ANNEXURE 1
Tasmania's Population Challenge: 650,000 by 2050

BACKGROUND ISSUES PAPER

MARCH 2015

Prepared by Lisa Denny
WORKFORCE DEMOGRAPHER | WWW.LISADENNY.COM.AU
For the Tasmanian Department of State Growth

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About the author:

Lisa Denny is a consulting demographer and affiliated researcher with the Institute for the Study of Social Change at the University of Tasmania. Lisa is also a National Council Member of the Australian Population Association.

Lisa's area of research is in workforce planning and economic renewal in the context of population ageing. Lisa's specific expertise includes the interrelated nature of labour market dynamics, education and training and the population. She is currently undertaking a PhD at the University of Tasmania in which she has developed a measure of skill utilisation from a demographic perspective.

Lisa holds a Bachelor of Commerce (economics and finance), Bachelor of Arts with First Class Honours (social ecology) and a Graduate Diploma of Education (economics and business management).

Tasmanian born, Lisa has a wealth of knowledge and an in-depth understanding of the Tasmanian economy and population given her extensive, diverse working and life experiences in both the public and private sectors.

Executive Summary

The purpose of this Issues Paper is to provide demographic advice to inform the development of a broad population strategy for Tasmania. This paper provides an overview of the current population predicament and outlines the demographic intervention required to stabilise the age structure to set the population on a long term, sustainable, organic growth trajectory. In the process, the paper identifies the components of population change which the Tasmanian Government may be able to influence, directly or indirectly, through policy development to achieve the set target of 650,000 by 2050. As such, this Issues Paper comprises four parts:

1) an overview of Tasmania's population
2) trends in the components of population change
3) scenarios for achieving the population target
4) discussion

An effective population policy should seek to influence specific demographic variables that are considered to be contributing to unfavourable population, economic and social outcomes. At the same time, it must be able to respond appropriately to changing population dynamics that are less likely to be influenced through policy intervention. A comprehensive population policy has the capability to:

- stabilise the rate of population ageing
- ensure a balance between the working age and non-working age populations
- meet the needs of the population
- embrace and nurture a culturally diverse society
- create a strong and vibrant economy and community.

The capacity to grow a population stems from its age structure: the distribution of the population by age and by gender. Population growth has two sources; natural increase (more births than deaths) and migration (interstate and overseas). These sources are not mutually exclusive, and in Tasmania's case, are highly mutually dependent. The two correlates for population growth are the size (and proportion) of the prime reproductive cohort[1] and economic performance. As a state, Tasmania is currently in a position in which the propensity for population growth is in decline as the population age structure is no longer conducive to natural increase.

Tasmania's ageing population is causing a fundamental shift in the population, resulting in a trend towards an increasingly older age structure. Without intervention, the ageing population will eventually lead to a scenario in which natural decline occurs (more deaths than births) followed by absolute population decline[2].

The ageing population caused by the large baby boomer cohort and long-established internal migration patterns is a globally unprecedented phenomenon which has been lying dormant for many decades. Its implications are only now beginning to surface worldwide. Emerging research and

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[1] For the purpose of calculating the Total Fertility Rate (TFR), the reproductive cohort includes all women aged 15 to 49 years, however when considering the potential for population growth, the reproductive cohort can be further defined as the 'prime reproductive cohort' which is those women in the population aged 20 to 39 years.

[2] Natural decline is projected by the ABS to occur from around 2030, and absolute decline from around 2047 under the Series B population projections (ABS, Population Projections, Australia, 2012 (base) to 2101, Cat. No. 3222.0)

policy development is providing a growing evidence base from which to develop strategic direction[3]. Furthermore, there is also increasing evidence of the implications of *not* attempting intervention (e.g. Japan and much of Europe[4]).

In the Tasmanian context, the bulge in the population age structure created by the baby boomers will have largely passed by 2050 and provides the opportunity, over the duration of the target period, to stabilise the age structure. However, the ability to do so requires strategic intervention now. While in the short (and medium) term, policy measures to attempt to increase growth may appear to struggle against natural demographic forces working in the opposite direction (i.e. more deaths than births), by 2050, appropriate policy intervention has the capability to affect the required structural change over that time.

The phenomenon of population ageing is not isolated to regional areas like Tasmania, therefore the demand for skilled labour will become increasingly competitive globally. The ability to attract and retain people in Tasmania will be highly dependent on individual economic opportunities and the state's relative economic performance, both within Australia and globally. As such, a sustained, long term commitment (beyond election cycles) to a range of strategic interventions, including economic growth, will be required to achieve the population target of 650,000 by the year 2050.

As research reveals more about ageing populations, fertility intentions and migration experiences, governments have greater knowledge and ability to formulate policy to effect change. In Tasmania's case, there are four key opportunities to influence population change:

1. the ageing population and associated ageing workforce creating employment demand
2. a Tasmanian diaspora[5] community with a strong affinity with the place
3. a relatively high fertility rate
4. the opportunity to increase the state's share of the national migration programme and better utilise employment demand-led permanent and temporary migration schemes.

The practicality of influencing target demographic variables will be very much dependent on a policy approach which focuses on reducing the need (through employment) and desire (through lifestyle advantages) to reside elsewhere. This extends to improving the experiences of the population by enabling people to achieve their desired family size, embracing and nurturing a growing

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[3] See for example: South Australian Government 2004, Prosperity through people: A population policy for South Australia; Government of Newfoundland and Labrador 2012, Changing Course: A Discussion Paper on Population Growth in Newfoundland and Labrador, Canada; Hugo, G 2008, 'Australia's state-specific and regional migration scheme: An assessment of its impacts in South Australia', Journal of International Migration and Integration, vol. 9, no. 2, pp. 125-145; Bell, M, Charles-Edwards, E, Wilson, T & Cooper, J 2010, 'Demographic futures for South East Queensland', Australian Planner, vol. 47, no. 3, pp. 126-134; Wilson, T 2015, 'The Demographic Constraints of Future Population Growth in Regional Australia', Australian Geographer, vol. 46, no. 1, pp. 91-111.

[4] See for example: Hospers, G-J & Reverda, N 2014, Managing Population Decline in Europe's Urban and Rural Areas, Springer. Clark, RL, Ogawa, N, Kondo, M & Matsukura, R 2010; 'Population decline, labor force stability, and the future of the Japanese economy', European Journal of Population, vol. 26, no. 2, pp. 207-227; Shirakawa, M 2012, 'Demographic changes and macroeconomic performance: Japanese experiences', in Speech at BOJ-IMES Conference, Bank of Japan, Tokyo, May, vol. 30.

[5] Originally defined as a scattered and dispersed population with a common origin in another geographic area, diaspora, is increasingly used globally as a term referring to a dispersed group of people who no longer reside in their original homeland but maintain strong political, social and emotional ties to what they regard as their true home.

multicultural society and supporting people to achieve an effective balance between work and family responsibilities. At the same time, the strategy will need to proactively attract return migration and interstate and overseas migration without compromising opportunities for resident Tasmanians.

Put simply, the Tasmanian Government will need to:

- maintain (or increase) the Total Fertility Rate (TFR)
- increase the number and proportion of women of childbearing age
- improve net interstate migration (NIM) by reducing departures and increasing arrivals
- increase net overseas migration (NOM) to Tasmania
- encourage temporary migrants to become permanent residents
- retain migrants to Tasmania.

More specifically, the Tasmanian Government will need to consider policy positions which:

- identify likely future skill and labour shortages
- develop and apply best practice workforce planning and workforce development strategies at regional and industry levels
- provide youth with opportunities for education and training with a direct employment outcome
- enable people to effectively balance the responsibilities of work and family, across all generational needs
- provide a pathway for the Tasmanian Diaspora to return 'home'
- identify and provide appropriate ongoing support for migrants and their families throughout the settlement process
- facilitate and nurture a culture of inclusiveness.

Critically, population change takes time; it generally takes a long time for the full effect of changing demographic variables to be realised, for both negative and positive changes. The regularity and comprehensive nature of population data gathering enables demographic variables to be constantly monitored, and for the processes which impact upon them continually to be analysed. The population strategy for Tasmania should not be static and must be a dynamic document which can take advantage of emerging opportunities and mitigate unforeseen challenges as they arise.

Section 1: Tasmania's population

Overview

Two key areas of popular discourse dominate discussion regarding Tasmania's population: its ageing, and its size (or its rate of growth). In fact, these two areas are closely related and are directly influenced by the age profile of inward and outward interstate and overseas migration. This paper will explain the relationship between population ageing and the propensity for growth, the causes and the subsequent implications for the economy and society, as well as future opportunities.

The capacity to grow a population stems from its age structure: the distribution of the population by age and by gender. Population growth has two sources; natural increase (more births than deaths) and migration (interstate and overseas). These sources are not mutually exclusive, and in Tasmania's case, are actually highly mutually dependent. The two correlates for population growth are the size (and proportion) of the prime reproductive cohort[6] and economic performance. As a state, Tasmania is currently in a position in which the propensity for population growth is in decline as the population age structure is no longer conducive to natural increase. That is, there has been a decline in the number of women of reproductive age. This is due to the age profile of migration movements affecting the size and proportion of the reproductive cohort. Figure 1 highlights the significant 'bite' in the population age structure for the 20 to 40 year age group (for both males and females) which is reducing Tasmania's ability to achieve population growth through natural increase.

Figure 1: Population age structure, Tasmania, June 2014
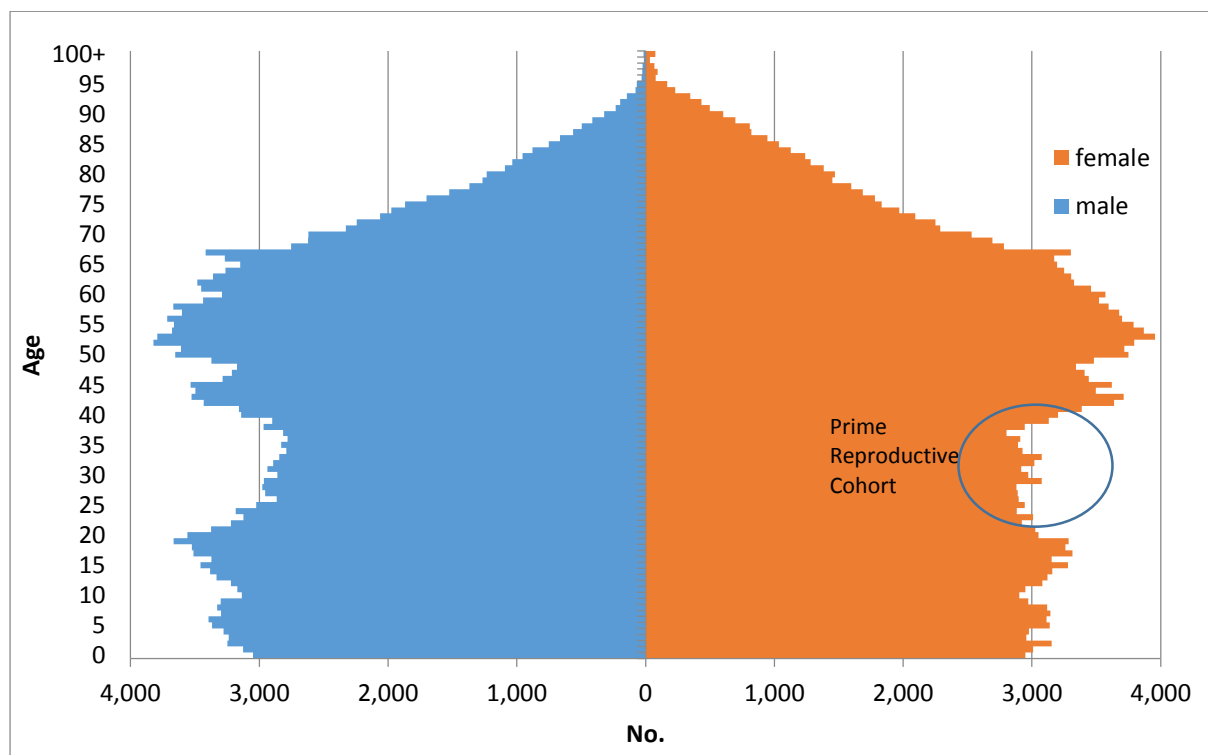
Source: ABS, Australian Demographic Statistics, December 2014, Cat. No. 3101.0

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[6] For the purpose of calculating the Total Fertility Rate (TFR), the reproductive cohort includes all women aged 15 to 49 years, however when considering the potential for population growth, the reproductive cohort can be further defined as the 'prime reproductive cohort' which is those women in the population aged 20 to 39 years.

The trend of net migration losses in the prime reproducing age groups began in the early 1960s when the growth of the size of the labour force outstripped growth in demand for labour. The absolute size of the labour force grew as a result of the large cohort of baby boomers, men and women, entering the labour market. The rapid growth of the labour force placed enormous strains on the economy to find employment for the increasingly educated men and women. As a result, Tasmania started experiencing an increase in the number of people leaving the state seeking appropriate employment, particularly those of prime working and reproducing age. Since then, the outward migration of these age groups has been a persistent trend.

Persistent net migration losses in prime reproductive age groups perpetuate the inability of the Tasmanian population to continue to grow over the longer term. These net losses are also the primary cause of the accelerating rate of ageing of the Tasmanian population.

Projected population for Tasmania

Population projections are informed by historical trends relating to fertility (births), life expectancy (deaths) and interstate migration. In addition, assumptions are made about future overseas migration levels in Australia (distributed to states and territories based on historical share). Importantly, population projections are not forecasts and do not factor any future strategic intervention into the size or composition of the population.

The Australian Bureau of Statistics (ABS) released population projections for Australia and Australian states and territories in November 2013 for the period 2012 to 2101[7]. These projections are based on a range of assumptions which have been formulated on the basis of demographic trends over the past decade and longer, both in Australia and overseas. The ABS advises it does not specifically attempt to allow for non-demographic factors (such as major government policy decisions, economic factors, catastrophes, wars, epidemics or significant health treatment improvements) which may affect future demographic behaviour or outcomes. As future levels of fertility, mortality, overseas migration and internal migration are unpredictable, the ABS makes two or more assumptions for each component of population change. The ABS clearly state that "these are intended to illustrate a range of possible future outcomes, although there can be no certainty that any particular outcome will be realised, or that future outcomes will necessarily fall within these ranges". From the assumptions, 54 sets of population projections are created. Three main series are selected from these to provide a range, these series are referred to as Series A, B and C[8].

In the ABS projections for Tasmania, the population is projected to increase in two of the three main series and to decline in the third. Tasmania is the only state or territory projected by the ABS to experience population decline.

Projections for Tasmania's population are largest in Series A, which estimates an increase from 512,200 people at 30 June 2012 to 714,000 in 2061. In Series B, Tasmania's population increases slowly before levelling out by around 2046 and then decreasing marginally from 2047 onwards. In

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[7] The ABS uses the cohort-component method for producing population projections. In this method, assumptions made about future levels of fertility, mortality, overseas migration and internal migration are applied to a base population (split by sex and single year of age) to obtain a projected population for the following year. The assumptions are then applied to this new (projected) population to obtain a projected population for the next year. This process is repeated until the end of the projection period is reached.
[8] For details of the ABS' assumptions and further explanation see
http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/3222.0main+features42012%20(base)%20to%202101

Series C, Tasmania's population increases only slightly over the first 15 years and begins to decline from 2028 onwards. By 2061, Tasmania's population is projected to be 460,900 in this series.

In 2014, the Tasmanian Department of Treasury and Finance (Treasury) also released population projections for the state and each Local Government Area (LGA)[9]. Treasury's projections include three series; high, medium and low.

Treasury projects in the medium series, the most likely series, that by June 2062, Tasmania's population will be almost 589,000 persons, achieving an average growth rate of 0.3 per cent per year. In this series, Tasmania's population increases each year until 2058, though at a decreasing rate. For the final four years to 2062, Tasmania's population declines marginally.

Under the high series, Tasmania's population is projected to reach almost 768,000 persons by June 2062, with an average growth rate of 0.8 per cent per year. Under the low series, Tasmania's population is projected to decline to 459,000 persons by June 2062, with an average growth rate of negative 0.2 per cent per year.

The population projections for Tasmania made by the ABS and Treasury differ due to the assumptions about fertility, mortality and migration which inform possible future populations also differing. Both the ABS and Treasury project that Tasmania's population will begin to decline from around the middle of the 21st Century under their most likely scenarios (Series B for the ABS and the medium series for Treasury). See Figure 2 for each set of projections to 2050.

Figure 2: Population projections for Tasmania – ABS and Tasmanian Department of Treasury and Finance
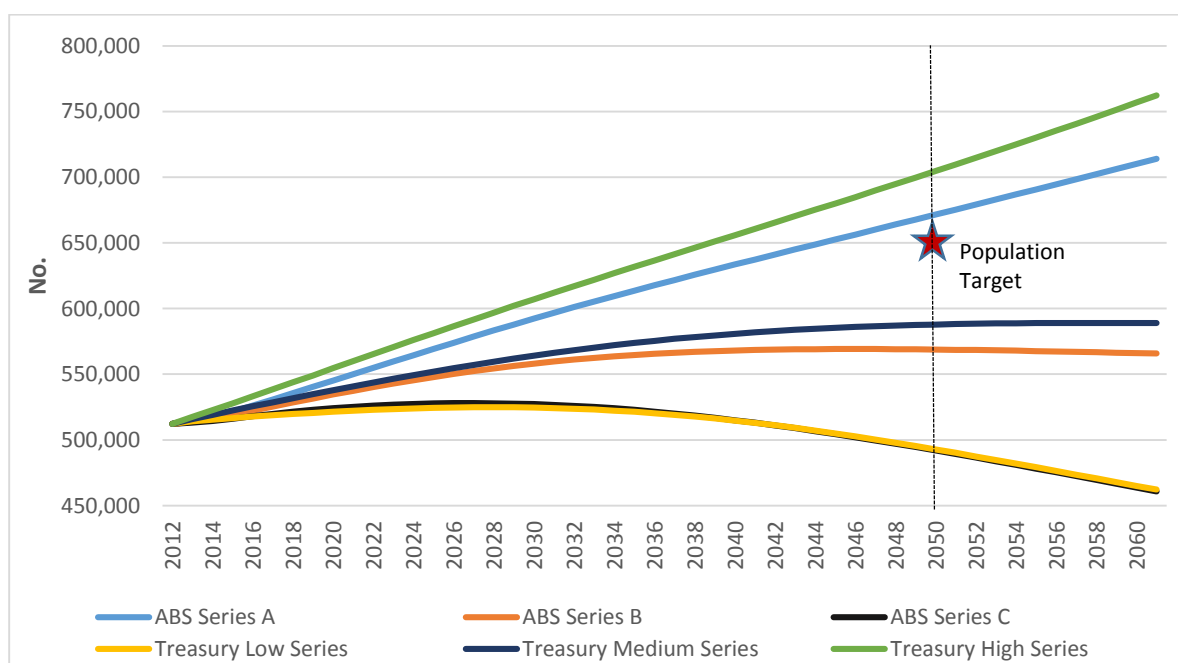
Source: ABS, Population Projections, Australia, 2012 (base) to 2101, Cat. No. 3222.0, Department of Treasury and Finance, 2014 Population Projections, Tasmania

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[9] For an explanation of the assumptions made by Treasury in formulating their population projections see http://www.treasury.tas.gov.au/domino/dtf/dtf.nsf/85069fc0572051bbca257488007edd54/397d0680e5dcc5 83ca257cec0005f727?OpenDocument

Population growth

The rate of population growth in Tasmania has fluctuated considerably over time and the state consistently experiences the slowest rate of growth in the nation (excluding two quarters in December 2003 and June 1990), as shown in Figure 3. Furthermore, the gap between the Tasmanian and Australian population growth rates is widening and is projected to continue to do so.

Popular consensus is that the rate of population growth is influenced by the economic conditions of the state at the time and that a return to positive economic performance will reverse the historic downward trajectory of the rate of growth. This is partly true; however, the rate of growth is dependent on the *relative* economic performance of the state compared with that of Australia and other states and territories, as well as the size of the prime reproductive cohort (the number and proportion of women aged 20 to 39). Furthermore, the economic performance of the state directly impacts on the size and proportion of the prime reproductive cohort by influencing the age profile of migration movements. Even in past periods of strong economic performance and increasing population growth, Tasmania experienced continual net migration losses in the reproductive age groups and net migration gains in older age groups. If these trends continue in periods of stronger economic performance, it is likely that increased rates of population growth will result in the short term. However, this growth will be predominantly in older age groups. Over the longer term, the gains will not be sufficient to maintain population growth due to the accelerated ageing of the population and this will bring forward the point of natural decline (more deaths than births).

