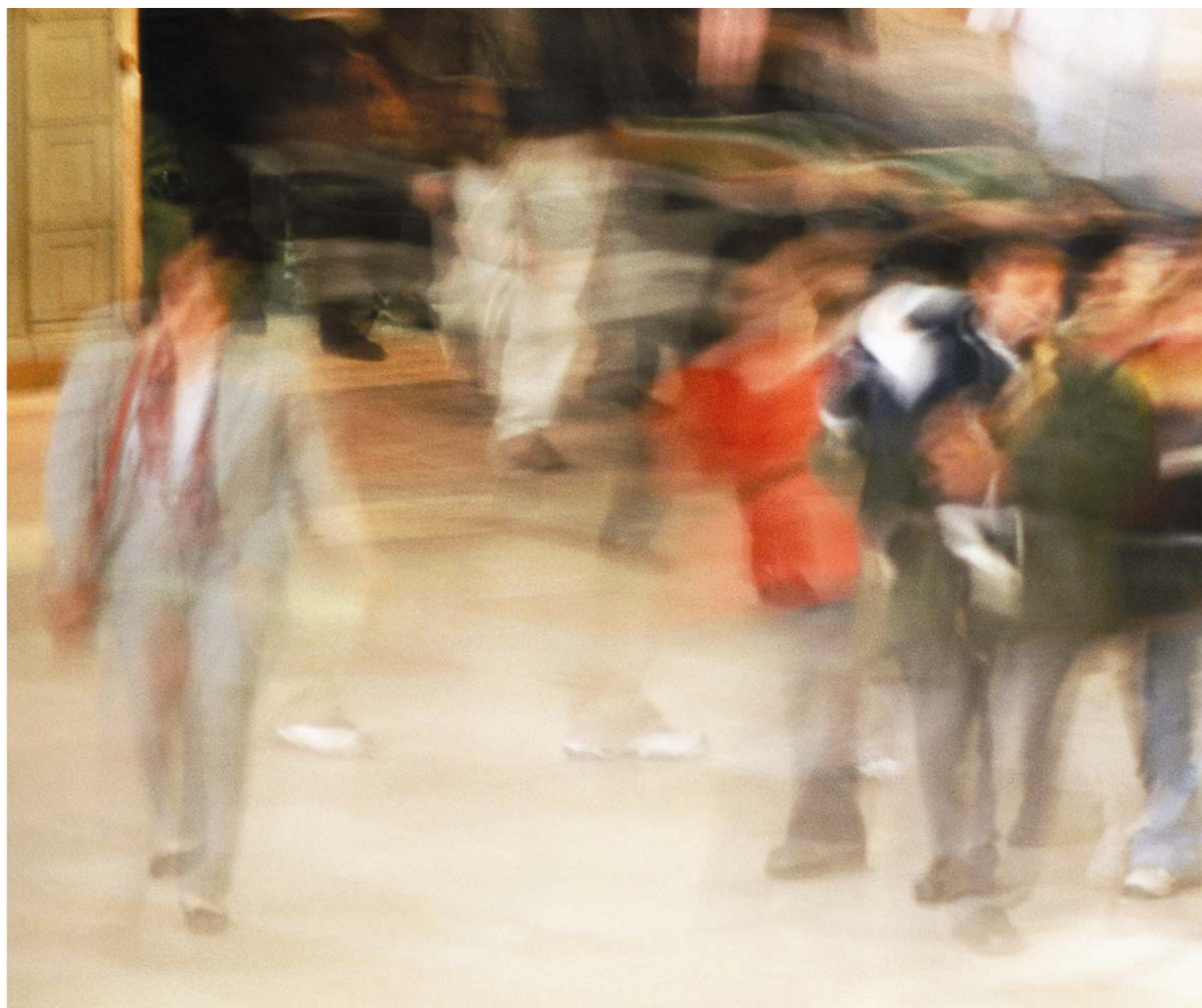


Office of Economic and
Statistical Research

Queensland Treasury



Queensland Government population projections:

Methodology, assumptions and scenarios for Queensland

2011 edition



Queensland Government

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1. Introduction

Population projections are broadly defined as ‘illustrations of growth and change in the population that would occur if assumptions made about future demographic trends were to prevail over the projection period’.¹ Queensland Government projections for the state, statistical divisions (SDs) and local government areas (LGAs) are revised twice every five years in line with the ABS (Australian Bureau of Statistics) Census of Population and Housing cycle.

The Office of Economic and Statistical Research (OESR) produced the 2011 edition of the Queensland Government population projections during 2010 and early 2011. The 2011 edition is largely an update of the 2008 edition, utilising similar base data and updated assumptions and taking account of more recent population data and information about planning and development activity. Comprehensive population projection data and resources can be found on the OESR website at www.oesr.qld.gov.au/population-projections.

This publication introduces the key aspects of the projections methodology and the underlying assumptions about population growth at the state and SD level. It then provides some alternative population projection scenarios to inform public discourse on population growth and assess the historical significance of recent trends.

The Queensland Government’s state and SD level population projections are generated by applying assumptions regarding future trends in net overseas migration, net interstate migration and natural increase to a set of base-year population data. Local government area populations are projected separately and constrained to the statistical division figures. While the state/SD and LGA projections are produced using separate models, the two processes are conducted concurrently and feed into each other throughout.

A project advisory group of relevant Queensland Government agencies assists with the formulation of assumptions at the state level, while local governments and other organisations contribute information on future major commercial, industrial and residential projects in their areas.

