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Sustainable Queensland

Volume 1

Population Growth and Demographic Change
Alison Taylor

Skills for a Sustainable Queensland
Chris Robinson

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About this paper

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Chris Robinson is the Chief Executive for the Department of Education and Children Services, South Australia and was formerly the Deputy Director-General of the Queensland Department of Employment and Training. He led the development of two key reports for the Queensland government – "Skills for Jobs and Growth: A Queensland Government Research Paper" and "Queensland's Proposed Responses to the Challenges of Skills for Jobs and Growth: A Green Paper", both released in mid-2005. Chris has authored over 100 published research papers, articles and books, mostly in the labour market and vocational education and training fields.

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About CEDA

The Committee for Economic Development of Australia (CEDA) has been Australia's leading independent forum for high-level policy debate and research since 1960. We bring together leaders in business, government, academia and the broader community to promote Australia's economic development in a sustainable and socially balanced way.

CEDA's research and events programs explore the policy issues underpinning Australia's economic growth. Each year CEDA publishes a range of research papers and holds more than 300 events, conferences, boardroom briefings, and chief executive roundtables each year. In 2006, CEDA events attracted more than 22,400 attendees.

CEDA members include the major financial institutions, manufacturers and resources companies, professional services firms, leading universities, both federal and state government departments, community organisations and numerous small to medium enterprises, and individuals. CEDA is independent and advocates policy in the national interest rather than lobbying for special interests.

Sustainable Queensland

Volume 1

Population Growth and Demographic Change

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Skills for a Sustainable Queensland

Chris Robinson

Contents

Foreword

The “Sustainable Queensland” project undertaken by CEDA in Queensland breaks new ground. This project critically analyses the phenomenal growth occurring in Queensland and the sustainability of that growth. It examines all facets of the burgeoning economy in terms of key growth drivers and constraints. As a necessary precursor to other chapters we have commissioned two expert authorities to author chapters on the demographic changes underpinning Queensland’s growth, and the insatiable appetite of Queensland industry for skilled workers.

Demographer Alison Taylor’s position in the Department of Local Government Planning, Sport and Recreation gives her a birds-eye view of the changing shape of the Queensland population. She has also addressed CEDA conferences on the subject as it applies to particular geographic areas. The latest of these was her address to the Sunshine Coast regional conference conducted in conjunction with the University of the Sunshine Coast.

Chris Robinson has recently been appointed as Chief Executive of SA’s, Department of Education and Children’s Services and is now domiciled in Adelaide. We still claim him as “one of ours” from his previous role as Deputy Director-General of Queensland’s Department of Employment and Training. He has produced a thought-provoking analysis of the skills situation in Queensland.

CEDA is truly indebted to Professor Ken Wiltshire, the Chair of the Sustainable Queensland project and the research committee who have injected a great deal of insight and effort into their analysis of trends and projection of the future for Queensland.

The two chapters in this first volume have been the subject of scrutiny by CEDA Queensland trustees in a policy forum exclusive to CEDA trustees. The two chapters are being released at a CEDA event in Brisbane on Tuesday 27 March 2007. We thank Manpower for their sponsorship of this event. The next two chapters to be released will be infrastructure and the availability of private capital funding. Those chapters are being authored by Jason Watters of Wilson HTM and Mark Ingham of PricewaterhouseCoopers. We are eagerly awaiting the release of these chapters which have also followed the process of scrutiny by CEDA trustees through a policy forum prior to public release.

I would encourage CEDA trustees to become involved in this exciting project as it takes shape. The policy forums are an opportunity for trustees to input to the process and make points to the authors on their draft papers prior to release.

Greg Meek
Sustainable Queensland Project Director, CEDA Deputy CEO and Executive Director for Queensland and the Northern Territory

Introduction

Most societies welcome economic growth. It has come to symbolize wealth creation, dynamism, and the prospect of rising living standards for all members of the community. No wonder commentators pounce on latest figures for gross national or state product as a measure of the success of the economy.

However in recent times, in many parts of the world, the challenges presented by economic growth have come to the fore, often in the light of debates about the impact on the environment and general quality of life. The global emphasis on sustainable development is the most visible manifestation of this new concern. Questions begin to be raised as to whether there are limits and constraints to growth, and whether there needs to be a refashioning of public policy to address these issues.

Queensland presents the quintessential case study for this scenario. Having experienced legendary high population growth for a prolonged period, particularly from interstate migration, the consequences of this trend are now becoming very apparent. Significant challenges in coping with such growth have become manifest.

It is in this context that the “Sustainable Queensland” project was conceived. A group of experienced economists and policy advisers, drawn from CEDA trustees from the private and public sectors, have identified a number of rapidly emerging pressure points for the state ‘s economy. Each of these has been addressed in turn by expert authors, all of whom have been commissioned to analyse the magnitude and nature of the challenge and to identify some realistic policy options to address them. In short the authors have been asked to address the fundamental question as to whether, in each of these domains, Queensland’s growth is sustainable.

The project begins by defining sustainable development from a business as well as a societal perspective. Then the forecast state population growth is presented in both quantitative and qualitative terms. This is followed by a paper on each of the potential pressure points which have been identified *viz.* skills, infrastructure, private capital and financing options, the environment, water, and the very governance framework of the state. This project should be of considerable interest throughout Australia and internationally dealing as it does with some of the most pressing contemporary concerns for all proponents of economic development.

Professor Kenneth Wiltshire AO
Sustainable Queensland Project Director

1 Key Messages

Population Growth and Demographic Change

Queensland's population is projected to grow by 1.54 million people in the next 20 years, compared with growth of 1.42 million in the past 20 years. Queensland's population is expected to reach 7.1 million people by 2051, although it could be as low as 5.9 million or as high as 8.7 million.

That population growth will underpin economic and employment growth. It will also help to stave off the inevitable ageing of the population.

However, the twin impacts of the ageing of the population and societal change will alter Queensland household structure, with three out of every five households projected to have only one or two persons living in them in 20 years' time.

Queensland's future sustainability depends on how well the state manages these population changes. Management challenges include the provision of transport, water, health and other major infrastructure items, as well as management of housing growth. Shrinking supplies of city and town fringe sites in coming years will drive expansion of new housing locations and/or higher housing densities.

The largest threat to Queensland's future sustainability would be unfettered population growth occurring in unplanned areas with inadequate facilities coupled with the unrestrained expansion of coastal settlements, towns and cities to accommodate people who are loving Queensland to death. To avoid this we must continue to focus on the sustainable management of population growth.

Skills for a Sustainable Queensland

The Queensland economy has reached full employment. With unemployment rates at or around 5 per cent or less over the past two years, Queensland's labour market is tighter than it has been for 30 years.

Population growth, economic growth, the global resources boom, economic diversification and workforce ageing are all fuelling growth in demand for skills and driving skills shortages.

The skill deficits now emerging are driven by underlying factors that will not disappear with the next downturn in the economy and require a long-term response.

As well as expanding workforce training, Queensland needs to raise the workforce participation of over-55 workers. Beyond this, the provision of skills will require a fundamental shift in employer and community attitudes. Employers need to develop new recruitment, skills development skill retention processes. Attitudes and practices towards older workers and investment in their skills will need to change. Take-up of vocational and technical education (VTE) will need to rise.

The Queensland government has taken considerable steps to respond, with the Smart State strategy and education and training reforms including a major skills investment package. Federal government superannuation changes will also help keep over-55s in the workforce, but the federal government's skills initiatives have been more modest.

2 Population Growth & Demographic Change

BY ALISON TAYLOR

Introduction

In this paper, a longer term view of population change is initially taken in order to identify distinctive periods of growth in Queensland's history. This gives us a perspective from which to view our projections of future growth and consider the implications of this growth from a sustainable development viewpoint.

Population change is then discussed in terms of its size, distribution and composition, focusing on what has happened over the past 20 years and what is anticipated to happen over the coming 20 years and beyond. It is the nature of these three aspects of the population – its size, distribution and composition – how they have changed and how they are forecast to change in the future, that will dictate much of the impetus for and potential shape of sustainable development in Queensland in the coming decades.

Identifying Queensland's periods of growth

The past – steady until the 1970s, then regular periods of increasingly large and fast growth

Queensland's population has grown substantially over the past 150 years. While it took 36 years for the state's population to grow from 1 to 2 million people, it took only half that time (18 years) to reach 3 million and then a further 13 years to reach 4 million people (Table 1). This indicates that the pace of growth has been increasing throughout the 20th century, particularly as the long economic boom of the postwar period (and the baby boom) carried through until the beginning of the 1970s, after which the baby boom echo (that is, the higher number of births to the baby boomers themselves), and strong internal and overseas migration flows sustained Queensland's population growth.

TABLE 1: QUEENSLAND'S POPULATION MILESTONES

Population reached	Year (ending June)	Years since previous million people reached
1 million	1938	-
2 million	1974	36
3 million	1992	18
4 million	2006	13
5 million	2019*	13
6 million	2032*	13
7 million	2050*	18

* 2006 Edition medium series projections
Source: ABS Cat No 3105.0.65.001 and Queensland Government population projections, 2006 edition, medium series

The strong and sustained population growth experienced in Queensland has not been matched in other parts of Australia. As a result, Queensland's share of the Australian population has increased markedly from 13.3% in 1901 to reach 18.7% 100 years later in 2001 (Table 2). Based on recent Australian Bureau of Statistics (ABS) projections, this share is expected to rise to 23.1% by 2051, as Australia's population exceeds 28 million and Queensland's reaches almost 7 million (6.899 million people under the ABS Series B projection).

TABLE 2: QUEENSLAND'S SHARE OF THE AUSTRALIAN POPULATION

Year	Population share (%)
1901	13.3
1921	14.0
1941	14.6
1961	14.5
1981	15.7
2001	18.7
2051*	23.1

* Based on Series B projections, 2005, ABS, Cat No 3222.0.
Source: Derived from ABS, Cat No 3105.0.65.001, Australian Historical Population Statistics

Distinctive periods of growth in Queensland can be identified by taking a longer term view of population change. From this perspective, population growth in Queensland over the last 100 years can be seen to have followed a series of highs and lows, sometimes as a result of external factors such as World Wars, major events or the operation of the broader economic environment at the national and even the global scale (Figure 2-1, page 4).

From this longer term perspective, it is apparent that Queensland's growth was less than 20,000 people each year for much of the first half of the century. The impact of the two World Wars and the Depression years can be seen in the patterns of growth. In particular, the end of the Second World War marked the beginning of both the long economic boom and the baby boom. As a result, Queensland's growth averaged closer to 30,000 people each year between 1950 and 1970. The year 1971 saw the commencement of the rapid growth period of the last quarter of the century when growth averaged 60,000 people each year.

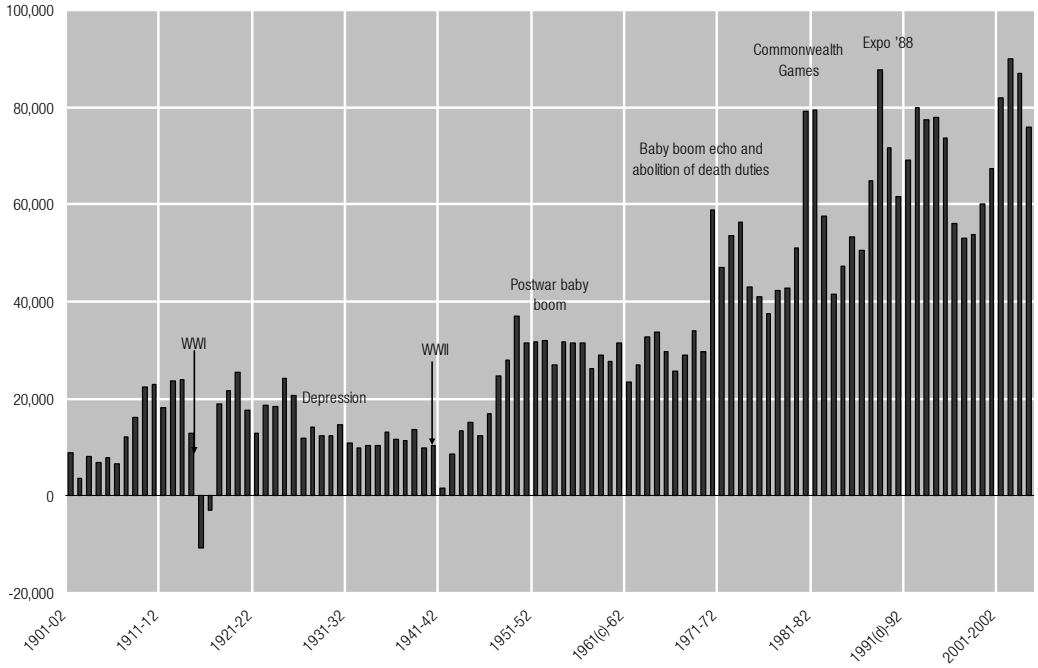
Notably, since 1971 the peaks of the growth cycle have been getting higher, as have the low points. In other words, each growth cycle has been peaking at a higher point than in the previous cycle and when the growth slowed it bottomed out at a higher point than the previous low. For example, the high growth of 56,400 in the year to 1974 was eclipsed by an increase of 79,400 people in 1982. This was followed by a peak year in 1989 with an increase of 87,700 people. The next peak in 1993 was slightly lower at 80,000 people, but this was overtaken a decade later by the most recent peak when an increase of 90,000 people was recorded in Queensland's population over the year to June 2003.

It is evident that significantly higher levels of growth occurred in Queensland following the Second World War, with the emergence of a period of strong economic growth and the onset of the baby boom. The 1970s saw the beginning of another period of even stronger growth, which has subsequently been supplemented by further high growth periods, the most recent peaking in 2003. It is no coincidence that Queensland's population doubled from 2 to 4 million people between 1974 and 2006. However, continuing growth of this magnitude may be much more difficult to sustain in the future, given the pressing environmental, economic and social issues associated with past growth that are yet to be effectively addressed.

The future – continuing strong growth to 2026 and beyond

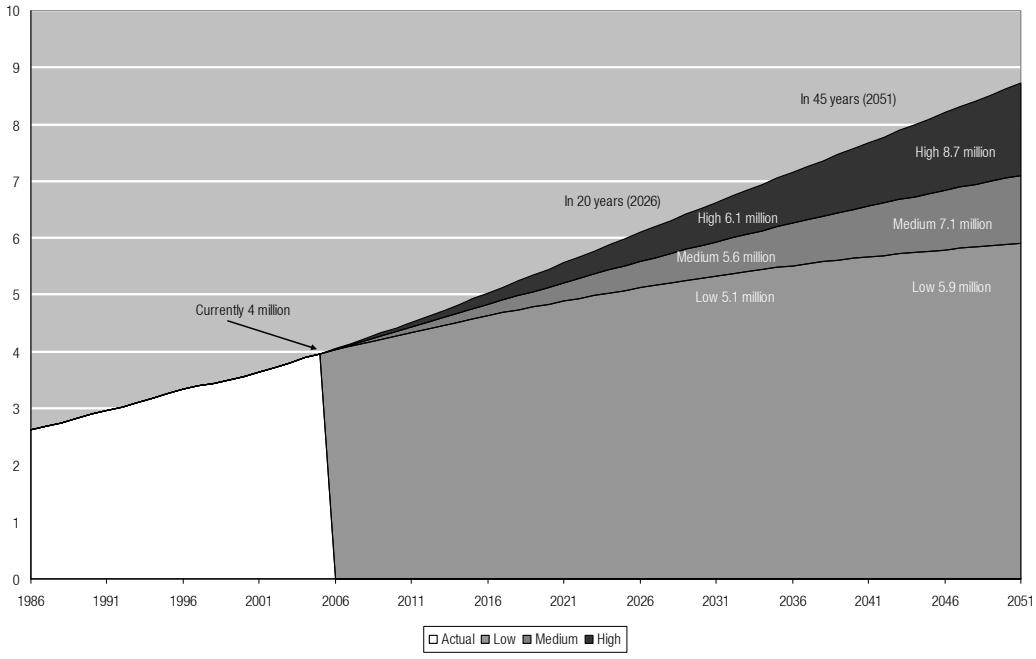
Continuing growth is projected for Queensland. From around 4 million people in 2006, current projections suggest that the population might grow to 5.6 million within 20 years and reach 7.1 million people by 2051 (Queensland Government, 2006 edition, medium series). This level of growth, while providing significant opportunities for business and economic development, also results in considerable challenges. These challenges include the environmental consequences of accommodating this many extra people, efficiently transporting them about their business, providing for their basic water needs and disposing of their waste products. In addition, there are significant social concerns to be addressed, including building and maintaining safe and supportive communities, encouraging the development and protection of social capital networks and creative, vibrant and networked centres, towns and cities.

FIGURE 2-1: CHANGE IN ANNUAL POPULATION, QUEENSLAND, 1901–2005*



* Data from 1954 onwards is at 30 June. Prior to 1954, data are at 31 December
Source: Derived from ABS, Cat No 3105.0.65.001, Australian Historical Population Statistics

FIGURE 2-2 PAST AND PROJECTED POPULATION, QUEENSLAND, 1986–2051



Source: ABS, Cat No 3101.0 and Queensland Government, 2006 edition population projections

In 1986, Queensland's population was 2.62 million people. Over the 20 years to 2006, the population grew by around 1.42 million people or nearly 54% to reach just over 4 million. During the coming two decades, the population is projected to grow to 5.58 million people, an increase of 1.54 million people or around 38%. (Note that while the number of additional people is slightly more than Queensland's population growth over the past two decades, the percentage increase is lower due to the increasing size of the base.)

Thus, Queensland is anticipated to grow by 1.54 million people in the next 20 years, compared with growth of 1.42 million in the past 20 years. However, the concern is not just the additional growth that needs to be accommodated in the coming two decades compared with that of the past, but just how and where those additional 1.54 million people will be accommodated. While Queensland is still experiencing some growing pains from the amount and pace of past growth, the past options were relatively easy. Most of the growth was accommodated in fringe areas, both metropolitan and non-metropolitan, typically in separate houses in greenfield areas. As a result, densities in most of our urban areas are low, especially in comparison to overseas cities.

However, on several fronts in South East Queensland (SEQ) in particular, supplies of greenfield land are not sufficient to cater for enough similar low density residential development to meet the projected demand in the coming decades. This means that the additional people will have to be accommodated in alternative locations and/or at higher densities if we are to meet the demand and prevent spiralling housing costs. Then we are still left with the need to provide and manage effective and efficient environmental, economic and social systems, leading to safe, supportive and sustainable communities for Queenslanders, both now (addressing issues of past growth) and in the future (dealing with the impacts of future growth).

In the longer term, Queensland is expected to grow even further to reach 7.1 million people by 2051 (medium series). Growth of this magnitude will result in Queensland's 1981 population doubling by 2015 and increasing three-fold by 2051. Of course, these are only projections based on a series of assumptions that may or may not eventuate. To provide some boundaries of the likely future growth, high and low series projections have also been produced. The low series projection for 2051 of 5.9 million people assumes lower fertility rates, little improvement in mortality and less migration to Queensland. In contrast, the high series of 8.7 million by 2051 is based on higher fertility rates being sustained into the future (more children being born), continuing improvement in mortality rates (people living longer), as well as higher levels of migration (from interstate and overseas) to supplement the population. These projections represent a 46% increase on the current population for the low series or a 115% increase for the high series by 2051 (Figure 2-2, page 4).

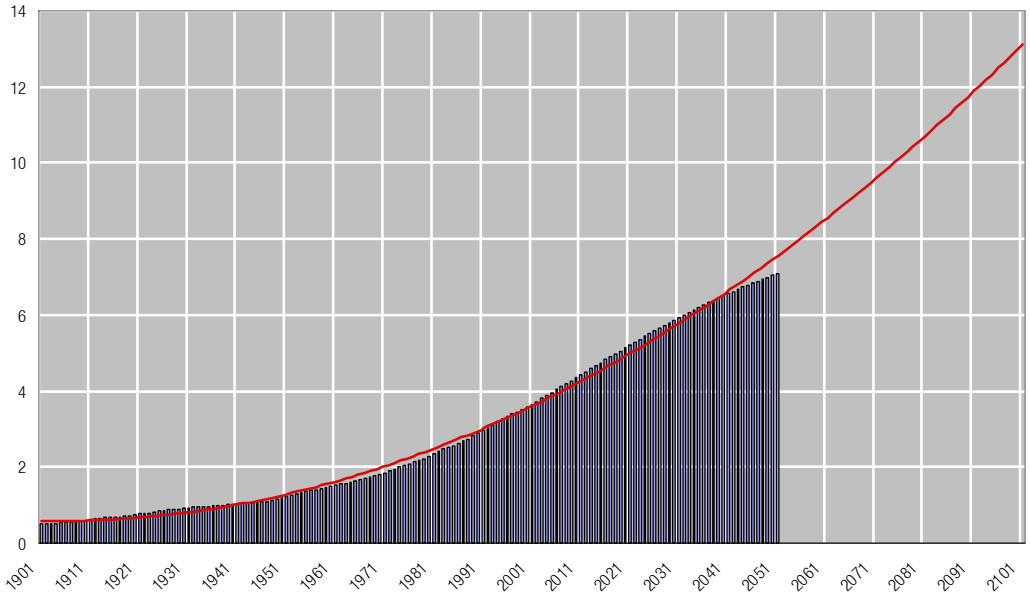
Beyond 2051, it is likely that Queensland will continue to grow. Fitting a simple trend line to past and projected population levels indicates that Queensland's population may reach around 13 million people by the end of this century, although it seems more likely that the rate of growth will slow (Figure 2-3, page 6). Significant changes in levels of consumption in urban areas in particular, will be necessary, given current pressures on housing affordability, increasing fuel costs and the push to increase population densities. This is apart from the pressures on all the other elements of urban systems. We have some significant challenges to sustainability to overcome in the coming decades.

Population size

Past population change

When considering the total population increase for Queensland for each decade of the past 100-year period, it is apparent that the highest levels of growth have occurred in recent decades (Figure 2-4, page 7). While the decades ending 1911 - 1951 each resulted in total growth of less than 200,000 people, subsequent decades saw much stronger growth. The 1950s and 1960s resulted in an increase of around 300,000 people each, while the increase in the decade ending 1981 rose to nearly 500,000 people. Population growth in the decade ending 1991 grew further to 600,000 people, with total growth for the decade ending 2001 reaching 668,000 people.

FIGURE 2-3 QUEENSLAND PAST AND PROJECTED POPULATION GROWTH (MILL.), 1901–2101



Source: derived from ABS Cat No 3105.0.65.001 and QLD Gov., 2006 edition population projections, medium series

In the years since 2001, Queensland recorded high annual increases, peaking at 90,000 in the year to June 2003 and subsequently easing to around 76,000 people in the year ending June 2005. Based on annual average growth during the 2002 to 2005 period, Queensland may achieve total growth in excess of 800,000 people during the decade ending 2011.

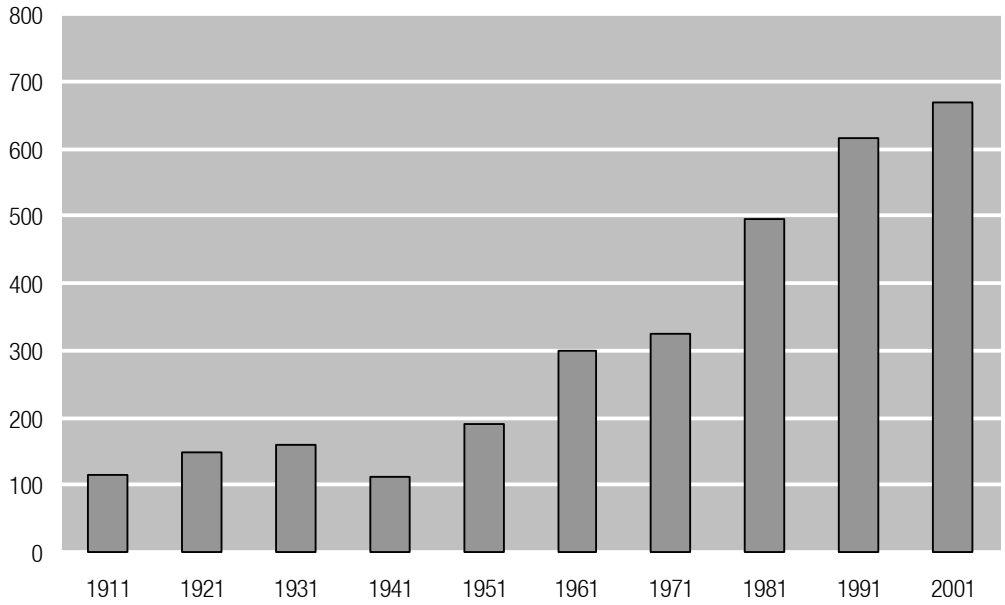
This recent stronger growth experienced in Queensland has resulted in the state significantly increasing its share of the national population over the past three decades (Figure 2-5, page 7). In 1901, Queensland accounted for 13.3% of Australia's population and remained at around this level for the next 75 years. By 1977, the Queensland population represented only 15% of the nation, but reached 18% by 1995 and in 2005 was home to 19.5% of Australians.

Queensland's growth compared with other states and territories

Despite increasing levels of absolute change in Queensland over the past 33 years, until very recently Queensland's population growth has largely been matched by that of New South Wales (Figures 2-6 to 2-9, pp 8-9). During the first three decades of this period (1971–2001), population growth in Queensland was very similar to that recorded in NSW, somewhat higher than in Victoria and considerably higher than in any of the remaining states and territories.

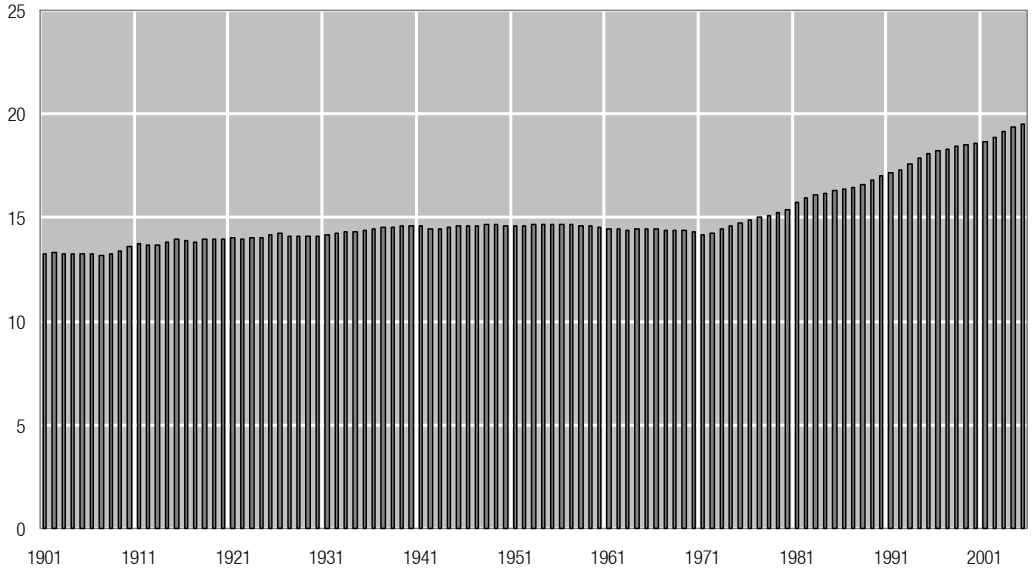
However, during the period 2002–05, population growth in Queensland increased to average 83,750 people each year (up 25% on average growth between 1992 and 2001), compared to average annual growth of 49,750 people in NSW (down 26%). Victoria also recorded comparatively high levels of population growth during this period, averaging increases of 54,400 people each year between 2002 and 2005, or 42% higher than annual increases between 1992 and 2001. This higher level of growth in recent years pushed Queensland into first place in terms of average annual population increases over the past 33 years. In total, Queensland accounted for 29.1% of Australia's total growth between 1972 and 2005, compared with 28.2% in NSW and 19.6% in Victoria (Table 3).

FIGURE 2-4: TOTAL POPULATION GROWTH ('000), QUEENSLAND, DECADES ENDING 1911–2001*



* Data from 1954 onwards is at 30 June. Prior to 1954, data are at 31 December
Source: Derived from ABS, Cat No 3105.0.65.001, Australian Historical Population Statistics

FIGURE 2-5: PERCENTAGE SHARE OF AUSTRALIA'S POPULATION, QUEENSLAND, 1901–2005*



* Data from 1954 onwards is at 30 June. Prior to 1954, data are at 31 December
Source: ABS Cat No 3102.0 and 3101.0

FIGURE 2-6 CHANGE IN ANNUAL POPULATION, QUEENSLAND, 1972–81*

* Years ending June, 2005 preliminary
Source: ABS Cat No 3102.0 and 3101.0

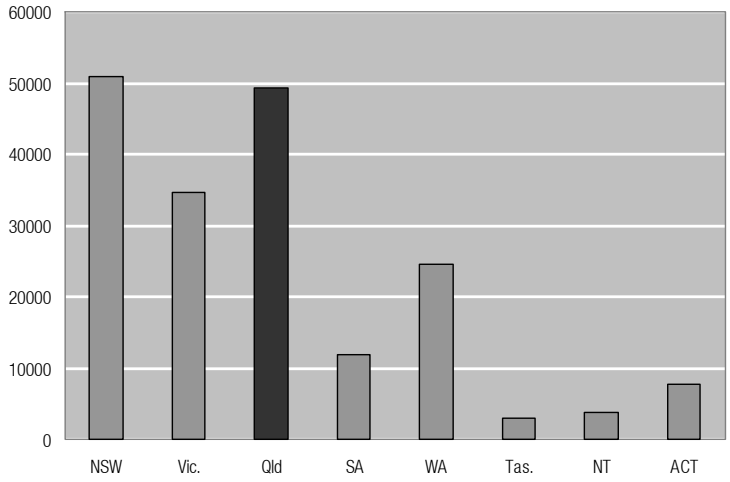


FIGURE 2-7 CHANGE IN ANNUAL POPULATION, QUEENSLAND, 1982–91*

* Years ending June, 2005 preliminary
Source: ABS Cat No 3102.0 and 3101.0

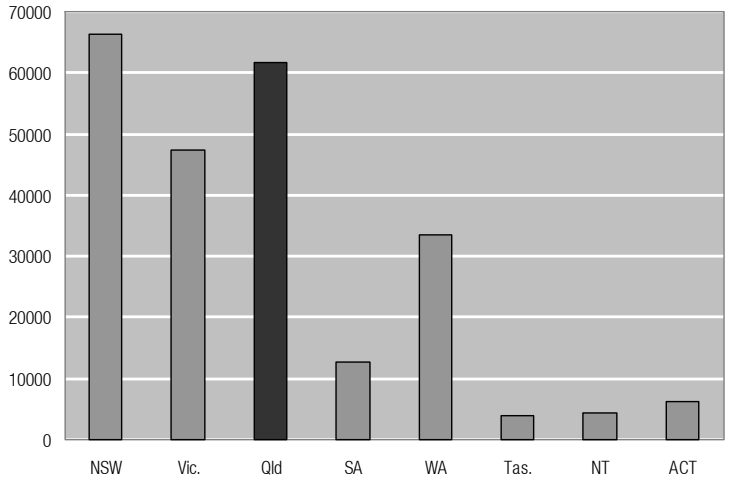


FIGURE 2-8 ANNUAL POPULATION CHANGE, QUEENSLAND, 1992–2001*

* Years ending June, 2005 preliminary
Source: ABS Cat No 3102.0 and 3101.0

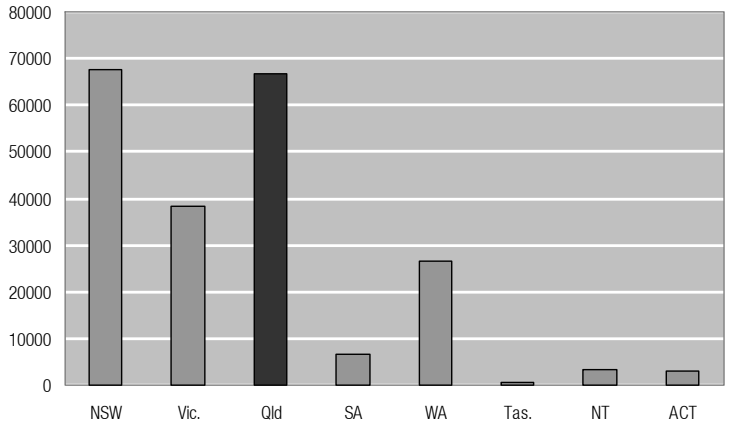


FIGURE 2-9 ANNUAL POPULATION CHANGE, QUEENSLAND, 2002–05*

* Years ending June, 2005 preliminary
Source: ABS Cat No 3101.0

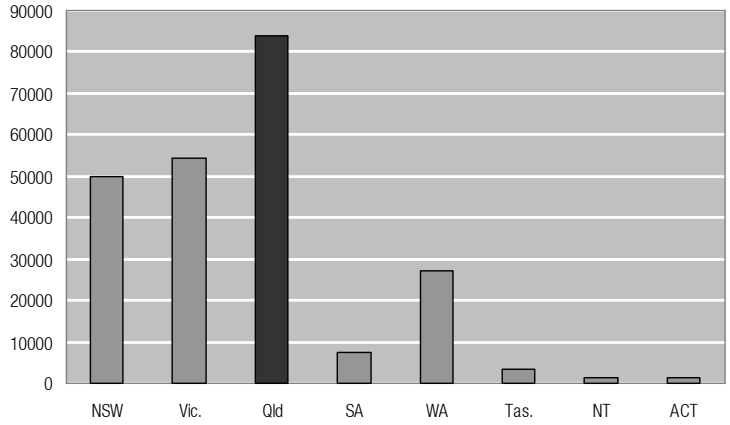


TABLE 3: AVERAGE ANNUAL POPULATION CHANGE AND SHARE OF NATIONAL GROWTH, 1972– 2005*

	Population increase (No.)	Share of national total (%)
Queensland	62,132	29.1
New South Wales	60,257	28.2
Victoria	41,794	19.6
Western Australia	28,126	13.2
South Australia	10,056	4.7
Australian Capital Territory	5,117	2.4
Northern Territory	3,443	1.6
Tasmania	2,564	1.2
Australia	**213,569**	**100.0**

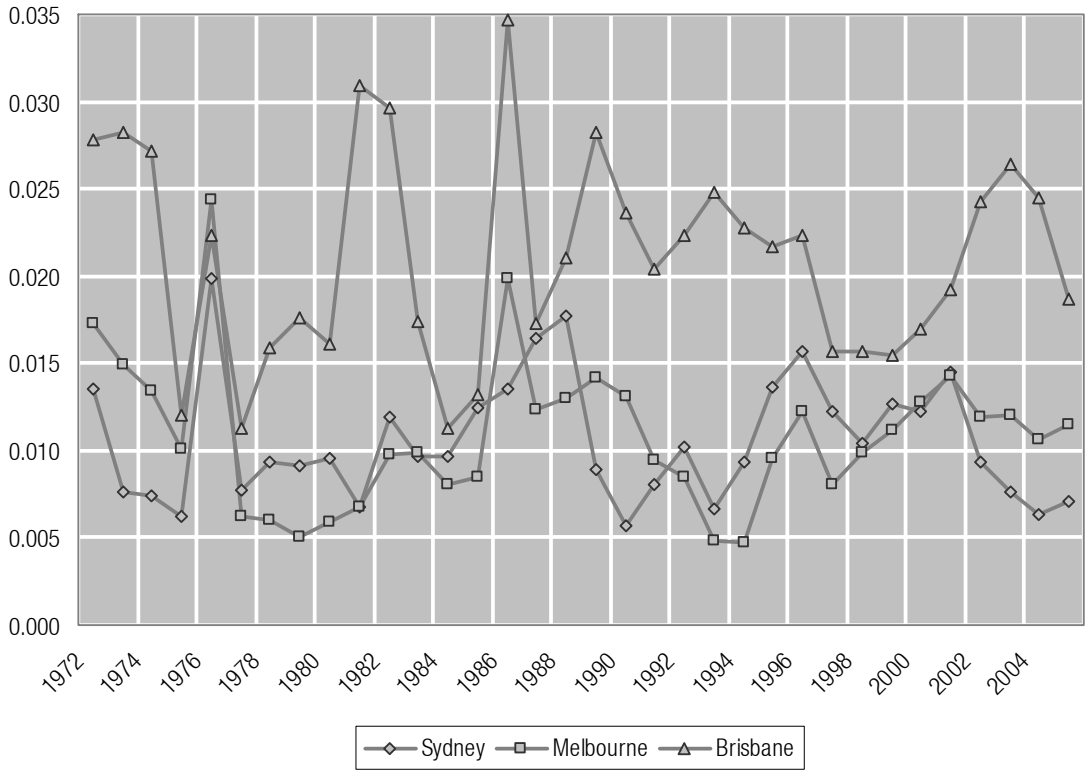
* Years ending 30 June, 2005 preliminary
Source: ABS Cat No 3102.0 and 3101.0

This strong and sustained population growth resulted in Queensland recording rapid population growth rates over the 33-year period, exceeding both NSW and Victoria, but also consistently higher than the Australian rate of growth (Figure 2-10, page 10). While growth rates in some of the remaining states and territories were higher, these increases were from a relatively low population base and, as already described, the absolute population increases were relatively low compared to growth in the three largest states.

