

Centre for People,
Organisation & Work



**Regions at work and in employment: A Preliminary Statistical
Profile and Analysis Selected Regions and Australia, 2016**

Report for Regional Australia Institute

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1 Introduction

In accordance with the document, Provisional Data to be Collected and its Analytical Uses, August 2018, this report sets out key data on the regions selected for study by the Regional Australia Institute. The data covers the demographic, labour force, employment (industry and occupation), highest educational attainment of employed persons and an index of socio-economic advantage and disadvantage. This data is based on the Place of Residence (PoR) which records the characteristics of persons based on their usual place of residence rather than their actual location on the night of the 2016 census. Other data on occupational and industry structure of employment is also provided based on Place of Work (PoW) for the selected regions. Comparing the industry and occupation structure of PoR and PoW permits an approximate evaluation of the extent to which the skills of employed persons resident within a given region match the skills of jobs within the same region.

Data is presented for each of the six regions at the Statistical Area 4 (SA4) geographic level, comprised of one or more smaller Statistical Area 3 (SA3) level units. For comparative purposes data on the total of the six regions and total Australia is also provided in the tables.

The Appendix contains the same data topics presented here for the 15 SA3 regions included in the study. This provides much more detailed information and reference is made to the specific corresponding tables through-out this summary report.

This study is preliminary in the sense that it has used only a small but, nevertheless, important selection of data from the vast range available in the 2016 Census databases. The latter is a uniquely comprehensive record of the characteristics of the Australian population providing key insights into many topics concerning regional development and welfare. Further, much of the data can be developed into five year time series providing essential insight into trends and inflection points in trends.

The geographic classification used for the data is derived from the Australian Statistical Geography Standard (ASGS). It 'provides a framework of statistical areas used by the Australian Bureau of Statistics (ABS) and other organisations to enable the publication of statistics that are comparable and spatially integrated' (ABS 2011). The two area Levels used in this report are:

Statistical Areas Level 3 (SA3s) is designed for the output of regional data. SA3s generally have populations between 30,000 and 130,000 persons. In regional areas, SA3s represent the area serviced by regional cities that have a population over 20,000 people. In the major cities, SA3s represent the area serviced by a major transport and commercial hub. They often closely align to large urban Local Government Areas (e.g. Gladstone, Geelong). In outer regional and remote areas, SA3s represent areas which are widely recognised as having a distinct identity and similar social and economic characteristics. SA3s are aggregations of whole SA2s.

Statistical Areas Level 4 (SA4s) is specifically designed for the output of Labour Force Survey data. Most SA4s have a population above 100,000 persons to provide sufficient sample size for Labour Force estimates. In regional areas, SA4s tend to have lower populations (100,000 to 300,000). In metropolitan areas, the SA4s tend to

have larger populations (300,000 to 500,000). SA4s are aggregations of whole SA3s (ABS 2011a)

The regions included in this report are given in Table 1. It is evident that the regions exhibit considerable diversity in terms of their location across Australia; size, measured in both land area and population and their population density.

Table 1: Selected ABS SA3 and SA4 Regions for Analysis

SA3 Name 2016	SA4 Name	SA3			
		Code	Area SQKM	Population	Persons per sq km
Gosford	Central Coast	10201	988	168,892	170.9
Wyong	Central Coast	10202	693	158,484	228.7
Barwon – West	Geelong	20301	2580	18,808	7.3
Geelong	Geelong	20302	919	187,972	204.5
Surf Coast - Bellarine Peninsula	Geelong	20303	930	71,556	76.9
Baw Baw	Latrobe - Gippsland	20501	3934	48,434	12.3
Gippsland - East	Latrobe - Gippsland	20502	21,714	44,909	2.1
Gippsland – S.W.	Latrobe - Gippsland	20503	4382	61,321	14.0
Latrobe Valley	Latrobe - Gippsland	20504	1480	72,997	49.3
Wellington	Latrobe - Gippsland	20505	10,045	42,735	4.3
Toowoomba	Toowoomba	31701	2259	149,233	66.1
Burnie-Ulverstone	West and North West	60401	1604	47,344	29.5
Devonport	West and North West	60402	1894	44,098	23.3
West Coast	West and North West	60403	19,026	17,033	0.9
Katherine	N. T. - Outback	70205	326,250	18,572	0.1
Australia			7,692,000	23,401,970	3.0

Source: Australian Statistical Geography Standard (ASGS): Volume 1 - Main Structure and Greater Capital City Statistical Areas, 2011 Cat. No. 1270.0.55.001

Note: there can be small differences in cell counts and totals across the tables for apparently similar data items. This is due to differences in both classification systems and respondent response rates to specific Census questions. Thus, some tables have entries such as 'Not Stated', 'Not Applicable' or 'Inadequately Described' and other tables do not. These differences are relatively minor in proportional terms.

1.1.1 Data

The data analysis included in this report covers:

1. Demographic Structure
2. Labour Force
3. Occupational Employment Structure
4. Industry Employment Structure
5. Highest Educational Attainment. Employed and Unemployed
6. Occupational Employment Structure. Place of Work and Place of Residence
7. Industry Employment Structure. Place of Work and Place of Residence
8. Socio-Economic Indexes

2 Demographic Structure

The total population of the selected SA4 regions was 1,226,050 in August 2016, representing close to 1 in 20 of the total Australia population¹. The largest region was the Central Coast with 327,730 residents and the smallest was the Northern Territory (NT) Outback with 89,446. In all cases, with the exception of the NT Outback the proportion of females in the total population exceeds, by a small margin, that of males. This is probably due to the difficulty of attracting females to the NT Outback. The small aggregate preponderance of females over males reflects number of factors including a higher death rate among the latter. This numerical preponderance emerges when the population cohort is in their thirties and becomes quite pronounced in the elderly, so that after 90 years of age females generally outnumber males by a factor of two. (Tables 1a-1g in the Appendix provide detailed demographic X gender x SA3 data).

Table 2: Total Population X Gender (Ranked) Selected SA4 Regions and Australia. 2016

	Population			Gender Distribution	
	F	M	P	F	M
N. T. Outback	44,146	45,274	89,446	49.4%	50.6%
West & North West	55,764	53,261	109,029	51.1%	48.9%
Toowoomba	77,279	72,239	149,512	51.7%	48.3%
Latrobe- Gippsland	138,248	133,164	271,406	50.9%	49.1%
Geelong	143,118	135,808	278,927	51.3%	48.7%
Central Coast	168,971	158,777	327,730	51.6%	48.4%
<i>Total Regions</i>	<i>627,526</i>	<i>598,523</i>	<i>1,226,050</i>	<i>51.2%</i>	<i>48.8%</i>
Australia	11,855,236	11,546,634	23,401,885	50.7%	49.3%

Contrary to the views of some policy makers, demography is not necessarily 'destiny' particularly at a regional level. This is due to counter-veiling effects of internal labour mobility, and policies that can alter fertility rates and immigration. More generally, labour force participation rates (proportion of the population aged 15 years and over in employment or unemployed) are elastic as they are strongly pro-cyclical (rising in booms and falling in recessions) (Evans, A 2018) and participation rates among older workers appear to have undergone a major structural shift upwards in response to many factors. Some of these include the aging of the female cohort that had a pronounced increase in workforce participation rates from the 1960s onwards. Other contributors are improved health, growth of service industry work that does not necessarily require hard physical labour, rising educational attainment over previous decades (higher educational attainment and higher participation rates are closely correlated) and arguably rising expectations of improved

¹ The SA4 total population differs marginally from the total population of the selected regions based on SA3s because with the exception of Katherine the SA4's are comprised of all the SA3's within their boundaries.

retirement life-style. In 1990 the labour force participation rate of persons aged 65 years was 5.3%; by 2015 this had more than doubled to 12.9% (Australian Institute of Health and Welfare 2018).

