



Education & Skills in Southern Adelaide: preparing for the future



**Report prepared for the Southern Knowledge
Transfer Partnership – Flinders University & the
Southern Adelaide Economic Development Board**

FINAL REPORT

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List of Abbreviations

ABS	Australian Bureau of Statistics
ANZSCO	Australian and New Zealand Standard Classification of Occupations
ASCED	Australian Standard Classification of Education
ASGC	Australian Standard Geographical Classification
DEEWR	Department of Education, Employment and Workplace Relations
DIAC	Department of Immigration and Citizenship
HEAP	Highest Level of Education Attainment
HILDA	Household, Income and Labour Dynamics in Australia
HSCP	Highest Year of School Completed
IRR	Internal rate of return
LGA	Local Government Area
NCVER	National Centre for Vocational Education and Research
NILS	National Institute of Labour Studies – Flinders University
OECD	Organisation for Economic Cooperation and Development
QALLP	Non-school Qualification: Level of Education
SA	South Australia
SAEDB	Southern Adelaide Economic Development Board
SAEDCG	Southern Adelaide Economic Development Coordination Group
SALM	Small Area Labour Market
SKTP	Southern Knowledge Transfer Partnership – Flinders University
SSRM	State Sponsored Regional Migration
UK	United Kingdom
US	United States
VET	Vocational Education and Training

Executive Summary

Increasing and improving the stock of education and training of the residential population and local workforce in Southern Adelaide is acknowledged by the Southern Adelaide Economic Development Board (SAEDB) as a high priority objective. Education and training are closely linked with the further objectives to increase the labour force participation of residents (particularly within the Southern Adelaide region), to improve the productivity of the local workforce, and the more general aspiration of the SAEDB that by 2025:

... Southern Adelaide is a vibrant area with a thriving and diverse economy built around knowledge, innovation and high value-added manufacturing and service industries.²

To realise these objectives and to enable the setting of appropriate education targets, an understanding of education and training in relation to economic growth within the Southern Adelaide region is required. NELS has been commissioned to produce this report as a foundation document that discusses the overall relationship between education attainment and economic growth, and presents detailed evidence on the levels of education and training in each of the four Southern Adelaide Local Government Areas (LGAs).

The objective of this report is to provide the concrete information needed for setting specific education and training targets for Southern Adelaide.

The first section of this report outlines the economic concepts that underlie the relationship between education and training, and how investment in education and training may be transmitted into economic growth. It also summarises the results of three recent and pertinent Australian empirical studies examining the returns from education attainment. The objective of this section is to illustrate the diverse way in which education improves economic performance at the individual level. This will help the reader to interpret the importance of the demographic diversity of Southern Adelaide in the context of improving economic performance through education and training.

Key general points:

- *Individuals that invest in formal education acquire skills and knowledge, that improve their productive capacity (the focus of human capital theory); and, are provided with a recognisable qualification, which facilitates and improves the probability of a successful match with an employer (the focus of job signalling theory). In real life good human capital and accurate signals improve individual and social economic performance.*
- *Individuals of lower ability and/or low socio-economic background have less incentive to invest in formal education, which result in unequal education outcomes, resulting in economic and social inequalities.*

² Southern Adelaide Economic Development Board, *A New Economic Future – Vision for Southern Adelaide*, pp.3

- *Australian evidence shows that those who completed a post-school qualification have a much higher employment participation and better productivity outcomes in comparison to those that did not.*
- *For Year 12 completers, the greatest post-school education returns were received by those that went on to complete a Higher Education qualification.*
- *For school non-completers (i.e. with Year 11 or less), the greatest post-school education returns were received by those that went on to complete a Certificate IV or an Advanced Diploma/Diploma qualification,*
- *Post-school qualification returns are higher for Year 12 completers than for school non-completers.*
- *For mature-aged students, the returns from completing post-school qualifications later in life were either delayed by a few years or slightly diminished, but the benefits still outweighed the costs.*

The second section of the report identifies four external pressures currently facing the Australian economy and discusses how they relate to education and training.

Key points:

- *The Australian population is ageing, which means that the future stock of education, skills and experience will need to be replaced, but by fewer people. This will increase the returns on investment in education, encouraging more individuals to attain higher levels of education, and possibly prolong the participation of older workers.*
- *To maintain the competitiveness and growth of the Australian economy, the quality and level of education attainment of the Australian workforce has to keep pace with the workforces of other major developed nations.*
- *Australia's overseas migration policy of targeting 'skilled' immigrants has been a significant contributor to population growth in South Australia and benefited the levels of education and training of the labour force, due to the classification of South Australia as a 'regional' location under the State Specific Regional Migration (SSRM) program. However, increased competition from other developed nations for skilled migrant labour and the possible reclassification of metropolitan Adelaide under the SSRM, may influence the flow of skilled migrants into South Australia and the optimal level of investment in education and training of the local population.*
- *It is unknown how environmental climate change or the implementation of policy measures that address the issue will affect the labour market. However, during the period of adjustment, there will certainly be a role for education and training to accommodate the changing skills demands of industry.*

The third section of the report provides detailed evidence on the stock of education and skills and related labour market outcomes, for both the residential populations and the local workforces for each of the four LGAs that comprise the Southern Adelaide region: Holdfast Bay, Marion, Mitcham and Onkaparinga. The section concludes with evidence on the utilisation of education and skills in each of the local economies. It examines the geographical size of the labour market and related commuting flows for residents of the Southern Adelaide region, and compares the education and occupation distributions of the employed residents for each of the local workforces.

The principal source of information used in this report has been the ABS 2006 Census of Population and Housing. Throughout the analysis, examination of the characteristics of the residential populations and the local workforces are disaggregated by gender and age. This is necessary as these factors are influential on the behaviour of individuals in relation to their investment in education and training, and their subsequent engagement with the labour market. In addition, each of the four Southern Adelaide LGAs, have been considered individually to reflect the considerable economic and social diversity within Southern Adelaide.

Key points:

- *There is a large degree of variation in the population and labour force characteristics between each of the four Southern Adelaide LGAs; where Mitcham had the highest proportion of residents that had attained a post-school level of education or were employed, while Onkaparinga had the lowest.*
- *Investment in education and training in Southern Adelaide will need to be greater for the residential populations of Onkaparinga and Marion.*
- *Across each of the four LGAs, education attainment was positively correlated with employment participation. This association also persisted across gender in the youth and prime-working age cohorts, but was ambiguous for residents in the older age cohort.*
- *The positive relationship between education attainment and labour force participation was stronger in Mitcham and Holdfast Bay, than in Onkaparinga and Marion. It appears that this geographic clustering is not a random occurrence, and that it is representative of a part of the population that would require an above-average investment in education and training to achieve average labour market outcomes.*
- *The geographical size of the labour market for the residential populations of the four Southern Adelaide LGAs stretched well beyond their boundaries, as the number of residents travelling to another region for work each day (approx. 82,429) was far greater than the number of workers travelling into the Southern Adelaide region (approx. 17,245) – most of whom travelled the furthest distance to and from Onkaparinga. In addition, almost 90% of employed residents travelled to work by car.*
- *The distributions of education and occupation for each of the four LGAs were relatively well matched between the employed residents and the local workforces, indicating that the under-utilisation of local labour by the local economies was due to their small sizes, rather than a mismatch between skills required and those locally available.*

1 Background

How does education & training influence the broader economy?

The level of education and training of a country's population and how a country's public and private investment in education and training influences its broader economy are both indirect and subtle. Nonetheless, investment in education and training is instrumental in sustaining the growth of a developed industrial economy.

In general terms, the true benefit of education and training to the broader economy (the macroeconomic level) is a consequence of the collective impact that education and training has on individuals within the economy (the microeconomic level). That is, the influence of education and training is indirectly transmitted to the macroeconomic level through its direct effect on individuals at the microeconomic level. At the microeconomic level, education and training influences the employment opportunities available to individuals (i.e. the quantity of labour supplied and the quality of employment), as well as their productive capacity (i.e. the price or wage at which labour is supplied). At the macroeconomic level, the level of education and training translates into second round effects (or multiplier effects). That is, the influence of education and training on labour market behaviour of individuals goes on to affect the welfare and tax receipts of government, infrastructure spending and discretionary spending on goods and services. In turn, the second round effects at the macroeconomic level feedback to the microeconomic level, in the form of the availability of employment opportunities for productive individuals, which continues in a cycle until the availability of individuals with suitable levels of education are exhausted (due quantity and/or price constraints).

This section briefly explains the economic theoretical premise of how investment in education and training is transmitted through to the broader economy, and how the investment in education and training in Australia has influenced employment participation and earnings outcomes in recent years.

1.1 Theoretically

The accumulation of education and training by individuals and its influence on their labour force participation and earnings outcomes are theoretically explained by two complementary concepts of Human Capital theory and Signaling theory.

The concept of human capital (Lewis, 1954; Mincer, 1958; Becker, 1964) considers the knowledge and skills acquired by individuals to be an economic input, similar to physical capital, and that there is a benefit to both government (i.e. public) and individuals (i.e. private) to invest their resources in providing and acquiring education and training, respectively. In making the decision to invest, governments and individuals must consider both the opportunity (implicit) cost and the direct cost of their investment. That is, the present value of the expected costs incurred by undertaking education (including tuition fees, foregone earnings from employment, and labour force experience) versus the expected benefits derived from the acquisition of knowledge and skills (including higher earnings, lower rates of unemployment, and more secure employment). An underlying assumption of human capital theory is the transparency of information in facilitating a competitive labour market. However, in reality, human capital investment decisions are often made by individuals based on imperfect and sometimes incomplete information.

The issue of asymmetric and opaque information in the labour market are dealt with by the second concept of job market signaling (Spence, 1973). Both employers and potential employees cannot immediately observe the strengths and weaknesses of one another. Furthermore, both parties have an incentive to only disclose their favourable attributes while concealing their poor attributes. Signaling theory explains how the observable attributes of individuals transmit or signal information regarding their levels of ability, skill or competency. For example, formal education and its resulting qualification, offers a rapid and recognisable signal to an employer about the abilities of a potential employee, which the employer can then interpret and match to a wage schedule (i.e. make a judgement regarding the marginal productivity of the potential employee). Similarly, the signals conveyed by employers to potential employees (such as the wages offered, their ethics and standards, or work conditions) allow potential employees to assess the suitability of the potential employer. Unlike human capital theory, the decision to invest in formal education is dependent on the quality of the information signal it provides (i.e. the level of qualification). For young labour market entrants, formal education and qualification attainment is particularly important, as they have little work experience and require a proxy to indicate their abilities. Similarly, for employers, the integrity of a qualifications framework provides certainty and reduces the risks when employing workers; decreasing the turnover in staff and allowing wage offers to be judged more accurately. However, relying too heavily on education qualifications may result in levels or types of education to be undertaken that are not entirely necessary for a particular job.

Joint consideration of the two theoretical concepts also suggests that the decision to invest in education and training may be further influenced by an individual's ability or background (Becker, 1994). That is, there may be an inherent selection bias in the type of individuals that decide to invest in education and training. For example, human capital theory suggests that individuals with high levels of ability have a greater marginal benefit from investing in further education; similarly, young individuals from wealthy backgrounds have a lower marginal cost from investing in further education. The influence of an individual's ability or background, or the combination of both, on their investment decision is further amplified by

signaling theory, which also affects their probability of gaining employment and their choice of employer. This is an important implication, particularly for governments, that the investment in education and training needs to be socially inclusive, so that societal imbalances are avoided and are not compounded over generations.

1.2 Empirically

While it is difficult to accurately estimate the full contribution of the (public and private) investment in education and training to the macro-economy, the relationship between education and labour market outcomes for individuals is empirically measured more readily and with a higher degree of certainty. There are numerous Australian studies using various microeconomic data sources, which sample the Australian population, that have examined the influence of education on labour market outcomes in many different ways. For example, education and training can be defined as the number of years of undertaken, the highest level completed or the most recent level completed. Similarly, the examination of labour market outcomes can be defined as the probability of gaining employment or gaining a particular type of employment (e.g. full-time/part-time or casual/permanent); the average number hours worked per week or per year; or, the hourly wage, the average weekly earnings or the annual income. In most cases, the information provided by the data determines which labour market measures are used. Therefore, for the purposes of this report, rather than make strict comparisons of level estimates from different studies, only the broad trends of the results from a representative selection of the most recent Australian empirical studies are discussed.

Empirically, increased levels of education and training have been found to (i) improve the probability of individuals gaining employment, and (ii) improve the quality of employment. Research by Lee & Coelli (2010) estimated the average contribution of the highest level of education attainment on the probability of gaining employment and the quality of employment (i.e. full-time/part-time and permanent/casual), for Australians aged 15 years and over, in 2005, with a particular emphasis on VET qualification attainment. Furthermore, their estimates considered the pathway of education, separately estimating the influence of post-school education relative to Year 12 completers and non-completers (i.e. Year 11 or below).

In the first instance, their estimates showed that not only was the average proportion of employment higher for individuals with only Year 12 qualifications (82%), in comparison to those that only held Year 11 and below qualifications (75%), but that the probability of gaining employment continued to improve for school completers that attained higher levels of education, as illustrated in Table 1-1. For example, for male Year 12 completers, the probability of employment increased for all tertiary qualifications above Certificates I & II, while, for females, the only significant improvement was at the Higher Education (i.e. university) qualification levels. For both male and female non-school completers, Certificates III & IV were the only qualifications to improve their probability of employment. These results also highlight the positive influence that higher levels of education attainment have had on the employment outcomes for females in comparison to males.

In the second instance, their estimates showed that the influence of education on the quality of employment (conditional on having gained employment) varied substantially by

qualification level and gender. As illustrated in Table 1-1, for Year 12 completers, the probability of gaining full-time employment (relative to part-time employment) only increased for those that went on to attain Higher Education qualifications, and that the effect was greater for males than females; whereas, for non-school completers, males that attained higher level qualifications beyond the Certificate I & II levels decreased their probability of full-time employment, and that for females there was no improvement from attaining a post-school qualification. Alternatively, their estimates showed that for both female Year 12 completers and non-completers, higher levels of education improved their probability of permanent employment (relative to casual employment); whereas, for males, the only improvement occurred for Year 12 completers that went on to attain a Higher Education qualification or a high skill vocational qualification (i.e. Advanced Diploma or Diploma).

Table 1-1: Estimates comparing the employment and earnings outcomes of Higher Education and VET qualification completers conditional on the school completion, by gender, 2005

	Probability of employment		Probability of working full-time* (conditional on employment)		Probability of permanent employment (conditional on employment)	
	Male	Female	Male	Female	Male	Female
Sample is restricted to respondents that completed Year 12.						
Estimates relative to Year 12 completers (i.e. the <i>base</i>)						
Higher Edu.	3.9%	4.8%	6.7%	4.0%	6.2%	9.2%
Adv. Dip. & Dip.	5.2%	0%#	0%#	0%#	6.2%	8.4%
Cert. III & IV	4.2%	0%#	0%#	0%#	0%#	10.7%
Cert. I & II	0%#	0%#	0%#	0%#	0%#	9.9%
Base average	82%		77%		74%	
Sample is restricted to respondents that did not complete Year 12.						
Estimates relative to Year 11 & below (i.e. the <i>base</i>)						
Higher Edu.	0%#	0%#	0%#	0%#	0%#	10.7%
Adv. Dip. & Dip.	0%#	0%#	0%#	0%#	0%#	10.0%
Cert. III & IV	3.6%	8.4%	-3.2%	0%#	0%#	10.4%
Cert. I & II	0%#	0%#	6.6%	0%#	0%#	6.8%
Base average	75%		73%		70%	

Notes: * Full-time employment equates to working ≥ 35 hours per week. # Estimates were not statistically significant from zero at 90% and above confidence.

Data: ABS, Survey of Education & Training, 2005.

Source: Lee & Coelli (2010).

Having considered the influence of education and training on labour force participation in Australia, another empirical approach is to measure the relationship between education attainment and the productive capacity of employed individuals. A recent study by Leigh (2008), examined the influence of education on productivity and also the combination of productivity and participation, by estimating the effect of the highest level of education attainment on the pre-tax hourly wage and pre-tax annual earnings, respectively; for employed Australians, aged 25-64 years, between 2001 and 2005. Similar to the research by Lee & Coelli (2010), the estimates considered the pathway of education, by examining the influence of education attainment of Year 12 completers and non-completers separately.

The estimates of Leigh (2008), again, indicate that post-school levels of education and training improved the hourly wage and the annual income, particularly for Year 12 completers compared with non-school completers. As illustrated in Table 1-2, the hourly wage of Year 12 completers increased proportionally for those that went on to attain post-school levels of education beyond Certificates III & IV; while, for non-school completers, hourly wage increased proportionally for those that went on to attain Certificates III or IV, or an Advanced Diploma or Diploma. While the opportunities for post-school education available to Year 12 completers were greater than those compared to non-school completers, and that these opportunities were associated with higher returns; the estimates indicated that there was still a clear benefit to non-school completers from continuing on to attain high skill vocational level qualifications (e.g. Advanced Diploma/Diploma).

Moreover, the estimated results that examine the relationship between education attainment and annual income are used to determine the component of productivity provided by each level of education, on average. For example, for Year 12 completers, continuing on to attain a Bachelors qualification (as their highest level of education) improved their average annual income by 45%, of which, 71% of that effect was attributable to productivity (as the estimated impact on annual earnings was 1.4 times greater than the estimated impact on hourly wages). As illustrated in Table 1-2, the productivity gains from post-school levels of education were substantial for both Year 12 completers and non-school completers, and from attaining high skill vocational level qualifications.

