

2020-21 PRE-BUDGET SUBMISSION

December 2019

ABOUT RESEARCH AUSTRALIA

Our vision: Research Australia envisions a world where Australia unlocks the full potential of its world-leading health and medical research sector to deliver the best possible healthcare and global leadership in health innovation.

Our mission: To use our unique convening power to position health and medical research as a significant driver of a healthy population and contributor to a healthy economy.

Our role:

Engage

Australia in a conversation about the health benefits and economic value of its investment in health and medical research.

Connect

researchers, funders and consumers to increase investment in health and medical research from all sources.

Influence

government policies that support effective health and medical research and its routine translation into evidence-based practices and better health outcomes.

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Summary of recommendations

Invest in Innovation	Research Australia calls on the Australian Government to invest in innovation. <i>Australia 2030: Prosperity through Innovation</i> has provided a plan for this investment and the Government now needs to follow through with the investment required to implement it as a matter of urgency.
	Research Australia submits that the Government should outline a plan for investing in innovation and commit to increasing its spending on research and development to at least 0.75% of GDP annually, by the end of its current term.
Health and Medical Research and Innovation	Continuing to invest in and support Australia's world class capacity and expertise in health and medical research and innovation is a key element of positioning Australia as a knowledge-based economy able to make the most of the information revolution.
The MRFF	Research Australia congratulates the Government on its ongoing commitment to the MRFF which has seen the Fund reach a balance of \$17.6 billion, with the final capital injection to be provided in the next financial year, 2020-21. Research Australia looks forward to the final capital instalment for the MRFF being included in the 2020-21 Budget.
NHMRC and ARC Funding This recommendation reiterates Research Australia's position outlined in our Pre-Budget submissions in 2016, 2017 and 2018	Funding for the research programs of the NHMRC and ARC must be increased in real terms in the 2020-21 Budget and over the forward estimates.

Indirect Research Costs These recommendations reiterate Research Australia's position outlined in our Pre-Budget submissions in 2016, 2017 and 2018	The cuts to the Research Block grants outlined in the MYEFO on 17 December 2018 and confirmed in the April 2019 Budget must be reversed.
	The pool of funding for the Research Support Program needs to be increased proportionately in the 2020-21 Budget to reflect the inclusion of MRFF competitive grants in the Program.
	In a similar manner, an additional stream of the IRIISS program needs to be funded by the Department of Health to cover the indirect costs associated with MRFF funding incurred by Independent Medical Research Institutes. This funding should be administered by the NHMRC.
	The Chief Scientist should lead a review of the funding of indirect research costs to establish a sustainable and equitable funding program.
Research Infrastructure	Research Australia acknowledges the \$1.9 billion announced in the May 2018 Budget over the forward estimates and confirmed in the 2019-20 Budget. We look forward to seeing this funding commitment retained in the 2020-21 Budget.
National Innovation Strategy 2030	Commit the additional funding required to implement the measures outlined in the <i>Australian Government response to Innovation and Science Australia's Australia 2030: Prosperity through Innovation</i> These include, for example, implementation of a framework to identify and implement additional National Missions.
	The Government should make provision in the 2020-21 Budget for the implementation of the <i>Innovation Metrics Review's</i> recommendations. It is vital that we are able to appropriately measure and evaluate the performance of innovation in Australia and the effectiveness of Government programs.

Data for better health and prosperity	The Government should commit funding in the 2020-21 Budget to the implementation of the measures outlined in the CSIRO Report, <i>Artificial intelligence: Solving problems, growing the economy and improving our quality of life</i> .
	The Government should make provision in the 2020-21 Budget for the infrastructure needed to support the new Data Sharing legislation in anticipation of its passage through Parliament in 2020.
	Invest in capacity building in Commonwealth departments and agencies to enhance their ability to capture, manipulate and analyse data, and their capability to link data and to prepare secure, deidentified datasets for public release.
	Ensure the AIHW is adequately resourced to prepare for and undertake the significant new role of preparing and providing de-identified My Health Record data for research and public health purposes.
	The Government should implement an ongoing awareness campaign to emphasise the positive contribution the My Health Record can make to individual and whole of population health outcomes.
	Provide funding to develop and implement an ongoing strategy to improve Australians' health literacy, with a particular focus on disadvantaged groups. This strategy should include ongoing monitoring of Australians' digital health literacy to enable the progress of the strategy to be assessed. It should incorporate the initiatives in relation to the My Health Record proposed above.
Investing in Prevention	Make a significant multi-year commitment to fund implementation of the new 10 Year National Prevention Strategy currently being developed.
R&D Tax Incentive These recommendations reiterate Research Australia's position outlined in our Pre-Budget submissions in 2017 and 2018	In the current economic environment of reduced business expenditure on R&D, the Government should not take action to reform the R&D Tax Incentive that could further dampen R&D activity.
	Instead, the Government should continue with measures to improve compliance with the existing scheme.

2020-21 PRE-BUDGET SUBMISSION

Introduction

Research Australia welcomes the opportunity to make this submission to the Treasurer in relation to the 2020-21 Budget.

Australia's record period of uninterrupted economic growth in Australia continues:

- Australia continues to enjoy record low interest rates
- The Australian Government Budget was effectively balanced in 2019-20 and is expected to return to surplus in the current financial year.
- There is modest growth in real wages.¹

However, while still in positive territory, economic growth and real wages growth are slow; household debt remains very high, and unemployment is starting to increase again. In a similar vein, measures of private sector research and development expenditure show that while there has been a slight increase in nominal terms, total R&D expenditure as a percentage of GDP across the economy has declined.²

Turning to our own sector of health and medical research and development, the highlight has been the continued development of the Medical Research Future Fund (MRFF). As at 30 September 2019 the MRFF's balance was \$17.6 billion; the final capital injection in August 2020 will take the MRFF to its full capital of \$20 billion. The true significance of this lies in how the investment earnings are being utilised. In a few short years, disbursements from the MRFF to fund medical research and medical innovation have risen from \$61 million in 2016-17 to a forecast \$580 million in this current financial year.

This is a truly remarkable achievement, and one for which we congratulate the Government. This funding is important to the future health and wellbeing of every Australian. It is also important to Australia's future prosperity, as MRFF funding has the potential to make our health system more sustainable, support new industries in advanced manufacturing and create new jobs in the knowledge economy.