Despite these qualifications, demographic structure and absolute population size are an enabling or constraining factor in key development variables such as potential growth of the labour force, demand for education and dependency rates. (This is examined in more detail in section 2). For example, West and North West Tasmania has a much lower proportion of young people aged 0 to 39 years in the total population (44.5%) compared to Australia (52.5%) (Table 3). Conversely, the share of older people aged 50 years and above, in W and NW Tasmania at 27.8% is much larger than for Australia as a whole at 21.2%.

A key finding is that in comparison to the Australian total the selected region's demographic structure is skewed from young people, who comprise just 48.4% of the regions' population and towards older persons (25.4%). The reasons for this skew across the selected SA4 regions will differ. In W and NW Tasmania this is probably due to younger persons leaving the region for work; the Central Coast is a well-known retirement centre with close proximity to Sydney and excellent services for older people.

The regional outlier to these demographic trends is NT Outback, which has a much larger share of young people (64%) and much smaller share of older people (22.6%). A key factor is high fertility rates in the NT and higher death rates (ABS 2017).

Table 3: Population Distribution X Age Group (10 Year) Selected Regions and Australia

Age	Central Coast	NT Outback	Too'mba	West & North West	Geelong	Latrobe - Gippsland	Total Regions	Australia
0-9	12.2%	16.7%	13.4%	11.7%	12.5%	11.8%	12.6%	12.7%
10-19	12.3%	14.9%	13.7%	12.2%	12.2%	11.5%	12.4%	12.0%
20-29	10.8%	16.6%	13.4%	10.3%	12.2%	10.1%	11.7%	13.8%
30-39	11.2%	15.8%	12.1%	10.3%	12.3%	10.5%	11.7%	14.0%
40-49	13.0%	13.6%	12.7%	12.8%	13.3%	12.1%	12.8%	13.5%
50-59	13.4%	11.9%	12.4%	14.9%	12.9%	14.3%	13.4%	12.7%
60-69	12.3%	7.2%	10.6%	13.9%	12.0%	14.9%	12.4%	10.6%
70-79	8.9%	2.6%	7.1%	9.0%	7.6%	9.6%	8.1%	6.6%
80-89	4.8%	0.8%	3.7%	4.1%	4.0%	4.4%	4.0%	3.3%
90-99	1.1%	0.1%	0.8%	0.8%	1.0%	0.9%	0.9%	0.7%
≥100	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total	100%	100%	100%	100%	100%	100%	100%	100%

3 Labour Force

Table 4 provides a comprehensive description and analysis of the key labour market indicators for the SA4 regions and Australia. (Tables 2a-2i in the Addendum provide the same data at an SA3 and SA4 level and also includes a gender variable). The key points are:

- With the exception of the NT Outback unemployment rates are clustered around the national average of 6.9%. Geelong had the lowest unemployment rate at 6.0%
- W and NW Tasmania has the lowest labour force participation rate of 57.1% and Toowoomba has the highest at 64.4%, close to the national average. The aggregate regional labour force participation rate at 60.1% is significantly below the national average at 64.6% reflecting factors such as the skewed demographic structure of the region and depressed economic position of some regions such, as NT Outback and W and NW Tasmania. This reflects the 'discouraged worker effect' whereby participation rates are inversely correlated to the unemployment rate and positively correlated to the growth of vacancies- see Evans 2018. This lower labour force participation rate is important as many SA4 regions have an unemployment rate not greatly different to the national average. Indeed, the lower labour force participation rate for these regions explains this modest difference in unemployment rates, despite the fact that the employment to population ratio aged for persons aged 15 years and over at 55.9% is much lower than the national average of 60.1%. If the regional labour force participation was the same as the national average the regional unemployment rate would be much higher given the regional low employment to population ratio.
- An analytical variation on the employment to population ratio aged for persons aged 15 years and over is the dependency rate, which measures the ratio of persons in the labour force to total population. It is sometimes broadly interpreted as 'how many people in the labour force support those not in the labour force'. Thus, for every person in the labour force in Australia there are 1.04 persons not in the labour force.

This interpretation needs considerable qualification, for example many retired people may be fully financially independent of government. Nevertheless, a high dependency rate can be an indicator of structural economic problems for some regions, which is the case if the high dependency rate is caused by few employment opportunities within the region and surrounds. This is especially the case if the predominant employment is in low-paid industries.

The dependency rate for the aggregate study regions is around 20% higher than for Australia as a whole: 1.21 compared to 1.04 for the nation. The lowest are Geelong and Toowoomba, which are close to the national average, and the highest are NT Outback (1.57), Latrobe Gippsland (1.29) and West North West Tasmania (1.27). For these three regions the cause of higher dependency rate is most likely to be found in adverse structural

reasons, such as absence of growth industries and for the latter two regions a high proportion of older non-working persons.

Data in the Addendum reveals that female employment is predominantly part-time across the regions by a large margin, with the exception of Katherine SA3 and NT Outback. Female labour force participation rate is approximately 5-10% lower than the male rate.

Table 4: Labour Force. Selected Regions and Australia

		Central Coast	N T Outback	To'mba	West & North West	Geelong	Latrobe - Gippsland	Total Regions	Australia
	Employed, away from work	7,524	2,297	3,297	2,882	7,201	7,660	30,861	569,275
	Employed, worked full-time	82,713	21,758	41,224	24,919	71,062	61,549	303,225	6,623,137
	Employed, worked part-time	49,173	6,551	21,575	16,394	46,759	41,193	181,645	3,491,509
	Total Employed	139,410	30,606	66,096	44,195	125,022	110,402	515,731	10,683,921
	Unemployed, looking for full-time work	5,828	3,199	2,983	2,389	4,295	5,164	23,858	447,653
	Unemployed, looking for part-time work	4,282	943	2,049	1,281	3,621	3,069	15,245	339,802
	Total Unemployed	10,110	4,142	5,032	3,670	7,916	8,233	39,103	787,455
	Population aged ≥ 15years	250,914	57,990	110,472	83,844	213,566	205,709	922,495	17,768,978
	Employment to Population Ratio Aged ≥ 15 years	55.6%	52.8%	59.8%	52.7%	58.5%	53.7%	55.9%	60.1%
a	Unemployment Rate	6.8%	11.9%	7.1%	7.7%	6.0%	6.9%	7.0%	6.9%
b	Total Labour Force	149,520	34,748	71,128	47,865	132,938	118,635	554,834	11,471,376
c	Not in the labour force	101,394	23,242	39,344	35,979	80,628	87,074	367,661	6,297,602
d	Labour Force Participation Rate	59.6%	59.9%	64.4%	57.1%	62.2%	57.7%	60.1%	64.6%
e	Not stated	16,217	9,574	8,479	5,682	13,550	17,807	71,309	1,268,382
f	Not applicable	60,427	21,743	30,282	19,346	51,802	47,821	231,421	4,364,610
g	Dependency Ratio	1.19	1.57	1.10	1.27	1.10	1.29	1.21	1.04
h	Total Population	327,558	89,307	149,233	108,872	278,918	271,337	1,225,225	23,401,970

