

Business growth opportunities

Wollongong, NSW



**REGIONAL
AUSTRALIA
INSTITUTE**

The Regional Australia Institute (RAI) is a think tank devoted to issues concerning regional Australia.

We gather and analyse the best information available on regions and make this readily accessible to people around the country.

We work with regional leaders around the nation to understand their challenges and help them identify opportunities for future development that they can implement.

We also talk to governments at all levels providing them with independent, evidence-based advice about the options they have to make regions even greater.

The RAI is a not-for-profit organisation established as a public company limited by guarantee, and we are an approved research institute for tax purposes.

The institute was founded in 2012 with seed funding from the Australian Government. Our current operations reflect partnerships that bring together the Australian Government, all state governments and the Northern Territory in supporting an inquiry program of national significance. We also have active partnerships with a range of companies and projects working directly with regions.

In 2017, the RAI joined a distinguished group of international experts to receive the Regional Studies Institutional Ambassador Award for sustained excellence in the field of regional studies.

Past winners include the Organisation for Economic Co-operation and Development (France), University of Warsaw (Poland) and the Lincoln Institute (USA).

For more information about the RAI, visit:
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Executive summary

Wollongong has changed and transitioned over recent years and has positioned itself well with knowledge-based industries and information and communication technology (ICT) and advanced manufacturing enterprises expanding. The City of Wollongong is already realising many of the benefits of access to high speed broadband as it grows as a city of innovation.

Local businesses that have connected to the **nbn**[™] broadband access network are able to engage global markets.

The RAI confirms Wollongong shows strengths in innovation, ranking third out of 95 Local Government Areas (LGAs) in regional New South Wales (NSW), performing highly across the

indicators of research and development (R&D) and science. Business entries and knowledge-intensive business services (KIBS) are also higher than regional NSW.

Wollongong is still pursuing economic transition and has identified the need to support existing businesses, as well as to attract and grow new innovative businesses. Having the necessary infrastructure in place and available to enable this is key, and access to fast broadband is the foundation.

The *Wollongong economic development strategy* (2013-23) recognises the potential impact of the digital economy and acknowledges the city “needs to continue to grow and broaden its economic base to create more of the jobs required in the 21st century.” Uptake of services over the **nbn**[™] access network in Wollongong can support these objectives, while maintaining a proactive, strategic approach is critical.

Fast broadband provides more competitive market conditions, both inbound and outbound. It’s necessary for regional leaders, businesses, educators and the workforce to engage with digital technology in ways that build on existing strengths, capture new growth opportunities and transition people to less vulnerable jobs so that more is gained from fast broadband.

In order to support an innovative business environment, a skilled workforce is also necessary. Wollongong is currently performing relatively well on the ‘human capital’ indicator, but access to fast broadband can help further improve its ranking and reduce the workforce vulnerability to automation and digital disruption.

While 42.4 per cent of jobs have been assessed by the RAI as low vulnerability to automation (higher than regional NSW’s 37.3 per cent), Wollongong still

has a similar proportion of jobs that are considered to be highly vulnerable (27.2 per cent compared to regional NSW’s 27.5 per cent). Reducing this high vulnerability requires a more technologically engaged and skilled workforce.

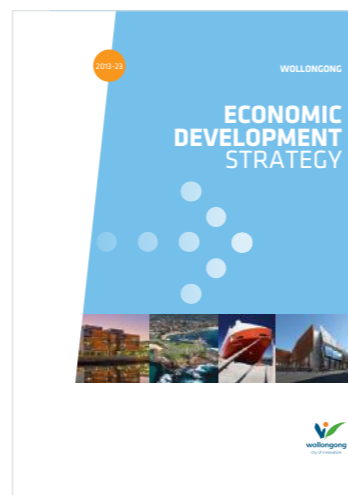
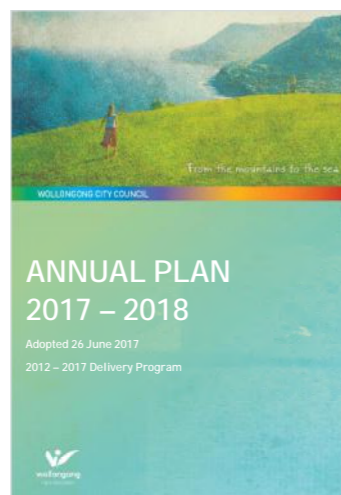
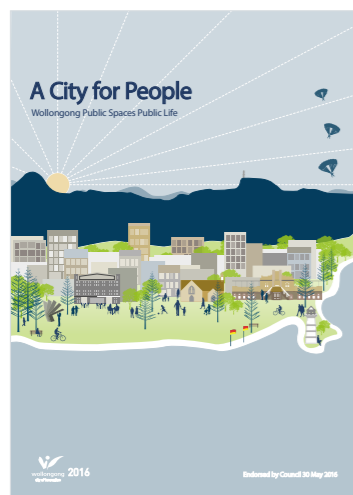
Connecting to available digital technologies demonstrates a growth mindset and drives entrepreneurial and innovation behaviour, which grows a skilled and future-focused, technologically capable workforce.

