



Research discussion paper no. 2

Competitiveness and the South Australian Economy: a source paper

December 2020



Government of
South Australia

© Government of South Australia. Published 2020. All rights reserved.

No part of this publication may be reproduced by any process except in accordance with the provisions of the *Copyright Act 1968* (Cth), without prior written permission from the South Australian Productivity Commission.

Disclaimer

The views expressed herein are those of the South Australian Productivity Commission and do not purport to represent the position of the Government of South Australia. The content of this research discussion paper is provided for information purposes only. While care has been taken that the material contained in this report is accurate and up-to-date at the time of printing, the information in this research discussion paper is provided on the basis that all persons having access to this research discussion paper will assume responsibility for assessing the relevance, completeness, currency and accuracy of its content. The South Australian Productivity Commission and the Crown in right of the State of South Australia therefore disclaim any liability for any loss or damage arising from reliance on any information contained in it (or any use of such information) which is provided in this research discussion paper or incorporated into it by reference.

South Australian Productivity Commission
GPO Box 2343
Adelaide South Australia 5001
AUSTRALIA

Telephone: 08 8226 7828
Email: sapc@sa.gov.au
Website: www.sapc.sa.gov.au

An appropriate citation for this publication is:

South Australian Productivity Commission, *Competitiveness and the South Australian Economy: a source paper*, Research discussion paper no. 2, December (2020).

About the South Australian Productivity Commission

The Commission provides the South Australian Government with independent advice on facilitating productivity growth, unlocking new economic opportunities, supporting job creation and removing existing regulatory barriers.

Premier and Cabinet Circular PC046 sets out the objectives and functions of the Commission: how inquiries are referred to the Commission, undertaken and reported on; and how the Commission and public sector agencies work together.

The Commission was established to assist the government to:

- improve the rate of economic growth and the productivity of the South Australian economy in order to achieve higher living standards for South Australians;
- improve the accessibility, efficiency and quality of services delivered or funded by government;
- improve South Australia's competitiveness for private sector investment;
- reduce the cost of regulation;
- facilitate structural economic changes while minimising the social and economic hardship that may result from those changes;
- take into account the interests of industries, employees, consumers and the community;
- increase employment;
- promote regional development; and
- develop South Australia in a way that is ecologically sustainable.

The Commission is supported by the Office of the South Australian Productivity Commission (OSAPC) which is an attached office of the Department of the Premier and Cabinet. The Chair of the Commission also serves as the Chief Executive of the OSAPC.

For more information on the Commission, including circular PC046, visit the website at www.sapc.sa.gov.au.

Disclosure

The Commissioners have declared to the South Australian Government all personal interests that could have a bearing on current and future work. The Commissioners confirm their belief that they have no personal conflicts in regard to this inquiry.

Contents

About the South Australian Productivity Commission	ii
Contents	iii
Acknowledgements	1
Summary	2
1. Competitiveness and economic performance.....	3
2. Industry structure and exports.....	10
3. Living standards and liveability.....	15
4. Labour market.....	28
5. Economic Infrastructure	43
6. Investment and capital stock	63
7. Research and development and innovation	69
8. Conclusion	78

Acknowledgements

The Commission would like to acknowledge and thank the contribution of various Office of the SA Productivity Commission staff, including Mark Bode, Burcu Subasi, Di Wheeler and Giselle Oruga, under the direction of the Deputy Chief Executive, Christine Bierbaum.

The Commission would also like to acknowledge and thank the South Australian Centre for Economic Studies for their contribution in the preparation of this paper.

Summary

Productivity and competitiveness are two related concepts that influence an economy's capacity to grow, compete and raise living standards over time. All other things equal, an economy that has high (and growing) productivity will generally be competitive in business sectors that pay higher wages and returns to capital and support high living standards for the population at large. Conversely, where an economy has low productivity and has limited capacity to compete effectively other than on cost, living standards will generally be lower.

That said, external events, such as the resources boom and the swing in Australia's terms of trade and the pandemic, can also have a big impact on a jurisdiction's competitiveness.

This paper provides a picture of the South Australian economy over the period, broadly speaking, of the two decades since the year 2000, with particular regard to areas that underpin the state's capacity to compete. The focus is on the state's comparative performance to Australia as a whole, and to other Australian jurisdictions where information permits. The picture ceases before the onset of the pandemic whose full economic impact has yet to be felt. This is an information paper only and contains no recommendations.

Companion papers address the state's productivity performance since the mid 1990's and in a range of industry sectors.

Since the 1990s economic activity and population in South Australia have grown more slowly than Australia as a whole. The state's share of the Australian economy fell from 7.5 per cent in 1990 to 5.8 per cent in 2018, while its share of the national population fell from 8.4 per cent to 6.9 per cent over the same period. The state's industry composition has changed notably since 1990, lifting the relative importance of healthcare and social assistance; and agriculture, forestry and fishing and lowering the relative importance of manufacturing.

Consistent with output trends, employment growth in the state has been lower than the national average. Growth in part-time employment has contributed to a higher than average labour underutilisation rate in the state. South Australian workers earn lower hourly rates of pay than the national average. This reflects both differences in industry and occupational mix and differences in the average skill level of South Australian workers compared to other states.

South Australia's business expenditure on research and development (R&D) was static in the decade to 2015-16. Expenditure on R&D by higher education institutions has grown more slowly in SA than the eastern states and SA's share of national activity has fallen.

On liveability, Adelaide has regularly ranked in the top ten in the Economists Intelligence Unit's (EIU) liveability index covering 140 cities and ranked 29th out of 450 cities globally on the Mercer quality of living index. Adelaide also ranks well in international cost of living comparisons.

The time series and cross section data in this report suggest areas of competitive advantage:

- relatively low hourly labour costs and low-cost commercial office space; and
- electricity supply reliability and airport charges at, or better than, the national average and improving rail freight transit times.

The data also point to areas where the state's underpinnings for competitiveness are weak:

- poor and worsening performance in terms of multifactor productivity growth.
- a workforce that is less educated, less mobile and older than the national average;
- relatively low port productivity; and
- performance innovation below the national average.

1. Competitiveness and economic performance

Introduction

This paper provides a snapshot of South Australia's economic competitiveness. It is part of a project to provide the South Australian Productivity Commission (SAPC) and South Australian agencies with an independent, informed and analytically rigorous assessment of the State's economic performance, especially in respect of its relative competitiveness and productivity.

The project aims to better understand the state's drivers of competitiveness, productivity and the foundations of living standards. It includes a more detailed picture of the State's economic strengths and weakness and provides reference material for SAPC's wider work program.

The project draws on both short-term and long-term information covering the last two decades. It does not include the economic effects of the pandemic, whose effects are likely to persist.

Since the late 1980s, competitiveness has become a major analytical focus in academic studies and policy-focussed reviews and reports. A common theme is competitiveness is a significant determinant of economic growth and prosperity at both national and regional levels.

The World Economic Forum (WEF) defines competitiveness in relation to the determinants of long-run productivity growth¹. For the WEF, competitiveness is a measure of an economy's capacity to grow at higher rates over time:

...the set of institutions, policies and factors that determine the level of productivity of a country. The level of productivity, in turn, sets the level of prosperity that can be earned by an economy. The productivity level also determines the rates of return obtained by investments in the economy, which in turn are the fundamental drivers of growth rates. In other words, a more competitive economy is one likely to grow faster over time.²

The WEF's annual *Global Competitiveness Report* (GCR) assesses the major factors that influence long-run economic growth within national economies.³ Its assessment is captured in an index of competitiveness incorporating 103 indicators, organised into 12 themes, to estimate the degree to which an economy approaches the 'frontier' of competitiveness in that theme (macroeconomic stability, for instance).⁴

The themes cover the major socio-economic determinants of long-run and sustainable productivity growth and collectively form the 'pillars' of the WEF's framework. The 'pillars' delineate the broad institutional and policy areas that enable long term productivity growth. They include information and communication technology (ICT) adoption, institutions, infrastructure, macroeconomic stability, health, skills, product markets, labour markets, the financial system, market size, innovation capability and business dynamism.⁵

¹ For alternative definitions of competitiveness refer to the research completed by the Organisation for Economic Cooperation and Development (OECD), the International Institute for Management Development (IIMD), the Irish National Competitiveness Council (INCC) and the United Kingdom Competitiveness Index (UKCI).

² World Economic Forum, 'What is Competitiveness?', available at <https://www.weforum.org/agenda/2016/09/what-is-competitiveness/>

³ See, for example, the WEF's 2019 'Global Competitiveness Index', which forms the analytical foundation of its *Global Competitiveness Report*, and is available at <https://www.weforum.org/reports/how-to-end-a-decade-of-lost-productivity-growth>

⁴ Klaus Schwab, *The Global Competitiveness Report 2019* (World Economic Forum: Geneva, 2019).

⁵ *Ibid.*

Those themes provide a useful framework and starting point for assessing South Australia's competitiveness at the State and industry levels. This task is constrained by the availability of the relevant data for the State.

Competitiveness and productivity

A common theme in much of the literature is the close, interdependent, relationship between competitiveness and productivity.⁶

This perspective is particularly evident in the work of Porter, Delgado *et al* and the WEF, in which competitiveness is defined, in effect, as the equivalent of a high and rising level of labour productivity.⁷ In Porter's view, "the only meaningful concept of competitiveness at the national level is productivity".⁸ By using an analytical framework in which competitiveness is essentially driven by productivity, it is possible to apply the full range of factors identified as drivers of productivity at the international, national and regional levels.⁹

Importantly, if competitiveness is defined in terms of productivity, then the extensive range of factors, including the so-called 'soft factors', which have been identified as explanations of comparative productivity, are also drivers of competitiveness: capital stocks, skills, management capabilities, innovation, firm and market size, extent of competition in the market, institutions, etc.¹⁰

It is important to distinguish between firms and locations (national or sub-national). Locations, unlike a firm, can never simply go out business and they benefit from spill over effects from rising prosperity in other locations, a situation that is particularly pronounced at the sub-national and regional level.¹¹ This is not the situation of firms competing in international markets, which sometimes face the prospect of losing their capacity to mobilise production factors when their revenue drops below a critical level.¹² Hence competitiveness needs to be seen in much broader term than unit labour costs and market shares.

As the Irish National Competitiveness Council (INCC) makes clear, a view of competitiveness based on productivity will necessarily focus on a location's capacity to create additional value on the basis of "the production factors it has at its disposal".¹³ The INCC also observes, an analytical framework that explicitly links competitiveness with productivity should not neglect the relationship between competitiveness, productivity and cost levels:

...the relation between productivity and costs is critical for the relative attractiveness of a location to firms. This is particularly crucial for Ireland given its positioning as a platform for Multinational Corporations (MNCs). While attractiveness for these companies is unlikely to

⁶ See, for example, Michael E. Porter, 'The Competitive Advantage of Nations', in *International Business*, March-April 1990.

⁷ See, for example, S. Delgado *et al*, *The Determinants of National Competitiveness*, National Bureau for Economic Research (NBER) Working Paper No.18249 (Cambridge, MA: NBER, 2012). A definition of competitiveness based on long run productivity does not, in itself, preclude the incorporation of additional determinants of a location's competitiveness, such as firms' relative costs of doing business, including labour, energy or transport costs. This is the broad approach taken, for example, by the Republic of Ireland's National Competitiveness Council.

⁸ Michael E. Porter, 'The Competitive Advantage of Nations', p. 4.

⁹ Esmond Birnie *et al*, 'A Critical Review of Competitiveness Measurement in Northern Ireland', in *Regional Studies*, Vol. 53, No. 10 (March 2019), p. 1495.

¹⁰ *Ibid.*, p.1495.

¹¹ Paul E. Krugman, 'Competitiveness: A Dangerous Obsession', in *Foreign Affairs*, Vol. 73, No. 2 (March-April 1994), pp. 28-44.

¹² National Competitiveness Council, *Review of Competitiveness Frameworks*, p.7

¹³ *Ibid.*, p.8.

be an appropriate ultimate goal for policy, it is a necessary condition for achieving high standards of living for the Irish population.¹⁴

The relationship between productivity and unit cost is also a critical element in the relative attractiveness of a location for multinational firms. The intersection of unit costs and productivity is also a significant indicator of macroeconomic balance, with wages that are set above productivity levels, for instance, exposing an economy to possible imbalances at the macroeconomic level.

The determinants of competitiveness

Allowing for alterations designed to address and reflect local conditions, the most influential and wide-ranging attempts to define and measure competitiveness, including both the INCC and its Northern Irish counterpart, have followed the WEF's approach to analysing competitiveness.

The WEF analyses competitiveness at the national level using an index that incorporates 12 significant drivers (pillars), each of which reflects the fundamental proposition that productivity gains are the primary determinants of long-term economic growth. The current WEF framework contains 103 indicators, assigned across the 12 pillars. These are, in turn, organised under four themes: the enabling environment; human capital; markets; and the innovation ecosystem. Under its broad thematic headings, the WEF has assembled its 12 pillars, or determinants, of competitiveness at the national level (see Table 1).

Table 1: WEF pillars of competitiveness

Enabling environment	Markets
Institutions (Pillar 1)	Product Market (Pillar 7)
Infrastructure (Pillar 2)	Labour Market (Pillar 8)
ICT Adoption (Pillar 3)	Financial Markets (Pillar 9)
Macroeconomic Stability (Pillar 4)	Market Size (Pillar 10)
Human capital	Innovation ecosystem
Health (Pillar 5)	Business Dynamism (Pillar 11)
Skills (Pillar 6)	Innovation Capability (Pillar 12)

Source: *The Global Competitiveness Report 2019*

The WEF's analytical approach is founded on the contention that competitiveness needs to be defined in terms of the 'attributes and qualities of an economy that allow for a more efficient use of the factors of production'.¹⁵ The WEF's determinants of competitiveness are designed to capture 'the process through which underlying competitiveness is transformed into ultimate prosperity'.¹⁶ These determinants are generally closely related to the capacity of an economy, at least at the national level, to transform underlying competitiveness into productivity growth over the long-term. As Ketels observes, 'this is what makes these indicators (or determinants) powerful diagnostic tools to better understand a country's competitiveness'.¹⁷

Constructing the conceptual framework with which to analyse competitiveness is the first step. The next step is to assemble appropriate data, which is a challenging task at a sub-national level. Data constraints, including the lack of some disaggregated data at a sub-national level and the quality of information, can limit the scope of analysis the state or sub-national level of government.

¹⁴ *Ibid.*, p.8

¹⁵ Klaus Schwab, *The Global Competitiveness Report 2019*, (World Economic Forum: Geneva, 2019), 2.

¹⁶ National Competitiveness Council, *Review of Competitiveness Frameworks*, 13, Dublin, arch 2016.

¹⁷ *Ibid.*, p.13.

Competitiveness and policy levers

The usefulness of a competitiveness framework ultimately rests, at the national or sub-national level, on its capacity to inform policy settings. The roles of national and sub-national governments differ, meaning the components of competitiveness need to reflect the role and policy instruments available to the level of government.

The policy options available to governments can be broadly defined, following the Australian Productivity Commission (APC), in three categories, all of which are designed to enhance productivity: direct government policies; indirect policies; and government processes.¹⁸ According to the APC, policies in these categories have the potential to increase productivity by enhancing capabilities (including by improving physical infrastructure), providing incentives (including better regulation), and introducing greater flexibility into government processes (by enhancing information provision and transparency, for example).¹⁹

The major determinants of competitiveness, such as those captured by the framework developed by the WEF, constitute powerful diagnostic tools with which to understand the performance of a national or sub-national economy.²⁰ These diagnostic tools can provide national and sub-national governments with insights into settings of policy instruments that can enhance the underpinnings of competitiveness and increase prosperity.

Competitiveness frameworks at the regional level

The majority of the frameworks developed to analyse competitiveness have focussed exclusively on the national level. This level of analysis incorporates, among other factors: the structural conditions of markets; the free movement of goods and services within a defined geographical area; and the fact that the majority of legislative and spending powers tend to reside with national governments, rather than at the regional or sub-national level.²¹

Nonetheless, differences in prosperity levels between regions in a nation state can be significant, leading several contributors to emphasise incorporating measures of regional competitiveness within broader frameworks of analysis.²²

This consideration reflects the importance of economic geography among other factors affecting local competitiveness. These drivers may be specific to a location, including the development of business clusters and locational preferences of firms for their activities.²³

The sub-national approach adopted by Northern Ireland's Economic Advisory Group, which is contained in its *Competitiveness Summary Report*, is a useful starting point for a South Australian competitiveness framework.²⁴ It is based largely on the WEF framework, but has been tailored to the analytical constraints and requirements of analysis at the sub-national level. It compares Northern Ireland's competitiveness with a range of European and OECD countries using over 150 indicators, grouped into the 11 categories, into divided policy inputs, essential conditions and sustainable growth, as depicted in Figure 1.

¹⁸ Productivity Commission, *Shifting the Dial: 5 Year Productivity Review, Inquiry Report* (Canberra: PC, 2017), 36.

¹⁹ *Ibid.*, p. 36.

²⁰ National Competitiveness Council, *Review of Competitiveness Frameworks*, 13, Dublin, March 2016.

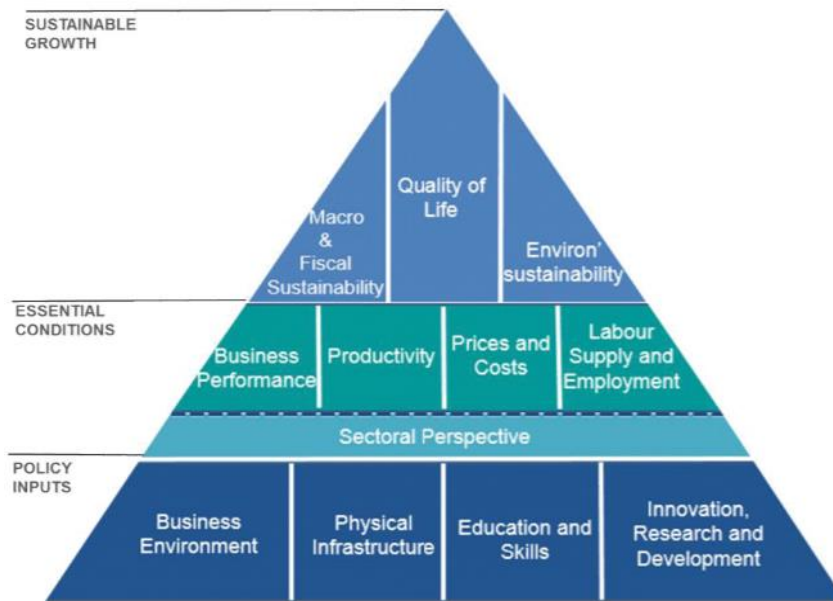
²¹ Klaus Schwab, *The Global Competitiveness Report 2019*, (World Economic Forum: Geneva, 2019), 9.

²² See, for instance, K. Morgan, 'The Exaggerated Death of Geography: Learning, Proximity and Territorial Innovation Systems' (2006) 4 *Journal of Economic Geography*, 3-21.

²³ Esmond Birnie *et al.*, 'A Critical Review of Competitiveness Measurement in Northern Ireland', 1496, *Regional Studies*, March 2019.

²⁴ Economic Advisory Group *Competitiveness Summary* (Economic Advisory Group, Northern Ireland, 2016).

Figure 1: UUEPC Competitiveness scorecard



Previous studies of Australia's competitiveness

The WEF's 2019 Global Competitiveness Report²⁵ ranked Australia 16th out of 141 countries, immediately behind the Republic of Korea, Canada and France and ahead of Norway, Luxemburg and New Zealand. Australia's strengths were macroeconomic stability (equal first), skills (13th), financial system development (13th) and health (17th). Australia's weakest areas were infrastructure and ICT adoption (both 29th).

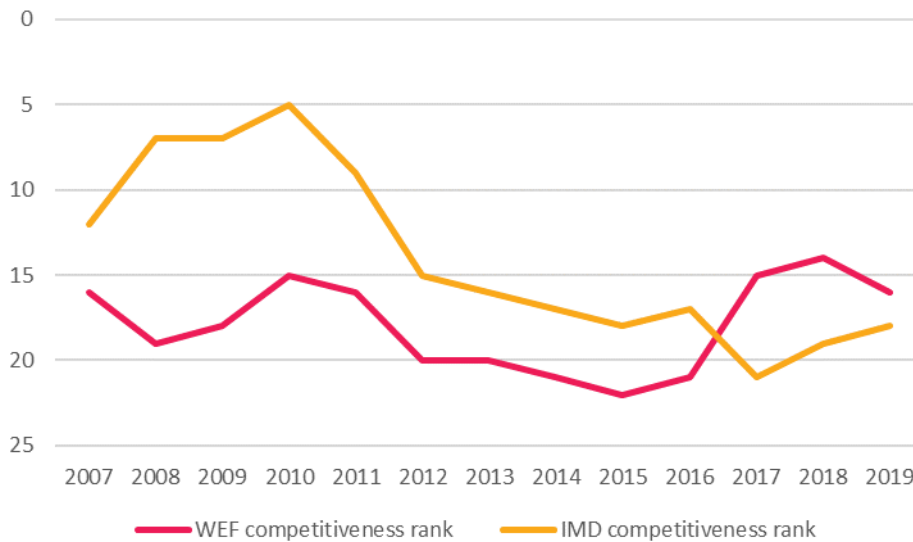
The International Institute for Management Development (IMD) 2019 *World Competitiveness Ranking*²⁶ placed Australia 18th, immediately behind Finland, Taiwan and Germany and ahead of Austria, Iceland and New Zealand. The IMD listed Australia's strengths as including, country credit rating (1st), student mobility inbound (1st), human development index (3rd), state ownership of enterprises (4th) and resilience of the economy, start-up days, tariff barriers, public sector contracts and mobile broadband subscribers (all 5th). The least competitive areas were entrepreneurship (57th), export concentration by partner (56th), energy infrastructure (55th) and trade to Gross Domestic Product (GDP) ratio, compensation levels, mobile telephone costs and communications technology (all 54th).

Australia's rankings across both the WEF and IMD each year since 2007 are shown in Figure 2. Australia has consistently ranked in the top 25 nations in both indexes, although Australia's ranking declined in both indexes over the first half of the decade.

²⁵ WEF , *The Global Competitiveness Report 2019* (2019).

²⁶ IMD , *World Competitiveness Ranking 2019* (2019).

Figure 2: Australia's competitiveness ranking over time



Source: WEF, IMD

KPMG's *Competitive Alternatives*²⁷ study, ranked the costs of doing business in 10 countries,²⁸ with Australia ranked 5th in 2016.²⁹ The study also investigated costs at a city level for selected cities within each country, with Adelaide the lowest cost Australian city in 2016 (23rd out of 111 cities).

There have been limited attempts to assess the overall competitiveness of Australian states. Most studies look at specific factors or industries or attempt to explain economic performance without defining competitiveness as an underlying cause.

A now dated 2011 study by the Victorian Competition and Efficiency Commission (VCEC)³⁰ ranked each State and Territory's competitiveness across the seven areas of taxation, regulation, infrastructure, education, innovation, participation and wellbeing³¹. The VCEC drew on WEF and the limited available data on states and territories.

Methodology

This report is part of a suite of work that explores productivity on its own right. It is best read in conjunction with the *Research Discussion Paper No. 1 - A Data-driven Investigation of South Australia's Productivity Performance* and the 8 companion research discussion papers focusing on growth state industry sectors, which will analyse those sectors within the competitiveness framework used in this paper.³²

²⁷ KPMG, *Competitive Alternatives: KPMG's guide to international business locations costs*(2016).

²⁸ The study includes 26 location-specific cost factors across the groups of: labour costs, facility costs, transportation costs, utility costs, cost of capital, taxes other than income, income taxes and incentives.

²⁹ The 10 countries included, in order of lowest costs were: Mexico, Canada, Netherlands, Italy, Australia, France, UK, Germany, Japan and the US.

³⁰ VCEC, *Securing Victoria's Future Prosperity: A Reform Agenda*, Draft Report (November, 2011).

³¹ VCEC, *Securing Victoria's Future Prosperity: A Reform Agenda*, Benchmarking Information Paper (November, 2011).

³² Research discussion papers can be accessed on <https://www.sapc.sa.gov.au/research-program>.

The remainder of this report applies the competitiveness concepts to South Australia through an analysis of time series, as well as in a cross sectional data comprising the comparison of states and territories, to examine long term and jurisdiction-specific trends.

The indicators presented are largely informed by the competitiveness measures discussed earlier, especially the thematic headings used by the World Economic Forum (WEF). There are some limitations on matching the available data with WEF's thematic headings, especially at state and territory level.

Since first detected in late 2019, the COVID-19 pandemic has resulted in the unfortunate loss of many lives, closure of entire countries and a global economic slowdown. The social, economic and health impacts of the disease are yet to be fully realised. Changes in the way businesses operate and employees work (such as an increased focus on no contact deliveries, online purchases and working remotely) are likely to have lasting impacts on the use of technology, work and management practices and potentially also on the underlying competitiveness of industries and the state. An assessment of the economic impacts of the pandemic is a subject for future work.

The paper covers the following areas:

- Industry structure and exports (section 2)
- Living standards and liveability (section 3)
- Labour market (section 4)
- Economic infrastructure (section 5)
- Investment and capital stock (section 6)
- Research and development and innovation (section 7).

A final section provides a summary of these areas of the South Australian economy.

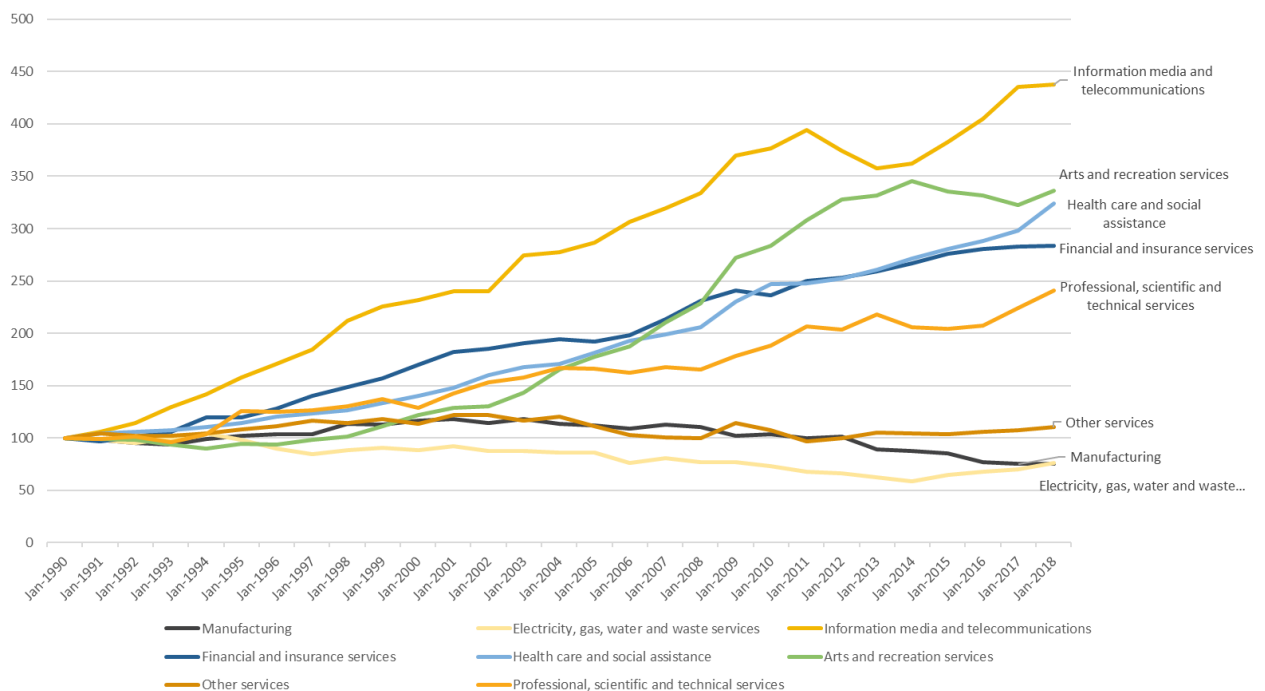
2. Industry structure and exports

Industry

The sectors that have experienced significant growth in South Australia since 1990 include information media and telecommunications (337 per cent) as well as arts and recreation services (236 per cent). These two sectors are the only two in South Australia that have grown faster than the corresponding national growth rate.

Health care and social assistance (224 per cent), financial and insurance services (184 per cent) and professional, scientific and technical services (141 per cent) have also experienced growth in South Australia, although at a rate lower than the national rate for these industries (232, 235 and 266 per cent respectively).

