Australian Government

Department of Infrastructure, Transport, Regional Development, Communications and the Arts

# Experimental Gross Regional Product estimates

## Key points

- In 2020–21, the economic contribution of capital cities to the national economy was 69.2 per cent, with regional Australia[1] contributing 30.8 per cent. This is similar to the share of employment.
- The average annual growth of Real GRP between 2015–16 and 2020–21 was 2.0 per cent for the capital cities, and 1.4 per cent for regional Australia.
- Across the 88 Statistical Areas 4 (SA4) regions, GRP in 2020–21 ranged from $1.8 billion (South East in Tasmania) to $168.1 billion (Sydney – City and Inner South), with 90 per cent of SA4s having GRP growth in Real terms between 2015–16 and 2020–21.
- Collectively, per capita GRP[2] was $83,800 for all capital cities, and $76,300 for regional Australia.
- Per capita GRP in 2020–21 ranged from $55,400 in rest of Victoria to $293,000 in rest of Western Australia.
- In 2020–21, Northern Australia's GRP was within the range of $177.8b and $240.8b, or between 8.5 and 11.5 per cent of the nation's total economic output. (The range is due to some SA4s being partly outside the Northern Australia boundary, so the upper value includes SA4s with some areas in the south.)

2 Per capita GDP has been rounded to 100 throughout this document.

The economic outcomes of Australia's regions can vary due to differences in economic structures, degree of specialisation, agglomeration advantages and their connections with external markets. While all of Australia's regional economies are interconnected, each region contributes to the national economy.

A measure of a region's economic contribution to the national economy is called Gross Regional Product (GRP), which estimates the total value of goods and services produced in a given year in that region. This is the regional equivalent to the national Gross Domestic Product (GDP).


This factsheet presents experimental GRP estimates for sub–state Statistical Areas 4 (SA4s) regions for 2015–16 and 2020–21. These estimates provide insight into how a region is performing economically over time.

The method is adapted from the income approach presented by the Office of the Chief Economist within the then Department of Industry, Innovation and Science, Australian Industry Report 2016 and (earlier) the then Queensland Treasury and Trade. Two key data sources for these estimates are the Australian Bureau of Statistics (ABS) 2016 and 2021 Census of Population and Housing, and the Australian National Accounts: State Accounts, 2022–23 financial year.

This publication is accompanied by an Excel spreadsheet presenting the GRP estimates for all SA4s, and an interactive map within the Regional Data Hub.

1 See 'defining regions' on page 21 for an introduction to this geographic boundary classification.

# Performance of Australian economy by state and territory

Over the past three decades, the Australian economy experienced almost continuous growth in Gross Domestic Product (GDP). This streak was broken in 2019–20, with a decline of 0.3 per cent during the pandemic. The economy quickly recovered, growing over the next three years. In the latest year (2022–23), GDP grew by 3.0 per cent.

Figure 1 presents Australia's GDP and the state–level measure, Gross State Product (GSP). Over the long term, all States and Territories experienced GSP growth, with only a few periods of decline.

During the pandemic in 2019–20, four states experienced GSP declines. Queensland GSP declined by 1.1 per cent, followed by New South Wales and South Australia, both declining by 1.0 per cent, and Victoria at 0.3 per cent. The strongest GSP growth in this year was for the Northern Territory at 6.0 per cent.

In the following year, 2020–21, most States and Territories recovered, with the strongest GSP growth in South Australia (4.9 per cent), followed by Tasmania (4.8 per cent), Australian Capital Territory (3.9 per cent) and Western Australia (3.3 per cent). GSP fell in two locations: Victoria, for a second year, with a 0.2 per cent fall, and the Northern Territory, whose GSP fell by 1.6 per cent.

**Figure 1: Real Gross State Product index 1990–91 to 2022–23**


Source: Australian Bureau of Statistics 2023, Australian National Accounts: State accounts – Australian National Accounts: State Accounts, 2022–23 financial year | Australian Bureau of Statistics (abs.gov.au)

Note: Based on chain volume measures.

# Gross Regional Product, SA4s, 2020–21

Map 1 presents the experimental GRP estimates for 2020–21 for 88 SA4s. In terms of economic output, the largest SA4s include:

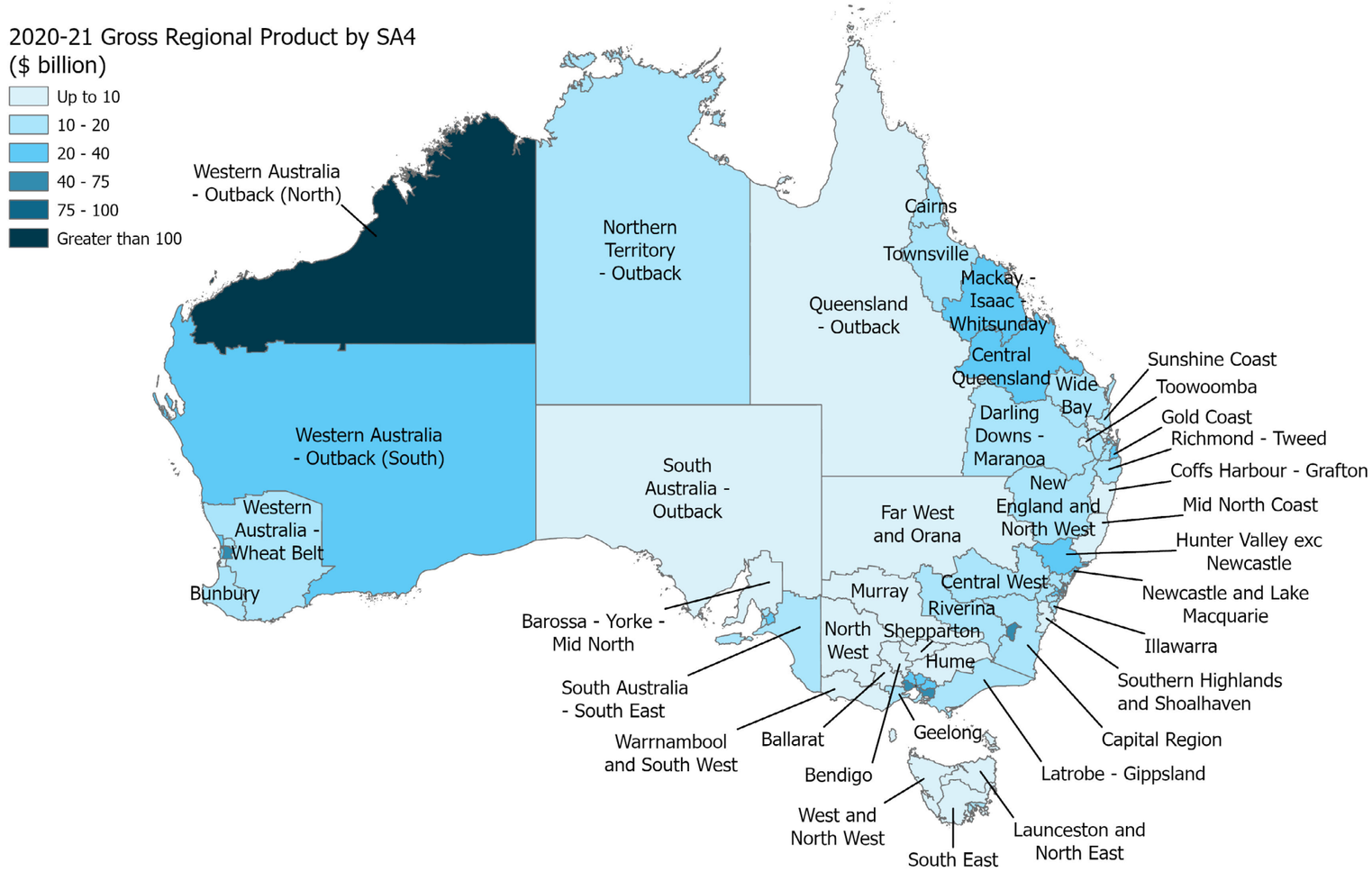
- The Inner areas of the largest capital cities: Sydney - City and Inner South ($168.1b), Melbourne - Inner ($165.9b), Perth - Inner ($77.9b) and Brisbane Inner City ($76.8b). Together these accounted for 23.4 per cent of total economic output, but only 16.8 per cent of total employment (by place of work).
- Western Australia - Outback (North) ($101.2b), the SA4 with third largest GRP, due to its mining operations.

The SA4s with the smallest GRP include usually regional areas across the country with a smaller number of people employed (under 55,000 workers each):

- South East in Tasmania ($1.8b), Mandurah in Western Australia (within Perth) ($4.4b), Barossa - Yorke - Mid North in South Australia ($6.2b), Coffs Harbour - Grafton in New South Wales ($6.9b) and Murray NSW ($7.5b).

Differences between regions can be due in part to the size of employment, incomes, and industry structure in each SA4.

## Map 1: Gross Regional Product by Statistical Areas Level 4, 2020–21



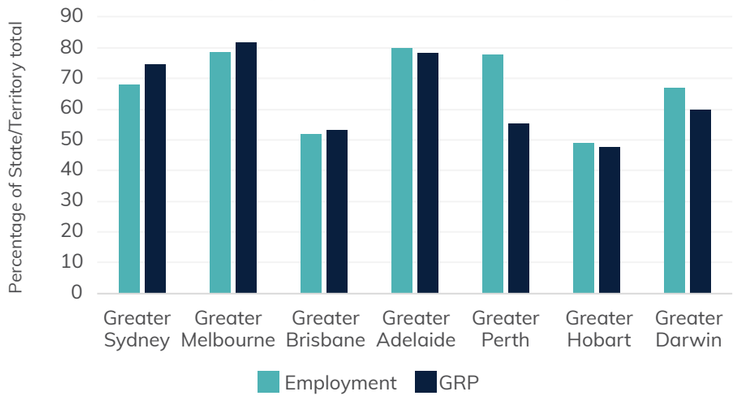

Source: BCARR analysis. Map 2 provides a more detailed view of the GRP within capital cities.

# Gross Regional Product, capitals and rest of state areas, 2020–21

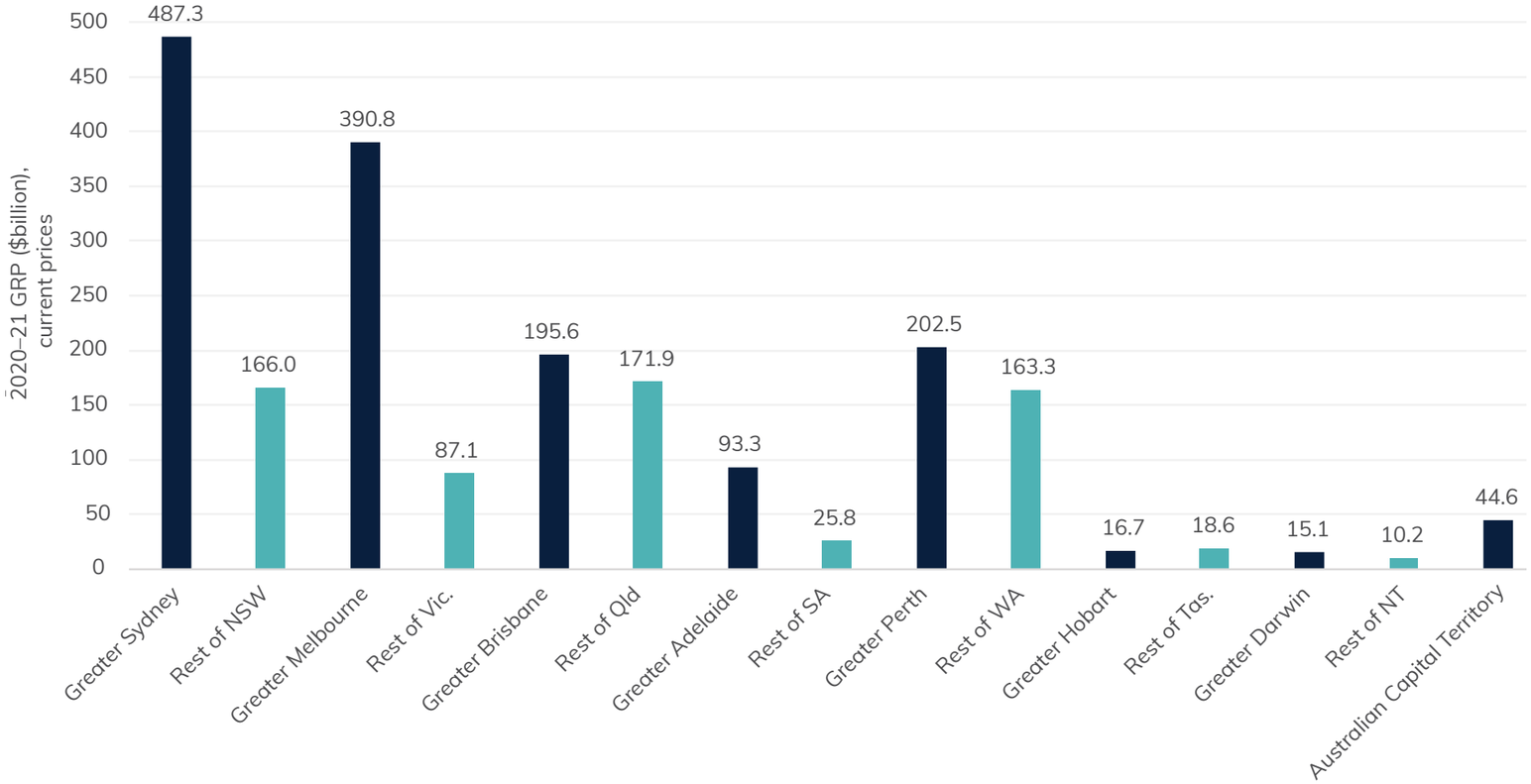
Figure 3 presents the distribution of GRP for the capital cities and regional Australia.[3] The capital cities' economic output ($1446.0b) represents 69.2 per cent of the national economy, with the remaining 30.8 per cent ($642.9b) from regional Australia. By way of comparison, in 2021, regional Australia accounted for 30.3 per cent of employment by place of work (ABS 2021), and 32.8 per cent of the population (ABS 2023).