Low, medium and high series projections are generated. The medium series population growth assumptions were chosen to represent the most likely scenario, but other outcomes may result if there are unforeseen changes in the social and economic circumstances that underpin population growth. The low and high series have been produced to represent a plausible range of population growth outcomes around the medium series.

The resulting projections are not forecasts or predictions, as social and economic factors underlying the components of population change may vary over time. The 2011 population projections provide a range of outcomes, reflecting current expert knowledge.

¹ Australian Bureau of Statistics, *Population projections, Australia, 2006 to 2101*, cat. no. 3222.0, 2008

1.1 Population projections versus targets

Population projections represent likely population outcomes given current knowledge of the components of population change. Queensland government population projections do not constitute policy on optimal population growth outcomes, nor do they represent a set of population targets.

Across the Queensland Government, policy makers and planners draw on population projections to manage the impacts of population growth by making appropriate planning and infrastructure development decisions. Population projections thereby help government, community and private sector decision makers to plan effectively by establishing a common set of expectations.



2. Methodology

2.1 Stakeholder input

Various consultation strategies were conducted to improve the quality of the 2011 population projections. A project advisory group contributed to the state and SD level projections, while a survey of local governments and other regional stakeholders contributed to the LGA projections. Agencies with knowledge of Indigenous communities and populations were consulted separately.

2.1.1 Advisory group

As for previous editions, an advisory group drawn primarily from a broad range of Queensland Government agencies oversaw the development of the 2011 population projections for Queensland and SDs. The primary objective of the group was to provide expert input to the assumptions used in the projections model. The Queensland Centre for Population Research (QCPR, University of Queensland) also participated in the advisory group. QCPR provided expert knowledge and advice on current international demographic research.

OESR provided background research to the advisory group on past and current trends in the components of population change in Queensland. The research was carried out in May, June and July 2010 and the resulting information underpins the 2011 edition of population projections. The research results are published in a separate background paper (*Queensland Government population projections: background research, 2011 edition*).

2.1.2 Local government survey

To assist in determining the distribution of Queensland's projected population growth across SDs, OESR surveyed all Queensland local governments in mid-2010. A web-based survey sought feedback on existing population projections and detailed information related to significant upcoming commercial, industrial and residential projects that would be likely to have an impact on population growth in each LGA. The survey questions were tailored to suit the diverse range of local government areas across the state. A similar survey was also distributed to Queensland Government and non-government agencies in regional Queensland.

The surveys elicited a good response rate from a wide range of LGAs and other stakeholders. Survey data were included in the SD level population projections on the basis that larger shares of population growth were allocated to those areas in which significant projects were planned to occur. Data from this survey were also used at the LGA level of population projections.

2.2 The cohort component population projection model

Migration input data for all models were drawn from the 2006 Census. As such, modelling was run using the Australian Standard Geographical Classification (ASGC) 2006 and subsequently converted to ASGC 2008 (which reflects the current SD structure).

State and SD population projection results are generated by a cohort component model. These models:

begin with a base population for each sex by single year of age and advances it year by year by applying assumptions regarding future fertility, mortality and migration. This procedure is repeated for each year in the projection period for [relevant geographic areas].²

OESR methodology, based on the POPSTAR population projections software (refer Section 2.3), primarily models the impact of four key variables (fertility rates, life expectancy, overseas migration, and interstate migration) on state population data for the base year, with a fifth component (intrastate migration) being included for sub-state, SD population data. Age-specific assumptions regarding the future values of these components are set according to OESR and advisory group assessments of current trends. A discussion of the modelled components of population growth, including the assumptions made for the 2011 edition of population projections for Queensland, is included in Section 3.

Projection results for the SDs are constrained to the Queensland result. The primary output of the model is a set of population projections for Queensland and SDs, by sex and single year of age.

Preparation of the 2011 edition of population projections also involved qualitative assessment by OESR of the results achieved at each stage of the modelling process. This incorporated data from the local government survey and other studies into specific industries such as mining, major projects planning, regional plans and urban development and other research.

2.3 Population projection modelling software

The 2011 edition of the Queensland Government population projections is the fourth series produced using the POPSTAR software. This state-of-the-art software, developed by the QCPR, applies the multi-regional cohort component population projection model described at Section 2.2.

Separate software is used by OESR to develop projections for LGAs, Statistical Local Areas (SLAs) and Collection Districts (CDs) (see Section 2.4 for more details).

2.4 Other projections

OESR produces local government area population projections concurrently with state and SD level projections in a closely inter-related methodology. A companion to this background paper (*Queensland Government population projections: methodology for local government areas, 2011 edition*) outlines methodology for the 2011 edition of LGA population projections.

OESR produces population projections for SLAs, CDs and customised areas. These projections are derived from LGA and SD level projections and take small-area information

² Australian Bureau of Statistics, *Population projections, Australia, 2006 to 2101*, cat. no. 3222.0, 2008



regarding land supply and constraints into account. CD level and custom-area projections are provided on a consultancy basis.

OESR also produces projections of numbers of households, dwellings and living arrangements at state and LGA level. These are based on the population projections. These show how numbers of homes and housing patterns are likely to change over time. They inform state and local government policy on future demand for housing and other human services, and provide some certainty to the development industry in meeting Queensland's housing demand appropriately into the future. A new edition of household and dwelling projections is due to be released following the 2011 release of population projections. The current set of household and dwelling projections is based on 2008 population projections.

All freely available OESR projections and supporting materials are available at the OESR website www.oesr.qld.gov.au/population-projections.

The Australian Bureau of Statistics also publishes a separate set of population projections for the nation, states, capital cities and balance of states.

