FINAL REPORT NO. 365

Population growth and mobility in Australia: implications for housing and urban development policies

From the AHURI Inquiry: Inquiry into population growth, migration and agglomeration

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Acronyms and abbreviations used in this report

ABS	Australian Bureau of Statistics
ACT	Australian Capital Territory
AGDPMC	Australian Government Department of the Prime Minister and Cabinet
AHA Survey	Australian Housing Aspirations Survey
AHURI	Australian Housing and Urban Research Institute Limited
CBD	Central Business District
COAG	Council of Australian Governments
DPLH	Department of Planning Lands and Heritage
FIFO	Fly-in-fly-out
GAIC	Growth Area Infrastructure Contribution
HILDA	Household, Income and Labour Dynamics in Australia
LGA	Local Government Area
NSW	New South Wales
NT	Northern Territory
QLD	Queensland
REIWA	Real Estate Institute of Western Australia
SA	South Australia
SA3	Statistical Area Level 3
SEIFA	Socio-Economic Indexes for Areas
SLA	Statistical Local Area
US	United States of America
WA	Western Australia
WAPC	Western Australian Planning Commission

Executive summary

Key points

- This study drew on population projection data from the Australian Bureau of Statistics (ABS) to track how the population has grown over the period 2006–16, and examine if and how this actual growth differed from projected growth. It then examined key drivers of population mobility in Australia to inform future urban development policy responses to demands on infrastructure and housing.

- The study finds that macro-scale population projections over the long-term largely align with overall population changes. The bulk of Australia's population growth has been concentrated in major cities, where projections were exceeded on the outer edges and inner city areas. Regional Australia has shared overall population growth, with only a few areas recording absolute population decline.

- Variances between actual and projected population growth were as a result of land releases, market conditions, and planning as well as demographic change, regional investment, labour mobility and commodity drive economies. These trends impacted upon the effective delivery of state infrastructure, the capacity to remain economically competitive, commuting patterns and the capability of local governments to deliver socially and economically healthy communities.

- Residential mobility is driven by housing and location choice, tenure, labour market related decisions as well as household composition. Renters are three times as likely to move as owners, while a person who is unemployed has a 20 per cent higher chance of moving compared to an employed person. Australians are more likely to travel long-distance from urban to regional areas or regional to urban areas as a result of a need to be closer to one's place of employment or study, or for lifestyle reasons.

- **This research was designed and commissioned prior to the COVID-19 pandemic. The implications of the pandemic on the findings have, however, been noted where possible, although we have been cautious to not speculate.**

Key findings

This study drew on ABS population projection data to track how the Australian population has grown over the period 2006–16, and examined if and how this actual growth differed from projected growth. It considered the local level responses to population growth exceeding or lagging behind projections before exploring the key drivers of population mobility in Australia, The findings contribute to the debates around housing and urban planning and population growth. The research itself was designed and granted funding before the COVID-19 pandemic. However, implications for the findings as a result of this sustained event are discussed throughout.

Profiling population trends

The research used annual projected growth rates for Statistical Area Level 3 (SA3s) nationally and calculated the difference between the actual and projected 2016 population for each geographical area to understand the divergence from the projections. Overall, the macro-scale population projections over the long-term largely align with overall population changes. The majority of Australia's population growth has been concentrated in major cities. Regional Australia has shared in the overall population growth with only a few areas recording absolute population decline.

Population projections are central to urban decision-making policies including housing, employment, education and health infrastructure as well as those components of place which contribute to a community's lifestyle. While state governments used projections with broad assumptions typically in line with the assumptions underpinning the ABS population projections, local governments frequently utilised small area projections, which considered information on land releases, building approvals and occupancy rates.

Variances between actual and projected populations

Despite the alignment of overall growth with projections, individual localities did experience variance between population projections and actual populations. A qualitative approach explored the impact of these variances for housing and urban development policies at the local level. In areas where populations exceed projections (high growth areas), variances were as a result of land releases, market conditions, and planning and occurred in expanding residential suburbs on the outer edges of cities, and the development of high-density housing in inner city areas. Where populations lagged behind projections (low growth areas), stakeholders explained population variances as a function of demographic change, regional investment, labour mobility and commodity drive economies.

Key drivers of residential mobility in Australia

Housing and location considerations are major drivers of mobility and location choice decisions. Modelling from the Household, Income and Labour Dynamics in Australia (HILDA) Survey found that the duration of housing tenure had the single largest impact on the decision to move versus stay among all the socio-demographic, work, income, housing and area related predictors in the mobility decision model. The typical Australian adult has resided in his or her residential address for approximately 10 years. At 10 years' duration, we found that the odds of moving are reduced by more than one-third (37%). This represented a larger impact than other important variables, including unemployment which increased the odds of moving by nearly one-fifth (19%) and life course transitions. In the case of the latter, couples with children were around half as likely to move as lone persons. Renters were found to be three times as likely to move as owners, possibility reflecting the high transaction costs of home purchase that impeded mobility and a lack of tenure security in the private rental sector. These barriers may deter labour market moves and contribute to a lack of labour market mobility on the part of Australian workforce and hinder the efficient functioning of labour markets.

Location choice was highlighted as another major factor in mobility decisions in our statistical analysis. Safety and security were highlighted concerns in the Australian Housing Aspirations (AHA) Survey, with three-quarters of respondents nominating this as an important factor driving dwelling choice. Furthermore, neighbourhood characteristics such as local shopping and walkability were also important.

Delivering socially and economically sustainable communities

Regardless of whether the population exceeded or lagged behind the projections, the impact of a variance between projected and actual population impacted upon the effective delivery of state infrastructure, the capacity to remain economically competitive, commuting patterns and the capability of local governments to deliver socially and economically healthy communities.

Local government initiatives responding to these variances were similar regardless of whether the populations were exceeding or lagging behind projections. Responses included the development of communication strategies with state government, regional leadership, research and advocacy.

Policy development options

The importance of population growth in determining housing and infrastructure needs was raised in 2018 at meeting of the Council of Australian Governments (COAG), where a framework to address national population planning and management was specifically considered., A National Population and Planning Framework was developed to improve the coordination between all levels of government. A number of policy development options emerged from this research:

Remove barriers to residential mobility

First, the econometric modelling findings support previous AHURI research, which have found lower mobility rates within the home ownership sector than the private rental sector. The findings may reflect stamp duties' role in acting as a barrier to home purchase and labour market mobility. The evidence provides further support for stamp duty reform to promote general and labour market mobility, which would improve the efficient functioning of the economy.

Improve tenure security

Second, the relatively frequent moves experienced by private renters suggest that tenure insecurity in the private rental sector is a pressing policy issue. This is a policy problem highlighted in previous AHURI research. The greater mobility of private renters observed through the modelling findings reflect, at least in part, tenure insecurity in the private rental sector. Given the continued tight rationing of the public housing stock, the private rental sector—already a sizable one-quarter of the Australian housing stock—will house growing numbers of Australians in the coming decades. This is likely to include those renting in later stages of the life course, as home purchase continues to be hindered by high real house prices for many young people.

Promote housing supply responsiveness and diversity

Third, there is a need to promote housing supply responsiveness in both metropolitan and regional housing markets through land release and infrastructure strategies. Statistical analyses from the HILDA Survey suggest that there is an appetite for moves from regional to metropolitan areas due to the need to be closer to one's place of employment or study. Hence, policies enabling long-distance mobility from metropolitan to regional areas are important to improve the labour market prospects of individuals. From a labour market perspective, it is particularly important to ensure housing supply in local areas can respond quickly to the housing needs of workers or job seekers in job-rich areas.

The AHA Survey also offers indications of an appetite to move from metropolitan to regional areas, as well as within regional areas. The HILDA Survey findings suggest this is prompted by lifestyle considerations. Hence, policies that enable mobility from metropolitan to regional areas benefit regional housing and labour markets in general. These include land release and infrastructure strategies that promote housing supply responsiveness to shifts in demand in regional areas.

Expanding the diversity of the housing stock is critical for supporting important life course transitions. Changes in family composition (e.g. marriage, moving in with a partner, or marital breakdown), feature consistently as relatively important reasons prompting all kinds of moves. This finding supports a case for improving the diversity of the housing stock to ensure the stock in the housing market continue to meet the needs of individuals and families as they transition through important stages of the life course that give rise to different housing needs.

