

COVID-19 and the future of work in Tasmania

Prepared by the
Tasmanian Policy Exchange and the
College of Business and Economics
in collaboration with
Tasmanian Leaders

September 2021

ACKNOWLEDGEMENTS

This report has been prepared by the Tasmanian Policy Exchange (TPE) at the University of Tasmania.

The TPE has been established to enable the University of Tasmania to make timely and informed contributions to key policy debates occurring in Tasmania thus making a positive contribution to the future of our state and its people. This report provides analysis of the impact of the COVID-19 crisis on employment in Tasmania, as well as assessing likely trends moving into the future.

PRIMARY AUTHORS

Richard Eccleston – Professor of Political Science and Director, Tasmanian Policy Exchange

Sarah Hyslop – Project Manager, Tasmanian Policy Exchange

Lachlan Johnson – Policy Analyst, Tasmanian Policy Exchange

CONTRIBUTING AUTHORS

David Adams – Professor and Pro Vice Chancellor, Partnerships & Regional Development

Philip Bohle – Professor, College of Business and Economics

Tim Butcher – Associate Professor of Organisation Studies, College of Business and Economics

Saul Eslake – Independent Economist and Vice Chancellor's Fellow

Peter Fairbrother – Professor of Management, College of Business and Economics

ACKNOWLEDGEMENTS

We would also like to thank colleagues from across the University, government, industry and the community sector for their input into this report.

Table of contents

EXECUTIVE SUMMARY	5
PART 1 – THE CONTEXT: THE IMPACT OF COVID-19 ON THE AUSTRALIAN AND GLOBAL ECONOMIES	10
Section 1.1: COVID-19 and the global economy	11
Section 1.2: Global economic recovery	13
Section 1.3 The Australian pandemic response	15
Section 1.4 Australian economic support and stimulus	16
Section 1.5 Economic and employment impacts in Australia	17
PART 2 – TASMANIA: THE IMPACT OF COVID-19 ON EMPLOYMENT AND WORK	20
Section 2.1: State-wide economic and employment impacts	22
Section 2.2: Industry-specific impacts on employment in Tasmania	24
Section 2.3 Regional and demographic variation	27
Section 2.4 Gender and age variation in economic impacts and employment outcomes	29
PART 3 – COVID-9 AND THE FUTURE OF WORK: KEY TRENDS AND THE IMPLICATIONS FOR TASMANIA	35
Trend 1: The acceleration of digitisation and use of technology	37
Impact 1: The rise of remote working	37
Impact 2: Migration to the regions, decline of CBDs and ‘city work’	39
Impact 3: Increasing demand for digital literacy and technical skills across occupations and industries	42
Trend 2: Economic restructuring and increasing inequality	45
Impact 1: Industries at risk of restructuring and automation	45
Impact 2: Industries expected to grow during the recovery	51
Impact 3: Impacts on specific cohorts of workers	53
Trend 3: Migration, mobility and labour shortages	55
Trend 4: Accelerating enterprise creation and new forms of work	62
ENDNOTES	67
REFERENCES	72

EXECUTIVE SUMMARY

Governments and communities the world over continue to struggle with the complex balancing act of containing the ongoing COVID-19 pandemic while supporting the recovery from its devastating economic impacts. This challenge is compounded by the fact that the long-term economic and social sustainability of this recovery requires that it be built upon meaningful, well-paid, and productive jobs. In this fast-changing and uncertain context, a nuanced understanding of the changing nature of work and the conditions likely to shape labour market outcomes in the emerging 'new normal' is critical. Despite Tasmania's relative success managing the virus thus far, the challenges for the future of work are as pressing here as they are anywhere else in the world.

Analysis of the changing nature of work is being conducted by governments and research organisations globally and while common themes are emerging, it is also apparent that the impact of COVID-19 on employment, both during the current crisis and into the future, is subject to significant variation across regions and communities. The same is true for public health responses and the design of economic stimulus or support: despite some broad, generally applicable trends, there is no universal blueprint for effective policy responses. Rather, a strong and sustainable recovery requires place-based and context-specific analysis of the rapidly changing circumstances being confronted by communities. While the analysis presented in this discussion paper focuses on the economic recovery through to the end of June 2021, prior to the worst impacts of the Delta variant outbreak, it does provide an important framework for analysing the impacts of the ongoing crisis and key trends shaping the future of work in Tasmania.

This discussion paper has four broad aims:

1. To provide a detailed, data-driven analysis of the impact of the COVID-19 crisis on employment in Tasmania, as well as an assessment of the trajectory of the economic recovery through to mid-2021.
2. To review emerging international evidence regarding the impact of COVID-19 on the future of work and evaluate the extent to which these trends are being experienced in Tasmania.
3. To assess the likely longer-term impacts of the changing nature of work in Tasmania and their implications for the local economy and community.
4. To encourage and inform a wider discussion of the issues and ideas that will shape the future of work in Tasmania, thereby helping to inform the policy responses and strategies required to support meaningful and sustainable employment for Tasmanians into the future.

Why this matters for Tasmania

Analysis of emerging trends regarding the future of work and their relevance to Tasmania is important for several reasons:

1. To provide an evidence base upon which to conduct more detailed industry-level workforce and skills planning. This work will be especially important as the broader Australian economy reopens in late 2021 and will help ensure that more Tasmanians can secure meaningful, employment and acquire the skills to contribute in a fast-changing labour market.
2. Detailed labour market research improves our understanding of the industries and businesses that are already well-positioned for future growth, and assesses the prospects of those that will have to adapt in the aftermath of the COVID-19 crisis.
3. Effective economic policy planning will not be possible without considering the ways that changing patterns of migration and settlement will affect the size and distribution of Tasmania's future workforce.

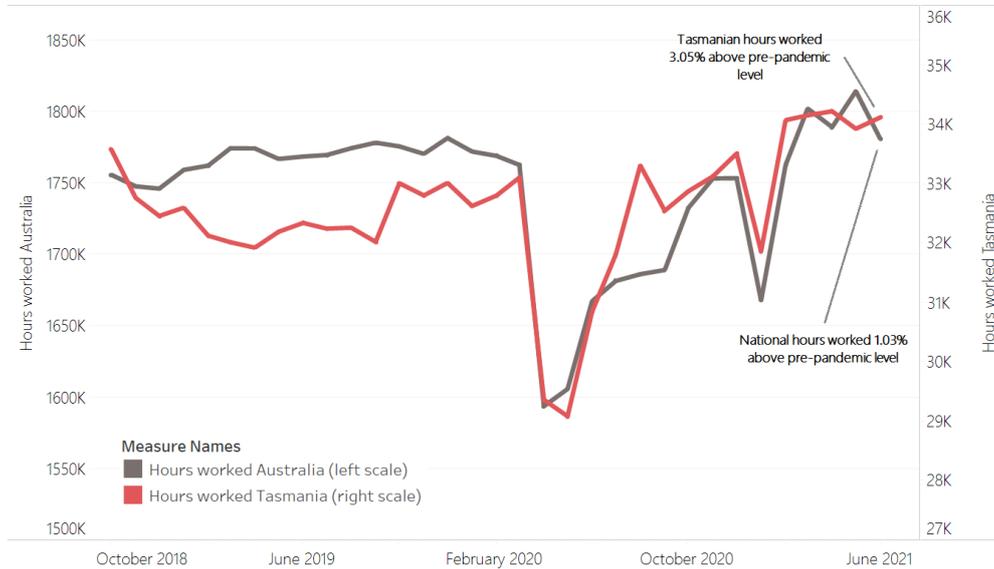
Overall, this report concludes that the COVID-19 pandemic is likely to change what millions of workers do every day, as well as how and where they work. In many places and industries, the crisis will lead to an acceleration of changes already underway, while in other areas it may reverse existing trends and drive the emergence of new ones. Most importantly, and while change is undeniably afoot, uncertainty abounds. Indeed, at the time of writing, the growing Delta outbreak has derailed Australia's strong economic recovery from the first phase of the crisis.

This uncertain outlook highlights the importance of anticipating, and preparing for, likely changes to the way we work, ensuring that the Tasmanian community can capitalise on our strong economic recovery to date and make the most of the opportunities on the horizon. If we are able to ensure that more Tasmanians have the skills

¹ Research conducted by the Institute for Social Change in PESRAC (2021). *Premier's Economic & Social Recovery Advisory Council Final Report*, March 2021

Figure A: Total hours worked in all jobs in Tasmania and Australia, 2018 to 2021

(source: ABS Labour Force June data)



and training to contribute to the future workforce, we can both increase the number of Tasmanians in employment and address the challenges posed by growing labour and skills shortages. We must also assess the extent to which the mix of industries in Tasmania and the numbers of workers employed in them will change as a result of the pandemic to help businesses and workers adapt before it is too late. Finally, promoting Tasmania as a safe and sustainable island from which to live and work will underpin longer term population and economic growth, including in rural and regional areas. Given Tasmania's demographic and workforce challenges, this will be essential to the state's future prosperity.

Key findings

The paper begins with a high-level overview of the impact of COVID-19 on global and national employment (Part 1) before providing a detailed analysis of the impact of the COVID-19 crisis on the Tasmanian labour market to June 2021 (Part 2). Key findings include:

- Despite growing risks associated with the current Delta outbreak, Tasmania's economic recovery has been strong, with hours worked (the Reserve Bank of Australia's preferred measure of labour market demand) now exceeding their pre-pandemic peak. In June 2021 hours worked rose 3% above pre-pandemic levels, having fallen by 9.9% between February and April 2020 (see Figure A).
- The recovery in the official unemployment rate across Tasmania has also been strong, with the rate falling to 4.5% in Greater Hobart and 4.6% in the rest of the state in June 2021.
- The recovery in hours worked and labour force participation has not been as strong, especially in regional Tasmania. While the total workforce in Greater Hobart was larger in June 2021 than in February 2020 (with a participation rate of 64.8%, less than 1.5 points below the national figure), the total workforce in the rest of Tasmania includes 3500 fewer people than it did in February 2020.

². Florida, R., Andres Rodriguez-Pose, A. and Storper, M., (2020). *Cities in a Post-COVID World*, Utrecht University discussion paper <http://econ.geo.uu.nl/peeg/peeg2041.pdf>

Table A: Change in employed persons in major Tasmanian industries, February 2020 to February 2021

(source: ABS Labour Force June data)

Jobs lost February to May 2020		Jobs recovery as of February 2021*
Accommodation and food services	7,594 jobs lost	8,558 jobs recovered, net gain = 964 jobs
Construction	743 jobs lost	1,577 jobs recovered, net gain = 834 jobs
Administration and support services	631 jobs lost	326 jobs recovered, net loss = 305 jobs

*Employment recovery is measured February to February to control for seasonal influences

- The recovery to date in total employment varies between key Tasmanian industries (see Table A).
- The economic crisis has exacerbated existing structural inequalities in the labour market. Women, younger workers, and workers in less secure categories of employment, especially in the regions, have fared worse than workers with more secure employment.
- Women were more likely to lose their jobs than men during the early stages of the crisis and were also more likely to increase their

already-disproportionate share of unpaid work. This gender differential is greatest in regional Tasmania, where total hours worked by women remains marginally below (-0.6%) the pre-pandemic peak whereas male worked have increased by 5.5%. Much of this impact stems from the over-representation of women in casual and insecure categories of employment and has been compounded by stimulus programs favouring male-dominated industries and occupations, particularly in the construction industry.

Emerging trends and foresight analysis

This report's review of emerging international and national analysis on the likely longer-term consequences of the COVID-19 crisis on employment has identified four key trends regarding the future of work.

Future of work key trends
Trend 1: The acceleration of digitisation and use of technology in the workplace
Trend 2: Economic restructuring and increasing inequality
Trend 3: Declining migration, mobility, and labour shortages
Trend 4: Accelerating enterprise creation and new forms of work

The third part of the discussion paper presents a preliminary assessment of the extent to which these trends are evident in Tasmania, as well as discussing their likely impacts. In so doing, the report uses a foresight approach to inform policy and strategic responses. The foresight analysis is not designed to predict the future, but rather to identify emerging trends and their potential impacts in Tasmania.

The foresight analysis suggests that:

- Demand for digital skills and infrastructure will intensify, affecting some industries and occupations more than others.
- A permanent increase in remote working (along with lifestyle and other factors), will likely continue to drive increasing population growth in regional areas. This could see both increasing migration from large mainland cities into Tasmania and more migration from Tasmanian cities into Tasmania's regions and will have implications for patterns of settlement and service provision.
- There will be an acceleration in automation and the adoption of artificial intelligence (AI) in many important Tasmanian industries. Crucially, Tasmania is not only more exposed to AI and automation than other Australian states, it also less prepared.

- While uncertain, the pandemic may have a lasting impact on segments of key service industries, including international travel, education, and arts and recreation.
- There will be strong employment growth in health and social care, technology, logistics, construction and engineering, and professional services.
- Younger and less skilled workers are likely to be more vulnerable in the labour market into the future, as are routine-task intensive administrative and retail occupations that are susceptible to either automation or offshoring.
- Restricted migration and mobility, coupled with strong national demand in key industries and occupations, is likely to result in ongoing labour shortages which may undermine the economic recovery.
- Although the pandemic has also had a greater impact on small businesses than on larger ones, this disruption has also created opportunities for new enterprise creation. However, the causes and implications of recent growth in new businesses is unclear and requires more detailed research.

Finally, the foresight analysis process highlights several important policy priorities to promote employment and economic growth during the COVID-19 recovery. Many of these were also identified in the Premier's Economic and Social Recovery Advisory Council's *Final Report* published in March 2021. However, the need to support employment pathways and skills development has become even more acute given the strong (albeit vulnerable) economic recovery and growing evidence of skills and labour shortages.

Policy objectives that as a community we should continue to pursue include:

- Improving the digital literacy and technological skills of the Tasmanian workforce and young people.
- Improving access to digital infrastructure and technology.
- Reshaping sector-specific and place-specific workforce education and training programs and options in recognition of the state's rapidly evolving industrial and skills context.
- Developing flexible pathways between education and training and careers to assist people into rewarding and meaningful work and to support the employment needs of the future.

³ PESRAC 2021, p. 8

- Promoting up-skilling or re-reskilling via industry-focused short and micro courses for skills development in the current workforce. Flexible models of training while working are especially important in a tight labour market.
- Utilising place-based employment services and hubs to connect local job seekers with work in their communities.
- Supporting workers in vulnerable industries and occupations to re-skill and move to more secure employment.
- Re-evaluating the place of insecure work in our labour market, and exploring ways that casual, contract, temporary, or otherwise insecure workers can be better supported.
- Analysing new forms of work, including gig economy work enabled by digital platforms, in order to inform better decision-making.

The University of Tasmania is committed to working collaboratively to achieve a more prosperous, inclusive, and sustainable Tasmania.

The last 18 months have been challenging but our hope is that the disruption of the COVID-19 pandemic can prompt us all to re-imagine a more accessible, equitable, inclusive labour market where more Tasmanians can secure meaningful, productive, and sustainable work. The pandemic provides an opportunity to reassess the values and ideas underpinning employment and the future of work in Tasmania. To quote the Premier's Economic and Social Recovery Advisory Council: 'Recovery isn't just about restoring what we had before. Recovery is also about building stronger, smarter, better'.³

Introduction

The COVID-19 pandemic has had a profound impact on the global economy and society. Lockdowns, border closures, and movement restrictions – not to mention fear of contracting the virus itself – have fundamentally reshaped the world of work. How and where we work is changing, with profound implications for education, training, and the nature and distribution of employment. Despite low case numbers to date, Australia and Tasmania have not been immune from these impacts.

This report provides analysis of the impact of COVID-19 on employment and work (both formal and informal) in Tasmania and assesses the extent of the recovery to June 2021. It identifies emerging changes to the way Tasmanians work in the context of the evolving pandemic and analyses the implications for the future of employment in Tasmania. This analysis draws on public data together with other employment datasets from a wide variety of sources, including the University of Tasmania, other research organisations, government, and industry. The aim is to identify emerging employment trends into the future in order to support strategies, policies, and programs designed to maximise the numbers of Tasmanians able to secure meaningful and rewarding work into the future.

Relative to the rest of the world, Australia has recorded low COVID-19 case numbers and few deaths, with 40,097 cases and 967 deaths reported as of 18 August 2021. However, at the time of writing in mid-2021, the Delta variant of the coronavirus continues to spread across mainland Australia. While so far, Australia has undoubtedly benefited from being an island, and its strong public health response has also been crucial. Nevertheless, the disruption to the lives of Australians has been profound. The crisis has also taken an enormous economic toll, exacted a tragic health and welfare cost, and been a catalyst for significant social change.

To date, Tasmania has performed well relative to the rest of the country. This is due in part to the fact that Tasmania is an island state with no major barriers to limiting movement or entry of residents or visitors. Tasmania experienced a severe but relatively short-lived downturn during the initial lockdown period in 2020, followed by a strong recovery to mid-2021.

However, the detailed analysis presented in this report suggests that this impact has not been uniform. Some regions, industries, occupations, and worker cohorts have fared worse than others and a number have continued to experience the pandemic's adverse impacts, even prior to the current Delta outbreak. Despite a relatively strong 'V-shaped' recovery thus far, a return to pre-pandemic conditions is unlikely, especially given the likely impact of the Delta variant of the virus on the economic recovery of the country as a whole. Ultimately, it may be several years before the 'next normal' takes shape. In addition, Australia is in the process of making a transition from an isolation and suppression strategy to one where mass vaccination is used to manage the spread and impact of the virus. The success of this strategy and its effects on the economy and employment are yet to be seen.

A note on data and sources used in the report

This report combines and analyses data from a diverse range of sources, including the Australian Bureau of Statistics, the US Census Bureau, the OECD, and the International Monetary Fund. While these are meticulously collated and thoroughly reliable, they typically become more speculative with each degree of disaggregation. This becomes especially important when trying to discern subtle trends at the regional, industrial, or cohort level. Much analysis of that nature in this report has used the ABS detailed monthly labour force survey data and while all care has been taken to minimise the impacts of seasonality or sampling error, for example, these cannot be avoided entirely. Finally, these datasets offer only a brief snapshot in time during a period of historic social and economic change and should be read with this fast-changing context in mind.

1.1 - COVID-19 and the global economy

COVID-19 has impacted every country and region on the planet, from the largest urban centres to the most remote rural communities. Over the past 18 months, it has reshaped fundamental features of daily life and work in communities the world over. As of August 2021, more than 208 million people have contracted COVID-19 and 4.38 million have died as a result. The virus' indirect effects have also been enormous. Lockdowns, travel restrictions, and social distancing measures have disrupted aspects of daily life formerly taken for granted, with immeasurable social, physical, and psychological consequences.

Despite these global impacts, different places and people have had very different experiences of the pandemic, with significant regional variation driven by a combination of geography, diverse public health responses, vaccination progress, and the availability of economic support measures.

Even the best performers have not escaped the pandemic's severe impact. During the second quarter of 2020, the global economy contracted 3.5% – a 6.9% turnaround on the IMF's 3.4% growth forecast

– causing the deepest global recession since 1945. The share of national economies simultaneously experiencing a contraction was the highest since the 1931 Great Depression.¹

Those countries that have been unable to contain the virus have generally experienced the most severe public health and economic impacts. In the early stages of the crisis, governments faced the difficult decision of whether to lock down communities by restricting travel, commerce, and social interaction to contain the virus in the knowledge that these measures would have profound economic and social consequences.

Countries like Australia, with no shared land borders and which quickly implemented an aggressive public health response, did experience significant economic consequences but to date at least have also generally experienced stronger recoveries. This is because even though lockdowns and movement restrictions impact economic activity, the costs of these actions pale in comparison to the cost of uncontrolled community transmission of the virus.

Figure 1.1: Global real GDP growth, 1980 to 2021

(source: IMF)

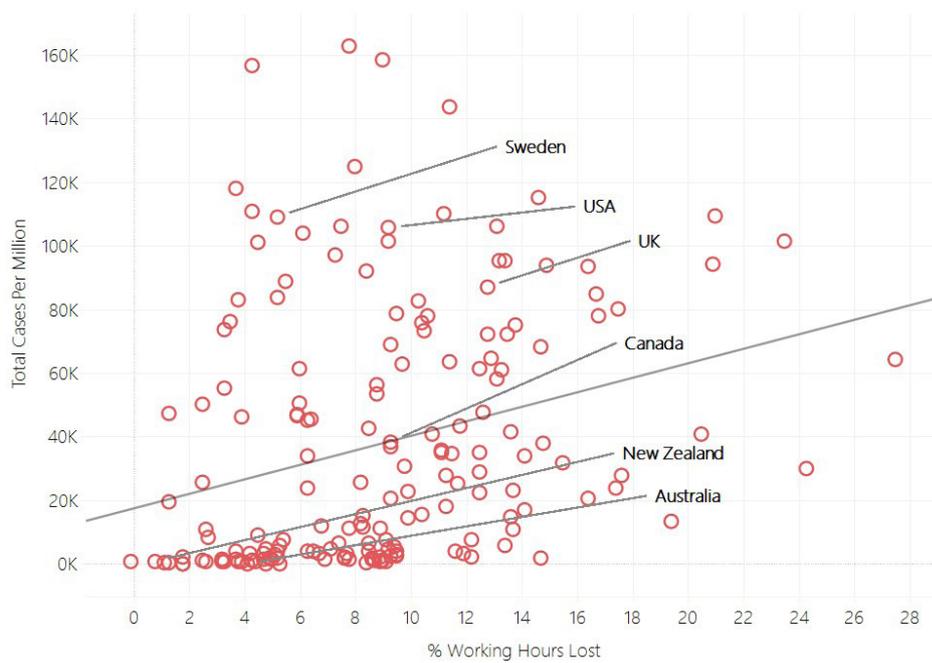


The impact of COVID-19 in 2020 saw both advanced economies and emerging ones sustain greater declines in GDP than those seen during the Global Financial Crisis

Analysis by the Brookings Institution shows a “positive correlation between the magnitude of growth revisions and [COVID-19] death tolls”.² Similarly, as Figure 1.2 below illustrates, there is a strong relationship between per capita COVID-19 cases and adverse employment impacts.

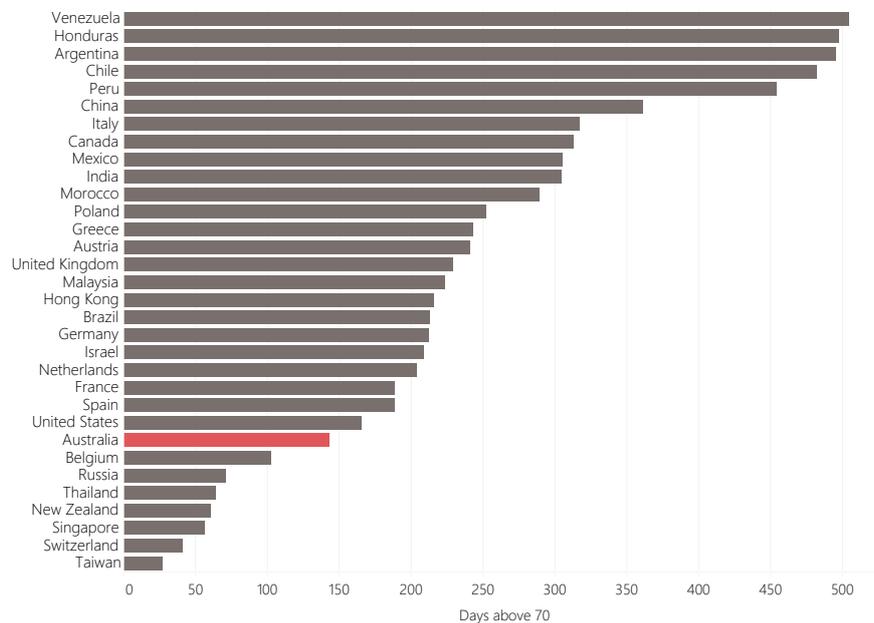
The greatest loss of work hours was experienced in those countries with the worst health outcomes as opposed to those which imposed strict lockdowns to suppress transmission.

Figure 1.2: Working hours lost per capita due to COVID-19 around the world.
(source: ILO)



Countries that have been more successful in controlling COVID-19 have generally experienced better employment outcomes

Figure 1.3: Number of days over 70 on the Oxford Stringency Index for selected countries
Public health responses to the pandemic varied widely between jurisdictions
(source: Our World in Data COVID Tracker)



1.2 - Global economic recovery

To date, the economic and employment recovery from the pandemic has been strong, albeit with significant variation across countries, and subject to subsequent waves of infection. For most nations, however, the size and cost of economic stimulus and support measures have dwarfed those deployed during the 2008-9 Global Financial Crisis (GFC).

The pace at which national economies are recovering from the COVID crisis is largely driven by four key factors:

1. The effectiveness of public health responses
2. The scale and effectiveness of economic support measures
3. The progress of vaccination rollouts
4. The progression and impacts of the Delta variant

Regarding the first of these, as discussed above, jurisdictions that have pursued more aggressive and proactive public health measures have typically been the strongest economic performers. However, the speed and coverage of vaccination programs is likely to be the key to economic recovery during the next phase of the pandemic.

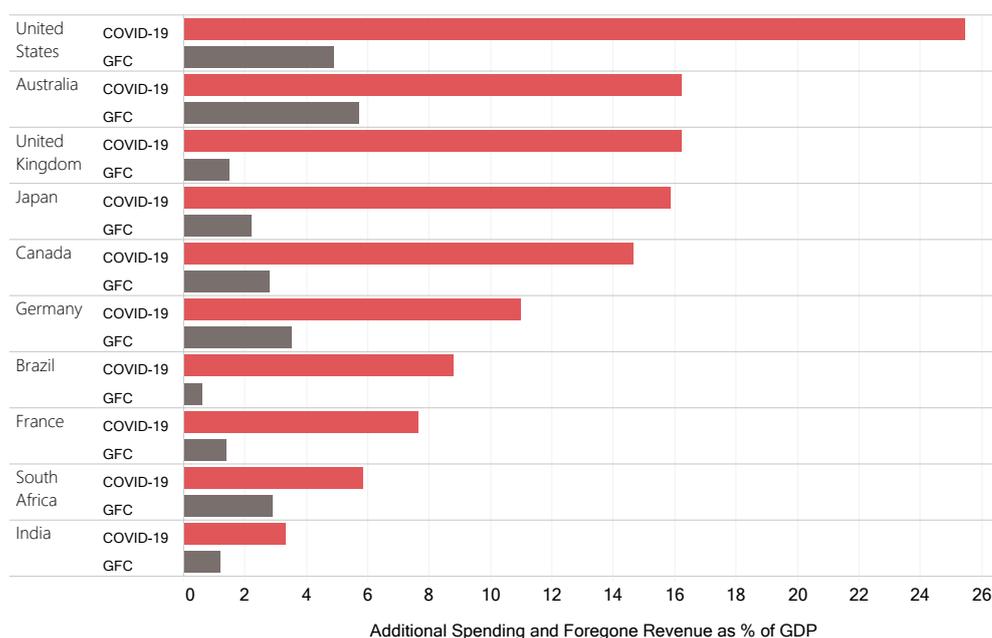
ECONOMIC SUPPORT AND STIMULUS MEASURES

Fiscal and monetary stimulus measures have been deployed at an unprecedented scale and (during the early stages of the crisis at least) Australian support measures were among the largest on a per capita basis in the developed world, at around 16.1% of GDP (see Figure 1.4).

Approaches to the design and delivery of stimulus and support packages have varied considerably, especially in relation to the focus on employers and/or employees. The United States funded direct cash payments, interest-free loans to businesses, and employer tax credits through the *Coronavirus Aid, Relief, and Economic Security (CARES) Act* from late March 2020. Australia and New Zealand both introduced lump-sum subsidies at a fixed rate (as opposed to a proportion of an employee's wage) accessible to businesses that could demonstrate a threshold level of lost turnover due to the pandemic. Many support and stimulus packages, including Australia's 'JobKeeper' subsidy, contained specific measures for displaced or furloughed workers, which sought to maintain a connection between employers and employees to assist with the recovery. Canada and Poland introduced a subsidy covering a designated portion of employees' wages rather than a fixed payment, with rates set at 75% and 50% respectively. The Netherlands supported employers to cover employees' full wages at their pre-pandemic levels.

Figure 1.4: Comparison of stimulus spending between the COVID-19 crisis and the GFC.