3. Assumptions

For the 2011 edition of population projections for Queensland, assumptions on the components of population change were based on historical trends, statistical analysis, and qualitative assessment of social and economic conditions. These include economic and employment forecasts (e.g. prospects for the resource sector), sociological trends (e.g. changing attitudes and policies towards having children) and demographic factors (e.g. age-specific fertility effects). Background papers were produced to assist the advisory group to determine the assumptions used in the model. These reports are available for download at www.oesr.qld.gov.au/population-projections.

This section summarises the background information concerning the components of population change modelled in the Queensland Government population projections, and details the final assumptions regarding these components that were applied to the 2011 edition medium, low and high series. A concise table of the resulting population projections series follows, in Section 4.

3.1 Base population

The base population for the 2011 edition is the Australian Bureau of Statistics 30 June 2008 estimated resident populations (ERPs) by single year of age and sex for the state and statistical divisions. This is based on the ABS publication Australian Demographic Statistics, September 2009 (cat. no. 3101.0).

3.2 Net overseas migration

According to the ABS³, net overseas migration (NOM) is the net gain or loss of population through immigration to Australia and emigration from Australia. ABS net overseas migration figures represent the difference between the number of incoming international travellers who stay in Australia for 12 months or more out of the 16 months prior to the reference period (NOM arrivals), and the number of outgoing international travellers (Australian residents and long-term visitors to Australia) who leave Australia for 12 months or more in the same period (NOM departures). By this definition, some temporary residents in Australia are included in the net overseas migration figure. Overseas migration data are derived primarily from Department of Immigration and Citizenship international passenger and visa records.

For the purposes of the Queensland Government population projections, assumptions are made for projection years about the level of net overseas migration for Australia by financial year (in persons), and the Queensland share of those annual totals.

Australia's net overseas migration has increased over time, averaging almost 110,000 people per year in the 20 years to 2004 and almost 270,000 in the three years for which data are available since then. Recent quarterly data show steady or slightly declining net overseas migration since around mid 2008. Despite these declines, the 2009 net overseas migration result was the highest on record, at slightly under 315,000 (revised), due to a surge in the March quarter of that year. Since 1982, slow cyclical variations in net overseas migration to

³ Australian Bureau of Statistics, *Migration, Australia, 2008–09*, cat. no. 3412.0, 2010



Australia have resulted in a wide range of annual figures, from a low of 49,000 people in 1984 to the record high of 315,000 in 2009.

Historically, Queensland's average share of Australia's net overseas migration has been marginally less than the state's share of the national population. The assumed Queensland shares for future years have been set accordingly. This assumed share increases slightly over the projection period, as the projected Queensland population increases as a proportion of the national population.

For the 2011 edition of the Queensland Government population projections, Australia's assumed net overseas migration was modelled lower than the 2009 level (similar to the 2006 level of 182,000 people) to reflect the recent downturn.

Low series assumption:

Net overseas migration for Australia declining to 130,000 by 2011–12, and remaining constant for the remainder of the projection period (to 2055–56). Queensland share increasing from 19.4 per cent to 24.0 per cent by the end of the projection period.

Medium series assumption:

Net overseas migration for Australia declining to 180,000 by 2011–12, and remaining constant for the remainder of the projection period (to 2055–56). Queensland share increasing from 19.4 per cent to 24.4 per cent by the end of the projection period.

High series assumption:

Net overseas migration for Australia declining to 230,000 by 2011–12, and remaining constant for the remainder of the projection period (to 2055–56). Queensland share increasing from 19.4 per cent to 24.9 per cent by the end of the projection period.

3.3 Net interstate migration

For any given state or territory, net interstate migration is the estimated difference between the number of people moving from and to other states. The ABS publishes quarterly net interstate migration data for Australian states. Data between census years are modelled using change of address information sourced primarily from Medicare Australia, and supplemented by Department of Defence administrative records⁴.

Age-specific net interstate migration is measured annually in persons. For the purposes of the 2011 edition of the Queensland Government population projections, levels of net interstate migration were set around historical averages and verified by age-specific gross migraproduction rate analysis (accounting for the likelihood of individuals moving from one defined area to another in a given year).

Net interstate migration levels fluctuate significantly. For Queensland, net interstate migration has ranged from under 10,000 people in 1984 to slightly under 50,000 people in 1993. Multiple peaks and troughs in the 20 years to 2004 resulted in an average net gain of almost 30,000 people annually. A decline through the five years for which data are available since then has resulted in an average annual net gain of 25,000 over this period. The 2008–09 net figure of 18,400 was the lowest for 10 years.

⁴ Australian Bureau of Statistics, *Migration, Australia, 2008–09*, cat. no. 3412.0, 2010

For the Queensland Government population projections 2011 edition, it was assumed that net interstate migration will recover from the recent low figures to levels just below the average of the last 30 years of 28,000 people per annum. For the medium series, net interstate migration was modelled at an annual average of 25,000 persons.

Low series assumption:

Net interstate migration for Queensland of 8,500 persons in 2009–10, increasing to 17,500 persons in 2012–13, then constant thereafter.

Medium series assumption:

Net interstate migration for Queensland of 11,000 persons in 2009–10, increasing to 25,000 persons in 2012–13, then constant thereafter.

High series assumption:

Net interstate migration for Queensland of 21,000 persons in 2009–10, increasing to 32,500 persons in 2012–13, then constant thereafter.