Now, the immediate imperative for businesses in Wollongong is to get connected, build the technological knowledge and skilled workforce required to fuel business innovation, and take action applying digital technologies to drive revenue growth, operational efficiencies as well as grow market share.

Strengths and deficiencies in the Wollongong economy based on comparison areas

Like other regions in Australia, the Illawarra region has been in transition since the downturn of traditional industries, and this includes Wollongong. The city is looking for a broader and more diversified economy, and access to fast broadband has been essential to achieving success.

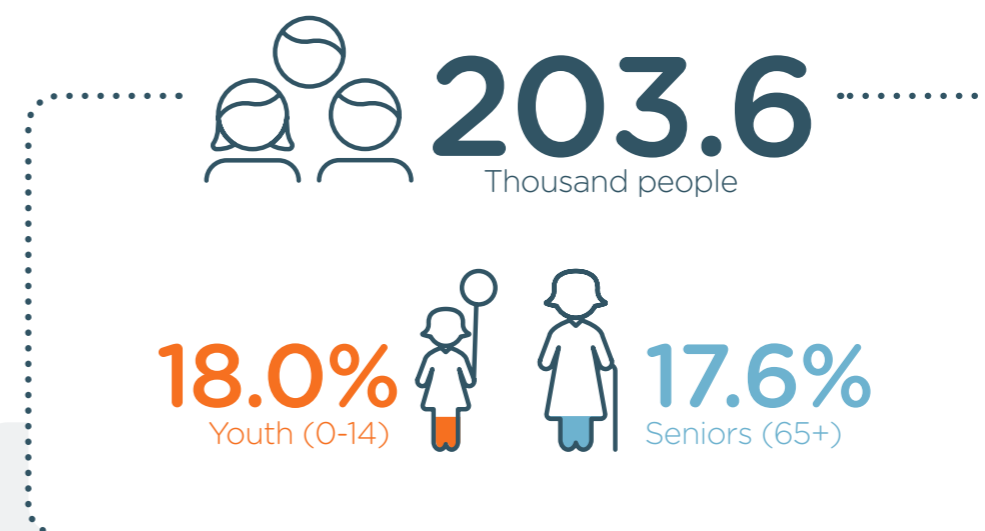
Improving digital connectivity was identified in the reports below as a strategic priority for Wollongong, acknowledging the impact of global digital disruption and the opportunities it presents. Fast broadband and digital technologies are critical to Wollongong's aspirations as a city.



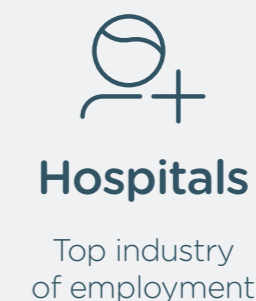
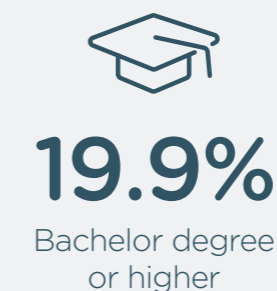
David Farmer
General Manager of Wollongong City Council

“High quality, high speed broadband is essential to business, particularly to data hungry businesses which are growing in Wollongong. It also allows for more flexibility in the workforce and how they live and work - the option to split commuting to a big city like Sydney and work some time at your home in regional Australia. In this way, fast broadband impacts the whole economy as well as the lifestyle of these regionally based knowledge workers.”

Wollongong community profile



Employment and education



Housing

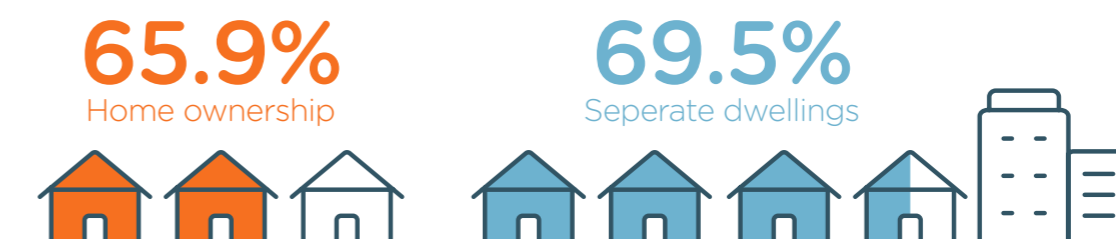


Figure 1 | Source: Australian Bureau of Statistics 2016 Census

“ Access to fast broadband and digital technologies can support industries within Wollongong to become commercially competitive beyond the region, and is an attractant for new industries and businesses to the city. ”

The RAI research shows that Wollongong has a high concentration of professionals, accounting for 23 per cent of the total workforce, a ranking of third out of the 95 LGAs in regional NSW for the innovation theme, and educational attainment which, overall, is higher than regional NSW.

