

SKILL SHORTAGES IN NSW

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LONG-TERM SOLUTIONS TO PROFESSIONAL SKILL NEEDS IN RURAL AND REGIONAL NSW

Charles Sturt University is Australia's largest regional university by student enrolment, and the largest single provider of online and distance education nationally.

With regional campuses in Albury-Wodonga, Bathurst, Dubbo, Goulburn, Orange, Port Macquarie and Wagga Wagga the University has an extensive footprint across inland NSW and areas of regional labour market demand, and substantial expertise in regional and workforce development.

Charles Sturt University's submission addresses professional skill shortages in rural and regional NSW and focuses on three key areas:

- (1) developing integrated regional policy;
- (2) building local professional skills;
- (3) improving the targeting of skilled migration.

Recommendations

Charles Sturt University makes the following recommendations to the Committee:

1. The NSW Government should continue to support integrated regional planning through Regional Development Australia to target current and future skills needs.
2. The role of NSW regional universities in regional planning in NSW should be clearly articulated.
3. The NSW Government should establish a Rural Tertiary Education Investment Fund to

support the expansion of the range of higher education courses offered at regional universities in areas of rural and regional workforce shortage, with a particular focus on expanding offerings across multiple campuses and regions, and TAFE-University Pathway initiatives. This Fund could be used to directly fund new initiatives, or to leverage capital and startup funding from Commonwealth and other sources.

4. Establish a NSW Centre for Regional Statistics and Research based in rural NSW to provide information and advice to regions to support regional planning.
5. The NSW Government should commission research on the capacity for skilled migration to address skills needs and shortages on a region-by-region basis, and to identify the strategies each region should develop to attract and retain skilled migrants in their professional workforce.

Overview of Skills Shortages in Rural and Regional NSW

Current Skills Demand and Shortages

The Skills Shortage List for New South Wales identifies a range of professional occupations experiencing shortage and recruitment difficulties on a State-wide basis and in rural and regional areas.¹

These identified shortages broadly reflect feedback to Charles Sturt University from industry and employers in rural and regional NSW, and its own experience. Table 1 sets out some key areas of professional skill needs in rural and regional areas in Charles Sturt University's footprint.

Table 1: Skills Shortages in Rural and Regional NSW

Child Care Manager Early Childhood Teachers Secondary School Teacher Special Needs Teacher	Civil Engineer Electrical Engineer Mechanical Engineer
General Medical Practitioner Medical Specialist Dentist Optometrist Medical Diagnostic Radiographer Sonographer Occupation Therapist Physiotherapist Speech Pathologist Midwife Registered Nurse Agricultural Scientist	Accountant Lawyer Agribusiness Manager Urban and Regional Planner

Some of these areas of skill shortage can be described as chronic. For example, rural doctor shortages date back almost five decades.

A number of studies provide further insights into shortages and recruitment difficulties in rural and regional areas:

¹ NSW Skills Shortages List 2012 at <http://foi.deewr.gov.au/system/files/doc/other/nswskillshortagelistdec2012.pdf>

- Allen Consulting Group has estimated a shortfall of around 5,000 University graduates in agriculture per annum with implications for future productivity in the critical food security sector.²
- The Law and Justice Foundation of NSW has reported recruitment difficulties for lawyers in rural and remote areas of NSW, with 19 Local Government Areas (LGA) not having any solicitors.³
- NSW local government has identified shortages of planners and engineers, as well as recruitment difficulties for qualified accountants, childcare workers and managers.⁴ The Independent Review of Local Government in NSW noted that “[s]kills shortages are of growing concern and in a highly competitive labour market local government needs to give high priority to developing the talents of its workforce and finding new ways to attract and retain skills”.⁵
- The 2012 Engineering Profession Statistical Overview found that nationally “[c]ivil engineers consistently featured as the group where most recruiting difficulties occurred, even during the global financial crisis. Mechanical, electrical and structural engineers were other specialisations where significant difficulties were experienced”.⁶ Engineering shortages in rural and regional NSW is a significant issue, particularly with growth in the minerals sector.
- Deakin University is currently undertaking a study with the CPA on accounting shortages in rural and regional Australia.⁷
- The Western Research Institute has conducted a study on the rural optometry workforce in NSW for the Optometry Association (NSW) and Charles Sturt University, finding evidence of a growing shortage of optometrists in rural areas over the next 15 years.
- Health Workforce Australia has undertaken a comprehensive study of rural medical workforce shortages projecting growing national shortfalls of general medical practitioners and specialists using its medium self-reliance model, noting that current policies are unlikely to be able to resolve the chronic maldistribution of doctors between rural and urban areas.⁸
- The NSW Department of Education and Communities has identified possible shortages of secondary school teachers in some geographic locations including engineering science,

² The Allen Consulting Group, Rebuilding the Agricultural Workforce (2012) at <http://www.allenconsult.com.au/resources/acgagricultureworkforce2012.pdf>

³ Forrell, S, Cain, M, Gray, A, Recruitment and Retention of Lawyers in regional, rural and remote NSW (September 2010), Law and Justice Foundation of NSW at [http://www.lawfoundation.net.au/ljf/site/articleIDs/53FAC0137BED4F38CA2577BA0024256B/\\$file/Recruitment_and_retention_of_lawyers_in_RRR_NSW_web.pdf](http://www.lawfoundation.net.au/ljf/site/articleIDs/53FAC0137BED4F38CA2577BA0024256B/$file/Recruitment_and_retention_of_lawyers_in_RRR_NSW_web.pdf).

⁴ NSW Department of Law Government, Survey of Skills Shortages in NSW local Government (2005) at <http://www.dlg.nsw.gov.au/DLG/Documents/information/SkillsShortages.pdf>.

⁵ Independent Local Government Review Panel, Future Directions for Local Government – Twenty Essential Steps (May 2013), p22.

⁶ Engineers Australia, The Engineering Profession: A statistical overview (July 2012) at http://www.engineersaustralia.org.au/sites/default/files/shado/Representation/Stats/statistical_overview_2012_1.pdf.

⁷ Deakin University, Regional and rural accounting firms face staff shortages (May 2009) at <http://www.deakin.edu.au/news/2009/10509regional-accounting.php>

⁸ Health Workforce Australia, Health Workforce 2025 – Medical Specialties (January 2013) at <http://www.hwa.gov.au/health-workforce-2025>

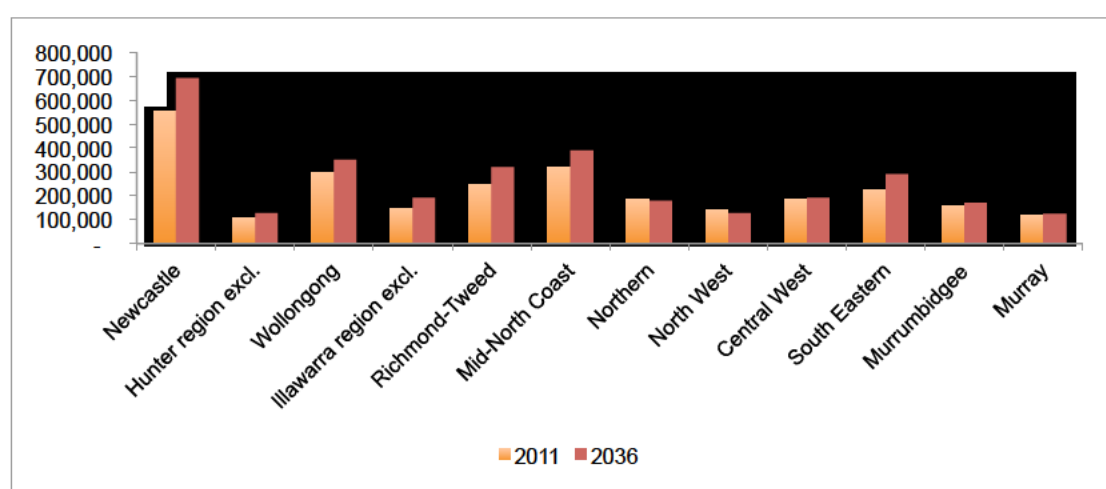
food technology, textiles technology, mathematics, sciences (including physics) and languages.⁹

Continuing and Emerging Skills Demand and Shortages in Rural and Regional NSW

In scoping the extent of professional skill shortages in rural and regional NSW, it is important to also consider influences on the supply of professional and other skills in the future.

(a) Projected Population Growth

The NSW Department of Planning and Infrastructure projects that all coastal and inland regions of NSW, except the Northern and North Western regions, will grow in population by 2036.¹⁰ While the bulk of population growth is projected to occur in coastal regions, the majority of inland communities are expected to have larger populations in 2036 than exist today, increasing activity and demand for skilled professional labour above current levels.



(SOURCE: Data extracted from NSW State and Regional Population Projections – 2010 Interim Release)

(b) Population Ageing

The proportion of older people in rural and regional communities in NSW will increase over the next 20 years, impacting on the supply of skills to regional labour markets, workforce participation rates and demand for services in these communities.

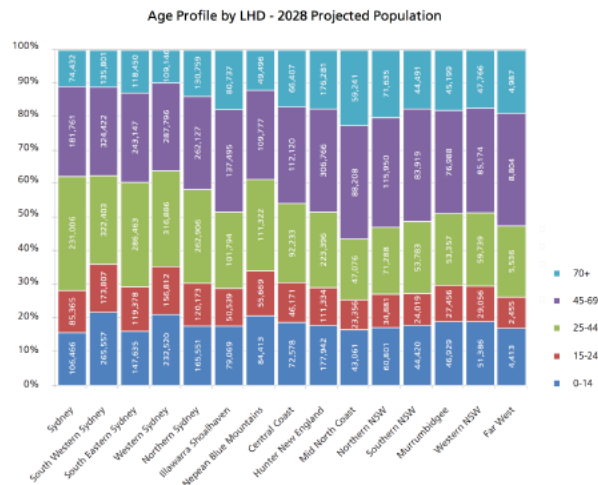
For example, NSW Health has prepared modeling on the age composition of rural and regional populations by Local Health District (LHD).¹¹ The model shows that by 2028 older people will comprise a larger proportion of the LHD populations than today. This is expected to lead to an increase in incidence of chronic diseases with a resultant impact on workforce demand to meet an expanded need for primary, hospital, community, rehabilitation and disability services in rural and regional areas.