Sydney and Melbourne together make up 42.0 per cent of the total economic output of Australia. Sydney's GRP is three times the size of the GRP for Rest of New South Wales, while Melbourne's GRP is four and a half times the size of the GRP for Rest of Victoria. As Figure 2 shows, the largest capitals have proportionately larger GRP than employment within their state, while the smaller ones have proportionately less.

## Figure 2: Percentage of State/Territory GRP (2020–21) and Employment (2021), Capital cities




## Figure 3: Gross Regional Product, capital cities and rest of state areas, 2020–21




Source: BCARR analysis. Gross Regional Product, Capital city SA4s, 2020–21

3 Throughout this document, capital cities and regional Australia (rest of state) areas are defined based on the Australian Bureau of Statistics (ABS) Greater Capital City Statistical Areas (GCCSA) 2021 classification. The ABS category of Other Territories is excluded, as GRP estimates are not available.

# Gross Regional Product, Capital city SA4s, 2020–21

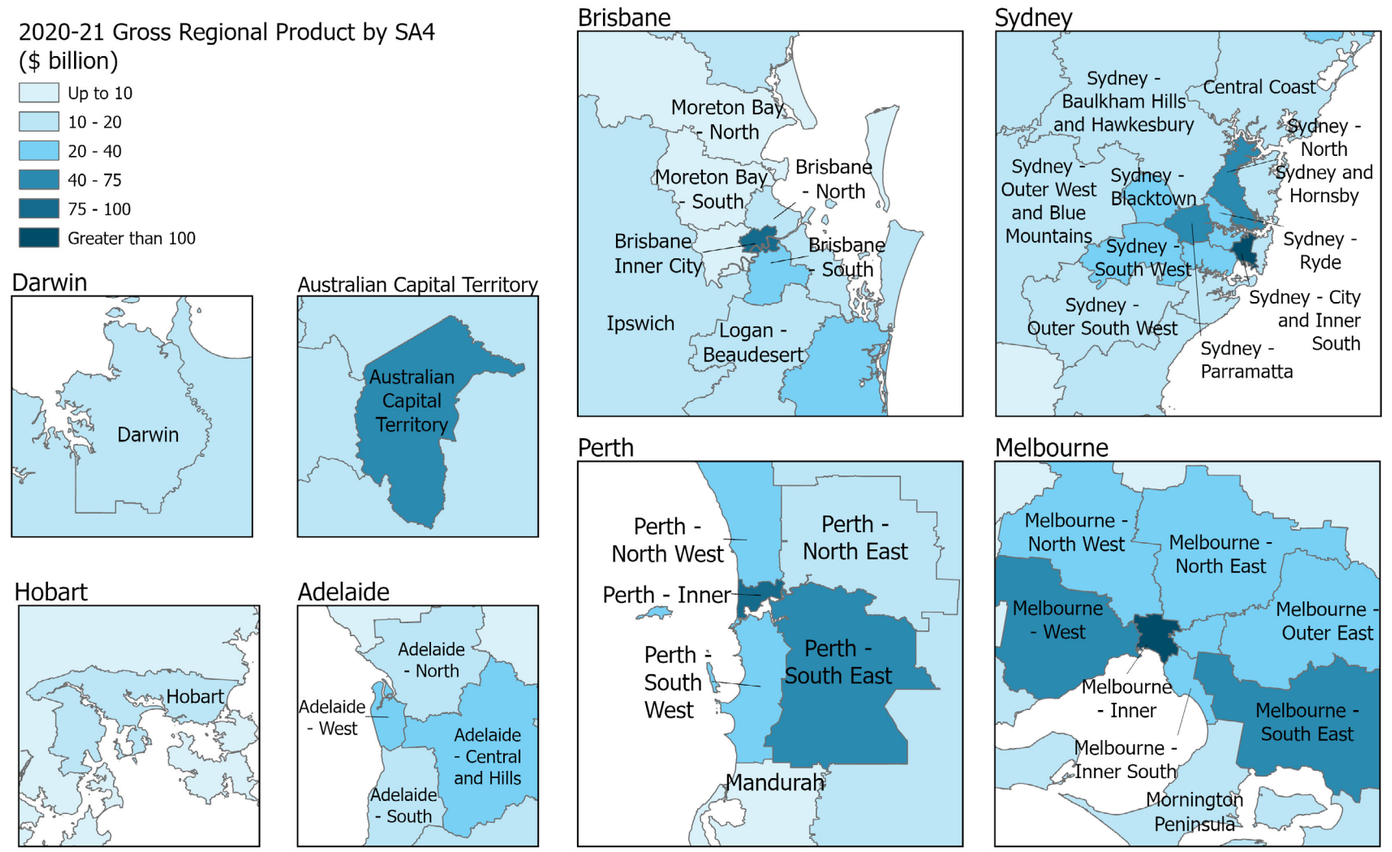
The most inner SA4s of Sydney, Melbourne, Perth and Brisbane had by far the largest GRP of any SA4 in each capital (Map 2). These areas contain the central business districts, and are a key location of employment.

The characteristic industries of these inner city areas were the high–income Professional, Scientific and Technical Services and Financial and Insurance Services, which contributed strongly to GRP. Each of the inner/central SA4s[4] in Sydney, Melbourne, Brisbane and Perth had more than 18 per cent of their workforce in Professional, Scientific and Technical Services (compared to 8.2 per cent nationally), as did Sydney - North Sydney and Hornsby, also in the top ten GRP SA4s nationally. For Perth - Inner, mining also contributed strongly to its GRP.

Within Sydney, SA4s in the inner and middle areas had the next largest GRPs, while SA4s further from the city centre were smaller.

For the smaller capital cities of Hobart and Darwin, a single SA4 represents the city, with GRPs of $16.7b and $15.1b respectively. The Australian Capital Territory produced $44.6b.

## Map 2: Gross Regional Product, capital city Statistical Areas Level 4, 2020–21




Source: BCARR analysis

4 These are Sydney – City and Inner South, Melbourne – Inner, Brisbane Inner City and Perth – Inner.

# Gross Regional Product per capita, capitals and rest of state areas, 2020–21

Looking at GRP per capita (Figure 4) can provide additional insight, because the population sizes of SA4s vary (with some exceptions) between about 100,000 and 600,000 people.

Due to mining activity, Rest of Western Australia has a much higher per capita GRP ($293,000) compared with all other regions.

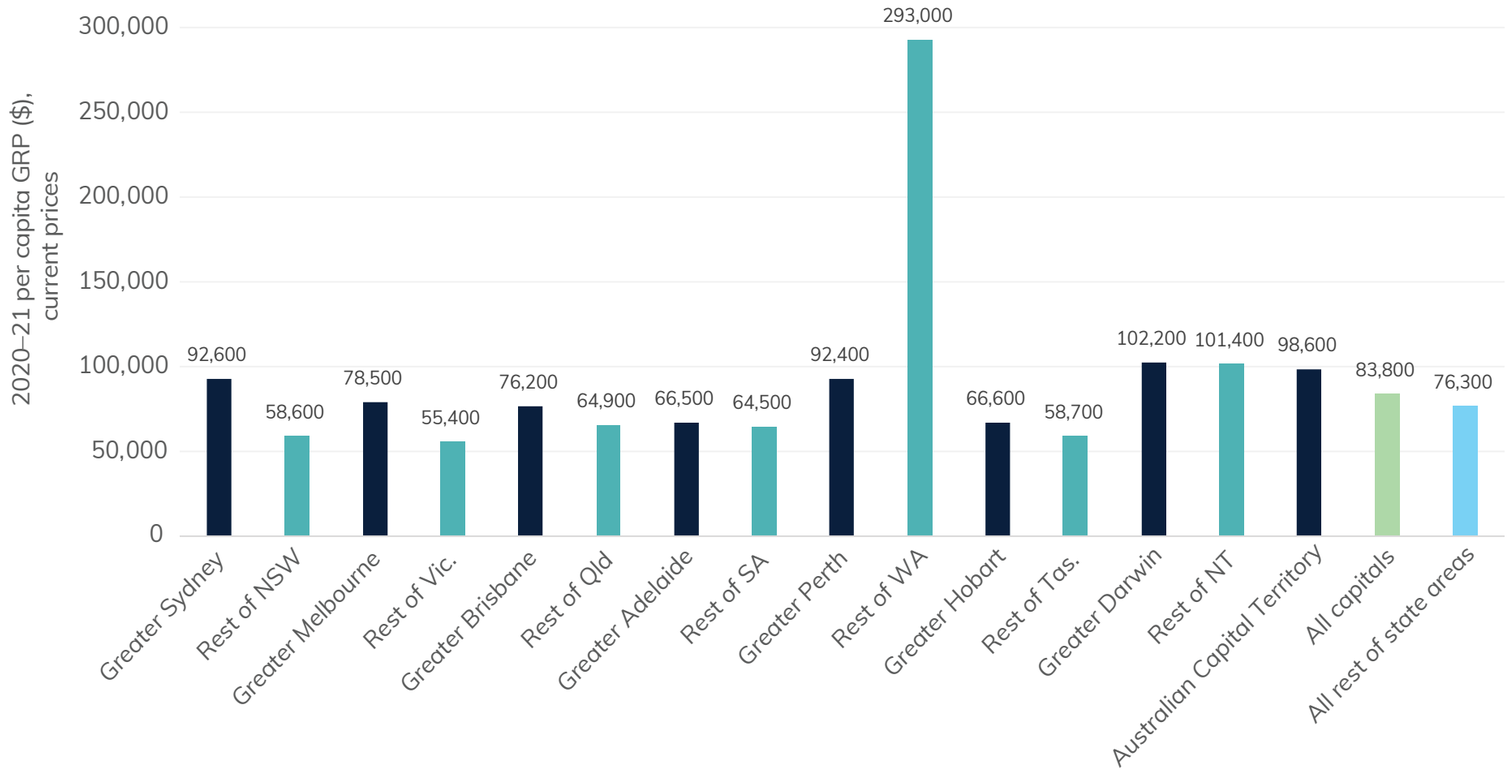
The next two highest locations were in the Northern Territory, with Darwin having a higher per capita GRP ($102,200) than Rest of Northern Territory ($101,400).

Apart from Perth, the capital cities had higher per capita GRP than the rest of state areas. This difference was more pronounced in New South Wales and Victoria, where the rest of state areas' per capita GRPs were only about two thirds of the capitals' values.

Collectively, per capita GRP was $83,800 for all capital cities, and $76,300 for regional Australia.

A limitation of this per capita approach is that it divides the value of goods and services produced in a location among the people living in the location. This makes sense for larger areas, in which many people both live and work. However, it is not as meaningful to compare the number of people living in the centre of Sydney with the value created by the people who work there. Therefore, per capita GRP is presented only for the capital cities, rest of state areas and (in subsequent pages) SA4s outside the capitals, as these are more likely to reflect places within which people both live and work – with some exceptions.

**Figure 4: Per capita Gross Regional Product, capital cities and rest of state areas, 2020–21**




Source: BCARR analysis (GRP). Population: ABS 2023, Regional population, 31/08/2023 update

# Change in Real Gross Regional Product, capital cities and rest of state areas, 2015–16 to 2020–21

Figure 5 shows the average annual change in Real GRP between 2015–16 and 2020–21 for capital cities and rest of state areas.