Table 1-2: Estimates comparing the earnings outcomes of Higher Education and VET qualifications conditional on school completion, 2001-2005

	Proportional influence on hourly wage	Proportional influence on annual income	Impact of education on productivity
Sample is of respondents with twelve years of schooling. Estimates relative to Year 12 (school completers).			
Postgraduate	41%	66%	62%
Grad. Dip & Dip.	35%	42%	83%
Bachelor	32%	45%	71%
Adv. Dip. & Dip.	13%	17%	76%
Cert III/IV	0%#	0%#	-
Sample is of respondents with eleven or fewer years of schooling. Estimates relative to Year 11 & below and no post-school qualifications.			
Adv. Dip. & Dip.	12%	20%	60%
Cert. III & IV	7%	19%	37%
Cert. I & II	0%#	0%#	-

Notes: # Estimates were not statistically significant from zero at 90% and above confidence. All statistically significant estimates have been adjusted downwards by 10% to account for the bias of 'ability'.

Data: Household, Income and Labour Dynamics in Australia (HILDA) Survey, 2001-2005.

Source: Leigh (2008)

In contrast to the studies by Lee & Coelli (2010) and Leigh (2008), an alternative approach is to construct an internal rate of return (IRR) from investing in education, based on estimating the stream of costs and benefits over an individual's lifetime. The recent research by Long & Shah (2011) estimated the average private rates of return from investing in vocational education and training (VET) qualifications, in Australia, 2005. Using a sensitivity analysis technique, Long & Shah (2011) estimated the direct and indirect costs, and the additional income, involved in attaining the 'Certificate III & IV' and 'Advanced Diploma & Diploma' qualifications². In addition, Long & Shah (2011) examined the effect of education attainment for various age cohorts, with rates of return estimated for the 18-19 year, 28-29 year and 43-44 year age cohorts. Again, their estimates considered the pathway of education, examining the influence of vocational education attainment for Year 12 completers and Year 10 completers separately.

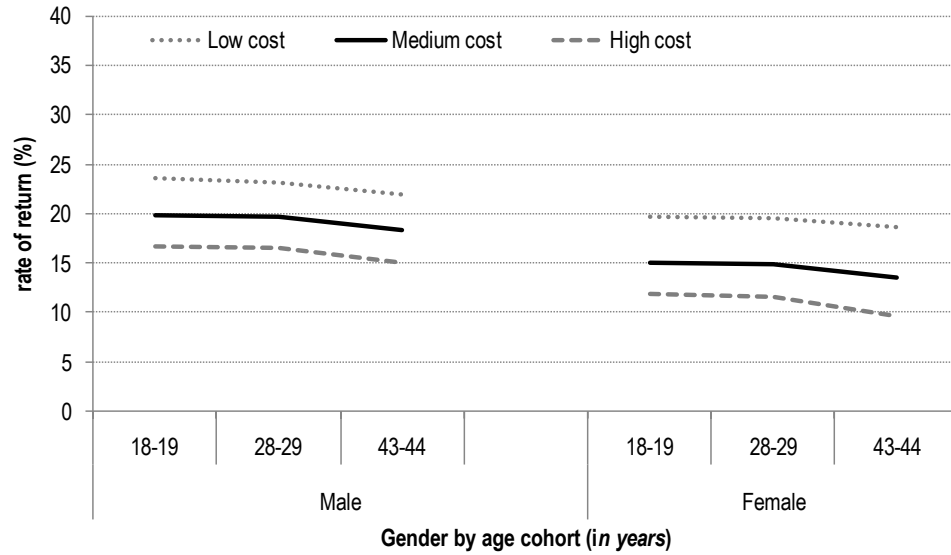
Figure 1-1 and Figure 1-2 illustrate the estimated rates of return for Year 12 completers that went on to attain an 'Advanced Diploma & Diploma' or 'Certificate III & IV' qualifications, respectively; and, Figure 1-3 and Figure 1-4 illustrate the estimated rates of return for Year 10 completers that went on to attain an 'Advanced Diploma & Diploma' or 'Certificate III & IV' qualifications, respectively.

² The rates of return to attaining the 'Certificate I & II' qualifications relative to Year 10 completers were estimated by Long & Shah (2011), but are not replicated in this report due to high standard errors.

Similar to the trends seen in previous studies, the estimates of Long & Shah (2011) indicated large positive returns from investment in post-school (vocational) education, even for the 'high' cost scenarios. For Year 10 completers, the estimated returns to vocational education were higher compared with the Year 12 completers, and the rates varied by qualification and gender. The estimates for both male and female Year 10 completers were similar at the Advanced Diploma/Diploma qualification attainment level, approximately 16-22% (assuming medium cost); whereas, the returns at the Certificate III & IV attainment level were 19-20% (assuming medium cost) for males, increasing to 30% (assuming medium cost) for females. For the Year 12 completers, the estimated returns from vocational education were similar if they undertook either a 'Certificate III & IV' or 'Advanced Diploma/Diploma' qualifications; however, the returns were 5-7 percentage points better for males than females. While the estimated returns to vocational education were similar for males regardless of their school completion level, the additional benefit of vocational education to females that did not complete school was significantly greater.

Furthermore, the estimated returns to vocational education indicated that age only made a small difference. Across all the scenarios, the rates of return for the 18-19 year and 28-29 year cohorts were approximately equal, and the estimates for the oldest age cohort (43-44 years) were, at the maximum, 5 percentage points lower than the 18-19 year cohort. As noted by Long & Shah (2011), the estimated returns for the 43-44 year age cohort were always slightly lower, due to their shorter time-horizon and the higher implicit costs (i.e. the opportunity costs) of undertaking study. The results of Long & Shah (2011) suggest that older students had almost the same economic incentive to undertake vocational qualifications as younger students.

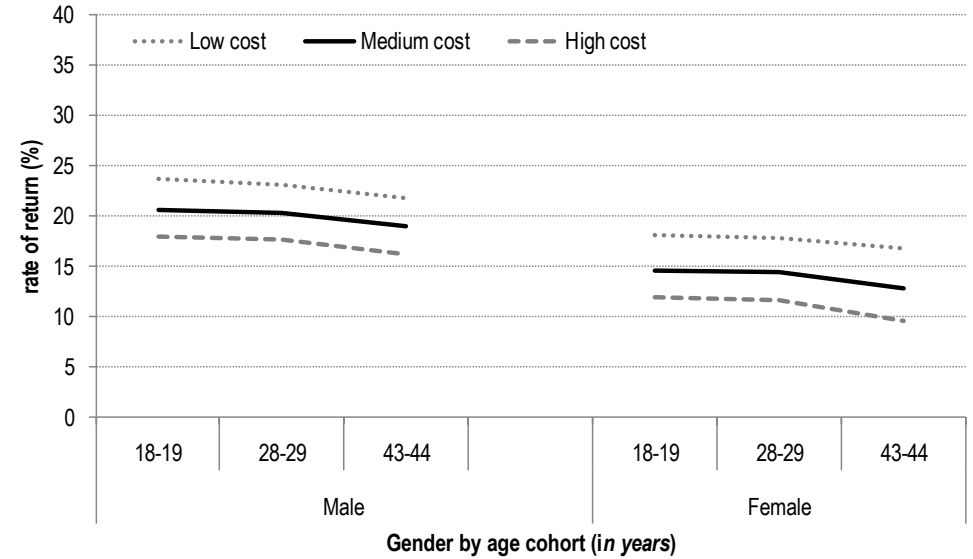
Figure 1-1: Private rates of return to ‘Advanced Diploma/Diploma’ qualifications (highest level attained) relative to Year 12 completers, by gender and age, 2005



Notes: Estimates are based on 2 years of full-time equivalent study

Source: Long & Shah (2011)

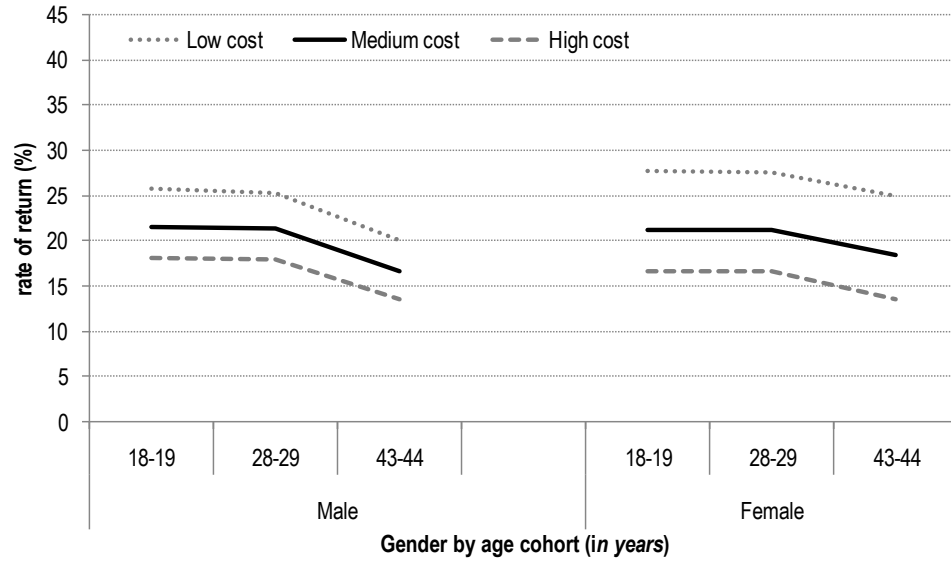
Figure 1-2: Private rates of return to ‘Certificate III & IV’ qualifications (highest level attained) relative to Year 12 completers, by gender and age, 2005



Notes: Estimates are based on 2 years of full-time equivalent study

Source: Long & Shah (2011)

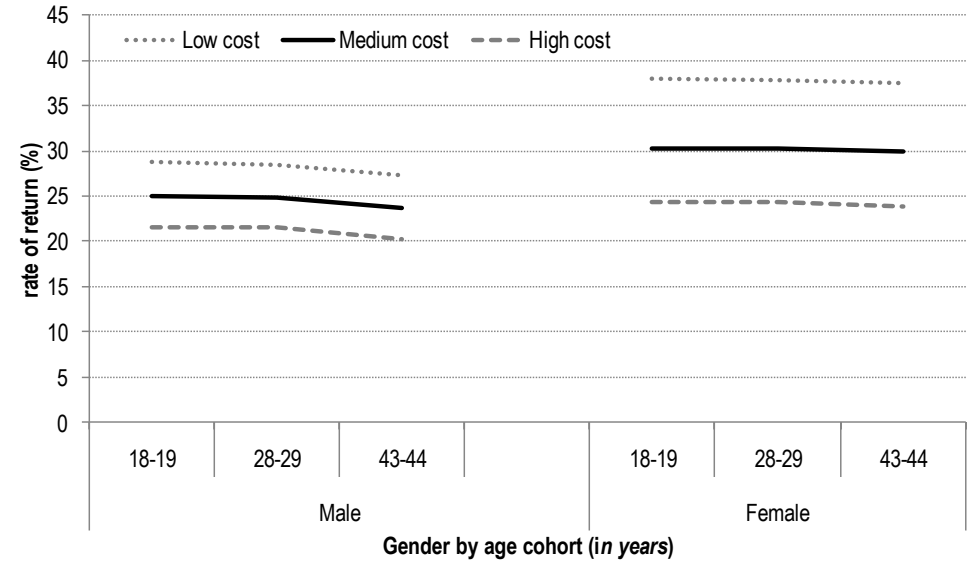
Figure 1-3: Private rates of return to ‘Advanced Diploma & Diploma’ qualifications (highest level attained) relative to Year 10 completers, by gender and age, 2005



Notes: Estimates are based on 2 years of full-time equivalent study

Source: Long & Shah (2011)

Figure 1-4: Private rates of return to ‘Certificate III & IV’ qualifications (highest level attained) relative to Year 10 completers, by gender and age, 2005



Notes: Estimates are based on 2 years of full-time equivalent study

Source: Long & Shah (2011)

2 Current Economic Climate

Why is education & training important?

There are currently several exogenous factors placing pressure on the Australian economy:

- an ageing population;
- globalisation;
- overseas migration;
- climate change

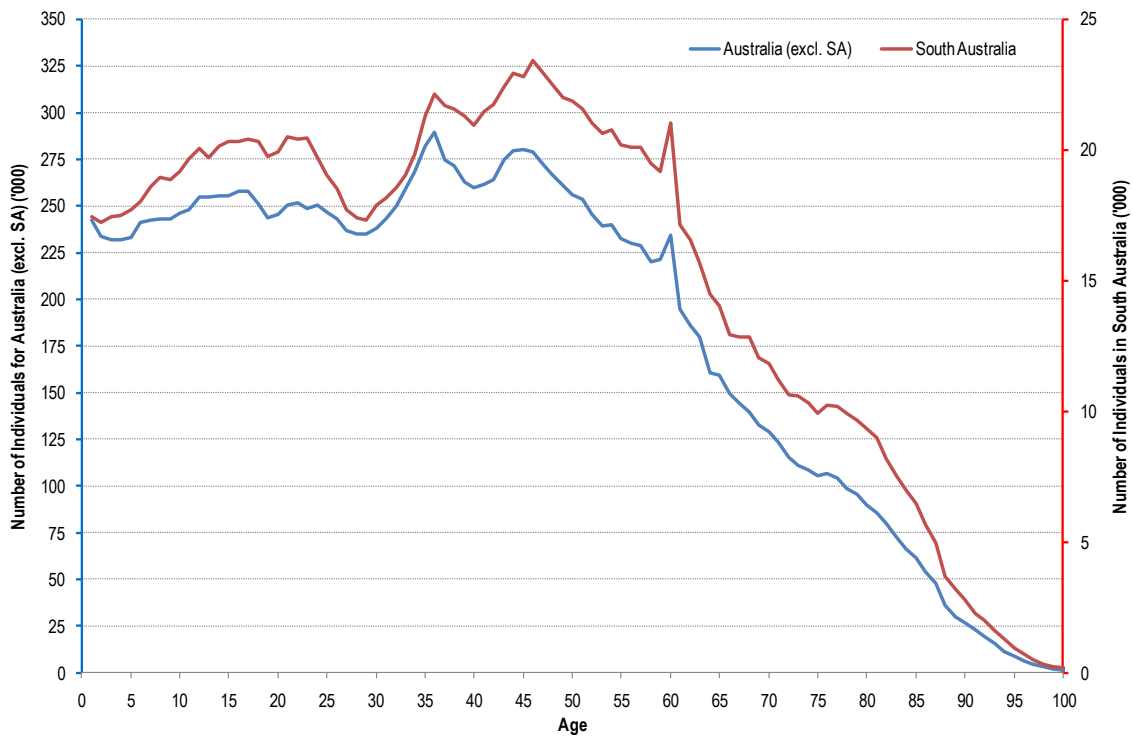
This section briefly explains what they are, how they might influence the investment in education and training, and how education and training might be used as tool to overcome the challenges they present.

2.1 Ageing Population

Discusses the impact that an ageing Australian population will have on the Australian and South Australian labour markets, its influence on the stock of education and training available, and how investment in education and training might alleviate these problems.

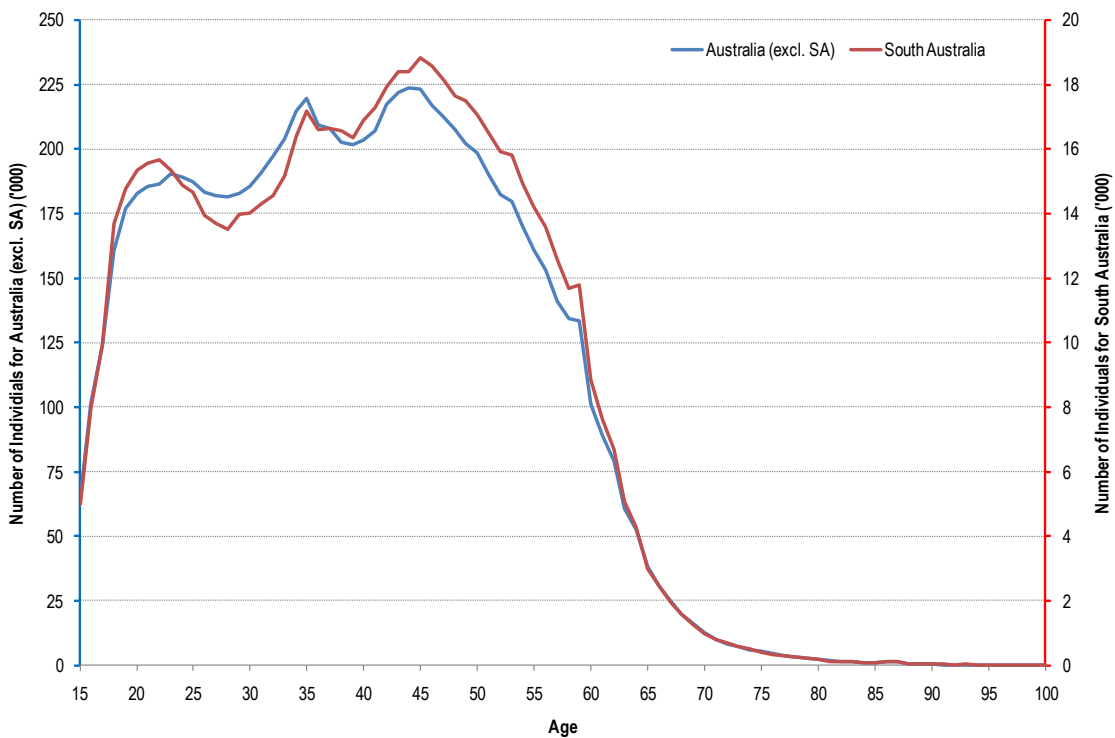
Like other developed nations, the Australian population is ageing. The ageing of Australia's population is extremely problematic for the economy and an issue that has no fast or easy solution, as detailed in the Australian Treasury's *Intergenerational Report*. The impact of an ageing population on the economy includes the constraints it places on the labour supply, due to the replacement shortfall of young labour force entrants with elderly labour force exits. Figure 2-1 and Figure 2-2 illustrate the distribution of age for the populations and labour force participants (i.e. employed and unemployed), respectively, for Australia (excluding South Australia) and South Australia. The figures also show that the trends in ageing are occurring at a faster rate in South Australia compared with the rest of Australia.