a= total unemployed/total labour force b= sum of employed and unemployed c = population 15 years and older neither employed or unemployed d = Labour force/population aged 15 years and older (It is higher than the rate for Employment to Population Ratio Aged ≥ 15 years as the labour force participation rate also includes the unemployed) e= Census respondents did not answer LF questions f = Population aged under 15 years (i.e. there is no upper age restriction applied to the Labour Force) g = Labour Force/Total Population (For example, for every persons in the labour force in Australia there are 1.04 persons not in the labour force) h= Total population b+c+e+f.

4 Employment

4.1 Occupational structure

The case for the importance of the occupational variable in regional analysis is well made by the (ABS 2016c, p. 218):

Occupation data are essential for labour market analysis and policy formation. Changes in the occupational composition of the labour force are important for planning at the industry and geographic area levels. The data are used in analyses of education and training needs, and as indicators for industry assistance programs. Small area data on occupation are important in regional planning; in examining the occupational mobility of ethnic and other minority groups; and in measuring socioeconomic status variability between regions.

Regional occupation structure is a critical cause and effect of regional development. (Addendum Tables 3a-3g have similar tables to Table 5 for SA3 level). For example, it is a key influence on workers' income, educational attainment and industrial structure (The latter influences the industrial structure mainly through the availability of local skills for new firms). Even at a highly aggregated occupational classification level there are large differences in earnings across different occupations (Table 5). The highest paid occupations, Managers and Professionals earn substantially more than the average worker, up to 39% more. Managers earn 90% more than the lowest in Sales. (Note that this data controls for hours worked to the extent that it only covers full time workers).

Table 5: Full-Time Non-Managerial Employees Paid at The Adult Rate. Average Weekly Total Cash Earnings, Occupation. Australia. May 2016

Occupation	Average Weekly cash earnings \$	% of All Industries
Managers	2,178	139%
Professionals	1,905	122%
Technicians and trades workers	1,600	102%
Community and personal service workers	1,369	88%
Clerical and administrative workers	1,288	82%
Sales workers	1,149	73%
Machinery operators and drivers	1,496	96%
Labourers	1,225	78%
All occupations	1,564	100%

Source: ABS (2016) Employee Earnings and Hours, Australia, May 2016 Cat. No. 6306.0

There is considerable variation in occupation structure across the SA4 regions, though in aggregate the selected regions are skewed away from higher skill occupations and towards middle skill occupations. Thus, Managers and Professionals comprise only 30.5% of the

regions' total employment compared to 35.2% for Australia, and Technicians and trades workers, middle skill occupations, comprise 15.3% of the regions' total employment compared to 13.5% for Australia.

W and NW Tasmania has the lowest share of skilled occupations, comprising only 26.1% of total employment and this same region has the highest proportion of the lowest skilled Labourer occupation, comprising 15.2% of total employment compared to 9.5% for Australia.

The regions have a high share of Community and Personal Service jobs. This occupational group is very diverse, encompassing workers who 'assist health Professionals in the provision of patient care, provide information and support on a range of social welfare matters, and provide other services in the areas of aged care and childcare, education support, hospitality, defence, policing and emergency services, security, travel and tourism, fitness, sports and personal services' (ABS 2009). NT Outback has the highest share of workers in this occupation (17.1%) compared to just 10.8% for Australia. This probably reflects the higher demand for services in disadvantaged regions.

As expected, the occupational structure at the SA3 level shows greater divergence than that at a more aggregated SA4 level. For example, on the SA3 West coast of Tasmania Labourers comprise 21.1% of all employed persons. This divergence in turn reflects regional specialisation in industrial structure that becomes evident the more disaggregated the geographic analysis. The next section provides more analysis of the role of industry in determining in occupational structure within regions.

The Addendum also confirms that the Australian labour market is highly sex segmented in its occupational structure. Across Australia male Technicians and Trades outnumber females by a factor of five and females outnumber males in the Clerical and Administration occupation by a factor of 3.5. This occupational sex segmentation can be even greater at an SA3 level.

Table 6: Employment X Occupation. Selected Regions and Australia

	Central Coast	N T Outback	To'mba	West & North West	Geelong	Latrobe – Gippsland	Total Regions	Australia
Managers	15,624	3,644	7,136	5,473	14,541	15,870	62,288	1,390,056
Professionals	25,904	6,759	13,021	6,047	26,395	16,896	95,022	2,370,996
Technicians and Trades Workers	21,593	3,731	9,976	6,681	18,923	18,138	79,042	1,447,411
Community and Personal Service	17,309	5,236	7,568	5,319	15,715	12,762	63,909	1,156,994
Clerical and Administrative	19,106	3,675	9,108	4,928	15,046	12,621	64,484	1,449,677
Sales Workers	14,770	1,765	6,256	4,485	12,709	10,574	50,559	1,000,953
Machinery Operators and Drivers	8,358	1,568	4,287	3,802	7,209	7,607	32,831	670,089
Labourers	14,429	3,214	8,020	6,725	12,461	14,084	58,933	1,011,546
Inadequately described	1,411	495	400	462	1,199	953	4,920	109,952
Not stated	906	519	324	273	824	897	3,743	76,247
<i>Total</i>	<i>139,410</i>	<i>30,606</i>	<i>66,096</i>	<i>44,195</i>	<i>125,022</i>	<i>110,402</i>	<i>515,731</i>	<i>10,683,921</i>

Table 7: Percentage Employment X Occupation. Selected Regions and Australia

	Central Coast	N T Outback	To'mba	West & North West	Geelong	Latrobe – Gippsland	<i>Total Regions</i>	Australia
Managers	11.2%	11.9%	10.8%	12.4%	11.6%	14.4%	12.1%	13.0%
Professionals	18.6%	22.1%	19.7%	13.7%	21.1%	15.3%	18.4%	22.2%
Technicians and Trades Workers	15.5%	12.2%	15.1%	15.1%	15.1%	16.4%	15.3%	13.5%
Community and Personal Service	12.4%	17.1%	11.5%	12.0%	12.6%	11.6%	12.4%	10.8%
Clerical and Administrative	13.7%	12.0%	13.8%	11.2%	12.0%	11.4%	12.5%	13.6%
Sales Workers	10.6%	5.8%	9.5%	10.1%	10.2%	9.6%	9.8%	9.4%
Machinery Operators and Drivers	6.0%	5.1%	6.5%	8.6%	5.8%	6.9%	6.4%	6.3%
Labourers	10.4%	10.5%	12.1%	15.2%	10.0%	12.8%	11.4%	9.5%
Inadequately described	1.0%	1.6%	0.6%	1.0%	1.0%	0.9%	1.0%	1.0%
Not stated	0.6%	1.7%	0.5%	0.6%	0.7%	0.8%	0.7%	0.7%
Total	100%	100%	100%	100%	100%	100%	100%	100%