(source: IMF Fiscal Monitor)



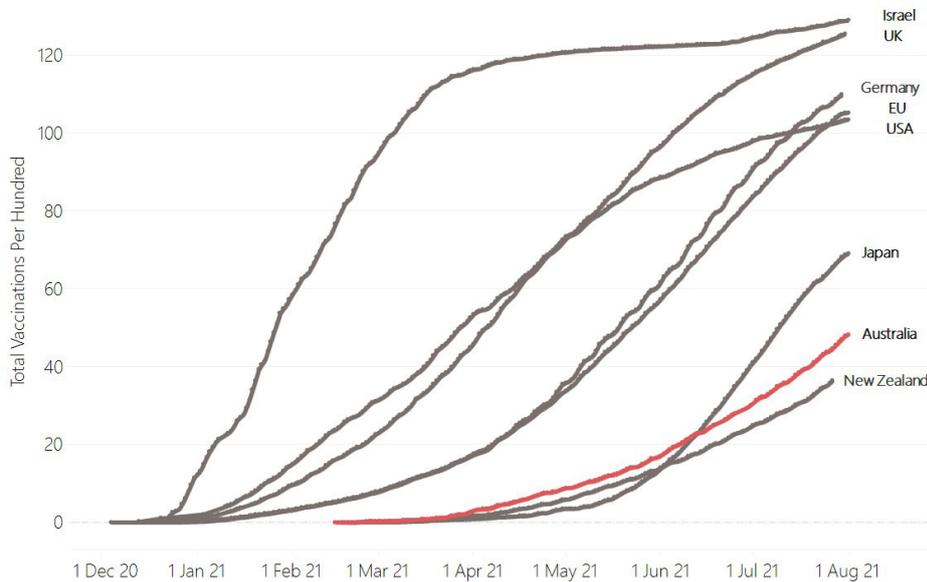
VACCINATION ROLLOUT

It would seem that the only credible path towards a sustainable economic recovery is to achieve a level of vaccination high enough to reopen borders and resume travel without significant public health impacts. As illustrated in Figure 1.5 below, Australia and New Zealand are lagging well behind many other developed countries in their vaccine rollouts and remain vulnerable to periodic outbreaks and subsequent lockdowns (as evidenced by Australia's Delta variant outbreak of July 2021). In August 2021 the Federal Government released its 'National Plan to transition Australia's National COVID-19 Response' from a suppression strategy to a focus on prevention of serious illness, hospitalisation, and fatality underpinned by widespread vaccination take-up.³ It is yet to be seen how Australia's relatively slow rollout of vaccines will affect its economy relative to those countries who have implemented a faster vaccination response, as well as the effects of the National Plan once implemented.

At the time of writing, Israel, Chile, Canada, Iceland, the United Kingdom, Hungary, and the United States are leading the global rollout. The total global vaccine rollout also appears to be gaining pace. As of mid-August, some 4.5 billion doses have been administered worldwide, with approximately 30% of the world's population having received at least one dose. And the rate is increasing – where the first 500 million doses took nearly four months to administer, the most recent 500 million took only 14 days. At the time of writing, an average of some 40 million doses are being administered every day across the globe. However, the global vaccination rollout has also been plagued by north-south inequalities, with only 1.1% of people in low-income countries having received at least one dose.⁴ Booster programs, where third doses of vaccine are administered, are already being planned and rolled out in some countries.

Australia remains well behind other advanced economies in terms of vaccine rollout

Figure 1.5: Vaccine doses administered per 100 persons in selected countries
(source: COVID-19 Data Australia)



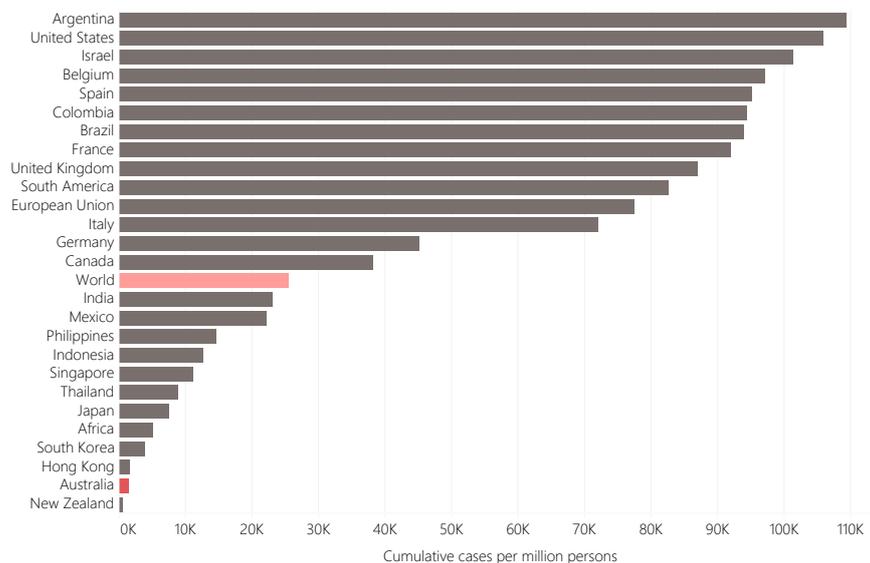
1.3 The Australian pandemic response

Prior to the Delta outbreaks in July and August 2021, Australian efforts to contain the virus have been among the most effective globally and, for the most part, Australia's progress towards economic recovery has benefited from this robust public health approach, combined with historically large economic support measures. As a result, and as demonstrated in Figure 1.6 below, cases and deaths per capita in Australia are among the lowest in the world.

In addition to state and regional movement restrictions, a key pillar of the Australian response has been the near-total closure of international borders. While this has undoubtedly helped reduce the number of imported COVID-19 cases, it has also had a profound impact on the international tourism and education sectors and migration (see Figure 1.7 – the specific workforce implications of international travel restrictions are discussed in Part 3, Trend 3).

Figure 1.6: Cumulative COVID-19 cases per capita in selected countries as of 3 August 2021

(source: Our World in Data)

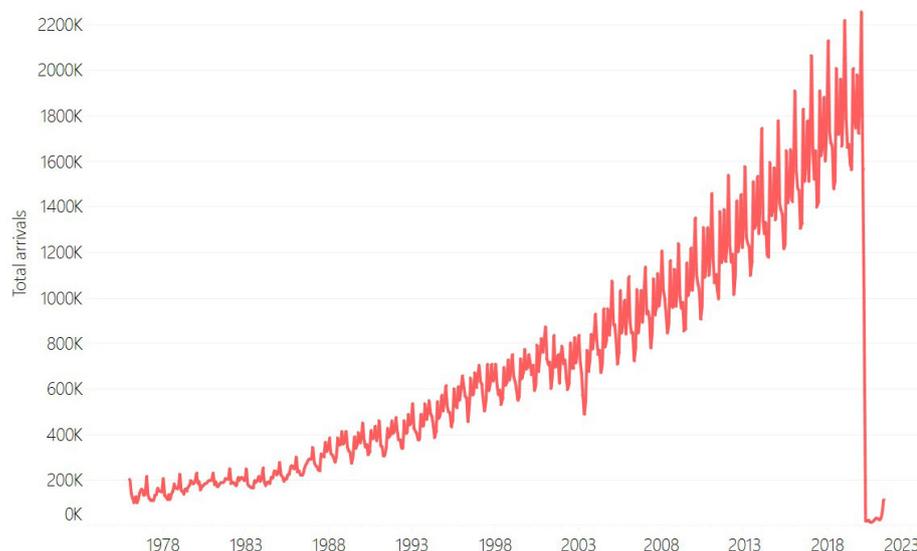


The Australian COVID-19 response has been amongst the most effective in the world but at the expense of international travel

Figure 1.7: International arrivals to Australia, 1978 to the present day.

Travel restrictions instantly reduced international visitations

(source: ABS)



1.4 - Australian economic support and stimulus

As noted above, Australian state and territory governments and the Commonwealth introduced large-scale economic support measures. Some key features of the Australian response have included:

- Tax-related measures, such as increasing the instant asset write-off for purchases of up to \$150,000 and expanding access to include businesses with turnover up to \$500 million (up from the previous level of \$50 million), as well as accelerated depreciation for certain existing assets.
- Eligible individuals have been permitted to withdraw up to \$10,000 tax-free from their superannuation, and several states have also either waived payroll tax for certain industries or delayed planned increases.
- Supplements or subsidies: most notably the JobKeeper wage subsidy scheme; the JobSeeker (formerly Newstart) allowance was also temporarily increased, alongside other temporary measures like federal funding for childcare.
- A cash flow boost to employers directed to businesses with a turnover of less than \$50 million, estimated at a cost of some \$30 billion.

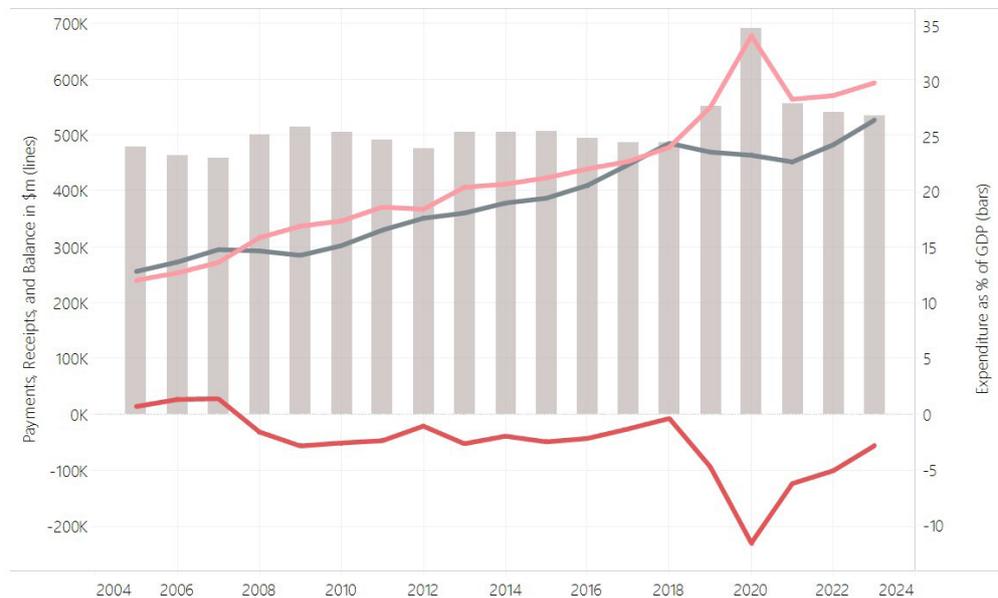
- Stimulus measures, such as a temporary business investment allowance for business with turnover up to \$5 billion and an expedited personal income tax cut. A \$4 billion hiring credit – JobMaker – for younger workers aged 16-35 was also introduced, as well as a \$750 direct payment to some 6.5 million lower-income Australians.
- The HomeBuilder initiative, intended to support confidence in the residential construction sector and encourage Australians to proceed with purchases and renovations that may have been delayed by uncertainties caused by COVID-19.

This approach has come with a considerable price tag. Stimulus and support measures totalling more than \$311 billion to date have seen government spending and debt increase to wartime levels (see Figure 1.8).

While the scale of economic support measures has been unprecedented, the social and economic consequences of doing nothing may have been greater. Having navigated the first 18 months of the crisis there is an opportunity to develop more targeted support measures focusing on the cohorts that are the most vulnerable to the pandemic’s impacts as well as supporting employment and skills development in key industries of the future such as the ‘care’ and ‘green’ economies.

Figure 1.8: Australian government tax receipts, spending and cash balance.

(source: Australian Federal Budget 2021-22)



At the time of writing, the cost of Commonwealth COVID-19 support measures exceeds \$311 billion

1.5 - Economic and employment impacts in Australia

Despite Australia's strong public health response and stimulus and support spending, the economic and employment impacts of the crisis have been profound. The national economy shrank by 7% in the second quarter of 2020 – a historically unparalleled impact – and Australia entered recession (two consecutive quarters of negative growth) for the first time since 1991 (see Figure 1.9 below). At the time of writing, the current Delta outbreaks raise the possibility of a 'double dip' recession. In late July 2021, consultancy EY estimated these lockdowns were likely to reduce work nationally by 35 million hours per week and output by \$2.8 billion per week.⁵

Some 700,000 Australians lost their jobs between mid-March and the first week of April 2020, with total wages falling 6.7% over the same short period. The increase in official unemployment as a result of the COVID-19 pandemic has been similar to the aftermath of the GFC, though the volume of COVID-19-related stimulus and support spending has been considerably greater. Also, as Figure 1.10 below shows, the impact of the JobKeeper wage subsidy scheme has meant that the 'effective' unemployment impact of the crisis has been far higher than the official rate ('effective' unemployment refers to not only officially unemployed people but also to people who left the workforce and the number working zero hours for economic reasons).

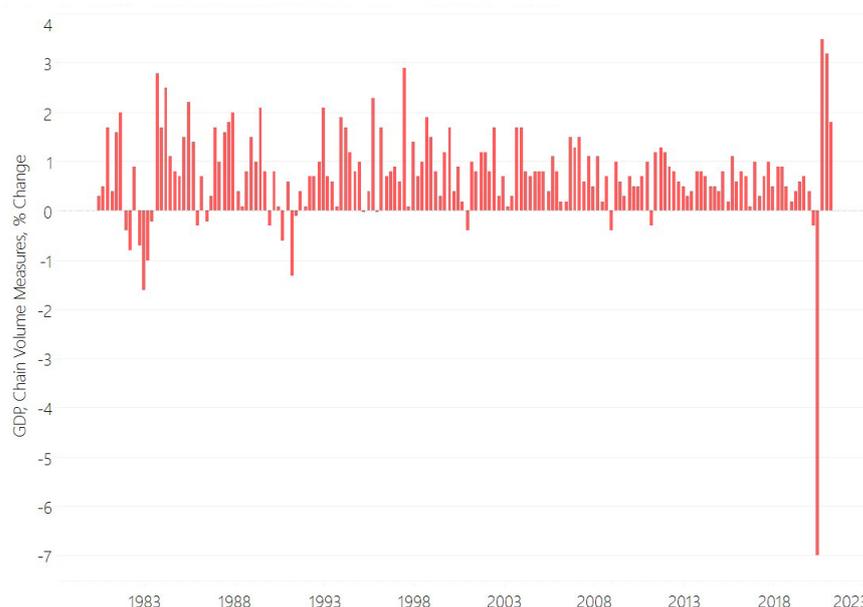
These trends are also evident in national employment data. As of July 2021, official employment is higher now than before the pandemic (see Figure 1.10). This recovery is far from complete, however; the length and severity of the current Delta outbreak, along with the progress of the vaccine rollout, will determine whether the current recovery can be sustained.

Given the nature of the public health response and effect of lockdowns, the pandemic has had a greater impact on those industries and workers who rely on social interaction and travel. These trends, common to most jurisdictions around the world, have been clearly evident in Australia.

These impacts suggest that many workers and households experienced unemployment as a result of the pandemic, at least for a time.

The pandemic has heightened the precarity of some people's work roles, particularly those employed on a casual basis.⁶ The rate of casualisation (defined as employment in which there is no entitlement to paid leave such as annual, sick or carer's leave) was at 20% of employed people prior to the pandemic. This dropped to 17% in May 2020, suggesting that casual workers accounted for approximately two-thirds of people who

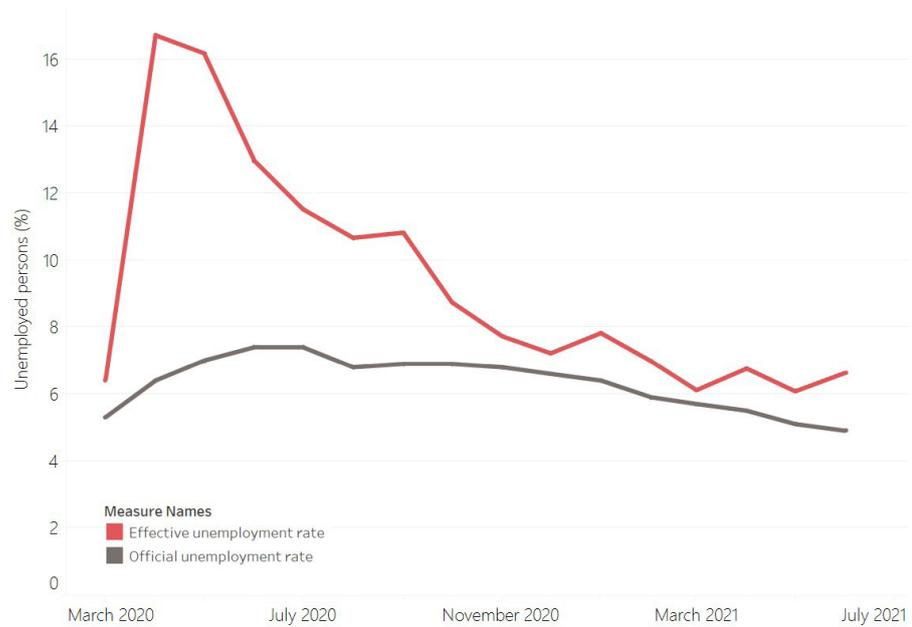
Figure 1.9: GDP growth in Australia from 1980 to the present.
(source: ABS)



In late July 2021, the 'cost' of lockdowns in terms of lost economic output was an estimated \$2.8 billion per week

Without JobKeeper, official unemployment in Australia could have peaked at 16% in April 2020

Figure 1.10: Official and calculated 'effective' unemployment rate for Australia.
(source: ABS)



lost a job early in the COVID-19 crisis. By November 2020 there had been some recovery in casual employment, with 19% of employed people listed in that category.⁷

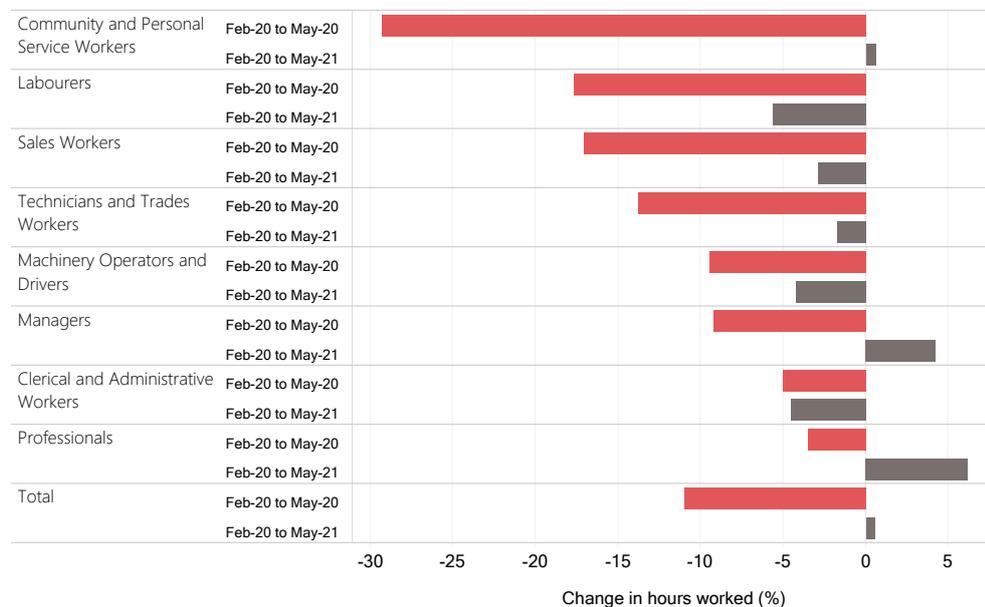
COVID-19 has highlighted the precarity of those who are in casual employment. What is less clear is the extent to which jobs lost during the first phase of the crisis have been replaced by casual positions due to the uncertain economic outlook and amid ongoing lockdowns.

OCCUPATION-LEVEL IMPACTS

At the level of specific occupations, nationally the pandemic's unemployment impact has been worst for community and personal services workers and labourers, many of whom were heavily impacted by lockdowns (see Figure 1.11 below).

Professionals, managers, and community and personal service workers were the only occupations to have seen net growth in the twelve months to May 2021, most likely because they could work remotely or because of underlying shortages of care workers. The impacts of these dynamics on employment in Tasmania are assessed in greater detail in Part 2.

Figure 1.11: Percent change in hours worked for different occupations in Australia.
(source: ABS)



Community and personal service workers suffered the sharpest decline in hours worked during the first phase of the crisis

CONCLUSION

Australia's proactive pandemic response has seen the mortality rate kept relatively low. While the economic fallout has not been as severe as in other developed countries, there has nonetheless still been a sizeable impact on the economy and on employment. To mitigate the effects on employment, federal, state and territory governments introduced various initiatives, including tax-related measures, JobKeeper and JobSeeker, and other stimulus measures.

Despite government action, approximately 700,000 Australians lost their jobs between mid-March and the first week of April 2020. These impacts were not experienced evenly across the workforce: The worst impacts were felt by community and personal services workers and labourers, who were most susceptible to the impact of lockdowns.

Due to the aggressive public health response to the pandemic and the support and stimulus measures, the economy had experienced a strong recovery, as had employment, with employment levels higher than prior to the pandemic.

Ultimately, a comprehensive vaccine rollout and widespread uptake is required for a return to a more 'normal' economic and employment landscape. Until this is achieved the recovery remains vulnerable to the negative impacts of the highly infectious Delta variant of the virus.

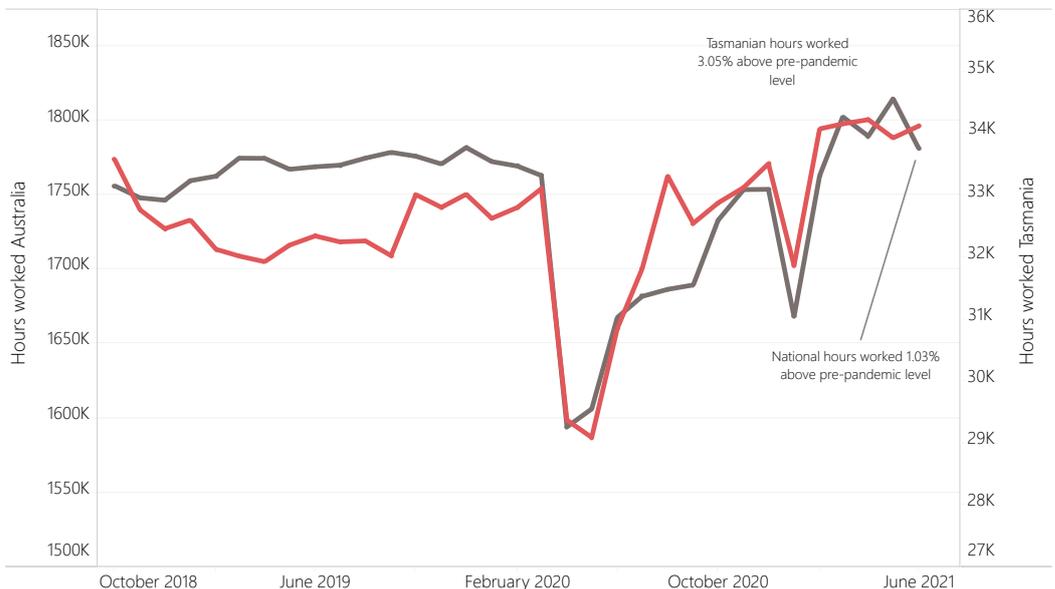
The impact of COVID-19 on the Tasmanian economy has been similar to other states and territories, although there are some important points of difference. Tasmania’s broad economic recovery has been generally strong although slightly slower than other Australian states and with significant variation across industries. Tasmania was the last Australian state to regain its pre-pandemic employment peak, in June 2021 (the Northern Territory is yet to achieve its pre-pandemic peak). However, in terms of hours worked (the Reserve Bank’s preferred measure of ‘demand for labour’) in June 2021, Tasmanian employment was 3.1% above its pre-pandemic peak, second only to Queensland.

Similarly, Tasmania’s unemployment rate fell to 4.5% in June 2021 (the lowest since June 2009), second only to Victoria, although this would have been 4.8% had workforce participation rates remained at pre-pandemic levels.⁸

Some of these differences between Tasmania and other states are subtle and require further analysis, while others are clearly linked to structural features of key industries in the Tasmanian economy. What is clear, however, is that some regions of Tasmania – rural areas and communities dependent on tourism in the north and on the east coasts in particular – have been hit harder than others. The unemployment rate in Greater Hobart remained relatively steady at between 5.5% and 6% from April 2020 through to May 2021, while the rates in the north east and north west of the state both reached over 8% over this period. Moreover, and although the percentage decline in total employment was greatest for Hobart in the early days of the pandemic, the north west and south east remain below their pre-pandemic levels almost 18 months later.

In terms of the virus itself, at the time of writing, Tasmania has experienced low case numbers, low mortality, and very limited lockdowns relative to the rest of Australia. As of mid-August 2021, Tasmania had not recorded any local transmission of COVID-19 in over a year. Continuing mainland outbreaks of the Delta variant do present a considerable risk to Tasmania’s current COVID-free status. Nevertheless, a combination of geography and effective management has meant Tasmania has so far escaped the devastation seen internationally and has experienced some of the lowest direct health impacts in the nation. While Tasmania has had the lowest number of infections per head of population of any state or territory (if cases directly linked to the Ruby Princess are excluded), it nevertheless has experienced a higher mortality rate in part because of its older population.

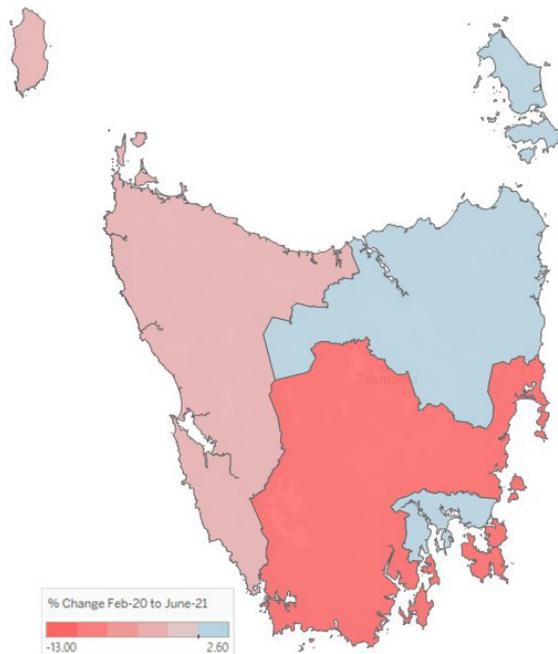
Figure 2.1: Hours worked in Tasmania and Australia, 2018 to 2021
(source: ABS)



By June 2021, hours worked in Tasmania were 3% above pre-pandemic levels

Figure 2.2: Change in total employment by SA4 in Tasmania

(source: ABS)



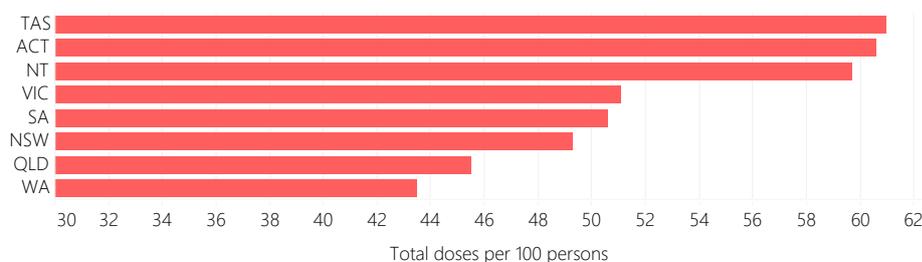
Employment in regional, central and eastern Tasmania remains well below pre-pandemic levels

As of mid-August 2021, Tasmania is also leading the nation in the vaccine rollout, with 52.3% of the population having received at least one dose (see Figure 2.3 below). Tasmania's relatively successful vaccination rollout program will help mitigate against the fact that our older demographic profile, and a higher-than-average incidence of disability and chronic disease, increase our vulnerability to further COVID-19 outbreaks.

It is worth bearing in mind, though, that having a faster or higher vaccination rate in Tasmania than the rest of the country may not help open our economy if the easing of border restrictions remains dependent upon the state with the slowest rollout. Ultimately, it may be that the country as a whole can only reopen as quickly as its least-vaccinated jurisdiction.

Figure 2.3: Progress of the vaccination rollout across Australia

(source: COVID-19 Data Australia)



Tasmania currently leads the nation, having administered 62 doses per 100 persons as of 4 August 2021

2.1 State-wide economic and employment impacts

In Australian states that experienced more prolonged and severe outbreaks, along with associated shutdowns and movement restrictions, there was a significant decline in hours worked across all jobs. Tasmania, by contrast, experienced only a modest decline due to state-level economic support measures and relatively large employment in the government sector. While national total hours worked declined by 4.7% over the

twelve months to May 2021, the corresponding Tasmanian figure fell just 1.1%.⁹ Tasmania was also one of only two jurisdictions to record growth in total compensation of employees between March and June of 2020, the other being the ACT (see Figure 2.6 below). The high level of public sector employment is likely to be responsible for this development in both jurisdictions.