Figure 3: South Australian industry Gross Value-Added annual growth, selected industries, 1990-2018 (Index where 1990 = 100 as base year)



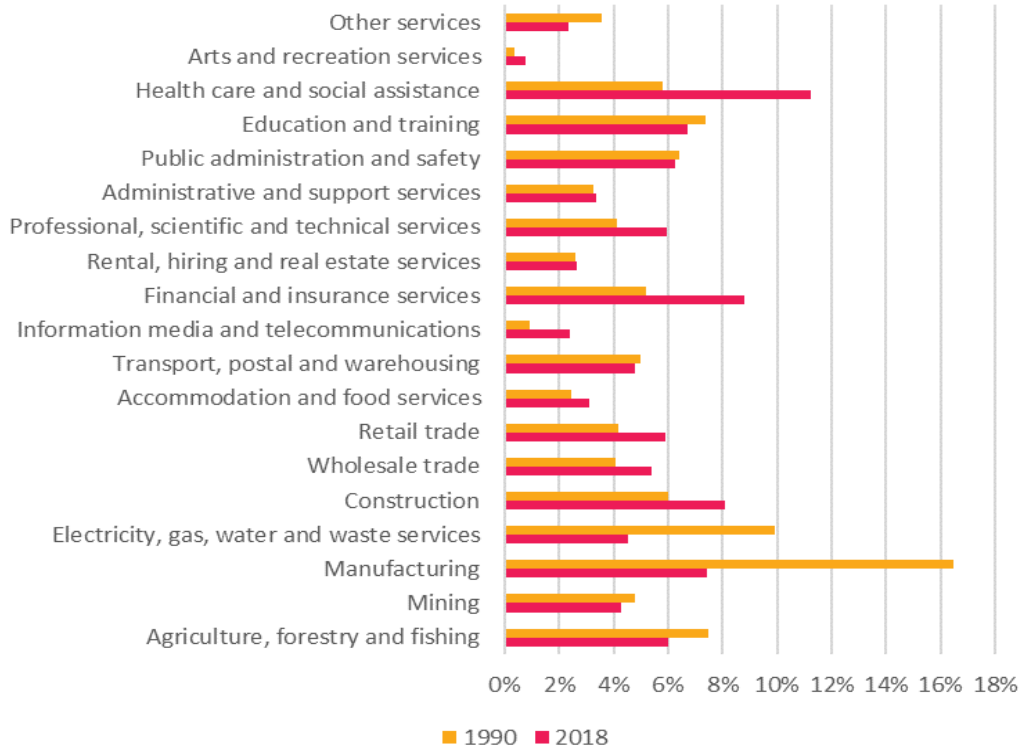
Source: ABS 5220.0

Since 1990 manufacturing's gross value added has decreased 24 per cent (and decreased from 16.5 per cent of total industry Gross Value Added (GVA) to 7.4 per cent, or from the largest industry to the fourth largest). Electricity, gas, water and waste services also decreased 24 per cent, and from 9.9 per cent of total industry GVA to 4.5 per cent (from the second largest sector in 1990 to the twelfth largest in 2018).

Due to weak growth in these sectors, the state's industry composition has changed notably since 1990. Healthcare and social assistance has increased to become the largest sector by GVA in the state's economy, from 5.8 per cent of GVA in 1990 to 11.2 per cent in 2018. This growth is more pronounced than the national picture, where the sector has grown from 6.0 to 8.2 per cent of the economy.

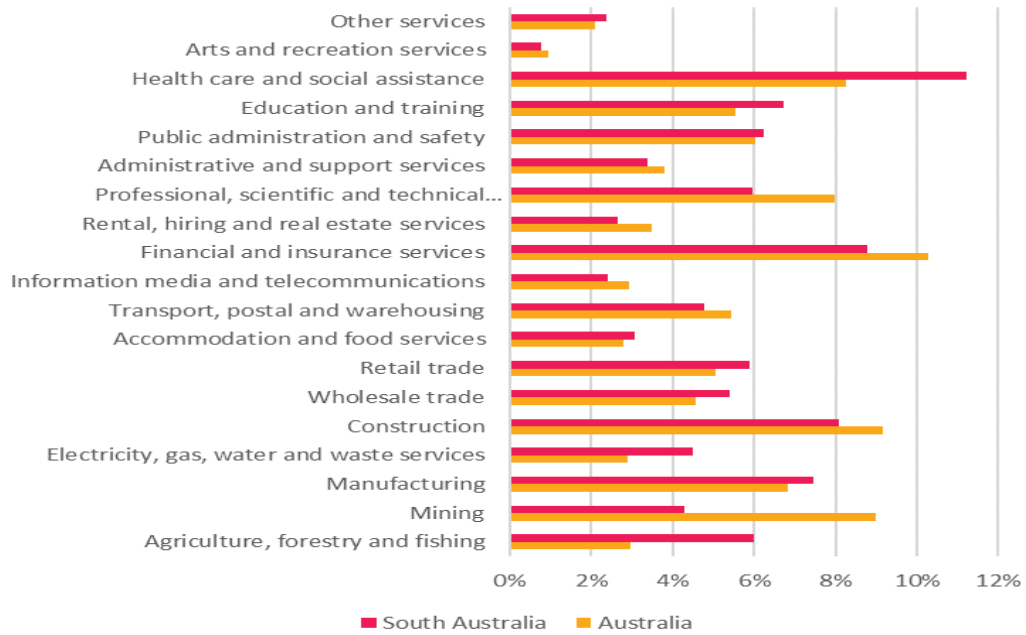
Information media and telecommunications has increased from less than 1 per cent of total industry GVA in 1990 to 2.4 per cent in 2018, arts and recreation services rising from 0.4 to 0.8 per cent and financial and insurance services rising from 5.2 to 8.8 per cent.

Figure 4: South Australian industry structure, 1990 and 2018 (% of total industry GVA)



Source: ABS 5220.0

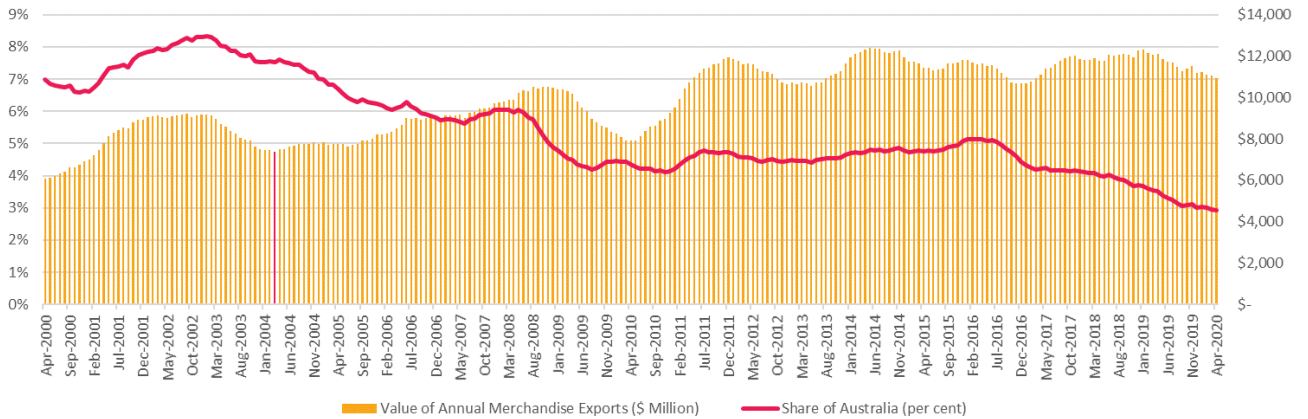
Figure 5: Proportion of total industry GVA (%), Australia and South Australia, 2018



Source: ABS 5220.0

Exports

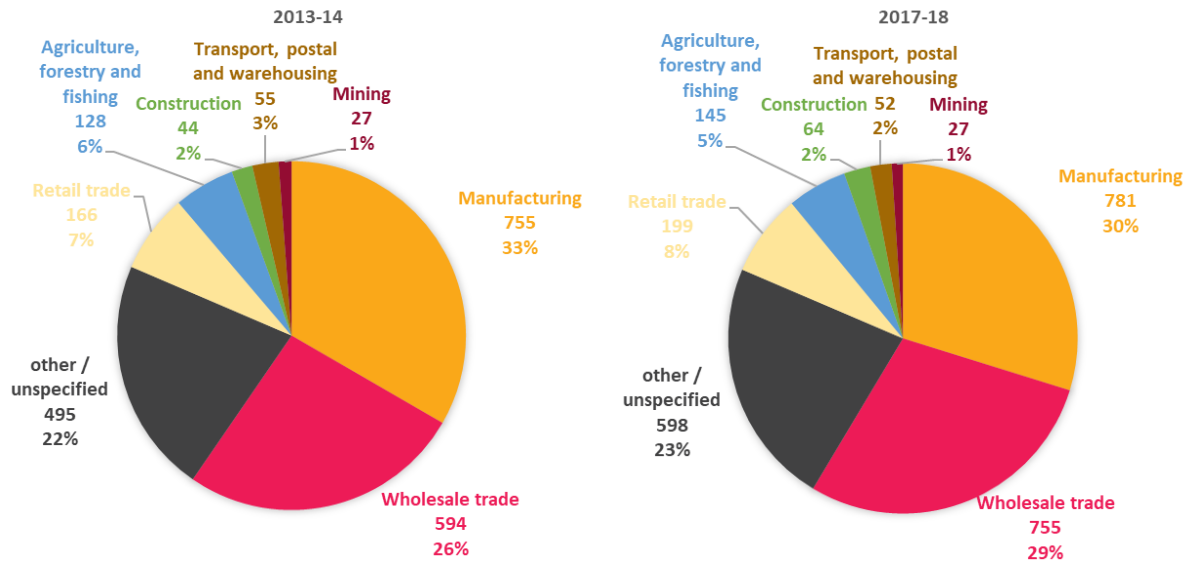
Figure 6: Value of annual merchandise exports, South Australia, April 2000 – April 2020 (\$ million) and share of national exports (%)



Source: ABS 5368.0

Despite growing exports, South Australia’s share of Australia’s exports has declined from a high of 8.3 per cent in 2003 to under 4 per cent in 2019. This is largely a result of significant increases in mineral exports from Western Australia and Queensland over this period.

Figure 7: Number of South Australian exporters by industry sector, 2013-14 and 2017-18



Source: ABS 5368.0.55.006

The number of South Australian exporting businesses grew from 2,264 in 2013-14 to 2,621 in 2017-18. This growth of 15.9 per cent was the second highest increase among states with comparable data, with Tasmania growing the most at 17.0 per cent over the period.

Comparison of industry composition of South Australian exporters over the period reveals an increase in the number and proportion of exporters in both wholesale and retail trade, with most other industries largely unchanged. South Australia's share of Australian exporters increased slightly over the period to 6.1 per cent³³.

Table 2 shows the top 10 destinations for SA exports in 2018-19, with China, Malaysia and the United States being South Australia's top export markets.

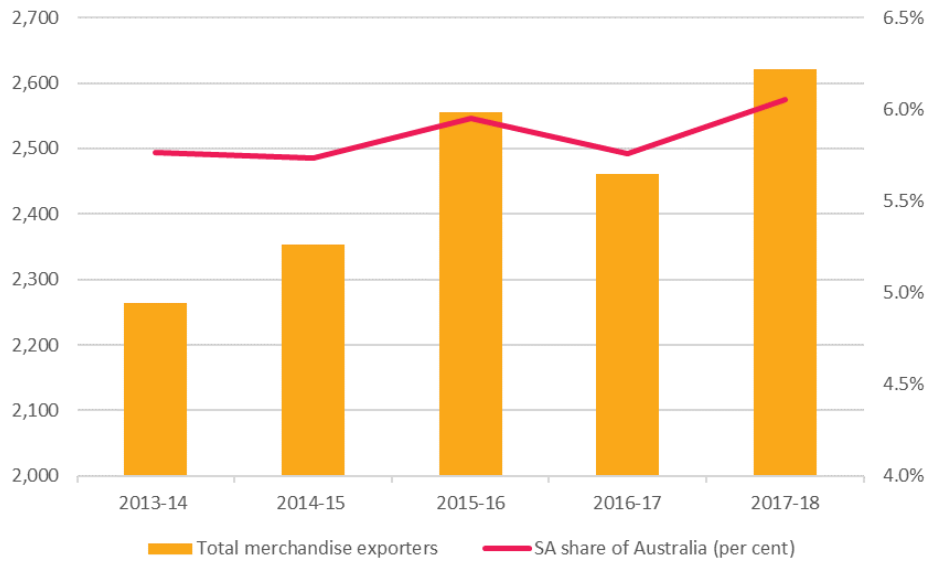
Table 2. Top 10 destinations for South Australia and Australian exports, 2018-19

South Australia's top export markets				Australia's top export markets		
Rank	Country of destination	2018-19 (\$ millions)	\$ share of total	Country of destination	2018-19 (\$ millions)	\$ share of total
1	China	2,742	23.4	China	153,177	32.6
2	Malaysia	1,231	10.5	Japan	61,728	13.1
3	United States	1,081	9.2	Republic of Korea	27,771	5.9
4	Japan	628	5.4	United States	24,748	5.3
5	Thailand	547	4.7	India	22,836	4.9
6	India	492	4.2	New Zealand	16,003	3.4
7	New Zealand	458	3.9	Singapore	15,951	3.4
8	Canada	425	3.6	Taiwan	13,860	2.9
9	United Kingdom	413	3.5	United Kingdom	13,504	2.9
10	Vietnam	379	3.2	Malaysia	11,545	2.5

³³ Proportion is calculated based on total merchandise exporters with a Type of Activity Unit identified.

Source: ABS 5368.0 and Department of Foreign Affairs and Trade analysis of ABS data
<<https://www.dfat.gov.au/trade/resources/trade-statistics/trade-in-goods-and-services/Pages/australias-trade-in-goods-and-services-2018-19>>

Figure 8: Number and national share (%) of South Australian exporters 2013-14 to 2017-18



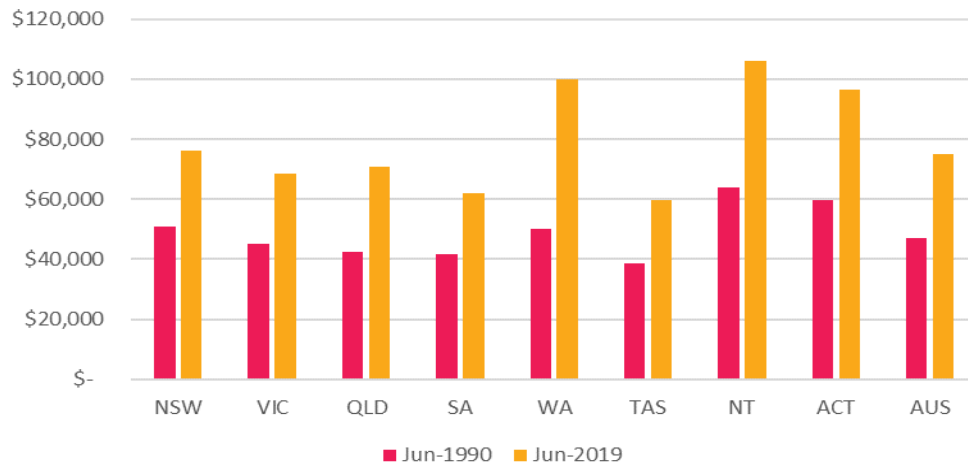
Source: ABS 5368.0.55.006

3. Living standards and liveability

Living standards

As of June 2018, South Australia had the second lowest Gross State Product (GSP) per capita in Australia at \$61,343 per capita. This is five-sixths of Australia's average GDP per capita of \$73,267. This difference has increased since 1990, when South Australia's GSP per capita was only 10 per cent lower than the national figure.

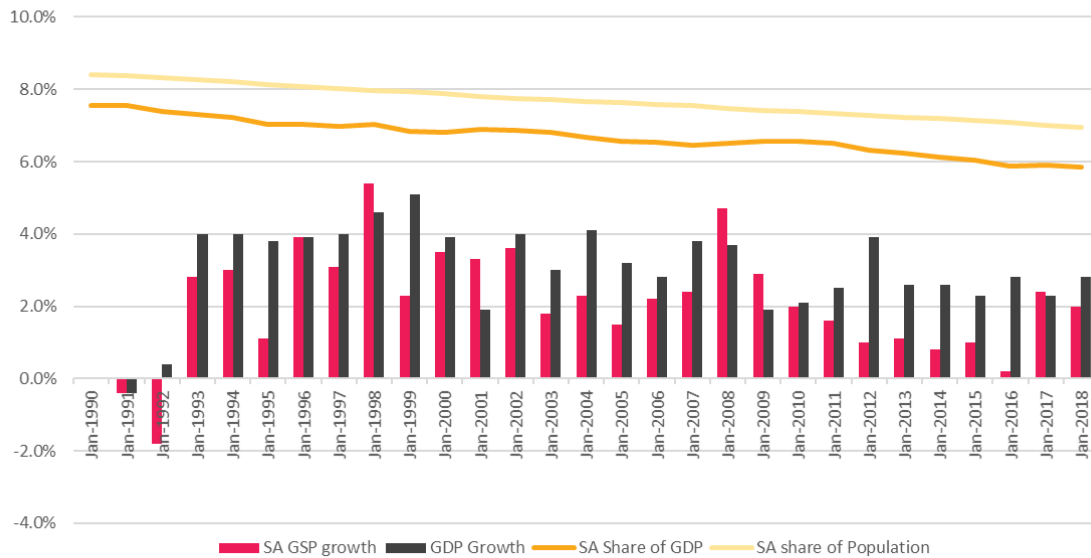
Figure 9: GSP per capita, states and territories, and Australia, Jun 1990 and Jun 2019 (\$)



Source: ABS 5220.0

Due to lower than average GSP growth, South Australia's share of the Australian economy has decreased from 7.5 per cent in 1990 to 5.8 per cent in 2018. Over this same period, South Australia's share of the national population has also decreased from 8.4 per cent to 6.9 per cent. The state's share of national economic activity (as measured by GSP) has therefore fallen by a greater amount than its share of population.

Figure 10: South Australia's Share of national GDP and population, and annual changes in growth measures, 1990-2018 (%)



Source: ABS 5220.0, ABS 3101.0

Liveability

This section focuses on measures of factors which relate to the cost and/or quality of living in South Australia. These factors—in aggregate—link to the state’s economic competitiveness by affecting the attraction and retention of a supply of labour for the economy.

Economist Intelligence Unit liveability index

The Economist Intelligence Unit (EIU) 2019 edition of the annual Global Liveability Index ranks Adelaide as the tenth most liveable city in the world and third most liveable city in Australia, behind Melbourne and Sydney. This is unchanged from the previous year.

The EIU’s liveability rating quantifies the challenges that might be presented to an individual’s lifestyle in 140 cities worldwide. Each city is assigned a score for over 30 qualitative and quantitative factors across five broad categories, which influence the index ranking:

- stability – determined by prevalence of petty crime, violent crime, threat of terror, threat of military conflict and threat of civil unrest/conflict;
- healthcare – determined by availability and quality of private healthcare, availability and quality of public healthcare, availability of over-the-counter drugs and general healthcare indicators from the World Bank;
- culture and environment – determined by humidity/temperature, discomfort of climate to travellers, level of corruption, social or religious restrictions, level of censorship, sporting availability, cultural availability, food and drink and consumer goods and services;
- education – determined by availability and quality of private education and public education indicators from the World Bank; and

- infrastructure – determined by quality of road network, quality of public transport, quality of international links, availability of good quality housing, quality of energy provision, quality of water provision and quality of communications.

Adelaide's scores in all five categories (stability, healthcare, culture and environment, education and infrastructure) remain unchanged from the previous year, leaving Adelaide's overall ranking of tenth place also unchanged from the previous year.

The city of Vienna, Austria retained its title as the most liveable city. Sydney was the only city within the top ten to see a change in its score from the previous year, moving it up from fifth to third place.

The EIU has stated that the index tends to favour medium-sized cities in wealthy countries, often with relatively low population densities, well-funded public healthcare systems, compulsory and high-quality education, and functional road and rail infrastructure. Adelaide's ranking in this index is long-standing; it has recorded consecutive top 10 rankings in the liveability index for several years.

Table 3: EIU Liveability Index – Top 10 most liveable cities

The ten most liveable cities								
Country	City	Rank	Overall Rating (100=ideal)	Stability	Healthcare	Culture & Environment	Education	Infrastructure
Austria	Vienna	1	99.1	100	100	96.3	100	100
Australia	Melbourne	2	98.4	95	100	98.6	100	100
Australia	Sydney	3	98.1	95	100	97.2	100	100
Japan	Osaka	4	97.7	100	100	93.5	100	96.4
Canada	Calgary	5	97.5	100	100	90	100	100
Canada	Vancouver	6	97.3	95	100	100	100	92.9
Canada	Toronto	7	97.2	100	100	97.2	100	89.3
Japan	Tokyo	7	97.2	100	100	94.4	100	92.9
Denmark	Copenhagen	9	96.8	95	95.8	95.4	100	100
Australia	Adelaide	10	96.6	95	100	94.2	100	96.4

Source: EIU

Mercer quality of living city ranking

Mercer evaluates local living conditions in more than 450 cities surveyed worldwide as part of its quality of living index. The index was developed to assist multinational organisations to compensate employees fairly when placing them on international assignments, by comparing relative differences between locations.

Living conditions are analysed according to 39 factors, grouped in 10 categories:

- political and social environment (political stability, crime, law enforcement, etc.);
- economic environment (currency exchange regulations, banking services);
- socio-cultural environment (media availability and censorship, limitations on personal freedom);
- medical and health considerations (medical supplies and services, infectious diseases, sewerage, waste disposal, air pollution);
- schools and education (standards and availability of international schools);
- public services and transportation (electricity, water, public transportation, traffic congestion, etc.);

- recreation (restaurants, theatres, cinemas, sports and leisure);
- consumer goods (availability of food/daily consumption items, cars).;
- housing (rental housing, household appliances, furniture, maintenance services); and
- natural environment (climate, record of natural disasters).

The scores attributed to each factor, which are weighted to reflect their importance to expatriates, permit objective city-to-city comparisons. The result is a quality of living index that compares relative differences between any two locations evaluated. For the indices to be used effectively, Mercer has created a grid that enables users to link the resulting index to a quality of living allowance amount by recommending a percentage value in relation to the index.

The 2019 survey saw Vienna top the ranking for the 10th consecutive year. Melbourne fell from 16th to 17th; Perth (21st), Adelaide (29th) and Canberra (30th) retained their rankings; and Brisbane jumped from 37th to 35th place.

Table 4: Mercer Quality of living city ranking – Top 10 and Australian cities

Rank	City	Country / Region
1	Vienna	Austria
2	Zürich	Switzerland
3	Vancouver	Canada
4	Munich	Germany
5	Auckland	New Zealand
6	Düsseldorf	Germany
7	Frankfurt	Germany
8	Copenhagen	Denmark
9	Geneva	Switzerland
10	Basel	Switzerland
11	Sydney	Australia
17	Melbourne	Australia
21	Perth	Australia
29	Adelaide	Australia
30	Canberra	Australia
35	Brisbane	Australia

Source: Mercer

EIU worldwide cost of living index

The EIU worldwide cost of living Index is a biannual survey comparing more than 400 individual prices across 160 products and services. These include: food, drink, clothing, household supplies and personal care items, home rents, transport, utility bills, private schools, domestic help and recreational costs.

The survey itself is a purpose-built internet tool designed to help human resources and finance managers calculate cost-of-living allowances and build compensation packages for expatriates and business travellers.

The 2019 EIU worldwide cost of living Index highlighted both Adelaide and Perth as two of the top 10 cities whose cost of living ranking had declined the most since the 2018 edition.

Adelaide's 2019 ranking of 51st highest cost of living is down 21 places from 2018.

Part of this decline in the cost of living ranking may be attributed to currency fluctuations, given the Australian Dollar's sustained decline against the US dollar since the beginning of 2018.

Table 5: EIU Worldwide Cost of Living Index – 10 cities showing greatest reduction in cost of living ranking, 2018 to 2019

Biggest movers down the ranking in the past 12 months

Country	City	Index (New York=100)	Rank	Index move	Rank move
Turkey	Istanbul	46	120	-25	-48
Argentina	Buenos Aires	41	125	-28	-48
Brazil	São Paulo	53	107	-16	-30
Brazil	Rio de Janeiro	52	108	-15	-26
Australia	Adelaide	75	51	-11	-21
Sweden	Stockholm	73	56	-11	-19
Uzbekistan	Tashkent	33	131	-21	-19
Australia	Perth	69	64	-11	-18
New Zealand	Wellington	78	41	-11	-17
Russia	Moscow	55	102	-11	-16

Source: EIU

Mercer cost of living city ranking

Mercer produces annual rankings of the cost of living in more than 200 of the most prevalent assignment destinations for expatriate employees. The rankings demonstrate how currency fluctuation and shifts in the prices of goods and services can affect the purchasing power of expatriate employees. Multinational companies use this information to compensate their skilled professionals who take on international assignments.

The multinational approach to the cost of living index develops cost-of-living indices and differentials based on a blended international spending pattern. The methodology assumes a convergence of spending patterns among expatriates from different nationalities. With weighting of goods and services the same for all locations, this approach compares prices of similar brands and from similar retail outlets in both the home city and host city.

As with other cost of living indices, Australian city rankings fell in Mercer's 2019 survey given the fall in the value of the Australian dollar. Sydney was the highest-ranking Australian city at 50 (29th in 2018), followed by Melbourne at 79th spot (58th in 2018).

Perth came in at 87 (61st in 2018), Canberra at 96 (77th in 2018), Brisbane at 103 (84th in 2018), and Adelaide the lowest Australian city at 109 (87th in 2018).

Table 6: Mercer cost of living city ranking – Top 10 and Australian Cities

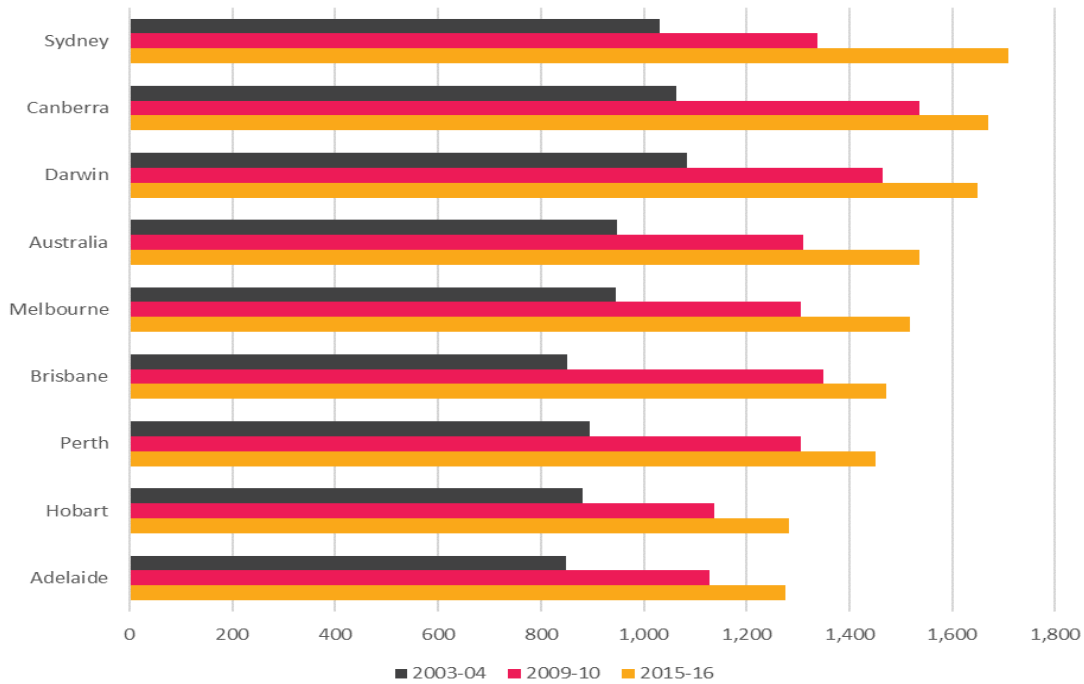
Rank	City	Country/Region
1	Hong Kong	Hong Kong (SAR)
2	Tokyo	Japan
3	Singapore	Singapore
4	Seoul	South Korea
5	Zürich	Switzerland
6	Shanghai	China
7	Ashgabat	Turkmenistan
8	Beijing	China
9	New York	United States
10	Shenzhen	China
50	Sydney	Australia
79	Melbourne	Australia
87	Perth	Australia
96	Canberra	Australia
103	Brisbane	Australia
109	Adelaide	Australia

Source: Mercer

National cost of living – household expenditure

Long-term trends in household expenditure remain largely unchanged. In Australia, Adelaide has remained the lowest expenditure capital city since 2003-04, while Sydney has overtaken Canberra and Darwin to have the highest weekly household expenditure.

Figure 11: Household expenditure on goods and services by capital city and Australia, 2003-04 to 2015-16 (\$ per week)



Source: ABS 6530.0

National cost of living – housing costs and affordability

As of December 2019, Adelaide’s median house price was the lowest of all capital cities in Australia. The \$485,000 median price of established house transfers in Adelaide was 50 per cent lower than in Sydney (\$977,000), 35 per cent lower than in Melbourne (\$750,000) and 12 per cent lower than in Brisbane (\$550,000).

The \$375,000 median price of attached dwelling transfers in Adelaide was in line with Brisbane, Hobart and Perth, while prices remain lowest in Darwin. The data were analysed before the COVID-19 pandemic and therefore do not reflect the impact of that significant event. There have been early signs of a property market slow-down since early 2020, which is yet to be fully measured.

Figure 12: Median price of property transfers by capital city, Dec 2019 quarter (\$'000)

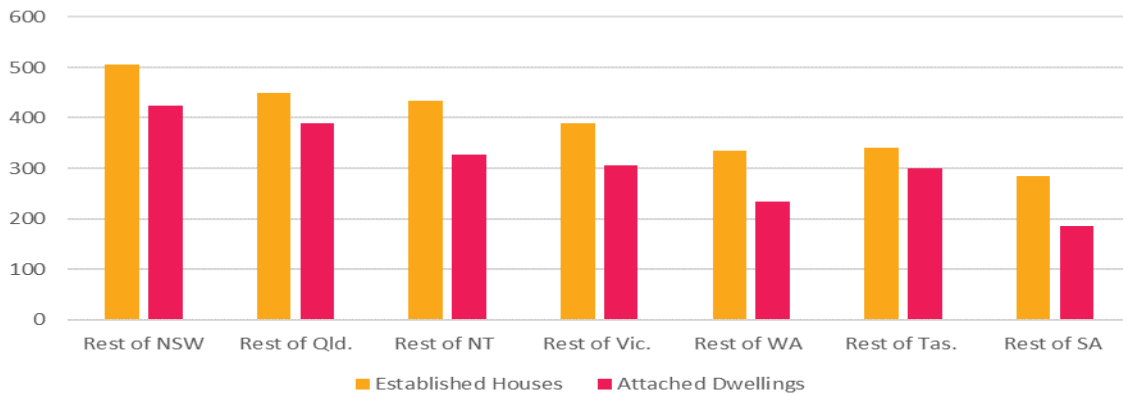


Source: ABS 6416.0

Adelaide’s property price competitiveness extends to the rest of the state. In December 2019, the \$285,000 median price of established house transfers in the rest of South Australia was 44 per cent lower than in Sydney (\$425,000), 37 per cent lower than in the rest of Queensland (\$389,500) and 27 per cent lower than in the rest of Victoria (\$305,000). Figure 13 gives further details.