Alignment of infrastructure with population development

Better alignment between infrastructure and population growth in urban and regional areas is required to mitigate the negative impacts resulting from its absence or lagging capacity. Stakeholders from both state and local governments both believe that more effective communication strategies could mitigate the impacts of the population variances. Local area population projections undertaken by local government provide an opportunity to develop population thresholds to signal potential changes to state level infrastructure delivery in a given area. A dedicated mechanism to feed imminent population changes back to state government is needed to aid the prioritisation of high-level investment.

Developer contributions to support local infrastructure delivery

The research found recognition among stakeholders that developer contributions are not working as effectively as they could in helping state and local governments respond to infrastructure needs. This was in terms of both the timely delivery of infrastructure that matches the rate of local population growth and the ability to respond effectively when the actual population growth exceeds the projections upon which the funding was based. The structure of developer contributions is one aspect impeding the capacity for local government to deliver infrastructure to support socially and economically sustainable communities. This is particularly in terms of the pace of infrastructure delivery and providing for actual populations, which are larger than those projected, and from an industry perspective, trust that services are being delivered with contributions levied. Currently, reviews are being undertaken to improve this effectiveness and the resulting structure should remedy the issues outlined. Ensuring that these elements are responded to in the reformed developer contribution guidelines is critical.

The study

Part of a wider AHURI Inquiry into population growth, migration and agglomeration, this project addressed Inquiry Research Question 1:

> What are the key drivers of population growth and mobility in Australia, and what do the identified effects imply for housing and urban development policies seeking to facilitate and respond to population change?

by addressing the following key research questions:

- **RQ1:** How does actual population growth compare with projected population growth in Australia over the period 2006–16 across different geographical areas? What factors have underpinned actual population change which has exceeded or lagged behind demographic projections?

- **RQ2:** What are the key drivers of different mobility and location choice decisions by Australians? How important are housing and area related drivers compared to personal reasons at different stages of the life course?

- **RQ3:** What do the identified trends and effects imply for housing and urban development policies seeking to respond to the needs of the changing population in Australia?

This project informs housing and urban development policies seeking to facilitate and respond to population change in Australia. It considers the extent to which housing and area related reasons influence mobility decisions and generates an evidence-base to inform the implementation of effective policy responses to foster effective investments in housing and related infrastructure (such as transport, recreation services and employment) in cities and regions.

Australia's population trends between 2006 and 2016 were profiled using a bespoke data set generated using ABS Census data. Annual projected growth rates were determined by extracting ABS projections for 2006 and 2016 from Population Projections 1999 to 2101 Cat. 3222.0 (ABS 2000) to estimate the projected growth rate from 2006 to 2016 at state level. The projected growth rate was applied to actual 2006 population numbers to estimate the projected population for 2016 for each SA3 region. Differences between the actual population for 2016 and the projected 2016 population for each SA3 region was then calculated to understand the divergence from the projections. Finally, the difference between the actual 2006 population and the actual 2016 population for each SA3 region were also calculated and the differences in population size were converted to an annual percentage change.

Key drivers of different mobility and location choice decisions by Australians were examined using a random effects logit model to estimate the odds of an individual making a residential move between two adjacent years as a function of their personal, housing and area predictors. The modelling drew on all 17 waves of data from the HILDA Survey to observe mobility patterns of individuals across the 2001–17 timeframe. Particularly suitable for analysis of mobility decisions because of its longitudinal nature, the HILDA Survey allowed observation of year-on-year changes in the residential location of each respondent. Simultaneously, it provided a comprehensive range of personal, housing and area characteristics that are potentially important predictors for mobility decisions.

To understand the impact of these population trends on housing and urban development policies, case studies were drawn from local government areas (LGAs) in Victoria, New South Wales (NSW) and Western Australia (WA). Case studies included SA3s with a population change which exceeded ('high growth') or lagged ('low growth') behind the forecasted aggregated population. Semi-structured interviews with 25 key stakeholders in 15 state and local governments and regional councils were conducted using video conferencing software. Interviewees included those responsible for strategic plans that address population issues and innovative housing and urban development approaches, for example demographers, strategic planners and economic and community development officers. The interview data was analysed thematically in reference to the earlier findings from this research.

1. Introduction

- **Over the last decade, Australia's population growth has eclipsed ABS forecasts and this growth is concentrated in the major capital cities.**

- **The uneven spatial distribution of population growth (and decline) presents particular challenges for housing and urban planning policy.**

- **There is a need for greater information about the spatial patterns of growth in Australia and the drivers of population mobility.**

- **Households move in response to factors such as employment, lifestyle, housing opportunities, education and health care but how do the drivers of mobility and location choice decisions differ by cohort and how do housing variables and area characteristics neighbourhoods influence whether or not a move is undertaken?**

- **Accurately forecasting patterns and drivers of population mobility is key to addressing growing demands on infrastructure and housing.**

This research is interested in why people move. Using data from the ABS, it begins by understanding patterns of population mobility at the SA3 scale. The analysis pointed to areas that had grown at a rate that was higher or lower than anticipated from projections generated 20 years ago. Micro- and macro-views of residential mobility decisions were then explored. From a micro, or individual perspective, this study examined the key drivers of population growth and mobility in Australia. Through analysis of the HILDA Survey and through expert interviews the study examined urban policy responses to the pressures which emerge from population growth and change. The research has identified how demographic, household and area level factors impact mobility decisions and, in turn, spatial variability in population growth and decline across Australia. This project was designed and commissioned prior to the COVID-19 pandemic and while the implications of this have been noted, we have been cautious to not speculate.

1.1 Population and mobility

Australia's population expanded from just over 21 million to 25.5 million residents between 2007 and 2019 (ABS 2020). In 2020, the ABS estimated that the rate of population growth, when considering births, deaths, new arrivals and departures, equated to about one person every one minute and 13 seconds (ABS 2020). While population growth of this magnitude is not unexpected in an economically prosperous and politically stable country such as Australia, arguably, the urban concentration of this growth has been greater than expected.

Around two-thirds of Australians live within a capital city (Infrastructure Australia, 2018) while about 90 per cent of the population lives in an urban setting, making Australia one of the most highly urbanised nations in the world (World Bank 2018). Against the backdrop of overall population growth, Australia has become increasingly urbanised over time, with the share of residents living in urban areas rising from 82 to 90 per cent between 1960 and 2017.

Importantly, Australia's population growth has not simply been concentrated in urban areas, it has been most significantly concentrated into the capital cities of Melbourne and Sydney, with considerable growth also occurring in the Brisbane-Gold Coast region. It is this unevenness in the spatial distribution of growth (and decline for some areas) that has presented particular challenges for housing and urban planning policy, and, in turn, the need for improved information about the spatial patterns of growth in Australia and the drivers of population mobility.

Australians are a residentially mobile cohort with 40 per cent of the national population changing where they reside every five years (Productivity Commission 2014). Mobility has contributed to the adjustment to structural changes in the Australian economy by meeting geographically shifting labour demands and plays in both shaping the places in which we live as well as being shaped by those who move towards or away from a given location (Coulton, Theodos et al. 2012; Productivity Commission 2014; Baker, Bentley et al. 2016; Clark, Duque-Calvache et al. 2017).

As households move, populations in the origin and destination may grow or decline in size. Households are moving in response to factors such as employment, lifestyle, housing opportunities, education and health care (Davies and James 2011; Clark and Maas 2015; Clark 2017; Whelan and Parkinson 2017). They are also attracted by what is on offer in the housing market—the dwelling and tenure options for example, which form communities or neighbourhoods (Clark 2017), where households place attachment, value and satisfaction. All of these variables provide the reasons that 'pull' households towards these places. In choosing a house or neighbourhood as a destination, households are selectively moving, migrating or sorting themselves by place (Clark and Morrison 2012; Baker, Bentley et al. 2016; Clark 2017). This process of selective migration or sorting 'is well established and understood among researchers as a substantial force shaping (and actively reshaping) our cities' (Baker, Bentley et al. 2016: 65), albeit a gradual process related to resources and preferences. Consequently, as population growth occurs in a spatially uneven manner, demographic profiles in given locations can shift and create locational inequity (Baker, Bentley et al. 2016). In a study on residential mobility and neighbourhood change, Coulton, Theodos et al. (2012), found that demographic changes that did occur within the community were a function of those households moving in, rather than changes to existing households.