3.4 Natural increase

Natural increase is calculated as the net effect of births minus deaths for any given area. For the Queensland Government population projections 2011 edition, estimates of birth and death statistics are derived primarily from Queensland Government registration records (Queensland Registry of Births, Deaths and Marriages). Annual natural increase has varied the least of all components of population growth, ranging from around 20,000 people in 1988 to the historic high of approximately 38,000 people in 2009. Between 1990 and 2004, annual natural increase remained relatively stable at approximately 25,000. Through this period, there was a small annual increase in the number of registered births (despite a declining total fertility rate) and a commensurate increase in deaths. In the five years since then, a sharp increase in births associated with increased total fertility rates has raised the average annual natural increase figure to almost 33,000.

3.4.1 Fertility

The POPSTAR model projects future births by applying assumed age-specific fertility rates to the projected female population of child bearing age.

In Queensland, following a long period of general decline from around 3.0 babies per woman in the early 1970s to a record low of 1.8 babies per woman in 2000, total fertility rates have increased in recent years to around 2.1.

It is assumed that the basic fundamentals of the Queensland economy will remain robust, despite the recent downturn in the global economy, and that there will be a continuation of family-friendly policies at both the state and national level. For the medium projections series, it is assumed that these conditions will continue to sustain fertility in Queensland at levels higher than the low levels recorded around 2000, but lower than the contemporary high levels. The low series assumption reflects a situation where rates are assumed to decline to a point slightly less than the lowest recorded levels, and the high series assumption is based on rates remaining around the contemporary high levels.

**Low series assumption:**

Queensland total fertility rate of 2.0 babies per woman in 2008–09, declining linearly over a five-year period to 1.7 and remaining constant thereafter.

Medium series assumption:

Queensland total fertility rate of 2.0 babies per woman in 2008–09, declining linearly over a five-year period to 1.9 and remaining constant thereafter.

High series assumption:

Queensland total fertility rate of 2.0 babies per woman in 2008–09, increasing linearly over a five-year period to 2.1 and remaining constant thereafter.

3.4.2 Mortality

To model future mortality, POPSTAR converts assumed life expectancies into mortality rates by age and sex, which are then applied to the projected population to generate deaths by age and sex.

In Queensland there have been significant, sustained and continuous improvements in life expectancies at birth and for subsequent ages over a long period of time, for both males and females. At this point in time, there is no evidence of a slowing in the rate of increase in life expectancy of either males or females. As such, life expectancies are assumed to increase in each of the three projection series: low, medium and high. However, it is generally thought that there will be a biological limit to life expectancy. To reflect this probability, improvements in life expectancies are assumed to reduce over the projection period for the low and medium series. Only the high assumption represents a similar rate of improvement into the future.

Low series assumption:

Reducing improvements in life expectancy at birth in Queensland, to reach 85.0 years for males and 88.2 years for females by 2055–56.

Medium series assumption:

Reducing improvements in life expectancy at birth in Queensland, to reach 89.4 years for males and 92.2 years for females by 2055–56.

High series assumption:

Continued improvements in life expectancy at birth in Queensland, to reach 93.9 years for males and 96.3 years for females by 2055–56.

4. Population projections output: 2011 edition

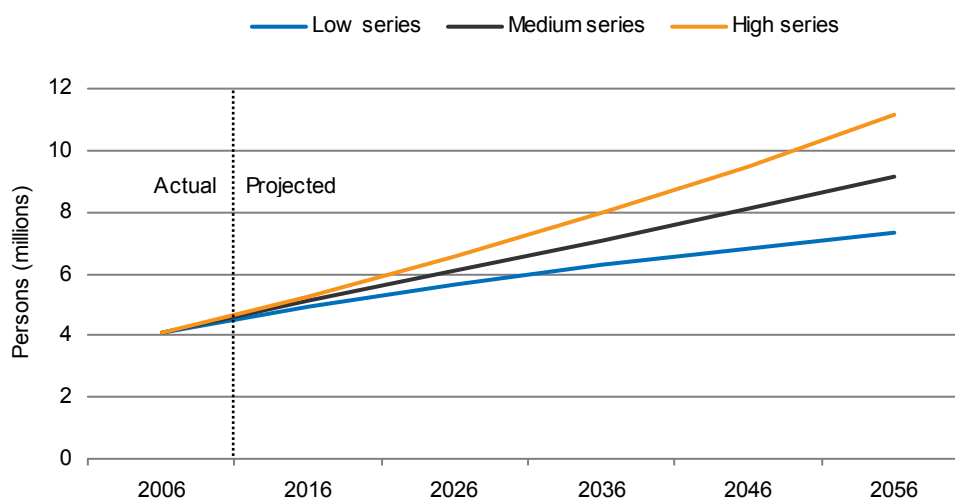
A concise summary of the Queensland Government population projections 2011 edition is provided at Table 4.1 and Figure 4.1. It is strongly suggested that data users refer to the full range of projections series rather than simply focus on the medium series alone. The table and figure show the 2011 edition high, medium and low series. Detailed population projection data tables, including by age, sex and geographic area, can be found on the OESR website at www.oesr.qld.gov.au/population-projections.