Large numbers of Tasmanians either lost their jobs or exited the labour market in the second quarter of 2020

Figure 2.4: Employed persons and those not in the labour force (NILF) in Tasmania.
(source: ABS)

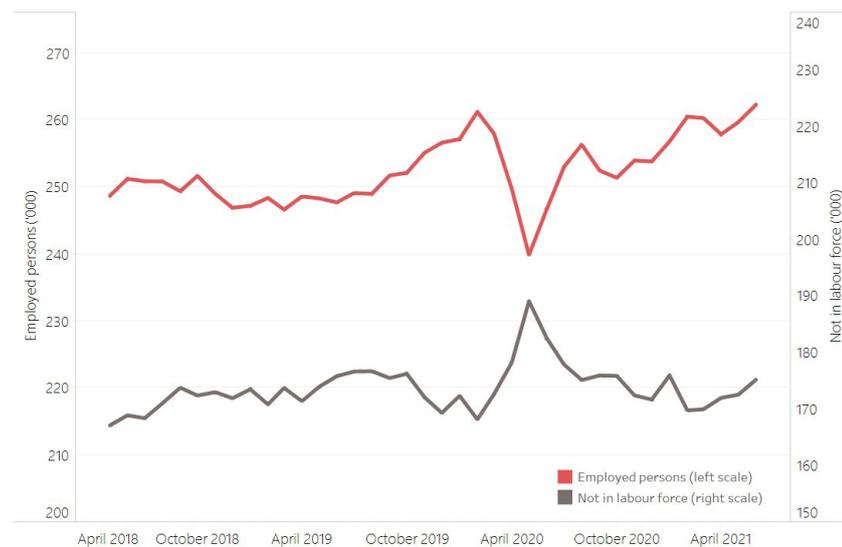
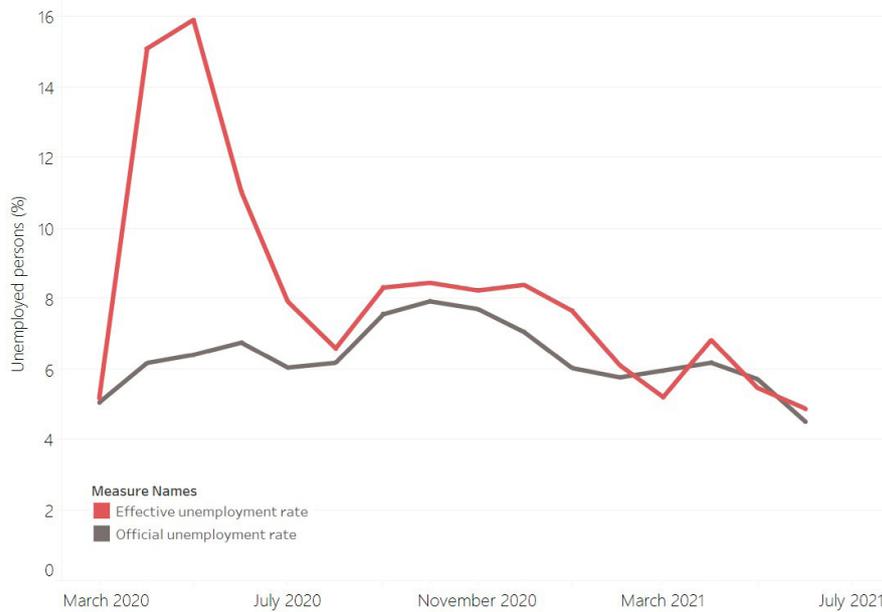
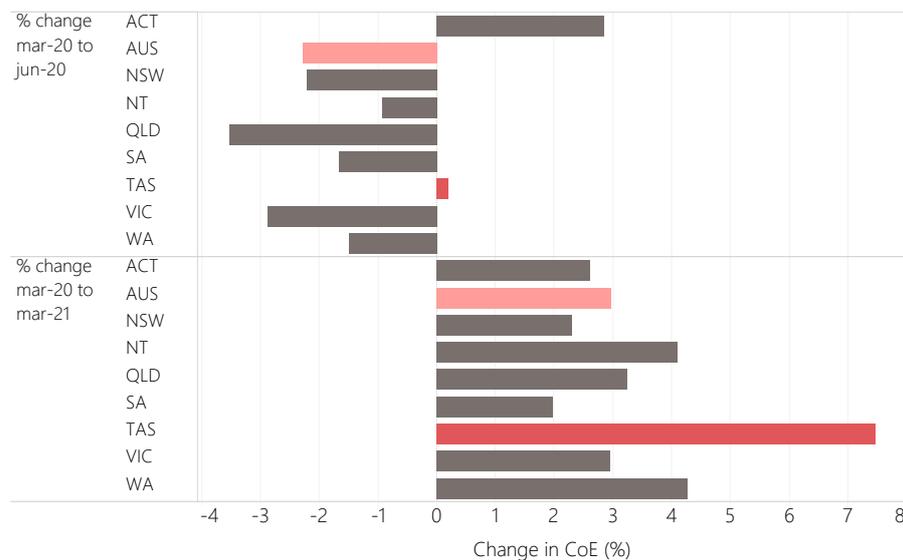


Figure 2.5: Official and effective rates of unemployment in Tasmania during the crisis.
(source: ABS)



Like the rest of the nation, Tasmania's effective unemployment rate was 10% higher than the official rate, peaking at 16%

Figure 2.6: Change in total compensation of employees in 2020*
(source: ABS)



In the year to March 2021, Tasmania recorded the highest rate of growth in total compensation of employees in Australia

*Total compensation of employees includes the JobKeeper wage subsidy

2.2 Industry-specific impacts on employment in Tasmania

In terms of the impacts on specific industries, payroll jobs data from Tasmania suggest a pattern of impacts broadly similar to the national picture, although there are some distinct areas of variation. Like the rest of the country, industries that rely on travel and social interaction were hit hard (see Table 2.1 below).

The industries in which Tasmania's experience varied most starkly from the national average include public administration and safety, agriculture, forestry and fishing, financial and insurance services and arts and recreation (see Figure 2.7 below).

Table 2.1: Decline in payroll jobs in Tasmania, March to April, 2020
(source: ABS)

Industries	Percentage decline in payroll jobs between 14 March and 18 April, 2020
Accommodation and food services%	-32.3%
Arts and recreation	-27.2%
Information, media, and telecommunications	-7.6%
Wholesale and retail trade	-2% and -5.9%

Figure 2.7: Change in payroll jobs in Tasmania and Australia
(source: ABS)

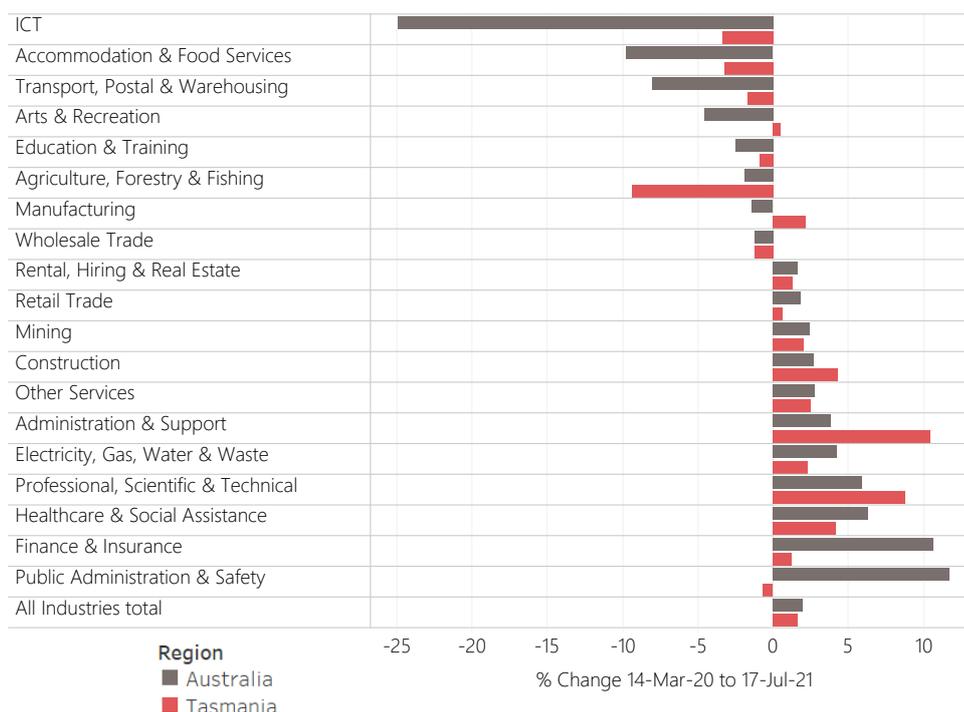
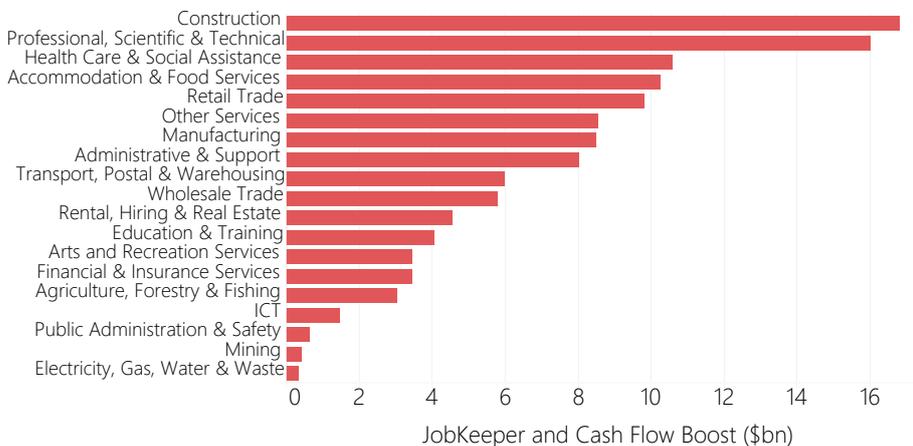


Figure 2.8: Total JobKeeper payments per industry, Australia
(source: ABS)



The construction sector received almost \$17 billion in wage subsidies and other payments since the beginning of the pandemic

Further evidence of how the pandemic impacted some industry sectors more severely than others is provided by JobKeeper data. Several Tasmanian industries relied heavily on the Federal Government’s JobKeeper wage subsidy scheme. The JobKeeper payment was introduced in May 2020 to prevent workers from being laid off during lockdowns or as a result of business closures associated with pandemic restrictions. After two extensions, the scheme ended in March 2021. Eligibility requirements meant that most casual workers, contractors, freelancers, or otherwise insecurely employed workers could not receive the subsidy.

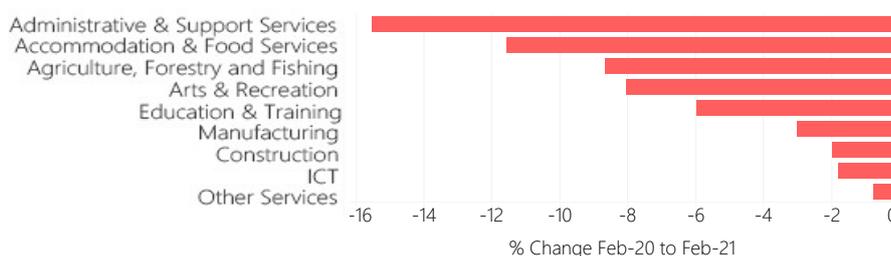
Unsurprisingly, and as evidenced by the high proportion of JobKeeper receipts as a share of total compensation, the industries that relied most heavily on wage subsidies (and therefore that lost the greatest proportion of their pre-pandemic income) were arts and recreation and accommodation and food services.¹⁰

Tasmanians tend to be over-represented in the jobs, industries, and employment categories hit hardest by the crisis. The tourism industry is a good example: arts

and recreation and accommodation and food services employed over twice as many Tasmanians relative to the national average in 2019 with Tourism Research Australia reporting that tourism-related industries accounted for 17.4% of employment (direct and indirect) in Tasmania compared to just 8.1% nationally.¹¹ Tourism-related sectors were severely impacted by the pandemic, with accommodation and food services experiencing the largest decline in payroll jobs of any industry, both nationally and in Tasmania. As Figure 2.9 below illustrates, the state’s most heavily-impacted industries typically also have high ‘location quotients’ in Tasmania, which means that they employ a greater share of Tasmanians than the national average for those industries.

Despite Tasmania’s relatively short lockdown in 2020, and the recovery in most intrastate travel and interstate travel until new ‘Delta lockdowns’ were introduced in certain states from June 2021, the state’s accommodation and food services industry remains well below its pre-pandemic level of employment – a situation which will likely deteriorate further given the current national Delta outbreak.

Figure 2.9: Change in payroll jobs by industry, Australia
(source: ABS)

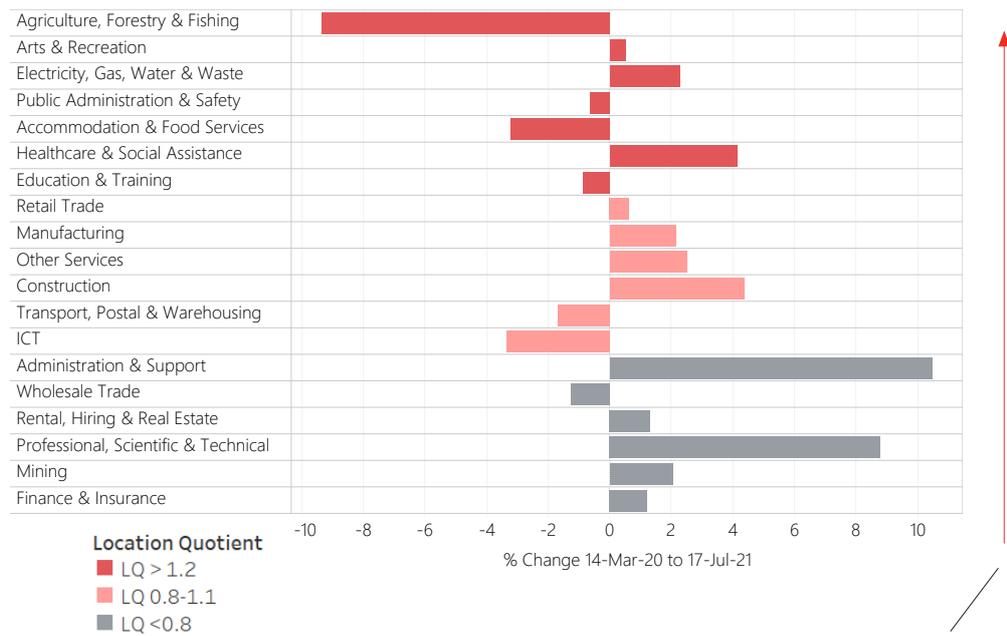


Tasmania is overrepresented in the industries that have been most severely impacted during the crisis

Employment in agriculture, forestry and fishing and accommodation and food services, two of Tasmania's most important industries, remain well below pre-pandemic rates

Figure 2.10: Per cent change in payroll jobs by industry in Tasmania, ordered by location quotient

(source: ABS)



Industries listed in order of prominence in Tasmania

2.3 Regional and demographic variation

Regions matter. Across Tasmania, different regions have had different experiences of the pandemic and associated economic impacts. For Tasmania, a clear distinction can be drawn between Greater Hobart and the other regions: South East and East Coast, Launceston and the Northeast and the Northwest (see Figure 2.2).

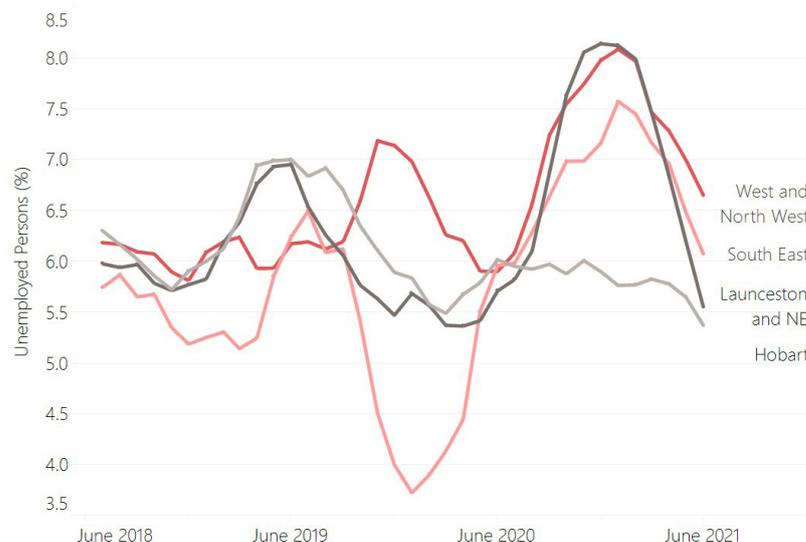
The impacts play out in several ways. The first relates to the geographical distribution and relative importance of different industries. Some of Tasmania's most important industries, including tourism, agriculture, accommodation and food services, and arts and recreation, experience significant seasonality. As a result, a large number of workers in these industries are employed in casual,

freelance, short-term, part-time, or otherwise insecure forms of employment. In addition to being employed in industries that were especially hard-hit by the pandemic's impacts, these workers experienced a 'double-whammy' due to their high rates of ineligibility for the Commonwealth's JobKeeper wage subsidy. As Figure 2.10 above illustrates, the industries that were impacted most severely include several that are especially important to regional Tasmania.

As the worst-affected industries are more concentrated in regional Tasmania, employment impacts have likewise been greater in rural and regional areas of the state. While Greater Hobart has experienced only a modest increase in

Figure 2.11: Unemployment by region in Tasmania, June 2018 to May 2021

(source:)



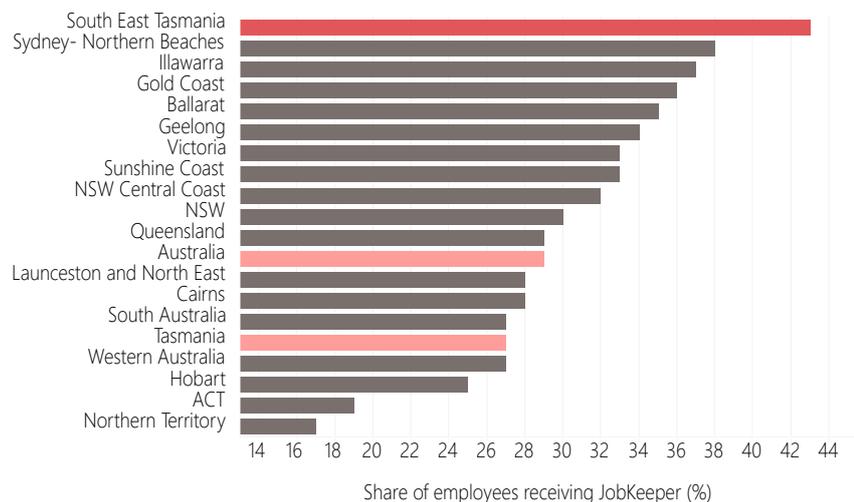
The worst-affected industries and greatest employment impacts have been concentrated in regional Tasmania

unemployment, much of regional Tasmania experienced a steep rise (see Figure 2.10 above). However, and despite starting from a higher base, Greater Hobart experienced a larger fall in the participation rate (down just over 6 points) relative to the rest of the state (down 3.5 points), which played a role in moderating the impact on the headline unemployment rate.

These impacts can also be seen in JobKeeper data. As Figure 2.12 below illustrates, while fewer Tasmanian employees received the supplement than the national average, South East Tasmania, which includes the Derwent Valley as well as the highly tourism-dependent East Coast and Tasman Peninsula, recorded the highest rate of JobKeeper dependence in the country with over 43% of employees accessing the supplement.

South East Tasmania (excluding Greater Hobart) had the highest dependence on JobKeeper of any Australian SA4 region

Figure 2.12: Share of employees who received JobKeeper payment (initial round) in selected Australian regions
(source: ABS)



2.4 Gender and age variation in economic impacts and employment outcomes

In addition to the important industrial and geographical impacts described above, the economic and employment implications of the crisis have also had gender and age dimensions. While the underlying dynamics are complex, women (at least in the initial stages) and younger workers were overrepresented in many of the occupations, industries, and employment types that were hit hardest by the crisis.

Pre-existing structural and social factors see women typically earn less than men, occupy more precarious categories of employment, and they are also over-represented in jobs and industries that have been more vulnerable to the COVID crisis than male-dominated industries. Based on its national analysis, the Grattan Institute identified a “triple-whammy”, where women lost more jobs than men (peaking at nearly 8% compared to just 4% for men), were less likely to receive government support, and bore a greater proportion of the increase in unpaid caring responsibilities resulting from the pandemic (despite doing more already). The experience of women since the beginning of the pandemic will add to the already-large lifetime gender pay gap.¹²

Women received a smaller share of government economic support and stimulus than men. The Commonwealth’s “shovel-led recovery” has focused on infrastructure and construction. Where the male-dominated construction sector lost fewer than 5% of its work hours but received some \$35 billion in direct

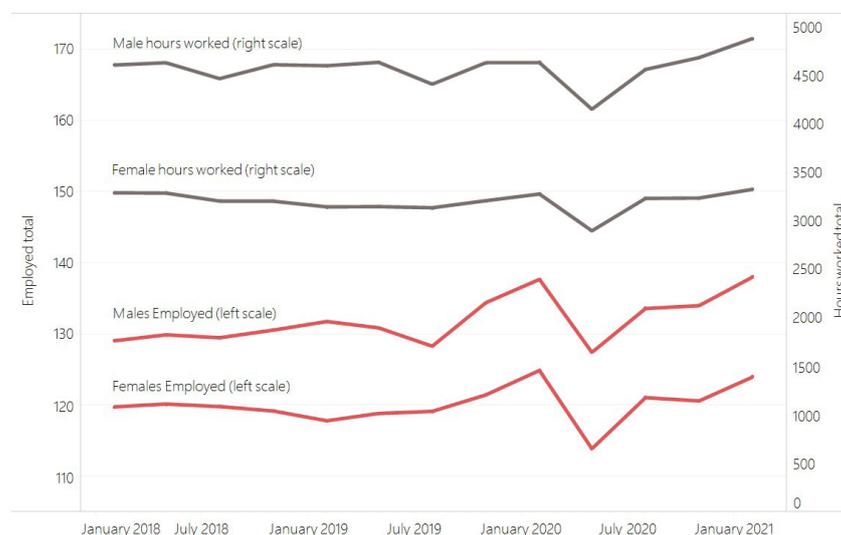
government support, the female-dominated hospitality sector received only \$1.3 billion in direct government support despite losing 47% of its work hours.¹³

The pandemic provides an important opportunity for governments and society as a whole to re-evaluate and address deeply held and persistently gendered perceptions about the types of work, and the types of workers, that create value in modern economies.¹⁴

IMPACTS ON HEADLINE EMPLOYMENT MEASURES, TASMANIA

The national picture described above, of women losing more jobs and hours than men, has also been seen in Tasmania. In the initial acute phase of the crisis, female workers left the labour market in greater numbers than men. Where the male participation rate in Tasmania fell 3.8 points from February to May 2020, the female rate fell 4.8 points (despite starting from a considerably lower base). While the male participation rate has recovered, the female rate remains around 1 percentage point below its pre-pandemic level. Also, while the number of males in full-time work has now recovered to be comfortably above pre-pandemic levels, the most recent available data showed a small decline in the number of Tasmanian women employed full-time.

Figure 2.13: Employed persons and hours worked by males and females in Tasmania, 2018 to 2021
(source: ABS)



Male employment recovered more strongly than female employment during the first 12 months of the pandemic

Furthermore, and despite losing more hours initially (female hours worked fell 11.5% compared with 10.4% for men's hours), women's hours in Tasmania have also recovered more slowly than men's. Where hours worked by males had recovered to be 5.2% above their pre-pandemic level within 12 months, female hours worked were only 1.6% higher over the same period.

IMPACTS ON YOUNGER WORKERS

These broader impacts have also been more pronounced in certain age groups than others. Younger workers in Tasmania, who are more likely to be junior employees and less likely to be in established, full-time positions, were hit hardest by layoffs in the early days of the pandemic.

As Figure 2.14 shows, young women (15-34) and older women (60+) experienced the worst initial impacts of all age groups. Younger people generally (especially those aged 15-29, and women in particular) have also experienced a sluggish recovery relative to most other age groups. The continuing slow recovery of hours worked for 'early-career' women, aged 20-29, is particularly concerning given the pivotal importance of these years to younger peoples' future career trajectories. The pandemic's impacts could thus make it even more difficult for a generation of younger people – women in particular – to establish themselves in permanent, secure, well-paid work with meaningful opportunities for career progression.

Figure 2.14: Change in hours worked in all jobs by gender and age, Tasmania – February 2020 to May 2020

(source: ABS)

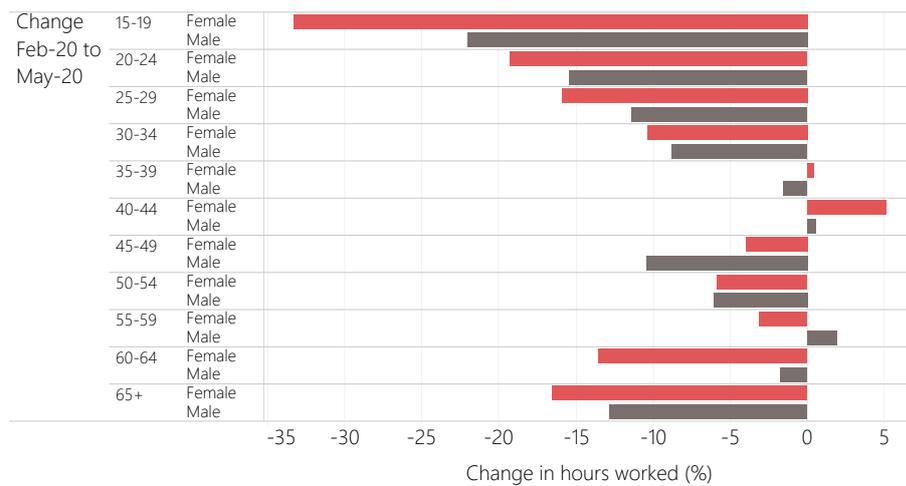
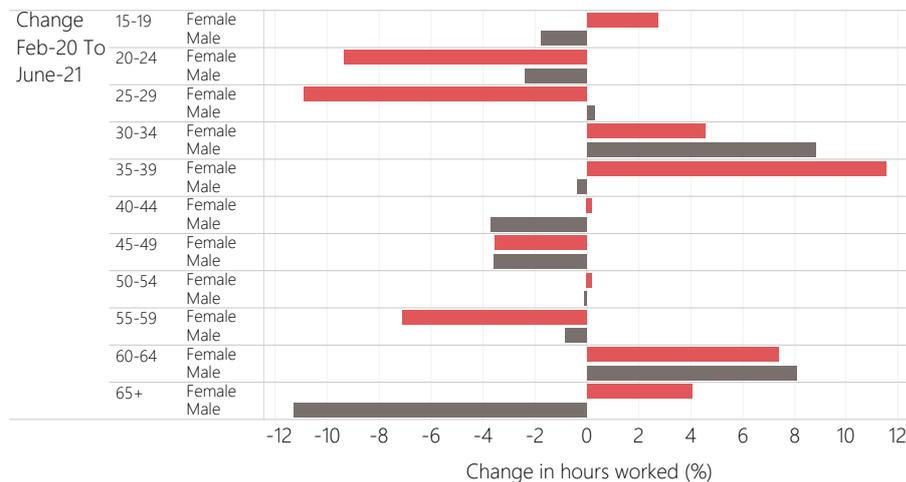


Figure 2.15: Change in hours worked in all jobs by gender and age, Tasmania – February 2020 to June 2021

(source: ABS)



Employment for 'early-career' women aged 20-29 has been especially slow to recover

INDUSTRY IMPACTS AS A CAUSE OF GENDER VARIATION

One of the underlying causes of these gendered impacts relates to pre-existing differences in male and female employment between industries. Women tend to be over-represented in many of the industries that faced the greatest immediate impact from shutdowns, movement restrictions, and border closures. These include some of Tasmania’s key industries, such as healthcare, education and training, retail trade, accommodation and food services, and arts and recreation.

As well as these greater initial impacts, and consistent with the Grattan Institute’s national analysis cited above, female-dominated industries in Tasmania have typically experienced a weaker recovery than male-dominated ones. As Figure 2.16 illustrates, both hours worked and

employed persons recovered more slowly in female-dominated industries than in male-dominated ones. Furthermore, between November 2020 and May 2021, the disproportionate allocation of stimulus spending to the male-dominated construction sector saw the gender pay gap rise by close to one percentage point to 14.2%.¹⁵

A similar trend can also be seen *within* many industries: male hours worked recovered more strongly than female hours worked in many individual industries as well as overall. Male workers also recovered more strongly than female workers even in many industries that employ considerably more females than males (including accommodation and food services, education and training, financial and professional services, healthcare and social assistance, and retail trade) (see Figure 2.17).