What is less well known is how the drivers of mobility and location choice decisions differ by personal characteristics such as marital status, income, labour market history, retirement status and health during difference stages of the life course in Australia. Moreover, little is known about how housing variables and area influence whether or not a move is undertaken. Given the immediate and pressing challenge to policy in addressing growing demands on infrastructure and housing in Australia's rapidly growing cities and towns, understanding contemporary patterns and drivers of population mobility is critical.

1.2 Residential mobility and population change: Understanding why people move

Australia's residents are largely free to move within the country as they prefer. With the exception of Aboriginal owned land, there are few governmental restrictions that directly govern people's movements. This relative freedom has resulted in a pattern where the majority of Australian's live within Australia's capital cities—with economic, lifestyle and cultural factors all informing migration decisions (ABS 2000; Davies and James 2011; AGDPMC 2019). Over the last decade, the preference for Australians and immigrants to live in Australia's largest cities has placed considerable increased pressure on infrastructure, services and housing resulting in a need to better understand the drivers informing location choices.

Households move for a combination of interrelated reasons with residential mobility being viewed as a strategy to balance changing household needs with their environment (Rossi 1955). These reasons extend beyond the physical dwelling itself and include a response to employment, health and education services or recreational facilities or lifestyle opportunities, which are attached to a dwelling in a given location (Davies and James 2011; Marsh and Gibb 2011). Households consider the utility of these factors and weigh up the costs associated with moving and the perceived benefits of doing so (Clark and Maas 2015; Morrison and Clark 2016). A move will take place when the factors pulling a household to a destination are sufficient enough to overcome the natural inertia that prevents a household from moving (Lee 1966). Housing consumption, as a strategy to balance the needs of the household has long been, and remains, an important driver of mobility (Rossi 1955) resulting in neighbourhood and community growth and decline (Clark 2013). However, residential mobility is not always a choice with housing affordability known to shape the decision to the move and the final destination (Baker, Bentley et al. 2016, Rowley and James 2018).

Research on mobility in Australia has revealed that Australian households tend to have a preference for stability, with housing moves generally considered risky (Morrison and Clark 2016). The decision-making process around residential mobility is rarely as simple as a cost-benefit analysis (Marsh and Gibb 2011). However, Clark and Lisowski (2018) found that an adjustment in the life course stage of the household, combined with employment loss or change were the most likely catalysts to creating an intention to move.

1.2.1 Life course transitions, housing and choice

As households move through the life cycle, they make decisions around housing consumption like dwellings type and tenure and the location. Seminal work by Rossi (1955) linked residential mobility to the physical structure of the dwelling, in particular space. That is, at various stages of life, households have differing space requirements and when the physical space is not aligned with household needs, it was expected that they would move to balance or gain greater satisfaction with their housing (Clark and Onaka 1983). Since the 1950s, the life cycle has become more fluid and events such as leaving home, getting married or having children, are less associated with age meaning that household composition and mobility is more dynamic and a life course approach has been adopted (Clark 2017).

Households adjust their housing during the life course in response to changing needs and priorities which are linked to work, relationships and changing household structures (Clark 2017). For example, moves during early adulthood, at family formation or at retirement (Clark and Onaka 1983; Kendig 1984; Productivity Commission 2014; Clark and Lisowski 2018). The decision to move is distinct from the selection of the location, which is informed by a wider set of variables such as employment, lifestyle, education, and access to services (Speare 1974; Davies and James 2011; Productivity Commission 2014; Clark and Lisowski 2017; James, Rowley et al. 2019). Location selection is also informed by housing affordability, a factor driving mobility of both home owners and renters in Australia (Baker, Bentley et al. 2016; Rowley and James 2018). Although home owners have been found less likely to move than renters (Productivity Commission 2014; Whelan and Parkinson 2017).

Residential mobility, moving house in the same neighbourhood or to a different one carries a large degree of risk and is a stressful life event (Morrison and Clark 2016; Clark and Lisowski 2017). Households have an aversion to this risk, or the potential loss of what they possess because of the use value that they place or endow on their dwelling. Morrison and Clark (2016: 1082) noted that the use value that households place on their dwellings 'typically exceeds its change value, which in turn means there is a potentially large element of risk in changing residence.' The value placed on the home considers not only the economic, but also social aspects of the households' lifestyle making the decision to move complex (Morrison and Clark 2016). This might include changes to the neighbourhood or the breaking of old and formation of new social and employment networks (Clark and Lisowski 2019). That is, 'we value what we have - the reference point - and are loss averse.' (Clark and Lisowski 2019: 2). Therefore, as households weigh up what is to be achieved by moving, the endowment placed on the origin will require significant net gains to be made at the destination. Overall, those who are more risk averse, are less likely to move (Clark 2017; Whelan and Parkinson 2017)

In advanced economies, most households move to improve their locational advantage, and, as a result, much of the extant research is underpinned by an understanding that residential mobility is a chosen outcome (Baker, Bentley et al. 2016). However, there are more vulnerable households who find themselves displaced, or experiencing forced relocation (Coulton, Theodos et al. 2012; Desmond, Gershenson et al. 2015; Rowley and James 2018).

Forced residential mobility most often occurs in Australia when households may wish to remain in a given location, however, find themselves forced to move in response to lease arrangements, unaffordable housing (Baker, Bentley et al. 2016; Rowley and James 2018), or poor quality housing (Desmond, Gershenson et al. 2015). Evidence suggests that lower income households, renters and younger families move more frequently than others (Coulton, Theodos et al. 2012; Productivity Commission 2014; Baker, Bentley et al. 2016; Whelan and Parkinson 2017). Forced mobility was found to be associated with residential instability and, in turn, reduced the capacity to build trusting relationships between neighbours and reduced opportunity for social participation in the community (Desmond, Gershenson et al. 2015). Forced moves could also include those precipitated by unexpected events such as changes in health status within the households, which results in the need for a change in residence (Clark and Lisowski 2018; James, Rowley et al. 2019).

Conversely, some households may wish to move away from their current dwelling and or location. However, aspects such as access to employment and availability of affordable or appropriate housing may restrict a move from taking place (Clark, Duque-Calvache et al. 2017). Therefore, The decision to move or stay is, therefore, not a definitive indication of a household's satisfaction with their housing outcomes.

1.2.2 Employment

In Australia, there are strong links between residential mobility and geographic labour mobility (Productivity Commission 2014). Employment has often been associated with longer distance moves, while housing was thought to motivate those over a shorter distance, but the decision involving work and mobility are more complex and tied more closely to life course transitions (Clark and Davies Withers 2007). In urban areas, households are less likely to move to find work because it is often possible to access a range of work opportunities within commuting distance from home (Molloy, Smith et al. 2017). However, in Australia, long distance commuting practices do shape population flows. Employment-related geographical mobility where the population moves regularly for employment, for example Fly-In Fly-Out (FIFO) (Cresswell, Dorow et al. 2016) where the population moves on short-term, often regular basis, to where the labour is required. These moves are not without cost to households, government, employers and communities (Productivity Commission 2014). Individuals moving for employment related reasons move more regularly than most, as do young people, overseas migrants, single people or highly educated or skilled individuals.

Understanding why young people move is important from a policy perspective, particularly in relation to 'brain drain' – the loss of a highly skilled or educated workforce – from regional locations. Young people move for a range of reasons, including furthering education, employment and social opportunities (Davies 2008). A combination of career aspirations and familial ties were more likely to pull young adult migrants to a location compared to the characteristics of that location (Crescenzi, Holman et al. 2017). This highlights the importance of employment opportunities in the movement of young people in particular and the opportunity to trigger return migration.

1.2.3 Location

Attachment to place or location is generated through knowledge of a given space, through physical, social or economic interactions and connections within the neighbourhood (Clark, Duque-Calvache et al. 2017). Attachment to place can influence the desire to move (Clark and Coulter 2015) or the desire to stay put (Clark, Duque-Calvache et al. 2017). Proximity to family and friends, for example, feature more in the decision to stay rather than to move (Clark 2017). Some households move, but remain within the vicinity of their original dwelling, which Clark, Duque-Calvache et al. (2017) explain as being demonstrative of this attachment. A majority of residential moves in Australia are over short distances, like 10 kilometres or less (Productivity Commission 2014). This confirms the strong role that attachment to place plays in informing the migration decisions of Australian households (Clark and Maas 2015).

