

**South Australian Productivity Commission Inquiry into Health and Medical
Research
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Torrens University Australia

Torrens University Australia (Torrens) is Australia's newest university. Since its inception, it has aimed for excellence in both teaching and research. Late 2015 saw the passing of Australian Government legislation establishing Torrens University Australia (Torrens) as a Table B university.

Torrens is a private sector university owned by Laureate International Universities, the world's largest educational network. The university is a for-profit enterprise with B Corp certification. Headquartered in Adelaide, Torrens also has a national campus footprint, with teaching and research locations in Brisbane, Sydney and Melbourne.

Consistent with its focus on innovation, Torrens University is committed to the strategic focus of developing curriculum and research programs in Health, Organisational Agility, Education, Creative Technologies and Artificial Intelligence. Torrens research is founded on a strategy of partnerships with external organisations to deliver research outcomes with industry, business and community impact. The university has actively engaged in value-adding research partnerships with the three South Australian Universities, South Australian Health and Medical Research Institute (SAHMRI), Health Translation SA and Industry Partners. Torrens has also established national partnerships with OPAL Aged Care, Austin Health and Baker Health and Diabetes Institute in Victoria. Across the Laureate Global University network, Torrens has fostered research affiliations with Universities in USA, South America, India and South East Asia. It also has active research affiliations with Universities in Africa.

Torrens University Research Evolution

From inception in 2014, Torrens has grown rapidly to include multiple areas of world-class excellence in research, launch five dedicated research centres and foster a growing cohort of higher degree by research students. There have been many key development milestones including:

- 2014 Research Office was established. First PhD and MPhil students commenced.
- 2015 First collaboration with National Health and Medical Research Council (NHMRC) funded Centre of Research Excellence. Public Health Information Development Unit (PHIDU) joined Torrens research portfolio.

- 2016 Research & Research Ethics Committees launched. Torrens Health Research Centre launched.
- 2017 First PhD and MPhil students graduated. Torrens Education Research Centre launched.
- 2018 Torrens Business Research Centre established. Research Ethics Committee achieved NHMRC registration.
- 2019 Torrens Design Research Centre and AI Research Centre established. NHMRC awarded Torrens status as a grant administering institution.
- 2020 Multiple applications made to ARC and NHMRC competitive grant rounds.

In Health and Medical Research, Torrens has established several key focus areas. In establishing these areas, the research leadership of the university has focused on building on our strengths efficiently and strategically by actively creating mutually beneficial working partnerships across the South Australian and Australian research community.

By its very nature, Torrens has proven in the education space its capacity to grow, innovate and respond efficiently to the prevailing needs and circumstances of its students and industry partners. The same strategy has been applied in the research space without needing to build substantial and costly footprints that require significant resources to maintain. As a smaller, more agile research entity, therefore, Torrens has been able to thrive in spaces (particularly around truly collaborative health services and industry-led research) where the larger entities in SA are simply too cumbersome/non-competitive. This advantage is likely to be enhanced in the Medical Research Future Fund (MRFF) applications.

Torrens University Health and Medical Research priorities

(1) Cardiopulmonary Health

Professor Simon Stewart (an NHMRC Senior Principal Research Fellow) is a world-renowned health services researcher leading a national and international health services collaborative research program focussing on cardiopulmonary health.

Communicable and non-communicable diseases affecting the cardiovascular system and/or lungs (cardiopulmonary disease - CPD) are the leading cause of death and disability in Australia and on a global basis. Accordingly, its greater contributor (cardiovascular disease) remains a National Health Priority Area currently affecting 1 in 20 Australians adults overall and 1 in 5 of those aged >75 years. Professor Stewart's overall aim is to better characterise the burden imposed by an evolving epidemic of CPD and develop highly innovative/cost-effective health services that reduce high levels of morbidity and premature mortality. In collaboration with national/international collaborators and industry partners and with support from the NHMRC of Australia and other prestigious peer-review funding schemes, Professor Stewart is addressing three unique facets of the burden of disease imposed by CPD. When this program of research is complete, it will deliver considerable cost-savings and economic benefits to Australia and

participating countries. The three main facets of his research are – a) reducing seasonal patterns of cardiopulmonary disease; b) improving the efficient use of echocardiography and c) improving the CPD detection and management in Africa.