Brisbane's growth compared with other capital cities

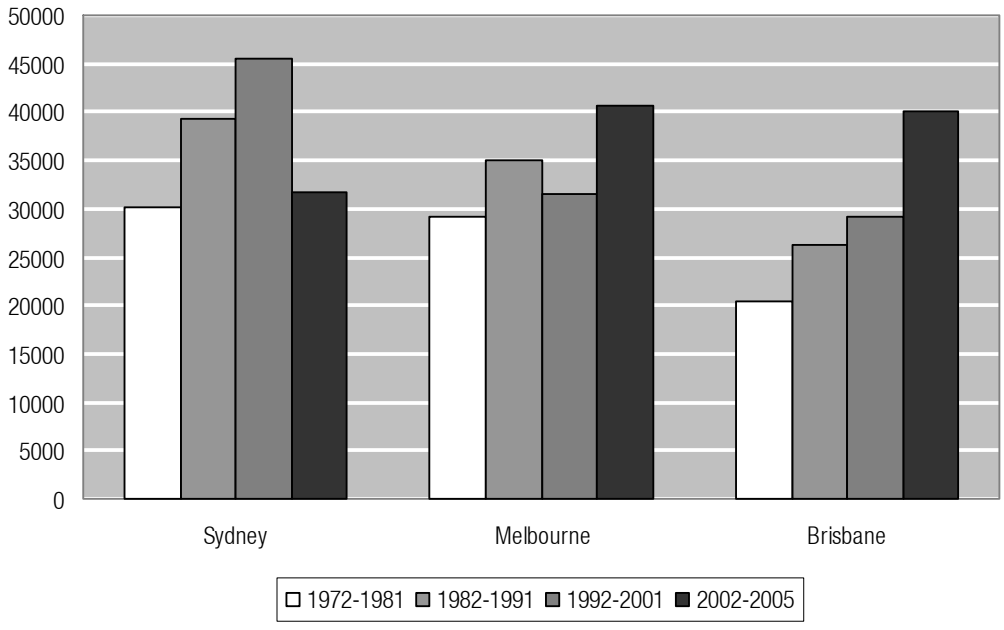
While Queensland has recorded higher levels of population growth in recent years than that experienced in other states and territories, this has also been the case for its capital city, Brisbane. In particular, average annual growth in Brisbane Statistical Division (SD) since 2001 (40,130 people), has been much higher than in earlier periods, and was 27% higher than the average for Sydney SD (31,650 people) and just less than Melbourne SD's average growth (40,650 people) during this five-year period (Figure 2-11, page 10).

FIGURE 2-10 POPULATION GROWTH RATES, SYDNEY, MELBOURNE AND BRISBANE, 1972–2005*



* Years ending 30 June, 2005 preliminary; Source: ABS Cat No 3102.0 and 3101.0

FIGURE 2-11 TOTAL POPULATION GROWTH, SYDNEY, MELBOURNE AND BRISBANE, 1972–2005*



* Years ending 30 June, 2005 preliminary; Source: ABS Cat No 3101.0

These data also indicate that population growth in Sydney peaked in the decade to 2001 and has since slumped to levels last seen during the 1970s of around 30,000 people each year. Growth in Melbourne averaged between 30,000 to 35,000 people each year for the three decades to 2001, but is currently averaging slightly more than 40,000 people each year as population growth in Victoria rebounds. In contrast, growth in Brisbane has steadily increased in each of the three decades to 2001, with annual averages of 20,000, 25,000 and then around 30,000 people respectively, followed by current growth of around 40,000 people each year for the four years to 2005.

Similar patterns emerge from a consideration of growth rates in Sydney, Melbourne and Brisbane (Figure 2-12, page 12). For much of the past 33 years, growth rates in Brisbane SD have been considerably higher than those in either Sydney or Melbourne. These rates of growth are affected by the size of the base population and should be viewed in conjunction with levels of absolute population change to obtain a clear assessment of growth.

Non-metropolitan growth

The balance of Queensland outside Brisbane SD has also recorded high levels of population growth over recent decades, leading to Queensland's designation as the second-most decentralised state in Australia, after Tasmania. In 2005, the population of Brisbane SD at 1.8 million people accounted for 45.7% of Queensland's population, with the balance of the state containing 2.2 million people or 54.3% of the population. This compares with Sydney (62.8%) and Melbourne (72.4%), while Perth (73.5%) and Adelaide (73.2%) contained the highest share of their respective state populations in the capital city (with the exception of Canberra – 100%).

In part, this designation as highly decentralised is due to the inclusion of areas like the Gold and Sunshine Coasts into non-metropolitan Queensland; that is, the area outside the capital city statistical division. Many commentators believe that at least the two coastal growth areas should be considered part of the capital city metropolitan area due to their close proximity and significant linkages. However, the same argument may also be made in relation to Gosford, Wollongong and Sydney, or Geelong and Melbourne.

In comparison to either NSW or Victoria, non-metropolitan (defined as that area outside the capital city SD) population growth in Queensland has consistently been much higher for all of the past 33 years. Average population growth in the balance of Queensland was 141% higher than growth in the balance of NSW and more than 200% higher than in the balance of Victoria over the four years to 2005 (Figure 2-13, page 12).

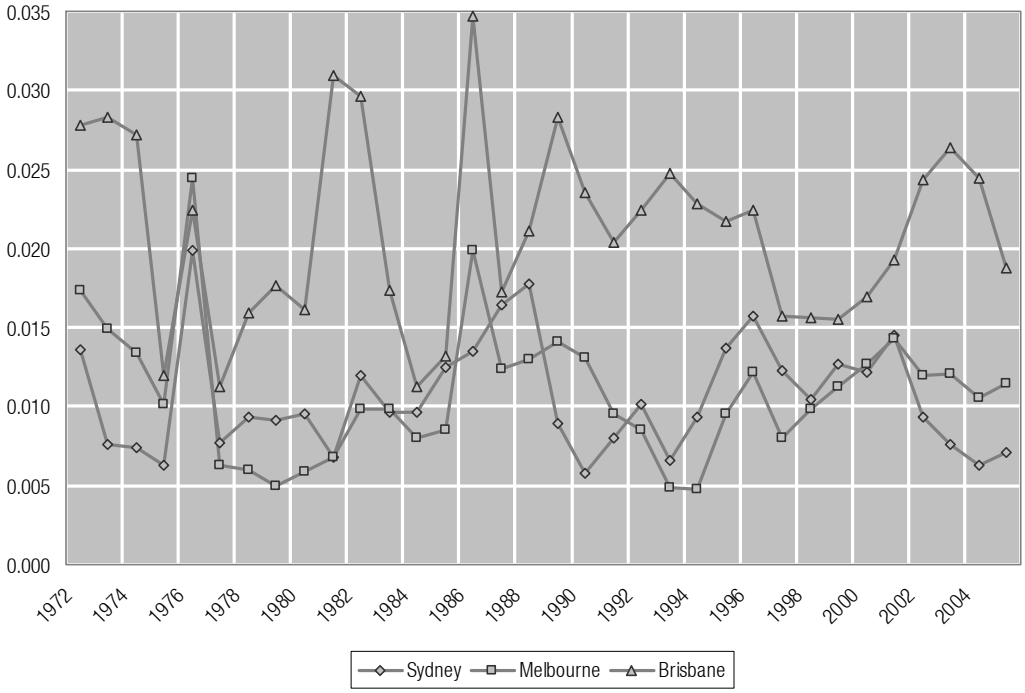
Growth rates for the three largest states' non-metropolitan areas show that the balance of Queensland has consistently recorded the fastest growth rates, as well as the largest amount of absolute population growth over the past 33 years (Figure 2-14, page 13).

This means that challenges to sustainability from strong population growth are not constrained to the metropolitan area. In fact, the dispersed nature of population growth in Queensland has led to pressures on a number of fronts. It should also be noted that those areas of Queensland that are not experiencing population growth face their own challenges. These may take the form of managing environmental issues, retaining a minimum population to support services such as schools and banks, as well as having a population of sufficient size to maintain viable social organisations.

Components of growth

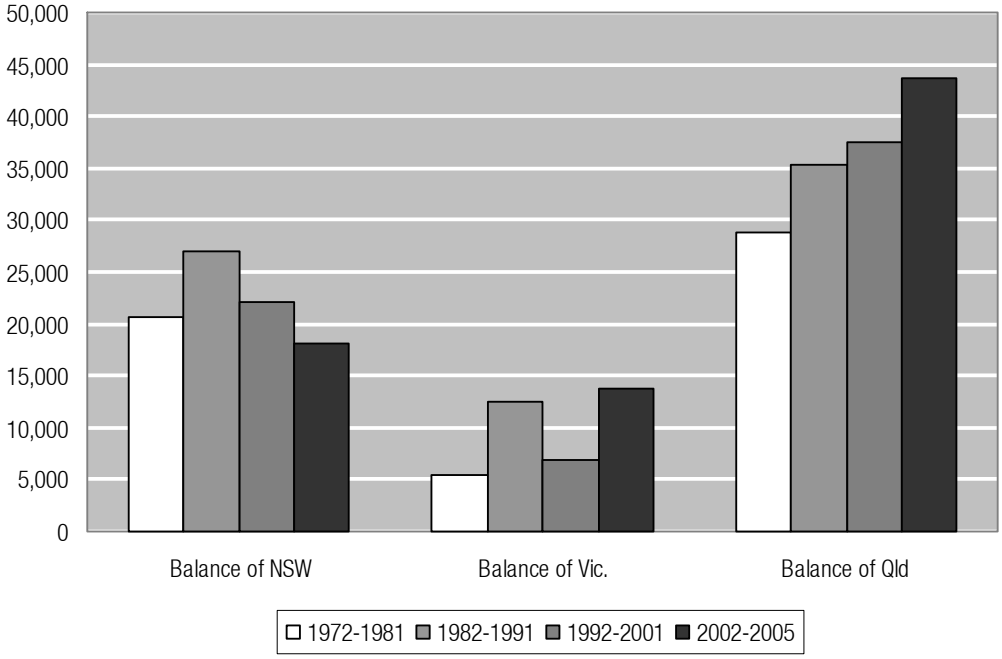
At the state level, there are three components of growth: natural increase (or the difference between the number of births and deaths), interstate and overseas migration. The contribution of each of these components to Queensland's population growth over the 1972–2005 period is shown in Figure 2-15, page 13. While natural increase has remained relatively stable, both net interstate and net overseas migration have fluctuated quite dramatically from year to year. This volatility, especially in relation to migration patterns, makes projecting Queensland's future population particularly difficult. Births (because of recent changes to past trends) and migration (because of its importance) are briefly discussed below.

FIGURE 2-12 POPULATION GROWTH RATES, SYDNEY, MELBOURNE AND BRISBANE, 1971–2005



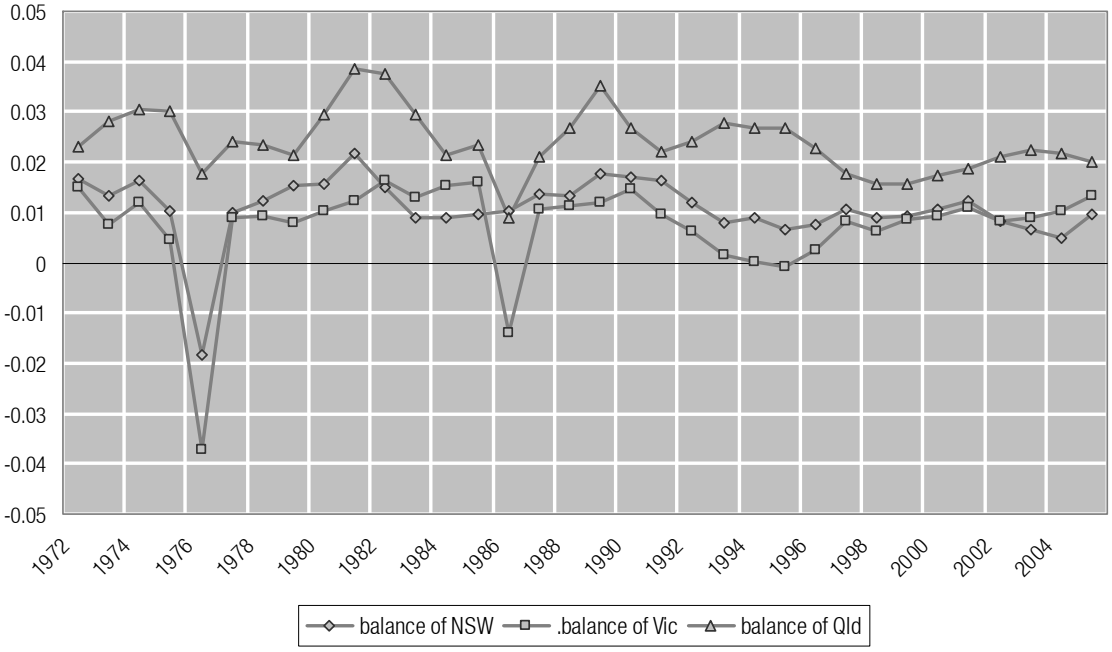
* Years ending 30 June, 2005 preliminary
Source: ABS Cat No 3102.0 and 3101.0

FIGURE 2-13 TOTAL POPULATION GROWTH, BALANCE OF NEW SOUTH WALES, VICTORIA AND QUEENSLAND*, 1972–2005#



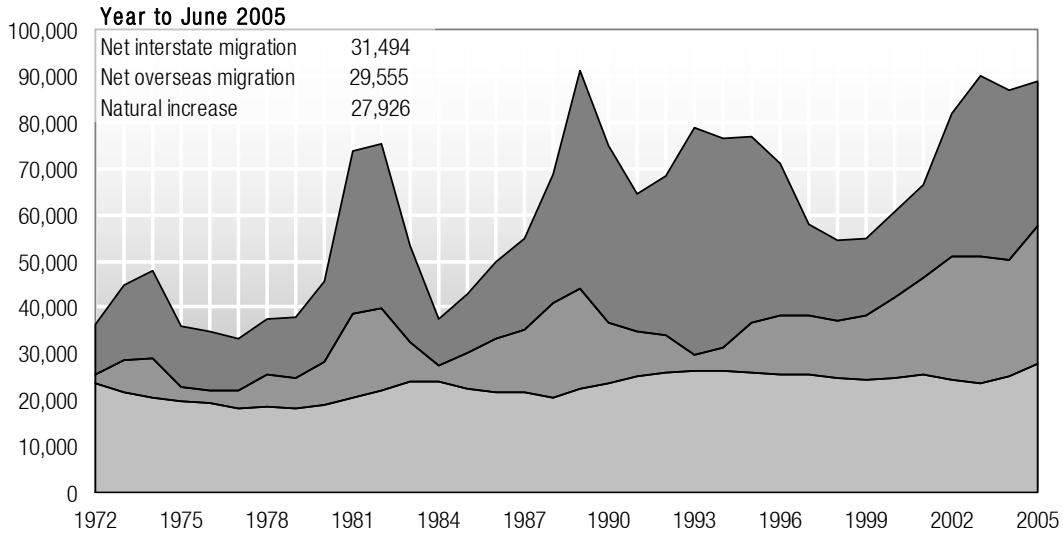
* Balance of state is that area outside the capital city statistical division
# Years ending 30 June, 2005 preliminary; Source: ABS Cat No 3101.0

FIGURE 2-14 ANNUAL PERCENTAGE POPULATION GROWTH RATES, BALANCE OF NEW SOUTH WALES, VICTORIA AND QUEENSLAND* , 1971–2005#



* Balance of state is that area outside the capital city statistical division
\# Years ending 30 June, 2005 preliminary
Source: ABS Cat No 3102.0 and 3101.0

FIGURE 2-15 COMPONENTS OF GROWTH, QUEENSLAND, 1972 TO –2005



* Years ending 30 June, 2005 preliminary
Source: ABS, Australian Demographic Statistics, Cat. No. 3101.0 & unpublished data

BIRTHS

Consideration of the number of births in Queensland since 1901 (Figure 2-16, page 14) shows how much population growth was driven by births alone in the first three-quarters of the century. Until the end of the Second World War in 1945, the number of births in Queensland largely remained below 20,000 each year (population growth during this time was only just above this level at its peak, while during the Depression years population growth was much less). From 1946, the number of births jumped with the commencement of a period designated the "baby boom" era, when the number of births in Queensland averaged closer to 30,000 each year.

While the exact end date of the baby boom period is debated, in Australia it is generally taken to be 1965. The peak year of births in Queensland during this period was in 1961 with 36,600 births after which the number of births steadily declined until 1967 when they again began to rise. In Queensland (and the rest of Australia), it is clear that a second peak, or "baby boom echo", was experienced between 1968 and 1978 when the number of births again rose as the older baby boomers had children of their own. In Queensland, the peak year of births during this period was in 1971 with 39,800 births.

During the 1980s, births in Queensland averaged around 40,000 each year as migration increased the number of women of child-bearing age in the population. This population growth continued to drive the number of births, despite subdued total fertility rates, with the average number of births per year during the 1990s reaching 46,340. Between 2000 and 2003, births averaged around 47,000 each year but have since risen to peak at 51,600 in 2005, the highest number of Queensland births on record.

The significance of this is that the increase in the number of births contributes to a slightly higher total fertility rate, which, if sustained, will lead to a higher population in future than that previously anticipated. In addition, an increased number of births will help to partially offset the ageing of the population

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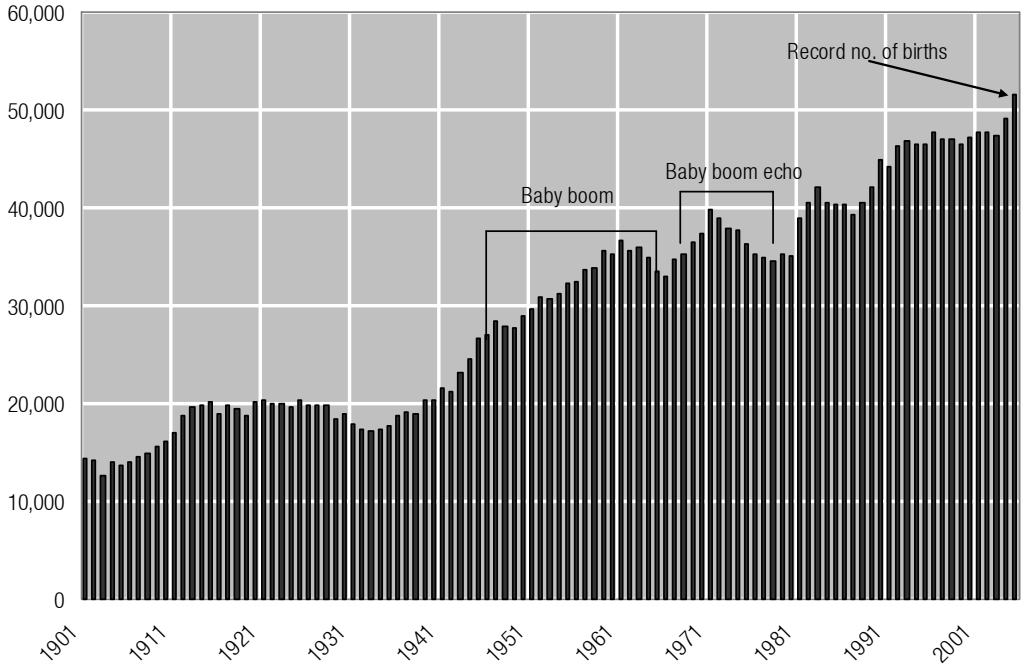
FIGURE 2-16 BIRTHS, QUEENSLAND, 1901 –2005



Source: ABS, Australian Demography Bulletins and Cat No 3301.0, various issues

MIGRATION

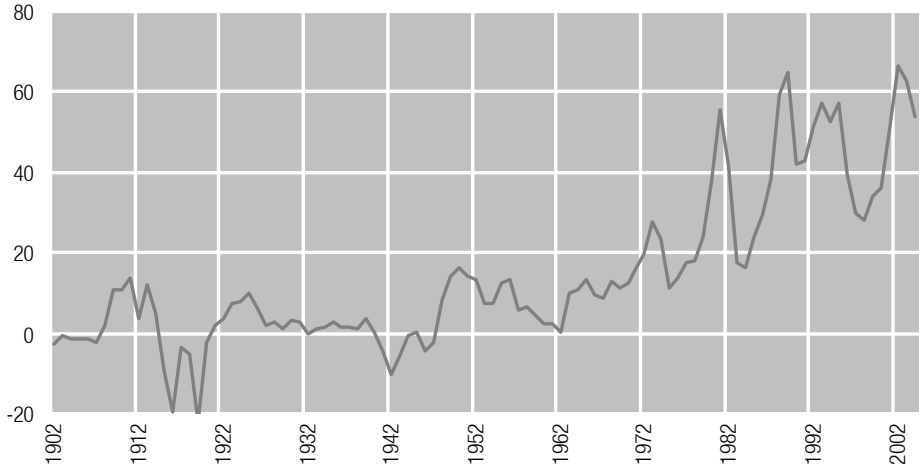
Migration has been a significant force in the growth and redistribution of population in Australia, and particularly in Queensland, during the last quarter of the 20th century. While large numbers of people moved to Queensland following its separation from NSW in 1859, the subsequent discovery of minerals and the establishment of pastoral and mining industries also attracted numbers of new settlers. At this time, the counter-clockwise pattern of movement away from the south-east corner of Australia towards the north and west was established; a pattern that continues to the present day.

Net migration gains to Queensland were interrupted by the First World War, were low during the Depression years and again negative during the Second World War (Figure 2-17, page 15). During the late 1940s and 1950s, higher levels of migration were associated with increasing numbers of overseas migrants from European countries. Since the 1960s, net migration gains (from both interstate and overseas) have steadily increased, peaking around the time of the Commonwealth Games in 1982 and the staging of the World Expo in 1988 in Brisbane (see DLGPSR, forthcoming, Migration Queensland, 1996–2001).

Net migration gains were again high in the early 1990s, but remained more subdued during the second half of the decade. Increasing net gains as a result of people moving from NSW, Victoria and overseas led to another peak in net migration for Queensland in 2003, with a subsequent easing over the last few years. The principal reasons for the continuing magnetism of Queensland in recent years have been positive economic conditions, especially low unemployment, favourable housing affordability, an attractive environment and the opportunity for a quality lifestyle; all conditions that may not be sustained into the future. For example, there has been a decline in Queensland's relatively favourable housing affordability over recent years.

The majority of Queensland's current population growth is due to migration, as a result of net gains from both interstate and overseas movement. This has been the case for much of the past three decades (see Figure 2-15 above). For example, the contribution of migration to population growth over the last decade averaged 63%, accounting for almost two-thirds of the total increase, or nearly 450,000 people. While interstate movement has accounted for the major share of this contribution (37% of total growth or 263,400 people), net gains from overseas migration have risen considerably over the past decade with the ten-year average at 26% or 186,500 people. In comparison, natural increase (the difference between the number of births and the number of deaths) contributed just over one-third of Queensland's increase in population over the last ten years (37% or 250,300 people).

FIGURE 2-17 NET INTERSTATE AND OVERSEAS MIGRATION ('000), QUEENSLAND, 1902–2005



Source: ABS, Cat No 3102.0 and 3101.0

While the impact of migration on Queensland's population growth has been significant, that impact has been spatially specific. For example, in recent years, the majority of overseas migrants have settled in South East Queensland (SEQ), with the region gaining more than 103,000 people between 1996 and 2001. Within SEQ, Brisbane and Gold Coast were the major destinations, capturing around 60% of people, who moved from overseas locations to Queensland in the five years to 2001. The balance of Queensland has traditionally attracted relatively few overseas movers, with the exception of some particular communities such as Mt Isa and Mareeba.

Similarly, two-thirds of interstate migrants to Queensland between 1996 and 2001 moved to SEQ – around 163,000 people. Within SEQ, it was to a relatively small number of coastal Local Government Areas (LGAs) that most of these migrants moved. Brisbane City and Gold Coast City were the destination for 42% of all interstate movers to Queensland over the five years to 2001 (25,800 and 15,300 people respectively). Interstate movement was particularly significant for Gold Coast City, which was one of only a few Queensland LGAs where the amount of interstate movement outweighed that from within the state.

Below the state level, movement within Queensland also impacted on patterns of growth and decline in varying ways in different communities, however, SEQ was again the major beneficiary. Between 1996 and 2001, almost 80,000 people moved from the Eastern Region of Queensland to SEQ, while the Western Region was the source of a further 7,000 people moving to the south east corner. (In this context, the Eastern Region includes the eastern coastal Statistical Divisions and the Darling Downs Statistical Division (SD) while the Western Region comprises the three western SDs of South West, Central West and North West.) Brisbane City, Gold Coast City and Maroochy Shire were the main winners from intrastate movement, while Logan, Ipswich and Redcliffe cities were among a number of SEQ LGAs that sustained net intrastate losses over the five-year period.

The Eastern Region of Queensland was the destination for around 62,000 people moving from other parts of the state between 1996 and 2001. These people came principally from SEQ (50,000 people), but also from Western Queensland (12,000 people). In contrast, the Western Region of the state attracted only around 11,000 people from intrastate movement, in this case, predominantly from the Eastern Region (7,000 people), with a further 3,800 people from SEQ.

Within these broad regions there were even more detailed patterns, with the larger towns and cities both losing and gaining the largest number of people, however, the amount of movement occurring in smaller centres and rural areas was also significant – especially in relation to the size of the population remaining in these areas. In many of these regional areas, out movement of people to interstate locations was high relative to the inflow, with as many as eight people moving away for every ten who moved from interstate. This led to relatively small net gains compared to the total amount of movement.

In total, Eastern Regional Queensland had a net interstate migration gain of around 12,000 people. However, this was more than offset by the net loss from intrastate movement that was almost twice as large as the net interstate gain. The result was a total internal net migration loss in Eastern Regional Queensland of almost 11,600 people over the five years to 2001. In comparison, SEQ had a net gain of more than 70,000 people from interstate movement (85% of Queensland's total net gain with much smaller outflows relative to inflows) and a net gain of almost 35,000 people from movement within Queensland over the same period.

These patterns of movement were also age specific, with most regional areas losing young people to the larger cities, interstate and overseas, but some other regions gaining people of more mature years. Far North SD for example, recorded net intrastate migration losses in all five-year age groups between 1996 and 2001, with the largest losses in the 15- to 24-year age groups. Some areas in SEQ also experienced a net loss of young people, for example, the cities of Logan, Ipswich, Toowoomba and Redcliffe. In contrast, Brisbane City and Gold Coast City gained sizeable numbers of young people, as well as those of young working age (and their dependent children).

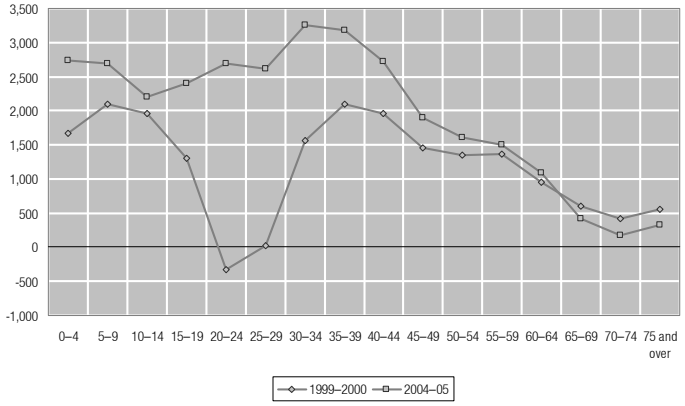
While employment opportunities are obviously greater in larger cities, those cities offering educational, cultural and entertainment options also proved attractive to young people. For example, Northern SD, containing a major university and defence force establishment at Townsville, recorded a net gain of 2,600 young people aged between 15 and 24 years from Northern and North Western Queensland. However, demonstrating the significantly greater pull of the state's capital, the Townsville Region also had a net loss of more than 600 young people to Brisbane City over the five years to 2001.

The attraction of a greater range of opportunities for young people applied particularly to Brisbane with the focus area for movers in their 20s being the inner suburbs. For somewhat older movers, the main Brisbane destinations were the middle suburbs. Surrounding LGAs within easy commuting distance to the jobs on offer were favoured by families with young children. This is no doubt also related to the relatively more affordable housing available in these locations in past years, although the sustainability of these settlement patterns, given rising fuel prices, might now be questioned. In contrast, coastal LGAs to the north of Brisbane proved attractive to older movers, in particular those areas along the Fraser Coast such as Hervey Bay City, Burnett and Tiaro Shires.

Despite the continuing perception that Queensland attracts significant numbers of people of retirement age, analysis of the data does not support this (Barker, R and Taylor, A, 2005). While people aged 60 years and over have accounted for a slowly increasing share of the net interstate gain to Queensland since the mid-1970s, they still represent less than 15% of that gain (14% in the 1996–2001 period). Since the 1970s, the age profile of Queensland's net interstate migration gain has been dominated by adults in the 30- to 44-year age groups and their dependent children aged between 5 and 14 years. (This is despite the peak age groups for both interstate movers into Queensland, as well as those leaving for interstate locations being between 25 and 34 years.) These peaks are consistent with life cycle events that influence migration, such as higher levels of mobility, pursuing employment opportunities and forming households.

More recent data show that the proportion of interstate migration made up by people aged 60 years and over has declined from 13% of Queensland's net gain in 2000 to just 6% in the year ending June 2005. People aged between 40 and 59 years (32% in 2000 and 25% in 2005) and children aged less than 15 years (30% and 24% respectively) also declined as a proportion of the net interstate gain over this period. In contrast, young people aged between 15 and 24 years and people of young working age (25 to 39 years) have increased their share of the net interstate gain. The change was particularly apparent for people aged between 15 and 24 years who increased from only 5% of the net gain in 2000 to 16% in 2005, while people of young working age increased from 19% to 29% over that period (Figure 2-18 below).

FIGURE 2-18 AGE PROFILE OF NET INTERSTATE MIGRATION, QUEENSLAND, 2000 AND 2005 *



* Years ending June; Source: ABS, unpublished data

This change in the attractiveness of Queensland to younger people is possibly related to the strengthening employment market in the state over this period. Between June 2000 and June 2005, Queensland's unemployment dropped from 7.3% to 4.6% and the number of new jobs created more than doubled from 46,600 in the year ending June 2000 to 97,300 in the year ending June 2005 (ABS Cat No 602.0.55.001).

Also related to employment opportunities in Queensland is the migration both into and out of the state of people with higher level qualifications, employed in higher status jobs. Between 1996 and 2001, Queensland recorded gains in every occupation due to interstate migration. Clerical and service workers dominated, accounting for 11,300 people or 41% of the net gain. The next largest broad occupational group was associate professionals (3,700 people or 14%), closely followed by tradespersons and related workers (3,200 people or 12%). Managers, administrators and professionals accounted for 2,700 people or around 10% of the net interstate migration gain to Queensland between 1996 and 2001.

The managers, administrators and professionals occupational category was the only one representing a higher proportion of the interstate outflow than for the inflow (32% of those moving out compared with 26% of those moving in). One conclusion that may be drawn from these figures is that during the five years to 2001, Queensland did not possess the critical mass to hold highly qualified people in these occupations. This is probably partly related to the relatively few national head offices of public companies, as measured by Business Review Weekly's Top 500 listing.

Queensland also experienced a net interstate migration loss, over the 1996–2001 period, of 2,400 people qualified at the postgraduate and higher degree level. Heavy losses were incurred to NSW (2,300 people) and Victoria (1,250 people), further supporting the contention that there were insufficient jobs during this period in Queensland for the most qualified workers compared with the concentration of head office functions located in Sydney and Melbourne. However, Queensland did receive a net inflow of 1,160 postgraduate and higher degree graduates from the remainder of Australia.

This net loss of higher qualified people to NSW and Victoria was partially offset by a substantial net gain of people with bachelor degree qualifications (12,600 people), dominated by movers from NSW and Victoria. However, the largest net interstate migration gain to Queensland between 1996 and 2001 for any broad type of qualification was at the certificate level (21,800 people). This aligns with the strong gains for advanced clerical and services workers and tradespersons and related workers. Results from the 2006 Census will be useful in determining if these patterns have continued in the light of changing economic conditions, particularly in the context of declining housing affordability, the strengthening of international linkages and increasing flexibility in home location compared with job location.

Migration, and the resulting redistribution of the population, has significant environmental, economic and social implications for Queensland. The continuing attractiveness of Queensland to migrants from both interstate and overseas contributes to the sustained high levels of population growth being experienced in the state. Continuing growth in the outer suburbs, as well as in the non-metropolitan hinterlands and coastal settlements demands an enormous response to the need for infrastructure, services and facilities – from both the public and private sector.

Yet these impacts are not only felt in areas experiencing growth, but also in those regions where population decline is occurring as a result of the outwards migration of people. For many such areas, population losses have been particularly felt with the outflow of young people; a trend with a "double whammy" impact where not only are these people lost to their communities, but so too are any potential offspring. In some areas, these population losses have led to the removal of services, which in turn, has led to further out movement. For many smaller communities, especially those located far from job opportunities and with significant levels of population decline, sustainability into the future is dependent on the establishment of new industries such as tourism (possibly historical and eco-tourism attractions) or boutique agricultural pursuits (such as olives or wine-making), and by offering regional service centre functions to large hinterland areas.

There remain significant environmental and social challenges in some of these communities, challenges that may be difficult for any government to address.

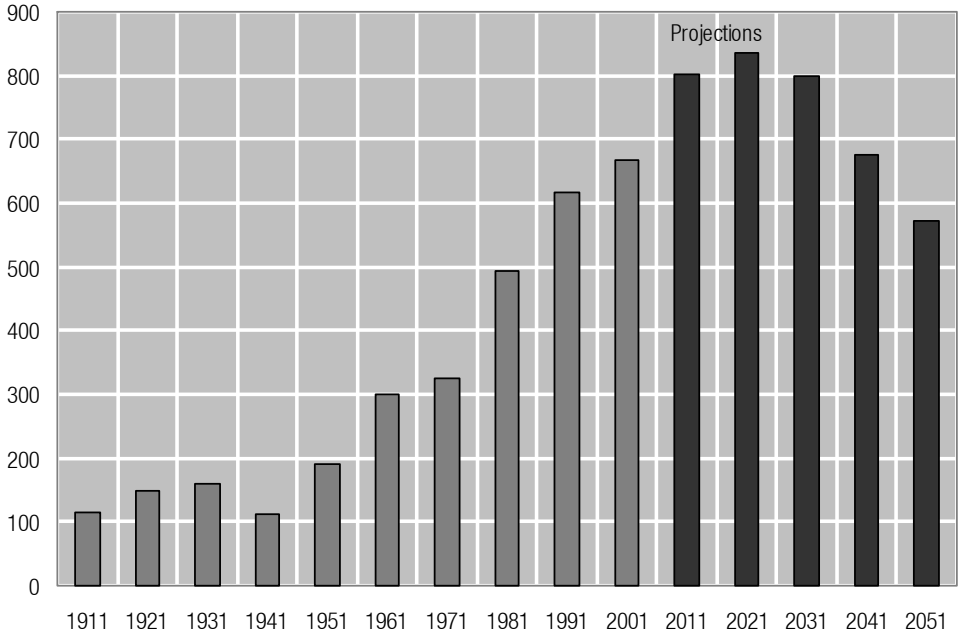
Future population growth

While recent decades have seen the largest amount of population growth ever experienced in Queensland, growth in future decades is projected to be even larger. Growth in the current decade ending 2011 is expected to be around 800,000 people, but this is anticipated to be exceeded in the following decade ending 2021, with a projected increase of around 836,000 people. Growth is then expected to ease slightly, back to current levels, with the levels of increase during the decades ending 2041 and 2051 slowing further to roughly match growth during the 1980s and 1990s (Figure 2-19, below).

This slowing of the very high levels of population growth in the latter part of the projection period is due to a combination of factors. First, the number of births in Queensland in the future is anticipated to increase, due to the increasing number of women of child-bearing age. However, the number of deaths will also increase, due to the number of people, particularly the baby boomers, that will be in the age groups where death is most likely. The large cohort of baby boomers will be aged between 60 and 80 years in 2026.

As the number of deaths approaches the number of births, the amount of natural increase making a positive contribution to population growth will reduce from its current level of around 25,000 people each year to around 10,000 people each year. Following 2051, Queensland is likely to reach a point, already occurring in some other countries and expected to occur much sooner in some other Australian states, where the number of deaths actually exceeds the number of births. This will result in a situation of natural decrease, where the absolute contribution towards population growth will be negative. At this point, any population growth occurring in Queensland will be wholly dependent on net migration gains.

FIGURE 2-19 PAST AND PROJECTED POPULATION GROWTH ('000), QUEENSLAND, 1901–1951 *



* Decades ending; Source: Derived from ABS, Cat No 3105.0.65.001, Australian Historical Population Statistics and Queensland Government, 2006 edition population projections, medium series

The second set of factors contributing to a slowing of Queensland's growth in the future is related to migration. Current assumptions regarding the likelihood of people moving to Queensland reflect the continuing attractiveness of the state, and therefore the continuing relatively high propensity for people moving here. Similarly, these assumptions also reflect the continuation of current patterns that see principally young people moving away from Queensland to both interstate and overseas locations.

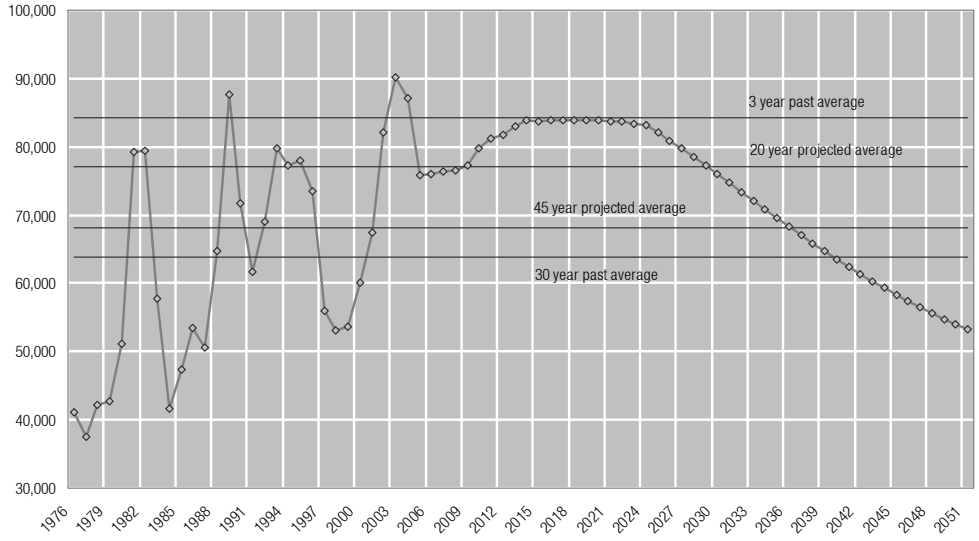
However, as noted above, the peak ages for people to move are during their mid-20s and mid-30s. The share of the Australian population of this age, who are in effect potential movers to Queensland, is expected to diminish over the coming decades as the ageing of the population continues and other older age groups increase more rapidly. This is in part a reflection of past low fertility rates and therefore these smaller cohorts are already a part of Australia's age structure. In addition, as Queensland's population continues to grow, the number of people in the peak age groups for moving will increase and therefore the number of potential movers out of Queensland will increase.