A concept linked to place attachment is residential satisfaction. Residential satisfaction relates to the dwelling itself, the location and also the experience of belonging to a neighbourhood. As such, residential satisfaction has long been understood as an inhibitor to residential mobility but not in isolation to other life course aspects (Speare 1974; Duque-Calvache, Clark et al. 2018). Location and neighbourhoods do form part of the search and selection process of the residential mobility decision, but the extent in which the characteristics of that neighbourhood informs the decision to move requires more research (Clark 2017).

Understanding why people move is important in predicting demand for housing supply in the future in terms of both the number of people and the demographic profile of those households. This knowledge can assist policy makers in anticipate settlement patterns which, in turn, can inform urban policy.

1.3 Research objectives

To better understand the implications of population growth and mobility for housing and urban development policy, this project examines the key drivers of population growth and mobility in Australia. While the factors of Australia's overall population growth relate to birth rates, mortality rates and international migration, population growth (and decline) is not occurring evenly in across Australia. The causes of this unevenness are complex and relate to housing, lifestyle, employment, cultural and geographical factors. To provide insight into these matters in the contemporary Australian setting, three lines of inquiry guided by the following key research questions (RQs) were examined:

- **RQ1:** How does actual population growth in each metropolitan (regional) SA3 compare with the aggregated population growth in its capital city (rest of state) in Australia over the period 2006–16? What factors have underpinned actual population change which has exceeded or lagged behind aggregated trends?

- **RQ2:** What are the key drivers of different mobility and location choice decisions by Australians? How important are housing and area related drivers compared to personal reasons at different stages of the life course?

- **RQ3:** What do the identified trends and effects imply for housing and urban development policies seeking to respond to the needs of the changing population in Australia?

Firstly, the study reviews the contemporary spatial patterns of population growth for Australia. Using data from the ABS, the project maps and compares population trends across metropolitan and regional SA3s between 2006 and 2016. This analysis sheds light on the geographical areas in which actual population growth has exceeded or lagged behind the aggregated population trends in each metropolitan (regional) area's respective capital city (rest of state).

Having established macro-patterns of population change in Australia between 2006 and 2016 and the broad drivers of spatial variability associated with housing, the second part of the study turns to identifying the factors that impact mobility and location choice decisions of Australians. In unpacking the mobility trends and drivers, we investigate how these differ across pertinent area-related factors (e.g. housing stock accessibility and diversity, access to services, access to job opportunities etc.) and personal factors (e.g. life course transitions, retirement choices etc.). The analysis extends previous qualitative AHURI research that examined the drivers of supply and demand in regional centres (McKenzie 2009; Beer et al. 2011) by implementing large-scale quantitative analyses that offers national coverage of urban and regional centres using the HILDA Survey. The analysis reveals the relative importance of housing and area related drivers at different stages of the life course.

The final phase examines the factors that may have resulted in divergence between actual and projected populations across SA3s in the recent decade to understand the impact of these trends on housing and urban development policies seeking to respond to the needs of the changing population in Australia.

Overall, this project will inform housing and urban development policies seeking to facilitate and respond to population change in Australia by:

- Shedding light on the extent to which housing and area related reasons influence mobility decisions by Australians

- Informing the Inquiry's critical evaluation of whether existing housing and urban policy approaches are appropriate to the needs of Australia's changing population

- Illuminating opportunities for the use of housing as a 'tool' in future policy focussed on stimulating or responding to population growth

- Generating an evidence base that can inform the implementation of effective approaches by governments to foster cost-effective and value for money investments in housing related infrastructure in cities and regions.

1.4 Research methods

The study uses a sequential mixed methods approach to answer the research questions. The research itself was designed and granted funding before the COVID-19 pandemic and, as such, the research design, methods and findings have been impacted.

1.4.1 Profiling of population trends

To profile Australia's population trends between 2006 and 2016, a special purpose data set was generated using ABS Census data. One of the challenges encountered was the lack of consistency in the spatial units used to organise data across the 10-year period. Specifically, 2006 Census data was not available in the SA3 geographic classification. The 2006 Census data was mapped to the SA3 spatial units following the method advised by the ABS.

Annual projected growth rates were determined by extracting ABS projections for 2006 and 2016 from Population Projections 1999 to 2101 Cat. 3222.0 (ABS 2000). Projections (Series 2) were used to estimate the projected growth rate from 2006 to 2016 at state level. The projected growth rate was applied to actual 2006 population numbers to estimate the projected population for 2016 for each SA3 region. The difference between the actual population for 2016 and the projected 2016 population for each SA3 region was then calculated to understand the divergence from the projections. Finally, the difference between the actual 2006 population and the actual 2016 population for each SA3 region were also calculated and the differences in population size were converted to an annual percentage change. Maps were created using geographic information system software and freely available ABS SA3 shape files.

1.4.2 Econometric modelling and statistical analysis of mobility decisions

A random effects logit model was used to estimate the odds of an individual making a residential move between two adjacent years as a function of their personal, housing and area predictors. The modelling exercise drew on Australia's only nationally representative longitudinal dataset—the HILDA Survey. The HILDA Survey commenced in 2001, collecting data on nearly 14,000 adult respondents. In every year subsequent to 2001, these respondents have been re-approached for interviews. At the time of this report's analysis, the HILDA Survey had been running for 17 years. The analysis drew on all 17 waves of the HILDA Survey to observe mobility patterns of individuals across the 2001–2017 timeframe. The HILDA Survey is particularly suitable for analysis of mobility decisions because of its longitudinal nature, which allowed observation of year-on-year changes in the residential location of each respondent. Importantly, it also provides a comprehensive range of personal, housing and area characteristics that are potentially important predictors for mobility decisions. Because of the panel nature of the data, we applied a standard panel data modelling specification, i.e. random effects. The logit specification is particularly suitable to analysis of binary outcomes, in our case, whether to move or to remain at the same address.

1.4.3 Qualitative analysis of urban development policies for population growth

Case studies were drawn from a group of SA3 geographical areas that exhibited a population change that exceeded or lagged behind the forecasted aggregated population. LGAs in Victoria, New South Wales and Western Australia, which incorporated the SA3s with 'high' and 'low' population growth patterns were selected as case studies. Those SA3s with very small population bases, where a small change would result in a misrepresentation of population growth, were disregarded in case study selection. SA3 boundaries do not always mirror local government boundaries. Therefore in some cases, representatives from multiple LGAs were interviewed.

Semi-structured interviews were conducted with 25 key stakeholders in 15 state and local governments and regional councils (Table 1). Interviews were held with those responsible for strategic plans that address population issues and innovative housing and urban development approaches. Participants included demographers, strategic planners and economic and community development officers.

Interview questions were developed following a review of contemporary policy frameworks conducted as part of population growth, regional connectivity, and city planning – international lessons for Australian practice – a project within the same Inquiry which investigated the planning approach of Australian state governments to both drive and manage population growth through housing-specific initiatives, economic development and infrastructure goals (Appendix 2). The interview data were analysed thematically in reference to the earlier findings from this research.

Table 1: Matrix of stakeholder organisations interviewed by state

State	Victoria	New South Wales	Western Australia
SA3 Growth Type	• 2 high growth SA3 • 1 low growth SA3	• 2 high growth SA3 • 1 low growth SA3	• 2 high growth SA3 • 1 low growth SA3
Interviews	• Department of Planning (2) • 2 LGAs in high growth SA3s (2) • 2 LGAs in low growth SA3s (3)	• 2 LGAs in high growth SA3s (3) • 1 LGAs in low growth SA3s (1)	• Department of Planning (2) • 2 LGAs in high growth SA3s (3) • 2 LGAs in low growth SA3s (7) • Regional development board low growth SA3 (2)

Source: Authors.

2. Profiling population trends before the COVID-19 pandemic

- The importance of population growth in determining housing and infrastructure needs was recognised in 2018 at meeting of the COAG where the need for a framework to address national population planning and management was specifically considered. To improve the coordination between all levels of government, a National Population and Planning Framework was developed and through the establishment of a Centre for Population, brings a coordinated approach to population planning, analysis and policy development spanning all levels of government.