4.2 Industry Structure

As with occupations, regional industrial structure of employment and output has a critical cause and effect on regional development. (Addendum Tables 4a-4g have similar tables to Tables 9 and 10 for SA3 level). As with the closely associated occupational structure, it is a key influence on workers' income and educational attainment. The type and relative size of industries in a given region directly influences the occupational structure through the demand firms have for specific skills, indicating an iterative development process through the demand and supply of skills within a region. This in turn reflects largely the technological requirements of production, the scale of a firm's production- larger firms are invariably more capital intensive than smaller firms in the same industry and- and to some extent the relative price of labour and capital. Similarly, the industrial structure has a large effect on the educational attainment of workers demand by firms.

Even at a highly aggregated industry classification level there are large differences in earnings across different industries (Table 8). Workers in the highest paid industry, Mining, earn 62% more than the average worker, and 132% more than those in the lowest paid industry, Accommodation and Food Services. Despite the much larger absolute and proportional differences between outliers in the industry earnings data compared to the occupational data, interestingly the average deviation of earnings across the two series are nearly identical. Average deviation is a measure of the dispersion of data around the mean. The implication of this is that in general, occupation and industry structure exercise similar effect on earnings dispersion. (Note that this data controls for hours worked to the extent that it only covers full time workers).

While all regions at an SA4 level have quite diversified industrial structures of employment, there is a high degree of commonality in the industrial structure across the regions, and also compared with Australia as a whole (Tables 9-10). This reflects a broad range of factors such as the mobility of technology, capital and labour mobility and the powerful influence of structural change induced by technology and international trade. Government provision of services or subsidising their provision by the private sector is also a significant factor in the maintenance of many industries across the regions, health and education in particular. It is also clear from the earlier analysis of labour markets that major socio-economic changes such as the rise of female participation in paid work and the rise of the family in which both parties work affects all regions of Australia. This change in household working patterns also induced changes in consumption, such as the growth of outsourced child care, cleaning, fast food, even dog walking and grooming services and increased car ownership. All regions are subject to these changes to varying degrees (Connolly & Lewis 2010).

Table 8: Average Weekly Ordinary Time Cash Earnings. Non-Managerial Employees. Full-Time. Adult. Industry. 2018

	\$	% of All Industries*
Mining	2,647	162%
Manufacturing	1,414	87%
Electricity, Gas, Water and Waste	1,902	117%
Construction	1,550	95%
Wholesale Trade	1,566	96%
Retail Trade	1,170	72%
Accommodation and Food Services	1,143	70%
Transport, Postal and Warehousing	1,667	102%
Information Media and Telecommunications	1,967	121%
Financial and Insurance Services	1,930	118%
Rental, Hiring and Real Estate Services	1,476	90%
Professional, Scientific and Technical Servs.	1,870	115%
Administrative and Support Services	1,441	88%
Public Administration and Safety	1,716	105%
Education and Training	1,815	111%
Health Care and Social Assistance	1,688	104%
Arts and Recreation Services	1,571	96%
Other Services	1,277	78%
Total All Industries	1,631	100%

*Source: ABS (2018) Average Weekly Earnings Cat. No. 6306.0 * Agriculture is excluded from the ABS survey given the predominance of non-employing businesses.*

Importantly, across Australian regions there is also a floor under the extent of income inequality across the regions. For example, there are similar government social security payments nation-wide; a national Minimum Wage system applies and minimum rates for lower paid and lower skilled workers operate through the award system. The policy of vertical fiscal equalisation in Commonwealth payments to the states is also an important factor in ensuring comparability of government funded services and, therefore, a similarity in industrial structure across the regions. A degree of labour mobility ensures that wage differentials between regions for similar types of work cannot grow to excessive limits. In addition, there are other factors which, although not applying to all regions, tend to provide an important source of demand for services and income support. This includes the movement of well-off retired people to regions which have desirable life-style aspects, such as proximity to the coast or pleasant rural settings whilst also offering also reasonable access to major cities or large regional centres. Also, the growth of e-workers, especially those in the ICT or creative industries, who can live some distance from their source of paid

income, is another factor. Rapid house price inflation in metropolitan areas has been an important factor, either enabling retirees to move to desirable non-city regions or forcing the currently employed, including relatively well-paid people, into such regions. Demography is also a factor as the generally older age group of the selected regions is associated with significantly higher share of Health Care and Social Assistance. In the selected regions this industry comprises 15.2% of total employment compared to 13.2% for Australia. This similarity in industrial structure at a broad regional level is also a feature of other countries with similar levels of income per person, as indicated by the OECD (2009) *Structural Analysis Statistics Online Database*. However, even at a fairly aggregated SA4 level there are some important differences across the regions reflecting a degree of industry specialisation. Compared to Australia, the regions have a notably larger share of Agriculture, Forestry and Fishing, and as noted, Health Care and Social Assistance, but a lower share of employment in Professional, Scientific & Technical Services.

As with all other variables examined here, industry inter-regional differences in employment structure are more pronounced at a more disaggregated regional level. For example, in the West Coast Tasmania SA3 21% of employed persons are in Agriculture, Forestry and Fishing and 12.3% in manufacturing compared to just 2.6% and 6.7% respectively for Australia. In the Wyong SA3 12.7% of all persons are engaged in the Construction industry compared to 8.9% for Australia.

Finally, it is worth highlighting the importance of industry type and relative size of different industries as a key determinant of occupational structure within regions. Whilst virtually any occupation can be found in any type of industry it is the case that certain types of occupation are clustered within specific industries (Table 10). Given the scope of this report it is not possible to provide a detailed analysis of the occupational structure of each industry at a regional level. There are significant differences in the share of specific occupations within specific industries. For example, in Australia the workforce of the Agriculture, Forestry and Fishing industry is comprised mostly of Managers (52.4%), as farmers are classified by the ABS as managers, and Labourers (25.4%). Similarly, this industry has only 3.1% of Professionals in its workforce compared to 54.7% in the Professional, Scientific & Technical Services industry.