Combined with the higher results for KIBS and business entries – both greater than that for regional NSW – Wollongong is positioned well for continuing its economic transition towards more technology, knowledge and service products.

For human capital, Wollongong ranks six out of the 95 LGAs in regional NSW with strength in university qualifications (16.4 per cent), high school completion (48.4 per cent) and a higher level of adult learning at 7.9 per cent (compared to 5.8 per cent for regional NSW). These human capital indicators are positive for economic growth as education is an aspect of developing a skilled workforce.

Access to fast broadband and digital technologies can support industries within Wollongong to become commercially competitive beyond the region, and is an attractant for new industries and businesses to the city.

The level of business entries in Wollongong reflects a supportive business environment. KIBS provides knowledge-intensive support to other organisations’ business processes, which requires specific and professional knowledge; it’s also an indication of a skilled workforce. Knowledge production often contributes to innovation, so strong performances on these indicators suggests that Wollongong has a significant level of innovation, particularly in the traditional measurements on R&D and science.

Advancing and increasing the business ecosystem and innovation within Wollongong is impacted by the availability of high speed broadband and the rate of uptake by the local community.

Wollongong has a low level of owner-managers (12.1 per cent) compared to regional NSW (15.9 per cent), which is an indicator of the level of entrepreneurship. Entrepreneurism can broaden and strengthen the business ecosystem of Wollongong.

Also, as Wollongong has a level of jobs vulnerability due to increasing automation and digital technology, education is a key element for workers learning new skills to adapt to change. Technical qualifications are slightly lower in Wollongong (25.3 per cent) compared to regional NSW (26 per cent).

Improving these indicators is considered an important outcome for Wollongong and their flow-on effects will have a direct bearing on business and innovation.

Using fast broadband to address these weaknesses requires proactive community education to influence the uptake and impact.

Wollongong versus regional New South Wales







	Wollongong	Regional NSW
 Low vulnerability to automation	42.4%	37.3%
 High vulnerability to automation	27.2%	27.5%
 Science and tech-qualified workers	25.3%	26%
 Business entries	10.7%	8.7%
 Education levels	Secondary	40%
	Tertiary	11.8%
	Adult	5.8%
 Business owner-managers	12.1%	15.9%

Figure 2 | Source: Regional Australia Institute 2018

Access to fast broadband can assist local businesses in Wollongong by allowing them to adopt best practice and state-of-the-art digital technologies, reach new markets and compete globally. Wollongong can continue to build on its strengths by embracing fast broadband and enjoying the rewards of exploiting its benefits.

Industries that have large data transfer requirements (such as tourism, R&D, agriculture, etc.) are able to more easily reach and engage their audiences without being competitively disadvantaged by technology limitations.

Continuing to be proactive, strategic and coordinated as a city to develop the business and innovation ecosystem through programs, networks and training should also further stimulate entrepreneurs to pursue their business ideas due to access to fast broadband.

Helping existing businesses become aware of and implement the productivity and efficiency improvements provided by fast broadband and digital technologies will assist them in their ongoing viability.

Continuing promotion and development of innovation and entrepreneurship will raise awareness of business opportunities and connect residents in the city with the prospect of being able to have fast broadband to complement their regional lifestyle, too. This fosters new business development, greater work/life flexibility and growth.

Research illustrates the scale of growth the Illawarra region can expect to see by 2021 from learning to harness the opportunities provided by fast broadband. Over the next three years it is projected that up to 600 additional businesses and up to 7,620 additional digital jobs could be a direct result of access to services over the **nbn**TM access network.

Fast broadband provides more competitive market conditions both, inbound and outbound, so it is necessary to engage with digital technology in ways that build on existing strengths, capture new growth opportunities and transition people to less vulnerable jobs so that more is gained from fast broadband.

“Over the next three years it is projected that up to 600 additional businesses and up to 7,620 additional digital jobs could be a direct result of access to services over the **nbn**TM access network.”



Connecting Australia – Illawarra

The impact of the **nbn**TM access network on the lives of Australians and the economy