Figure 2.16: Hours worked and employed persons in industries employing more males than females

(source: ABS)

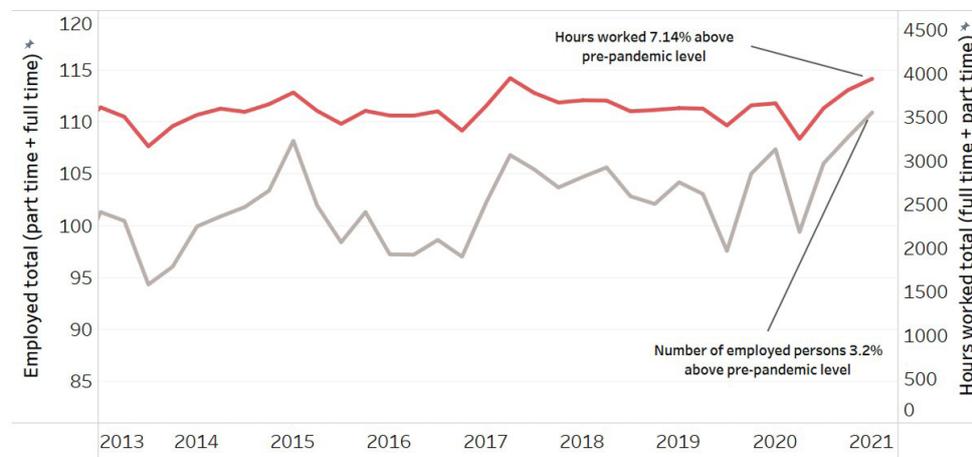
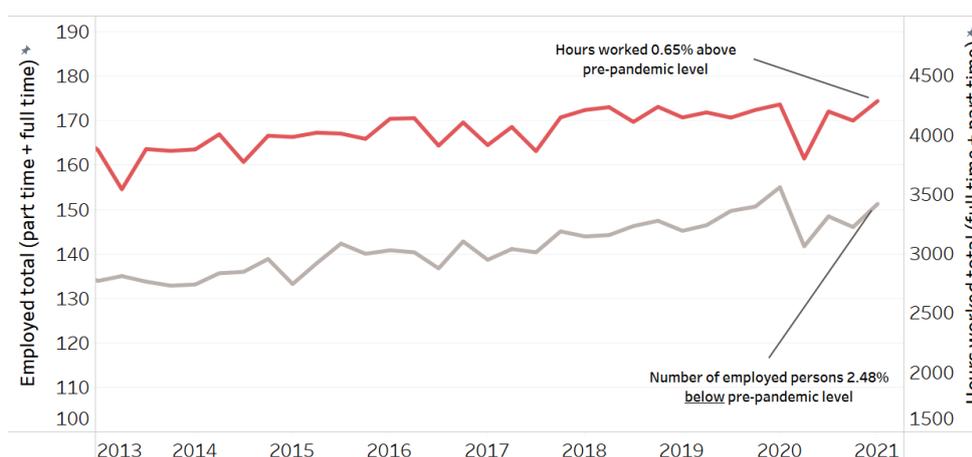


Figure 2.17: Hours worked and employed persons in industries employing more females than males

(source: ABS)



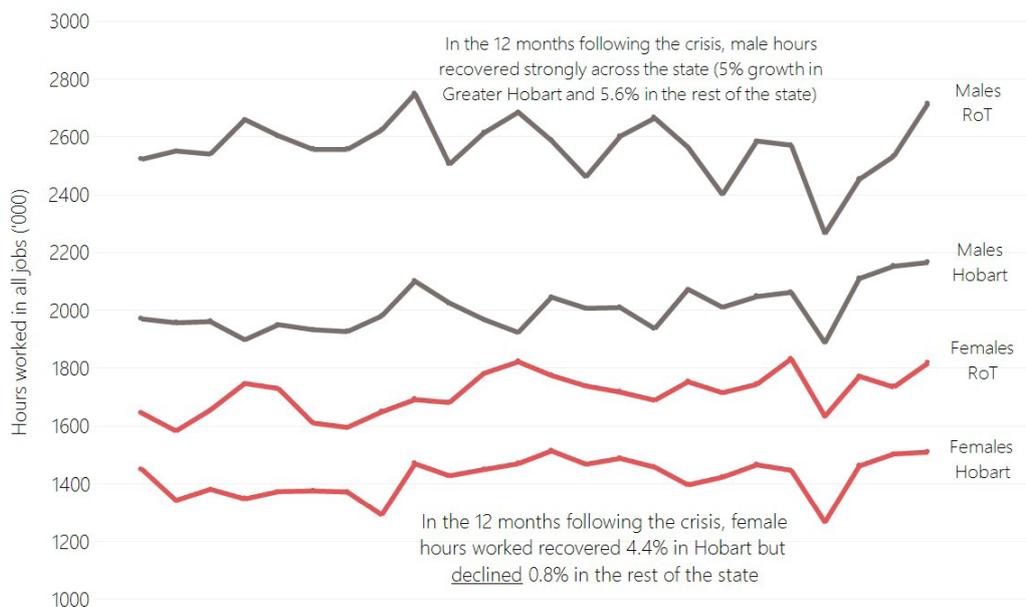
The recovery has been slower in industries with more female workers

GENDER VARIATION IN REGIONAL IMPACTS

Another closely related gendered impact can be seen in the regional variation in hours worked by males and females. As illustrated in Figure 2.18 below, the recovery in male hours worked has been similar across the state. The recovery in female hours worked, however, has been considerably stronger in Greater Hobart than in the rest of the state. This is likely due to the high concentration of female-dominated industries (particularly health care and social assistance, education and training, and government employment) in population centres.

Excluding Greater Hobart, male hours worked recovered by 5.6% while female hours worked declined by -0.8%

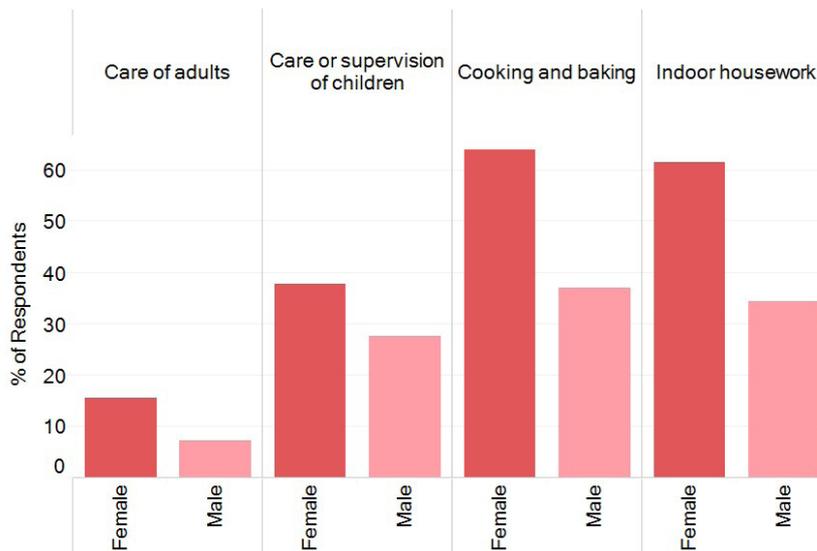
Figure 2.18: Recovery in hours worked in Greater Hobart and rest of Tasmania, by gender
(source: ABS)



UNPAID WORK

Another clear gender difference can be seen in the distribution of unpaid domestic work and caring responsibilities (see Figure 2.19). Lockdowns, and especially school closures, created a large burden of additional unpaid domestic labour, and the extra share has been borne disproportionately by women, who were already doing more of this work pre-pandemic.¹⁶

Figure 2.19: Adults who spent five or more hours per week on unpaid work, by gender, Australia
(source: ABS)



Women have borne a greater share of increased unpaid caring responsibilities during the pandemic

Conclusion

Through to June 2021 the Tasmanian economy and jobs market had recovered strongly since the depths of the first wave of the pandemic in May 2020. However, the impacts of COVID-19 and the subsequent recovery have not been borne equally by all Tasmanians. Rather, variation in the economic impacts has followed a number of patterns, often exacerbating pre-existing economic inequality or disadvantage.

Three over-arching trends are evident.

1. Vulnerable industries are over-represented in Tasmania

The industries and categories of employment that were most vulnerable to pandemic job losses were over-represented in Tasmania. This is because industries relying on travel or movement and social contact, such as the arts and recreation or accommodation and food services sectors, employ more Tasmanians than the national average for those industries. Their high level of seasonality means that a large number of these workers are also employed in temporary, contract, or casual categories of employment. Not only did these industries face some of the earliest and most severe impacts, but their employees were also less likely to be eligible for the emergency income support or wage subsidies offered by the Federal Government. As a result, a large number of Tasmanians laid off in the early days of the pandemic were already likely to be facing labour market disadvantage and job insecurity. Ensuring that these workers do not face further labour market disadvantage or exacerbated income inequality outcomes as a result of the pandemic's economic impact will be a crucial, long-term project for policy makers.

2. Women and younger people in Tasmania fared worse than others

As in the rest of the country, Tasmanian women typically fared worse than men. Fewer women are employed as of June 2021 than pre-pandemic, while more men are now employed than prior to the emergence of the coronavirus. Women were not only more likely to lose their jobs initially, they were also less likely to qualify for Commonwealth support and more likely to have

shouldered a greater share of unpaid domestic labour during lockdowns. Moreover, while male employment in the state has recovered strongly over recent months, the recovery in female employment has been considerably slower, especially in regional Tasmania. This disparity was exacerbated by an approach to economic stimulus that targeted male-dominated industries like construction, manufacturing, and energy industries. As a result of this approach and existing structural challenges, industries that employ more females than males have for the most part experienced a weaker recovery than industries that employ mostly males.

Younger Tasmanians also experienced the pandemic labour market impacts more severely than established or permanently employed and mid-career workers. This is particularly the case for young male workers between 20 and 34 years of age. It is likely that early retirement has been responsible for the large numbers of older workers exiting the workforce. For younger workers, however, the disparity was likely due to overrepresentation in casual or insecure employment. Workers in their early- to mid-twenties have also experienced the slowest recovery of any age bracket.

3. Regional areas of Tasmania suffered more than the urban centres

Regional areas of Tasmania were hit harder than the state's urban centres. There are two likely reasons for regional disparity in the crisis's impacts and the progress of economic recovery. The first is that the economies of many regional areas in Tasmania rely considerably on the tourism industry. The heavy early impacts and sluggish recovery experienced on the Tasmanian East Coast, the North East, and the Tamar Valley support this interpretation. A similar picture is true of food production and agriculture, as well as light manufacturing, as they are largely based in regions outside of Hobart. Another related explanation is that rural and regional areas of Tasmania could not rely on the 'ballast' provided by large public sector workforces in Tasmania's urban centres, particularly Hobart. This left smaller regional economies more exposed to the effects of the economic crisis than city regions.

COVID-19 has affected the economy and work globally. The recovery from this shock has been strong thus far, although at the time of writing the rapid spread of the more infectious Delta variant threatens to undermine the recovery both in Australia and internationally. What is also clear is that the pandemic will not end with a 'return to normal'. On the contrary, the present crisis is likely to have an enduring impact on work in Tasmania and beyond, both by accelerating existing trends (such as digitisation and structural inequality in the labour market) and by driving the emergence of new labour market dynamics (shifting patterns of labour demand arising from border closures or movement restrictions, for example). Additionally, both the crisis and the recovery could

intensify existing gender, demographic, and economic inequalities.

The precise nature of the 'new normal' after what has been described as "the most unusual economic recovery in living memory" remains unclear, but a consensus is emerging in relation to broad trends regarding the future of work.¹⁷

This analysis identifies four broad trends regarding the future of work and their likely implications for Tasmania (see Table 3.1 below). The objective is to inform discussions about the policies, strategies, and investment required to maximise access to meaningful and sustainable work for all Tasmanians in the wake of the COVID-19 crisis.

Table 3.1: Key trends and their impacts on the future of work

Key trends	Impacts
Trend 1: The acceleration of digitisation and use of technology	<ul style="list-style-type: none"> ■ The rise of remote working ■ Increased migration to the regions and associated decline of CBDs and 'city work' ■ Increasing demand for digital literacy and technical skills across occupations and industries
Trend 2: Economic restructuring and increasing inequality	<ul style="list-style-type: none"> ■ Industries at potential risk of restructuring (tourism, arts and hospitality, retail, international education) ■ Industries expected to experience employment growth (health and care economy, technology, transport and logistics, construction, renewable energy) ■ Accelerating displacement of work through technology and automation across industries and occupations and the polarisation of work ■ Impacts on specific cohorts of workers (women, younger, lower-paid and casual workers)
Trend 3: Declining migration, mobility, and labour shortages	<ul style="list-style-type: none"> ■ Declining international and interstate migration and skills shortages in sectors that rely on migration ■ Slower population growth and an ageing population
Trend 4: Accelerating enterprise creation and new forms of work	<ul style="list-style-type: none"> ■ Potential increased incidence of both business closures and enterprise creation ■ New forms of enterprise, particularly those enabled by digital platforms

The outlook for the COVID recovery, both in terms of the virus itself and its effects on the economy, was highly uncertain even before the Delta variant began to take hold in certain areas of mainland Australia from June 2021 onwards. Given this uncertainty, the analysis of emerging trends in relation to the future of work in Tasmania applies a three-step foresight method. The goal of the analysis is to identify emerging trends in relation to the future of work from the international literature and assess their relevance to and potential impacts in Tasmania. This process also includes an element of 'horizon scanning' for unexpected events or developments which, while unlikely, would have significant implications if they did eventuate.

The objective of the foresight approach is not to predict what will happen in the future, but rather to identify and inform policy and strategic responses to a range of likely scenarios. This analysis should be updated and refined through a process of critical reflection and input from a diverse range of actors and perspectives. A series of discussion questions is provided to guide this process.

TREND 1: THE ACCELERATION OF DIGITISATION AND USE OF TECHNOLOGY

The need, where possible, to limit movement and social interaction in our daily lives has led to a dramatic acceleration of digitisation and use of technology in the workplace and beyond. Having made a rapid transition to working, communicating, and conducting business online, many organisations are now contemplating and implementing new operating models to promote efficiency in response to employer and consumer preferences. Our analysis identifies three related impacts associated with this broad trend:

1. The rise of remote work,
2. Increased migration to the regions and associated decline of CBDs and 'city work', and
3. The growing need for digital skills across a range of industries and occupations.

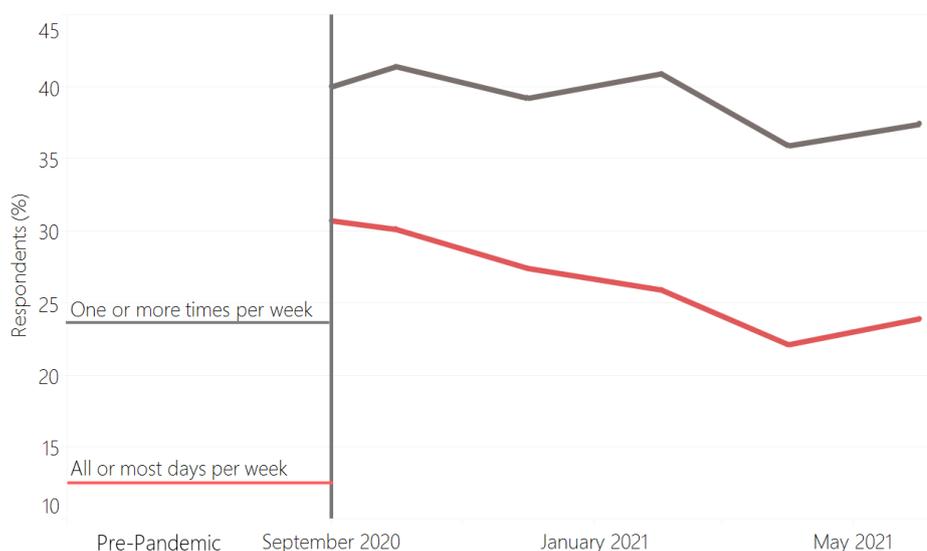
Impact 1: The rise of remote working

The need to work remotely at various stages of the COVID-19 pandemic has led to the transformation of workplaces for many Australians. Around twice as many Australians are now working remotely (either at home or away from their regular office) either most or at least some of the time than was the case before the pandemic (see Figure 3.1 below). While there was a modest return to the workplace during the first half of 2021, most analysts anticipate that professional 'knowledge workers' (that is, workers whose positions involve them handling or using information) who are well placed to work remotely are likely to persist with 'hybrid' models (ie, a mix of working remotely and working at work premises) of working into the future. Moreover, a recent McKinsey study of more than 2,000 tasks used in some 800 occupations in eight focus countries found that around 20 to 25 per cent of workers in advanced economies could work from home three to five days a week without a loss of productivity.¹⁸

It is important to note, however, that hybrid or flexible work arrangements are not available to many workers. A movement towards more remote work therefore raises the possibility of increasing the divide between the work arrangements available to 'knowledge workers' and those serving other parts of the labour market. Research indicates that globally around one in six workers are employed in jobs that could be performed mostly or completely remotely, but this figure falls to just 13% in low-income countries compared with nearly a third of workers (or in some places even more) in high-income countries.¹⁹

Figure 3.1: Rates of Australians working from home, pre-pandemic to July 2021

(source: ABS)



As Figure 3.1 above illustrates, more than a third of Australians were working at least one day per week remotely in June 2021, with just under a quarter working all or most days remotely. While this figure has been declining since the end of the widespread 2020 lockdowns, it will have risen again following the lockdowns associated with the current spread of the Delta variant. It is also highly likely that, having invested considerably in infrastructure and organisational change to facilitate remote working arrangements, both employees and employers will continue to embrace a significant degree of remote work into the future. An ABS June 2021 survey found that 33% of Australians reported they would like to see working from home continue after the COVID-19 pandemic.²⁰

This likely permanent, even if partial, shift to more flexible working arrangements in many professions will have significant implications for the future of work and society more generally. These implications are considered below.

Emerging evidence: Remote working in Tasmania

While state-level figures are not available from any of the national employment surveys conducted over the past 12 months, other sources suggest that Tasmanian trends in remote work are similar to other Australian states and territories. Data from the University of Tasmania's Tasmania Project, drawn from surveys conducted in May 2020, show that just over half of Tasmanian respondents worked entirely remotely during the 2020 pandemic lockdowns, and roughly another fifth worked remotely at least some of the time.²¹ These insights are supported by the University's own experience, with internal university data showing that, at the height of the pandemic last year, some 90% of staff were working from home all or most of the time. More than 12 months on many staff are working at least one day per week at home under hybrid arrangements.

It is important to stress that comparison between Tasmania and the rest of the country is complicated by the smaller relative size of the state's professional workforce and other factors. In other words, more Tasmanians work in jobs that cannot be performed remotely than the national average. Shorter commuter times relative to most other states may be another factor which ultimately leads to lower levels of remote working in Tasmania. Nevertheless, these data suggest that the pandemic has had a sizeable impact on the number of Tasmanians working remotely and, as in much of the rest of the developed world, that this change is likely to persist over the longer term. The extent to which remote working becomes an established practice will have important implications for patterns of settlement both in cities and in regions, affecting the ability of hybrid/remote workers who may nevertheless need to attend offices once or twice a week while living in more regional parts of the state.

Trend 1 Impact 1	
Foresight analysis	Policy considerations
<ul style="list-style-type: none"> ■ Demand for digital skills and infrastructure will intensify as more people work from home. ■ Existing models of work, social interaction, and management will change. ■ There is likely to be a growing divide between online knowledge workers and those required to work on site. ■ Increased market for knowledge workers leading to an increase in competition. 	<ul style="list-style-type: none"> ■ Increased need to improve digital infrastructure and other services for remote and hybrid workers. ■ Opportunity to promote Tasmania as a lifestyle destination for remote working. ■ Need to ensure that adequate technological and working-from-home support can be provided to remote workers, with policies to manage risk and opportunities for exploitation.

Impact 2: Migration to regions, decline of CBDs and 'city work'

The rapid shift of a wide range of work to online platforms is also likely to influence where we live and there is emerging evidence that a growing number of Australians are moving to the regions now that it is easier and more acceptable to employers for employees to work remotely, combined with a wide range of lifestyle reasons (see text box on p. 41 for a note on the definition of 'region').

A growing body of national survey data suggests that the COVID-19 pandemic has increased the desire for city-dwellers to move into the regions, with 22 per cent of respondents in late 2020 considering relocation – twice the pre-pandemic rate.²² The rise in working from home will allow more workers to live in regional and peri-urban areas outside of the major centres, especially where there is good transport to city centres to access workplaces when needed.

Further evidence of this trend includes ABS inter-regional migration data in the three months to March 2021, which show that Australian capital cities saw a net loss of some 11,800 people to rural and regional areas.²³

Similarly, the Regional Movers Index shows that 7% more people in the March quarter 2021 shifted from Australia's capitals to the regions compared to the same time a year earlier.²⁴ Modelling has also shown that the working-from-home trend may see an increase in people commuting further, albeit less often, boosting the populations of peri-urban areas.²⁵

This evidence of increased migration to Australian regions is also being reflected in property markets, with regional property prices rising more quickly than in major cities since the start of the pandemic. The emerging structural shift in where and how professionals work will, if sustained, reshape the economic geography of major cities with implications for transport, settlement and infrastructure as relatively fewer people live and work in city centres.

In terms of patterns of work, this trend towards living in and working from the regions is already having a detrimental impact on CBD retail and food services and property prices.²⁶ Recent Deloitte modelling (conducted prior to the June 2021 Delta lockdowns) suggests that Australian CBDs may not fully recover until 2025, with major implications for personal services, hospitality, and retail businesses in city centres, particularly Sydney, Melbourne and Brisbane.²⁷

The emerging pattern of migration to regions would effectively reverse a long-term trend towards the concentration of high-wage professional work in CBDs. In turn, this may affect demand for housing, retail, and personal services as well as gentrification in inner cities the world over. While the impact of COVID-19 on employment in CBD retail businesses is already apparent, the longer-term impact on major metropolitan centres is less certain and will depend in part on the effectiveness of strategies to reinvent and revitalise urban centres.

It is important to note, however, that any pandemic-driven retreat from urbanisation or city work would run counter to a longstanding trend whereby investment and professional work has clustered in major global cities.²⁸ Despite decades of improvement in technology enabling knowledge workers to live outside large cities, their likelihood of actually doing so, up until the COVID-19 pandemic at least, has continued to fall. Notwithstanding some early signs of decentralisation reflected in the data reported here, its translation into a long-term trend is still far from certain.

Emerging evidence: Migration into and around Tasmania

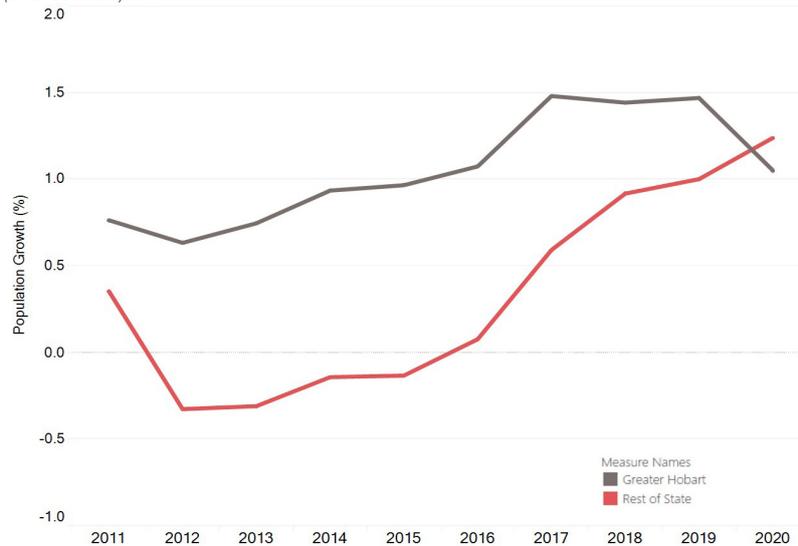
There are two scales of migration which we need to consider: Migration from large mainland cities to Tasmania, and migration from the larger cities in Tasmania to the Tasmanian regions and outskirts of cities. In the terms of the former, the Commonwealth Treasury’s interstate migration projections are consistent with the general Australian trend of growth in the regions, anticipating ongoing net interstate migration to Tasmania. The extent to which this is being driven by the ability to work remotely as opposed to availability of work in the regions, or even more general lifestyle preferences, is unclear.

Secondly, in terms of population movement from Tasmanian cities into the peri-metro areas and regions, increasing real estate prices and rents may drive people to look for affordable housing further out. Of course, moving away from cities will impact the jobs to which people will have access both in terms of proximity and necessary transport infrastructure.

Population is growing in both Greater Hobart and in the rest of the state, however, population growth in the rest of the state beyond greater Hobart is at its highest level in over a decade – despite the absence of international migration – and now exceeds population growth in greater Hobart (Figure 3.2).

Figure 3.2: Population growth in Hobart versus the rest of the State

(source: ABS)



Trend 1 Impact 2	
Foresight analysis	Policy considerations
<ul style="list-style-type: none"> It is possible that a growing number of knowledge workers will move to the regions and outside of city centres. Workers living remotely (from their places of work) are likely to commute further, but less often. We may see a changing mix of work and businesses in city CBDs with a possible decline in office and retail work and increase in health, personal and educational services. Increasing regional migration could see regional property prices rise and emerging regional 'gentrification' with associated tensions between high-wage knowledge workers and established residents. 	<ul style="list-style-type: none"> Increasing regionalisation in Tasmania would present challenges for delivery of key public services. Strong population growth in Tasmania's regions and peri-metro areas will have impacts on infrastructure, transport, and retail services both in CBDs and outside of them. If a move out of CBDs continues, it will be important to support a changing mix of work in our cities with a new emphasis on health care and social assistance, education and personal services. Social and affordable housing will continue to be important in and around cities in order to allow people who do continue to work in them to live near their places of employment.

The University of Tasmania Southern Transformation

Over the next ten years, the University of Tasmania is creating a new campus in the city of Hobart. The campus will enable easy access for students and promote collaboration with easier access to partners in business, government and the community, and will replace aged infrastructure with new and reinvigorated spaces. The transformation aims to create a university *of* and *for* the city. The themes underpinning the transformation are sustainability, a campus heart, green spaces, permeability and accessibility, community links, respectful of history, and vibrant mixed use activities. For more information go to www.utas.edu.au/southern-future



Map showing the interwoven UTAS properties throughout the city of Hobart

A note on regions and regionality

This report often uses terms such as 'the regions' or 'regional areas'. The ABS developed the Accessibility/Remoteness Index of Australia (ARIA) to classify areas across Australia according to measurements of their accessibility and remoteness. According to this index, Tasmania is largely composed of outer regional areas, with pockets across the length of the West Coast and the middle of the East Coast classified as remote. Greater Hobart and Launceston are both classified as inner regional (rather than as major cities of Australia). Therefore, according to that measure, we could classify the whole of Tasmania as regional and remote. But when we talk about the 'regions of Tasmania', we do this to differentiate between the cities of Greater Hobart and Greater Launceston, and the rest of the state.

For more information go to www.abs.gov.au/websitedbs/d3310114.nsf/home/remoteness+structure

Impact 3: Increasing demand for digital literacy and technical skills across occupations and industries

Lockdowns associated with COVID-19 have rapidly accelerated the adoption of digital technology and platforms, including artificial intelligence, automation, and e-commerce. Following a steep rise during the early days of pandemic lockdowns, e-commerce grew between two and five times faster in 2020 than projected in countries across the developed world.²⁹ Digital disruption generally – and artificial intelligence and machine learning in particular – are set to fundamentally reshape employment in a range of industries.

These changes are also being seen in Australia, with the CSIRO arguing that COVID-19 has driven ten years' worth of digital transformation in a matter of months, with profound implications for how we access services and interact with friends, family and colleagues.³⁰ The need for technology use and application skills, which was already widely recognised prior to the crisis, has now become even more important during the recovery as digital platforms are adopted across a wide range of industries and occupations from retail to education and health services. As discussed in greater detail in the section on automation below, there is a growing consensus that enhancing digital literacy and inclusion must be a priority in regional pandemic recovery planning in order to build workplace skills and the ability of citizens to utilise a growing range of digital services and opportunities.³¹

The increasing need for digital skills in the Tasmanian labour market is widely recognised within government as well as among industry players and educational organisations.³² These organisations highlight Tasmania's relatively poor performance compared with other states across a range of indicators of digital inclusion and technological readiness, as well as the vital role these skills will play in the future workforce.

Emerging evidence: Increasing artificial intelligence exposure in key Tasmanian industries

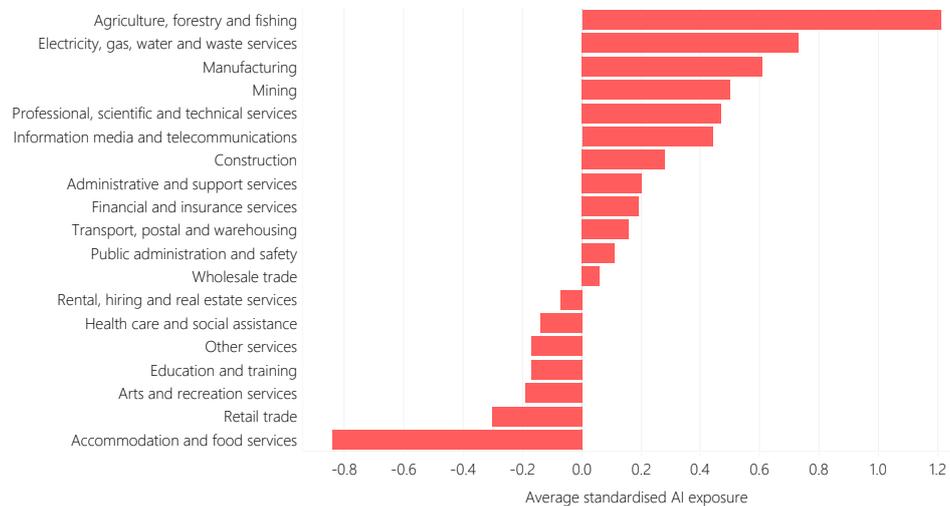
Beyond a growing need for general digital skills across a range of industries and occupations, international research highlights a particular need to identify industries and occupations that face high levels of exposure to artificial intelligence (AI) in the near future.³³

As noted already in this report, AI and machine learning will fundamentally reshape the nature of work in a number of important Tasmanian industries in the near future, with agriculture, forestry, and fishing, electricity, gas, water, and waste, and manufacturing likely to experience the most dramatic changes. To prepare for and capitalise on this change – and avoid being left behind – will require a greater commitment to education and training in skills required in what is termed 'Industry 4.0'. 'Industry 4.0' refers to the automation of industry through 'smart' technologies. Tasmania specialises in several of the industries (see Figure 3.3) whose AI exposure exceeds the national average. In other words, Tasmania is over-represented in several industries whose employees will increasingly require sophisticated AI skills and digital literacy in order to accomplish their everyday tasks.