An ageing rural and regional population is also expected to drive demand for financial planning, housing, social, community and cultural services.

⁹ NSW Department of Education and Communities, 2012 Workforce Plan for School Teachers in NSW Public Schools

¹⁰ NSW Department of Planning and Infrastructure, NSW State and Regional Population Projections – 2010 Interim Release at <http://www.planning.nsw.gov.au/population-and-housing-projections>.

¹¹ NSW Health, Health professionals Workforce Plan Taskforce – Technical Paper (October 2011) p. 17 at http://www0.health.nsw.gov.au/resources/workforce/hpwp/pdf/hpwp_technical.pdf.



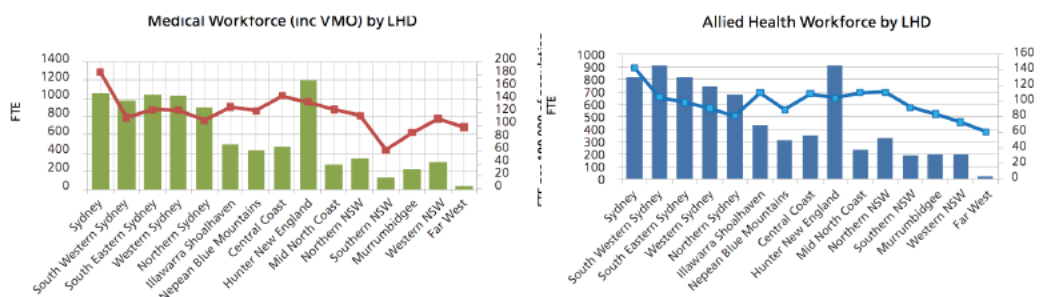
(SOURCE: Reproduced from NSW Health, Health professionals Workforce Plan Taskforce – Technical Paper, October 2011)

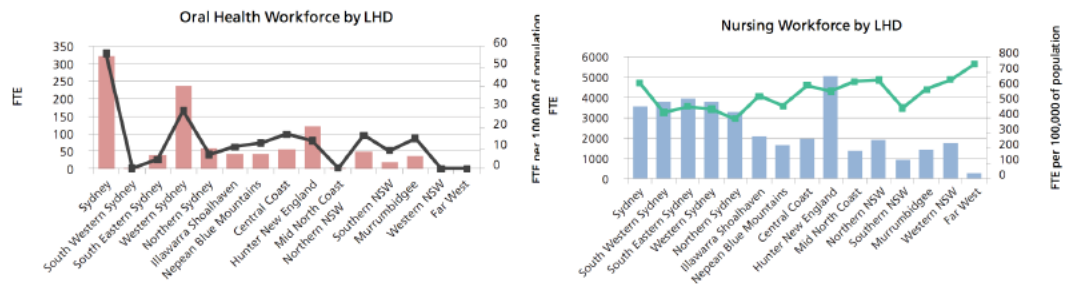
(c) Unmet skill needs

Rural and regional people in inland NSW have poorer access to a range of essential services compared to metropolitan areas of the State due to workforce shortages in particular fields.

This is most evident in the area of health services, where there are significantly lower ratios of medical and health professionals to population compared to metropolitan areas of the State.

The charts below from NSW Health Professional Workforce Taskforce illustrate the serious maldistribution of the health workforce between health districts in rural and metropolitan areas. Rural and regional LHDs have significantly fewer full-time equivalent doctors, nurses, oral and allied health professionals per 100,000 of population compared to Sydney and Hunter and New England LHDs (noting that Hunter and New England incorporates the health workforce in the major city of Newcastle), while also serving more geographical dispersed populations.





(SOURCE: Reproduced from NSW Health, Health professionals Workforce Plan Taskforce – Technical Paper, October 2011)

While rural and regional communities have adapted to medical and health professional shortages over many years, it is unlikely that this will continue to be possible in the future with growth in rural populations, the ageing of the population (including the rural health workforce), higher incidence of chronic disease, reduced workforce participation, and the introduction of an expanded Dental Care package and the National Disability Insurance Scheme (NDIS) which will significantly increase demand for professional health services.

(d) Future Growth in Skills Needs

There is also expected to be an emergence of demand for new skills to support new and existing industries, productivity improvement, innovation and environmental sustainability in rural and regional communities and businesses, such as:

1. carbon capture and storage;
2. biosecurity;
3. animal health and welfare;
4. natural resource management;
5. environmental rehabilitation;
6. water harvesting and water cycle management;
7. renewable energy;
8. international trade and marketing.

Building the base of new skills in rural and regional areas will be particularly critical to improving productivity, innovation and environmental performance in the commodities sectors - Australia's largest export generating industries.

Professional skill shortages in rural and regional areas limit the capacity of rural regions to innovate, attract new businesses and grow. The persistent nature of shortages in some professional fields suggest that current policy settings have not been effective in meeting all the skills needs of rural and regional communities.

Integrated Regional Policy

Governments have progressively shifted away from subsidy-based regional programs to focus on integrated regional policies that target economic capacity building. These policies recognise that rural regions have a range of competitive advantages that are distinct from other regions (including city regions). They also acknowledge that poor coordination and integration of investments in regional infrastructure, skills, and capacity building in the past has failed to deliver the best outcomes in terms of rural and regional development, and can burden government with unnecessary and escalating costs down the track to mitigate the effects of poor planning.

For example, investing in a new regional hospital without an associated investment in the development of health and medical workforce skills in the region is more likely to undermine regional development than enhance it, and exposes governments to increasing costs in recruiting health and medical professionals into rural and regional areas to address workforce shortages.

Contemporary regional policy aims to integrate planning to ensure the right balance of investments that maximise regional development opportunity and competitiveness. This is not to suggest that all investments can be planned, for example, the rapid growth in demand for skills associated with the mining boom in rural and regional areas. However, governments can assist regions in a range of ways by providing the right policy settings and structures that support integration of planning across all tiers of government, and helping regions to access accurate and timely data that informs planning and decision-making.

In a recent report on regional growth, the OECD noted: “These new approaches are characterised by several factors. First, there is a development strategy covering a number of factors such as infrastructure and the availability of a suitable workforce, that affect the performance of local firms. Second, there is a greater focus on local assets and knowledge and less of a focus on investments and transfers from outside the rural area concerned. Finally, there is a collective/negotiated governance approach to such matters, involving national, regional and local government plus other stakeholders, with the central government playing a less dominant role”.¹²

Charles Sturt University supports the steps taken by the NSW Government towards an integrated approach to regional planning through its investment in Regional Development Australia, the establishment of the Regional Industries Investment Fund, the creation of the Regional Development Ministerial Advisory Council and the development of Regional Action Plans under the State Plan.

These approaches would be strengthened in relation to professional skills shortages through a clearer articulation of the role of NSW’s regional universities in addressing professional skills and innovation needs in rural and regional areas, and by incorporating NSW regional universities more effectively into State regional planning structures. For example, the specific role of NSW universities in assisting regions to address professional skills needs could be articulated more clearly in the NSW Regional Action Plans.

A key limitation for many regional organisations in planning for the future skills needs of rural and regional industries and communities is the lack of detailed data and analysis on labour force demand in rural and regional areas, and long-term projections for skills needs. There is substantial duplicated effort between government departments, Regional Development Australia committees, universities, TAFEs, local government and other regional stakeholders in attempting to develop indicators for future demand to inform detailed skills and infrastructure planning.

There is a critical need for a rural data and research capacity to collate and coordinate information relevant to the development of our regions and provide independent analysis and

¹² OECD, Reinventing Rural Policy (October, 2006), p4 at <http://www.oecd.org/regional/37556607.pdf>.

advice on a region by region basis on a range of issues including regional labour market trends, infrastructure plans and investment opportunities.

An independent NSW Centre for Regional Statistics and Research, possibly modeled on the NSW Bureau of Crime Statistics and Research, could provide a central resource for regional organisations to inform and improve planning and decision-making. Such a body should be located in rural NSW to ensure effective engagement with rural stakeholders.

Building rural and regional professional capacity to address skill shortages

While there is a strong public policy focus on moving people to rural regions in NSW to address skill shortages, comparatively less attention is paid to capacity building in rural regions to support the development and retention of local skills.

Charles Sturt University acknowledges the emphasis placed by the NSW Government in the Regional Action Plans on increasing access to quality education and training that will support existing and new industries, and help to retain rural young people in our regions. This emphasis acknowledges that rural young people continue to leave rural and regional NSW to study, despite skills shortages in many professional fields.

There is now substantial evidence that rural and regional professionals are significantly more likely to have come from a rural and regional area, and have been educated in a rural and regional area. This increases the importance of ensuring the availability of a full range of courses in areas of skills shortages in rural and regional NSW to provide rural young people with the opportunity to study locally.

Data from the national Graduate Destination Survey shows that more than 70 percent of Charles Sturt University's on-campus students come from a rural or regional area, and more than 70 percent of these go on to work in a rural or regional area after graduation (see Regional Development Report attached).

This data is reinforced by a recent study of regional higher education for the Federal Government by the Australian Centre for Educational Research. This study found that five years after completing their course, 65.7 percent of those who were enrolled (both regional and urban origin students) at regional universities and are working are still living in rural and regional areas. By comparison, 84.4 per cent of those who were enrolled at metropolitan universities were still living in metropolitan areas, with just 15.6 per cent having moved to rural or regional areas.¹³

One reason for this is that the mission and strategies of regional universities are traditionally more closely aligned to industry and skills needs of the rural and regional areas in which they are located. Regional universities enroll significantly more rural and Indigenous students than city based universities, are more likely to offer programs that are specifically designed to meet regional labour market needs and have local knowledge that supports retention and success of graduates in rural and regional employment.