The \$185,500 median price of attached dwelling transfers in the rest of South Australia was also the lowest in Australia.

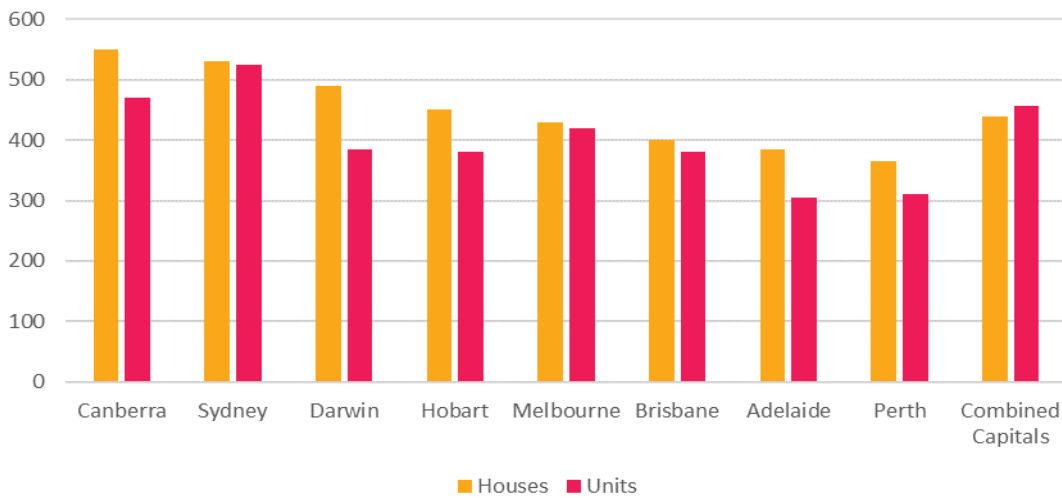
Figure 13: Median price of property transfers by rest of state, Dec 2019 quarter (\$'000)



Source: ABS 6416.0

Data from Domain highlights that the median weekly rent in Adelaide is the second cheapest in the nation for houses at \$385 per week and the cheapest in Australia for units at \$305 per week.

Figure 14: Median house and unit rent prices by capital city, June 2019 quarter (\$)

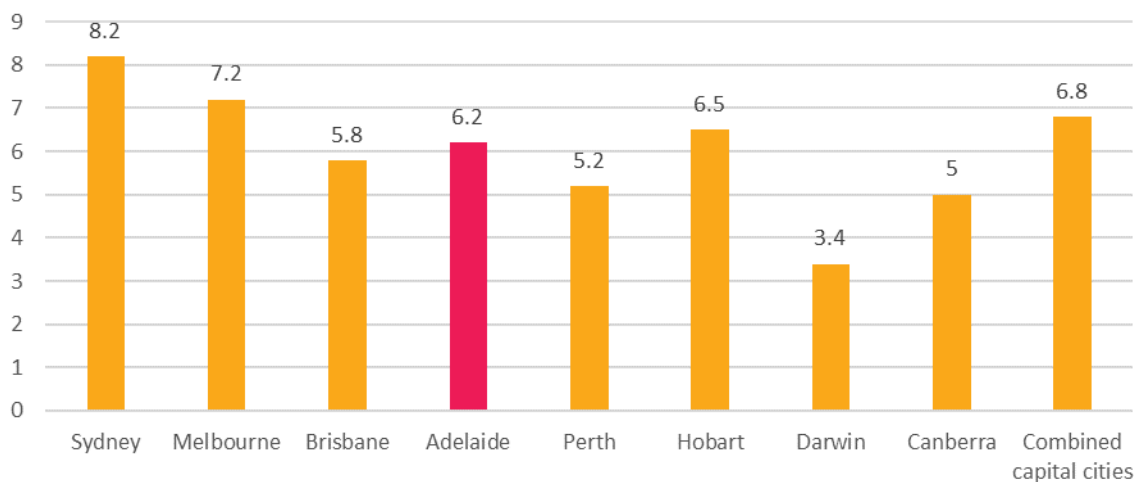


Source: Domain Rental Report June 2019 Quarter

Absolute housing costs are of limited usefulness without consideration of household incomes earned in jurisdictions. The most used measure of housing affordability is the ratio of dwelling values to household incomes (i.e. how many years of household income is required to cover the purchase price of a dwelling).

The ANZ-CoreLogic Housing Affordability Report highlights that at June 2019, Adelaide had the fourth highest dwelling value to income ratio in Australia (6.2), with average dwellings in Adelaide less affordable for households than in Brisbane (5.8), Perth (5.2), Canberra (5) and Darwin (3.4).

Figure 15: Dwelling value to income ratios by capital city, June 2019 quarter (ratio)



Source: ANZ-CoreLogic Housing Affordability Report

In regional areas South Australia's housing affordability remains nationally competitive, with dwelling value to income ratios the lowest in Australia (4.1).

Figure 16: Dwelling Value to Income Ratios by Region, Time Series, Dec 2018 (ratio)



Source: ANZ-CoreLogic Housing Affordability Report

Adelaide's housing affordability has not materially changed—either in absolute terms or in relative terms—in the last 15 years. Adelaide's dwelling value to income ratio has stayed just above 6, while its relative ranking among the capital cities of fourth highest value to income ratio is the same as it was in 2003 and more recently in 2013.

Table 7: Dwelling value to income ratios by capital city, December Quarter, 2003-18 (ratio)

	2003	2008	2013	2018
Sydney	8.2	6.4	7.4	8.5
Melbourne	6.1	6.2	6.8	7.6
Hobart	5.5	5.9	5.3	6.6
Adelaide	5.7	6.4	6.2	6.3
Brisbane	6.1	6.1	5.7	5.9
Perth	5.1	6.6	6.6	5.2
Canberra	5.1	4.9	4.7	5.2
Darwin	3.3	5.3	5.2	3.6

Source: ANZ-CoreLogic Housing Affordability Report (December quarter report is the most recent for time series.)

Crime

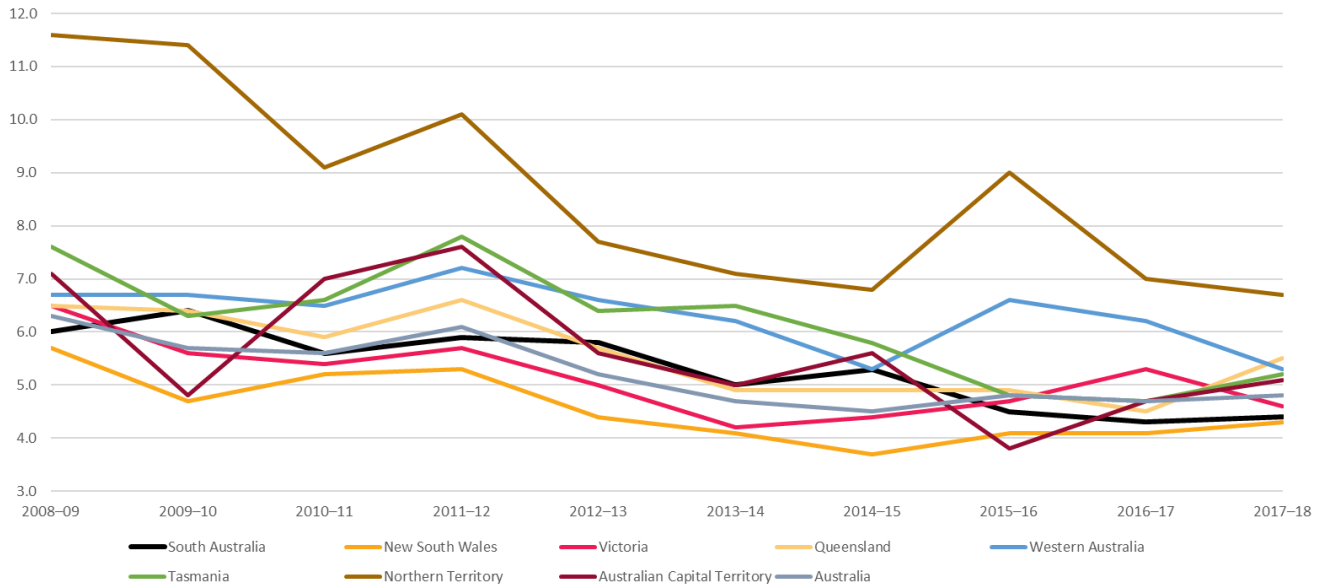
Australia and its major cities enjoy a relatively low crime rate by international standards. The United Nations Office on Drugs and Crime in its *2019 Global Study on Homicide* ranked Australia within the top 20 nations with the lowest homicide rate, at 0.8 per 100,000 persons.

The Australian Bureau of Statistics Multipurpose Household Survey is conducted each financial year throughout Australia and is designed to provide annual statistics for a number of small, self-contained topics, including crime victimisation. Victimisation rates aim to represent the prevalence of selected crimes in Australia and are expressed as a percentage of the total relevant population.

Analysis reveals that South Australia's victimisation rates (crimes per 100,000 people aged 15 years or over) are either in line with, or better than, the national average. Total assault victimisation rates in South Australia are currently the second lowest in Australia at 4.4 persons per 100,000 with New South Wales the lowest at 4.3 persons per 100,000.

Over the past decade South Australia’s assault victimisation rates have declined 27 percent, in line with the national decline of 24 per cent.

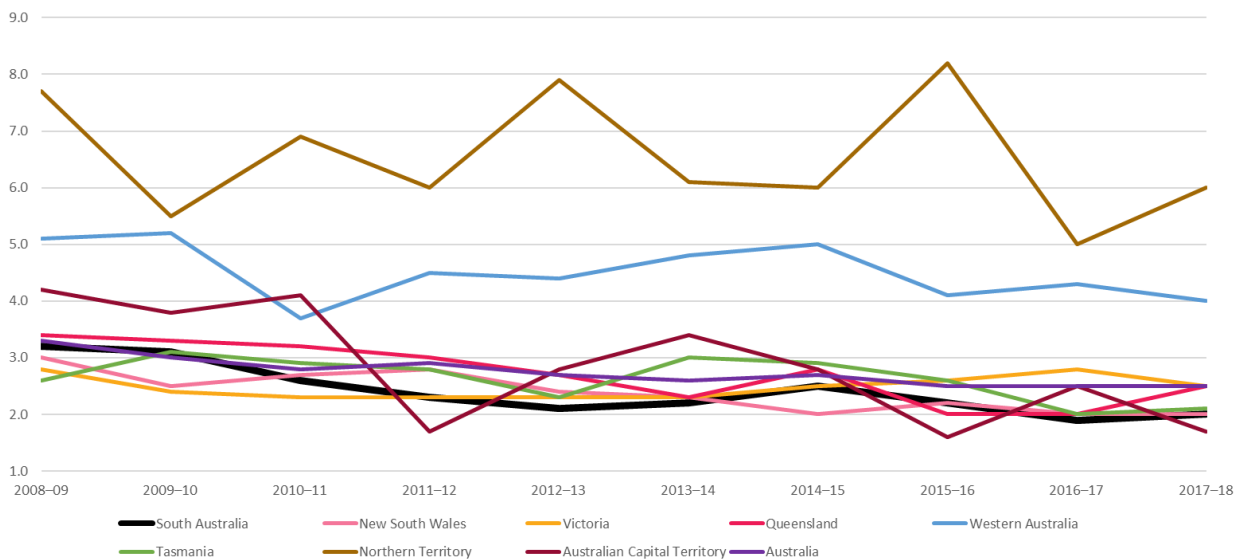
Figure 17: Crime victimisation rate: Assault (occurrences per 100,000 people), by capital city and Australia, 2008-09 to 2017-18



Source: ABS 4530.0

Household crimes reveal a similar position for the state. Victimization rates for break-ins in South Australia are currently the equal lowest in Australia with New South Wales at 2 persons per 100,000.

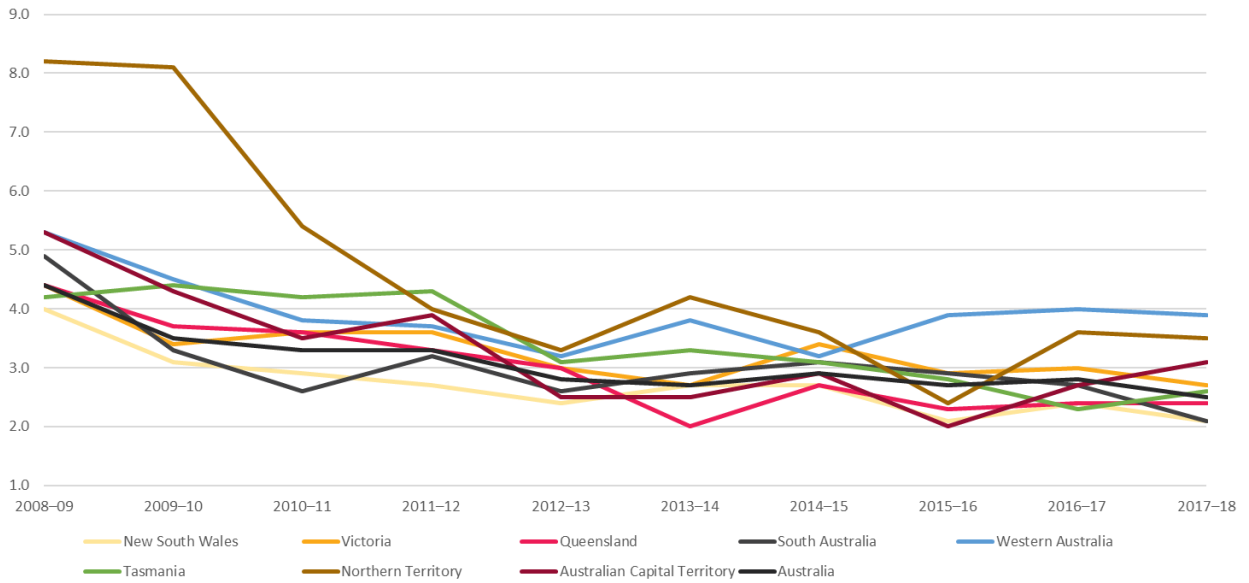
Figure 18: Crime victimisation rate: Break-in (occurrences per 100,000 people), by capital city and Australia, 2008-09 to 2017-18



Source: ABS 4530.0

Similarly, for crimes classified as ‘other theft’ South Australia and New South Wales share the equal lowest crime victimisation rates at 2.1 per 100,000 persons.

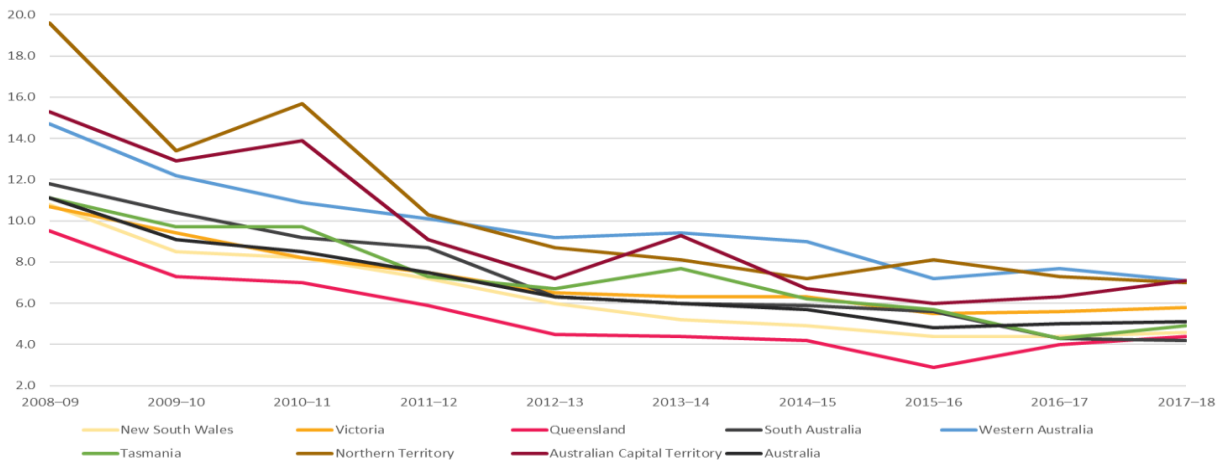
Figure 19: Crime victimisation rate: Other theft (occurrences per 100,000 people), by capital city and Australia, 2008-09 to 2017-18



Source: ABS 4530.0

Victimisation rates for malicious property damage in South Australia are currently the outright lowest in Australia at 4.2 per 100,000 persons.

Figure 20: Crime victimisation rate: Malicious property damage (occurrences per 100,000 people), by capital city and Australia, 2008-09 to 2017-18



Source: ABS 4530.0

According to ABS data on recorded offences, South Australia generally ranks below other states and territories. Among the 15 categories of offences, there are 10 for which South Australia ranks within the bottom half of states and territories. South Australia has the worst offender rate of all states and territories for recorded illicit drug offences.

Table 8: Recorded crime, offender rates (rate per 100,000 persons 10 years of age and over) by principal offence, 2017-18

Principal offence	SA offender rate	SA rank of 8 states and territories (1= lowest offender rate)
Fraud/deception	35.5	2
Offences against justice	98.3	4
Property damage and environmental pollution	82.9	4
Unlawful entry with intent	41.8	4
Robbery/extortion	13.9	4
Public order offences	570.6	5*
Abduction/harassment	14.7	5
Homicide and related offences	3.4	5
Dangerous/negligent acts	8.7	5
Acts intended to cause injury	437.9	6
Theft	228.4	6
Miscellaneous offences	94.4	6*
Sexual assault and related offences	56.8	7
Weapons/explosives offences	129.0	7
Illicit drug offences	1,037.9	8
Total	3,048.7	6*

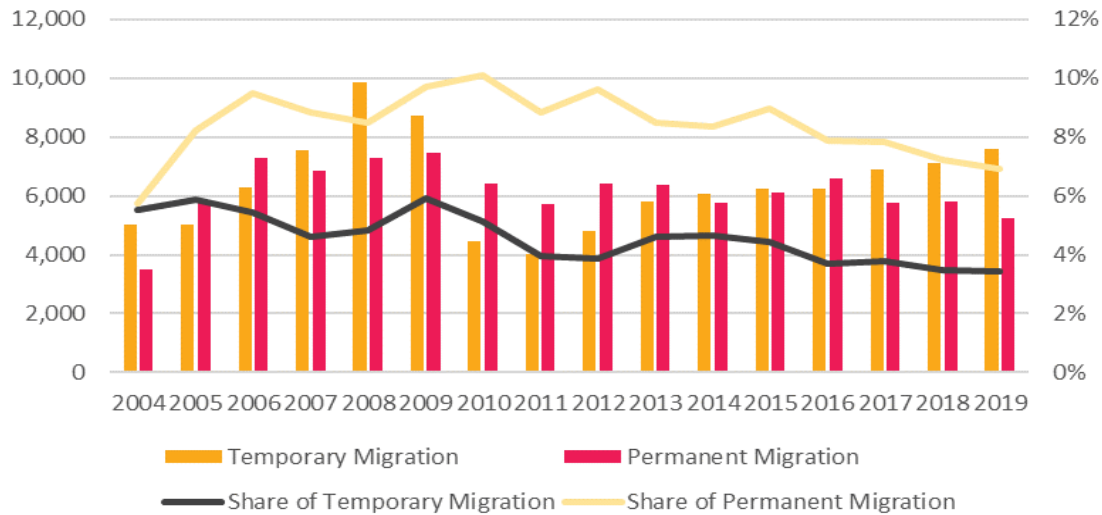
Source: ABS 4519.0

*Victorian data for this row not published - SA's rank in these rows is among 7 states and territories.

4. Labour market

Migration

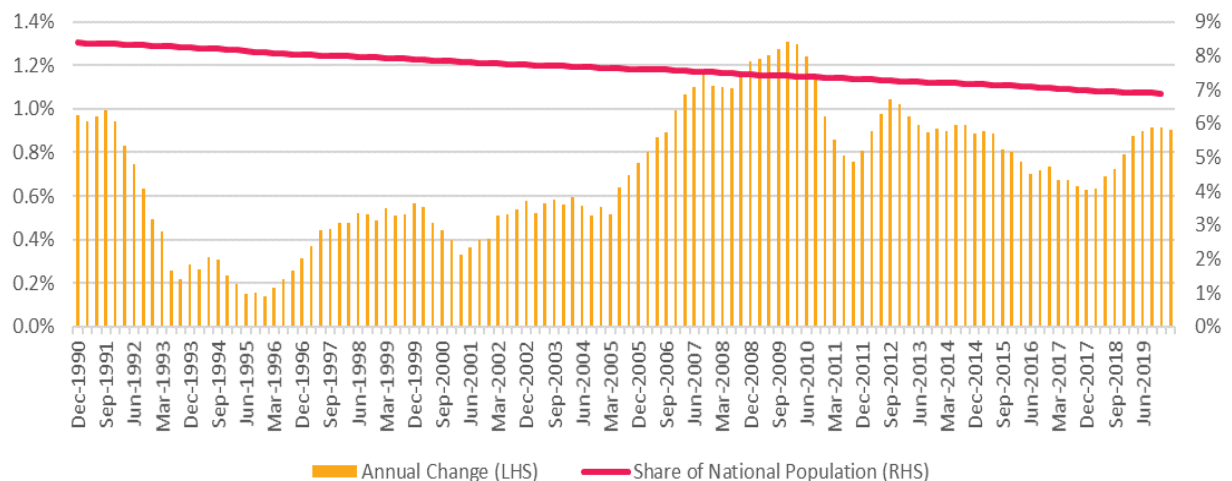
Figure 21: Net overseas migration and temporary migration, South Australia (no, % share of national) 2004 - 2019



Source: ABS 3412.0

South Australia’s share of net overseas migration has fluctuated between five and seven per cent of total Australian net overseas migration. South Australia receives a larger share of permanent migration, at around eight per cent, than temporary migration at under four per cent. The majority of South Australia’s permanent migration is comprised of skilled migrants.

Figure 22: Population Growth, South Australia and share of national (%), Dec 1990 – Dec 2019

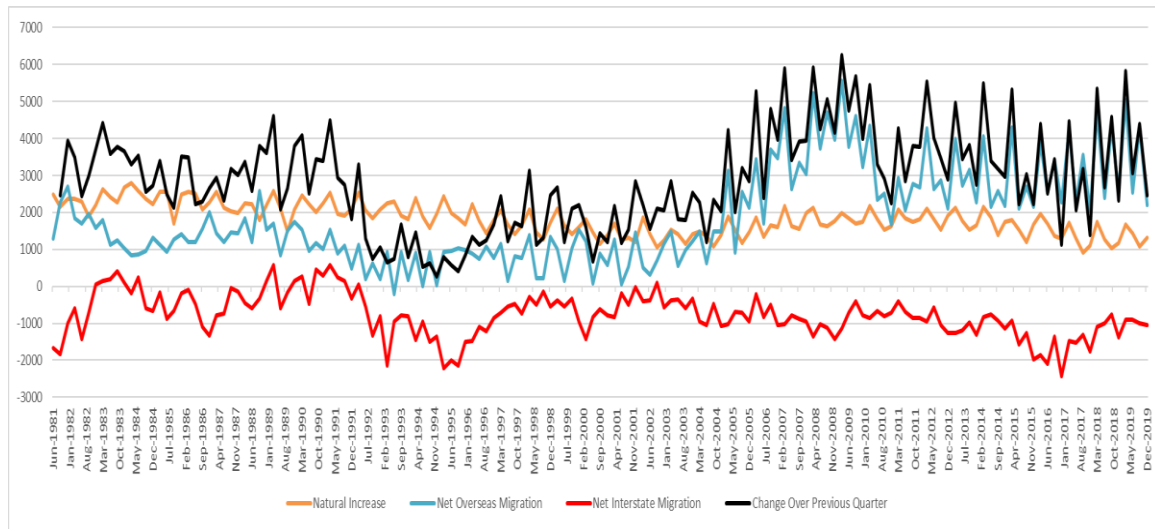


Source: ABS 3101.0

South Australia’s population growth has been lower than the rest of the country. As a result, South Australia’s share of Australia’s population has declined from 8.8 per cent in 1990, to 6.9 percent in 2018. Figure 23 breaks up the total population change into natural increase, net overseas migration and net interstate migration since June 1981. It shows the dominant source

of increase is from net overseas migration, with natural increase being partially offset by net interstate migration.

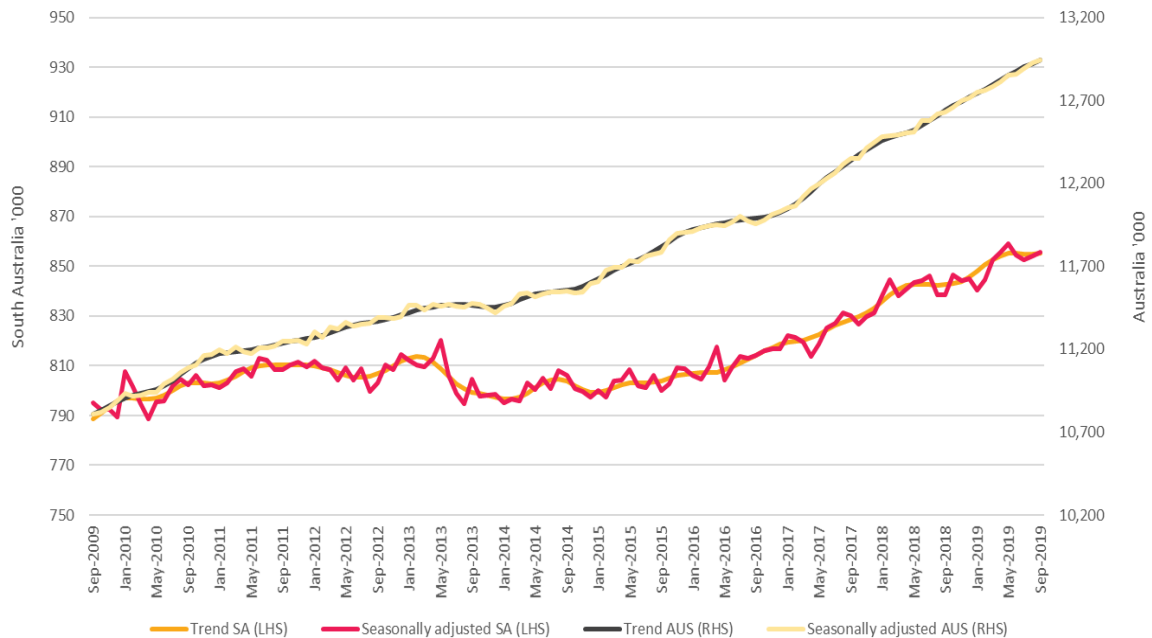
Figure 23: Population change in South Australia Jun 1981 – Dec 2019



Source: ABS 3101.0

Employment

Figure 24: Employment, South Australia and Australia, Sep 2009 – Sep 2019, ('000s)



Source: ABS 6202.0

The statistics and conclusions in this section come from the period before the pandemic and the resulting measures to contain it, which have had a large adverse impact on the labour market.

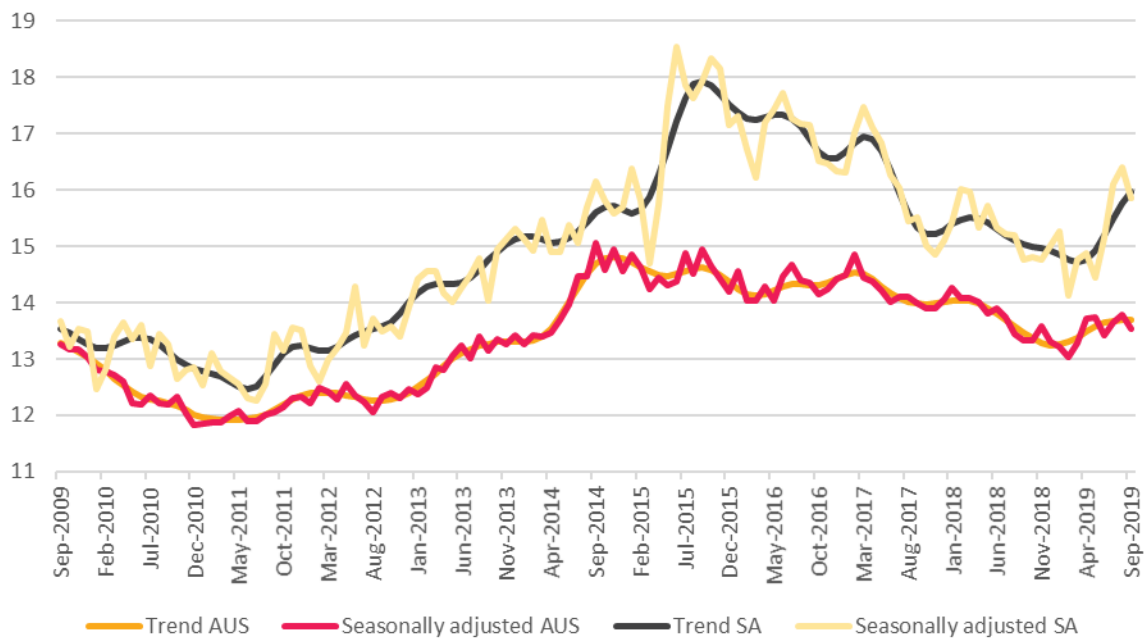
Over the decade to 2019 South Australian employment has been on an upward trend, as has Australia.

Whilst South Australian total employment has increased, this has mostly been due to an increase in part-time employment, and the rate of increase has been lower than that of Australia as a whole. A proportion of this part time employment is involuntary and has contributed to an increase in the under-utilisation rate.

The under-utilisation rate is an amalgam of underemployment and unemployment. It is the total percentage of the labour force that is underutilised. It is a measure of the potential for the labour force to absorb increased labour demand.