While adoption of AI technology typically enhances productivity, the challenge is that Tasmania has among the lowest levels of digital literacy and digital inclusion in the country and the equal lowest rate of university STEM training nationally. The fact that Tasmania is over-represented in jobs that will increasingly require sophisticated digital skills, yet heavily underrepresented in the share of citizens who have those skills, raises the prospect of skilled labour shortages, weakening competitiveness and productivity, and ultimately loss of jobs to better-prepared jurisdictions. These factors highlight the need to develop flexible Industry 4.0 training to enable Tasmanian workers to upskill and fully engage in the use of AI in the workplace.

A particular challenge concerning the impact of AI on the Tasmanian Economy is that AI exposure is greatest in industries of particular significance to rural and regional Tasmania, but these regions currently rate poorly on measures of technological readiness and digital skills relative to urban regions in Tasmania and to the rest of the country.³⁴ In other words, regions with the highest levels of AI exposure are also the areas least prepared for digital disruption, highlighting the need for accessible place-based training programs.

Figure 3.3: Share of AI exposure by industry



Industry 4.0 education at the University of Tasmania

UTAS has developed courses and workshops to support and engage with industry, schools and the community which focus on Industry 4.0. Industry 4.0, or the Fourth Industrial Revolution, is the automation of industry through 'smart' technologies. These technologies are helping to address the challenges posed by climate change, resource shortages, food waste and growing populations. Amongst its offerings, UTAS runs a fee-free Diploma of Advanced Technologies to people currently working in small to medium Tasmanian businesses. The course includes work with electrical circuits and systems, use of sensor simulators, the fundamentals of robotics and the benefits of working with data and statistics.



For more information go to www.utas.edu.au/community-and-industry/industry-4-0

Trend 1 Impact 3	
Foresight analysis	Policy considerations
<ul style="list-style-type: none"> ■ There is a growing need for digital literacy and skills across a wide range of industries and occupations. ■ Artificial intelligence and machine learning will fundamentally reshape the nature of work in many of Tasmania's key industries and occupations. ■ The high level of AI exposure of several key Tasmanian industries can represent an opportunity leading to increased productivity and growth or a vulnerability leading to long-term structural decline. 	<ul style="list-style-type: none"> ■ The need to continue to develop flexible and accessible training programs to enable Tasmanian workers and jobseekers to enhance their digital skills. ■ The need to improve digital infrastructure and inclusion, especially in regional Tasmania. ■ AI exposure will be greatest in rural and regional industries, highlighting the need for accessible place-based training programs in Industry 4.0 skills and technologies.

Questions for further consideration - Trend 1: The acceleration of digitisation and use of technology

- Will remote working be an increasingly important characteristic of the future of work in Tasmania?
- Are current policy frameworks adequate to ensure that increasing remote work does not exacerbate divides between 'knowledge workers' and those without access to such flexible arrangements?
- How can we capitalise on the shift towards remote working?
- How do we adapt our population and migration strategies to capitalise on the possible growth of remote working?
- What are the risks for Tasmanians of significant population growth in the regions?
- What are the implications of regionalisation for infrastructure, services, and settlement?
- What strategies might be required to maintain and enhance our CBDs?
- In a world characterised by increasing flexibility regarding remote work, how do we retain and attract people to live and work in Tasmania?
- How can the Tasmanian education and training system better equip students/workers with the digital skills required for effective participation in the state's future workforce?
- Do we need to improve levels of foundational literacy before we can enhance digital literacy among Tasmanian workers and job-seekers?
- What policies and strategies should be adopted to ensure that digital disruption in the Tasmanian workforce becomes an opportunity for growth rather than a risk?

TREND 2: ECONOMIC RESTRUCTURING AND INCREASING INEQUALITY

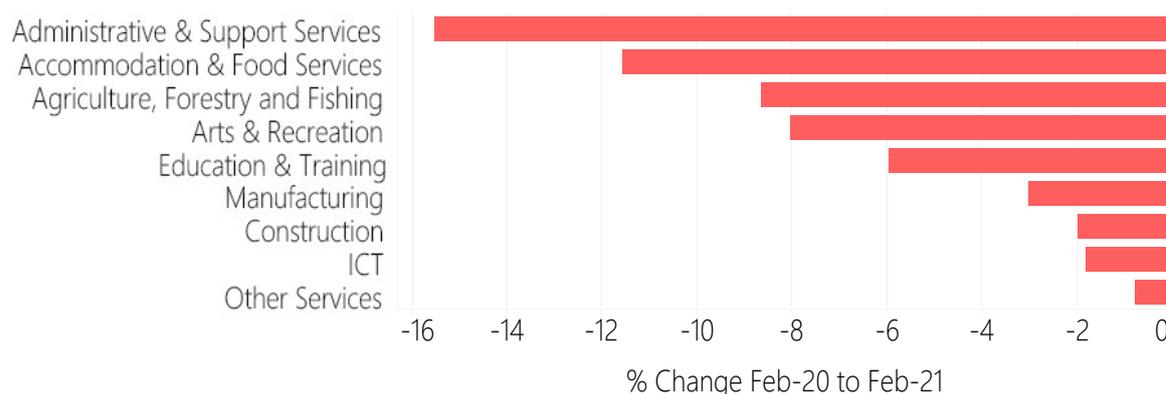
Australia's economic recovery from the COVID-19 pandemic has been strong although it remains vulnerable given low levels of vaccination and (at the time of writing) the current Delta outbreaks in NSW, the ACT, and Victoria. In terms of employment, total hours worked in Australia returned to pre-pandemic levels in February 2021 while real national GDP grew 1.8% in the first quarter of 2021. The overall picture may be strong but, as noted above, it conceals significant variation across regions, industries, occupations, and individual households.

Beyond the labour market, the combination of ultra-low interest rates, quantitative easing, and a wide range of stimulus programs has resulted in rising house and financial asset prices both in Australia and globally over the last 12 months. These policies have supported the economic recovery but have also increased wealth inequality, which has a number of political, economic, and social implications.

While the pandemic's long-term impacts on the structure of the global economy remain unclear, two broad developments with implications for the future of work are emerging. First, the pandemic may lead to a permanent decline in some industries (or segments within them), while others will be subject to increasing levels of automation or technological disruption. The acceleration of the so-called 'Fourth Industrial Revolution', as noted above, will see enhanced productivity but the nature of work within certain industries and occupations will be impacted. Second, the pandemic will drive innovation and growth and new forms of work in emerging industries such that aggregate employment may increase, albeit unevenly, in the economy as a whole. In combination, these structural and economic changes may contribute to a redistribution of work, with implications for inequality. These implications are summarised at the end of this section.

Figure 3.4: Hours worked in industries yet to recover twelve months after the beginning of the crisis

(source: ABS)



Impact 1: Industries at risk of restructuring and automation

Despite significant uncertainty in the long-term outlook, the COVID-19 crisis is affecting the structure and distribution of employment in economies around the world. Many pandemic-driven changes are likely to be short-lived, but others will persist long after the 'next normal' emerges. As with past economic crises, many pre-existing trends have intensified during the pandemic.

Some of the clearest short-term impacts have been on industries that rely on travel, mobility, and personal interaction. National and international travel, tourism, retail and food services, and the arts and recreation sectors were among the first and hardest hit industries following the introduction of initial lockdowns in the early part of 2020. Amid ongoing international travel restrictions, Australia's international education sector (our fourth largest export industry prior to the pandemic, totalling some \$40 billion annually and supporting around 250,000 jobs) has also been severely impacted, declining 21.4% in 2020, and may not fully recover for several years.³⁵

Over the longer term, however, it appears likely that the pandemic will exacerbate trends that were already underway before 2020. Dubbed 'the great acceleration', this change has seen some of the most profitable firms and industries of the pre-pandemic era record extraordinary growth while hastening the decline of smaller and more vulnerable businesses.

There are two broad dynamics at play:

1. The potential for established industries to be subjected to long-term restructuring.
2. The adoption of technology and automation within industries.

Vulnerable industries

The extent to which COVID-19 will have long-term impacts on specific industry sectors and on the future of work in those sectors is uncertain and will ultimately depend on the extent to which patterns of consumption and investment change on an ongoing basis.

Australian industries that are at greatest risk of being impacted on a permanent basis by the pandemic are segments of international tourism and international education along with the performing arts and leisure sectors.³⁶

Tourism is one of Australia’s largest employers and the industry is twice as important to the Tasmanian economy than it is to the Australian economy as a whole. While it is highly likely there will continue to be strong demand for recreational travel when COVID restrictions ease (see Figure 3.5 below), not all segments of the market may recover to pre-pandemic levels. Business and conference travel is at risk of being partially displaced in the longer term by technology while health concerns associated with long-haul air travel and cruise holidays are likely to persist.³⁷ This suggests a possible shift in the visitor economy towards domestic travel and less frequent, longer duration international holidays. Given growing political tensions between Canberra and Beijing, it is very unlikely Chinese visitation to Australia (which peaked at 1.4 million arrivals in 2019) will recover in the foreseeable future. Also, as the reopening of Australia lags behind that of other countries, international tourists are likely to seek alternative destinations.

Similarly, the disruption to Australia’s \$40 billion international education industry after two years of near zero on-shore commencements is likely to have ongoing consequences for international student numbers as both international students and agents seek and develop relationships in more accessible markets. As with international tourism, Australia will be at a relative disadvantage to rival education providers including in the United States, Canada, and the United Kingdom.

A slightly different domestic dynamic might play out in other hard-hit industries where even if demand returns to pre-pandemic levels, many operators and business will not survive long enough to capitalise on the recovery. The risk of otherwise viable businesses failing to survive the pandemic has increased significantly given the impact of the Delta outbreaks in mainland cities from mid-2021. On the demand side, consumer preferences may have evolved over the course of the pandemic, permanently disrupting industries and employees who work in them.

The short-term outlook for the tourism industry is particularly uncertain given the impact of the Delta variant, which has undermined the strong recovery in Australian domestic tourism experienced in the first half of 2021.³⁸

When vaccination rates do eventually enable borders to reopen, Tourism Research Australia (TRA) envisages that travel for visiting friends and family will be the first to recover, with those having been separated eager

Figure 3.5: The recovery in global commercial flights since April 2020

(source:)



to reconnect. However, holiday travel will take longer to return, given the planning and expenses involved. Further, TRA predicts international travel will be slow to recover even when borders reopen, due to the cost, Australia's relative remoteness, limited aviation capacity, and weaker economic conditions globally. Lastly, international visitation numbers may also be adversely affected by the conditions on which Australia is prepared to accept travellers from particular countries.³⁹

These ongoing impacts and uncertainty are likely to have long-term consequences for the Australian tourism industry as will the number of operators and workers likely to leave the sector and changing consumer preferences and travel behaviour.

The National Skills Commission has developed an occupational resilience ranking for a broader range of occupations to assess the likely impact of COVID-19 (see Table 3.2). According to this analysis Sales Workers and Clerical Administrative Workers are especially vulnerable due to a relatively low projected employment growth pre-COVID and because they recorded the largest drop in online job advertisements during the pandemic in 2020.⁴⁰

The rise of automation

The second, perhaps clearer, trend is the adoption of technology and automation across a range of industries to improve productivity during the economic recovery. Whereas the previous section (Trend 1 Impact 2) focused on the training implications of accelerating digitisation and increased use of artificial intelligence, here we

consider the ways in which technology may displace employment in industries and occupations which are susceptible to automation.

In the aftermath of previous recessions, business has invested in technology and automation to improve productivity and decrease the need for low-skilled labour.⁴¹ The acceleration of automation is especially likely in response to the COVID-19 crisis given that both businesses and consumers have been forced to embrace technological solutions. Indeed, emerging evidence supports this hypothesis, with a July 2020 survey of 800 businesses across nine countries (including Australia) indicating that 68 per cent of executives have plans to adopt automation and AI.⁴² National Skills Commission modelling suggests that with increasing automation, there will be a fall in employment in lower-skilled occupations, such as freight handlers and shelf fillers, reflecting a shift to online retailing and warehousing.⁴³

Examples of the shift to e-commerce and other forms of digital service delivery include:

- Online retail sales increased between two and five times faster in 2020 than predicted; In Australia, online retail sales increased 70.8% between October 2019 and October 2020.⁴⁴
- In retail banking a combination of declining foot traffic and cost-cutting measures has led the 'big four' Australian banks to close, or plan to close, 350 branches between January 2020 and December 2021.⁴⁵

Table 3.2: Occupations with the three lowest and highest resilience indices

(source: National Skills Commission)

Occupations with a lower resilience index	■ Clerical and administrative workers
	■ Sales workers
	■ Managers
Occupations with a higher resilience index	■ Machinery operators and drivers
	■ Community and personal service workers
	■ Professionals

- There has also been a significant shift towards telehealth across most advanced healthcare systems with remote (telephone or video) medical consultations growing from being a niche option prior to the pandemic to a point where they represented 28% of all federally funded consultations in Australia by mid-2020.⁴⁶

Implications for employment

The COVID-19 crisis has contributed to a rapid acceleration in automation across a diverse range of industries and occupations. It is important to note that automation does not necessarily translate to aggregate job losses, as is often supposed. On the contrary, research from the OECD finds that a high level of firm investment in automation technologies is typically associated with employment growth rather than decline.⁴⁷

Nonetheless, it is important to recognise that automation does disrupt labour markets. Anywhere from 25-40% of current Australian work activities could be automated by 2030,⁴⁸ potentially spurring rapid shifts in labour demand. New jobs created by automation also require different skills, training, and qualifications than the jobs being replaced, which can lead to displacement of lower-skilled workers in particular. Some of the industries most vulnerable to automation (not to mention offshoring) include retail trade; transport, postal, and warehousing; accommodation and food services; and manufacturing (see Figure 3.6), with the OECD estimating that 14% of jobs are at high risk of automation.⁴⁹ The Regional Australia Institute predicts that 26% of jobs across the nation are highly vulnerable to automation.⁵⁰

Another widely reported consequence of automation is that it displaces mid-level and administrative jobs across a wide range of industries and occupations. This can lead to a ‘hollowing out’ where employment growth is concentrated in low-paid, often insecure service-based employment or high-skill, high-wage occupations. Research conducted by the University of Tasmania prior to the pandemic argued that this polarisation is especially challenging for young workers given the lack of entry-level positions and pathways to professional careers.⁵¹

The National Skills Commission argues that for workers displaced by automation, training and skills development will play a crucial role in up-skilling and re-skilling to assist with the transition to higher-skilled employment.⁵²

Emerging evidence from Tasmania

Data on the extent of COVID-related automation in Tasmanian industries is only just emerging but analysis presented in Figure 3.7 suggests the number of Tasmanians who work in partly or fully automatable jobs is higher than the national average. As in the case of artificial intelligence, increased use of automation will not have a uniform impact across Tasmania’s regions.

The industries with the greatest proportion of automatable tasks are of disproportionately high importance to some of Tasmania’s regional communities. This means that even if automation creates a state-wide increase in jobs over the long term, it is possible that it could result in an unequal realignment of work across different groups and regions if not managed carefully.

This analysis is consistent with available data at a regional level, which show that while some of Tasmania’s most remote and rural LGAs have a lower share of automatable jobs than the state and national average, mid-size regional centres like Sorell, Devonport, Burnie, Circular Head, and Launceston are especially vulnerable. With around one third of its jobs classed by the Regional Australia Institute as at high risk, Sorell is the LGA that is the third most vulnerable in the country to digital disruption associated with automation (see Figure 3.7 below).⁵³ This is likely due to the fact that these regional population centres and ‘satellite suburbs’ have traditionally specialised in light manufacturing, warehousing, and logistics industries. The data also suggest that Tasmania as a whole has a slightly higher share of jobs vulnerable to automation (at around 28%) than the national average (26.5%).

Figure 3.6: Share of tasks susceptible to automation

(Office of the Chief Economist/ABS)

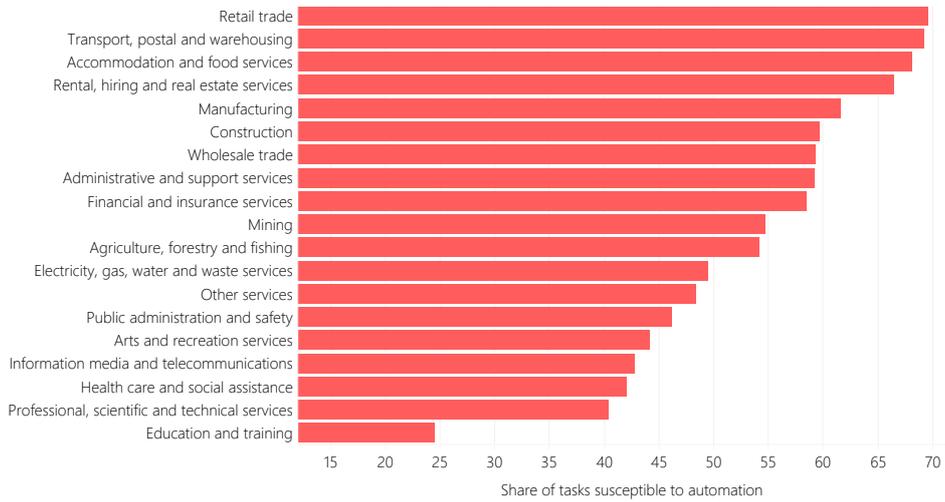
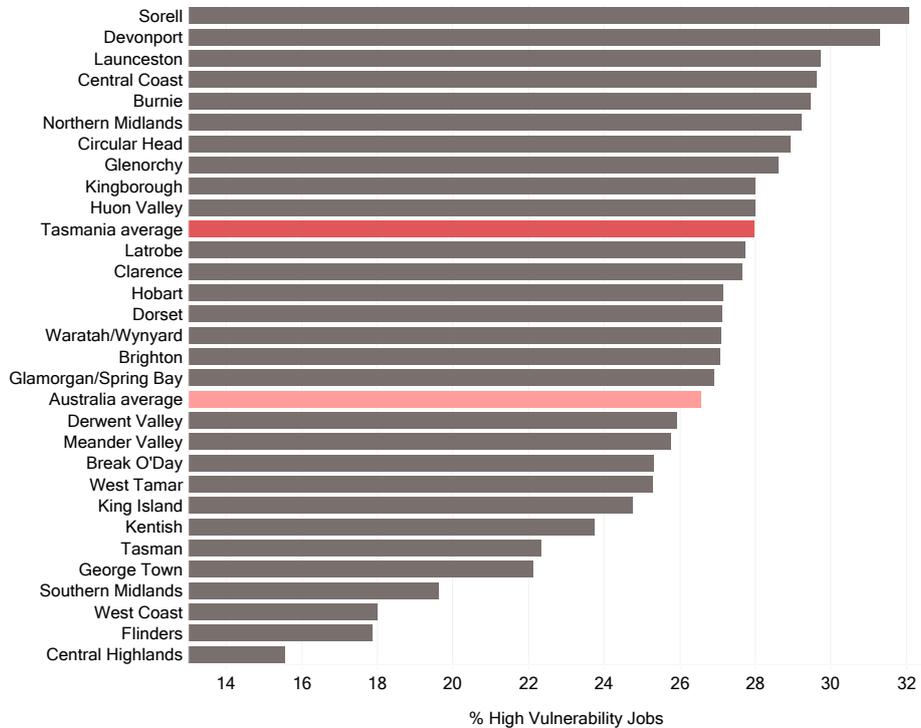


Figure 3.7: Share of jobs at high risk of automation, by LGA

(source: Regional Australia Institute)



Detailed evidence of the extent to which the COVID-19 crisis is leading to an acceleration of employment trends associated with the 'Fourth Industrial Revolution' is still emerging.⁵⁴ However, it is increasingly clear that shifting technology will permanently displace many traditional

forms of work during the current economic recovery, demanding a renewed focus on retraining, up-skilling, and economic restructuring. Continued reskilling and flexible 'lifelong learning' will be needed to ensure people are able to adapt to changing work.⁵⁵

Ashgrove Cheese:

A Tasmanian automation in industry case study

Ashgrove Cheese, a family-owned Tasmanian business operating since 1908, has recently teamed up with Sage Automation to automate some of its processes. Thanks to the use of automated vats, block formers and a recipe management system, Ashgrove has now significantly increased its output - up by 50,000 litres per day, as well as its reliability - with an increased throughput of 350 per cent. The automated heating, stirring and cutting means that the staff now do not need to do the hard 'lifting', as the machinery does it for them.

For more information go to www.sageautomation.com/our-work-manufacturing-stories/tasmanian-cheese-producer-welcomes-automation-to-production

Trend 2 Impact 1	
Foresight analysis	Policy considerations
<ul style="list-style-type: none"> ■ COVID-19 is likely to have a lasting impact on levels of international tourism and education, as well as on arts and leisure industries. ■ We will see increasing adoption of technology and automation within industries. ■ Inner-regional communities are likely to be hardest hit by increasing automation. ■ Ongoing shifts to e-commerce and telehealth are likely to continue. ■ An increased move to automation will see a greater need for workers with Industry 4.0 skills. 	<ul style="list-style-type: none"> ■ Continue to monitor the long-term impacts of COVID-19 on the visitor economy and support adaptation and diversification in the tourism, education, arts, and leisure industries.. ■ Workers in vulnerable industries and occupations will need to be supported to up-skill and re-skill especially as there are relatively more industries vulnerable to automation in Tasmania than the national average. ■ Young people in particular need access to local pathways and programs for local jobs and industry-relevant training. ■ Managing the realignment in job opportunities and labour market competition that will follow increased automation in Tasmania will be a key future challenge for policy makers, industry, and affected communities themselves.

Impact 2: Industries expected to grow during the recovery

Some industries and occupations will decline in the aftermath of the pandemic, but many will grow reflecting changing patterns of consumption and investment. Indeed, this has already been anticipated in financial markets over the course of the COVID-19 crisis.⁵⁶

A similar divergence is also evident at the industrial and occupational levels. As we have noted above, technology workers, business and finance professionals, logistics specialists, construction, and health and community care workers will likely experience strong employment growth between now and 2030, while office support, food services, production and warehousing, agricultural, and customer service workers will make up a smaller share of the workforce in developed economies by the decade's end.⁵⁷

The OECD predicts that the COVID-19 recovery will see strong growth in health and community care occupations as well as in information technology, logistics, and renewable energy.⁵⁸ According to National Skills Commission modelling, if we continue to see digitisation accelerate at its current rate then there will be an increase in the share of employment in higher-skilled technology-based occupations, with growth in occupations involving technology, computing and digital media professionals in the short- and medium-term.⁵⁹

The Australian Government's Intergenerational Report identifies health and aged care as 'key areas of future spending' due to an ageing population, rising incomes, technological advancement and, recently, the impacts of COVID-19.⁶⁰ This increase in spending will result in significant employment growth in the health and aged care industries subject to the availability of appropriate education and training.

Another broad trend will be the continuing growth of 'green jobs' across a range of occupations and industries in response to the deepening climate emergency facing the planet. Decarbonising the global economy will see declining employment in carbon-intensive industries offset by rising investment, innovation and employment in low-carbon technologies and processes.⁶¹ During the first phase of this process there will be substantial growth in the energy, transport and agriculture sectors.⁶² This trend is being amplified by the fact that many governments around the world have focused much of their COVID stimulus spending on climate and environmental action. This focus has been less apparent in Australia, with the United Nations Environment Program rating our COVID spending as the least climate-friendly of any advanced economy.⁶³

Finally, it is likely that the coming decades will see significant growth in the construction industry. Australia's buoyant housing market, COVID-19-expedited infrastructure spending and the Australian Government's \$110 billion ten-year infrastructure pipeline are likely to ensure strong and sustained demand for construction occupations over the medium to long term. Modelling from BIS Oxford Economics suggests that construction industry output in Australia is likely to grow by 21% over the next decade, with civil construction the strongest area of growth.⁶⁴

Emerging evidence in Tasmania

Evidence in relation to long-term structural shifts in the Tasmanian economy is only just emerging. As was reported in Part 2, the industries in Tasmania which have generated the strongest growth in payroll jobs since March 2020 include:

- Administration and support services (10.5%)
- Professional, scientific and technical services (8.8%)
- Construction (4.3%)
- Healthcare and social assistance (4.1%)

Beyond this, in the medium term at least, stimulus-funded infrastructure spending and historically high housing commencements (37.5% higher over the past twelve months than Tasmania's decade average) are likely to lead to further and sustained demand for construction workers.⁶⁵

Tasmania is also well positioned to contribute to Australia's emerging, albeit uncertain, green recovery. Tasmania's Renewable Energy

and Renewable Hydrogen Action Plans seek to attract over \$5 billion in new investment in energy projects over the next decade, which will create significant growth in specialist construction and associated services.

Beyond renewable energy generation, rapidly growing investment in a wide range of low-carbon technologies and industries is likely to be a major driver of sustainable jobs for Tasmanians into the future.

Our health and community care industry will likely experience strong and sustained employment growth in the coming years given Tasmania's ageing population, an increasing demand for care services more generally and broad-based recognition of the need to increase public investment in high quality care services. The need for better workforce planning, training, and support in the community care industry is especially acute given that it was estimated that an additional 4,000 staff were required to meet existing demand prior to the COVID crisis combined with the fact that the industry has traditionally been reliant on international migration.⁶⁶ The long-standing shortage of a wide range of health professionals in regional Tasmania appears to be intensifying due to the effects of the COVID-19 pandemic.

It has been established that an additional 4,000 care staff were required prior to the COVID-19 crisis

Trend 2 Impact 2	
Foresight analysis	Policy considerations
<ul style="list-style-type: none"> ■ Strong growth in employment opportunities is likely for technology workers, business and finance professionals, logistics specialists, construction, and health and community care workers. ■ Tasmania is well-positioned to capitalise on a 'green recovery' through an increase of jobs in renewable energy systems and low-emissions technology with concomitant benefits in the fight against climate change and Tasmania's environmental credentials. 	<ul style="list-style-type: none"> ■ Effective and industry-specific training programs need to be implemented to support growth in the industries of the future. ■ Given growing labour and skills shortages in certain sectors and regions (discussed below) a clear commitment to providing place-based support for local job seekers to meet local workforce needs will be required. ■ High automation risk does not necessarily result in lower employment. However, managing the realignment in job opportunities and changing skills needs associated with increased automation in Tasmania will be a key future challenge for policy makers, industry, and affected communities themselves.

Impact 3: Impacts on specific cohorts of workers

Having assessed the impact of COVID-19 on specific regions, industries and occupations it is necessary to consider the impact on specific cohorts of workers and the implications for equity. Overall, younger and low-wage workers have been hit hardest by the COVID-19 crisis and, in the absence of carefully designed labour market programs, remain vulnerable to long-term unemployment despite the economic recovery. The OECD view is that: 'There is a real risk that the depth of the COVID-19 crisis will entrench inequality and exclusion unless governments put jobs at the heart of the recovery'.⁶⁷

Emerging evidence, published by the OECD, of the vulnerability of lower-paid and casually employed workers amid the COVID-19 crisis includes:⁶⁸

- Hours worked in low-paying occupations fell by 28% whereas hours worked in high-paying occupations fell just 10%.
- Professionals with a high level of education have recovered hours and pay more quickly than lower-skilled and lower-paid occupations.

The combined industrial impacts of the crisis, longer-term restructuring, and technological disruption will likely have broad social impacts. Currently, men dominate the routine task-intensive occupations and industries most susceptible to automation while women are significantly over-represented in the categories with lower levels of AI exposure and automatability, such as healthcare and social assistance and education and training. Whether these dynamics have any longer-term impact on gender inequality in employment and remuneration outcomes remains to be seen.

In addition, the trends outlined in this section will affect the geographical distribution of employment. Notwithstanding the likelihood that an increase in remote or flexible work will enable some migration from inner cities to more regional areas, many less vulnerable jobs are in large cities. Some of the occupations and industries with the highest automatability and AI exposure, on the other hand, are important employers in rural and regional parts of Australia and many other developed countries.

Emerging evidence in Tasmania

As in the rest of the world, the COVID-19 crisis and recovery has created winners and losers in Tasmania. Recent data highlight pandemic-driven divergence along industrial, occupational, and broader socio-economic lines.

The recovery, as was noted in Part 2, has been slower for younger workers. Women aged 20-29 have fared particularly badly – both total employment and hours worked in this cohort remain considerably lower than their levels in February 2020.

The recovery has been slower for women in the regions. In the twelve months following the initial economic crash, male hours worked have recovered strongly across the state (5.6% growth), as have female hours worked in the greater Hobart area (up 4.4%). Female hours worked outside greater Hobart, however, remained 0.8% lower after twelve months than their February 2020 level.