Queensland's past population growth has been extremely volatile on a year-to-year basis, largely due to the fluctuating contribution of net migration. This makes projecting future growth difficult as it is impossible to estimate the same degree of volatility that is likely to occur due to fluctuating patterns of migration in the future. Therefore, comparing past annual population growth with that projected for the future is problematical. This is because projected growth should be seen as an average around which the actual growth is likely to fluctuate. For this reason it is instructive to compare projected annual growth with average past growth figures, and equally revealing to compare past growth to projected average growth figures (Figure 2-20, below).

The interval between 2001 and 2005 was a high growth period in Queensland's recent history. It is evident from Figure 20 that, at only one other point in the past 30 years (1989), has Queensland's annual growth exceeded the average growth from this period. Anticipating that this level of growth will continue into the future would appear to be overly optimistic and it is evident from Figure 20 that the three-year past average exceeds current projections by a sizeable margin.

Taking a longer term view, it was shown above that the last quarter of the 20th century was the period in which Queensland's current period of strong growth occurred.

FIGURE 2-20 PAST AND PROJECTED ANNUAL POPULATION GROWTH, QUEENSLAND, 1976–2051*



* Years ending June; Source: ABS Cat No 3101.0 and Queensland Government, 2006 edition population projections, medium series

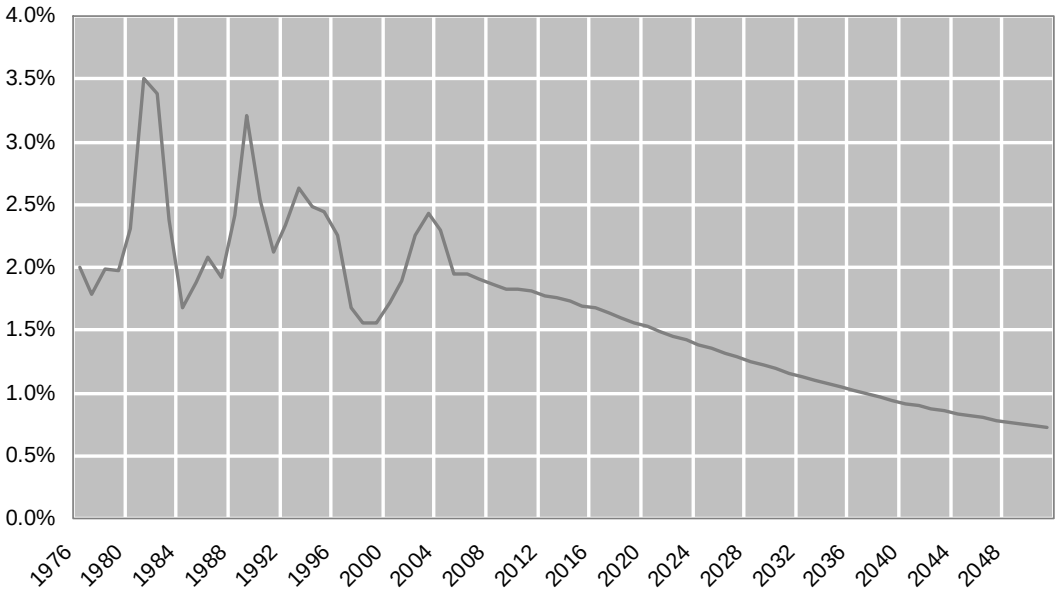
Applying a 30-year past average shows that the current level of growth is 19% above this average figure (an increase of 75,900 people in the year to June 2005 compared with average growth of 63,750 people over the past 30 years). In addition, it is worth noting that future levels of growth are projected to remain above this 30-year past average until 2040

Considering the projected average growth figures in the context of past growth is also revealing. The 20-year projected average growth of 77,100 people each year is slightly above current growth (75,900 people in the year ending June 2005), but also exceeds annual growth in all but eight of the past 30 years. This might then be also considered a reasonably optimistic outlook for Queensland, given past trends. Similarly, the longer term projected average growth, to the end of the projection period in 2051, is 68,175 people each year. This is 11% lower than current growth and exceeds annual growth in all but 12 of the past 30 years.

Of course, these projected average levels of annual growth are not based on past trends, as some believe, but instead take into account a broad range of emerging trends, patterns of age structure and changing propensities. Nonetheless, a comparison of projected levels of growth with past levels of growth, indicates the relatively optimistic view of Queensland's population future embedded in current projections. The real question to be addressed is whether an increase of this magnitude in Queensland's population can be accommodated in a sustainable way, without jeopardising the environment for future generations and in fact, leaving a positive legacy of strong, supportive and efficiently functioning communities.

A similar analysis of growth rates is not appropriate. This is because the percentage growth rate is related to the size of the base population. Thus, if an increase of 75,900 people, which equated to a growth rate of 1.9% in the year ending June 2005 on a population base of 3.9 million people, was to occur in the year ending June 2025, only a growth rate of 1.4% would result (on a base of 5.4 million people). This, and the slowing growth projected for Queensland in the longer term, is the reason for the pattern evident in Figure 2-21 below.

FIGURE 2-21 PAST AND PROJECTED POPULATION GROWTH RATES, QUEENSLAND, 1976 – 2051



* Years ending June
Source: ABS Cat No 3101.0 and Queensland Government, 2006 edition population projections, medium series

Population distribution

Population growth by region

While Queensland has experienced strong population growth over the past three decades, the impact of this growth has been variable in different regions of the state. Table 4 shows the share of the state population and land area in each of the three broad regions referred to above; South East Queensland (SEQ, comprising Brisbane and Moreton SDs), Eastern Regional (comprising Darling Downs SD and all the SDs abutting the east coast) and Western (comprising the three western SDs of South West, Central West and North West).

This table clearly demonstrates that while the Western Region occupies the largest land area of the state (nearly 58%), it contains the smallest share of the Queensland population, a position it has held for at least the last three decades. In addition, the share of the state population in this large geographic region is declining, having more than halved over the last 30 years (from 4.1% in 1976 to 1.8% in 2005).

The Eastern Regional area accounts for the next largest land area of Queensland (nearly 41 %) but also contains a declining share of the state's population. In 1976, the Eastern Region had more than one-third of Queensland's population (37.7%), but that share steadily declined to be only 31.8% by 2005. Both these regions had lower shares of the population in 2005 while, in contrast, SEQ significantly increased its share over the past 30 years. In 1976, 58.2% of Queenslanders lived in the south east corner of the state. Thirty years later, the population had become increasingly concentrated in this relatively small share of the state's total land area (less than 2%), growing to 66.3% of the population, or two out of every three Queenslanders.

To determine whether the Eastern Regional area has benefited from any population increase associated with coastal migration, the region was further divided into a coastal and an inland area. The Eastern Coastal Region includes all LGAs outside SEQ that abut the Pacific Ocean, while the Inland Region includes the remaining LGAs outside of the large Western Region of Queensland.

TABLE 4: SHARE OF LAND AREA AND POPULATION, BROAD REGIONS OF QUEENSLAND, 1976–2005*

		Share of Queensland population (%)						
	Land area (%)	1976	1981	1986	1991	1996	2001	2005p
SEQ	1.3	58.2	59.9	60.7	62.4	64.0	65.4	66.3
Eastern Regional	40.9	37.7	36.6	36.2	34.9	33.8	32.5	31.8
Western	57.8	4.1	3.5	3.1	2.7	2.2	2.0	1.8
Queensland	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

* preliminary
Source: ABS, Cat No 3218.0 and PIFU calculations

TABLE 5: SHARE OF POPULATION, BROAD REGIONS OF QUEENSLAND, 1976–2005*

	1976	1981	1986	1991	1996	2001	2005p
South East Queensland Region#	61.6	63.0	63.7	65.3	66.6	67.9	68.8
Eastern Coastal	24.8	24.3	24.1	23.6	23.5	22.8	22.5
Inland	9.6	9.2	9.1	8.4	7.6	7.2	6.9
Western	4.1	3.5	3.1	2.7	2.2	2.0	1.8
Queensland	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

* preliminary
# Includes Toowoomba
Source: ABS, Cat No 3218.0 and PIFU calculations

Table 5 shows that, as a share of the total Queensland population, both the Eastern Coastal Region and the Inland Region have declined over the period since 1976.

In 1976, the Eastern Coastal Region accounted for close to one-quarter of Queensland's population, with this share declining to 22.5% by 2005. Similarly, the Inland Region went from having nearly one in every ten Queenslanders in 1976 (9.6%) to 6.9% some 30 years later. However, it is important to recognise that despite the share of Queensland's population declining in both these regions, each recorded significant amounts of population growth over the 30-year period. It was simply that population growth in SEQ has been both more substantial and faster than in the other regions (Figure 2-22, below).

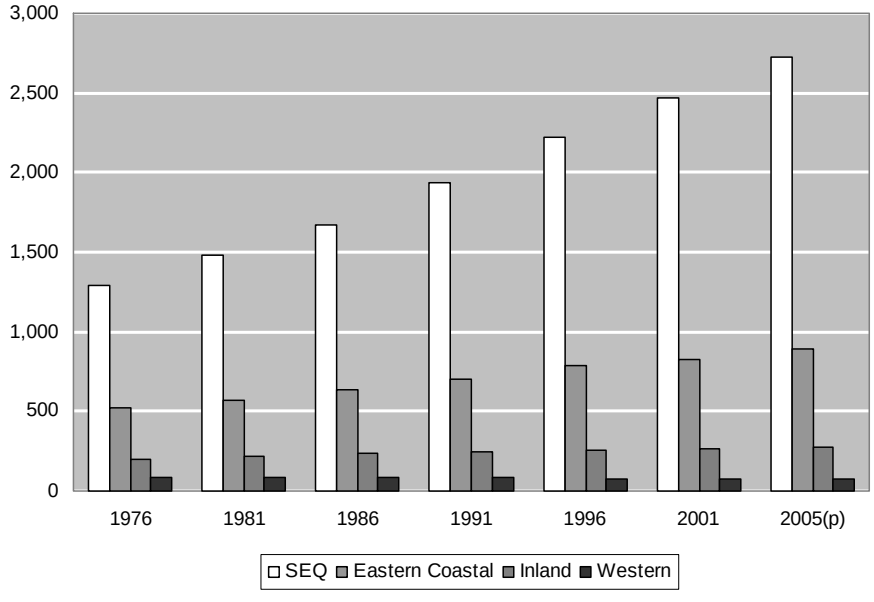
Over the 30 years since 1976, the population of SEQ has more than doubled from almost 1.3 million people to 2.7 million in 2005, equivalent to percentage growth of almost 112%. In comparison, the population of the Eastern Coastal Region increased by 72% and the Inland Region by 35%, while the population of the Western Region declined by 12%. This population change was in the context of Queensland's population increasing by 90% over the 30-year period.

Projected population growth by region

Continuing strong growth is projected to occur in Queensland's coastal regions and particularly in SEQ over the coming two decades. From around 2.68 million people in 2006, SEQ is projected to grow to 3.27 million in ten years time and reach 3.84 million by 2026. This increase of 1.16 million people over the next two decades equates to average increases of around 58,000 people each year. In comparison, growth in SEQ over the past two decades amounted to 1.09 million people, or an average of 54,550 people each year.

As Table 6 and Figure 2-23 (page 24) show, the share of the state population in SEQ is increasing as more people choose to live in this corner of Queensland. Thirty years ago, 58.2% of Queenslanders lived in SEQ, but this share steadily increased to reach over 60% in 1986, 64% in 1996 and 66.4% in 2006. Medium series projections indicate that by 2026 nearly 69% of the Queensland population will live in SEQ, which represents only 1.3% of the total land area of the state.

FIGURE 2-22 POPULATION, BROAD REGIONS OF QUEENSLAND, 1976–2005*



* preliminary
Source: ABS, Cat No 3218.0 and PIFU calculations

This increase has been at the expense of the other two broad regions of Queensland. The Eastern Region has the next largest share of the population (31.8% in 2006), but this share is projected to decrease slightly over the next 20 years to reach 30.6% in 2026. Nonetheless, the Eastern Region is projected to grow by more than 400,000 people over the coming 20 years. From 1.28 million in 2006, the population is projected to grow to 1.71 million by 2026, equivalent to an average increase of more than 21,000 people each year.

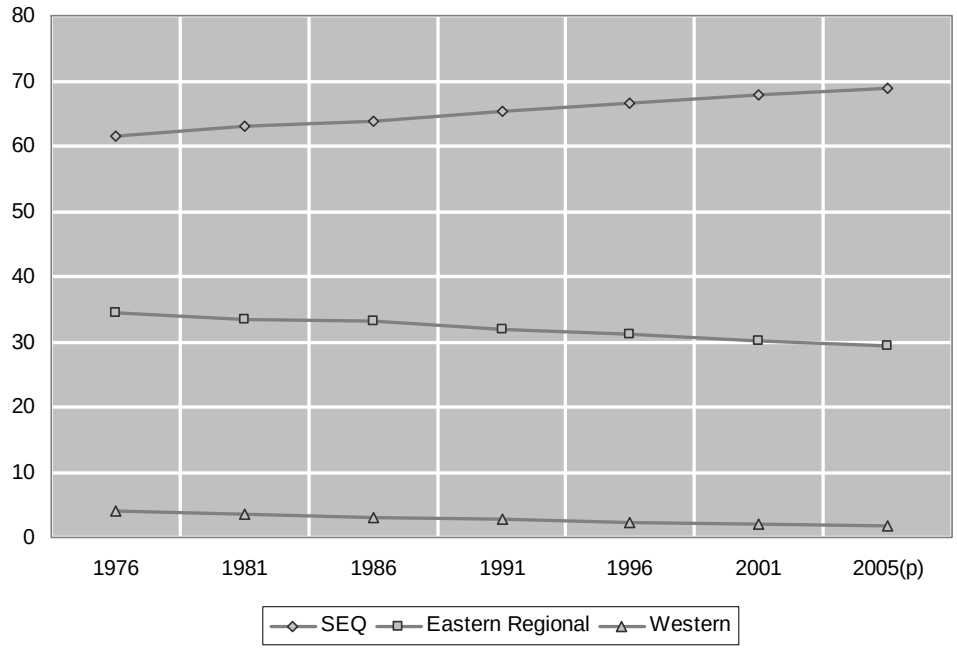
The Western Region has only a small population in a large geographic area and in 2006 accounted for 1.8% of Queensland's population. This share is projected to decline further to reach 1.3% in 2026. Despite this decline in the share of the state population, the population of the Western Region is projected to remain largely stable over the next two decades (growth of around 1,500 people) and reach nearly 75,000 people by 2026.

TABLE 6: POPULATION AND SHARE OF POPULATION, QUEENSLAND REGIONS, TEN YEARS ENDING 30 JUNE 2006, 2016 AND 2026

	2006		2016		2026	
Region	No.	%	No.	%	No.	%
Eastern Regional Queensland *	1,284,898	31.8	1,496,526	31.0	1,707,699	30.6
Western Regional Queensland	73,440	1.8	73,781	1.5	74,975	1.3
South East Queensland#	2,683,921	66.4	3,269,620	67.8	3,843,894	68.8
Queensland ^	**4,041,368**	**100.0**	**4,823,408**	**100.0**	**5,583,956**	**100.0**

Includes high series projections for Local Government Areas in Mackay and Fitzroy Statistical Divisions
Comprises LGAs in Brisbane and Moreton SDs
Medium series projections
Source: Queensland's Future Population 2006 edition

FIGURE 2-23 PERCENTAGE SHARE OF QUEENSLAND POPULATION IN BROAD REGIONS, 1976–2026



Source: ABS, Cat No3218.0, Queensland's Future Population 2006 Edition and PIFU calculations

Population composition

Age structure

Queensland's population has grown from 2.6 million people in 1986 to just over 4 million people in 2006 (an increase of 54.0%). However, due to patterns established some years earlier when larger numbers of children were born in certain years (for example the baby boom years of 1946–65) and also because of the specific age structure of migration patterns, some age groups in Queensland's population have increased more rapidly than others.

Children aged 15 years and under (28.4%) and young people aged between 15 and 29 years (26.2%) increased at just over half the rate of the total population (54.0%) between 1986 and 2006, while people of young working age (30–44 years) increased at almost the same rate as the total population (52.8%). In contrast, each of the remaining 15 year age groups, that is, age groups covering people aged 45 years or more, grew faster than the population as a whole. For example, those aged 90 years or more grew by more than 200% over the 20 years to 2006, while people aged between 75 and 89 years also experienced strong growth of 123.1%. People of older working age (45–59 years) grew by more than 100% over this period (121.1%) and younger retirees (60–74 years) grew by 65.6%.

While Queensland's population is projected to continue growing over the next 20 years, from 4 million in 2006 to 5.6 million in 2026, the percentage increase is expected to slow to 38.2%. People aged less than 60 years are projected to increase at a slower rate than the population as a whole with the smallest increase expected among those aged less than 15 years (18.2%), as continuing low fertility rates impact. Conversely, it is among the older age groups, 60 years and over, that the largest increases are expected. Again, people aged 90 years or more are projected to experience the largest percentage growth (194.6%) over the 20 years to 2026, albeit at a slower rate than that of the past 20 years. People aged between 75 and 89 years are projected to grow by 120.4%, while those aged 60 to 74 years are expected to increase by 96.9% over the coming two decades.

However, while growth rates indicate the speed at which each of these age groups has grown, it is the amount of absolute growth that determines increased demand for infrastructure, goods and services in our communities (Table 7). For example, while Queensland's percentage increase is projected to slow over the next two decades to 38.2%, compared with 54.0% over the past two decades, the absolute population increase is projected to be slightly higher (1.5 million and 1.4 million people respectively).

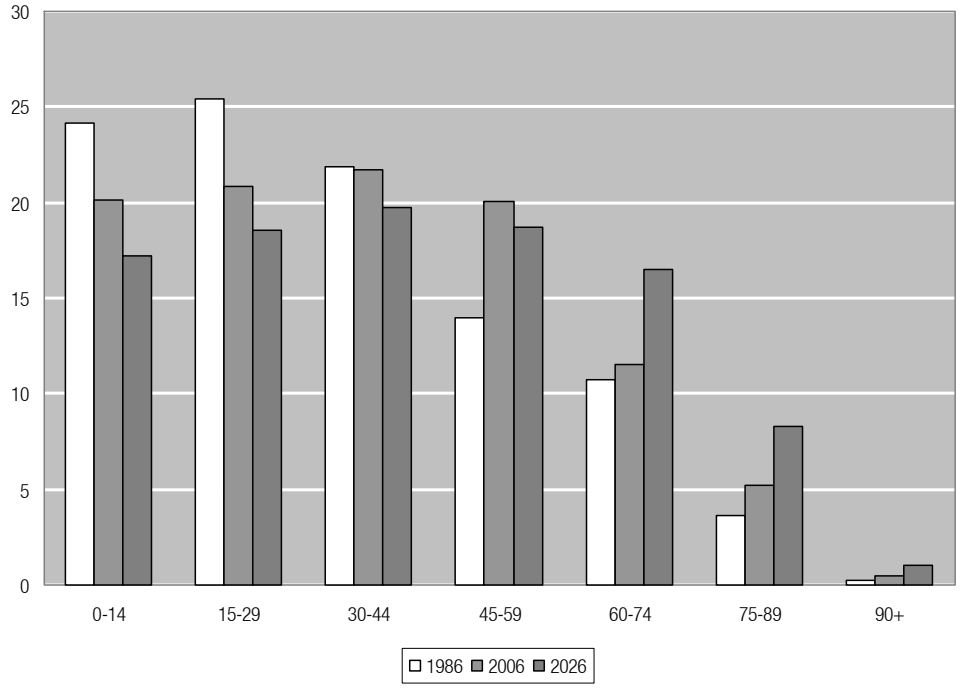
Another way of viewing these numbers is to consider each age group's share of the total population. These trends clearly show that age groups under 45 years are declining, while those over 45 years are increasing as a share of Queensland's total population (Figure 2-24, page 26).

TABLE 7: AGE STRUCTURE AND ABSOLUTE INCREASES, QUEENSLAND, 1986, 2006 AND 2026

	1986	2006	2026	1986–2006	2006–26
	No.	No.	No.	Change	Change
0–14	633,317	813,182	961,119	179,865	147,937
15–29	667,048	841,532	1,034,346	174,484	192,814
30–44	574,975	878,389	1,102,735	303,414	224,346
45–59	366,639	810,777	1,043,301	444,138	232,524
60–74	281,856	466,844	919,333	184,988	452,489
75–89	94,517	210,866	464,847	116,349	253,981
90+	6,243	19,779	58,278	13,536	38,499
Total	2,624,595	4,041,369	5,583,959	1,416,774	1,542,590

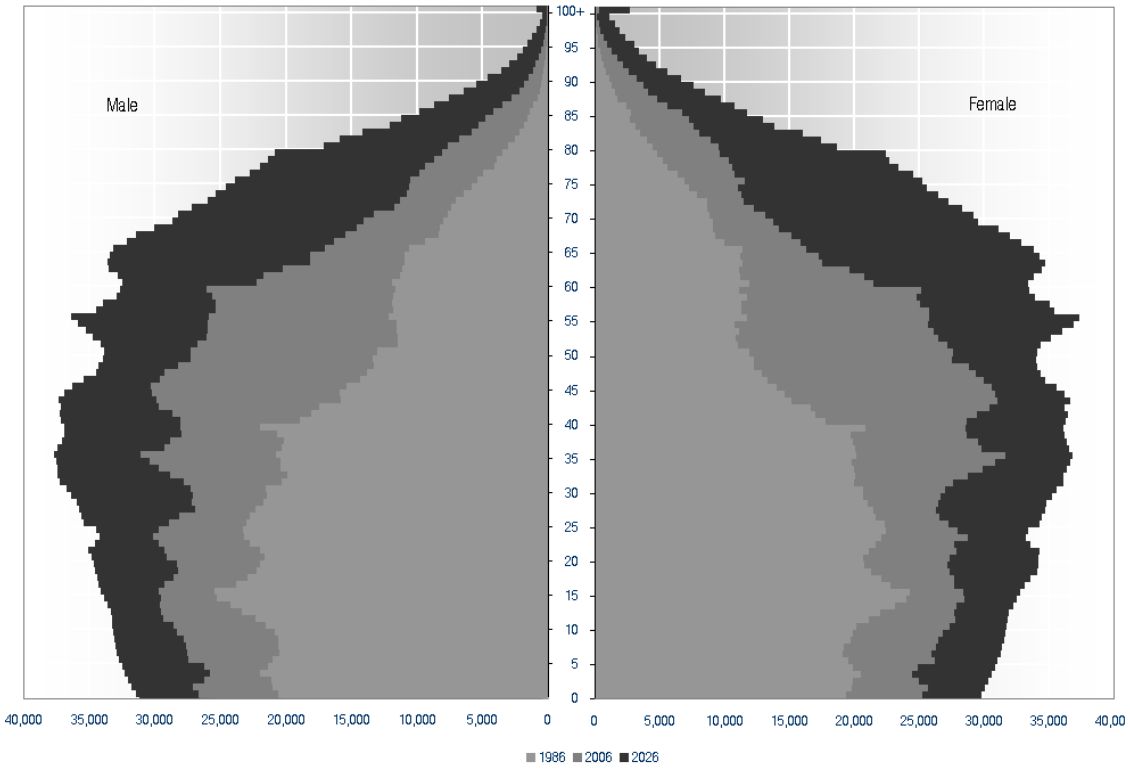
Source: Queensland Government population projections, 2006 edition, medium series

FIGURE 2-24 PERCENTAGE AGE STRUCTURE OF QUEENSLAND'S POPULATION, 1986, 2006 AND 2026



Source: ABS Cat No 3201.0, Queensland Government population projections, 2006 edition, medium series

FIGURE 2-25 AGE STRUCTURE, QUEENSLAND, 1986, 2006 AND 2026



Source: ABS Cat No 3201.0, Queensland Government population projections, 2006 edition, medium series

However, it is important to note that age groups under 45 years still represent the majority of the population (nearly 63% of the population in 2006). Although these age groups are expected to decline as a share of the population to 55.5% by 2026, they will still account for over half of all Queenslanders.

Changes to Queensland's age structure over the 40-year period to 2026 are summarised in Figure 2-25, page 26. Clearly evident are the lead cohorts of the baby boomers (aged 60 in 2006) and the baby boom echo, or children of the baby boomers. Also evident is the large impact the baby boomers have made on the overall numbers and the large increases among the older age groups both in the past 20 years and projected for the coming 20 years. This will have significant implications for all aspects of sustainability as more people create more environmental pressures, fewer people in the main working ages lead to concerns regarding the ability to support those in the dependant age groups and the smaller number of children in families change the face of our communities with more couple-only families and people living alone. These demographic changes will place pressure on all three aspects of sustainability, with resultant impacts in the environmental, economic and social dimensions of our lives.

Ethnicity and the Indigenous population

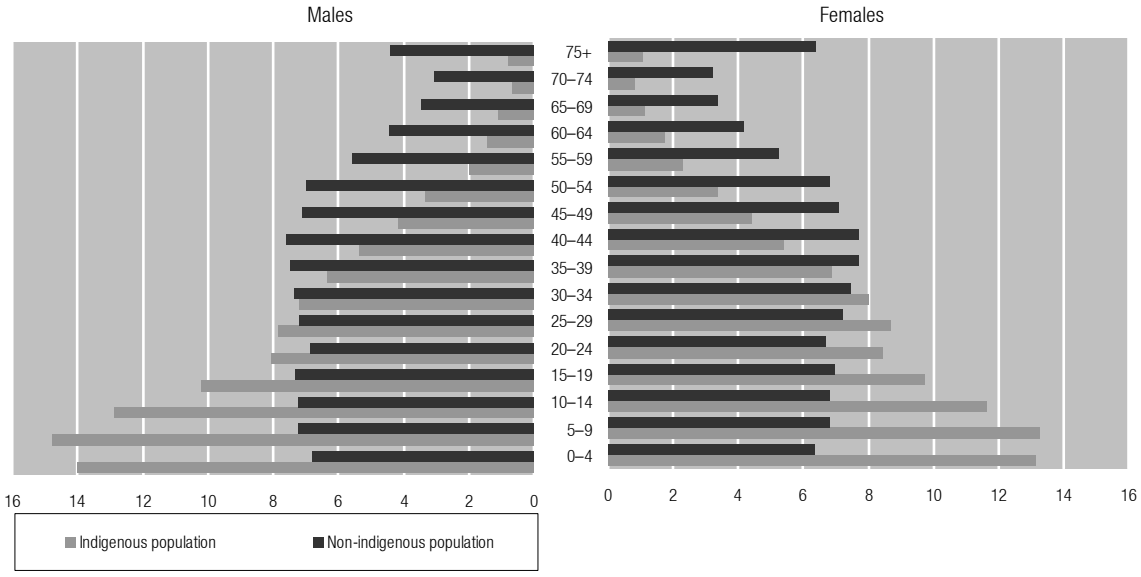
Queenslanders are predominantly Australian-born with nearly eight out of every ten (79.1%) usual residents of Queensland in 2001 indicating that they were born in Australia. This represents a larger proportion of the population than in either NSW (70.4%) or Victoria (70.3%), each of which has experienced higher levels of sustained overseas migration than Queensland.

For those Queenslanders who were born overseas, Europe was the dominant birthplace (302,665 people or 8.6% of usual residents in 2001), followed by South-East Asia and North-East Asia (85,658 people or 2.4%). Despite persons born in these East-Asian countries accounting for a relatively small share of the population, they were increasing at a faster rate than the European-born residents. Between 1996 and 2001, the number of Queensland usual residents born in South-East Asia and North-East Asia increased by 11,146 people or 15.0%. In contrast, the increase in European-born Queenslanders was only 3,076 people or 1.0%. Due to the earlier period in which many European-born people moved to Australia, they tend to be older and may therefore be considering returning to their birthplace or be in need of specialised services as they age. For example, language can become a more difficult problem as people age. In Queensland in 2001, 253,691 people spoke a language other than English at home (7.2%).

In 2001, 112,772 people reported that they were Indigenous, representing 3.2% of usual residents in Queensland. This was an increase of 17,254 people since 1996, although some of this growth is due to an increased propensity to identify as Indigenous. In 2001, Queensland was home to nearly one-quarter (23.7%) of the Australian Aboriginal population but also accounted for nearly two-thirds of Torres Strait Islanders (63.4%) and half of people who said they were both Aboriginal and Torres Strait Islanders (51.7%). Indigenous people differ from the community as a whole in terms of their demographic, economic, social and cultural characteristics.

For example, the Queensland Indigenous population with a median age of 20.1 years is much younger than the non-Indigenous population (median age of 35.6 years)Figure 2-26, page 28). This is partly due to the younger age of Queensland Indigenous mothers (25.1 years compared with 29.8 years for all mothers in Queensland). Indigenous people also have a lower life expectancy, with the median age at death being 53.7 years for Queensland Indigenous males compared with 76.2 years for non-Indigenous Queensland males and 57.9 years and 82.5 years for females respectively. In addition, a high number of Indigenous deaths occur in younger age groups. In 2004, only one-third of Indigenous deaths were to people aged 65 years or more while more than three-quarters of non-Indigenous deaths in Queensland occurred in this age group. More than one in every ten Indigenous deaths (14.6%) resulted from external causes including transport accidents, intentional self-harm and assault (compared with 6.6% of non-Indigenous deaths). Diabetes mellitus also accounted for a much higher proportion of Indigenous deaths (7.4%) than of non-Indigenous deaths (2.3%). (See also Queensland's Aboriginal and Torres Strait Islander Population (2006)).

FIGURE 2-26 PERCENTAGE AGE STRUCTURE INDIGENOUS AND NON-INDIGENOUS POPULATION*, QUEENSLAND, 2001



* Indigenous population estimates are experimental, estimated resident population
Source: ABS, Cat No 4713.3.55.001

Income and qualifications

While income statistics can provide some indication of wealth, they afford only a limited picture of income status. Many people have assets that provide them with financial security, such as owning their own home, and can live quite comfortably on a smaller income than that required to support a mortgage. Nonetheless, Queensland ($359) had the third lowest median weekly individual income in 2001, after Tasmania ($314) and South Australia ($345). The median weekly individual income in Queensland in 2001 was 4.5% lower than the figure for Australia (Table 8).

In part, these lower incomes may be related to the levels of qualifications held by people living in Queensland, qualifications that are somewhat lower than the Australian average. In 2001, only 2.5% of Queenslanders held a postgraduate degree, graduate diploma or graduate certificate. While this figure was up from only 2.0% in 1996 and 1.3% in 1991, it was still considerably lower than the comparable figure for all of Australia in 2001 of 3.2%. Similarly, the proportion of the Queensland population in 2001 that held a bachelor degree (8.3%) was up from the 1996 figure of 6.6% and much higher than the 1991 figure of 4.7%. While this increase in the number of people with tertiary qualifications is a national phenomenon, the proportion of the Queensland population holding a bachelor degree in 2001 (8.3%) remained considerably below the proportion for all of Australia (9.7%)

TABLE 8: MEDIAN WEEKLY INDIVIDUAL INCOME, 2001

State	Median income
New South Wales	$386
Victoria	$380
Queensland	$359
South Australia	$345
Western Australia	$374
Tasmania	$314
Northern Territory	$442
Australian Capital Territory	$543
Australia	**$375**

Source: ABS, Cat No 2015.0

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It is only at the level of advanced diploma, diploma or certificate that the qualifications of Queenslanders almost matched the Australian average. In 2001, 21.5% of people in Queensland held such a qualification compared with 21.8% of Australians. In total, more than two-thirds (67.7%) of people in Queensland in 2001 reported that they did not have a qualification, did not state their qualification or had a qualification outside the scope of the classification (compared with 65.3% of people across Australia).

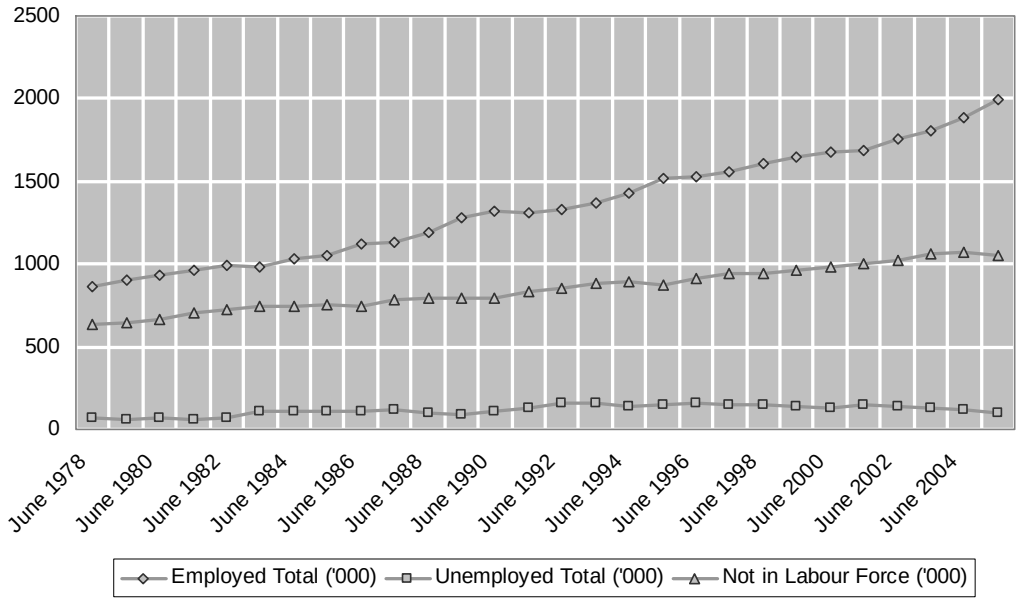
Changing labour force status

As the population grows, the size of the labour force should also grow. This has been the case in Queensland over the past 30 years where the number of people in the labour force has increased from 934,000 in June 1978 to 2.08 million people in June 2005, an increase of more than 120%. However, this growth hides some other significant changes in the composition of the labour force. For example, while the unemployment rate has plummeted from 7.1% to 4.7%, the proportion of Queenslanders working full-time has decreased from 84.5% in 1978 to 71.6% in 2005 and the proportion working part-time has increased from 15.5% to 28.4%.

Between 1978 and 2005 the number of people in the labour force increased by 123.5% with the number employed increasing by 129.4%. However, the number working full-time increased by only 94.2% while those working part-time increased by 322.1%. In contrast, the numbers who were unemployed increased by only 46.4% and the number not in the labour force by 65.0% (Figure 2-27, below).

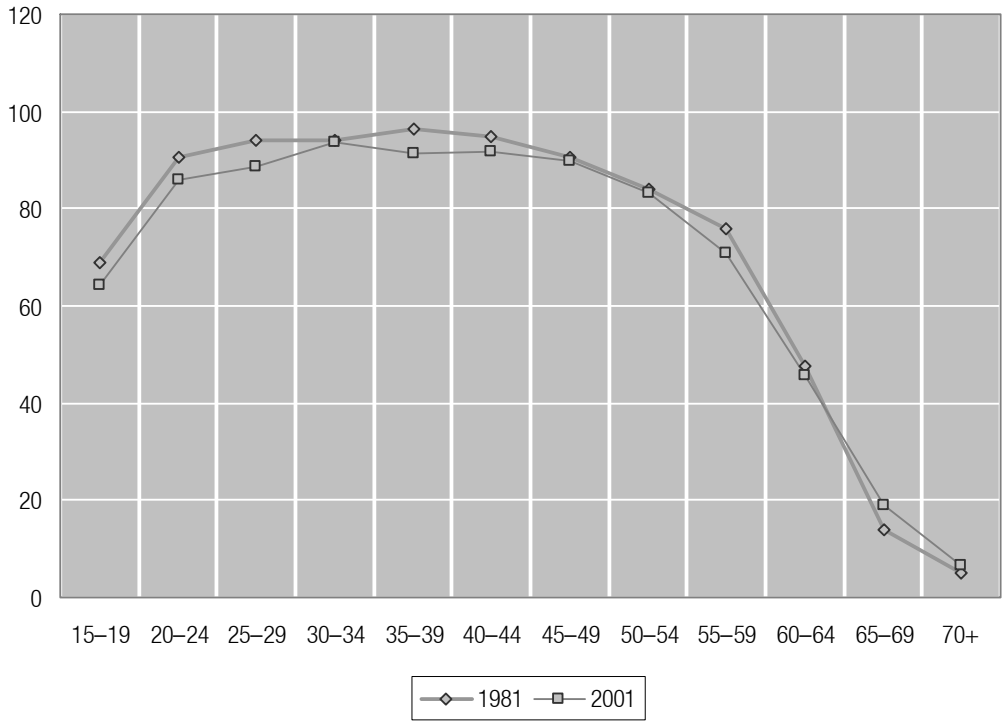
There have also been some changes in the way that males and females of various ages participate in the labour force. For males, very high proportions aged between 30 and 49 years are continuing to participate in the workforce. For example, for Queensland males aged between 30 and 35 years, 93.5% were in the labour force in 2001, down slightly from 94.1% in 1981. In general, participation rates for younger males (15–29 years) have declined marginally as have those for males aged 35–44 years. In addition, there has been a slight decline (from 75.8% in 1981 to 70.9% in 2001) in participation rates for males aged between 55 and 59 years, the age at which some are proceeding to early retirement. The only age group for which there was an increase in male participation rates was 65 to 69 years, up from 13.9% in 1981 to 18.9% in 2001 (Figure 2-28, page 30).