Figure 3: Tasmania's population and growth rate compared with Australia
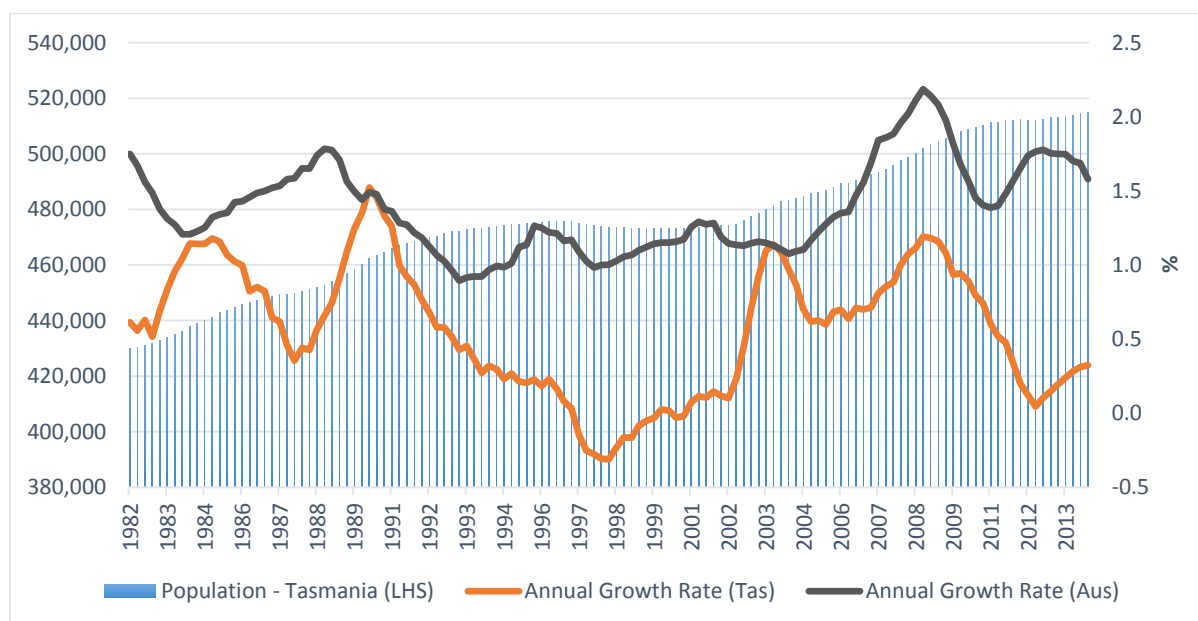
Source: ABS, Australian Demographic Statistics, December 2014, Cat. No. 3101.0

Tasmania's greatest rates of annual population growth occurred when the state's economic performance exceeded the national rate, most recently from around 2002 to 2004. However, as soon as Australia's economic performance surpasses that of Tasmania, the state's rate of population growth slows comparably. This is directly attributable to the relative (perceived and actual) opportunities available elsewhere and to the resulting net interstate migration losses. Conversely, when the Australian economy is weakening, Tasmania's population growth rate improves due to

improved net interstate migration performance (which generally lags economic performance by a quarter), as shown in Figure 4. As such, in circumstances where Tasmania's economic performance is not equivalent to other states and/or territories (even if positive), net interstate migration losses in the working and reproductive ages will likely increase. Thus, the number of children being born will decline, and the rate of population growth will slow further in future.

Figure 4: Economic performance and population growth, Tasmania and Australia
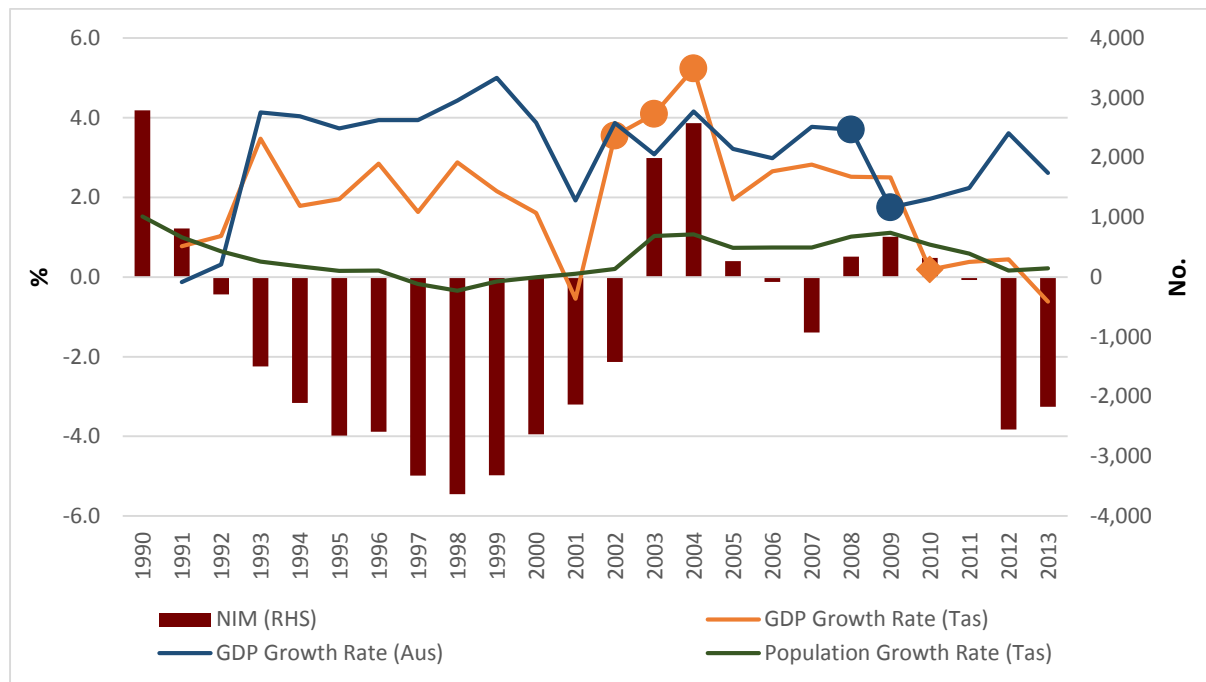
Source: ABS, Australian Demographic Statistics, December 2014, Cat. No. 3101.0; Migration, Australia, 2011-12 and 2012-13, Cat. No. 3412.0; Australian National Accounts: State Accounts, 2012-13, Cat. No. 5220.0

For this reason, a sole reliance on a return to positive economic performance will not result in a significant increase in the rate of population growth over the long term. In fact, without intervention, relying on economic performance has the potential to hasten the process to a scenario of population decline: the acceleration in the rate of ageing would ultimately bring forward the point at which population growth ends[10].

Population ageing

Population ageing is defined as an increase in the median age of a population over time. The median age is the age at which half the population is older and half the population is younger. In Tasmania the median age is 41.2 years. This is the highest median age of all states and territories in Australia and compares to 37.3 years at the national level. Tasmania also experienced the largest increase in median age over the last five years; the median age rose by 1.8 years compared with a national increase of 0.4 years.[11]

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[10] Jackson, N 2014, Subnational depopulation search of the theory: Adding New Zealand in diagnostic framework to the international evidence base. NIDEA working papers No. 8, National Institute of Demographic and Economic Analysis, University of Waikato, Hamilton.

[11] ABS, Population by Age and Sex, Regions of Australia, 2013. Cat. No 3235.0

Population ageing causes a fundamental shift in the population, resulting in a trend towards an older age structure. It can be further defined and described as either numerical or structural ageing. Numerical ageing refers to the *absolute increase in the number* of elderly and is primarily caused by improvements in life expectancy. Additionally, the large number of baby boomers creating a bulge in the population age structure is contributing to numerical ageing (baby boomers are now aged between 50 and 70 years). Structural ageing refers to the increase in the *proportion* of the population that is older and is primarily caused by declining fertility rates at a national level. However, in Tasmania's case, it is the age profile of interstate migration movements which decreases the size and proportion of the population that is young (and of reproductive age) which is the greatest contributor to structural ageing. Numerical ageing drives up the numbers of elderly and thus increases the demand for, and cost of, retirement income support, health, and aged care services, while structural ageing constrains governments in their ability to fund pension schemes and aged related services.

The implications of an ageing population are an increasing demand for publicly funded services and a diminishing number, and proportion, of working age people to provide those services. Depopulation[12] has the potential to be self-perpetuating, creating a cycle of slowing economic activity, emigration of human capital, diminishing revenue streams, degradation of social and physical infrastructure and services and a declining standard of living.[13]

The primary challenge of population ageing is to support a population which is potentially more dependent, and becoming increasingly so. Increasing dependency tests the resources of a population and its capacity to maintain (and sustain) itself. While there are many measure of dependency (e.g., proportions of the population who are aged, the Total Dependency Ratio (the sum of the Child Dependency Ratio and the Old Age Dependency Ratio, the Labour Market Entry to Exit Ratio, etc.), given Tasmania's disproportionate age structure, the best measure of dependency is the change in the size of the prime working age group (15 to 64 year olds) over time. As Figure 5 shows, the year on year percentage change in the size of the Tasmanian working age population has been declining, however its fluctuations have been strongly influenced by the age profile of interstate migration movements. This means that the size of the prime working age population is getting smaller. This trend is projected to continue. Since 2011 the absolute size of the working age population has been declining, consistent with the accelerated ageing of the population and the large cohort of baby boomers reaching the age of 65. The projected improvement in the rate of decline from 2025 is due to the increase in the number of children born in the late 2000s reaching labour market entry age (15 years). Regardless, the size of the working age population in Tasmania is no longer growing.

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[12] Depopulation is the process where a population reduces in size
[13] Haartsen, T & Venhorst, V 2010, 'Planning for decline: anticipating on population decline in the Netherlands', Tijdschrift voor economische en sociale geografie, vol. 101, no. 2, pp. 218-227.

Figure 5: Percentage change in size of prime working age group (15 to 64 year olds), year on year, observed and projected
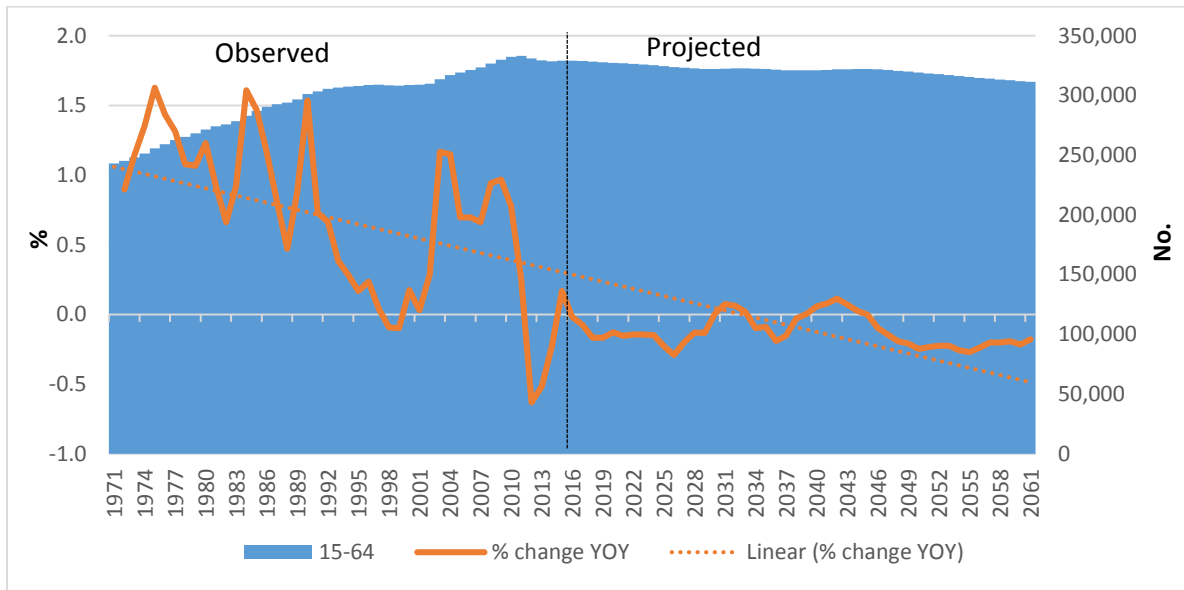
Source: ABS, Australian Demographic Statistics, December 2014, Cat. No. 3101.0, Population Projections, Australia, 2012 (base) to 2101, Cat. No. 3222.0

Section 2: Components of population change

There are three factors which influence population change, referred to as the "components of population change": natural increase (the difference between births and deaths), net interstate migration (NIM) and net overseas migration (NOM). The sum of the components provides a net figure of population change.

In recent times, apart from the period between December 1996 and June 1999 and six months during 2000, Tasmania has experienced ongoing population growth. However, Tasmania's rate of population growth is significantly less than the national rate. Since 1993, Tasmania has averaged a population growth rate of 0.42 per cent per annum, compared to a national rate of 1.36 per cent per annum.

Historically, contribution to population change by natural increase and NOM has been positive while NIM has been negative. In the past 32 years there have only been 10 years in which NIM has been positive, and only five in the past 20, as illustrated in Figure 6 below.

Figure 6: Components of population change, Tasmania
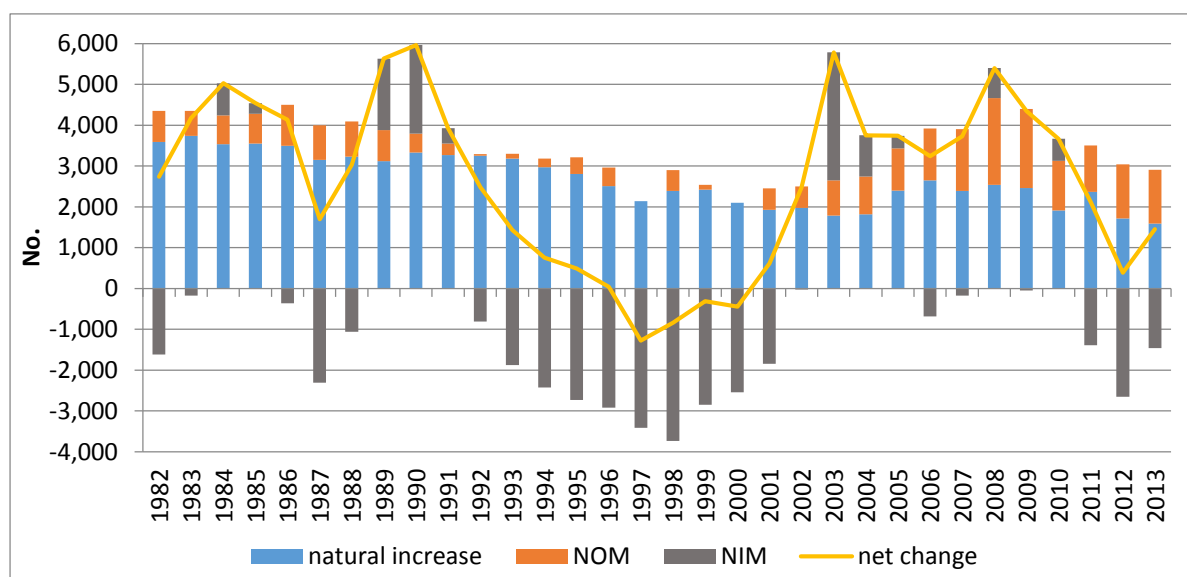
The twenty year averages for each component of population change and the net growth average are detailed in Table 1 (overleaf). Also included are 2013 data for comparison purposes.

Table 1: Components of population change, 20 year average, Tasmania

	Annual average (past 20 years)	2013
Natural Increase	2,289	1,595
Net Interstate Migration	-1,072	-1,460
Net Overseas Migration[14]	834	1,317
Net Growth	1,932	1,452

On average, over the longer term, net interstate migration losses have been almost cancelled out by gains in net overseas migration (resulting in natural increase being the primary source of population growth). This is not the case on a year by year basis, as shown in Figure 7. Also evident is that natural increase generally declines when net migration is negative. This reflects the age profile of migration movements. Critically, considering the absolute number of migration movements in isolation obscures the impact of the age profile of inward and outward migration movements on both the age structure of the population and the propensity for growth through natural increase.

Figure 7: Net migration and natural increase, Tasmania
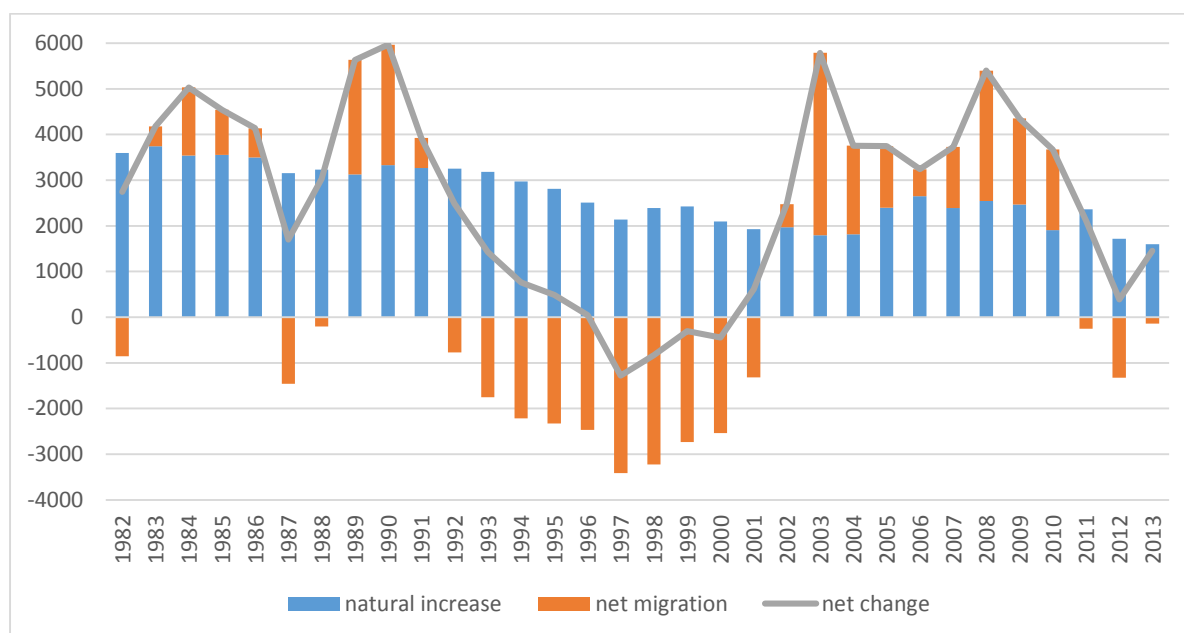
Source: ABS, Australian Demographic Statistics, December 2014, Cat. No. 3101.0

It is the complex interaction of the three components of population change which influence the composition of Tasmania's population and its potential for growth over the longer term. The following sections explain each of the components of population change in further detail.

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[14] The methodology used by the ABS to calculate overseas migration changed in the September quarter of 2006. The new method tests whether someone has been in Australia for 12 of the previous 16 months rather than the former criterion of 12 out of 12 months. This methodology captures international students, working holiday makers and other temporary visa classes not previously captured in overseas migration data. Therefore, historical comparisons with data gathered prior to 2006 are not a true indication of trends. NOM since 2006 is therefore likely to be greater than years prior to 2006.

Natural increase

From a population change perspective, natural increase is defined as the difference between the number of births and the number of deaths per year. Historically, natural increase has always been positive in Tasmania. Trends in natural increase can be measured by the Vital Index, which is calculated as the annual number of births per 100 deaths. As Figure 8 illustrates, natural increase in Tasmania is declining, and the difference between Tasmania and Australia is widening, and did so dramatically in 2012. In 2013, for every 100 deaths in Tasmania there were 136 births, while in Australia as a whole there were 208 births for every 100 deaths. While Australia's rate of natural increase has risen since the early 2000s due to more children being born,[15] Tasmania's rate of natural increase is in decline. This trend can be explained by the trends in the Total Fertility Rate (TFR) and number of births as well as the Standardised Death Rate (SDR) and number of deaths in Tasmania.