South Australia has historically had higher rates of under-utilised labour than the Australian average. This means that it would normally be expected that economic growth will take more time to feed through to the employment data as at least some of the extra labour force demand will be absorbed by under-utilised labour.

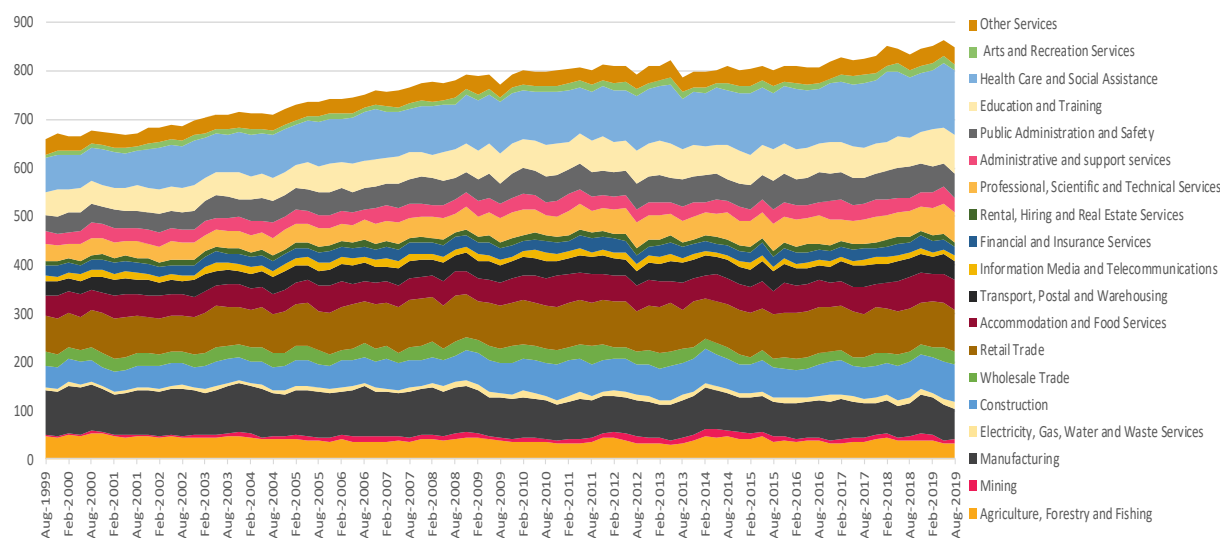
Figure 25: Under-utilisation rate (%), South Australia and Australia, Sept 2009 – Sept 2019



Source: ABS 6202.0

Employment by industry

Figure 26: Numbers of South Australian employees by industry, Aug 1999 – Aug 2019



Source: ABS 6291.0.55.003

Over the last twenty years, the distribution of South Australia’s work force across industries has changed. This reflects a fall in the relative size of manufacturing and above average growth in the service sector. The occupational mix has also changed as a result of changes in technology.

Job vacancies by skill level

Table 9: Trend index for vacancies by skill level, South Australia and Australia, (January 2006 = 100)

		Sep 2019	Aug 2019	Sep 2018
Overall	Australia	78.7	79.3	84.7
	South Australia	58.3	58.5	57.7
Skill level 1 – Bachelor degree or higher	Australia	103.7	104.2	108.1
	South Australia	101.3	102.5	90.8
Skill level 2 – Advanced Diploma or Diploma	Australia	109.2	109.2	118.0
	South Australia	79.1	80.2	85.9
Skill level 3 – Certificate IV or III	Australia	86.0	86.2	93.9
	South Australia	59.4	59.6	62.2
Skill level 4 – Certificate II or III	Australia	72.1	72.8	78.7
	South Australia	52.9	52.8	52.8
Skill level 5 – Certificate I or secondary education	Australia	37.7	38.0	43.5
	South Australia	28.1	28.2	29.8

Source: Australian Government, Labour Market Information Portal, internet vacancy index, <https://lmip.gov.au/>

The internet vacancies index by skill level classifies skill levels of occupations by the level of educational attainment/experience associated with each occupation. January 2006 is assigned an index of 100.

Vacancies are a leading indicator of labour market conditions.

Prior to the pandemic and its impact on the South Australian and national labour market, the data indicated overall decreases in job advertisements (i.e. in vacancies) in Australia but not

much change in South Australia over the period 2018-19. Of concern for South Australia, was that advertisements for three out of five skill levels decreased. The exceptions were Certificate II or III (which has only changed slightly) and Bachelor degree or higher advertisements, which showed a large improvement from September 2018 to August 2019 and then a slight decrease in the following month).

Duration of unemployment

The data, which was analysed prior to the pandemic and its impact on South Australia's and the national labour market, showed that unemployed persons in South Australia faced a longer average search for employment than the Australian average and this was even longer in particular areas of the state such as the northern suburbs and non-metropolitan areas. The average duration of job search in South Australia has been increasing whilst for Australia it has been decreasing (see Table 10).

Table 10: Average duration of job search activity for unemployed persons (weeks)

	Sep 2019	Aug 2019	Sep 2018	Annual change (%)
Australia	50.7	48.3	51.0	-0.7
New South Wales	48.1	52.5	62.3	-22.8
Victoria	39.9	45.9	35.0	13.9
Queensland	57.0	49.9	54.5	4.5
South Australia	65.3	46.1	61.3	6.5
Greater Adelaide	64.1	45.6	58.4	9.7
Adelaide - Central and Hills	62.0	48.2	31.8	95.0
Adelaide – North	71.9	37.6	70.1	2.5
Adelaide – South	55.4	40.7	58.0	-4.4
Adelaide – West	58.3	67.8	65.7	-11.2
Rest of SA	69.2	48.4	72.1	-3.9
Barossa - Yorke - Mid North	74.3	54.2	58.5	27.0
South Australia – Outback	62.5	37.1	140.7	-55.6
South Australia - South East	69.6	51.6	66.0	5.4
Western Australia	56.9	45.0	44.8	27.0
Tasmania	46.0	49.7	62.5	-26.4
Northern Territory	61.6	44.6	36.0	70.8
Australian Capital Territory	39.4	26.0	39.3	0.1

Source: ABS 6291.0.55.001

South Australia also has a higher incidence of long-term unemployment amongst the unemployed. This suggests a lower degree of labour mobility and higher levels of structural unemployment in South Australia.

Table 11: Proportion of unemployed who are long-term unemployed (52 weeks or more) (%)

	Sep 2019 (%)	Aug 2019 (%)	Sep 2018 (%)
Australia	23.93	23.93	25.13
New South Wales	20.87	22.13	29.67
Victoria	16.40	20.92	16.81
Queensland	27.55	27.89	28.61
South Australia	31.12	24.15	27.45
Greater Adelaide	30.35	23.61	24.93
Adelaide - Central and Hills	31.91	27.74	21.77
Adelaide - North	35.62	21.83	30.30
Adelaide - South	22.67	13.25	16.03
Adelaide - West	26.02	34.71	29.10
Rest of SA	33.65	26.24	36.91
Barossa - Yorke - Mid North	32.95	34.36	39.20
South Australia - Outback	39.01	19.51	69.94
South Australia - South East	30.04	23.12	27.54
Western Australia	25.36	26.54	24.77
Tasmania	20.20	23.80	21.76
Northern Territory	44.08	39.00	20.75
Australian Capital Territory	12.89	7.93	17.73

Source: ABS 6291.0.55.001

Earnings

South Australian private sector labour incomes are below those of most other states and territories, and 11.8 per cent lower than the Australian average.

Part of these differences is driven by lower hours worked and lower pay rates. An average South Australian private sector employee was paid for 30.5 hours per week, compared to the national average of 31.4 hours. In addition, South Australian hourly pay rates are 6.9 per cent below the Australian average with the highest difference being for the 35 to 44 years age group.

These differences in hourly wage rates in turn largely reflect a combination of differences in industry and occupational mix of the South Australian workforce compared to other states, and differences in the average skill level of South Australian workers.

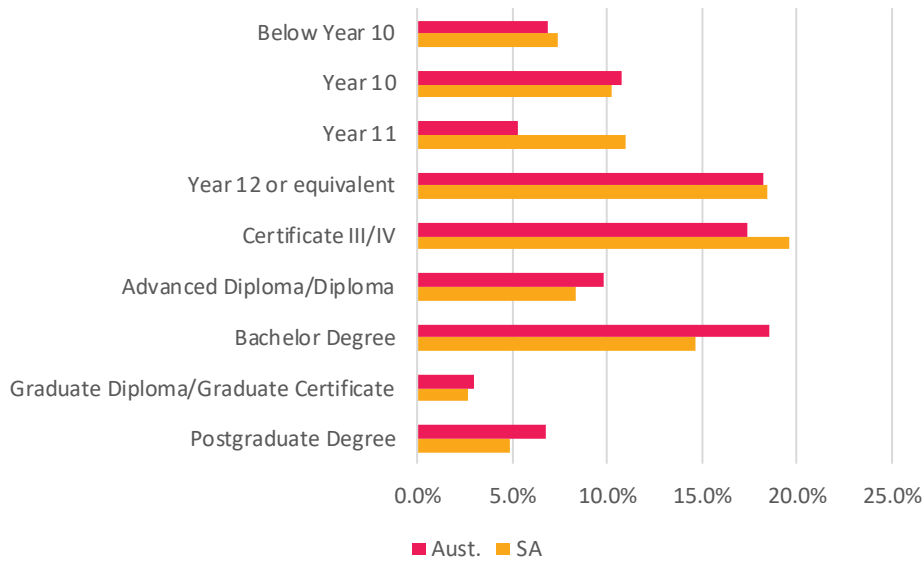
Table 12: Average hours paid for and hourly labour costs by state and Australia, by age group, May 2018

	17 years and under	18 to 20 years	21 to 24 years	25 to 34 years	35 to 44 years	45 to 54 years	55 to 64 years	65 years and over	All ages
AVERAGE WEEKLY TOTAL HOURS PAID FOR (hours)									
New South Wales	13.1	23.9	28.2	32.6	32.8	32.4	32.7	25.5	31.1
Victoria	11.1	19.3	27.7	33.4	32.4	33.3	32.1	24.5	31.1
Queensland	12	25.5	31.6	33.1	33.8	34	33.1	27.3	32
South Australia	8.2	20.8	28	32.7	31.1	32.7	32.8	29	30.6
Western Australia	12.1	24.1	27.6	34.8	34	33.4	33.3	28.4	32
Tasmania	11.3	22.9	29.9	30.8	30.8	31.9	32.5	24	30.1
Northern Territory	12.9	27.4	32.2	33.4	35.1	36.5	35.4	33.8	33.9
ACT	8.8	18.4	23.7	33.4	33.4	34.3	32.7	24.6	31.6
Australia	11.9	23	28.7	33.1	32.9	33.1	32.7	26.1	31.4
AVERAGE HOURLY TOTAL CASH EARNINGS (\$)									
New South Wales	14.7	21.6	28.9	37.8	45.4	43	41.5	37.8	39.5
Victoria	14.6	20.1	28	36.1	42.9	42.7	41.5	37.5	38.6
Queensland	15.1	21.9	28.5	35.3	42	43.5	41.6	39.2	38
South Australia	14.7	21.3	28	33.8	38.6	41	39.2	37.4	36.4
Western Australia	13.8	21.2	28.6	40	45.8	48.3	44.8	41.9	41.9
Tasmania	16.5	20.8	28.2	32.7	36.6	38	37.5	39.1	34.7
Northern Territory	16.2	23.3	29.1	38.8	45.6	46.2	44.6	42	41.5
ACT	15.6	23.5	28.9	39.4	52.5	53.5	50.3	41.2	45.7
Australia	14.7	21.3	28.5	36.8	43.8	43.6	41.8	38.5	39.1
Percentage difference	0	0	-1.8	-8.2	-11.9	-6.0	-6.2	-2.9	-6.9

Source: ABS 6306.0

Labour force education levels

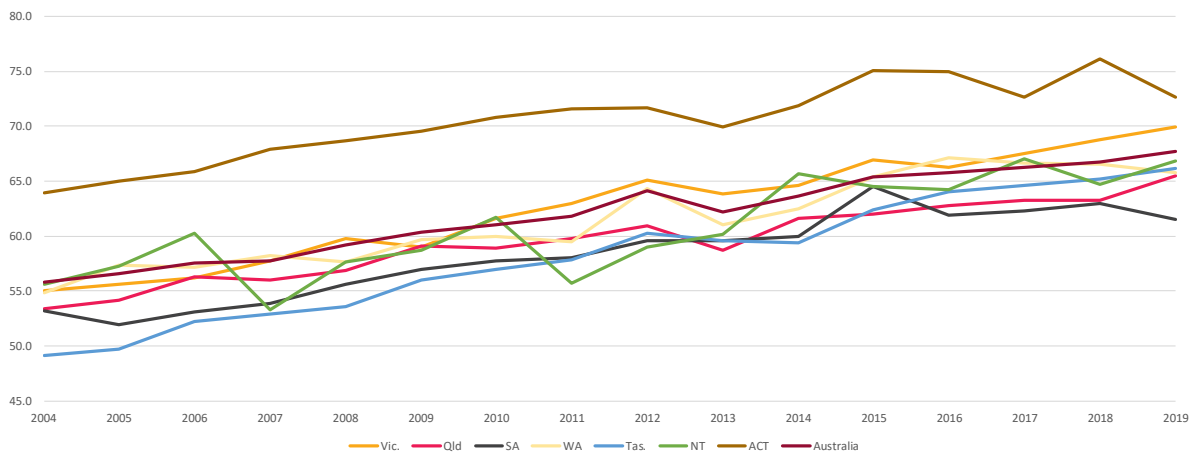
Figure 27: South Australia and Australia, highest educational attainment by type, persons aged 15-74years, May 2019 (%)



Source: ABS 6227.0

South Australia has a lower proportion of Bachelor degree attainment (or higher) than the rest of Australia. SA also has double the national proportion of persons aged 15-74 years whose highest educational attainment is the completion of Year 11 (we have not attempted to determine the extent that this is due to demographics).

Figure 28: Proportion of the population aged 20-64 years with a non-school qualification (%), 2004 to 2019



Source: ABS 6227.0

The proportion of the South Australian population aged 20 to 64 years with a non-school qualification has been on a steady upwards trend until dipping in 2019. This upwards trend was not sufficient to address the relatively lower qualification levels of the South Australian population aged 20 to 64 years, as other states have increased their qualification levels at a faster pace.

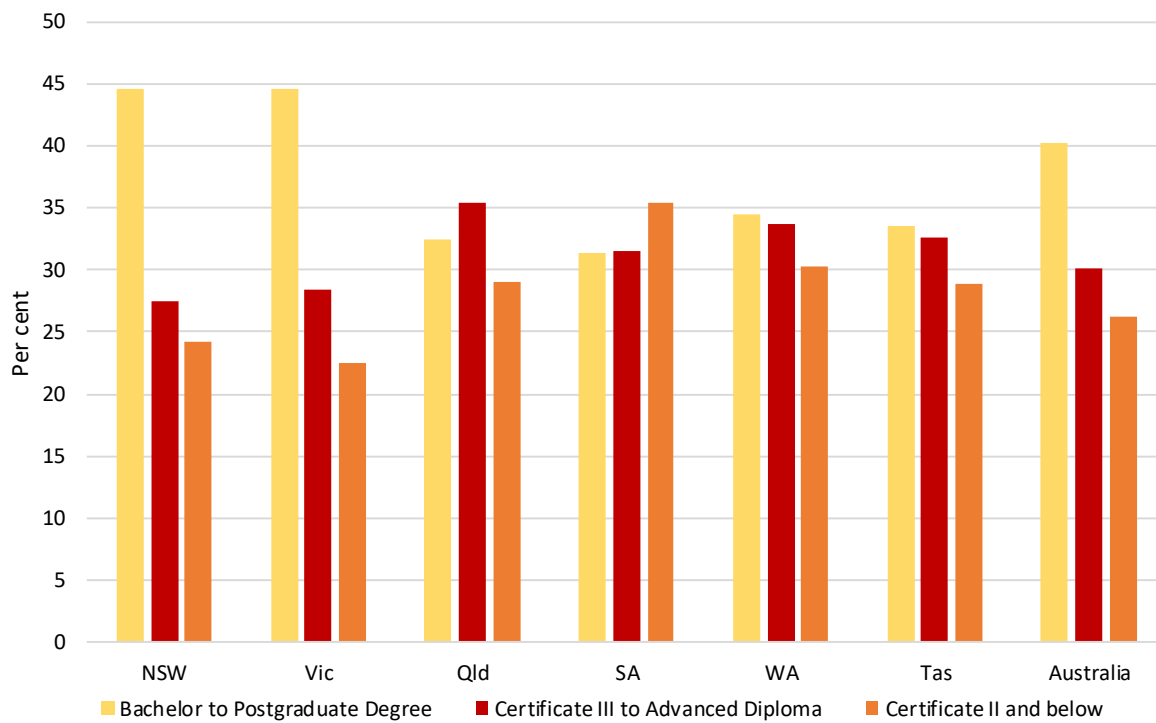
Part of this difference in education levels is due to population composition. South Australia has an older population and older populations on average have lower education levels. It also reflects the relatively high net interstate migration out of South Australia, a pattern that is particularly evident amongst relatively younger, relatively more qualified persons.

Age structure and qualifications

The educational attainment of the younger adult cohort in South Australia is quite low compared to other states and territories. For instance, 31 per cent of South Australians aged 25 to 44 years in May 2019 reported a highest level of educational attainment equal to a Bachelor degree or higher, which was well below the average of 40 per cent for Australia. Indeed, South Australia recorded a lower share of persons aged 25 to 44 years with a Bachelor degree or higher qualification, compared to any other state (See Figure 29).

A similar but much less severe pattern is evident for young adults. An estimated 8.9 per cent of persons in South Australia aged 15 to 24 years in May 2019 had a Bachelor degree or higher qualification compared to almost 12 per cent of the corresponding Australian cohort. The much larger gap for the 25 to 44-year-old cohort suggests that significant numbers of young people in South Australia move interstate soon after they graduate, leading to a loss in human capital.

Figure 29: Proportion of persons aged 25 to 44 years by level of highest educational attainment, by state and Australia, May 2019 (%)



Note: The results should be interpreted with a degree of caution as they are, in some instances, derived from estimates with relatively high standard errors.

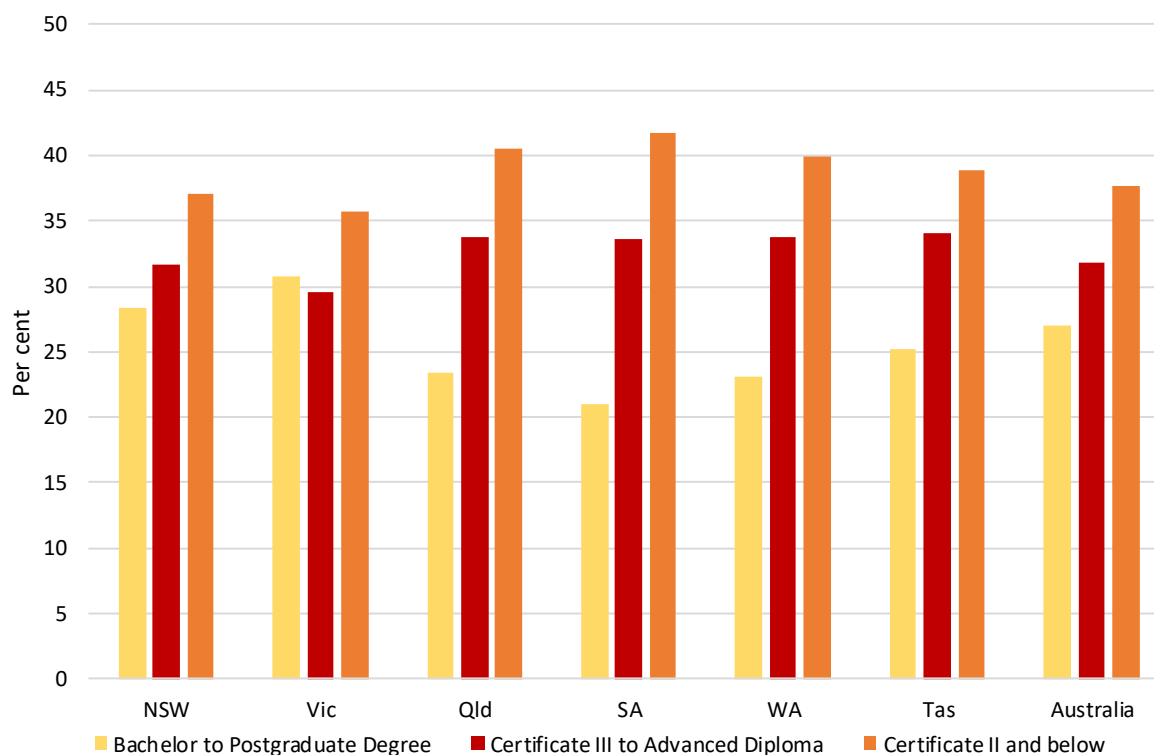
Certificate II and below includes Secondary Education – Years 10 and above.

Source: ABS, Education and Work, Australia (May 2019), Cat. No. 6227.0, TableBuilder.

The lower level of educational attainment among the South Australian population also extends to older age groups. Almost 42 per cent of persons aged 45 to 64 years in South Australia in May 2019 had a highest qualification level equivalent to Certificate II or lower, compared to

approximately 38 per cent for the corresponding Australian cohort. The proportion of this age group with a Certificate II or lower qualification was higher for South Australia than any other state or territory. Those states with the next highest proportions at that level included Queensland (40 per cent), Western Australia (40 per cent), and Tasmania (39 per cent).

Figure 30: Proportion of persons aged 45 to 64 years by level of highest educational attainment, by state and Australia, May 2019 (%)



Note: The results should be interpreted with a degree of caution as they are, in some instances, derived from estimates with relatively high standard errors.

Certificate II and below includes Secondary Education – Years 10 and above.

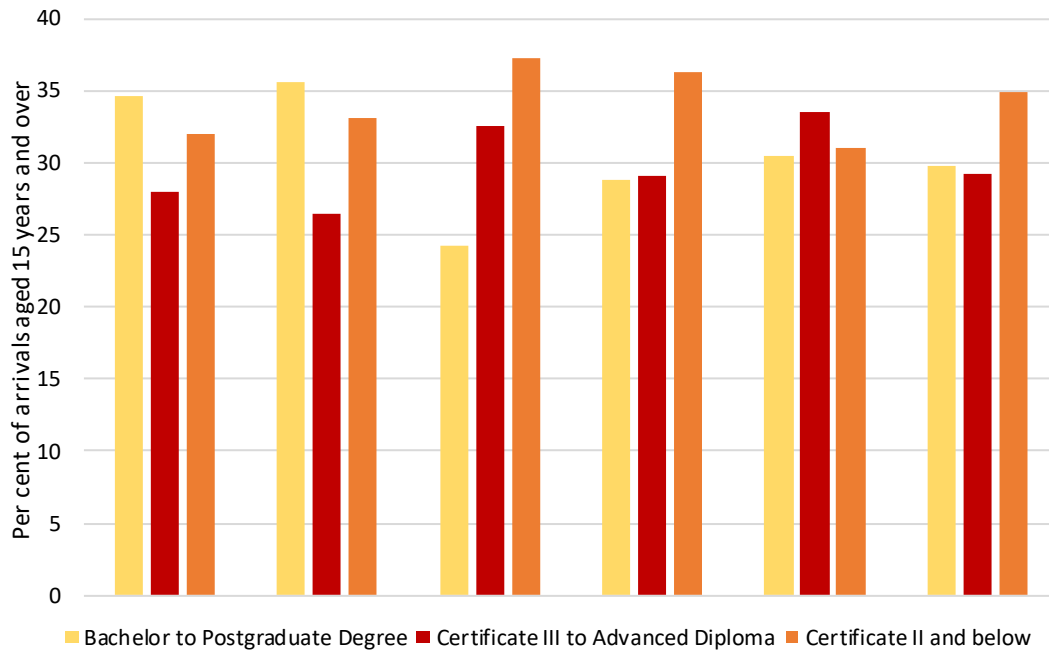
Source: ABS, Education and Work, Australia (May 2019), Cat. No. 6227.0, TableBuilder.

Interstate migration by qualifications

The relatively lower qualification levels of the South Australian population are partly explained by interstate migration movements which tend to lead to a loss of more highly qualified people. This pattern is shown in Figures 31 and 32 which show, respectively, interstate migration arrivals and departures by highest educational attainment during the last inter-census period.

Among the states, South Australia had the second lowest share of interstate arrivals between 2011 and 2016 with a Bachelor degree or higher qualification (29 per cent of interstate arrivals aged 15 years or over), with only Queensland recording a lower share (24 per cent). Victoria (36 per cent) and New South Wales (35 per cent) recorded the highest shares of interstate arrivals with a Bachelor degree or higher, while Western Australia (31 per cent) and Tasmania (30 per cent) had slightly higher shares compared to South Australia. South Australia also had a relatively high share of interstate arrivals with the lower qualifications equivalent to Certificate II or below (36 per cent).

Figure 31: Interstate arrivals in South Australia by level of highest educational attainment, 2011 to 2016, Persons aged 15 years and over

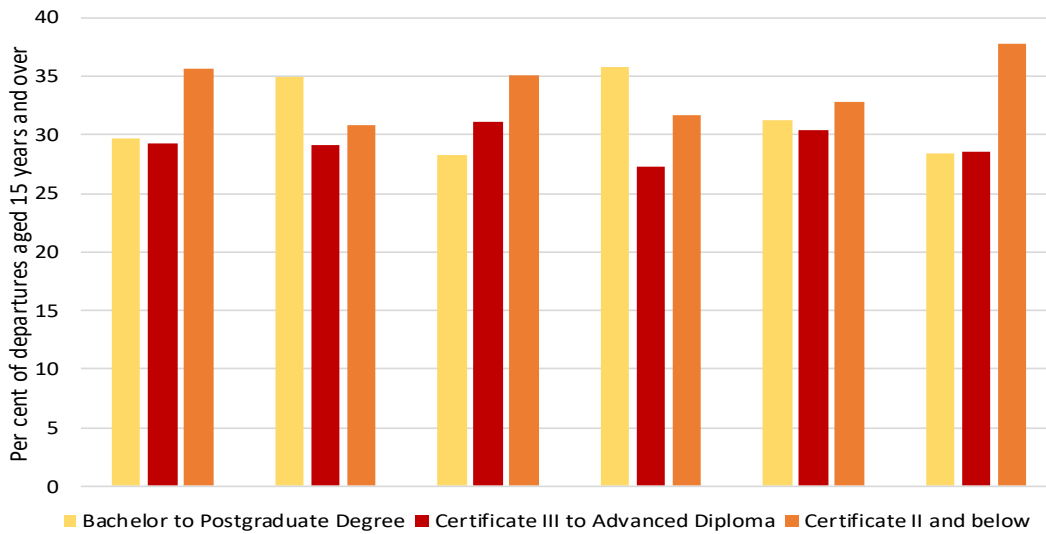


Note: Certificate II and below includes Secondary Education – Years 10 and above.

Source: ABS, Census of Population and Housing (2016), TableBuilder.

The erosion of qualifications for South Australia has been compounded by highly qualified people migrating to other parts of Australia. In terms of interstate departures between 2011 and 2016, South Australia had the highest share with an educational attainment of a Bachelor degree or higher (36 per cent) compared to any other state. The corresponding share for Victoria was also relatively high, while the share of departures with a Bachelor degree or higher was quite low for Queensland and Tasmania (28 per cent respectively).

Figure 32: Interstate departures from South Australia by highest educational attainment, 2011 to 2016, Persons aged 15 years and over



Note: Certificate II and below includes Secondary Education – Years 10 and above.

Source: ABS, Census of Population and Housing (2016), TableBuilder

Overseas migration by qualifications and age

Overseas migration movements also contribute to the pattern of relatively lower education levels for South Australia compared to other states, although to a lesser degree compared to interstate migration movements. Table 13 shows the highest qualification and age profile of permanent migrants to Australia by state, based on the Australian Census and Migrants Integrated Dataset (ACMID), which captures people who migrated to Australia between 1 January 2000 and 9 August 2016 under a permanent Skill, Family, Humanitarian and Other Permanent visa.

A moderately lower share of people who migrated to South Australia during the period covered by ACMID had a highest educational attainment equal to a Bachelor degree or higher compared to the national average (40 per cent versus 44 per cent). South Australia is similar to most other states as migrants to Queensland had an equivalent proportion with a Bachelor degree or higher (40 per cent), while permanent migrants to Western Australia (38 per cent) and Tasmania (39 per cent) reported a relatively lower share with such qualifications. The relatively higher figure for Australia reflects that people who migrated to New South Wales (48 per cent) and Victoria (45 per cent) were much more likely to have a highest qualification of at least a Bachelor degree compared to the other states.

Other features of overseas migrants in respect of their qualifications and age include:

- The proportion of overseas migrants in South Australia with a highest educational attainment that ranged from a Certificate II to Advanced Diploma was equivalent to the national average (20 per cent).
- All age groups for migrants in South Australia had a lower share with a Bachelor degree or higher compared to the corresponding national age cohorts.
- In terms of the age profile of these migrants, a relatively larger proportion of migrants for South Australia than Australia as a whole were aged 15 to 24 years (17 per cent).

compared to 13 per cent), while a relatively smaller share were aged 25 to 44 years (59 per cent compared to 62 per cent).

