



University of
Southern
Queensland

Regional Development Research

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Research at the University of Southern Queensland

The University of Southern Queensland is a dynamic, regional University that has established its position as a prominent teaching and research institution, providing education worldwide from three physical locations across South East Queensland (Toowoomba, Springfield, and Ipswich) with an extensive online presence. The University’s mission is to drive economic and social development through higher education and research excellence.

University researchers are working directly with local communities, industry, and our international partners to form strong and enduring research partnerships that deliver tangible benefits and real impact. The University’s world-class research institutes, centres and faculties are home to unique state-of-the-art facilities enabling our researchers to deliver a broad range of research outcomes across multiple disciplines.



The University’s Flagship Research Areas

-  Regional Development, including Agribusiness, Energy, Sustainable Economic Development, Regional Decarbonisation, Innovation, Workforce Development, Community Wellbeing, Climate Variability, Culture and Heritage.
-  Agriculture and Environment, including Climate Science, Drought Mitigation and Adaptation, Crop Health, Agricultural Technology and Environmental Science.
-  Space and Defence, including Astrophysics, Hypersonics and Rocketry, and Materials Engineering.
-  Health, including Sport and Exercise Science, Mental Health and Allied Health.

Research Excellence

The global reach and world-class quality of the University’s research is confirmed by International Rankings and the Australian Research Council’s Excellence in Research for Australia (ERA) Report. In the 2018 ERA Report, the University’s research was rated as ‘world standard or better’ in 30 areas of research and 18 fields of research were rated as ‘well above world standard’.



The following 18 fields of research received the ultimate accolade of ‘well above world standard’



Astronomical and Space Sciences
Materials Engineering
Mechanical Engineering
Numerical and Computational Mathematics



Environmental Science and Management
Agriculture, Land and Farm Management
Crop and Pasture Production



Physical Sciences
Medical and Health Sciences
Human Movement and Sports Science



Clinical Sciences
Psychology
Nutrition and Dietetics
Public Health and Health Services



Chemical Sciences
Inorganic Chemistry
Macromolecular and Materials Chemistry
Microbiology



In the Times Higher Education World Rankings, the University of Southern Queensland was ranked in the 350-400 band and ranked #154 in the world for Research Quality.



In the Times Higher Education Young University Rankings, the University of Southern Queensland was ranked 55 in the world.

The University of Southern Queensland’s Regional Development Research Portfolio

The University’s Institute for Resilient Regions is delivering research and engagement to address social, economic, health, behavioural and cultural challenges facing regions across Australia.



Professor The Hon. John McVeigh is the Executive Director of the Institute for Resilient Regions and Director of the Southern Queensland and Northern New South Wales Innovation Hub.

Regional Development Research and Engagement

The University of Southern Queensland's Institute for Resilient Regions conducts collaborative multidisciplinary research that helps regional communities embrace and adapt to change while maintaining their unique identities.

The Institute's vision is to be the leading Australian research institute addressing the needs of regional communities. This is achieved through regional research partnerships that develop and sustain diversified and adaptive economies, healthy communities, and diverse cultural identities that underpin a thriving regional Australia that is a desirable place to work and live.

The long-term viability of regional communities is dependent on diversified workforces, flexible economies, and behavioural adaptations to sustain healthy populations, and strong cultural and social capital. The Institute draws together research expertise to address complex issues, challenges, and opportunities in regional communities by:

- training and mentoring future researchers;
- challenging conventional assumptions that stifle resilience in regional communities;
- increasing innovation and the adoption of technology that benefits regional communities;
- pursuing research that address issues of priority and relevance to regional partners; and
- delivering high impact research that broadens and strengthens regional resilience.

Research Capabilities and Scope

The University's community footprint throughout Southern Queensland facilitates engagement in contemporary regional, rural and remote research and extension challenges and opportunities. For example, the completion of the \$1.8b Toowoomba Bypass project in recent years provided an opportunity for University engineering students to be exposed to large infrastructure development.