A good example is the different approaches taken by regional and city universities to student recruitment. A study looked at the different approaches taken by Charles Sturt University and the University of Sydney to the recruitment of students to their veterinary science programs, and

¹³ Richardson, S and Friedman, T, "Australian Regional Higher Education: Student characteristics and experiences" (2010) at http://research.acer.edu.au/higher_education/22

the impact this had on the intention of graduates to work in rural and regional practice.¹⁴ The study noted that the University of Sydney relied principally on academic performance in selecting students for admission, while Charles Sturt University relied on a combination of academic performance, student submissions and interviews.

The study found that students selected by the University of Sydney had generally higher average University admission scores and were more likely to have gone to school in a major city. While both cohorts had similar motivations for studying veterinary science, Charles Sturt University veterinary students “placed greater importance than those at the University of Sydney on a desire to live and work in a rural area, and a desire to help farmers. Two-thirds of Charles Sturt University students planned to work in rural mixed practice when they graduated, and most planned to stay for at least 10 years, compared to just one-third of University of Sydney students”.¹⁵ A study of the first cohort of Charles Sturt University veterinary science graduates found that 90 percent moved into rural practice after graduation.

Another study by James Cook University of medical student practice location intentions illustrates the difference in outcomes that can be achieved through local regional university provision of medical education. James Cook University is the major provider of medical education in Australia that is fully delivered in a rural and regional area. At graduation, “88 percent of James Cook University’s medical students intended to practise outside Australian capital cities compared with just 31 percent of graduates from other medical schools. Similarly, more James Cook University medical graduates planned to work in rural towns or regional centres with a population of less than 100,000 (46 percent compared with 16 percent for other medical schools). Sixty-seven percent of James Cook University’s graduates undertook their internship outside a metropolitan centre compared with 17 percent of other medical schools, and 47 percent in outer regional centres compared with 5 percent for other medical schools, respectively [and] .. ‘working in a rural area’ increased over the course duration from 68 percent at entry to 76 percent at graduation”.¹⁶

In 2010, the World Health Organization (WHO) published a major international study on strategies to improve the recruitment and retention of medical and health professionals in rural and regional areas. The Expert Panel confirmed the need for a stronger emphasis by government on growing local capacity in rural and regional areas to address medical and health workforce shortages. It made five global policy recommendations relating to education on best practice steps for increasing the number of doctors in rural and regional medical practice.¹⁷

1. Use targeted admission policies to enrol students with a rural background in education programmes for various health disciplines, in order to increase the likelihood of graduates choosing to practise in rural areas.
2. *Locate health professional schools, campuses and family medicine residency programmes outside of capitals and other major cities as graduates of these schools and programmes*

¹⁴ Heath, T, Hyams, J, Baguley, B, Abbott, K, “Effect of different methods of selection on the background, attitudes and career plans of first year veterinary students”, Australian Veterinary Journal Volume 84, No 6, June 2006

¹⁵ *ibid*

¹⁶ Sen Gupta T, Murray R, Hays R, Woolley T. James Cook University MBBS graduate intentions and intern destinations: a comparative study with other Queensland and Australian medical schools. Rural and Remote Health 13: 2313. (Online) 2013. Available: <http://www.rmh.org.au>

¹⁷ World Health Organization, Increasing access to health workers in remote and rural areas through improved retention: global policy recommendations (2010) at http://www.rhwa.org.au/client_images/950350.pdf.

are more likely to work in rural areas.

3. Expose undergraduate students of various health disciplines to rural community experiences and clinical rotations as these can have a positive influence on attracting and recruiting health workers to rural areas.
4. Revise undergraduate and postgraduate curricula to include rural health topics so as to enhance the competencies of health professionals working in rural areas, and thereby increase their job satisfaction and retention.
5. Design continuing education and professional development programmes that meet the needs of rural health workers and that are accessible from where they live and work, so as to support their retention.

Research supports a much stronger emphasis in government policy on expanding local rural and regional higher education opportunities to address regional professional skills shortages, and to improve the retention of rural young people in rural and regional areas.

As noted in Charles Sturt University *Regional Development Report* (see page 8 in the attached) Charles Sturt University graduates are now the mainstay of the professional labour market in western NSW.

Between 2008 and 2010 the Western Research Institute conducted three regional labour market studies for Charles Sturt University, surveying employers in the teaching, social welfare and accounting workforce in western NSW to find out where they obtained their primary and other qualifications. The studies found that 43 per cent of teachers in western NSW schools (public and Catholic) obtained their undergraduate qualifications from Charles Sturt University, and 39 per cent of teachers held Charles Sturt University postgraduate qualifications. Thirty six per cent of social work and social welfare professionals working in western NSW obtained their base qualification from Charles Sturt University, while 74 per cent of accounting graduates also obtained their qualification from Charles Sturt University.

While significant work has been undertaken by Charles Sturt University and other NSW regional universities to expand the range of programs available to rural and regional students locally over the last decade (for example, the establishment of new programs in areas of regional workforce shortage such as dentistry, pharmacy and veterinary science at Charles Sturt University), key disciplines including medicine, dentistry and engineering continue to be under-represented in the profile of regional universities, or only available in limited geographic regions, requiring rural students to relocate to study.

A study undertaken in 2009 using Census data found that while 98 percent of the metropolitan residents in 2001 who were enrolled in higher education in 2006 were still living in metropolitan locations, only 69 percent of rural and regional residents in 2001 who were enrolled in higher education in 2006 were still in rural and regional locations.¹⁸

A key finding of the research was that rural and regional students are significantly more likely to leave a rural or regional area to study in a major city where the course they wish to study is not available locally at a regional university.

While rural and regional students predominantly remain to study in regional areas in disciplines that are highly accessible at local universities such as agriculture and environment (71 percent),

¹⁸ PhillipsKPA, A new National University for Regional Australia: Feasibility Study (2009), p 44

education (70 percent) and management and commerce (65 percent), they are most likely to leave a regional areas to study architecture and building (62 percent), engineering (57 percent) and sciences including medicine and dentistry (52 percent).¹⁹ These are disciplines that are less likely to be offered at regional universities, or are generally less accessible across multiple regions. These are also areas where there are more likely to be skill shortages in rural and regional areas.

Even where courses are available at one regional university, this does not necessarily increase access for all rural and regional students. For example, while the University of New England and Southern Cross University both offer law programs in Armidale and Lismore respectively, yet these programs are geographically distant from students located in southern and western NSW communities. For many of these students, it is more convenient to go to a major city university despite the fact that these institutions are unlikely to offer a curriculum or context that is conducive to later work in a rural or regional area.

Recent research from the Australian Centre for Educational Research using data from the 2006 and 2011 Census shows that around 4,000 students from rural and regional NSW had relocated to Melbourne, Canberra and Brisbane to access higher education opportunities between 2006 and 2011.²⁰ This represents a significant migration of young people from rural and regional communities, as well as a loss of income to the NSW economy (Commonwealth funding follows the student).

Charles Sturt University has sought to address some of the geographic barriers in its own course profile through an innovative use of its multi-campus and multi-regional network. For example, using its extensive multi-campus network Charles Sturt University is able to offer physiotherapy, pharmacy, nursing, teacher education, accounting, IT, paramedics, medical imaging, social work, agribusiness and a range of other courses in multiple different regions of NSW, increasing the geographic accessibility of courses to a wider range of students.

Charles Sturt University has also established extensive networks with TAFEs across NSW to facilitate improved access to its programs for rural and regional students. Under these arrangements, students can commence a Diploma at a TAFE close to their home location and then gain credit towards a complementary Charles Sturt University degree which in many cases can be completed in that home location via online and distance learning. For many rural students, this means that they have the possibility of completing a University degree without leaving their community (increasing access and reducing financial barriers to study). As a result of this initiative, more than 30 percent of Charles Sturt University's students now commence on the basis of a TAFE experience. This allows Charles Sturt University to address skill needs in smaller rural and remote communities, while also addressing the geographic and financial barriers rural and regional students experience if required to relocate to study.

Expanding the range of courses that are available at regional universities, in combination with the uncapping of higher education enrolments, has resulted in a 13 percent increase in the number of rural and remote students enrolled in regional universities in NSW between 2007 and 2011.²¹

¹⁹ ibid, p 51

²⁰ Edwards, D, van der Brugge, E, "Shifting Students – Regional Mobility of undergraduates in Australia" *Joining the Dots Research Brief* (Australian Centre for Education Research, June 2013).

²¹ Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education, Higher Education Statistics Collection 2011 – Equity Performance Data at

This demonstrates that there is demand in rural and regional NSW for the opportunity to go to University locally to gain the skills needed for a professional career, if we can increase access to courses and reduce the barriers (in particular the financial barriers caused by relocation) to going to University.

There is strong evidence to show that expanding the range of courses, increasing the accessibility of courses across multiple regions through multi-campus provision, and working collaboratively across tertiary education sectors has a positive impact on rural student participation in higher education and retention of professional skills in rural regions.

The Australian Centre for Education Research recently concluded after a review of all the data on regionally based higher education as follows: “..[R]esearch with medical students suggests that any exposure to regional areas is likely to interest students to work in those areas in the future, with the likelihood increasing with the amount of time spent in a regional area. Those most likely to take up these options, however, originate in regional areas themselves and this suggests that exposure to a regional area during a work placement is less important than a prior attachment to regional areas *per se*. Ultimately, all of these findings point to a clear pattern – to ensure regional workforces it is necessary to provide regional students with the opportunity to enrol at [Higher Education Institutions] in their local area, and to support them financially to do so [our emphasis]”.²²

Further investment is required however to support regional universities to appropriately expand their course profiles in response to professional skills needs and shortages. The Education Investment Fund was established by the Commonwealth to providing funding for critical University infrastructure but requires substantial co-investment from the NSW Government. The lack of a specific funding source for co-investment in NSW has made the process of preparing funding applications to the Education Investment Fund complex, as has the relatively small amount of co-investment made available for rurally based applications.