Table 9: Employment X Industry. Selected Regions and Australia 2016

	Central Coast	N T Outback	To'mba	West & North West	Geelong	Latrobe - Gippsland	Total Regions	Australia
Agriculture, Forestry and Fishing	1,097	1,251	2,961	3,714	2,197	9,424	20644	266,942
Mining	757	1,005	1,040	1,375	382	1,477	6036	177,692
Manufacturing	8,751	376	4,299	4,206	9,129	7,563	34324	683,685
Electricity, Gas, Water and Waste	1,546	336	710	482	1,504	3,420	7998	115,753
Construction	15,735	1,766	5,716	3,287	12,648	10,961	50113	911,065
Wholesale Trade	3,438	276	1,976	1,066	2,968	2,336	12060	307,768
Retail Trade	15,459	2,146	6,532	4,919	14,274	11,549	54879	1,053,796
Accommodation and Food Services	10,574	2,163	4,185	3,174	9,170	7,722	36988	738,246
Transport, Postal and Warehousing	5,240	1,089	2,795	2,422	5,192	3,771	20509	499,492
Information Media & Telecomms.	2,670	233	491	254	1,432	926	6006	179,531
Financial and Insurance Services	4,624	162	1,832	536	3,464	1,581	12199	384,611
Rental, Hiring and Real Estate	2,420	279	994	457	1,657	1,293	7100	182,111
Professional, Scientific & Technical	7,506	989	3,070	1,330	6,974	4,233	24102	775,959
Administrative and Support Services	4,962	932	1,729	1,445	3,795	3,040	15903	365,753
Public Administration and Safety	8,701	5,306	4,411	2,224	7,799	6,815	35256	713,127
Education and Training	10,717	3,784	7,571	3,592	12,386	9,116	47166	925,870
Health Care and Social Assistance	21,414	4,572	10,041	5,823	18,611	14,692	75153	1,351,048
Arts and Recreation Services	2,117	675	627	420	2,181	1,651	7671	176,672
Other Services	5,860	1,794	2,790	1,796	4,431	4,259	20930	399,646
Total	133,588	29,134	63,770	42,522	120,194	105,829	495037	10,208,767

Table 10: Employment X Industry. Percent of Total Employment in Each Region and Australia. 2016

	Central Coast	N T Outback	To'mba	West & North West	Geelong	Latrobe - Gippsland	Total Regions	Australia
Agriculture, Forestry and Fishing	0.8%	4.3%	4.6%	8.7%	1.8%	8.9%	4.2%	2.6%
Mining	0.6%	3.4%	1.6%	3.2%	0.3%	1.4%	1.2%	1.7%
Manufacturing	6.6%	1.3%	6.7%	9.9%	7.6%	7.1%	6.9%	6.7%
Electricity, Gas, Water and Waste	1.2%	1.2%	1.1%	1.1%	1.3%	3.2%	1.6%	1.1%
Construction	11.8%	6.1%	9.0%	7.7%	10.5%	10.4%	10.1%	8.9%
Wholesale Trade	2.6%	0.9%	3.1%	2.5%	2.5%	2.2%	2.4%	3.0%
Retail Trade	11.6%	7.4%	10.2%	11.6%	11.9%	10.9%	11.1%	10.3%
Accommodation and Food	7.9%	7.4%	6.6%	7.5%	7.6%	7.3%	7.5%	7.2%
Transport, Postal & Warehousing	3.9%	3.7%	4.4%	5.7%	4.3%	3.6%	4.1%	4.9%
Information Media & Telecomms.	2.0%	0.8%	0.8%	0.6%	1.2%	0.9%	1.2%	1.8%
Financial and Insurance Services	3.5%	0.6%	2.9%	1.3%	2.9%	1.5%	2.5%	3.8%
Rental, Hiring and Real Estate	1.8%	1.0%	1.6%	1.1%	1.4%	1.2%	1.4%	1.8%
Professional, Scientific & Technical	5.6%	3.4%	4.8%	3.1%	5.8%	4.0%	4.9%	7.6%
Administrative & Support	3.7%	3.2%	2.7%	3.4%	3.2%	2.9%	3.2%	3.6%
Public Administration and Safety	6.5%	18.2%	6.9%	5.2%	6.5%	6.4%	7.1%	7.0%
Education and Training	8.0%	13.0%	11.9%	8.4%	10.3%	8.6%	9.5%	9.1%
Health Care and Social Assistance	16.0%	15.7%	15.7%	13.7%	15.5%	13.9%	15.2%	13.2%
Arts and Recreation Services	1.6%	2.3%	1.0%	1.0%	1.8%	1.6%	1.5%	1.7%
Other Services	4.4%	6.2%	4.4%	4.2%	3.7%	4.0%	4.2%	3.9%
Total	100%	100%	100%	100%	100%	100%	100%	100%

4.3 Highest Educational Attainment: Employed and Unemployed

It has long been recognised that there is a positive association between key economic and labour market variables and educational attainment of the workforce (Kennedy & Hedley 2003). For example, higher levels of educational attainment are strongly correlated with higher wages, productivity and innovation (Australian Workforce and Productivity Agency 2013). Toner (2011), in a report to the OECD, details the links between education, knowledge and innovation activity, such as:

- The tendency for capital equipment to be complementary with higher skills;
- The cumulative nature of knowledge, as unlike other forms of investment it does not depreciate, is often generally easily transferable at low cost and investment in prior knowledge generally lowers the cost of acquiring more knowledge; and,
- Higher skills and knowledge facilitate participation in and contributions to innovation.

The Census has various classifications for educational attainment but the one most relevant to the concerns of this report is Level of Highest Educational Attainment (HEAP). This is:

... derived from information on the highest year of school completed and level of highest non-school qualification regardless of the particular field of study or the type of institution in which the study was undertaken. The derivation process determines which of the 'non-school' and 'school' attainments will be regarded as the highest. Usually the higher ranking attainment is self-evident, but in some cases secondary education is regarded as higher than some Certificate level attainments. It may be used to determine the general level of educational achievement of the Australian population and of specific groups in Australian society; to investigate the relationship between levels of education and employment outcomes (ABS 2016c, p. 209)

The data in Tables 11 and 12 examines the highest educational attainment of employed and unemployed persons in the selected SA4 regions and Australia. (Tables 51-5g in the Addendum have similar data at an SA3 level). In aggregate, regions have a significant lower share of Bachelor degrees amongst the employed, at 15.0% compared to 20.7% for Australia. The regions also have approximately half the proportion of employed persons with post-graduate degrees as Australia. They also a significantly higher share of Certificate 3-4 workers, at 25.8% compared to 20.0% for Australia. There is also considerable variation in educational attainment of employed persons across the regions. In West and Northwest region of Tasmania 36.9% of employed persons have year 10 and above school education as their highest qualification compared to 30.1% for Australia, where Year 10 and above for all practical purposes indicates that years 10-12 schooling is the highest level of education attained.

This pattern of educational attainment in the regions reflects their orientation to middle and lower skill occupations, such as a community service, trades and labourer and industries in agriculture and construction. The regions also have a lower share of more highly qualified occupations such as professionals and industries such as scientific and technical services.