Casual workers were more likely to lose their job (and those employed for less than 12 months were ineligible for Jobkeeper) during the early stages of the crisis.

Growing inequality in the labour market has been compounded by the broader economic consequences of the COVID-19 crisis including a clear and growing divergence between people who owned significant assets before the pandemic and those who did not. Wealthier (and generally older) Tasmanians have benefited from rising share market and property prices whereas many younger and poorer Tasmanians are being forced to contend with a more challenging and volatile labour market and an increasingly unaffordable housing market exacerbating pre-existing inequality.

The median house price in Hobart increased 19.6% in the 12 months to June 2021 to \$655,000, making it on par with Brisbane and higher than Perth and Adelaide. As a result, Hobart is now tied with Sydney as the least affordable city in the country for renters and first home buyers alike, with the result that the bottom 40% of income earners in Hobart are unable to buy or rent 90% of properties on the market.⁶⁹ While starting from a more affordable base, rural and regional price rises in Tasmania have been even greater as a result of increasing regional migration, contributing to an emerging state-wide housing affordability crisis.

'There is a real risk that the depth of the COVID-19 crisis will entrench inequality and exclusion unless governments put jobs at the heart of the recovery' (OECD)

Trend 2 Impact 3	
Foresight analysis	Policy considerations
<ul style="list-style-type: none"> Impacts of COVID-19 and other future crises will be felt more acutely by younger, lower-paid, and less securely-employed workers. The consequences of a less equitable distribution of work and income is being compounded by rapidly increasing housing and asset prices. Impacts will likely vary by gender. Industries and occupations in rural and regional areas are likely to experience higher rates of automation and AI exposure than their counterparts in inner cities. 	<ul style="list-style-type: none"> Given structural changes emerging in the labour market, policy makers and industry must try to promote job security and address growing income inequality. The need is growing to address the barriers for low-income households to access secure work ,which includes transport and suitable housing, The supply of social housing must be increased as well as affordable housing options for key workers.

Questions for further consideration - Trend 2: Economic restructuring and increasing inequality

- How can we work to address structural inequalities across Tasmania's workforce in the aftermath of the pandemic (rather than watching the divide increase between higher-paid professionals and lower-skilled lower-paid workers)?
- How do we support retraining and reskilling as workers move between occupations or industries as a result of economic restructuring?
- What lessons could Tasmania learn from successful targeted labour market programs elsewhere in the world?
- How can we ensure young Tasmanians gain the technological skills they will need in the jobs of the future?
- What would an optimal social and affordable housing solution look like in Tasmania?

Trend 3. Migration, mobility, and labour shortages

The COVID-19 crisis has had an unprecedented impact on international travel and migration, with border closures instantly reducing international arrivals to Australia – (see Figure 1.7). When combined with regional travel restrictions and ‘stay at home’ orders, organisations which depend on migrant or out-of-region labour have been profoundly disrupted. Emerging evidence suggests that employers, out of a combination of short-term necessity and a desire to reduce longer-term risk, are seeking to reduce their dependence on migrant labour through a combination of increased automation and through employing local workers. Despite these efforts, many regions and industries are experiencing increasingly severe labour shortages. These shortages threaten the economic recovery and highlight the need to provide effective, local employment services and place-based training solutions.

While only representing one element of the 280 million people migrating globally each year prior to the pandemic, the OECD estimated that inward migration to member countries declined by an unprecedented 78% during 2020.⁷⁰

Australia has implemented an aggressive approach to quarantine and border control which has resulted in a significant decline in international travel, repatriation, and migration. Since the national border closure, international arrivals to Australia have averaged just 32,736 per month with the majority being returning Australian citizens.⁷¹

This national border closure has prevented the arrival of a range of visa holders who would otherwise have been able to work in Australia, most notably international students (down by 190,000 in the 12 months to March 2021) and working holiday visa

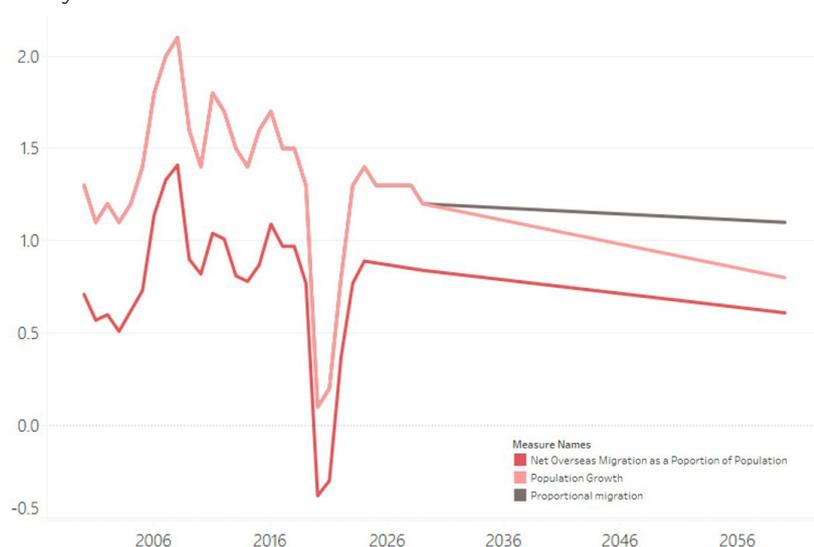
holders (down by 80,000 in the same period). International students tend to seek employment in lower-skilled jobs in the services sector, such as accommodation and food services, health care and social assistance, and retail trade while international visitors on working holiday visas tend to work in regional industries such as agriculture, forestry and fishing, and accommodation and food services.⁷² In total, there were approximately 318,000 fewer residents in Australia on temporary work visas on 31 March 2021 compared to 12 months earlier.⁷³ On a per capita basis the equivalent figure for Tasmania is likely to be approximately 5,000.

There are an estimated 5,000 fewer workers in Tasmania on temporary visas than before the pandemic

The Federal Budget, handed down before the rise of the Delta variant in June 2021, assumes that Australia’s borders will re-open after mid-2022, after which there will be a gradual return of temporary and permanent migration, with the rate of international arrivals continuing to be constrained by state and territory caps during 2021 and the first half of 2022.⁷⁴

As a result of these and other factors, projected population growth in Australia is lower now than before the pandemic due to both limited migration and a lower fertility rate. On top of this, population ageing will reduce labour force participation – especially in Tasmania given our older demographic profile. Nationally the participation rate is projected to decline from a record high of 66.3 per cent in March 2021 to 63.6 per cent by 2060-61, adding to labour shortages in many industries and occupations.⁷⁵

Figure 3.8: Population and overseas migration projections
(source: Australian Government)



Even if international and interstate travel does return to pre-pandemic levels, governments and businesses may attempt to reduce supply chain risk and their reliance on migration and FIFO labour. Federal Resources and Water Minister Keith Pitt has suggested that in the future more residential workers with fewer FIFOs will be common and that many of the changes forced by the pandemic will not necessarily be reversed once the crisis is over.⁷⁶ Major resource companies such as BHP, Rio Tinto and Woodside have indicated that they will reduce their reliance on a FIFO workforce with the Western Australian Government also promising to do the same.⁷⁷

In the short term, declining migration and mobility, combined with a reluctance to work in roles where there is potential exposure to COVID-19, has led to significant labour shortages in several industries, notably accommodation and food services; electricity, gas, water, and waste; manufacturing; and construction across the developed world, and in Australia (see Figure 3.9). These emerging skills shortages threaten to undermine the economic recovery and highlight the need to continue to invest in and refine innovative training and transition to work programs for local job seekers.

Even if travel does return to pre-pandemic levels, governments and businesses may attempt to reduce supply chain risk and their reliance on migration and FIFO labour

Figure 3.9: Labour shortages in Australia

(source: ABS)

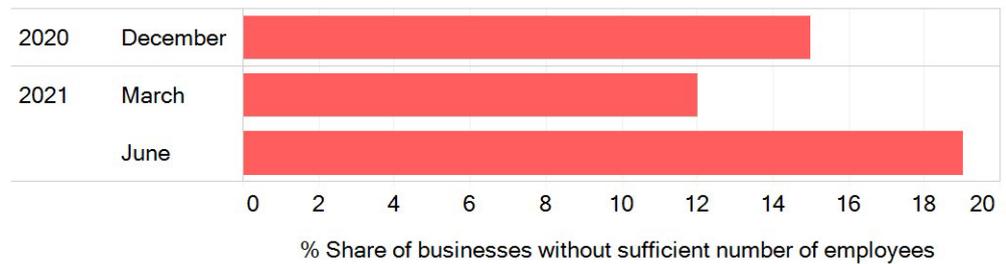
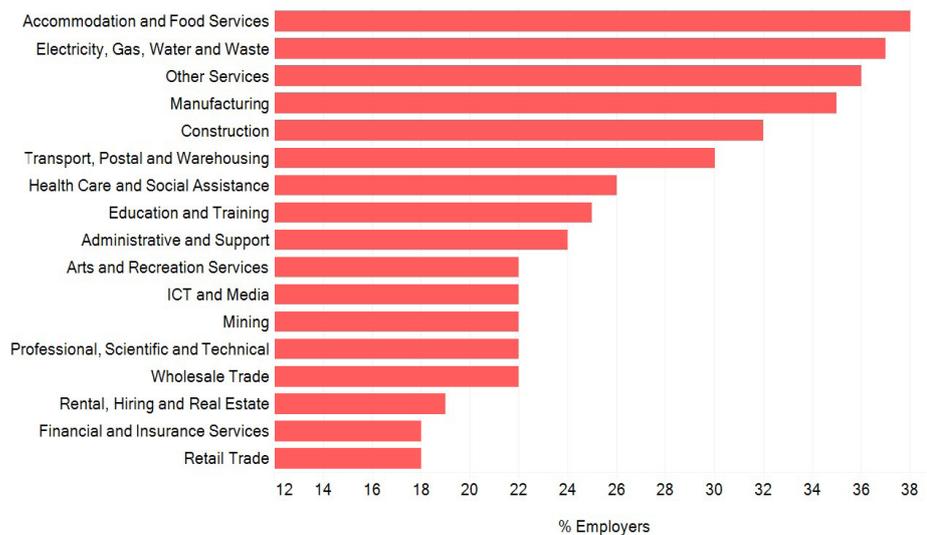


Figure 3.10: Share of employers reporting difficulty recruiting staff across Australian industries

(source: National Skills Commission/Labour Market Information Portal)



Emerging evidence from Tasmania

Available evidence suggests that the pandemic's impact on skills and labour shortages in Tasmania is multi-faceted, comprising acute impacts as well as exacerbation of longer-term structural challenges. What is clear is that there are emerging skills and labour shortages across the Tasmanian economy with the rise in job vacancies more than doubling since the peak of the crisis (Figure 3.11 below).

Following the introduction of border closures and travel restrictions, there have been acute labour shortages in Tasmanian industries which rely on an un- or semi-skilled seasonal workforce. Specific labour shortages reported by local industries include:

1. The agricultural sector, which relies heavily upon seasonal migrant workers. The closure of the state's borders created a shortfall of up to 5,000 seasonal farm workers although special temporary worker programs with strict quarantine requirements have addressed some of this shortfall. Indeed, the 9.4% decline in payroll jobs in agriculture relative to the start of the pandemic (see Fig 2.9) is a product of labour shortages rather than demand. Tasmania's specialisation in highly-labour intensive crops, particularly wine and table grapes and berries, means that its acute, critical labour shortages are on par with Victoria's as the worst in the country.⁷⁸
2. The tourism and hospitality industry, which is facing what it calls a 'dire' shortage of skilled workers, with overseas visa holders usually making up a large part of this cohort. 94% of Tasmanian tourism and hospitality operators who reported a skills shortage in their business attributed it to a lack of local skilled workers.⁷⁹

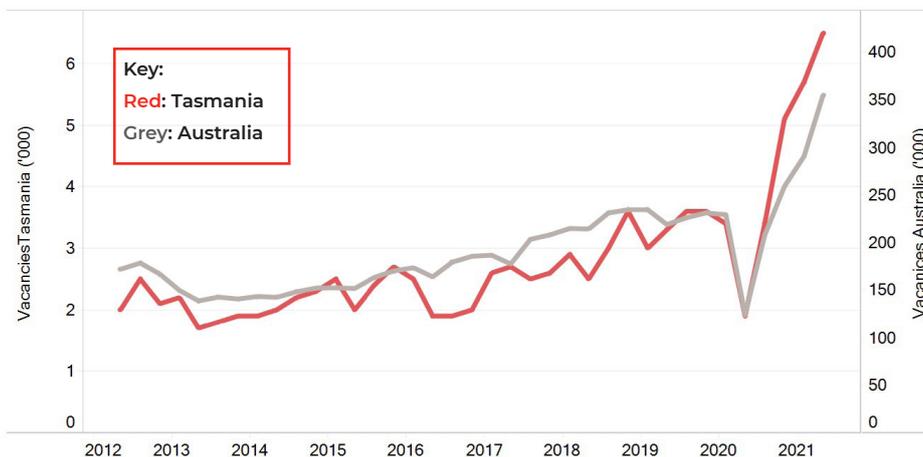
Border closures have also exacerbated already existing labour shortages in higher-skilled, non-seasonal occupations in the health, social and community care, and construction industries.⁸⁰ In the most recent available survey data from the National Skills Commission, 45% of Australian employers reported receiving no suitable candidates for advertised vacancies in vital healthcare occupations, including physiotherapists and occupational therapists. Only 33% of such vacancies were being filled even before the COVID-19 pandemic due to limited skilled migration, suggesting that the problem will only have become more dire in the past 12 months.⁸¹

Job vacancies have almost doubled in Tasmania since the peak of the crisis in 2020

The state's highly decentralised and ageing population, and shortage of local graduates in key health and aged sector occupations, have led to high long-term dependence on skilled migration to fill a wide range of essential healthcare roles. Most notably these include a wide range of nursing specialisations, occupational therapists, physiotherapists, speech pathologists as well as GPs and other medical specialists. Indeed, all occupations currently in the highest demand category of the Tasmanian Skilled Occupations List, used by Migration Tasmania to fill skills shortages, are healthcare occupations.⁸²

Figure 3.11: Job vacancies in Tasmania and Australia

(source: ABS)



UTAS to introduce new allied health degrees in 2022

Under the School of Health Sciences Allied Health Expansion program, students in Tasmania will be able to undertake a Masters of Physiotherapy, Occupational Therapy or Speech Pathology, from next year. In designing these courses, the University is collaborating with government, health professionals, industry and local communities to increase allied health education, training and research opportunities in Tasmania, and is responding to the growing demand for, and shortage of, allied health services across Tasmania. Head of the School of Health Sciences, Professor Nuala Byrne, has said that these courses needed to be introduced as 'Tasmania faces significant health challenges with an ageing population, high rates of chronic conditions and increasing multi-morbidity driving demand on the State's health system.' For more information go to:

www.utas.edu.au/allied-health-expansion-program

Similarly, Tasmania's large and rapidly growing social and community care industry was facing acute labour shortages even prior to the onset of COVID-19, with the sector's current industry plan estimating an additional 4000 workers would be required by 2024 to meet community need.⁸³ There is broad-based recognition that new models of training and support for the care workforce, combined with better pay and conditions, will be required to attract and retain sufficient staff to provide quality aged, disability, and social care.

The construction industry in Tasmania was already experiencing a boom prior to the pandemic,⁸⁴ and notwithstanding a short downturn, this boom has continued apace. In the March quarter of 2021, construction work in Tasmania was up 12.6 per cent above the decade average for the state.⁸⁵ Detached building approvals in Tasmania in the three months to March 2021 were 50.8 per cent higher than the same time in 2020. Renovation work is booming too, with a similar increase to new dwelling approvals. Indeed, building approvals in Tasmania reached their highest level in March 2021 since the ABS has been collecting that data. The HIA anticipates that 3,000 new detached homes will be built in Tasmania over 2021-2022. This increase has had a flow-on impact on labour with the industry declaring that it has a skills shortage and that this record volume of work will see the industry looking to 'absorb' workers from across the economy.⁸⁶

Local industry-focused training and employment pathways.

Evidence suggests that Tasmania, like many other states and regions in Australia and around the world, is facing intensifying skills shortages that may persist for some years. This presents both a challenge and an opportunity to support more Tasmanians through appropriate pathways and training into employment. Supporting Tasmanians so they can gain work in their local community is a central element of the Tasmanian Government's economic recovery plan. The plan seeks to enhance local training options and employment pathways through the creation of Jobs Tasmania Local Networks in order to ensure that the benefits of economic growth are shared across communities.⁸⁷

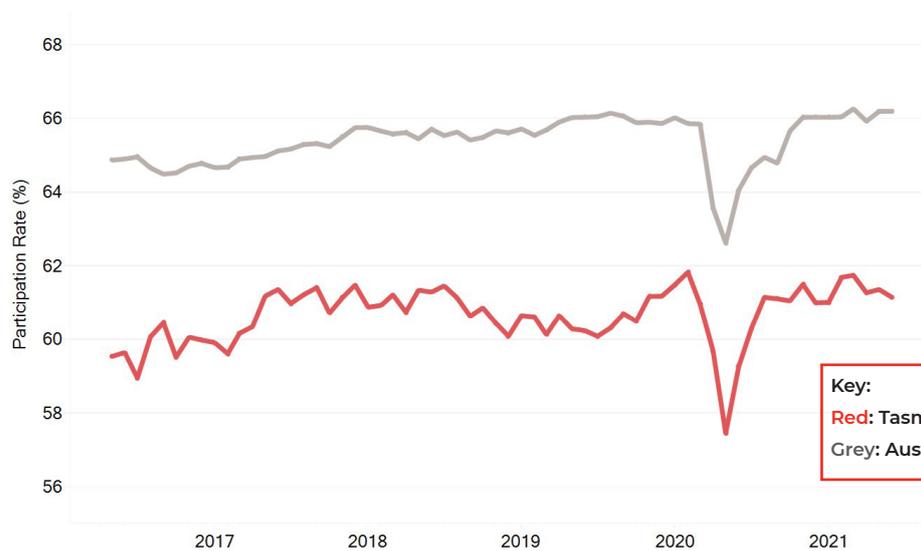
Expanding place-based employment pathways and hubs in regional Tasmania is a key element of this strategy, which will become increasingly important if low population growth and restricted skilled migration perpetuate current acute skills shortages. The goal here is to increase workforce participation rates in Tasmania's disadvantaged communities. At 61.1%, the proportion of the Tasmanian working-age population in employment is more than five percentage points lower than the national rate (see Figure 3.12 below). If the state's participation rate matched the national average, just under 23,000 more Tasmanians would be in work than is currently the case.

Targeted pathways and programs aimed at increasing labour market participation in key areas of disadvantage, combined with education and training initiatives that address emerging areas of skills demand, could go some way towards addressing Tasmania's reliance on skilled migration. The PESRAC final report found that there are gaps in job services around Tasmania, and that the Federal Government's 'Jobactive' service providers have

little incentive to place people in appropriate long-term jobs. The report recommends the creation of local 'Jobs Tasmania Local Networks', each led by a local network board, which would act as 'linkers' between other services (such as labour hire and recruitment firms), with the job seeker's circumstances considered at an individual level, and barriers in the local area identified.⁸⁸

Figure 3.12: Labour force participation, Australia and Tasmania, April 2016 to June 2021

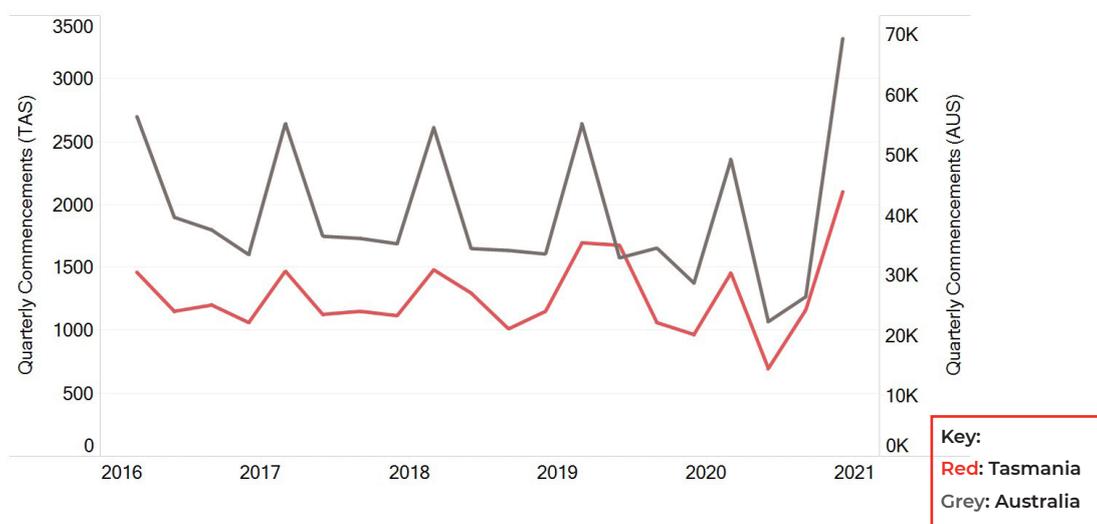
(source: ABS)



Increasing Tasmania's workforce participation rate to the national average would increase Tasmania's workforce by 23,000

Figure 3.13: Apprenticeship and traineeship commencements in Australia and Tasmania, 2016-2021

(source: National Centre for Vocational Education Research)



Tasmania's poor school retention and year 12 completion rates are further key drivers of low workforce participation in the state. The most recent available data from the Productivity Commission shows that just 58% of Tasmanian school students complete year 12, which is the lowest in Australia and 14 points behind the national average of 72%. However, as an increasing number of high schools have extended their offerings to include grades 11 and 12 (all public high schools are expected to offer grades 7 through 12 by the start of 2023), retention is expected to improve.

Research also points to the need for a greater number of vocationally-qualified workers in Tasmania. The PESRAC final report identified education and training, and TasTAFE in particular, as crucial to a strong COVID-19 recovery in Tasmania. It recommended greater connections be made between industry and schools and stronger support for vocational education training or schools-based apprenticeships. It further suggested

that vocational qualifications need to be made more attractive to young people (arguing that many younger people viewed them less favourably than university qualifications), with an emphasis on their importance to Tasmania and the fact that they offer one of the most reliable pathways to fulfilling, well-paid, and permanent employment.⁸⁹

While the state has also shown a promising rise in apprenticeship and traineeship commencements since the first wave of the crisis, this is likely a temporary response to recently introduced wage subsidies (Figure 3.13 above). Though this progress is encouraging, successful implementation of regional employment hubs and other pathways and training programs will be critical to meeting future skills demand. The need to support and improve workforce development and retention in the care economy is especially important.⁹⁰

Trend 3	
Foresight analysis	Policy considerations
<ul style="list-style-type: none"> ■ Tasmania's skilled migration challenges and labour shortages are not new but have intensified with the pandemic – the future is uncertain. ■ Key Tasmanian industries will continue to be reliant on seasonal workers. ■ Increasing Tasmania's workforce participation rate could go some of the way towards addressing skills shortages. ■ In the context of an ageing population, there are particularly urgent implications for the health care and social assistance sector. 	<ul style="list-style-type: none"> ■ Tasmania's reliance on skilled migration illustrates the need for inclusive growth, effectively targeted education and training pathways, and better retention of young/graduate health professionals. ■ The University of Tasmania's Allied Health Expansion program, which will introduce Masters-level courses in areas of key skills demand starting in 2022, may help address existing shortages provided graduates remain in Tasmania rather than moving elsewhere. ■ A priority must be to lay the foundations for Tasmanians to gain meaningful work through improvements in school retention and literacy rates. ■ Deeper and more seamless integration of work and training pathways through industry partnerships would not only improve education outcomes but also provide avenues for increasing graduate retention. ■ Seasonal workers will need to continue to be imported unless such work is made more attractive to Tasmanians. ■ Regions will need effective place-based solutions tailored to their own particular workforce challenges and shortages.

Questions for further consideration - Trend 3: Migration, mobility and labour shortages

1. Is Tasmania too dependent on skilled migration to meet core health system needs? Or does our demographic profile and education and training capacity mean that such reliance is inevitable?
2. How can Tasmania's workforce participation rate be increased to address areas of labour shortage into the future?
3. How can we support more effective pathways from education into work so that young people are better matched with meaningful and useful employment of the future?

Trend 4: Accelerating enterprise creation and new forms of work

Enterprise creation during the pandemic

The COVID-19 crisis, the impact on small businesses and shift to digital platforms, and the vulnerable economic recovery pose some interesting questions about new forms of micro business, 'side-hustles', and new enterprise creation. Analysing these trends and their implications for innovation and the future of work in Tasmania is challenging due to the paucity of contemporary data and a diversity of views in relation to their implications highlighting the need for ongoing research and analysis.

The context for this debate about the impact of COVID-19 on enterprise creation and its implications for the future of work is that levels of small business creation and casualisation in Australia have been reasonably stable since the mid-1990s (see Figures 3.14 and 3.15).

There is some evidence that COVID-19 has precipitated a rapid increase in the rate of enterprise creation and small-scale start-ups, though the exact cause of this phenomenon and its implications remain unclear. The extent to which micro-businesses are being established out of necessity or choice will vary from case to case and the longer-term implications of this emerging trend require further research.

There was an increase in casual employment in the second half of 2020 but overall rates of casualisation have been reasonably stable over the last 20 years

Figure 3.14: Casual employment as a share of the total workforce, Australia, 1983-2018
(source: ABS)

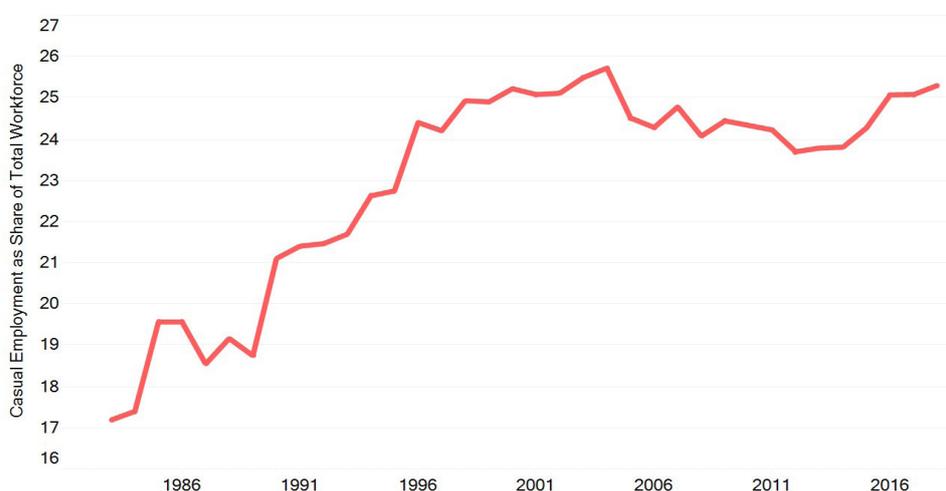
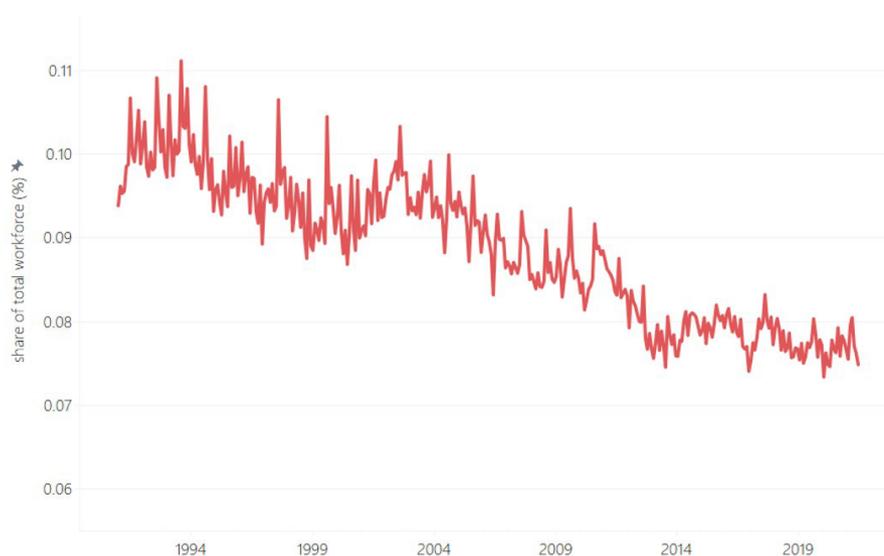


Figure 3.15: Unincorporated enterprises without employees as a share of the total workforce, Australia

(source: ABS)



International trends

Internationally there has been an increase in new enterprise creation during the pandemic:⁹¹

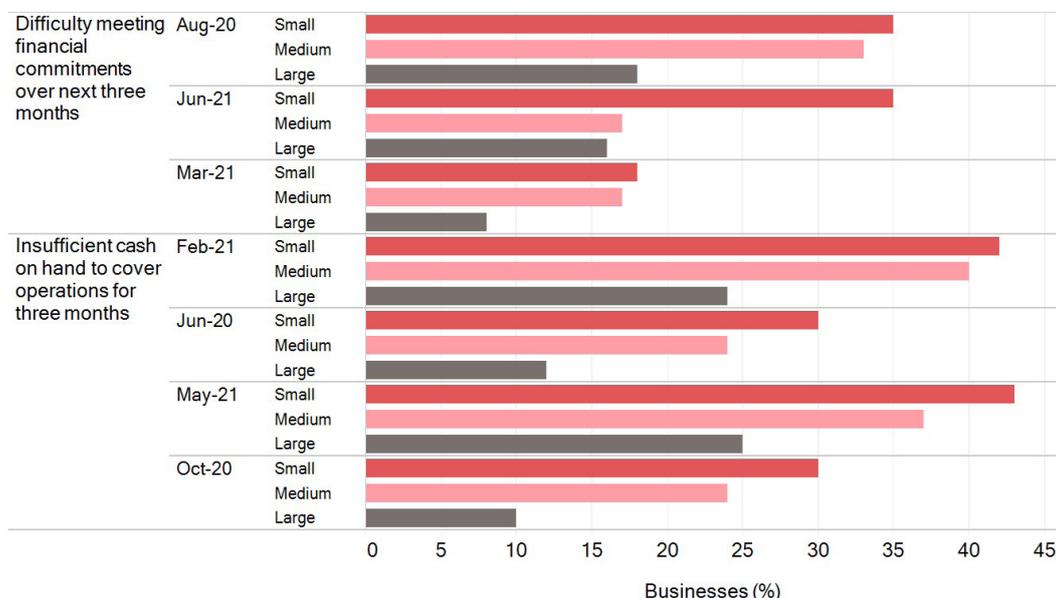
- Census Bureau data from the United States from 2020 showed a doubling of small business registrations in the third quarter of 2020 (an increase of 1.5 million) relative to a year earlier.
- A 20% increase in business registrations was recorded in France in the third quarter of 2020.
- A 14% increase in Japan of business registrations was recorded in Japan over the same period.
- Likewise, in the UK and the EU, the number of registered companies rose between 20 and 40% in 2020 (where there was greater emphasis than in the US on protecting existing jobs).