Given the critical importance of expanding the accessibility of courses in rural and regional NSW to addressing skills shortages, Charles Sturt University recommends that the NSW Government establish a specific Rural Tertiary Education Investment Fund (to complement the Regional Industries Investment Fund) to support major infrastructure proposals that address identified skills needs in rural areas. Given the uncertainty around future rounds of the Education Investment Fund, it is proposed that this fund could be used to co-invest in new skills initiatives with NSW regional universities, or collaborations between NSW regional universities and TAFEs in rural and regional areas, as well as to leverage funding from Commonwealth and other sources.

The role of migration in addressing rural and regional skills needs

Domestic Skilled Migration

Governments have developed a range of policies to encourage Australians to relocate from major cities to rural and regional areas to address population sustainability and skills needs, as well as reduce pressure on increasingly overburdened metropolitan infrastructure, services and environment. This includes the promotion of rural and regional lifestyles and employment

<http://www.innovation.gov.au/HigherEducation/HigherEducationStatistics/StatisticsPublications/Pages/2011StudentFullYear.aspx>.

²² Richardson, Sarah and Friedman, Tim, "Australian Regional Higher Education: Student characteristics and experiences" (2010) p.20 at http://research.acer.edu.au/higher_education/22

opportunities (eg. the Country and Regional Living Expo), funding of regional linkage infrastructure (eg. redevelopment of the Pacific Highway) and community infrastructure (eg. sporting and cultural facilities), and in some cases the provision of financial incentives to support intra-State migration.

However, net population movements continue to be unbalanced across the State with a pattern of population drift from inland regions and Sydney in NSW to the coast or other States.

The OECD has noted that in “.. most countries, labour mobility is relatively low and represents a very imperfect adjustor to changes in the labour market”.²³

This view gains some support in Australia from a recent Issues Paper on *Geographic Labour Mobility* by the Productivity Commission. The paper noted that in Australia “[a]vailable data .. show that most residential moves are over short distances – about two thirds of all moves are less than 10 kilometers”.²⁴

The Productivity Commission paper noted that:

- Most people do not move for employment related reasons – around 50 percent move for housing-related reasons, 30 percent for family reasons with only 10-17 per cent for employment reasons;
- Young people (25-29 years old) are twice as likely to move compared to the overall working population;
- Young adults from regional areas tend to move to urban locations, while the general population tends to move to the coast;
- Higher skilled people are more likely to move than lower skilled people.²⁵

While coastal regions seem to be net beneficiaries of population movements, it remains unclear whether current tree and sea change policies are the reason why people to move to particular locations, or whether they simply reinforce pre-existing relocation preferences. It is clear, however, the current strategies to encourage people to move from major cities to inland areas have limited impact on our ability to address skills shortages in rural areas in the long term.

This suggests that regional relocation policies need to be aligned to the specific needs and circumstances of each region, with a mix of strategies that reflect the various factors that influence the recruitment and retention of skilled labour in each region as part of an integrated regional planning approach.

Charles Sturt University addresses similar challenges in the development of its campuses. For example, different campuses are more attractive to international students than others. This is influenced by a range of factors including the campus course profile, research focus, physical location, community amenity, cultural diversity of the community, types of accommodation and employment, and regional transport linkages (connection to family/community networks). For the same reasons, other campuses are more attractive to students coming from major cities.

²³ OECD, *Regions Matter: Economic Recovery, Innovation and Sustainable Growth* (2009) at http://www.utas.edu.au/_data/assets/pdf_file/0008/61937/REGIONS-MATTER-ECONOMIC-RECOVERY,-INNOVATION-AND-SUSTAINABLE-GROWTH-OECD-2009.PDF, p 61.

²⁴ Productivity Commission, *Geographic Labour Mobility: Issues Paper* (July 2013) at http://www.pc.gov.au/_data/assets/pdf_file/0017/124613/labour-mobility-issues.pdf at pages 7-9

²⁵ *ibid* p. 7

Understanding the unique characteristics of each campus and region enables Charles Sturt University to better plan for regional student cohorts, make strategic investments in infrastructure and attract students to study in each of our regional communities by building on their underlying strengths and advantages.

Each region is different, and domestic skilled migration programs should be more responsive to the specific requirements and characteristics of different regions to improve the performance of programs in facilitating the movement of the right people, with the right skills, to the right locations.

Overseas Skilled Migration

Overseas skilled migration is also used as a means to address rural skill shortages by linking new skilled migrants to locations where skills are in demand.

Despite Australia's long history of successful migration, and the value of overseas migration to enhancing the cultural diversity of our communities, there remains a lack of detailed research on the effectiveness of these strategies in addressing long-term skills needs in rural and regional communities.

The most recent data from the Commonwealth Department of Immigration however suggests that overseas migration programs tends to result in "low net migration levels in association with relatively high turnover", particularly in inland regions of NSW.²⁶

As shown in Table 1, of the 10 regions outside of Sydney, 5 experienced a negative net effect of recent migration (4 of which are inland regions) between 2001 and 2006.

Table 2: Internal Migration of Recent Migrants, Statistical Divisions, 2001-2006

Statistical Division	Total Departures	Total Arrivals	Net Migration
Richmond-Tweed	334	541	207
South-Eastern NSW	319	502	183
Mid-North Coast	298	477	179
Hunter	744	921	177
Murray	153	203	50
Far Western	37	25	-12
Northern NSW	283	267	-16
Central West NSW	257	232	-25
Murrumbidgee	411	331	-80
Illawarra	916	684	-232
Sydney	10,817	6,175	-4,642

(SOURCE: Department of Immigration, Data extracted from Population Distribution Effects of Migration in Australia: Research Report, March 2011, p 200).

The net impact of recent overseas migration of people with Bachelor Degrees of Higher Qualifications (a key group to the extent that skilled migration aims to address skill shortages in professional disciplines in rural and regional NSW in fields such as medicine, optometry, dentistry, engineering, law, accounting etc) was largely negative in inland NSW, with Central Western NSW, Murray and Murrumbidgee experiencing small growth, and coastal regions

²⁶ Department of Immigration, Population Distribution Effects of Migration in Australia: Research Report, March 2011, p.228.

experiencing low overall levels of net migration over this period.

Table 2: Internal Migration of Recent Migrants With Bachelor Degree or Higher Qualification, Statistical Divisions, 2001-2006

Statistical Division	Total Departures	Total Arrivals	Net Migration
South-Eastern NSW	109	174	65
Richmond-Tweed	78	134	56
Mid-North Coast	79	118	39
Central West NSW	53	69	16
Hunter	280	286	6
Murray	34	38	4
Far Western	15	11	-4
Murrumbidgee	110	88	-22
Northern NSW	97	68	-29
Illawarra	443	193	-250
Sydney	3393	2789	-604

(SOURCE: Department of Immigration, Data extracted from Population Distribution Effects of Migration in Australia: Research Report, March 2011, p 219).

As shown in Table 2, there was a net loss of recent overseas migrants with Bachelor or Higher Qualifications to all locations outside of Sydney, although coastal regions had comparatively better performance than inland regions.

The data suggests that recent degree qualified overseas migrants may not play, under current policy settings, a significant role in addressing long-term skill shortages in inland regions, but may have a role in addressing skills shortages in some coastal regions.

Well-targeted skills migration programs will continue to be an important strategy to alleviate short-term professional skill shortages experienced in rural and regional NSW. Rural communities are overwhelmingly supportive of skilled migration, both international and domestic, and have greatly benefited from the contribution migrants have made to their communities. They recognise the value of skilled migration in building the cultural capital and diversity of their communities, and in providing access to skills and knowledge that will enable rural regions to further develop businesses that are oriented to global markets.

More research however is required to understand the different factors that influence both the attraction and retention of skilled migrants in different regions to support the development of policies and programs that address the specific needs and characteristics of different regions.

Case Study: Rural Doctor Shortages

Programs to address rural doctor shortages provide a good case study on the effectiveness of geographic migration programs in addressing rural and regional skill shortages. Given the chronic nature of doctor shortages in rural and regional Australia, considerable research has been undertaken on the recruitment and retention of doctors in rural and difficult to recruit locations.

The reluctance of predominantly city-educated and born medical graduates to work in rural regions is well documented, and the primary cause of ongoing medical workforce shortages in rural regions.

Governments have implemented a range of policy measures over the last two decades to encourage more doctors to relocate to practice in rural regions of Australia. For example, the Federal Department of Health and Ageing introduced a target to encourage at least 70 Australian doctors to relocate to rural or remote areas nationally each year. Yet, in

2011/12 the Department reported that it had relocated only 22 doctors (31 percent of target) to rural and remote areas and 39 doctors in 2010/11 (56 percent of target).²⁷ The Rural Doctors Association of Australia has reported a current shortfall of 1,800 doctors in rural and regional practice.²⁸

This reluctance of doctors to work in rural regions (particularly smaller rural and remote areas in inland regions) is illustrated by data from Health Workforce Queensland (HWQ) on the movement of domestic medical graduates into rural and remote practice in Queensland. Their survey covers GPs in all rural and remote areas with the exception of the larger coastal cities like Cairns and Townsville. HWQ reports that of the more than 5,000 medical students who graduated from Queensland universities over a 20 year period between 1990 and 2010, only 294 (five percent) are currently working in rural and remote Queensland.²⁹ Similar data shows a low rate of relocation of city medical graduates in NSW to rural and remote areas.

A recent survey conducted by the Melbourne Institute looked at what factors might influence more current General Practitioners to work in rural regions. Based on the responses, the researchers concluded that 92 percent of current General Practitioners in Australia would not consider moving to a rural or regional area for work. The authors concluded that factors related to a person's family and lifestyle appear to be more important than the characteristics of a job in the decision to locate to a rural region.³⁰

As a result of the reluctance of city medical students to work in rural and regional areas, the Australian government has also focused on attracting overseas trained doctors to fill gaps in the supply of medical professionals. There is evidence however to suggest that overseas skilled migration, particularly programs that require International Medical Graduates (IMGs) to locate to rural regions for specified periods, may have similar problems in delivering long-term solutions to rural and regional skill needs.