The data in Tables 11 and 12 is consistent with the literature as there is a strong inverse relationship between higher qualifications and likelihood of unemployment. For example, in the regions in total employed persons with Bachelor degrees comprise 20% of the workforce

but only 6.8% of the total unemployed. By contrast, persons with year 9 and below education account for 4.4% of the region's workforce but over double the unemployed at 11.0%.

Further, it can be surmised that, having regard to the drivers of investment by firms in innovation, that the occupational, industry and educational structure of the selected regions are somewhat less conducive in aggregate to innovation than for Australia as a whole (Toner 2011).

Table 11: Highest Level of Education. Employed Persons and Percent of Total Employment in Each Region and Australia 2016

	CC	NT Outback	T'oomba	W & NW	Geelong	Lat. – Gipps.	Total Regions	Australia
Adv. Diploma/Dip.	16,526	2,975	6,702	3,929	14,978	11,706	56,816	1,180,121
Bachelor Degree	20,078	4,778	10,964	4,561	23,584	13,544	77,509	2,209,208
Cert. 1 & 2	102	55	14	24	63	98	356	6,585
Cert 3 & 4	36,866	6,685	16,521	12,593	29,051	31,290	133,006	2,136,045
Grad. Dip. & Grad. Cert.	2,510	939	1,588	748	4,262	2,953	13,000	293,875
P/G Degree	4,712	1,383	2,995	842	5,773	2,627	18,332	726,377
Secondary Educ. Yr ≥10	44,738	9,302	21,987	16,329	36,389	35,254	163,999	3,218,384
Secondary Educ. Yr ≤9	5,574	1,966	2,263	2,380	4,606	5,977	22,766	335,572
Not stated	3,616	1,551	1,472	1,497	3,126	3,938	15,200	249,503
Other	4,787	1,045	1,712	1,363	3,116	2,941	14,964	328,202
<i>Total</i>	<i>139,509</i>	<i>30,679</i>	<i>66,218</i>	<i>44,266</i>	<i>124,948</i>	<i>110,328</i>	<i>515,948</i>	<i>10,683,872</i>
Adv. Diploma/Dip.	11.8%	9.7%	10.1%	8.9%	12.0%	10.6%	11.0%	11.0%
Bachelor Degree	14.4%	15.6%	16.6%	10.3%	18.9%	12.3%	15.0%	20.7%
Cert. 1 & 2	0.1%	0.2%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%
Cert 3 & 4	26.4%	21.8%	24.9%	28.4%	23.3%	28.4%	25.8%	20.0%
Grad. Dip. & Grad. Cert.	1.8%	3.1%	2.4%	1.7%	3.4%	2.7%	2.5%	2.8%
P/G Degree	3.4%	4.5%	4.5%	1.9%	4.6%	2.4%	3.6%	6.8%
Secondary Educ. Yr ≥10	32.1%	30.3%	33.2%	36.9%	29.1%	32.0%	31.8%	30.1%
Secondary Educ. Yr ≤9	4.0%	6.4%	3.4%	5.4%	3.7%	5.4%	4.4%	3.1%
Not stated	2.6%	5.1%	2.2%	3.4%	2.5%	3.6%	2.9%	2.3%
Other	3.4%	3.4%	2.6%	3.1%	2.5%	2.7%	2.9%	3.1%
<i>Total</i>	<i>100%</i>	<i>100%</i>	<i>100%</i>	<i>100%</i>	<i>100%</i>	<i>100%</i>	<i>100%</i>	<i>100%</i>

Table 12: Highest Level of Education. Unemployed Persons and Percent of Total Unemployment in Each Region and Australia 2016

	CC	NT Outback	T'oomba	W & NW	Geelong	Lat. – Gipps.	Total Regions	Australia
Adv. Diploma/Dip.	896	69	334	184	703	548	2,734	63,264
Bachelor Degree	710	89	409	135	739	430	2,512	97,373
Cert. 1 & 2	26	34	16	4	12	29	121	1,694
Cert 3 & 4	2,013	316	1,040	796	1,613	2,075	7,853	127,424
Grad. Dip. & Grad. Cert.	102	12	41	19	95	84	353	9,626
P/G Degree	178	25	137	34	237	107	718	37,686
Secondary Educ. Yr ≥10	4,565	1,870	2,340	1,914	3,322	3,426	17,437	343,049
Secondary Educ. Yr ≤9	952	1,060	374	314	705	885	4,290	56,115
Not stated	343	496	149	191	272	402	1,853	24,815
Other	312	187	170	94	225	247	1,235	26,406
<i>Total</i>	<i>10,097</i>	<i>4,158</i>	<i>5,010</i>	<i>3,685</i>	<i>7,923</i>	<i>8,233</i>	<i>39,106</i>	<i>787,452</i>
Adv. Diploma/Dip.	8.9%	1.7%	6.7%	5.0%	8.9%	6.7%	7.0%	8.0%
Bachelor Degree	7.0%	2.1%	8.2%	3.7%	9.3%	5.2%	6.4%	12.4%
Cert. 1 & 2	0.3%	0.8%	0.3%	0.1%	0.2%	0.4%	0.3%	0.2%
Cert 3 & 4	19.9%	7.6%	20.8%	21.6%	20.4%	25.2%	20.1%	16.2%
Grad. Dip. & Grad. Cert.	1.0%	0.3%	0.8%	0.5%	1.2%	1.0%	0.9%	1.2%
P/G Degree	1.8%	0.6%	2.7%	0.9%	3.0%	1.3%	1.8%	4.8%
Secondary Educ. Yr ≥10	45.2%	45.0%	46.7%	51.9%	41.9%	41.6%	44.6%	43.6%
Secondary Educ. Yr ≤9	9.4%	25.5%	7.5%	8.5%	8.9%	10.7%	11.0%	7.1%
Not stated	3.4%	11.9%	3.0%	5.2%	3.4%	4.9%	4.7%	3.2%
Other	3.1%	4.5%	3.4%	2.6%	2.8%	3.0%	3.2%	3.4%
<i>Total</i>	<i>100%</i>	<i>100%</i>	<i>100%</i>	<i>100%</i>	<i>100%</i>	<i>100%</i>	<i>100%</i>	<i>100%</i>

4.4 Place of Work and Place of Residence

4.4.1 Occupational structure

Up to this point all the data was based on place of residence (PoR), but important insights can be gained from comparing the same variables based on Place of Work (PoW) for the selected regions. Comparing the occupation and industry structure of PoR and PoW enables an approximate evaluation of the extent to which the skills of employed persons resident within a given region match the skills of jobs within the same region. Another perspective is that such a comparison reveals the degree of 'self-containment' of employment offered within a given region. It is generally accepted that it is desirable for there to be a reasonable proximity between PoR and PoW for reasons such as reducing commuting time and the variety of direct and indirect benefits such as reduced transport costs, lower carbon emissions, improved quality of life and lower transport accidents that flow from closer co-location of home and work. Clearly, the degree of self-containment that is both desirable and attainable varies from region to region depending on factors such as population density, absolute size of the population, and the ease of access to out of region employment centres.