This boom in new small business creation during the COVID-19 pandemic contrasts with previous recessions. Whether this rise in new enterprise creation will continue remains an open question, but emerging evidence does appear to accord with a longer-term trend towards hybrid, less stable, or so-called 'portfolio careers'.⁹² Unsurprisingly the 'snap back' in enterprise creation has been strongest in the US with its culture of entrepreneurship and where support measures focused on individuals rather than supporting businesses and where there is less stigma associated with businesses failing and fewer penalties associated with bankruptcy.

This global increase in enterprise creation since 2020 may be driven by necessity or choice (or a combination of the two). Regarding the former, there was an unprecedented loss of employment across the world in the first half of 2020, forcing millions of workers to look for new opportunities. The International Labour Organization reported that 81 million workers left the labour force altogether in 2020, with 71 % of those losing their jobs, and 33 million becoming officially unemployed.⁹³ Furthermore, the past 12 to 18 months have been extremely difficult for many businesses, especially small or micro-businesses, new enterprises and sole traders, with many closing up shop or shedding employees. Indeed, the pandemic has had a disproportionately severe impact on 'non-standard work', including not just casual work but also the kinds of contract, short-term, or less secure forms of work important to smaller enterprises. In the US the first year of the pandemic resulted in the closure of approximately 200,000 'establishments' (that is, individual companies as well as specific outlets of companies) above historical levels.⁹⁴

In regard to choice spurring enterprise creation, the pandemic has provided an opportunity for some to take stock and re-evaluate their working lives. According to this view, the pandemic has provided the impetus for younger professionals in particular to retrain, re-skill, or turn hobbies and passion projects into new enterprises and careers. For "a growing number of people with financial cushions and in-demand skills", it is argued, "the dread and anxiety of the past year are giving way

Figure 3.16: Selected indicators from the ABS business Conditions and Sentiments Survey by business size
(source: ABS)



to a new kind of professional fearlessness”.⁹⁵ A recent post-pandemic job intentions survey of more than 30,000 full-time employees in several high-income countries supports this interpretation, finding that nearly half were “planning to make a major pivot or career transition” within 12 months.⁹⁶

Other than effects on enterprise creation and closures, the pandemic has also accelerated the trend towards new forms of work, such as those attached to the gig economy. Overseas, numbers of gig economy workers have risen during the pandemic: in the US, 35 per cent of the workforce in 2020 were estimated as undertaking gig work, up from between 14 and 20 per cent in 2014.⁹⁷ Evidence from the UK shows a varied impact on gig workers. Delivery companies in particular have done well and gig workers were less likely to suffer a loss of income than other self-employed workers during 2020. On the other hand, drivers have not fared so well, with Uber reporting a 73% decrease in rides in the second quarter of 2020 compared to the same time in the previous year.⁹⁸ There is also evidence from the both the US and the UK that competition for gig jobs is becoming fiercer as more people turn to this work on losing more traditional jobs.⁹⁹

Australian perspectives on enterprise creation

Available evidence (albeit limited and relatively embryonic) suggests that similar trends may be playing out in Australia. The first similarity is that, like in much of the rest of the world, small businesses in Australia have been particularly vulnerable to the pandemic’s impacts. As illustrated in Figure 3.16 above, throughout the past year small businesses have consistently reported higher rates of difficulty meeting financial commitments and a greater share of businesses with insufficient cash to sustain operations for three months than either medium or large businesses.

Analysis from Deutsche Bank Australia supports the hypothesis that the recent rebound in employment in Australia was ‘driven by non-employees’ or contractors who work for companies but are not employed by those companies. It is suspected that a large portion of this group is made up of gig economy workers. Platforms such as Uber, DiDi and Deliveroo have all reported growth in their Australian markets, with weekly consumer spending in the gig economy over 40 per cent higher between July and October 2020 than pre-lockdown levels.¹⁰⁰ Data shows that total hours worked by Australians has barely risen, indicating that there are more workers sharing in less actual work between them and that gig economy workers may be ‘playing an outsized role in boosting employment statistics’.¹⁰¹

Available evidence suggests that this trend is 'a tale of two economies': While there may be some benefits of gig economy work to those workers, such as flexibility and relatively low barriers to entry, there are also inherent risks.¹⁰² These include a lack of entitlements such as minimum wage, employer paid superannuation, and sick, annual, or other types of leave. These can be added to what is typically a low overall salary. Food delivery drivers in Australia are making just \$10 an hour after costs, according to a new survey,¹⁰³ which leaves little room for personal superannuation contributions or other living expenses,¹⁰⁴ let alone clear career pathways for workers to increase their skills and income.¹⁰⁵

The Australia Institute's Centre for Future Work has found that the proportion of Australians employed in insecure 'non-standard' work (casual, marginal self-employment, and other insecure categories) has increased slightly in Australia in recent years and accelerated due to the pandemic. Insecure work categories, especially those related to the 'gig economy', are also on the rise. Self-employment increased by more than 145,000 positions between May 2020 and February 2021, of which more than 116,000 (around 80%) were owner-managers of unincorporated enterprises with no employees. In addition, nearly 60% of all new waged jobs added in the same period were casual.¹⁰⁶

While there was an increase in self and casual employment in Australia during the second half of 2020, it is far from certain that this will disrupt the otherwise relatively stable rate of casual employment in Australia, which remains below the average of the past 20 years (Figure 3.14 above). Similarly, the percentage of single person unincorporated businesses in Australia as a share of total employment has declined and shows no obvious signs of shifting (Figure 3.15 above).

Emerging evidence from Tasmania

While the full effects of the COVID crisis on insecure work, new enterprise creation, and the gig economy in Tasmania may not become clear for some time, some early signs suggest that the impact in Tasmania has been significant. Partly this is due to the share of casual workers in the Tasmanian workforce – at around 28.3% of employed persons before the crisis, Tasmania had the highest rate of casual employment in the country (due to the size of the tourism and hospitality sector) when the pandemic struck (the national average was 24.4% at the time). This meant that a considerably greater proportion of Tasmanians were likely to be ineligible for Commonwealth income support than the national average, given that more than 40% of casual employees have not been continuously employed by one employer for 12 months.

It is important to note, however, that the over-representation of women in casual employment meant that COVID's impact on this employment category had a gendered impact. While women outnumbered men in casual employment at the national level by around 2.5 percentage points in at the height of last year's lockdowns, the difference in Tasmania was considerably larger. 30.5% of Tasmania women were employed in casual roles in August 2020 compared with only 22.8% of men – a difference of nearly 8 percentage points. This meant, as noted above, that Tasmanian women were much more vulnerable to COVID layoffs than men as well as less likely to be eligible for JobKeeper (as discussed at greater length in Part 2).

The dynamics of how the impacts of COVID-19 alongside other structural changes in the economy are influencing patterns of enterprise creation and new forms of work are complex and their implication are unclear. Inevitably, these processes will vary across industries, occupations and places and the policy challenge (and opportunity) will be to support new forms of work such that they drive innovation and deliver value for both worker/owners and communities. Ensuring that innovation and enterprise programs are place-based, context-sensitive, and responsive to individual communities' needs will be critical to drive economic and employment growth while avoiding widening inequality and leaving regions behind.

Trend 4	
Foresight analysis	Policy considerations
<ul style="list-style-type: none"> ■ There may be an increasing trend of enterprise creation and new start-ups emerging during the COVID-19 recovery ■ The extent to which this trend is occurring because of necessity or choice is unclear ■ The pandemic has also impacted many small businesses forcing many to cease trading ■ The pandemic may have led more workers to join in the 'gig economy' ■ Gig economy work is inherently full of risks, including no minimum wage, employer-paid superannuation, or leave entitlements 	<ul style="list-style-type: none"> ■ There is a need for businesses to consider new ways of operating to become more nimble in a changing market ■ Tasmania's high proportion of workers in insecure employment will make them particularly vulnerable to further impacts from the pandemic and other shocks to the economy ■ More research is required to understand the ongoing impact of gig economy work in Tasmania, to inform analysis and decision-making ■ Tasmania could consider the creation of a body to advise gig workers on matters relating to their rights and provide dispute resolution where needed (as was recommended in the recent Victorian Inquiry into the On-Demand Workforce)

Questions for further consideration - Trend 4: Accelerating enterprise creation and new forms of work

1. How can businesses and enterprise creation be supported, especially in times of crisis?
2. Are casualisation, self-employment, and gig economy jobs a vulnerability in Tasmania's labour market?
3. If so, how do we support better work conditions for these workers while at the same time acknowledging that some people prefer this work due to more flexible and tailored work conditions?

1. Yeyati, E. L., and Filippini, F. (2021). *The Social and Economic Impact of COVID-19*, The Brookings Institution, available at <https://www.brookings.edu/research/social-and-economic-impact-of-covid-19/>
2. Ibid.
3. Australian Government (2021e). *National Plan to transition Australia's National COVID-19 Response*, Department of Prime Minister and Cabinet, <https://www.pm.gov.au/sites/default/files/media/national-plan-to-transition-australias-national-covid-19-response-30-july-2021.pdf>
4. Our World in Data (2021). 'Statistics and Research: Coronavirus Pandemic (COVID-19)', <https://ourworldindata.org/coronavirus>
5. Masters, J., and McMenamin, J. (2021). 'A Bump or a U-Turn in the Race to Recovery?', Ernst & Young, available at https://www.ey.com/en_au/economics/a-bump-or-a-u-turn-in-the-race-to-recovery
6. 'Precarious work' has been defined as that which is uncertain, unstable, and insecure, and in which employees bear the risks of work (as opposed to businesses or the government) and receive limited social benefits and statutory entitlements. See Kalleberg, A. L. (2018). *Precarious Lives: Job Insecurity and Wellbeing in Rich Democracies*, Cambridge: Polity Press.
7. Australian Bureau of Statistics (2020a). 'Insights in Casual Employment, Occupation and Industry', available at <https://www.abs.gov.au/articles/insights-casual-employment-occupation-and-industry>
8. Australian Bureau of Statistics (2021a). 'Labour Force, Australia', available at <https://www.abs.gov.au/statistics/labour/employment-and-unemployment/labour-force-australia/latest-release>
9. Ibid.
10. Australian Bureau of Statistics (2021b). 'Government Support for Business: March Quarter 2021', available at <https://www.abs.gov.au/articles/government-support-business-march-quarter-2021>
11. Tourism Research Australia (2020a). 'State Tourism Satellite Account 2019-20', <https://www.tra.gov.au/data-and-research/reports/state-tourism-satellite-account-2019-20/about-this-report>
12. Wood, D., Griffiths, K. and Crowley, T. (2021). *Women's Work: The Impact of the COVID Crisis on Australian Women*, The Grattan Institute, <https://grattan.edu.au/report/womens-work/>
13. Ibid.
14. Hill, E. (2020). *Labour Market Policy after Covid-19: Reducing Gender Inequality and Boosting the Economy: Fiscal Policy after Covid-19*, Committee for Economic Development Australia, available at <https://www.ceda.com.au/CEDA/media/ResearchCatalogueDocuments/PDFs/CCEP-Labour-inequality-Elizabeth-Hill.pdf>; Richardson, D., and Deniss, R. (2020). *Gender Experiences During the Covid-19 Lockdown: Women to Lose from Covid-19, Men to Gain from Stimulus*, Canberra, The Australia Institute, available at <https://australiainstitute.org.au/wp-content/uploads/2020/12/Gender-experience-during-the-COVID-19-lockdown.pdf>
15. Hutchins, G. (2021). 'Gender pay gap widens even as overall wage growth stalls', ABC News, <https://www.abc.net.au/news/2021-08-19/wage-price-index-slips-despite-labour-market/100386326>
16. Wood et al. (2021) op. cit.
17. The Economist (2021a). 'The New Fault Lines on which the World Economy Rests', *The Economist Online*, www.economist.com/leaders/2021/07/10/the-new-fault-lines-on-which-the-world-economy-rests
18. Lund, S., Madgavkar, A., Manyika, J., Smit, S., Ellingrud, K. and Robinson, O. (2021). *The Future of Work after COVID-19*, McKinsey Global Institute, <https://www.mckinsey.com/featured-insights/future-of-work/the-future-of-work-after-covid-19>; Lund, S., Madgavkar, A., Manyika, J., and Smit, S. (2020). *What's Next for Remote Work: An Analysis of 2000 Tasks, 800 Jobs, and Nine Countries*, McKinsey Global Institute, <https://www.mckinsey.com/featured-insights/future-of-work/whats-next-for-remote-work-an-analysis-of-2000-tasks-800-jobs-and-nine-countries>
19. International Labor Organisation (2020). 'Working from Home: Estimating the Worldwide Potential', ILO Policy Briefs, https://www.ilo.org/global/topics/non-standard-employment/publications/WCMS_743447/lang-en/index.htm
20. Australian Bureau of Statistics (2021c). 'Household Impacts of COVID-19 Survey', <https://www.abs.gov.au/statistics/people/people-and-communities/household-impacts-covid-19-survey/latest-release>
21. Institute for Social Change (2020). *The Tasmania Project*, University of Tasmania, <https://www.utas.edu.au/tasmania-project>
22. Regional Australia Institute (2021b). 'New Research Shows why City Dwellers want a Life in the Country

- and when they Might Move', Madethemove National Awareness Campaign, <http://www.regionalaustralia.org.au/home/new-research-shows-why-city-dwellers-want-a-life-in-the-country-and-when-they-might-move/>
23. Australian Bureau of Statistics (2021d). 'Regional Internal Migration Estimates, Provisional', <https://www.abs.gov.au/statistics/people/population/regional-internal-migration-estimates-provisional/latest-release>
 24. Regional Australia Institute (2021a). 'New Index Fast-Tracks Details on Where Australians are Moving Regionally', <http://www.regionalaustralia.org.au/home/new-index-fast-tracks-details-on-where-australians-are-moving-regionally>
 25. Lennox, J. (2020). *More Working from Home will Change the Shape and Size of Cities*, Centre of Policy Studies Working Paper Series no. G-308, Victoria University, available at <https://www.copsmodels.com/ftp/workpapr/g-306.pdf>
 26. Lund et al. (2021), op. cit., p. 37
 27. City of Melbourne (2021). *City of Melbourne Medium Term Economic Outlook June 2021*, Deloitte Access Economics, available at <https://www.melbourne.vic.gov.au/SiteCollectionDocuments/medium-term-economic-outlook-report-2021.pdf>
 28. Florida, R., Rodriguez-Pose, A., and Storper, M. (2021). Cities in a post-COVID world, *Urban Studies*, June 2021. doi:10.1177/00420980211018072
 29. See Lund et al. (2021), op. cit. pp. 50-51
 30. See Hajkowicz S, Bratanova A, Schleiger E and Brosnan A. (2020). *Global trade and investment megatrends: Exploring opportunities and risks for the Australian economy during and after the COVID-19 crisis with strategic foresight*. CSIRO Data61. Brisbane, Australia
 31. See, for example: Tasmanian Council of Social Services (2018). *Understanding Digital Inclusion in Tasmania: Report on Research Findings*, <https://tascoss.org.au/new-submission-to-the-tascoss-vault-11/>; Capgemini Research Institute (2020). *The Great Digital Divide: Why Bringing the Digitally Excluded Online should be a Global Priority*, https://www.capgemini.com/wp-content/uploads/2020/05/Report-%E2%80%93-Digital-Divide_Web.pdf
 32. See, for example, Tasmanian Government (2019). *Tasmanian ICT Workforce Action Plan 2020-23*, Department of State Growth, https://www.stategrowth.tas.gov.au/_data/assets/pdf_file/0017/216611/Tasmanian_ICT_Workforce_Action_Plan_2020-2023.pdf; TasICT (2021). 'TasICT: Evolving Tasmania's Digital Ecosystem', <https://www.tasict.com.au/>; and Gekara, V., Snell, D., Molla, A., Karanasios, S. and Thomas, A. (2019). *Skilling the Australian Workforce for the Digital Economy*, National Centre for Vocational Education and Training, <https://www.ncver.edu.au/research-and-statistics/publications/all-publications/skilling-the-australian-workforce-for-the-digital-economy>
 33. Brookings Institution (2019b). 'What Jobs are Affected by AI? Better-Paid Better-Educated Workers Face the Most Exposure', <http://www.brookings.edu/research/what-jobs-are-affected-by-ai-better-paid-better-educated-workers-face-the-most-exposure/>
 34. Regional Australia Institute (2018b). *Job Vulnerability in Australia: Where are Vulnerable Jobs Located? Are we Ready for the Future of Work?* <http://www.regionalaustralia.org.au/home/regional-job-automation-pack/>
 35. Grozinger, P., and Parsons, S. (2020). 'The COVID-19 Outbreak and Australia's Education and Tourism Exports', Reserve Bank of Australia, rba.gov.au/publications/bulletin/2020/dec/pdf/the-covid-19-outbreak-and-australias-education-and-tourism-exports.pdf; Department of Foreign Affairs and Trade (2021). 'Trade Statistics: Trade Time Series Data', <https://www.dfat.gov.au/trade/resources/trade-statistics/trade-time-series-data>
 36. Organisation for Economic Cooperation and Development (2020). 'Culture shock: COVID-19 and the cultural and creative sectors', 7 September 2020, <https://www.oecd.org/coronavirus/policy-responses/culture-shock-covid-19-and-the-cultural-and-creative-sectors-08da9e0e/>
 37. The Economist (2021). 'The Return of the Wanderer: The future of travel', Special Report, *The Economist Online*, 11 February 2021, <https://www.economist.com/special-report/2021-02-13>
 38. Deloitte (2021). COVID-19 recovery for the tourism sector: How are we tracking?, Deloitte Access Economics, January 2021, <https://www2.deloitte.com/content/dam/Deloitte/au/Documents/Economics/deloitte-au-economics-covid-19-recovery-tourism-sector-090221.pdf>
 39. Tourism Research Australia (2020b). *Tourism Recovery Scenarios*, September 2020

40. National Skills Commission (2020), *The shape of Australia's post COVID-19 workforce*, 7 December 2020, <https://www.nationalskillscommission.gov.au/sites/default/files/2020-12/NSC%20Shape%20of%20Australias%20post%20COVID-19%20workforce.pdf>
41. Kopytov, A., Roussanov, N., and Taschereau-Dumouchel, M. (2018). *Short-run pain, long-run gain? Recessions and technological transformations*, National Bureau of Economic Research, working paper number 24373, March 2018, <https://www.nber.org/papers/w24373>; McKinsey Global Institute (2021). *Will productivity and growth return after the COVID-19 crisis*, March 2021, <https://www.mckinsey.com/-/media/mckinsey/industries/public%20and%20social%20sector/our%20insights/will%20productivity%20and%20growth%20return%20after%20the%20covid%2019%20crisis/will-productivity-and-growth-return-after-the-covid-19-crisis-report-final.pdf>
42. McKinsey & Company (2020). McKinsey Global Business Executive Survey, July 2020, <https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/the-coronavirus-effect-on-global-economic-sentiment>
43. National Skills Commission (2020) op. cit.
44. Lund et al. (2021) op. cit.; Australian Bureau of Statistics (2020e). 'Online sales, October 2020 – Supplementary COVID-19 analysis', <https://www.abs.gov.au/articles/online-sales-october-2020-supplementary-covid-19-analysis>, accessed 28 June 2021
45. Frost, J. (2021). 'Big four banks shut 350 branches during virus crisis', *Australian Financial Review*, 11 July 2021, <https://www.afr.com/companies/financial-services/big-four-banks-shut-350-branches-during-virus-crisis-20210711-p588o5>
46. Taylor, A., Caffery, L. J., Gesesew, H. A., King, A., Bassal, A., Ford, K., Kealey, J., Maeder, A., McGuirk, M., Parkes, D., and Ward, P. R. (2021). How Australian Health Care Services Adapted to Telehealth During the COVID-19 Pandemic: A Survey of Telehealth Professionals, *Public Health*, 26 February 2021, <https://www.frontiersin.org/articles/10.3389/fpubh.2021.648009/full>
47. Organisation for Economic Cooperation and Development (2021b). 'What Happened to Jobs at High Risk of Automation?', Policy Brief on the Future of Work, <https://www.oecd.org/future-of-work/reports-and-data/what-happened-to-jobs-at-high-risk-of-automation-2021.pdf>
48. Ibid.
49. OECD (2021b). *What happened to jobs at high risk of automation?, Policy brief on the future of work*, January 2021, <https://www.oecd.org/future-of-work/reports-and-data/what-happened-to-jobs-at-high-risk-of-automation-2021.pdf>
50. Regional Australia Institute (2018b) op. cit.
51. Denny (2019), *Insight Seven: Workforce polarisation in Tasmania: Implications for the future of work and training*, Institute for the Study of Social Change, University of Tasmania
52. National Skills Commission (2020) op. cit.
53. Regional Australia Institute (2018a). Job Vulnerability Data Tool, <http://www.regionalaustralia.org.au/home/regional-job-automation-pack/>
54. 'Fourth Industrial Revolution' refers to the current and ongoing digital disruption of almost every industry across the world, transforming entire systems of production, management and governance – see for example Schwab, K. (2016), 'The Fourth Industrial Revolution: what it means, how to respond', World Economic Forum, <https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/>
55. Australian Government (2021b). 2021 *Intergenerational Report: Australia over the Next 40 Years*, Department of the Treasury, <https://treasury.gov.au/publication/2021-intergenerational-report>
56. McKinsey Global Institute (2021). Will productivity and growth return after the COVID-19 crisis? March 2021, available at <https://www.mckinsey.com/-/media/mckinsey/industries/public%20and%20social%20sector/our%20insights/will%20productivity%20and%20growth%20return%20after%20the%20covid%2019%20crisis/will-productivity-and-growth-return-after-the-covid-19-crisis-report-final.pdf>
57. McKinsey and Company (2021b). 'The Next Normal Arrives: Trends that will Define 2021 and Beyond', available at <https://www.mckinsey.com/featured-insights/leadership/the-next-normal-arrives-trends-that-will-define-2021-and-beyond>
58. OECD (2021a). *Employment Outlook 2021: A once-in-a-lifetime opportunity to build a better world of work*, <https://www.oecd.org/employment-outlook/>
59. National Skills Commission (2020) op. cit.
60. Australian Government, (2021b) op. cit., p. xiii

61. Australian Government, (2021b) op. cit.
62. Sneider, K. and Sigal, S. (2021). The next normal arrives: Trends that will define 2021 – and beyond, McKinsey & Company, 4 January 2021, <https://www.mckinsey.com/featured-insights/leadership/the-next-normal-arrives-trends-that-will-define-2021-and-beyond>
63. United Nations (2021). *Are we Building Back Better? Evidence from 2020 and Pathways for Inclusive Green Recovery Spending*, United Nations Environment Program, <https://www.unep.org/resources/publication/are-we-building-back-better-evidence-2020-and-pathways-inclusive-green>
64. Heaton, A. (2020). 'World Construction Set for Decade Long Boom', Sourceable Industry News and Analysis, available at <https://sourceable.net/>
65. CommSec (2021). *State of the States: July 2021 Economic Performance Report*, Commonwealth Bank of Australia, <https://www.commsec.com.au/stateofstates>
66. TasCOSS (2021), *A Community Services Industry Built for Tasmania's Future: 2021-2031 Industry Plan*, in preparation
67. OECD (2021a) op. cit.
68. Ibid.
69. Razaghi, T. (2021). Hobart housing affordability is as bad as Sydney's: NHFIC, *Domain*, 1 April 2021
70. European Commission (2020). *OECD International Migration Outlook 2020: What is the impact of the COVID-19 pandemic on migrants and their children?* 19 October 2020, <https://ec.europa.eu/migrant-integration/?action=page.details&type=librarydoc&uid=BID8CD9C-9E03-7209-5AD3D7EB10DD9F28>
71. Australian Bureau of Statistics (2021f). 'Overseas Arrivals and Departures, Australia', available at <https://www.abs.gov.au/statistics/industry/tourism-and-transport/overseas-arrivals-and-departures-australia/latest-release>
72. National Skills Commission (2021). 'Temporary migration and COVID-19 labour market considerations', <https://www.nationalskillscommission.gov.au/news/news-centre/temporary-migration-and-covid-19-labour-market-considerations>
73. Ibid.
74. Australian Government (2021), *Budget Paper No. 1, Statement No. 2 2021-22*, https://archive.budget.gov.au/2020-21/bp1/download/bp1_w.pdf
75. Australian Government, (2021b) op. cit.
76. Ker, P. (2020) The future of FIFO mines is residential, *Australian Financial Review*, 6 April, 2020, <https://www.afr.com/companies/mining/the-future-of-fifo-mines-is-residential-20200403-p54grh>
77. de Kruijff, P. (2021). Property Council pushes \$10,000 rebate for interstate FIFO workers moving to WA, *WAtoday*, 28 January 2021, <https://www.watoday.com.au/politics/western-australia/property-council-pushes-10-000-rebate-for-interstate-fifo-workers-coming-to-wa-20210127-p56xaw.html>
78. The Australian (2020). Casual labour shortage a sign of problems to come: Editorial, *The Australian*, 30 September 2020, <https://www.theaustralian.com.au/commentary/editorials/casual-labour-shortage-a-sign-of-problems-to-come/news-story/bd03591e4fda39d0eba345bf80aff456>
79. Tasmanian Hospitality Association (2021), 'Media Release: Skills shortage crisis the latest challenge in hospitality sector', 6 May 2021
80. Migration Tasmania (2021). Tasmanian Skilled Occupations List (TSOL) 2021 –2022, https://www.migration.tas.gov.au/_data/assets/pdf_file/0003/279606/Tasmanian_Skilled_Occupation_List_-_January_2021_020221.pdf
81. Tasmanian Government (2019). *Tasmanian ICT Workforce Action Plan 2020-23*, Department of State Growth, https://www.stategrowth.tas.gov.au/_data/assets/pdf_file/0017/216611/Tasmanian_ICT_Workforce_Action_Plan_2020-2023.pdf
82. Migration Tasmania (2021) op. cit.
83. TasCOSS (2021) op. cit.
84. See Eccleston, R. (2018). 'Insight Three: A Blueprint for Improving Housing Outcomes in Tasmania', Institute for Social Change, University of Tasmania, <https://www.utas.edu.au/social-change/publications/insights/insight-three-a-blueprint-for-improving-housing-outcomes-in-tasmania>
85. CommSec (2021) op. cit.
86. Housing Industry Association (2021). 'Building approvals reach new record in Tasmania', Media release, 5 May 2021, <https://hia.com.au/-/media/HIA-Website/Files/Media-Centre/Media-Releases/2021/tas/>