- The study finds that macro-scale population projections over the long-term largely align with overall population changes. The bulk of Australia's population growth has been concentrated in major cities, where projections were exceeded on the outer edges and inner city areas. Regional Australia has shared overall population growth with only a few areas recording absolute population decline.

- Population projections provide a useful tool for planners and policy makers to determine future housing and infrastructure needs. Population projections prepared by the ABS and various government agencies are calculated by applying the cohort component method to data from the ABS Population and Housing Census. Considering how past population projections differ from actual observations of population change provides insights into the economic, land-use and/or cultural drivers of population settlement.

There currently exists a significant pool of commentary and statistics on population growth in Australia from the ABS, as well as Australian Government and state and territory government agencies. However, this project will contribute important new information that informs the policy debate around housing and urban planning and population growth.

The first Intergenerational Report was the catalyst to forming the office of Minister for Population (Buckmaster and Simon-Davies 2010). The report focussed on birth and mortality rates and net overseas migration to project an increase in the size of the Australian population by 2050, albeit at a slower rate than in experienced in the past (Department of Treasury 2010).

The Intergeneration Report projected that population growth was likely to put pressure on existing infrastructure and service provision and highlighted the need for governments to plan for future populations (Department of Treasury 2010). The report further noted the impact of this population growth on the environment including greenhouse gas emissions and water availability; and the requirement of early government action to reduce this impact (Department of Treasury 2010). Importantly, the report stated that 'much of a city's capacity to accommodate population increases while supporting productivity growth is reliant on the efficacy and adequacy of its infrastructure, including its housing stock. The sustainability of Australia's cities will also be dependent on better governance in the planning and organisation of city infrastructure and more efficient use of existing infrastructure' (Department of Treasury 2010: xv).

The Minister for Population was renamed Minister for Sustainable Population under the Rudd Government and oversaw the development of a sustainable population strategy including the impact of population growth on 'housing, infrastructure, employment and the environment' (Buckmaster and Simon-Davies 2010). Under the Gillard Australian Government, the office was known as the Minister for Sustainability, Environment, Water, Population and Communities.

The importance of population growth in determining housing and infrastructure needs has been recognised most recently at the December 2018 meeting of the COAG where the need for a framework to address national population planning and management was specifically considered (COAG 2018). In response, the inaugural Treasurers' forum on population was held in February 2019 with the purpose of ensuring that all levels of government can strategically plan for Australia's growing population (Trudge 2019). To improve the coordination between all levels of government, it was agreed that a National Population and Planning Framework would be developed.

In response to the outcomes at both the COAG December 2018 meeting and the Treasurer's Forum in February 2019, the Australian Government generated a plan for Australia's future population, which includes the delivery of the National Population and Planning Framework (AGDPMC 2019). Through the establishment of a Centre for Population, it aims to bring a coordinated approach to population planning, analysis and policy development that spans all levels of government (AGDPMC 2019).

2.1 Profiling of population trends methodology

To profile Australia's population trends between 2006 and 2016, a special purpose data set was generated using ABS Census data. One of the challenges encountered was the lack of consistency in the spatial units used to organise data across the 10-year period. Specifically, 2006 Census data was not available in the SA3 geographic classification. The 2006 Census data was mapped to the SA3 spatial units following the method advised by the ABS. See detailed notes in Appendix 1.

The following cases were excluded from the data set:

- Migratory-offshore-shipping SA3 codes (eight cases—one for each state and territory)

- No usual address SA3 codes (eight cases—one for each state and territory)

- Other territories—Christmas Island, Cocos islands, Jervis Bay and Norfolk Island

- SA3 codes, which had zero actual populations in 2006 (three cases).

2.1.1 Annual projected growth rate

To determine the annual projected growth rate, ABS projections for 2006 and 2016 were extracted from Population Projections 1999 to 2101 Cat. 3222.0 (ABS 2000). Projections (Series 2) were used to estimate the projected growth rate from 2006 to 2016 at state level. The projected growth rate was calculated as follows:

$$[(2016\ projected\ population - 2006\ projected\ population)/2006\ projected\ population] \times 100$$

The annual projected growth rate at a state level was established by dividing the projected growth rate by 10. The projected growth rate was applied to actual 2006 population numbers to estimate the projected population for 2016 for each SA3 region. The difference between the actual population for 2016 and the projected 2016 population for each SA3 region was then calculated to understand the divergence from the projections. Finally, the difference between the actual 2006 population and the actual 2016 population for each SA3 region were also calculated and the differences in population size were converted to an annual percentage change.

2.1.2 Spatial mapping

Maps were created using ARCGIS software. SA3 shape files were freely available from the ABS and were linked to the 2016 SA3 code for each geographic unit. The following variables were mapped for analysis:

- Actual population size in 2016 for each SA3, nationally and by state and territory

- Annualised rate of growth between 2006 and 2016 for each SA3, nationally and by state and territory

- Projected population size in 2016 for each SA3, nationally

- Difference between projected growth and actual growth between 2006 and 2016 for each SA3, nationally and by state and territory.

2.2 Population Size

Just over 64 per cent of Australia's population live in cities with over 1 million people (AGDPMC 2019). Living within medium size cities of between 100,000 and 1 million is a further 10.6 per cent of the population, with another 10 per cent living within small cities of up to 100,000 people (AGDPMC 2019). Regional towns of up to 10,000 people accounts for just under 10 per cent of the population. Only about 5.6 per cent of the population lives on rural properties (AGDPMC 2019). Figure 1 illustrates spatially uneven distribution of Australia's population as recorded at the 2016 Australian Population and Housing Census. Immediately observable from Figure 1 is the concentration of Australia's population along the east coast of Australia, in particular around major capital cities. This reflects historical settlement patterns, the economic dominance of the major cities and the liveability factors of these geographic locations.

Figure 1: Distribution of Australia's population, showing total number of residents in each SA3 in 2016
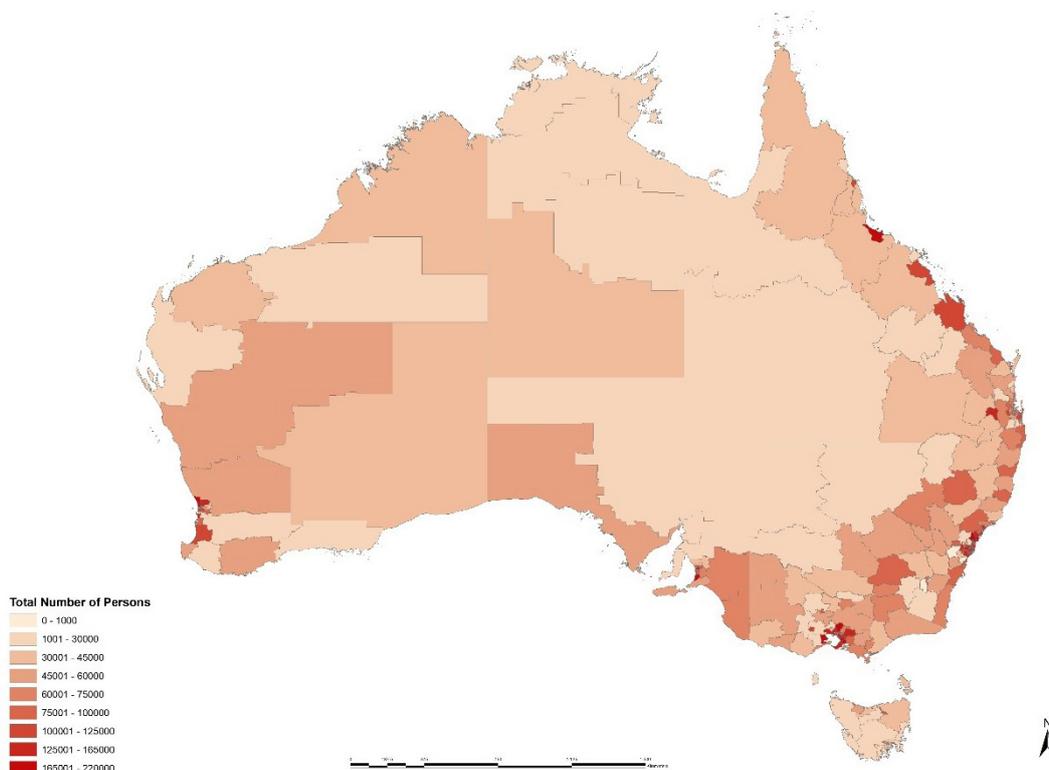
Source: Authors from the ABS 2019.