However, the MRFF does not operate in isolation, and cannot, by itself ensure a vibrant research and development sector. The Abbott, Turnbull and Morrison Governments have presided over a steady decline in real funding for the research programs of The National Health and Medical

¹ Australian Bureau of Statistics, 6345.0 - Wage Price Index, Australia, Sep 2019

² Australian Bureau of Statistics, 8104.0 - Research and Experimental Development, Businesses, Australia, 2017-18, Estimate of GERD as a percentage of GDP

Research Council and the Australian Research Council, and the proposed increases in the funding provided to universities for the indirect costs of research have been reversed.

These cuts:

- reduce the capacity of Australia's higher education sector to sustain a research workforce with world class capabilities; and
- limit our ability to undertake the basic research which provides the pipeline of discoveries that can be translated into new treatments, devices and products; and
- restrict the capacity of universities to engage with business.

It also affects the viability and capability of Australia's medical research institutes, making it more difficult for them to undertake research, collaborate with other researchers or engage with industry.

The Research and Development Tax Incentive (R&DTI) continues under a cloud, with the Government's proposed changes criticised by industry and the Senate Economics Legislation Committee in a report which echoed many of our sector's concerns. While the Government remains committed to reform of the R&DTI, there has been no further consultation or discussion about the nature of the proposed reforms contained in the new Treasury Laws Amendment (Research and Development Tax Incentive) Bill. In the meantime, expenditure on the R&DTI has declined significantly.

There are other areas where we would welcome more activity from the Government, including implementing a National Digital Economy strategy (the subject of consultations in 2017) and a substantive response to the report by Innovation and Science Australia, *Australia 2030: Prosperity through Innovation*.

This submission contains a number of recommendations all aimed at improving Australians' health, wellbeing and prosperity through more effective investment in, and support for, health and medical research and development.

Why invest in innovation?

Per capita, Australia is one of the wealthiest countries in the world. And while it is no longer true that Australia rides on the sheep's back, for a wealthy country our economy remains poorly diversified. This places Australia's long-term future at risk; a decline in the export value of just a few key commodities can jeopardise our whole economy and standard of living.

In general, the complexity of a country's economy, measured in terms of the diversity of its international trade, is a good measure of the economy's strength and resilience, and its capacity for continued innovation and growth.

The *Atlas of Economic Complexity*, developed by Harvard University, rates the complexity of Australia's economy as the 93rd most complex economy in the world, behind Morocco, Uganda and Senegal.

'Australia is a high-income country, ranking as the 8th richest economy per capita out of 133 studied. Its 24.6 million inhabitants have a GDP per capita of \$54,093 (\$49,653 PPP; 2017). GDP per capita growth has averaged 0.9% over the past five years, below regional averages.'

Australia ranks as the 93rd most complex country in the Economic Complexity Index (ECI) ranking. Compared to a decade prior, Australia's economy has become less complex, worsening 22 positions in the ECI ranking. Australia's worsening complexity has been driven by a lack of diversification of exports. Moving forward, Australia is positioned to take advantage of a moderate number of opportunities to diversify its production using its existing knowhow.'

Australia is less complex than expected for its income level. As a result, its economy is projected to grow slowly. The Growth Lab's 2027 Growth Projections foresee growth in Australia of 2.2% annually over the coming decade, ranking in the bottom half of countries globally.³

To summarise:

- The key to long term, sustainable prosperity is a more complex economy.
- Greater complexity requires greater diversification of exports.
- Existing knowhow provides a moderate number of opportunities to diversify our production.
- The key to diversifying our exports and our economy is new knowledge creation and innovation, that includes smart manufacturing as an example.

It is clear that we need to do more. While there are signs that Australia is becoming more innovative, a concerted long-term investment in innovation by the Government and the private sector is required over decades if we are to see innovation have a real impact on our exports and permeate our economy.

³ Harvard University Growth Lab, Centre for International Development, Atlas of Economic Complexity, Australia Profile, accessed on 19 November 2019 at <http://atlas.cid.harvard.edu/countries/14>

The Government commissioned Innovation and Science Australia to develop a plan for innovation, which was delivered to the Government in 2017.⁴ *Australia 2030: Prosperity through Innovation* outlined a plan for how the Australian Government could drive innovation across the whole economy through investment at the medium term average level of 0.63%.

While Research Australia contends that this level of Government investment in R&D is too low, even this modest target has not been achieved, with the **Government's expenditure on R&D across all areas having fallen to less one half of one percent of GDP**.

Australian Government investment in R&D as a percentage of Gross Domestic Product⁵

Financial Year									Forecast		
09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	Average
0.64	0.63	0.67	0.64	0.62	0.61	0.58	0.54	0.56	0.48	0.48	0.61

This underinvestment by the Government in innovation will condemn Australia to a low growth future, highly dependent on just a few key exports. It is essential that we act now, while we still have relatively high levels of wealth, to invest in developing the export industries that can sustain our wealth in the future.

Research Australia calls on the Australian Government to invest in innovation. *Australia 2030: Prosperity through Innovation* has provided a plan for this investment and the Government now needs to follow through with the investment required to implement it as a matter of urgency.

Research Australia submits that the Government should outline a plan for investing in innovation and commit to increasing its spending on research and development to at least 0.75% of GDP annually by the end of its current term.

⁴ Innovation and Science Australia 2017, *Australia 2030: prosperity through innovation*, Australian Government, Canberra.

⁵ Australian Government, Science, Research and Innovation (SRI) Budget Tables, 2019-20, Australian Government investment in R&D by sector and sub-sector, and other analyses Table 6, Australian Government investment in R&D as a percentage of Gross Domestic Product

A focus on healthcare, innovation, and health and medical research

Research Australia represents the whole pipeline of health and medical research and innovation, from the new ideas that power basic research through to the application of this knowledge to improve human health. This is an important part of the knowledge economy, which is reliant on new ideas and discoveries, and new ways of looking at things and doing things to drive economic progress. This is Research Australia's particular focus within the broader innovation ecosystem and basis for our observations and advocacy calls.

Healthcare is a sector in which governments, the private sector and not for profit service providers are all key stakeholders. For this reason, healthcare is the perfect exemplar of the need for the Commonwealth Government to work and invest strategically, responsively and proactively with other sectors of our community to deliver the healthier population and higher quality, safer and more efficient healthcare system Australia needs if it is to prosper in the future.

Why invest in Australian health and medical research and innovation?

All Australians benefit from strong investment in health and medical research and innovation.

Improving the health of the Australian population is central to improving national productivity. Australian health and medical research leads to new medicines, technologies and treatments that cure us when we are ill or injured. It plays a significant role in disease prevention through the development of vaccines, as well as technologies for early disease diagnosis. More immediately, health and medical research in Australia continues to tackle how to best deliver healthcare, providing critical evidence that addresses clinically important unanswered questions.

