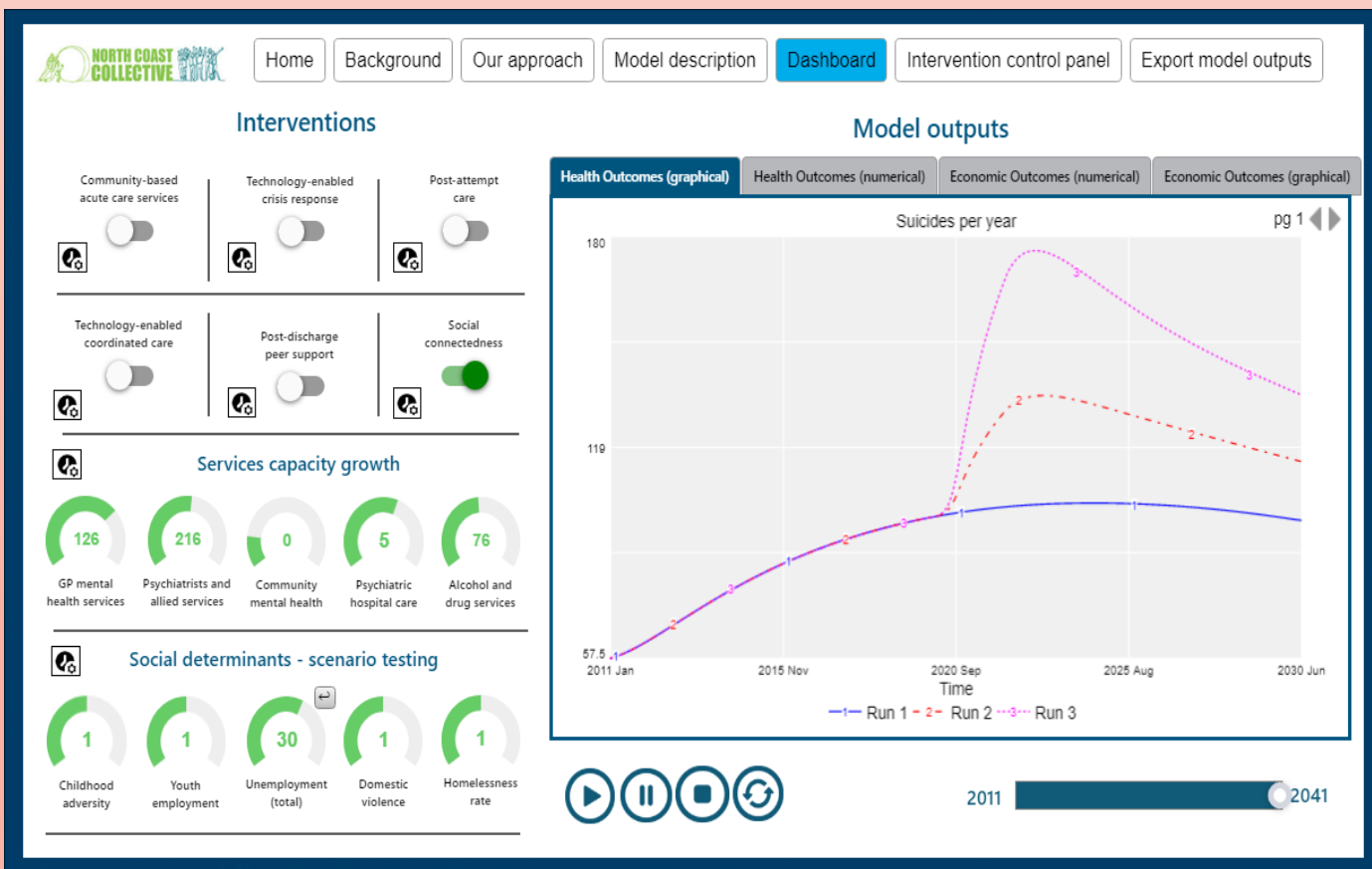
Why systems modelling?

Pathways from the economy, to economic recession, to population and youth mental health and wellbeing and interactions with the mental health systems are complex. Systems modelling offers a unique and important tool for systems analysis to support decision making for complex problems. Model development leverages disparate datasets, research evidence and our best understanding of system structure and the behaviors of system actors in a systematic and disciplined way. Applications of systems modelling to provide improved decision support capability for policy agencies in the health

and social sectors have demonstrated their utility and value. Through interactive interfaces, systems models allow decision makers and stakeholders to alter assumptions, turn interventions on/off, scale them up and down, stagger their implementation and forecast how different combinations of policies, programs, services, and incentives will play out over the short and long term across a range of outcomes. Integrating economic components within systems models also allows cost effectiveness/utility and cost benefit outcomes for alternative scenarios to be explored.