Table 14 shows the net difference between PoR and PoW for the selected regions. A negative sign means more people work outside than within the region in the particular occupation and conversely a positive sign means there is a net inflow of people in a given occupation into the region. The key findings are:

- All regions with the exception of the NT Outback had a net outflow of workers, though there is considerable variation across the regions in the extent of this outflow
- Overall 12.3% of the total regional workforce work outside the selected SA4 regions.
- The outflow of workers is related to the proximity of larger cities, as:
 - The Central Coast of NSW has the largest proportion of its workforce that is employed outside the region at 24.8%. Close to 1 in every 4 workers are employed outside the region. The Central Coast is recognised as a dormitory region primarily for the Sydney labour market.
 - Only NT Outback SA4 has a net inflow of workers comprising 10.5% of the workforce.
 - In other regions, there was a range of net worker outflows from 3.4% in Toowoomba to 14.0% in Geelong.
- Overall, the occupation which had the highest propensity to work outside their region of residence was Trades and Technicians at 20.5%, and the occupation with lowest propensity was Sales at 6%.
- Generally, the higher skill occupations professional (12.5%) and managers (8.8%) have a lower propensity to work outside their PoR region compared to some middle skill jobs such as Trades and Technicians and lower skill Machinery Operators and drivers (15.5%) and Labourers (14.8%). Sales have the lowest propensity at 6.0%.

A preliminary investigation of the association between the variables in Table 1 of this report and Table 13 yielded some interesting findings. This may reflect the shorter commutes to out of region employment. The correlation coefficient between the propensity to work outside the region and geographic size is 0.77, a reasonably strong relationship. Thus, the smaller the geographic area the higher the propensity to work outside the region. The Central Coast has

the smallest area but the highest propensity for residence to be employed outside the region. NT Outback has the largest area but also a net inflow of workers. There is an inverse relation between population size and propensity to work outside the region. The correlation coefficient is $-.899$, a robust figure. Thus, the Central Coast has the largest population and the NT Outback the smallest, but the former has the largest propensity to out-commute and the latter the smallest. While the sample is small and the analysis quite simple, but the analysis suggests further, more sophisticated work on the factors driving these results is warranted. This further analysis includes the proximity of the region to major employment hubs, particularly the state capitals, as well as amenity factors such as coastal locations.

It is desirable that policies be implemented to reduce, what for many, is an arduous, dangerous and wasteful lengthy commute by implementing policies that either move relevant jobs closer to the region in which they reside or reducing the barriers to workers being able to reside closer to their place of work. In terms of the latter, factors such as the cost of housing closer the major metropolitan centres and reducing the transaction cost of moving house by reducing imposts to spatial mobility such as stamp duty on sale and purchase of homes, is necessary. Alternatively, or possibly as a complement, greatly improving the efficiency of public transport links between places of work and residence may prove beneficial.

Table 13: Employment X Occupation. Difference Between Place of Work and Place of Residence. Selected Regions. 2016

	Central Coast	N T Outback	To'mba	West & North West	Geelong	Latrobe – Gippsland	Total Regions
Managers	-4,568	313	-340	-180	-2,243	-783	-7,801
Professionals	-5,402	691	-35	20	-3,133	-499	-8,358
Technicians and Trades Workers	-7,667	837	-1,191	-549	-4,319	-3,284	-16,173
Community and Personal Service	-3,472	158	-17	-292	-1,819	-827	-6,269
Clerical and Administrative	-4,808	102	354	-24	-1,618	-856	-6,850
Sales Workers	-2,021	65	249	-53	-746	-547	-3,053
Machinery Operators and Drivers	-2,344	640	-272	-336	-1,472	-1,317	-5,101
Labourers	-3,785	310	-951	-438	-1,820	-2,011	-8,695
<i>Total</i>	<i>-34,067</i>	<i>3,116</i>	<i>-2,203</i>	<i>-1,852</i>	<i>-17,170</i>	<i>-10,124</i>	<i>-62,300</i>
	Percent Difference Between Place of Residence and Work						
Managers	-29.2%	8.6%	-4.8%	-3.3%	-15.4%	-4.9%	-12.5%
Professionals	-20.9%	10.2%	-0.3%	0.3%	-11.9%	-3.0%	-8.8%
Technicians and Trades Workers	-35.5%	22.4%	-11.9%	-8.2%	-22.8%	-18.1%	-20.5%
Community and Personal Service	-20.1%	3.0%	-0.2%	-5.5%	-11.6%	-6.5%	-9.8%
Clerical and Administrative	-25.2%	2.8%	3.9%	-0.5%	-10.8%	-6.8%	-10.6%
Sales Workers	-13.7%	3.7%	4.0%	-1.2%	-5.9%	-5.2%	-6.0%
Machinery Operators and Drivers	-28.0%	40.8%	-6.3%	-8.8%	-20.4%	-17.3%	-15.5%
Labourers	-26.2%	9.6%	-11.9%	-6.5%	-14.6%	-14.3%	-14.8%
<i>Total</i>	<i>-24.8%</i>	<i>10.5%</i>	<i>-3.4%</i>	<i>-4.3%</i>	<i>-14.0%</i>	<i>-9.3%</i>	<i>-12.3%</i>

4.4.2 Industry Employment Structure.

An identical logic to that in section 4.4.1 applies to the analysis of the difference between industry PoR and PoW. The same policy implications apply to this data as well. Again, a negative sign means more people work outside than within the region in the given industry or region.

Table 14 shows the values for PoW in the regions and Table 15 shows the net difference between PoR and PoW for the selected regions. The key findings are:

- The industries with the highest propensity to have workers engaged outside their regional PoR are Information Media & Telecomms. (32.9%), Construction (32.6%) and Finance and Insurance (25.0%)
- Accommodation and Food (1.2%), Retail Trade (3.6%), Health Care and Social Assistance (4.9) and Education and Training (6.6%) have the lowest propensity to work outside their region.

Table 14: Employment X Industry. Difference Between Place of Residence and Place of Work. Selected Regions. Australia 2016

	Central Coast	NT Outback	T'oomba	West & North West	Geelong	Latrobe-Gippsland	Total Regions
Agriculture, Forestry and Fishing	-163	207	-433	-203	-154	-252	-998
Mining	-247	1,505	-236	-20	-210	-295	497
Manufacturing	-1,521	48	-727	-101	-951	-847	-4,099
Electricity, Gas, Water and Waste	-426	9	-8	-19	-248	-187	-879
Construction	-7,104	228	-1,155	-643	-4,294	-3,353	-16,321
Wholesale Trade	-1,401	5	-2	-14	-582	-378	-2,372
Retail Trade	-1,903	105	343	-7	-27	-470	-1,959
Accommodation and Food	-692	273	77	16	-133	23	-436
Transport, Postal & Warehousing	-2,038	29	-51	-51	-1,614	-637	-4,362
Information Media & Telecomms.	-1,332	-11	-15	2	-466	-151	-1,973
Financial and Insurance	-2,258	5	77	-23	-736	-114	-3,049
Rental, Hiring and Real Estate	-414	-6	2	-9	-178	-65	-670
Professional, Scientific & Technical	-2,749	29	-44	-49	-1,328	-639	-4,780
Administrative and Support	-1,777	24	-263	-138	-1,029	-719	-3,902
Public Administration and Safety	-2,905	112	-377	-82	-1,755	-270	-5,277
Education and Training	-1,859	171	270	-31	-1,237	-406	-3,092
Health Care and Social Assistance	-2,547	237	386	-276	-1,042	-456	-3,698
Arts and Recreation	-627	41	-28	-13	-393	-181	-1,201
Other Services	-1,319	16	23	-73	-440	-362	-2,155
<i>Total</i>	<i>-33,282</i>	<i>3,027</i>	<i>-2,161</i>	<i>-1,734</i>	<i>-16,817</i>	<i>-9,759</i>	<i>-60,726</i>

Note there are small differences in the absolute values in column totals between tables 13 and 14 due to small differences in categories such as Not Stated and Inadequately Defined, which are excluded from these tables.