Table 4.1 Actual and projected resident population, Queensland, June 2006 to 2056

	Actual		— Projected —			
	2006	2016	2026	2036	2046	2056
Low series	4,090,908	4,942,485	5,633,411	6,262,724	6,818,495	7,318,602
Medium series	4,090,908	5,092,858	6,090,548	7,095,063	8,108,400	9,142,610
High series	4,090,908	5,258,395	6,576,674	7,980,426	9,498,052	11,147,548

Source: Australian Bureau of Statistics, *Australian Demographic Statistics, September quarter 2009*, cat. no. 3101.0, 2010 (estimated resident population); and Queensland Government population projections 2011 edition

Figure 4.1 Actual and projected resident population (millions), Queensland, June 2006 to 2056



Source: Australian Bureau of Statistics, *Australian Demographic Statistics, September quarter 2009*, cat. no. 3101.0, 2010 (estimated resident population); and Queensland Government population projections, 2011 edition



5. Sensitivity testing: alternative population growth scenarios

Rapid population growth has long been a reality in Queensland. In the last 20 years, Queensland's population has increased by 1.6 million. That figure exceeds all other Australian states and equates to around 1,500 people per week on average throughout that period. Traditionally, this population growth has been celebrated for providing economic and cultural impetus. It has ensured that the state's resource and development industries have been well supplied with labour, and it has reduced the effects of population ageing.

Population growth has recently become a common theme in the growing public discourse on sustainability in Queensland. This has been prompted in particular by the projected Australian population of 35.9 million at 2050 contemplated in the Australian Government's *2010 Intergenerational Report* (IGR). Environmental and social pressures associated with population growth have been highlighted by advocates of low population growth at the same time as a resource industry boom has consolidated and intensified perceptions of Queensland's economic need for skilled labour. The Queensland Government delivered the Queensland Growth Management Summit in March 2010, and established Growth Management Queensland as lead agency in managing sustainable population growth.

The quantitative model employed to generate the Queensland Government population projections 2011 edition provides a vehicle for generating alternative scenarios, thereby offering valuable insights into this discourse. This section examines a few, selected, alternative growth scenarios based on variations to the assumptions used to generate the 2011 edition medium series. These scenarios illustrate the sensitivity of the model to minor changes to various assumptions.

This exploration of various scenarios begins with a brief outline of the Queensland Government Population Projections 2011 edition medium series. As the most likely scenario of population growth, this operates as a baseline for the alternative scenarios. The alternative scenarios that follow were each developed through isolation and manipulation of a single assumption of population growth. As outlined at Section 3, these components are total fertility rate (TFR), life expectancy (LE), net overseas migration (NOM) and net interstate migration (NIM). The scenarios include:

1. 2011 edition, medium series;
2. Net overseas migration: averaging at the 2008–09 peak;
3. Net interstate migration: averaging at the 1992–93 peak;
4. Natural increase: fall to OECD average total fertility rate;
5. Natural increase: static life expectancy.

Finally, the section concludes with a brief outline of the similarities between the 2011 edition medium series projection for Queensland, and the Federal Treasury Intergenerational Report preferred growth scenario.

5.1 Queensland Government population projections 2011 edition, medium series

The 2011 medium series represents the Queensland Government's most likely population projection scenario. A summary of the assumptions underpinning the medium series is provided at Table 5.1.

Table 5.1 Population growth assumptions (summarised), Queensland Government population projections 2011 edition, medium series

	2011 medium series
Total fertility rate	1.9 (long-term)
Life expectancy (years)	increasing to 89.4 for males, 92.2 for females
Net overseas migration (persons)	averaging approximately 40,300 per annum
Net interstate migration (persons)	25,000 per annum (long term)
Total projected Queensland population at 2056	9,142,600

Reflecting Queensland and Australia's traditionally liberal approach to social policy, this projection has been produced on the assumption of minimal government intervention in population growth. As such it should not be construed as a target or policy statement in any sense, rather as a projection of the most likely population outcome given a careful analysis of historical trends and foreseeable changes in the future (see Section 3 for further details). For a full analysis of the information and trends behind these assumptions, please refer to the Queensland Government population projections 2011 edition background papers available at the OESR website (www.oesr.qld.gov.au/population-projections).

5.2 Net overseas migration: averaging at the 2008–09 peak

Throughout and beyond the peak of the economic boom (2006–2009), annual net overseas migration (NOM) increased substantially in Queensland to become the largest component of population growth (followed by natural increase and net interstate migration). NOM for Queensland peaked at a record level of 61,900 (revised) in the year to 30 June 2009.⁵

This increase served to more than offset a concurrent decline in net interstate migration and maintained Queensland's strong population growth momentum. It was due largely to high rates of arrival under temporary visas, specifically overseas students, skilled temporary residents (mainly 457 visa holders) and those on working holidays. It is not considered likely that NOM at this level will be sustained in the short or medium term.

A scenario of population growth in which NOM is projected at the 2008–09 peak demonstrates the hypothetical impact of its continuation into the future. For this scenario, NOM begins at 61,900 and increases slowly over the projection period as Queensland's share of the Australian population increases (averaging 69,200).

⁵ Australian Bureau of Statistics, *Australian Demographic Statistics, June quarter 2010*, cat. no. 3101.0, 2010

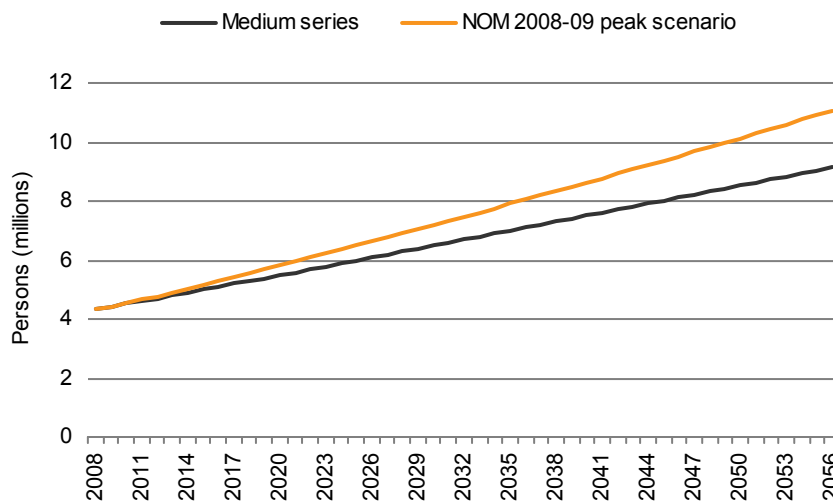


Table 5.2 Population growth assumptions (summarised), net overseas migration: averaging at the 2008–09 peak scenario