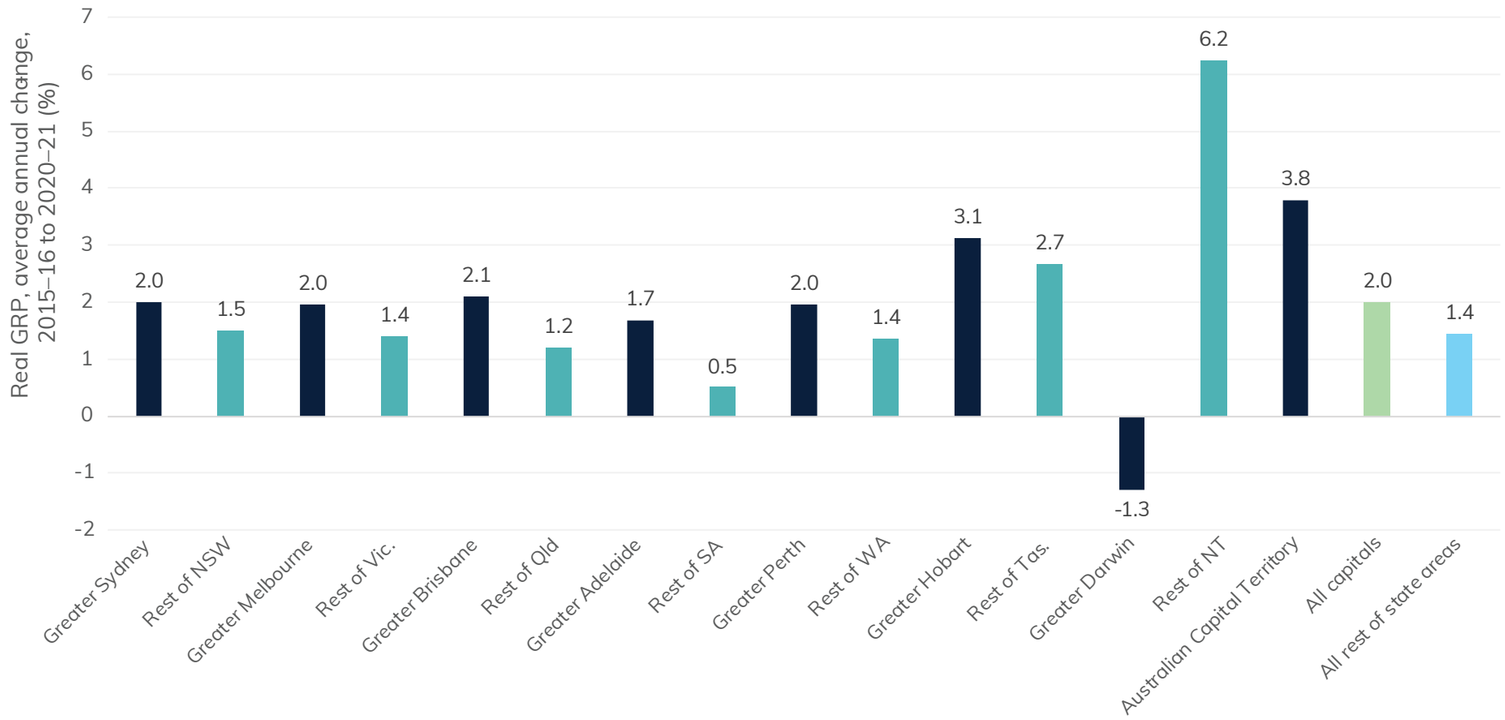
The three largest capital cities had very similar average annual Real GRP growth rates of between 2.0 and 2.1 per cent, while their rest of state areas had between 1.2 and 1.5 per cent.

Hobart and the ACT, two of the smaller capitals, had the strongest annual growth of 3.1 and 3.8 per cent respectively.

While the collective GRP growth of rest of state areas was 1.4 per cent, there was a lot of variability across these areas. Rest of NT had notably higher growth than the other regional areas, at 6.2 per cent per year.

The only capital or rest of state area with a fall in GRP over the five years was Darwin, but as seen on page 6, it was among the regions with the highest per capita GRPs. Darwin's Real GRP being higher in 2015–16 than in 2020–21 is attributable in part to the activity associated with the construction. More generally, the Northern Territory's Gross State Product is subject to large year-on-year changes.

## Figure 5: Average annual change in Real Gross Regional Product, capital cities and rest of state areas, 2015–16 to 2020–21




Source: BCARR analysis. Presented in Real terms (calculated to $2021-22). See method slides for details of conversion to Real.

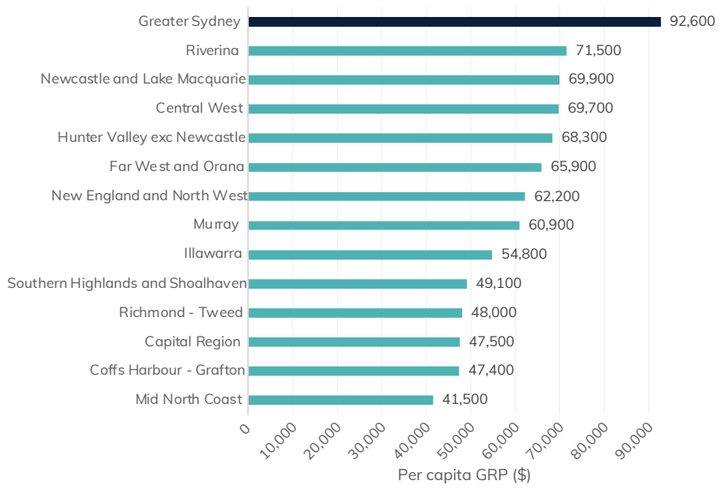
# Gross Regional Product, New South Wales SA4s, 2020–21

Figures 7 and 8 show the distribution of GRP for SA4s in Greater Sydney and in the Rest of New South Wales.

As in other large capital cities, GRP is concentrated in the inner area (Sydney - City and Inner South), representing over a third of the city's total GRP.

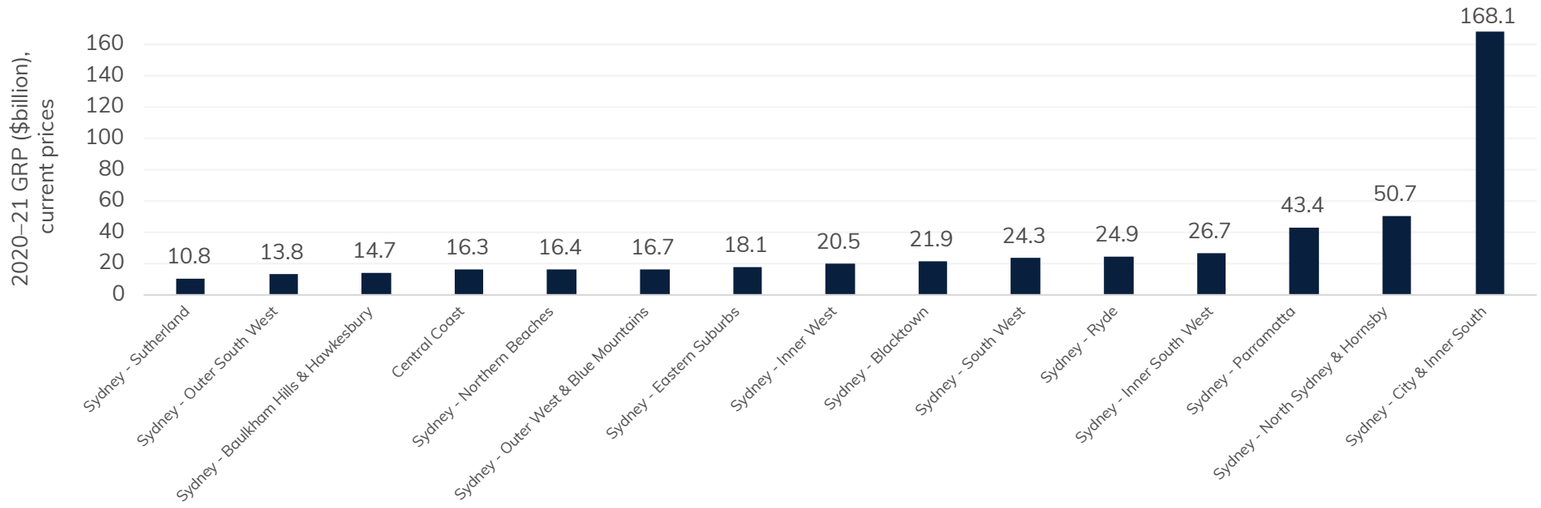
In the Rest of New South Wales, the highest GRPs were in the three largest areas (Newcastle and Lake Macquarie, the adjacent Hunter Valley exc. Newcastle, and Illawarra). However, Riverina and Far West and Orana are in the top five regional NSW SA4s by GRP per capita (Figure 6 below).

## Figure 6: Per capita GRP by SA4s and capital, New South Wales, 2020–21



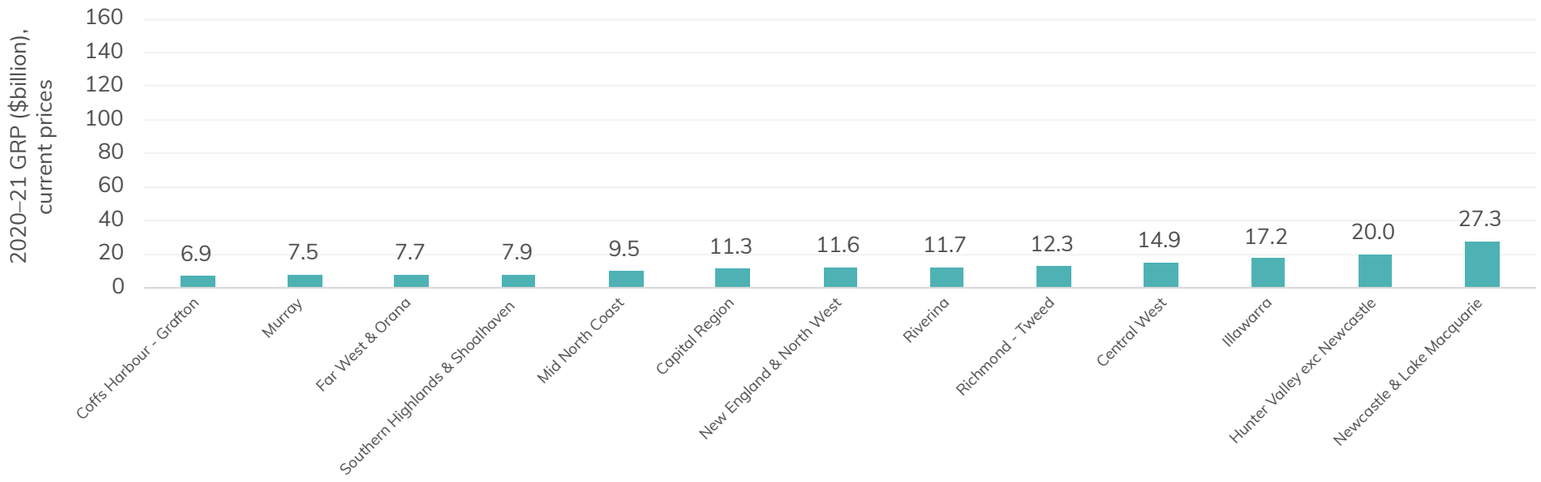

Source: BCARR analysis (GRP). Population: ABS 2023, Regional population, 31/08/2023 update.

## Figure 7: Gross Regional Product by Statistical Areas Level 4, Greater Sydney, 2020–21




Source: BCARR analysis.

## Figure 8: Gross Regional Product by Statistical Areas Level 4, Rest of New South Wales, 2020–21




Source: BCARR analysis.

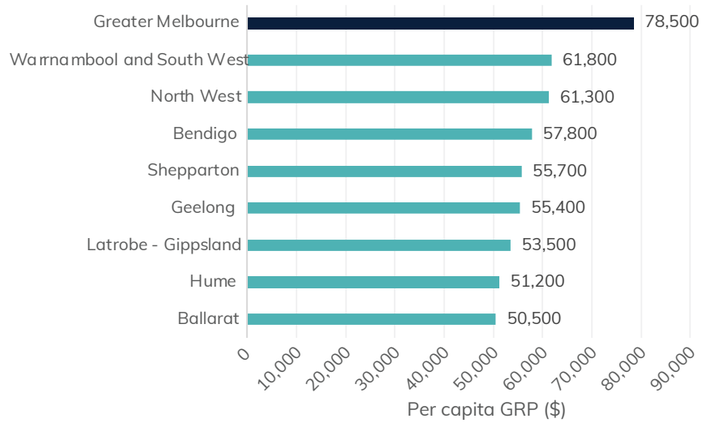
# Gross Regional Product, Victorian SA4s, 2020–21

Victoria's SA4-level GRP follows a similar pattern to New South Wales (Figures 10 and 11). The Melbourne - Inner SA4 had by far the largest GRP (of $165.9b), representing 42.5 per cent of Melbourne's total GRP. This SA4 had the largest number of employed among all SA4s (778,703 people in 2021).