FIGURE 2-27 LABOUR FORCE STATUS, QUEENSLAND, 1978–2005



Source: ABS, unpublished data

FIGURE 2-28 PERCENTAGE MALE LABOUR FORCE PARTICIPATION RATES BY AGE GROUP, QUEENSLAND, 1981 AND 2001



Source: ABS, unpublished data

By contrast, participation rates for females have changed more dramatically over the two decades to 2001, and unlike male participation rates, have increased for each age group. The largest increase was for females aged between 45 and 49 years, where only just over half (51.2%) were participating in the labour force in 1981, but this had increased to over three-quarters (76.7%) by 2001 (Figure 2-29, page 31). These patterns of labour force participation, as well as future trends in both participation and age structure, must be considered for their impact on the economy, the size of the labour force and the availability of specific skills.

Families and households

There have been considerable changes to family and household composition over recent decades. In terms of household size, for example, the average in Queensland has declined from 2.89 persons per household in 1986 to 2.57 persons in 2001. This is a direct result of fewer children in each family as the total fertility rate declined, as well as an increase in the number of lone-parent families and people choosing to live alone.

COUPLE FAMILIES

Queensland's population increased from 2.4 million in 1986 to 3.3 million in 2001. The number of parents in couple families also increased from 700,470 to 814,600 during this period, reflecting strong growth in the population. However, the proportion of the population made up of this family type steadily declined, providing evidence of the underlying trend away from the traditional family structure dominated by couple families with children. In Queensland in 1986, 29.0% of the population were parents in couple families. Over the following years this proportion declined to 28.1% in 1991, 26.1% in 1996 and reached 24.7% in 2001. This trend was evident in all the main age groups, although the decline was most apparent among those aged between 25 and 44 years as young couples increasingly deferred childbirth (Figure 2-30, page 31).

FIGURE 2-29 PERCENTAGE FEMALE LABOUR FORCE PARTICIPATION RATES BY AGE GROUP, QUEENSLAND, 1981 AND 2001

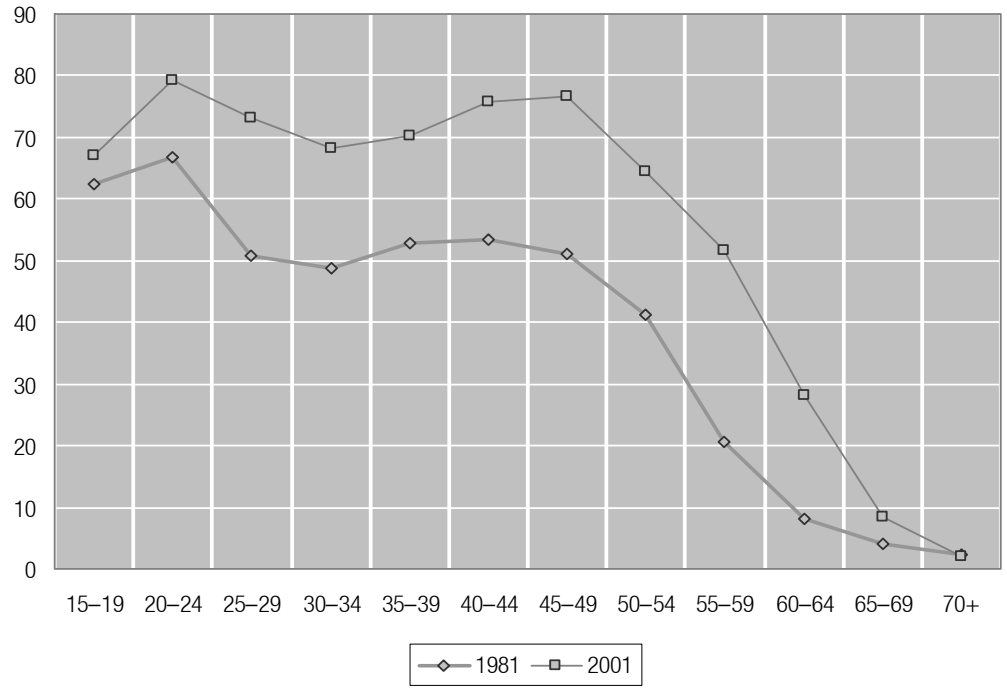
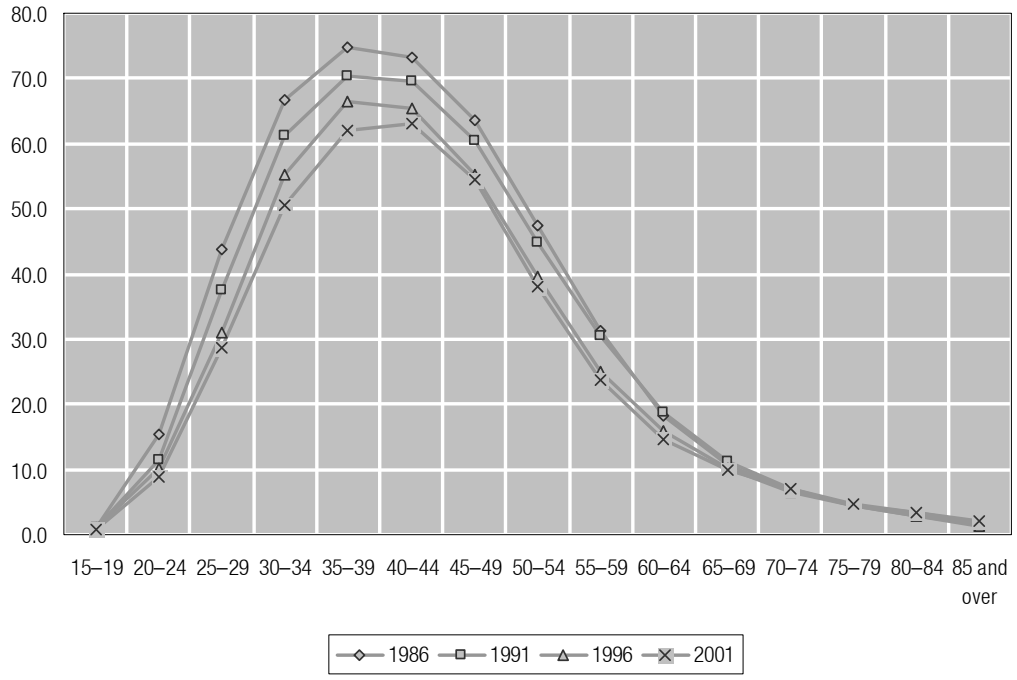


FIGURE 2-30 PERCENTAGE POPULATION IN A COUPLE FAMILY, QUEENSLAND, 1986, 1991, 1996 AND 2001



Source: ABS, unpublished data

COUPLE-ONLY FAMILIES

While the trend over recent years has been away from couple families, family types that have increased have included both couple-only families and lone-parent families. At the same time as Queensland's total population increased by 36.3% between 1986 and 2001, the number of people in couple-only families increased by 63.7%. However, this increase has been largely among people aged between 50 and 64 years in 2001, an age group that included a large number of the baby boom cohort (Figure 2-31, page 33). These people have reached the age where their children have left home to form families of their own and they are now in the category sometimes referred to as "empty nesters".

LONE PARENT FAMILIES

Equally significant changes are evident in the increasing likelihood of being a lone parent. Over the 15 years to 2001, the number of lone parent families in Queensland increased by 71,000 to 149,850. Such families may be formed by choice, but others have resulted following separation or divorce. In Queensland in 1986, the proportion of people aged between 40 and 44 years that were lone parents was 6.6%. By 2001, this figure had increased to 9.8%, along with 9.3% of people aged 35 to 39 years and 8.4% of those aged 45 to 49 years. The majority of lone parents in Queensland in 2001 were female, outnumbering male lone parents by nearly 100,000 people. Between 1986 and 2001, the number of male lone parents increased by 11,600 to 24,900, while the number of female lone parents increased by 59,400 to 124,900 (Figure 2-32, page 33). However, of particular importance in terms of the social implications, are the increasing numbers of children in lone-parent families.

CHILDREN IN FAMILIES

The trend towards living in lone-parent families is evident among children aged to 15 years. For some age groups it is becoming increasingly common to live in this type of family, although the majority of children still live in couple families. In Queensland in 2001, one in every five children aged between 5 and 9 years and nearly one in every four children aged between 10 and 14 lived with one parent only (Figure 2-33, page 34).

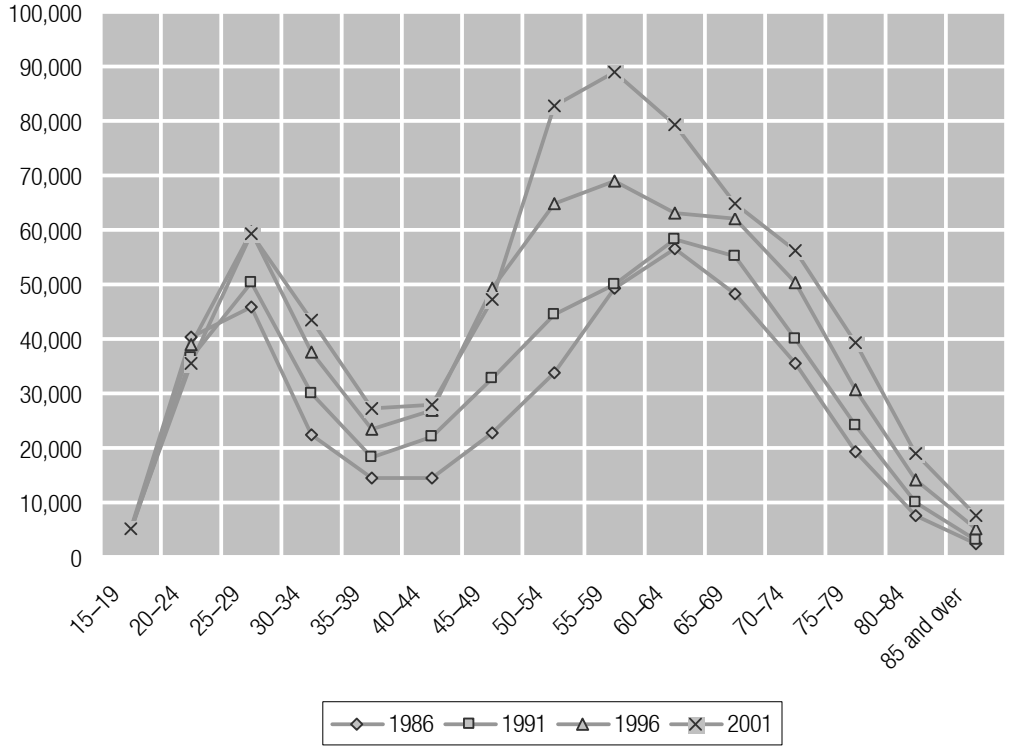
Even as the majority of children in Queensland continue to live in couple families (nearly nine out of every ten children aged between 0 and 14 years in 1986 and nearly eight out of every ten in 2001), there has been a strong trend towards children living in lone-parent families. In 1986, 12.2% of 0 to 14 year old children lived in lone parent families, with this proportion rising to 21.0% by 2001. The number of children aged less than 15 years increased by 21.0% to nearly 125,700 over the 15 years to 2001. Over this period, the number of children living in couple families increased by only 9.0% compared with an increase of 108.4% in the number living in lone-parent families (Table 9).

TABLE 9: CHANGE IN LIVING ARRANGEMENTS FOR PERSONS AGED 0–14 YEARS*, QUEENSLAND, 1986 TO 2001

			Change 1986–2001	
	1986	2001	No.	%
In couple families	599,361	725,046	125,685	21.0
In lone-parent families	522,722	569,535	46,813	9.0
Total	72,909	151,970	79,061	108.4

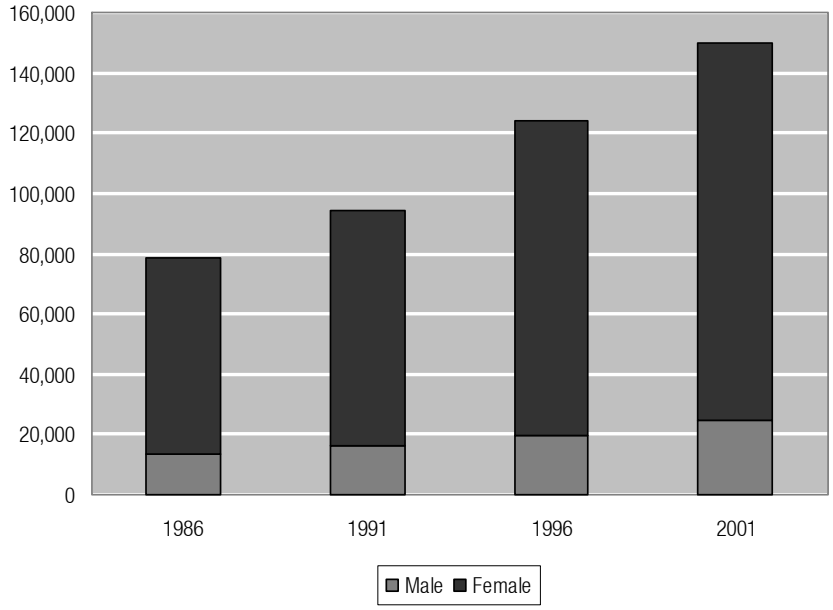
* Not all living arrangements are reported in this table. A small number of persons aged 0–14 also lived in non-private dwellings. Source: ABS, unpublished data.

FIGURE 2-31 NUMBER OF PEOPLE WHO WERE PARTNERS IN A COUPLE-ONLY FAMILY, QUEENSLAND, 1986, 1991, 1996 AND 2001



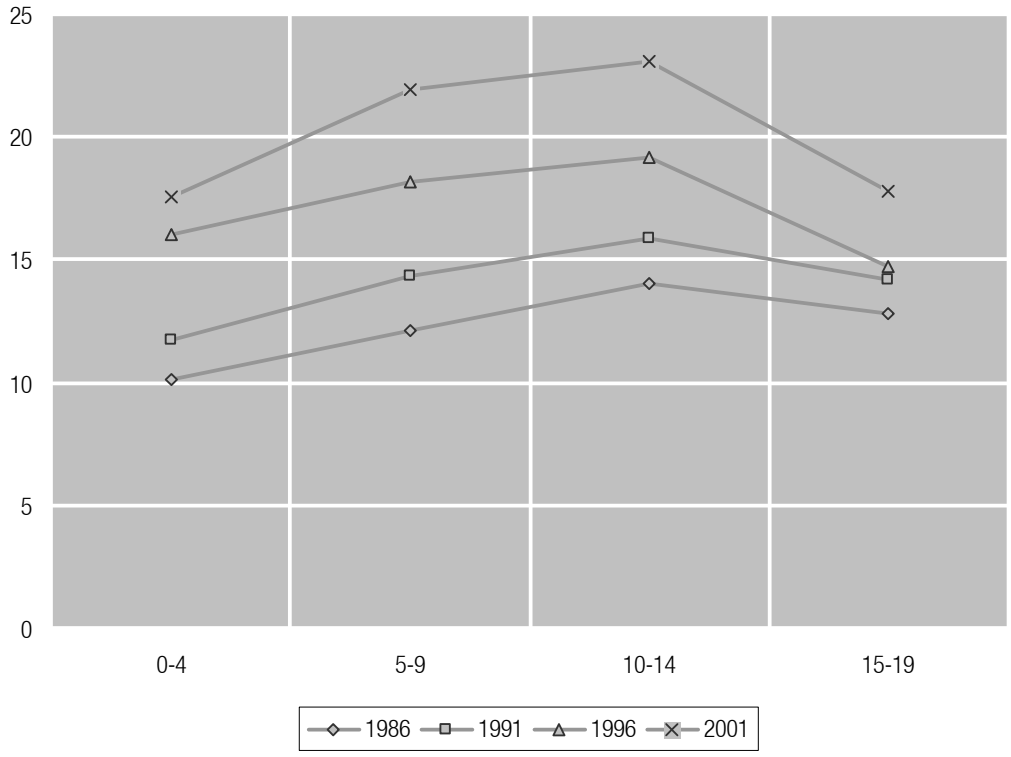
Source: ABS, unpublished data

FIGURE 2-32 NUMBER OF PEOPLE IN LONE-PARENT FAMILIES, QUEENSLAND, 1986, 1991, 1996 AND 2001



Source: ABS, unpublished data

FIGURE 2-33 PERCENTAGE OF CHILDREN IN LONE-PARENT FAMILIES BY AGE GROUP, QUEENSLAND, 1986, 1991, 1996 AND 2001

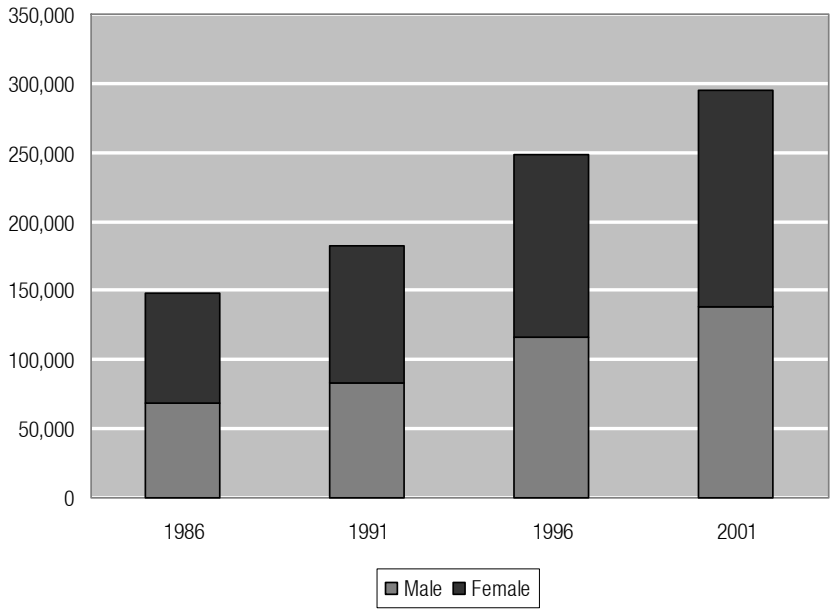


In summary, there have been significant changes to the living arrangements of Queensland's children aged less than 15 years over the past 15 years. These changes are not only significant in terms of individual children's lives but represent a considerable change in the social structure of our communities. Lone parent families may find it more difficult to combine employment and child care but they also face difficulties in managing household finances, undertaking normal parental tasks like after-school activities and sport, as well as finding time to participate in voluntary activities like tuckshop duties or meals on wheels. While many dual income couples are also time poor, the additional income achieved by two earners goes some way towards compensating by allowing for the possibility of a higher standard dwelling or purchasing household help. Combined with the increasing number of families where there is no income earner, children in these and lone-parent families may be subjected to significant disadvantages.

LONE PERSON HOUSEHOLDS

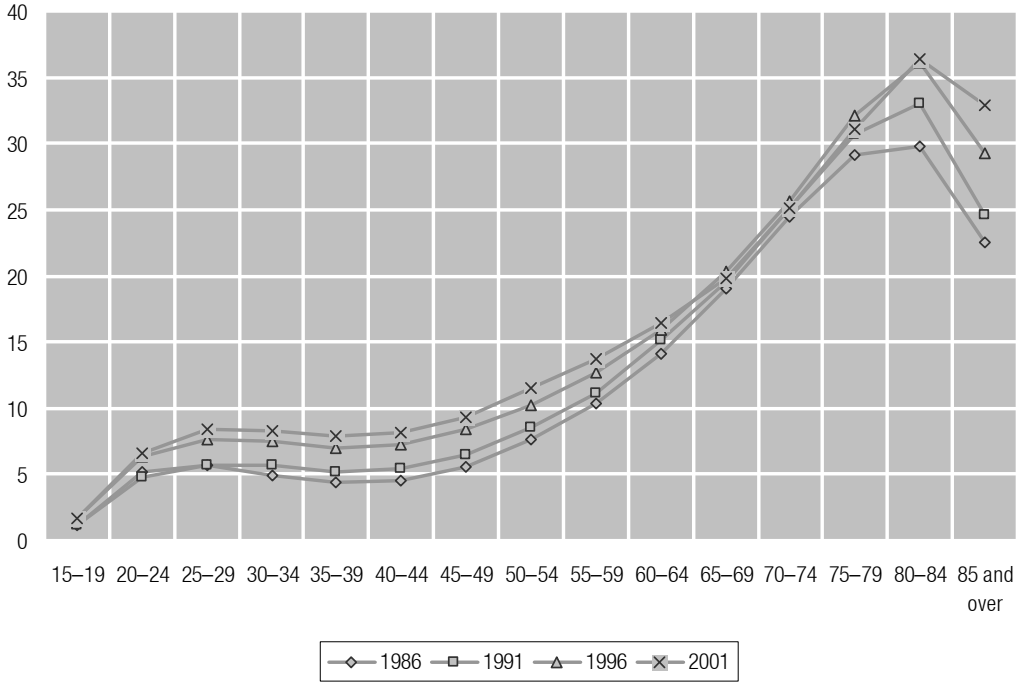
The number of people living alone in Queensland rose from 148,500 in 1986 to 295,520 in 2001, an increase of nearly 100% (99.0%). The biggest increase occurred between 1991 and 1996 when the number grew by over one-third (36.2%) or 66,940 additional people living alone. This was nearly twice the growth in lone-person households in Queensland between 1986 and 1991 (33,880). Since 1996, the increase in lone-person households has slowed with an additional 47,190 people living alone or an increase of 19.0% by 2001. Although most people living alone are female, the number of male lone-person households grew more quickly over the 15 years to 2001 resulting in a slowly increasing proportion from 45.9% of all lone person households in 1986 to 46.8% in 2001 (Figure 2-34, page 35).

FIGURE 2-34 LONE-PERSON HOUSEHOLDS, QUEENSLAND, 1986, 1991, 1996 AND 2001



Source: ABS, unpublished data

FIGURE 2-35 PERCENTAGE OF LONE PERSON HOUSEHOLDS BY AGE GROUP, QUEENSLAND, 1986, 1991, 1996 AND 2001



Source: ABS, unpublished data

While in the past older people occupied the majority of lone-person households, this situation is changing. In 1986, people aged over 55 years occupied 57.1% of lone person households, but by 2001 this proportion had declined to only 51.0% of lone person households. Despite this change, the proportion of each age group that are lone-person households has changed very little and remains much higher among the older age groups (Figure 2-35, page 35).

However, a consideration of the growth in numbers of lone-person households by age shows clearly that the largest growth has been among younger age groups. Between 1986 and 2001, there was an increase of 80,990 people aged less than 55 years living alone compared with an increase of 66,030 people aged 55 years or more (Figure 2-36, page 36). While there is no doubt that there has been an increase in the numbers of younger people living alone, this large growth is not likely to be repeated as much of the increase can be attributed to the movement of the baby boom generation through these age groups.

The increasing numbers of younger male lone person households may be attributed to family and relationship breakdowns as well as changing preferences. It is clear that younger lone person households tend to be male, while older lone person households tend to be female (Figure 2-37, page 37).

HOUSEHOLD PROJECTIONS

Due to declining household size, the number of households is anticipated to grow faster than the population. Between 2001 and 2026, Queensland's population was projected to grow by 53.9% (Queensland Government 2006 edition, medium series projections) while the number of households is projected to increase by 73.3% (Queensland Government, 2007). This more rapid rate of increase in the number of households will contribute to rapidly escalating demand for many goods, services and infrastructure, particularly those demands that are household-based.

The number of households in Queensland is projected to increase by two-thirds from 1.38 million in 2001 to 2.40 million in 2026, an increase of 1.01 million households. While the total number of households is projected to grow by 73.4%, different types of households are expected to increase at different rates (Figure 2-38, page 37). Slowest growing household types will be couple families with children (19.8%) while lone parent households (68.4%) and group households (75.8%) are expected to grow at almost the same rate as the total number of households.

FIGURE 2-36 GROWTH IN LONE PERSON HOUSEHOLDS, QUEENSLAND, 1986–2001

Source: ABS, unpublished data

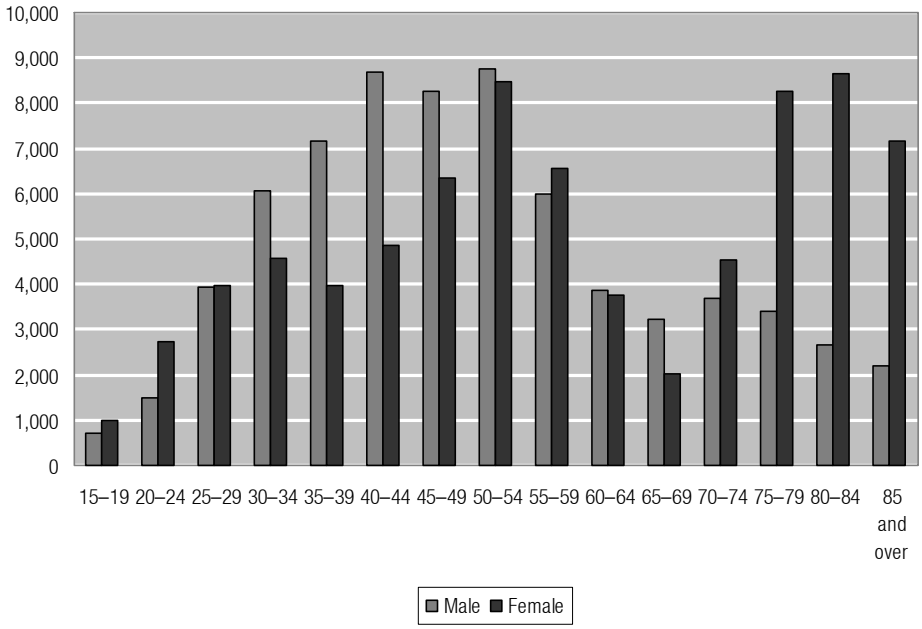
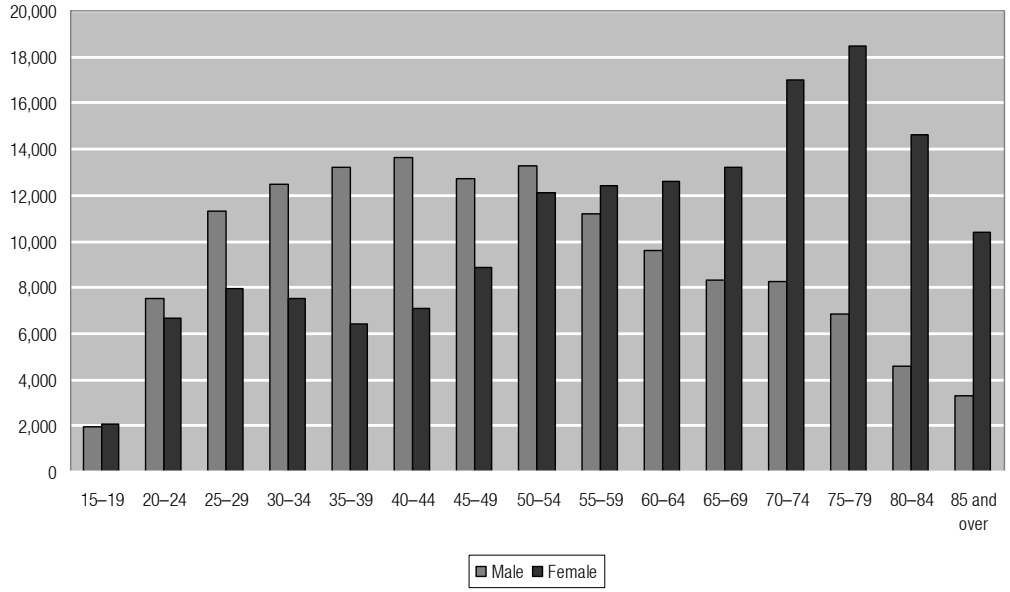
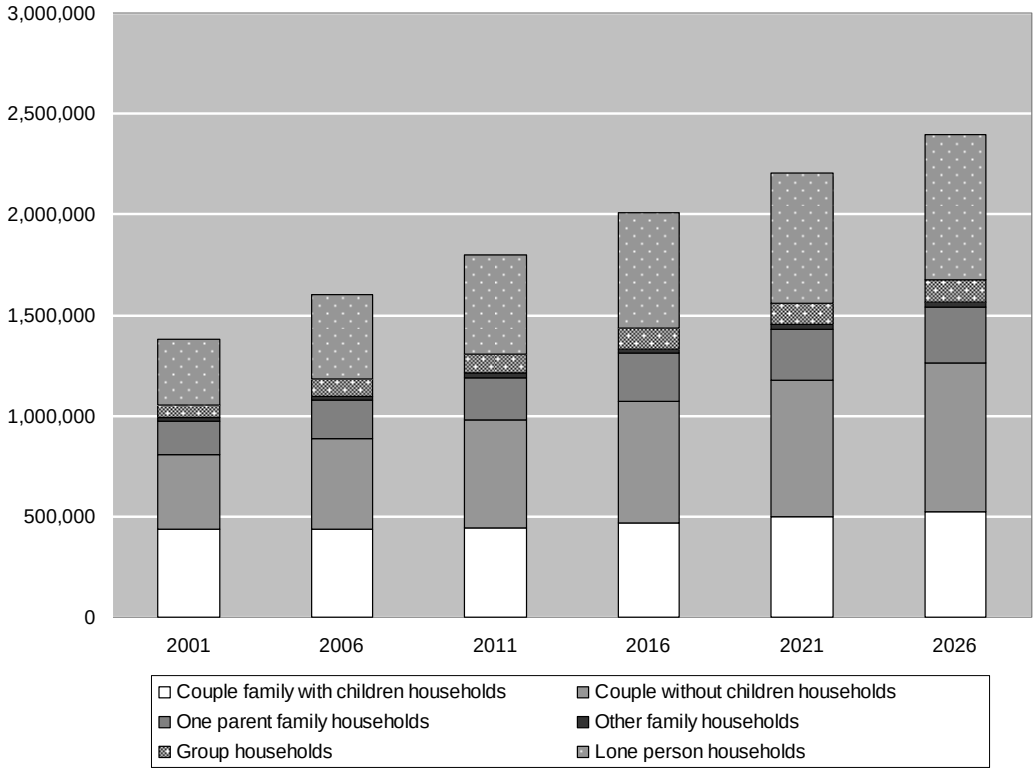


FIGURE 2-37 LONE PERSON HOUSEHOLDS, QUEENSLAND, 2001



Source: ABS, unpublished data

FIGURE 2-38 NUMBER OF HOUSEHOLDS, QUEENSLAND, 2001–26

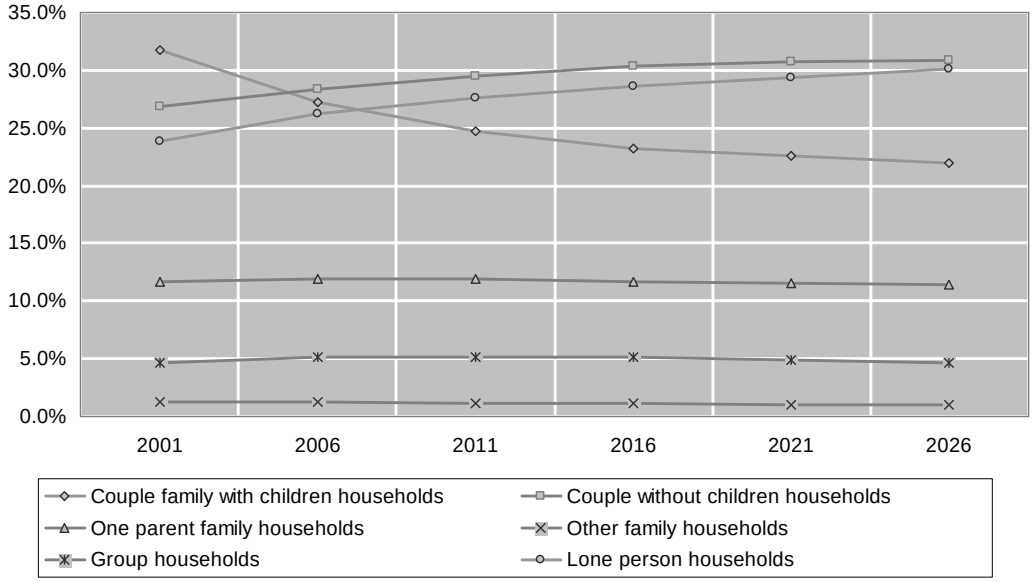


Source: Queensland Government household projections, 2007

In contrast, lone person households (119.3%) and couple-only households (99.5%) are projected to have the fastest rates of increase over the next two decades. There are anticipated to be more than 393,000 additional people living alone by 2026, most of whom will be females. Similarly, there is projected to be an extra 369,000 couple-only households in 2026 compared with the number in Queensland in 2001. This means that of the additional 1.01 million households projected for Queensland between 2001 and 2026, three-quarters or 75.1% will be one or two person households. (In addition, some lone parent households may also only comprise two people – a parent and one child.)

As a result of these changing household trends, different households will dominate our communities within two decades. In Queensland in 2001, couple families with children were still the most common household type, accounting for 31.7% or nearly one-third of all households. This family type has been seen as the "traditional" type of household over the last century and beyond, and has driven much of the thinking behind the planning and infrastructure provision in our cities and towns. However, by 2026, two other household types will be more numerous, neither of which include children. More than six out of every ten households in Queensland in 2026 are projected to be couple without children (30.9%) or lone person households (30.2%). Couple family with children households (21.9%) and lone parent households (11.4%), that is households with children, are anticipated to account for only one in every 3 households (Figure 2-39, below).

FIGURE 2-39 PROJECTED HOUSEHOLDS BY TYPE, QUEENSLAND, 2001 TO 2026



Source: Queensland Government household projections, 2007

Implications for future sustainability

Queensland has been Australia's growth state for much of the last quarter of the 20th century. This is not expected to change over the next quarter of a century or even during subsequent decades. In fact, Queensland is projected to grow by slightly more people in the 20 years from 2001 than it did in the previous 20 years. This growth of course brings opportunities. It makes a strong contribution to the economy as population growth continues to buttress demand, especially for new dwellings and goods and services, but also by way of supporting continued labour force growth.

Another positive associated with Queensland's population growth is that that growth, largely driven by migration, is helping stave off the inevitable ageing of the population. This is due to migrants tending to be younger people. In fact the largest group of interstate migrants are young families accompanied by their dependent children. These patterns of migration will be of considerable benefit to Queensland in the future as new entrants partially compensate for the large numbers of older people who will be exiting the labour force. Areas that can attract young, educated and qualified workers will gain a natural advantage in the highly competitive future labour market. However, there is no escaping the significant implications associated with the ageing of the population with considerable impacts for future social and economic sustainability, as well as for services and infrastructure provision, which will need to be significantly increased in the coming decades.

It is also clear that continuing population growth brings with it considerable challenges. Not only will there be an enormous financial impost in accommodating and providing infrastructure for an additional million people in Queensland in the coming two decades, but there will be significant environmental pressures as well. As Queensland accommodated around an extra million people over the past 25 years, many of the obvious areas for urban expansion have already been used up. Finding appropriate locations for the next million, in settings that are environmentally appropriate, where people want to live and close to where jobs are on offer, will be much more difficult.

In addition, there are some serious environmental concerns yet to be comprehensively addressed as a result of strong population growth over past decades. Declining air quality, loss of biodiversity and efficient waste management are relevant examples. Also, the effective provision of basic infrastructure such as transport and water is a pressing problem that needs resolution before many more thousands of people cross the border to add to the current level of demand.

While Queensland has experienced strong population growth over recent decades, and is projected to continue to grow strongly, this growth is location specific. In fact, some areas of the state are declining in population as the growth is increasingly focused on the south east corner, in selected regional centres and coastal locations. In these areas, mounting demands are occurring to more efficiently manage expanding urban footprints, to preserve sufficient open space and high quality environments, particularly good quality agricultural land, and to provide for and encourage community development initiatives so that social and cultural structures build up along with the growing population. Those areas that are not experiencing the same level of high growth will face pressures of their own; to retain the necessary minimum threshold of population to keep services viable, to manage the environment, to provide the necessary workers and to keep communities functioning.

It is also clear that the demographic characteristics of our population are changing. These changes are likely to have a profound influence on population composition and, in turn, on the makeup, look and feel of our communities. For example, the declining proportion of households containing children projected for the future will be in strong contrast to past patterns. It is also likely that expectations will change over time and, while it is obvious that the scale of demand will increase as the population grows, these projected changes to household structure suggest that the nature of demand may also alter. For example, with a large proportion of the population comprising one and two-person households, demand for a greater variety of smaller dwellings may emerge

or for specific products for older people living alone.

Of course, these trends are not uniform across the state with some areas changing more rapidly than others and some trends becoming apparent in some areas and not others. For example, highly urbanised areas such as Brisbane and metropolitan SEQ can be expected to exhibit different rates of change in some of these characteristics compared to rural and remote areas. However, some characteristics, like the ageing of the population and natural decrease, as the number of deaths outweigh the number of births, will become rapidly evident in rural areas where fewer young people live.

So a growing population brings both challenges and opportunities. Given recent community responses to initiatives like recycling and water-use reduction, there appears to be sufficient support and commitment among Queenslanders to set about achieving higher levels of sustainability outcomes. This will be an ongoing process. The challenge of sustainability should attract support from all sides of politics, given the significant issues to be resolved.

It is also worth noting that Queensland is in the enviable position of having the opportunity to change the way things are done because we have to cater for continuing future growth. This option is not available in areas of only slow growth, or where there is a stable or declining population as there is comparatively little demand for new housing or large infrastructure items. Queensland however, has an opportunity to demonstrate how to plan for and accommodate a growing population in a sustainable way, something of great interest to both rapidly developing countries as well as to many large western cities. This may be considered the least we can do given our good fortune of living in Queensland. We now have the chance to leave this environment healthy, the economy strong and our society caring. We have the opportunity to leave the quality of life we enjoy here in good condition for our children and future generations.

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3 Skills for a Sustainable Queensland

BY CHRIS ROBINSON

Executive summary

The Queensland economy has reached full employment with unemployment rates at or around 5% or less over the past two years. The labour market is tighter than it has been for 30 years, and the demand for new skills in Queensland is at record levels.

This growth in the demand for skills has been fuelled by the fastest population growth of any region in Australia, stronger economic growth, a global resources boom fuelled by the unprecedented growth of developing economies, particularly China, the diversification of Queensland's economic base into new and emerging industries and a rapid ageing of the workforce. Never before have so many major factors conspired at the one time to produce skill shortages.