	NOM 2008-09 peak scenario	2011 medium series
Net overseas migration (persons)	averaging approximately 69,200 per annum	averaging approximately 40,300 per annum
Total projected Queensland population at 2056	11,070,400	9,142,600

This scenario varies from the 2011 medium series assumptions as summarised at Table 5.2. Population growth with net overseas migration similar to the 2008–09 peak over the long term (and all other components under the medium scenario remaining unchanged) would result in almost two million more Queenslanders by 2056 than suggested by the 2011 medium series (Figure 5.1).

Figure 5.1 Population projection to 2056, medium series and averaging at the 2008–09 NOM peak scenario, Queensland, millions of persons



Source: Queensland Government population projections, 2011 edition

5.3 Net interstate migration: averaging at the 1992–93 peak

Net interstate migration (NIM) has long been central to Queensland’s population growth, contributing 36.1 per cent of the state’s population growth since 1982. As recently as 2005, NIM was the largest component of population growth in Queensland. Two long peaks in NIM, through the early to mid 1990s and the early 2000s, created a popular conception that the economic outlook, as well as lifestyle and amenity characteristics of the state were closely associated with high NIM.

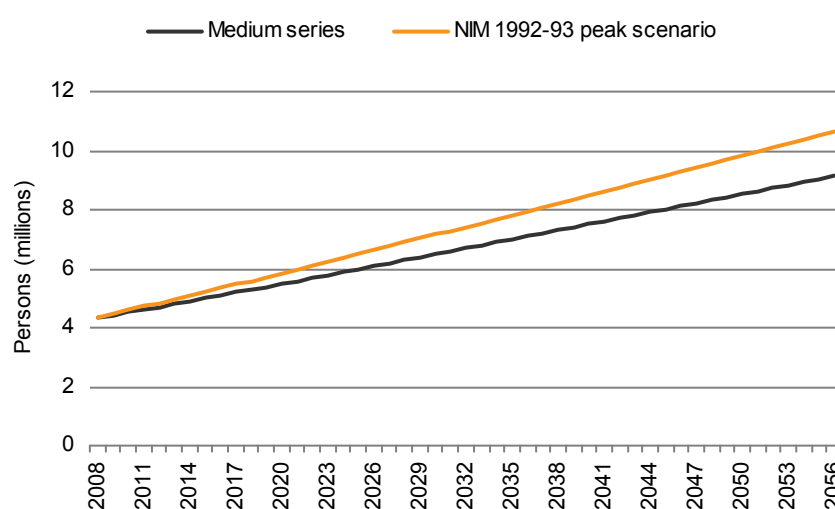
The NIM peaks identified above were temporary and not necessarily indicative of Queensland’s long-term population growth prospects. An alternative population growth scenario, where NIM levels are averaged at the peak level of 49,200 (as recorded in 1993), demonstrates the hypothetical impact of a continuation of this higher level through the projection years – all other components under the medium scenario remaining unchanged). The assumptions differ from the 2011 medium series as summarised at Table 5.3.

This scenario produces a projected population at 2056 which is over 1.5 million higher than the 2011 medium series figure (see Figure 5.2), and a projected average annual population growth of 1.9 per cent or 132,400 persons. Growth such as this is considered to be relatively high.

Table 5.3 Population growth assumptions (summarised), net interstate migration: averaging at the 1992–93 peak scenario

	NIM 1992-93 peak scenario	2011 medium series
Net interstate migration (persons)	49,200 per annum (long term)	25,000 per annum (long term)
Total projected Queensland population at 2056	10,662,700	9,142,600

Figure 5.2 Population projection to 2056, medium series and averaging at the 1992–93 NIM peak scenario, Queensland, millions of persons



Source: Queensland Government population projections, 2011 edition

5.4 Natural increase: fall to OECD average total fertility rate

Population projection modelling can also highlight the significance of Queensland's recent upswing in fertility. A population growth scenario in which Queensland's total fertility rate (TFR) is constrained to that of the Organisation for Economic Co-operation and Development (OECD) countries' average is illustrative. This entails variations to the 2011 medium series TFR assumptions as summarised at Table 5.4.

Table 5.4 Population growth assumptions (summarised), fall to OECD average TFR scenario

	OECD TFR scenario	2011 medium series
Total fertility rate	1.7 (long term)	1.9 (long term)
Total projected Queensland population at 2056	8,668,900	9,142,600