Health and medical research and innovation can lead to efficiencies that help constrain health expenditure; reducing the call on the taxpayer, and the cost to consumers through health insurance premiums and out of pocket expenses. For every dollar invested in Australian health research and development, an average of \$3.90 in health benefits is returned.⁶

Australian health and medical research has traditionally been world class, but our record in translating our discoveries into new products, treatments and medicines has not been as good. An assessment by Innovation and Science Australia for the Australian Government identified that fewer than 10% of Australian companies across all industries introduced new-to-market product innovations (new products and services) compared to 21% for the top five performing OECD countries.⁷

The encouraging news is that this percentage is increasing. In the health and medical research and innovation sector, the last decade has seen the development of greater expertise in the commercialisation of new discoveries and more sources of funding for the long process of bringing new medicines, vaccines and medical technologies to market. There is an opportunity to significantly increase Australia's exports in the trillion-dollar global healthcare sector, adding new

⁶ KPMG, Economic Impact of Medical Research in Australia, October 2018, commissioned by the Australian Association of Medical Research Institutes

⁷ Innovation and Science Australia, Performance Review of the Australian Innovation, Science and Research System 2016, p.xi.

jobs in advanced manufacturing and other related industries, and helping to diversify Australia's exports and economy. But we need to act now and capitalise on what has been put in place to date. We must dramatically 'scale up' our efforts to support health and medical research and development and innovation across the whole economy if we are to make the most of these opportunities.

Data as a national resource

Research Australia believes that when it comes to improving Australians' health and our healthcare system, the key is harnessing the transformative power of data to accelerate advances. Digitisation of healthcare is already occurring, but continued support from Government through initiatives like the Australian Digital Health Strategy and the proposed Digital Economy Strategy is essential to accelerate and guide this activity, and to promote the more systematic adoption that will enable the greatest benefits to be derived. It also provides an opportunity to encourage the crossover of technologies from other sectors of the economy such as banking, which is a leader in the use of technology to interact and transact with consumers.

Embedding research in the health system

The greatest opportunities for improvement and innovation in our healthcare system lie in the systematic application of evidence-based healthcare, driven by the best research. With Australian healthcare expenditure in 2017-18 estimated to be \$185 billion, even relatively small efficiency improvements can have significant economic benefit.⁸ For example, adverse events in hospital are events that lead to harm to patients. Approximately 5% of patients experience an adverse event, and these patients stay an average of 10 days longer in hospital. Screening for risks such as falls and medication errors are recognised ways of reducing adverse events that that can be addressed with digital solutions, leading to millions of dollars in annual savings.⁹

According to the Australian Commission on Safety and Quality in Healthcare, there is a \$5.80 return on each dollar invested in clinical trials conducted by Australian networks.¹⁰ For example, a clinical trial conducted in Australian intensive care units demonstrated that it was just as effective to treat patients with normal saline rather than the far more expensive human albumin solution. This discovery has led to a change in international guidelines and practice, saving hundreds of millions of dollars per year, not only in Australia but also worldwide.¹¹

The Productivity Commission has reported that the healthcare sector is ripe for significant productivity improvements. Health and medical research and innovation will be one of the key drivers of this change- providing new technologies and approaches to improve efficiency, and new platforms to support the quicker uptake of new practices into healthcare.

⁸ Australian Institute of Health and Welfare 2019. Health expenditure Australia 2017–18. Health and welfare expenditure series no.65. Cat. no. HWE 77. Canberra: AIHW

⁹ <https://www2.health.vic.gov.au/hospitals-and-health-services/patient-care/older-people/resources/improving-access/ia-adverse>

¹⁰ <https://www.safetyandquality.gov.au/our-work/clinical-trials/>

¹¹ See ACTA and NHMRC, 2015, Report on the Activities & Achievements of Clinical Trials Networks in Australia 2004 – 2014 for this and other examples

The Third Atlas of Healthcare Variation, published in December 2018, continues to highlight unwarranted variation in the delivery of healthcare, pointing to a lack of consistent adoption of evidence-based care across the system.¹²

While undertaking the research to establish the best type of care to deliver is essential, it is not enough. We must redouble our efforts to ensure that this knowledge is communicated and implemented more quickly and consistently throughout our healthcare system and the broader community.

Smarter investment in health and medical research

The Australian Government makes substantial investment in health and medical research every year, and one that is set to increase as the Medical Research Future Fund reaches its full potential.

There is an opportunity to make this investment more effective, yielding better returns to Australia's population and taxpayers alike, balancing resources with need, capacity and opportunity.

Medical devices, diagnostics and therapeutics continue to feature strongly in non-health specific government programs such as the Cooperative Research Centres and commercialisation grants.

The success of these products in programs designed to boost commercialisation across the economy is a pointer to the significance of the health technologies and pharmaceuticals sector to Australia's future and our increasing ability to capitalise on our world class health and medical research.

Research Australia submits that continuing to invest in and support Australia's world class capacity and expertise in health and medical research and innovation is a key element of positioning Australia as a knowledge-based economy, able to make the most of the information revolution.

The remainder of our submission addresses specific initiatives to achieve our ambition of a healthier and more prosperous Australia and a sustainable health system.

¹² The Australian Commission on Safety and Quality in Healthcare, 2018, *The Third Australian Atlas of Healthcare Variation*

The Medical Research Future Fund

Research Australia congratulates the Government on its ongoing commitment to the MRFF which has seen the Fund reach a balance of \$17.6 billion, with the final capital injection to be provided in the next financial year, 2020-21. The MRFF is one of the Government's signature policy initiatives and enjoys strong support from the public and multi-partisan support; in Research Australia polling conducted in June 2018, 88% of poll respondents expressed support for the MRFF¹³.

The MRFF also has the strong backing of the health and medical research and innovation sectors. They have embraced the MRFF's potential to improve the translation of research into new drugs, therapies, interventions and practices that will:

- improve health outcomes;
- enhance the quality, safety, and efficiency of our health system; and
- boost exports.

The funding provided so far has responded to a range of different needs and strategic priorities, and utilised different approaches to the disbursement of funding. It has also successfully leveraged contributions from other sources. The Fellowships Program is giving health professionals the opportunity to establish their careers as researchers, while the Missions are supporting large multidisciplinary programs that have the potential to transform the delivery of healthcare to Australians and around the world. The Frontiers Program is an innovative two stage program, supporting long term collaborations to explore bold and innovative ideas in the health and medical research sector and/or make discoveries of great potential and global impact.