(2) Frailty and Ageing

This program of research is led by Professor Justin Beilby in partnership with Drs Rachel Ambagtsheer and Elsa Dent.

Professor Justin Beilby is an academic GP with long standing expertise in primary care and aged care research, health service evaluation, general practice intervention studies, and the translation of research findings into policy and clinical practice. Dr Rachel Ambagtsheer is a Research Fellow with more than 20 years' experience working in the health field, as a researcher, planner and consultant to all levels of government and the private and not-for-profit sectors. Her current research focuses on the implementation of frailty screening within Australian general practice, the relationship between frailty and mental health and exploring how older people interact with the health system. As members of the NHMRC CRE for Frailty and Healthy Ageing, Professor Beilby and Dr. Ambagtsheer have co-authored several publications on frailty, including one of the largest diagnostic test accuracy studies conducted within general practice to date.

Torrens, in partnership with the Baker Heart and Diabetes Institute, also hosts Dr. Elsa Dent, an NHMRC Early Career Fellow who is an internationally recognised expert on frailty and a member of the WHO Clinical Consortium for Healthy Ageing. Dr. Dent recently led two collaborative international projects developing clinical guidelines for frailty and has recently completed a commissioned review on frailty for The Lancet.

(3) Artificial Intelligence and Data Science

Torrens hosts researchers who are world-leaders in Artificial Intelligence and Robust Optimisation. Robust Optimisation is the concept of achieving an optimal balance between operational efficiency and resistance to disruptions from unpredictable events. This research area provides transformational subject matter expertise (SME) to any type of health research, development or innovation project which involves the use of computer modelling or electronic systems – prototyping and manufacture, autonomous systems, cyber and surveillance systems, computational analysis of research and more.

Assoc. Prof. Mirjalili is a specialist in Optimisation, Nature-inspired Algorithms, Machine Learning, and Data Science. He has authored or co-authored over 150 publications, including 110 journal articles, 30 book chapters, 15 conference papers, two research monographs, and three edited books. With over 16,000 citations and a Google Scholar H-index of 44, he was named as an influential researcher in Computer Science by Web of Science in the list of 1% highly-cited researchers. In the 2019 list, he is one out of 271 highly-cited researchers from Australia (6,216 worldwide) of which only nine of them are in the category of Computer Science (107 computer scientists worldwide). He was also featured as a rising star in the Science and Engineering category of The Australian's research supplement in 2019. He is a senior member of The Institute of Electrical and Electronics Engineers (IEEE) and an Associate Editor of four

leading, Q1 journals in Artificial Intelligence.

(4) Public Health Information Development Unit (PHIDU).

The PHIDU commenced at Torrens in November 2015. This Unit is led by Professor John Glover. Funded by the Australian Government Department of Health since 1999, PHIDU, as per the funding agreement, collects, compiles and publishes data 'to facilitate improved national policies and programs in population health including social determinants of health and health inequalities.

This is achieved largely through the widely recognised and utilised Social Health Atlas of Australia; a substantial and important small area database that is a unique resource not matched in Australia. With data in some instances dating back to the 1980s, it has been possible to produce time-series analyses and the identification of trends over considerable periods. Examples of use of the data within government agencies include:

- Advice from the past Director of Public Health, Victorian Department of Health and Human Services that it was noticeable how many times data from PHIDU was quoted to support submissions over a wide range of topics.
- Communication from the Indigenous Health Division of the Australian Government Department of Health that maps and data from PHIDU's Aboriginal and Torres Strait Islander Social Health Atlas were used in presentations to the minister to support new resource allocation based on the need for primary health care.
- Supporting local councils to meet the requirements under the new Public Health Act in South Australia – relevant data were extracted from the general Social Health Atlas for incorporated local government areas and from the Aboriginal and Torres Strait Islander Social Health Atlas for Aboriginal Lands and 'out-of-council' areas.