Figure 8: Vital Index, Tasmania and Australia
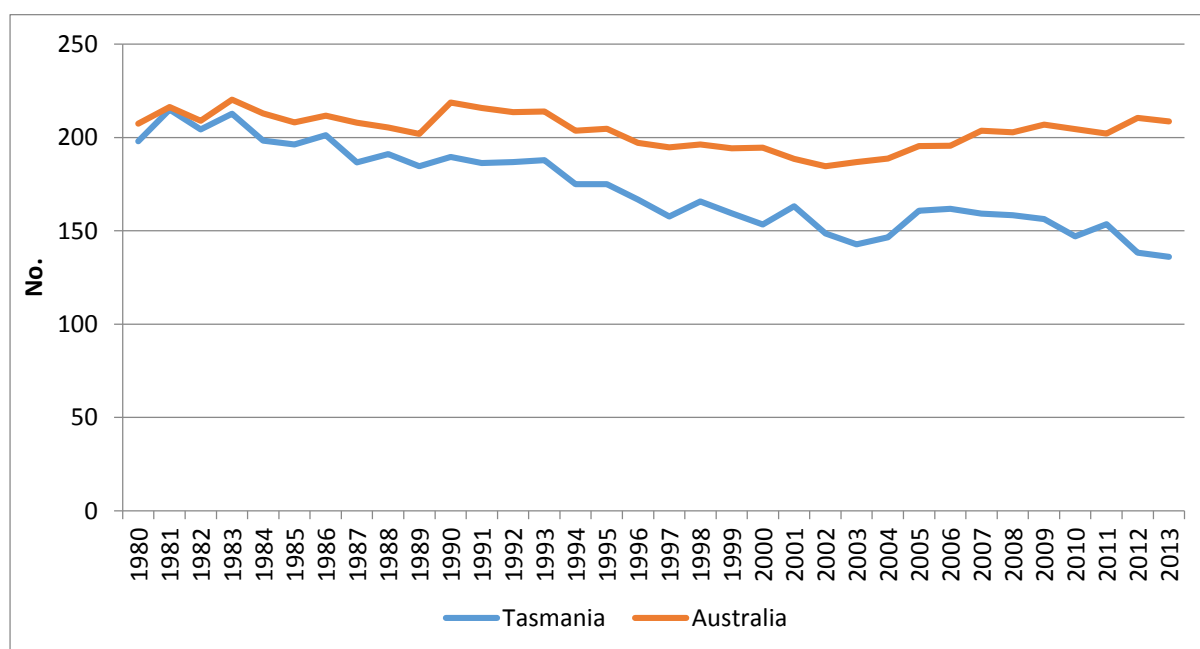
Source: ABS, Deaths, November 2014, Cat. No. 3302.0, Births, October 2014, Cat. No. 3301.0; Australian Historical Population Statistics, 2014, Cat. No. 3105.0.65.001

Births

The number of births occurring in a population is a function of the number of women of childbearing age (15 to 49 years) in that population and the rate at which those women are having children (the Total Fertility Rate). Since 1974, Tasmania's Total Fertility Rate (TFR)[16] has been above the national rate; despite falling to a low of 1.794 in 1997, from 2001 to the present the rate has hovered around the population replacement rate of 2.1 births per woman in her lifetime. In 2013, Tasmania's TFR

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[15] This increase is explained in Churchill, B, Denny, L & Jackson, N 2014, 'Thank God, You're Here: the coming generation and the role they will play in future-proofing Australia from the challenges of population ageing', Australian Journal of Social Issues, vol. 49, no. 3, pp. 373-392.

[16] The TFR is a synthetic measure of the average number of children a woman would expect to bear during her lifetime if she were to experience all of the age-specific birth rates occurring in that year for women aged 15 to 49.

was 2.01 compared with the national TFR of 1.88. Importantly, however, a high TFR does not automatically translate into a high, or increasing, number of children being born. As the TFR is a measure of the number of children born to every 1,000 women aged 15 to 49, it does not take into consideration the number of women of childbearing age (the size of the reproductive cohort) which, as previously explained, is a correlate for population growth. As evident from the data shown in Figure 9, the number of children being born in Tasmania is trending downward, after a brief increase from 2003 to 2011, consistent with the size and age of the reproductive cohort at the time.

Figure 9: Total Fertility Rate (TFR) and births, Tasmania
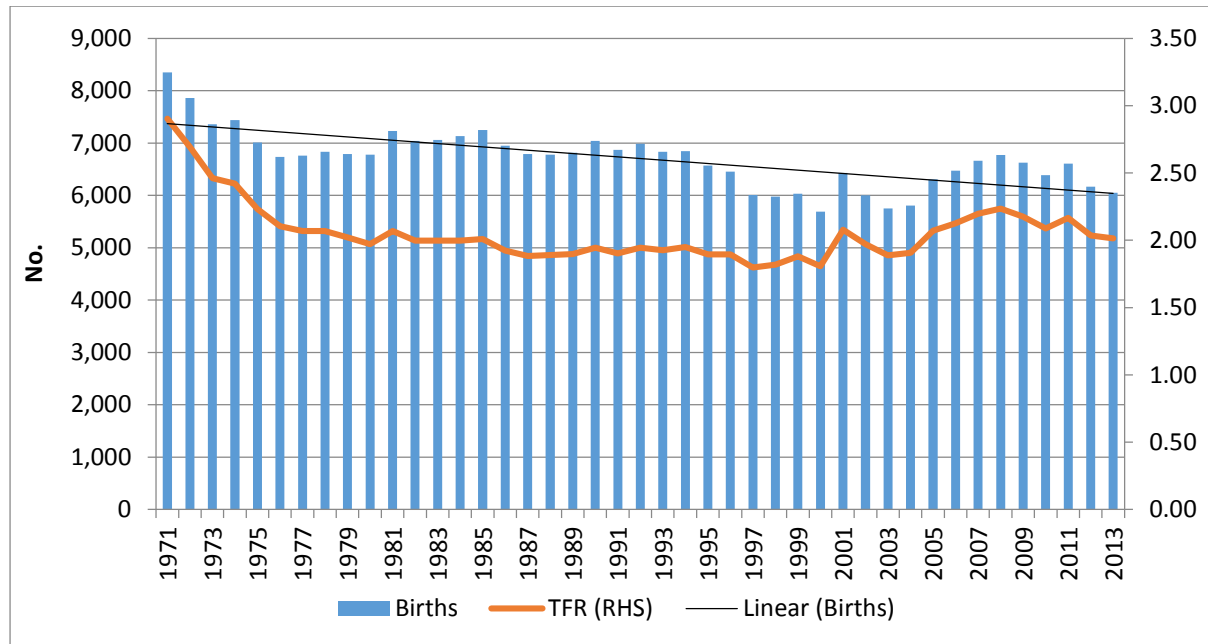
Source: ABS, Births, October 2014, Cat. No. 3301.0; Australian Historical Population Statistics, 2014, Cat. No. 3105.0.65.001

In Tasmania, the size of the prime reproductive cohort peaked in 1992 and has been declining, both numerically and structurally (proportionately), since the largest birth cohort (women born in the early 1970s) turned 20. This decline in the size of the reproductive cohort is influenced by two compounding factors. First, there has been a decline in the TFR (consistent with Australia and other developed nations), which until the early 2000s was persistently below the population replacement rate. Second, there have been persistent net interstate migration losses in the prime reproductive ages. This downward trend in the size and proportion of the prime reproductive cohort is projected to continue, as shown in Figure 10. This continual decline in the size of the prime reproductive cohort will have a detrimental impact on natural increase in Tasmania, and thus on future population growth.

Figure 10: Prime reproductive cohort, Tasmania, observed and projected
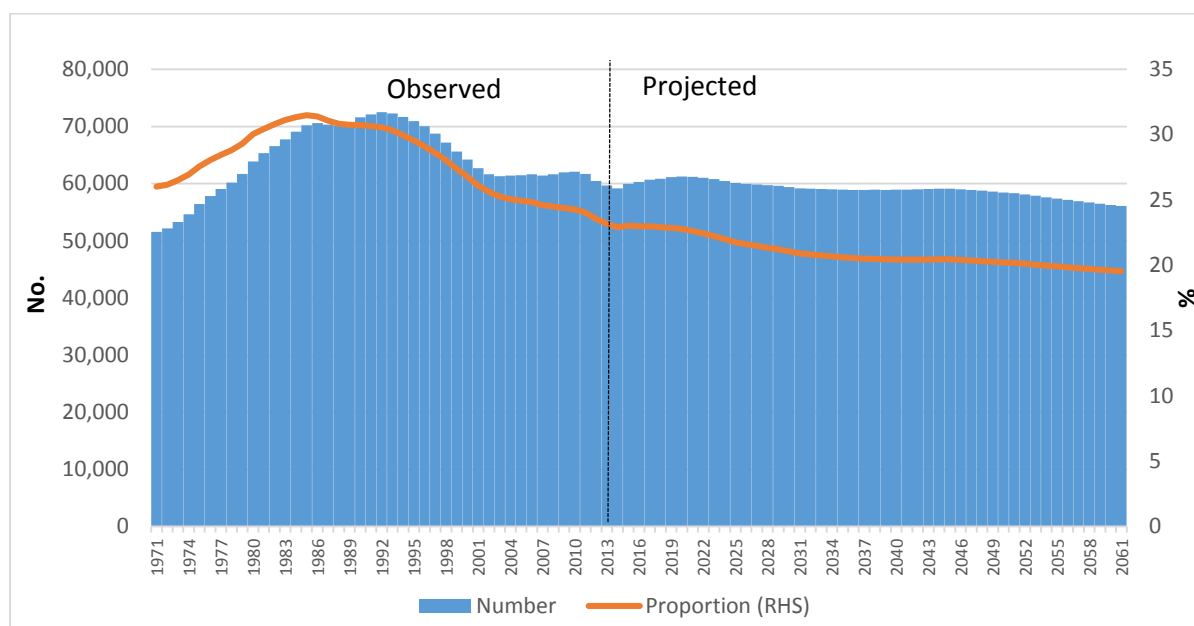
Source: ABS, Australian Demographic Statistics, December 2014, Cat. No. 3101.0, Population Projections, Australia, 2012 (base) to 2101, Cat. No. 3222.0

Deaths

Similar to the TFR, the standardised death rate (SDR) is a synthetic measure of the number of deaths per 1,000 standard population (defined as the age distribution of Australia at 30 June 2001) and does not reflect the change in the total number of deaths over time. Increasing life expectancy has contributed to declining mortality rates; however, the age profile of the state has influenced an increase in the number of deaths (see Figure 11) and will continue to do so.

Figure 11: Deaths and Standardised Death Rate (SDR), Tasmania
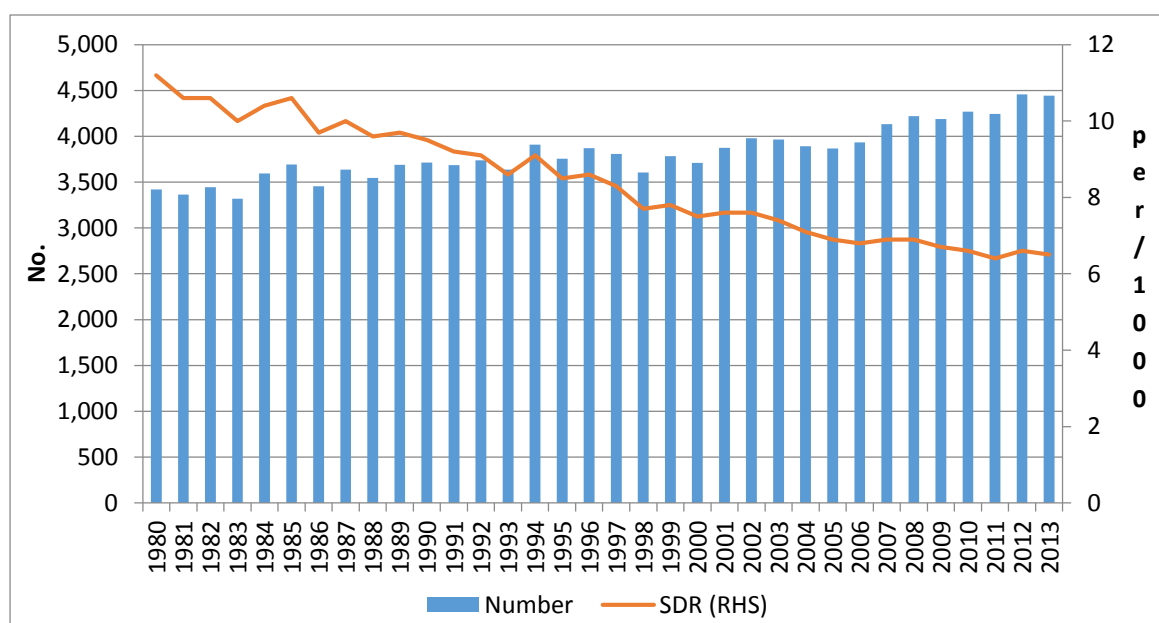
Source: ABS, Deaths, November 2014, Cat. No. 3302.0, Australian Historical Population Statistics, 2014, Cat. No. 3105.0.65.001

The number of people aged over 85 in Tasmania is projected to more than triple in the 36 years to 2050. It is projected that by 2050 there will be around 33,800 people aged 85 years and older, equivalent to 5.95 per cent of the population (compared to 2.13 per cent or 10,974 people in 2014). This is illustrated in Figure 12. Growth in both the number and proportion of people aged over 85 will inevitably result in an ongoing increase in the number of deaths.

Figure 12: Size and proportion of population aged 85 and over, Tasmania
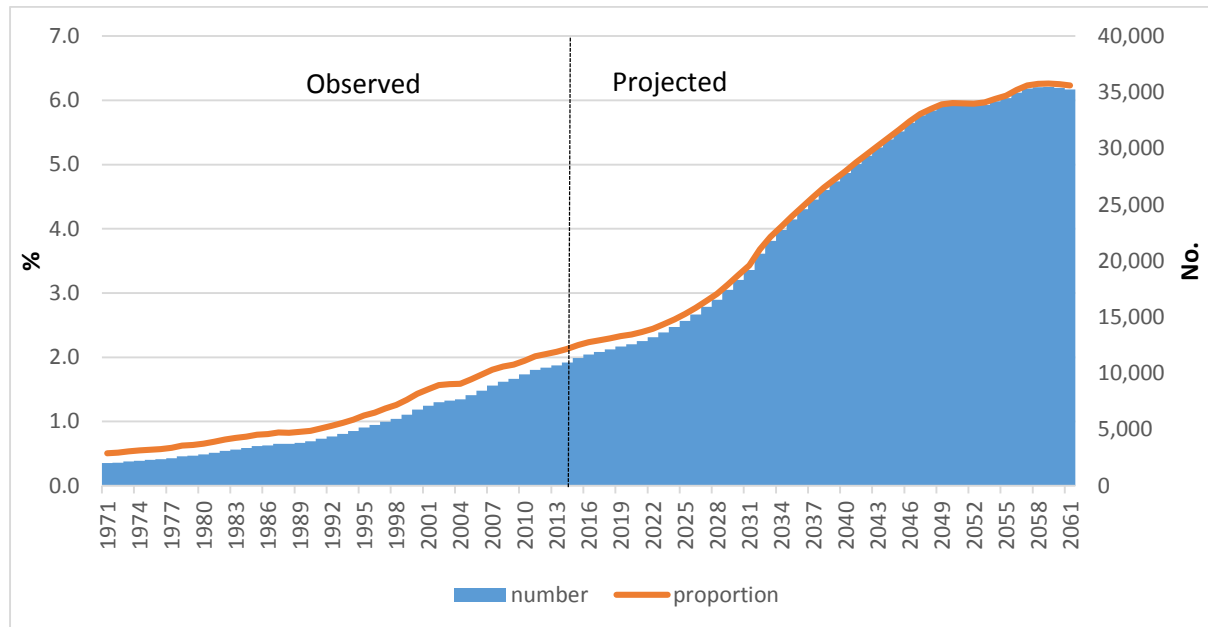
Source: ABS, Australian Demographic Statistics, December 2014, Cat. No. 3101.0, Population Projections, Australia, 2012 (base) to 2101, Cat. No. 3222.0

As the number of deaths continues to increase and the number of births declines, the contribution of natural increase to population growth will diminish and will eventually result in ongoing natural decline. For Tasmania this is projected to commence from around 2032 under Series B of the ABS population projections.

While fertility and mortality have some impact on Tasmania's population age structure, it is the age differentials in migration patterns which shape Tasmania's population age structure. To achieve population growth in a population experiencing natural decline, replacement migration is required.

Net interstate migration

At a national level, interstate migration does not affect the size and growth rate of the population, as movements between states and territories are absorbed in the national Estimated Resident Population (ERP). Net interstate migration (NIM), however, has a direct impact on both the size and composition of a population at a sub-national level. The difference between interstate arrivals to the state and interstate departures from the state and their respective age profiles considerably alters the age structure of the Tasmanian population and its propensity for growth.

As previously explained, Tasmania has historically experienced negative net interstate migration, with an average annual loss of 1,072 persons over the past 20 years. However, this average net loss is comprised of average annual arrivals to the state of 12,195 and average annual departures from the state of 13,262, as illustrated in Figure 13. In numerical terms, this means that there are not

enough people arriving in the state to replace those who are leaving. Also evident in this figure is the recent downward trending of both arrivals to, and departures from, Tasmania, notwithstanding the increase in departures from 2010 to 2011, consistent with the economic performance of the state at the time.

Figure 13: Interstate migration, arrivals and departures, Tasmania
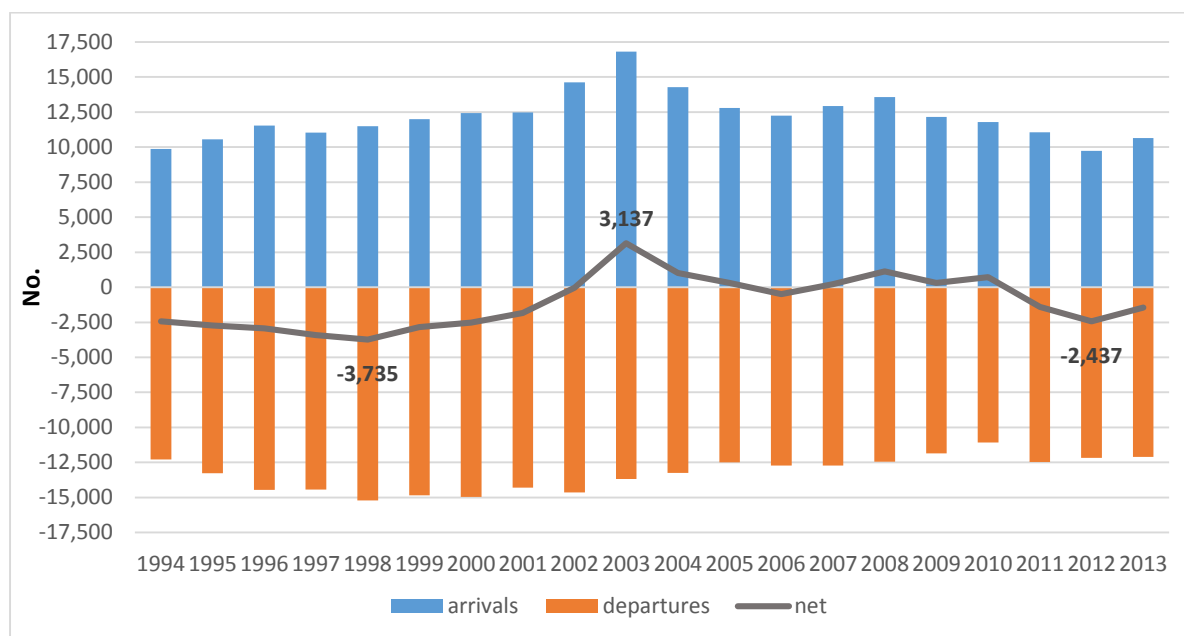
Source: ABS, Migration, Australia, 2011-12 and 2012-13, Cat. No. 3412.0; Australian Historical Population Statistics, 2014, Cat. No. 3105.0.65.001

In 2012, Tasmania recorded its worst net interstate migration loss in 12 years, farewelling a net total of 2,437 persons. However, net interstate migration in 2013 improved considerably on 2012, with an improvement of 977 persons, likely due to greater confidence in state economic conditions and worsening national economic performance. An increase in arrivals to the state – for the first time since 2008 (920 more arrivals than 2012) – rather than a reduction in departures (57 less persons compared to 2012) accounts for most of this improvement.

There is greater volatility in arrivals to the state than departures from it. Therefore, net interstate migration is more likely to be influenced by the level of arrivals to the state rather than increasing numbers of people leaving the state, particularly in the absence of strategic intervention.

The impact of interstate migration movements on the propensity for population growth is further influenced by the age and gender profile of those arriving in and departing from the state. Figure 14 illustrates these net interstate migration trends by age group from 1997 to 2013. On average, Tasmania has historically experienced a net interstate migration loss in the age groups of 5 to 34 years, with the greatest net losses occurring in the 15 to 29 years age groups. Net losses extend to other age groups depending on the economic conditions of the state at the time. On average, net interstate migration gains are experienced for all age groups older than 35, with the greatest net gains experienced in the 50 to 64 years age groups, contributing to the accelerated rate of population ageing in Tasmania.

In 2012 the state experienced net losses in all age groups from 0 to 54 and also, for the third time only, a loss in the 75 years and over age group. This indicates that entire families – rather than just those of younger, working and reproducing, age – were leaving the state (or not arriving). While net interstate migration improved in 2013, net losses were still experienced in all age groups zero to 49, suggesting a trend of entire families departing from (or not arriving in) Tasmania, however the net loss for each age group declined compared to 2012.