All Melbourne SA4s had larger GRPs than the SA4s in rest of Victoria, except for Mornington Peninsula, in the southeast of the city.

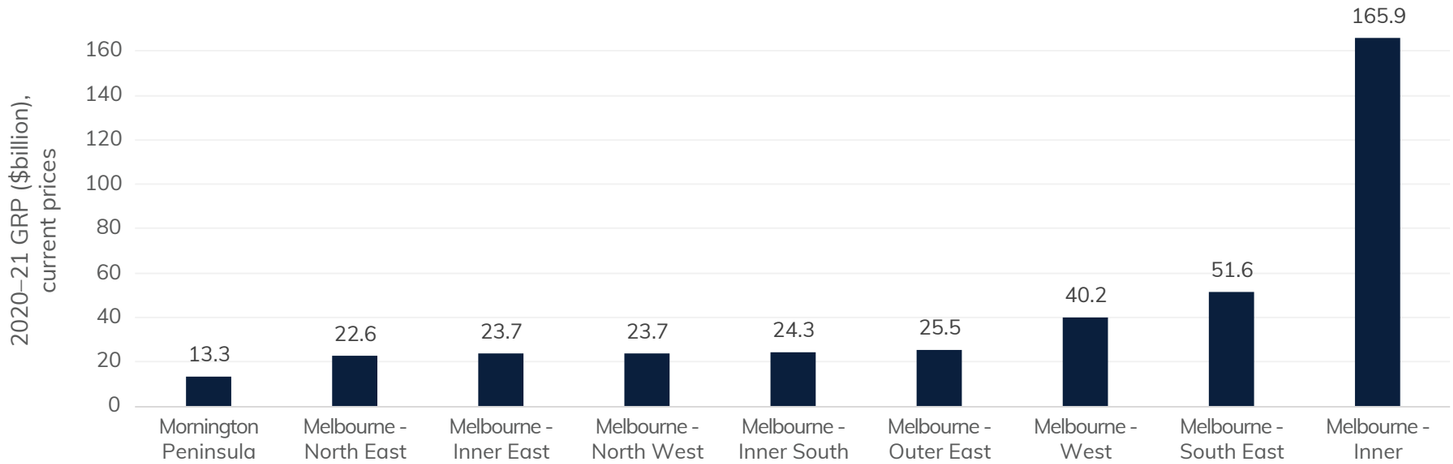
However, SA4s with some of the smallest total GRP in the state (under $10 billion) had some of largest per capita GRPs outside of Melbourne (Figure 9).

## Figure 9: Per capita GRP by SA4s and capital, Victoria, 2020–21

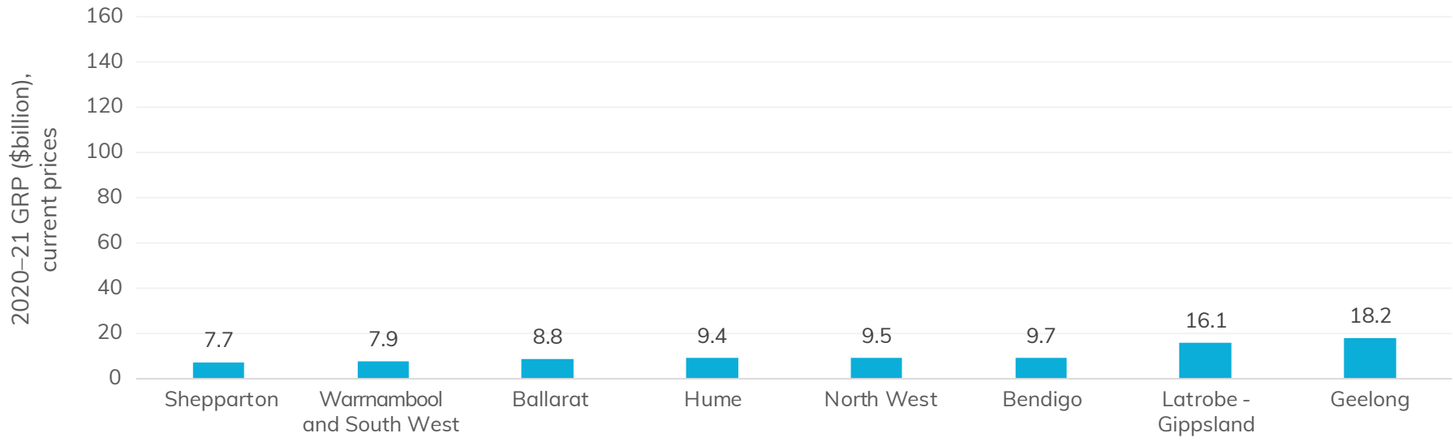



Source: BCARR analysis (GRP). Population: ABS 2023, Regional population, 31/08/2023 update.

## Figure 10: Gross Regional Product by Statistical Areas Level 4, Greater Melbourne, 2020–21




## Figure 11: Gross Regional Product by Statistical Areas Level 4, Rest of Victoria, 2020–21



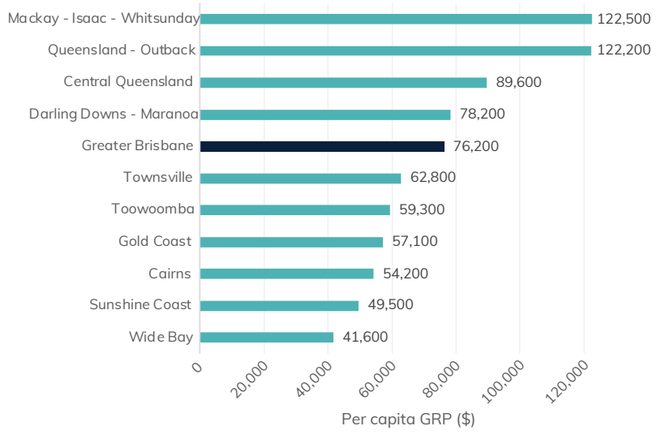

Source: BCARR analysis.

# Gross Regional Product, Queensland SA4s, 2020–21

Queensland is similar to Sydney and Melbourne in having a large concentration of the State's GRP in the capital city's innermost SA4. However, many Queensland rest of state SA4 GRPs were similar in size to or exceeded those of the Brisbane SA4s. This in part reflects the geography, with Gold Coast ($37.1b) a large urban area outside the capital.

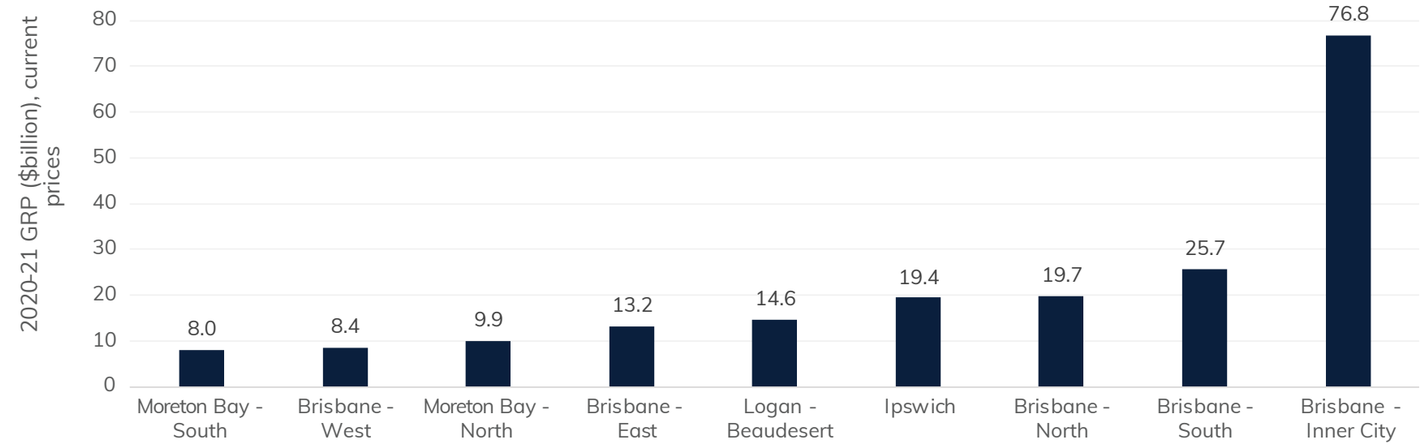
Another point of difference with Sydney and Melbourne is that Brisbane did not have the largest per capita GRP of the state (Figure 12). Four Queensland rest of state SA4s had higher per capita GRP than the capital city. Mackay - Isaac - Whitsunday and Queensland - Outback each had over 18 per cent employed in mining, which in part contributed to their high figures.

## Figure 12: Per capita GRP by SA4 and capital, Queensland, 2020–21

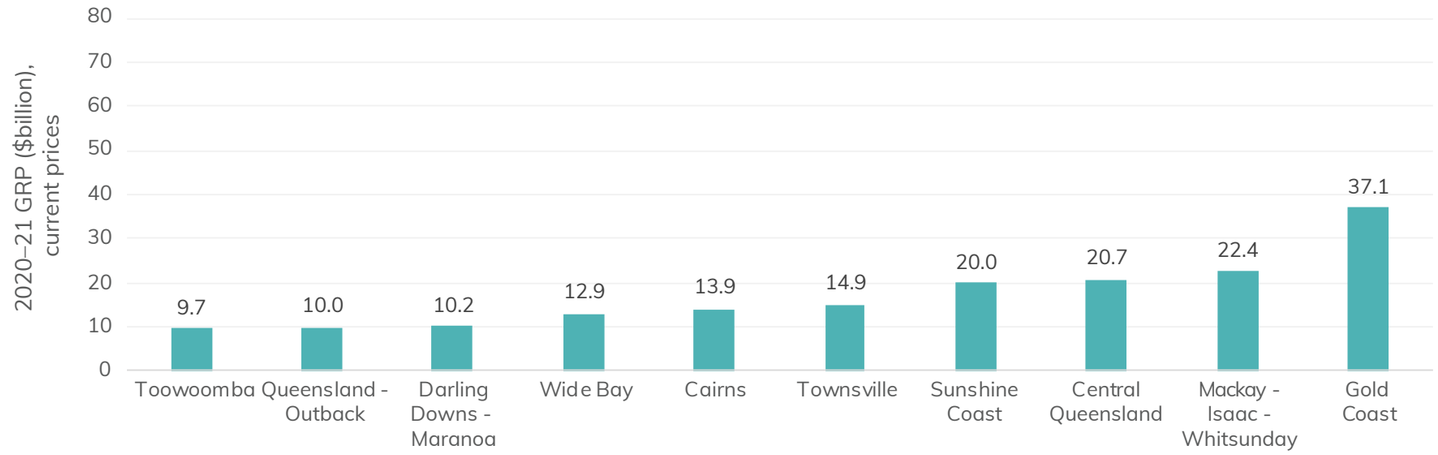



Source: BCARR analysis (GRP). Population: ABS 2023, Regional population, 31/08/2023 update.

## Figure 13: Gross Regional Product by Statistical Areas Level 4, Greater Brisbane, 2020–21




## Figure 14: Gross Regional Product by Statistical Areas Level 4, Rest of Queensland, 2020–21




Source: BCARR analysis.

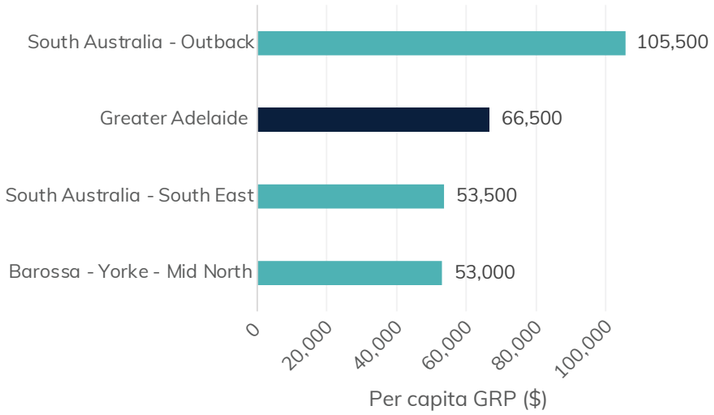
# Gross Regional Product, South Australian SA4s, 2020–21

Similar to the eastern states, the inner area of Adelaide produced the most GRP in the state (Figure 16, Adelaide - Central and Hills, with $37.6b). In contrast to other South Australian SA4s, Adelaide - Central and Hills had 12.9 per cent of its employment in Professional, Scientific and Technical Services, while the remaining SA4s had less than 5 per cent.