Table 13: Permanent migrants to Australia by highest educational attainment and age, 2000 to 2016^(a), Proportion of total persons in age group (%)

	Bachelor degree and higher	Cert. III to Advanced Diploma and Diploma	Cert. II and below ^(b)
New South Wales			
15-24 years	9.7	10.3	75.6
25-44 years	58.5	17.2	19.7
45-64 years	39.1	19.8	32.8
65 years & over	22.5	13.3	47.8
Total ^(c)	47.6	16.8	29.8
Victoria			
15-24 years	9.8	10.9	74.4
25-44 years	55.5	19.5	19.9
45-64 years	38.1	22.5	30.8
65 years & over	21.9	13.9	46.2
Total ^(c)	45.1	18.8	30.0
Queensland			
15-24 years	8.2	14.5	73.0
25-44 years	51.1	23.9	20.4
45-64 years	37.4	30.7	25.4
65 years & over	20.1	21.3	44.6
Total ^(c)	40.3	24.0	30.4
South Australia			
15-24 years	6.4	11.2	77.3
25-44 years	53.3	20.4	20.4
45-64 years	34.7	28.2	26.8
65 years & over	19.3	17.0	41.9
Total ^(c)	40.4	20.4	32.0
Western Australia			
15-24 years	8.3	14.2	73.6
25-44 years	49.0	26.6	19.9
45-64 years	33.7	34.2	26.1
65 years & over	17.8	20.9	46.4
Total ^(c)	37.8	26.2	30.9
Tasmania			
15-24 years	5.9	7.9	79.1
25-44 years	50.3	18.8	23.4
45-64 years	38.2	25.0	23.3
65 years & over	20.2	19.4	33.6
Total ^(c)	38.8	18.7	32.7
Australia			
15-24 years	9.0	11.9	74.7
25-44 years	55.1	20.3	19.8
45-64 years	37.6	25.3	29.3
65 years & over	21.5	15.9	46.2
Total ^(c)	44.0	20.0	30.1

Note: (a) Migration between 1 January 2000 and 9 August 2016 under a permanent Skill, Family, Humanitarian and Other Permanent stream visa. (b) Certificate II and below includes Secondary Education – Years 10 and above.

(c) Total includes inadequately described, no educational attainment, and not stated. Excludes persons aged 0 to 14 years.

Source: ABS, Australian Census and Migrants (20160, Cat. No. 3417.0.55.001, TableBuilder).

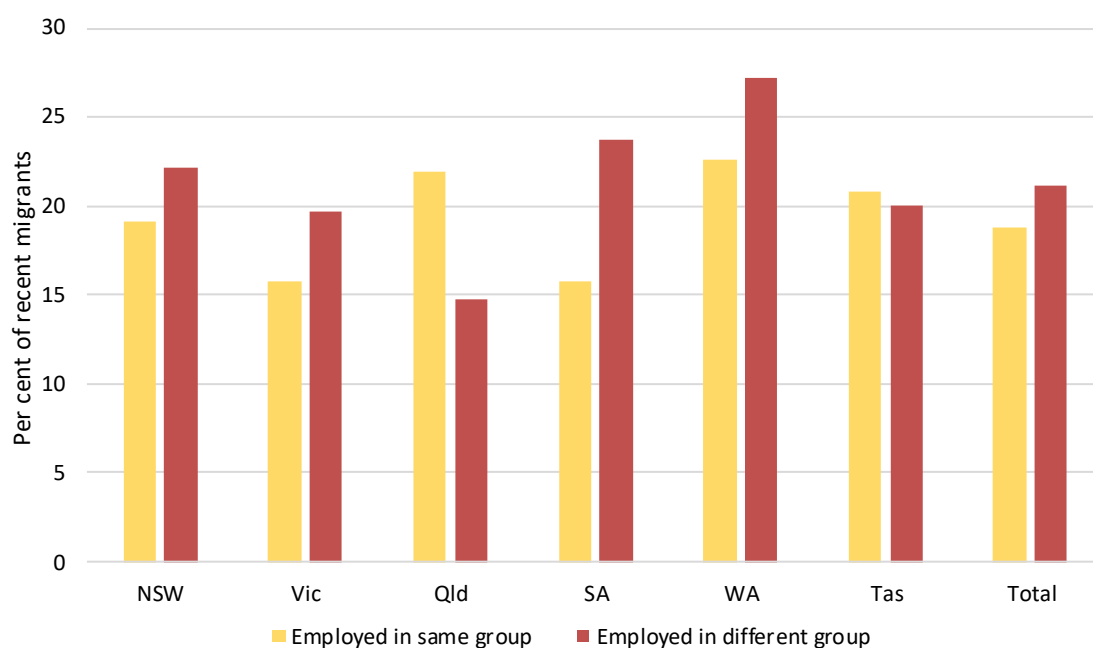
Under-utilisation of skills by overseas migrants and temporary residents

Beyond differences in the education level of migrants, the skills of migrants may also go under-utilised, which would in turn indicate that the local economy is unable to fully use their human capital. One imperfect measure of such under-utilisation is the extent to which recent overseas migrants have been able to find employment in the same occupation group compared to their previous employment prior to their arrival in Australia.

The results of the 2016 Characteristics of Recent Migrants Survey, which was conducted by the ABS as a supplement to the Labour Force Survey, suggest that the skills of overseas migrants and temporary residents are somewhat more likely to be under-utilised in South Australia (referred to as 'recent migrants' as a whole in the remainder of this section).³⁴ The survey indicates that 16 per cent of recent migrants to South Australia were employed in the same occupation group as their main job just prior to arrival in Australia, which was slightly below the national average of 19 per cent (see Figure 33).

Although recent overseas migrants to South Australia were less likely to be able to find employment in the same occupation group compared to their interstate counterparts, they were able to find employment in other occupations, with the total share in employment broadly similar to the other jurisdictions. An important unknown factor here is the extent to which migrants were employed in an alternative occupation group because they were unable to find local employment in their preferred occupation, as opposed to an actual shift to their preferred occupation (e.g. after completion of studies).

Figure 33: Recent migrants and temporary residents employed in the same occupation group in Australia as just before their arrival in Australia (%), by state



³⁴ This survey focuses on recent migrants and temporary residents who arrived after 2006 and is not directly comparable to the Australian Census and Migrants Integrated Dataset analysed previously.

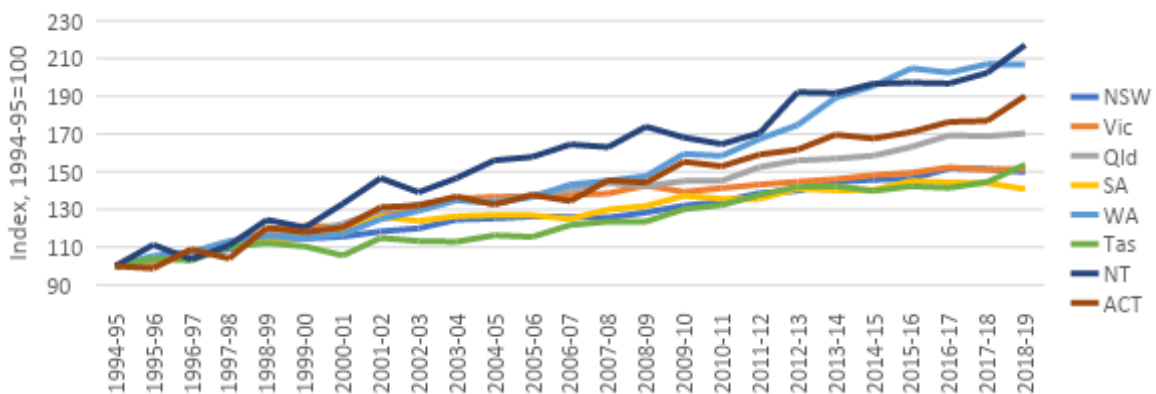
Note: These figure only report those in employment, and therefore do not add up to 100 per cent.

Source: ABS, Microdata: Characteristics of Recent Migrants, Australia (November 2016), Cat. No. 6250.0.25.002. TableBuilder.

Labour productivity

The overall efficiency with which labour is used in an economy is measured by labour productivity. This can be difficult to compare across regions as it is influenced by the capital stock of a region, and its industry structure. For this reason, the ABS publishes estimates as an index as this supports a focus on relative trends over time rather than levels. South Australia had around average growth in its labour productivity up to 2000-01. After this date its growth rate slowed to below the national average, and total growth in labour productivity over the 24 years of data was lower in South Australia than in any other state or territory.

Figure 34: Index of labour productivity, Australian states and territories, 1994-95 to 2018-19



Source: ABS, , *Estimates of Industry Multifactor Productivity, Australia (2019)*, cat. no. 5260.0.55.002

According to Dean Parham’s research commissioned by the South Australian Productivity Commission, South Australia’s labour productivity (LP) growth has been relatively weak since the early 2000s.³⁵ The state showed a reduction in its use of labour over the period 2010 -19, whereas most other jurisdictions increased their use of labour. With ongoing capital growth and a cutback in labour, South Australia has had much stronger capital deepening than NSW and Victoria. While LP growth in those two states was based on multifactor productivity growth; LP growth in the state was based on capital deepening.

The same research also shows that the stagnation in South Australia’s productivity has been mainly due to labour productivity. The state has had comparatively weak LP growth since the early 2000s. The state’s LP growth has been even weaker than the national rate in recent years: 0.99 per cent versus 1.66 per cent annually between 2011-12 and 2017-18. South Australia has had negative LP growth in the last three years. There has not been the same clear fall in annual capital deepening, although capital shallowing has been evident in the last few years. From 2011-12 to 2017-18, healthcare, transport and to a lesser extent manufacturing detracted from the state’s LP growth. The main contributors to growth were finance and wholesale trade industries.

³⁵ D. Parham, *A data driven investigation of South Australia’s Productivity Performance*, SAPC Research Discussion paper No 1 (September 2020).

5. Economic Infrastructure

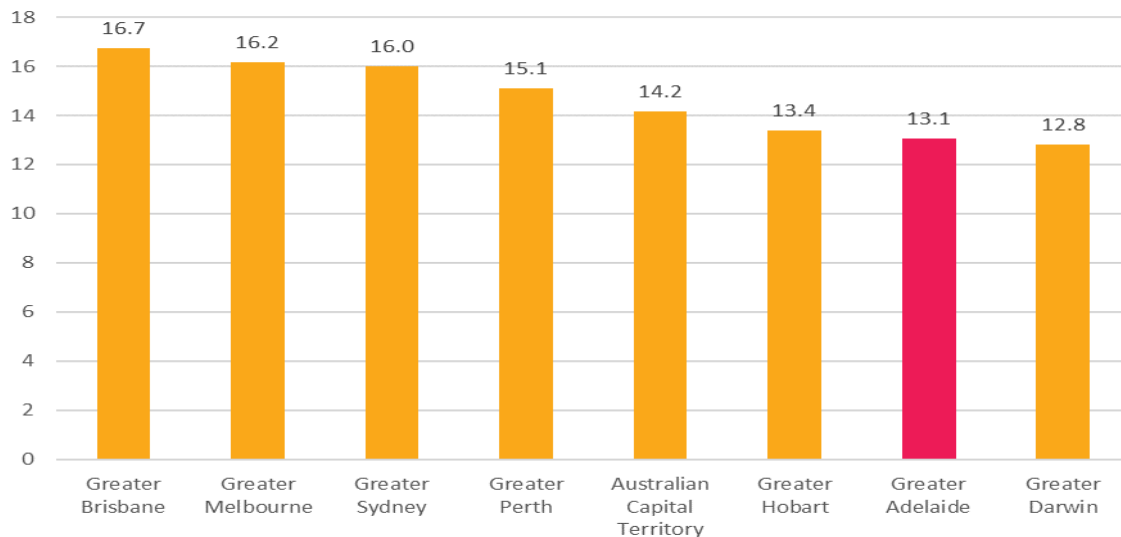
Road infrastructure

Commuting times

Average commute times, and how they change over time, are a key measure of the capacity of road infrastructure to accommodate transport service needs. Beyond quality of life issues for commuters, commute times have a direct bearing on the productivity of certain sectors, such as road freight, couriers, and businesses that rely on just-in-time inventory management systems.

Census data reveals employees working in the Greater Adelaide area have the second shortest average commute *distance* to work in Australia at 13.1 km.

Figure 35: Commuting distance to place of work (average km) by Greater Capital City Statistical Area, 2016



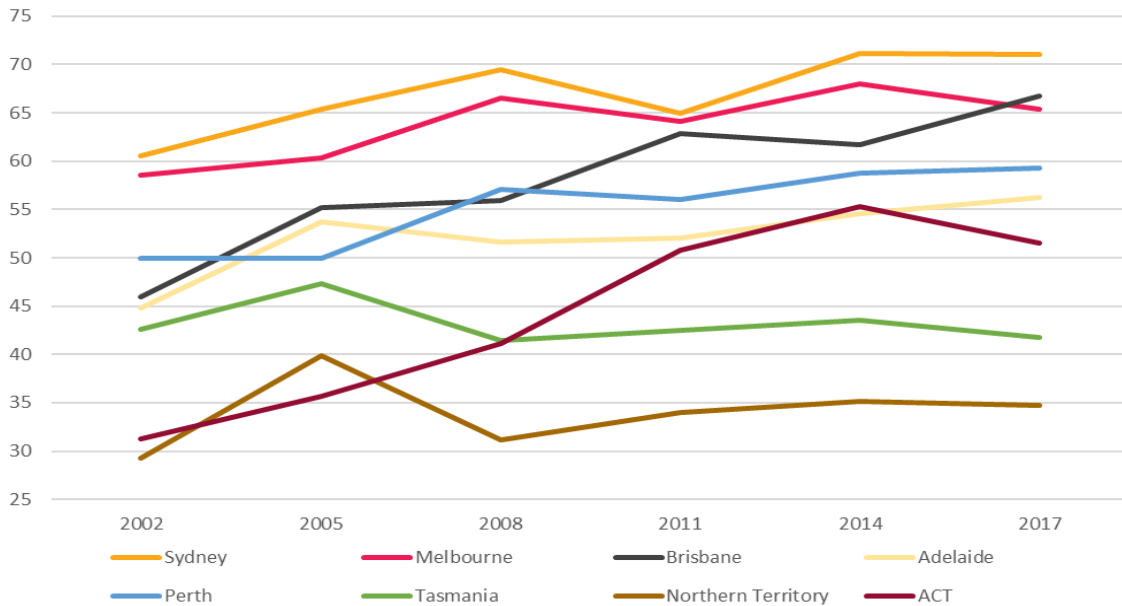
Source: ABS 2071.0.55.001

That said, longitudinal analysis of average commuting times to work from the Household, Income and Labour Dynamics in Australia (HILDA) Survey shows that Adelaide employees are ranked in the middle of the country with an average two-way commute time of 56.3 minutes in 2017, indicating slower than average commuting speeds are offsetting the shorter distance to be travelled.

The average two-way commute time increased from 44.8 minutes in 2002 to 56.3 minutes in 2017. This 25.8 per cent increase in Adelaide commuting times since 2002 is one the highest increases in the nation over this period (aside from Brisbane at 44.8 per cent and Canberra at 64.5 per cent) and is above the mainland capital city average of 19.5 per cent.

This data indicates that Adelaide's relative advantage over other capital cities of shorter average commuting to work times for employees is declining.

Figure 36: Mean daily commuting times of employed persons, by location, 2002 to 2017 (minutes)



Source: HILDA Statistical Report 2019

Construction cost trends

Price trends for construction of physical infrastructure provides insight into the competitiveness of the local construction sector. In addition, divergences in price trends over time will affect governments' ability to invest in physical infrastructure in terms of the quantity and/or quality of infrastructure that is constructed and may impact the state's attractiveness as a business investment destination.

The producer price index for road and bridge construction in South Australia has grown at a faster rate compared to national trends over recent years. Over the decade to 2019 the road and bridge construction price index for South Australia grew at an annual average of 3.0 per cent. The corresponding national index grew at an annual average pace of 2.5 per cent over this period. Only Victoria, which has experienced rapid population growth over recent years, experienced a faster pace of inflation than South Australia, for road and bridge construction over that decade (3.2 per cent).

Price inflation for road and bridge construction slowed noticeably after the global financial crisis. The average pace of growth for South Australia of 3.0 per cent over the decade to 2019 compares with an annual average growth rate of 4.8 per cent over the decade to 2009.

Electricity infrastructure

System reliability

Reliable and affordable electricity supply and distribution systems are essential to modern societies. Energy is an essential input into most human and economic activities, including delivering critical public and private services, and is consequently essential to the functioning of the broader economy. As a consequence, growth in economic activity tends to increase demand for energy. Meeting this increasing demand is complicated by the need to reduce greenhouse gas emissions in order to mitigate the effects of human-induced climate change.

The Australian Energy Regulator publishes a number of measures of energy infrastructure quality and performance, including measures of electricity distribution supply reliability, for those states that comprise the national electricity market.

South Australian electricity supply customers experienced an average of 1.2 interruptions per customer in 2017-18, which was marginally below the weighted average for the national electricity market (NEM) of 1.4 interruptions per customer (see Table 14). Only the Australian Capital Territory (0.6) and New South Wales (1.1) recorded better levels of reliability in 2017-18, while Victoria experienced a similar level of reliability comparable to South Australia (1.2).

Excluding 2016-17, due to the severity of the storm that impacted electricity infrastructure, the stability of the South Australian electricity market has been increasing since the introduction of the national electricity market in 2005-06; an improvement that is also seen across the NEM as a whole.

Table 14: Average number of times a customer's electricity supply is interrupted per Year (National Electricity Market, System Average Interruption Frequency Index), by state, 2000-01 to 2017-18

Year	NSW	Vic	Qld	SA	TAS	ACT	National electricity market weighted average
2000-01*		2.0	3.0	1.7	2.8		2.4
2001-02*	2.6	2.0	2.8	1.6	2.3		2.4
2002-03*	1.4	2.2	2.7	1.8	2.4		2.0
2003-04*	1.6	1.9	3.4	1.7	3.1		2.2
2004-05*	1.6	1.8	2.7	1.7	3.1		2.0
2005-06	1.7	1.8	3.0	2.0	2.6	0.8	2.0
2006-07	1.8	2.0	1.9	1.9	2.4	0.8	1.8
2007-08	1.6	1.6	2.2	1.4	2.4	0.6	1.6
2008-09	1.7	2.4	2.6	1.8	2.3	0.6	1.9
2009-10	1.4	1.5	2.3	1.8	2.4	0.7	1.7
2010-11	1.3	1.4	2.2	2.2	1.8	0.8	1.6
2011-12	1.4	1.4	1.6	1.5	2.1	0.6	1.4
2012-13	1.2	1.7	1.9	1.8	1.9	0.7	1.6
2013-14	1.2	1.6	1.6	2.0	2.2	0.5	1.5
2014-15	1.4	1.3	1.8	1.2	1.9	0.6	1.4
2015-16	1.3	1.4	1.5	1.4	1.9	0.7	1.4
2016-17	2.3	0.9	1.5	3.1	1.8	0.9	1.8
2017-18	1.1	1.2	1.7	1.2	2.4	0.6	1.4

*Note: * Not directly comparable with data after 2004-05 due to a change in methodology.*

Source: BITRE, Infrastructure Statistics – Yearbook (2019).

Although South Australia's electricity supply network has been broadly at the NEM average in terms of interruption frequency, it has outperformed the NEM in terms of the average duration of interruptions (see Table 15). The average interruption duration per customer for South Australia has been lower than the NEM average in 8 of the last 13 years (i.e. 62 per cent of years). The notable exception is 2016-17, when violent storms damaged electricity transmission infrastructure in South Australia, leading to a spike in the interruption duration index to 972 minutes, compared to 363 minutes for the NEM.

As is the case with the frequency of interruptions (and again excluding 2016-17 as an outlier), the average duration of interruption has also been improving since the introduction of the NEM in 2005-06.

Table 15: Average electricity supply outage duration per customer per year, minutes, (National Electricity Market, System Average Interruption Duration Index), by state, 2000-01 to 2017-18

Year	NSW	Vic	Qld	SA	TAS	ACT	National electricity market weighted average
	Minutes						
2000-01*		152	314	164	198		198
2001-02*	324	151	275	147	198		245
2002-03*	193	161	265	184	214		199
2003-04*	279	132	434	164	324		260
2004-05*	218	165	283	169	314		214
2005-06	169	136	626	208	200	50	232
2006-07	319	167	180	203	253	45	194
2007-08	157	202	218	137	283	26	170
2008-09	178	229	304	182	331	33	209
2009-10	124	130	313	207	471	29	212
2010-11	158	126	1080	318	210	48	323
2011-12	156	128	163	171	179	33	138
2012-13	163	140	549	233	389	48	254
2013-14	129	162	176	290	312	28	183
2014-15	445	127	436	160	320	33	254
2015-16	174	174	173	173	275	40	168
2016-17	319	96	453	972	265	70	363
2017-18	116	118	241	137	373	38	170

Note: * Not directly comparable with data after 2004-05 due to a change in methodology.

Source: BITRE, *Infrastructure Statistics – Yearbook (2019)*.

Electricity and gas prices

As Figure 37 shows, residential electricity prices across Australia have grown at a relatively rapid pace over the past decade. This surge has been driven by several factors, including, but not limited to: the extent of investment in distribution and transmission infrastructure; increases in natural gas prices reflecting the globalisation of the Australian market; emergence of distributed energy technologies; measures to reduce human-derived greenhouse gas emissions; and a lack of reforms to national energy markets to recognise these new market developments, including policies relating to greenhouse gas emissions and renewable technologies, which have been integrated in a coordinated fashion.³⁶

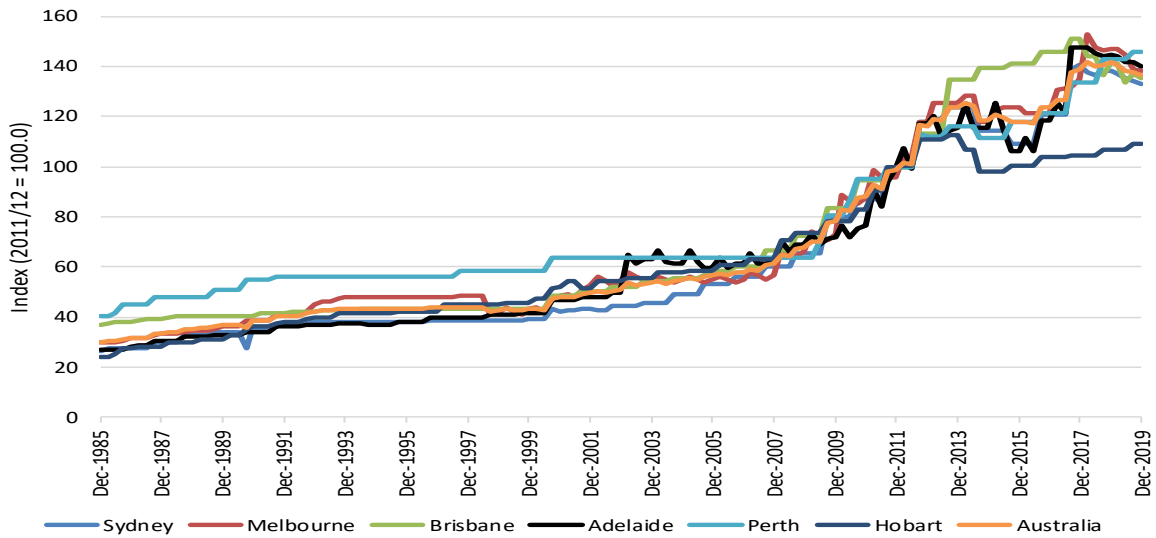
Although residential electricity prices in Adelaide have grown broadly in line with other states and territories over time, they have risen at a moderately faster pace. On a year average basis, between 1985 and 2019, residential electricity prices in Adelaide grew at an annual average rate of 4.9 per cent, about 0.2 per cent higher than average growth for the eight capital cities

³⁶ Nelson, T., Bashir, S., McCracken-Hewson, E., and Pierce, M., 'The Changing Nature of the Australian Electricity Industry', (June 2017) 36(2) *Economic Papers*, 104-120.

over this period (4.7 per cent). Among the capitals, Adelaide had the equal fastest growth in electricity prices along with Sydney (4.9 per cent per annum) and Canberra (4.9 per cent), followed closely by Melbourne (4.8 per cent).

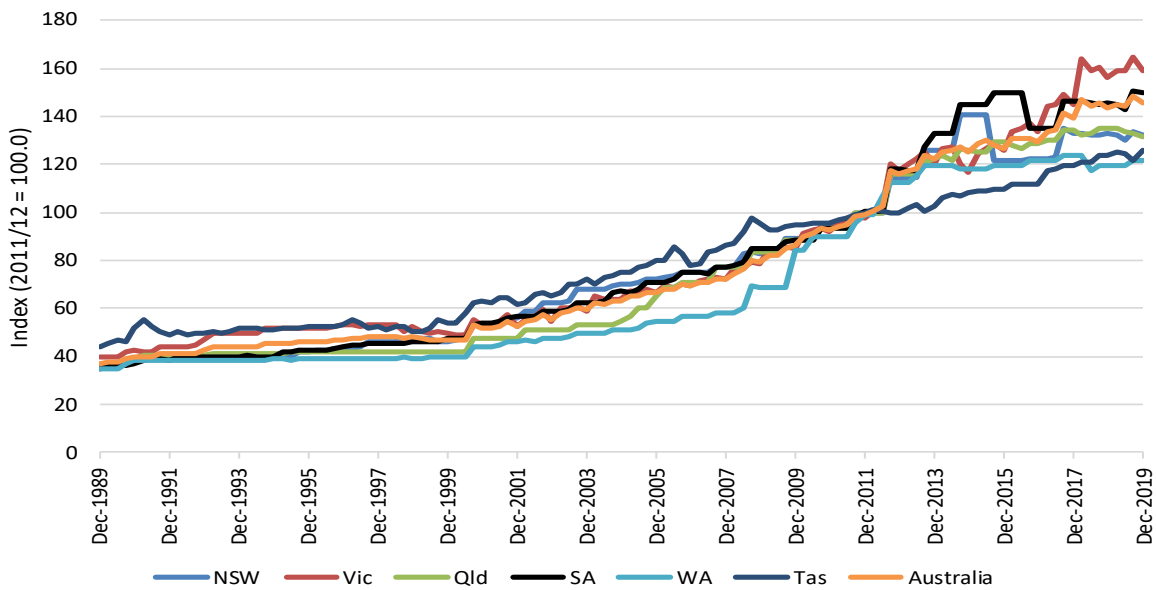
Relatively faster growth in electricity prices for Adelaide has been particularly noticeable over the past decade. Electricity prices for Adelaide over the decade to 2019 grew at an annual average rate of 7.1 per cent, some 0.7 percentage points faster than for the eight capitals (6.5 per cent).

Figure 37: Consumer Price Index for electricity, by state capital, 1995 - 2019



Source: ABS, Consumer Price Index, Australia, Cat. No. 6401.0.

Figure 38: Consumer Price Index for gas and other household fuels, by state, 1989 - 2019



Source: ABS, Consumer Price Index, Australia, Cat. No. 6401.0.

Gas is another important form of energy source for households. Like electricity, prices for gas and other household fuels have grown at a slightly faster pace for Adelaide compared to the other eight capital cities over the long term (4.9 per cent compared to 4.7 per cent per annum over the 29 years to 2019). However, over the most recent decade Adelaide gas and other household fuel prices grew at a slightly slower pace compared to the eight capitals (5.5 per cent compared to 5.7 per cent), notwithstanding a very steep rise between 2012 and 2016 (see Figure 38).

Water and wastewater system reliability

Selected performance benchmarks for water service reliability for major urban water utilities are summarised in Table 16. In comparing performance across utilities and over time it is important to recognise that a variety of factors will contribute to variances in performance, including the age, scale and composition of the water supply network infrastructure, population density, and environmental conditions. For example, dry conditions will tend to increase the propensity for water pipe bursts due to increased soil movement.

Over the six-year period to 2018-19, SA Water Corporation consistently had a lower level of water main breaks, bursts, and leaks per 100 km of water mains compared to the mean and median for other major urban water utilities. However, the average duration of an unplanned interruption was consistently higher for the South Australian Water Corporation over this period compared to the mean and median for other major urban utilities. For example, SA Water Corporation had an average unplanned interruption of 240 minutes in 2018-19, compared to an average of 138 minutes across the fourteen major urban utilities in Australia. Only Central Coast Council in New South Wales had a higher average duration of interruption (265 minutes).

The average duration of mains water supply interruptions has generally increased over time for SA Water Corporation, from 161 minutes in 2013-14 to 240 minutes in 2018-19, which represents an increase of 49 per cent. A similar but much less severe trend has been observed for all major urban water utilities over this period, although only when measured on a mean basis (up 10 per cent).

The relatively higher average duration of unplanned water mains supply interruptions for SA Water Corporation and increasing trend over time can in large part be explained by the use of cast iron pipes and associated changes in repair procedures intended to minimise safety hazards. As the Bureau of Meteorology (2020, p. 46) explains:

Cast iron pipes have been used extensively in South Australia and are more likely to fail from pressure issues. Previously, these pipes were repaired under pressure; however, work, health, and safety measures require the water supply to be shut down and the area excavated before the pipe is repaired.

Table 16: Performance benchmarking for water services for major utilities in Australia

Year	NSW				Vic			Qld				SA	WA	ACT	Major Utilities	
	Central Coast Council	Hunter Water Corp.	Sydney Water Corp.	Barwon Region Water Corp.	City West Water Corp.	South East Water Corp.	Yarra Valley Water Corp.	City of Gold Coast	Logan City Council	Queens land Urban Utilities	Unity Water	SA Water Corp.	Water Corp. Perth	Icon Water	Median	Mean
Number of water main breaks, bursts, and leaks, per 100 km of water mains																
2013-14		30.2	30.0	31.0	39.9	30.8	50.5	12.0	6.6	29.0	5.6	11.4	13.4	11.5	29.0	23.2
2014-15		28.9	26.0	29.0	37.1	32.2	39.3	7.1	6.5	28.0	3.3	13.9	15.0	14.2	26.0	21.6
2015-16	17.0	26.8	26.0	33.5	40.1	33.5	48.5	7.4	4.7	25.7	3.7	14.9	12.0	13.8	21.4	22.0
2016-17	16.0	24.8	23.9	31.0	42.1	32.7	47.4	5.1	4.0	23.1	4.8	13.5	13.1	14.3	19.6	21.1
2017-18	14.4	30.0	32.8	29.4	42.8	37.1	46.3	6.4	5.1	22.5	4.1	13.6	11.1	16.3	19.4	22.3
2018-19	12.1	27.0	24.7	32.3	51.8	36.9	43.9	9.1	5.8	30.0	4.2	15.0	11.6	14.7	19.9	22.8
Average duration of an unplanned interruption: water supply (minutes)																
2013-14		129.0	151.0	93.1	115.4	91.0	99.4	160.0	151.4	139.0		161.0	117.4	104.0	123.2	126.0
2014-15		364.0	147.0	88.0	112.0	89.0	103.2	132.4	155.6	139.0	157.0	163.0	96.0	119.5	132.4	143.5
2015-16	198.0	136.0	136.0	99.5	122.2	81.3	122.5	119.7	143.0	134.0	139.0	185.7	107.9	135.0	134.5	132.8
2016-17	202.0	231.0	133.0	102.0	125.3	83.0	118.2	137.5	177.6	132.0	160.0	195.0	103.0	134.7	133.8	145.3
2017-18	198.0	149.0	155.0	89.0	119.6	87.4	102.9	116.0	117.2	125.0	129.5	226.3	112.0	125.1	122.3	132.3
2018-19	265.0	161.0	143.0	126.7	113.0	83.8	95.0	126.0	90.7	135.0	119.7	240.4	102.9	135.0	126.3	138.4

Note: South Australian Water Corporation data not published prior to 2013-14.

