



Australian Academy of Science

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Committee Secretary
Senate Select Committee on COVID-19
PO Box 6100
Parliament House
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By email: economics.sen@aph.gov.au

Dear Secretary,

Australian Academy of Science Submission to the Inquiry into the Australian Government's response to the COVID-19 pandemic.

The Australian Academy of Science welcomes the opportunity to provide a submission to the Senate Select Committee into the Australian Government's response to the COVID-19 pandemic.

Australia's response to the pandemic, as led by the Commonwealth and State and Territory governments - has been remarkably successful, including the ability of the Government to continually integrate the latest evidence into policy decisions.

The ability of the Australian research and innovation sector to provide a rapid and robust response to such crises is a credit to both the individuals working within the field, as well as national long-term investment into research and development by governments and the community. Such a return on capacity has been decades in the making, involving investment in research (especially fundamental and discovery research), research careers, research infrastructure and scientific agencies.

Beyond the significant return on investment that occurs when funds are invested into research, the investment also builds our world-leading capability that can be used to mount a nation-wide response and inform policy during events like pandemics.

In order to progress in an increasingly uncertain and challenging world, in recovery from COVID-19 Australia will need to build an economy and a workforce able to support the future we choose: a future that will be heavily influenced by national and global shocks such as pandemics or the impact of climate change. The importance of a strong research sector cannot be underestimated. However, the sector has been heavily impacted by the pandemic, as demonstrated by the Rapid Research Information Forum (RRIF) report on the impact on the research workforce.⁴ The predicted job losses and lost productivity in this sector may limit economic growth due to a decline in innovation, including the development of new technologies and more efficient processes.

The role of science in public policy

The Australian Academy of Science strongly supports the principle that public policy should be informed by the best available evidence. It is appropriate at all levels of government to ensure that evidence is used to inform policy, and that the evidence base is as strong, up to date and as comprehensive as possible.

Scientific evidence is not the only input that policy makers need to assess in reaching decisions about what, if any, interventions are necessary on any given topic. However, science is often a critical input to public policy and the advice of scientists must play an important and obvious role.

As the Australian government's response to the pandemic has demonstrated, policy is more effective and has greater public support, where it is actively informed by the best available evidence base.

Why we can trust in science

In keeping with our mission to provide independent and authoritative scientific advice, and to celebrate and support excellence in Australian science, the Academy wishes to provide additional comment on the nature of science and the use of science to inform public policy. These points are relevant to the inquiry as they address the importance of ensuring that public policy decisions are informed by the best possible advice.

Australians trust science, and trust scientists. This trust has developed because the scientific process is based on fidelity and transparency to data, a robust peer review process, and a respect for the expertise embedded in scientists and scientific organisations and Australian universities.

Good science leads to better public policy

The hallmarks of good science are demonstrated expertise, accurate and unbiased reporting, and a commitment to opening one's work to the scrutiny of peers and the public. For this reason, scientists are more inclined to trust research that appears in peer-reviewed literature and is open to examination and critique. This openness builds trust and this trust allows scientists to expand their own thinking and their own hypotheses, leading to a deeper understanding of the world. Through greater understanding better public policy is made.

Science and COVID-19

Through the government and community response to the pandemic there have been many examples of the ways in which the science and research community has focused and accelerated our resources to help our country manage COVID-19. One, of many, exemplars of how public policy is being informed and improved by evidence from the Australian research sector is the Rapid Research Information Forum (RRIF). The RRIF is convened by Australia's Chief Scientist Dr Alan Finkel AO FAA FTSE FAHMS and its operations are led by the Australian Academy of Science. RRIF was established in April to provide the best available evidence as it relates to the COVID-19 pandemic, drawing on expertise in various fields including all aspects of science, technology, humanities, social sciences and public health.

Membership of the RRIF brings together the science, research and innovation sectors across Australia and New Zealand to provide the latest, highest quality evidence in the response to the COVID-19 pandemic. Forum members are:

- Australia's Chief Scientist (Chair)
- Australian Academy of Science (AAS)
- Australian Academy of Health and Medical Sciences (AAHMS)
- Australian Academy of Technology and Engineering (ATSE)
- Academy of the Social Sciences in Australia (ASSA)
- Australian Academy of the Humanities (AAH)
- Royal Society Te Apārangi (New Zealand)
- Australian Council of Learned Academies (ACOLA)
- State and Territory Chief Scientists and representatives

- Chief Science Advisor to the Government of New Zealand
- Scientific expert members of the National Science and Technology Council (NSTC)
- CSIRO
- Universities Australia (UA)
- Science & Technology Australia (STA)

RRIF has delivered detailed, multidisciplinary and peer reviewed responses to questions posed by Ministers and other key decision makers. All responses are published on the Academy and other members' websites.