IMGs now comprise between 40-50 per cent of general practitioners in rural and regional Australia. Section 19AB of the *Health Insurance Act 1973* (which is commonly known as the 10 Year Moratorium) applies to IMGs and foreign graduates of accredited medical schools. It restricts access by this group to Medicare benefits and requires the group to work in districts of workforce shortage for a minimum period of 10 years from the date of medical registration. These doctors obtain a reduction in the moratorium requirement if they elect to work in more remote locations.

A recent national survey of IMGs in rural and regional areas found that 60-70 percent identified themselves as being "restricted" in their work location.³¹ The survey found that IMGs subject to restrictions were dissatisfied with rural and regional practice, with professional and non-professional satisfaction significantly lower compared to Australian trained doctors. By comparison, IMGs that were not subject to restrictions on their work location had comparable levels of satisfaction to Australian trained doctors.

The authors concluded: "It follows that the long-term retention of currently-mandated IMGs in these vulnerable small rural communities is problematic unless the outstanding issues affecting their significantly reduced professional and non-professional satisfaction can be addressed. Furthermore, many of these concerns are likely to be transferrable to locally-trained medical graduates initially mandated to rural practice".³²

This research suggests that requiring overseas skilled migrants work in rural and regional areas may have a negative impact on their perception of rural life and practice, and their preparedness to remain in rural areas for work in the longer-term.

It is emerging from the research that non-employment factors are critical in the decision of people to work in rural and regional locations. A recent study by the University of Queensland on the factors that support retention of skilled overseas migrants in rural and regional areas identified the importance of family and community connectedness, and regional characteristics (such as access to educational opportunities, health services, appropriate housing), as critical

²⁷ Department of Health and Ageing, Annual Report 2011/12 and 2010/11 at <http://www.health.gov.au/internet/main/publishing.nsf/Content/Annual+Reports-3>.

²⁸ Medical Student Action on Training, Doctors desperately needed across Australia (1 November 2012) at <http://interncrisis.org/inthenews/news-roundup-doctors-desperately-needed-across-australia/>.

²⁹ Health Workforce Queensland. Medical Practice in rural and remote Queensland: Minimum Data Set (MDS) Report as at 30th November 2011. 2012.

³⁰ Scott, Anthony, Witt, Julia, Humphreys, John, Joyce, Catherine, Kalb, Guyonne R.J., Jeon, Sung-Hee and McGrail, Matthew, Getting Doctors into the Bush: General Practitioners' Preferences for Rural Location (July 2012). Melbourne Institute Working Paper No. 13. Available at SSRN: <http://ssrn.com/abstract=2126895> or <http://dx.doi.org/10.2139/ssrn.2126895>, p22

³¹ Matthew R. McGrail, John S. Humphreys, Catherine M. Joyce, Anthony Scott, International medical graduates mandated to practise in rural Australia are highly unsatisfied: Results from a national survey of doctors, *Health Policy* 108 (2012) 133-139, 138

³² *ibid*

factors in the retention of overseas migrants in rural and regional locations.³³ A study on the factors influencing retention of Australian trained doctors in rural areas similarly identified the importance of non-professional factors such as educational opportunities for children and community/family connectedness in retention of Australian trained doctors in rural and regional locations.³⁴ This reinforces the observation of the Productivity Commission that it appears that most people don't move for employment related reasons.³⁵

The research on migration suggests the need for better integrated planning that is contextualized to each region. What works for our cities, does not necessarily work for the coastal or inland communities. Planning needs to realistically evaluate the capacity for skilled migration to address skills shortages in the short-medium-long term in particular regions, taking into account the needs of each region and relevant push and pull factors specific to that region. The characteristics of coastal communities, for example, may permit a higher reliance on skilled migration (both domestic and international) to meet some long-term skills needs with the balance of skills needs met from local capacity building. Inland communities may rely more on skilled migration to address short-term skills shortages with the need for a greater investment in expanding the professional skills base of local students. In all cases, however, a balanced approach is required with an emphasis on local capacity building, and skilled overseas and domestic migration as part of an integrated regional planning solution.

Recommendations

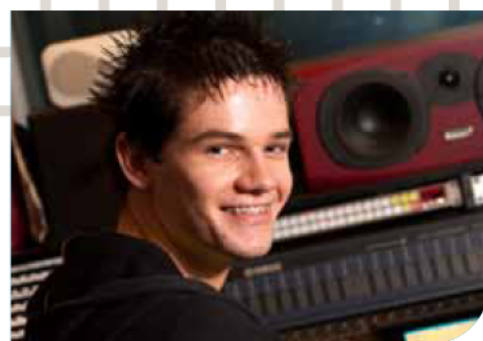
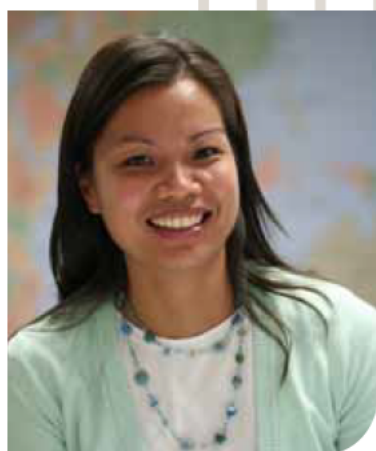
Charles Sturt University makes the following recommendations to the Committee:

1. The NSW Government should continue to support integrated regional planning through Regional Development Australia to target current and future skills needs.
2. The role of NSW regional universities in regional planning in NSW should be clearly articulated.
3. The NSW Government should establish a Rural Tertiary Education Investment Fund to expand the range of higher education courses offered at regional universities in areas of regional workforce shortage, with a particular focus on expanding offerings across multiple campuses and regions, and TAFE-University Pathway initiatives. This Fund could be used to directly fund new initiatives, or to leverage capital and startup funding from Commonwealth and other sources.
4. Establish the NSW Centre for Regional Statistics and Research based in regional NSW to provide information and advice to regions to support planning.
5. Research should be commissioned on the capacity for skilled migration to address skills needs and shortages on a region-by-region basis, and to identify the strategies each region should develop to attract and retain skilled migrants in their professional workforce.

³³ Judith Griffiths, Warren Laffan, Andrew Jones, Factors that Influence Skilled Migrants Locating in Regional Areas, University of Queensland Institute for Social Science Research (May 2010) at http://www.immi.gov.au/media/publications/research/_pdf/factors-influence-skilled-migrants-locating-regional-areas.pdf.

³⁴ Hays, R, Veitch, P, Cheers, B, Crossland, L. Why doctors leave rural practice Australian Journal of Rural Health (1997) 5, 198-203.

³⁵ Ibid, Productivity Commission



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Growing our Communities

Charles Sturt University's
Regional Development Report 2010



Expanding Regional Choice

Charles Sturt University continues to be the leading provider of higher education in rural and regional Australia with more than 31,000 students enrolled in the first half of 2010 – an increase of more than nine per cent in total enrolments compared to the same period in 2009.

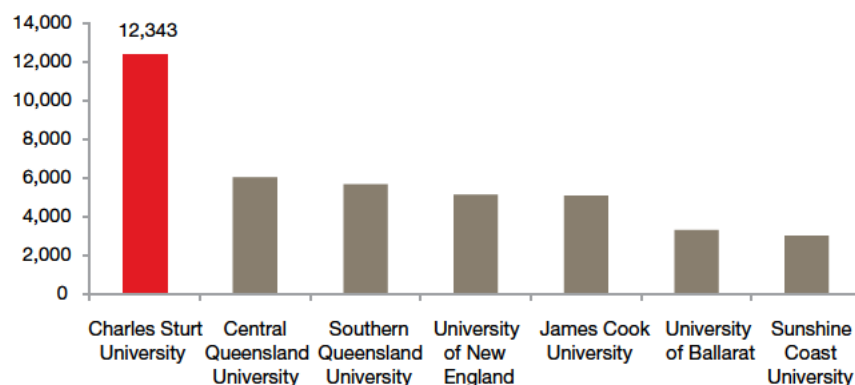
Increasing levels of demand to study at Charles Sturt University saw the number of new enrolments grow by 19.8 per cent to over 12,300 commencing students, representing a 29.4 per cent increase in commencing equivalent full-time students (EFTSL) – the largest growth in demand experienced by any university in the country. Overseas student enrolments, which comprise 15 per cent of total student enrolments, also increased by 6 per cent in the first half of 2010.

Reflecting its mission, Charles Sturt University significantly outperformed state and national averages for the enrolment of rural and regional students as a proportion of domestic student enrolments. Almost 70 per cent of Charles Sturt University's on campus student enrolments were originally from a rural or regional area. Of rural and regional students studying on campus and via online and distance learning, 62 per cent came from Inner Regional areas, 33 per cent from Outer Regional areas and 5 per cent from Remote/Very Remote areas.

Within our regions, Charles Sturt University remains the overwhelming choice of students. More than 60 per cent of the students who attend university from the Murrumbidgee region choose to study at Charles Sturt University; 55 per cent of students from the Central West of NSW; 45 per cent from the Murray region on the border of NSW and Victoria; 43 per cent from North Western NSW; and 31 per cent from Far Western NSW.