Source: Bureau of Meteorology, National performance report 2018-19: urban water utilities.

Table 17: Performance benchmarking for wastewater services for major utilities in Australia

Year	NSW				Vic			Qld				SA	WA	ACT	Major Utilities	
	Central Coast Council	Hunter Water Corp.	Sydney Water Corp.	Barwon Region Water Corp.	City West Water Corp.	South East Water Corp.	Yarra Valley Water Corp.	City of Gold Coast	Logan City Council	Queensland Urban Utilities	Unity Water	SA Water Corp.	Water Corp. Perth	Icon Water	Median	Mean
Number of sewer mains breaks and chokes per 100 km																
2013-14		53.6	61.4	29.0	16.2	14.8	27.6		12.1	22.9	20.4	46.0	17.0	57.0	25.3	31.5
2014-15		53.6	68.7	35.4	17.0	14.3	31.6	3.9	12.6	30.1	25.0	48.0	17.6	51.6	30.1	31.5
2015-16	38.0	42.7	58.4	38.8	21.4	17.6	35.3	7.2	11.5	25.2	24.5	51.0	18.6	54.1	30.2	31.7
2016-17	34.3	49.6	62.8	33.0	20.3	18.0	38.1	4.3	11.2	24.9	24.8	43.0	17.0	48.9	28.9	30.7
2017-18	37.0	50.6	70.0	36.1	21.3	16.2	30.7	5.1	10.7	20.9	16.4	43.0	17.0	55.6	30.7	31.7
2018-19	38.0	44.9	74.0	51.2	24.1	19.0	38.4	4.9	9.0	18.4	13.7	46.0	17.0	72.1	36.6	33.8
Number of property connection sewer breaks and chokes per 1,000 properties																
2013-14		10.1	0.2	0.0	4.2	4.9	6.5		1.0	2.9	0.7	30.0		10.0	4.2	6.4
2014-15		10.2	0.2	1.8	5.0	4.7	6.7	1.2	1.8	3.8	1.5	29.0		9.4	4.2	6.3
2015-16	2.9	8.5	0.2	2.8	5.2	5.0	7.4	0.9	1.8	3.3	1.3	32.0		10.1	3.3	6.3
2016-17	6.9	9.3	0.3	6.0	4.5	4.0	7.6	2.2	1.9	3.9	1.3	26.0		9.5	4.5	6.4
2017-18	3.2	10.0	0.3	6.0	3.2	4.8	6.7	2.3	1.3	3.1	1.1	28.0		10.4	4.0	6.5
2018-19	3.6	10.3	0.3	9.4	3.4	5.2	8.1	1.8	1.0	2.9	1.2	28.0		13.8	4.4	7.1

Note: Includes TasWater data for 2017-18 and 2018-19.

South Australian Water Corporation data not published prior to 2013-14.

Source: Bureau of Meteorology, National performance report 2018-19: urban water utilities.

Table 17 shows the number of breaks and chokes per 100 km of sewerage mains and property connection breaks and chokes per 1,000 properties. Sewer system performance is sensitive to: various factors including soil type, soil moisture levels, pipe material, age of materials and wastewater flows. Any comparison between utilities will be influenced by differences in network configurations and the degree of ownership of the sewer network (BoM, 2017).

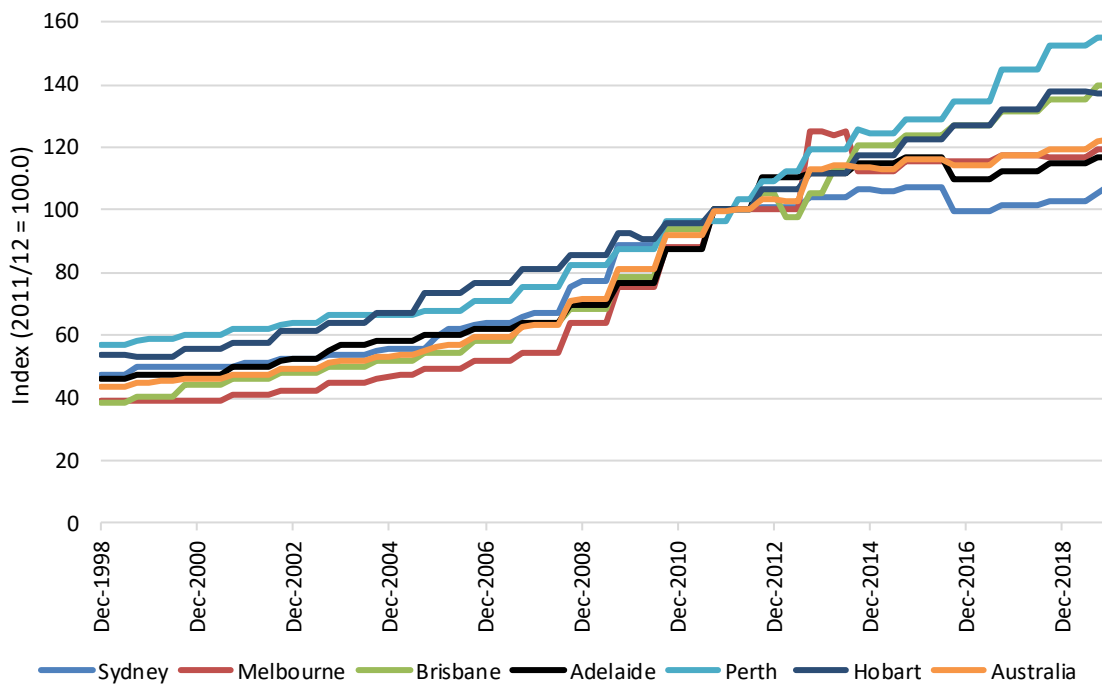
SA Water’s sewerage network reliability has generally underperformed relative to other major urban water utilities. Over the 6-year period to 2018-19, SA Water reported a relatively higher rate of sewer mains breaks and chokes per 100 km of mains and property connection breaks and chokes per 1,000 properties relative to the average for all major urban water utilities. The relatively high level of breaks and chokes is attributed to a large number of interruptions in the Adelaide foothills owing to tree root intrusion, exacerbated by the type of pipe material that was historically used (vitrified clay pipes), pipe depth and density of trees (BoM, 2017).

While SA Water’s sewerage network suffers from a relatively high degree of blockages, performance has not materially changed between 2013-14 and 2018-19, and, if anything, has improved slightly. In comparison, performance for the major urban utilities as a whole has remained relatively stable over recent years, and possibly deteriorated slightly.

Residential water and sewerage price trends

Prices for water and sewerage services in Adelaide have grown at a slightly slower pace than the national trend over the long term (see Figure 39). Over the two decades to 2019, residential water and sewerage prices in Adelaide grew at an annual average rate of 4.7 per cent, about 0.5 per cent lower than growth in the corresponding price index for the eight capital cities (5.1 per cent). Only Sydney (3.9 per cent) recorded a slower pace of price inflation over this period, while prices for Tasmania (4.8 per cent) effectively grew in line with South Australia.

Figure 39: Consumer Price Index for water and sewerage, by state capital, 1989-2018



Source: ABS, Consumer Price Index, Australia, Cat. No. 6401.0.

The weaker long-term price trend for South Australia is due in part to a weaker price trend over recent years. The Adelaide water and sewerage consumer price index grew at an annual rate of just 0.4 per cent between 2014 and 2019, whereas the national price index grew at an average pace of 1.2 per cent over this period. Sydney and Melbourne actually recorded a weak downward price trend over this period (each falling 0.1 per cent per annum on average).

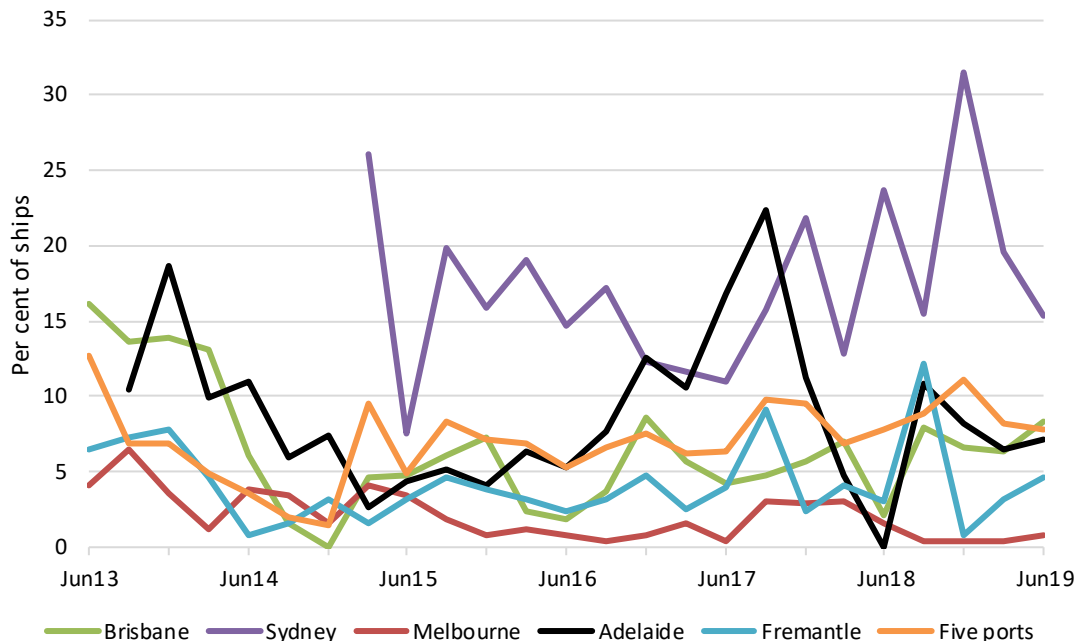
Port container terminal productivity measures

Ports are an important element of economic infrastructure as they are the main method by which the state's merchandise goods exports leave the state.

In terms of congestion, port facilities in Adelaide have typically ranked around the middle of the pack compared to the other major capital cities over recent years (see Figure 40). In the June quarter of 2019 an estimated 7.1 per cent of ships were waiting at anchorage for more than two hours in Adelaide, compared to 7.8 per cent for port facilities across the other five state capitals. Sydney (15 per cent) and Brisbane (8.3 per cent) had higher levels of congestion, while Melbourne (0.8 per cent) and Fremantle (4.7 per cent) had significantly lower congestion levels.

Congestion at port facilities in Adelaide showed no substantial change between 2013 and 2019. That said, there have been notable spikes in congestion, including in late 2013 and in 2017. In comparison, port congestion across the five ports has exhibited a gentle upward trend over the past six years.

Figure 40: Port congestion, per cent of ships waiting at anchorage for more than 2 hours, for mainland state capital ports, June 2013 – June 2019



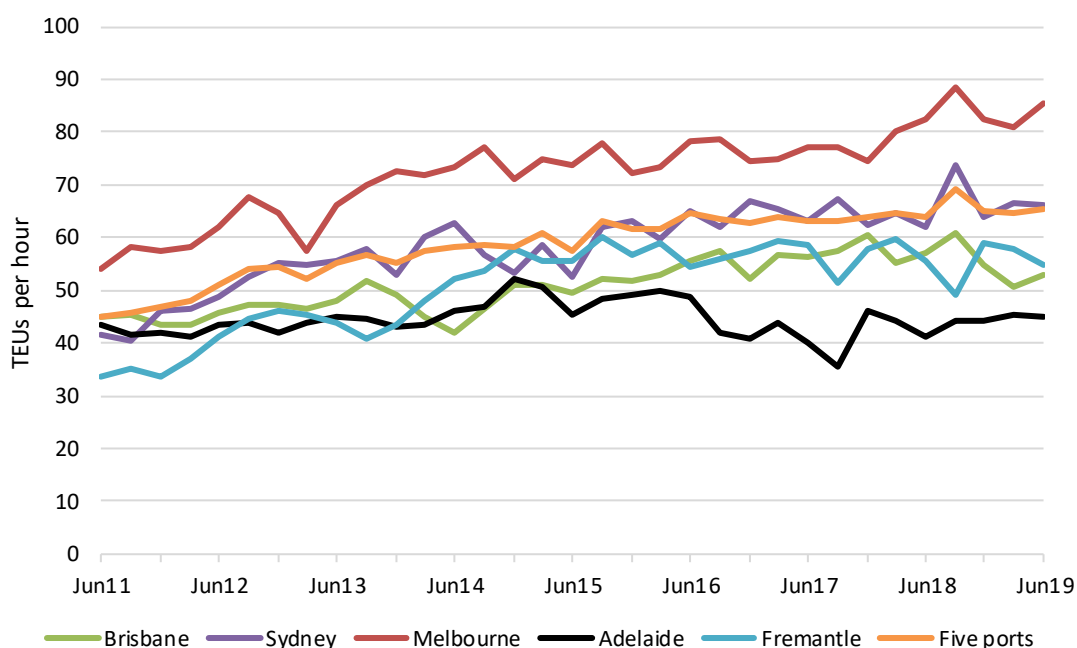
Source: Bureau of Infrastructure, Transport and Regional Economics, Waterline 65, December 2019

A range of productivity and throughput measures are published by the Bureau of Infrastructure, Transport and Regional Economics (BITRE) for the five mainland state ports in Australia. The most important of these in assessing comparative productivity are average twenty-foot equivalent units (TEUs) per ship-hour at berth (see Figure 41) and average lifts per ship-hour at berth (see Figure 42).

Whole of container terminal productivity for Adelaide has been lower compared to the other four capital city port facilities over recent years, whether one measures on an average of TEUs or lifts per ship-hour at berth basis. It is important to note that the former productivity measure 'is strongly influenced by changes in average number of TEUs exchanged per visiting ships and by the mix of ship sizes'³⁷.

This relatively poorer performance of Adelaide is a recent change, arising from it not increasing productivity as quickly as other ports. Between the first half of 2011 and the corresponding period of 2019, average TEUs per ship-hour at berth rose by 6.6 per cent for Adelaide, which is well below the average 40 per cent rise recorded across the five ports. Brisbane recorded the next smallest rise over this period (22 per cent), but even there the increase in productivity was more than three times that seen in Adelaide.

Figure 41: Average twenty-foot equivalent units per ship-hour at berth, mainland state capital ports, June 2011 – June 2019, (TEUs per hour)



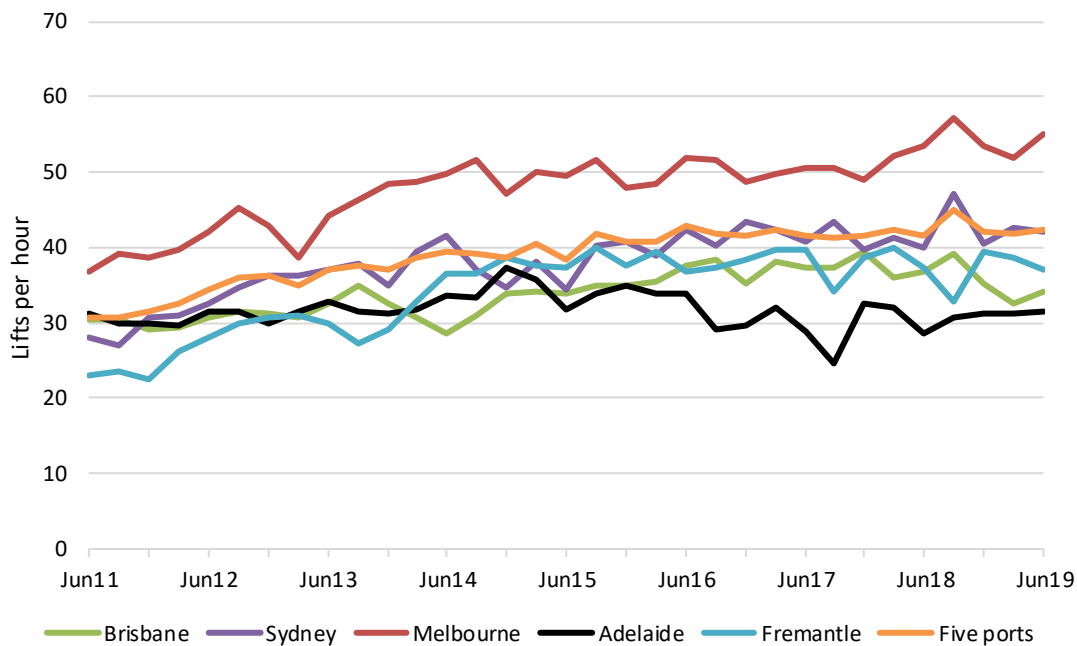
Source: Bureau of Infrastructure, Transport and Regional Economics, Waterline 65 (December 2019)

In terms of average lifts per ship-hour at berth, productivity for Adelaide rose by only 1.7 per cent between the first halves of 2011 and 2019, whereas across the five ports it rose by 34 per cent on average.

Other measures of productivity paint a similar picture. Over the eight years to the first half of 2019 Adelaide recorded weaker outcomes compared to the five ports in terms of average lifts per hour of stevedoring operation (up 19 per cent compared to 33 per cent), and average lifts per berth visit (down 14 per cent compared to a rise of 26 per cent).

³⁷ BITRE, *Infrastructure Statistics – Yearbook* (2019).

Figure 42: Average lifts per ship-hour at berth, mainland state capital ports, June 2011 – June 2019



Source: Bureau of Infrastructure, Transport and Regional Economics, *Waterline 65* (December 2019)

Airport charges and total costs per passenger

Data on charges, and efficiency of operation for air freight services are not available for Adelaide, with the relevant data sources only reporting individual data for the four highest freight volume airports of Sydney, Melbourne, Brisbane and Perth³⁸. Volumes of international airfreight from Adelaide are low, accounting for 0.8 per cent of national air freight exports by value and 2.6 per cent by weight³⁹.

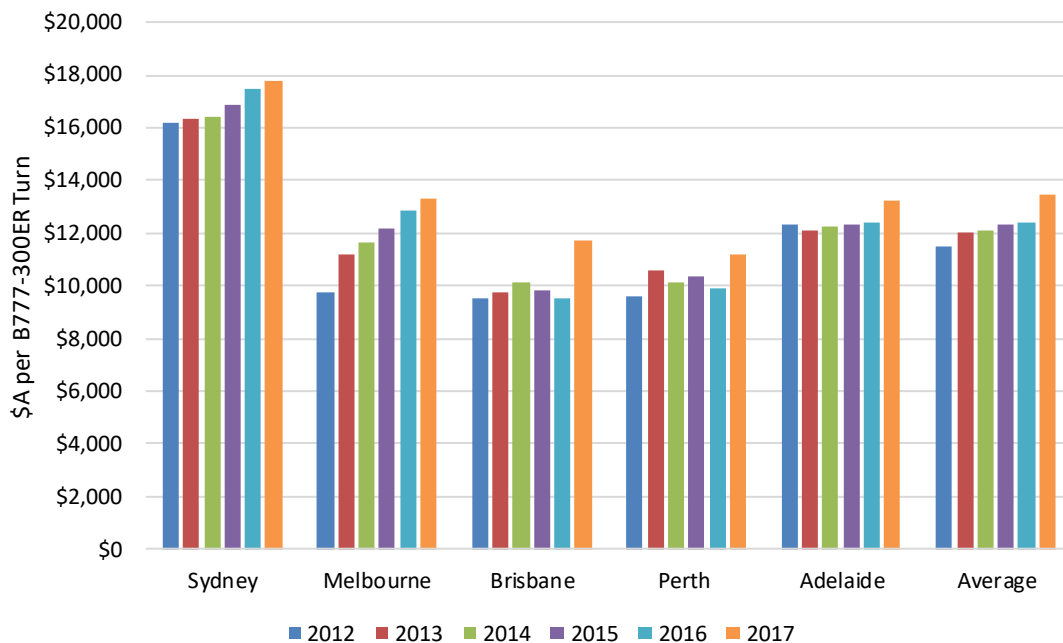
A wider range of data is available for passenger air transport, and as a significant proportion of airfreight is carried on passenger aircraft this should provide a reasonable guide to the availability and cost of air freight. In 2018 InterVISTAS consulting prepared a performance benchmarking study of major domestic airports on behalf of the Australian Airports Association. As part of the study InterVISTAS estimated airport charges for turning specific aircraft types. The estimated international charges for turning a Boeing 777-300ER are published in Figure 43, while the domestic charges for a Boeing 737-800 are presented in Figure 44. In interpreting these charges it is important to note that they are based on 'rack rates' fees and charges as published by the airports, and do not take into account significant discounts which are typically applied but cannot be directly calculated due to a lack of data. These charges may also vary according to other airport features such as scale, use, ownership structure (private versus public), and other similar factors⁴⁰.

³⁸ Australian Competition and Consumer Commission 2020, *Infrastructure Partnerships Australia*, (2019).

³⁹ Department of Infrastructure, *Regional Development and Cities*, (2018).

⁴⁰ InterVISTAS, *Australian Airports: A Performance Benchmarking Study*, (2018).

Figure 43: Airport international charges based on published rack rates, 777-300ER Aircraft, mainland state capital airports, 2012 – 2017, (constant prices in 2017 Australian dollars)



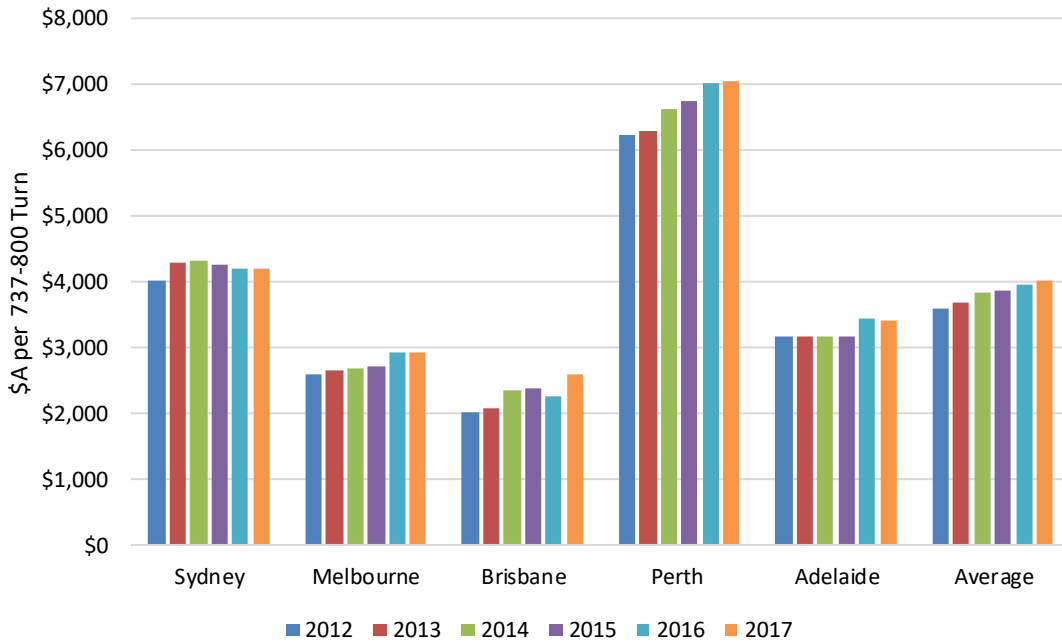
Source: InterVISTAS, *Australian Airports: A Performance Benchmarking Study (2018)*

The estimated charge for an international flight based on a 777-300ER for Adelaide Airport was comparable to the average for the five largest Australian capital city airports over the period from 2012 to 2017 (see Figure 43). The average includes a relatively high turning cost for Sydney Airport. The estimated average charge for Adelaide Airport over the six years to 2017 (\$12,445) was higher than Perth (\$10,296), Brisbane (\$10,076) and Melbourne (\$11,823), and significantly lower than Sydney (\$16,837).

While the estimated charge for turning a 777-300ER was relatively higher for Adelaide Airport, it has risen at a slower rate over recent years. The estimated charge for Adelaide airport rose by 7.8 per cent in real terms between 2012 and 2017, which was the lowest rise among the airports considered. The next largest rise was for Sydney Airport (10.1 per cent), while Melbourne Airport recorded the largest rise (36 per cent).

The estimated charge for turning a domestic flight based on a 737-800 aircraft for Adelaide Airport was slightly below the average for the five largest Australian capital city airports over the six-year period to 2017 (see Figure 44). The estimated average charge for Adelaide Airport over this period (\$3,256) was lower compared to Perth (\$6,659) and Sydney (\$4,219), but higher compared to Brisbane (\$2,284) and Melbourne (\$2,753). The average cost per turn for this aircraft type rose by 8.3 per cent in real terms for Adelaide Airport between 2012 and 2017. Only Sydney recorded a smaller rise (4.7 per cent) over this period, while the estimated charge for Brisbane Airport rose quite substantially (28 per cent).

Figure 44: Airport domestic charges based on published rack rates, 737-800 Aircraft, mainland state capital airports, 2012 – 2017, constant prices in 2017 Australian dollars

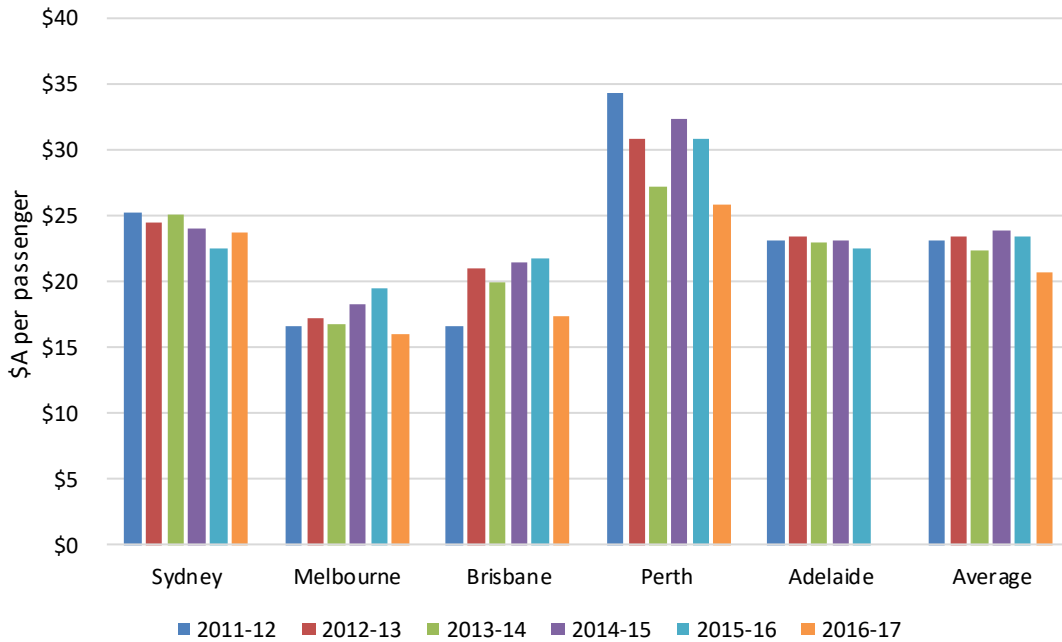


Source: InterVISTAS, *Australian Airports: A Performance Benchmarking Study (2018)*.

Figure 45 shows the relative cost efficiency of Adelaide Airport compared to the other major Australian airports on a real total cost per passenger basis. For the most recent year for which data was available for Adelaide Airport for inclusion on the benchmarking report (2015-16) the total cost per passenger for Adelaide Airport was \$22.60, which was slightly below the average for the five largest Australia airports of \$23.46 per passenger. Perth had a significantly higher total cost (\$30.88), while total costs for Sydney (\$22.51) were comparable to Adelaide. On the other hand, Brisbane (\$21.75) and Melbourne (\$19.55) had relatively lower total costs compared to Adelaide.

Total costs per passenger remained relatively stable for Adelaide Airport over the period illustrated in Figure 45. A similar trend is evident for the average for the five other mainland capital cities, although there was a notable decline in 2016-17 (data were not available for Adelaide Airport for this year).

Figure 45: Total costs per passenger, mainland state capital airports, 2011-12 – 2016-17, constant prices in 2017 Australian dollars



Source: InterVISTAS (2018), *Australian Airports: A Performance Benchmarking Study*

Rail intermodal performance

Table 18 shows performance indicators for scheduled inter-capital ‘intermodal’ train flow patterns across the East-West Australia rail corridor over the last five years as reported by BITRE. Intermodal represents ‘containerised freight or freight in a louvre wagon’, and captures market activity such as high priority transport that may compete with road transport⁴¹. While BITRE effectively defines bulk freight as anything that is not intermodal, in principle it comprises the transportation of large quantities of homogenous products via wagons⁴². This definition is not perfect as intermodal freight can capture some forms of bulk freight, such as steel products carried by Pacific National trains.

⁴¹ BITRE, *Infrastructure Statistics – Yearbook*, (2018).