Research Australia looks forward to these investments making a material difference to the health and wellbeing of Australians, and contributing to a safer, more effective and efficient healthcare system and a vibrant home-grown medical technologies and pharmaceuticals sector.

Research Australia looks forward to the final capital instalment for the MRFF being included in the 2020-21 Budget.

¹³ Research Australia, 2018, *Australia Speaks! 2018 Opinion Polling for Health and Medical Research*, available at <http://researchaustralia.org/reports/public-opinion-polling/>

NHMRC and ARC funding

Australia's universities and medical research institutes are the foundation on which Australian health and medical research and innovation is built, and the Commonwealth Governments' premier funding bodies are the National Health and Medical Research Council (NHMRC) and the Australian Research Council (ARC).

The NHMRC's funding programs are clearly aligned with health and medical research; the importance of the Australian Research Council's own programs to health and medical research is less obvious but just as real. While the ARC does not fund 'medical and dental research', it funds basic life sciences research. It also funds the application of research in a range of disciplines, including biochemistry, engineering, computing and the social sciences, which directly and indirectly support health and medical research and its application.

Examples of ARC funding that is relevant to health and medical research and innovation

The *ARC Training Centre for Medical Implant Technologies* aims to train a new generation of interdisciplinary engineers and to transform the orthopaedic and maxillofacial implant industry in Australia. In collaboration with industry, universities and hospitals, the Centre will build a dynamic training environment for interdisciplinary engineers to develop and evaluate personalised implants and surgeries. It will create new networks, international collaborations and a generation of industry-ready researchers critical for growing Australia's industry. The advances in materials and savings in time for procedures will reduce costs.

ARC Future Fellow Dr Cameron Bracken is researching hidden complexity in microRNA function. Dr Bracken's project aims to determine the extent to which microRNAs function through 'non-canonical' mechanisms within cell nuclei, how their roles are expanded by naturally occurring sequence variation and how their activity is controlled by little known families of genes that sequester and inhibit their availability. The knowledge generated is significant as microRNAs regulate the expression of virtually all genes and biological processes, yet these mechanisms of function remain poorly characterised and seldom considered. The expected outcome of better understanding mechanisms through which microRNAs work should provide significant benefit to safe and effective development of microRNAs for future agricultural or therapeutic application.¹⁴

ARC Laureate Professor Kaarin Anstey aims make a significant advance in our understanding of cognitive ageing through the adult life course by discovering how contemporary lifestyles and experience impact on cognitive resilience and cognitive function. Through assessment of adults aged 18-90 (across the life course), her research will evaluate the impact of technology, life space and sensory function on brain structure and function, and cognition. Intended benefits include provision of evidence to inform interventions and policies that optimize cognitive resilience and reduce cognitive decline.¹⁵

¹⁴ ARC Funding announcements 2019 funded research, selected grants, <https://rms.arc.gov.au/RMS/Report/Download/Report/a3f6be6e-33f7-4fb5-98a6-7526aaa184cf/204>

¹⁵ <https://www.arc.gov.au/news-publications/media/funding-announcement-kits/2019-australian-laureate-fellowships/2019-laureate-profile-professor-kaarin-anstey>

NHMRC Programs

The 2019-20 Budget reveals funding for the NHMRC's programs falling in real terms. Funding to the Medical Research Endowment Account (MREA) for the NHMRC's research programs is \$842.766 million for 2019-20. The estimates for the following three years have the funding remaining virtually stable with increases of roughly 1.5% each year.

The CPI was 1.8% for the year to 31 December 2018, and the 2019-20 Budget forecast CPI to be 2¼ per cent through the year to the June quarter 2020 and 2½ per cent through the year to the June quarter 2021.

So, in real terms Government funding to the MREA is forecast to continue to decline over the forward estimates, as it has for several years now.

NHMRC MREA Funding 2019 Budget

\$m.	18-19	19-20	20-21	21-22	22-23
	829.324	842.766	856.250	869.950	883.870

ARC Programs

Over the forward estimates provided in the 2019-20 Budget, the funding to the ARC for the Discovery Program declines slightly in later years compared to the estimates in the May 2018 Budget, a trend that has continued for the last three years. The increases year on year are a little greater than the current inflation rate of 1.8% and around the forecast range for CPI of 2¼ per cent to 2½ per cent.

ARC Funding 2019 Budget

\$m.	18-19	19-20	20-21	21-22	22-23
Discovery	493.951	507.044	513.542	525.537	538.350

The Linkage Program was singled out in the Government's National Innovation and Science Agenda (NISA) as an important component of Australia's innovation system, and it was announced that from 1 July 2016 the Program would be open to continuous applications and decision making would be fast tracked. Once again, funding in the 2019-20 Budget was lower than forecast in the 2018-19 Budget and shows increases at around the forecast rate of CPI.

ARC Funding 2019 Budget

\$m.	18-19	19-20	20-21	21-22	22-23
Linkage (2019 Budget)	265.974	279.168	288.788	295.246	301.741
Linkage (2018 Budget)	273.990	285.432	293.492	297.862	N/A

Underinvestment

This trend of funding NHMRC and ARC research program increases at less than inflation cannot continue if Australia is to develop the more diversified and knowledge driven economy that we need to secure our future. We are currently missing a real opportunity to capitalise on the sector's expertise to make technological advances and address current and emerging issues, such as our ageing population.

And if the MRFF is to achieve its full potential it is essential that the financial assistance it provides 'complements and enhances' existing government funding sources, as specified in the MRFF's enabling legislation. It was not designed to, and nor should it be seen as, instead of or the panacea to existing funding challenges. Sustainable and consistent funding at the basic end of the pipeline must occur if there is to be a research for translation at the other end, including via the MRFF.

Research Australia submits that funding for the research programs of the NHMRC and ARC must be increased in real terms and in their own right, in the 2020-21 Budget and over the forward estimates.

Indirect research costs

The funding from the ARC, NHMRC and MRFF meet only part of the costs of the research to which they are directed. They are a contribution to the direct costs of research, such as paying researchers' salaries and purchasing necessary equipment and experimental materials. They do not cover the cost of 'keeping the lights on', quite literally and metaphorically: paying utility bills, administrative staff, maintenance on buildings and facilities.