Skill deficits now have their roots in underlying persistent and structural causes. These skill shortages are not simply a transient phenomenon that will disappear with the next downturn in the economic cycle.

The agenda for developing sustainable skills for Queensland needs to go well beyond simply expanding training supply. A coherent response to the ageing of the workforce is required. But even more important is the need to achieve a fundamental shift in employer and community attitudes.

Employers need to start treating skills as the most important resource they have. New workplace practices in recruitment, skills development and the treasuring, nurturing and retaining of skills are urgently needed. In particular, attitudes and practices towards older workers and investment in their skills will need to change if we are to avoid all the dire consequences being predicted by "the doomsdayers".

In the community new attitudes towards education and training are required. The supply of university-trained people to meet the available growth of professional jobs requiring such qualifications can be expected to reach an overall equilibrium over the next decade, while the take-up of vocational and technical education (VTE) is still falling well below the levels needed in the Queensland economy.

At the moment in Queensland slightly less than half the workforce have a tertiary qualification and the big gap is in VTE skills, particularly high-level VTE skills. We cannot continue to have a community where university education is valued to the exclusion of other forms of high-level skilling from the VTE sector, especially when the real career options and levels of life-time earnings are now quite similar for university and higher VTE qualifications. And with an ageing population we cannot afford to continue to have rates of workforce participation of people aged 55 years or more falling below OECD averages.

The Queensland government has taken considerable steps to respond. The Smart State strategy for 2005–15 has focused the economic agenda of Queensland on productivity improvement, research and innovation, and skills as the key economic fundamentals for the future. Queensland has introduced a package of education and training reforms for the future designed to encourage the participation of young people in education and training. Queensland has followed up with the Queensland Skills Plan, announced in March 2006 and providing over $800 million in recurrent funding for new skills initiatives over the next four years, and just over a further $300 million in new funding for skills infrastructure for projects commencing over the next three years. This is the biggest skills investment package ever announced by a state government in Australia. This new spending, most of which will occur after 2006–07, brings the total publicly funded VTE budget in Queensland to $877.5 million for the 2006–07 financial year.

In addition, the Queensland government has allocated a further $100 million in 2006–07 for the Skilling Queenslanders for Work initiative to provide disadvantaged jobseekers, whose skills and qualifications are obsolete, with new skills and work experience for sustainable employment.

The Australian government has also been responding to some of these challenges, with legislative changes to enable people to draw particular superannuation benefits while continuing in part-time work past the age of 55, with new superannuation changes to encourage people to stay in the workforce longer and other polices designed to encourage people in receipt of welfare back into the workforce.

The Australian government also invests considerable resources in VTE in Queensland. Included in the total VTE budget for Queensland referred to above is around $200 million in 2006–07 provided by the Australian government as its share of the total expenditure of the Queensland and Australian governments on publicly funded VTE through the national VTE agreement between the Australian and Queensland governments. In addition, the Australian government will expend over $170 million on employer incentives and other apprenticeship and traineeship support in Queensland in 2006–07.

However, the Australian government has embarked on a much more modest agenda when it comes to new initiatives designed to skill the workforce. A modest package of additional spending was announced in the May 2006 budget of some $192 million over four years with offsets of $67 million over four years, giving a net expansion of $125 million nationally. This package is aimed at increasing support for Australian apprenticeships and to support some of the skills reforms of the Council of Australian Governments (COAG), following on from the roll-out of Australian technical colleges anticipated to ultimately provide some 1,200 part-time, school-based apprenticeship places in Queensland when fully operational.

Taken together, all of these recent initiatives, particularly those of the Queensland government, will provide a very significant boost to the development of a much more sustainable skills base for Queensland. This paper explores the rapidly changing economic landscape that is changing the demand for different types of skills and considers the extent to which responses are likely to produce a sustainable skills base for Queensland.

Introduction

Skill shortages have received an enormous amount of media attention in recent times. Headlines such as “Shortages of skilled workers undercut employment rise”, “Training deficit holds us back”, and “Skill shortage threatens exports” have been common. These stories reflect the concerns of national business organisations about the problems employers are experiencing in hiring skilled workers.

The Australian Chamber of Commerce and Industry (ACCI) (2005) reported the availability of suitably qualified employees as the top constraint on investment reported by business in its January 2005 *Survey of Investor Confidence*.

The Australian Industry Group (AiGroup) (2004) in a recent report on Australia’s skills gaps, estimated that nationally there are between 18,000 and 21,000 vacant positions for skilled tradespeople in the manufacturing industry. In the same report, AiGroup reported that 55.5% of firms surveyed were experiencing difficulties in obtaining skilled labour compared with only 37.8% of firms that were not. The report also found that Queensland employers were experiencing the greatest difficulty in finding skilled labour. This is even though Queensland has the highest rate of apprentices per 1,000 employees in the nation.

By 2006, in an extensive survey of Australian employers, the AiGroup found that building their skills base is the key to achieving international competitiveness, and that three-quarters of all enterprises identified the inability to secure skilled staff as a barrier to success over the next three years, ahead of all other factors. Those results also hold for Queensland employers, where 76% identified an inability to secure skilled staff as the biggest barrier to business success over the next three years (Australian Industry Group 2006a; 2006b, p. 52).

If anything, Queensland was noted historically for experiencing a surplus of labour, not a shortage. For most of the past two decades

Queensland has experienced higher unemployment than most other parts of Australia. The reasons for this include a relatively high proportion of the population living in regional and rural areas, small business accounting for a proportionately larger part of the economy, and relatively more people in younger age groups and fewer people with tertiary qualifications, including those who migrate to Queensland from other areas of Australia.

In recent times this situation has turned around in a drastic way. The majority of Australian full-time jobs growth in 2004 and 2005 occurred in Queensland, even though Queensland has only around one-fifth of the national population. Queensland's unemployment reached the lowest levels in the nation in 2005, falling to as low as 4.6% in early 2005, the lowest level for 30 years. Unemployment levels have remained low throughout 2005 and 2006, falling to 4.5% by mid-2006.

The reasons for this are complex and varied. Queensland's industry base has diversified beyond the traditional primary and resource-based industries into areas such as tourism and hospitality, aviation, new manufacturing industries including marine construction, and new and growing export and services industries as varied as education and training exports and aged care. Moreover, Queensland has been experiencing very strong population growth, particularly in the south-east corner of the state, which has led to an economic boom for some industries that supply goods and services to the rapidly expanding population such as the building and construction and retail industries. The state's economic growth is also being fuelled by unprecedented levels of demand for resources because of the extraordinary levels of global demand arising from the rapidly emerging economies, particularly China.

It is becoming increasingly clear the key driver of a sustainable economy is the relevance and quality of the skills of the workforce.

Australia has experienced higher than average economic growth among OECD countries over the past decade and a half. This growth coincided with a national transformation of the inflow of university-provided high-level professional skills to the labour market, which saw the number of university students in Australia soar from under 400,000 per year in the late 1980s to over 900,000 per year today. Over this period Australia leapt from a ranking of 18th to sixth among OECD countries in terms of the proportion of the population holding university qualifications. Australian society has embraced this expansion of university education with gusto. "Middle Australia" aspires to university education for themselves and their children.

These changes have seen very significant skill shortages emerge right across Australia. However, they are more pronounced in Queensland than in most other parts of the nation because of Queensland's much higher levels of population and employment growth. And yet these skill shortages have emerged at a time when education and training levels are at record or historically high levels, as shown in Table 1.

TABLE 1: STUDENTS[A] IN TERTIARY EDUCATION AND TRAINING IN QUEENSLAND, 1990–2005.

Year	University and other higher education		Vocational and technical education					
			Apprenticeships and Traineeships				All VTE	
	No of students[a] ('000)	Annual growth (%)	No of apprentices hips[b] ('000)	Annual growth (%)	Total no of apprentices and trainees[c] ('000)	Annual growth (%)	Total no of publicly funded VTE student[d] ('000)	Annual growth (%)
1990	77.3	–	23.5	–	25.4	–	158.5	–
1991	86.2	11.5	21.7	–7.6	23.0	–9.4	145.4	–8.3

1992	90.2	4.6	20.8	–4.1	22.4	–2.6	173.3	19.2
1993	94.0	4.2	21.8	4.8	23.5	5.3	189.9	9.6
1994	97.0	3.1	22.4	2.7	24.9	5.9	192.8	1.5
1995	100.0	3.0	24.3	8.4	27.2	9.2	194.5	0.9
1996	108.2	8.2	24.3	0.0	31.8	16.9	195.0	0.2
1997	114.6	5.9	23.9	–1.6	36.8	15.7	215.6	10.6
1998	117.9	2.8	23.3	–2.5	46.0	25.0	247.9	15.0
1999	121.5	3.0	25.0	7.2	56.2	22.2	291.2	16.5
2000	125.2	3.0	26.3	5.2	50.6	–10.0	266.5	–8.5
2001	135.7	8.3	25.4	–3.4	54.6	7.9	298.3	11.9
2002[e]	170.9	na	26.3	3.5	62.0	13.5	298.6	0.1
2003	175.7	na	28.3	7.6	70.7	14.0	297.6	–0.3
2004	182.6	na	32.3	14.1	72.7	2.8	278.8	–6.3
2005	–	–	37.7	16.7	77.8	7.0	290.4	4.2

na not applicable
a Student numbers include full-time and part-time students *not* full-time equivalent.
b The number of apprentices in training at 31 December each year.
c The number of apprentices and traineeship participants in training at 31 December each year.
d The number of people enrolling in a publicly-funded VTE course or program throughout the whole year.
e The basis of measurement of the higher education series changed in 2002 with a new census date later in the calendar year adding almost 25,000 students to the numbers.

Sources: National Centre for Vocational Education Research, the Department of Employment and Training and the Department of Education, Science and Training.

The past two decades have seen a massive increase in the numbers of people enrolling in tertiary education, whether in higher education (mainly provided by universities) or vocational and technical education (VTE – mainly provided by TAFE [Technical and Further Education and Training] institutions or private, registered training organisations). The increasing recognition of the need for lifelong learning has resulted in higher levels of participation in tertiary education and training beyond the school leaver age groups, which has seen the participation of adult Australians as being among the highest in the world (Robinson 2000).

Overall VTE student numbers in Queensland (in publicly funded VTE) reached a peak of almost 300,000 in 2001 and 2002, having grown by just under 8% each year since the mid-1990s in a massive expansion of the VTE system during the 1990s. Student numbers in publicly funded VTE fell by 6% between 2002 and 2004 because of a significant improvement in job opportunities in Queensland since 2002, leading to people deferring. Interestingly the time spent by each student in their VTE course actually increased by over 5% between 2002 and 2004 as more students began to undertake more training in response to increasingly complex skill needs in the labour market. And the latest indicators are that VTE student numbers are growing quite strongly again, with 290,400 students enrolling in 2005. This represents an increase of 4% in VTE student numbers between 2004 and 2005, and is the fifth highest number of VTE students in publicly funded VTE ever recorded in Queensland (see Table 1).

By the end of 2005 apprenticeship levels reached a record of 37,700 apprentices in training after apprenticeship levels increased by an unprecedented 17% from 2004 to 2005 across Queensland, as shown in Table 1.

Moreover, Queensland has been part of a huge increase in university intakes across Australia since the higher education reforms of the late 1980s. The number of university students in Queensland has risen from 77,300 per year in 1990 to 182,600 per year in 2005. Discounting for the change in counting method of higher education students in 2002, which added around 25,000 students to the series, higher education student numbers have experienced an average growth of more than 5% per year since 1990.

But with the emergence of substantial skill shortages there are indications that this growth in participation in tertiary education and training has not been sufficient to secure a sustainable skills base for Queensland.

One factor here could well be that not enough of these relatively high levels of participation in tertiary education and training is leading to completion of full higher education or VTE qualifications.

As shown in Table 2, in Queensland in 2003 over 37,000 higher education awards were issued, while some 34,400 VTE awards were issued (excluding statements of attainment). This translates to a ratio of tertiary awards to student numbers of only 0.39 in the higher education sector and 0.33 in the VTE sector.

TABLE 2: THE NUMBER OF TERTIARY QUALIFICATIONS/AWARDS ISSUED IN QUEENSLAND, 2003

Type of award	University/higher education award completions		Vocational and technical education awards[a]	
	No. of awards ('000)	**Proportion of total (%)**	**No. of awards ('000)**	**Proportion of total (%)**
Doctorate	0.8	2.2	–	–
Masters	6.7	17.8	–	–
Other postgraduate[b]	5.1	13.8	–	–
Bachelor degree	23.8	64.1	–	–
Associate degree	0.1	0.3	–	–
Advanced diploma and Diploma	0.7	1.8	4.7	13.7
Certificate IV	–	–	5.5	16.0
Certificate III	–	–	13.7	39.8
Certificate II	–	–	8.8	25.6
Certificate I	–	–	1.7	4.9
Total	37.2	100.0	34.4	100.0
Ratio of award issued to no of equivalent full-time student load[c]	0.39	–	0.33	–

a The number of VTE qualifications awarded to students (full-time or part-time) in publicly funded VTE during 2004.
b Other post-graduate is mostly graduate diploma and graduate certificate awards.
c Calculated as the number of awards issued divided by student load in the higher education sector and the number of awards divided by total annual hours curriculum (AHC) delivered divided by 540 hours (as a proxy for VTE student load in full-time equivalent terms).
Source: National Centre for Vocational Education Research and Department of Education, Science and Training.

The Queensland government has been very conscious of the increasing importance of skills for the future of the state. In 2005 it undertook a major analysis of changes in the Queensland economy and the adequacy of the state's skills base to underpin the future development of the state. In mid-2005 a key report Skills for Jobs and Growth: A Queensland Government Research Paper was released by the Premier and the Minister for Employment, Training and Industrial Relations, and the Minister for Sport (Department of Employment and Training 2005a). At the same time the government released a skills green paper, Queensland's

Proposed Responses to the Challenges of Skills for Jobs and Growth: A Green Paper (Department of Employment and Training 2005b), as a basis for consultation across the state about the way forward for developing Queensland's skills base.

Drawing on this work, this paper documents the changes in the labour market and the skills profile in Queensland, and explores the growing importance of skills as a critical driver of economic growth and prosperity.

This paper goes on to explore the policy prescriptions needed to secure a sustainable skills base for Queensland. In particular, consideration is given to the new $1.1 billion Queensland Skills Plan released by the Queensland government in March 2006 following the policy consultations and deliberations that took place throughout 2005.

The changing labour market context

The Queensland labour market is in the process of unprecedented change. The most critical structural changes affecting the supply of skilled labour are:

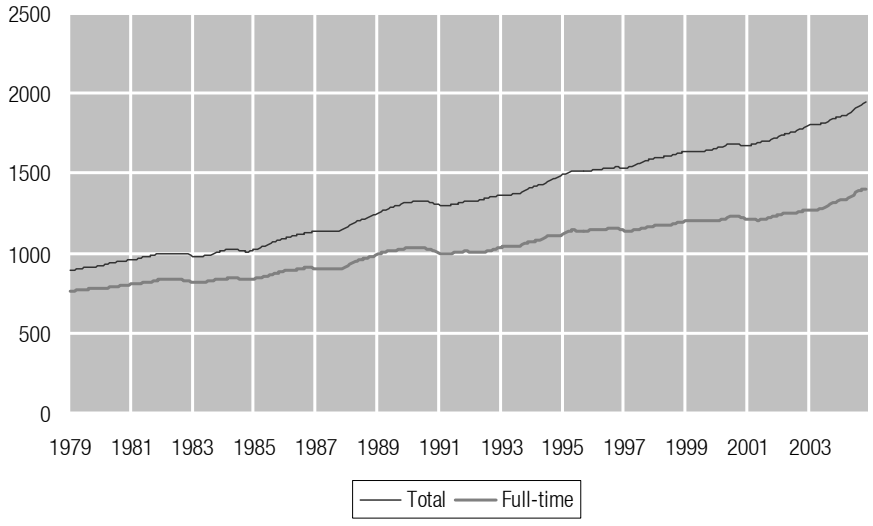
- the rapid growth in jobs, combined with a rapid decline in unemployment, leading to the tightest labour market in Queensland for more than 30 years;
- the sudden and dramatic change in demand for workers in occupations that require specialised skills. Many industries that were characterised by low or negative employment growth over the past decade are now experiencing a boom in employment. Rapid changes in technology have also led to demand for workers with new skills;
- significant changes in occupational structure. The very strong growth in professional and associate professional occupations has outpaced the take-up of training for these sectors of the labour market.[1]

The rapid growth in employment

Queensland experienced steady and strong employment growth over the 1980s and 1990s. Total employment grew from 1 million people in the early 1980s to reach 1.75 million by the middle of 2002 as shown in Figure 3-1 below. Queensland employment, 1979–2004. Growth has been more rapid since then, with employment reaching almost 2 million people by January 2005. Nearly 1.4 million of these positions were full-time.

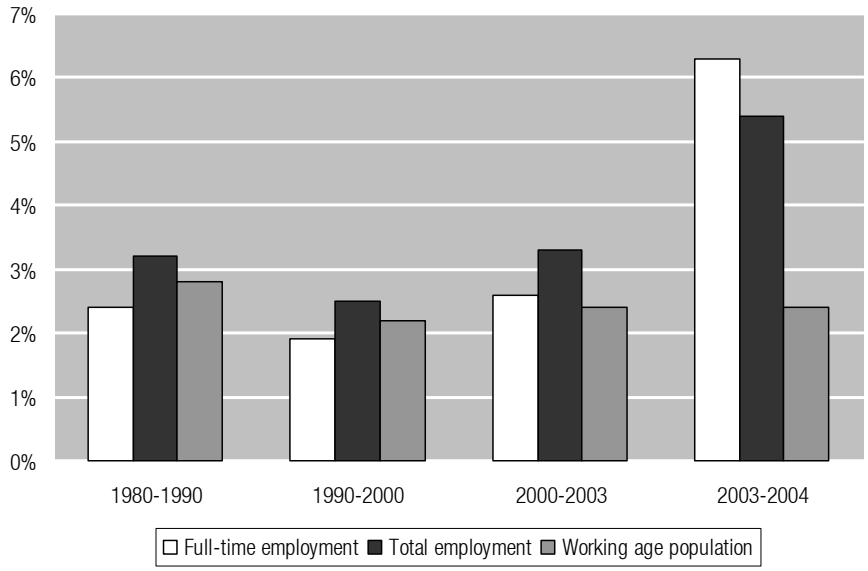
Figure 3-2 (page 47) shows the strong employment growth in recent years. Employment growth averaged 3.3% per year for the early years of this century. Full-time jobs grew from an average of 2.6% per year from 2000 to 2003 to reach a staggering 6.3% during 2004, reflecting a very buoyant labour market.

FIGURE 3-1 QUEENSLAND EMPLOYMENT ('000), 1979–2004



Source: Department of Employment and Training (2005a), p38

FIGURE 3-2 AVERAGE ANNUAL GROWTH IN QUEENSLAND EMPLOYMENT AND IN WORKING AGE POPULATION, 1980–2004



Source: Department of Employment and Training (2005a), p. 39

Approximately one-third of all full-time jobs created in Australia over the past decade were in Queensland, even though Queensland has slightly under 20% of the national population.

Full-time employment growth has increased at an even faster rate in recent years, with nearly 52% of all full-time jobs created in Australia between December 2003 and December 2004 created in Queensland. Almost half of all full-time jobs created between December 2000 and December 2004 were in Queensland.

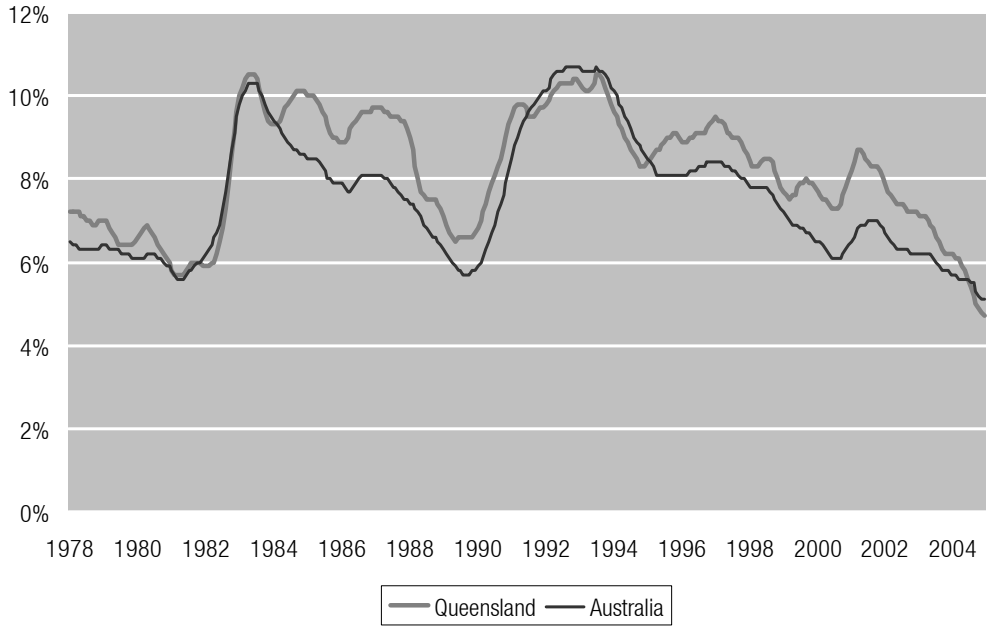
The rapid decline in unemployment

From the late 1970s to the early 1990s, Queensland's unemployment rate exceeded the national rate, except for a couple of short periods in 1982 and 1984, as shown in Figure 3. At that time the unemployment rates of Queensland and Australia surged from just under 6% to over 10% in the space of less than two years.

Between 1984 and 1987, Queensland's unemployment rate fluctuated between 9% and 10%, before falling to around 6.5% by the beginning of 1990. Unemployment rose dramatically again to break the 10% barrier by early 1993. Throughout almost all of this period Queensland's unemployment rate was higher than the national unemployment rate. From the mid-1990s to 2001 Queensland's unemployment rate fluctuated between 7.5% and 9%, remaining well above the national rate.

Since 2001 the decline in the unemployment rate has been dramatic. The Queensland rate fell below the Australian rate in August 2004, dropping to below 5% in late 2004 for the first time since the early years of the 1970s. Queensland's trend unemployment rate fell to below 5% by early 2005, considerably lower than the national unemployment rate, which has remained at 5.1% for the early part of 2005. The unemployment rate in Queensland stabilised at around 5% throughout the rest of 2005, and dropped to 4.5% by mid-2006.

FIGURE 3-3 TREND IN UNEMPLOYMENT RATES FOR QUEENSLAND AND AUSTRALIA, 1978–2004



Source: Department of Employment and Training (2005a), p. 39.

The tightest labour market in 30 years

The rapid growth in jobs, combined with a rapid decline in unemployment, has produced the tightest market in Queensland (in terms of high demand for labour) in more than 30 years. This is demonstrated by Figure 4, which shows the proportion of all Queenslanders aged 15 to 64 years who are employed (the employment–population ratio).

Since the early 1990s the proportion of the working age population employed in Queensland has been consistently higher than the corresponding national employment level.

The proportion of working age Queenslanders who are employed has grown rapidly from around 59% in 2002 to nearly 62% by early 2005. This growth has been most rapid since the beginning of 2004, resulting in a very considerable tightening of the labour market in recent times.

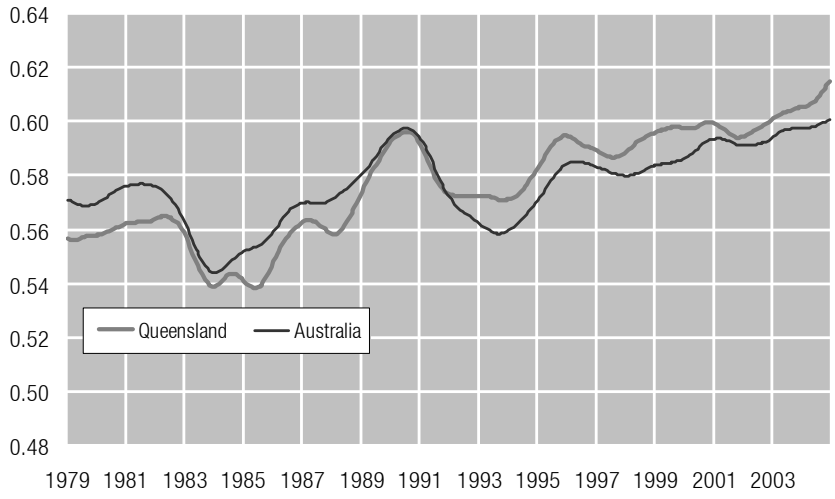
The tight labour market has seen the overall number of unemployed people in Queensland drop from 155,400 in 2002 to only 110,400 by early 2005. This trend has also seen a considerable reduction in the number of the long-term unemployed (individuals who have been unemployed for 12 months or longer) from 33,000 in early 2002 to only 19,000 by early 2005.

The changing nature of employment

The rapidly changing nature of work has been a topic of interest in recent times. These changes have attracted a range of labels, such as “the development of a globalised economic system”, “the rise of the information age”, and “the emergence of the knowledge economy”. Some have even imaginatively labelled the change “the transformation from the old economy to the new economy”.

Whatever the label, these changes are impacting on the nature of work as profoundly as the industrial revolution did in its day.

FIGURE 3-4 QUEENSLAND AND AUSTRALIAN EMPLOYMENT-TO-POPULATION RATIOS, 1979–2004



Source: Department of Employment and Training (2005a), p. 40.

In a key Australian study by Simon Marginson (2000), six key elements that are driving the changing nature of work in Australia were described as:

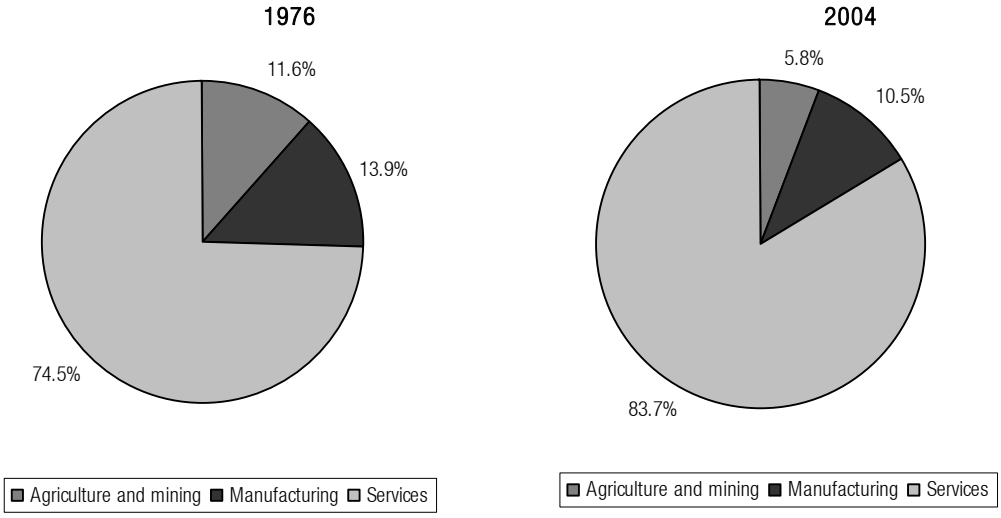
- *globalisation,* creating a more international economy and culture;
- *increased international competition,* driving an accelerated rate of technological change, particularly in information and communications technology;
- *rapid technological change,* leading to a decline in "blue collar work" and an increase in skilled "white collar work", with little or no increases in jobs overall;
- *immense but uneven organisational change* in workplaces, where high worker participation, team-oriented and integrated multi-skilled workplaces make the greatest productivity gains;
- *sharp increases in non-standard forms of work* such as part-time, casual, outsourced or home-based work;
- *a growing polarisation in incomes and in access to work, job security and technology,* with growing numbers of two income families on the one hand, and growing numbers of "no income families" on the other.

Over the past 30 years, the Queensland workforce has changed dramatically, as shown in Figure 3-5, page 50. The importance of agriculture and the primary industry sector as a source of employment has nearly halved, now accounting for less than 6% of total employment. Manufacturing employment as a proportion of total employment has also fallen significantly over the past three decades from 14% of total employment to just over 10% of total employment. The service industry sectors, in contrast, have grown significantly to dominate employment (now 83.7% of all jobs).

A more detailed breakdown of contemporary employment in different industries in Queensland is shown in Table 3.

Of the almost 1.9 million people employed in Queensland, over half are employed in just five industries. These are retail (16% of total employment), property and business services (10.7%), manufacturing (10.5%), health and community services (9.8%) and construction (9.1%).

FIGURE 3-5 EMPLOYMENT IN QUEENSLAND INDUSTRY SECTORS, 1976 AND 2004



Source: Department of Employment and Training (2005a), p. 2

TABLE 3: EMPLOYMENT BY INDUSTRY, QUEENSLAND

Industry	No. employed ('000)	Proportion of total employment %	Average annual growth 1995–2002 %	Average annual growth 2002–04 %
Agriculture, fishing & forestry	84.3	4.5	3.1	–11.0
Mining	24.2	1.3	0.8	13.2
Manufacturing	198.1	10.5	0.3	3.4
Electricity, gas & water	14.5	0.8	–1.5	9.3
Construction	171.3	9.1	1.0	10.6
Wholesale trade	84.8	4.5	–0.1	0.1
Retail trade	301.4	16.0	3.5	3.2
Accommodation, cafes & restaurants	101.0	5.4	4.0	–0.2
Transport & storage	95.3	5.1	–0.2	9.1
Communication services	31.3	1.7	0.0	14.4
Finance & insurance	49.2	2.6	–0.4	5.1
Property & business services	201.0	10.7	2.8	7.2
Government administration & defence	84.4	4.5	3.0	3.1
Education	138.5	7.3	2.3	6.1
Health & community services	185.7	9.8	4.1	4.1
Cultural & recreational services	49.7	2.6	3.0	7.7
Personal & other services	71.5	3.8	5.9	–4.6
Total employment	1 886.2	100.0	2.3	3.8

Source: Department of Employment and Training (2005a), p. 41.

Interestingly, many industries that were characterised by low or negative employment growth over most of the past decade have experienced a boom in employment in recent years. These include:

- mining (with an average annual growth in jobs of 13.2% per year in 2002–04)
- electricity, gas and water (9.5% growth per year in 2002–04)
- construction (10.6% growth per year in 2002–04)
- transport and storage (9.1% growth per year in 2002–04)
- communication services (14.4% growth per year in 2002–04)
- cultural and recreational services (7.7% growth per year in 2002–04)
- property and business services (7.2% growth per year in 2002–04)
- education (6.1% growth per year since 2002).

Even in manufacturing, which had extremely low employment growth, employment has grown by 3.4% per year in recent years in Queensland.

The industry trends highlighted above are important because they reflect the overall economic changes, setting the context for employment changes in the economy.

However, changes in occupational structure are most pertinent to the changing skill needs in the labour market. That is because for many jobs, specific skills relate to specific occupations or clusters of occupations, particularly in relation to professional, para-professional, technical and trade skills.

The changes in occupational clusters over the last decade are outlined in Table 4.

TABLE 4: EMPLOYMENT BY OCCUPATION IN QUEENSLAND

Occupational group	No. employed ('000)	Proportion of total employment %	Average annual growth 1997–2002 %	Average annual growth 2002–04 %
Managers & administrators	131.3	7.0	2.1	2.4
Professionals	313.1	16.6	3.4	6.8
Associate professionals	231.5	12.3	3.9	3.7
Tradespeople & related workers	257.3	13.6	1.7	5.8
Advanced clerical, sales & service	71.4	3.8	2.1	–3.6
Intermediate clerical, sales & service	335.8	17.8	3.4	4.3
Intermediate production & transport	171.3	9.1	1.3	7.0
Elementary clerical, sales & services	192.5	10.2	1.9	1.7
Labourers & related workers	182.0	9.6	1.5	–0.6
Total employment	1886.2	100.0	2.5	3.8

Source: Department of Employment and Training (2005a), p. 41.

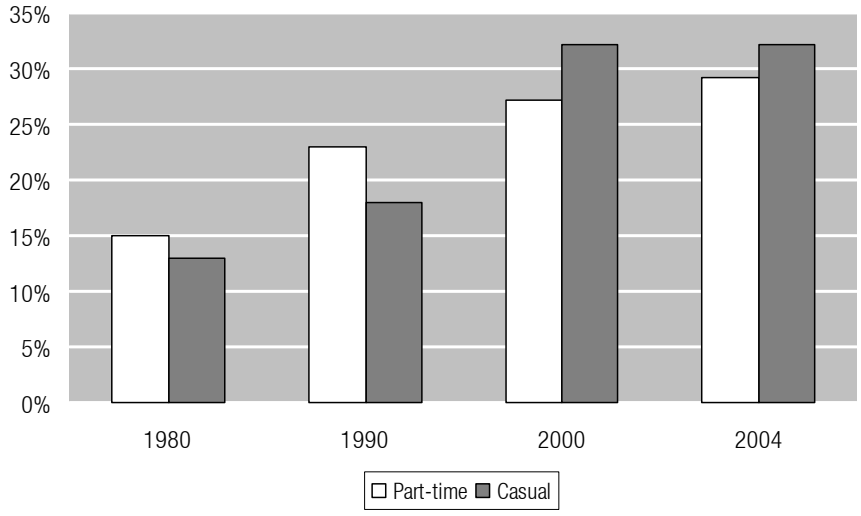
These trends depict a complex and rapidly changing picture that make it increasingly difficult to predict which types of work will be in the highest demand, even one or two years into the future. However, a number of trends are apparent:

- Professional and associate professional employment requiring high-skill levels has been growing at much higher than average rates of employment for many years.
- Employment in the trades, which is also highly skilled, experienced slightly lower than average growth over the past two decades, but has been growing at extraordinary levels over the past few years.
- In lower skilled occupations some areas are growing while others are in long-term decline, reflecting a dispersed set of difference factors driving the microeconomies of different sectors.

Another big change in the labour market has been the growth in non-standard forms of work. For example, there has been a dramatic rise in part-time and casual employment in the Queensland labour market. As shown in Figure 6, part-time employment has grown from just 15% in 1980 to 30% today.

Casual work has also grown enormously from only 13% of total employment in 1980 to almost one-third of the workforce today (Figure 3-6).

FIGURE 3-6 PART-TIME AND CASUAL EMPLOYMENT IN QUEENSLAND, 1980–2004



Source: Department of Employment and Training (2005a), p. 8.

Australia has very high rates of part-time employment and among the highest rates of casual employment in the OECD. Queensland rates of part-time and casual employment are even higher than the Australian rates. This situation makes Queensland's labour market among the most flexible in the world, but it also reduces the level of job security in the workforce.

These patterns reflect a major change in the growth of non-standard forms of employment, such as sessional workers, contractors, self-employed consultants, and labour hire employees. Some indicative data shown in Table 5 suggest that these forms of employment made up around 40% of the workforce by the end of the 1990s.

Noting that permanent part-time employment accounts for around 10% of total employment, this means that conventional full-time permanent employment only constitutes around half of all employment in today's labour market. The changes have had profound implications for the way in which people work. Full-time wage and salaried employment is no longer the norm for the majority of Queenslanders throughout their entire working lifetimes.

The implications of the changing nature of work are quite profound. They can be summarised in Table 6.

TABLE 5: INDICATIVE DATA ON THE RISE OF NON-STANDARD EMPLOYMENT IN AUSTRALIA

	Late 1970s	Late 1990s
Casuals	10	20
Contractors		
- Sole traders	15	14
- Owner managers of incorporated enterprise	2	6
Total	27	40

Source: Board of Vocational Education and Training (2001), p. 4.

TABLE 6: CHANGING MODELS FOR THE WORLD OF WORK

Old model	New model
Narrowly defined industries	Borders breaking down across industries and the clear emergence of value-chains encompassing goods and services
Relative importance of industry-specific skills	Growing importance of generic skills for many industries and value-chains (e.g. IT skills, project management skills)
Relative importance of technical skills	Growing importance of soft-skills (e.g. teamwork, communications, creativity)
Stability in industry structure and skills requirements	Pressure for continuous innovation
Enterprises not competing on the basis of workforce skills	Workforce skills are central to business competitiveness
People remain in the same industry for life	Change is the order of the day with requirements for lifelong learning
Separation of professional skills (higher education) and workplace skills (TAFE)	Blurring of lines between professional and workplace skills and hence between higher education and TAFE
Goods producing and transforming industries important	Growing importance of services industries
Full-time permanent staff	Casual, part-time, specialist contractors supplement a smaller core of full-time staff

Source: Business Council of Australia (2004).

The rapidly changing nature of work requires responses by the education and training systems that will deliver the skills needed in the economy in time to avoid skill shortages.

The changes in the labour market have been extraordinarily rapid in recent years, especially over the past two years. The changes have led to the highest demand for labour in the economy, and the tightest labour market that we have seen for 30 years. This situation has contributed more than any other factor to the rapid emergence of skill shortages in some sectors. This volatility has also made skill shortages very difficult to predict with any precision.

The emergence of skill shortages in Queensland

Not surprisingly, these trends have seen the emergence of significant skill shortages in Queensland.

The official national and state skill shortage lists published by the Commonwealth Department of Employment and Workplace Relations (DEWR) are conventionally used to monitor skill shortages. DEWR uses the following definition of skill shortages:

skill shortages exist when employers are unable to fill or have considerable difficulty in filling vacancies for an occupation, or specialised skill needs within that occupation, at current levels of remuneration and conditions of employment, and a reasonably accessible location.

These official skill shortage lists are based on labour market intelligence gathered by DEWR on the basis of contact with employers, industry, employer and employee organisations, and education and training providers. The key strategy in compiling the skill shortage lists is surveying employers who have recently advertised vacancies for selected skilled occupations. DEWR's skill shortage assessments cover trades, professionals and information and communication technology (ICT) occupations.

The 2004 skill shortage list for Queensland published by DEWR is shown in Table 7.