Researchers from the Institute for Resilient Regions were also able to provide input into agribusiness and logistics research around this and other local transport infrastructure such as the Brisbane-Wellcamp Airport and the advent of Inland Rail. At the same time, the Institute's Centre for Heritage and Culture were able to consider the long history of previous range crossings as well as cultural heritage aspects of this latest development.



SQWNNNSW Innovation Hub
Regional Soil Coordinator
Cameron Leckie works directly with agricultural stakeholders to identify soil infiltration constraints and opportunities to improve the condition and fertility of the soil on their properties.

Research Projects

The Southern Queensland and Northern New South Wales Innovation Hub

World-renowned climate scientists and community experts from the University of Southern Queensland are leading the Southern Queensland and Northern New South Wales (SQNNSW) Innovation Hub to build drought resilient regions and help Australian farmers to thrive into the future.

The SQNNSW Innovation Hub is one of eight national Drought Resilience and Adoption and Innovation Hubs, a flagship of the multi-billion-dollar Future Drought Fund led by the Australian Government. Headquartered at the University's Toowoomba campus, the Hub's regional reach extends from Longreach in Queensland to Dubbo in New South Wales, and from the east coast to the Southern Australian and Northern Territory borders in the west.

Australian farmers live with the reality of a changing climate with sometimes devastating impacts on production and profit. The Hub is applying proven drought-resilience research on the ground to improve innovation and adoption across agriculture, industry and the community.

Through extensive consultation, the SQNNSW Innovation Hub has identified four key regional priorities:

- **Data and Decision-making:** data access, interpretation and application, decision-making support, tools, processes and capacity.
- **Wellbeing and Employability:** recognising the connection between support for wellbeing and personal capacity in skills and confidence as business managers, employees and community members.
- **Environmental Commodities:** understanding opportunities and risks in engaging in emerging environmental markets.
- **Best Practice Agriculture and Preparing for Drought:** techniques, tools, processes and approaches that support holistic, sustainable, productive, profitable management of natural resources within extreme variable climate conditions.



Regional Development

The Institute for Resilient Regions is home to the Rural Economies Centre of Excellence; a unique rural economic research collaboration led by the University of Southern Queensland in partnership with The University of Queensland, James Cook University and Central Queensland University.

The Centre undertakes a multi-disciplinary approach to addressing regional and rural economic problems and opportunities, providing solutions that integrate the economics of innovation with world-leading technical expertise on regional economic development and agriculture.

The Centre works in partnership with national organisations such as the Australian Rural Leadership Foundation, the Future Drought Fund and the Foundation for Rural and Regional Renewal and all levels of government.

Associate Professor Ben Lyons leads the Rural Economies Centre of Excellence alongside a team of University staff with practical experience in regional and rural development issues.

Research Themes

Research conducted by the Rural Economies Centre of Excellence draws from widespread industry and government engagement to investigate crucial economic hurdles that outline rural development, including: water resources, tourism, energy and climate changes, supply and value chain design (beef, horticulture and aquaculture), entrepreneurship and innovation, workforce, and investment and policy.

- **Regional innovation:** developing innovative business models and integrated value chains for new markets, global trades and to meet ever-changing consumer demands.
- **Policy development:** providing a comprehensive and integrated rural policy framework by assessing the impact of policy and identifying areas for improvements through an evidence base for a more synchronized and empowering policy.
- **Economic tools and analysis:** helping communities ride the wave of economic growth and decline, by developing the digital economy, diversifying into sectors such as tourism, and attracting workers to rural communities.
- **Translations and engagement:** translating research outcomes into tangible tools that will provide the economic skills and knowledge to enable rural stakeholders to develop economic resilience.
- **Value chain analysis:** aligning agricultural products with profitable markets through improved access to diverse markets, market research analysis and improved quality standards.



Research Projects

Regional Decarbonisation

From developing low-emissions materials and technologies, to supporting the transition to renewable energy sources and improving energy efficiency, the University of Southern Queensland is helping the South-East Queensland region to embrace decarbonisation.