2.3 Population growth

Population growth was analysed at the SA3s spatial unit which is designed for the analysis of regional data. With populations between 30,000 and 130,000 people, SA3s encompass the functional areas of towns and cities with similar regional characteristics, administrative boundaries and labour markets (ABS 2011). There are 333 SA3s which cover Australia, 44 per cent of which are outside the metropolitan boundaries.

Figure 2 shows the observed growth rate per annum between 2006 and 2016 for each of the SA3s, revealing that in addition to a spatially uneven population distribution, there was also considerable spatial variability in the growth rate. Significantly, most of Australia's recent population growth has been centred within the largest cities. Indeed, between 2017 and 2018, capital city growth accounted for 79 per cent of Australia's total population growth, with this spatially concentrated population growth reflecting the trend of the previous decade (ABS 2019). Overall, between 2017 and 2018 the number of people living in Australia's capital cities increased by 2 per cent, where the national averaged growth rate was 1.6 per cent (ABS 2019). Melbourne, Australia's second largest city, experienced one of the largest rates of growth at 2.5 per cent (ABS 2019). Much of the growth that occurred outside of capital cities was concentrated in large cities that are within commuting distance to a capital city (ABS 2019). For example, in this research the North Lakes SA3 in Greater Brisbane, Gungahlin in the Australian Capital Territory (ACT) or Casey South in Greater Melbourne. With much of the last decade's population growth occurring within capital cities, concerns have been raised about the capacity of these cities to accommodate future growth. Indeed, the Australian Government's Department of the Prime Minister and Cabinet commented 'The Government recognises that the current rate of growth, and its concentration in major cities, has heightened existing pressures in these cities, leading to rising congestion and reduced liveability. The Government has decided to reduce the permanent migration program ceiling by a cumulative 120,000 places over four years. This is designed to reduce pressure on Australia's major cities while new arrangements for improved planning across governments and more infrastructure are put in place to manage long-term population growth and settlement across Australia' (AGDPMC 2019: 18).

Importantly, population growth (or decline) does not just result in change in the absolute number of people in a community, it can also result in changes in the demographic structure of a community. With much of Australia's population growth the result of international migration, the concentration of migrant populations into particular locations has resulted in a statistical over-representation of some ethnic or age groups in particular locations (Davies and James 2011). Similarly, some locations may have an overrepresentation or underrepresentation of people with social advantage or disadvantage (see ABS 2018). For example, the population growth being experienced in high amenity settlements in the south-eastern part of Queensland and northern coastal New South Wales is being driven by the movement of older Australian's as they seek warm climates and high amenity, well connected settlements for their later life phases (Davies and James 2011). Importantly, sustained changes in demographic structure drive changes in demand for services, infrastructure, and housing.

The following sections set out the core dimensions of population change experienced in each of Australia's states and territories between 2006 to 2016. While data about the change in the total number of people residing in an area provides important insight into the pressures resulting from population change, data showing the proportional rate of change is also revealing. Data showing annual population growth rates provides insight into magnitude of population change being experienced in an area and, in turn, the capacity of an area to absorb or adapt to the impacts of population change. As well as considering total population change, the following summaries also reflect on the annual rate of population change.

Figure 2: Distribution of Australia's population, showing the annual population growth rate between 2006 and 2016 for each SA3
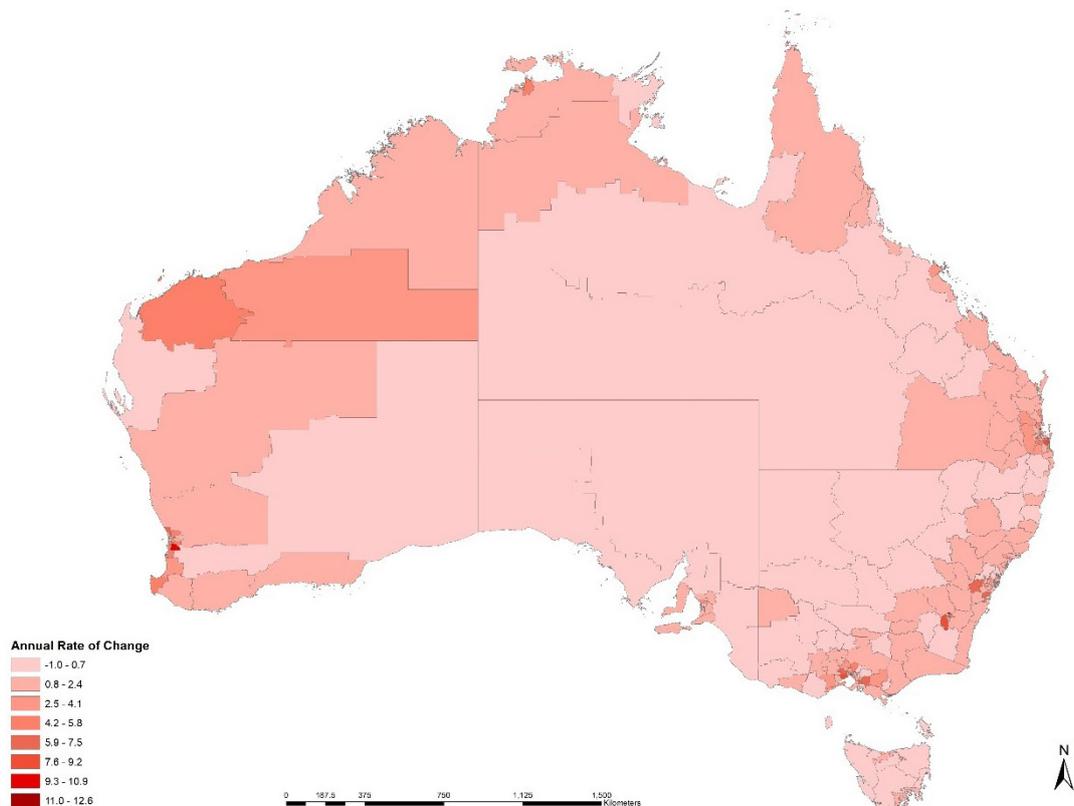
Source: Authors from the ABS 2019.

2.3.1 New South Wales (NSW)

NSW is Australia's most populated state and experienced considerable absolute (Figure A1, Appendix 3) and proportional (Figure A2, Appendix 3) population growth between 2006 and 2016. This growth was the result of both natural increase and net international migration. In absolute and proportional terms, major growth was concentrated in the capital city of Sydney and second tier coastal cities both north and south of Sydney. Importantly, growth occurred in both the inner and outer parts of major cities, with very significant growth rates observed in Greater Sydney's outer suburban SA3s including Blacktown, Penrith and Parramatta resulting from residential land development (Rowley, Gilbert et al. 2020). In line with elsewhere in Australia, remote areas in NSW experienced very modest population change, with regional areas that experienced mining, led economic expansion experiencing population growth.

2.3.2 Victoria

Victoria is Australia's second most populated state and, between 2006 and 2016, had the fastest growing capital city (Figure A3, Appendix 3 and Figure A4, Appendix 3). Much of Victoria experienced population growth with all major and regional cities including Ballarat, Bendigo and Geelong experiencing high annual population growth rates (Figure 6). As with NSW, the growth experienced in the capital was across both inner and outer parts, with some outer suburbs of Melbourne such as Whittlesea—Wallan and Wyndham experiencing very high growth rates. Remote parts of Victoria only experienced modest population growth, with Murray River—Swan Hill experiencing negative growth.

2.3.3 Queensland

In 2016, the capital city of Brisbane and the adjacent Gold Coast region were home to 58 per cent of the Queensland population (ABS, 2019). Both areas experienced considerable absolute population growth (Figure A5, Appendix 3) and proportional change (Figure A6, Appendix 3) over the period from 2006 to 2016. Ormeau—Oxenford, a suburb of the Gold Coast, grew by approximately 58,000 people or an annual average growth rate of 6 per cent. Springfield – Redbank, a Greater Brisbane commuter suburb, grew by approximately 36,000 people or an annual average growth rate of 7 per cent. Queensland's regional cities also experienced considerable population growth with, for example Townsville added 32,000 residents and experienced an annual growth rate of 2 per cent. Cairns added 30,000 residents and experienced an annual growth rate of 3 per cent. While most of remote Queensland experienced modest growth, the area classified as 'outback' declined by approximately 3,000 residents.