TABLE 7: QUEENSLAND STATE SKILL SHORTAGE LIST, 2004

Occupation classification	Occupation in shortage[(a)]	Qualifying notes
Child care	Child Care Coordinator (N)	
	Child Care Worker (N)	
Engineers	Civil Engineer (N)	**S**hortages are particularly evident for Civil Engineers experienced in water, roads and structural engineering
Accountants	Accountants (N)	Shortages particularly for accountants with experience in audit and taxation
Health professionals	Enrolled Nurse (N)	Shortages particularly for experienced occupational therapists in specialisations such as mental health services and aged care.
	Registered Nurse (N)	
	Registered Midwife (N)	
	Mental Health Nurse (N)	
	Dentist (N)	
	Pharmacist (N)	Shortages for physiotherapists most apparent in specialisations such as gerontology and for locum work.
	Occupational Therapist (N)	
	Physiotherapist (N)	
	Speech Pathologist (N)	
	Diagnostic Radiographer (N)	
	Radiation Therapist (N)	
	Nuclear Medicine Technologist (N)	
	Sonographer (N)	
	Audiologist	
Legal professionals	Lawyer	Shortages for lawyers experienced in the area of property, mining and town planning.
Engineering trades	Metal Fitter (N)	Shortages particularly for Metal Fitters who have the skills to work underground on mining equipment and who have high-level skills in parts replacement for heavy earthmoving equipment.
	Metal Machinist (N)	
	Toolmaker (N)	
	Metal Fabricator (N)	
	Welder (N)	
	Sheetmetal Worker (N)	Metal machinists who have high-level CNC machine

		operating skills are in particularly strong demand. Sheetmetal Worker shortages are particularly evident in the manufacture of aluminium hull boats, switchboards and stainless steel fittings.
Vehicle trades	Motor Mechanic (N) Auto Electrician (N) Panel Beater (N) Vehicle Painter (N)	
Electrical/ electronics	Electrician (N) Refrigeration and Air-conditioning Mechanic (N) Electrical Powerline Trades (N) Electronic Instrument Trades (N)	Electrician shortages are particularly acute for electrical appliance servicing and industrial electricians
Construction trades	Carpenter and Joiner (N) Bricklayer (N) Plumber (N)	Carpenter: shortage is particularly for carpenters specialising in building staircases and balustrading. Plumber: Mechanical Services Plumbers are particularly hard to recruit.
Food trades	Chef (N) Cook (N) Pastrycook (N)	
Printing trades	Graphic Pre-press Trades Printing Machinist Binder and Finisher	
Other trades	Hairdresser Furniture upholsterer	

Includes occupations that are classified by the Department of Employment and Workplace Relations as being in shortage state-wide in Queensland. It does not include any skill shortages that are only being experienced in the metropolitan area or in particular regional areas. It does not include occupations where recruitment difficulties are being experienced by employers, where employers are unable to attract and recruit sufficient employees, even though there may be an adequate supply of skilled workers.
(N) this occupation is also on the official national skills shortage list; Source: Dep. of Employment and Workplace Relations (2004).

There are 45 specific occupations on the above list for Queensland. This is out of some 340 managerial, professional, associate professional and skilled trade occupations (at the Australian Standard Classification of Occupations at the four-digit level). Some 40 of the 45 occupations on the Queensland list are also on the official national skill shortage list. All of Queensland's skill shortages are classified as state-wide, with no metropolitan or regionally specific shortages.

The list also classifies some specific ICT and secondary teaching occupations in Queensland as experiencing difficulties in finding suitable workers, even though a broader skill shortage is not evident.

Caution is required in using the national and state skill shortages lists in developing a response to skill shortages. There are several issues with the skill shortage lists:

- The official skill shortage list only covers skills that require a significant period of training and/or experience. Shortages of truck drivers or fruit pickers would not be reported by DEWR as a skill shortage even though a significant labour shortage might exist.

- The skills shortages listed typically refer to experienced or specialist workers and may not be relevant to new graduates. In fact, there could be an oversupply of new graduates at the same time as a skill shortage. Where that is the case, increasing training effort for new entrants would not only be a waste of public money, but would set students up for unemployment.
- An occupation may be assessed as being in shortage even though not all specialisations are in shortage.
- Although skill shortages are monitored closely, there may be localised or specialised shortages that are not reflected in these lists.
- Many skilled occupations are not covered by DEWR's survey.
- Managerial occupations, which account for about 14% of total employment in high-skill jobs, are not included in the survey – except, curiously, child-care managers.
- Associate professionals, which account for one-quarter of high-skilled employment, are not included in the survey – except enrolled nurses.

Most important of all, the official skill shortages list gives no estimates regarding the size of skill shortages.

The skills profile of the Queensland workforce

More light can be shed on the issue of what is the skills base of Queensland and what are the likely future skill needs if we consider the whole skills profile of the Queensland labour market.

The skills profile of Queensland is best depicted by the qualifications of the population. Higher education qualifications are provided by universities or other higher education providers and VTE qualifications represent the formal attainment of a package of skills and the successful completion of a VTE program provided by a TAFE institute or another registered training provider (RTO). Qualifications are the currency of the labour market, and are used heavily by employers in their recruitment decisions.[2]

Qualifications from universities/other higher education providers or VTE are issued according to a national qualifications standard – the Australian Qualifications Framework (AQF) – as shown in Table 8.

TABLE 8: THE AUSTRALIAN QUALIFICATIONS FRAMEWORK

Schools sector	Vocational education and training sector	Higher education (university) sector
		Doctoral degree
		Master degree
	Vocational graduate diploma[a]	Graduate diploma
	Vocational graduate certificate[a]	Graduate certificate
		Bachelor degree
	Advanced diploma	Advanced diploma/associate degree[b]
	Diploma	Diploma
	Certificate IV	
Senior secondary	Certificate III	
Certificate of	Certificate II	
Education	Certificate I	

a Vocational graduate diplomas and vocational graduate certificates are new national VTE qualifications under the AQF that are to be offered for the first time later in 2005.
b Associate degrees were incorporated into the AQF in 2004.

Source: Australian Qualifications Framework Advisory Board (2002).

TABLE 9: THE TYPES OF JOBS ASSOCIATED WITH DIFFERENT QUALIFICATIONS

Qualifications	Issuing sector	Types of jobs
Doctoral and master degrees	Higher Education	Professional jobs
Graduate diplomas/certificates	Higher Education	Professional jobs
Vocational graduate diplomas/certificates	VTE	Upskilling of high-skilled workers
Bachelor degrees	Higher Education	Professional jobs
Associate degrees	Higher Education	Professional/para-professional jobs
Diplomas /Advanced diplomas	Dual sector, mostly VTE	Para-professional jobs/ higher skilled jobs
Certificate IV	VTE	Technician/para-professional jobs
Certificate III (a)	VTE	Skilled trades people Wide range of skilled service industry jobs and other skilled jobs
Certificate II (b)	VTE	Lower skilled jobs in service, clerical, retail and transport industries Trades assistants/technical assistants Other lower skilled jobs Access to further education
Certificate I	VTE	Mostly access to further education and training

a Apprenticeships are generally at the Certificate III level.
b Traineeships are usually at the Certificate II level.

Many jobs require very specific skills and competencies, and in some occupations people cannot work without the relevant qualification. In many other jobs, although specific qualifications are not a prerequisite for employment, qualified people are considered highly desirable and dominate recruitment to these jobs.

This is particularly the case for high-skill occupations (managerial, professional, associate professional and skilled trades occupations). Half of all employment is now in these high-skill jobs.

These different qualifications are the skills pathways to different types of jobs within the labour market, as depicted in Table 9.

The skills profile of the Queensland workforce, as depicted by the attainment of tertiary qualifications issued by either the higher education or VTE sectors, is shown in Table 10.

In total, some 46% of Queenslanders working age population (15–64 years) have a tertiary qualification (i.e. a VTE or higher education qualification). Slightly over half the working age population do not have a tertiary qualification. Queensland's overall skills profile falls slightly behind that of Australia as a whole.

The most widely held qualifications are Certificate III and IV qualifications (17.6%), followed by Bachelor degrees (11.9%).

The skills needs of high-skill jobs are becoming more complex, and employers are increasingly seeking people who have formal qualifications to perform these high-skill occupations.

Table 11 outlines the number of high-skill occupations which are now dominated by qualified workers.[3] In total, there are 211 high-skill jobs.[4]

Classifying those occupations where at least 50% of people employed in them have a formal tertiary qualification from university and/or VTE, we can see that:

- 62 of the 211 high-skill occupations already have a majority of people employed in them with a university qualification (bachelor degree, graduate certificate, graduate diploma, master degree or doctorate);
- 67 of the 211 high-skill occupations currently have a majority of people employed in them with a VTE qualification (Certificate I to IV, diploma or advanced diploma);
- a further 37 of the 211 high-skill occupations currently have a majority of people employed in them with a tertiary qualification of some kind (either university or VTE), without university or VTE dominating as the major skills pathway to that occupation;
- there are still some 45 of the 211 high-skill occupations in the labour market where more than half the people currently employed in them do not have a tertiary qualification.

The skills of Queensland's managers

There are 24 different managerial occupations in the labour market. Currently, the majority of people employed in them (17 of the 24 managerial occupations or 70%) have a tertiary qualification, as shown in Table 11 (above).

Surprisingly, university qualifications are the dominant skills pathway in only five of these (as shown in Table 12). These are engineering managers, policy and planning managers, health services managers, education managers and commissioned officers in the defensive services. VTE qualifications dominate in only one category – building and construction managers. Some seven of the 24 managerial jobs have the majority of people employed in them holding a tertiary qualification (either university or VTE). This group includes general managers, finance managers, human resource managers, child care managers, and sales and marketing managers. Managerial occupations where fewer than half those employed in them hold a tertiary qualification are mainly in the agricultural sector.

TABLE 10: THE QUALIFICATIONS PROFILE OF THE WORKING AGE POPULATION, 2004

	Queensland %	Australia %
Postgraduate degree	2.0	2.8
Graduate diploma/certificate	2.1	2.5
Vocational graduate diploma/certificate Bachelor degree[a]	11.9	13.6
Advanced diploma/diploma or Associate degree[b]	6.9	7.8
Certificate III/IV	17.6	15.5
Certificate I/II	5.9	6.2
Total with tertiary qualifications	46.4	48.4
Total without tertiary qualifications	53.6	51.6
Total	100.0	100.0

a Vocational graduate diplomas/certificates are new qualifications that were introduced into the AQF in 2005.

b Associate degrees were incorporated into the AQF in 2004, so the first graduates under the AQF were not completed by the time of the survey.

Source: Department of Employment and Training (2005a), p. 12.

TABLE 11: THE NUMBER OF HIGH-SKILL OCCUPATIONS IN QUEENSLAND BY QUALIFICATIONS PATHWAY

Occupations[a]	Share of total employment %	No. of occupations where: University qualifications are the main skills pathway[b]	VTE qualifications are the main skills pathway[c]	Combination of university and VTE qualifications are the main skills pathway[d]	More than 50% of persons employed do not have a tertiary qualification	Total
	%	no.	no.	no.	no.	no.
Managers & administrators	8.7	5	1	11	7	24
Professionals	16.5	57	4	14	4	79
Associate professionals	12.2	0	14	10	17	41
Tradespeople & Related workers	13.2	0	48	2	17	67
Total	50.6	62	67	37	45	211

a Australian Standard Classification of Occupations (ASCO) at the four-digit level
b University is defined as the main skills pathway for a job when at least 50% of all persons employed in that job have a university qualification.
c VTE is defined as the main skills pathway for a job when at least 50% of all persons employed in that job have a VTE qualification.
d A combination of university and VTE qualifications refer to jobs where at least 50% of all persons in that job have a tertiary qualification from either university or VTE. (Source: Australian Bureau of Statistics Census of Population and Housing 2001).

TABLE 12: SKILL PATHWAYS FOR MANAGERIAL OCCUPATIONS

Managerial jobs	
where university qualifications are main skills pathway	
• Engineering managers	• Commissioned officers
• Policy & planning managers	• Education managers
• Health services managers	
where VTE qualifications are main skills pathway	
• Building & construction managers	
where a mixture of university and VTE qualifications are the main skills pathway	
• General managers	• Sales & marketing mangers
• Finance managers	• Child care managers
• Company secretaries	• Media producers & artistic directors
• Human resource managers	• Legislators & government appointed officials
• Production managers	• Other specialist managers
• Information technology managers	
where the majority of employees have no tertiary qualifications	
• Importers, exporters & wholesalers	• Crop farmers
• Manufacturers	• Mixed crop & livestock farmers
• Supply & distribution managers	• Aquaculture farmers

Source: Department of Employment and Training (2005a), p. 47.

As shown in Figure 7, only 52% of Queensland's managers currently have a tertiary qualification. Almost 23% of managers have a university qualification, and 29% currently have a VTE qualification.

Comparing these figures, it is clear that there is a skills deficit in the managerial occupations, with 70% of jobs now dominated by people with tertiary qualifications, and yet just under half of all people employed in managerial occupation actually hold a tertiary qualification.

Managerial occupations are becoming increasingly complex and are requiring more and more high-level skills. Most, if not all, managerial jobs in the long term will benefit from having people having tertiary qualifications.

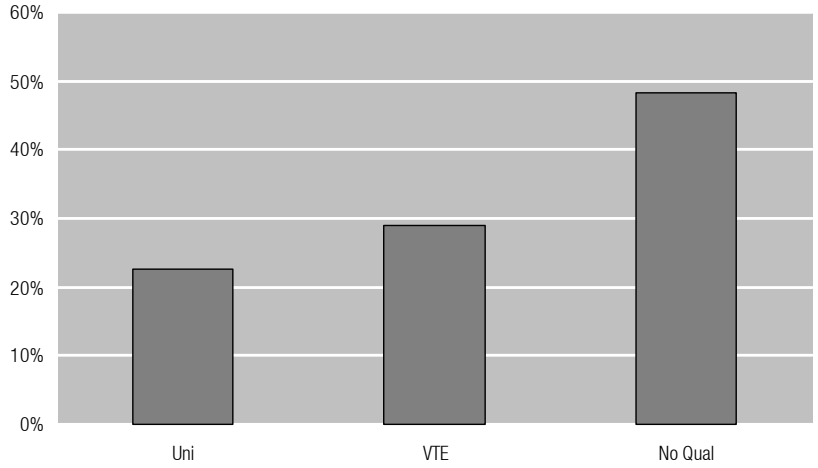
Skills in professional occupations

Most professional occupations are dominated by people with tertiary qualifications. Of 79 professional occupations listed in Table 11 above, some form of tertiary qualification provides the primary pathway to 75 of them, or 95% of all professional occupations, as shown in Table 8 (above). Of these:

- university is the primary pathway for 57 different professional jobs or 72% of all professional occupations;
- vocational education and training is the primary pathway for four professional occupations or some 5% of all professional jobs;
- mixed tertiary qualifications, through either university or VTE, provide the main skills pathways for a further 14 professional jobs, or some 18% of all professional occupations.

Only 5% of professional jobs (four specific occupations) are not currently dominated by tertiary qualified people. The breakdown of specific professional occupations by main qualification/skills pathways is shown in Table 13. University qualifications now dominate the skills pathways for most professional jobs. VTE is the primary pathway for natural therapy professionals, air and sea transport professionals, and some health professionals. A mixture of university and VTE qualifications are the main pathways to professional occupations in sales, marketing, business, property, media, and design.

FIGURE 3-7 EMPLOYEES IN MANAGERIAL OCCUPATIONS, BY TYPE OF QUALIFICATION



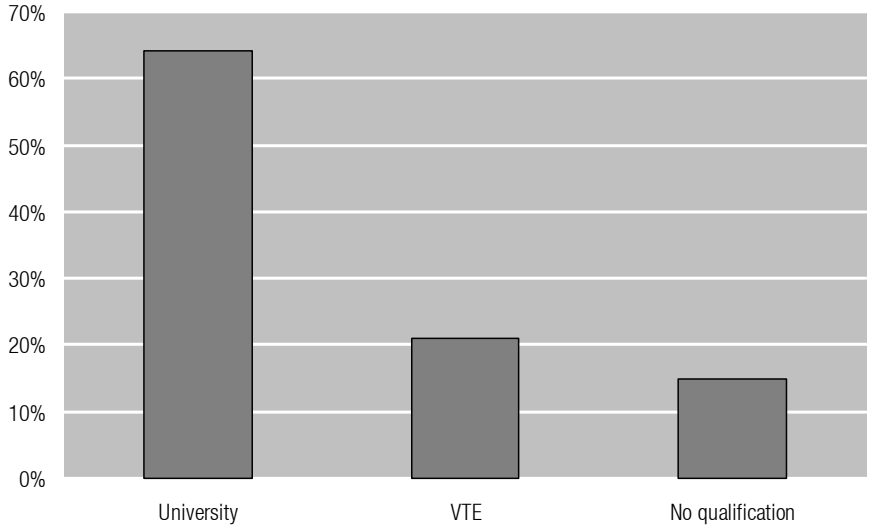
Source: Department of Employment and Training (2005a), p. 48.

TABLE 13: SKILL PATHWAYS FOR PROFESSIONAL OCCUPATIONS

Professional jobs	
where university qualifications are main skills pathway	
Chemists	Registered developmental disability nurses
Geologists & geophysicists	Dental practitioners
Life scientists	Pharmacists
Environmental & agricultural scientists	Occupational therapists
Medical scientists	Optometrists
Natural & physical scientists	Physiotherapists
Architects & landscape architects	Speech pathologists
Quantity surveyors	Chiropractors & osteopaths
Civil engineers	Podiatrists
Electrical & electronics engineers	Medical imaging professionals
Mechanical, production & plant engineers	Veterinarians
Mining & materials engineers	Dieticians
Engineering technologists	Pre-primary school teachers
Other building & engineering professionals	Primary school teachers
Accountants	Secondary school teachers
Auditors	Special education teachers
Corporate treasurers	University lecturers & tutors
Computing professionals	Vocational education teachers
Librarians	English as a Second Language teachers
Mathematicians, statisticians & actuaries	Education officers
Other business & IT professionals	Social workers
Generalist medical practitioners	Counsellors
Specialist medical practitioners	Psychologists
Nurse managers	Legal professionals
Nurse educators & researchers	Economists
Registered nurses	Urban & regional planners
Registered midwives	Other social professionals
Registered mental health nurses	Journalists, authors & related professionals
where VTE qualifications are main skills pathway	
Natural therapy professionals	Air transport professionals
Other health professionals	Sea transport professionals
where a mixture of university and VTE qualifications are the main skills pathway	
Cartographers & surveyors	Ministers of religion
Marketing & advertising professionals	Photographers
Technical sales representatives	Designers & illustrators
Human resource professionals	Film, television, radio & stage directors
Business & organisation analysts	Occupational & environmental health professionals
Property professionals	
Extra systemic teachers	Welfare & community workers
where the majority of employees have no tertiary qualifications	
Visual arts & crafts professionals	Media presenters
Actors, dancers & related professionals	

Source: Department of Employment and Training (2005a), p. 49.

FIGURE 3-8 EMPLOYEES IN PROFESSIONAL OCCUPATIONS, BY TYPE OF QUALIFICATION



Source: Department of Employment and Training (2005a), p. 50.

Even though 85% of professionals are currently tertiary qualified, making the professionals by far the best qualified component of the workforce, there is still an under-qualified workforce, as 95% of professional jobs are already dominated by people with tertiary qualifications. The breakdown of the level of qualifications held by the professional workforce is shown in Figure 8.

Around 64% of all people employed in professional occupations hold a university qualification and almost 21% hold a VTE qualification as their highest qualification. Interestingly, there is a growing group of professionals who have undertaken VTE as well as university.

Professional workers are the most highly qualified group within the Queensland workforce, with 85% of them currently holding a tertiary qualification, although it is difficult to envisage that virtually all professionals would not need to be tertiary qualified in the future.

Skills of associate professionals

Associate professional occupations cover a wide range of high-skill jobs at the para-professional level, as listed in Table 14. Associate professional occupations include highly skilled technicians in the building, architecture, surveying, civil engineering, electrical engineering, electronics engineering, mechanical engineering, computing support and other related technical fields. These occupations also include highly skilled occupations in the health and community service fields, finance and business, retail, sports and hospitality fields, as well as police and skilled emergency service workers.

Some 17 of the 41 associate professional jobs in the labour market currently have the majority of people working in them holding a tertiary qualification, as shown in Table 11.

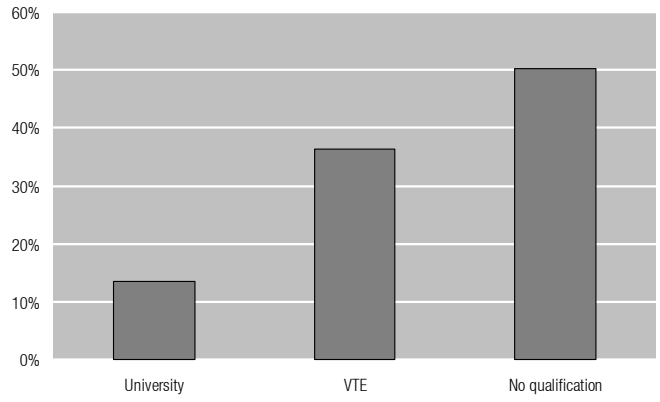
As shown in Table 14, university is currently not a main skills pathway for any associate professional occupations. VTE is the main skills pathway for about 34% (or 14 of the 41 occupations) of associate professional occupations, particularly in the fields of engineering, building, health and emergency services. Some kind of tertiary qualification (either VTE or university) is the main skills pathway for a further 25% of associate professional occupations (some 10 of 41 occupations), especially in the fields of science, medicine, finance, computing and welfare. Over 40% of associate professional occupations (17 of the 41 occupations) currently only have a minority of people working in them who have some kind of tertiary qualification – even though associate professional jobs are among the highest skilled jobs in the labour market.

TABLE 14: SKILL PATHWAYS FOR ASSOCIATE PROFESSIONAL OCCUPATIONS

Associate Professional Jobs	
where university qualifications are main skills pathway	
None	
where VTE qualifications are main skills pathway	
Building, architectural & surveying associate professionals	Chefs
Civil engineering associate professionals	Enrolled nurses
Electrical engineering associate professionals	Ambulance officers & paramedics
Electronics engineering associate professionals	Dental associate professionals
Mechanical engineering associate professionals	Massage therapists
Other building & engineering associate professionals	Primary products inspectors
	Senior fire fighters
	Library technicians
where a mixture of university and VTE qualifications are the main skills pathway	
Medical technical officers	Welfare associate professionals
Science technical officers	Aboriginal & Torres Strait Islander health service workers
Financial investment advisers	Police officers
Project and program administrators	Safety inspectors
Computing support technicians	Miscellaneous associate professionals
Customer service managers	
where the majority of employees have no tertiary qualifications	
Branch accountants & managers (financial)	Other hospitality & accommodation managers
Financial dealers & brokers	Sport & recreation managers
Office managers	Transport company managers
Real estate associate professionals	Other managing supervisors (sales & service)
Shop managers	Sportspersons, coaches & related associate professionals
Restaurant & catering managers	Senior non-commissioned defence force officers
Hotel & motel managers	Retail buyers
Club managers (licensed premises)	Miscellaneous associate professionals
Caravan park & camping ground managers	

Source: Department of Employment and Training (2005a), p. 51

FIGURE 3-9 EMPLOYEES IN ASSOCIATE PROFESSIONAL OCCUPATIONS, BY TYPE OF QUALIFICATION



More than half of all associate professionals employed in Queensland (50.2%) do not have a qualification, as shown in Figure 3-9 (above), yet qualifications are the main pathways for about 60% of jobs. Of those associate professionals who currently have a tertiary qualification, 27% have a university qualification and 73% have a VTE qualification.

This situation is of major concern. The associate professional workforce is underqualified at present. It is an unsustainable, long-term situation where only half of the workers in this group of higher skill jobs would have a tertiary qualification. The expectation needs to be that all associated professional workers will need to hold tertiary qualifications in the long term.

The skills profile in the skilled trades occupations

Trades employment growth was very sluggish for most of the past decade, averaging only 1.7% growth per year from 1997 to 2002. However, growth in the years 2002–04 has shot up to nearly 6% per year. This growth has occurred across most trades, but is especially due to the high demand for building and construction tradespeople. This growth is enormous by historical standards and has created major pressures for skills shortages across the sectors of the Queensland economy that employ tradespeople.

Vocational and technical education through trades apprenticeships is currently the main skills pathway to about 72% of trades occupations. This includes traditional trades such as plumbing and carpentry as well as new and emerging trades in industries such as aviation and marine.

Not surprisingly, most trades jobs (48 of 67) have a majority of people employed in them with a VTE qualification (Table 11). However, in just under 30% of all trades jobs (17 of 67) the majority of people employed have no tertiary qualification.

The "under-qualified" trades include metal finishing, cooks and a range of agricultural and horticultural trades, as shown in Table 15.

TABLE 15: SKILLS PATHWAYS FOR SKILLED TRADES JOBS

Skilled trades jobs	
where university qualifications are main skills pathway	
None	
where VTE qualifications are main skills pathway	
General mechanical engineering tradespeople	Fibrous plasterers
Metal fitters & machinists	Roof slaters & tilers
Toolmakers	Bricklayers
Aircraft maintenance engineers	Solid plasterers
Precision metal tradespeople	Wall & floor tilers & stonemasons
General fabrication engineering tradespeople	Painters & decorators signwriters
Structural steel & welding tradespeople	Floor finishers
Forging tradespeople	Plumbers
Sheet metal tradespeople	Meat tradespeople
Metal casting tradespeople	Bakers & pastry cooks
Motor mechanics	Wool, hide & skin classers
Automotive electricians	Graphic pre-press tradespeople
Panel beaters	Printing machinist & small offset printers
Vehicle painters	Binders & finishers
Vehicle body makers	Wood machinists & turners
Vehicle trimmers	Cabinet makers
Electricians	Hairdressers
Refrigeration & air conditioning mechanics	Upholsterers & bedding tradespeople
Electrical distribution tradespeople	Footwear tradespeople
Electronic instrument tradespeople	Marine construction tradespeople

Electronic & office equipment tradespeople	Glass tradespeople
Communications tradespeople	Jewellers & related tradespeople
Carpentry & joinery tradespeople	Fire fighters
	Power generation plant operators
where a mixture of university and VTE qualifications are the main skills pathway	
Other wood tradespeople	Miscellaneous tradespeople & related workers
where the majority of employees have no tertiary qualifications	
Metal finishing tradespeople	screen printers
Cooks	Clothing tradespeople
Other food tradespeople	Leather goods, canvas goods & sailmakers
Farm overseers	Florists
Shearers	Drillers
Animal trainers	Chemical petroleum & gas plant operators
Nursery persons	Other defence force members
Greenkeepers and gardeners	Performing arts support workers

Source: Department of Employment and Training (2005a), p. 53.

Although skilled trades are an area of the labour market where qualified and skilled labour should be universal, some 34% of people employed in the trades in Queensland are not currently fully qualified, as shown in Figure 3-10, page 66.

The trades are highly skilled occupations with precise technical requirements that are rapidly becoming much more complex and sophisticated. While many of the people who are working in the trades without the required qualifications do have most or many of the required skills and competencies, it is difficult to envisage that people could get by without the appropriate qualifications in the trades of the future.

Continued government support to assist virtually all tradespeople to attain an appropriate vocational trades qualification in the longer term must be one of the highest priorities for meeting the future skills needs of the economy.

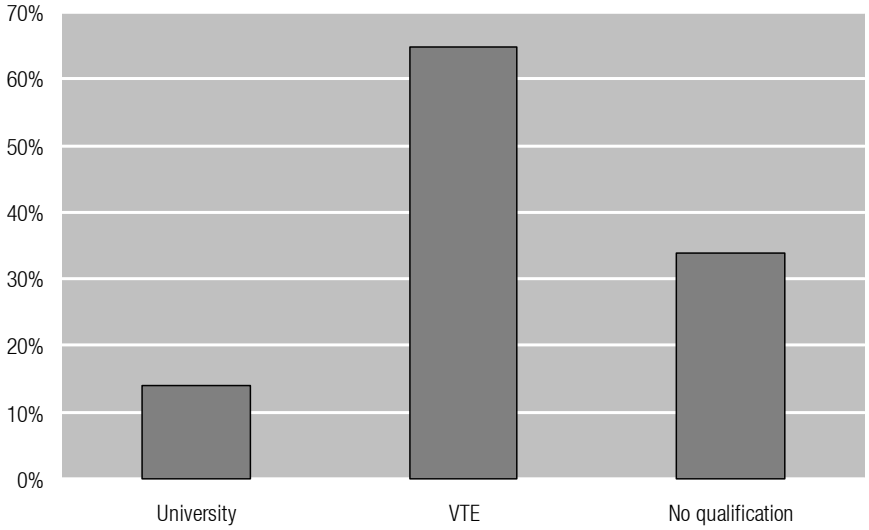
The skills profile in lower skilled jobs

There are some 129 occupations in the clerical, sales and service, production and transport, and labouring areas of the labour market that can be classified as lower skill jobs. Around half of all people employed in Queensland are employed in these lower skill jobs.

The majority of people working in these lower skill jobs do not have a tertiary qualification. As shown in Table 16:

- in only two of the 10 advanced clerical and service work occupations do employees have a tertiary qualification (service risk surveyors and investigators, and desktop publishing operators);
- in only five of the 35 intermediate clerical, sales and services jobs do the majority of employees have a tertiary qualification (veterinary nurses, prison officers, personal care consultants, fitness instructors, and travel and tourism agents);
- in only one of 34 intermediate production and transport jobs does the majority of employees have a tertiary qualification (engine and boiler operators);
- not surprisingly, none of the 22 elementary clerical, sales and service jobs or the 28 labourer jobs have a majority of people employed in them with a tertiary qualification.

FIGURE 3-10 THE PROPORTION OF PERSONS EMPLOYED IN SKILLED TRADES OCCUPATIONS WITH A QUALIFICATION



Source: Department of Employment and Training (2005a), p. 54.

TABLE 16: THE NUMBER OF LOW-SKILL OCCUPATIONS IN QUEENSLAND BY QUALIFICATIONS PATHWAY

Occupations[a]	Share of total employment %	No. of occupations where:				
		University qualifications are the main skills pathway[b]	VTE qualifications are the main skills pathway[c]	A combination of university and VTE qualifications are the main skills pathway[d]	More than 50% of persons employed do not have a tertiary qualification	Total
Advanced clerical, sales & service workers	**3.5**	**0**	**1**	**1**	**8**	**10**
Intermediate clerical sales & service workers	17.1	0	1	4	30	35
Intermediate production & transport workers	8.6	0	0	1	33	34
Elementary clerical, sales & services workers	10.3	0	0	0	22	22
Labourers & related workers	9.9	0	0	0	**28**	28
Total	49.4	0	2	6	121	129

a Australian Standard Classification of Occupations (ASCO) at the four-digit level.
b University is defined as the main skills pathway for a job when at least 50% of all persons in the occupation have a university qualification.
c VTE is defined as main skills pathway for a job when at least 50% of all persons employed in that job have a VET qualification.
d A combination of university and VET qualifications refers to jobs where at least 50% of all persons employed in that job have a tertiary qualification from either university or VTE.

Source: Department of Employment and Training (2005a), p. 55.

The qualifications held by people who are employed in lower skill jobs are shown in Table 17. Just over 4% of all people working in lower skill jobs have a university qualification. None of these jobs requires a university qualification and this comparatively low proportion suggests that there is no major "over-qualification" problem of too many university graduates ending up in low-skill employment.

Almost 15% of people working in lower skill jobs have a VTE qualification and are working in occupations where national VTE training packages exist (see Table 16). National VTE training packages are the nationally agreed frameworks specifying the skills and competencies required to perform the work in occupations or clusters of occupations. They also provide the framework to allow the skill competencies to be specified as nationally recognised qualifications under the AQF. They identify those occupational areas where VTE qualifications are required or are useful to perform the work in particular occupations. This means that some 15% of people currently employed in lower skill occupations where it is useful to hold a national VTE qualification actually do have one.

Some 5% of people working in lower skill occupations have a VTE qualification but are working in a job where there is no national VTE training package. This could be interpreted as working in an occupation where a VTE qualification is not necessary. This represents a relatively small "over-qualification" issue.

Some 58% of people working in lower skill occupations are working in a job where there is a national VTE training package, but they do not hold a qualification. This is a major component of the workforce for whom a VTE qualification would be useful in performing the work of their occupation.

Some 18% of people in lower skill jobs have no qualifications and are working in jobs where no national VTE training package exists. These are generally low-skill jobs for which VTE training is not really necessary.

As shown in Table 17 some 72.5% of employment in lower skilled occupations is in occupations where national VTE training packages are available. VTE is desirable for workers in these occupations. It is unlikely, however, that all employees in these occupations will become tertiary qualified. People can and do undertake these occupations with informal on-the-job instruction. However, in the long run, as skill requirements for many of these occupations increases, it will become increasingly beneficial in terms of improving labour productivity to significantly increase the proportion of VTE qualified workers from the current level of just below 15%.

The mismatch between the current profile of skills and the skills needed in the labour market

To determine what the real skill deficits in the Queensland economy are we need to gauge to what extent there is a mismatch between the current skills profile of the workforce and the skill requirements of different occupations in the labour market.

The Department of Employment and Training (2005a, pp. 22–5) outlined three steps in determining what the skills deficits in the labour market are:

- First, ascertain how much total employment relates to university education as the skills pathway, how much total employment relates to VTE as the skills pathway, and what proportion of total employment currently does not require tertiary training.
- Second, estimate how we expect the position to change in the coming years given the current trends of high employment growth in most high-skill occupations.
- Third, compare this expected profile of skills for future jobs with the current skills profile of the working age population.

In considering the first step, employment in occupations where university is currently the relevant skills pathway can be defined as all employment in higher skill jobs (i.e. managerial professional, associate professional and trades occupations) where the employee holds a university qualification.

TABLE 17: THE QUALIFICATIONS HELD BY PEOPLE EMPLOYED IN LOWER SKILL OCCUPATIONS (A)

Occupation categories	Proportion of people employed in the occupational group with:					Total employment
	University qualifications %	VTE qualifications in an occupation where training package coverage exists %	VTE qualifications in an occupation where there is no training package coverage %	No tertiary qualifications but in an occupation where a training package coverage exists %	No tertiary qualifications in an occupation where there is no training package coverage %	in occupational group %
Advanced clerical & sales jobs	7.9	17.6	3.2	65.3	6.0	100.0
Intermediate clerical & sales jobs	7.0	16.4	8.9	38.6	29.1	100.0
Intermediate production process & transport jobs	1.6	15.9	5.9	58.7	17.9	100.0
Elementary clerical, sales & service jobs	3.8	10.8	3.7	60.4	21.3	100.0
Labouring jobs	1.8	12.3	3.7	66.6	15.6	100.0
Average, all lower skilled jobs	4.4	14.6	5.1	57.9	18.0	100.0

Lower skill occupations make up around half of all employment

Source: Department of Employment and Training (2005a), p. 56.

Employment in occupations where VTE is currently the relevant skills pathway can be defined as:

- all employment in higher skill jobs where the employee holds a VTE qualification; and
- all employment in lower skill occupations where a national VTE training package exists and where the employee holds a VTE qualification.

Those not currently in a relevant skills pathway can be defined as those in low-skill jobs who are currently overqualified because they hold a university qualification or a VTE qualification in occupational areas where a national VTE training package does not exist. The category of those not currently in a skills pathway includes all those currently without a tertiary qualification, irrespective of whether they are employed in a high-skill or low-skill occupation.

Currently it is estimated that just under 15% of total employment is in jobs where university qualifications or where university qualifications are desirable, and where those employed in them possess these qualifications. As shown in Table 18, some 26% of current employment is in jobs requiring a VTE qualification or where the possession of VTE qualifications is desirable, and where those employed in them have a VTE qualification (Table 18).

TABLE 18: CURRENT UNIVERSITY AND VTE SKILLS PATHWAYS IN THE QUEENSLAND LABOUR MARKET

Current skills pathways	Proportion of total employment %
University pathways	
High-skill occupations (a) where those employed in them currently have a university qualification	14.4
Total current university pathway	14.4
VTE pathways	
High-skill occupations (a) where those employed in them currently have a VTE qualification.	19.0
Other occupations (b) where a VTE training package exists and those employed in them currently have a VTE qualification	7.1
Total current VTE pathway	26.1
No current skills pathways	
Over-qualified university: low-skill occupations (b) where those employed in them have a university qualification	2.2
Over-qualified VTE: low-skill occupations (b) where no training package exists and those employed in them have a VTE qualification	2.9
All unqualified employment in high and low-skill occupations	54.4
Total employment currently not in relevant skills pathway or not requiring tertiary skills	59.5
Total employment	100.0

a High-skill occupations are defined as managerial, professional, associate professional and trades occupations.
b Low-skill occupations are defined as advanced clerical and service occupations; intermediate clerical, sales and service occupations; clerical, sales and service occupations; and labourer occupations.

Source: Department of Employment and Training (2005a), p. 23.

Almost 60% of current employment is estimated to be taken up by those who are "over-qualified" for the job they are doing, those who do not have the appropriate qualifications for the job they have and those who are in a job that does not require tertiary qualifications (Table 17).

The second step referred to above is to ascertain which jobs really should have university pathways, which should have VTE pathways, and which really do not require a tertiary qualification, given our assessments of likely skill needs changes in different occupations.