As energy costs continue to rise, greenhouse gas emissions reduction requirements are becoming increasingly complex for many supply chains and export markets. The Rural Economies Centre of Excellence is exploring opportunities to help regional manufacturers and producers to implement sustainable practices and understand the importance of how decarbonisation applies to their businesses.

In 2022, the University of Southern Queensland joined other Queensland universities and delegates from Government, local councils, First Nations groups and industry to participate in the QLD VC's Decarbonisation Forum: A Pathway to Net-Zero

Emissions for Queensland. Professor The Hon. John McVeigh, Executive Director of the Institute for Resilient Regions facilitated a session for the theme 'Regional Transitions'.

Following on from this event, the University is now a partner in the Queensland Decarbonisation Hub, an initiative set up by the University of Queensland and the Department of Environment and Science and is proposing to lead the theme 'Mapping Queensland's Decarbonisation Capability'.

The South-East Queensland region is a region that is rich in a combination of traditional and renewable energy infrastructure. As the transition towards a low carbon economy accelerates in coming years, Centre researchers will continue to work with industries to help them rise to the challenge of meeting Australia's net-zero emissions ambitions.

Regional Drought Resilience Planning Program

Although many Queenslanders have been impacted by floods in recent years, planning for drought remains as critical as ever for regional and rural communities. The University’s Rural Economies Centre of Excellence is leading Queensland in the rollout of the pilot for the Regional Drought Resilience Planning Program, a key initiative under the Australian Government’s \$5 billion Future Drought Fund.

The program is supporting local government and community groups to develop regional drought resilience plans, enabling greater coordination of community-specific responses that will minimise the economic and social impact of drought on small communities. Importantly, planning is community-led and owned and brings together regional knowledge and perspectives with the best available evidence and data.

Researchers from the Centre are well placed to lead the regional planning program in Queensland, building on existing relationships and ongoing work in regional communities. In September 2023, the Federal Minister for Agriculture Senator the Hon Murray Watt launched the five initial plans completed with more than 150 stakeholders across the regions of Fitzroy and Capricornia, Darling Downs and the South Burnett, Cape York and Torres Strait, Burdekin and Charters Towers and Southwest.

The Regional Drought Resilience Program is combining local knowledge with research expertise to inform community-led plans for future prosperity.



Burnett Inland Futures Strategy

Regional communities across the country are collectively facing similar issues, such as shifting demographics in populations, changing industries, climate variability and the rapid growth of technology. While there is no one-size-fits-all approach to managing these challenges, strategies for embracing change are essential for regional resilience. Dr Chad Renando from the Rural Economies Centre of Excellence has conducted extensive engagement with local governments and community groups to discuss and take action for the future of their regions, developing approaches for transition and long-term economic resilience.

Most recently Dr Renando has worked with the Australian Agritech Association on their 2023 AgTech Landscape report; the New South Wales Department of Innovation and Productivity Council on ‘Accelerating NSW: the impact of coworking spaces, accelerators, incubators, and startup hubs’; the Australian Rural Leadership Foundation’s Drought Resilient Leaders impact report; and the Red Earth Foundation’s Burnett Inland Futures Strategy.

Through significant stakeholder engagement, analysis of regional information and economic data, Dr Renando has overseen the creation of an ecosystem map of the assets and organisations in the region, and a strategy analysis to identify gaps in investment commitments.

The complexity and size of these existential challenges for regional communities requires an approach that is more than any one organisation or institution can achieve. The University’s role as a ‘guide on the side’ to facilitate the conversation has enabled community members to realise value from the engagement.

Recognising the role of women in remote education

Resilience and adaptability are inherent skills for rural and remote women across Australia. They are also some of the crucial abilities developed by the women, who, either by choice or necessity, carry out the task of educating the children of the bush in a role known as remote education tutor (RET).

This complex and essential education work happening in remote homes across the country is being investigated by the University’s three-phase Capricornia Project which explores the lived experience of mothers and governesses in the role of RET.



University research is seeking to recognise and enrich the experiences of those who take on the role of Remote Education Tutor (RET).