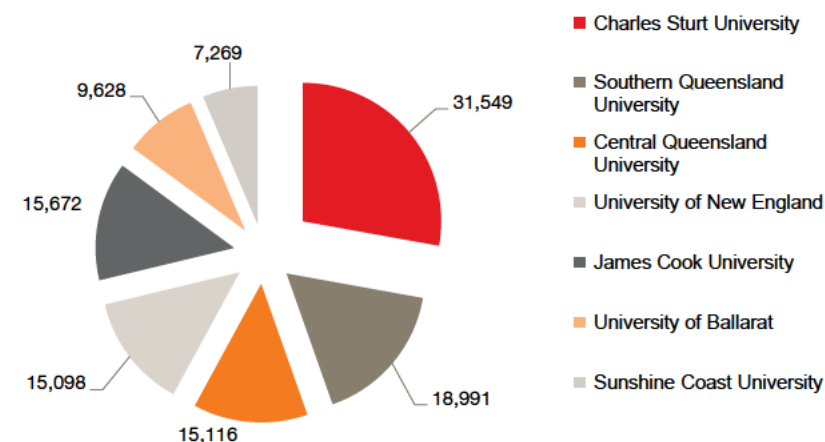
Regional Universities by Commencing Enrolments

(DEEWR, Higher Education Statistics Collection First Half 2010)



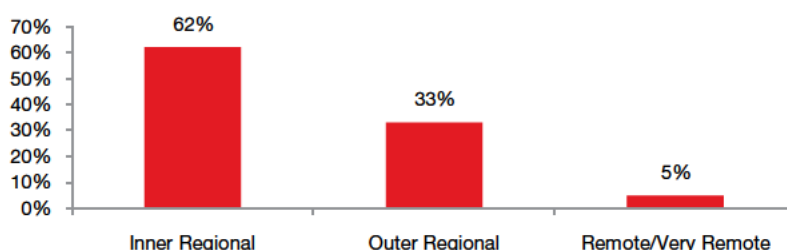
Total Student Enrolments in First Half 2010

(DEEWR, Higher Education Statistics Collection First Half 2010)



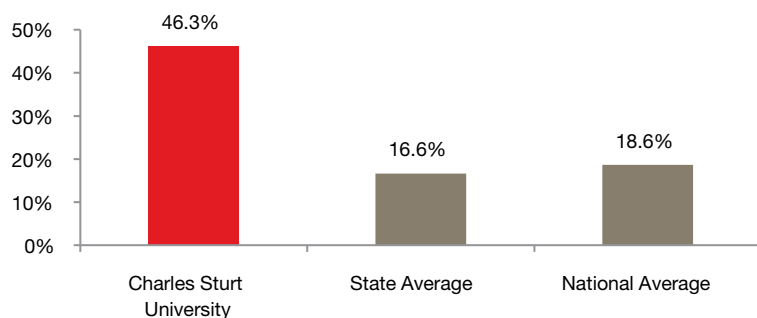
Rural and Regional Students Enrolled at Charles Sturt University by Remoteness Area

(Division of Planning and Audit, 2010)



Rural and Remote Student Enrolments at Charles Sturt University as a Proportion of Total Domestic Enrolments

(DEEWR, Higher Education Equity Statistics, 2009)



“The number of equivalent full-time students commencing at Charles Sturt University grew by a total of 29.4 per cent – the largest growth in demand experienced by any university in the country.

Charles Sturt University's Share of Student Market by Region

(Proportion of students who enrol with CSU as a percentage of all students that attend University in that region, CSU Division of Planning and Audit 2010)

Region	Market share
(150) Murrumbidgee	61%
(140) Central Western NSW	55%
(155) Murray	45%
(135) North Western NSW	43%
(160) Far Western NSW	31%
(145) South Eastern NSW	24%
(105) Sydney	13%
(115) Illawarra	13%
(130) Northern NSW	12%
(125) Mid-North Coast NSW	11%
(120) Richmond-Tweed	10%
(350) Far North Queensland	10%
(110) Hunter	9%
(230) Mallee Victoria	9%
(330) Fitzroy Victoria	6%
(985) Off-Shore Areas & Migratory	9%



Growing Regional Opportunity

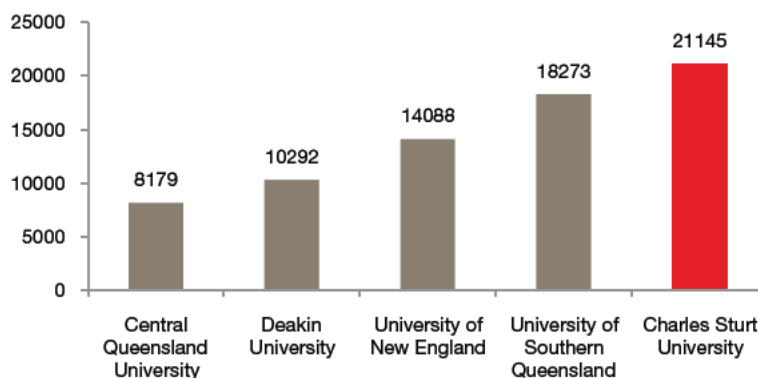
In addition to its significant role in expanding local choice for rural and regional Australians, Charles Sturt University remains the largest national provider of online and distance education, enrolling more than 21,000 students across Australia and the world. More than 40 per cent of Charles Sturt University's online and distance education students enrol from a home location in Inner Regional, Outer Regional and Remote/Very Remote Australia.

Specialising in meeting national and regional workforce demand for professional skills, in 2010 more than 200 courses (~80% of total offerings) were offered through online and distance learning – with more planned for the future.

Our online and distance offerings have contributed to Charles Sturt University enrolling more than 14,000 students from outside its home state of New South Wales – generating more than \$81 million in revenue from outside the state for our regions.

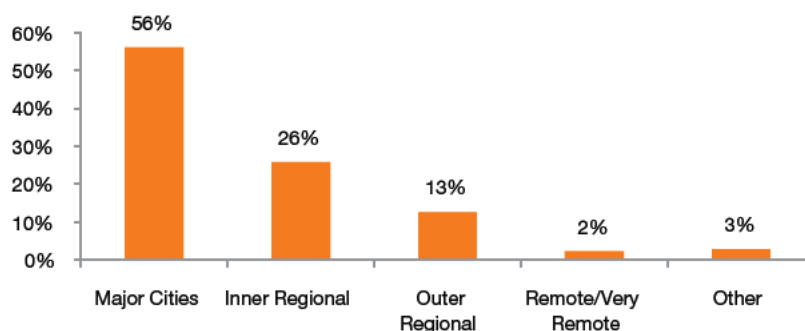
Online and Distance Enrolments

(DEEWR, Higher Education Statistics Collection Full Year 2009)



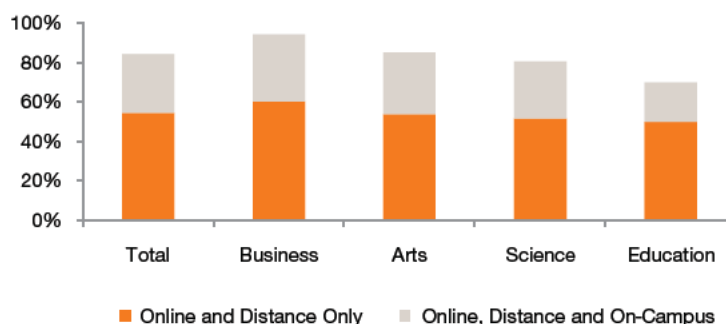
Online and Distance Education Enrolments by Home Location

(CSU Division of Planning and Audit, 2010)



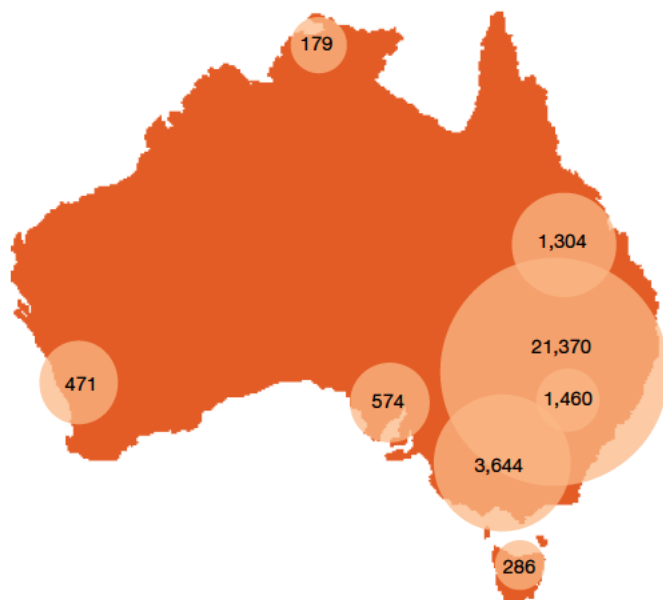
Courses Offered via Online and Distance

(LEK, A Goal Oriented Strategic Planning Framework, 2009)



State of Origin of Charles Sturt University Students

(CSU Division of Planning and Audit, 2010)



"In 2010 Charles Sturt University generated \$524 million in gross regional product, \$331 million in household income and 4,996 full time equivalent jobs in rural and regional NSW."





Developing Regional Capacity

Charles Sturt University operates its main rural and regional campuses in Albury-Wodonga, Bathurst, Dubbo, Goulburn, Orange and Wagga Wagga, generating significant economic activity and employment growth across rural and regional communities. The total impact of Charles Sturt University includes expenditure on capital works and the purchase of goods and services in its regions, as well as expenditure by non-local students and by family and friends from outside the local area attending graduation ceremonies and other regular university activities. To maximise the impact of its investments and activities, Charles Sturt University is committed to 'buying local' wherever possible.

According to an independent analysis by the Western Research Institute, in 2010 Charles Sturt University contributed \$524 million in gross regional product, \$331 million in household income and 4,996 full-time equivalent jobs to its rural and regional communities when initial and flow-on expenditures are counted. For every one dollar of Federal Government funding received, Charles Sturt University returns approximately \$4.75 to the Australian economy.

"For every one dollar of Federal Government funding received, Charles Sturt University returns approximately \$4.75 to the Australian economy."

Overall Economic and Employment Impact on our Regions

(Western Research Institute, 2011)

	Employment Full-time Equivalent	Income \$m	Value Added \$m	Output \$m
Initial	3,132	223	268	443
Flow on	1,864	107	256	542
Total	4,996	331	524	985
Multiplier	1.59	1.48	1.96	2.22

Economic and Employment Impact by Regional Statistical Division

(Western Research Institute, 2011)

	Employment Full-time Equivalent	Income \$m	Value Added \$m	Output \$m
Central Western (NSW)	1,784	115.8	184.9	362.7
Murray - Ovens (NSW/VIC)	740	49.8	93.8	168.4
Murrumbidgee (NSW)	2,215	148	214.9	410
North Western (NSW)	152	9.5	17.5	35.5
South Eastern (NSW)	112	7.1	15.7	26.7



Strengthening Regional Industries

Providing local access to a comprehensive range of courses and relevant research in rural and regional Australia not only increases opportunity and participation, it also delivers needed skills to regional labour markets.