Figure 2-1: The age profile of the population for South Australia and Australia (excl. South Australia), 2006



Source: ABS, 2006 Census of Population and Housing

Figure 2-2: The age profile of labour force participants for South Australia and Australia (excl. South Australia), 2006.



Source: ABS, 2006 Census of Population and Housing

The implication of an ageing population on education and training means that the stock of knowledge and skills of the elderly labour force exits will need to be, at the minimum, matched by the smaller number of young labour force entrants. Hence, to sustain Australia's future economic growth, young labour force entrants need to be better educated and labour market ready than the preceding generations.

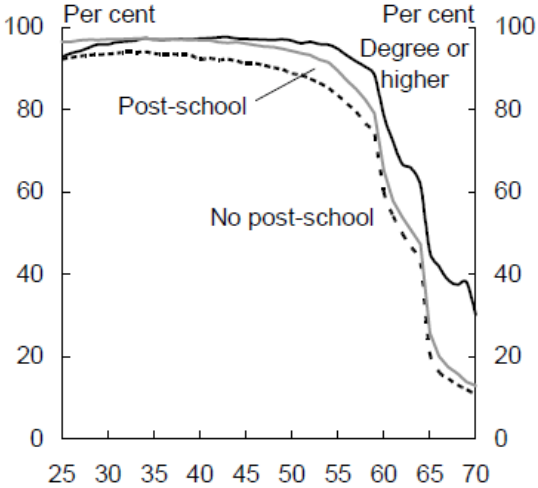
The role of education and training and its use as a tool in alleviating the impact of ageing on the economy is complex, however. In Australia, post-school levels of education attainment have been associated with increased rates of participation in the labour force, at all ages between 25-54 years. As illustrated in Figure 2-3, for both males and females, at every age cohort, the rates of participation of those with degree or above levels of education were greatest, followed by those with post-school levels of education (i.e. vocational education), in 2006. Between 1981 and 2006, the participation rates for females, at every age cohort and education level had increased; whereas, for males, the most noticeable changes was the significant decline in the rates of participation of those with no post-school qualifications, and the increased rates of participation of those aged 60-70 years, at every level of education. Therefore, for the most part, increased levels of education attainment have been associated with improved rates of participation, particularly for females, and that this has occurred at every age cohort, particularly for older males.

This does not necessarily imply that increased levels of education attainment will improve the rates of participation of older workers in the future, however. Nor can it be said that the participation of older workers in the labour force with poor levels of education will be prolonged by providing them with additional education. Importantly, governments need to ensure that public investment in education and training of older workers does not displace their investment in the young.

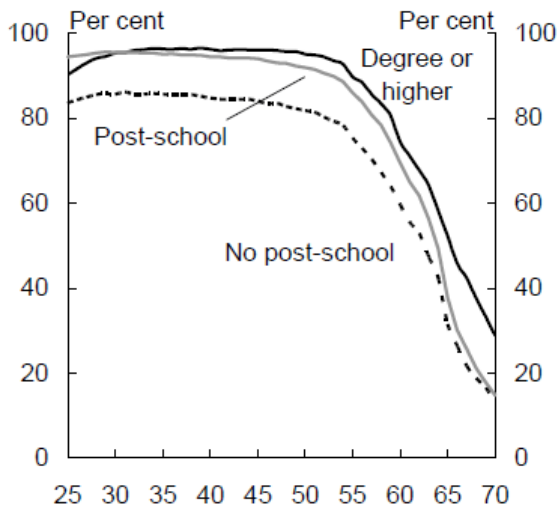
As well as having its challenges, an ageing population also provides a number of opportunities. The effect of an ageing population on the labour force will occur more rapidly than it will on the population (i.e. people will retire from the labour force before they eventually die) and, for a period of time, it is likely that the demand for labour will outstrip supply. If this occurs, the private returns from investing in education and training should increase (assuming no increases in the private costs of investing in education), which would naturally induce more individuals to attain higher levels of education, and for older workers to prolong their participation. Furthermore, for young labour market entrants with the necessary skills and education, there will be a greater diversity of employment opportunities and accelerated career pathways. Finally, there will be an increase in the demand for skills by the industry sectors associated with an ageing population, such as health and aged care services.

Figure 2-3: Australia rates of labour force participation by gender, age and education attainment, for 1981 and 2006.

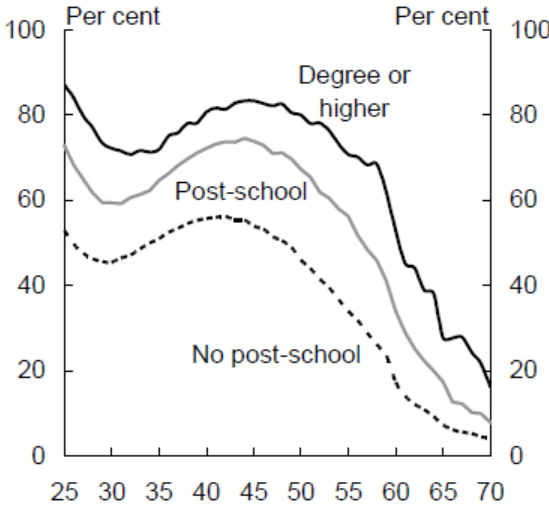
Male participation by age & education, 1981



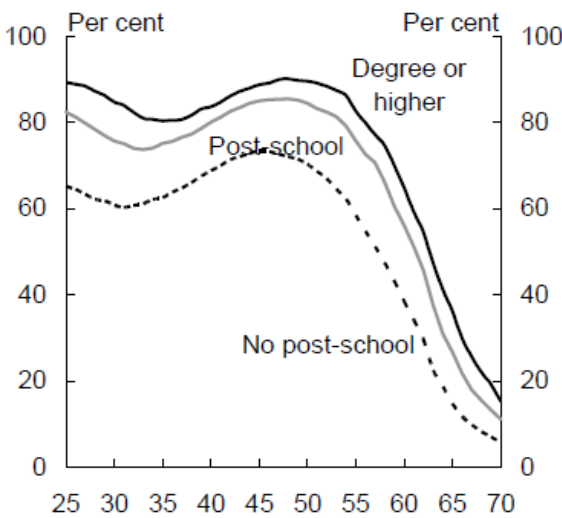
Male participation by age & education, 2006



Female participation by age & education, 1981



Female participation by age & education, 2006



Data: ABS, Census of Population & Housing, 1981, 2006
 Source: Kennedy et al. (2008), pp.30

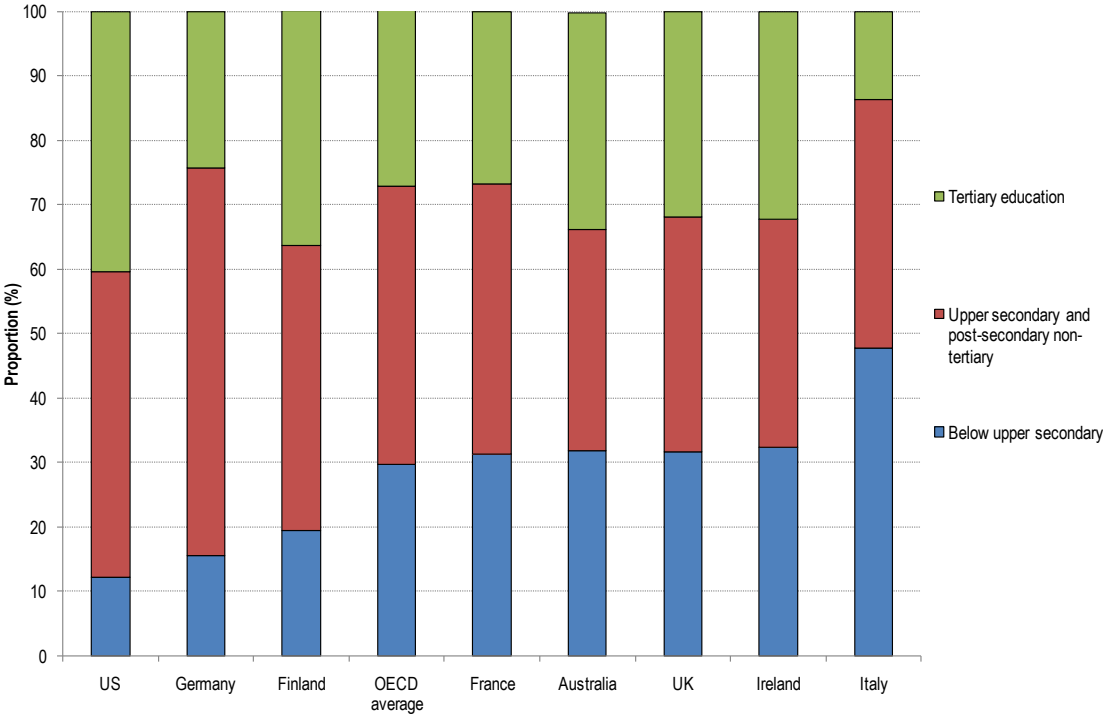
2.2 Global competitiveness

Discusses the pressures that open trade and globalisation have placed on the Australian economy and labour market, and the role that education and training plays in maintaining Australia’s global competitiveness.

Since the 1970’s, successive federal governments have pursued market based economic principles and open trade policies. As a consequence, the Australian economy has become integrated into a global network of foreign economies. While these changes have improved the efficiency of the Australian economy and the standard of living of the population, the globalised environment has also exposed the education and skills of Australia’s workforce to greater competition from the workforces of other developed nations. Although the mobility of labour internationally remains heavily restricted, the ease by which businesses can move their capital between countries means that the stock of education and skills available in a country has become a key factor in determining the location, level and type of business investment that occurs.

The implication for Australia is that for it to maintain its global competitiveness and economic growth, the levels of education and training of Australia’s labour force will, at a minimum, need to keep pace with other developed nations (i.e. Organisation for Economic Co-operation and Development (OECD) countries). As illustrated in Figure 2-4, in 2007, the education distribution of Australia’s population, aged 25-64 years, was worse than that of the United States, Germany and Finland, particularly for the ‘below upper secondary’ level (i.e. Year 10 and below). Instead, the education distribution of Australia was similar to that of less dynamic OECD countries, such as France and the United Kingdom.

Figure 2-4: Distribution of education (highest level attained) as a proportion (%) of the population aged 25-65 years, for selected OECD countries, 2007.



Source: OECD Factbook 2010, pp.185

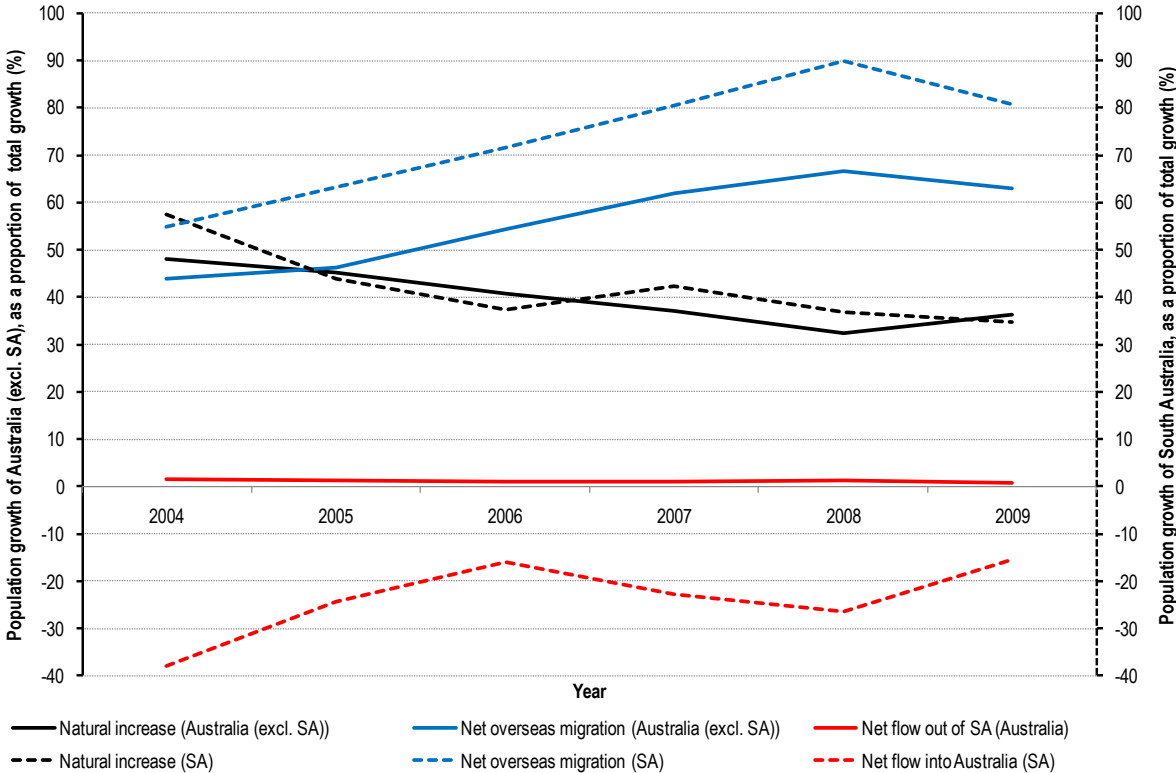
2.3 Overseas Migration

Discusses the intake of overseas migrants to Australia and South Australia, to what extent they impact on the population and labour market, and the relationship between overseas migration policy and investment in education and training.

Since the 1950's, Australia has relied upon the migration of foreign nationals to maintain the growth of its population and labour force. Traditionally, migrants were predominately from the UK and Western Europe (particularly following World War II), swelling the younger age cohort of the population, and providing the manufacturing, construction and agricultural industries with low skill labour. In contrast, over the last decade, the immigration policies of successive Australian governments have primarily focused on attracting skilled migrants to fill gaps in the Australian market, rather than just increasing the population. That is, immigration policy is used as instrument by which to import education and training into Australia. Also, contemporary migrants to Australia now immigrate from a diverse range of countries, such as India, China, the UK, Vietnam, the Philippines, and Malaysia.

Figure 2-5 illustrates the components of population growth for Australia (excluding South Australia) and South Australia, as a proportion of their respective total population additions in each year, 2004 to 2009. For the populations of Australia (excluding South Australia) and South Australia, between 2004 and 2009, net overseas migration was a key driver of population growth, while natural population growth (i.e. excess of births over deaths) declined proportionally. For South Australia, interstate migration was a drag on the state's population growth, over the period. Although the recent net outflows of individuals from South Australia to the other states/territories improved somewhat, they still predominately represent a loss of young and skilled individuals.

Figure 2-5: Components of population growth for Australia (excl. South Australia) and South Australia, as a proportion of their total growth in population per annum, 2004-2009.



Source: ABS, cat. no. 3101.0, Australian Demographic Statistics, March 2010, Data Cube

The intake of overseas migrants was predominately ‘skilled’, particularly for South Australia. That is, they had obtained a visa permitting their participation in the Australian labour market, either provisionally (i.e. for a 1-2 year basis) or permanently, based on their level of education and previous work experience, and/or the demand for their skills in the Australian labour market. The numbers of immigrants (both permanent and provisional) to Australia and South Australia are detailed in Table 2-1, by the three broad visa classes (Skilled, Family and Humanitarian), for each financial year between 2002/2003–2008/2009. Similarly, Figure 2-6 compares the proportion of immigrants, disaggregated by the three broad visa categories, between Australia (excluding South Australia) and South Australia.