Research indicates that it is often women in the home who take on this critical role of conduit between distance education students and their teachers. Evidence also suggests that when there is an opportunity to employ a RET, frequently the role is filled by young women.

Critically, University researchers have found that there is a limited career pathway and no way to gain formal qualification for the education skills required by the women who take on this role, despite it being crucial part of equitable education in rural Australia. The Capricornia Project is sharing the findings about the experiences of RETs among education stakeholders, with future credentialling opportunities in mind. The ultimate goal is to advocate for the establishment of RET as an occupation that is recognised, respected and valued.

In 2022, the research team leading the Capricornia Project received the 2022 Silver Award from the United States Distance Learning Association.

Regional and Rural Health

Health is a flagship for the University of Southern Queensland, with a particular focus on advocating for regional health and wellbeing. As a regionally based institution with geographic reach, the University is well placed to respond to the health needs of regional Australia where social determinants play a particularly strong role in influencing health outcomes.

The strategic focus on regional issues is fostered by longstanding partnerships with regional healthcare providers and connectivity with communities who are benefiting directly from the translation of collaborative research into practice.

The University is a founding member of the Manna Institute, a collaborative virtual research and training institute that is dedicated to improving the mental health and wellbeing of rural, regional and remote communities.

A key focus of Manna Institute is the establishment and expansion of mental health workforces. From clinical health professionals and peer workers to community advocates and regional researchers, Manna Institute is building workforce capacity, diversity and sustainability through exciting new collaborations. The multi-disciplinary Centre for Health Research is focused on improving health and wellbeing by addressing the health behaviours, influences, and outcomes associated with key contemporary communicable and non-communicable diseases.

University research is exploring solutions for public health challenges such as the role of physical activity in chronic disease prevention.



Research Capabilities

The University has a highly regarded reputation in the delivery of teaching and research in nursing, health science, and allied health disciplines including psychology, counselling, sport and exercise science, paramedicine, biomedical science and medical laboratory science.

Specific areas of health research strength include:

- **Mental Health and Wellbeing** including child and adolescent health, suicide behaviours and prevention, technology and mental health and wellbeing.
- **Health and Social Justice** to reduce disparities among priority populations by focusing on themes such as culturally and linguistically diverse (CALD), First Nations, Neurodiversity, Sexuality and Gender.
- **Artificial Intelligence (AI) and Technology** for improved early detection of health conditions and for the development of decision-making systems for health professionals.
- **Cancer Survivorship** and improving the disparities between regional, rural and remote cancer survivors and their city-based counterparts who experience better outcomes in access to care and quality of life.
- **Health Promotion** to address prevalent health issues, reduce disparities and improve health outcomes among priority populations through rigorously evaluated applied research and translation science.

Research Projects

Surviving Prostate Cancer in Regional Australia

Prostate cancer is now the most common cancer diagnosed in Australia and national health data indicates that men living in regional or rural Australia are more likely to die from the disease than their urban counterparts. Researchers from the University of Southern Queensland are working on several joint initiatives in partnership with the Prostate Cancer Foundation Australia (PCFA) to improve cancer survivorship and quality of life for regional Queenslanders.

Professor Jeff Dunn AO is the PCFA/University of Southern Queensland Chair of Cancer Survivorship and is leading the effort to bring together

government, health services, and patients to develop evidence-based and innovative interventions that improve outcomes for men who have experienced a cancer diagnosis. One example is the world-first study Prostate Cancer Survivorship Essentials or PCEssentials, which is a National Health and Medical Research Council Partnership led by the University of Southern Queensland and the PCFA.

PCEssentials integrates evidence-based strategies to improve men’s quality of life and outcomes after hormone therapy, with the aim of enhancing their ability to support their own health and wellbeing. PCEssentials includes nurse-led survivorship care interventions that are delivered by phone or video-call, making the program accessible to men across all geographical locations.

Professor Jeff Dunn AO is Chair of Cancer Survivorship at the University of Southern Queensland and is the current President of the Union for International Cancer Control.





Professor Sonja March is the Director of the Centre for Health Research and is the Mental Health Program Theme Lead.