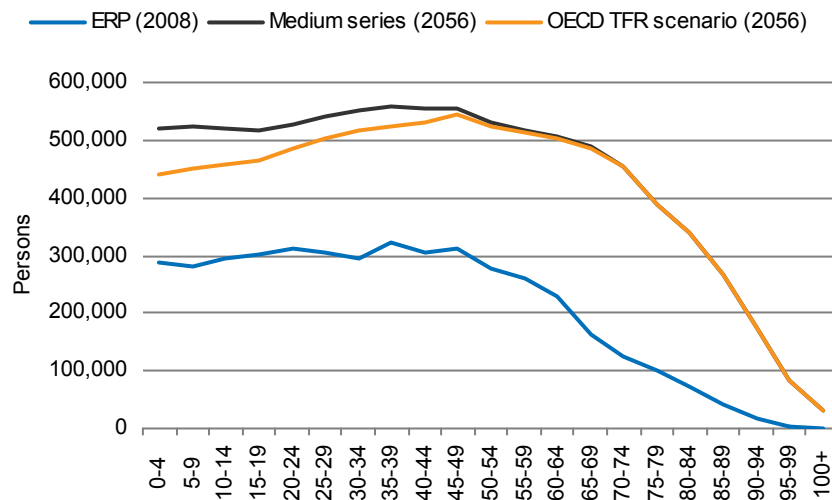
Figure 5.3 shows that the lower TFR results in a total population projection approximately 473,700 lower than the 2011 medium series. This suggests that the relatively high current



TFR will have a meaningful impact on the size and age structure of Queensland’s population, if sustained throughout the projection period.

The impact of sustained lower total fertility rates would include an increase in population ageing. The proportion of the total population at 2056 aged 65 years and over is 24.3 per cent in the 2011 medium series, which is lower than the equivalent OECD TFR scenario figure of 25.6 per cent. As total fertility rate assumptions impact only on projections of people born after the base year, the resulting variation to the ultimate age profile at 2056 diminishes through the age groups with effectively zero variation after age 49.

Figure 5.3 Population projection by age group, medium series and fall to OECD TFR scenario, Queensland, persons



Source: Australian Bureau of Statistics, *Australian Demographic Statistics, September quarter 2009*, cat. no. 3101.0, 2010 (estimated resident population); and *Queensland Government population projections*, 2011 edition

5.5 Natural increase: static life expectancy

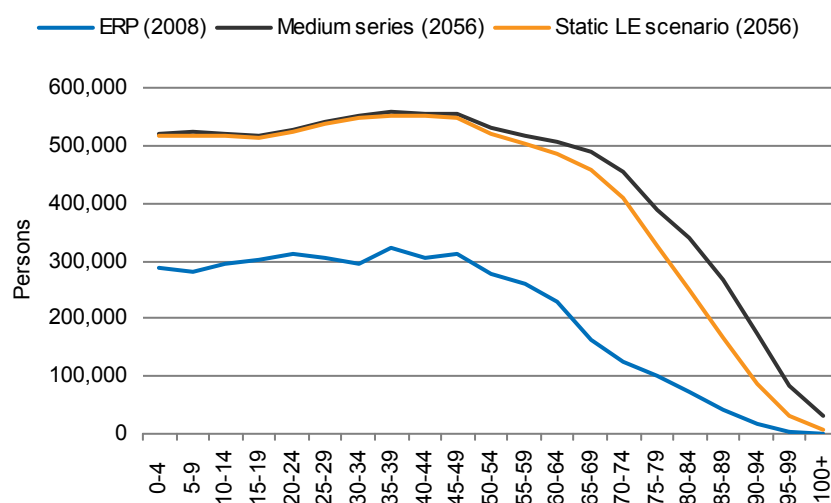
The other contributing factor to natural increase that is modelled in population projections is life expectancy (LE). Life expectancy has increased steadily throughout Queensland’s history to reach 79.1 years for males and 83.8 years for females in 2007–2009. The 2011 medium series projection assumes this increase will continue. To demonstrate the impact of this increasing life expectancy on the population, a scenario in which life expectancy is held static at the 2008 level provides a useful comparison. The variation in assumptions from those of the 2011 medium series is summarised at Table 5.5.

In this scenario, the total population of Queensland at 2056 is projected at 572,400 persons lower than in the 2011 medium series. This suggests that increases in life expectancy will have significant implications for Queensland’s age profile and dependency ratio if they continue as projected. At 2056, this scenario projects 20.2 per cent of the total population to be aged 65 years and over, which is substantially lower than the equivalent 2011 medium series figure of 24.3 per cent. As Figure 5.4 demonstrates, the variation in projected population at 2056 applies generally to the older age groups in which the impacts of changes to life expectancy assumptions are largely confined.

Table 5.5 Population growth assumptions (summarised), static life expectancy scenario

	Static LE scenario	2011 medium series
Life expectancy at birth (years)	79.1 for males, 83.8 for females	increasing to 89.4 for males, 92.2 for females
Total projected Queensland population at 2056	8,570,200	9,142,600

Figure 5.4 Population projection by age group, medium series and static life expectancy scenario, Queensland, persons



Source: Australian Bureau of Statistics, *Australian Demographic Statistics, September quarter 2009*, cat. no. 3101.0, 2010 (estimated resident population); and *Queensland Government population projections, 2011 edition*

5.6 2010 Intergenerational Report scenario

The population growth scenario presented in the Federal Treasury 2010 Intergenerational Report (IGR) assumes annual net overseas migration lower than recent record figures for Australia, although somewhat higher than the pre-peak historical average. The net overseas migration figure used in the 2010 IGR was 180,000 per annum and Queensland's share of this net overseas migration would, on average over the projection period, be about 40,000 per annum. This is very close to the net overseas migration assumption in the medium series of the 2011 edition of Queensland Government population projections.

Modelling a Queensland scenario equivalent to the 2010 IGR would involve assumptions similar to the 2011 medium series, with the exception of a small change to net overseas migration. This variation is summarised at Table 5.6.