2.3.4 Western Australia (WA)

In WA, between 2006 and 2016, while the majority of the State's population growth was concentrated in the Greater Perth area, the overall distribution of the population between regional WA and Greater Perth did not change. This is because the high amenity coastal settlements in the southwest of WA attracted more than 35,000 new residents. Also, expansion of mining activities in the Pilbara region underpinned considerable in-migration to the area with approximately 20,000 people moving into an area that only had a population of 41,000 in 2006. Within the Greater Perth area, while all SA3s experienced population growth, as shown in Figure A8, Appendix 3, the highest growth rates were observed in the outer suburbs. Figure A7, Appendix 3 shows that in these suburbs, in addition to having high growth rates, some of the largest absolute population increases were observed. This growth resulted from expansive land development for residential housing (Rowley, Gilbert et al. 2020). Within the inner city area, established suburbs such as Belmont-Victoria Park (growth rate of 2.9% per annum) and Perth city (growth rate of 2.7% per annum) also experienced significant absolute population growth, driven by 'urban infill' residential development.

2.3.5 South Australia (SA)

Approximately 80 per cent of SA's population lived in the Greater Adelaide region in 2016, with the total population of Greater Adelaide growing by 174,000 people (Figure A9, Appendix 3). In 2006, only 76 per cent of the population lived in Greater Adelaide. Between 2006 and 2016, SA's total population increased by only 162,000 new residents. During this period, in each quarter there was negative net migration for Greater Adelaide, meaning that more people left Greater Adelaide than moved to Greater Adelaide (ABS 2021). This net negative migration was the

result of both more people leaving Greater Adelaide for an interstate destination than arriving and also more people leaving Greater Adelaide for a destination in regional SA than arriving (ABS, 2021). Focusing on regional SA, during 2006 to 2016, this area also experienced net population loss, driven by negative net interstate migration. Therefore, the overall population growth experienced in Greater Adelaide was the result of both natural increase and international migration.

Considering regional SA, the most significant growth that was observed occurred in the high amenity Fleurieu – Kangaroo Island region, which is popular as a lifestyle destination for retirees (Figure A10, Appendix 3). The high amenity region of the Barossa, which is adjacent to Greater Adelaide recorded modest population growth. Within Greater Adelaide, population growth was largely concentrated in outer suburban areas that had new residential land development such as Playford, Salisbury and Onkaparinga. However, the inner city of Adelaide also experienced an annual growth rate of 2.9 per cent driven by the development of new high-rise residential living options (Figure A10, Appendix 3).

2.3.6 Tasmania

Tasmania experienced only modest growth of approximately 33,500 people between 2006 and 2017, with an annual growth rate of 0.7 per cent (Figure A11, Appendix 3 and Figure A12, Appendix 3). The population of Tasmania's capital city of Hobart increased by almost 21,000 people, resulting in Hobart shifting from being home to 42 per cent of Tasmania's population to 44 per cent. Outside of Hobart, modest population growth occurred in Launceston which added approximately 5,000 people to its population and recorded a per annum growth rate of 1 per cent. The high amenity Huon—Bruny Island region recorded an annual growth rate of 2 per cent, however, given the small population this resulted in an increase of approximately 2,500 residents. The total population of the west coast region of Tasmania, dominated by primary industries, reduced in size by approximately 1,000 residents, with an annual growth rate of -0.5 per cent.

2.3.7 Northern Territory (NT)

Between 2006 and 2016, the NT experienced a per annum growth rate of 1.9 per cent, greater than the national average of 1.6 per cent (Figure A13, Appendix 3). Between 2006 and 2016, the NT added approximately 35,000 people to the total population. During this same time, the number of people living in the capital city of Darwin increased by approximately 31,000, with Darwin increasing its share of the NT population from 55 per cent to 60 per cent (Figure A14, Appendix 3). Unlike in other parts of Australia, some very remote areas in the NT experienced population growth, with the Daly—Tiwi—West Arnhem area experiencing an annual growth rate of 1.7 per cent, adding 2,200 people to the total population. In contrast to the population growth experienced in Australia's cities, this population growth was largely the result of natural increase.

2.3.8 Australian Capital Territory (ACT)

The ACT experienced one of Australia's highest per annum averaged growth rates between 2006 and 2016 at 2.1 per cent per annum (the ACT area is incorporated into Figure A1, Appendix 3 and Figure A2, Appendix 3). Between 2006 and 2016, the ACT added 69,000 people to the total population. The Canberra commuter suburb of Gunghalin absorbed nearly 40,000 new residents during this period with this growth driven by the extensive medium and high-density housing development in the area. Gunghalin's per annum growth rate during this period was 12.5 per cent, one of the highest in the country. Other parts of the ACT experienced modest growth, and, as with Gunghalin, this was driven by residential land development. The region of Turreranong, to the south of Canberra, and with extensive pastoral areas, experienced population loss of just under 2,000 people, or a per annum growth rate of -0.2 per cent.

2.4 Population projections

Population projections provide a useful tool for planners and policy makers to determine future housing and infrastructure needs. Population projections prepared by the ABS and various government agencies are calculated by applying the cohort component method to data from the ABS Population and Housing Census. The ABS provide a robust description of the method used for the calculation of the ABS's population projections (see ABS 2007).

Considering how past population projections differ from actual observations of population change provides insights into the economic, land-use and/or cultural drivers of population settlement.

Figure 3 shows the difference between the number of persons that were projected to be added (or lost) to an area's population between 2006 and 2016, and the number that were actually added (or lost). Areas where the total population change between 2006 and 2016 was greater than the projection are shown in red. The areas shaded in blue are those where the total population change between 2006 and 2016 was below projected. Most obviously, major cities and remote areas, generally, had actual populations in 2016 similar to what was projected. However, there are some points of difference. Perhaps most notably there are significant points of variance in outer suburban areas of major cities, with these areas containing far more people in 2016 than projected in 2000. For example, the outer suburban area of North Lakes in Greater Brisbane which recorded a population of 71,560 in 2016 compared to the 39,647 expected population.

Of particular relevance to explaining the difference between the projected and observed populations in major cities is that projections do not account for land development for residential housing. As noted above, population projections are developed using the cohort component method and, therefore, do not account for planned (or otherwise) land use change. Urban infill, development of high-rise apartments and the outward expansion of residential areas of cities has underpinned the greater than projected population growth in most major cities in Australia.

Similarly, in explaining the difference between the projected and observed populations in regional areas, it is important to consider that population projections do not account for economic expansion or contraction, such as that stimulated by the development or closure of mining operations.