As of 28 May 2020, eleven rapid expert reports have been delivered by the RRIF. The expert reports are evidence briefs, drawing on the latest science, both peer reviewed papers and preprints. Where preliminary research papers awaiting peer review are used, they are highlighted. As fast-moving science develops and more or better evidence becomes available, updates and addendums will continue to be issued.

Research topics and questions are received from Ministers and in one case from the National COVID-19 commission. RRIF does not make policy recommendations, either explicit or implied. The reports set out the state of the evidence base, with contributions and peer reviews from leading experts including Fellows of Australia's Learned Academies.

Papers led by or involving the Australian Academy of Science have included:

- **Seasonality of COVID-19: Impact on the spread and severity**
This rapid research brief synthesises the evidence on the influence of winter on the spread and severity of COVID-19, as lower air temperature can increase the viability and virulence of the virus and therefore its infectivity. However, human behaviour is a dominant contributor to the transmission of COVID-19 and physical distancing will have a more potent impact on controlling the spread than seasonal variability.
- **Monitoring wastewater to detect COVID-19**
This rapid research brief examines how wastewater-based epidemiology (WBE) techniques are used in routine surveillance for human pathogens and have provided valuable public health data. Developing similar WBE techniques for detection and monitoring the community prevalence of SARS-CoV-2 is an active area of research and rapid improvements can be expected.
- **The predictive value of serological testing during the COVID-19 pandemic**
This rapid research brief synthesises the evidence on the predictive value of serological antibody tests and the comparability of point-of-care (POC) tests to laboratory tests.
- **Impact of the pandemic on Australia's research workforce**
This rapid research brief synthesises the evidence on the impact the pandemic is having and likely to have on Australia's research workforce and its capability to support our recovery efforts.
Lead author – Professor Frank Larkins AM FAA FTSE
- **The most promising vaccines for COVID-19**
This rapid research brief synthesises the evidence on the most promising vaccines in development globally and nationally, their mechanisms of action, their stage of development and their strengths and limitations.
Lead author: Professor Tony Cunningham

- **The viability of SARS-CoV-2 on surfaces**

This rapid research brief synthesises the evidence on how well SARS-CoV-2 survives on different surfaces, and how surfaces can be cleaned and disinfected.

Lead author: Professor Edward Holmes FAA FRS

Other academies and organisations leading reports include AAHMS, ATSE, ASSA, AAH and STA.

Science advice in Australia

Many countries have formal mechanisms to secure science advice that is independent of government.^{1,2} Some draw on their respective national academies of science and establish through them advisory councils or committees. Their primary role is to provide independent science advice to underpin public policy.

Australia does not have such a mechanism.

The value of scientific advice has been demonstrated through this pandemic. Key information to the community is strengthened and trusted when the science informing tough decisions is open and revealed – both the facts, and the uncertainties. The government is to be congratulated in activating scientific advice networks, innovating to establish new ones, being open about the deliberations of key bodies and releasing the modelling sitting behind decisions of the National Cabinet.

Having done so, governments have been rewarded with increased trust and compliance with physical distancing measures by Australians.

The experience of RRIF also shows that scientists and researchers are willing to go above and beyond to contribute to rapid reports and to inform governmental deliberations. There is value in continuing and evolving these mechanisms and practices.

Many policy issues are immeasurably more complex than the response to COVID-19. More coordination and long-term engagement will be required. To make sure that capacity exists, research funders should support policy-relevant work by scientists and researchers, and their employers should mandate and value such activity in their reward and promotion structures.

As overseas examples have demonstrated, much ultimately depends upon leaders being prepared to listen to scientific advice and considering it while making decisions – often rapid.³ In other jurisdictions this has not always been evident, and arguably our system of government has held up remarkably well.

The Academy stands ready to continue to update the committee on the work of the research and innovation sector as Australia transitions through COVID 19.

If you would like to discuss any aspect of this submission, please contact Mr Christopher Anderson, Director of Policy, Australian Academy of Science

Yours sincerely,

Professor John Shine AC PresAA

President

The Australian Academy of Science

References

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2. Rose, D. C., Kenny, C., Hobbs, A. & Tyler, C. Improving the use of evidence in legislatures: the case of the UK Parliament. *Evid. Policy A J. Res. Debate Pract.* (2020) doi:10.1332/174426420x15828100394351.
3. Gluckman, P. & Tyler, C. Coronavirus: governments knew a pandemic was a threat – here’s why they weren’t better prepared. *The Conversation* (2020).
4. Larkins, F. *Impact of the pandemic on Australia’s research workforce | Australian Academy of Science.* <https://www.science.org.au/covid19/research-workforce> (2020).