Figure 14: Net interstate migration by age, Tasmania
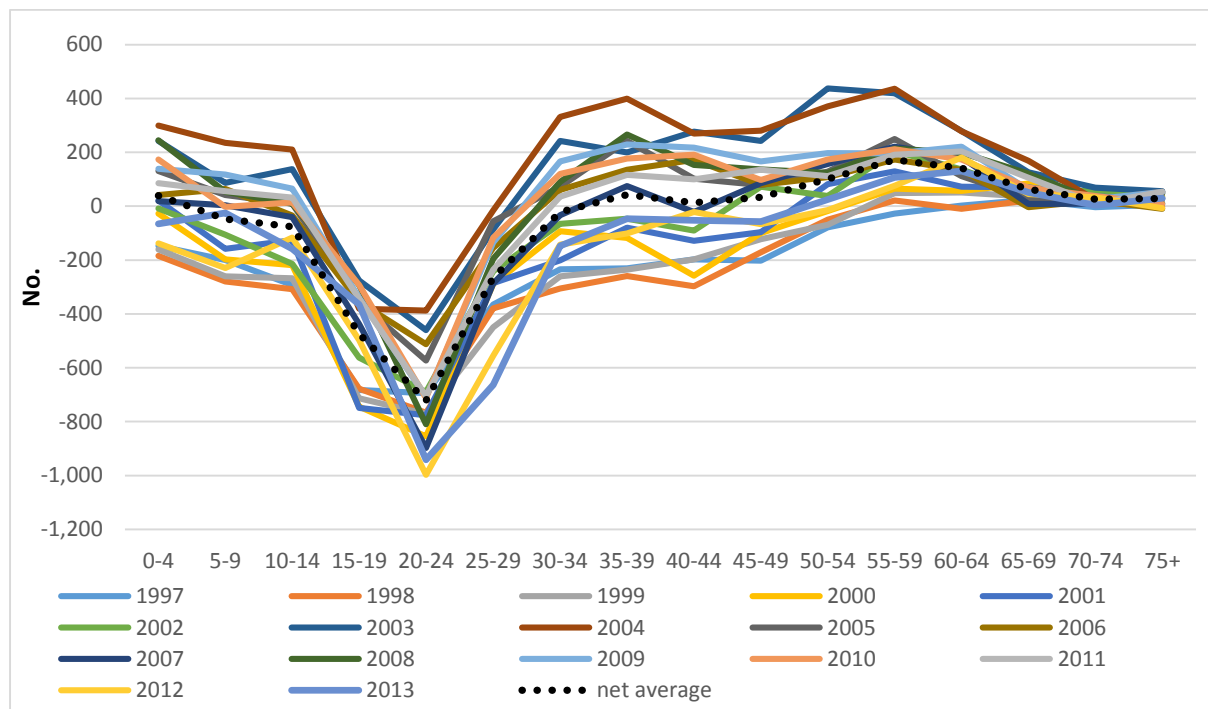
Source: ABS, Migration, Australia, 2011-12 and 2012-13, Cat. No. 3412.0

Interestingly, even though Tasmania experiences the greatest net interstate migration losses in the younger age groups, it also experiences the greatest number of interstate arrivals in these age groups. On average since 1997, the greatest number of arrivals to the state occur for those aged 25 to 29, closely followed by those aged 20 to 24 and 30 to 34. However, the greatest number of departures occurs for those aged 20 to 24, followed by 25 to 29 year olds and 15 to 19 year olds. The volume of actual arrivals and departures (on average) for older age groups is comparatively smaller than the younger, working and reproducing, age groups, as is the net volume, as shown in Figure 15.

Figure 15: Average interstate arrivals and departures by age, Tasmania, 1997 - 2013
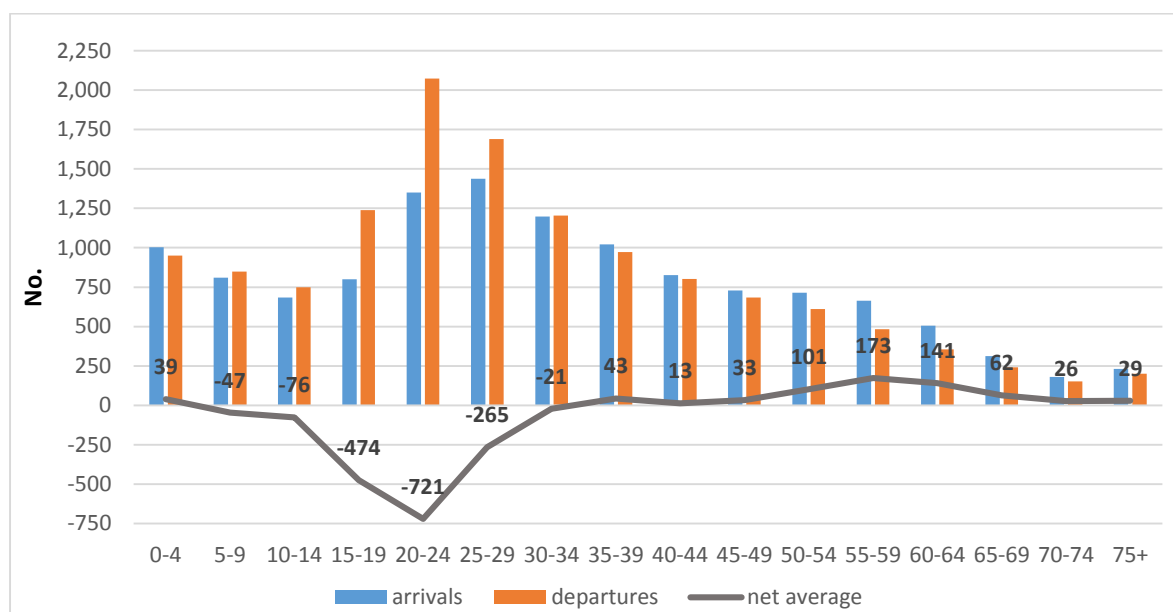
Source: ABS, Migration, Australia, 2011-12 and 2012-13, Cat. No. 3412.0

It is the large net interstate migration losses in the young working and reproducing age groups which are causing the accelerated rate of population ageing in Tasmania, rather than large numbers of older Australians relocating to Tasmania. In Tasmania's case, the age profile of both inward and outward interstate migrants and the consequent net result, directly contribute to a reduction in the size of the reproductive cohort, the accelerating rate of ageing, and the decline in the propensity for population growth.

Net overseas migration

Net interstate migration (NOM) is a complex measure of those people who change their country of usual residence. A person is regarded as an additional usual resident of Australia if they have resided in Australia for at least 12 months of a 16 month period. NOM captures the arrival and departure of permanent and temporary migrants on a range of visas, as well as New Zealand residents (who have reciprocal rights to live and work in Australia), and Australian residents departing from, or returning to, Australia (for a period of 12 out of 16 months). The place of residence by state or territory is determined on the basis of a combination of passenger entry cards into the country and visa documentation.

Overseas migration is further explained by permanent and temporary migration to Australia. Permanent migration comprises two components: the Migration programme and the Humanitarian programme. The Migration programme component consists of Skill Stream migrants (including business migrants), Family Stream migrants and Special Eligibility migrants; such migrants are further classified as primary or secondary visa holders. The humanitarian component is for refugees and others in humanitarian need. Programme levels are set annually by the Department of

Immigration.[17] The planning level for the 2014-15 Migration programme is set at 190,000 places. The Humanitarian programme is set at 13,750 places.

Temporary migration is comprised predominantly of the Temporary Work (Skilled) subclass 457 visa and student visas, as well as working holiday makers. The number of 457 visa holders is driven by demand for skilled labour. In 2011-12 and 2012-13 the number of 457 visas grants was equivalent to the total of all permanent skilled visa grants, however this number dropped in 2013-14. In addition, around half of 457 visa grants are made onshore, to existing 457 visa holders, students or working holiday makers. At any one time there are around 195,000 holders of 457 visas in Australia.

Tasmania generally receives disproportionately fewer migrants than the national per capita share, except for humanitarian entrants.

In 2013-14, of the 2011 permanent arrivals to Tasmania 53.3 per cent were sourced from the Migration programme (of which 64.2 per cent were in the Skill Stream, 35.5 per cent in the Family Stream and 0.3 per cent in the Special Eligibility Stream), 41.0 per cent were from the Humanitarian programme and 5.8 per cent were Australian or New Zealand citizens identifying as permanent settlers in Tasmania. Of the permanent additions to Tasmania's population in 2013-14, 34.5 per cent (694) were people who were granted a permanent visa onshore (79.5 per cent of these were in the Skill Stream and 18.4 per cent in the Family Stream).

As at 30 September 2014, there were 779 (413 primary) holders of 457 visas in Tasmania, representing a 0.34 per cent share of the holders of 457 visas in Australia.

Table 2 below, provides a comparison of the Tasmanian and Australian temporary and permanent migration intake for 2013-14.

Table 2: Migration, permanent and temporary, 2013-14

	Total	Number (Tasmania)	Share of the national intake
Temporary			
457 Visa	98,571	484	0.5%
Students	292,060	1,980	0.7%
Permanent			
Skill stream	128,550	768	0.6%
Family stream	61,112	364	0.6%
Humanitarian	15,800	824	5.2%

Source: Department of Immigration and Border Protection, State and territory migration summary, 30 June 2014

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[17] See the Department of Immigration and Border Protection for migration programme outcomes for 2010–11 to 2013–14 and planning levels for 2014–15 http://www.immi.gov.au/media/statistics/statistical-info/visa-grants/migrant.htm

Changes made to the method used by the ABS to calculate NOM from September 2006 mean that it is not possible to undertake detailed, historical comparative analysis of overseas migration trends. Nevertheless, since 1994 net overseas migration to Tasmania has been trending upwards, even prior to the 2006 method change, as shown in Figure 16. On average over that period, net overseas migration to Tasmania was 846 persons per annum. Since the change in method, the average net overseas migration gain in Tasmania has been 1,510 persons per annum.

Figure 16: Net overseas migration, Tasmania
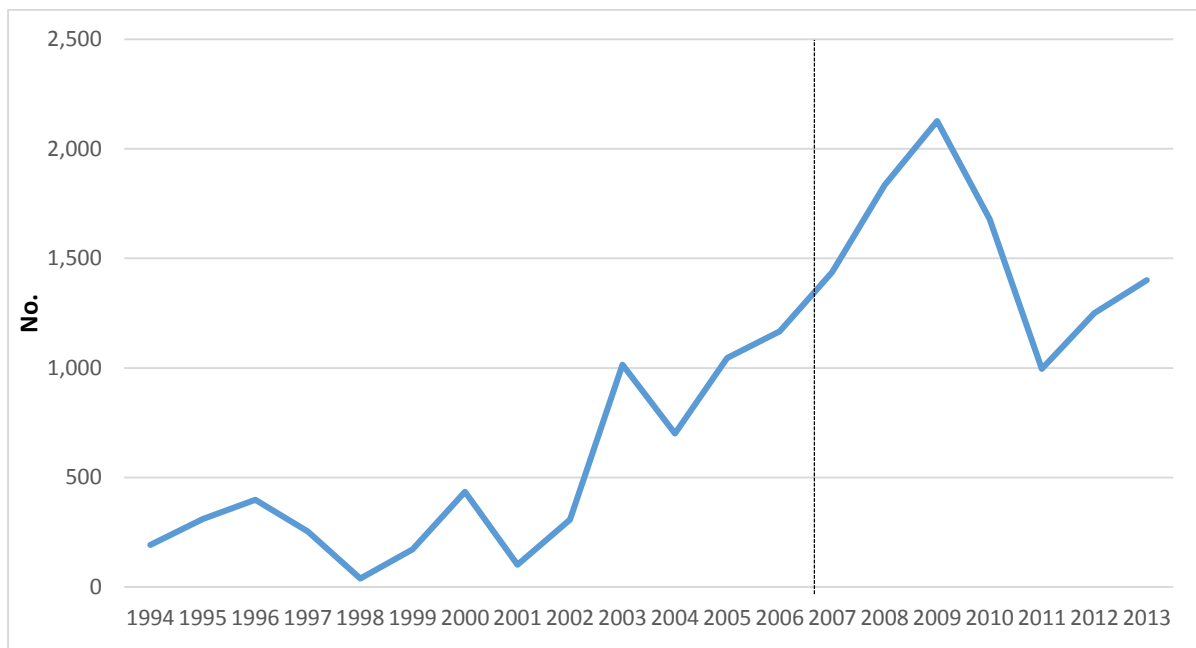
Source: ABS, Migration, Australia, 2011-12 and 2012-13, Cat. No. 3412.0; Australian Historical Population Statistics, 2014, Cat. No. 3105.0.65.001

The volume of overseas arrivals and departures is considerably smaller than interstate migration movements. Since 2007, an average of 5,807 persons have arrived per annum in Tasmania compared to 4,307 persons leaving per annum, resulting in a net annual average gain of 1,510 persons (see Figure 17). In addition, overseas migration does not fluctuate to the same degree as interstate migration, but is subject to external shock factors such as economic performance and the relative value of the Australian dollar.

Figure 17: Overseas migration, arrivals and departures, Tasmania, 2007-2013
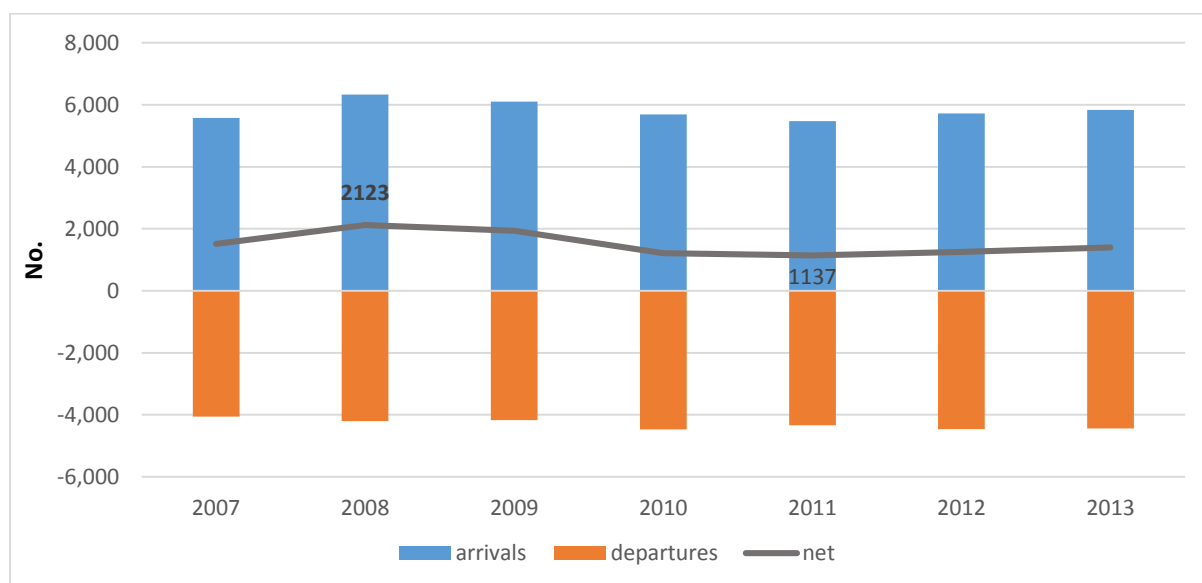
Source: ABS, Migration, Australia, 2011-12 and 2012-13, Cat. No. 3412.0

During the period 2004 to 2011, the greatest contributors to net overseas migration to Tasmania were temporary migrants (an average gain of 826 persons per annum), followed by permanent visa holders (681 persons per annum), as shown in Figure 18. The number of temporary migrants includes students in the vocational education and training and higher education sectors, temporary skilled workers (457 visa holders), working holiday makers (WHM), visitors and other temporary visa holders. Permanent visa holders include those on family, skill (including business) or special eligibility and humanitarian visas.

Figure 18: Average overseas migration, arrivals and departures by visa sub-category, Tasmania, 2004-2011
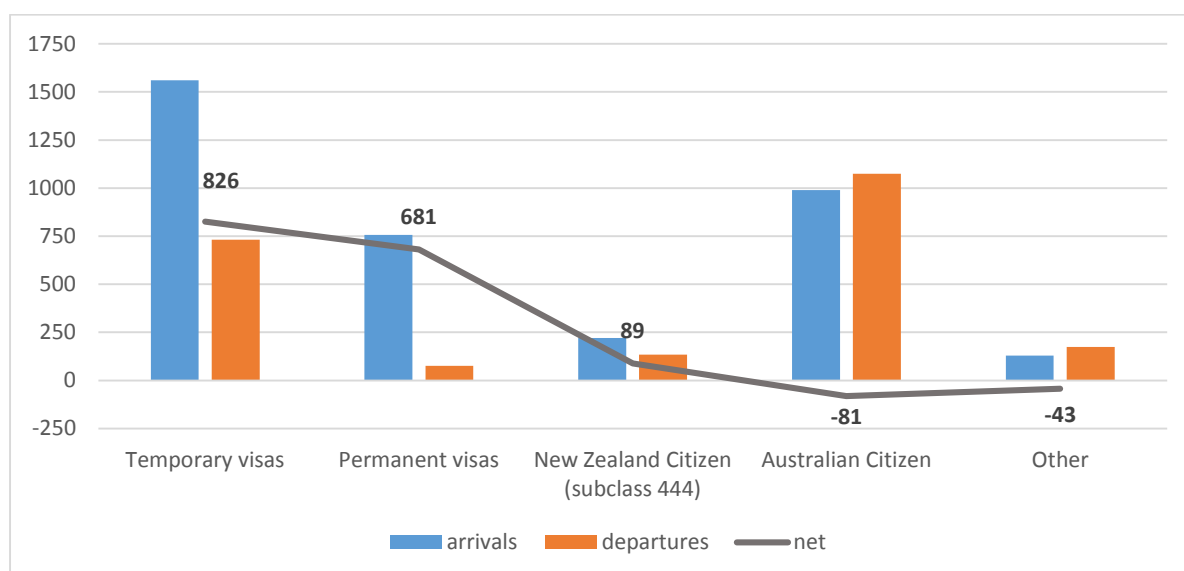
Source: ABS, Migration, Australia, 2011-12 and 2012-13, Cat. No. 3412.0

When disaggregated by type of temporary visa, the greatest average annual contribution to overseas migration to Tasmania since 2004 is students on higher education visas (335 persons per annum), followed by skilled workers on 457 visas (184 persons per annum). For those on permanent

visas, the greatest contributors to overseas migration to Tasmania on average are those on Special Eligibility or Humanitarian Visas (301 persons per annum) (see Figure 19).

Figure 19: Average overseas migration by visa sub-class, Tasmania, 2004-2011
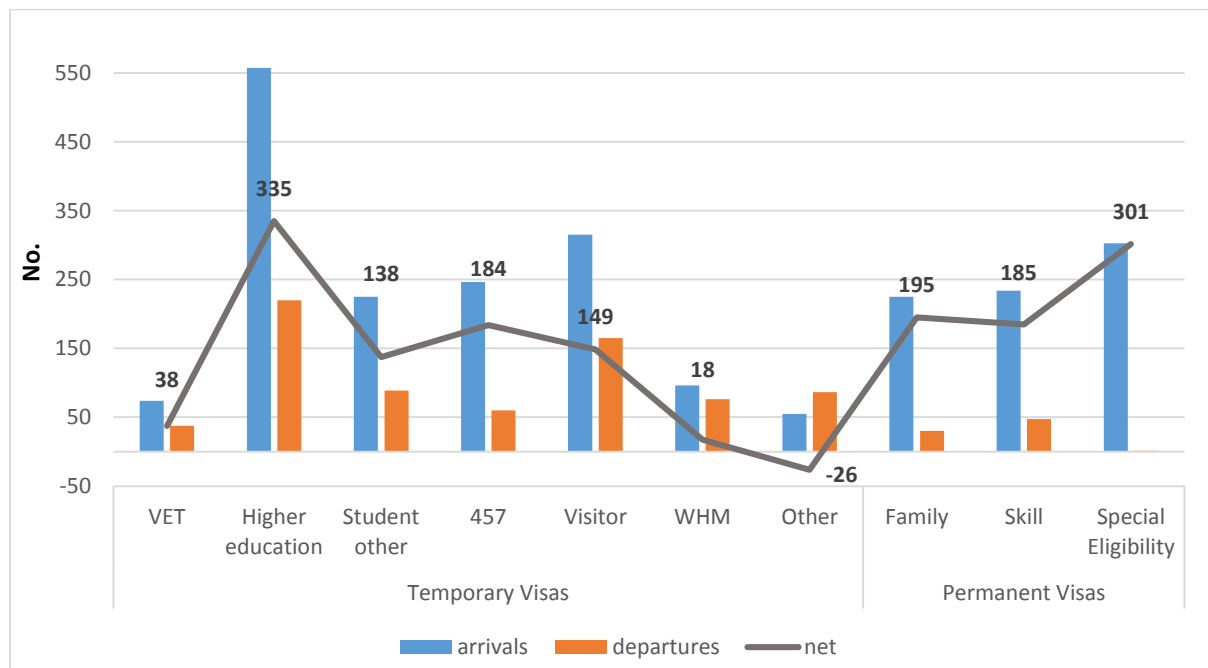
Source: ABS, Migration, Australia, 2011-12 and 2012-13, Cat. No. 3412.0

The age profile of overseas migrants differs considerably from interstate migration. The NOM age profile reflects the impermanent nature of the residence of temporary visa holders, particularly students, spiking in the 20 to 24 age group before returning to lower, almost neutral levels for all older age groups (see Figure 20).