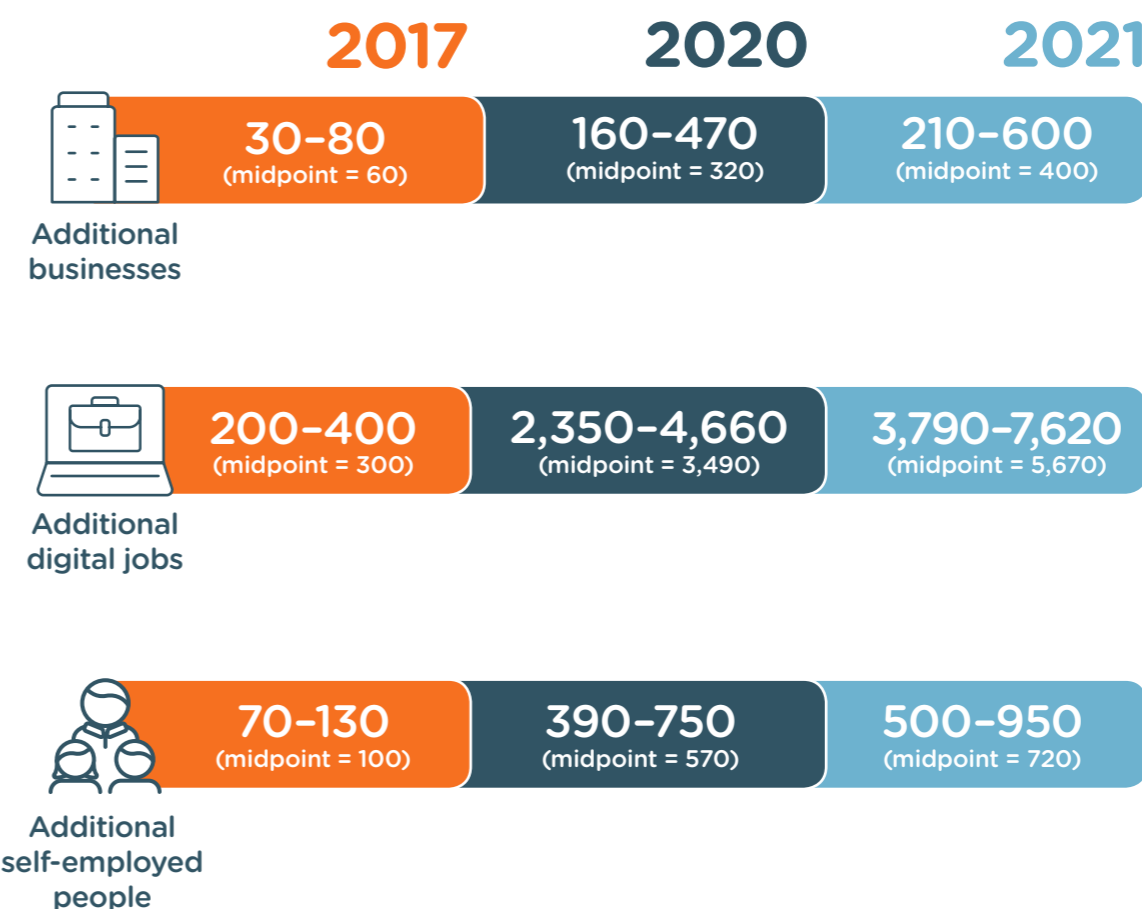


Figure 3 | Source: AlphaBeta and 89 Degrees East, *Connecting Australia* (2018)

This section presents a summary of key data that highlights the current occupation mix in the Wollongong LGA and performance on human capital and innovation measures in relation to regional NSW.

Understanding the current occupation mix in Wollongong highlights which occupations are mostly found in the region and, in turn, the proportion of jobs that are vulnerable to automation. This allows for businesses in the region to be aware of potential jobs that may be impacted and the necessary reskilling needed. It also means being able to tap into strengths in areas of human capital or innovation to take advantage of the new job opportunities as a result of automation and digitisation.

Occupational mix and vulnerability to automation

At the RAI, we have calculated an index to determine the level of job vulnerability to automation within a region. This index has drawn on the widely adopted work by Frey and Osborne's *The future of employment: how susceptible are jobs to computerisation* (2013) as well as automation scores from Edmonds and Bradley's *Mechanical boon: will automation advance Australia?* (2015) research paper.

The RAI job-vulnerability index classifies occupations with automation scores of below 40 as low vulnerability, jobs at or above 40 and at or below 80 as medium vulnerability, and jobs that have an automation score above 80 as high vulnerability. Based on this, we are able to identify the percentage of jobs in the region with low, medium and high vulnerability to automation.

Wollongong has a high concentration of professionals, accounting for 23 per cent of the total known jobs in the area. This is followed by clerical and administrative workers, technicians and trades workers, then community and personal service workers. These occupational categories account for 15, 14 and 13 per cent of jobs, respectively.

Wollongong's occupational mix

Machinery operators and drivers



Labourers



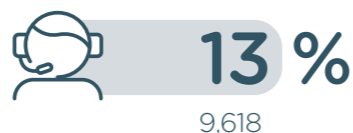
Sales workers



Managers



Community and personal service workers



Technicians and trades workers



Clerical and administrative workers



Professionals

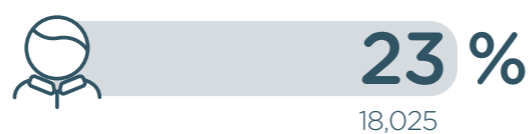


Figure 4 | Source: Regional Australia Institute 2018

The top 10 jobs in Wollongong have been identified in the table below. While other jobs have relatively similar numbers of people, there is a clear concentration of sales assistants and salespersons. This group accounts for 6.8 per cent of all total known jobs. This is close to double the number of people working as school teachers, which is the next most common occupation. There is also a relatively high number of jobs in occupations associated with the healthcare and social-assistance industry.