While the capital city SA4s all had higher GRP than the three regional SA4s, they were also larger in terms of employment size. The regional SA4s had about 41,000 to 75,000 workers each, while the Adelaide SA4s each had between about 115,000 and 241,000 - illustrating the size differences.

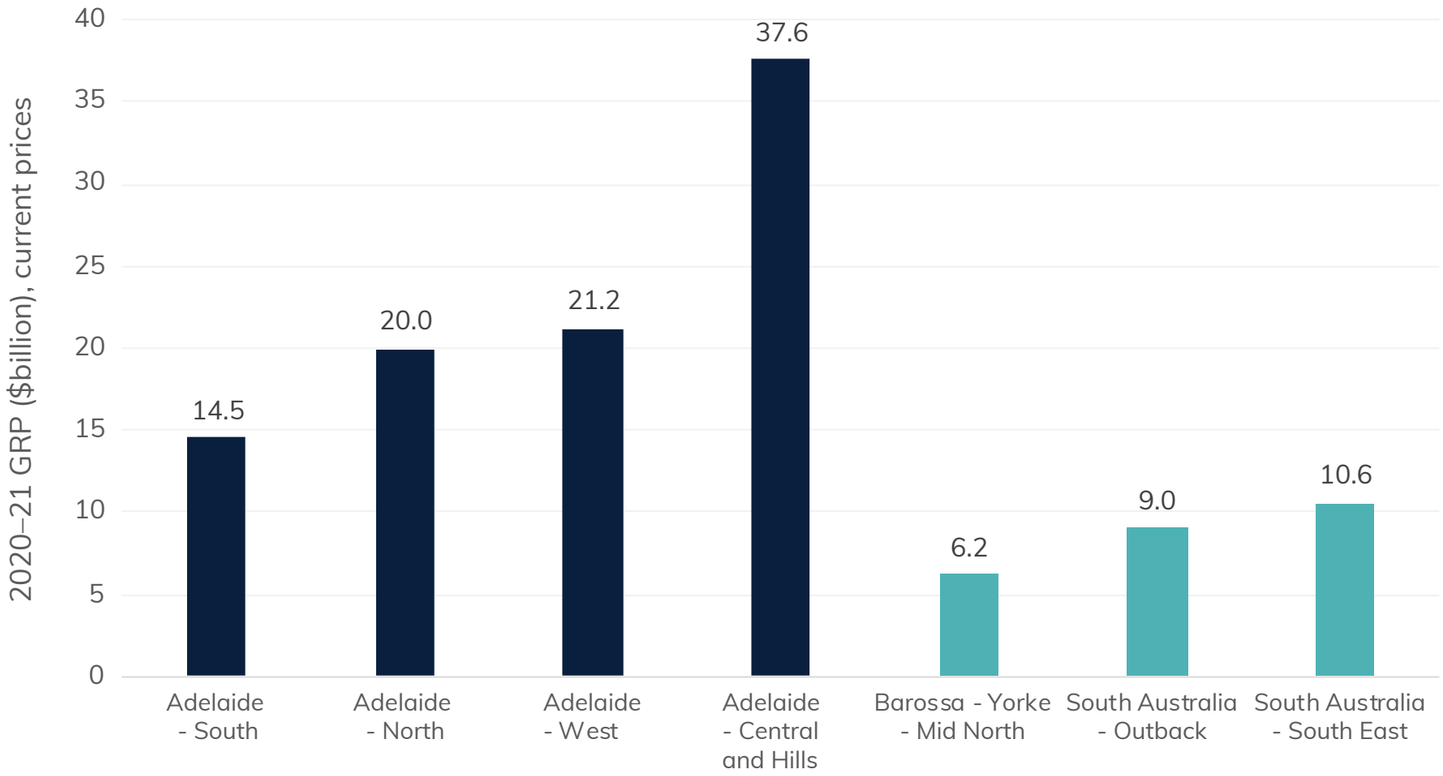
Taking SA4 population into account, South Australia - Outback had by far the highest per capita GRP (Figure 15). With major mines such as Olympic Dam and Prominent Hill, 15.8 per cent of this SA4's employment is in mining.

## Figure 15: Per capita GRP by SA4 and capital, South Australia, 2020–21




Source: BCARR analysis (GRP). Population: ABS 2023, Regional population, 31/08/2023 update.

## Figure 16: Gross Regional Product by Statistical Areas Level 4, South Australia, 2020–21




Source: BCARR analysis.

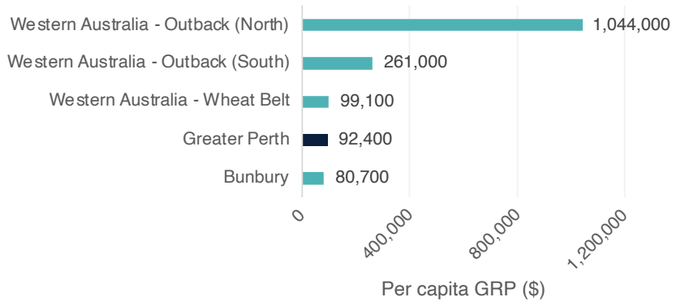
# Gross Regional Product, Western Australian SA4s, 2020–21

Due to the presence of mining operations in the Pilbara, Western Australia - Outback (North) had the largest GRP in the state ($101.2b) (Figure 18), and an extremely high per capita GRP of over $1 million (Figure 17). Mining also contributed to the size of GRP for Western Australia - Outback (South), which includes goldfields around Kalgoorlie - Boulder.

Some mining GRP is generated in Perth, reflecting the location of workers. While mining in Australia accounted for 1.9 per cent of employment, it represented 42.2 per cent of Western Australia - Outback (North)'s employment, and 27.2 per cent of Western Australia - Outback (South)'s. Mining was 9.0 per cent of Perth - Inner's total employment, much higher than the other capitals' central areas (with Brisbane Inner City at 2.1 per cent, and the inner SA4s of Sydney and Melbourne each at 0.2 per cent).

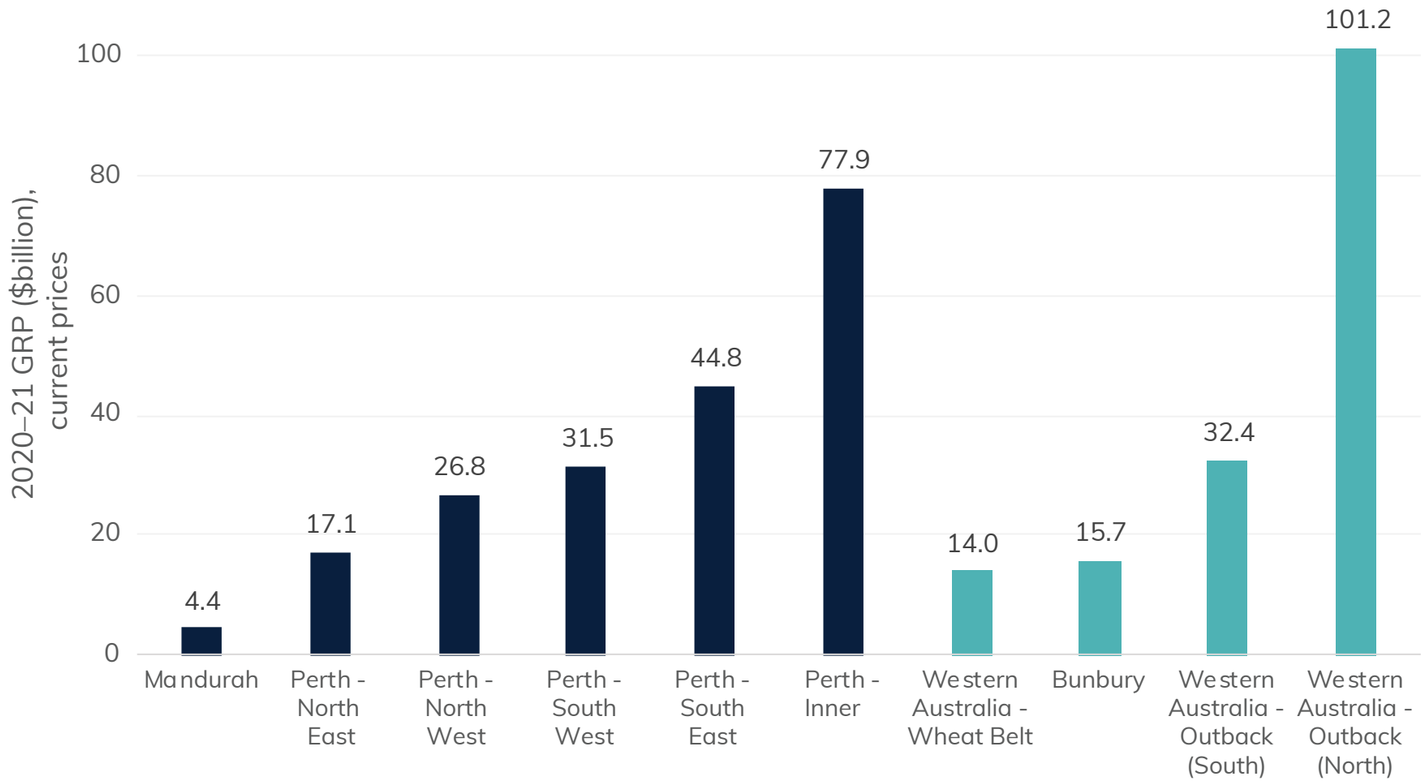
The pattern for Western Australia was otherwise similar to other rest of state SA4s. The GRP for Perth - Inner ($77.9b) was notably larger than other Perth SA4s. Western Australia - Wheat Belt and Bunbury had lower GRP than all but one Perth SA4 (Mandurah). However, on a per capita basis, Perth is below three of the four.

## Figure 17: Per capita GRP by SA4 and capital, Western Australia, 2020–21




Source: BCARR analysis (GRP). Population: ABS 2023, Regional population,31/08/2023 update.

## Figure 18: Gross Regional Product by Statistical Areas Level 4, Western Australia, 2020–21




Source: BCARR analysis.

# Gross Regional Product, Tasmanian SA4s, 2020–21

The largest GRP among Tasmanian SA4s was for Hobart[5], representing just under half (47.4 per cent) of Tasmania's total (Figure 19).

While Hobart had the largest per capita GRP ($66,630), it was closely followed by West and North West, and Launceston and North East (Figure 20).

South East's GRP ($1.8b) was the smallest of SA4s nationally, but it also had the smallest number of employed, at 11,415 nationally[6].

**Figure 19: Gross Regional Product by Statistical Areas Level 4, Tasmania, 2020–21**


**Figure 20: Per capita Gross Regional Product by Statistical Areas Level 4 and capital, Tasmania, 2020–21**


Source: BCARR analysis (GRP). Population: ABS 2023, Regional population,31/08/2023 update.

5 Hobart SA4 is the same geographic region as the Greater Hobart GCCSA definition.
6 With the exception of the SA4 Other Territories.

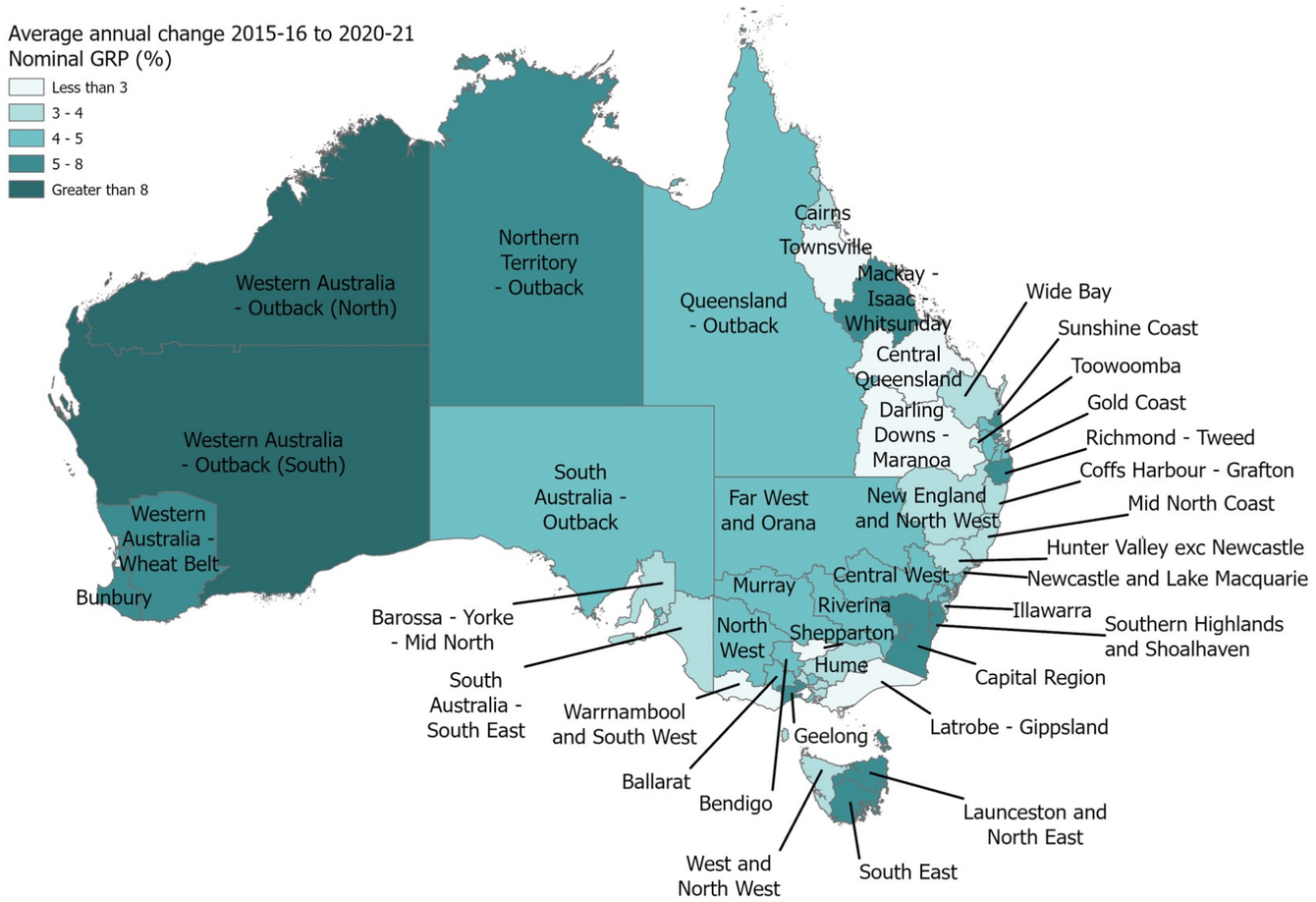
# The spatial distribution of Nominal growth, SA4s, 2015–16 to 2020–21