Securing appropriate levels of funding for the indirect costs of research conducted in Australia's higher education institutions and medical research institutes is a longstanding problem. It has been exacerbated by recent developments, including an emphasis on universities partnering with industry on research projects and reductions in the revenue of higher education institutions- it is widely recognised that teaching revenues from domestic and international students subsidise research expenditure, including covering indirect costs.

Universities

Currently, universities receive funding from the Department of Education and Training's Research Support Program (RSP). The RSP distributes a pool of money to universities in proportion to the research income each university received in the reporting period.

In the 2019-20 Budget the RSP suffered significant cuts compared to the forecasts in the 2018-19 Budget. Funding for 2019-20 is more than \$50 million lower than forecast in 2018, and nearly \$100 million lower in 2020-21.

Research Support Program 2019 Budget

\$m.	18-19	19-20	20-21	21-22	22-23
2019 Budget	894.016	902.062	920.573	941.748	962.455
2018 Budget	903.425	959.816	1,018.879	1,042.302	

Funding for the indirect costs of research funded by the MRFF is now to be provided from the Research Support Program, on the same basis as NHMRC and ARC funding. With the MRFF providing hundreds of millions of dollars in funding to universities over the next few years, **a substantial increase in the Research Support Program is needed just to maintain the levels of research support funding for research projects at their current already inadequate level.** The cuts to the Research Support Program represent a real threat to the capacity of our universities to undertake vital health and medical research, and indeed research in all disciplines.

Medical Research Institutes

While their circumstances and funding for indirect costs are different, the situation is at least as difficult for Independent Medical Research Institutes (IMRIs), those not affiliated with a university. IMRIs are ineligible to participate in the RSP or to receive funding from the ARC. IMRIs receive funding to partially subsidise indirect research costs from the NHMRC through the Independent Research Institute Infrastructure Support Scheme (IRIIS). IRIIS provides funding to IMRIs to assist with indirect research costs, at a rate of up to 20% of the value of NHMRC grants awarded to IMRIs. **No funding support for indirect research costs associated with MRFF grants is available to IMRIs.**

Funding for indirect research costs was raised as an issue during the public consultation on the Inaugural five-year strategy and two-year priorities for the MRFF conducted by the MRFF Advisory Board in 2016. While the MRFF Advisory Board subsequently drew attention to the issue of funding for indirect research costs, it did not proffer a solution:

A whole-of-government approach is needed to address the issue of research costing to ensure the research sector can continue to thrive. MRFF funding cannot in isolation solve the conundrum that surrounds indirect costs and may with the injection of new funds increase the need for a solution. The Advisory Board, while advocating for a whole-of-government and research sector agreed solution, must therefore abstain from implementing yet another funding model. In the short term MRFF program investment should adhere to existing costing approaches. Collaboration between Government and funded bodies to identify an equitable solution should be prioritised.¹⁶

Indirect research costs were also examined by the House Standing Committee on Education, Employment and Training at the request of the Minister for Education. The Committee's report,

¹⁶ Australian Government, MRFF Advisory Board, 2016, Australian Medical Research and Innovation Strategy 2016-2021, p.7

tabled on 26 November 2018, recommended that ‘the administration of research block grants be reviewed to provide more timely and adequate support for the indirect costs of research.’

The following four recommendations reiterate Research Australia’s position outlined in our Pre-Budget submissions in December 2016, 2017 and 2018. They remain valid.

The cuts to the Research Block grants outlined in the MYEFO on 17 December 2018 and confirmed in the April 2019 Budget must be reversed.

The pool of funding for the Research Support Program needs to be increased proportionately in the 2020-21 Budget to reflect the inclusion of MRFF competitive grants in the Program.

In a similar manner, an additional stream of the IRIISS program needs to be funded by the Department of Health to cover the indirect costs associated with MRFF funding incurred by IMRIs. This funding should be administered by the NHMRC.

In the longer term, Research Australia supports the call of the MRFF Advisory Board for a whole of government approach to the issue of funding indirect research costs. **Research Australia proposes that the Chief Scientist lead a review of the funding of indirect research costs to establish a sustainable and equitable funding program.**

Funding for research infrastructure

Commissioned by the Australian Government, the 2016 National Research Infrastructure Roadmap outlines national research infrastructure required over the coming decade so that Australia’s research system continues to improve productivity, create jobs, lift economic growth and support a healthy environment.

The Plan was provided to Government by the Chief Scientist in February 2017. Jointly releasing it to the public in May 2017, the Minister for Education and Training, and the Minister for Industry, Innovation and Science, committed to the development of a research infrastructure investment plan.

“Key to our consideration will be the development of a research infrastructure investment plan to develop a broad understanding of the range and scale of the infrastructure required for the future so that Australia continues to deliver cutting edge research outcomes.

“The plan will inform how we approach future investment in national research infrastructure and equipment needs across the sector consistent with the 2016 Roadmap, including in the publicly funded research agencies. It will be developed in consultation with Innovation and Science Australia and the Commonwealth Science Council,” Minister Sinodinos said.¹⁷

¹⁷ ‘National roadmap for research infrastructure shows the way’, Joint media release with the Minister for Education and Training, Senator the Hon Simon Birmingham, 12 May 2017

Research Australia acknowledges the \$1.9 billion announced in the May 2018 Budget over the forward estimates and retained in the 2019-20 Budget. **We look forward to seeing this funding commitment retained in the 2020-21 Budget.**

National Innovation Strategy 2030

The National Innovation Strategy is an important piece of public policy; it will set the direction for Australian science, research and innovation through to 2030, at a time when this has arguably never been more important to Australia's future. If we get this right it will help establish Australia as a leading player in Industry 4.0, the fourth industrial revolution, and lay the foundation for prosperity for decades to come. And, of course, this will only happen if the Strategy's implementation is supported by sustained national investment in:

- our education system,
- our publicly funded research organisations, institutes and universities; and
- an innovation system that supports private sector investment and innovation.

While the Government provided a response to the report accepting the majority of the recommendations in principle, there has been little progress since in implementing the report's recommendations.

In the 2020-21 Budget the Government should commit the additional funding required to implement the measures outlined in the Australian Government response to *Innovation and Science Australia's Australia 2030: Prosperity through Innovation*.

These include, for example, implementation of a framework to identify and implement additional National Missions. (Recommendation 28)

Measuring Innovation performance

With innovation so central to Australia's future, it is essential that we are able to measure Australian research and development activity across the economy.

The Australian Bureau of Statistics undertakes two yearly surveys of Research and Development activity in Government, Higher Education, Business and the Private Non-profit sectors. (It undertakes two surveys each year alternating between the sectors, so that each sector is measured every second year.) While the surveys are useful, the two-yearly 'staggered' nature of the data collection and analysis makes it difficult to capture an accurate snapshot of progress.