The main outputs are an interactive Atlas (mapping data describing health status, health outcomes and the socioeconomic and demographic contexts of the neighbourhoods and localities in which Australians live), interactive graphics (highlighting variations in these same elements by remoteness and socioeconomic status), data sheets and metadata. These products are available free of charge on the Torrens University website with 34,909 users over calendar 2019, 23,140 of whom were new users. Most users were from Australia (49.9%) and the United States (43.4%).

RESPONSE TO SPECIFIC TERMS OF REFERENCE

In establishing a thriving program of health and medical research as a new University, it has been crucial for us to build upon existing research networks. Over the last six years, Torrens academic staff members have worked in partnership with the three public Universities, SAHMRI, Interstate research networks (Austin Health and Baker Heart and Diabetes (Vic)), Laureate International Universities, and more recently with the South Australian Local Networks. There have been a number of key lessons we have learned that may be useful to SAPC in finalising their recommendations.

1) Whole of Government HMR Strategy and Minister and CEO leadership vital

In positioning Torrens to be an active partner in HMR research in South Australia, the absence of a whole of Government and health system agreed and supported HMR strategy made our task more difficult. While the major HMR contributors (three public Universities and SAHMRI) have relatively well-defined roles, other smaller research organisations are unclear how they would neatly and strategically fit into an overall HMR Strategy.

2) Bespoke and agile HMR organisations have a role but in collaborative frameworks

Torrens looked widely in South Australia to engage with collaborative partners and networks. Whilst our options were abundant, they required significant effort. Our flexible and agile single point of contact with a very clear and laser focus on where our research priorities lie was crucial to facilitating successful partnerships. What is abundantly clear is that there are many opportunities for building creative partnerships within the South Australian HMR community. However, what is needed is an efficient State-wide facilitator who can establish and create conversations with like-minded research groups. I am not convinced that the major Universities are best at this task as they are by nature focused on their own priorities. SAMHRI may have a facilitating role here but this would require a shift in their current strategy.

3) “SA MRFF” Future Fund linked to Local Health Networks (New Boards/Chairs)

Torrens has led or been a partner to a range of new MRFF grant proposals in 2020, with a focus on ageing and cardiopulmonary disease. We have focussed on building successful research relationships with the newly established Local Health Networks. As the State moves forward with an increased HMR grant success focus (particularly via MRFF funding) we will need to develop these applications in partnership with the Networks. Seed funding in the form of a “SA MRFF” fund could be used to drive these partnerships, underpinned by established research MOUs and with a shared vision between all participating organisations. This must be part of an agreed broader SA HMR Strategy (see 1 above).

4) Fostering partnerships across MRFF, BioMed Precincts, Innovation Precincts – role for Health Translation SA

In a broader sense, South Australia has an abundance of research and innovation precincts. Our view is that we now need a partnership facilitator that draws together Universities, SAHMRI, bespoke private research providers and appropriate Industry to build longer-term vision for research development. It is possible that Health Translation SA could be tasked with this role working closely with the Chief Entrepreneur and other precinct leaders.

5) International Researcher and student workforce models – Quality of Life-Adelaide

In just over 5 years, Torrens has established an international student base and in 2020 will educate more than 2,000 students via our Adelaide campus and online. Many of these committed and talented students would like to settle in Adelaide, due in part to our local quality of life and safety. As the State builds a new HMR strategy there is an opportunity to work closely with Study Adelaide and the Department of Tourism, Trade and Investment to create packages to attract new emerging and outstanding research leaders from within this large and talented cohort.