Figure 20: Net overseas migration by age, Tasmania
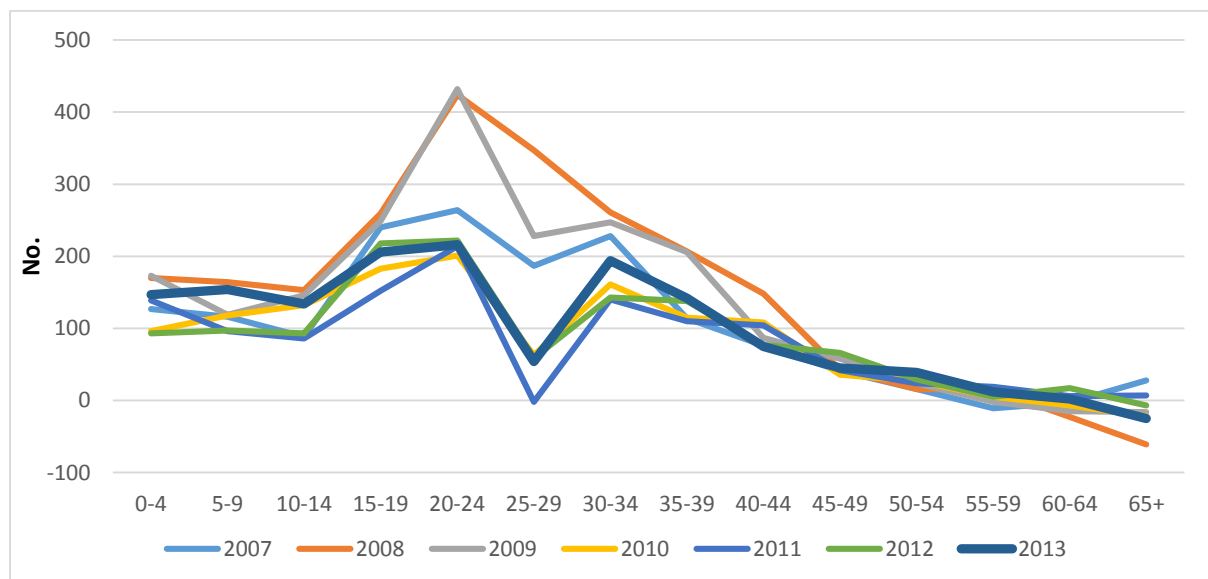
Source: ABS, Migration, Australia, 2011-12 and 2012-13, Cat. No. 3412.0

In contrast to net interstate migration, Tasmania experiences a net gain on average in all age groups except for those aged over 60, reflecting the dominance of international students in NOM figures. However, the relative size of NOM and the temporary nature of the migrants are not sufficient to mitigate the impact of net interstate migration losses on the overall age structure of the population. The greatest average annual net gain is experienced in the 20 to 24 years age group (282 persons), followed by those aged 15 to 19 (215 persons) as illustrated in Figure 21.

Figure 21: Overseas migration, average arrivals and departures by age, Tasmania, 2004-2013
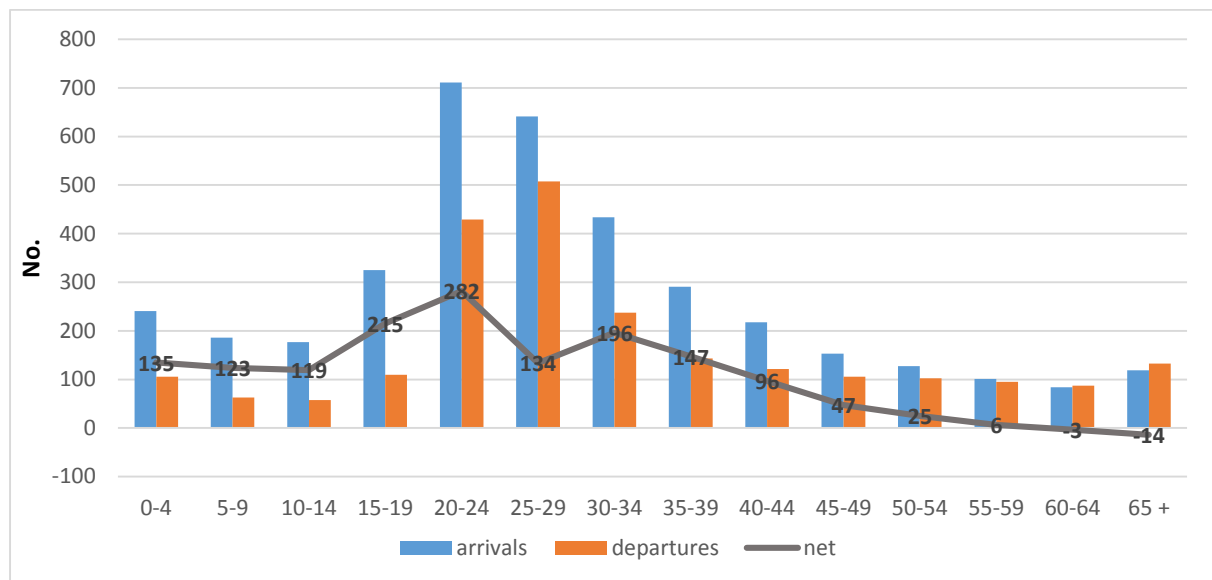
Source: ABS, Migration, Australia, 2011-12 and 2012-13, Cat. No. 3412.0

NOM is helpful from an Estimated Resident Population (ERP) perspective in planning for and providing appropriate infrastructure and services for the (current) population. However, in terms of future population projections and determining capacity for population growth, NOM is less helpful. This is because the age profile of NOM movements in and out of the state is likely to remain constant by age group, resulting in 'churn' rather than an ongoing contribution to the population.

Section 3: Achieving the population target

Tasmania's population at 30 June 2014 was 514,762.[18]

Population growth over the past 20 years (1993 to 2013) has averaged 1,932 persons per annum, a growth rate of 0.415 per cent per annum.

In order to achieve the population target of 650,000 by 2050, the Tasmanian population needs to increase by 135,238 persons, or an average of 3,756 persons per annum, an average growth rate of approximately 0.73 per cent per annum.

As discussed previously, there are a number of factors which influence population change and the propensity for growth. These components of population change include:

- natural increase/decline (the difference between the number of births and the number of deaths)
- net interstate migration (NIM)
- net overseas migration (NOM).

In addition, the potential for population growth is further influenced by:

- economic performance
- age and gender of migrants; arrivals and departures, both interstate and overseas
- permanent versus temporary migration
- size and proportion of the population of reproductive age.

This section identifies which components of population change need to be influenced to achieve the set population target, and the extent of change required.

Best fit scenario modelling

In order to identify the best age structure to achieve the population target of 650,000 by 2050 and provide the momentum for ongoing, sustainable population growth, modelling of five scenarios was undertaken. These scenarios were based on differing, but viable, opportunities (see Appendices A and B for details). This process identified the combination of the components of population change which will need to be strategically influenced to achieve the preferred age structure, one which has a balance between working and non-working age groups.

Each scenario was assessed using a number of indicators which identified the best combination of the components of population change to achieve the population target and sustainable long term growth. These indicators were:

- stable (or increasing) proportion of the population aged under 15
- stable (or decreasing) proportion of the population aged over 65
- balance between working age and non-working age proportions of the population
- positive natural increase
- low proportion of growth required from migration.

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[18] ABS, Australian Demographic Statistics, Dec 2014, Cat. No. 3101.0

While each of the five scenarios achieves the population target of 650,000 by 2050 (except scenario 2), each results in a very different population age structure, which impacts on the ability to achieve sustainable population growth over the longer term. None of the scenarios maintains natural increase (more births than deaths) over the projection period (to 2053), which means that each will rely on migration both to increase the population and to replace the lost population (due to more deaths than births). The point of natural decline occurs at different stages in the projection period. Natural decline occurs first from 2033 for scenarios 1 and 2, and from 2038 for scenarios 3, 4 and 5. Scenario 5 experiences the lowest level of natural decline and as such requires the lowest level of population growth to come from migration. However, natural increase is projected to return beginning in 2058 for scenario 5 and in 2063 for scenarios 3 and 4. Scenarios 1 and 2 will experience ongoing natural decline under the projection model. Importantly, natural increase provides for organic population growth. This requires *less* investment in strategic intervention (in migration attraction) to replace lost population due to natural decline.

As such, scenario 5 provides the best fit for the achievement of the population target of 650,000 by 2050 and provides the momentum for ongoing, sustainable population growth.

Specifically, scenario 5 is modelled on improving[19] net migration for ages 0 to 49 by 15 per cent per annum (for each five year age group 0 to 49) and for ages 50 and over by 5 per cent per annum. The scenario is based on an objective to reduce the rate of population ageing.

Using the indicators listed above and detailed in Table 3, scenario 5 achieves the most stable population age structure, providing sustainable population growth over the longer term (see Figure 22). The trend over the projection period shows that scenario 5 has the most stable proportion of the population aged under 15. While the proportion initially decreases from 2014 to 2038, it begins an upward trajectory from 2038 onwards, providing for sustainable long term population growth. The opposite is true for the proportion of the population aged over 65. While the proportion initially increases until 2043, it begins a downward trajectory from that year on. As such, the balance between working and non-working age groups improves towards the end of the projection period, which will support long term sustainable population growth beyond 2050.

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[19] Improve refers to either increasing net migration gains by age group or reducing net migration losses by age group.

Table 3: Scenario 5 - Improve net migration for ages 0 to 49 by 15 per cent and for ages 50 and over by 5 per cent

Scenario 5	2013	2018	2023	2028	2033	2038	2043	2048	2053	√^
Population	513,012	525,905	541,693	558,723	575,989	594,774	612,603	632,453	655,527	√
Annual growth	2,579	3,157	3,406	3,453	3,757	3,566	3,970	4,615		
Growth rate*	0.50	0.59	0.62	0.61	0.64	0.59	0.64	0.72		
% <15	18.5	18.2	17.8	17.4	17.2	17.0	17.0	17.1	17.2	√
%>65	17.3	18.9	21.0	23.1	24.3	25.4	25.1	24.8	24.6	√
% working age	64.2	62.9	61.2	59.4	58.5	57.6	57.9	58.1	58.2	√
% non-working age	35.8	37.1	38.8	40.6	41.5	42.4	42.1	41.9	41.8	√
natural increase/ decline*	1,012	1,234	1,102	733	581	-116	-276	-266		X
Annual Net Migration*	1,566	1,924	2,304	2,720	3,176	3,681	4,246	4,881		
replacement migration*	0	0	0	0	0	116	276	266		X
% of Growth required from Migration*	60.7	60.9	67.6	78.8	84.5	103.2	106.9	105.8		X

*annual measure for the five year period

^meets the assessment indicator

Figure 22: Age structure, Scenario 5, 2053
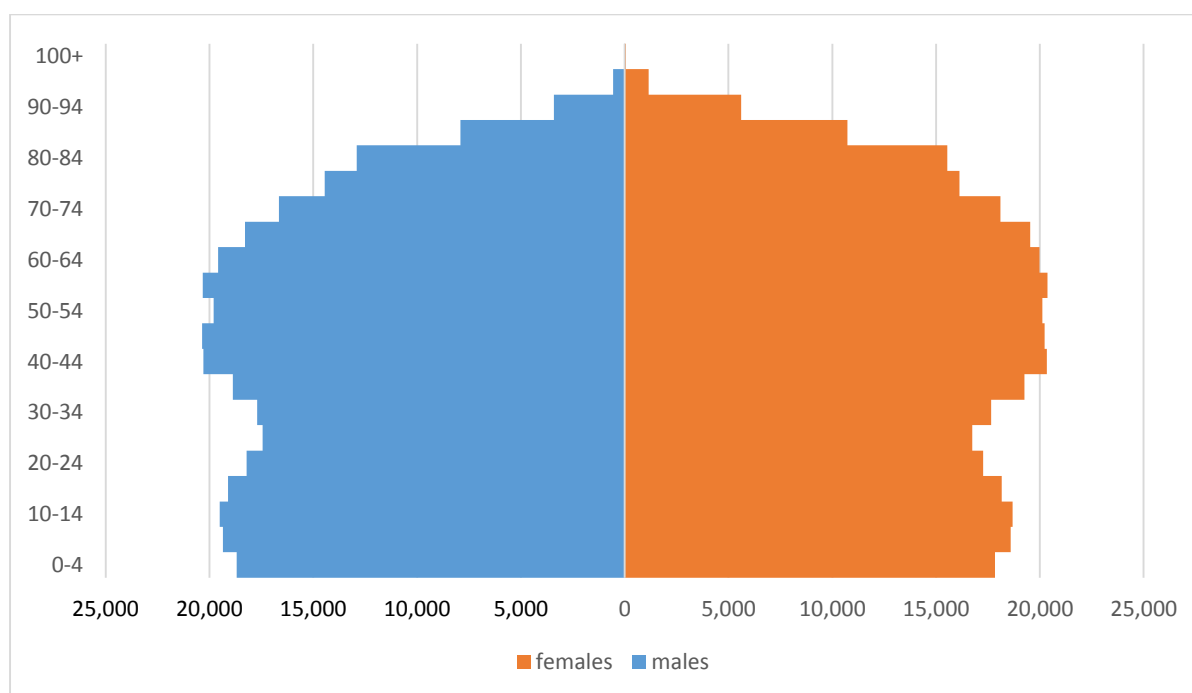
Scenario 5 will:

- achieve the population target of 650,000 by 2050
- provide for long term, sustainable population growth beyond 2050
- stabilise the rate of population ageing
- ensure a balance between the working age and non-working age populations
- achieve a comparable population growth rate to that of Australia as a whole (0.73 per cent per annum compared with the national projected rate of 1.32 per annum).

A detailed assessment of the alternative scenarios is provided in Appendix B, including an age structure diagram for each as projected for 2053.

Incremental targets

Recognising that population change takes a long time, the process of scenario modelling enables incremental targets to be set to ensure the growth trajectory required over the longer term is achieved. The setting of incremental targets clearly identifies which components of population change need to be influenced over the short, medium and long terms.

Scenario 5, the model which best meets the criteria, relies on reducing the rate of ageing to achieve long term population growth. Its objective is to maintain 2013 fertility levels and improve net migration for ages 0 to 49 by 15 per cent (for each five year age group 0 to 49), and for ages 50 and over by 5 per cent.

Under this scenario, population growth will come either from natural increase (or decline) or from net migration (both interstate and overseas)[20]. Importantly, improved migration not only contributes to population growth, but prevents the rate of natural increase (decline) falling further. The proportion of each contribution is illustrated in Figure 23.

Figure 23: Projected components of population growth per annum, natural increase and net migration, Scenario 5, 2013 - 2053

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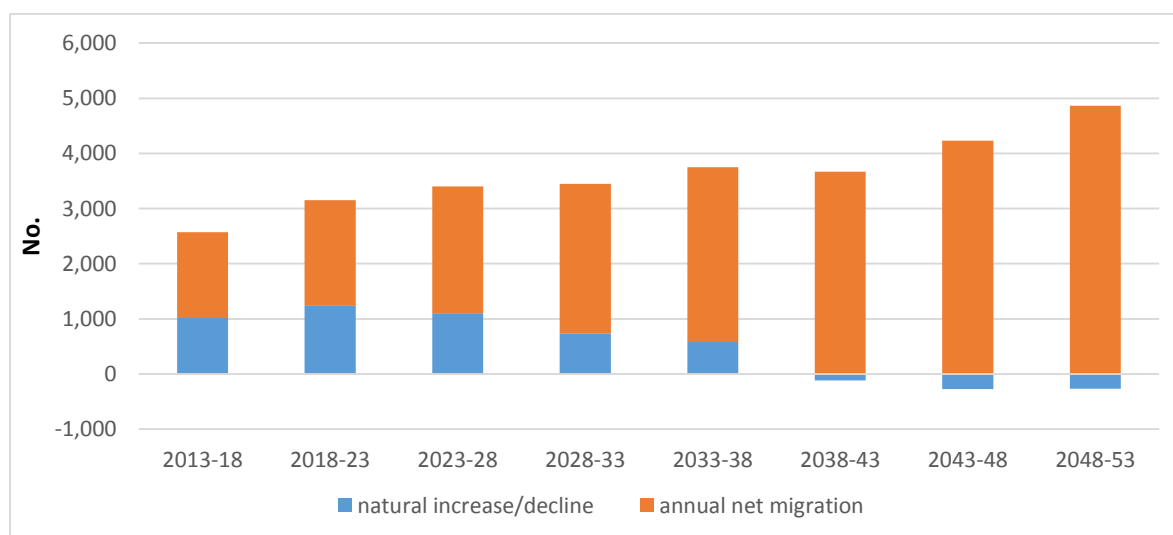
[20] Any children migrants have once they arrive in Tasmania are included in the blue (natural increase/decline). Similarly, any migrant deaths are also included in the blue (natural increase being difference between births and deaths).

While natural decline is projected to occur from 2038 under this scenario, it does so because of the increase in the number of deaths, resulting from the large cohort of baby boomers, not because of a decline in the number of births. Under this scenario the number of children being born increases over the projection period due to an increase in the size and proportion of the population at prime reproductive age due to improved net migration (while maintaining the TFR at 2.013) (see Figure 24). Under this scenario, births are projected to surpass deaths again from 2058 (not shown), returning the state to a period of natural increase.

Figure 24: Projected births and deaths under Scenario 5, 2013 - 2053
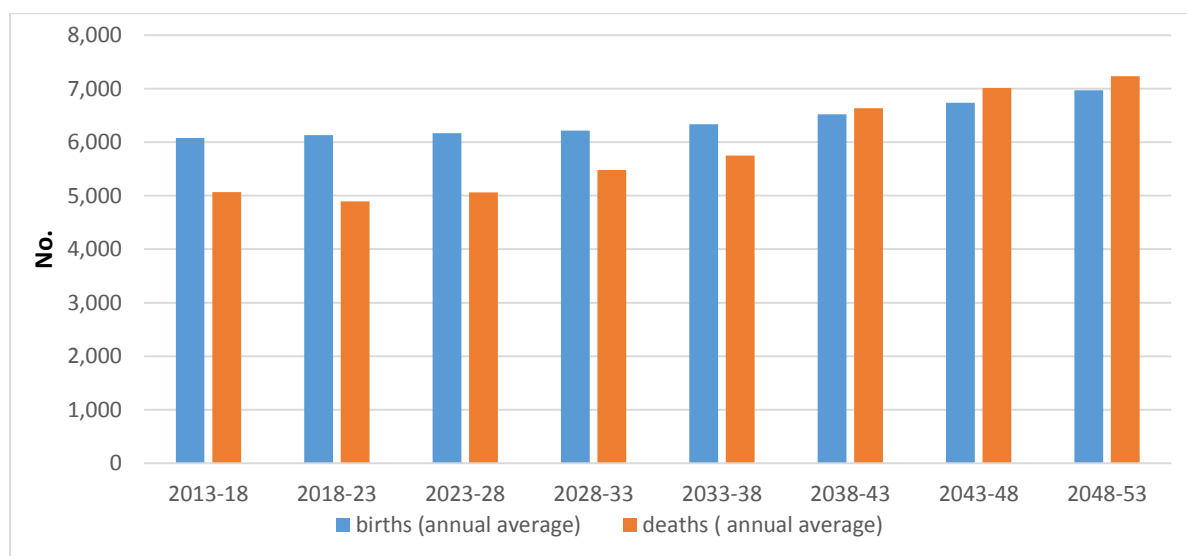
Actual annual migration target numbers for each five year age group and five year period until 2053 are detailed in the table below (the breakdown by sex is available in Appendix C). These numbers are the aggregate of interstate and overseas migration arrivals and departures, both temporary and permanent.

Table 4: Annual migration targets by age, Scenario 5

Year	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75+	Total
2013-18	261	164	122	-87	-427	-85	286	310	229	152	141	216	183	53	22	28	1,566
2018-23	300	188	140	-74	-363	-65	329	356	263	175	148	227	192	56	23	29	1,924
2023-28	345	217	161	-63	-308	-48	378	410	303	201	155	238	202	59	24	30	2,304
2028-33	396	249	185	-54	-262	-31	441	471	348	232	163	250	212	62	25	32	2,720
2033-38	456	286	213	-45	-223	-16	516	542	400	266	171	263	222	65	27	33	3,176
2038-43	524	329	245	-39	-189	-1	602	623	460	306	180	276	233	68	28	35	3,681
2043-48	603	379	282	-33	-161	13	704	717	529	352	189	290	245	71	29	37	4,246
2048-53	693	436	324	-28	-137	27	824	824	608	405	198	304	257	75	31	39	4,881

The targets can be cross-checked with future annual migration data from the ABS to determine whether the population target is likely to be met or if further intervention is required.