Table 15: Employment X Industry. Percent Difference Between Place of Residence and Place of Work. Selected Regions. Australia 2016

	Central Coast	NT Outback	T'oomba	W & NW	Geelong	Latrobe-Gippsland ¹	Total Regions
Agriculture, Forestry and Fishing	-14.9%	16.5%	-14.6%	-5.5%	-7.0%	-2.7%	-4.8%
Mining	-32.6%	149.8%	-22.7%	-1.5%	-55.0%	-20.0%	8.2%
Manufacturing	-17.4%	12.8%	-16.9%	-2.4%	-10.4%	-11.2%	-11.9%
Electricity, Gas, Water and Waste	-27.6%	2.7%	-1.1%	-3.9%	-16.5%	-5.5%	-11.0%
Construction	-45.1%	12.9%	-20.2%	-19.6%	-34.0%	-30.6%	-32.6%
Wholesale Trade	-40.8%	1.8%	-0.1%	-1.3%	-19.6%	-16.2%	-19.7%
Retail Trade	-12.3%	4.9%	5.3%	-0.1%	-0.2%	-4.1%	-3.6%
Accommodation and Food	-6.5%	12.6%	1.8%	0.5%	-1.5%	0.3%	-1.2%
Transport, Postal & Warehousing	-38.9%	2.7%	-1.8%	-2.1%	-31.1%	-16.9%	-21.3%
Information Media & Telecomms.	-49.9%	-4.7%	-3.1%	0.8%	-32.5%	-16.3%	-32.9%
Financial and Insurance	-48.8%	3.1%	4.2%	-4.3%	-21.2%	-7.2%	-25.0%
Rental, Hiring and Real Estate	-17.1%	-2.2%	0.2%	-2.0%	-10.7%	-5.0%	-9.4%
Professional, Scientific & Technical	-36.6%	2.9%	-1.4%	-3.7%	-19.0%	-15.1%	-19.8%
Administrative and Support	-35.8%	2.6%	-15.2%	-9.6%	-27.1%	-23.7%	-24.5%
Public Administration and Safety	-33.4%	2.1%	-8.5%	-3.7%	-22.5%	-4.0%	-15.0%
Education and Training	-17.3%	4.5%	3.6%	-0.9%	-10.0%	-4.5%	-6.6%
Health Care and Social Assistance	-11.9%	5.2%	3.8%	-4.7%	-5.6%	-3.1%	-4.9%
Arts and Recreation	-29.6%	6.1%	-4.5%	-3.1%	-18.0%	-11.0%	-15.7%
Other Services	-22.5%	0.9%	0.8%	-4.1%	-9.9%	-8.5%	-10.3%
<i>Total</i>	-24.9%	10.4%	-3.4%	-4.1%	-14.0%	-9.2%	-12.3%

5 Socio-Economic Indexes

The ABS (2016d) uses the labour market and educational variables from the Census examined in this study, plus many other variables, to construct Socio-Economic Indexes for Areas (SEIFA). There are four main indexes constructed to measure and rank areas in Australia according to relative socio-economic advantage and disadvantage. The four indexes each summarise a slightly different aspect of the socio-economic conditions in an area.

The measure used below is the Index of Relative Socio-economic Advantage and Disadvantage (IRSAD). This is the most comprehensive and general SEIFA measure as it summarises information about the economic and social conditions of people and households within an area, including both relative advantage and disadvantage measures. The SEIFA are calculated for almost all geographic areas used by the ABS such as Statistical Areas and LGAs.

As noted, to construct the SEIFA the ABS uses many variables in addition to education, occupation and labour market status (such as level of unemployment) including household and personal income, disability, internet connection, single parent status and ratio of house occupants to bedrooms.

Table 16 shows the proportion of the population in each SA4 region and Australia ranked on the SEIFA index.

Table 16: Proportion of the Population in Each Region Classified by the Index of Relative Socio-economic Advantage and Disadvantage (IRSAD).

	SEIFA Index.				
	1	2	3	4	Total
Central Coast	0.3%	16.9%	77.5%	4.9%	99.6%
N T Outback	31.8%	16.7%	43.8%	4.8%	97.1%
To'mba	0.0%	17.3%	76.1%	6.0%	99.3%
West & North West	1.9%	36.8%	61.1%	0.0%	99.7%
Geelong	0.7%	13.5%	78.0%	7.2%	99.3%
Latrobe - Gippsland	0.5%	26.0%	73.0%	0.0%	99.6%
Australia	0.7%	13.8%	67.9%	16.9%	99.2%

Source: ABS 2016 Census Socio-Economic Indexes for Australia (SEIFA), 2016. Cat No. 2033.0.55.001

The ABS (2016d) indicates the way to interpret the Index is as follows:

A low score indicates relatively greater disadvantage and a lack of advantage in general. For example, an area could have a low score if there are:

- many households with low incomes, or many people in unskilled occupations, AND
- few households with high incomes, or few people in skilled occupations.

A high score indicates a relative lack of disadvantage and greater advantage in general. For example, an area may have a high score if there are:

- many households with high incomes, or many people in skilled occupations, AND
- few households with low incomes, or few people in unskilled occupations'

Thus, a score of 1 on the Index indicates the highest level of disadvantage and absence of advantage, whereas a score of 4 represents the converse. The NT Outback has the highest proportion of its population classified to SEIFA 1 (31.8%), indicating that nearly 1 in every 3 residents is in this category of relative disadvantage. This is to be expected since it was shown earlier that, for example this region had the lowest employment to population ratio aged 15 or more years, the highest unemployment rate and highest dependency ratio of any region.

By contrast the level of disadvantage in the other selected regions is much lower with West & North West Tasmania having the next highest level at just 1.9% of its population so ranked. Excluding the NT Outback, the majority of people in the other regions and Australia as a whole are ranked around the median on the index at level 3 with a much smaller proportion of the regions' population classified to the most advantaged level 4 than for Australia as a whole. These results are consistent with the data and analysis presented earlier in this report, which point to some degree of relative disadvantage but, excluding NT Outback, not for most residents' extreme disadvantage.

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