Sales assistants and salespersons are occupations considered to be highly vulnerable to automation as they involve tasks that can be easily replicated or replaced by technology. Of the remaining top nine occupations, general clerks and hospitality workers are also occupations considered to be highly vulnerable to automation. Although ranked outside the top 10 occupations by employment numbers, Wollongong has similar numbers of people working as receptionists (1355) and food-preparation assistants (1353). These two jobs are also considered to be highly vulnerable to automation.

Top 10 jobs in Wollongong

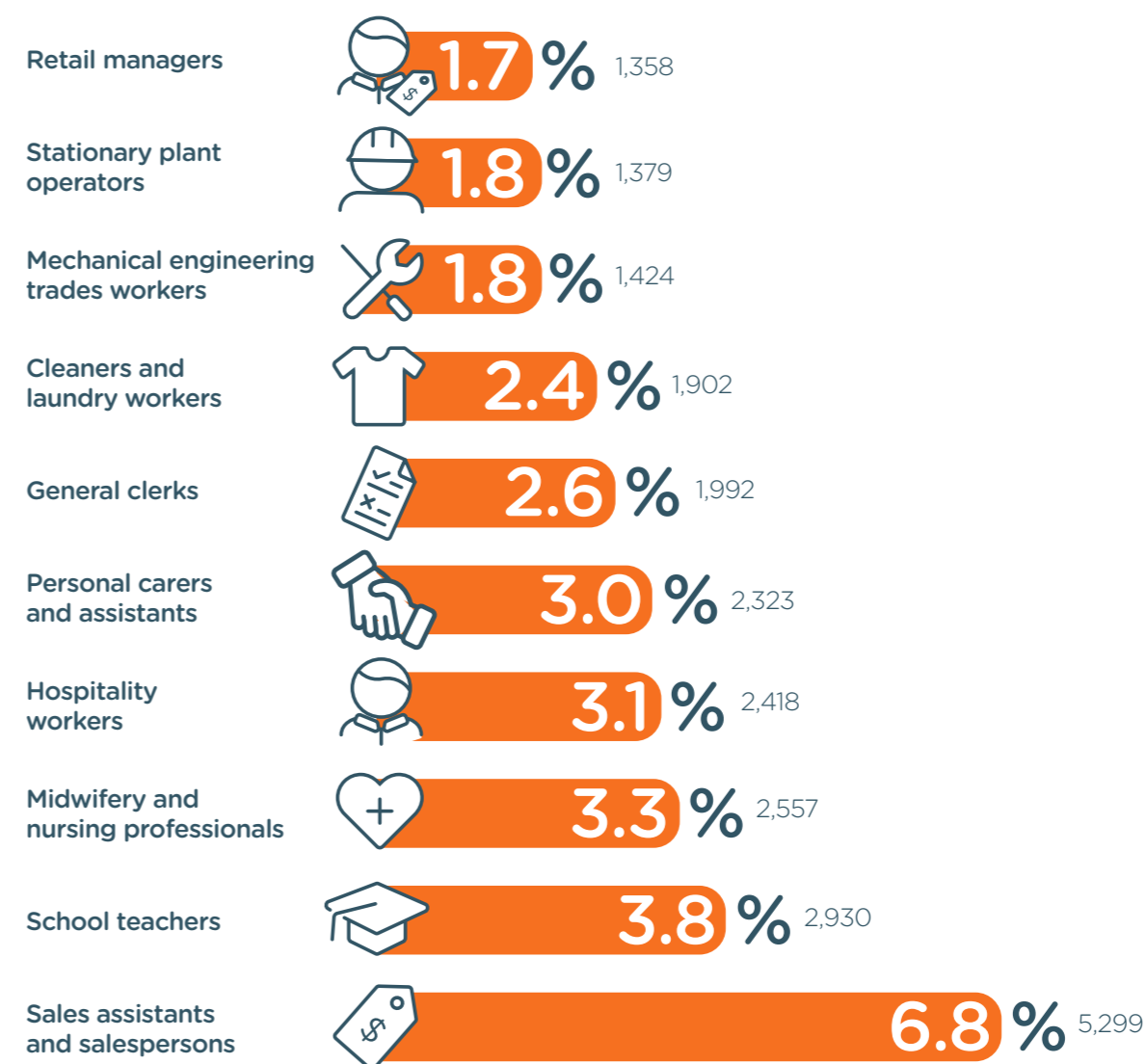


Figure 5 | Source: Regional Australia Institute (2018)

Overall, the distribution of jobs in Wollongong across the three categories of vulnerability shows a higher proportion of jobs considered to be of low vulnerability to automation (42.4 per cent). Wollongong has a higher proportion of jobs that are of low vulnerability compared to regional NSW, which has 37.3 per cent. However, the percentage of jobs in Wollongong that are considered to be highly vulnerable is similar to regional NSW at 27.2 and 27.5 per cent, respectively.