Map 3 illustrates the change in Nominal GRP. Unlike Real change, this does not remove the effect of price movements on the goods and services produced.

The GRP numbers allow us to consider growth at the sub-state level. Nominal GRP grew in all SA4s between 2015–16 and 2020–21. The strong growth in Western Australia was driven by the SA4s which also had the largest increases nationally: Western Australia - Outback (North) (16.5 per cent average annual growth) and Western Australia - Outback (South) (14.6 per cent). Perth – Inner (8.2 per cent) had the third strongest growth nationally, while the weakest growth in Western Australia was on the outskirts of Perth, in Mandurah (1.9 per cent) and Perth - North West (2.3 per cent).

The Northern Territory's more modest growth had large variation at the sub-state level. Northern Territory - Outback had the fourth strongest nominal growth nationally, with an average annual rate of 7.4 per cent, while Darwin had the weakest growth of any SA4 (0.1 per cent).

## Map 3: Average annual change in Nominal Gross Regional Product by Statistical Areas Level 4, 2015–16 to 2020–21




Source: BCARR analysis.

# The spatial distribution of Real growth, SA4s, 2015–16 to 2020–21

Map 4 shows the average annual change in Real GRP between 2015–16 and 2020–21 for each SA4. GRP grew in 90 per cent of SA4s between 2015–16 and 2020–21. Only nine of the 88 SA4s experienced GRP falls over the period, seven of which were in rest of state areas.

Those with the largest increases in Real GRP include Northern Territory - Outback (at 6.2 per cent average annual growth), Sydney - South West (3.9 per cent) and the large urban areas outside the major capitals of Geelong (3.9 per cent) and Sunshine Coast (3.8 per cent). Others above 3 per cent annually were more mixed, with a range of capital and rest of state areas.

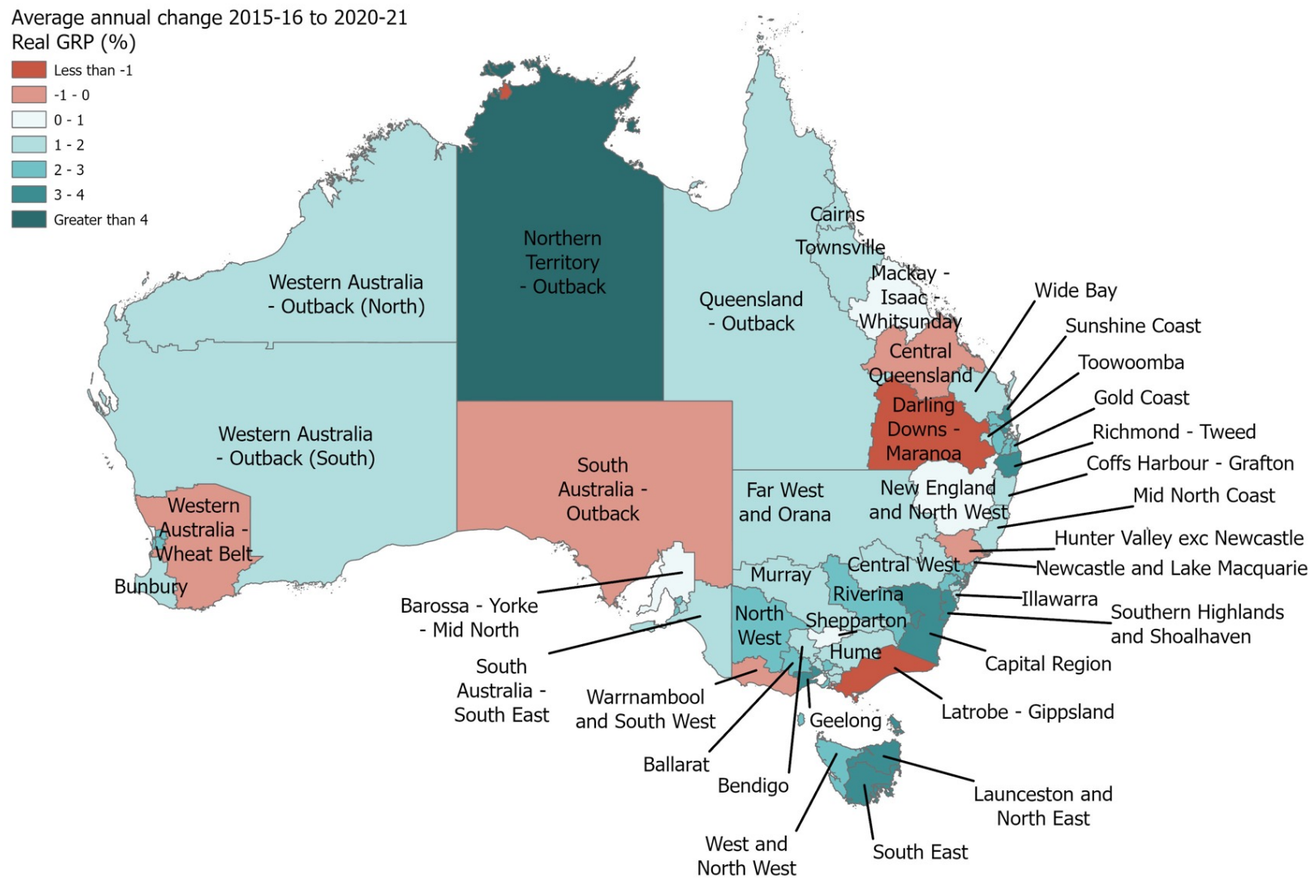
Darwin had the most pronounced fall in GRP (an average annual fall of 1.3 per cent), followed by falls in Darling Downs – Maranoa (1.2 per cent) and Latrobe – Gippsland (1.1 per cent). The only other capital city SA4 with a fall in GRP was Mandurah, on the outskirts of Perth, with an average annual fall of 0.8 per cent.

The fall in Darwin's GRP in part reflected the Building Construction and Heavy and Civil Engineering industries, such as the completion of the Ichthys LNG project[7]. This fall was somewhat softened by the increase in activity in the Oil and Gas Extraction industry and some service industries. Latrobe - Gippsland's GRP fall was in part due to the Electricity Supply industry, but was ameliorated by growth in some service industries such as Health Care and Social Assistance.

Western Australia - Wheat Belt had a marked difference between its Nominal and Real changes. While it was one of the few that declined in Real terms (by 0.3 per cent on average annually), in Nominal terms, it was the eighth strongest-growing SA4. Note that the mining deflators used to convert to Real terms are most influenced by the dominant mining commodity in each state, rather than each region.

Further details on the price deflator method is provided on slide 20.

## Map 4: Average annual change in Real Gross Regional Product by Statistical Areas Level 4, 2015–16 to 2020–21




Source: BCARR analysis. Presented in Real terms (calculated to $2021-22). See method slides for details of conversion to Real.

7 See: Ichthys LNG | INPEX

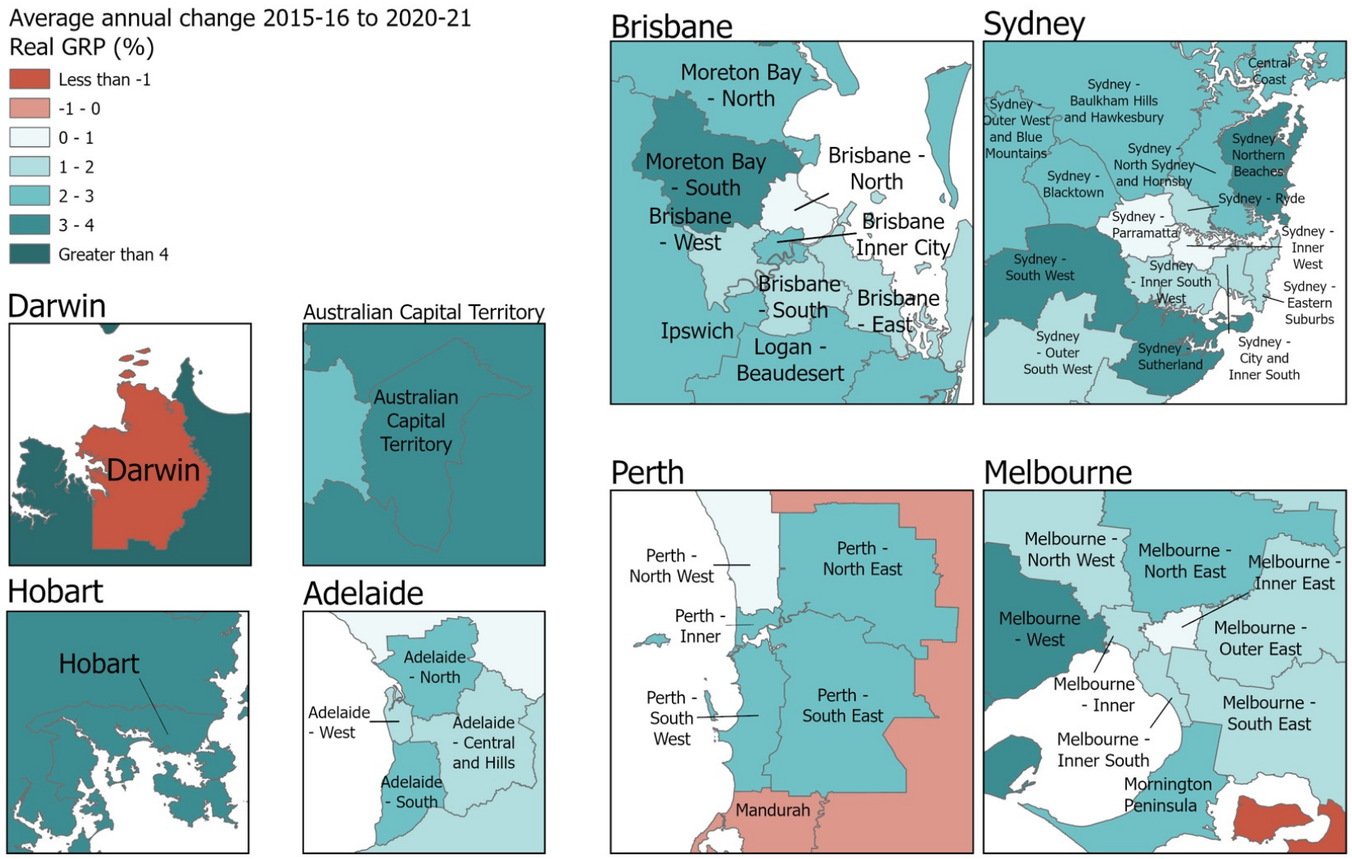
# The spatial distribution of Real growth, Capital city SA4s,2015–16 to 2020–21

Among capital city SA4s, the strongest average annual Real GRP growth was in Sydney - South West, the Australian Capital Territory and Melbourne - West (Map 5).

While the inner parts of capital cities had the largest GRP, stronger growth in some cities occurred in the outer areas of cities.