Expanding the reach of mental health interventions

Of the more than 500,000 young Australians who experience mental health issues, just half seek help and less than 5 per cent gain access to specialist care for adolescents and children. Anxiety in children and adolescents is very common and without enough help, can lead to significant and ongoing problems into adulthood.

Professor Sonja March has been researching mental health in young people for 18 years. Together with two other researchers, she created an online program for child and adolescent anxiety, known as BRAVE. In 2014, Beyond Blue supported Professor March's research team to translate BRAVE into an open access platform which is free for all Australians. The program has had 45,000 registrations to date, and research data shows that those engaging in the program show substantial reductions in anxiety.

Young people are particularly familiar with and proficient at using technology. Using technology to deliver evidence-based mental health is an ideal way for improving access to interventions and services, particularly for those who are based in regional areas.

In 2019, the University received a \$5 million grant from the Federal Government's Medical Research Future Fund, through the Million Minds program to Professor March's team to build on the BRAVE program to develop a more comprehensive online platform that integrates detection, assessment and tailored interventions.

The program is offering a viable model of care for health services around Australia with particular impact in regional, rural and remote communities where access to traditional mental health care services is limited. Professor March's project team includes researchers from Griffith University, The University of Queensland, Queensland University of Technology, Federation University and The Australian National University.

Improving access to First Nations health services

While the prevalence of digital primary healthcare services has increased over the years, a digital divide remains for some Australian communities. Heart disease, cancer and diabetes are the leading causes of death and disability among First Nations Australians, a population impacted by the disparity of available and culturally appropriate digital healthcare services.

The University is collaborating on a project led by The University of Queensland, which has received a Medical Research Future Fund grant from the Australian Government to investigate digital health inequality.

The project aims to provide a new model of innovative and tailored digital health care services to help prevent, detect, and manage chronic illnesses among First Nations people. Research undertaken in rural and regional Queensland over the past ten years is providing the foundation for understanding the digital divide and social determinants of health.

Currently, the rates of preventable hospitalisations for chronic illnesses are higher among First Nations communities, with residents in remote and isolated locations being the most vulnerable.

Achieving improved health outcomes requires timely screening and early intervention, which would help slow the course of chronic diseases and hospital admissions while enhancing quality of life. The program aims to achieve this by co-designing a new model of healthcare through consultation with First Nations communities. This is achieved in partnership with digitally enabled primary care services that utilise point-of-care testing devices and remote patient monitoring tools.

Professor Khorshed Alam from the University's School of Business has joined a team of researchers working to address health inequality by developing culturally appropriate digital healthcare services.



Heritage and Culture

The Centre for Heritage and Culture works in partnership with communities to uncover, analyse and reinterpret the stories and experiences of regional Australia. With research expertise in archaeology, history and heritage studies, the Centre seeks to understand past societies and cultures and their significance to the present. Aligned research in cultural studies, literature, law and creative arts enables a deep knowledge of contemporary regional communities.

The University’s work with First Nations communities aims to give Aboriginal people an opportunity to tell their stories and to contribute to restoring the place of Aboriginal people’s experience in the cultural and historical landscape.

University researchers are setting up a framework to support future studies on the potential impacts on Aboriginal wellbeing of sharing stories and acknowledgment of the past by the wider community, as well as other longer-term impacts such as improved economic and employment opportunities for Aboriginal people.

The Centre for Heritage and Culture conducts research across three themes:

- **Storied Landscapes** capturing historical stories before they are lost to younger generations and uncovering the unique and rich stories behind every community.
- **Social Identity and Inclusion** focusing on engagement, recognition and justice for communities and their diverse cohorts.
- **Social Wellbeing** including the interaction of culture, gender and social connectedness and wellbeing.



Professor Celmara Pocock is the Director of the Centre for Heritage and Culture and is an international leader in heritage research.

Research Projects

Youth Community Futures

The Youth Community Futures Project is a research and community engagement collaboration between the University of Southern Queensland and the Queensland Department of Science and Environment.