⁴² *Ibid.*

Table 18: Scheduled inter-capital intermodal train flow patterns, east-west corridor, 2015–2019

Year	Melbourne to Adelaide	Adelaide to Melbourne	Adelaide to Perth	Perth to Adelaide	Cootamundra to Crystal Brook	Crystal Brook to Cootamundra	Brisbane to Adelaide	Adelaide to Brisbane
Number of weekly services								
2015	26	26	20	20	4	9	2	2
2016	24	25	18	19	3	7	2	2
2017	23	24	18	18	3	7	2	2
2018	20	20	15	15	4	8	1	1
2019	18	19	13	14	3	7	2	2
Average speed (kph)								
2015	63	58	66	58	67	56	52	51
2016	67	58	66	57	64	66	52	51
2017	67	57	65	58	67	61	52	51
2018	68	58	67	59	67	57	54	53
2019	68	58	67	55	67	66	53	51
Average number of stops								
2015	3	5	14	18	4	5	15	16
2016	3	6	14	18	4	5	15	16
2017	3	5	12	17	5	5	14	14
2018	3	5	12	18	4	4	17	15
2019	3	5	11	17	5	4	16	13
Average transit time (mins)								
2015	789	855	2422	2765	1147	1357	3230	3292
2016	749	861	2400	2802	1192	1152	3230	3292
2017	748	874	2462	2764	1138	1248	3230	3292
2018	738	868	2366	2689	1136	1326	3145	3180
2019	738	862	2361	2742	1132	1155	3205	3298
Average dwell time (mins)								
2015	96	153	359	680	278	342	921	986
2016	63	149	355	731	321	321	921	986
2017	54	167	350	652	263	382	918	916
2018	51	153	326	646	266	350	840	860
2019	46	152	301	703	262	291	975	975
Percentage dwell time (per cent)								
2015	12	18	15	25	22	25	29	25
2016	8	17	15	26	27	28	29	25
2017	7	19	14	24	23	31	28	28
2018	7	17	14	24	23	26	27	27
2019	6	18	13	24	25	25	28	30
Dwell time per stop (mins)								
2015	28	28	26	38	69	68	61	73
2016	19	27	26	40	74	66	61	73
2017	17	34	28	39	53	79	63	65
2018	17	29	27	35	61	79	49	57
2019	17	29	26	42	56	81	56	72

Note: Dwell time refers to the time spent by a train at a scheduled stop without moving.

Source: Bureau of Infrastructure, Transport and Regional Economics, Trainline, 5, 6 and 7

Table 18 shows:

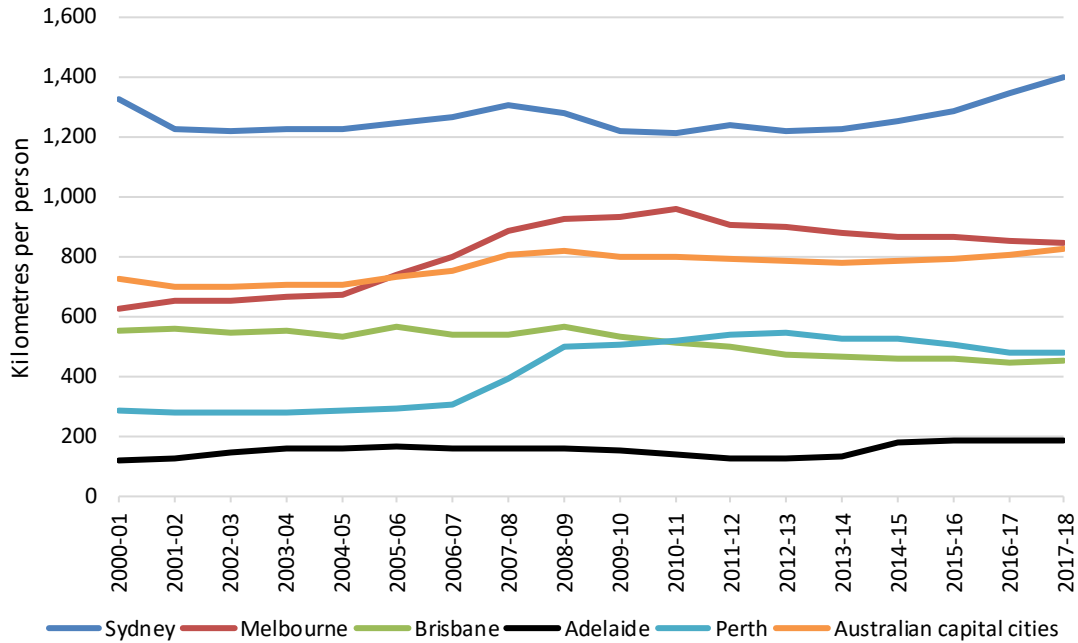
- There has been some decline in weekly services between Adelaide and Melbourne and between Adelaide and Perth over recent years.
- Average speeds have generally been maintained or even improved slightly across most rail segments.
- The number of stops has remained relatively stable across the segments with the exception of a small reduction across the Adelaide to Perth segment.
- Average transit times have remained stable or improved across most segments with the exception of Adelaide to Melbourne.
- Average dwell times have remained stable or improved across most segments, although there were significant increases in 2019 for Perth to Adelaide, Brisbane to Adelaide and Adelaide to Brisbane.

Urban heavy and light rail patronage

Patronage of rail transport services is influenced by various factors, including rail network coverage, service quality and timeliness. Rail patronage in South Australia lags significantly behind other major capital cities, sitting at around 200 passenger kilometres per year travelled per person, around one-seventh of the use in Sydney. Adelaide's passenger commuter rail usage is also less than half that of Perth and Brisbane, the two other cities with low use (see Figure 46).

Growth in patronage of heavy rail in South Australia, grew strongly up to 2005-06, before falling back and then experiencing a further wave of strong growth from 2012-12 to 2015-16. Most of the capital cities have seen patronage remain fairly flat since 2014-15, with Sydney the only city experiencing strong growth in recent years.

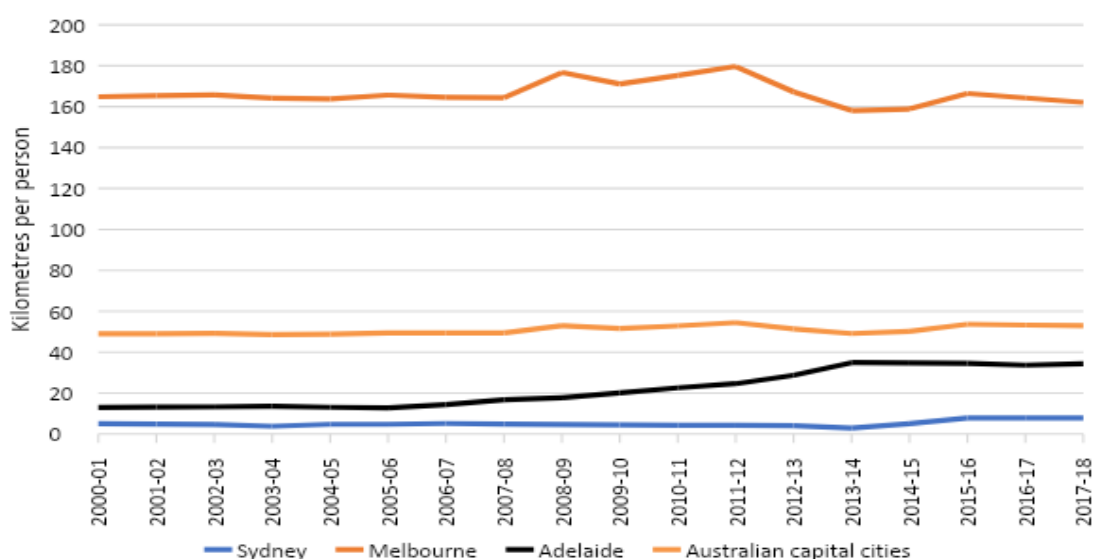
Figure 46: Total passenger kilometres travelled per person by heavy rail in selected capital cities, 2000-01 to 2017-18



Source: BITRE, *Infrastructure Statistics – Yearbook (2019)*.

As would be expected given its extensive network, Melbourne has significantly higher light rail use than any other Australian capital, at just over 160 passenger kilometres per person per year (see Figure 47). Adelaide’s usage rate is just under one-quarter of Melbourne’s, but well above that of Sydney. Patronage of light rail in South Australia was stagnant between 2000-01 and 2005-06 but has grown strongly since 2007 with the extension and rejuvenation of the city tram network. While Melbourne has recorded slower growth in light rail patronage compared to Adelaide and Sydney over recent years, this mainly reflects that the Melbourne light rail network is more mature and extensive. Total light rail passenger kilometres travelled in Melbourne in 2018-19 was approximately 17 times higher compared to Adelaide.

Figure 47: Total passenger kilometres travelled per person by light rail in selected capital cities



Source: BITRE, *Infrastructure Statistics – Yearbook (2019)*.

Commercial office space

The latest CBRE Global Prime Office Occupancy Costs publication highlighted Adelaide as the second cheapest city in Australia for renting office space, as measured by office occupancy costs. Office occupancy costs are reported for the highest quality office space in a prime location within each jurisdiction; costs are reported gross of all service charges and taxes and are standardised on a net internal area basis.

Table 19: Prime office occupancy costs by city, 2019 (\$ per square metre)

City	A\$ per square metre
Canberra	\$451.14
Adelaide	\$553.00
Perth	\$813.00
Brisbane	\$850.00
Melbourne	\$864.60
Sydney	\$1,537.00

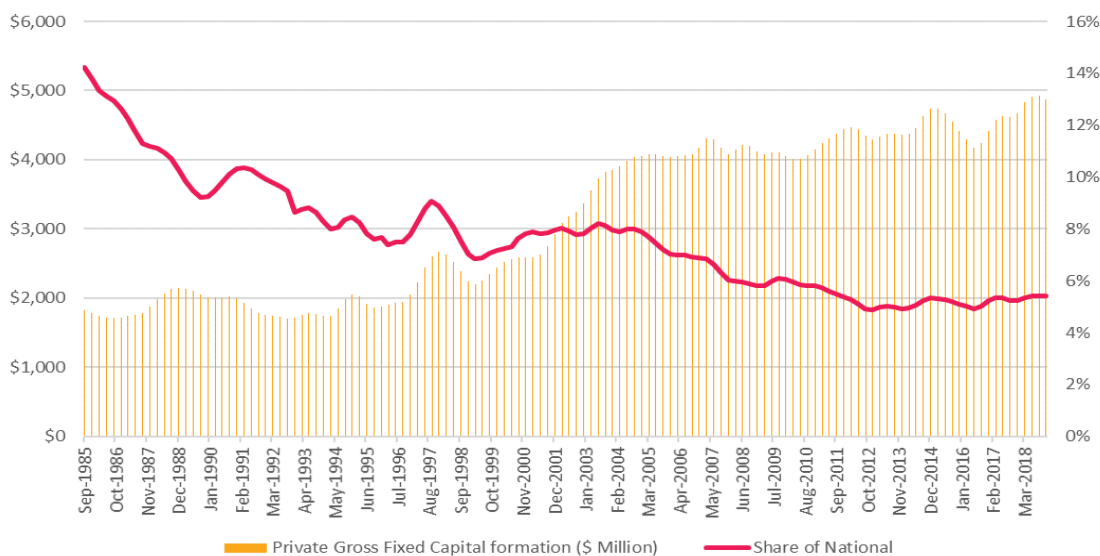
Source: CBRE *Global Prime Office Occupancy Costs 2019*

6. Investment and capital stock

Business investment

The main measure of investment in the national accounts data is gross fixed capital formation. As shown in section 2.1, whilst South Australia's level of investment has been growing, it has done so at a slower rate than Australia as a whole. South Australia's share of Australian private gross fixed capital formation has declined significantly from 14.2 per cent in 1985 to 5.4 per cent in 2018.

Figure 48: Private gross fixed capital formation, Sept 1985 – Mar 2018, South Australia (\$ million) and share of national (%)



Source: ABS 5206.0

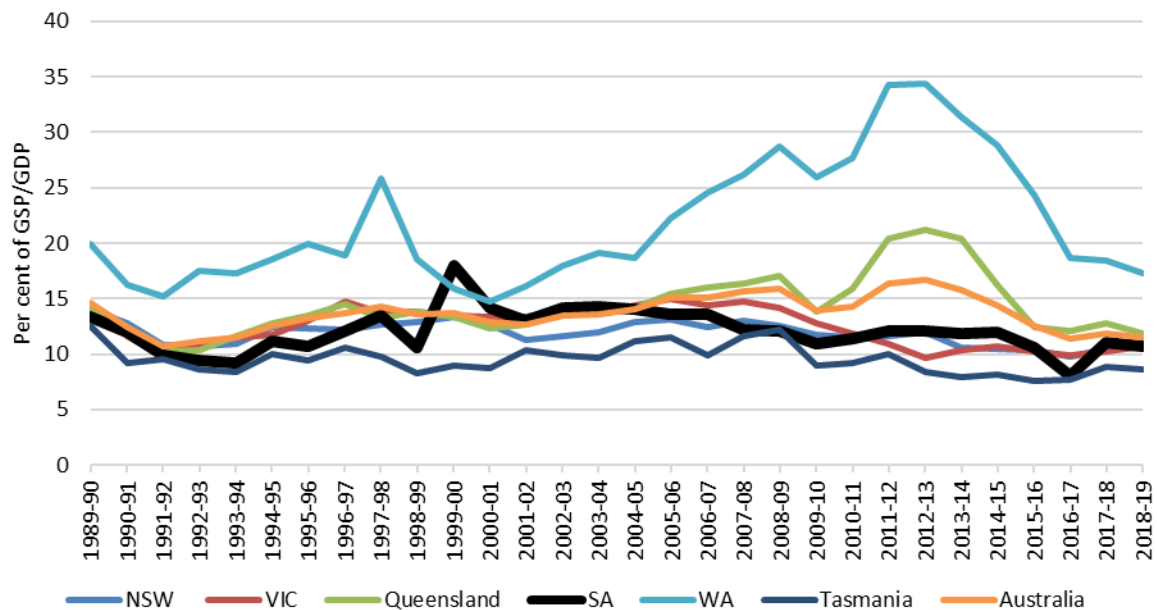
Gross fixed capital formation is not the best measure of the potential of investment to contribute to a region's productivity, as it includes a portion of housing investment and some other forms of investment that do not contribute directly to productivity.

More relevant in assessing the drivers of productivity is business investment. Business investment plays a critical role in determining the future productive capacity of the economy and therefore economic growth. It is a measure of the health of the economy as it provides insight into business confidence regarding the direction of the economy and changes in demand for the goods and services produced by businesses, with increasing demand leading to greater investment in order to expand production and services.

Figure 49 shows trends in private business investment as a share of Gross State/Domestic Product for the states and Australia over the three decades to 2018-19. Investment levels for South Australia have generally remained below national levels over time, with the main exception being during the early 2000s. Much of this discrepancy can be explained by significantly higher levels of investment in resource-rich states, especially Western Australia, but also Queensland and the Northern Territory over more recent years. Otherwise, business investment levels for South Australia have generally tracked in line with other non-resource-rich states.

This pattern is very much evident for the most recent financial year. Business investment as a share of GSP for South Australia in 2018-19 was 10.7 per cent, moderately below the Australian level of 11.5 per cent. While the level of business investment for South Australia was below corresponding levels for Western Australia (17 per cent), the Northern Territory (13 per cent) and Queensland (12 per cent), it was in line with New South Wales (10.8 per cent) and Victoria (10.7 per cent), and well above Tasmania (8.6 per cent).

Figure 49: Business Investment as a proportion of Gross State/Domestic Product, by state and Australia, 1989-90 to 2018-19



Source: ABS, Australian National Accounts: State Accounts, 2018-19. Cat. No. 5220

Notwithstanding business cycle factors including the early 1990s recession and recent mining boom, investment levels declined moderately across all states and territories between 1989-90 and 2018-19. The business investment share for South Australia fell by 2.7 percentage points over this period, while the share for Australia fell by 3.1 percentage points. Relatively larger declines were recorded by Tasmania (-3.9 per cent), Victoria (-3.8 per cent) and New South Wales (-3.2 per cent), while Queensland (-2.5 per cent) and Western Australia (-2.7 per cent) recorded the smallest falls. Similar trends have been evident across other advanced economies over the long-term, which points to broader structural factors playing a key role in bringing about weaker business investment spending, including, but not limited to:

- structural changes in the economy, including a shift away from manufacturing towards services and knowledge-based activities which have a relatively lower need for physical infrastructure and greater need for human capital;
- the transference away of investment from advanced to emerging economies associated with globalisation, relocation of manufacturing activities and other structural factors; and
- demographic factors including population ageing which will tend to reduce the available supply of capital as people draw down their savings in retirement.

Regular surveys of the drivers of foreign direct investment in South Australia indicate that the key factors affecting investment decisions are: domestic market growth, proximity to markets, the regulatory environment and access to transport infrastructure and skilled labour. South

Australia's performance on these factors, relative to other possible investment destinations, affects the level of foreign direct investment attracted into the state.

Investment data measure the flow of expenditure to create new productive assets. It does not identify the overall amount of assets able to support economic activity; measuring this requires data on the capital stock.

A higher level of physical capital stock per worker will generally lead to higher labour productivity and, in turn, increased returns to labour and higher skill levels. The relative level of capital stock per worker also has an important bearing on the competitiveness of businesses and regions given its direct influence on productivity.

In recent years, the ABS has started publishing state-level estimates of capital stock by type of asset, institutional sector and industry. Unfortunately, these estimates do not include capital stock in respect of business investment specifically. Nonetheless, one can still analyse capital stock for categories that are directly relevant to economically productive activities. On this basis Table 20 shows estimates of the real capital stock per hour worked for non-dwelling-related asset categories at the end of 2017-18 for the states and Australia.⁴³ Weapons systems have been included given the importance of current and future ship and submarine building activities to the South Australian economy.

Table 20: Real net capital stock per hour actually worked, by state and Australia, in 2017-18 (\$ per hour)^(a)

	NSW	Vic.	Qld	SA	WA	Tas.	Australia
Non-dwelling construction (\$million)	103.9	92.3	148.9	103.5	220.4	94.1	125.2
Machinery and equipment (\$million)	25.6	24.7	28.7	24.5	47.4	24.6	28.4
Cultivated biological resources (\$million)	0.8	1.1	1.3	3.1	0.8	1.5	1.1
Intellectual property products (\$million)	8.8	8.4	8.7	12.4	27.4	9.4	11.3
Weapons systems (\$million)	2.6	2.5	2.6	2.9	2.5	3.2	2.6
Total net capital stock ^(b)	141.7	129.1	190.1	146.5	298.5	132.7	168.6
Total net capital stock ^(c)	248.9	242.7	298.2	244.5	415.8	228.2	277.9

Note:^(a) Reference year for real measures is 2017-18

^(b) Excludes dwellings and ownership transfer costs.

^(c) Includes dwellings and ownership transfer costs.

Source: ABS, *Australian National Accounts: State Accounts, 2018-19. Cat. No. 5220, and Labour Force, Australia, Detailed, Quarterly, Cat. No. 6291.0.55.003*

These estimates are heavily influenced by investment in capital intensive sectors such as mining, which tends to distort direct comparisons with Western Australia and Queensland.

South Australia had a relatively lower level of real capital stock (excluding dwellings and ownership transfer costs) per hour worked compared to Australia at the end of 2017-18 (\$147 per hour compared to \$169 per hour). This difference is largely explained by the higher level of capital stock that naturally exists in resource-rich states, especially Western Australia (\$299 per hour), but also Queensland (\$190 per hour). (Estimates of capital stock that account for industrial differences between the states are presented in the next section.) In comparison,

⁴³ The analysis here has been restricted to the reference year for the real (i.e. chain volume) measures of capital stock (2017-18) as chain volume aggregates are not additive outside the reference year.

South Australia had a relatively higher level of non-dwelling related capital stock compared to New South Wales (\$142 per hour), Tasmania (\$133 per hour), and Victoria (\$129 per hour).

In terms of asset categories, South Australia had a stock of machinery and equipment that was similar to that of the non-mining states at the end of 2017-18 in per hour worked terms. The same was broadly true for non-dwelling construction.

On a more positive note, South Australia had a relatively higher capital stock of cultivated biological resources, intellectual property products and weapons systems compared to most other states and territories.

It is important to note that the estimates presented above would exaggerate the relative levels of capital stock for South Australia to the extent that they have been presented on a per hour worked basis rather than a per capita basis. The reason for this is that South Australia has a relatively larger dependent population and lower labour force participation.

Capital stock in the market sector

Another means of comparing relative capital stock levels for economically productive sectors is by looking at those industries that comprise the market sector. The Australian Bureau of Statistics defines the market sector as all industries except for 'public administration and safety', 'education and training', 'healthcare and social assistance', and 'ownership of dwellings'.⁴⁴

Figure 50 shows state-level estimates of capital stock per hour actually worked for the market sector in 2017-18. Once again, South Australia had a moderately lower capital stock per worker compared to Australia as a whole (\$164 compared to \$189 per hours worked), which reflects relatively higher levels of capital stock for the resource-rich states. Furthermore, the relatively level of capital stock for the market sector in South Australia was higher than or roughly equal to the level in other non-resource-rich states.

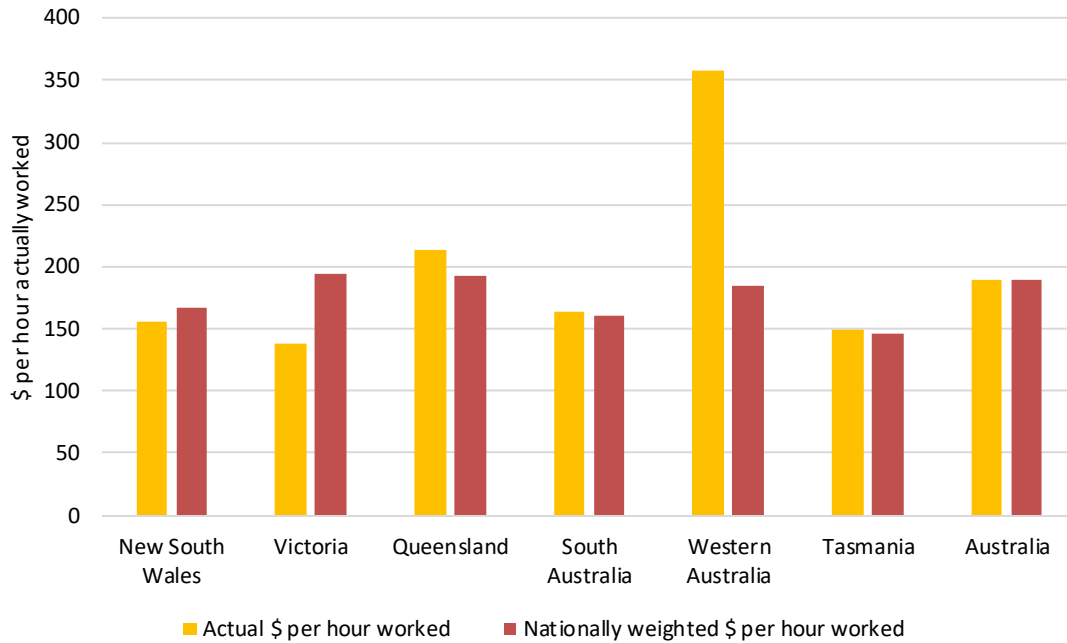
Differences in capital stock per worker that reflect differences in the industrial structure of regions can hide underlying differences in investment activity by businesses located in the same industries. They can also be less than informative from an analytical perspective to the extent that these industrial differences reflect differences in natural endowments (e.g. where minerals and petroleum resources are physically located) rather than other attributes that are amenable to policy (e.g. taxation policy, infrastructure quality, education and training, entrepreneurship etc.). One way to account for these industrial differences is by using national weights of hours worked by industry and applying these to the capital stock per hour worked by industry for each state. These estimates are presented in Figure 50 under the series named 'nationally weighted \$ per hour worked'.

Estimating capital stock per hour actually worked on a nationally industry weighted basis tends to flatten the differences between the states and change the story quite substantially. On this basis the South Australian market sector has the second lowest level of capital stock per hour worked (\$160 per hour) among the states, with only Tasmania (\$146 per hour) reporting a lower level of capital stock. Western Australia (\$184 per hour) no longer has the highest level of capital stock and falls behind Victoria (\$194 per hour) and Queensland (\$193 per hour) in this regard. New South Wales retains a relatively low level of capital stock (\$167 per hour) but shifts to a higher level compared to South Australia.

In summary, even after accounting for industrial differences in the economy, this measure also indicates that the South Australian market sector has a relatively low level of capital stock.

⁴⁴ ABS, Australian System of National Accounts, 2018-19, Cat. No. 5204.0 (2019).

Figure 50: Capital stock per hour actually worked and Nationally weighted capital stock per hour actually worked, for the market sector, by state and Australia, 2017-18

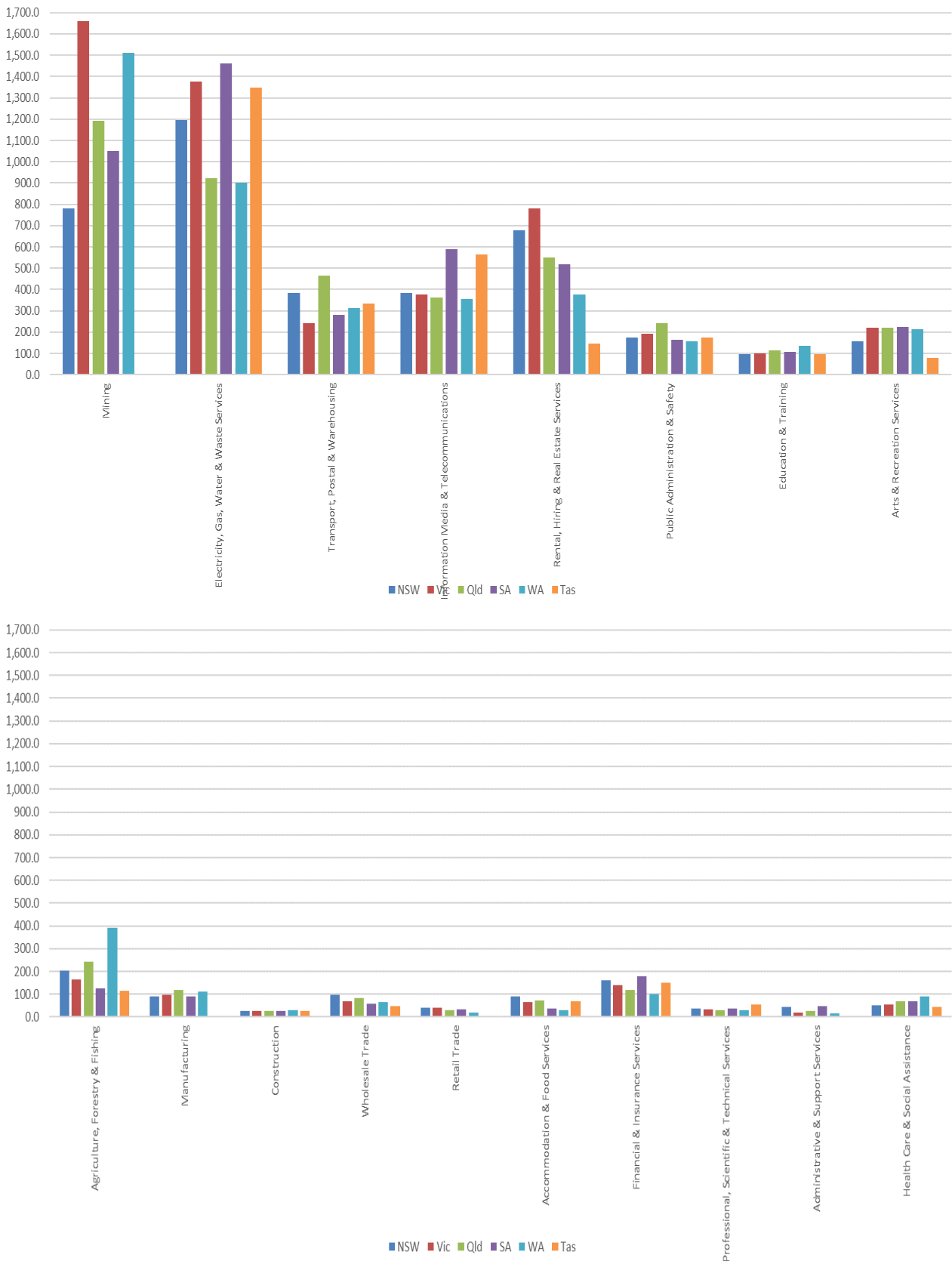


Source: ABS, *Australian National Accounts: State Accounts, 2018-19. Cat. No. 5220*, and *Labour Force, Australia, Detailed, Quarterly, Cat. No. 6291.0.55.003*

Reviewing the industry level capital stock data for 2013-14, the most recent year in which all industries are available in the South Australian data⁴⁵, Figure 51 shows that capital stock per hour worked is lower than other jurisdictions in Agriculture, Mining and Manufacturing. On the other hand, South Australia’s capital stock performance is higher than other states in Electricity, Gas, Water & Waste Services, Information Media & Telecommunications and Administrative & Support Services.

⁴⁵ In the more recent data for South Australia Mining and Manufacturing are merged.

Figure 51: Real Capital Stock per Hour Worked by Industry Sector, 2013-14



Note: Data for Tasmania is not reported for five of the industry sectors.

Source: ABS, Australian National Accounts: State Accounts, 2018-19. Cat. No. 5220, and Labour Force, Australia, Detailed, Quarterly, Cat. No. 6291.0.55.003

7. Research and development and innovation

In the context of productivity, competitiveness and economic growth, innovation is the development of new ideas and their application in new products, new ways of organising activity, or new processes. This distinguishes innovation from inputs such as creativity or research. It also includes a very broad set of activities that go far beyond the application of science and engineering. The OECD and Eurostat define innovation as:

An innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations⁴⁶.

A defining characteristic of innovation is novelty to the firm/organisation in question (although most innovation whilst new to the firm is not novel within the industry or world).