More significantly, the data are not reported at a sufficient level of detail to enable an assessment of the performance of particular sectors, or the impact of particular Government programs. Data on research and development are reported by the Australian Bureau of Statistics using the Standard Research Classification Codes of Socioeconomic Objective (SEO) and Field of Research (FOR).

These codes use a system whereby activity is initially grouped at a high level; for example, the broad activity of Manufacturing is assigned the Code 86. Specific industries within Manufacturing are assigned a specific code within this division; for example, Human Pharmaceutical products is 8608.

Human Pharmaceuticals manufacturing is a strategic target of the Australian Government's investment in innovation however the ABS does not provide data on R&D at the four-digit code of 8608. Data is only available at the level of Manufacturing, making it impossible to distinguish expenditure on pharmaceuticals from any of the other 18 categories in the Division. A similar issue arises with Fields of Research, with data on research and development only reported at the two-digit code level. It is not possible, for example to distinguish expenditure on biochemistry and cell biology from expenditure on genetics, physiology, plant biology or zoology. All are simply reported in the ABS statistics as expenditure on '06 Biological Sciences'.

This issue was identified in *Australia 2030: Prosperity through Innovation*, and the Government has acted on the report's recommendation to commission a review of how innovation is measured. The Innovation Metrics Review is due to publish its report in December 2019 and is expected to make recommendations for improved collection of data around Australian innovation.

Research Australia urges the Government to make provision in the 2020-21 Budget for the implementation of the Innovation Metrics Review's recommendations. It is vital that we are able to appropriately measure and evaluate the performance of innovation in Australia and the effectiveness of Government programs.

Data for better health and prosperity

The potential value of publicly held data has been recognised by the Australian Government and action is being taken to improve the value Australia derives from this data.

Initiatives in this area include the Department of Prime Minister and Cabinet's work on the Public-Sector Data Management Strategy, the creation of the Australian Government Public Data Policy Statement, and the Government's response to the Productivity Commission Inquiry into the Availability and Use of Public Data.

The experience in 2017 with the opt out period for the My Health Record illustrates the need to ensure the Australian population is better engaged with and informed about both the risks and benefits of the digitisation of healthcare.

Artificial intelligence for insights in health

Advances in computing power and the development of artificial intelligence are powerful tools that can be utilised to improve health outcomes and build future export industries, but are reliant on the data being made available to provide the insights. The recently released CSIRO report, commissioned by the Government, *Artificial intelligence: Solving problems, growing the economy and improving our quality of life* has identified health ageing and disability as one of the high potential areas of artificial intelligence specialisation for Australia.

‘This involves the use of AI to improve human health (either via prevention or treatment), achieve healthy ageing and support people living with disability. Solutions relating to this proposed AI specialisation are of high value considering rising or high rates of chronic illness, ageing populations and unsustainable growth healthcare expenditure. Disability support enabled by AI will benefit the 4.3 million Australians who live with disability, as estimated by the Australian Bureau Statistics. AI can be transformative for disabled people by improving their life opportunities and helping them get good jobs. Australia already has world-leading capabilities in AI for health, ageing and disability support. These issues are shared by countries worldwide and we can export our solutions into the global marketplace.’¹⁸

The Report outlines a range of actions that need to occur over the next decade and beyond to support this development, including:

- developing an AI specialist workforce;
- upgrading the skills of the broader workforce;
- access to high quality datasets;
- strong Data Governance to enhance public trust;
- research to apply the insights from AI in the real world (e.g. engineering solutions for surgical robots, bionics and automated cars);
- digital Infrastructure and cybersecurity; and
- standards for interoperability and Ethics.¹⁹

Making the most of the opportunities outlined in the Report will require significant leadership and investment from the Australian Government and we are pleased that the Minister for Industry, Science and Technology, the Honourable Karen Andrews, has warmly welcomed the report, and we look forward to a more detailed response.

Research Australia submits that the Government should commit funding in the 2020-21 Budget to the implementation of the measures outlined in the CSIRO Report, *Artificial intelligence: Solving problems, growing the economy and improving our quality of life*.

We also acknowledge the recently announced MRFF initiative for Applied Artificial Intelligence Research in Health as a positive step in this direction.

Government capacity to share and release data

A critical part of the Government’s response to the Productivity Commission report is the work it has undertaken to encourage Government departments and agencies to share and release data,

¹⁸ Hajkowicz SA1+, Karimi S1, Wark T1, Chen C1, Evans M1, Rens N3, Dawson D1, Charlton A2, Brennan T2, Moffatt C2, Srikumar S2, Tong KJ2 (2019) Artificial intelligence: Solving problems, growing the economy and improving our quality of life. CSIRO Data61, Australia., page 2

¹⁹ Ibid, Chapter 9

and to build their capacity to do so. This includes the appointment of a National Data Commissioner and the development of new legislation.

Research Australia has been actively involved in the consultations to develop the new Data Sharing legislation. In addition to supporting Government departments and agencies to share and release data it will implement a process for accrediting researchers and research institutions as ‘trusted users’ of data. Draft legislation is expected to be released for consultation in the next few months before being finalised and ready for introduction to the Parliament in 2020.

Research Australia submits the Government should make provision in the 2020-21 Budget for the infrastructure needed to support the new Data Sharing legislation in anticipation of its passage through the Parliament in 2020.

The Government should also continue to invest in capacity building in Commonwealth departments and agencies to enhance their ability to capture, manipulate and analyse data, and their capability to link data and to prepare secure, deidentified datasets for public release.

This funding will complement the legislative steps being taken with the Data Sharing Act and build on the investment the Government has already made in modernising Government Departments through the Data Integration Project for Australia (DIPA), which is due to conclude in mid 2020.²⁰

Utilising Health Data

The Government has made a significant commitment over many years to the development and implementation of the My Health Record. This is an important initiative with the potential to save lives, improve the delivery of healthcare and increase efficiency and productivity.

The report of the Productivity Commission Inquiry into Data Availability and Use has highlighted the significant social and economic benefits to be derived from making public data more available. The relative importance of health data was highlighted by the Commission’s Report.²¹ It concluded that across all of Government, some of the greatest gains could be made through making health data more available.²² Many of these recommendations relate to better access to data for researchers and innovators.