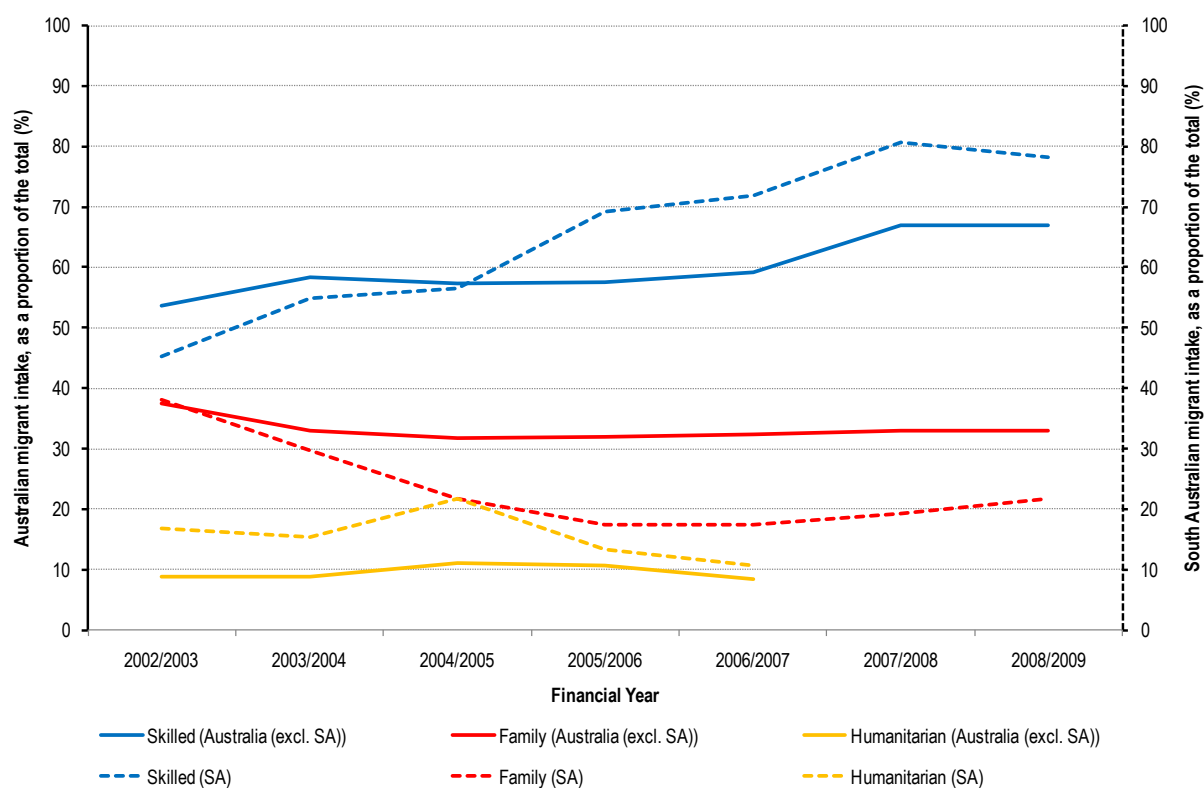
Table 2-1: Number of permanent and provisional overseas migrants arriving to South Australia and Australia, by broad visa class, 2002/2003-2008/2009.

Visa Class	Financial Year						
	2002/2003	2003/2004	2004/2005	2005/2006	2006/2007	2007/2008	2008/2009
South Australia							
Skilled	1,876	3,118	4,669	7,842	8,977	9,149	9,069
Family	1,579	1,688	1,794	1,980	2,185	2,192	2,522
Humanitarian	698	867	1,787	1,519	1,330	-	-
<i>Total</i>	<i>4,153</i>	<i>5,673</i>	<i>8,250</i>	<i>11,341</i>	<i>12,492</i>	<i>11,341</i>	<i>11,591</i>
Australia							
Skilled	54,906	71,732	77,224	83,659	89,941	107,469	118,415
Family	38,526	40,499	41,953	43,963	46,584	50,680	56,477
Humanitarian	9,489	11,179	15,741	15,445	12,828	-	-
<i>Total</i>	<i>102,921</i>	<i>123,410</i>	<i>134,918</i>	<i>143,067</i>	<i>149,353</i>	<i>158,149</i>	<i>174,892</i>

Source: DIAC, unpublished Permanent Additions data, 2002-03 to 2008-09

Notes: Data for the Humanitarian visa class was not available for the periods 2007/2008 to 2008/2009.

Figure 2-6: Migrant intake by broad visa class, for Australia (excl. South Australia) and South Australia, as a proportion their total intake per financial year, 2002/2003-2008/2009.



Source: DIAC, unpublished Permanent Additions data, 2002-03 to 2008-09

Notes: Data for the Humanitarian visa class was not available for the periods 2007/2008 to 2008/2009.

Overall, Australia's overseas migration policy has contributed to improving the levels of education and training of the labour force. In recent years, South Australia has also benefited from Australia's migration policies, such as the State Specific Regional Migration (SSRM) program, which classifies the entire state of South Australia as a 'regional' location, favouring metropolitan Adelaide. Also, as the average age of overseas migrants is younger than that of the Australian population, immigration has been, and will continue to be, an important policy tool in mitigating the negative impacts of an ageing population. However, for Australia, increased competition from other developed nations for skilled migrant labour does not guarantee that the increasing inflows will continue; for South Australia, reclassification by the SSRM program of metropolitan Adelaide's regional area status will put it in competition with the other major Australian capital cities. Hence, it is important that overseas migration policy not be relied upon as a source of skilled labour, in lieu of education and training investment in the local population. That is, overseas migration should complement and expand the existing labour force, and not be relied upon in the long-term as a substitute for the inadequacies in the education and training of the population.

2.4 Environmental climate change

Discusses briefly some of the challenges posed by environmental climate change and how these might be alleviated by education and training, and the possible new opportunities that these challenges present.

At present, the issue of environmental climate change and how this will be addressed by governments, both in Australia and abroad, remains uncertain. Therefore, it is difficult to know how the implementation of policies that address the issue of climate change, such as a carbon emissions tax or a carbon emissions trading scheme, will impact on the Australian economy, its industrial composition or the supply of and demand for labour. However, such changes are certain to simultaneously create challenges and opportunities.

Action on environmental climate change seems inevitable, and will place higher costs on some existing industries and individuals more so than others, while creating new industries and employment opportunities. During the period of adjustment, it is crucial that the current workers negatively impacted by the policy changes are provided with education and training support, so that their skills remain relevant to labour demand and that the loss of education and skills from the labour force are minimised. The implication for the education and training system is that it will need to both adequately accommodate displaced workers and be responsive to the changing skills demands of industry.

3 Education & Skills in the Southern Adelaide Region

This section of the report provides a comprehensive analysis of the stock of education and skills, and the labour market outcomes, of both the residential populations and the local workforces for each of the four Local Government Areas (LGAs), which comprise the Southern Adelaide region: Holdfast Bay, Marion, Mitcham and Onkaparinga. This analysis of the labour force and workforce characteristics for each of the four Southern Adelaide region LGAs is intended to assist the Southern Adelaide Economic Development Board (SAEDB) in forming its Workforce Development Plan.

The analysis is broken down into three parts:

- The first part provides a basic understanding of the residential populations, for each of the four LGAs, by examining the distributions of their characteristics, such as age, gender, and education.
- The second part outlines the labour force characteristics of the residential populations, for each of the four LGAs, by separately examining the employed, unemployed and not-in-the labour force residents, and the relationship between labour force participation and education and training.
- The third part examines the utilisation of education and skills in the local economies, for each of the four LGA's, by examining the geographical size of the labour market for residents of the Southern Adelaide region, the flows of labour to place of work, and comparing the education and occupation distributions of the employed residents to the local workforces.

Throughout the analysis, examination of the characteristics of the residential populations and the local workforces are disaggregated by LGA, gender and age. This is necessary as these factors are influential on the behaviour of individuals in relation to their investment in education and training, and their engagement with the labour market.

The geographical areas of the LGAs within the Southern Adelaide region vary significantly. Consequently, their geographical boundaries place a natural limit on their residential populations. Table 3-1 details the residential populations and geographical areas, for each of the four LGA's, in 2006. For example, the residential population of Onkaparinga was representative of approximately 45% of the Southern Adelaide region; whereas, Holdfast Bay was the smallest, approximately 11%. However, Onkaparinga also had the largest geographic area, approximately 78% of the Southern Adelaide region, while Holdfast Bay had the smallest, approximately 2%. Hence, despite having the largest residential population, Onkaparinga had the lowest average population density (approximately 231 people per square kilometre); while Holdfast Bay had the highest average population density (2,112 people per square kilometre). For the purposes of this report, each of the four Southern Adelaide LGA's are considered individually, as the population characteristics of Onkaparinga overwhelm the characteristics of Holdfast bay, for example. It should also be noted,

that proportional similarities between Onkaparinga and Holdfast Bay, for example, translate into large differences in absolute terms.

Methodological considerations such as the data source used, the purpose for disaggregation by gender and age, and explanations of the standards and classifications used are contained in Appendix I.

Table 3-1: Residential population and geographic area, for each of the four Southern Adelaide LGA's, 2006

LGA	Residential Population*		Geographic Area (Km²)	
	Freq.	%	Freq.	%
Holdfast Bay	29,149	11.0	13.8	2.1
Marion	65,708	24.7	55.6	8.4
Mitcham	51,207	19.3	75.6	11.4
Onkaparinga	119,445	45.0	518.3	78.1
Southern Adelaide	265,509	100.0	663.3	100.0

Notes: * denotes the residential population aged 15 years and over

Source: ABS, 2006 Census of Population & Housing

3.1 Population Characteristics

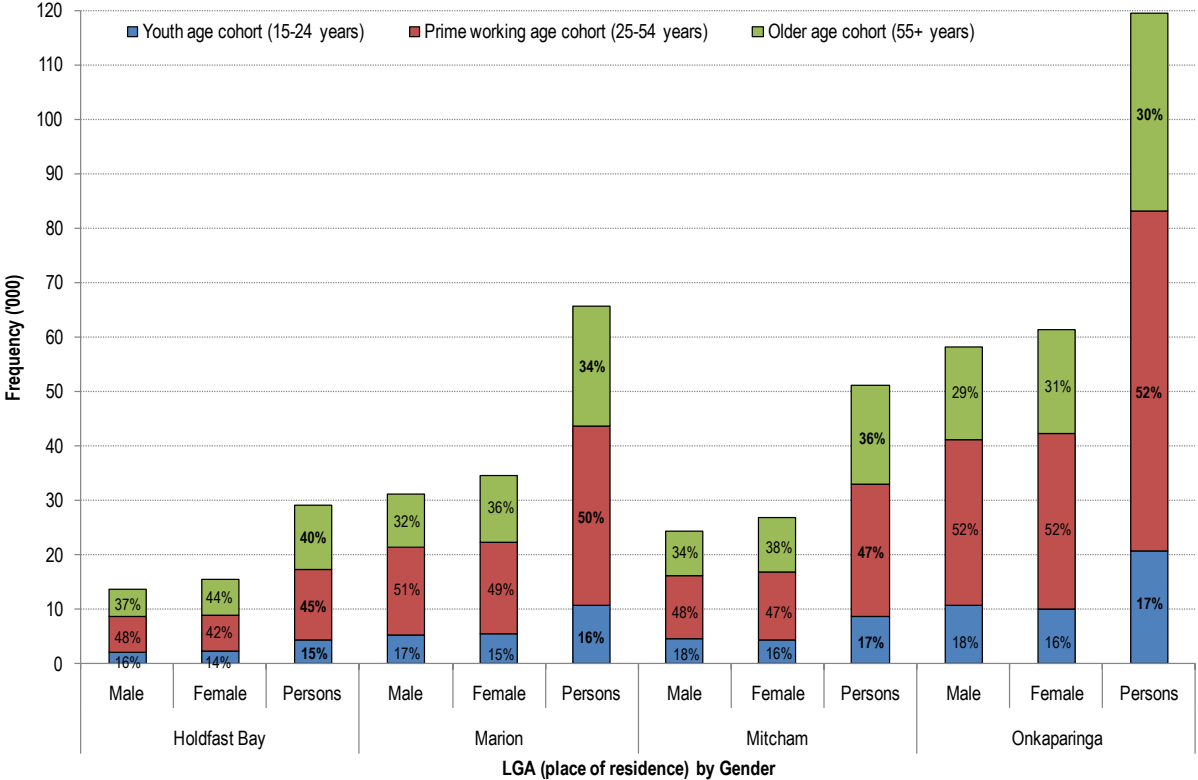
This section broadly outlines the age and gender profiles of the residential populations, for each of the four Southern Adelaide LGAs; then compares the distribution of education attainment across the LGAs in relation to the Australian and South Australian populations, and examines how education differs between gender and age.

3.1.1 Age & Gender Profile

Across the four Southern Adelaide LGAs, the age distribution of their residential populations was relatively consistent when disaggregated by the youth (15-24 years), prime working (25-54 years) and older (55+ years) age cohorts, as illustrated in Figure 3-1. Onkaparinga had the largest proportion and absolute number of residents within the youth and prime working age cohorts, approximately 17% (20,706) and 52% (62,491) respectively. Conversely, Holdfast Bay had the largest proportion of residents within the older age cohort, approximately 40% (11,786); however, Onkaparinga, due to its population size, had the largest absolute number of residents within the older age cohort, but the smallest proportion, approximately 30% (36,248). For each of the LGAs, the prime working age cohort (i.e. the potential workforce) represented the majority share of their residential populations; whereas, the youth age cohort was the smallest, both proportionally and in absolute terms.

The distribution of gender was consistent across the four LGAs. The proportion of males and females was almost equal in each of the three broad age cohorts, except for the older age cohort. For the older age cohort, there were a consistently higher proportion of females than males across each of the LGAs. For example, in Holdfast Bay 6,796 (58%) residents aged 55 years and over were female compared with 4,990 (42%) males. This is most likely attributable to females living longer than males.

Figure 3-1: Frequency & distribution of the residential populations for each of the selected LGAs, age cohorts and gender, 2006



Source: ABS, 2006 Census of Population & Housing

3.1.2 Education Profile

There was a large degree of variation in the levels of education attainment of the residential populations across the four LGAs. Table 3-2 outlines the distribution of the highest level of education qualifications attained by the residents of the four LGAs, by broad and detailed levels of disaggregation. The residential population of Mitcham had the highest levels of education, with approximately 53% (24,224) of its residents having attained a post-school qualification; followed by population of Holdfast Bay, approximately 47% (11,983). For the populations of Mitcham and Holdfast Bay, the post-school qualifications were split relatively evenly between VET and Higher Education (i.e. university) qualifications. Conversely, the populations of Onkaparinga and Marion had the highest proportion of residents with no post-school levels of education, approximately 62% (66,820) and 47% (21,897) residents respectively, most of which had not completed a Year 12 qualification. However, at the post-school levels of education, the populations of Onkaparinga and Marion had the highest proportions of residents with VET qualifications, approximately 28% (29,590) and 26% (14,936), most of which had completed a Certificate III or IV qualification.

Table 3-2: Education distribution (highest qualification attained) of the residential populations, for the selected LGAs, South Australia and Australia, by broad and detailed levels of education

Education (highest qualification)	Holdfast Bay	Marion	Mitcham	Onkaparinga	South Australia (excl. Southern Adelaide)	Australia
Higher Education	22.5%	15.2%	29.7%	10.3%	14.2%	18.0%
<i>Postgraduate</i>	3.6%	1.8%	5.4%	1.2%	2.0%	3.0%
<i>Grad. Dip. & Grad. Cert.</i>	2.1%	1.5%	3.1%	1.1%	1.4%	1.7%
<i>Bachelor</i>	16.8%	11.9%	21.1%	8.0%	10.7%	13.3%
VET	24.0%	25.5%	23.0%	27.5%	23.2%	24.6%
<i>Adv. Dip. & Dip.</i>	9.8%	8.1%	10.5%	7.3%	7.0%	8.2%
<i>Cert. III & IV</i>	14.1%	17.1%	12.3%	19.8%	15.9%	16.1%
<i>Cert. I & II</i>	0.2%	0.2%	0.2%	0.4%	0.3%	0.4%
School	53.3%	59.2%	47.2%	62.1%	62.6%	57.4%
<i>Yr. 12</i>	19.4%	19.8%	18.7%	18.5%	17.7%	18.6%
<i>Yr. 11 or below</i>	33.9%	39.5%	28.5%	43.6%	45.0%	38.8%
Total (%)	100%	100%	100%	100%	100%	100%
Total (n)	25,659	58,572	46,391	107,600	851,000	13,810,494

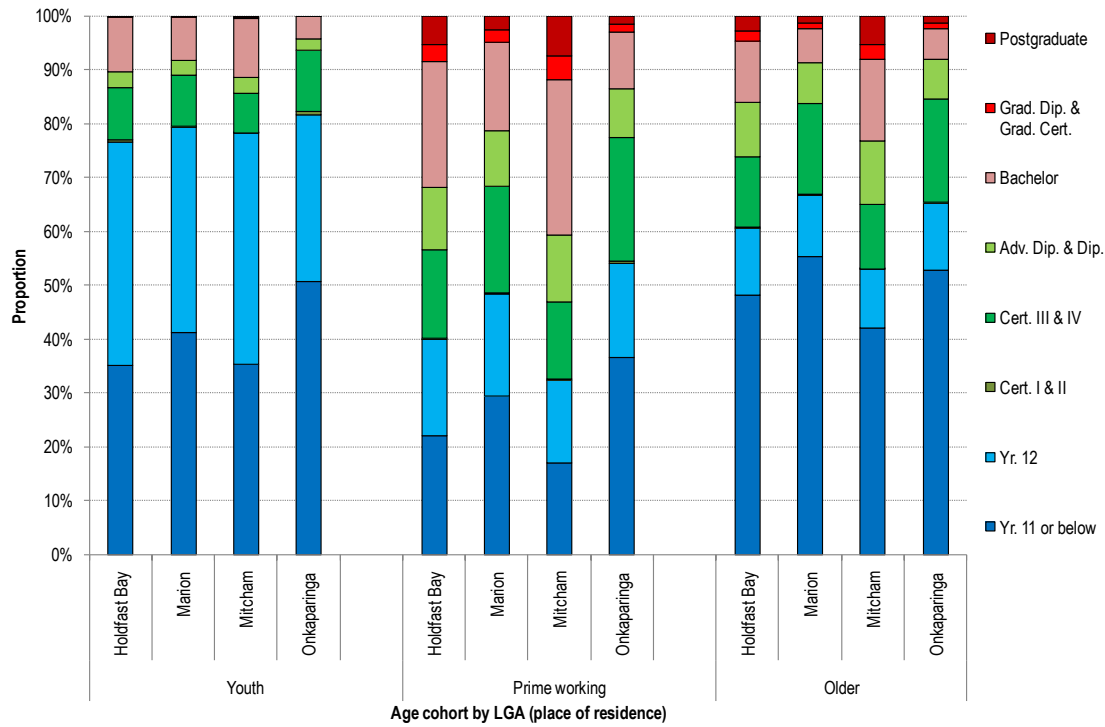
Source: ABS, 2006 Census of Population & Housing

Notes: Residential population aged 15 years and over. Excludes responses classified as 'not applicable', 'not stated' or 'inadequately described'.