The assessments made by the Department of Employment and Training (2005a, pp. 22–3) were that:

- all or most managerial occupations in the future would benefit from people having tertiary qualifications and, as described earlier, we expect the proportion of managers with a VTE qualification to rise to 60%, as most of the current managers who are not qualified are in technical managerial areas where a VTE training package exists (noting that only 51.6% of managers currently have a tertiary qualification);
- all professionals require tertiary qualifications (noting 98% are already qualified), but that the proportion with a VTE qualification as their highest level tertiary qualification can be expected to fall (we estimate to 15% of the total);
- most, if not all, associate professionals require or would benefit from having tertiary qualifications, given the high-skill nature of the work in these occupations. Although VTE qualifications dominate these occupations where people currently have a tertiary qualification, we expect the proportion with

university qualifications to rise to around 35% of associate professional employment in the long run (noting that only 49.8% of associate professionals currently have a tertiary qualification);

- almost two-thirds of tradespeople are currently qualified (almost all with VTE qualifications but a very small number have both a VTE and university qualification). We expect this proportion to rise to virtually all tradespeople in the long run;
- just over one-third of total employment is in lower skill occupations where VTE national training packages exist. VTE training is relevant and desirable for all employment in these occupations and so this area of the labour market is identified as employment through VTE skills pathways. It is unlikely, however, that all employees in these occupations will ever be tertiary qualified;
- the remainder of the workforce are either tertiary qualified now but are working in low-skill jobs that do not require a university or VTE qualification (which is around 5% of total employment), or are unqualified and are working in jobs that do not and will not require a tertiary qualification in the future (some 10% of total employment).

TABLE 19: POTENTIAL TOTAL EMPLOYMENT IN OCCUPATIONS WITH UNIVERSITY AND VTE SKILLS PATHWAYS IN THE LABOUR MARKET

Occupation	Proportion of total employment (%)			
	University skills pathway	VTE skills pathway	Occupations not requiring tertiary qualifications	Total
High-skill occupations				
Managerial & administrative occupations	3.5	5.2	0	8.7
Professionals	14.0	2.5	0	16.5
Associate professionals	4.2	7.9	0	12.1
Skilled trades	0	13.2	0	13.2
Low-skill occupations				
Occupations where a VTE training package exists	0	34.0	0	34.0
Other low-skill occupations	0	0	15.5	15.5
Total	21.7	62.8	15.5	100.0

Source: Department of Employment and Training

TABLE 20: POTENTIAL QUALIFICATIONS PATHWAYS FOR JOBS AND QUALIFICATIONS PROFILE OF THE POPULATION

Potential qualifications pathways for jobs	% of employment
Jobs that currently and potentially have a university pathway	21.7
Jobs that currently and potentially have a VTE pathway	62.8
Jobs not requiring tertiary qualifications	15.5

Current qualifications profile of the population	% of 15–64 population
University qualifications	16.4
VTE qualifications	30.0
No tertiary qualifications	53.6

Source: Department of Employment and Training (2005a), p. 25.

The third step is to compare the current profile of the educational qualifications of the working age population with the above estimates of qualifications/skills pathways for different jobs in the labour market.

This comparison is shown in Table 19. Just over 16% of the population aged 15 to 64 years (who have left school) currently have a university qualification, but we estimate that 22% of jobs will require or benefit from university qualifications. This means that in an aggregate sense the supply of people with a university qualification does not yet match the demand for skills in jobs requiring university qualifications. Although the level of mismatch is only 6 percentage points.

The same cannot be said about the VTE sector. As shown in Table 20, nearly two-thirds of all employment is in jobs where VTE is the skills pathway into them, yet only 30% of Queenslanders of working age currently have a VTE qualification.

The proportion with no qualification, at over 50% of the workforce, is far too high to meet contemporary, let alone future skills needs in the Queensland labour market. We estimate that only a small majority of jobs (around 15%) do not or will not require any qualifications.

Continuation of current patterns could see the emergence of a pattern of an oversupply of some university qualifications, with some university-qualified people ending up in lower skilled employment, not utilising the qualifications they have.

At the same time a continuation of current patterns will also see persisting shortages in high-skill and well-paying jobs in associate professional and some skill trades occupations where VTE is the main skills pathway.

A much better balance in Queensland is needed between university and VTE with the future expansion of tertiary education in aggregate terms directed towards the key VTE skills that are in deficit in the labour market.

In examining the data, the Department of Employment and Training (2005a, pp. 16–17) went on consider what the training shortfalls in particular skilled occupations might be. It estimated the extent of training shortfalls in the major associate professional and trades occupations in Queensland. The estimates include the annual increases in training that would be required to meet the projected skill needs arising from employment growth and labour turnover in these occupations. The estimates also included estimates of the training intake increases required each year to eliminate the current skill shortage backlog over the next 20 years. The estimates are shown in Table 21.

TABLE 21: ESTIMATED TRAINING SHORTFALLS FOR MAJOR SKILL SHORTAGES AMONG ASSOCIATE PROFESSIONALS AND TRADESPEOPLE

Department of Workplace Relations[a]	Department of Employment and Training Training Needs Assessment			
Associate professionals	Associate professionals	Annual shortfall	Backlog reduction[b]	Total
Not in DEWR survey	Science & **e**ngineering:			
	– Medical **t**echnicians	730	150	880
Not in DEWR survey	Business & **a**dministration	9100	3400	12500
Not in DEWR survey	Managing **s**upervisors (**s**ales & **s**ervice)	8500	2300	10800
Health & Welfare:	Health & **w**elfare:			
– Enrolled Nurse	– Other	950	210	1160
Total associate professionals		19280	6060	25340
Tradespeople	**Tradespeople**			
Engineering	Engineering **t**rades	2200	1000	3200
Automotive – All	Automotive			
	– Panel beaters	170	90	260
	– Vehicle trimmers	120	10	130
Electrical & Electronic	Electrical & electronic	120	710	830
Construction	Construction	3300	1370	4670
Food	Food:			
	– Meat	590	140	730
	– Bakers/Pastrycooks	1160	110	1270
Other:	Other:			
– Hairdresser	– Hairdresser	310	200	510
– Upholsterer	– Upholsterer	320	40	360
Total tradespeople		8290	3670	11960
Total		**27570**	**9730**	**37300**

a National and State Skill shortage lists published by the Commonwealth Department of Employment and Workplace Relations (DEWR) define skill shortages as existing "when employers are unable to fill or have considerable difficulty in filling vacancies for an occupation, or specialised skill needs within that occupation, at current levels of remuneration and conditions of employment, and reasonably accessible location".

b Additional training places required annually to eliminate current lack of qualifications for existing workers by 2024–25.

Source: Department of Employment and Training (2005a), p. 17.

The Department of Employment and Training (2005a, p. 17) estimates suggest that the main associate professional skill shortages are in various business and administrative para-professional occupations and among managing supervisors in various marketing, sales and service para-professional occupations.

There are also significant skill shortages among medical technicians and health and welfare para-professionals. We would expect enrolled nurses and other health para-professionals to experience significant shortages in the future as the population ages, bringing with it a sharp rise in demand for many health services.

These estimates suggest a need to increase training intakes for some of the key associate professional occupations experiencing skill shortage in Queensland by around 25,000 per year.

Skill shortages are also being experienced across most trades in Queensland. These estimates suggest the biggest shortages are in building and construction trades and food trades. The Department of Employment and Training (2005a, p. 17) estimated that training in skilled trades would need to increase by almost 12,000 per year to overcome trades skill shortages.

Why do skills matter?

Skills are the key to future economic prosperity

There is a growing body of evidence linking economic prosperity to skills and the level of education and training attainment of the population.[5] Moreover, skills are increasingly being perceived as a key part of the economic infrastructure that drives economic prosperity and establishes a nation or a region's comparative economic sustainability.

The Organisation for Economic Cooperation and Development (OECD), in a recent report on the Australian economy, suggested that a "10% increase in the education … [and training] … levels of the working age population nationally would raise per capita Gross Domestic Product (GDP) by 4 to 7%" (p. 24). The OECD also argues that "more and better labour input is now the challenge in boosting productivity and sustaining economic growth" (p. 24).

Modelling done by Access Economics quantifies the link between increased skills in the workforce arising from higher productivity and high labour force participation as contributing to higher GDP in Australia. They found an increase of 50,000 students retained in school or apprenticeships would, by 2040, lead to:

- a rise in participation in education and training of 0.48%;
- an increase in productivity of 0.62%;
- a lift in the overall size of GDP of 1.1% (Access Economics 2005, p. ii).

This followed earlier work carried out by Applied Economics and the Australian Treasury which demonstrated that there were considerable economic benefits from raising participation in education and training.[6]

The Australian Treasury has certainly warned of the cost of doing nothing to raise the skill levels of the population by increasing productivity and labour market participation. It estimates that growth in GDP per capita will decline by an average three-quarters of a percentage point per annum over the next 40 years, compared with average per capita GDP growth over the last 40 years, unless governments intervene and make strategic policy responses, including changes to education and training policy (Henry 2003).

Queensland's economic growth has led the country in recent years. In the five years to 2002–03, Queensland's Gross State Product (GSP) grew by 5.1% per year compared with 3.3% per year for the rest of Australia. Two-thirds of the difference between Queensland's economic growth and the rest of Australia during this period resulted from increases in productivity through innovation, increased capital investment and improved workforce skills. The state's labour productivity growth for the period was 2.9% per year compared to 1.7% for the rest of Australia (Queensland government 2004).

Skills are also an important factor in maintaining the competitiveness of our economy on an international level. The proportion of the workforce with higher-level skills is becoming an increasingly important factor in explaining differences in the economic performance of different countries. The skill base of the workforce is also becoming increasingly important as a factor that governs international investment decisions. Ultimately the capacity of the workforce to adjust to the changing patterns of employment in the wake of globalisation will have a significant impact on Queensland's ability to attract industry investment.

An indication of where Australia sits internationally in terms of participation in education and training is given in Table 22. Although a direct comparison is not possible between the OECD and Queensland participation rates in education and training the figures quoted for Australia provide a relatively good indication of Queensland's relative position internationally.[7]

TABLE 22: AUSTRALIA'S COMPARATIVE POSITIONS WITHIN THE OECD IN EDUCATION AND TRAINING PARTICIPATION, 2002

Participation in school education, vocational education and higher education*
15- to 19-year-olds • Australian participation rate is 82.6% • OECD average is 79.4% • Australia ranks 12th out of the 30 OECD countries
20- to 29-year-olds • Australian participation rate is 32.9% • OECD average is 22.7% • Australia ranks third out of the 30 OECD countries
30- to 39-year-olds • Australian participation rate is 15.2% • OECD average is 5.4% • Australia ranks second out of the 30 OECD countries
40 years and over • Australian participation rate is 6.7% • OECD average is 1.5% • Australia ranks second out of the 30 OECD countries

* includes both full-time and part-time students. Source: OECD (2004b), p. 278.

Australia experiences relatively poor levels of participation in education and training by young people aged 15 to 19 years. At just under 83%, Australia is slightly above the OECD average, but ranks around the middle at 12th of the 30 OECD countries.

In contrast, Australians in their 20s, 30s, 40s and beyond have very high rates of participation in education and training compared with adults in other OECD countries. We are in a world-leading position in terms of adult participation in education and training (ranking third for people over 20 years of age, equal second for people over 30 years and second for over-40s).

Unfortunately, this relatively high participation by adults does not translate into comparatively high levels of educational attainment by the population, as shown in Table 23.

TABLE 23: TERTIARY EDUCATIONAL ATTAINMENT IN OECD COUNTRIES, 2002

	Vocational qualifications only[a]	University only[b]	Total tertiary
Australia	22	20	42
Austria	64	7	71
Belgium	24	13	37
Canada	34	21	55
Czech Republic[c]	49	6	55
Denmark	55	20	74
Finland	17	16	33

France	42	12	55
Germany	67	13	80
Greece	13	13	26
Hungary[c]	39	6	44
Iceland	16	20	36
Ireland	22	16	38
Italy[c]	13	6	18
Japan	16	20	36
Korea	8	18	26
Luxenbourg	31	12	42
Mexico	3	2	6
Netherlands	31	22	53
New Zealand	43	15	58
Norway[c]	46	28	74
Poland	10	6	16
Portugal	2	7	9
Slovakia	40	10	51
Spain	13	17	30
Sweden	15	18	33
Switzerland	60	16	76
Turkey[c]	10	6	16
United Kingdom	30	19	49
United States	9	29	38
OECD average	28	14	43
Australia's ranking in OECD	16th	6th	15th

a Vocational qualifications are approximately equivalent to Certificates I to IV and diplomas and advanced diploma levels. Calculation of the share of the population aged 25–64 with Certificate I to IV level qualifications was derived as a residual, i.e. by subtracting out the categories at least upper secondary, university only, graduate certificate diploma and diploma, and upper secondary only.

b University qualifications equate to bachelor degrees, graduate diplomas and certificates, master degrees and doctoral degrees.

c Calculation of the shares of 25–64-year-olds with graduate diplomas and diplomas for Czech Republic, Hungary, Italy, Norway and Turkey was based on the average OECD ratio of graduate diploma and diplomas to university qualifications.

Source: OECD (2004b)

Overall, only 42% of Australians aged 25 to 64 years have a tertiary qualification (approximately at Certificate III level or higher). The OECD average for the attainment of equivalent tertiary qualifications is 43%, placing Australia 15th of the 30 OECD countries.

This ranking is the result of relatively low levels of attainment in VET qualifications, with Australia ranking 16th of the 30 OECD countries for VET qualifications, while ranking sixth for university qualification attainment.

Queensland sits slightly below the Australian average in terms of tertiary qualifications held by the population. Nevertheless, the Australian figures again provide a reflection of how Queensland's levels of educational attainment compare internationally.

To reach a world-leading level of educational attainment overall we need to raise the proportion of 25- to 64-year-olds holding a tertiary qualification from 40% to at least 65%. This would align Australia with the current levels of the top five or six OECD countries. As Australia already ranks sixth for university attainment, most of this growth needs to occur through the VET sector.

Skills now determine access to jobs

The Department of Employment and Training (2005a, p. 11) pointed out that

fifty years ago Australians could look forward to secure full-time employment without undertaking further education and training or gaining a post-school qualification. While access to some employment and higher skilled jobs was certainly governed then, as now, by possessing specific university or VET qualifications, Australians could nevertheless secure good employment without completing training or further education after leaving school.

The situation today for Queensland and Australia as a whole is shown in Table 24. This shows that only 58.5% of people who left school before completing year 12 had ongoing employment at the time of the survey. In contrast, the possession of tertiary qualifications is a direct pathway to gain secure employment. Over 80% of all people aged 15–64 years who had a tertiary qualification are employed at any given time.

TABLE 24: EMPLOYMENT OUTCOMES FOR PEOPLE WITH AND WITHOUT TERTIARY QUALIFICATIONS, 2004

	Proportion of people aged 15–64 years who have left school and are employed (%)	
	Queensland	Australia
	2004	2004
Tertiary qualification	80.5	81.5
Without a tertiary qualification		
Completed year 12	73.2	71.3
Left school before completing year 12	58.5	55.8
All without a tertiary qualification	63.2	60.8

Source: Australian Bureau of Statistics (2004).

TABLE 25: EMPLOYMENT OUTCOMES BY TYPE OF TERTIARY QUALIFICATION, 2004

Qualifications level	Education or training sector	Proportion of people aged 15–64 years who have left school who are employed (%)	
Tertiary qualification		Queensland	Australia
Postgraduate degree	University	86.4	86.7
Graduate diploma/certificate	University	84.2	86.3
Vocational graduate diploma/certificate	VET	[a]	[a]
Bachelor degree	University	81.6	83.7
Associate degree	University[b]	0.0	0.0
Advanced diploma/diploma	University & VET	80.6	79.9
Certificate III/IV	VET	82.2	83.3
Certificate I/II	VET	71.7	70.8
All with tertiary qualifications		80.5	81.4

No tertiary qualification			
Completed year 12	School	73.2	71.3
Left school before completing year 12	School	58.5	55.8
All without a tertiary qualification		63.2	60.8

Source: The Australian Bureau of Statistics (2004).

It is of concern that fewer than half the people in the workforce possess a tertiary qualification. In 2004 some 46% of people of working age in Queensland had a tertiary qualification. This rate falls slightly behind the national rate of 48%.

Some qualifications also deliver better job outcomes than others. Table 25 sets out employment outcomes for people in Queensland who hold a tertiary qualification. This shows:

- the best employment outcomes achieved are by those who have a postgraduate degree such as a PhD or a master degree (86.4%) or a postgraduate diploma or certificate (84.2%). These university qualifications offer excellent pathways to jobs;
- VET Certificate III and IV, such as trade qualifications or technician certificates, also offer excellent pathways to jobs. Some 82.2% of people with these qualifications are employed at any one time, which is a slightly higher employment rate than those holding bachelor degrees from universities, where 81.6% are employed;
- diplomas and advanced diplomas, which are offered by both VET and university providers, are also excellent pathways to jobs with 80.6% of Queenslanders with these qualifications being employed.

In general, job outcomes for university and VET graduates at Certificate III level or higher are excellent. These days there is little difference in likelihood of having a job among university and VET graduates with a qualification at Certificate III level or higher.

In contrast, completion of a VET Certificate I or II qualification or the completion of the senior school certificate in year 12 leads to an employment outcome of a bit over 70%. However, dropping out of school early and not returning to further education and training at a future date is now a pathway to infrequent and irregular employment.

The message is clear. The best employment outcomes now require at least a Certificate III, and there is virtually no difference between VET at this level or higher and university qualifications in terms of the likelihood of securing a job. Tertiary qualifications, particularly at Certificate III level or higher are fast becoming the key determinant of whether people have employment. Currently, fewer than half of those in the working age population have tertiary qualifications. Even though there have been significant improvements, with more and more people gaining tertiary qualifications in recent years, a continuation of this situation will not provide a sustainable future.

Skills are a key determinant of individual earnings

The other key aspect of individual economic wellbeing relates to earnings derived from, or the earnings potential of, different qualifications.

The annual starting salaries of TAFE and university graduates for Australians in 2004 is shown in Table 26. Not surprisingly, the annual starting salaries for graduates with bachelor degrees was the highest at $38,000. The starting salaries of bachelor graduates was some 28% higher than an average TAFE graduate, but only 13% higher than TAFE graduates with advanced diploma, diploma or Certificate IV level qualifications.

The average weekly earnings of full-time workers in Queensland with different qualifications is shown at Table 27. The variation between average usual weekly earnings of full-time workers with tertiary qualifications and the earnings of persons who have completed year 12 is shown at Table 28.

TABLE 26: GRADUATE STARTING SALARIES, AUSTRALIA 2004

Qualification of graduate	$	Proportion bachelor degree starting salary is higher (%)
University		
Bachelor degree (median)	38,000	
TAFE		
Certificate IV, diploma or advanced diploma (average)	33,600	13
Certificate III (average)	27,700	37
Certificate I & II (average)	25,500	49
All TAFE graduates (average)	29,700	28

a Bachelor degree starting salaries are the median, where as TAFE graduate starting salaries are averages. This may understate the differences between bachelor and TAFE graduate starting salaries.

Source: Graduate Careers Council of Australia (2004) and National Centre of Vocational Education Research (2004).

TABLE 27: AVERAGE USUAL WEEKLY FULL-TIME EARNINGS BY EDUCATIONAL ATTAINMENT, QUEENSLAND, 2001[A]

Highest level of educational attainment	Males $ per week	Females $ per week	Persons $ per week
Postgraduate degree	1435	1064	1321
Graduate diploma/ graduate certificate	1045	920	966
Bachelor degree	1136	817	972
Advanced diploma/ diploma[b]	1028	693	896
Certificate III or IV	798	531	757
Certificate I or II	556	512	539
Completed Year 12	701	575	653
Left school at Year 11	644	593	629
Left school at Year 10 or below	731	575	673
Average earnings for all educational levels	834	672	776

a Excludes persons aged 15 years and over who are still at school.
b Advanced diplomas and diplomas are offered by university and VET. 95% are VET.

Source: Department of Employment and Training (2005a), p. 13.

TABLE 28: THE EXTENT TO WHICH AVERAGE WEEKLY EARNINGS OF FULL-TIME WORKERS BY TERTIARY QUALIFICATION ARE HIGHER THAN THE EARNINGS OF PERSONS WHO HAVE COMPLETED YEAR 12 AT SCHOOL, QUEENSLAND 2001

Highest tertiary qualification	% Average weekly earnings higher than completing Year 12		
	Males	Females	Persons
Postgraduate degree	104.7	85.0	100.9
Graduate diploma/ graduate certificate	49.1	60.0	47.9
Bachelor degree	62.1	42.1	48.9
Advanced diploma/diploma	46.6	20.5	37.2
Certificate III or IV	13.8	–7.6	15.9
Certificate I or II	–20.8	–11.0	–17.4

Source: Devised from Australian Bureau of Statistics, Survey of Education and Training, 2001

TABLE 29: LIFETIME EARNINGS DIFFERENTIALS IN HIGH-SKILL OCCUPATIONS WITH DIFFERENT QUALIFICATIONS, AUSTRALIA[A]

Qualifications	Earnings differentials	
	Average annual differential[b] $	Total lifetime differential[c] $
	Managers & administrators	
Higher degree over bachelor degree	1,170	41,000
Bachelor degree over diploma/advanced diploma (d)	4,600	161,000
Diploma/advanced diploma over certificate (e)	7,090	248,000
Certificate over no qualification	970	34,000
	Professionals	
Higher degree over bachelor degree	0	0
Bachelor degree over diploma/advanced diploma[d]	0	0
Diploma/advanced diploma over certificate[e]	4,290	150,000
Certificate over no qualification	–1,650	–58,000
	Associate professionals	
Higher degree over bachelor degree	600	21,000
Bachelor degree over diploma/advanced diploma[d]	1,030	36,000
Diploma/advanced diploma over certificate[e]	5,740	201,000
Certificate over no qualification	–60	–2,000
	Tradespeople	
Higher degree over bachelor degree	na	na
Bachelor degree over diploma/advanced diploma[d]	–1,710	–60,000
Diploma/advanced diploma over certificate[e]	2,600	91,000
Certificate over no qualification	1,510	53,000

a Lifetime earnings differentials of males 20–59 years in full-time employment

b Average based on a working lifetime of 35 years

c Total based on a working lifetime of 35 years

d Diplomas and advanced diplomas are offered by university and VET but 95% are VET

e Certificates cover VET Certificates I to IV; Source: Department of Employment and Training (2005a), p. 14.

For males in 2001, when compared to those who had completed year 12 only,:

- bachelor degree holders earned 62% more (an average of $1,136 per week from full-time work compared to $700 per week)
- those with advanced diplomas or diplomas earned nearly 47% more ($1,028 per week)
- those with Certificate IIIs or IVs earned 14% more ($800 per week)
- those with Certificate I or II level qualifications earned 20% less at an average of around $550 per week.

Similar patterns were evident in the full-time earnings of females with different educational attainment, but with female full-time earnings being lower than those for males.

However, the difficulty with this analysis is that there may be significant differences in the wages paid for different types of occupations, even though workers may have the same level of qualification.

A more complete picture is shown by analysing the differences in lifetime earnings for people who work in same skilled occupational categories but hold different tertiary qualifications, as set out in Table 29.

For people in managerial jobs:

- there is a premium for holding degree or higher degree qualifications (based on full-time male earnings);
- managers who have higher degrees will earn just under $1,200 per year more than those with bachelor degrees;
- those with bachelor degrees will earn around $4,600 more per year than those with a diploma or advanced diploma;
- those with a diploma/advanced diploma earn a large premium of over $7,000 per year more than those with certificate qualifications.

For professionals:

- there is little or no difference in lifetime earnings between those who hold higher degrees or degrees from universities and those who hold diplomas or advanced diplomas (most of which are VET qualifications);
- these higher qualifications, however, offer their holders a premium of almost $4,300 per year over professionals who have a VET certificate qualification.

For associate professionals:

- there are small earnings premiums for those with higher degrees over those with bachelor degrees, and for those with bachelor degrees over those with diplomas or advanced diplomas;
- there is a premium of over $5,700 per year for associate professionals with diplomas or advanced diplomas over those with a VET certificate.

For tradespeople there are no premiums for university qualifications.

The results show on the surface that there is a considerable earnings premium for higher qualified managers over those who have VET certificates or no qualifications. However, it should be noted that most managers who have no tertiary qualifications are in the agricultural industries, where reported incomes are lower.

There is less of a difference, and in some cases no difference, in earnings between high-level VET qualifications and university qualifications for professionals and associate professionals. Professionals and associate professionals with higher level VET or university qualifications enjoy higher earnings of between $4,000 and $7,500 more each year than those who have a VET certificate.

The only qualifications that count for tradespeople in determining earnings are VET certificates gained through the apprenticeship system.

These results suggest that most of the observed differences in earnings attributed to university and VET qualifications are really to do with the differences in earnings of different occupations rather than different qualifications. Apart from managers, there are only relatively small annual differences in earnings between holders of higher level VET qualifications and university qualifications for people working in the same occupational category.

Factors impacting on skills formation in Queensland

CAUSES OF SKILLS DEFICITS

The conventional economic literature about skill shortages is outlined by Shah and Burke (2005, pp. 44–71). They point out that there are three main causes of skill shortages arising from a shift in demand for labour with particular skills. These are:

- a slowness in the adjustment of wages
- a slowness in the adjustment of supply of skills
- inadequate labour market information.

The Department of Employment and Training (2005a, p. 11) argues that while only around 45 specific occupations have been officially classified by DEWR as state-wide skills shortages on the Queensland list, suggesting that only a relatively small number of jobs are currently experiencing chronic skills shortages, it is clear that skills deficits in the economy are far deeper and broader than this.

The real skills deficits problem is a far more long-term structural problem than is generally believed. Most people attribute skills shortages to a shortage caused by high cyclical demand at times of a strongly buoyant economy.

There is a major structural imbalance between the skill levels needed in the economy and the supply of people with those skills. Put simply, we estimate that some 85% of jobs in the economy require or would benefit from workers with tertiary qualifications (either from university or a VTE provider), and yet less than half of the working age population (aged 15 to 64 years who have left school) currently hold a tertiary qualification.

The Department of Employment and Training (2005a, p. 25) estimates that just over one in five jobs require or would benefit from university skills, and over three in five jobs require or would benefit from VTE skills. Yet, only around 16% of the working age population currently have a university qualification and only 30% have a VTE qualification.

This is the key underlying skills imbalance in the economy, and it means that skills deficits are very likely to persist unless long-term action is taken to overcome this imbalance.

The Department of Employment and Training (2005a, p. 25) identified four different elements, aspects of long-term skills deficits in the Queensland labour market. These are:

- an urgent current shortage of trades skills in the economy that is partly cyclical (especially in the building industry in response to the major building boom over the past two years) and partly structural, in the sense that many current intakes to the trades apprenticeships system are not sufficient to meet projected growth and turnover in trades occupations. Even more pressing is the need to modernise trade skills training to ensure that the trades workforce is equipped with leading edge skills. Almost two-thirds of tradespeople currently have VTE qualifications (gained through the trades apprenticeship system). In the long-run all tradespeople should hold a VTE qualification;
- a seriously underqualified associate professionals workforce, where only half of the people employed in some of the highest skill jobs in the labour market currently have a VTE or university qualification. We estimate that most associate professionals in the future will need tertiary qualifications (mostly high-level VTE qualifications) to maximise labour productivity. A high priority here is skilling technicians with the latest skills. Ensuring that we have a fully qualified associate professional workforce is the biggest long-term skills deficit in the Queensland and national economies;
- a need for all professional workers to be appropriately tertiary qualified is also a key issue. Currently 85% of all professionals have a university or VTE tertiary qualification, and the majority of these hold a university qualification. However, there is an emerging need for professional workers to gain additional VTE skills so that professional workers are better equipped to meet the rapidly changing professional skills needs in the economy. There is an increasing demand within the workforce for professionals to possess a balance of academic skills (generally gained through a university degree) with specialist high-level VTE skills so that

professionals are equipped with technical and practical skills to reinforce their theoretical knowledge;

- a need to further roll out VTE qualifications across a wide range of lower skill jobs in the economy where productivity gains could be achieved through a better skilled workforce. Currently only 15% of people in lower skilled jobs, where a VTE training package exists, hold a qualification. These occupations make up around one-third of the workforce, and would experience significant productivity and benefits from VTE skills. This underskilling problem, while important, is the least urgent priority. Many, but not all, functional skill needs in lower skilled jobs can be gained in the workplace.

The reasons for skill shortages are complex and varied. They may result from economic or demographic change, incomplete training, qualified workers not working in the occupation for which they are qualified and/or experienced, cyclical fluctuations in labour demand, emerging skill demands of new technology, lack of flexibility in wages and regional mismatches.

Most people assume skills shortages are simply a failure by education and training providers to train enough people to fill the vacancies available. Certainly skill shortages do arise because of a mismatch between the skills of workers and the skills needed, and the VTE system has experienced difficulties in being able to respond quickly enough to changes in labour demand.

The current skill shortages do not appear to have been caused primarily by a lack of training effort overall. As mentioned earlier, Queensland has experienced strong growth in the number of students seeking VTE skills over the past 15 years. Publicly funded students in the Queensland VTE sector grew from around 158,000 in 1990 to just over 290,000 by 2005. This represents over 10% of all people aged 15 to 64 years in Queensland. In addition to this, an estimated further 400,000 Queenslanders participated in accredited VTE programs in private RTOs as commercial fee-paying students.

However, the key problems are:

- not enough of the overall training effort is ending up with people gaining fully recognised skills outcomes in the form of qualifications, with only just over 65,000 students graduating with a VTE qualification each year, even though most students successfully complete each unit they enrol in;
- too much of the training effort is in Certificate I and II level or service industry Certificate IIIs. In fact, enrolments in diplomas and advanced diplomas have declined. Trades skilling has not been given enough emphasis. During the 1980s and 1990s there was a big push for VTE training to deliver beyond trades and concentrate on the service industries where most of the jobs in the economy are. Training providers responded to this. Moreover, to meet national targets and achieve higher outputs at lower unit costs, too much of the total training effort has been in lower skills levels and lower cost training.

There has been a lot of training delivered, but not enough of it has been in the more expensive high-skill programs, particularly those training programs that are important for the associate professional, technician and trades workforces. And not enough of the training effort has been converted into recognised and articulated skills in the form of qualifications.

Current skill shortages are very much the result of significant changes in the nature of work of the last decade. The most critical changes affecting the supply of skilled labour are:

- a very tight labour market. Australia and Queensland in particular are experiencing the tightest labour markets in 30 years, evidenced by a national unemployment rate of 5.1% and a Queensland rate of 4.6% in February 2005. The tight labour market has seen high demand for labour and led to skill shortages across a range of industries;
- the sudden and dramatic change in demand for workers in occupations that require specialised skills. Many industries that were characterised by low or negative employment growth over the past decade are now experiencing a boom in employment. Rapid changes in technology have also led to demand for workers with new skills;
- significant changes in occupational structure. The very strong growth in professional and associate professional occupations has outpaced the take-up of training for these sectors of the labour market.

The other factor which is almost always overlooked in discourse around skills shortages is that many other workplace issues, rather than insufficient training, appear to be the main cause of many skills shortages. These workplace factors include:

- insufficient remuneration to retain skills in an industry or occupation;
- relative unattractiveness of work due to its remote location (away from major centres that offer better employment, education and community services, requiring relocation to small towns/settlements or long or frequent periods of family separation);
- relatively more attractive remuneration packages and working conditions offered by competing employers or industries.

Skill shortages are quite often the result of poor investment in recruitment and retention strategies at an enterprise level. Factors impacting on the ability of employers to attract workers include:

- work organisation – many workers now value lifestyle more than remuneration and do not want a job that includes long hours or shift work;
- job design – young, intelligent, skilled people value meaningful work, career paths, continuous learning, and fair pay;
- adverse perceptions of industry attractiveness – as participation in education and training increases, fewer people seek jobs in "dirty" industries, or industries with a negative image.

Many current workplace practices unintentionally exacerbate skills shortages. These include:

- a "just in time" approach to skilling, where employers prefer to recruit people who have already been trained by somebody else. This approach might work for low-skill jobs but quite simply does not work for higher skilled jobs in the current labour market;
- a reluctance to train, fearing that investing in workforce training will make employees more mobile or lead to demands for higher wages. Employers who lose staff because of a failure to invest in their training, who have an ill-equipped workforce because of a failure to train, or who try to recruit new staff that someone else has already trained, are now finding out how difficult and expensive some of these so-called cost-saving strategies really are;
- a desire to re-engineer business operations through downsizing the existing workforce and recruiting new skills. With skills deficits across many industries, the new skills required to make these strategies work are simply not available in the labour market;

calls on the government to increase skilled migration to tackle skill shortages. Such strategies have been successful in the past for recruiting people to lower skill jobs because such skills can be easily learned on the job. However, these strategies have only marginal impacts because high-level skill shortages are increasingly a global phenomenon. Moreover, the cost of retraining to account for international training differences can be very high.

- a desire by employers to seek new skills (especially ICT skills) in younger people, while offering redundancy packages/early retirement packages for older workers. The reluctance of employers to invest in the skilling of older workers will be a completely ineffective strategy in coming years;
- a desire to have more and more on-the-job training or short bursts of training to minimise the time workers spend away from the job. The skill requirements of today's workplace are increasingly complex, often requiring sophisticated and complex instruction off-the-job at training institutions;
- a desire by employers to treat training as a low priority that gets "fitted in" around slower times in the workplace, such as something to do when bad weather prevents work in outdoor jobs. Strategies that fail to build in training as an ongoing priority are unlikely to succeed in many contexts where complex skills are required.

A failure of employers to change these workplace strategies will have serious consequences at the economy-wide level as the workforce ages.

The impact of globalisation and technological change

Rapid changes in the nature of work arising from globalisation and technological change is a major source of pressure on the need for more skill formation. The rapid changes in the nature of work are perhaps best understood by using a different classification of job types. Some Australian research has examined the changes in employment patterns in Australia in relation to the extent of their exposure to globalisation and the impact of rapid technological change (Maglen 2000; Maglen & Shah 1999; Maglen & Hopkins 2000). Three broad categories of jobs were identified:

First are the occupations that are **positively exposed to globalisation**. These include:

- conceptual creative occupations that require the application of knowledge, reason and creativity in the research, design, development, production and delivery of new and sophisticated products and services;

conceptual technical occupations that require the application of information and knowledge to high-level technical tasks (examples of this type of work includes quantity surveyors, pilots, medical and science technicians, engineering associate professionals etc).

These occupations require high-level skills that are now largely globally traded, which means trends in international labour markets and skill formation policies elsewhere will affect our ability to supply these skills to the national labour market and the Queensland labour market.

The second group includes those jobs that are **vulnerable to the impact of globalisation and technological change**. These occupations involve a wide range of different jobs, some requiring high-skills and some requiring lower skill levels. All of these jobs are in areas where skills are now easily transferable to lower cost economies and/or have been overtaken by technology. The vulnerable occupations are in:

- some manufacturing trades involving some high-skilled occupations where global production is moving to lower cost economies;
- white collar clerical involving medium level skilled occupations primarily associated with clerical office work;
- blue collar operative jobs especially involving semi-skilled occupations, particularly in some sectors of manufacturing (such as production process work), agriculture, mining, utilities, construction, and transport and distribution industries;
- manual low-skilled occupations across all sectors.

The third group comprises the jobs that are largely **insulated from the effects of globalisation** because they are high to medium or even low-skilled services occupations performing a wide range of services that involve direct contact between the suppliers and the customers (i.e. services that are provided locally to the domestic economy). These jobs include:

- vocational trades that are high-skilled trade services provided directly to the domestic economy;
- professional in-person services that are again high-skilled occupations, such as doctors, lawyers, teachers, social workers;
- skilled in-person occupations below the professional level where services are provided directly to the customer (such as para-medical occupations, child care and aged care services);
- low-skilled in-person occupations such as sales assistants, hospitality staff, taxi drivers and other transport staff, housekeepers and domestic staff.

The situation concerning the exposure of the Queensland labour market to globalisation is shown in Figures 11 and 12. These show that:

- occupations that are positively exposed to globalisation provide employment for nearly 360,000 people and now account for one in five jobs in Queensland (Figure 11). These occupations are the fastest growing area of work averaging nearly 4% growth in employment each year since 1996–97;
- occupations that have been identified as vulnerable to globalisation and technological change currently employ some 630,000 people, accounting for one-third of total employment in Queensland. These occupations are growing at the lowest rate of any jobs in the Queensland economy with only 2% growth per annum in recent years and are the occupations where employment in more and more specific jobs will decline in the future;

occupations that are largely insulated from globalisation provide employment for nearly 860,000 people and are the biggest part of the Queensland labour market, accounting for some 46% of total employment. These occupations have also been growing strongly at almost 3% growth per annum since 1996–97.

The evidence suggests that contrary to what a lot of commentators have suggested, we are not simply seeing a shift from low-skill occupations to high-skill occupations in the Queensland labour market. Several things are actually happening here that are pulling in different directions. These include:

- global manufacturing based on mass production, which is moving out of high-cost economies to lower cost economies such as in China, India, South-east Asia, South and Central America and Central and Eastern Europe, particularly leading to a reduction in production process work in the manufacturing industry;
- new growth, especially in highly skilled work in resource industries which is fuelled by unprecedented global demand as demand for resources increases in the world's biggest countries, such as China, India and other emerging economies;

FIGURE 3-11 QUEENSLAND'S EXPOSURE TO GLOBALISATION

Source: Department of Employment and Training (2005a), p. 7.

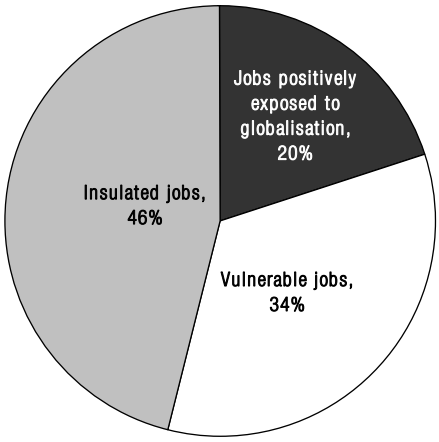
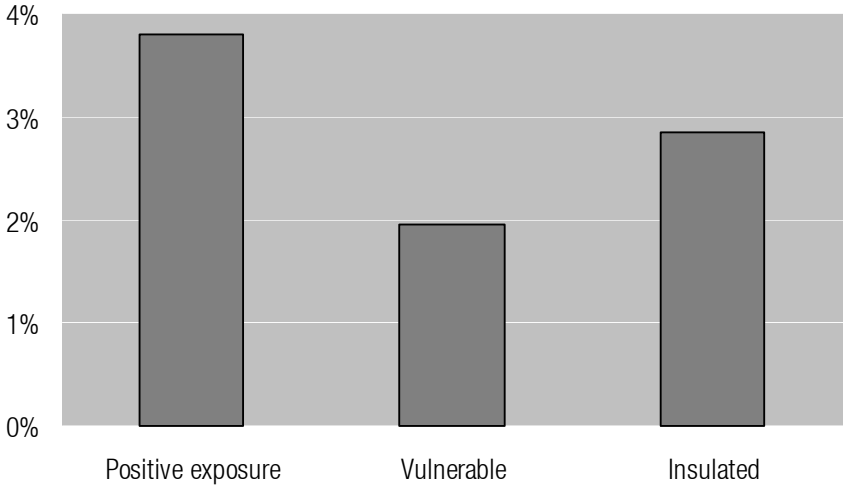


FIGURE 3-12 QUEENSLAND'S EXPOSURE TO GLOBALISATION – ANNUAL JOB GROWTH 1996–97 TO 2003–04

Source: Department of Employment and Training (2005a), p. 7.