Additionally, Wollongong is considered a regional city based on the RAI's classification of Australia's regional communities. In comparison to other such areas around Australia, Wollongong has a slightly lower percentage of jobs that are of high vulnerability and a much higher percentage of low vulnerability jobs compared to other regional cities.

Human capital and lifelong learning

The RAI's '[In]Sight' data tool provides a snapshot of the competitiveness of Australia's regional LGAs by ranking each LGA's performance on various indicators for 10 different themes. It highlights elements that the region has strengths in or areas for improvement.

The human capital theme focuses on understanding the skills and capabilities of people. Building a more agile and skilled workforce that is ready to adapt to changes and has relevant skills for future jobs is increasingly important. Therefore, having a good understanding of Wollongong's human capital is fundamental to securing future economic development and helping businesses identify the capabilities of the workforce.

Human capital is measured by a range of indicators such as the proportion of the region's population with university qualifications, technical qualifications, high school completion, primary and secondary school literacy and numeracy, level of early childhood development, the proportion of the population who are learning or earning, the workforce skill mix as well as the rates of adult learning.

Wollongong ranks six out of the 95 LGAs in regional NSW on human capital. On most of the indicators of human capital, Wollongong has scored better than regional NSW. Wollongong is home to the University of Wollongong and this, coupled with the close proximity to Sydney that also provides access to several higher education institutes, could account for the strong performance in university qualifications. University qualifications in Wollongong are at 16.4 per cent compared to 11.8 per cent in regional NSW.

Completing high school is considered to have an influence on whether people pursue higher education and, therefore, is an important aspect for developing a skilled workforce. High school completion was significantly higher in Wollongong with close to half the population (48.4 per cent) completing high school. Despite also having TAFE Illawarra, technical qualifications in Wollongong are slightly lower at 25.3 per cent compared to 26.1 per cent in regional NSW.

Wollongong also has a proportion of jobs, such as sales assistants and salespersons, general clerks and hospitality workers, which are vulnerable to automation and future jobs will also be impacted by the increasing use of digital technology. The demand for skills will continue to change and workers will be expected to learn new skills to meet these changing needs.

Adult learning rates provide an indication of how engaged the population in Wollongong is with lifelong learning. Regional NSW has around 5.8 per cent of its population aged 25-64 engaged in learning, while Wollongong has a higher engagement level at 7.9 per cent. The high level of adult learning is a positive indication of lifelong learning, which will be beneficial for a skilled and relevant workforce.

For more information on human capital and lifelong learning, see the RAI's report on bridging the education divide:

<http://www.regionalaustralia.org.au/home/2017/03/bridging-education-divide-building-culture-learning-across-lifecycle-regional-australia/>

Vulnerability to automation

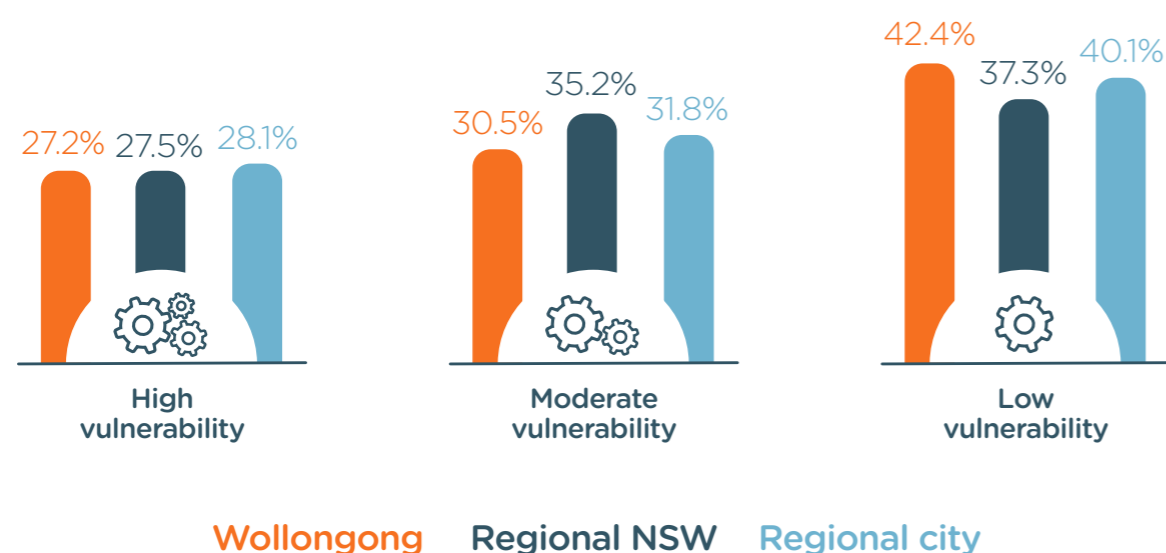
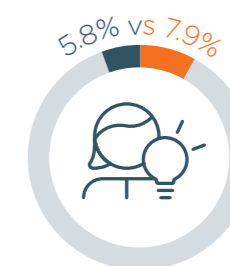
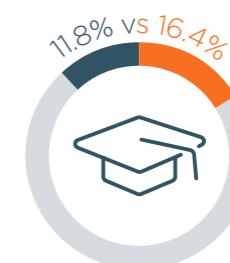