Disaggregating the distribution of education by the three broad age cohorts reveals that the levels of education differed substantially between age cohorts, although they are consistent with the overall population trends between the four LGAs. Figure 3-2 illustrates the proportionate levels of highest education attainment for the residential populations of each LGA, by the three broad age cohorts. Across the four LGAs, the levels of post-school education were highest for residents in the prime-working age cohort, while lowest in the youth and older age cohorts. The high proportion of residents in the older age cohort with no post-school levels of education, compared with the prime-working age cohort, was most likely due to the emphasis placed on skills acquisition through on-the-job training rather than formal education. At the other end of the age spectrum, the proportion of residents in the youth age cohort (i.e. 15-24 years) with Year 11 & below levels of attainment was considerably higher in comparison to the prime-working age cohort. Although a small number of young residents may still have been undertaking Year 11 or Year 12 qualifications, it may also reflect the transition of youth from school to post-school education through alternative pathways (such as undertaking a VET qualification rather than completing Year 12).

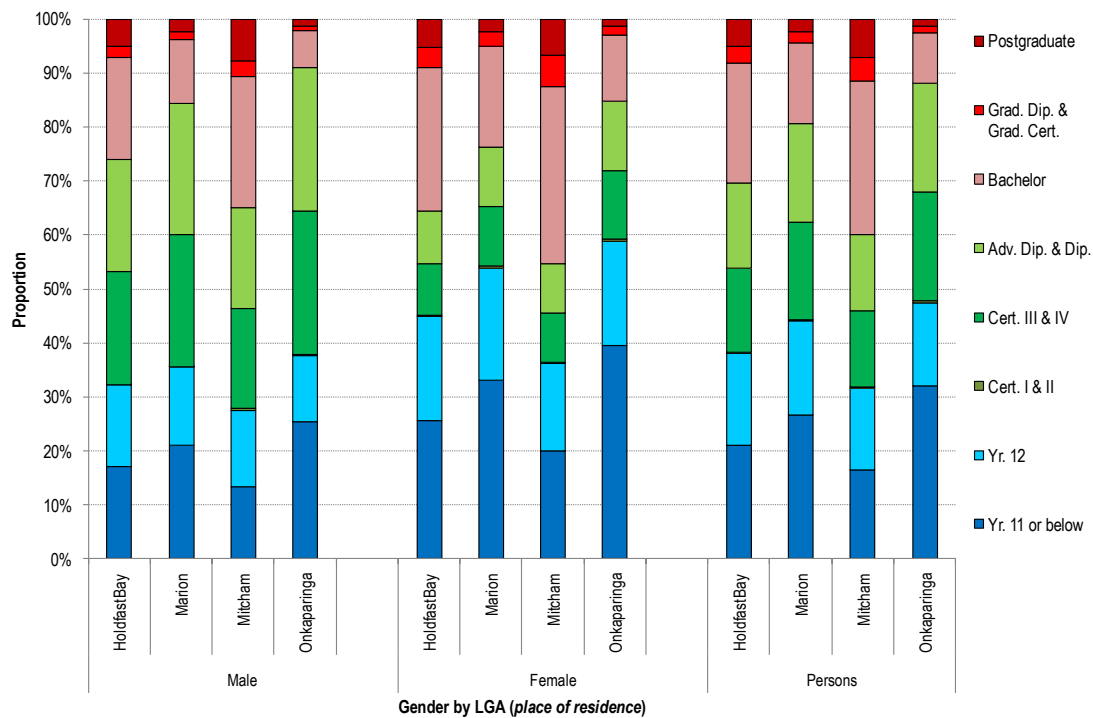
Similarly, disaggregating the distribution of education by gender reveals that the levels of education attainment differed significantly between males and females. As illustrated in Figure 3-3, the proportion of female residents aged 25-54 years with no post-school levels of education was consistently higher in comparison to the males, across each of the four LGAs. Furthermore, at the post-school levels of education, the proportion of males aged 25-54 years with VET qualifications was consistently higher in comparison to females; whereas, the proportion of females with Higher Education qualifications was consistently higher in comparison to males.

Figure 3-2: Education distribution (highest qualification attained) of the residential populations, for the selected LGAs, by broad age cohort, 2006



Source: ABS, 2006 Census of Population & Housing

Figure 3-3: Education distribution (highest qualification attained) of the residential populations in the prime-working age cohort, for the selected LGAs, by gender, 2006



Source: ABS, 2006 Census of Population & Housing

3.1.3 Summary

Overall, the age, gender and education profiles of the residential populations of the Southern Adelaide LGAs have several implications for the current and future stock of education and training.

It is expected that over time the levels of education attainment of the population will improve naturally, due to:

- the large proportion of the population in the older age cohort, relative to the youth age cohort; and,
- the low levels of formal education in the older age cohort, compared to the prime-working age cohort and, to a lesser extent, the youth age cohort.

The influence of the older age cohort on the stock of education and training in the prime-working age cohort (i.e. the potential workforce) will be negligible, however. Instead, overtime, the stock of education and training in the potential workforce will stagnate and begin a slow incremental decline, if:

- the levels of investment in education and training remain constant;
- the proportion of residents aged 15-24 years remains much smaller in size compared with the proportion of residents in the prime-working age cohort; and,
- the high proportion of Year 11 & below qualifications attained by the current youth age cohort does not translate into post-school levels of education in the future, and better the levels of post-school education attainment of the current prime-working age cohort.

To improve the stock of education and training of the future potential workforce and achieve higher levels of education in the population, at an accelerated pace, increased investment in formal education will need to occur in the youth age cohort at the school, VET and Higher Education levels; and investment in VET and Higher Education will also need to extend to those aged 25-54 years with no post-school qualifications (and low skill VET qualifications).

3.2 Labour Force Characteristics

This section discusses the broad labour force profiles of the residential populations, for each of the four LGAs, in relation to the Australian and South Australian populations; and, comparing across the LGAs, provides a detailed examination of the levels of employment, unemployment and labour force non-participants, and the relationship with education and training.

3.2.1 Labour force profile

Broadly, there is little variation in the distribution of labour force participants (i.e. employed and unemployed) and non-participants (i.e. not-in-the labour force) between the four LGAs. As outlined in Table 3-3, Onkaparinga had both the largest proportion and absolute number of residents participating in the labour force, approximately 64.9% (74,590); whereas, Holdfast Bay had the smallest, approximately 60.6% (16,681). In comparison to the national averages, both Mitcham and Onkaparinga over-perform, while Holdfast and Marion underperform. However, the broad labour market outcomes in Table 3-3 do not distinguish between age, gender or education attainment.

Table 3-3: Labour Force Status distribution of the residential populations for the selected LGAs, South Australia and Australia, 2006.

Labour Force Status	Holdfast Bay	Marion	Mitcham	Onkaparinga	South Australia (excl. Southern Adelaide)	Australia
Employed	58.1%	58.8%	61.8%	61.3%	58.6%	61.2%
Unemployed	2.5%	3.1%	2.5%	3.6%	3.3%	3.4%
Not-in-the labour force	39.3%	38.1%	35.8%	35.0%	38.1%	35.4%
Total (%)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Total (n)	27,526	62,965	49,437	114,930	915,036	14,879,102

Source: ABS, 2006 Census of Population & Housing

Notes: Residential populations aged 15 years and over. Excludes responses classified as 'not applicable', 'not stated' or 'inadequately described'.

As discussed in Appendix I, there is a strong relationship between age and participation in the labour market, given the life course pathways that individuals follow. Similarly, the association between gender and participation is important, given the influence of family or caring responsibilities, in particular the child-rearing activities undertaken by females. Hence, it is important to consider these factors when examining individuals' engagement in the labour market and their outcomes.

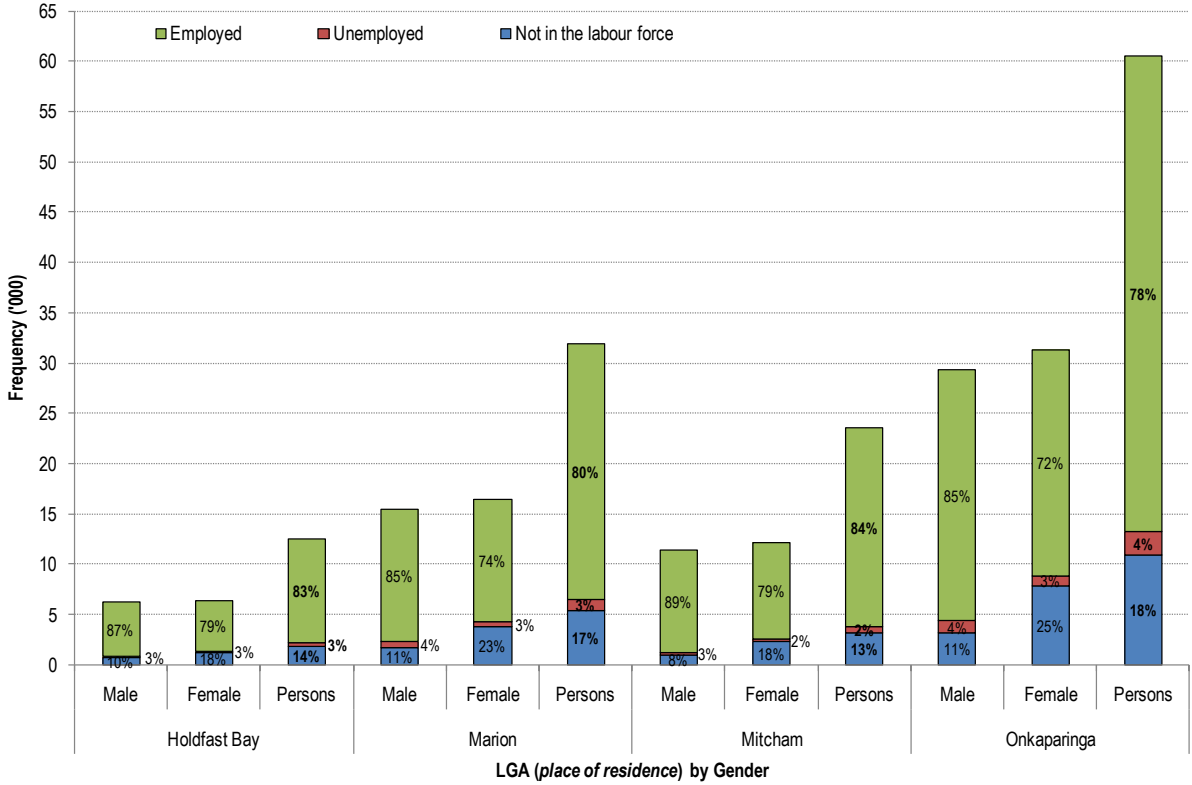
Primarily, the analysis of the labour force characteristics focuses on the residents in the prime-working age cohort, as it represents the majority share of the residential populations for each of the LGAs, and its characteristics are indicative of the potential workforce.

Furthermore, individuals aged 25-54 are most likely to have completed their highest level of education, while very few will have begun their transition into retirement.

Figure 3-4 illustrates the distribution of the labour force status (i.e. employment, unemployment and not-in-the labour force) of the residential populations in the prime-working age cohort, by gender, for each of the LGAs. Unlike the figures in Table 3-3, the distributions of labour force participation reveal a different trend between the LGAs. For example, while Onkaparinga had the largest number of residents aged 25-54 years participating in the labour force, approximately 49,617, it had the smallest proportion (82%). Instead, Mitcham and Holdfast Bay had the largest proportion of labour force participants aged 25-54 years, approximately 87% (20,375) and 86% (10,719), respectively.

Similarly, disaggregating the labour force distribution by gender reveals further differences in the labour force participation of residents in the prime-working age cohort. As illustrated in Figure 3-4, males comprised a larger number of labour force participants, with higher proportions of employment and unemployment at comparable measures across the four LGAs; whereas, females participated less in the labour force, with higher proportions not-in-the labour force. This was most likely due to child-rearing activities, or family and caring responsibilities. However, between LGAs, the variation in the proportion of females not-in-the labour force indicates that there may be a correlation with their investment in education and levels of education attainment. That is, the low (high) levels of post-school education attained by prime-working age females residing in Onkaparinga (Mitcham) are inversely related to the high (low) proportion of female non-participants.

Figure 3-4: Frequency & distribution of labour force status of the residential populations in the prime-working age cohort, for the selected LGAs, by gender, 2006



Source: ABS, 2006 Census of Population & Housing

In comparison to the prime working age cohort, the proportions of labour force participants in the youth age cohort were much lower, for each of the LGAs (as illustrated in Appendix II, Figure II - 1). Unlike the trends of participation in the prime-working age cohort, the proportion of residents aged 15-24 years not-in-the labour force was highest in Mitcham and Marion. The reasons for these differences were most likely due to their education commitments. Furthermore, the distribution of labour force participation was almost evenly spread between males and females, for each of the LGAs.

Again, the trends of participation of residents in the older age cohort differed in comparison those in the prime-working age cohort (as illustrated in Appendix II, Figure II - 2). For each of the LGAs, the proportion of residents not-in-the labour force was dominant. While Onkaparinga had the largest number of older residents not-in-the labour force, approximately 23,528 (68%), Marion had the largest proportion, approximately 74% (15,518). Mitcham had the lowest proportion of older residents not-in-the labour force, approximately 67% (11,635). Furthermore, the distribution of labour force participation was consistent, but not even, between males and females, across the four LGAs. These differences in the labour force behaviour between the older age cohort and the prime-working age cohort were most likely due to retirement, females living longer than males, and males continuing to work into older age in comparison to females.

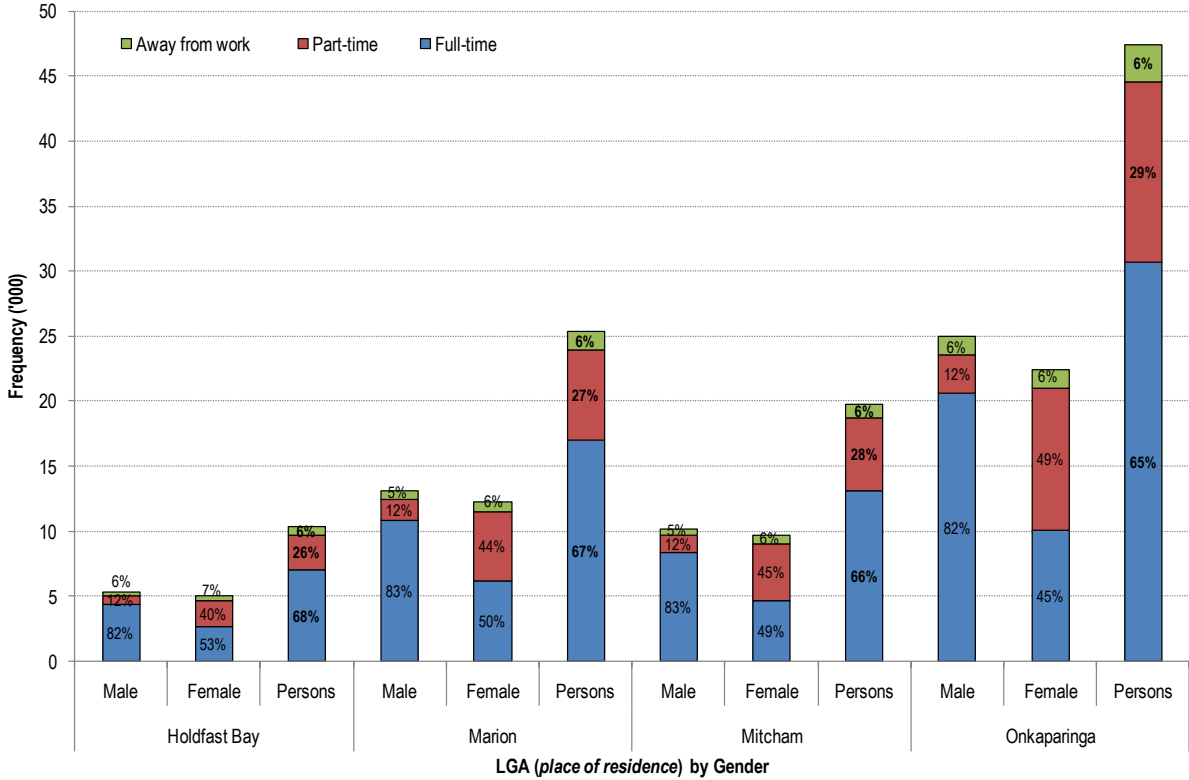
3.2.2 Employed

As shown in Figure 3-4, the number of employed accounted for the largest proportion of residents in the prime-working age cohort, across each of the LGAs. Mitcham and Holdfast Bay had the largest proportions of employed residents, approximately 84% (19,809) and 83% (10,357); whereas, Onkaparinga and Marion had the smallest, approximately 78% (47,362) and 80% (25,363). However, due to the population size of Onkaparinga, it simultaneously had the smallest proportion and largest absolute number of employed residents aged 25-54 years.