- Sydney's strongest average annual GRP growth between 2015–16 and 2020–21 was in Sydney - South West (3.9 per cent) and Sydney Northern Beaches (3.2 per cent). Other outer areas to the northwest showed stronger growth (over 2 per cent) compared with middle and inner areas. Sydney - Inner West's average annual growth was negligible at 0.2 per cent, with the next lowest growth in Sydney - Parramatta (0.9 per cent).
- Melbourne's strongest average annual GRP growth was in Melbourne - West (3.5 per cent). The only Melbourne SA4 with average annual growth of less than 1 per cent was Melbourne - Inner East (0.7 per cent).
- In Brisbane, the inner and outer SA4s had average annual growth rates between 2.3 and 3.1 per cent, with Moreton Bay - South experiencing the strongest growth. The weakest growth areas (of less than 2 per cent annually) were in the middle areas of the city: Brisbane - North (0.6 per cent), Brisbane - South (1.3 per cent), Brisbane - East (1.3 per cent) and Brisbane - West (1.5 per cent).

## Map 5: Average annual change in Real Gross Regional Product by Statistical Areas Level 4, 2015–16 to 2020–21




Source: BCARR analysis. Presented in Real terms (calculated to $2021-22). See method slides for details of conversion to Real.

# Gross Regional Product, Northern Australia, 2020–21

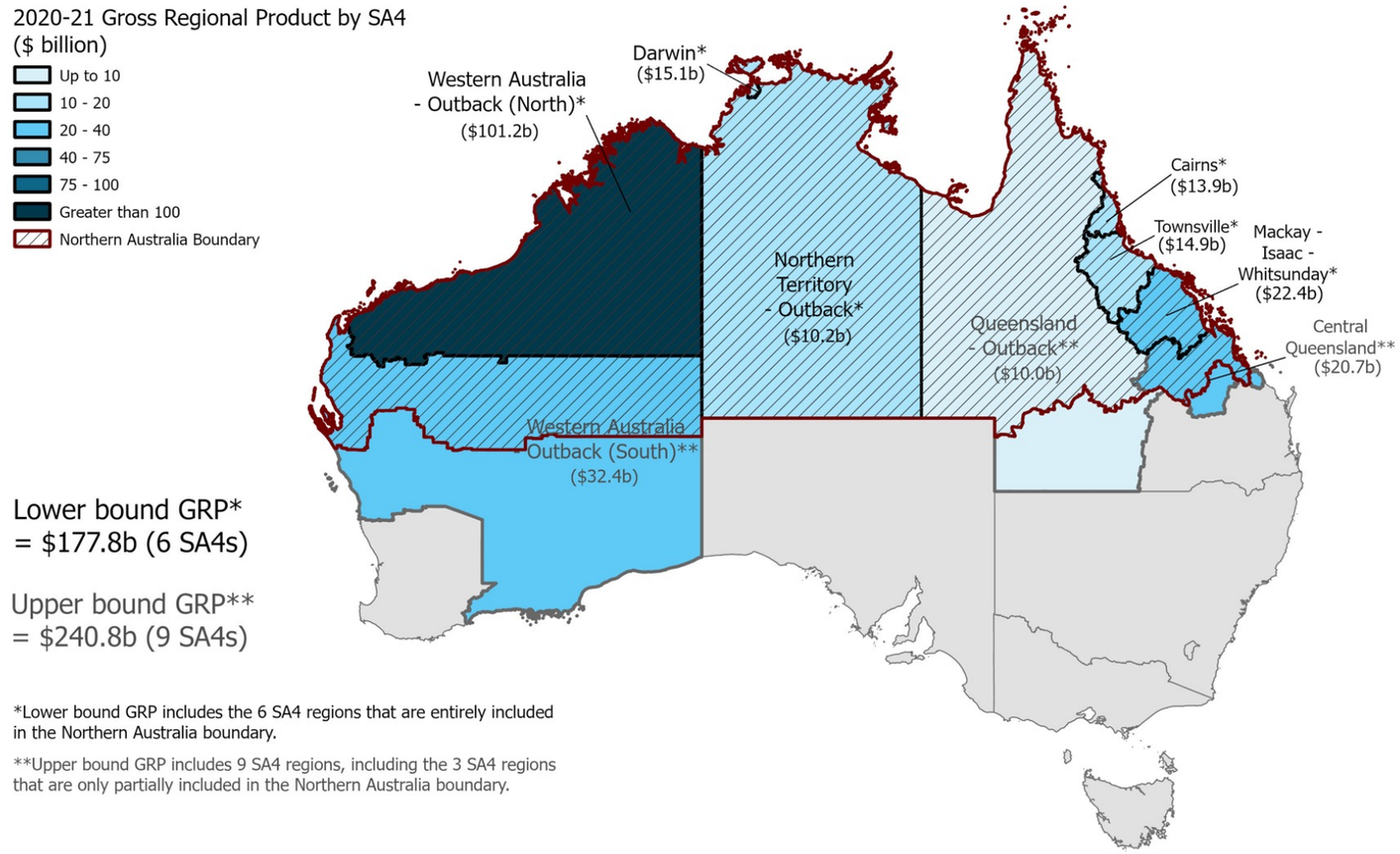
The 2020–21 GRP for Northern Australia was between $177.8b (the lower bound, with six SA4s completely within the boundary), and $240.8b (the upper bound, which includes an additional three SA4s with part of their area outside Northern Australia) (Map 6). Based on this, Northern Australia represents between 8.5 and 11.5 per cent of the nation's total economic output.

Western Australia - Outback (North) had the largest GRP of all the Northern Australia SA4s ($101.2b), representing 42.0 per cent of the upper bound figure. The Queensland and Northern Territory Outback SA4s contributed around $10b each respectively to the economy, while the more coastal city-based SA4s such as Cairns, Townsville, Mackay - Isaac - Whitsunday and Darwin contributed between $13.9b and $22.4b.

The per capita GRP for Northern Australia was between $165,000 and $173,800, with the higher number being for the conservative 6-SA4 definition. Underneath this high per capita figure is a lot of diversity across the region, ranging from $54,200 for Cairns up to $1,044,000 for Western Australia - Outback (North).

Northern Australia includes all of the Northern Territory and those parts of Queensland and Western Australia that are above or intersect with the Tropic of Capricorn.[8] Therefore the Northern Australia definition using SA4s will be an approximation, and depending on the SA4s included, can be a greater or lesser area than the official boundary. This approach matches the previous approach adopted by the Department of Industry, Innovation and Science.

## Map 6: Gross Regional Product, Northern Australian SA4s, 2020–21




*Lower bound GRP includes the 6 SA4 regions that are entirely included in the Northern Australia boundary.

**Upper bound GRP includes 9 SA4 regions, including the 3 SA4 regions that are only partially included in the Northern Australia boundary.

Source: BCARR analysis.

8 Northern Australia also includes the Indian Ocean Territories of Christmas Island and Cocos (Keeling) Islands, but these are not part of the analysis, as GRP was not calculated.

# Growth in Gross Regional Product, Northern Australia, 2015–16 to 2020–21

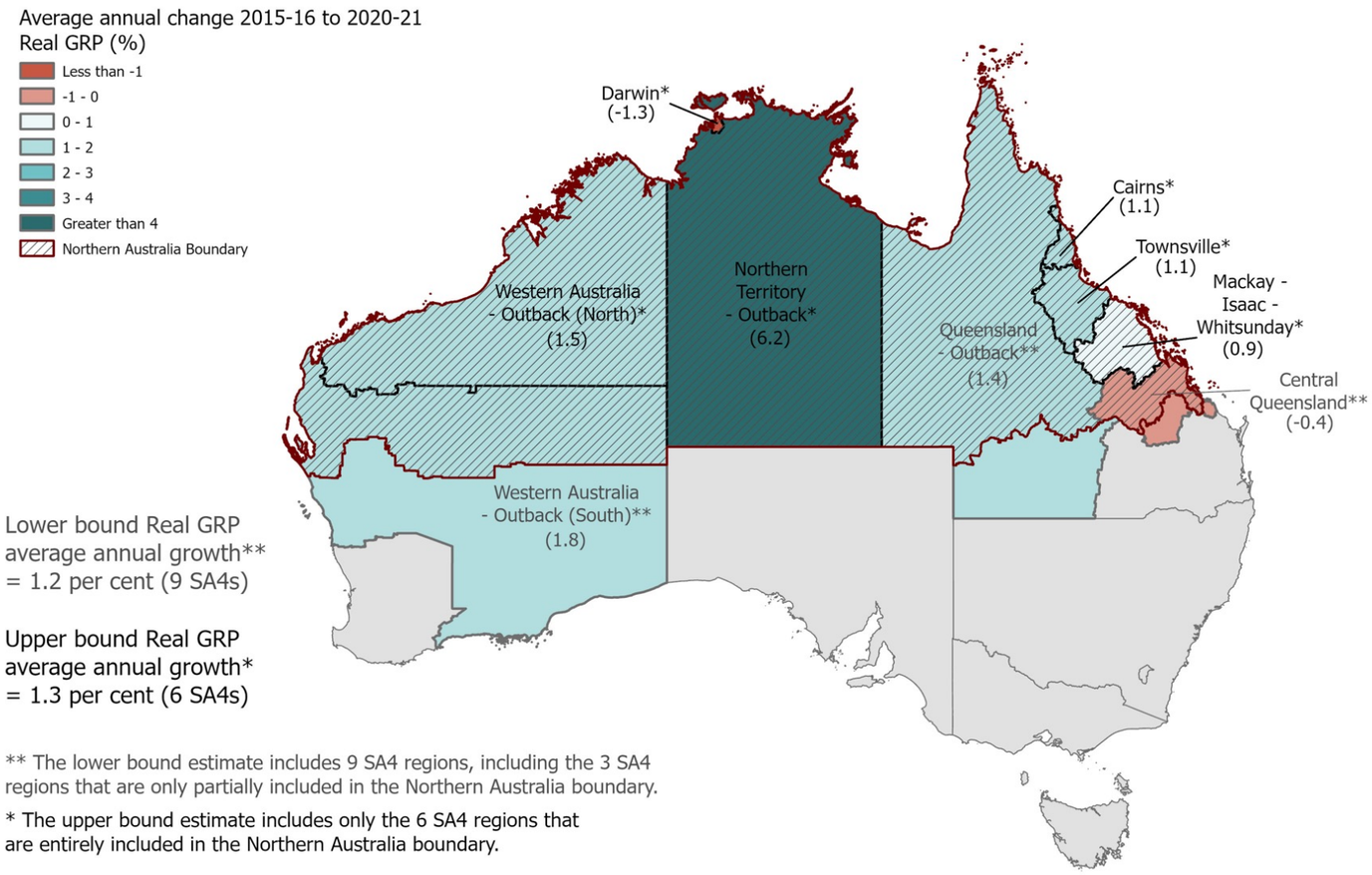
The average annual growth in Northern Australia's Real GRP from 2015–16 to 2020–21 was between 1.2 per cent and 1.3 per cent, with the 1.3 per cent representing the smaller Northern Australia boundary approximation.

Northern Territory - Outback and Western Australia - Outback (South) had the strongest average annual growth in Real GRP among these SA4s (6.2 per cent and 1.8 per cent respectively) (Map 7).

The only Northern Australian SA4s with a fall in Real GRP between 2015–16 and 2020–21 were Darwin and Central Queensland, with average annual falls of 1.3 per cent and 0.4 per cent respectively.

The remaining Northern Australian SA4s had average annual Real GRP growth between 0.9 per cent and 1.5 per cent.

## Map 7: Average annual change in Real Gross Regional Product, Northern Australian SA4s, 2015–16 to 2020–21




Lower bound Real GRP average annual growth**
= 1.2 per cent (9 SA4s)

Upper bound Real GRP average annual growth*
= 1.3 per cent (6 SA4s)

** The lower bound estimate includes 9 SA4 regions, including the 3 SA4 regions that are only partially included in the Northern Australia boundary.

* The upper bound estimate includes only the 6 SA4 regions that are entirely included in the Northern Australia boundary.

Source: BCARR analysis. Presented in Real terms (calculated to $2021–22). See method slides for details of conversion to Real.