Post-COVID: Scenario 1 - Unemployment rate 11.1% (total population) and 24% youth unemployment

Post-COVID: Scenario 2 - Unemployment rate 15.9% (total population) and 34.8% youth unemployment



References

Models are retained by the commissioning authority - relevant academic references below:

- Jo-An Atkinson, Adam Skinner, Frank Iorfino, Kenny Lawson, Julie Sturgess, Warren Burgess, Tracey Davenport, Danica Hudson, Ian Hickie, on behalf of the North Coast Collective suicide prevention modelling group. *Reducing youth suicide: Should investments be made across the determinants?* (Submission to PLOS Medicine, May 2020)
- Jo-An Atkinson, Adam Skinner, Kenny Lawson, Sebastian Rosenberg, Ian B. Hickie. *Bringing new tools, a regional focus, resource-sensitivity, local engagement and necessary discipline to mental health policy and planning.* (BMC Public Health – Accepted, May 2020)
- Jo-An Atkinson, Adam Skinner, Sue Hackney, Linda Mason, Mark Heffernan, Dianne Currier, Kylie King, Jane Pirkis. *Systems modelling and simulation to inform strategic decision making for suicide prevention in rural New South Wales (Australia)* (ANZJP – pending final decision).
- Jo-An Atkinson, Ian B. Hickie. Op-ed: *The Productivity Commission inquiry into mental health: a missed opportunity.* The Mandarin, Monday 18th November 2019: <https://www.themandarin.com.au/120646-the-productivity-commission-inquiry-into-mental-health-a-missed-opportunity/>
- Jo-An Atkinson, Andrew Page, Adam Skinner, Mark Heffernan, Ante Prodan, Ian B. Hickie. *The impact of reducing psychiatric beds on suicide rates.* *Frontiers in Psychiatry*, 6 June 2019: [doi:10.3389/fpsy.2019.00448](https://doi.org/10.3389/fpsy.2019.00448).
- Jo-An Atkinson, Andrew Page, Mark Heffernan, Geoff McDonnell, Ante Prodan, Bill Campos, Graham Meadows, Ian Hickie. *The impact of strengthening mental health services to prevent suicidal behaviour.* *Australian and New Zealand Journal of Psychiatry*, December 12, 2018 (doi.org/10.1177/0004867418817381).
- Jo-An Atkinson, Andrew Page, Ante Prodan, Geoff McDonnell, Nathaniel Osgood. *Systems modelling tools to support policy and planning.* *The Lancet*, 2018; Vol. 391, No. 10126.
- Andrew Page, Jo-An Atkinson, William Campos, Mark Heffernan, Shahana Ferdousi, Adrian Power, Nereus Maranan, Ian Hickie. *A decision support tool to inform local suicide prevention activity in Greater Western Sydney (Australia).* *Australian and New Zealand Journal of Psychiatry*, April 19, 2018 <https://doi.org/10.1177/0004867418767315>
- Andrew Page, Jo-An Atkinson, Mark Heffernan, Geoff McDonnell, Ante Prodan, Nate Osgood, Ian Hickie. *Static metrics of impact for a dynamic problem: The need for smarter tools to guide suicide prevention planning and investment.* *Australian and New Zealand Journal of Psychiatry*, 2018 Jan 1:1-8. doi: 10.1177/0004867417752866
- Andrew Page, Jo-An Atkinson, Mark Heffernan, Geoff McDonnell, Ian Hickie. *A decision tool to inform Australian suicidal behaviour and suicide prevention strategies.* *Public Health Research & Practice* April 2017; Vol. 27(2): e2721718.
- Atkinson JA, Page A, Wells R, Milat A, Wilson A: *A modelling tool for policy analysis to support the design of efficient and effective policy responses for complex public health problems.* *Implementation Science*, 2015; 10: 26.
- Atkinson JA, Wells R, Page A, Haines M, Dominello A, Wilson A: *Applications of system dynamics modelling to support health policy.* *Public Health Research and Practice* 2015; 25(3): e2531531