For those employed in the prime-working age cohort, the hours of labour supplied to the labour market was relatively consistent across each of the LGAs, but varied by gender. As illustrated in Figure 3-5, the proportion of full-time employed residents, aged 25-54 years, ranged between 68% (7,045) in Holdfast Bay and 65% (30,692) in Onkaparinga. When disaggregated by gender, the proportion of full-time employed males was consistently greater, relative to females. For example, the proportion of full-time employed males, aged 25-54 years, ranged between 82% (20,598) in Onkaparinga and 83% (8,410) in Mitcham; whereas, for females it ranged between 45% (10,094) in Onkaparinga and 53% (2,673) in Holdfast Bay.

In comparison to the prime-working age cohort, for residents aged 15-24 years the incidence of full-time employment was much lower, particularly for Mitcham; but, the variation between males and females was lower (see Appendix III, Figure III - 1). For residents aged 55 years and above, which had not retired, the incidence of full-time employment was only slightly lower than the prime-working age cohort, with only slightly less variation between males and females (see Appendix III, Figure III - 2).

Figure 3-5: Frequency & distribution of employment status (i.e. full-time/part-time) of the residential populations in the prime-working age cohort, for the selected LGAs, by gender, 2006

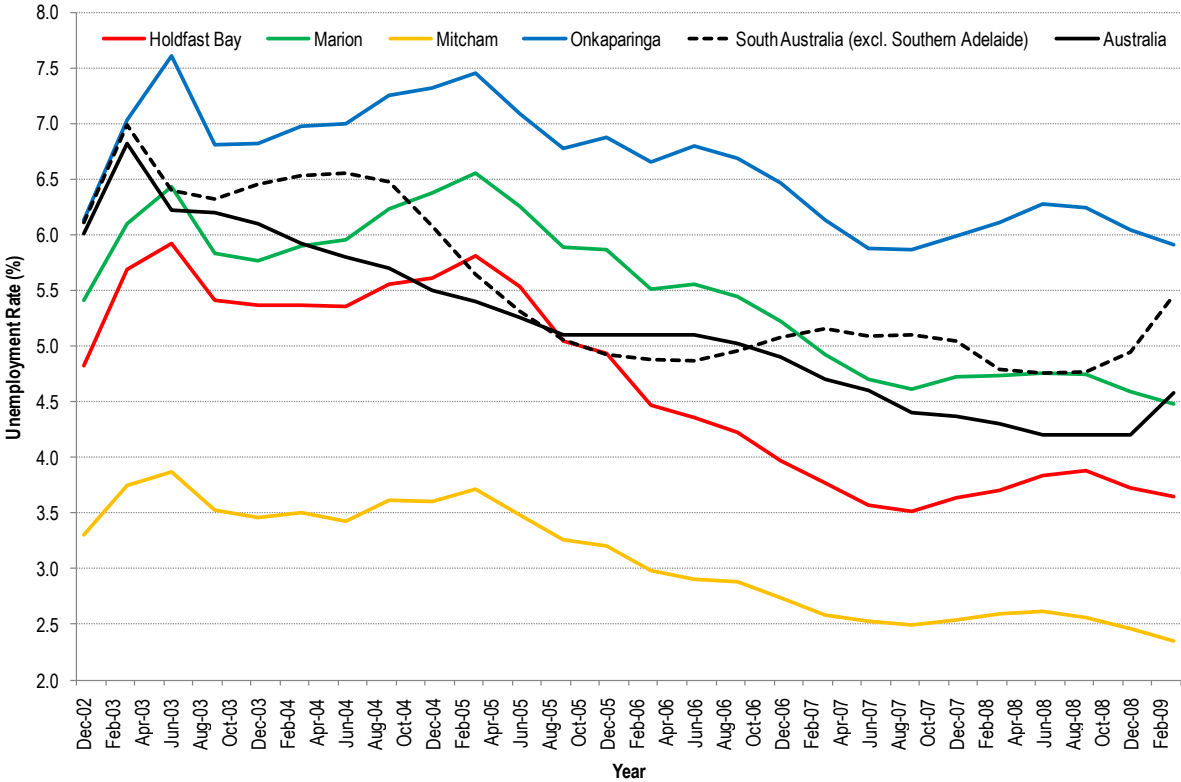


Source: ABS, 2006 Census of Population & Housing

3.2.3 Unemployed

Accurately determining the demand for labour using industry and employer information is difficult; hence, the influence of labour demand is often gauged by how it alters the supply of labour. A common measure used to indicate the demand for labour is the rate of unemployment (i.e. the number of unemployed as a proportion of the total labour force). Figure 3-6 illustrates the quarterly unemployment rate, for each of the four LGAs, from the December quarter 2002 to the March quarter 2009. Although the rates of unemployment in Onkaparinga were consistently higher than in Mitcham, for example, the trends in the unemployment rates are very similar, for each of the four LGAs, and indicate that they were all subject to the same external forces on the demands for labour. In comparison to Australia and South Australia, the unemployment rates of the LGAs broadly shared the same trends, but were weakly correlated.

Figure 3-6: Rate of unemployment for the selected LGAs, South Australia and Australia, 2002-2009.

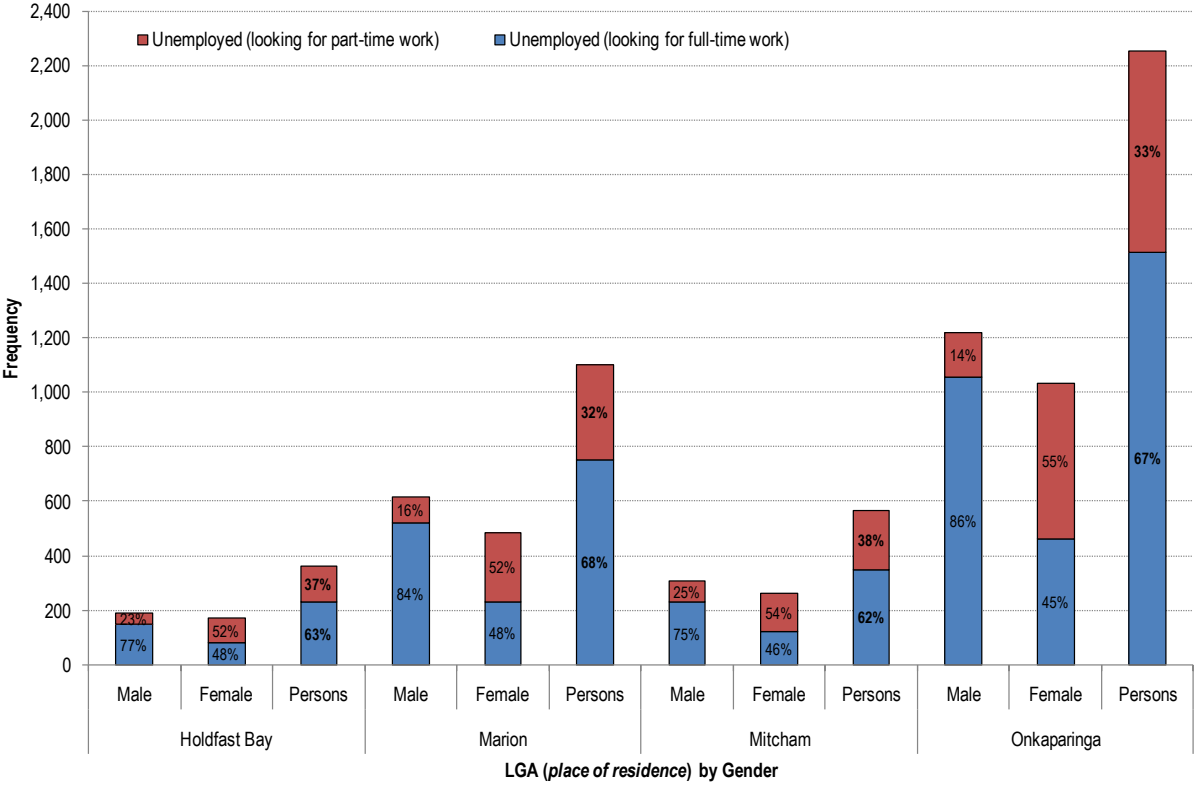


Source: DEEWR, Small Area Labour Market (SALM) quarterly series, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009.

In 2006, for the entire Southern Adelaide region, 8,073 residents were unemployed (i.e. actively searching for employment) across all age cohorts. Of which, approximately 53% (4,284) were aged 25-54 years, or they resided in Onkaparinga, approximately 52% (4,189) (only 28% (2,255) were both).

In the prime working age cohort, only a small proportion of residents were unemployed across each of the LGAs, as shown in Figure 3-4. Comparing between each of the LGAs, the proportion of unemployed residents in the prime-working age cohort was relatively consistent, ranging between 2.4% (566) in Mitcham and 3.7% (2,255) in Onkaparinga. Across the four LGAs, the proportion of male residents searching for employment was consistently higher in comparison to females; ranging between 2.7% (306) in Mitcham to 4.2% (1,220) in Onkaparinga, for males, and 2.1% (260) in Mitcham and 3.3% (1,035) in Onkaparinga for females. Furthermore, as illustrated in Figure 3-7, the proportion of male residents in the prime-working age cohort searching for full-time employment, rather than part-time employment, was consistently higher than that of female residents.

Figure 3-7: Frequency & distribution of unemployment status (i.e. searching for full-time/part-time work) of the residential populations in the prime-working age cohort, for the selected LGAs, by gender, 2006



Source: ABS, 2006 Census of Population & Housing

In comparison with the prime-working age cohort, the proportion of unemployed residents, aged 15-24 years, was consistently higher for both males and females. Across the four LGAs, the proportion of unemployed residents in the youth age cohort ranged between 6.6% (283) in Mitcham to 8.5% (872) in Onkaparinga, for males; and 5.1% (107) in Holdfast Bay to 7.1% (695) in Onkaparinga, for females (see Appendix II, Figure II - 1).

For the older age cohort, the proportion of residents searching for employment was very small for both males and females (see Appendix II, Figure II - 2).

3.2.4 Labour force non-participants (not-in-the labour force)

In 2006, for the entire Southern Adelaide region, there were 92,744 residents not engaged in the labour force, across all age cohorts. Of these, approximately 63% (58,586) were aged 55 years or above, or they resided in Onkaparinga, approximately 43% (40,244) (only 25% (23,528) were both). In the prime working age cohort, the number of non-participants in the Southern Adelaide region was 21,272; of which, approximately 70% (14,943) were female and 30% (6,329) were male.

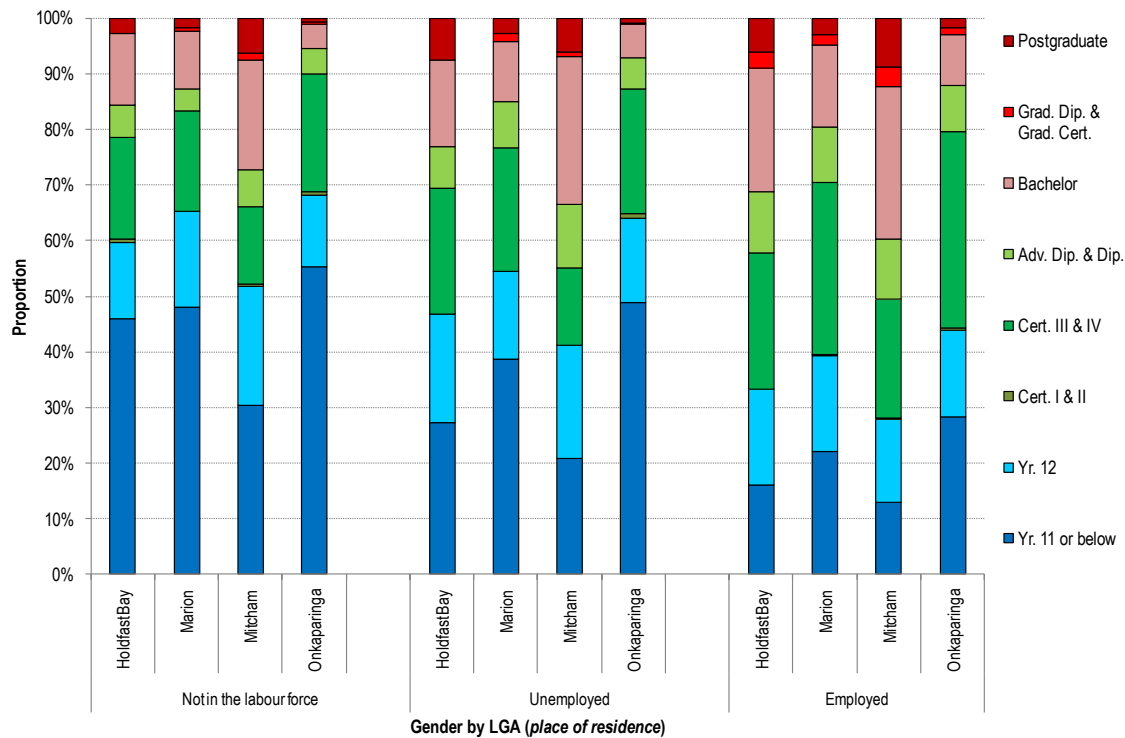
As illustrated in Figure 3-4, the distribution of residents aged 25-54 years and not-in-the labour force varied between the four LGAs. For example, the largest proportions of non-participants were in Onkaparinga and Marion, approximately 18% (10,921) and 17% (5,386) respectively; whereas, Mitcham and Holdfast Bay had the smallest proportions, approximately 13% (3,157) and 14% (1,808), respectively. Across the four LGAs, the proportion of prime-working age females not-in-the labour force was substantially higher in comparison to males. For example, the proportion of males not-in-the labour force ranged between 8% (916) in Mitcham and 11% (3,110) in Onkaparinga; whereas, for females it ranged between 18% (1,167) in Holdfast Bay and 25% (7,811) in Onkaparinga.

3.2.5 Labour force status by education attainment

As previously discussed, the levels of education and training differed significantly across the four LGAs and when disaggregated by age and gender. Having considered the relationships between labour force participation, age and gender, it is also important to consider the association of labour force participation with education attainment. Figure 3-8 and Figure 3-9 illustrate, for males and females respectively, the proportional distribution of education attainment by labour force status, for the prime-working aged residential populations in each LGA. The relationship between education and labour market outcomes, for males and females, are considered separately because, as previously discussed, (i) the levels of school and post-school education vary between males and females, (ii) the proportion of employment participation is higher for males than females, and (iii) there are fewer reasons for prime-working aged males to not be actively engaged in the labour market, relative to females. Consistent across each of the LGAs, for both prime-working aged males and females, the proportion of residents with either Year 12 or Year 11 & below qualifications rapidly declined as labour force status improved from 'not-in-the labour force' to 'employed'.

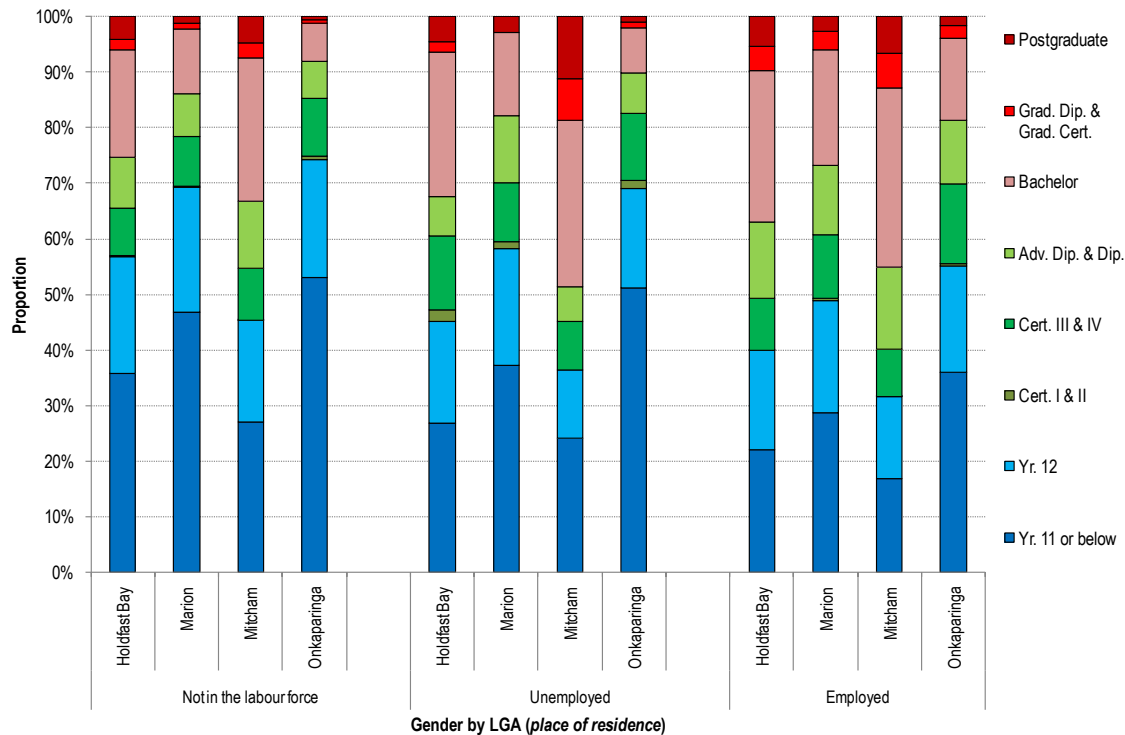
Across the LGAs, the education distributions for the unemployed residents were almost midway between the employed residents and those not-in-the labour force, for both males and females. This provides an indication that the disparity in the levels of education and training of job seekers were not that different to the skills being demanded and utilised by employers and industry, implying that much of the unemployment may be frictional (i.e. unemployment that is always present in an economy, due to the temporary transitions of workers between employers and information asymmetries in the labour market). However, there were considerable differences between the proportions of education attainment of residents not-in-the labour force in comparison to those employed, particularly for males. This is indicative of a more serious education and training mismatch between the skills of the non-participating residents and those demanded by employers. This may also provide a partial explanation for the high levels of non-participation amongst males aged 25-54 years.