Importantly, if fertility rates increase over this time, along with the number of women of reproductive age, it is likely that the population target could be achieved sooner than 2050.

Section 4: Discussion

To achieve the population target of 650,000 by the year 2050, the Tasmanian Government needs to grow the population by an annual average of 3,756 persons. Simplistically, if the average annual number of Tasmanians leaving to reside interstate were to fall by a quarter (from 13,262 to 9,946 persons per annum) then the state will go much of the way towards achieving the population target. If those retained in the state are of prime reproductive age, it is likely that the target would be achieved more easily, due to a resulting increase in the number of births. Increased immigration from interstate and overseas will also contribute to increasing the rate of population growth. However, the critical issue in achieving this apparently simplistic solution is making strategic interventions to influence future trends, i.e. to alter the historical patterns of population change in Tasmania.

The Tasmanian Government will need to:

- maintain (or increase) the Total Fertility Rate (TFR)
- increase the number and proportion of women of childbearing age
- improve net interstate migration (NIM) by reducing departures and increasing arrivals
- increase net interstate migration (NOM)
- convert temporary migrants to permanent residents
- retain migrants in Tasmania.

Understanding the factors that influence the components of population change, the decision of whether or not to have children, or to move to or from Tasmania, will be critical in developing appropriate policy and strategic initiatives.

The net loss of young, educated and skilled people is one of the major challenges faced by Tasmania. While the out-movement could be considered a testament to the quality of education in the state, given the almost 100 per cent employment rate for former Tasmanian residents,[21] it is not balanced by an inflow of other young people, nor by the later return of those who have left. This has a detrimental impact on the population age structure and the propensity for future population growth. It is therefore important to recognise in the development of a population strategy for Tasmania that migration is selective by age and has the greatest impact on the ability to shape the future age structure of a population.

Ultimately, the population strategy for Tasmania needs to contain objectives and initiatives that reduce the propensity for outward mobility by younger, working and reproductive aged, people. That is, reducing the need (employment) and desire (lifestyle advantages) to reside elsewhere. At the same time, the strategy will need to attract return migration and interstate and overseas migration without compromising opportunities for resident Tasmanians.

Employment demand

While it is Tasmania's ageing population that will cause eventual population decline without strategic intervention, this also provides the opportunity for Tasmania to stabilise its age structure and set a trajectory for long term, sustainable population growth.

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[21] ABS Census of Population and Housing, 2011

Hand-in-hand with an ageing population is an ageing workforce. In Tasmania, approximately 45 per cent of the current workforce is aged over 45.[22] Over the next 15 years, around 110,000 Tasmanians will leave the workforce, based on the average retirement age of 61.5 years.[23] This scenario will create demand for employment, a reversal of the situation of the last four decades. Not only will employment demand increase as a result of the need to replace retiring workers, it will increase to service the needs, and changing consumption patterns, of a larger, older population for at least the next four decades.

The Commonwealth Government Department of Employment produces employment projections at a state level by industry. These projections are based on historical trends, with some adjustments made to factor in findings of research undertaken by the Department and likely regional developments.[24] The projections are also made to be broadly consistent with the national ANZSIC industry projections, published in March 2014. The projections do not factor in any government policy intervention (e.g., the role of the Coordinator-General, irrigation investment, red tape removal, etc.) to influence employment demand. In addition, the projections are for new jobs only, and do not consider the age profile of the workforce and associated replacement labour requirements.

The Department of Employment projects that employment in Tasmania will grow by 4,975 jobs by November 2018. This will result from losses in the manufacturing sector of 1,466 jobs, from the agriculture, forestry and fishing sector of 1,010 jobs, from the public administration and safety sector of 594 jobs and from the mining sector of 581 jobs, offset by employment growth of 3,586 jobs in the health care and social assistance sector, 1,688 jobs in education and training, 799 jobs in retail, as well as 691 jobs in accommodation and food services, as set out in Figure 25.

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[22] ABS, Labour Force, Australia, Detailed - Electronic Delivery, Dec 2014, Cat. No 6291.0.55.001
[23] ABS, Retirement and Retirement Intentions, Australia July 2012 - July 2013, Cat. No. 6238.0
[24] These employment projections are derived from best practice time series models that summarise the information that is in a time series and convert it into a forecast. The projections are made by combining forecasts from autoregressive integrated moving average (ARIMA) and exponential smoothing with damped trend (ESWDT) models.

Figure 25: Employment projections to November 2018, Tasmania
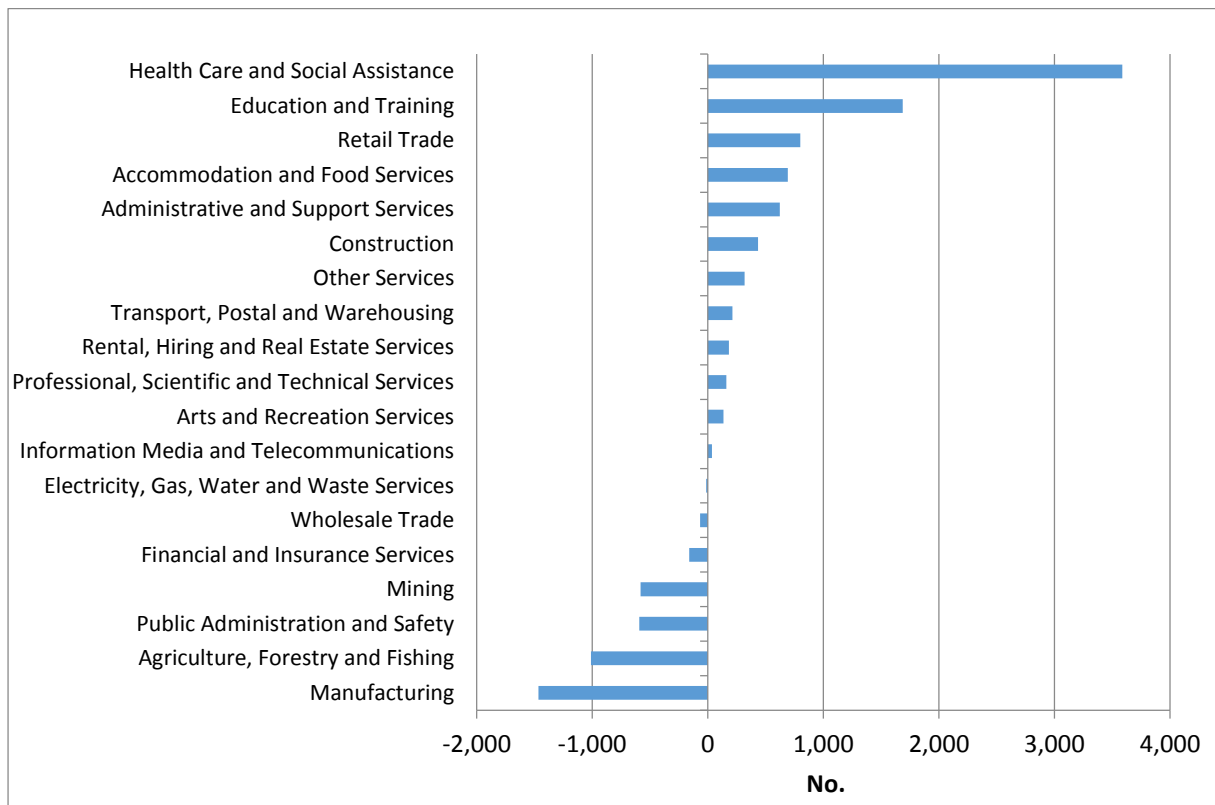
Source: Department of Employment, Employment Projections by Industry, Occupation and Region, 2014

In addition to the projected new employment growth by the Department of Employment, increased employment demand will also result from ageing workforces. The age profiles of industry sub-sectors provide an indication of where replacement labour will be required in the short to medium term. For 27 of the 105 industry sub-sectors, more than half of their workforces were aged at least 45 years of age at the time of the 2011 ABS Census of Population and Housing. Table 5 lists the top 20 industry sub-sectors by the percentage of the workforce aged 45 and over.

Table 5: Percentage of workforce aged 45 and over by industry sub-sector, Tasmania

Industry Sub-sector	Total Workers	Average Age of Worker	Workers aged over 45 (%)
Library and Other Information Services	235	50.1	74.0
Transport, Postal and Warehousing, nfd	151	51.3	72.2
Rail Transport	204	47.9	66.2
Health Care and Social Assistance, nfd	852	47.5	64.7
Postal, Courier Pick-up and Delivery Services	1,178	46.8	61.8
Residential Care Services	5,990	46.4	61.5
Agriculture	6,992	47.9	59.7
Road Transport	5,028	46.7	59.4
Textile, Leather, Clothing and Footwear Manufacturing	646	45.8	59.4
Education and Training, nfd	304	46.1	58.9
Transport Support Services	1138	45.9	57.0
Non-Metallic Mineral Mining and Quarrying	200	44.5	55.5
Preschool and School Education	13,398	45.1	55.0
Hospitals	5,947	44.6	54.5
Fishing, Hunting and Trapping	551	45.7	54.4
Pulp, Paper and Converted Paper Product Manufacturing	478	43.3	54.4
Building Cleaning, Pest Control and Other Support Services	2,591	44.7	53.9
Tertiary Education	4,273	44.8	53.5
Medical and Other Health Care Services	6,690	44.5	53.4
Adult, Community and Other Education	1,493	44.1	52.0

*nfd – not further defined

Source: ABS Census of Population and Housing, 2011

The ageing population and workforce augurs well for increasing labour force participation and reduced unemployment in Tasmania. Growth in new and expanding industries to cater for the needs of an older population, as well as replacement labour, will create employment demand and increase the incentives and likelihood for people to stay in, or move to, Tasmania. However, the ability to respond to these changing labour market opportunities will be dependent upon the skills individuals in the population possess. As such, it will be necessary to identify skill shortages associated with the ageing of the workforce and to design appropriate workforce development strategies to meet future labour and skills demand.

Maintaining the fertility rate

Recent discussions regarding Tasmania's potential for population growth have focussed on migration, but it is the fertility rate and the number and size of the reproductive cohort which will have the greatest long term impact on Tasmania's growth potential. Replacement-level fertility of 2.1 births per woman in her lifetime is considered to be the desirable fertility rate to provide a stable, sustainable population in the absence of migration. The Total Fertility Rate (TFR) in Tasmania in 2013 was 2.013 after reaching a high in 2008 of 2.24. While Tasmania's TFR is relatively high, hovering around the population replacement rate, in recent years it has been trending downwards. The causes of the historical decline in the TFR in the developed world are complex and best explained by the economic and opportunity costs of having children.[25]

To enable families to achieve their desired family size and for women to achieve, and maintain, a fertility rate at the population replacement rate of 2.1 births, policy development to remove the barriers to childbearing and raising is required. A significant element in solving below-replacement fertility will be the minimisation of the long term economic and opportunity costs to women of combining family responsibilities and paid employment, costs which are currently reducing the birth rate. Theoretical and empirical studies into the impact of both pro-natalist policies and paid parental leave schemes in Australia suggest that policies which permit and encourage women to stay in the labour force when they have children are most conducive to maintaining levels of fertility at or near replacement levels, generally referred to as 'family friendly' and, increasingly, 'gender equity' policies.[26] International studies concur, finding that those developed, industrialised countries with high female labour force participation rates also have higher fertility rates due to a range of policies which reduce the opportunity cost of having children and ease the tensions between work and family life.[27]

In Tasmania's case, research suggests that, in comparison with Australian women as a whole, Tasmanian women are generally achieving their fertility intentions and preferred family size[28] and therefore that efforts to increase fertility rates may be ineffective. However, given the importance of preventing natural decline occurring in Tasmania, and halting the recent downward trend in the TFR, there is a considerable impetus on identifying any constraints on achieving the desired family size. Critically, any further decline in the fertility rate will further hasten the process of population ageing. As such, maintaining the fertility rate should be a critical component of the population strategy.

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[25]A selection of extensive research includes McDonald, P 2000, 'Low fertility in Australia: evidence, causes and policy responses', People and Place, vol. 8, no. 2, pp. 6-21 Castles, FG 2002, 'The three facts about fertility', Family Matters, vol. 63, pp. 22-27. Tesfaghiorghis, H 2004, 'Education, work and fertility: A HILDA survey based analysis', Australian Social Policy, vol. 2004, pp. 51-73; van de Kaa, DJ 1996, 'Anchored Narratives: The Story and Findings of Half a Century of Research into the Determinants of Fertility', Population studies, vol. 50, no. 3, pp. 389-432.

[26] See for example Gray, M, Qu, L & Weston, R 2008, Fertility and family policy in Australia, Australian Institute of Family Studies, Melbourne. ; Drago, R, Sawyer, K, Shreffler, KM, Warren, D & Wooden, M 2011, 'Did Australia's baby bonus increase fertility intentions and births?', Population Research and Policy Review, vol. 30, no. 3, pp. 381-397; Guest, R & Parr, N 2010, 'The Effects of Family Benefits on Childbearing Decisions: A Household Optimising Approach Applied to Australia', Economic Record, vol. 86, no. 275, pp. 609-619.

[27] See Gauthier, AH 2007, 'The impact of family policies on fertility in industrialized countries: a review of the literature', Population Research and Policy Review, vol. 26, no. 3, pp. 323-346.

[28] Keygan, A 2013, "How many children do Tasmanian's want? Are they having them?", University of Tasmania, Research Week

Tasmanian diaspora

A strong opportunity for improving Tasmania's net interstate migration performance will be enticing former residents, referred to as the Tasmanian diaspora, to return. While emigration is inevitable for younger age groups seeking to expand their opportunities and experiences, providing a pathway to return to Tasmania will be a crucial component of a successful population strategy, given the established connection to, and affinity with, the state that the diaspora has.

A recent study of the Tasmanian diaspora in June 2014 confirmed and strengthened anecdotal evidence that Tasmanians leave the state in search of better opportunities to grow and develop – either through employment, education or experiencing other places.[29] Many want to return to the place they call home (45 per cent), but are dissuaded from doing so by a lack of opportunities matching the wealth of experience and knowledge they have gained from their time away.[30]

The majority of respondents identified as being Tasmanian because they were born in the state (60.7 per cent). Sixty per cent of the expatriates left Tasmania when they were aged between 20 and 29, and most of them left to find employment opportunities elsewhere (34 per cent).

Figure 26: Reasons expatriates left Tasmania
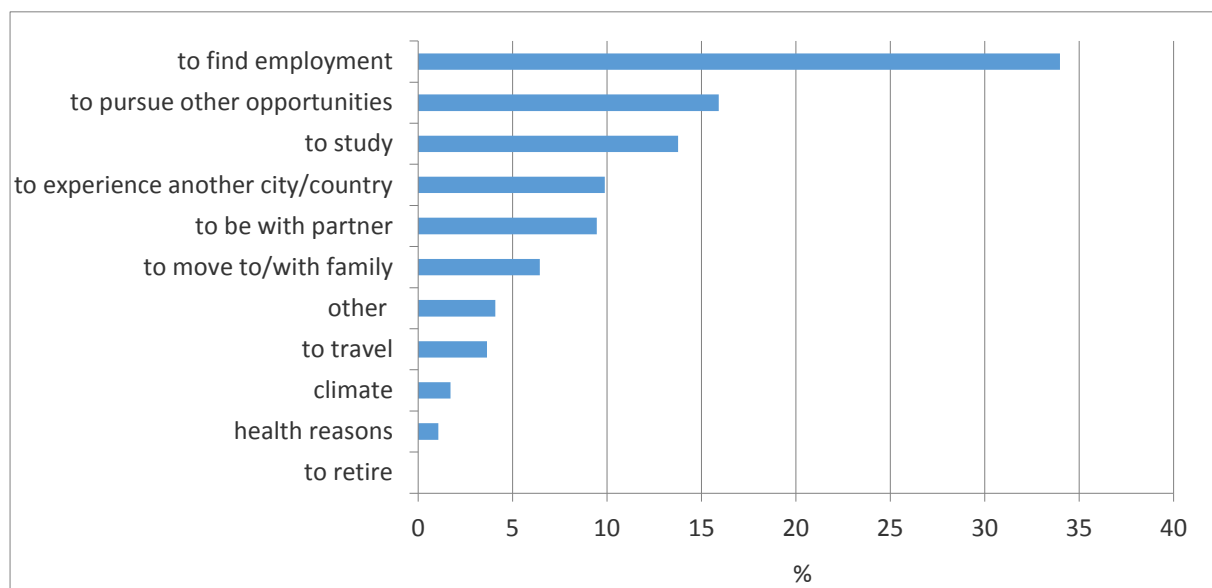
In terms of returning to Tasmania permanently, 45 per cent of expatriates would like to move back, while 23.5 per cent do not want to; the remainder may return if the timing is right and an opportunity arises.

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[29] Denny, L 2014, The Tasmanian Diaspora: A Snapshot, www.tasmaniandiaspora.com.au

[30] These findings are consistent with emerging research on diaspora communities and their affinity with their original 'home'. See for example: Fullilove, M 2008, World wide webs: diasporas and the international system, vol. 22, Lowy Institute for International Policy Australia; Hugo, GJ, Rudd, DM & Harris, KR 2003, Australia's diaspora: Its size nature and policy implications, Committee for Economic Development of Australia; Hugo, G, Harris, K, Bell, M, Spoehr, J & Coffee, N 2000, ''Bringing Them Back Home' Factors Influencing Interstate Migration To And From South Australia', Migration, vol. 1991, p. 96.

The greatest factor in the decision to return to Tasmania to reside permanently is employment opportunities. Almost equally important are the lifestyle, proximity to family and potential work/life balance available in Tasmania.

Figure 27: Factors influencing expatriates decisions to return to Tasmania
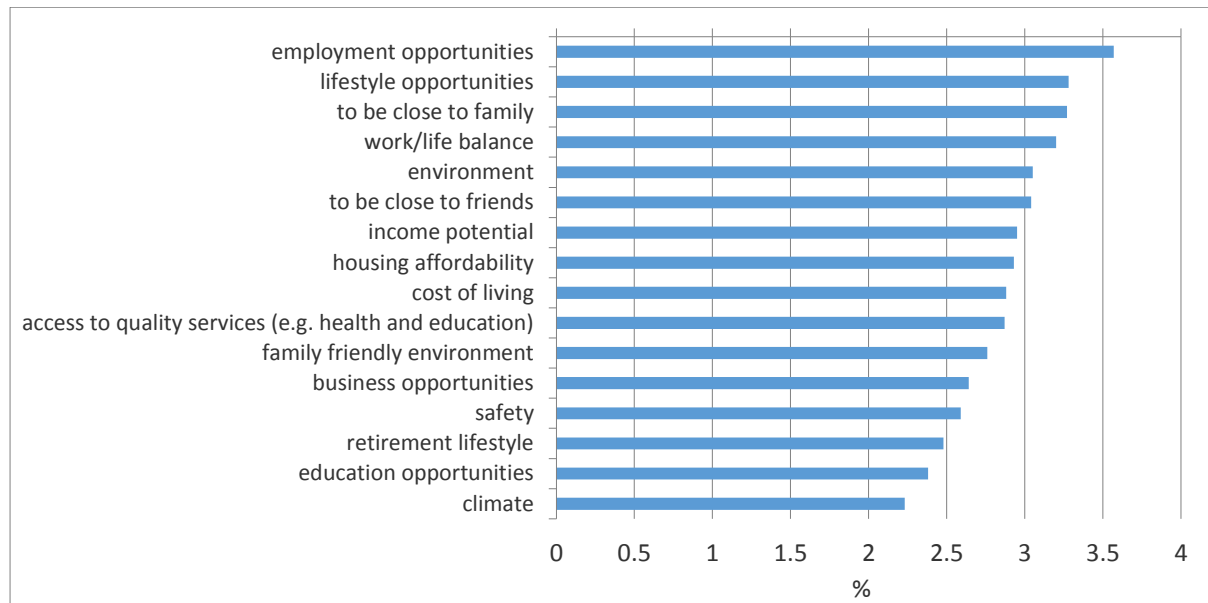
Chief among the reasons not to return to Tasmania is the perceived lack of opportunities in the state – employment, business, lifestyle and education for children. Other factors included the cold (weather and climate) and the quiet, isolated nature of the place.

While there is an inherently strong affinity for Tasmania for the vast majority of expatriates worldwide, there remain many concerns about the future of the state. The factors which influenced expatriates to leave the state in the first place are the very ones which prevent them from returning – employment opportunities, predominantly, but also cultural development and progress.

While many Tasmanian expatriates would like to return to the state to live permanently, they need concrete opportunities to return to, not just fond memories and natural beauty.

Liveability

The perceived and actual liveability of a place will be paramount to both attracting and retaining people in Tasmania. Liveability is the sum of the factors that add up to a community's quality of life[31] – including the built and natural environments, economic prosperity, social stability and equity, educational opportunity, and cultural, entertainment and recreation options.

Tasmania fares comparatively well with other states and regions in terms of liveability.