An earlier report of the Productivity Commission looking at the opportunities for productivity improvements in health highlighted the role of data in this regard:

‘More generally, administrative data — including performance data, patient health records and government-held datasets on patients’ use of medications or procedures — can support development of a more rigorous evidence base on the clinical and cost effectiveness of health interventions. Among other things, these data (subject to appropriate privacy safeguards) enable researchers to investigate the burden of disease, access to health care across the community, and the effectiveness of specific health interventions. This can help health care providers to choose the best treatments for individual patients. It also helps governments and insurers to make better overall funding decisions by directing funding to where the greatest health benefits can be achieved

²⁰ <https://www.pmc.gov.au/public-data/data-integration-partnership-australia>

²¹ Productivity Commission 2017, *Data Availability and Use*, Report No. 82, Canberra Pp. 509

²² Productivity Commission 2017, *Data Availability and Use*, Report No. 82, Canberra Pp. 5-6

(including to preventive health measures), and away from interventions with low or no clinical value.²³

Some of the greatest opportunities for better health outcomes lie in preventive health measures and public interventions. The burden of non-communicable disease has increased rapidly in the last two decades, linked to obesity and population wide changes in daily activity. Health data can be used to monitor changes in populations and sub-populations, and to identify emerging issues and solutions.

Access to reliable and current health data makes public health interventions both more effective and more cost effective, making it possible to respond more quickly to emerging issues. In addition to making the data available, it requires a commitment to use this data and a meaningful commitment by governments to evidence-based policy development and implementation.

The secondary use of My Health Record data for research and public health purposes is going to be central to achieving this ambition and is supported by the Australian public; in public polling undertaken on behalf of Research Australia in mid 2018, 90% supported the use of patients' medical records for research purposes.²⁴

The Australian Institute for Health and Welfare (AIHW) has been appointed to manage and release datasets for the My Health Record secondary use of data. The first data releases are expected to occur as early as 2020.

Research Australia urges the Government to use the 2020-21 Budget to ensure the AIHW is adequately resourced to prepare for and undertake the significant new role of preparing and providing de-identified My Health Record data for research and public health purposes.

An informed Public

The public controversy surrounding the commencement of the opt out period for the My Health Record, culminating in amendments to the legislation, illustrates the importance of ensuring the public is well informed about how the My Health Record will be used, and why it has been introduced.

In many ways the My Health Record is an extension of what we see in society more broadly, where many (but not all) individuals consent to the collection and use of their personal data in exchange for the ability to transact online, to access information and to make and maintain social relationships. In each of these cases individuals consciously or unconsciously evaluate the risks and benefits to them of using a particular application and decide whether or not they will use it. The relative value they assign to the risks and benefits, their assessment of the likelihood of adverse events and the impact it will have are very individual. A victim of online identity theft, for example, is likely to make a very different assessment of risks and benefits of being online to someone whose experience has only been positive.

²³ Productivity Commission 2015, Efficiency in Health, Commission Research Paper, Canberra. p.75

²⁴ Research Australia, 2018, *Australia Speaks! 2018 Opinion Polling for Health and Medical Research*, available at <http://researchaustralia.org/reports/public-opinion-polling/>

Research Australia submits that Government should implement an ongoing awareness campaign to emphasise the positive contribution the My Health Record can make to individual and whole of population health outcomes. Such a campaign needs to acknowledge that individuals are being asked to provide the MHR system with their personal information, and give them balanced information about this risk; acknowledging that while steps are being taken to mitigate the risk there is no guarantee. **The benefits and utility of the My Health Record should also be presented- both for the individual and for the broader community, to ensure the social licence remains current.**

Recognising that the risks and the benefits are perceived and valued differently across the population, we need many different messages and they need to be delivered through different channels on a regular and ongoing basis.

This includes showing the ways that data from individuals can be used to improve the safety, quality and effectiveness of health care, and provide better health outcomes for all Australians.

Improving Australians' digital health literacy

The National Digital Health Strategy notes that 'Digital information can transform the quality and sustainability of health and care. Used effectively, it can help save lives, improve health and wellbeing and support a sustainable health system that delivers safe, high quality and effective health services for all Australians.'²⁵

Australia's ability to make the most of initiatives like the My Health Record and to fulfill the promise of the National Digital Health Strategy is dependent on a population that is able to take advantage of, and use, digital applications to communicate with their healthcare providers and to monitor and better manage their own health.

This requires a combination of digital literacy (the ability to utilise technologies like smart phones and health monitors) and health literacy (the ability to use and understand health information to make informed decisions about our health, our illnesses and our lifestyles).

Access to and utilisation of digital technologies also varies widely across the population; older Australians, those on lower incomes, Indigenous Australians and people with a disability score lower than the national average on the Australian Digital Inclusion Index 2018.²⁶ These are also some of the population groups with poorer health, high levels of interaction with the health system and the greatest need for healthcare.

While the Australian Digital Health Strategy is focused on improving the availability, security and quality of health information, and expanding the capacity of the workforce to use digital health information, it does not address digital health literacy in the general community.

²⁵ Australian Digital Health Strategy, 2018, Safe, seamless and secure: evolving health and care to meet the needs of modern Australia.

Australia's National Digital Health Strategy, page 5

²⁶ Thomas, J, Barraket, J, Wilson, CK, Cook, K, Louie, YM & Holcombe-James, I, Ewing, S, MacDonald, T, 2018, *Measuring Australia's Digital Divide: The Australian Digital Inclusion Index 2018*, RMIT University, Melbourne, for Telstra.

Improving digital health literacy has the capacity to increase the number of Australians able to take advantage of digital health technologies to better manage their own health and their interactions with healthcare providers.

This requires not only understanding the benefits and risks of electronic health records but how digital health technologies can assist them and how to identify technologies that are effective and evidence-based; so they can be savvy digital health consumers.

Greater digital health literacy also offers the promise of higher quality healthcare and improved health outcomes and increased efficiency in the delivery of services.

Without increased digital health literacy we will fail to take full advantage of the opportunities that digital health technologies present in the coming years and decades. We will also see a growing disparity in health across the population, with those who are unable to engage digitally with their health left behind and experiencing poorer health outcomes.

Research Australia submits that the 2020-21 Budget should provide funding to develop and implement an ongoing strategy to improve Australians' health literacy, with a particular focus on disadvantaged groups. This strategy should include ongoing monitoring of Australians' digital health literacy to enable the progress of the strategy to be assessed. It should also incorporate the initiatives in relation to the My Health Record proposed above.

Investing in Prevention

One of the most cost-effective ways of improving Australians' health outcomes is through investment in prevention.