The Graduate Destination Survey has been conducted annually by Graduate Careers Australia and higher education institutions since 1972. The survey collects information on the employment destination of graduates from Australian universities after they qualify.

In 2010, the survey revealed that more than 77 per cent of Charles Sturt University's graduates who were originally from a rural or regional area commenced employment in a rural or regional area – addressing critical skills needs of regional labour markets. This ranged from 53.3 per cent in the creative arts to 100 per cent in natural and physical sciences.

In the field of health, Charles Sturt University is making a major contribution to addressing the critical demand for highly qualified health professionals in rural and regional areas. Offering the most comprehensive range of health programs of any university in the country, more than 70 per cent of Charles Sturt University's on campus health students came from a rural or regional area, and more than 70 per cent of those students (over 90 per cent in some professional fields) commenced employment in a rural or regional area.

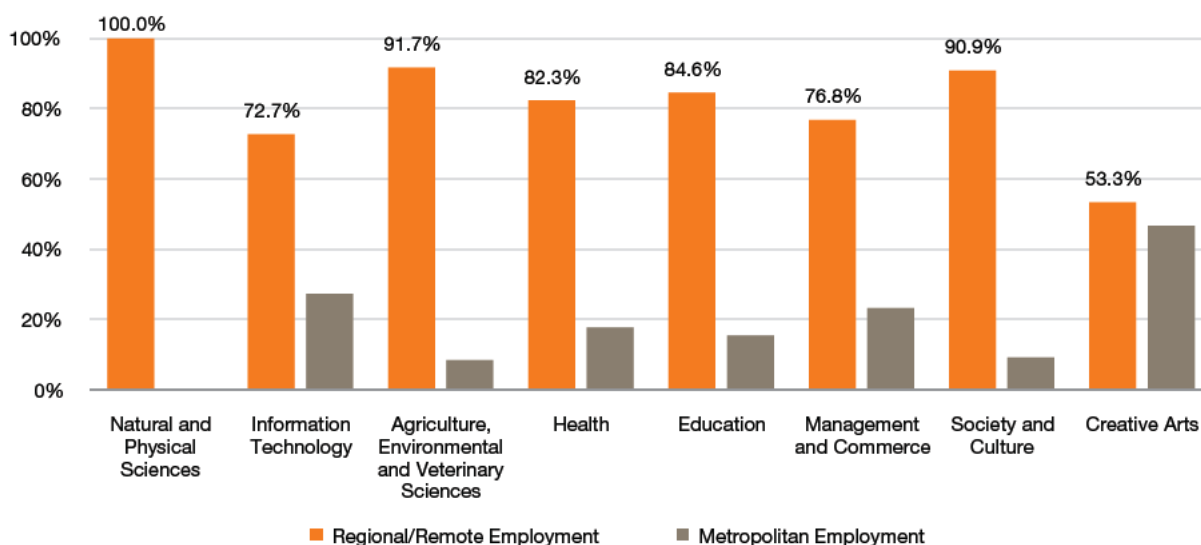
Destination of Charles Sturt University Rural Graduates

(Division of Planning and Audit, Graduate Destination Survey data, 2010)

Charles Sturt University degree	Percentage	
	Rural enrolments	Rural jobs
Paramedics	56.4%	75%
Nutrition and Dietetics	77%	90.5%
Occupational Therapy	89.6%	74.2%
Podiatry	82.8%	88.9%
Speech Pathology	86.8%	68.2%
Radiography	79.1%	50%
Nuclear Medicine Technology	75.4%	85.7%
Pathology	59.2%	73.7%
Nursing	78.5%	73.5%
Pharmacy	55.5%	83.1%
Physiotherapy	75.8%	73.7%
Psychology	56.8%	91.7%
Social Work	65.1%	80%

Destination of Charles Sturt University Rural Graduates

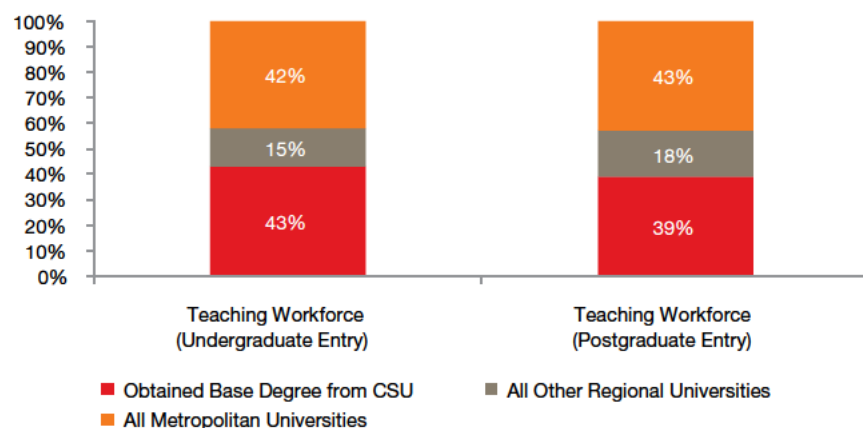
(CSU Division of Planning and Audit, Graduate Destination Survey data, 2010)



Charles Sturt University graduates are now the mainstay of the professional labour market in western NSW. Between 2008 and 2010 the Western Research Institute conducted three labour market studies, surveying professionals in the teaching, social welfare and accounting workforce in western NSW to find out where they obtained their primary and other qualifications. The studies found that 43 per cent of teachers in western NSW schools obtained their undergraduate qualifications from Charles Sturt University, and 39 per cent of teachers held Charles Sturt University postgraduate qualifications. Thirty six per cent of social work and social welfare professionals working in western NSW obtained their base qualification from Charles Sturt University, while 74 per cent of accounting graduates also obtained their qualification from Charles Sturt University.

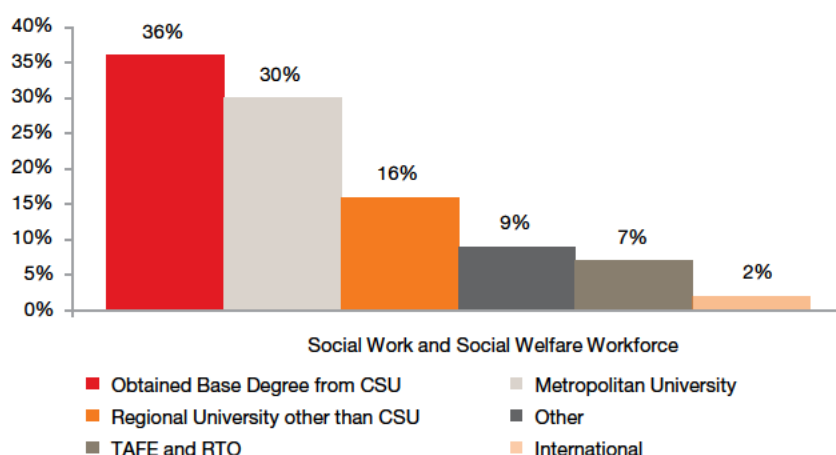
Teaching Workforce in Western NSW

(Western Research Institute, 2010)



Social Work and Welfare Workforce in Western NSW

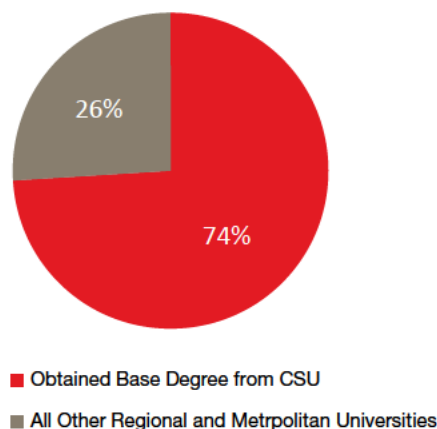
(Western Research Institute, 2010)



“More than 77 per cent of Charles Sturt University’s graduates who were originally from a rural or regional area commenced employment in a rural or regional area.

Accounting Workforce in Western NSW

(Western Research Institute, 2009)





Generating Regional Innovation

Charles Sturt University engages in innovative teaching and research, bringing global knowledge and innovation to our regions, and extending regional knowledge and innovation to our world.

Below are some of the highlights for 2010.

FOOD AND WATER SECURITY

National Life Sciences Hub for regional Australia

Food security, bio-security and climate change are global challenges driving national priorities in agricultural-animal research and requiring the production of a new generation of highly qualified scientists in rural and regional Australia. In 2010, planning started on the construction of Charles Sturt University's new \$45 million National Life Sciences Hub. The National Life Sciences Hub will create strong linkages between research scientists, producers and students, building the critical mass to extend undergraduate/postgraduate training and improve interactions across partners locally and internationally in fundamental and applied scientific research.

Bringing veterinary innovation to regional practice

Charles Sturt University welcomed final accreditation of its new Veterinary Science program in 2010, designed to address the shortage of rural and regional veterinarians with expertise in production animals in rural and regional Australia. The program was accredited by the Australasian Veterinary Boards Council (AVBC) for practice in Australia and New Zealand, and the Royal College of Veterinary Surgeons for practice in the UK. The final report concluded that the program "will produce outstanding veterinary graduates, selected and trained for roles in rural Australia". The Council found the "six-year program, problem-based curriculum and strong focus on production animals are unique and important features of the degree" and that the "facilities that have been built to support student learning are exceptional".

Balancing the benefits of water

Researchers from Charles Sturt University's Institute for Land, Water and Society are part of a team working on a new CSIRO Flagship program titled 'Ecological Responses to Altered Flow Regimes' undertaking applied research to assist water managers balance the multiple benefits of water and achieve enhanced environmental and social outcomes.

Indigenous business research project launched

Charles Sturt University's Institute for Land, Water and Society was awarded a \$455,000 Australian Research Council Linkage Grant for a three-year project to determine the factors influencing the success of private and community-owned Indigenous businesses across remote, regional and urban Australia. The research project will involve researchers from Charles Sturt University, the University of Technology Sydney and the University of Newcastle, as well as Indigenous Business Australia and the Cultural and Indigenous Research Centre as industry partners.