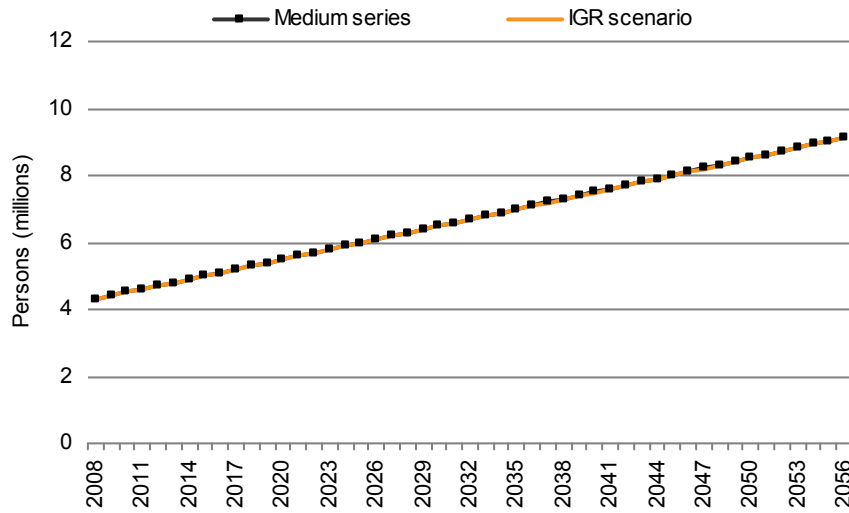
Table 5.6 Population growth assumptions (summarised), 2010 Intergenerational Report scenario

	2010 IGR scenario	2011 medium series
Net overseas migration (persons)	averaging approximately 40,200 per annum	averaging approximately 40,300 per annum
Total projected Queensland population at 2056	9,134,400	9,142,600



The population projection for Queensland suggested by the 2010 IGR scenario is very similar to the 2011 edition medium series (so as to be virtually indistinguishable in the chart (Figure 5.5)).

Figure 5.5 Population projection to 2056, medium series and 2010 Intergenerational Report scenario, Queensland, millions of persons



Source: Queensland Government population projections, 2011 edition

Glossary

This glossary provides a guide to terms used in this publication. It is in alphabetical order. Further details about Census data definitions can be obtained from the Australian Bureau of Statistics (ABS) publication *Census Dictionary, Australia, 2006* (cat. no. 2901.0).

Estimated resident population (ERP)

The number of people estimated to be residents of an area.

During population census years, ERP are based on Census counts by place of usual residence, to which are added the estimated net undercount and the number of Australian residents estimated to have been temporarily overseas at the time of the Census. Overseas visitors in Australia are excluded from this calculation. These census year estimates become the base on which estimates of natural increase and migration are added (or subtracted) over the following years.

People are deemed usual residents of the address at which they have lived (or intend to live) for six months or more during the census year. Using this criterion, boarding school students, for example, are considered usual residents at the school address rather than their home address.

Local government area (LGA)

As defined under the Local Government Act 1993, LGAs are spatial units that represent the geographical areas of incorporated local government councils, such as cities (C), regional councils (R) and shires (S). LGAs and their interstate equivalents aggregate directly to form the incorporated areas of Australia.

Natural increase

The excess of births over deaths. Although usually positive, natural increase can be negative if the population has an older age structure such that more deaths than births are experienced over a period of time.

Net interstate migration

The net result of population movement into the region from interstate minus population movement out of the region to other states. During intercensal years, the Australian Bureau of Statistics prepares state level quarterly estimates of net interstate migration using indicators of population change.

Net migration

Within the context of a given geographical region, such as a statistical local area, net migration refers to the net result of population movement into and out of the region. It is the resulting change in population from the combination of overseas migration, interstate migration and internal migration within the state.

Net overseas migration

The estimated difference between the number of people from overseas settling in Queensland and the number of people departing Queensland to live overseas. Overseas migration data are derived primarily from Department of Immigration and Citizenship international passenger and visa records, and revised for each period to include only those



people who have been in (or out of) Australia for 12 out of the previous 16 months. By this definition, some temporary residents in Australia are included in the net overseas migration figure.

Statistical division (SD)

The largest sub-state spatial units in the main structure of the Australian Standard Geographical Classification. Queensland is divided into 14 SDs, including the Off-Shore Areas and Migratory SD which is used to classify the whereabouts of people who were counted in transit on census night, for example, enumerated in airports or aboard ships within Australian territorial waters. SDs are composed of groups of statistical local areas. In aggregate, SDs cover all of Australia without gaps or overlaps.

Statistical local area (SLA)

The Statistical Local Area is an Australian Standard Geographical Classification (ASGC) defined area which consists of one or more Collection Districts (CDs). SLAs are Local Government Areas (LGAs), or parts thereof. Where there is no incorporated body of local government, SLAs are defined to cover the unincorporated areas. SLAs cover, in aggregate, the whole of Australia without gaps or overlaps.

Total fertility rate

Calculated as the sum of age-specific fertility rates. It represents the number of children a woman would be likely to have if she experienced the currently prevailing age-specific fertility rates throughout her lifetime.

Queensland Government Population Projections, 2011 edition

Projection results

- Queensland Government population projections to 2056: Queensland and statistical divisions, 2011 edition
- Queensland Government population projections to 2031: local government areas, 2011 edition

Background papers

- Queensland Government population projections: methodology, assumptions and scenarios for Queensland, 2011 edition
- Queensland Government population projections: methodology for local government areas, 2011 edition
- Queensland Government population projections: background research, 2011 edition

The population projections reports and data tables can be found at the Office of Economic and Statistical Research website: www.oesr.qld.gov.au/population-projections.