The program is focused on understanding the experiences that young people have in contemporary Queensland, with projects specifically centred on understanding the experience of regionality. Young people participating in the program were engaged to co-design the research questions that they wanted answered.

Young people in regional Queensland face a range of unique challenges, particularly in terms of access to educational, employment and social opportunities.

The Youth Community Futures research program is responding to these challenges, with three themes driving the program of research: Connectivity, Communication and Cultural Understanding, and Visibility of Opportunity.

Utilising social research techniques, including ethnography and action research, outcomes from the Youth Community Futures program will inform the Queensland Government’s policy development for youth, and extend the literature on the sociology of young people.

Associate Professor Andrew Hickey (second from the right) is working with Toowoomba Regional Council to develop a youth engagement strategy to ensure that young people across the region have a chance to shape their own futures.





The South-West Indigenous Cultural Trail

The South-West Queensland region is home to many historically significant Aboriginal camps and sites. While some of these sites have been lost to modern development, many remain and their significance is remembered through the stories and memories of local Aboriginal people.

Researchers from the University's Centre for Heritage and Culture have been documenting a journey of discovery, led by an Aboriginal woman who is preserving the stories of her community and region through a process of cultural sharing. Angelia Walsh of the Surat Aboriginal Corporation commissioned the research expertise of UniSQ's heritage, anthropology and psychology researchers to support the development of the South-West Indigenous Cultural Trail. The Trail is a driving tour enabling visitors to learn about Aboriginal history and culture through stories told by Aboriginal people.

The Trail has shone a light on an Aboriginal past and has allowed Elders, youth and other community members to re-connect with their heritage and share it with visitors to the region and the wider community. Together, the Surat Aboriginal Corporation and the University are working together to support Aboriginal people in St George, Surat, Roma, Mitchell, Charleville and Cunnamulla to tell the true history of those places.

University of Southern Queensland researcher and Senior lecturer in the School of Creative Arts, Dr Melissa Forbes, has worked with the local Toowoomba Parkinson's support group to establish the singing group 'Park 'n' Songs.'

Singing for Wellbeing

One of the lesser-known symptoms of Parkinson's Disease is the impact it has on the voice; but for one community group, singing together has lifted their voices and their spirits. Park 'n' Songs was officially established in 2017 by the Toowoomba Parkinson's Support Group in collaboration with the University of Southern Queensland to help people with the disease to strengthen vocal production and promote the social benefits of group singing.

Park 'n' Songs may appear to function like a choir, but they are in fact a therapeutic group who engage in the activity of singing to exercise the muscles required for general voice production. While this is beneficial for everyone, it is especially beneficial for those with Parkinson's Disease. The added social and psychological benefits of singing enables people with Parkinson's and their carers to better manage the impacts of the disease.

The Archeology of Frontier Conflict in Queensland

The Native Mounted Police Force (NMP) was a largely unacknowledged part of Australian history until recently. Although historical accounts of violent interactions between early colonists and Aboriginal groups are relatively common, to date there have been no systematic archaeological studies of this conflict.

University researcher Professor Bryce Barker embarked on a four-year collaborative research project, funded by the Australian Research Council, to archaeologically-document this piece of Australian history. The "Archeology of the Native Mounted Police Project" provides new evidence of the NMP and its actions.

The project compares and contrasts material culture and memory to explore a range of questions about understanding frontier conflict, the process of colonialism and its effects, and colonial society's

relationships with Aboriginal peoples both then and now. The project aims to document a little-known and sometimes confronting and controversial aspect of Australia's colonial past, broadening our knowledge of the true history of the settlement of Queensland.

Aboriginal Traditional Owners were an integral part of this project, and researchers drew extensively on the oral histories of Aboriginal and non-Aboriginal people about troopers, officers, the camps, and conflict. While some camps were on land controlled by Traditional Owners, many were on pastoral stations, and both groups have been overwhelmingly positive about uncovering the history of the NMP.

Archaeological excavations of the camps reveal remarkable details, including the discovery that troopers adopted traditional tool making and hunting practices despite access to camp rations and European tools.



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