Research Australia congratulates the Health Minister and the Government on the current initiative to develop a 10 Year National Health Prevention Strategy. This strategy will bring together existing initiatives as well as lead to new programs, and preparatory workshops have already identified areas where new resources will be required, for example in better data collection to ensure that we can effectively monitor and evaluate new programs.

While there are many elements to a Health Prevention Strategy, changing Australians' behaviour is key. And while we know this is difficult, we also know that we have been successful in doing so in the past, for example with reducing smoking rates and sun smart campaigns to reduce the risk of melanoma.

Research Australia conducts annual polling of the Australian public on matters relating to health and medical research. In our 2019 Poll we asked people about managing their own health. While individuals reported a high awareness of what they need to do to maintain their health physical health (97%) and mental health (83%) a majority of Australians would welcome more information and practical advice about what they can do to maintain their own health, again with a greater emphasis on mental health (58%) than physical health (52%).²⁷

²⁷ Research Australia, 2018, *Australia Speaks! 2018 Opinion Polling for Health and Medical Research*, p.16 available at <http://researchaustralia.org/reports/public-opinion-polling/>

There is clearly a role for more health prevention measures as part of a new National Health Prevention Strategy, and while cost effective in the long term, effective national prevention programs need to be adequately funded. We also need to ensure we have the resources in place to develop effective programs and to monitor and evaluate the outcomes. **Research Australia urges the Government to use the Budget to make a significant multi-year commitment to funding implementation of the new 10 Year National Prevention Strategy.**

R&D Tax Incentive

In 2018 the Government introduced a Bill to Parliament to:

- impose a cap on the refundable R&D Tax Incentive;
- exempt clinical trials from the cap;
- lower the rate of the refundable and non- refundable R&D Tax offsets; and
- create an intensity measure for the non-refundable R&D Tax Offset.

The Bill was the subject of an Inquiry by the Senate Economics Legislation Committee, which recommended *‘the Senate defer consideration of the bill until further examination and analysis of the impact of schedules 1–3 is undertaken. In particular, the committee recommends that:*

- *the approach to the cap on the refundable portion of the Research and Development (R&D) tax incentive is refined, noting investment decisions already taken; and*
- *the formula for R&D intensity is refined, noting inherent differences in R&D intensity across industries and impacts on businesses with large operating costs.’*

The Bill subsequently lapsed with the prorogation of Parliament before the election, but a new Bill, the Treasury Laws Amendment (Research and Development Tax Incentive) Bill 2019 was introduced on the last sitting day of Parliament in 2019. It differs slightly from the earlier Bill, but the changes do not address the sector’s concerns.

The ABS has reported that annual Australian R&D expenditure by businesses (BERD) declined by more than \$2 billion (12%) between 2013-14 and 2015-16.²⁸ While there was a slight improvement in 2017-18 in dollar terms, it is still lower than in 2013-14. BERD as a proportion of Gross Domestic Product (GDP) **decreased from 1.0% in 2015-16 to 0.9% in 2017-18.**²⁹

Business Expenditure on Research and Development 2008-09 to 2017-18

2007-08 (\$m.)	2008-09 (\$m.)	2009-10 (\$m.)	2010-11 (\$m.)	2011-12 (\$m.)	2013-14 (\$m.)	2015-16 (\$m.)	2017-18 (\$m.)
15,047,360	17,291,228	16,759,641	18,006,887	18,321,322	18,849,438	16,659,296	17,437,585

²⁸ Australian Bureau of Statistics, Cat. No. 8104.0 - Research and Experimental Development, Businesses, Australia, releases for years 2007-08 to 2017-18

²⁹ Australian Bureau of Statistics, Cat. No. 8104.0 - Research and Experimental Development, Businesses, Australia, 2017-18 Summary

This decline in activity is evident in recent expenditure on the R&D Tax Incentive, which in inflation adjusted terms, peaked in 2015-16 as the below table illustrates.³⁰

Research and Development Tax Incentive Expenditure (\$m inflation adjusted, 2017-18 dollars)

Program/activity	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19*	2019-20*
RDTI-Refundable	1603.6	1818.0	1953.6	2126.3	2179.6	2002.4	1929.0	1690.5	1706.3
RDTI-Non Refundable	1131.1	1227.5	1011.7	872.0	823.7	712.6	650.0	358.2	275.8
Total	2,734.8	3,045.5	2,965.3	2,998.3	3,003.3	2,715.0	2,579.0	2,048.8	1,982.2

*estimated actual *Budget estimate

The Government's proposed changes to the R&D Tax Incentive, if enacted, will further reduce private sector R&D. For example, by linking the non-refundable R&D Tax Incentive to the value of R&D as a percentage of total expenditure, the proposed intensity measure not only provides an incentive to increase R&D, but to reduce other expenditure, including moving other expenditure, such as manufacturing, to other countries.

In the current economic environment of reduced business expenditure on R&D, the Government should not take action to reform the R&D Tax Incentive that could further dampen R&D activity. Instead, the Government should continue with measures to improve compliance with the existing scheme.

³⁰ Australian Government, Dept. of Industry, Science and Innovation, SRI Budget Tables 2018-19, Table 2. Australian Government R&D programs and activities valued at over \$100 million in 2019-20, inflation adjusted

Conclusion

The 2020-21 Budget provides the opportunity for the Australian Government to consolidate the reviews and policy changes it has initiated in the last few years to improve the health and wellbeing of the Australian population and to reposition Australia as a modern and innovative nation with a knowledge-based economy.

However, this requires a renewed commitment to significant investment in innovation to reverse the declines in recent years that are evident when investment in R&D is considered as a proportion of GDP.

In addition to raising national prosperity and diversifying our economy, smarter investment in health and medical research and innovation can improve the effectiveness of our health system; constraining the rise in health costs that accompany an ageing population. It can also provide a sustainable pathway to addressing modern lifestyles factors such as obesity. Smarter investment also drives skilled employment in vibrant new pharmaceutical, medical device and biotechnology industries.

We must invest in raising the digital health literacy of all Australians, particularly the most disadvantaged and vulnerable. The promise of the digital revolution to make more information available to more people is only useful if those people are equipped to use that information to make decisions about their healthcare and lifestyle that will improve their health.

This investment will ensure that more Australians benefit from this revolution, transforming our health system and the way we manage our own health and wellbeing.

Research Australia is pleased to have had the opportunity to make this submission on behalf of our broad membership which is drawn from across the health and medical research pipeline. We are also willing to provide further information and/or contribute further.

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