Why is innovation considered important to productivity and economic growth? There are essentially three ways in which the output of an economy can increase:

- acquiring more capital (or increasing its quality); or
- increasing the size of the labour force (or increasing its quality); or
- using the available capital and labour more efficiently (generally referred to as multi-factor productivity growth).

Increasing the capital stock can be costly, and it generally exhibits decreasing returns to scale (that is, each additional unit of capital increases productivity by slightly less than the previous unit). Similarly, there are constraints on how quickly an economy can increase the share of its population in work, or the skill levels of its labour force.

This means that growth in the efficiency with which existing inputs to production are used is an important factor in determining an economy's long term growth rate, and innovation is the mechanism by which these increases in efficiency are realised, and multifactor productivity is increased.

Research and development

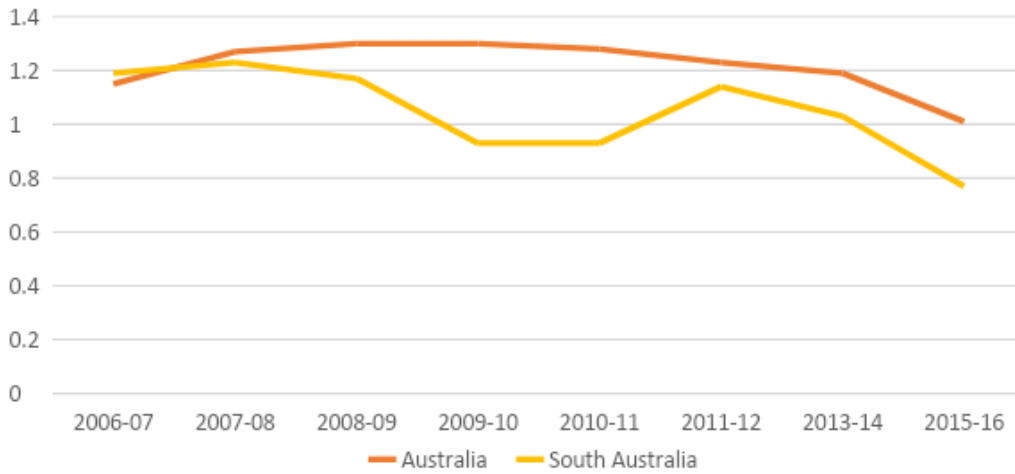
What is it that drives innovation? Research and development is an important input into the innovation process, both in terms of generating novel (or novel to the firm) ideas, and in terms of working out how to apply new technologies, ideas or ways of organising work in the workplace.

Research and development is usually measured in terms of expenditure, and this expenditure split between undertaking the R&D.

Business expenditure on R&D (BERD) as a proportion of both Australian GDP and South Australian GSP has declined, in unadjusted terms, between 2006-07 and 2015-16, with South Australia's proportion declining from 1.2 per cent to 0.8 per cent. Over the same period, BERD as a proportion of Australian GDP reduced from 1.2 per cent to 1.1 per cent.

⁴⁶ OECD, *The Measurement of Scientific and Technological Activities: Guidelines for Collecting and Interpreting Innovation Data: Oslo Manual, Third Edition*, the Working Party of National Experts on Scientific and Technology Indicators, Paris, para. 146, (2005).

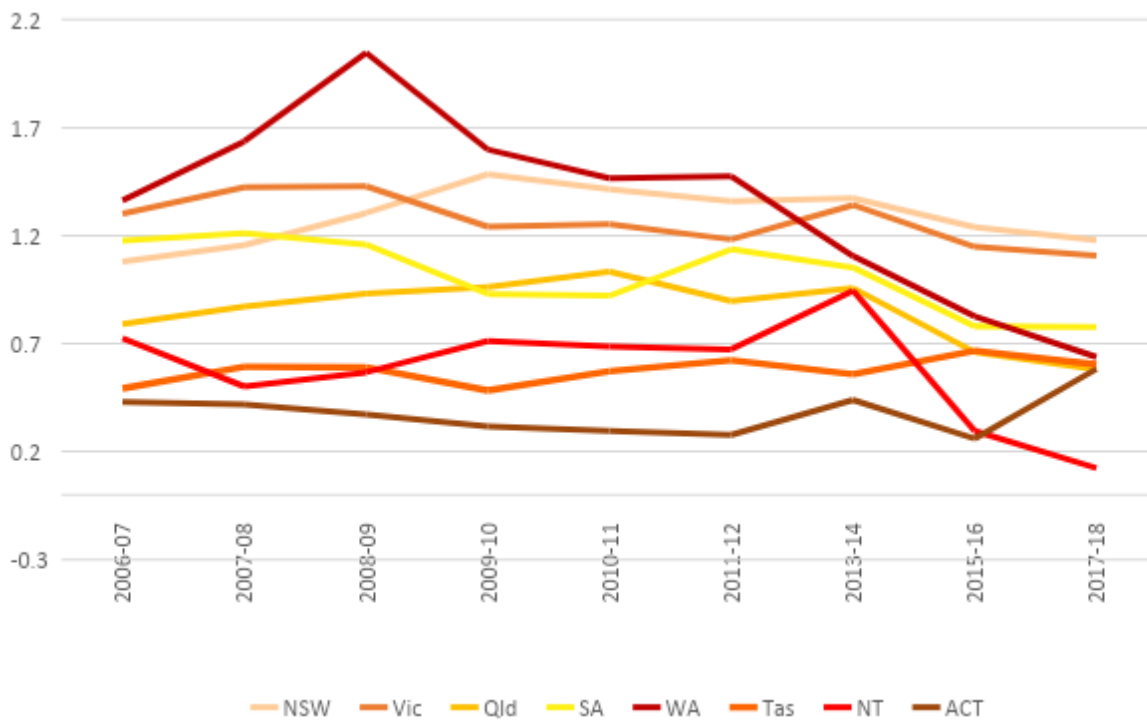
Figure 52: Business expenditure on research and development as proportion of GDP and GSP, South Australia and Australia (%), 2006-07 to 2015-16



Source: ABS 8104.0, ABS 5220.0

Looking across the states and territories, Figure 53 shows the dominant position of NSW and Victoria in national spending on business R&D. As a result, although, by 2017-18, South Australia has the third highest level of business R&D spending as a share of GSP, it is below the Australian average. The sharp decline in Western Australian BERD as a proportion of GSP was driven by the sharp rise in its GSP through the resource's investment boom rather than a decline in R&D expenditure, which remained reasonably constant.

Figure 53: Business expenditure on research and development as proportion of GSP, by state and territory (%)

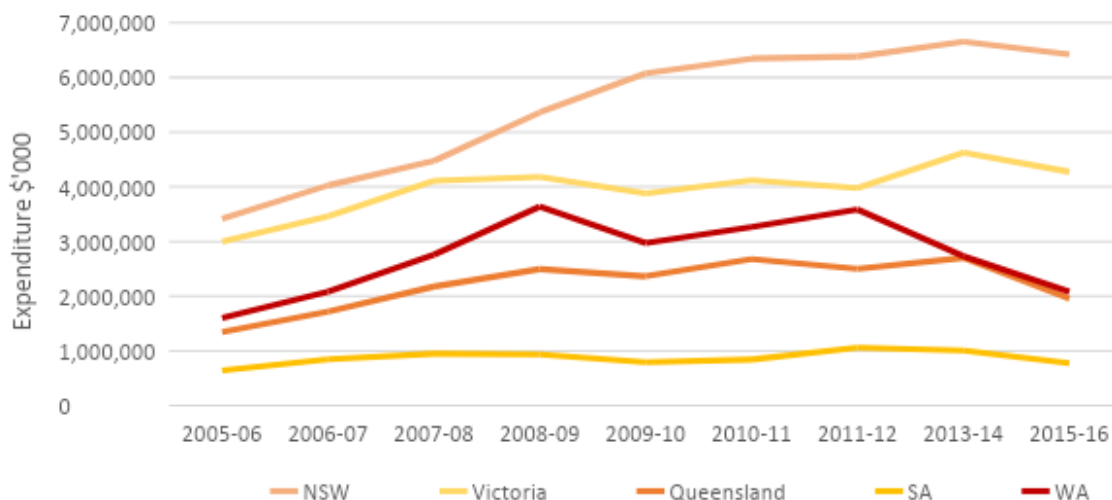


Source: ABS 8104.0, ABS 5220.0

In terms of the value of funds spent, New South Wales and Victoria continued to attract the highest levels of BERD in 2015-16, with \$6,421 million, or 39 per cent of total BERD, and \$4,275 million, 26 per cent of total BERD, respectively. South Australia's share of national BERD at 4.6 per cent is substantially below its share of the national population (6.9 per cent).

Queensland recorded the most significant overall decline in BERD between 2013-14 and 2015-16, dropping \$744 million or 28 per cent. South Australia's expenditure on BERD over the same period declined by \$229 million or 23 per cent.

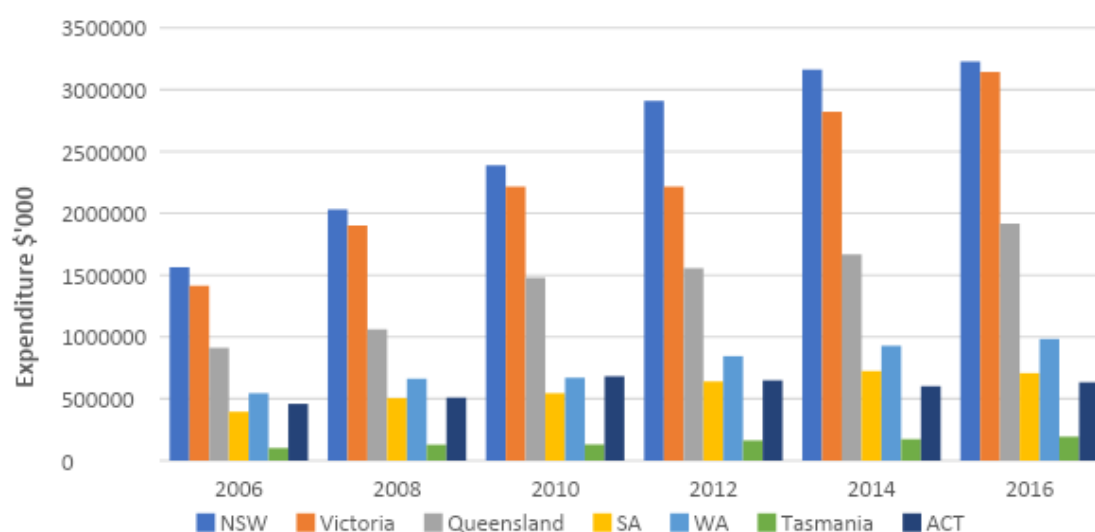
Figure 54: Total business expenditure on research and development, - NSW, Vic., Qld, SA and WA, real chain volume prices, 2005-06 to 2015-16



Source: ABS 8104.0

A similar pattern is seen in R&D expenditure in higher education institutions. In 2016, institutions based in New South Wales, Victoria and Queensland made up just over three quarters (76 per cent) of higher education expenditure on research and development (HERD), totalling \$3,226 million, \$3,142 million and \$1,918 million, respectively (in current price terms). HERD in South Australia totalled \$707 million or 6.5 per cent of the national total, which is close to SA's share of the national population (6.9 per cent). Compared with 2014, Victoria recorded the largest dollar increase in HERD in 2016, up \$322 million or 11 per cent. South Australia was the only location to experience a decrease, down \$17 million or 2 per cent between 2014 and 2016.

Figure 55: Higher education expenditure on research and development by state and the ACT (\$'000), 2006 to 2016



Source: ABS 8111.0.

Over the period between 2006 and 2016, total national expenditure on higher education research increased by 100.2 per cent, with expenditure in South Australia increasing over the same period by 79 per cent in current price terms. South Australia's share of total higher education expenditure on R&D declined from 7.3 per cent in 2006 to 6.5 per cent in 2016.

Access to finance can be a significant factor influencing business' ability to invest in R&D and to commercialise promising innovations. There is no single comprehensive data set available that measure the external funding available to businesses to fund innovation. The best available data is for venture capital funding, published by the Australian Private Equity and Venture Capital Association⁴⁷. But this only captures a portion of the funding potentially available to firms as it does not capture early stage funding such as angel investors, funding from proprietors' own resources, or bank loans secured against other assets owned by the firms' proprietors.

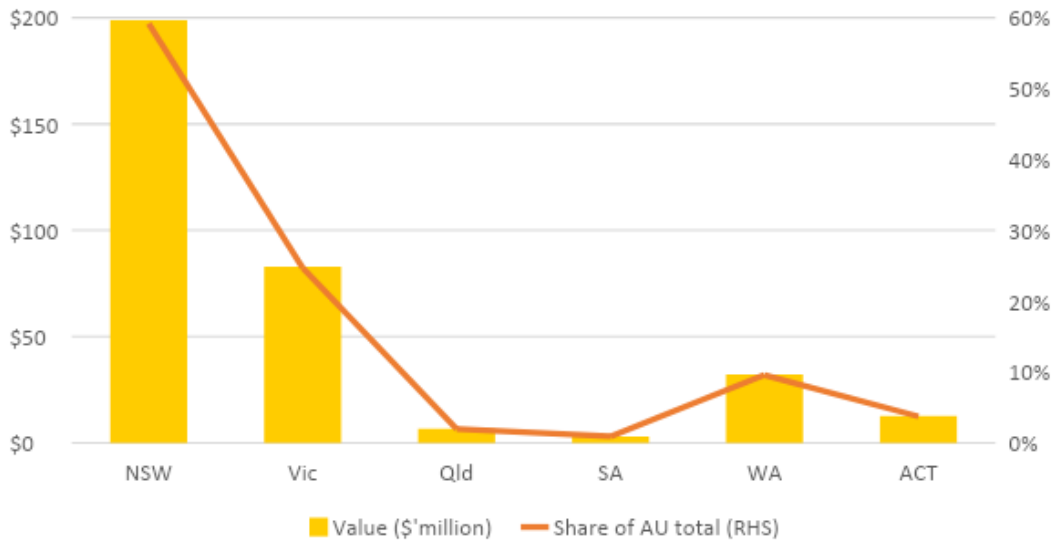
Firms' headquartered in New South Wales are significantly more likely to receive venture capital funding than those located in other states and territories, accounting for just under \$200 million in funding and almost 60 per cent of the national total⁴⁸. South Australian firms received only \$3 million in venture capital funding in 2017, 0.9 per cent of the Australian total. This data on access to venture capital funding concurs with the findings of other research into entrepreneurial firms in South Australia. For example, research undertaken by the Entrepreneurship Commercialisation and Innovation Centre at the University of Adelaide⁴⁹ found that many early stage firms reported a lack of access to external finance. Instead these firms typically reported having to have funded growth through their own retained profits, which had significantly held back their growth potential.

⁴⁷ Australian Private Equity & Venture Capital Activity Report, 2018 Yearbook, (November 2018).

⁴⁸ *Ibid.*

⁴⁹ Entrepreneurship Commercialisation and Innovation Centre at the University of Adelaide, (2015).

Figure 56: Venture capital funding by selected states and the ACT, \$'million and proportion of the Australian total (%), 2017



Australian Private Equity and Venture Capital Association (2018)

Innovation outputs

There is no single measure of innovation output, as it can vary widely between firms and between industries. Two commonly used measures are the proportion of firms that have introduced an innovation in the past year (innovation active firms), and the rates of patents issued.

The ABS no longer releases the data on business innovation activity at the state level, with the last data released relating to 2006-07. For what it is worth, this data suggests that South Australian firms back in 2006-07 were less innovative than those in the other reported states, with the lowest reported rate of innovations of the five states in three of the four categories (and in the fourth category—organisational/managerial processes—South Australia had the second lowest rate of reported innovation, only slightly higher than NSW).

Figure 57: Proportion of firms which reported having implemented one or more innovations in the past 12 months (%), by state and Australia, 2006-07



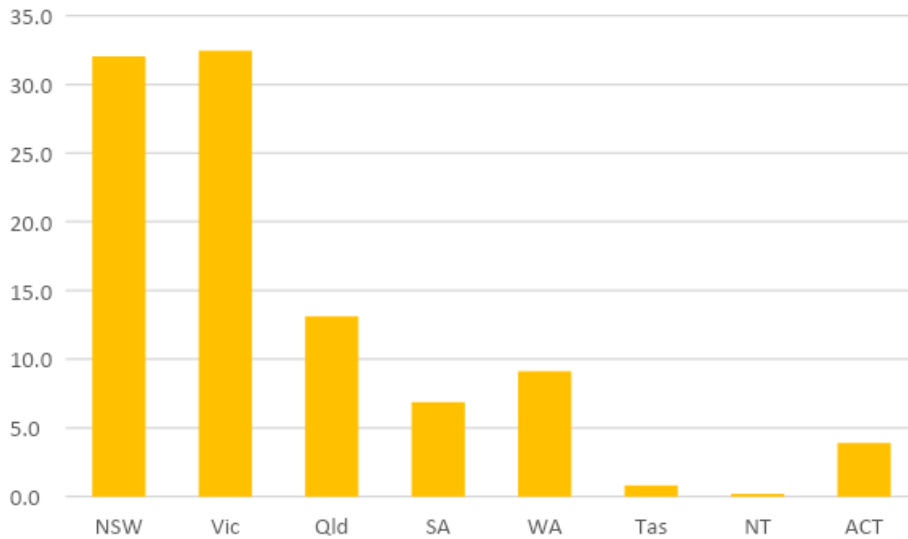
Source: ABS 8158

Note: data for Tasmania, Northern Territory and ACT are not reported individually as standard errors of the data are between 10 per cent and 25 per cent. These jurisdictions are included in the Australian total.

Patents are the other commonly used measure of innovation activity. They are a partial measure as product and process innovations are more likely to be patented than organisational and managerial processes. There does also tends to be an industry skew in patenting, with sectors such as manufacturing, biotechnology and health and IT more likely to protect innovations through patents. The big advantage of patents is that they are observed behaviour—the inventor felt this innovation was valuable enough to pay the filing fee for the patent—rather than being based on self-reported behaviours.

South Australia’s share of high quality patents in Australia (defined as patents filed under the international Patent Cooperation Treaty process, which provides protection for the intellectual property in multiple jurisdictions), is almost exactly in line with its share of the population, indicating an average performance in this area of innovation.

Figure 58: Proportion of Australian Patent Cooperation Treaty patents filed by state and territory (%), latest available data: 2013



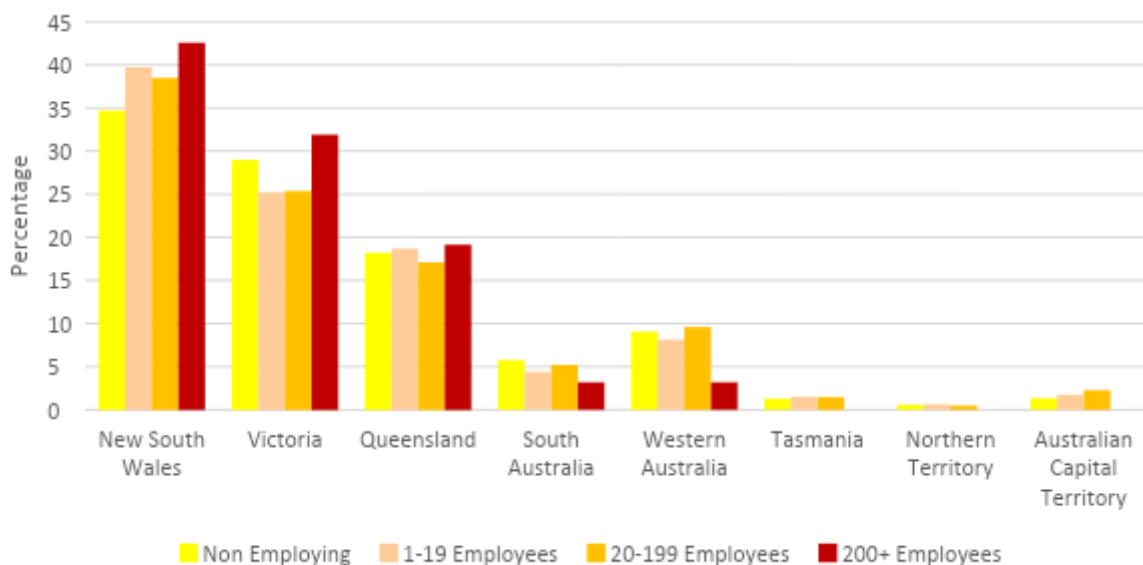
Note: Patents are weighted by inventors, e.g. a patent with inventors evenly split between three jurisdictions will be allocated as 1/3rd of a patent to each of the three jurisdictions.

Source: OECD REGPAT database.

Dynamism of the business sector

Data on business formation and exit from June 2019 suggest that South Australia has a relatively static business sector. South Australia’s share of new business entries is well below its population share (6.9 per cent) across all of the firm size categories, with the relative weakness being particularly apparent amongst firms with employment over 200 FTE, where it only accounts for 3 per cent of new entries. New South Wales by contrast is above its population share of 32 per cent in all of the size categories for business entry.

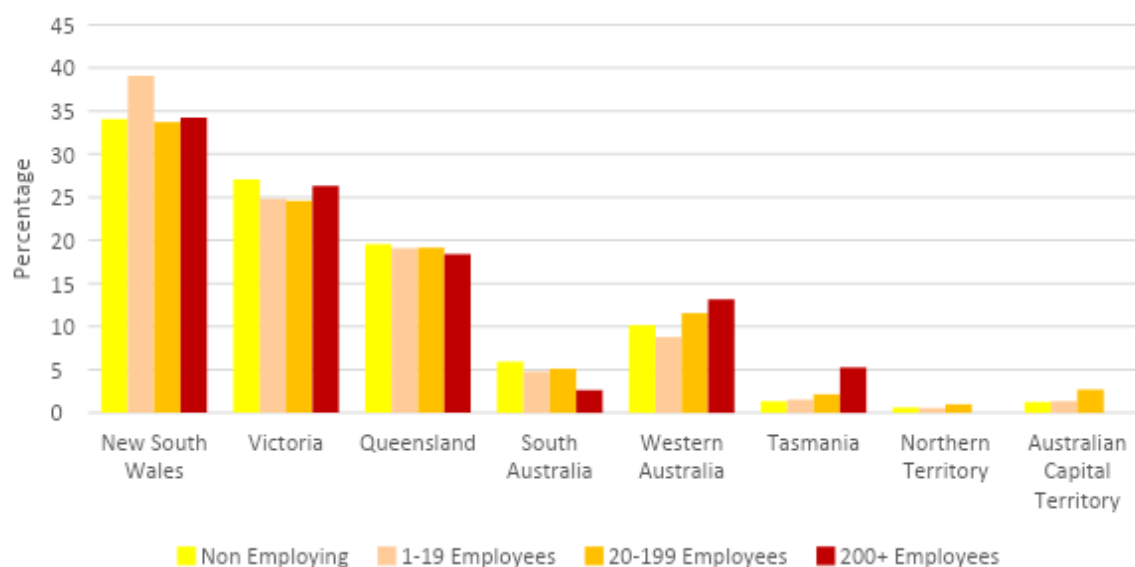
Figure 59: Proportion of business entries by employment size range (%), by state and territory, June 2019



Source: ABS, *Counts of Australian Businesses, including entries and exits, June 2015 to June 2019*. Cat. No. 8165.0.

A similar pattern can be seen in business exits, with South Australia again well below its population share for exits in each of the population size categories.

Figure 60: Proportion of business exits by employment size range (%), by state and territory, June 2019



Source: ABS, *Counts of Australian Businesses, including entries and exits, June 2015 to June 2019*. Cat. No. 8165.0.

Management quality

While the quality of management is likely to influence firm level productivity, data on the quality of management practices are limited, and difficult to collect and necessarily subjective. The best available data is from a 2009 global benchmarking study using a methodology developed by the London School of Economics and McKinsey and Company.⁵⁰ The results of this survey suggested that Australia's management performance was reasonable, sitting in the second tier of countries along with France, Great Britain and Italy. However, Australia's management performance was lower than the leading countries, the USA, Sweden, Japan, Germany and Canada.

The study also found that whilst the average management quality was good, there was a long tail of underperforming firms, which were most commonly family owned or privately held businesses without independent professional management. Firms with a broad base of shareholders had an average management score of 3.2⁵¹, which fell to an average of 3.0 for family firms with an external CEO, and fell further to an average of 2.9 for family firms with a family CEO and for privately held firms.

The study also compared average management quality across the states and territories, although these estimates are subject to much greater sampling error than the national estimates. Within Australia, South Australia is in the middle tier of states across each of the domains of management performance.

⁵⁰ University of Technology, Sydney Macquarie Graduate School of Management and the Society of Knowledge Economics *Management Matters in Australia: Just how productive are we? Findings from the Australian Management Practices and Productivity global benchmarking project* (2009).

⁵¹ Management performance was scored from 1 to 5.

Table 21: Average relative management quality by Australian states, 2009

	Operation	Performance	People	Overall
Statistically better	Victoria	Victoria		
Statistically not different	South Australia New South Wales	South Australia New South Wales	Victoria Queensland South Australia New South Wales	Victoria Queensland South Australia New South Wales
Statistically worse	Western Australia	Western Australia	Western Australia	Western Australia

Note: Sample size for Tasmania, ACT and NT was too small to analyse individually although firms from these jurisdictions are included in the national estimates. Rating for Queensland not published for 'Operation' or 'Performance'.

Source: University of Technology, Sydney Macquarie Graduate School of Management and the Society of Knowledge Economics (2009)

8. Conclusion

This paper presented competitiveness as a key framework when thinking about economic performance. It is best read in conjunction with a suite of research papers published by the South Australian Productivity Commission that explore concepts of productivity and competitiveness, as well as the role of the eight growth sectors in improving SA's economy.

The report applied the competitiveness concepts to South Australia through an analysis of time series, as well as in a cross sectional data comprising the comparison of states and territories, to examine long term and jurisdiction-specific trends. The indicators presented are largely informed by the competitiveness measures discussed in the report, especially the thematic headings used by the World Economic Forum (WEF). The social, economic and health impacts of the COVID-19 pandemic are yet to be fully realised, and therefore an assessment of the economic impacts of the pandemic is a subject for future work.

The time series and cross section data in this report suggest areas of competitive advantage:

- relatively low hourly labour costs and low-cost commercial office space; and
- electricity supply reliability and airport charges at, or better than, the national average and improving rail freight transit times.

The data also point to areas where the state's underpinnings for competitiveness are weak:

- poor and worsening performance in terms of multifactor productivity growth.
- a workforce that is less educated, less mobile and older than the national average;
- relatively low port productivity; and
- performance innovation below the national average.

An economy with growing productivity will generally be competitive in business sectors that pay higher wages and returns to capital and support high living standards for the population at large, leading to a higher standard of living.

South Australian workers earn lower hourly rates of pay than the national average. This reflects both differences in industry and occupational mix and differences in the average skill level of South Australian workers compared to other states. Employment growth in the state has been lower than the national average. South Australians face a longer than average search for employment and higher incidence of long-term unemployment. This suggests lower labour mobility in SA, a potential disadvantage in attracting new investment into the state.

The SA population aged 20 – 64 years has relatively lower qualification levels than other states. While this difference is partly explained by SA's older population, it is being exacerbated by the net interstate migration of younger, relatively more qualified people.

Liveability is regarded as influencing decisions on where to work, study, visit or live and is therefore important to attracting national and international tourists, students and migrants, as well as labour and managerial workers. Adelaide has recorded top ten rankings in the EIU liveability index covering 140 cities world-wide for several years, while Adelaide ranked 29th out of 450 cities globally on the Mercer quality of living index. Similar global comparisons of cost of living rated Adelaide as 51st (EIU) and 109th (Mercer).

Infrastructure, and the cost and quality of services it provides, can have important implications for productivity and quality of life. Inter-jurisdictional comparisons of transport, water and energy infrastructure performance have been made.

Average road commute times in greater Adelaide rank in the middle order of Australia's capital cities and Adelaide's historical advantage over other capitals has declined over the last two decades. SA has performed close to the national average in terms of road crashes and fatalities.

In the case of electricity infrastructure reliability, SA has performed at around the national electricity market (NEM) average (measured by frequency of interruptions), and better than the NEM average in terms of duration of interruptions, over the last two decades. Adelaide has experienced relatively faster growth than other capitals in electricity prices over the last decade, but a slightly slower pace of growth in prices for gas and other household fuels.

A mixed picture for SA's urban water system reliability over the six years to 2018-19 is suggested by a lower frequency, but higher average duration, of service interruptions compared to other states. SA's urban sewerage network has generally underperformed in terms of reliability over the same period. Prices for water and sewerage services in Adelaide have grown more slowly than the national average over the last two decades.

Productivity at Adelaide's container terminal port facility is low compared to other capital city ports, with Adelaide failing to experience the productivity gains in other ports over the last decade.

While data on air freight services are not available for Adelaide, examination of airport charges for passenger services indicates significant variation between major airports. Adelaide's charges have been relatively stable over the six years to 2017 and close to the average of the five airports examined. In terms of rail freight, transit times between Adelaide and other capital cities have remained stable or improved over the five years to 2019, with the exception of Adelaide to Melbourne.

Over the last three decades SA business investment as a share of GSP has generally tracked in line with other non-resource rich states. The level of physical capital stock per worker is an important influence on productivity. Estimates for 2017-18 indicate that SA's capital stock per hour worked is somewhat low, even after taking account of the impact of inter-jurisdictional differences in industry structure.

Innovation is a major driver of improvements in productivity. SA's business expenditure on R&D has been static in the decade to 2015-16 and the state's share of national expenditure has fallen below its population share. Similarly, expenditure on R&D by higher education institutions has grown more slowly in SA than the eastern states and SA's share of national activity has fallen.

In terms of output related measures of innovation, SA has been underperforming, with its share of national activity in terms of venture capital, number of new businesses established, and number of new patents filed, falling below its population share.

For more information

W: www.sapc.sa.gov.au

E: sapc@sa.gov.au

P: (08) 8226 7828

30 Wakefield Street
Adelaide SA 5000