Figure 6 | Source: Regional Australia Institute 2018

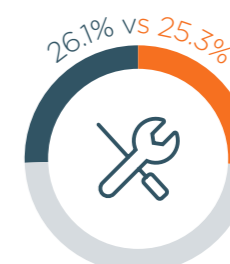
Human capital indicators



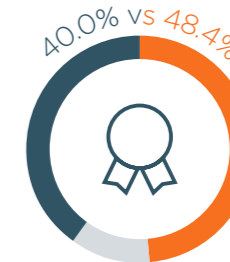
Adult learning



University qualification



Technical qualification



High school qualification

Regional NSW Wollongong

Figure 7 | Source: Regional Australia Institute 2018

The innovation theme combines traditional measures focused on R&D and science, as well as aspects related to the commercial environment (i.e. business dynamo) such as number of business entries.

The level of innovation in the region is important in driving productivity growth and to take advantage of future opportunities as the Australian economy transitions towards more knowledge and service products. Wollongong shows strengths in innovation, ranking third out of the 95 LGAs in regional NSW.

Indicators of R&D and science includes the number of people in Wollongong who are science and tech qualified, R&D managers, as well as the number of registered research service providers and patent applications. Wollongong has generally performed well in this aspect with 6.4 R&D managers per 10,000 working-age population, which is comparatively higher than regional NSW (3.7 per 10,000 working-age population).

Though the number of patent applications in Wollongong is relatively similar with regional NSW (4.1 and 3.9 respectively, per 10,000 working-age population). Additionally, Wollongong has a higher percentage of science and tech-qualified people (10.5 per cent) compared to regional NSW (8.5 per cent). Wollongong's strong performance in these indicators of R&D and science contributes to the city's overall high ranking in innovation.

The 'business dynamo' aspect focuses more on the environment in which businesses are operating and the level of innovation and entrepreneurial capacity in the region. It measures the number of business entries, owner-managers, trademark applications and KIBS. Overall, Wollongong performed relatively well, ranking 13 out of 95 LGAs in regional NSW for business dynamo.

Wollongong performed better on two indicators under the business-dynamo aspect. Business entries were higher than that of regional NSW at 10.7 per cent and 8.7 per cent, respectively. The level of business entries suggests there is a supportive business environment that can further help to bring new innovation to the region.

Additionally, KIBS provides knowledge-intensive support to other organisations' business processes, which requires specific and professional knowledge. Thus, a high KIBS level not only suggests a skilled workforce but knowledge produced by KIBS also contributes to innovation. Performance on KIBS in Wollongong (5.2 per cent) is slightly higher than regional NSW (4.4 per cent).

Business dynamo

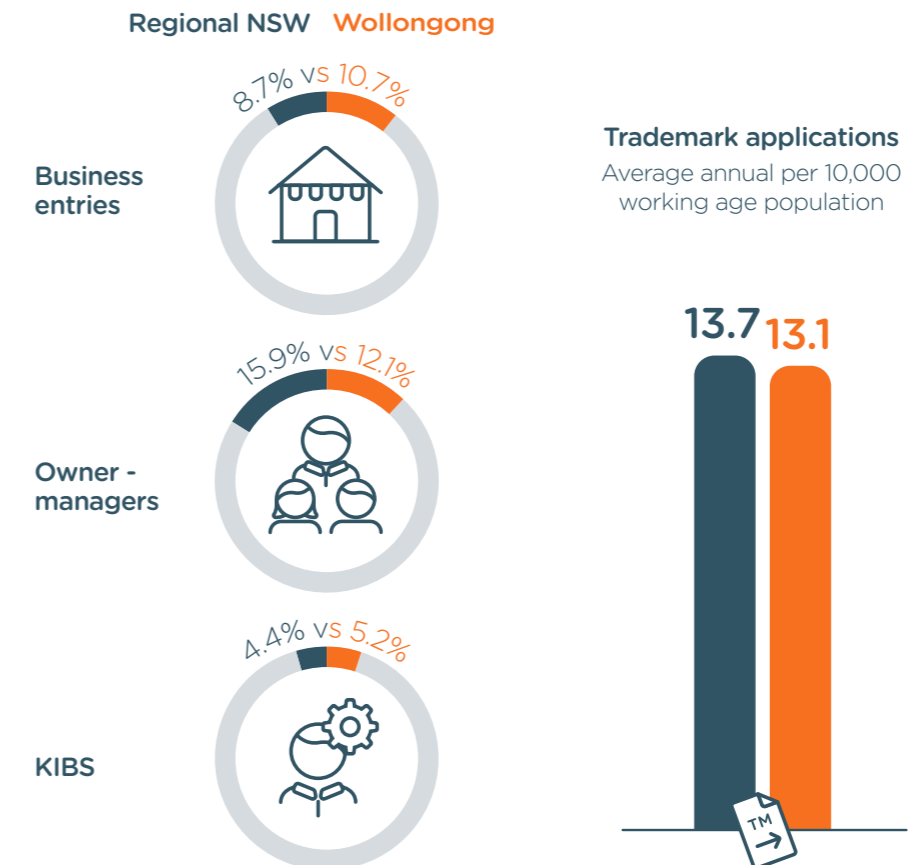


Figure 9 | Source: Regional Australia Institute (2018)