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[31] For a more detailed explanation of liveability see Chapter 5, Liveability, State of Australian Cities 2012, Department of Infrastructure and Regional Development http://www.infrastructure.gov.au/infrastructure/pab/soac/files/2012_08_INFRA1360_MCU_SOAC_CHAPTER_5_WEB_FA.pdf

In 2010, the Property Council of Australia developed a Liveability Index[32] to better understand the attitudes that Australians have towards the cities in which they live. In their study, the Council defined the "liveability" of a city as the degree to which a city meets the needs of the residents who live there, as defined by 17 key attributes. In 2013, Hobart ranked third of the 11 most liveable cities in Australia, behind Canberra and Adelaide. The attributes that Australians felt were most important in making a city a good place to live were being a safe place for people and their property, being an affordable place to have a good standard of living, and having good employment and economic opportunities.

Key attributes that Hobart performed relatively well on were:

- having an attractive natural environment
- having a wide range of recreational outdoor environments
- having a clean, well-maintained and unpolluted city.

However, Hobart also performed relatively poorly in the following respects:

- having good employment and economic opportunities
- there is a good public transport service
- having good healthcare services.

A 2009 brand perception study identified that Tasmania is perceived positively in terms of the environment, friendliness and housing affordability but that on employment, education and accessibility it rated quite low.[33] For younger respondents (those aged younger than 35), attributes such as education, excitement, creativity and innovation also rated poorly. Perceptions of Tasmania among all age groups were better among survey respondents who had visited the state previously.

The overall findings of the study with regard to perceptions of living and working in Tasmania were that while Tasmania is recognised as trustworthy, natural and extraordinary, these are attributes which are perceived as suiting older residents and as not matching what younger Australians are likely to identify with. Even so, a fifth of all survey respondents reported a desire to live or work in Tasmania within the next five years, though the report did not differentiate between age groups.

Given the research was undertaken in 2009, it is likely that the perception of Tasmania has improved among the younger age groups with the opening of MONA and the presence of related cultural activities and events, widely touted as "the MONA effect".[34]

Strategic intervention to attract and retain a younger demographic should focus on improving the state's and its cities' liveability (perceived and actual), as well as on communicating and promoting the benefits of living in Tasmania.

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[32] See the Property Council of Australia's Liveability Index for further detail
http://www.propertyoz.com.au/Article/NewsDetail.aspx?p=16&id=7259
[33] Colmar Brunton, 2009, Project Tasmania, report commissioned by the Department of Economic Development, Tourism and the Arts
[34] The MONA effect is currently being research at UTAS, based on the theoretical underpinnings of the Bilbao Effect (Spain).

Migration experience

There is little research on the migrant experience in Tasmania: the factors which motivate migrants to move to Tasmania, their experiences in Tasmania, and what may influence them to leave. That said, there is emerging research on migrant experiences in Australia, and regional Australia, from which inferences may be drawn about migrant experiences in Tasmania.

Permanent migrants

Preliminary research suggests that there is significant leakage of immigrants who initially settle in Tasmania then, through subsequent internal (secondary) migration, relocate to other Australian states, predominantly the eastern seaboard states. Using the Australian Census and Migrants Integrated Dataset indicative migrant retention rates can be determined (see Table 6). [35]

Of the 9,935 migrants who resided in Tasmania one year prior to the 2011 Census, the vast majority still lived in Tasmania at the time of the Census. 440 migrants relocated interstate in that one year period. The greatest retention was of those migrants in the Family and Humanitarian Streams, with a rate of at least 97 per cent. The retention rate for Skill Stream visa holders was lower, but at least 93 per cent of those permanent migrants who lived in Tasmania one year prior to the Census were still residing in the state at the time of the Census.

The retention rate over a five year period drops considerably for all visa streams, particularly the Skill and Humanitarian Streams. Of the 5,575 migrants who resided in Tasmania five years prior to the 2011 Census, 1,368 migrants had relocated interstate by the time of the Census, a retention rate of 76.3 per cent. For those permanent migrants in the Family Stream, the retention rate over the five years was 87.8 per cent for partners and 89.9 per cent for other family members. These figures reveal the growing marriage migration trend occurring in Australia as a result of increased globalisation and travel. They also reveal the growing proportion of Tasmanians who have one parent born overseas (9.6 per cent). For migrants in the Skill Stream, those whose visas have an employment condition (government or employer sponsored) are retained at a considerably higher rate than those on the Independent Skilled visa. The retention rate for the latter is only 58.3 per cent over the five year period, more than a 20 percentage point difference from that for government or employer sponsored visa holders. While Tasmania may have been the destination of choice for the skilled independent migrant, without employment opportunities it is difficult to retain such migrants in Tasmania. Similarly for Humanitarian Visa holders, the retention rate drops considerably over the five year period to 70.3 per cent for refugees and to 60 per cent for those in the Special Humanitarian Program.

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[35] Statistical techniques were used to link records from the Department of Immigration's Settlement Database to the ABS 2011 Census of Population and Housing, without using names and addresses. The integrated data enables person-level characteristics collected in the Census to be cross classified with data items that describe a post-2000 migrant's entry conditions; visa, main/secondary applicant status and whether they were an offshore or onshore applicant.

Table 6: Migrant retention rates, Tasmania

		Retention Rate (%)	
Stream	Visa Type	1 year	5 years
Skill	Independent	92.9	58.3
	Family or Government Sponsored	93.5	79.9
	Employer Sponsored	93.1	76.6
	Other	97.1	85.5
Family	Partner	97.1	87.8
	Other	97.4	89.9
Humanitarian	Refugee	97.8	70.3
	Special Humanitarian Program	96.9	60.0

Source: ABS Australian Census and Migrants Integrated Dataset, author calculations

Migrants in all visa streams are more likely to relocate from Tasmania to the eastern seaboard states, with Victoria followed by New South Wales the places of usual residence for those who lived in Tasmania one year prior to the Census (see Table 7).

Table 7: Place of usual residence for migrants whose place of usual residence 1 year prior to the 2011 Census was Tasmania

	Skill				Family		Humanitarian	
	Independent	Family/ Govt Sponsored	Employer Sponsored	Other	Partner	Other	Refugee	Special Humanitarian Program
New South Wales	1.1	0.4	1.1	2.0	0.5	1.4	0.0	3.1
Victoria	2.5	2.6	1.3	0.9	1.0	0.0	1.1	0.0
Queensland	1.9	1.1	1.9	0.0	0.7	1.2	0.2	0.0
South Australia	0.0	0.4	1.6	0.0	0.0	0.0	0.3	0.0
Western Australia	1.3	1.3	1.0	0.0	0.5	0.0	0.6	0.0
Tasmania	92.9	93.5	93.1	97.1	97.1	97.4	97.8	96.9
Northern Territory	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Australian Capital Territory	0.4	0.7	0.0	0.0	0.2	0.0	0.0	0.0
Other Territories	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source: ABS Australian Census and Migrants Integrated Dataset, author calculations

For those migrants who lived in Tasmania five years prior to the Census, Victoria was the dominant place of usual residence for all visa streams, though the other eastern seaboard states of New South Wales and Queensland also attracted a considerable proportion of former migrant residents of Tasmania (see Table 8).

Table 8: Place of usual residence for migrants whose place of usual residence 5 years prior to the 2011 Census was Tasmania

	Skilled				Family		Humanitarian	
	Independent	Family/ Govt Sponsored	Employer Sponsored	Other	Partner	Other	Refugee	Special Humanitarian Program
New South Wales	10.7	3.8	3.5	2.8	2.4	1.5	2.1	5.8
Victoria	14.7	8.2	6.7	1.9	4.5	3.1	9.8	12.1
Queensland	6.8	4.0	3.5	9.8	2.3	5.4	6.9	6.6
South Australia	2.1	0.7	4.6	0.0	0.7	0.0	4.1	2.6
Western Australia	4.8	2.7	3.9	0.0	1.9	0.0	5.7	12.9
Tasmania	58.3	79.9	76.6	85.5	87.8	89.9	70.3	60.0
Northern Territory	1.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0
Australian Capital Territory	1.5	0.8	0.7	0.0	0.4	0.0	1.1	0.0
Other Territories	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source: ABS Australian Census and Migrants Integrated Dataset, author calculations

Despite relatively high levels of migrant leakage, Tasmania also attracted migrants to relocate from other Australian states over the same period, but at a level insufficient to counter the leakage. In the one year period prior to the Census, 388 migrants relocated to Tasmania from interstate. The greatest source of this secondary migration were migrants on Skill Stream visas (207 migrants) and the Family partner visa (103). For those who lived interstate five years prior the Census, skilled migrants (393) and migrants on partner visas (303) were the greatest source of secondary (internal) migration to Tasmania (see Table 9).

Table 9: Secondary migration to Tasmania by visa class, number

Place of Usual Residence	Skill				Family		Humanitarian		Total
	Independent	Family/ Govt Sponsored	Employer Sponsored	Other	Partner	Other	Refugee	Special Humanitarian Program	
1 year ago									
Interstate	83	40	94	0	103	10	16	41	388
Overseas	63	54	107	27	193	30	393	21	888
5 years ago									
Interstate	186	54	141	12	303	11	11	13	731
Overseas	636	557	998	152	1,280	144	1,284	174	5,224

Source: ABS Australian Census and Migrants Integrated Dataset, author calculations

Reducing immigrant leakage (increasing retention) and attracting secondary migration to Tasmania will depend on successfully settling and integrating migrants and their families within Tasmania. Settlement strategies will also need to respond to the needs of migrants, which will likely vary by visa category.

A review of settlement literature and a small scale study of the settlement experience of refugees from Sierra Leone in Launceston reveal a disconnection between bureaucrats and refugees as to what constitutes successful settlement.[36] The government objective is to assimilate refugees into mainstream services and to achieve self-sufficiency within six months of arrival. The Refugee Council of Australia suggests settlement is not a point to be reached but a process that continues throughout a person's life, and critical to that process is the notion of empowerment. To refugees, successful settlement means a point at which life is lived normally, leaving the refugee experience behind, an opportunity to be free and to regain something of what was lost. Successful settlement is also constituted by the opportunity to *not* be differentiated. Critically, the study identified that successful settlement is a two way process between the arriving refugees and the broader community which they join, particularly in terms of the cultural awareness of both parties. Ultimately, successful settlement provides for ongoing education and employment opportunities, offering financial independence and social inclusion. Furthermore, settlement success is very much entwined with personal experiences prior to and during the settlement journey.

Temporary migrants

Given that temporary migration is a significant and growing pathway to permanent migration, the experiences of temporary migrants such as those on the 457 and student visas is critical in the context of attracting, and retaining, migrants to Tasmania. In Australia, in 2012-13, almost 60 per cent of permanent visas were processed onshore, in other words following a pathway from a temporary visa. In terms of visa classes, three quarters of employer sponsored visas are granted onshore, and half of skilled independent visas, a third of partner visas and a quarter of government sponsored visas are granted onshore.

A report by the Multicultural Council of Australia, "More than Just Temporary: Australia's 457 Visa Program", reveals a high level of satisfaction among 457 visa holders with their relationship with their employer (88 per cent), income (76 per cent) and opportunity for promotion (64 per cent). Importantly, both employers (68 per cent) and migrants (75 per cent) report that migrants provide training and development to Australians in the workplace.

Critical from a Tasmanian perspective is the intention of migrants to stay in Australia (preferably in Tasmania). The Multicultural Council of Australia report reveals that the rates of intention to stay in Australia vary according to migrants' partners' employment status and English language ability. Overall, 77 per cent of 457 visa holders intend to stay in Australia (consistent with onshore permanent visa grant trends). Eighty per cent of single migrants intend to stay in Australia, whereas only 55 per cent of migrants whose partners are English speaking and not working intend to stay.

Employer experience

Recent research into the experience of Tasmanian employers participating in the Regional Sponsored Migration Scheme (RSMS) found that most responding organisations have expanded as a result of employing a skilled migrant (48 per cent), that the business had employed additional staff

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[36] Sweeney, AJ 2008, Bumps on the Yellow Brick Road. Sierra Leoneans in Launceston, Australia and their Settlement Experiences, The International Journal of Diversity in Organisations, Communities and Nations, Vol 7, No. 6, Melbourne.

(40 per cent) or had introduced new processes (55 per cent).[37] Respondents also reported an increase in revenue (46 per cent) and profit (58 per cent) as a result of participating in the Regional Sponsored Migration Scheme. Employers reported high retention rates of migrants, with over half of the employees on RSMS visas being employed with the same business for over two years.

Despite the success of the program for the participating employers, over half reported they had not previously been aware of the program. Most employers were made aware of the program by the migrant themselves (32 per cent) or by word of mouth (26 per cent) rather than through formal channels like Federal and State Government. Employers also reported the process was difficult (45 per cent), complicated (48 per cent) and time consuming (75 per cent). In addition, the application processing time was a key frustration for employers given the immediate need for staff.

Multiculturalism

Tasmania is considerably less multicultural than the rest of the nation.[38] Slightly more than 12 per cent of people residing in Tasmania were born overseas, compared with the national figure of 26 per cent. Over a third of Australian residents' parents were born overseas, compared with only 14.9 per cent of Tasmanian residents. This is reflective of differing migration intakes historically, for both permanent and temporary migrants. Interestingly, 9.6 per cent of Tasmanians have one parent born overseas, compared to 12.0 per cent for Australians as a whole. This could be explained by the marriage and return migration of the Tasmanian diaspora, resulting from increased travel and globalisation as suggested in the retention rates of partner migration visa holders.

Tasmania's lack of multiculturalism could be a barrier to attracting and retaining migrants to the state.

Table 10: Ethnicity, Tasmania and Australia

	Tasmania	Australia
	%	%
Born overseas	12.2	26.0
Both parents born overseas	14.9	34.3
One parent born overseas	9.6	12.0
Both parents born in Australia	75.5	53.7

Source: ABS Census of Population and Housing

Further considerations

There are some schools of thought that suggest that there is limited scope for state governments to influence the size and structure of a population. While demographic variables are constantly changing, and are often subject to influences outside direct state government control, the role of state government in shaping future population policy can be significant, but requires leadership. There are many levers available to influence population change and growth, which operate at all tiers of government and within the wider community. A population policy should not be considered in isolation from broader economic and social agendas and should instead be thought of as a

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[37] This 2013 study was commissioned by the former Department of Economic Development, Tourism and the Arts and was undertaken by the Tasmanian Institute of Law Enforcement Studies, University of Tasmania. Ninety-five employers in the Regional Sponsored Migration Scheme participated in the study.

[38] "Multicultural" is defined in this context as relating to or containing several cultural or ethnic groups within a society.

component of a state-wide approach at the development, implementation and operationalisation level. Furthermore, the strategy needs to be delivered through tripartite co-operation involving government, industry and community. In fact, the strategy's success will be largely dependent on operationalisation at the local level through the commitment and active involvement of a wide range of stakeholders in strategic initiatives.

As research reveals more about ageing populations, achieving fertility intentions and migration experiences, governments have access to greater knowledge and hence have increased ability to implement policy to effect change. In Tasmania's case, the greatest opportunity to influence population change is through its ageing population and associated ageing workforce creating employment demand, its diaspora community with a strong affinity with the place, its relatively high fertility rate, and its growing opportunity to increase the share of the national migration programme to encourage settlement by immigrants in regional areas like Tasmania, as well as employment demand-led permanent and temporary migration schemes.

Critically, population change takes time; changing demographic variables, both negative and positive, shifts have long lead times before their full impact is realised. The population policy for Tasmania must therefore be a dynamic document which can take advantage of emerging opportunities and mitigate unforeseen challenges. It is also important to recognise that the outcome of any single policy initiative in the short term is unlikely to be fully apparent until closer to the target date of 2050. Nonetheless, the progress of initiatives can still be monitored and responded to accordingly.

Appendix A: Scenario modelling method

The Projections 2000[39] population projection model was utilised to undertake scenario modelling for Tasmania's future population of 650,000 by 2050. The model can be used to project populations by sex and five-year age group over a period of up to 100 years, taking into account births, deaths and migration. The Projections 2000 model was used because it enables modifications to both the number and age distribution of migrants over the projection period.

The model uses the base population and age distribution for Tasmania as at June 2013 and projects the population forward 40 years to 2053. Each of the scenarios assumes that the 2013 Tasmanian birth rate will be maintained at 2.013 births per woman over her reproductive life. This assumption is made on the basis of evidence suggesting that Tasmanian women are achieving their fertility intentions[40] and are therefore unlikely to increase the number of children they have. Life expectancy assumptions are derived from the Department of Treasury and Finance's life expectancy at birth projections as used in their population projections.[41] Migration levels are formulated from historical ABS data for both interstate and overseas migration,[42] as well as assumptions regarding growth rates and the composition of the age distribution.

As with every model, there are some limitations, both of the model and of the assumptions made. While the model uses a set fertility rate, life expectancy rates and migration rates for five-year age-groups and five-year projection periods as inputs rather than annual rates, it is likely that there would be variances in each rate each year. In addition, the migration data input function does not separate interstate and overseas migration, by number or by age distribution. As such, assumptions with regard to net migration are made based on the average of the aggregate of net interstate migration (NIM) and net overseas migration (NOM) by age distribution and sex. It is important to note in this assumption that NIM and NOM in Tasmania differ significantly in terms of age distribution and will affect future population scenarios considerably.[43] Furthermore, given age distribution data for NOM is only available from 2004, whereas NIM age distribution data is available from 1996, aggregates and thus averages for net migration are restricted to the past ten years (2004 to 2013).

Critically, population projection models like Projections 2000 are developed based on aggregate numbers, i.e. permanent population numbers, and cannot directly account for population flows. It is therefore difficult to incorporate the impact of temporary migration flows of international students, skilled migrants on temporary visas and working holiday makers on future population levels. In population projection models these temporary migrants are assumed to adopt the same fertility levels and life expectancy as the permanent population. Given temporary migrants contribute to a high proportion of Tasmania's net overseas migration figures, the contribution of overseas migrants (and their future children) to Tasmania's permanent population needs to be taken into account with caution and to be appropriately considered in strategy development.

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[39] Kippen, R 2000 Projections 2000, Australian Centre for Population Research, The Australian National University
[40] Keygan, A 2013, "How many children do Tasmanian's want? Are they having them?", University of Tasmania, Research Week
[41] Tasmanian Department of Treasury and Finance, Population Projections, 2013
http://www.treasury.tas.gov.au/domino/dtf/dtf.nsf/all-v/D1AEFBA589D342CBCA257BF10004F646
[42] ABS, Migration – Australia, Cat. No. 3412.0
[43] Denny, L 2013, A Synthesis of Tasmania's Population, report prepared for the Tasmania Development Board

Appendix B: Alternative scenarios

Five scenarios were considered to meet the population target of 650,000 by 2050. These were based on differing, but viable, opportunities.