- advanced economies that are moving towards globally traded service industries and a range of niche and highly specialised value-added manufacturing and process industries creating a new range of much more highly skilled manufacturing jobs;
- the consequent quick emergence of highly skilled conceptual technical and service industries that are aimed at global markets, making these industries the fastest areas of job growth in advanced economies;
- strong growth in advanced economies of a wide range of work that encompasses high, medium and low skills and are focused on providing services in person to local domestic markets. These jobs are largely insulated from the direct effects of globalisation. There is strong growth in these industries that are both labour-intensive and focused on providing services to the domestic economy;
- a long-term future of low employment growth or declining employment in most primary industries;
- low or negative growth in jobs where technological change has been replacing not only the need for physical manual work, but an emerging phenomenon where technological change is replacing human and transactional clerical and administrative work with automated digital processes requiring fewer people.

The impact of the ageing population

Across OECD countries, including Australia, the combined impact of the baby boom generation of the early postwar period, a fall in fertility rates and longer life expectancy is causing progressive ageing of the population and labour force.

Ageing of the population is likely to lead to large economic and social changes in the coming decades. These changes will have implications for Australian governments at all levels, with one of the most pressing issues being slowing growth in the labour force. It is also anticipated that there will be lower labour force participation, impacts on taxation revenues and increased demand for government services such as health and aged care.

The Australian government's Intergenerational Report of May 2002 warned that the population ageing could raise public expenditure by some 5 percentage points of GDP over the next four decades, if there was no action to substantially increase higher labour force participation by older persons.

By 2044–45, one-quarter of Australians will be aged 65 years or more. This is nearly double the current proportion. Overall labour participation rates are projected to fall from 63.5% in 2003–04 to 55.4% by 2044–45. Demographic projections by the Australian Bureau of Statistics suggest that over the next 20 years the number of people in the 45- to 64-year-old age group will increase by over 40%, while the number of 15- to 24-year-olds will not increase significantly. Increased immigration will make no appreciable difference to the long-term ageing trend (Productivity Commission 2005).

Labour supply constraints, if realised, threaten to hold back economic growth and prejudice living standards. The Australian government predicts that as a result of ageing, over the next four decades economic growth will slow relative to growth over the past decade, reflecting lower productivity and employment growth rates. Further, productivity growth is expected to return to around its 30-year average, below the growth of the 1990s. At the same time, employment growth will slow, reflecting lower labour force growth due to lower population growth and a falling rate of overall labour force participation. The Productivity Commission (2005) estimates that growth in GDP per capita could fall to 1.25% per year by the mid-2020s, half the present rate.

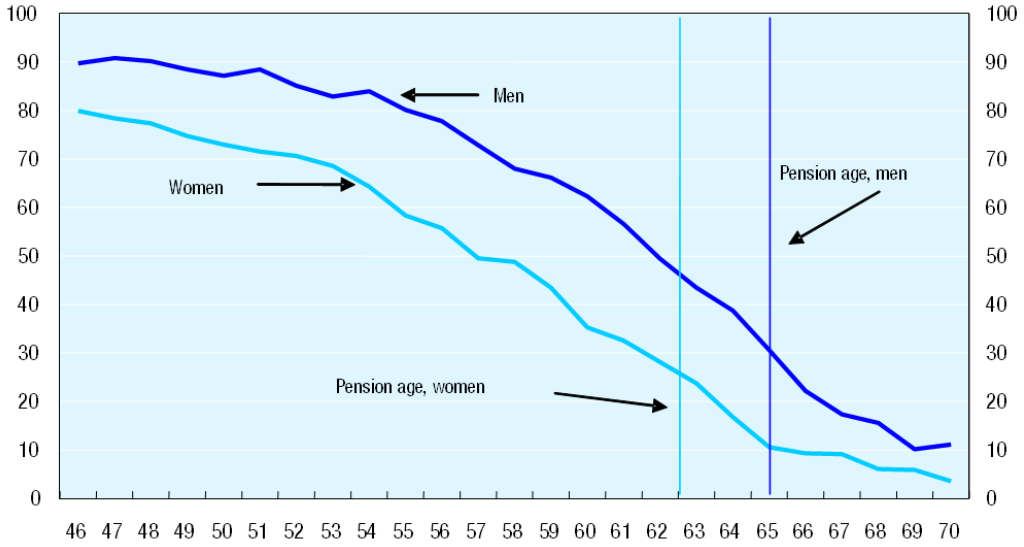
The impact of an ageing population on the workforce is straightforward. That is, Australians tend to leave the workforce well before the standard pension (or retirement) age. This is the case for both males and females, and this will slow labour force participation growth as the workforce ages – unless there is a change in these patterns of behaviour in coming years.

As shown in Figure 3-13, page 87, the decline in labour force participation by Australian males begins in their early 50s, but by their late 50s male labour force participation declines sharply to only just over 30% by the pension age of 65 years.

Female participation rates decline steadily from the late 40s to only around 25% by the pension age of 62 years.

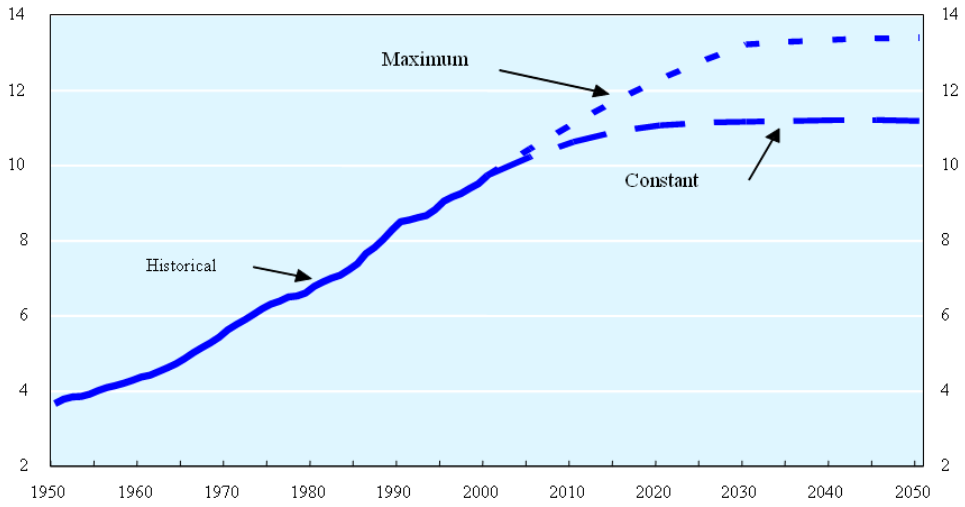
The OECD (2005) has estimated that if nothing is done to change labour force behaviour of older Australians as the population ages, in around 30 years time the overall Australian labour force will eventually stop growing. This is shown in Figure 3-14.

FIGURE 3-13 LABOUR FORCE PARTICIPATION BY SINGLE YEAR OF AGE IN AUSTRALIA, 2003



Source: Department of Employment and Training (2005a), p. 43

FIGURE 3-14 OECD PROJECTIONS OF THE AUSTRALIAN LABOUR FORCE



The constant scenario assumes that current participation rates by five-year age group and gender remain constant over the period to 2050, the maximum scenario applies the maximum participation rates (for older workers 50 and above) in the OECD area by five-year age group and gender from 2030 to 2050, with a gradual adjustment over the period 2000–30 to reach these maximum rates.

Source: OECD (2005), p. 36.

The impact of the ageing population in Queensland is likely to be similar to that of the nation as a whole. A recent study by the Queensland government (2005, p. 13) has concluded that

the ageing of the Queensland population, without any policy changes is likely to have three main economic impacts in the coming decades: slowing the rate of labour force growth; slowing the rate of economic growth; and slowing the rate of growth in living standards.

A labour force that is rapidly slowing in growth, to the point of not growing at all, will impact on the skills requirements of the workforce. As labour force growth abates there will be greater competition for existing skills within the workforce. It will mean that skill shortages are much more likely to persist in this environment, particularly in the case of high-level professional, para-professional, technical and trade skills that are already globally scarce.

The ageing workforce is changing the nature of skill shortages in the economy. Rather than an imbalance between skills available and the skills demanded at times of economic boom – that is, a cyclical issue – skill shortages in this future environment can be expected to persist because they are becoming an underlying structural problem with insufficient new skills supplied to the economy as the labour force growth slows. That is, of course, unless action is taken to better skill older Australians and encourage their higher participation in the workplace to offset these impacts.

A lack of information

The lack of information about labour market opportunities and the particular skills required is a greatly underrated cause of skills imbalances. Recent research by Shah and Burke (2005, p. 54) found that

the availability of good quality labour market information to firms, households, and education and curriculum planners is the lifeblood of an efficient market. Lack of reliable labour market information can hamper the speed of the market adjustment process and therefore the duration of shortages. The time taken for information to flow to workers about new opportunities and the time taken for them to take advantage of those opportunities add to the time lag. Since some workers may need training, inefficiencies arise when there is a lack of transparency in the links between education and training courses and labour market opportunities.

The labour market has never been changing more rapidly, and the future is certainly going to be about even more rapid change than we have seen to date.

The skills formation process is now extremely complex. The level of complexity can only be expected to increase as the pressures on the economy to change even more continue to increase at an even faster rate in the future.

Too often today "consumers" of skills advice receive inappropriate advice from family, peers or even school teachers. This advice is often based on the academic status of the education or training pathway, rather than on the actual economic benefits that different education or training pathways can bring to people once they are in the labour market.

This advice all too frequently does not take full account of people's aspirations, capacities and interests, nor does it usually take account of labour market opportunities and strategic economic priorities at the macro level.

A clear case of market failure exists. Consumers of education and training for one reason or another are opting for university skills pathways over VTE pathways. This is even though university pathways are really only relevant to a little over one in five jobs and VTE pathways are relevant to just over three in five jobs. And this is even though the employment outcomes from most VTE programs are just as good as those from university programs. Moreover, these days the earnings potential from university programs, although higher, is not that much higher for those from higher level VTE programs in the same occupational categories. And very recently we have seen a new phenomenon emerging in the labour market – that is, higher levels of remuneration for some technician, associate professional and high-skilled trades requiring VTE qualifications compared to the remuneration resulting from professional jobs stemming from university qualifications.

People of all ages need to continually reassess their work progress in order to make better decisions about their future based on good

information about the opportunities available and the additional skills they need to take them up. Available research shows that most young people make long-term career decisions on the basis of limited information and by relying mostly on family and peer group influence rather than on professional guidance. Until very recently no existing services were especially designed to help existing workers and older people make career change and skilling choices.

Policies for sustainable skills for Queensland

Skilling the population to meet the rapidly changing skill needs of the economy is now an extraordinarily complex process. What is clear is that many conventional approaches are unlikely to be comprehensive enough to meet the future skill needs of individuals, enterprises and the economy as a whole.

A focus on improving education and training needs to be the central plank of any policy to improve skill formation in Queensland. This essentially involves making sure that training supply is realigned to meet the very rapidly changing skill needs of the workforce. But a focus only on better education and training alone will not be a sufficient policy response to ensure the development of the skills base necessary for a sustainable economy into the future. Other critical elements of a holistic response to skills deficits are:

- a new system of information and guidance for people of all ages about the full range of job options that are available, and how to get the skills and qualifications needed to obtain them;
- strategies to encourage employers to implement workplace reforms aimed at new ways of recruiting, developing and retaining skills in enterprises;
- a range of measures to raise labour force participation, particularly by older people.

Realigning education and training to meet changing labour market needs

The Department of Employment and Training (2005a, p. 25), in its analysis of the skilling needs of the Queensland labour force, reached some major conclusions about the need to realign the education and training effort to meet Queensland's contemporary and future labour market needs. These included that:

- slightly over half of the working age population do not have a tertiary qualification, but in the long term only 15% of jobs are not likely to require any tertiary skills;
- just over 20% of jobs require or would benefit from university-level skills while some 16% of the population possess university qualifications, whereas almost two-thirds of jobs require or would benefit from VTE qualifications but only 30% of the population have a VTE qualification;
- the largest and most urgent skill shortages in the Queensland labour market are in high-level VTE qualifications for the skilled trades and para-professional occupations, noting of course that there are also skill shortages in some professional occupations (such as health) and in other skilled areas of the labour market.

This will require a new focus on VTE, particularly higher level VTE aimed at expanding training for skill trades and associate professional occupations.

The Queensland Skills Plan (2006, pp. 13–22, 29–45) has included a range of strategies and initiatives to address these issues. These include:

- an expansion of trade apprentice training places by an extra 17,000 places per year by 2010;
- an expansion of 14,000 extra places per year in other high-level VET programs by 2010 at Certificate IV or diploma/advanced diploma to meet Queensland's associate professional skill needs;
- a reform of the trade apprenticeship training system by moving to a fully competency-based trade training system that allows apprentices to become fully-qualified tradespeople as soon as they have gained the required competencies, rather than requiring them to serve a standard four-year apprenticeship;

- the establishment of a single state-wide trade and technician institute aimed at developing world-class trade and technician training;
- the modernisation and reform of Queensland's TAFE Institutes through the amalgamation of smaller TAFEs in the Brisbane metropolitan area and through the establishment of different TAFEs being the state's training leader for developing excellence in different vocational areas.

The modernisation and reform of TAFE includes substantial new funding for modernising the state's skills infrastructure and equipment, and for developing new approaches to learning delivery that involves:

- the latest ICT learning delivery models;
- a modernisation of learning materials;
- the development of upfront skills assessment services to enable all non-entry level students to be assessed prior to the commencement of any training, so that they do not have to undertake new training in areas where they have studied previously or where they already have the skills and competencies required.

These elements of the Queensland Skills Plan are designed to:

- increase the alignment of the skills training effort by directing growth in training places towards the major skills deficits identified in the labour market;
- put into place a range of measures designed to decrease the time taken to complete training, such as moving away from any remaining time-based programs towards full competency-based programs and by ensuring people are given full credit for prior learning or any relevant skills and competencies they already have;
- improve the quality of training through developing specialist TAFE institutes, reviewing and upgrading training curriculum and teaching and learning materials, and by modernising and upgrading training infrastructure and facilities.

To ensure that training is more relevant to industry needs the Queensland Skills Plan also includes a number of strategies to engage employers with government and training providers in the development of training responses that better meet industry's needs.[8]

Most of the $801 million over the next four years in recurrent funding for new initiatives in the Queensland Skills Plan, and most of the $303 million in new capital funding is for these elements of the Queensland Skills Plan.

The key elements of any policy response designed to ensure that education and training delivery is better aligned to meet contemporary and emerging labour market needs are that:

- a proper balance between the supply of higher education and VTE skills, particularly high-level VTE skills, needs to be achieved that is based on the contemporary skill needs labour market, rather than on views about the academic "status" of different education and training pathways;
- there is a significant expansion in the overall qualification levels of the workforce, particularly with respect to the higher level VTE qualifications that are still substantially undersupplied in the labour market;
- there is a range of strategies, particularly those concerned with giving full credit to any prior formal learning that people have already undertaken and/or full recognition to the skills and competencies individuals already have, to reduce the time taken to complete education and training programs and to increase the proportion of people who gain full qualifications from the study they do;
- it is recognised that today's typical learners at tertiary level are no longer mostly young people entering tertiary education and training for the first time. They are much more likely to be in their 30s, 40s, 50s or even 60s, they may or may not already have a formal tertiary qualification, but a high proportion of them are likely to have some of the skills and competencies required for completion of their learning programs.

Information for learners to become informed consumers

Australia has developed a wide range of employment and training pathways with multiple entry points and much flexibility aimed at enabling non-school leaver, non-entry level learners to engage with the education and training system in more ways than ever before.

Ironically this very flexibility and range of choices has led to confusion and poor choices.

Developing a sustainable skills base for Queensland will rely on people being able to make better informed choices about the skills they need to get jobs, to change jobs or to advance in the industry in which they are already working.

Thus a central element of any strategy to achieve a sustainable skills base for Queensland needs to include the development of a proper system of providing information and guidance to people of all ages about the full range of job options available and what skills are needed to obtain them. Existing approaches are wholly inadequate to meet general skills guidance needs of the population as they are mainly only focused on careers advice to school students in terms of advice about careers, more often than not meaning advice about courses, rather than about available jobs and the skills needed to secure them. In this context school-based careers advice is biased towards encouraging young people towards academic courses at university.

As part of the Queensland Skills Plan, the Queensland government announced the development of a state-wide service skills information and brokerage service – Skilling Solution Queensland. The Queensland government has allocated $75 million over the next four years to resource this initiative. Some 24 sites in all are planned.

This service will provide information on local sustainable job opportunities and put people in contact with training providers that can fast-track recognition of their existing skills and assist them to develop and complete customised training plans.

Skilling Solutions Queensland is a first in Australia, providing much-needed advice about skills options to people of all ages. Importantly, Skilling Solutions Queensland customer service centres will assist in linking Queenslanders to the various other skilling and employment service providers available, including Centrelink, new apprenticeship centres (NACs), Australian government job network providers, public and private VTE registered training organisations (RTOs) for assessment and training services, higher education providers, schools and relevant community organisations.[9]

Enterprise strategies to secure and retain skills

It will not be possible to address the issues raised in this paper simply through the reforms to the skills training system alone. Important as these reforms are, a range of current employer practices will also need to change if effective and sustainable strategies to address skill shortages are to be found.

Employers will find it increasingly difficult, if not impossible, to gain access to the high-level skills they will need in the future without major enterprise-level reform.

The Queensland labour market has already entered a persisting high-level skills deficit situation that is only going to be exacerbated by the rapid ageing of the population.

The practices that are contributing to skill shortages that will have to change are:

- a "just in time" approach to skilling where employers prefer to recruit people who have already been trained by somebody else. This approach might work for low-skill jobs, but quite simply does not work for higher skilled jobs in the persisting high-level skills deficit situation we are now in;
- a reluctance to train because of a fear that investing in skills training of their workforce will make their employees more mobile or demand higher wages. Employers who lose staff because of a failure to invest in their training, who have an ill-equipped workforce because of a failure to train, or who try to recruit new staff that someone else has already trained, are now finding out how difficult and expensive some of these so-called cost saving strategies really are;
- a desire to re-engineer business operations through downsizing and the subsequent new recruitment of skills. These strategies are not working well in an environment with a persisting skills deficit;
- calls on the government to increase skilled migration to tackle skill shortages. As we described earlier, such strategies are destined to have only marginal impacts because high-skill shortages are increasingly a global phenomena. Moreover, retraining costs can be

very high because of different international skills training systems;

- most importantly, a desire by employers to seek new skills, especially ICT skills, in younger people, while at the same time offering redundancy packages/early retirement packages for older workers. The reluctance to invest in the skilling of older workers will be a fatal strategy over the coming years.

Most of these strategies are doomed to fail at the enterprise level because we now have persisting skill shortages, especially at the higher skill level. These types of strategies can be expected to have serious consequences at the economy-wide level as the workforce ages.

The environment is becoming increasingly complex and most employers, especially in small to medium enterprises, are not well equipped to deal with these changes.

Some important work has been carried out recently by Drake International to identify the main risks faced by enterprises in today's economy with respect to the changing environment affecting the skills and knowledge of human resources. These risks are described in Table 30.

TABLE 30: KEY RISKS FACING TODAY'S ENTERPRISES

Risk 1 Increased competition for labour
The ability of organisations to continue their operations and meet market demands is integrally connected to their ability to secure adequate labour supply. This is grounded in the fact that historical patterns of recruitment by employers tend to continue exacerbating workforce balance problems. As competition intensifies**,** the capacity to select and appoint will increasingly come under threat. Hence an early response positions employers well to the changed marketplace for human resources.

Risk 2 Expansion of skills shortages
As the demand for labour continues to grow, the number of young entrants to the workforce stagnates and the baby boomer**s** retire, skill shortages will gradually spread across industries and occupations. Current shortages are not simply a blip in labour supply but indicative of the shift to a new and increasingly competitive environment.

Risk 3 Increased competition for younger people
The risks organisations face in this are linked to their historical patterns of recruitment and retention. Organisations will find it increasingly difficult to compete for a share of a diminishing pool of young people. At the same time skilled young people will be in a highly competitive position to choose their preferred employment option.
Many organisations target a prime age workforce, being people between the age of 30 and 40 years. Again this profile will be difficult to maintain as growth in this age group continues to slow.

Risk 4 Increasing mismatch between the available labour pool and the competencies and characteristics required
In times of abundant labour supply organisations have the benefit of achieving a close fit between the skills and characteristics they require and the candidate pool. As unemployment continues to fall and labour supply tightens it is likely that an increasing mismatch between the role offered and the candidate pool will emerge. This has consequences for organisations which will have to invest in more intensive induction and skill development over an extended period to achieve the "fit" required.

Risk 5 Loss of operational knowledge
At the other end of the spectrum organisations with high employee numbers of people aged 45 years and over are likely to face a significant loss of people and knowledge as this group reaches retirement age. Retention, knowledge and active succession management responses are required.

Risk 6 Loss of executive knowledge
The loss of executive experience is a serious challenge facing many organisations as a critical proportion of their executive pool reach retirement age. Those with active succession management strategies may weather this loss, but strategies to encourage the retention of executives past normal retirement age may also be necessary to stagger the loss over an extended period.
In some organisations the pattern of depletion of the middle management level over recent times is also a critical risk as it may compromise succession.

Risk 7 Impaired productivity consequences
People are an integral component of productivity, whether in optimising new technologies or keeping units of production operating. Productivity impacts die to labour shortages are evident in the health sector, resulting in underused hospital beds and in transport systems that cannot operate optimally due to labour shortages. At white collar and professional levels multi-tasking, longer working hours, and greater responsibility spread among fewer individuals is resulting in as much as 51% average worker productivity.

Risk 8 Inability to grow
Sustained growth is an important success factor for all organisations. For many businesses the greatest barrier to growth is access to an adequate supply and profile of labour.

Risk 9 A shifting landscape of health and wellbeing
As the workforce ages the health and wellbeing challenges and occupational health and safety risks faced by an organisation also change. For organisations with high levels of manual handling activity workforce ageing will challenge the way the environment is managed from work content and structuring, ratios of flexible to permanent staffing levels, roster systems to team arrangements and health and wellbeing initiatives.

Risk 10 Reduced capacity of an organisations managers and leaders to assess and respond to the changed environment
Akin to a "head in the sand" approach, this non-response to a galloping problem both accumulates and amplifies the previous nine risks, setting up organisational paralysis, uncertainly and poor or no adaptation to a significantly changed environment.

Source: Rolland & Dingjan (2005), pp. 13–15.

There is evidence that more employers are now identifying strategies involving skilling as a top priority. For example, a recent study conducted for the Australian Industry Group (2006a, 2006b) found that 85% of employers see building the skills base as a critical strategy for remaining competitive over the next three years, while almost 80% of employers think the up-skilling of existing and older staff is crucial. This is a very different situation from that of a decade ago when fewer employers identified skills as such an important issue.[10]

The implications of these risks are that organisations will need to seriously rethink their approaches to the recruitment, skilling and retention of staff if they are to secure the skilled human resources they need to prosper in the very rapidly changing contemporary business environment.

No factor could be more pivotal to business success in this context than the need for enterprises to develop an age-balanced approach to recruitment, skill development and retention.

Organisations that remain youth centred by focusing on 18–35-year-old staff will increasingly struggle to find a wide enough talent pool to draw from.

Those organisations that respond by merely shifting their focus to recruit prime age people aged 30 to 40 years to make up the workforce will also have a tough time in the next five years or so, as the impact of the ageing population becomes more pronounced.

The organisation that adjusts now, more heavily targeting older people in the mid-40s to late 50s, will fare much better as the ageing population trend deepens by giving themselves the widest possible talent pool to draw from.

The ageing of the population means there are significant risks that all organisations will have to proactively manage if they are to avoid a deepening of skills shortage problems in their organisations as the workforce ages.

Most part-time employment (some 70% of all part-time jobs in Queensland) is in low-skill occupations. Only 4.5% of part-time jobs are in skilled trades occupations, only 2.5% of all part-time jobs are in managerial occupations, only 14.8% of all part-time jobs are in professional occupations, and only 7.7% of all part-time jobs are in associate professional occupations. For people in most high-skill jobs the options are full-time work or "out of work", with few options in between.

We need to develop age pathways in these occupations that encourage older skilled people to stay on in the workforce at least on a part-time basis for longer periods than at present.

Organisations who proactively respond to these challenges are the ones that will gain a decisive competitive advantage in the marketplace.

Strategies to increase labour force participation particularly by older people

The Queensland government's study of the implications of an ageing population of the workforce (2005, p. 36) concluded that "greater utilisation of some of the population that does not currently participate – for example, early retirees, people over the age of 65 years and some welfare recipients (such as some of those currently accessing disability pensions) may change the rate at which labour force growth moderates".

Increasing the labour force participation of people who are not currently participating at sufficiently high levels will be an increasingly important strategy as the population ages and as skill shortages deepen in response to the global and domestic structural changes outlined in this paper. Without such a change in social behaviour, particularly with respect to attitudes towards remaining in work at older ages, it is unlikely that Queensland will be able to develop a truly sustainable workforce and skills base. It is not sustainable for older Queenslanders to participate in the workforce at rates below the OECD average without there being further skill shortages and eventual impacts on lowering living standards.

In its Australian report on ageing and employment policies, the OECD (2005, pp. 12–15) put forward the following proposals as possible elements of a comprehensive strategy to raise labour force participation in order to address the impacts of an ageing population:

- Enhance the incentives to remain in work longer.
- Reduce the incentives to retire early.
- Improve the information available to individuals about their future entitlements from superannuation.
- Link disability benefits more closely to a substantial reduction in work capacity.
- Review other assessment procedures for disability benefits.
- Reinforce the mutual obligations of older job seekers.
- Consider increasing incentives for job network providers to place older unemployed job seekers in work.
- Open up job search assistance to all.
- Improve arrangements for the recognition of prior learning.
- Increase awareness of anti-age discrimination legislation.
- Introduce surveys on job satisfaction and the work environment to find out more about what work environment and job changes might induce older people to stay in the workforce longer.
- Improve government co-ordination and establish quantitative goals for future ageing strategies.

Thus key elements of a comprehensive strategy to increase labour force participation especially by older people are:

- for employers to be encouraged to rethink existing practices that mitigate against people staying in the workforce longer, particularly people with highly demanded skills;
- to implement changes in retirement income policies and welfare arrangements to encourage more people to remain in the workforce or re-enter the workforce;
- to increase the skills base or recognition of skills of older people so they so that they can more easily make the necessary transitions to new work.

With respect to the need for developing more "age-friendly" workplaces, Rolland and Dingjan (2005) recently developed a blueprint for Drake International on successfully managing age in an organisation. They argued that the strategies organisations need to implement are:

- an **age balanced recruitment** strategy to ensure the organisation can draw from the widest possible talent pool across all age groups;
- a strategic and **age balanced skills development and learning** strategy that does what most organisations do not currently do, which is to invest as much in new skills

development of older employees as they do on younger employees;

- **strategic approaches to the retention of skills,** especially by developing part-time employment pathways for older workers, particularly in high-skill shortage occupations.

The elements of what these strategies will need to encompass are outlined in more detail in Tables 31, 32 and 33.

TABLE 31: ACTIVE STRATEGIC APPROACH TOWARDS MANAGING AGE IN RECRUITMENT PROCESSES

Determine the rationale for managing age in recruitment

- This will depend on the organisation, but will include opportunities to expand the pool of talent available.
- Other rationales may be to improve retention, or management depth.

Age audit past recruitment outcomes

- Organisations should review their recruitment practices to ensure that they are free of age biases**,** thereby providing access to the broadest pool available of candidates. This view should focus on the age profile of candidates and new recruits over the past three years and testing the level of age awareness among those responsible for recruiting within the organisations.

Build age awareness in recruitment

- Build the general age awareness of people responsible for recruitment within the organisation and equip them with age fee recruitment practices.
- Brief external recruitment suppliers on the organisation's focus on age-free recruitment practices and the associated expectations that screening and referral processes will not disadvantage older or younger applicants.
- Review how positions are promoted**,** as well as screening and assessment processes**,** to ensure they do not present age bias.
- Monitor the age profile of applicants to assess the effectiveness of the promotional strategy in attracting an age balanced pool of candidates and biases that may present barriers to older or younger applicants as they make the transition through screening, assessment, induction or placement.

Build consistent practice in the internal environment

- Prepare the working environment by communicating the organisation's intent and the objectives that underpin that intent to build a better age balance among new recruits.
- Ensure trainers understand generational learning differences.
- Review induction training to assess any barriers that may be present for older recruits.
- Train line managers and team leaders in managing intergenerational teams.
- Consider buddy or mentoring roles to support older recruits, particularly when they are breaking ground in shifting the organisation or unit from a young to a more age balanced profile.

Source: Rolland, L & Dingjan, A (2005), p. 22.

TABLE 32: STRATEGIC APPROACH TOWARDS LEARNING AND DEVELOPMENT IN THE AGEING WORKFORCE

Determine the rationale for learning and development strategies

- Assess the advantages of training and development for older workers.
- Develop responses that maximise advantages**.**

Learning and development audit to identify:

- Participation in training and development with age**;**
- Formal qualifications, to identify any reduction in formal skill currency as people age**;**
- The year of attainment**;**
- A concentration of investment in training and development that is positioning people for career development among younger people. Conversely, older people usually only participat**e** in training related to their immediate function.

Achieve organisational support for age-aware training

- Ensure that the training and development policy has a clear statement of the organisation**'**s support for and expectation of equal participation in learning and development across age groups.
- Promote the opportunities to participate in training and development.
- Educate people of the need for and the organisations expectation of continuing training and development, highlighting the current reduction in participation as people age and the related consequences for the individual and the organisation.
- Ensure that trainers have an understanding of generational differences in learning styles.
- Ensure incentives are in place to encourage people to continue to participate in training and development activities as they age.
- Consider the role of mentoring and coaching in facilitating skill transfer between younger and older workers.

Monitor outcomes

- Ensure monitoring by age and type.

Source: Rolland, L & Dingjan, A (2005), p. 26.

The available research evidence suggests that Australian employers discriminate against older workers when it comes to prioritising them for investment in workforce skilling or consideration for roles requiring new and emerging skills. This is despite the growing body of research work that challenges the validity of the widespread stereotypes held about how older workers are believed to be less effective in the workplace than younger workers.[11]

As part of the Queensland Skills Plan, the Queensland government has announced an Experience Pays Awareness strategy to provide employers with advice about how to "age-proof" their workplace by providing working environments that encourage them to recruit and retain old workers. The strategy seeks to dispel negative stereotypes about older workers and increase mature-age worker awareness of employment and training options. The strategy includes:

- forming partnerships with peak industry bodies, unions, government agencies, registered training organisations and others to maximise opportunities for older workers
- providing information and referral services for older people seeking employment and training assistance
- raising the awareness of encouraging the adoption of age-friendly recruitment and workplace practices by businesses;
- highlighting the benefits of adopting age-friendly recruitment and workplace practices through a state-wide awareness campaign.[12]

TABLE 33: STRATEGIC APPROACHES TO MANAGING RETENTION AND EXIT

Determine the rationale for retention

- Determine the critical reasons for retention.
- Identify the drivers that lead to early retirement.
- Assess the concentration and extent of loss of skills and knowledge as older workers exit to retirement.

Audit retention and exit to identify:

- Retention by age**;**
- Any patterns of early retirement**;**
- The representation of people within the organisation in the 55- to 64-year age range compared to the broader population.

Develop responses to these factors

- Introduce or elevate flexible workforce levels to encourage older worker participation.
- Structure flexible work arrangements that would support a phased transition to retirement.
- Consider opportunities for continued workforce attachment and re-entry. e.g.: an alumni for retirees that could provide a pool of experienced people to resource peak business periods, replace people on leave, coach or mentor new managers or work on a short-term basis on special projects.
- Review current superannuation arrangements to identify any barriers that exist to retention strategies.
- Promote participation in and new forms of retirement planning that dispel myths associated with the superannuation barriers to phased retirement and the consideration of retention and transition opportunities.
- Ensure that opportunities for flexibilities to support phased retirement are unpinned by appropriate policy.
- Educate managers about the organisation**'**s views of and opportunities for flexible work arrangements for older workers in transition to retirement.

Monitor and review outcomes

- Monitor take-up and impact of transition and other arrangements.

Source: Rolland, L & Dingjan, A (2005), p. 30.

In recent years the Australian government has made a number of changes to conditions applying to welfare eligibility and retirement arrangements in an attempt to encourage greater workforce participation by people who are "under-participating".

Significant reforms were announced in 2004 by the Australian government. New legislation commenced from 1 July 2005 enabling people aged 55 years and over to draw partial superannuation while continuing to work part-time for the first time ever. In the May 2006 Australian government budget considerable incentives were announced that were aimed at encouraging people to defer retirement until the age of 60.

In relation to skilling older people whose lack of qualifications are a barrier to sustainable employment or whose skills are obsolete, the Queensland government announced a major new initiative, "Skilling Queenslanders for Work" as part of the Queensland Skills Plan.

This initiative will provide over $80 million per year to support individual case management of older and disadvantaged jobseekers to gain skills

and qualifications and new work experience to gain sustainable employment.

Conclusion

In the long term most Queenslanders will need tertiary qualifications to prosper in the modern economy. In this paper it is estimated that fewer than 15% of jobs really do not require either vocational or university qualifications, yet slightly under half of the Queensland workforce hold such qualifications at the present time. Redressing this imbalance is the key to a sustainable skills base for Queensland.

Reforms to education and training that focus on better aligning the supply of education and training responses to the actual skill requirements of the labour market are a central plank of the policy response needed to ensure Queensland is able to secure a sustainable skills base.

In broad terms this means we need a much greater focus on vocational skills because some 30% of the workforce currently have vocational qualifications, yet indications are that over 60% of jobs in the economy will require or benefit from having vocationally qualified people filling them.

The prognosis for Queensland's professionally qualified workforce is much better as over 16% of the workforce hold university qualifications to at least degree level, compared with estimates that some one in five jobs require or would benefit from people having such qualifications. The national reforms of the last 20 years have seen Australia emerge as a world leading country in terms of having a university-trained population, and this has seen Queensland's professional skills base develop to a much more sustainable level. Notwithstanding this, Queensland has a slightly lower proportion of professionally qualified people in the workforce than does the rest of Australia, and there are some significant university-level skills shortages, particularly in some engineering and building professions, the sciences and the health industry.

Australians and Queenslanders have aspired to university-level education with a passion since the various reforms in place since the late 1980s opened up much wider access to higher education. In one sense this situation has contributed to a major gap in the overall levels of vocationally qualified people. We need to double the proportion of the workforce with vocational qualifications in the long run to achieve a sustainable skills base for the economy, particularly with respect to high-level VTE qualifications.

The Queensland Skills Plan has responded to this imbalance with an expansion of:

- 17,000 additional funded trade training places each year by 2010, which is estimated to be sufficient to meet the long-term skills gap in the Queensland trades labour market;
- 14,000 additional high-level VTE places in TAFE, sufficient to meet around two-thirds of the estimated long-term skills gap in the associate professional jobs area (with the other third being met by private training providers or universities).

Meeting these ambitious additional levels of training will require a change in the community's attitude towards valuing vocational learning as much as higher education. Certainly this shift is already underway with record numbers of Queenslanders having taken up trade apprenticeships in the past couple of years in response to the publicity generated about skills shortages and the fact that many people completing apprenticeships are now earning more than university graduates.

What employers do to respond to these trends will also be a key determinant of whether Queensland will generate a properly sustainable skills base. Employers will need to develop better approaches to securing, nurturing and retaining skills. This is as much about remuneration, job design and employment conditions as it is about more skilling itself. More training and education by itself is by no means a sufficient response to skill shortages. One of the key reasons enterprises and industries experience skills shortages is that they do not have adequate strategies to retain a sufficient number of skilled people rather than inadequate levels of training in the first place. The ageing workforce exacerbates these problems.

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End Notes

1 The description of changes in the Queensland labour market is drawn from Department of Employment and Training (2005a).

2 The material describing the skills profile of the Queensland workforce is drawn from Department of Employment and Training (2005a), pp. 19–21, 47–56.

3 Dominated by tertiary qualifications in terms of having more than half of the people employed in them holding tertiary qualifications.

4 At the four-digit level in the Australian Standard Classification of Occupations (ASCO), developed by the Australian Bureau of Statistics.

5 The roles of different factors in contributing economic growth across OECD countries is summarised in Organisation for Economic Cooperation and Development (2003).

6 See, for example, Applied Economics (2002); Kennedy and Hedley (2003), and Greun and Garbutt (2004).

7 Australian national participation rates are slightly higher than those for Queensland for people aged between 15 to 34 years. For older people aged 45 to 64 years, Queensland's education and training participation rates are slightly higher than national Australian participation rates.

8 The strategies aimed at improving the relevance of training for industry and employers through a better engagement with employers about skilling are outlined in Department of Employment and Training (2006), pp. 23–28.

9 Further information about Skilling Solutions Queensland is given in Department of Employment and Training (2006), p. 43.

10 See Australian Industry Group (1998).

11 See for example Smith A (ed) (1999).

12 Further information about the experience pays initiative is given in Department of Employment and Training (2006), p. 27.

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