Figure 3-8: Education distribution of the male residential population in the prime-working age cohort, for the selected LGAs, by labour force status, 2006



Source: ABS, 2006 Census of Population & Housing

Figure 3-9: Education distribution of the female residential population in the prime-working age cohort, for the selected LGAs, by labour force status, 2006



Source: ABS, 2006 Census of Population & Housing

3.2.6 Summary

In general, comparing between the LGAs, there was significant differences in the labour force characteristics between their residential populations; however, across the LGAs, the trends in the behaviour of males and females, and age cohorts, were similar.

Comparing between the LGAs, there were considerable differences in the levels of labour force participation, which shared a strong positive relationship with the levels of education attainment. For example, the proportion of employed residents in the prime-working age cohort with post-school levels of education was greater for Mitcham and Holdfast Bay, in comparison to Onkaparinga and Marion. This association also persisted across gender, as the LGAs with higher proportions of female labour force participation coincided with the LGAs that had higher proportions of female education attainment. Furthermore, this relationship was most noticeable amongst residents in the prime-working age cohort and weakest in the youth age cohort. For the older age cohort, the strength of the relationship between education attainment and labour force participation was ambiguous.

The relationship between education attainment and labour market outcomes only extended to labour force participation. Having gained employment, the proportion of residents working full-time and part-time was consistent between the LGAs, for both males and females.

Across the LGAs, the positive association between education attainment and labour force participation was again present, particularly for males aged 25-54 years. For example, while Onkaparinga had a much higher proportion of prime-working age residents with only school levels of education (approx. 54%), in comparison to Mitcham (approx. 32%); for both Onkaparinga and Mitcham, the proportion of residents with only school levels of education and not-in-the labour force were approximately 1.5 times greater than the proportion employed – a trend that persisted for both males and females. That is, for each of the LGAs, residents with lower levels of education attainment (e.g. Year 11 & below qualifications) were associated with poorer labour market outcomes (i.e. unemployment and not-in-the labour force), but that some LGAs had a higher concentration of these residents more so than others – for the Southern Adelaide region, 75% of the prime-working age males not engaged in the labour force resided in either Onkaparinga (3,110) or Marion (1,662).

However, as explained by the economic theory (see Section 1: Background), it may be that education attainment and labour force participation, while highly correlated, are actually a consequence of factors not readily observed, such as an individual's ability and/or background. It is also likely that, over a number of generations, these unobserved factors have resulted in the geographical clustering of individuals with similar education and labour market outcomes, such as that between Onkaparinga and Mitcham. Hence, the implication of these unobserved factors on the provision of investment in education to non-participating residents is that:

- the public cost is much greater to achieve similar education and labour market outcomes (i.e. public benefit) as the residents currently employed; and,
- if not addressed, overtime, it is likely that the average public cost will compound due to the development of 'poor' social attitude/culture towards education and

work within the sub-population, attributable to geographical clustering and/or intergeneration jobless households.

Moreover, the implications of these issues are more pertinent to males than females. While the consequences of ability and/or background on education attainment and labour market outcomes are equally present for females, child-rearing activities or family and caring commitments dilute their influence, in comparison to males. For example, for Mitcham and Holdfast Bay, there were a higher proportion of prime-working aged females with post-school levels of education and not-in-the labour force, in comparison to the male residents. In addition, across all the LGAs, both employed and unemployed females consistently indicated a preference for part-time work; whereas, males exhibited a strong preference for full-time work.

In reality, these are difficult issues for policy to deal with and require a coupling of social and education policies. In the first instance, social intervention is required to appropriately identify the individuals of 'poor' ability and/or background; and, in the second instance, more intense investment and support from government to ensure they do not prematurely exit the education system and instead successfully engage in the labour market. The key implication of this is that the policy approach to investment in education and training needs to be both inclusive and selective. That is, a 'one size fits all' policy approach will not be beneficial to everyone.

3.3 Utilisation of education and skills by the local economies

This section examines the utilisation of education and skills in the local economies, for each of the four LGAs, by examining the geographical size of the labour market for residents of the South Adelaide region, the flows of labour to place of work, and comparing the education and occupation distributions of the employed residents to the local workforces.

As there are few restrictions limiting the movement of labour within the Southern Adelaide region and beyond, the geographical boundaries delineating the four LGAs simply divide the responsibilities of governance, but are arbitrary where the labour market is concerned. Instead, as with most labour markets, the distance that individuals have to travel and, more specifically, the marginal cost of the travel incurred by both individuals and governments, have the greatest influence on the delineation of a labour market.

As detailed in Table 3-4 (below) and Table IV - 1 (in Appendix IV), a very high proportion of employed residents travelled at least five days a week to another LGA for work, with the exception of Onkaparinga. For example, the proportion of residents that travelled outside of Holdfast Bay and Marion for work was approximately 80% (12,734) and 81% (29,826), respectively. Within the Southern Adelaide region:

- approximately 28% (42,866) of employed residents both lived and worked in the same LGA, of which 59% (25,305) resided in Onkaparinga;
- approximately 17% (28,748) of employed residents worked in another Southern Adelaide LGA (i.e. worked in another LGA, but within Southern Adelaide), of which 48% (13,865) resided in Onkaparinga; and,
- approximately 54% (82,429) employed residents travelled outside of the Southern Adelaide region for work, of which 38% (31,342) resided in Onkaparinga.

The reverse of this was that only a small proportion of workers, residing outside of the Southern Adelaide region, were required to supplement the local workforces of the Southern Adelaide LGAs, approximately 19% (17,245), of which, 40% (7,022) worked in Mitcham.

As illustrated in Figure 3-10, the mobility of employed residents both within and outside of the Southern Adelaide region was substantial, for each of the LGAs, particularly Onkaparinga. While Onkaparinga had the largest absolute number and proportion of employed residents that both lived and worked in the same LGA, approximately 36% (25,305), in comparison to the other LGAs; it also had the largest absolute number of employed residents travelling to one of the other Southern Adelaide LGAs (approx. 13,865 (44%)) and outside of the Southern Adelaide region (approx. 31,342 (20%)) for work. It is likely that the large proportion of employed residents that both lived and worked in Onkaparinga was due to its large geographical size and its furthest proximity from metropolitan Adelaide, relative to the other Southern Adelaide LGAs. Marion had the second largest number of employed residents travelling to another Southern Adelaide LGA (approx. 8,170 (22%)) and outside of the Southern Adelaide region (approx. 21,656 (59%)) for work (see Figure 3-10).

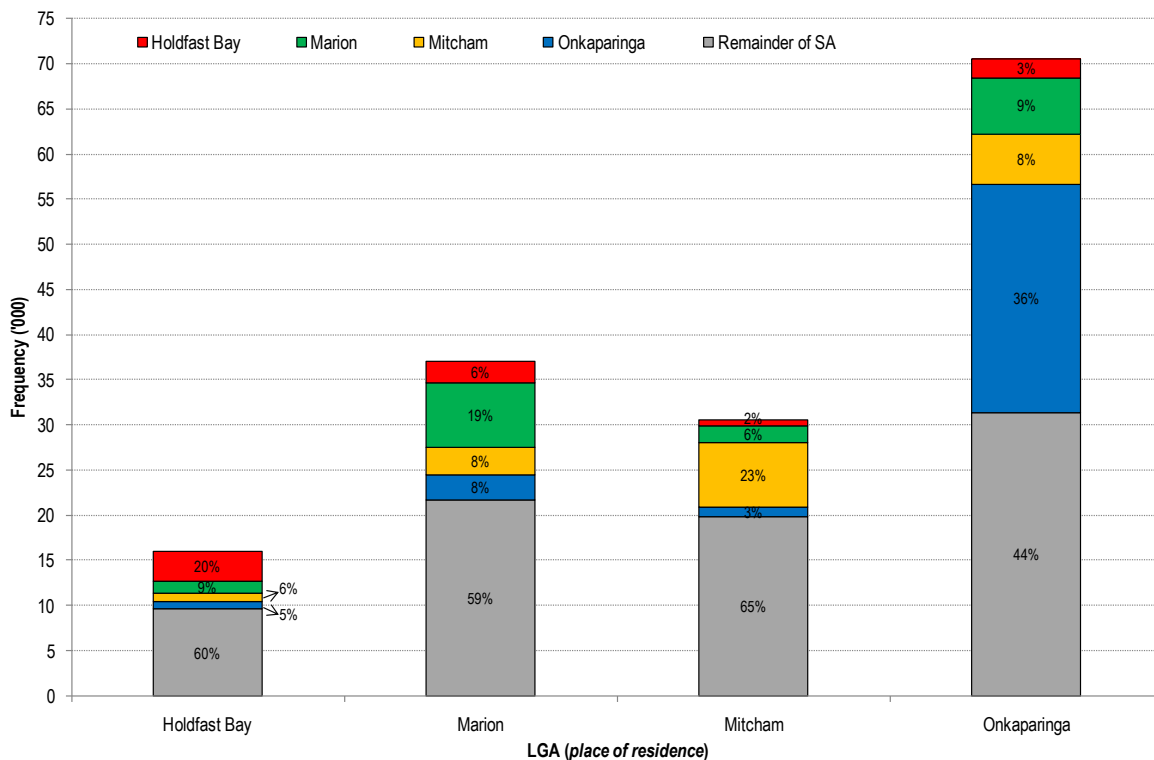
In addition, the method of travel to work by the majority of employed residents was by car, (either as the driver or as a passenger), in similar proportions across the four LGAs, as detailed in Table 3-5. For example, the largest number and proportion of employed residents that used the car as their single method of transport to work was approximately 89% (50,585). Very few employed residents utilised public transport (i.e. train, tram, bus or ferry) as their principal method; Holdfast Bay had the largest proportion, approximately 11% (1,442).

Table 3-4: Mobility of employed residents and local workforces, for the selected LGAs, 2006

LGA	Employed residential population	Outflow of employed residential population (from place of residence)		Local workforce	Inflow of local workforce (to place of work)	
		Freq.	%		Freq.	%
Holdfast Bay	15,993	12,734	80	10,732	7,473	69
Marion	37,009	29,826	81	21,548	14,365	67
Mitcham	30,529	23,410	77	23,670	16,551	70
Onkaparinga	70,512	45,207	64	32,909	7,604	23
Southern Adelaide	154,043	82,429	54	88,859	17,245	19

Source: ABS, 2006 Census of Population & Housing

Figure 3-10: Frequency and distribution of employed residents by their place of work, for the selected LGAs, 2006.



Source: ABS, 2006 Census of Population & Housing

Table 3-5: Method of travel to work of employed residents, for the selected LGAs, 2006

	Holdfast Bay			Marion			Mitcham			Onkaparinga		
	Freq.	%	%	Freq.	%	%	Freq.	%	%	Freq.	%	%
One method												
<i>Train</i>	479	3.7		1,480	5.0		693	2.9		614	1.1	
<i>Bus</i>	523	4.0		1,136	3.8		1,523	6.3		2,395	4.2	
<i>Ferry</i>	3	0.0		11	0.0		5	0.0		20	0.0	
<i>Tram</i>	437	3.4		314	1.1		16	0.1		16	0.0	
<i>Taxi</i>	44	0.3		102	0.3		81	0.3		81	0.1	
<i>Car, as driver</i>	9,670	74.7		23,018	77.1		18,678	76.8		46,687	82.3	
<i>Car, as passenger</i>	712	5.5		1,921	6.4		1,506	6.2		3,898	6.9	
<i>Truck</i>	71	0.5		262	0.9		166	0.7		728	1.3	
<i>Motorbike/scooter</i>	87	0.7		234	0.8		185	0.8		488	0.9	
<i>Bicycle</i>	245	1.9		495	1.7		517	2.1		330	0.6	
<i>Other</i>	104	0.8		202	0.7		154	0.6		375	0.7	
<i>Walked only</i>	568	4.4		693	2.3		786	3.2		1,080	1.9	
Sub-total	12,943	100.0	93.4	29,868	100.0	93.9	24,310	100.0	92.9	56,712	100.0	93.7
Two methods	315	-	2.3	929	-	2.9	549	-	2.1	1,479	-	2.4
Three methods	44	-	0.3	91	-	0.3	45	-	0.2	152	-	0.3
Worked at home	560	-	4.0	909	-	2.9	1,261	-	4.8	2,213	-	3.7
Total	13,862	-	100.0	31,797	-	100.0	26,165	-	100.0	60,556	-	100.0

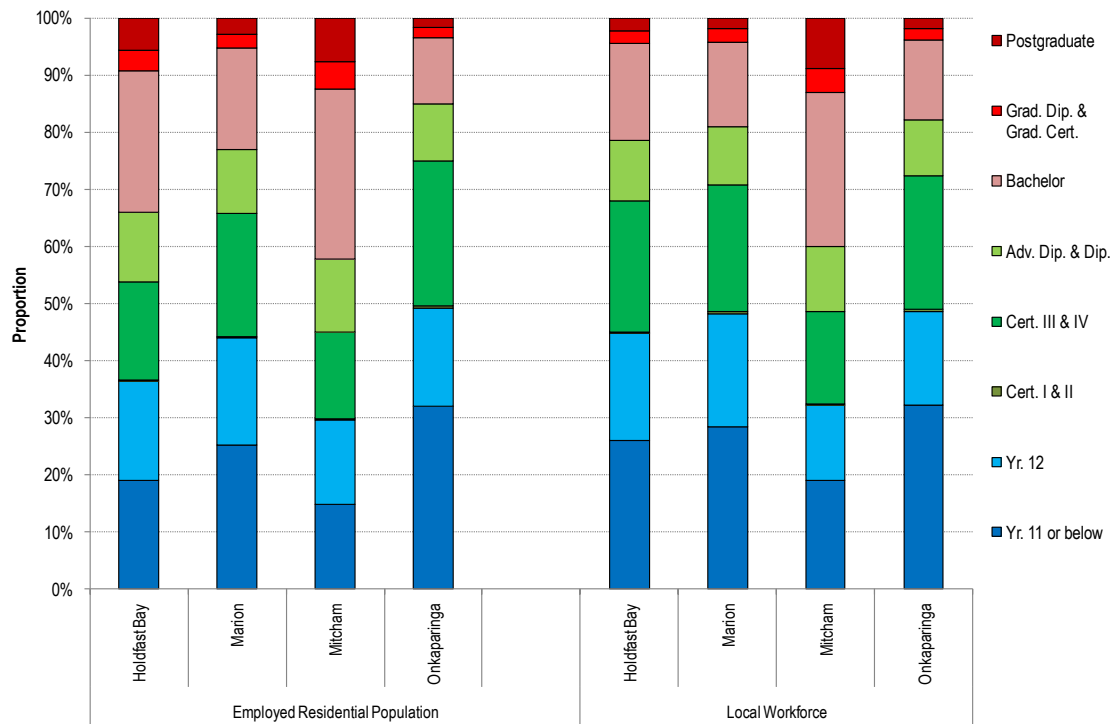
Notes: Total figures exclude 'not stated' and 'did not go to work'

Source: ABS, 2006 Census of Population & Housing

Given the substantial flows of employed residents travelling within and outside of the Southern Adelaide region for work, particularly for those from Onkaparinga, there was little difference in the education and skills profiles between the employed residential populations and the local workforces, for each of the four LGAs. Figure 3-11 and Figure 3-12 illustrate the respective education and occupation distributions, of the employed residents and the local workforces, in the prime-working age cohort, for each of the LGAs. The greatest difference in the education and occupation distributions between the employed residents and the local workforce occurred in Holdfast Bay. For example, for Holdfast Bay, the proportion of employed residents with Higher Education level qualifications (34%) differed to the proportion of workers in the local workforce (22%) by approximately thirteen percentage points (representing a net outflow of 2,065 individuals). For Onkaparinga, however, the differences between the distributions were negligible.