- [building-approvals-reach-new-record-in-tasmania.ashx](#); Housing Industry Association (2021). 'Skilled trades remain in high demand across all regions', media release, 28 July 2021, <https://hia.com.au/-/media/HIA-Website/Files/Media-Centre/Media-Releases/2021/national/skilled-trades-remain-in-high-demand-across-all-regions.ashx>
87. Premier's Economic & Social Recovery Advisory Council (PESRAC)(2021). *Final Report*, Department of Treasury and Finance, March 2021; Eccleston, R. (2019). 'Talking Point: State of the state: Bring us all Along for the Ride', *The Mercury*, available at <https://www.themercury.com.au/news/opinion/talking-point-state-of-the-state-bring-us-all-along-for-the-ride/news-story/a87aeeddcfbdb815991fca241d1b5ae9>
 88. PESRAC (2021) op. cit.
 89. Ibid.
 90. TasCOSS (2021) op. cit.
 91. Altun, Y. (2021). Pandemic Fuels Global Growth Of Entrepreneurship And Startup Frenzy, *Forbes*, 9 April 2021, <https://www.forbes.com/sites/forbestechcouncil/2021/04/09/pandemic-fuels-global-growth-of-entrepreneurship-and-startup-frenzy/?sh=2cc58fe17308>; The Next Normal: Business Trends for 2021 | McKinsey
 92. Castrillon, C. (2019). 'Why it's time to consider a portfolio career', *Forbes*, 15 September 2019, <https://www.forbes.com/sites/carolinecastrillon/2019/09/15/why-its-time-to-consider-a-portfolio-career/>
 93. International Labour Organization (2021b), *World Employment and Social Outlook: Trends 2021*, ILO Flagship Report, International Labour Office, Geneva
 94. Simon, R. (2021), Covid-19's Toll on US Business? 200,000 Extra Closures in Pandemic's First Year, *The Wall Street Journal*, 16 April 2021, <https://www.wsj.com/articles/covid-19s-toll-on-u-s-business-200-000-extra-closures-in-pandemics-first-year-11618580619>; Crane, Leland D., Ryan A. Decker, Aaron Flaaen, Adrian Hamins-Puertolas, and Christopher Kurz (2021). *Business Exit During the COVID-19 Pandemic: NonTraditional Measures in Historical Context*, *Finance and Economics Discussion Series 2020-089r1*. Washington: Board of Governors of the Federal Reserve System, <https://doi.org/10.17016/FEDS.2020.089r1>
 95. Roose, K. (2021). The Shift: welcome to the YOLO Economy, *The New York Times*, 21 April 2021, <https://www.nytimes.com/2021/04/21/technology/welcome-to-the-yolo-economy.html>
 96. Microsoft (2021). *2021 Work Trend Index: Annual Report – The Next Great Disruption is Hybrid Work – Are We Ready?*, 22 March 2021
 97. Henderson, R. (2020), 'How COVID-19 has transformed the Gig Economy', *Forbes*, 10 December 2020, <https://www.forbes.com/sites/rebeccahenderson/2020/12/10/how-covid-19-has-transformed-the-gig-economy/>
 98. Scarfe, R. (2021), Update: How is the coronavirus crisis affecting gig economy workers, Economics Observatory, 2 March 2021, <https://www.economicsobservatory.com/update-how-is-the-coronavirus-crisis-affecting-gig-economy-workers>
 99. Henderson (2020) op. cit.; Scarfe (2021) op. cit.
 100. Actuaries Australia (2020), *The Rise of the Gig Economy and its Impact on the Australian Workforce*, Green Paper, December 2020
 101. Derwin, J. (2020a). 'Desperate for work': The gig economy is booming but the jobs it's creating aren't the ones Australia needs, *Business Insider Australia*, <https://www.businessinsider.com.au/gig-economy-australia-work-rideshare-jobs-2020-9>
 102. Singletary, M. (2021), Gig-economy jobs and how to manage the irregular income, *The Washington Post*, 14 May 2021, <https://www.washingtonpost.com/business/2021/05/14/working-gig-economy-job/>
 103. Derwin, J. (2020b). 'Food delivery drivers in Australia are making just \$10 an hour after costs, according to a new survey', *Business Insider Australia*, 22 September 2020, <https://www.businessinsider.com.au/delivery-drivers-australia-pay-rates-coronavirus-work-2020-9>
 104. Actuaries Australia (2020) op. cit.
 105. Lund et al. (2021) op. cit.
 106. Pennington, A. (2021). *Update on Job Insecurity in Australia*, 3 June 2021, Centre for Future Work, Australia Institute, <https://centreforfuturework.medium.com/update-on-job-insecurity-in-australia-6f2d93c550c4>

- Actuaries Australia (2020), *The Rise of the Gig Economy and its Impact on the Australian Workforce*, Green Paper, December 2020
- Altun, Yusuf B. (2021). 'Pandemic Fuels Global Growth of Entrepreneurship and Start-Up Frenzy', *Forbes*, <https://www.forbes.com/sites/forbestechcouncil/2021/04/09/pandemic-fuels-global-growth-of-entrepreneurship-and-startup-frenzy/?sh=4689558d7308>
- Australian Bureau of Statistics (2020a). 'Insights in Casual Employment, Occupation and Industry', <https://www.abs.gov.au/articles/insights-casual-employment-occupation-and-industry>
- Australian Bureau of Statistics (2020b). 'Online sales, October 2020 – Supplementary COVID-19 analysis', <https://www.abs.gov.au/articles/online-sales-october-2020-supplementary-covid-19-analysis>
- Australian Bureau of Statistics (2021c). 'Household Impacts of COVID-19 Survey', <https://www.abs.gov.au/statistics/people/people-and-communities/household-impacts-covid-19-survey/latest-release>
- Australian Bureau of Statistics (2021b). 'Government Support for Business: March Quarter 2021', <https://www.abs.gov.au/articles/government-support-business-march-quarter-2021>
- Australian Bureau of Statistics (2021e). 'Online sales, April 2021 - Supplementary COVID-19 analysis', <https://www.abs.gov.au/articles/online-sales-april-2021-supplementary-covid-19-analysis>
- Australian Bureau of Statistics (2021d). 'Regional Internal Migration Estimates, Provisional', <https://www.abs.gov.au/statistics/people/population/regional-internal-migration-estimates-provisional/latest-release>
- Australian Bureau of Statistics (2021a). 'Labour Force, Australia', <https://www.abs.gov.au/statistics/labour/employment-and-unemployment/labour-force-australia/latest-release>
- Australian Bureau of Statistics (2021g). 'Labour Force, Australia, Detailed', <https://www.abs.gov.au/statistics/labour/employment-and-unemployment/labour-force-australia-detailed/latest-release>
- Australian Bureau of Statistics (2021f). 'Overseas Arrivals and Departures, Australia', <https://www.abs.gov.au/statistics/industry/tourism-and-transport/overseas-arrivals-and-departures-australia/latest-release>
- Australia Bureau of Statistics (2021h). 'Weekly Payroll Jobs and Wages in Australia', <https://www.abs.gov.au/statistics/labour/earnings-and-work-hours/weekly-payroll-jobs-and-wages-australia/latest-release>
- Australian Bureau of Statistics (2021i). 'Australian National Accounts: National Income, Expenditure, and Product', <https://www.abs.gov.au/statistics/economy/national-accounts/australian-national-accounts-national-income-expenditure-and-product/latest-release>
- Australian Government (2019). *STEM and Digital Literacy Skills: Final Report*, Department of Education and Training, <https://schooltowork.dese.gov.au/sites/default/files/2019-08/Ithaca%20STEM%20Digital%20Literacy%20report%20-%20for%20publication%2029.08.19.pdf>
- Australian Government (2020). 'Supporting International Student to Support Australian Jobs', Department of Education, Skills and Employment, <https://ministers.dese.gov.au/tudge/supporting-international-students-support-australian-jobs>
- Australian Government (2020). 'State Tourism Satellite Account 2019-20', Tourism Research Australia, <https://www.tra.gov.au/data-and-research/reports/state-tourism-satellite-account-2019-20/about-this-report>
- Australian Government (2021a). 'Trade, Investment and Economic Statistics', Department of Foreign Affairs and Trade, <https://www.dfat.gov.au/trade/resources/trade-statistics/trade-statistics>
- Australian Government (2021b). *2021 Intergenerational Report: Australia over the Next 40 Years*, Department of the Treasury, <https://treasury.gov.au/publication/2021-intergenerational-report>
- Australian Government (2021c). *Budget 2021-22: Securing Australia's Recovery*, <https://budget.gov.au/2021-22/content/overview.htm>
- Australian Government (2021d). *Budget Paper No. 1, Statement No. 2 2021-22*, https://archive.budget.gov.au/2020-21/bp1/download/bp1_w.pdf
- Australian Government (2021e). *National Plan to transition Australia's National COVID-19 Response*, Department of Prime Minister and Cabinet, <https://www.pm.gov.au/sites/default/files/media/national-plan-to-transition-australias-national-covid-19-response-30-july-2021.pdf>
- Bradley, Chris, Hirt, M., Hudson, S., Northcote, N. and Smit, S. (2020). *The Great Acceleration*, McKinsey and Company, <https://www.mckinsey.com/~media/McKinsey/Business%20Functions/Strategy%20and%20Corporate%20Finance/Our%20Insights/The%20great%20acceleration/The-great-acceleration.pdf>

- Brookings Institution (2019a). 'Skills and Opportunity Pathways', <https://www.brookings.edu/wp-content/uploads/2019/07/skills-opportunities-pathways-071719.pdf>
- Brookings Institution (2019b). 'What Jobs are Affected by AI? Better-Paid Better-Educated Workers Face the Most Exposure', <http://www.brookings.edu/research/what-jobs-are-affected-by-ai-better-paid-better-educated-workers-face-the-most-exposure/>
- Capgemini Research Institute (2020). *The Great Digital Divide: Why Bringing the Digitally Excluded Online should be a Global Priority*, https://www.capgemini.com/wp-content/uploads/2020/05/Report-%E2%80%93-Digital-Divide_Web.pdf
- Castrillon, C. (2019). 'Why it's time to consider a portfolio career', *Forbes*, 15 September 2019, <https://www.forbes.com/sites/carolinecastrillon/2019/09/15/why-its-time-to-consider-a-portfolio-career/>
- City of Melbourne (2021). *City of Melbourne Medium Term Economic Outlook June 2021*, Deloitte Access Economics, <https://www.melbourne.vic.gov.au/SiteCollectionDocuments/medium-term-economic-outlook-report-2021.pdf>
- CommSec (2021). *State of the States: July 2021 Economic Performance Report*, Commonwealth Bank of Australia, <https://www.commsec.com.au/stateofstates>
- Crane, Leland D., Ryan A. Decker, Aaron Flaaen, Adrian Hamins-Puertolas, and Christopher Kurz (2021). 'Business Exit During the COVID-19 Pandemic: Non-Traditional Measures in Historical Context', Board of Governors of the Federal Reserve System, <https://www.federalreserve.gov/econres/feds/business-exit-during-the-covid-19-pandemic.htm>
- De Kruijff, Peter (2021). 'Property Council pushes \$10,000 rebate for interstate FIFO workers moving to WA', *WA Today*, <https://www.watoday.com.au/politics/western-australia/property-council-pushes-10-000-rebate-for-interstate-fifo-workers-coming-to-wa-20210127-p56xaw.html>
- Deloitte (2021). *COVID-19 recovery for the tourism sector: How are we tracking?*, Deloitte Access Economics, January 2021, <https://www2.deloitte.com/content/dam/Deloitte/au/Documents/Economics/deloitte-au-economics-covid-19-recovery-tourism-sector-090221.pdf>
- Denny, Lisa (2019). 'Workforce Polarisation in Tasmania: Implications for the Future of Work and Training', Institute for Social Change, University of Tasmania, <https://www.utas.edu.au/social-change/publications/insights/insight-seven-workforce-polarisation-in-tasmania>
- Derwin, Jack (2020). 'Desperate for Work: The Gig Economy is Booming but the Jobs it's Creating aren't the ones Australia Needs', *Business Insider Australia*, available at <https://www.businessinsider.com.au/gig-economy-australia-work-rideshare-jobs-2020-9>
- Eccleston, R. (2018). 'Insight Three: A Blueprint for Improving Housing Outcomes in Tasmania', Institute for Social Change, University of Tasmania, <https://www.utas.edu.au/social-change/publications/insights/insight-three-a-blueprint-for-improving-housing-outcomes-in-tasmania>
- European Commission (2020). 'OECD International Migration Outlook 2020: What is the Impact of the COVID-19 Pandemic on Migrants and their Children?', European Union, <https://ec.europa.eu/migrant-integration/?action=page.details&type=librarydoc&uuid=B1D8CD9C-9E03-7209-5AD3D7EB10DD9F28>
- Evans, Simon (2020). 'Why the Pandemic could Produce the Next Global Tech Giant', *The Australian Financial Review*, <https://www.afr.com/technology/tech-will-accelerate-in-dark-times-says-csiro-s-data61-boss-20200827-p55q0k>
- Florida, R., Rodríguez-Pose, A. and Storper, M. (2020). 'Cities in a Post-COVID World', *Urban Studies* p. 1-23, <https://doi.org/10.1177/00420980211018072>
- Frost, J. (2021). 'Big Four Banks Shut 350 Branches During Virus Crisis', *The Australian Financial Review*, <https://www.afr.com/companies/financial-services/big-four-banks-shut-350-branches-during-virus-crisis-20210711-p588o5>
- Gekara, V., Snell, D., Molla, A., Karanasios, S. and Thomas, A. (2019). *Skilling the Australian Workforce for the Digital Economy*, National Centre for Vocational Education and Training, <https://www.ncver.edu.au/research-and-statistics/publications/all-publications/skilling-the-australian-workforce-for-the-digital-economy>
- Grattan, Michelle (2021). 'Victorians Struggle to Exit JobKeeper as the Scheme's End Looms', *The Conversation*, <https://theconversation.com/victorians-struggle-to-exit-jobkeeper-as-the-schemes-end-looms-155288>
- Grozinger, P., and Parsons, S. (2020). 'The COVID-19 Outbreak and Australia's Education and Tourism Exports', Reserve Bank of Australia, www.rba.gov.au/publications/bulletin/2020/dec/pdf/the-covid-19-outbreak-and-australias-education-and-tourism-exports.pdf
- Hajkowicz S, Bratanova A, Schleiger E and Brosnan A. (2020). *Global trade and investment megatrends:*

Exploring opportunities and risks for the Australian economy during and after the COVID-19 crisis with strategic foresight. CSIRO Data61. Brisbane, Australia

Department of Foreign Affairs and Trade (2021). 'Trade Statistics: Trade Time Series Data', available at <https://www.dfat.gov.au/trade/resources/trade-statistics/trade-time-series-data>

Heaton, Andrew (2020). 'World Construction Set for Decade Long Boom', *Sourceable Industry News and Analysis*, <https://sourceable.net/>

Henderson, Rebecca (2021). 'How COVID-19 has Transformed the gig Economy', *Forbes*, <https://www.forbes.com/sites/rebeccahenderson/2020/12/10/how-covid-19-has-transformed-the-gig-economy/?sh=2af20dc76c99>.

Hill, E.(2020). 'Labour Market Policy after Covid-19: Reducing Gender Inequality and Boosting the Economy: Fiscal Policy after Covid-19', Committee for Economic Development Australia, <https://www.ceda.com.au/CEDA/media/ResearchCatalogueDocuments/PDFs/CCEP-Labour-inequality-Elizabeth-Hill.pdf>

Housing Industry Association (2021). Media Release: Building Approvals Reach New Record in Tasmania', <https://hia.com.au/-/media/HIA-Website/Files/Media-Centre/Media-Releases/2021/tas/building-approvals-reach-new-record-in-tasmania.ashx>

Housing Industry Association (2021). Media Release: Skilled Trade Remain in High Demand across all Regions, <https://hia.com.au/-/media/HIA-Website/Files/Media-Centre/Media-Releases/2021/national/skilled-trades-remain-in-high-demand-across-all-regions.ashx>

Hutchins, G. (2021). 'Gender pay gap widens even as overall wage growth stalls', *ABC News*, <https://www.abc.net.au/news/2021-08-19/wage-price-index-slips-despite-labour-market/10038632>

Institute for Social Change (2020). The Tasmania Project, University of Tasmania, <https://www.utas.edu.au/tasmania-project>

International Labor Organisation (2020). 'Working from Home: Estimating the Worldwide Potential', ILO Policy Briefs, https://www.ilo.org/global/topics/non-standard-employment/publications/WCMS_743447/lang-en/index.htm.

International Labor Organisation (2021a). 'Working Hours and COVID-19', ILOSTAT, <https://ilostat.ilo.org/topics/covid-19/>.

International Labor Organisation (2021b). *World Employment and Social Outlook: Trends 2021*, <https://www.ilo.org/global/research/global-reports/weso/trends2021/lang-en/index.htm>

International Monetary Fund (2021). 'Real GDP Growth: Annual Percent Change', IMF Datamapper, https://www.imf.org/external/datamapper/NGDP_RPCH@WEO/OEMDC/ADVEC/WEOWORLD

Kalleberg, A. L. (2018). *Precarious Lives: Job Insecurity and Wellbeing in Rich Democracies*, Cambridge: Polity Press

Ker, Peter (2020). 'The Future of FIFO Mines is Residential', *The Australian Financial Review*, <https://www.afr.com/companies/mining/the-future-of-fifo-mines-is-residential-20200403-p54grh>.

Kopytov, Alexandr, Nikolai Roussanov, and Mathieu Taschereau-Dumouchel (2018). 'Short-Run Pain, Long-Run Gain? Recessions and Technological Transformation', National Bureau of Economic Research, <https://www.nber.org/papers/w24373>

Leach, R. (2021). 'Temporary Migration and COVID-19 Labour Market Considerations', National Skills Commission, <https://www.nationalskillscommission.gov.au/news/news-centre/temporary-migration-and-covid-19-labour-market-considerations>

Lee, Neil, and Sissons, P. (2016). "Inclusive Growth? The Relationship Between Economic Growth and Poverty in British Cities." *Environment and Planning A: Economy and Space* 48 (11):2317-2339. doi:10.1177/0308518X16656000

Lennox, J. (2020). 'More Working from Home will Change the Shape and Size of Cities', *Centre of Policy Studies Working Paper Series no. G-308*, Victoria University, <https://www.copsmodels.com/ftp/workpapr/g-306.pdf>

Lund, S., Madgavkar, A., Manyika, J. and Smit, S. (2020). What's Next for Remote Work: An Analysis of 2000 Tasks, 800 Jobs, and Nine Countries, McKinsey Global Institute, <https://www.mckinsey.com/featured-insights/future-of-work/whats-next-for-remote-work-an-analysis-of-2000-tasks-800-jobs-and-nine-countries>

Lund, S., Madgavkar, A., Manyika, J., Smit, S., Ellingrudm, K. and Robinson, O. (2021). *The Future of Work after COVID-19*, McKinsey Global Institute, <https://www.mckinsey.com/featured-insights/future-of-work/the-future-of-work-after-covid-19>

Masters, J., and McMenamin, J. (2021). 'A Bump or a U-Turn in the Race to Recovery?', Ernst & Young, https://www.ey.com/en_au/economics/a-bump-or-a-u-turn-in-the-race-to-recovery

- McKinsey & Company (2020). McKinsey Global Business Executive Survey, July 2020, <https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/the-coronavirus-effect-on-global-economic-sentiment>
- McKinsey & Company (2021a). 'How E-Commerce Share of Retail Soared across the Globe: A Look at Eight Countries', <https://www.mckinsey.com/featured-insights/coronavirus-leading-through-the-crisis/charting-the-path-to-the-next-normal/how-e-commerce-share-of-retail-soared-across-the-globe-a-look-at-eight-countries>.
- McKinsey & Company (2021b). 'The Next Normal Arrives: Trends that will Define 2021 and Beyond', <https://www.mckinsey.com/featured-insights/leadership/the-next-normal-arrives-trends-that-will-define-2021-and-beyond>
- McKinsey Global Institute (2020). 'What 800 Executive Envision for the Post-Pandemic Workforce', <https://www.mckinsey.com/featured-insights/future-of-work/what-800-executives-envision-for-the-postpandemic-workforce>
- McKinsey Global Institute (2021). *Will productivity and growth return after the COVID-19 crisis*, March 2021, <https://www.mckinsey.com/~media/mckinsey/industries/public%20and%20social%20sector/our%20insights/will%20productivity%20and%20growth%20return%20after%20the%20covid%2019%20crisis/will-productivity-and-growth-return-after-the-covid-19-crisis-report-final.pdf>
- Microsoft (2021). 'The Next Disruption is Hybrid Work: Are we Ready?', in *The Work Trend Index: Annual Report*, <https://www.microsoft.com/en-us/worklab/work-trend-index>
- National Skills Commission (2020), *The shape of Australia's post COVID-19 workforce*, 7 December 2020, <https://www.nationalskillscommission.gov.au/sites/default/files/2020-12/NSC%20Shape%20of%20Australias%20post%20COVID-19%20workforce.pdf>
- National Skills Commission (2021). 'Temporary migration and COVID-19 labour market considerations', <https://www.nationalskillscommission.gov.au/news/news-centre/temporary-migration-and-covid-19-labour-market-considerations>
- Organisation for Economic Cooperation and Development (2018). 'Programme for International Student Assessment (PISA)', <https://www.oecd.org/pisa/>.
- Organisation for Economic Cooperation and Development (2020). 'Culture Shock: COVID-19 and the Creative Sectors', <https://www.oecd.org/coronavirus/policy-responses/culture-shock-covid-19-and-the-cultural-and-creative-sectors-08da9e0e/>.
- Organisation for Economic Cooperation and Development (2021a). 'Employment Outlook 2021: A Once-in-a-Lifetime Opportunity to Build a Better World of Work', <https://www.oecd.org/employment-outlook/>
- Organisation for Economic Cooperation and Development (2021b). 'What Happened to Jobs at High Risk of Automation?', Policy Brief on the Future of Work, <https://www.oecd.org/future-of-work/reports-and-data/what-happened-to-jobs-at-high-risk-of-automation-2021.pdf>
- Organisation for Economic Cooperation and Development (2021c). *Employment Outlook 2021: A Once in a Lifetime Opportunity to Build a Better World of Work*, <https://www.oecd.org/employment-outlook/>
- Our World in Data (2021). 'Statistics and Research: Coronavirus Pandemic (COVID-19)', <https://ourworldindata.org/coronavirus>
- Patternmakers (2021). *Audience Outlook Monitor Australia Snapshot Report*, <https://www.thepatternmakers.com.au/covid19>.
- Pennington, Alison (2021). 'Update on Job Insecurity in Australia', The Centre for Future Work, The Australia Institute, <https://centreforfuturework.medium.com/update-on-job-insecurity-in-australia-6f2d93c550c4>
- Premier's Economic & Social Recovery Advisory Council (PESRAC)(2021). *Final Report*, Department of Treasury and Finance, March 2021
- Razaghi, Tawar (2021). 'Hobart Housing Affordability is as Bad as Sydney's: NHFIC', *Domain*, <https://www.domain.com.au/news/hobart-housing-affordability-as-bad-as-sydneys-crisis-nhfic-1040820/>
- Regional Australia Institute (2018a). Job Vulnerability Data Tool, <http://www.regionalaustralia.org.au/home/regional-job-automation-pack/>
- Regional Australia Institute (2018b). *Job Vulnerability in Australia: Where are Vulnerable Jobs Located? Are we Ready for the Future of Work?*, <http://www.regionalaustralia.org.au/home/regional-job-automation-pack/>
- Regional Australia Institute (2019). *Insight: Australia's Regional Competitiveness Index*, <http://www.regionalaustralia.org.au/home/insight-second-edition/>
- Regional Australia Institute (2021a). 'New Index Fast-Tracks Details on Where Australians are Moving Regionally', <http://www.regionalaustralia.org.au/home/new-index-fast-tracks-details-on-where-australians-are-moving-regionally>

- Regional Australia Institute (2021b). 'New Research Shows why City Dwellers want a Life in the Country and when they Might Move', Madethemove National Awareness Campaign, <http://www.regionalaustralia.org.au/home/new-research-shows-why-city-dwellers-want-a-life-in-the-country-and-when-they-might-move/>
- Richardson, D. and Denniss, R. (2020). 'Gender Experiences During the Covid-19 Lockdown: Women to Lose from Covid-19, Men to Gain from Stimulus', Canberra, The Australia Institute, <https://australiainstitute.org.au/wp-content/uploads/2020/12/Gender-experience-during-the-COVID-19-lockdown.pdf>
- Roose, Kevin (2021). 'The Shit: Welcome to the YOLO Economy', *The New York Times*, <https://www.nytimes.com/2021/04/21/technology/welcome-to-the-yolo-economy.html>
- Scarfe, R. (2021), Update: How is the coronavirus crisis affecting gig economy workers, Economics Observatory, 2 March 2021, <https://www.economicsobservatory.com/update-how-is-the-coronavirus-crisis-affecting-gig-economy-workers>
- Schwab, Klaus (2019). The Fourth Industrial Revolution: What it Means, how to Respond, World Economic Forum, <https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/>
- Simon, Ruth (2021). 'Covid-19's Toll on U.S. Business? 200,000 Extra Closures in Pandemic's First Year', *The Wall Street Journal*, <https://www.wsj.com/articles/covid-19s-toll-on-u-s-business-200-000-extra-closures-in-pandemics-first-year-11618580619>
- Singletary, Michelle (2021). 'Gig Economy Jobs and How to Manage the Irregular Income', *The Washington Post*, <https://www.washingtonpost.com/business/2021/05/14/working-gig-economy-job/>
- TasICT (2021). 'TasICT: Evolving Tasmania's Digital Ecosystem', <https://www.tasict.com.au/>
- Tasmanian Council of Social Services (2018). *Understanding Digital Inclusion in Tasmania: Report on Research Findings*, <https://tascoss.org.au/new-submission-to-the-tascoss-vault-11/>
- TasCOSS (2021), *A Community Services Industry Built for Tasmania's Future: 2021-2031 Industry Plan*, in preparation
- Tasmanian Government (2018). 'ANZSCO 2525-11 Physiotherapist', Department of Education, Skills, and Employment, <https://www.dese.gov.au/skill-shortages/resources/anzsco-2525-11-physiotherapist-tas>
- Tasmanian Government (2019). *Tasmanian ICT Workforce Action Plan 2020-23*, Department of State Growth, https://www.stategrowth.tas.gov.au/_data/assets/pdf_file/0017/216611/Tasmanian-ICT-Workforce-Action-Plan-2020-2023.pdf
- Tasmanian Government (2020). *Our Digital Future: Tasmanian Government Strategy for Digital Transformation*, Department of Premier and Cabinet, https://digital.tas.gov.au/_data/assets/pdf_file/0024/91068/Our-Digital-Future.PDF
- Tasmanian Government (2021). 'Tasmanian Skilled Occupations List (TSOL) 2021-22', Migration Tasmania, https://www.migration.tas.gov.au/_data/assets/pdf_file/0018/301167/TSOL_Tasmanian_Skilled_Occupations_List_2021-22_Aug_2021.pdf
- Tasmanian Hospitality Association (2021). 'Skills Shortage Crisis the Latest Challenge in Hospitality Sector', <https://www.tha.asn.au/tha-1/Hospitality%20Skills%20Shortage%20Crisis>
- Taylor, A., Caffery, L. J., Gesesew, H. A., King, A., Bassal, A., Ford, K., Kealey, J., Maeder, A., McGuirk, M., Parkes, D., and Ward, P. R. (2021). How Australian Health Care Services Adapted to Telehealth During the COVID-19 Pandemic: A Survey of Telehealth Professionals, *Public Health*, 26 February 2021, <https://www.frontiersin.org/articles/10.3389/fpubh.2021.648009/full>
- Taylor, C., Carrigan, J., Noura, H., Ungur, S., van Halder, J. and Singh Dandona, G. (2019). Australia's Automation Opportunity: Reigniting Productivity and Inclusive Growth, McKinsey and Company, <https://www.mckinsey.com/featured-insights/future-of-work/australias-automation-opportunity-reigniting-productivity-and-inclusive-income-growth>
- The Australian (2020). 'Casual Labour Shortage a Sign of Problems to Come', *The Australian*, <https://www.theaustralian.com.au/commentary/editorials/casual-labour-shortage-a-sign-of-problems-to-come/news-story/bd03591e4fda39d0eba345bf80aff456>
- The Economist (2021a). 'The New Fault Lines on which the World Economy Rests', *The Economist Online*, www.economist.com/leaders/2021/07/10/the-new-fault-lines-on-which-the-world-economy-rests
- The Economist (2021b). 'The Return of the Wanderer: The Future of Travel', *The Economist Online*, <https://www.economist.com/special-report/2021-02-13>
- The Institute of Actuaries of Australia (2020). *The Rise of the Gig Economy and its Impact on Australian Workers: Green Paper*, <https://www.actuaries.asn.au/public-policy->

[and-media/thought-leadership/green-papers/the-rise-of-the-gig-economy-and-its-impact-on-the-australian-workforce](#)

Tourism Research Australia (2020a). 'State Tourism Satellite Account 2019-20', <https://www.tra.gov.au/data-and-research/reports/state-tourism-satellite-account-2019-20/about-this-report>

Tourism Research Australia (2020b). *Tourism Recovery Scenarios*, September 2020

United Nations (2021). *Are we Building Back Better? Evidence from 2020 and Pathways for Inclusive Green*

Recovery Spending, United Nations Environment Program, <https://www.unep.org/resources/publication/are-we-building-back-better-evidence-2020-and-pathways-inclusive-green>

Wood, D., Griffiths, K. and Crowley, T. (2021). *Womens Work: The Impact of the COVID Crisis on Australian Women*, The Grattan Institute, <https://grattan.edu.au/report/womens-work/>

Yeyati, E. L., and Filippini, F. (2021). *The Social and Economic Impact of COVID-19*, The Brookings Institution, <https://www.brookings.edu/research/social-and-economic-impact-of-covid-19/>