University partners in groundwater research and training

Charles Sturt University's Institute of Land, Water and Society is one of 12 university partners in the ARC National Centre for Groundwater Research and Training. Charles Sturt University researchers will focus on the social construction of the concept of sustainable yield as applied to groundwater management. The research will also involve Charles Sturt University researchers in two case studies, one in the Namoi Groundwater System in northern NSW; the other in the Willunga Basin in South Australia.

Taking agricultural knowledge and innovation to Lao

Charles Sturt University's collaborative EH Graham Centre for Agricultural Innovation, a joint venture with the NSW Department of Primary Industries, has commenced an Australian Centre for International Agricultural Research project in Lao that has the aim of improving food security and rural livelihoods in the rain-fed southern provinces of Lao. The project involves collaboration between the EH Graham Centre, the University of Queensland, the International Rice Research Institute and the International Centre for Tropical Agriculture.

Translating research into practice

The EH Graham Centre for Agricultural Innovation unveiled its new 15 hectare field site in late 2010. The field site, located near Wagga Wagga, showcases the Centre's research outputs to assist farmers, advisers and natural resource managers to develop and maintain robust and sustainable food production. It will assist the Centre to deliver productivity gains and environmental sustainability and address the challenges of food security, bio-security, climate change, water scarcity and the skills shortage in agriculture. New technologies included in 2010 were: biochar for increased productivity, weed resistance management, forage crops for feed gaps, minimising crop damage from herbicides, and new crop varieties. The site is managed by an Industry Steering Committee.

Supporting regional industries to grow

Charles Sturt University's National Wine and Grape Industry Centre is an alliance with NSW Department of Primary Industries and the NSW Wine Industry Association. The Centre is working on research that will assist the industry grow their businesses by creating wines in styles that consumers prefer, in contrast to conforming to traditional styles.

Improving industry productivity and returns

Potentially hotter climatic conditions and proposed reductions in water allocations threaten the productivity of vineyards within warmer Australian wine regions. Those regions produce a very significant proportion of Australia's wine exports. Research led by the National Wine and Grape Industry Centre in 2010 examined the relationship between productivity and management of grapevines after harvest; ensuring leaves continue to photosynthesise to replenish depleted reserves of carbohydrates and nitrogen needed for root and shoot growth in the coming Spring.



Preparing Australian wine regions for warmer, wetter summers

Bunch rot of grapes is a significant problem in vineyards that experience rain and high humidity close to harvest. Distinguishing bunch rotting fungus and understanding where and when each is likely to occur lie at the core of effective grapevine management practices. Researchers with the National Wine and Grape Industry Centre are revealing the epidemiology of the various fungal organisms that cause grape bunch rots in the different wine regions of NSW and examining grapevine disease strategies under forecast climate change scenarios of warmer, wetter summers in dry viticultural regions.

Sharing food and water security knowledge globally

Feeding their burgeoning population is a critical challenge for national policy makers in South Asia. Endemic poverty and food insecurity are associated with water scarcity, while rural livelihood security and good agricultural performance remain firmly linked to sustainable water resources management for food crop production. A team from Charles Sturt University's International Centre of Water for Food Security was awarded an AusAid Leadership Award Fellowship to provide six weeks training around the theme "Knowledge Sharing for Food and Water Security in Asia" to senior scientists from leading institutes in China and Pakistan. The program aimed to increase the exchange of knowledge and information and build common purpose and understanding between Australia, China and Pakistan through the development of effective networks and capacity building.

Working with industry to improve water management

Irrigated farmers in the New South Wales area of the Murray Darling Basin often require a tool to assist them to make decisions about long and short term investment options for their irrigation business. Researchers from Charles Sturt University's International Centre of Water for Food Security, together with the Irrigated Cropping Forum, have developed a program, 'WaterWorks', for farmers and their advisers to answer the question "How should an irrigator use water for best use in any given year?" The model was developed to include a range of business indicators and returns to capital. 'WaterWorks' has been developed over a period of time with the active involvement of researchers and the irrigation community through the Irrigated Cropping Forum.

*Improving agricultural and health outcomes in South Asia

Rice wheat is the major cropping system in the Indo-Gangetic Plains of South Asia and is grown on 10 million hectares in India. As part of an Australian Centre for International Agricultural Research project, Charles Sturt University researchers have been instrumental in the development of the 'Happy Seeder', a seeder capable of direct drilling wheat into heavy, machine harvested rice straw to give farmers an alternative to burning. Burning results in extensive damage to the environment (reduced air quality, particulates, greenhouse gases) and human health, as well as substantial loss of plant nutrients and organic carbon, which has important implications for soil health. The Punjab Farmer's Commission has finalised a program to supply about 750 Happy Seeder machines along with a dedicated tractor to different cooperative societies in the state to facilitate the supply of these machines on a contract basis.

EDUCATION AND PROFESSIONAL PRACTICE

Placing the regions at the centre of national education debate

In 2010 Charles Sturt University's Research Institute for Professional Practice, Learning and Education brought together leading international researchers in regional NSW to prepare a draft position statement on transition to school. Researchers also met with policy makers from Federal and State governments, early childhood education authorities, and non-government organisations, where they presented and discussed the position statement. On the last day of the conference, approximately 100 early childhood educators from schools and prior-to-school settings joined the group for a series of workshops presented by experts in the field.

Exploring key national challenges from our regions

Charles Sturt University's Research Institute for Professional Practice, Learning and Education based in Bathurst is delivering an ARC Discovery Project exploring the practises of leading, professional learning, teaching and student learning. The research will examine a range of issues including inclusive practices that contribute to overcoming social injustices that sometimes arise for students with special needs and ways to develop VET teaching practices and programs to address the needs of the VET sector in the different economic, social, cultural and educational conditions.

Gathering global thinkers in our regions

In December 2010 Charles Sturt University's Research Institute for Professional Practice, Learning and Education gathered 40 international PhD students from Canada, Australia, Sweden, the Netherlands and the United States at Charles Sturt University in Wagga Wagga for a Doctoral School, including a forum to discuss draft manuscripts of articles and book chapters, and cross-national empirical projects currently underway.

Innovative new classrooms for teacher education

The Faculty of Education is charting new directions for teacher education with the design of two new innovative learning spaces at the Wagga Wagga and Bathurst campuses. The buildings will deploy cutting-edge technology to ensure student teachers are well prepared for working with new technology in schools. The new learning spaces will include high definition video conferencing to enable connections between the University and schools located in the Riverina and Western regions. This will enable school teachers to talk to student teachers from their school sites; student teachers to observe classrooms; mentoring groups between student teachers and school teachers; and professional development for Charles Sturt University and school-based staff.



HEALTH AND WELLBEING

Improving Indigenous rural and remote health

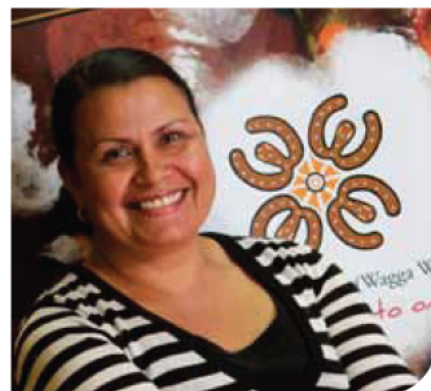
A Memorandum of Understanding signed this year between Charles Sturt University and the Wiradjuri Condobolin Corporation will enable the parties to work together in research and education that will enhance the wellbeing of the Aboriginal community in Condobolin. Researchers from the University's Centre for Inland Health will work with the Corporation to design and conduct a local community health survey, as well as identify and train Indigenous people at Condobolin as research assistants as a starting point for developing local community capacity for research.

Addressing regional needs through innovation

With critical shortages of paramedics in regional Australia, and growing national demand, Charles Sturt University and the Ambulance Service of NSW have established a new program designed to fast track entry into the paramedic profession. This cutting-edge course has been developed in consultation with ambulance industry representatives from NSW and other states and territories. It has received the formal endorsement of the Ambulance Service of NSW and accreditation by the Council of Ambulance Authorities.

Unique Indigenous mental health program

Charles Sturt University's Djirruwang Aboriginal and Torres Strait Islander Mental Health program is the only program of its type in Australia. The aim of the program is to build workforce capacity for the future of Aboriginal and Torres Strait Islander people. Since its inception, it has produced 97 Indigenous graduates in mental health, including students from the Torres Strait Islands. There are 75 Indigenous students currently completing the course. In 2010, two submissions for Federal funding to expand the program into WA, involving collaboration with the Western Australia Statewide Aboriginal Mental Health Service and the Ngunnawal Local Aboriginal Land Council, were successful.



Creatively expanding rural health education and services

Charles Sturt University completed construction in 2010 of its fifth community Dental and Oral Health Clinic located in Bathurst. The University now has community Dental and Oral Health Clinics in Albury-Wodonga, Bathurst, Dubbo, Orange and Wagga Wagga. Expanding on this successful initiative, the University will commence a \$5 million expansion of its Dental Clinic in Albury-Wodonga to allow it to offer a broader range of allied health services. The expanded Clinic will include a surgical suite, primary health care rooms, training spaces and additional health teaching facilities to deliver a range of expanded services to the community, and provide clinical training for allied health and dental students.

Bringing the latest educational innovation to our regions

Charles Sturt University is building a new Regional Inter-Professional Clinical Simulation Centre at Charles Sturt University in Bathurst. The Clinic will be the most advanced of its type in regional NSW incorporating a state-of-the-art clinical education centre consisting of an Emergency Department Resuscitation Simulation Unit, a Multi-Purpose Scenario Unit, a Control Room, lecture theatre and break-out rooms. It will allow nursing and paramedic students to practise emergency health management skills in a realistic environment prior to undertaking 'real-life' practice in the community, hospitals and health facilities. The use of realistic simulators will allow students to obtain high levels of competency in health assessment, critical thinking and decision making in a safe environment before they practise on real patients in high-pressure situations.



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