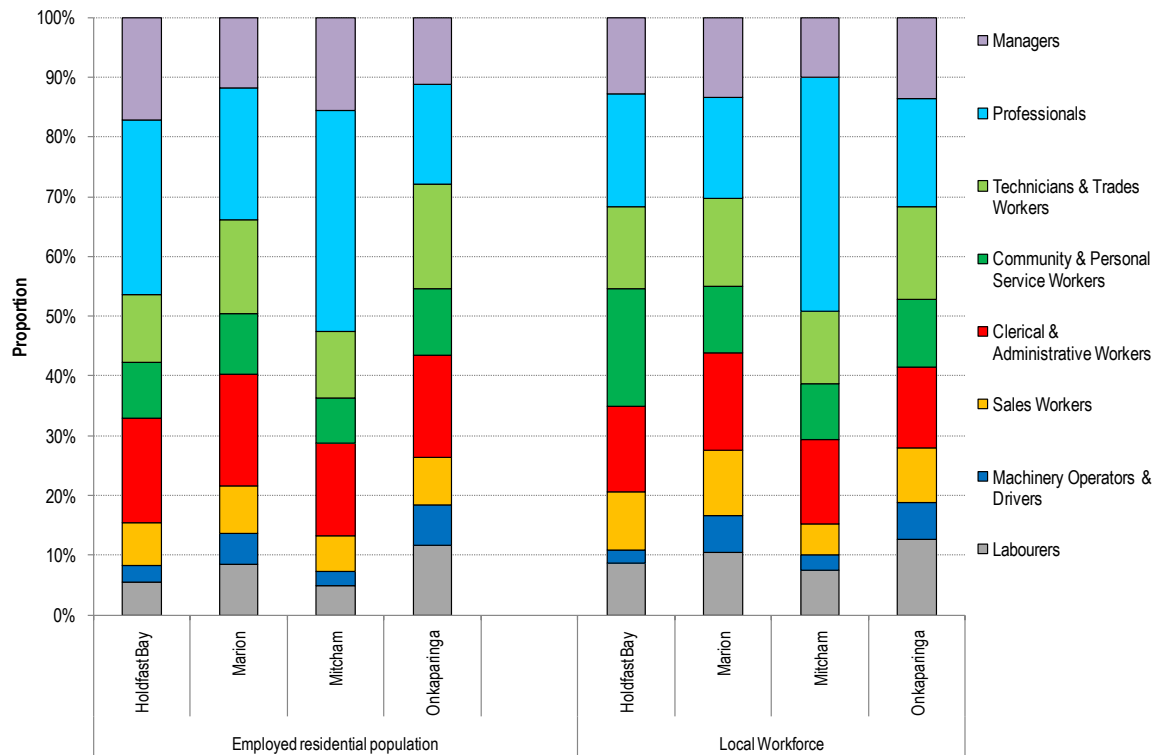
Broadly, this implies that for each of the LGAs the stock of education and skills required by their local economies, for the most part, was met by the stock of education and skills of their residential populations. However, the utilisation of the local stock of education and training was low for each of the LGAs.

Figure 3-11: Education distributions of the prime-working age residential population, employed residents and local workforces, for the selected LGAs, 2006



Source: ABS, 2006 Census of Population & Housing

Figure 3-12: Occupation distributions (ANZSCO 1-digit) of the prime-working age employed residents and local workforces, for the selected LGAs, 2006



Source: ABS, 2006 Census of Population & Housing

3.3.1 Summary

In general, the mobility of labour travelling to other LGAs for work, both within and beyond the Southern Adelaide region, suggested that the labour market for the residential populations of the four Southern Adelaide LGAs stretched well beyond their boundaries. The number of Southern Adelaide residents that travelled to another region for work each day (approx. 82,429) was far greater than the number of workers travelling into the Southern Adelaide region (approx. 17,245). Furthermore, the principal method of transport to work was by car. However, the difference in the education and skills distributions between the employed residents and the local workforces was almost negligible, for each of the LGAs.

While the education and occupation distributions for the employed residents and the local workforces were relatively well matched, for each of the LGAs, the magnitude of the local demand for labour was much less than the available local supply. That is, the large outflows of labour from the Southern Adelaide region was not due to a mismatch between the education and skills available and those required, but because the current local economies were too small. This implies, there is scope for increased investment and development of the existing local industries and businesses, even at the existing levels of education attainment.

In total, 99,674 people either travelled into or outside of the Southern Adelaide region for work twice a day, at least five days of the week. Of which, the largest share travelled either into or outside of Onkaparinga, approximately 34% (34,247). However, the large size of the labour market imposed a number of implicit costs both to government and on the individuals travelling, which are difficult to quantify. For government, the costs were in maintaining and improving the road infrastructure, maintaining and supporting health and emergency services to deal with road and car related accidents, and the present and future consequences of environmental pollution (predominately air pollution from road transport). For individuals, there were the costs associated with owning and driving a car and, most importantly, the cost of time lost travelling large distances, particularly for the employed residents of Onkaparinga. These costs, while not always immediately apparent, are a significant burden on society and provide a strong incentive for government to invest in better matching the supply and demand for labour at the LGA level, by growing the local economy and to try and shrink the geographical size of the Southern Adelaide labour market.

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- Southern Adelaide Economic Development Board (SAEDB), *A New Economic Future – Vision for Southern Adelaide*

Appendix I: Methodological Considerations

For the purpose of this analysis, the Australian Bureau of Statistics (ABS) 2006 Census of Population and Housing was used as the principal information source. The ABS Census is the largest survey in Australia, involving a complete enumeration of the population, rather than of a population sample, which allows the analysis of small or highly specific groups to be targeted. Hence, while the information from the ABS 2006 Census is four years old, it is the only data source that can provide accurate distributions of population and labour force characteristics at the Local Government Area (LGA) level. For further methodological and definitional details of the ABS 2006 Census, please refer to the ABS Census Dictionary, 2006 (cat. no. 2901.0). In addition, given the use of the ABS 2006 Census data, all standards of classification used followed those outlined by the ABS, see detailed in Table I - 1.

Gender differentiation is important as females can undertake child-rearing and, traditionally, have also taken on the responsibility of family and caring commitments. Subsequently, these responsibilities have affected their investment in, and returns to, education and training; or, their engagement in the labour market (e.g. choice of occupation and flexible employment arrangements); or, a combination of both.

The disaggregation of individuals by age is important as the behaviour of individuals in relation to the labour market differ over the life course. For the purposes of this report, age is considered in three cohorts:

- Youth age cohort (15-24 years): are individuals that are most likely to be studying (i.e. investing in education and training), and/or engaging in the labour market for the first time.
- Prime working age cohort (25-54 years): are individuals that are most likely to have completed their education (highest level attained), and are representative of the potential workforce. For females, this is also period when child rearing activities are most likely to occur.
- Older age cohort (55 years and above): are individuals that are most likely to be beginning their transition from work and into retirement; and, decreasing their engagement in the labour market by either (i) working fewer hours per week, and/or (ii) seeking fewer responsibilities by altering their career pathway and occupation.

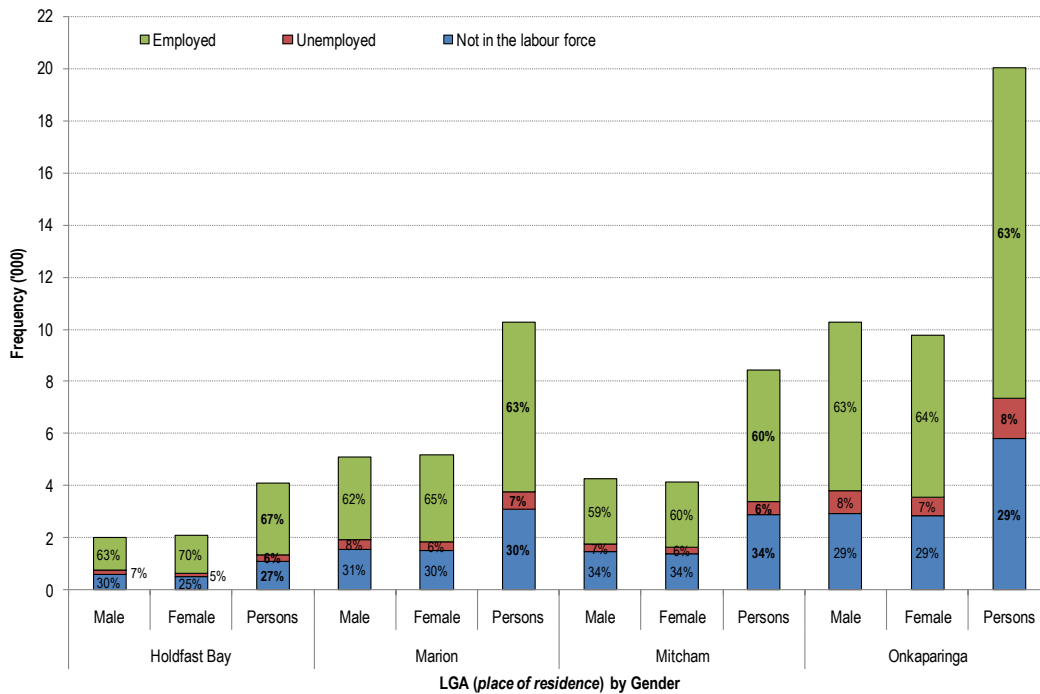
Table I - 1: Standards used by the ABS 2006 Census of Population and Housing.

Census field	ABS Standard	Level of classification
Statistical Subdivision	Australian Standard Geographical Classification (ASGC), 2006	Southern Adelaide
Local Government Area (LGA)	Australian Standard Geographical Classification (ASGC), 2006	Holdfast Bay Marion Mitcham Onkaparinga
Highest Level of Education Attainment*	Australian Standard Classification of Education (ASCED), 2001	Postgraduate Degree Level Graduate Diploma and Graduate Certificate Level Bachelor Level Advanced Diploma and Diploma Level Certificate III & IV Level Certificate I & II Level Year 12 Year 11 & below
Occupation (conditional on employment)	Australian and New Zealand Standard Classification of Occupations (ANZSCO), 2006	Managers Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers Sales Workers Machinery Operators and Drivers Labourers

* Level of Highest Level of Education Attainment (HEAP) in the ABS 2006 Census is derived from the variables Highest Year of School Completed (HSCP) and Non-school Qualification: Level of Education (QALLP). Please refer to: ABS, cat. no. 2914.0, 2006 Census of Population and Housing - Fact Sheets, 2006.

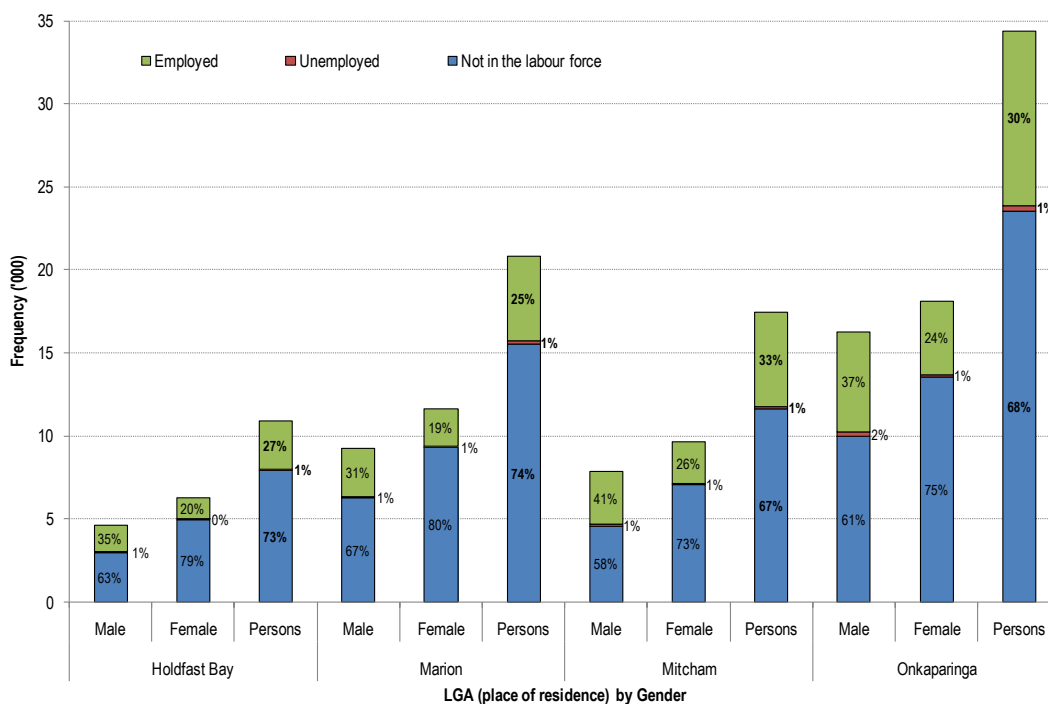
Appendix II

Figure II - 1: Frequency & distribution of the residential populations in the youth age cohort, for the selected LGAs, by gender, 2006



Source: ABS, 2006 Census of Population & Housing

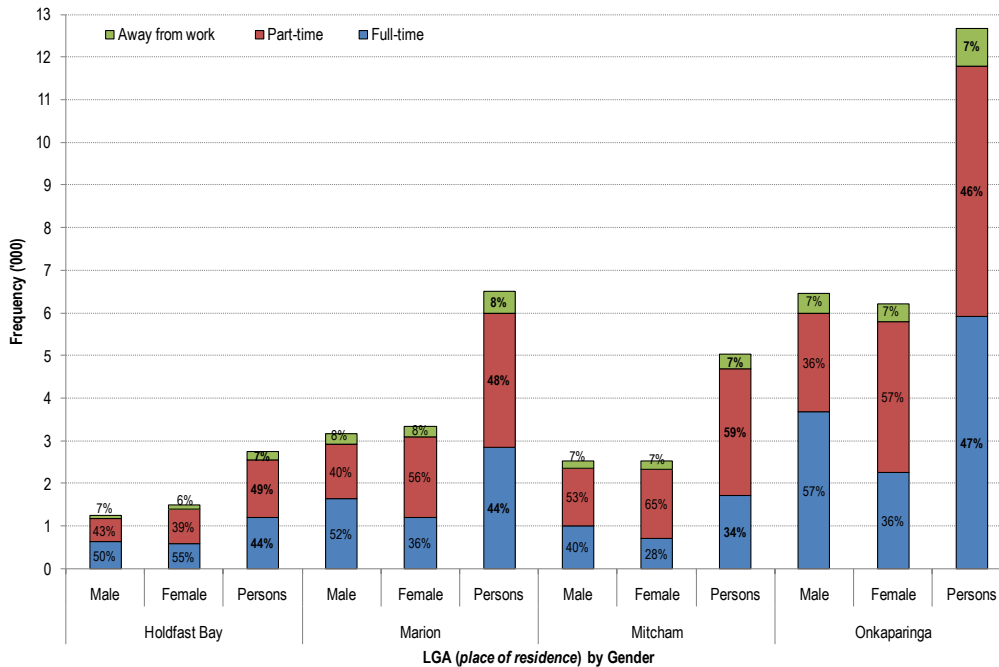
Figure II - 2: Frequency & distribution of the residential populations in the older age cohort, for the selected LGAs, by gender, 2006



Source: ABS, 2006 Census of Population & Housing

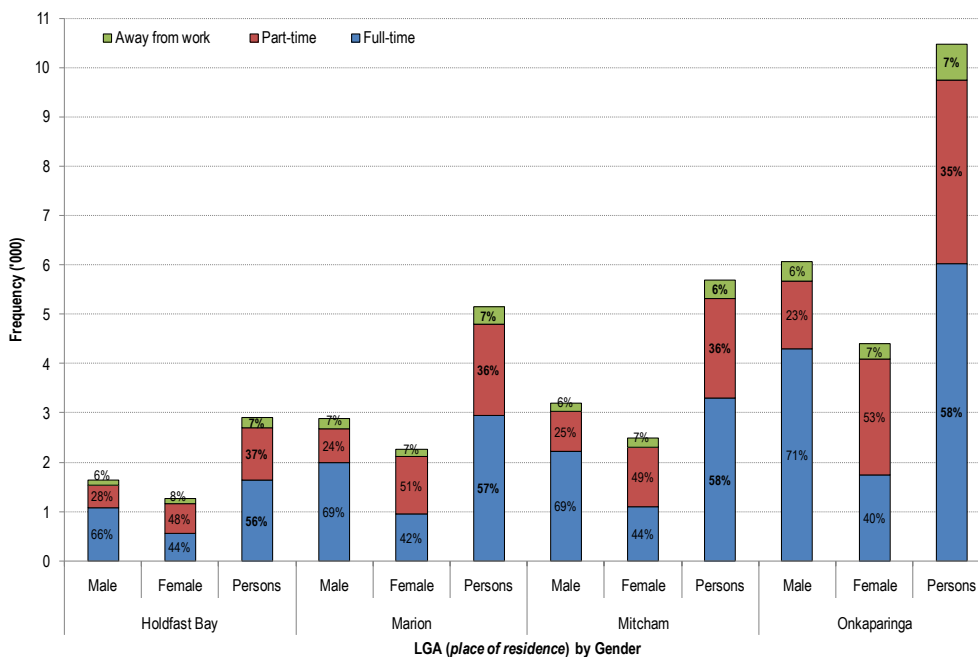
Appendix III

Figure III - 1: Frequency & distribution of employment status (i.e. full-time/part-time) of the residential populations in the youth age cohort, for the selected LGAs, by gender, 2006



Source: ABS, 2006 Census of Population & Housing

Figure III - 2: Frequency & distribution of employment status (i.e. full-time/part-time) of the residential populations in the older age cohort, for the selected LGAs, by gender, 2006



Source: ABS, 2006 Census of Population & Housing

Appendix IV

Table IV - 1: Matrix of 'usual place of residence' by 'place of work' for the employed residents of the selected LGAs, 2006

Usual place of residence (LGA)	Place of work (LGA)				
	Holdfast Bay	Marion	Mitcham	Onkaparinga	Remainder of South Australia
Holdfast Bay	3,259	1,375	999	773	9,587
Marion	2,316	7,183	2,984	2,870	21,656
Mitcham	625	1,885	7,119	1,056	19,844
Onkaparinga	2,034	6,285	5,546	25,305	31,342
Remainder of South Australia	2,498	4,820	7,022	2,905	518,602

Source: ABS, 2006 Census of Population & Housing