1) Improve net migration by 25 per cent per annum (based on premise of maintaining the age profile distribution trend since 2004)
2) Improve net migration for ages 0 to 49 years by 10 per cent (for each five year age group 0 to 49) , improve net migration for ages 50 and over by 20 per cent (based on premise of capturing increasing baby boomer retirement)
3) Improve net migration for ages 0 to 49 by 15 per cent (for each five year age group 0 to 49), and ages 50 and over by 10 per cent (based on reducing rate of ageing and capturing increasing baby boomers retiring)
4) Improve net migration for ages 0 to 24 by 10 per cent (for each five year age group 0 to 24), ages 25 to 44 by 20 per cent (for each five year age group 24 to 44) and ages over 45 by 5 per cent (scenario based on emphasis of increasing business and skilled migration and working age population)
5) Improve net migration for ages 0 to 49 by 15 per cent (for each five year age group 0 to 49) and for ages 50 and over by 5 per cent (scenario based on reducing rate of ageing only)

NB – *Improve* refers to either increasing net migration gains by age group or reducing net migration losses by age group

Scenario 1. Improve net migration by 25 per cent per annum (based on premise of maintaining the age profile distribution trend since 2004)

Scenario 1	2013	2018	2023	2028	2033	2038	2043	2048	2053	
Population	513,012	528,172	543,985	559,661	574,933	591,596	608,036	627,398	651,056	√
Annual growth*	3,032	3,163	3,135	3,054	3,333	3,288	3,872	4,732		
Growth rate*	0.58	0.59	0.57	0.54	0.57	0.55	0.63	0.74		
% <15	18.5	18.1	17.8	17.3	16.8	16.4	16.1	15.9	15.7	X
%>65	17.3	19.6	22.0	24.4	25.9	27.6	28.1	28.8	29.8	X
% working age	64.2	62.3	60.3	58.3	57.2	56.1	55.8	55.3	54.5	X
% non working age	35.8	37.7	39.7	41.7	42.8	43.9	44.2	44.7	45.5	X
natural increase/decline*	1,501	1,249	743	64	-406	-1,385	-1,969	-2,570		X
Annual Net Migration*	1,531	1,914	2,393	2,991	3,738	4,673	5,841	7,302		
replacement migration*	0	0	0	0	406	1385	1969	2570		
% of Growth required from Migration*	50.5	60.5	76.3	97.9	112.2	142.1	150.8	154.3		X

*annual rate for the five year period

Scenario 1 Age Structure, 2053
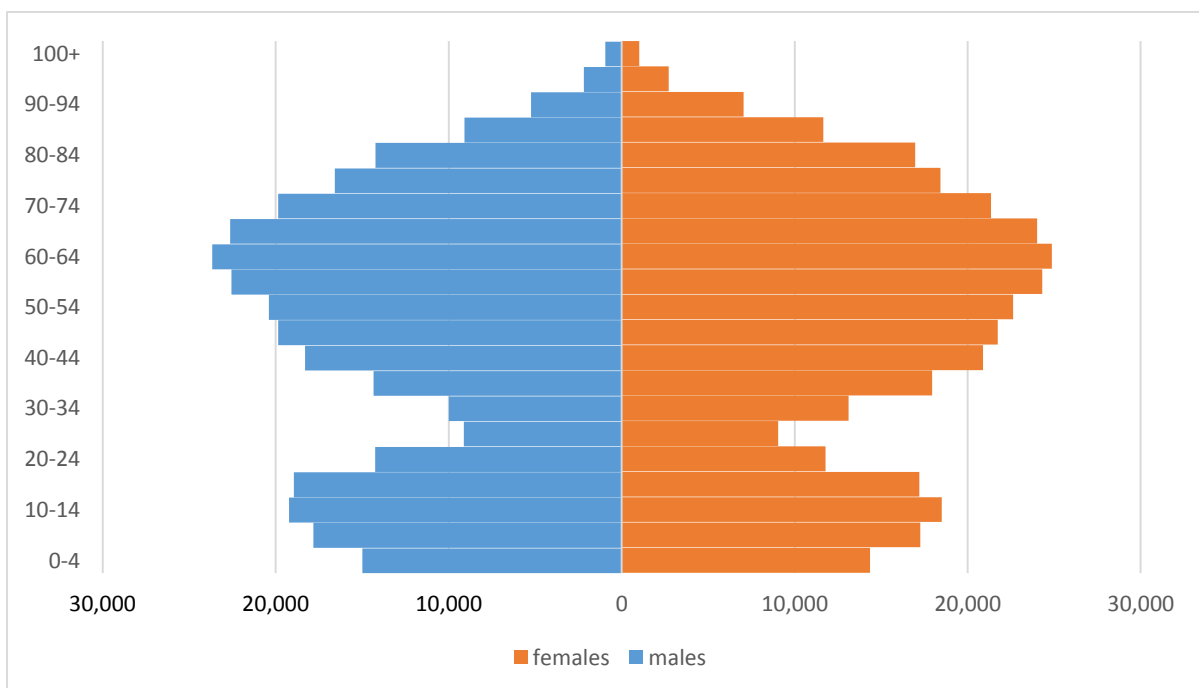
Scenario 2. Improve net migration for ages 0 to 49 years by 10 per cent, improve net migration for ages over 50 by 20 per cent (based on premise of capturing increasing baby boomer retirement)

Scenario 2	2013	2018	2023	2028	2033	2038	2043	2048	2053	
Population	513,012	525,805	541,384	558,088	574,868	592,997	609,867	628,372	649,583	X
Annual growth*	2,559	3,116	3,341	3,356	3,626	3,374	3,701	4,242		
Growth rate*	0.49	0.59	0.61	0.59	0.62	0.56	0.60	0.67		
% <15	18.5	18.2	17.8	17.3	16.9	16.6	16.4	16.3	16.2	X
%>65	17.3	19.0	21.1	23.4	24.8	26.3	26.5	26.8	27.1	X
% working age	64.2	62.9	61.1	59.3	58.3	57.2	57.1	56.9	56.7	X
% non working age	35.8	37.1	38.9	40.7	41.7	42.8	42.9	43.1	43.3	X
natural increase/decline*	1,004	1,201	1,028	599	370	-446	-762	-956		X
Annual Net Migration*	1,531	1,914	2,393	2,991	3,738	4,673	5,841	7,302		
replacement migration*	0	0	0	0	0	446	762	956		
% of Growth required from Migration*	59.8	61.4	71.6	89.1	103.1	138.5	157.8	172.1		X

*annual rate for the five year period

Scenario 2 Age Structure, 2053
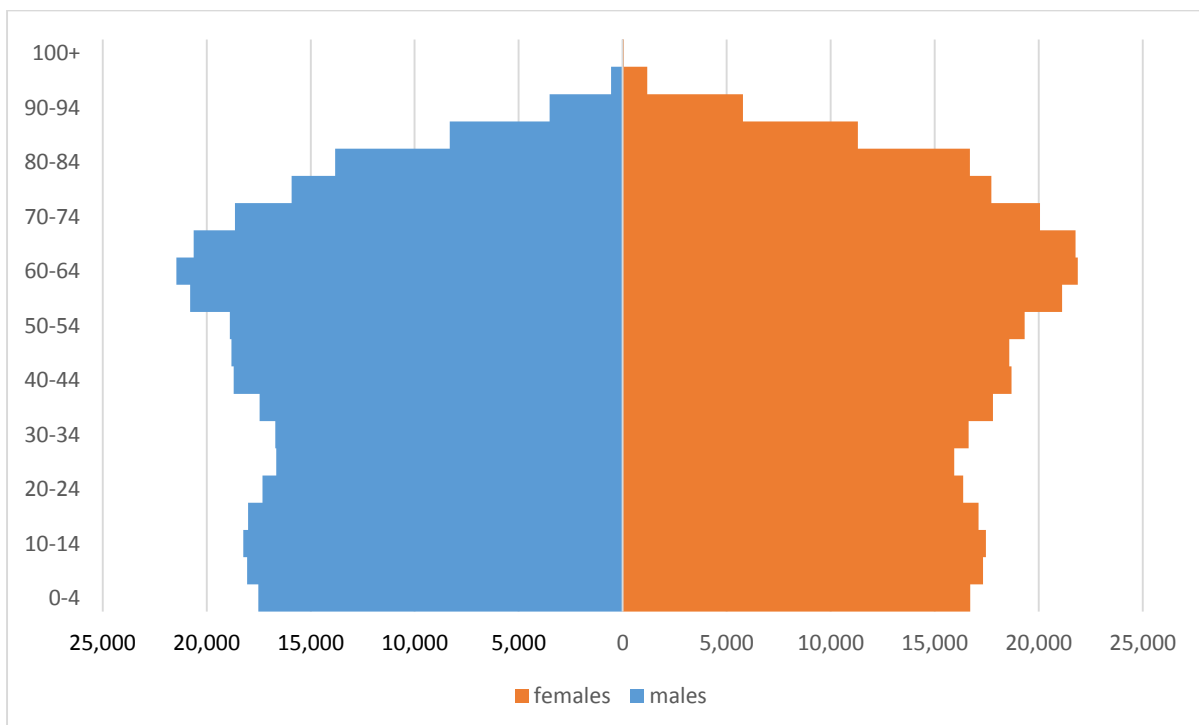
Scenario 3. Improve net migration for ages 0 to 49 by 15 per cent, and ages over 50 by 10 per cent (scenario based on reducing rate of ageing and capturing increasing baby boomers retiring)

Scenario 3	2013	2018	2023	2028	2033	2038	2043	2048	2053	
Population	513,012	526,055	542,074	559,379	576,949	596,079	614,281	634,554	658,102	√
Annual growth*	2,609	3,204	3,461	3,514	3,826	3,640	4,055	4,710		
Growth rate*	0.50	0.60	0.63	0.62	0.65	0.60	0.65	0.73		
% <15	18.5	18.2	17.8	17.4	17.1	16.9	16.9	16.9	17.0	√
%>65	17.3	18.9	21.0	23.2	24.4	25.6	25.4	25.3	25.1	√
% working age	64.2	62.9	61.1	59.4	58.5	57.5	57.7	57.8	57.9	√
% non working age	35.8	37.1	38.9	40.6	41.5	42.5	42.3	42.2	42.1	√
natural increase/decline*	1,004	1,201	1,093	709	534	-195	-392	-425		x
Annual Net Migration*	1,597	1,973	2,368	2,805	3,292	3,836	4,447	5,135		
replacement migration*	0	0	0	0	0	195	392	425		
% of Growth required from Migration*	61.2	61.6	68.4	79.8	86.0	105.4	109.7	109.0		x

*annual rate for the five year period

Scenario 3 Age Structure, 2053
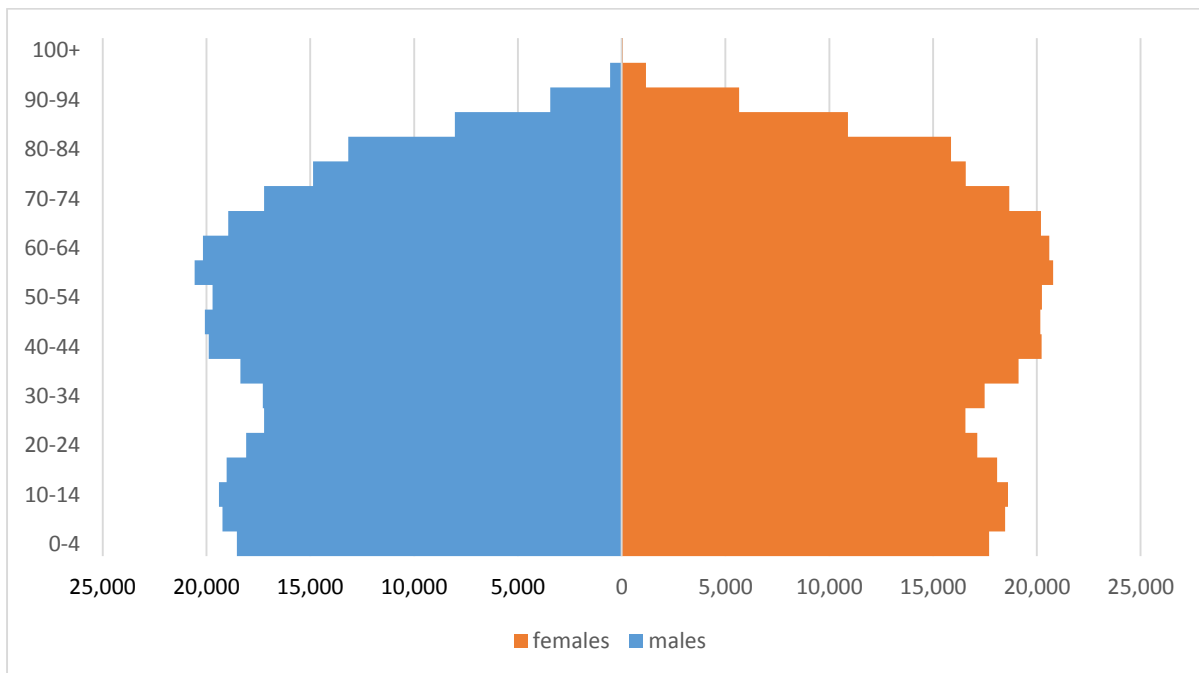
Scenario 4. Improve net migration for ages 0 to 24 by 10 per cent, ages 25 to 44 by 20 per cent and ages over 45 by 5 per cent (scenario based on emphasis of increasing business and skilled migration and working age population)

Scenario 4	2013	2018	2023	2028	2033	2038	2043	2048	2053	
Population	513,012	525,779	541,346	558,098	575,048	593,544	611,187	631,053	654,464	√
Annual growth*	2,553	3,113	3,350	3,390	3,699	3,529	3,973	4,682		
Growth rate*	0.49	0.59	0.61	0.60	0.64	0.59	0.64	0.73		
% <15	18.5	18.2	17.8	17.3	17.0	16.7	16.6	16.6	16.6	√
%>65	17.3	18.9	21.0	23.2	24.3	25.4	25.2	24.9	24.6	√
% working age	64.2	62.9	61.2	59.5	58.7	57.9	58.2	58.5	58.8	√
% non working age	35.8	37.1	38.8	40.5	41.3	42.1	41.8	41.5	41.2	√
natural increase/ decline*	1,011	1,228	1,089	710	549	-157	-325	-324		X
Annual Net Migration*	1,542	1,885	2,262	2,680	3,150	3,685	4,298	5,006		
replacement migration*	0	0	0	0	0	157	325	324		
% of Growth required from Migration*	60.4	60.6	67.5	79.0	85.2	104.4	108.2	106.9		X

*annual rate for the five year period

Scenario 4. Age Structure, 2053
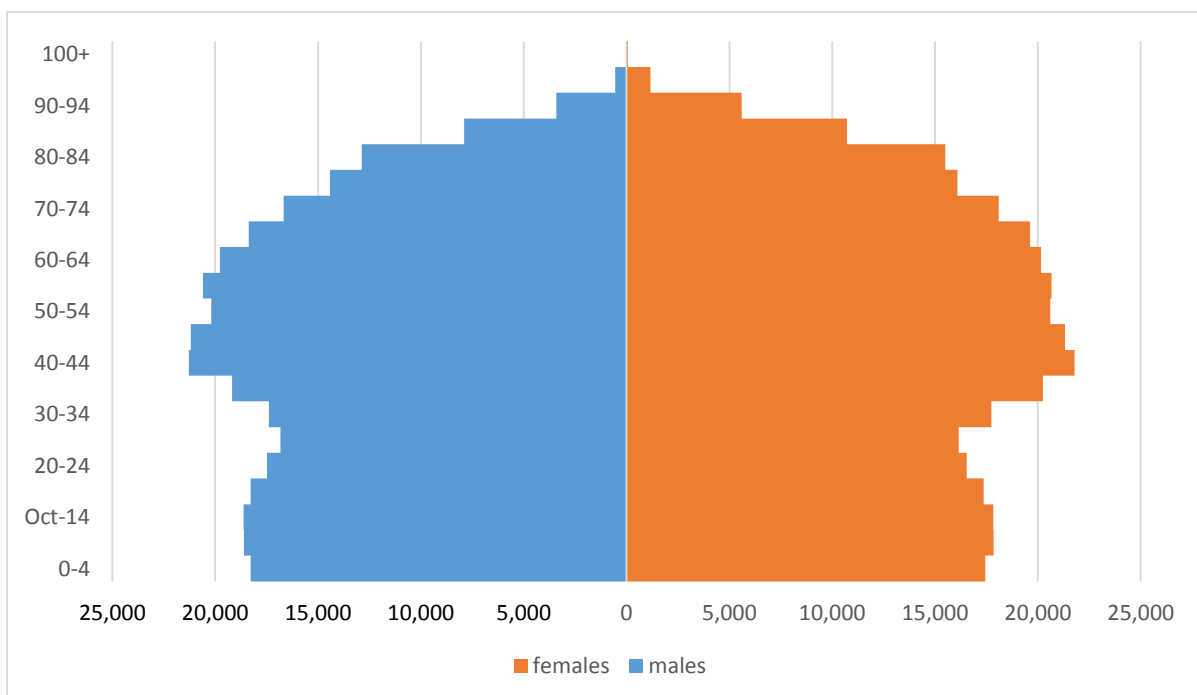
Scenario 5. Improve net migration for ages 0 to 49 by 15 per cent and for ages 50 and over by 5 per cent (scenario based on reducing rate of ageing only)

Scenario 5	2013	2018	2023	2028	2033	2038	2043	2048	2053	
Population	513,012	525,905	541,693	558,723	575,989	594,774	612,603	632,453	655,527	√
Annual growth*	2,579	3,157	3,406	3,453	3,757	3,566	3,970	4,615		
Growth rate*	0.50	0.59	0.62	0.61	0.64	0.59	0.64	0.72		
% <15	18.5	18.2	17.8	17.4	17.2	17.0	17.0	17.1	17.2	√
%>65	17.3	18.9	21.0	23.1	24.3	25.4	25.1	24.8	24.6	√
% working age	64.2	62.9	61.2	59.4	58.5	57.6	57.9	58.1	58.2	√
% non working age	35.8	37.1	38.8	40.6	41.5	42.4	42.1	41.9	41.8	√
natural increase/ decline*	1,012	1,234	1,102	733	581	-116	-276	-266		X
Annual Net Migration*	1,566	1,924	2,304	2,720	3,176	3,681	4,246	4,881		
replacement migration*	0	0	0	0	0	116	276	266		
% of Growth required from Migration*	60.7	60.9	67.6	78.8	84.5	103.2	106.9	105.8		X

*annual rate for the five year period

Scenario 5, Age Structure, 2053
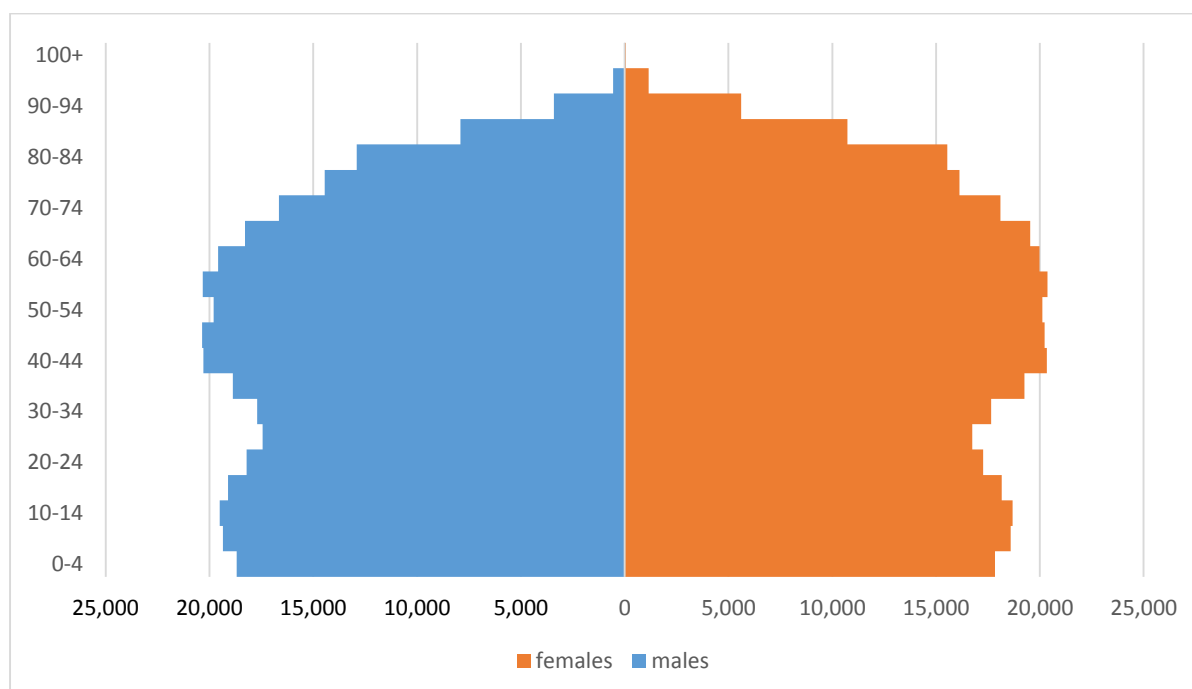
Appendix C: Incremental migration targets by age and gender

Scenario 5 Migration Targets for males and females by age for each of the five year projection periods to 2053

Male Annual Net Migration																	
Year	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75+	Total
2013 -18	130	78	71	-22	-208	-108	100	151	114	70	55	108	107	23	13	5	686
2018 -23	150	89	82	-19	-177	-92	115	174	131	80	57	114	112	24	13	6	860
2023 -28	172	103	94	-16	-150	-78	133	200	151	92	60	119	118	25	14	6	1,042
2028 -33	198	118	108	-14	-128	-67	159	230	174	106	63	125	123	26	15	6	1,245
2033 -38	228	136	124	-12	-109	-57	191	264	200	122	66	132	130	28	15	6	1,466
2038 -43	262	156	143	-10	-92	-48	229	304	230	141	70	138	136	29	16	7	1,710
2043 -48	302	179	164	-8	-78	-41	275	350	264	162	73	145	143	31	17	7	1,984
2048 -53	347	206	189	-7	-67	-35	330	402	304	186	77	152	150	32	18	7	2,292

Female Annual Net Migration																	
Year	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75+	Total
2013 -18	130	86	51	-65	-219	23	186	159	115	82	86	108	76	30	9	22	880
2018 -23	150	99	58	-55	-186	27	213	183	132	95	91	113	80	32	10	23	1,064
2023 -28	172	114	67	-47	-158	31	245	210	151	109	95	119	84	33	10	25	1,261
2028 -33	198	131	77	-40	-134	35	282	241	174	125	100	125	88	35	11	26	1,475
2033 -38	228	151	89	-34	-114	41	325	278	200	144	105	131	93	37	11	27	1,710
2038 -43	262	173	102	-29	-97	47	373	319	230	166	110	138	97	39	12	28	1,971
2043 -48	301	200	118	-25	-83	54	429	367	265	190	116	145	102	41	12	30	2,262
2048 -53	346	229	135	-21	-70	62	494	422	305	219	121	152	107	43	13	31	2,589

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