



Commonwealth Government COVID-19 Response Inquiry

Submission

**Brain and Mind Centre
University of Sydney**

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Introduction

Thank you for the opportunity to make this submission to the Inquiry. The challenges posed by COVID-19 were extraordinary and remain threatening. There is much to be commended about the way Australia responded to these challenges, but also some key lessons which could better prepare us for future threats.

Dynamic modelling represents vital new expertise in helping us to understand and organise to respond to fluid situations, such as that posed by COVID-19.

About the Brain and Mind Centre

The University of Sydney's [Brain and Mind Centre](#) is a network of researchers and clinicians who partner across borders and disciplines in pursuit of a common goal: to develop better treatments for conditions of the brain and mind and improve health outcomes now and for future generations. Our multidisciplinary research teams are at the forefront of brain and mind sciences. We seek answers to some of the world's greatest health challenges, including:

- [Childhood development and behaviour, such as autism and behavioural disorders](#)
- [Youth mental health and addiction, including youth, addiction, gambling and mental health policy](#)

Under our [economics and systems science stream](#), we also provide [research and ideas](#) on how best to design a contemporary mental health system, fit for purpose in the 21st century. We are developing next generation clinical and systems-based decision support tools, utilising participatory systems modelling approaches. We harness data science methods and innovation from across disciplines in order to achieve advances in the mental health and [mental wealth](#) of young people.

COVID-19 Related Research

Dynamic Systems Modelling

We have presented information to the Australian public regarding the capacity of dynamic systems models to [make the most of investments](#) in mental health. [Our paper in Nature](#) outlined the major challenges and priorities to ensure that models are used to reliably guide policy and allocate resources.

At the outset of the COVID-19 pandemic, systems models were rapidly deployed in many countries to estimate the likely trajectories of transmission, mortality, and health system burden, to determine the most impactful mitigation strategies, and to most effectively allocate limited resources. We modelled multiple COVID-19 trajectories and showed that the optimal mental health strategies were consistent across these scenarios.

The COVID-19 pandemic demonstrated the [significant value](#) of systems modelling in supporting proactive and effective public health decision making despite the complexities and uncertainties that characterise the evolving crisis.

The same approach is possible in the field of mental health. However, a commonly levelled (but misguided) criticism prevents systems modelling from being more routinely adopted, namely, that the presence of uncertainty around key model input parameters renders a model useless.

[This recent study](#) explored whether radically different simulated trajectories of suicide would result in different advice to decision makers regarding the optimal strategy to mitigate the impacts of the pandemic on mental health. This study demonstrates that robust decision making can occur even in the presence of significant uncertainty about the social and economic impacts of covid-19 on mental health.

Another recent paper, currently under review, compares simulation results for a set of progressively more refined models with data on psychological distress, suicide, intentional self-harm hospitalisations, and mental health-related ED presentations published after our initial projections were released in July 2020. We show that [our apparent overestimation](#) of the mental health impacts of COVID-19 was due primarily to our assumption that new cases of moderate to very high psychological distress emerging as a result of the pandemic could be considered equivalent to pre-pandemic cases (with the same per capita rates of spontaneous recovery and suicidal behaviour). The results suggest that accommodating the influence of prior mental health on the psychological effects of population-wide social and economic disruption is likely to be essential for accurately forecasting the mental health impacts of future public health crises as they arise.

Suicide Modelling

With considerable recent resources allocated to suicide prevention and universal aftercare, we have [used systems modelling and simulation](#) to consider population-level decision making for best strategic allocation of limited resources. We have shown that impactful youth suicide prevention requires a combination of social connectedness programs, technology-enabled coordinated care, post-attempt assertive aftercare, reductions in childhood adversity, and increasing youth employment. Together, these measures could effectively reduce self-harm hospitalisations (suicide attempts) by 28.5% and suicide deaths by 29.3%. Introducing additional interventions beyond the best performing suite of interventions produced only marginal improvement in population level impacts, highlighting that 'more is not necessarily better.'

Other Initiatives

The Centre provided a [series of webinars](#) entitled “Flattening the mental health and suicide curve post-COVID-19 - Beyond prevention, which active interventions will help?” One of these webinars discusses dynamic models and interventions to inform decision-makers responding to the mental health and suicide prevention crisis due to COVID-19. Another focused on youth mental health from the perspective of seven carers who have had experience in or are ongoingly supporting their young person to navigate the mental health system. This webinar, led by the carers themselves, explored topics such as the difficulties in supporting loved ones with suicidal thoughts and behaviours. We openly discuss the potential to make positive changes to mental health advocacy, access, stigma and discrimination to #FlattenTheMentalHealthCurve.

Members of our Centre also contributed to development of papers [comparing Australia's response](#) to COVID-19 with other parts of the world, specifically in relation to mental health.

Our Key Findings

[Modelling published](#) by the Brain and Mind Centre found that employment programs are the single most effective strategy for mitigating the adverse mental health impacts of the COVID-19 crisis. This work underscored the importance of sustaining the duration of the program, indicating that extending employment programs (primarily JobKeeper and JobSeeker) from May 2021 to May 2022 could prevent an additional 9,272 ED presentations, 1,114 self-harm hospitalisations, and 123 live [lost to suicide](#) over the period 2020-2025.

[These findings](#) focused largely on working age populations and men.

[Other modelling](#) explored COVID-19's impact on women, finding they had been disproportionately affected by the pandemic through structurally imposed vulnerabilities, likely to increase the mental health gender gap particularly as a result of increased rates of job loss due to their greater representation in precarious employment and ineligibility for JobKeeper. This report recommended that gender-informed policies are needed, combining economic, social, and mental health services interventions with a gender equity lens.

[Our COVID-19 modelling](#) found that associated social disruption had greatest adverse impacts on young people. We were able to suggest a suite of services to address these impacts, combining social connectedness programs, technology-enabled care, post suicide-attempt care, Direct Access to specialist services, and increased capacity in psychologists, psychiatrists, mental health nurses, social workers, occupational therapists and other skilled allied service practitioners. Such a combination could yield the maximum benefit for reducing psychological distress, self-harm hospitalisations (10.6%), suicide deaths (11.2%), and mental health related Emergency Department (ED) presentations (9%).

While modelling enables new capacity to identify problems and their potential solutions, our final key finding over this period was that as they currently stood, Australian mental health services were inadequate and not able to respond effectively to this scale of social disruption.

Conclusion

Systems modelling and simulation offers a robust approach to leveraging best available research, data, and expert knowledge in a way that helps decision makers respond to the unique characteristics and drivers of mental illness and suicidality. These models are evolving rapidly. The Brain and Mind Centre is a leader in this process. There is now compelling evidence to indicate the merit of increased use of these modelling techniques to plan and organise better and more accurate responses to mental illness, including in times of crisis.

Centre staff would be delighted to discuss our work in systemic modelling and in response to COVID-19, with the Inquiry, at your convenience.