# Method to create Gross Regional Product estimates

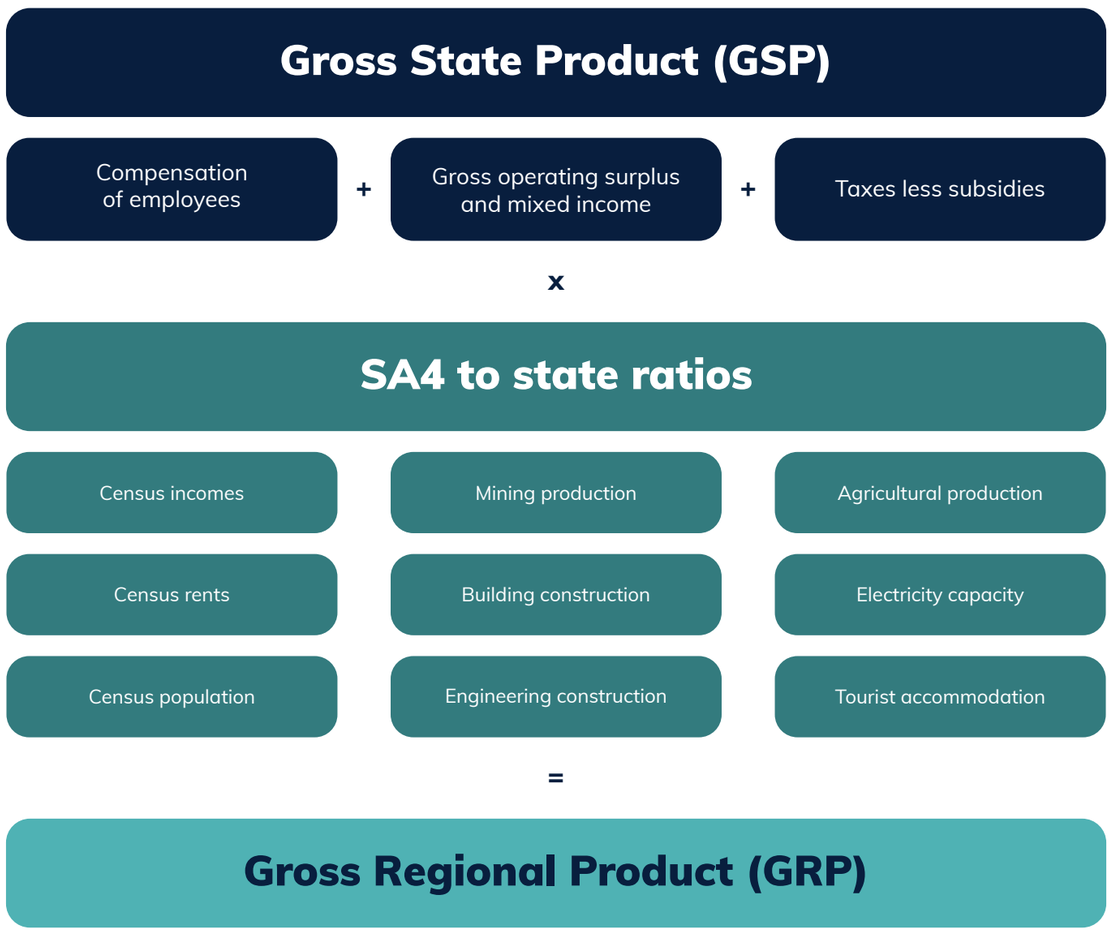
The method used is from the then Department of Industry, Innovation and Science Australian Industry Report 2016, which was originally based on the work by the then Queensland Treasury and Trade (2013).

The GRP estimates presented here are based on distributing the 2015–16 and 2020–21 Gross State Product (GSP) estimates for each state and territory from the Australian Bureau of Statistics' State Accounts to individual SA4s. The income approach is used. This is the sum of income created through the production of goods and services in each industry by state and territory. The three components of the income approach are:

- Compensation of Employees - 'total remuneration, in cash or in kind, payable by an enterprise to an employee in return for work done by the latter during the accounting period' (ABS 2021 citing SNA, 2008, para.7.5).
- Gross Operating Surplus and Mixed Income – 'Gross operating surplus (GOS) is the surplus accruing from the production of enterprises, and from the ownership of dwellings. Gross mixed income (GMI) is the surplus accruing from the production of unincorporated enterprises' (ABS 2021).
- Taxes less subsidies on production and imports - net income receivable by the government.

An apportioning approach is used to estimate each SA4's share of GSP. Figure 21 presents the summary of the income approach.

**Figure 21: Income approach to create experimental estimates of GRP**




Source: Reproduced from Department of Industry, Innovation and Science 2016 Australian Industry Report 2016 (archive.org.au)

Note: Original diagram based on the Queensland Treasury and Trade methodology.

# Data sources and limitations

## Gross State Product (GSP) components

Income components were distributed into SA4s to estimate Nominal GRPs. Industry components were used to derive implicit price deflators. Data for all the components was taken from:

- Australian Bureau of Statistics (ABS), *Australian National Accounts: State Accounts 2022–23*.

## Compensation of employees (COE)

The COE at the State and Territory level was apportioned to each SA4 by industry based on the proportion of employees' total personal income. Data was sourced from:

- ABS, *2016 and 2021 Census – counting persons, 15 years and over by SA4 (place of work), Total Personal Income, Industry of Employment and Status in Employment*.

## Gross Operating Surplus and Mixed Income (GOSMI)

In general, the GOSMI at the State and Territory level was apportioned to each SA4 by industry based on the proportion of total personal income. Data was sourced from:

- ABS, *2016 and 2021 Census – counting persons, 15 years and over by SA4 (place of work), Total Personal Income and Industry of Employment*.

Where industry-specific regional datasets could be derived, these were also used to apportion SA4 to state ratios, sometimes in conjunction with the total personal income approach. These industry-specific datasets include:

- **Agriculture**: ABS, *Value of Agricultural Commodities Produced, Australia, 2015–16 and 2020–21 financial years*
- **Coal mining, Oil and gas extraction**, and **Metal ore mining**: Wood Mackenzie, *Coal Supply Data Tool, Lens Upstream, Iron Ore Costs Tool, and Metal Cost Curves Tool, accessed between September and December 2023*
- **Electricity supply**: Australian Energy Council, *Energy Gas Australia 2017 and 2022 reports, Appendix 1*
- **Building construction**: ABS, *Building Approvals, Australia, August 2017 and October 2021*
- **Heavy and civil engineering construction**: Oxford Economics, *Australian Engineering Construction Masterplan, October 2023*
- **Accommodation:** Australian Tourism Research, *Gross Value Added Estimates for accommodation 2015–16 and 2020–21*
- **Information Media and Telecommunications and Health Care and Social Assistance**: ABS, *2016 and 2021 Census, counting persons by SA4 (place of usual residence)*
- **Ownership of dwellings**: ABS, *2016 and 2021 Census, counting persons by SA4 (place of enumeration), Rent Ranges and Dwelling Type*

## Taxes less subsidies on production and imports

Taxes less subsidies on production and imports at the State and Territory level was apportioned to each SA4 based on the proportion of Total Factor Income (the sum of GOSMI and COE).

## Implicit price deflators

Nominal estimates of SA4s' Total Factor Income were converted to Real values (reference year 2021–22) using implicit price deflators for each state or territory by industry. The implicit price deflators were derived from the ratio of the current price and chain value measures of gross value added by industry. This was done in order to calculate percentage change in Real terms between 2015–16 and 2020–21. Values presented for 2020–21 are in current prices.

## Limitations

These estimates are indicative of the economic activity of regions and should be used with caution.

There are **conceptual limitations** to locate the value of production to only one region, as all regions within the Australian economy are interlinked, with production often taking place in multiple locations at the same time (such as mining, where activity occurs at the location of the mine and in the capital city, for example), and the value of a product is usually greater than the sum of its parts. The geography is another conceptual limitation, as SA4s are imperfect representations of labour markets.

There are **data limitations**. BCARR has followed Queensland Treasury and Trade's (2013, p.1) approach to call these GRP estimates experimental, "owing to the paucity of economic statistics available at the regional level to assist with more rigorous estimation". Personal income and other industry-level data used for allocating the GSP components are unlikely to fully capture the distribution of economic activity, particularly where business data are recorded in capital cities rather than where economic activity occurs, or where production process extends beyond the boundaries of one region.

The 2021 Census took place during the **COVID-19 pandemic** when lockdowns were in place in many areas. This is likely to have affected the employment data used for allocating economic activity.

**Proxy deflators** for Real GRP estimates are not consistent with their counterparts in the ABS state accounts, and the total of Real GRPs should not be used to derive Real GSP, Real GDP, or their growth rates.

The Real GRPs and growth rates will be impacted for regions where industries have **volatile prices**. If the composition of the products of an industry within a region differs from the composition at the state or territory level, the region's Real GRP may have been imprecisely deflated. For example, the mining deflator in Western Australia is mainly driven by the changes in the price of iron ore, hence Real GRP for a region in Western Australia whose mining sector is based on other commodities may be impacted.

SA4s for **offshore locations** are excluded from the analysis. However, economic activities offshore have been assigned to SA4s connected with the activity – most typically, those closest to the offshore location or otherwise connected (such as a pipeline).

# Defining regions

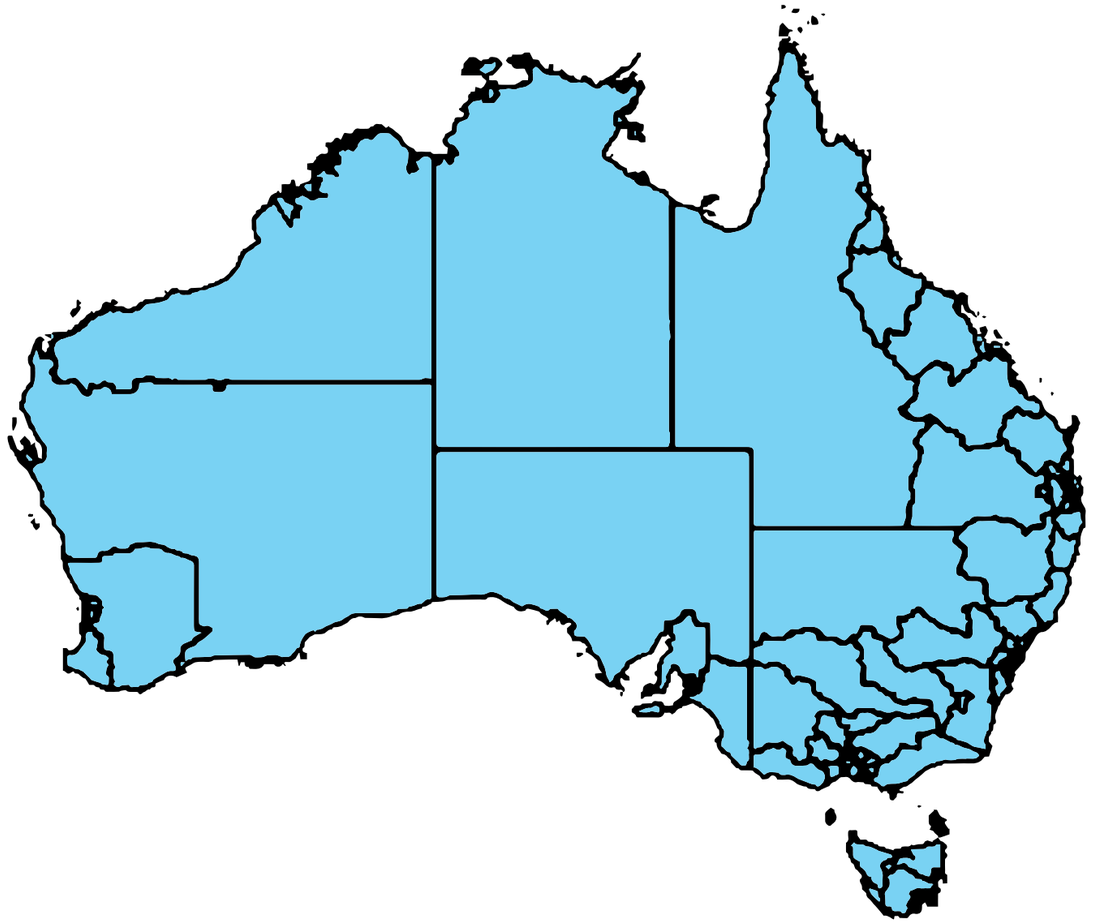
The ABS Australian Statistical Geography Standard (ASGS) is a classification that divides the country into statistical areas. The ASGS main structure defines seven levels of increasingly detailed statistical areas that show where people and communities live. This analysis uses the 2021 (Edition 3) version of the ASGS boundaries.

Statistical Areas Level 4 (SA4s) are part of this structure and the largest sub-state classification below the capital city/rest of state geographical scale (Map 8). SA4s (broadly) represent labour markets, and generally have a population between 100,000 to 600,000 people.

There are 108 SA4s covering all of Australia, but only 89 are spatial, with the other 19 representing populations difficult to define geographically, such as those with no usual address. GRP estimates are provided for 88 of the 89 spatial SA4s. The Other Territories SA4 is excluded as its small population makes estimation unfeasible.

There are 46 capital city SA4s, and 42 SA4s in rest of state areas.

**Map 8: Australian Statistical Geography Standard 2021 Statistical Areas Level 4**



Source: ABS Australian Statistical Geography Standard, Statistical Area Level 4 | Australian Bureau of Statistics (abs.gov.au)



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