Compared to regional NSW's performance on the number of owner-managers and average annual number of trademark applications per 10,000 working age population, Wollongong has lower numbers. In terms of the number of owner-managers, which is an indicator of the level of entrepreneurship in the area, Wollongong only has 12.1 per cent compared to 15.9 per cent in regional NSW.

The number of trademarks is relatively similar with Wollongong having 13.1 trademarks per 10,000 working age population compared to 13.7 in regional NSW.

Overall on the innovation theme, Wollongong performed stronger on the traditional measures on R&D and science, scoring higher than regional NSW. Wollongong also showed strengths in certain areas of the business dynamo, but continuing to develop this aspect to encourage innovation and entrepreneurial capacity can bring new opportunities for businesses in the region.

In order to support an innovative business environment, a skilled workforce is also necessary and is related to the human capital indicators. Wollongong is currently performing well in this aspect with high levels of university qualification, high school completion and adult learning compared to regional NSW.

Research and development

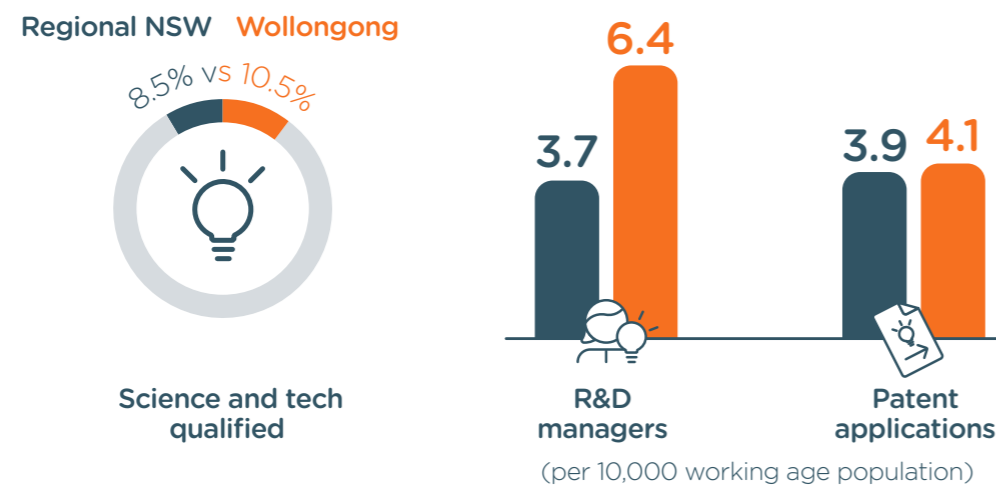



Figure 8 | Source: Regional Australia Institute (2018)



“Full access to high speed digital technology, along with the skills required, will enable Wollongong to continue to offer the benefits of regional living and lifestyle with the attraction of globally competitive business options.”

Wollongong's future will be influenced significantly by the health and vitality of the local businesses. Automation and the digital economy are real drivers of business viability, and fast broadband enables competitive participation.

Access to fast broadband in Wollongong is stimulating business growth, from a proactive approach to connecting and learning how to take full advantage of digital technologies.

Continuing to embrace digital technology to leverage existing strengths and develop new industries can bring increased economic resilience and prosperity to Wollongong, ensuring more is gained than lost from the impact of fast broadband.

Innovation and entrepreneurship that can be pursued with full access to high speed digital technology, along with the skills required, will enable Wollongong to continue to offer the benefits of regional living and lifestyle with the attraction of globally competitive business options.

Maintaining and expanding the programs in Wollongong that promote and educate on the business possibilities from access to fast broadband can encourage latent innovators and entrepreneurs in the community and existing business operators to embrace digital technology, pursue new ideas and invest in growth.

Conclusion

July 2018

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Notes:

- KIBS are services and business operations heavily reliant on professional knowledge, such as finance, law, engineering and science.
- Total known jobs excludes inadequately described, not stated and not applicable in 2016 Census responses.
- Talking point: the foundations of regional Australia
<http://www.regionalaustralia.org.au/wp-content/uploads/2014/12/Foundations-of-regional-Australia-FINAL-.pdf>
- [In]Sight: Australia's regional competitive index is available at
<http://www.regionalaustralia.org.au/home/tools-and-products/insight/>

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