Figure 3: Total number of persons difference between the projected population growth from 2006 and 2016 and the actual population growth for each SA3
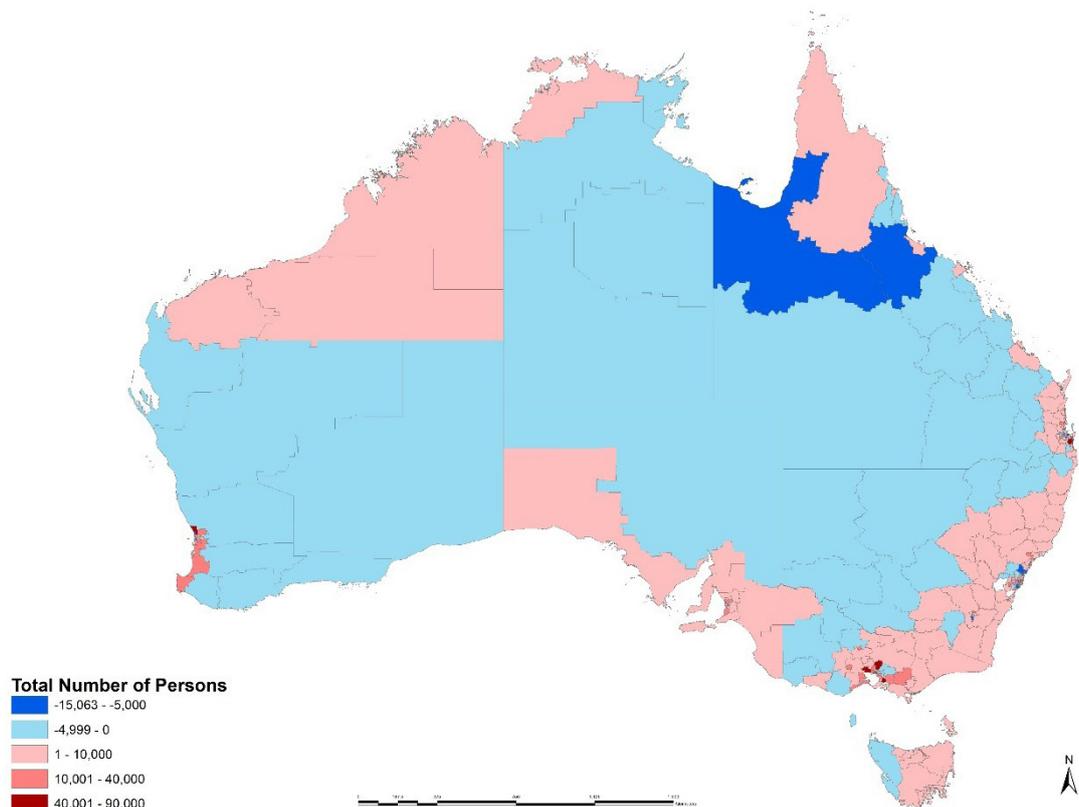
Source: Authors from ABS 2000, 2019.

From the analysis, nine SA3s were identified in metropolitan and regional Victoria, NSW and WA where large variances occurred between the actual population growth between 2006–2016 compared to the projected aggregated population. SA3 boundaries do not always match those of the LGAs, however, the identification of these SA3s informed the LGAs that would be approached to be involved in the qualitative component of the research. The details of these SA3s are shown in Table 2. Those SA3s with rates of growth exceeding the projections were identified as being 'high growth' and while those lagging behind the projections are described as being 'low growth'.

Table 2: Case study area

SA3 type	Projected population 2016	Actual population 2016	Annual growth (%)
High growth, Metropolitan Victoria	125,695	221,895	8.97
High growth, Metropolitan Victoria	99,209	153,438	6.62
Low growth, regional Victoria	37,219	37,040	-0.03
High growth, Metropolitan NSW	48,903	62,510	4.05
High growth, Metropolitan NSW	128,780	134,753	5.47
Low growth, regional NSW	22,744	20,217	-0.82
High growth, Metropolitan WA	14,816	26,873	10.57
High growth, Metropolitan WA	125,853	187,960	4.93
Low growth, regional WA	41,816	39,097	0.57

Source: Authors' own calculations from the from ABS 2000, 2019.

2.5 Summary

Between 2006 and 2016, Australia added approximately 3.75 million people to the total population, experiencing a per annum growth rate of 1.85 per cent. Data released by the ABS in 2019, that considers population growth since the 2016 Census, indicates there has been a recent modest decline in the growth rate to 1.6 per cent per annum. A trend that has remained since at least 2006 is for population growth to be higher in major cities than regional areas. While most of Australia's regional areas have shared in Australia's overall population growth, and only a few areas have experienced absolute population decline, the bulk of Australia's population growth has been concentrated in major cities.

When considering population projections, broadly it can be observed that the intensity of the population growth experienced in major cities outstripped projections (Figure 3). The higher than projected growth identified in some SA3s in major cities was underpinned by residential land development, planned to accommodate this growth. Most notably, the expansion of residential suburbs on the outer edges of cities and the development of high-density housing in inner city areas underpinned the observed difference between projected population and actual observed population in 2016. These findings concur with recent patterns of supply described in Rowley, Gilbert at al. (2020). For regional Australia, higher than projected population growth was influenced by developments in primary industries, in particular mining, which generated increased employment opportunities, as well as lifestyle-led migration to high amenity areas.

These population changes present a challenge to all levels of government in relation to a range of factors, including the delivery of housing, infrastructure, and transport (Simon-Davies 2012). An understanding of the changing population and importantly those factors that shape the mobility of the population should inform future urban development policies.

3. Population trends and urban development policy planning

- **Population projections are derived from a range of sources and important for strategic urban planning at both state and local government levels.**

- **Variances in population growth between 2006 and 2016 were as a result of land releases, market conditions, and planning as well as demographic change, regional investment, labour mobility and commodity drive economies.**

- **Variances impact upon the effective delivery of state infrastructure, the capacity to remain economically competitive, commuting patterns and the capacity of local governments to deliver socially and economically healthy communities.**

- **The local level response to population growth exceeding or lagging behind projections includes the development of communication strategies with state government, regional leadership, research and advocacy.**

Population projections play an important role in planning for growth. From a state government perspective, planning departments identify and re-zone land to cater for growing populations while local governments are tasked with the approval of development applications and the provision of local services and infrastructure. Accurate projections, in concert with an understanding of changes to the economy and environment that make regions attractive to households, are therefore important to develop strategies to accommodate future populations. Drawing on the findings from Chapter 2, nine SA3 case studies were identified in metropolitan and regional Victoria, NSW and WA where large variances occurred in the actual population growth between 2006–16 compared to the projected aggregated population.

Variation between the projected population size and the actual population size typically results from changes in land use between the time the forecast was made and the time the actual population was recorded. Land development for housing has long been a significant driver of spatial variability in population growth. Indeed, land development for housing on the urban periphery of some of Australia's largest cities has made a significant contribution to the overall population growth of these places. That noted, major expansion or contraction in local employment, planning controls and market mechanisms will also drive variability between the projected size and actual size of a population.

This chapter is focussed on understanding the impact of these variances in population trends on urban development policies when they are seeking to respond to the needs of the changing population in Australia. It begins by discussing the importance of population projections for state and local government and explores the sources of information used to monitor demographic changes of local populations.

3.1 The importance of population projections

3.1.1 State and territory government perspectives

Drawing on a range of data including Census data from the ABS, state and territory governments develop population projections for areas using a cohort component method at a range of geographic levels. These area-specific projections enable states to vary the assumptions that underpin projections, to accommodate for site specific variations such as industry expansion or proposed major land development. Demographers develop their own combination of assumptions for 'fertility and mortality and migration, but then we will stochasticise (sic) the assumptions, so we end up with basically a range, of forecasts. We tend to do 15-year time horizons for our forecasts' (state government stakeholder). However, all state and territory projections are designed to provide an estimate about the future size, distribution and demographic composition of the population.

These area-specific projections enable states to vary the assumptions that underpin projections, to accommodate for site specific variations such as industry expansion or proposed major land development. Stakeholder interviews revealed that population projections provide the basis for land use and strategic planning at a range of jurisdictional levels. For example, a state planning manager explained that population projections are:

> … a really central part of the picture that is put together to develop strategic plans, so you can get a really good handle on what might be the forecast growth for an area and also how that might be different across the city. … you can get a picture on how is the community changing an and then that can feed into what might be the different housing needs in terms of the quantum of change that might be needed to accommodate particular group of accommodate that forecast growth, which then also feeds into what kind of economic activity as in land area you might need to support the population serving businesses or land uses … (State Government Stakeholder)

Informing infrastructure delivery

The state and territory governments have a key role in the delivery of infrastructure, in particular health, education, transport and the coordination of utilities such as water, power and gas. The delivery of this infrastructure is informed not only by the number of people in a given area, but also by the demographic structure of the population as well.. Modellers are able to project how the overall demographic character of a population might change over time, which is critical for enabling planners to determine the future infrastructure needs for locations. A state planning manager explained:

> It's helpful to have something as a vision to shoot for and to have some sort of understanding. Is that linear growth, is it going to be quicker or slower in different areas, but equally as to how many [people] what … [are the demographic characteristics], so is it an ageing population? Is it a younger population? So that's got huge difference for your infrastructure demand, or you're talking about schools or you're talking about aged care? (State Government Stakeholder).

Population projections provide 'the evidence-base or detail in our planning across government' (State Government Stakeholder). For housing, they are useful in providing a basis for the coordination of infrastructure investment to support growing or demographically changing populations. However, in regard to the provision of housing, state and territory governments are limited in what work can be undertaken, for example:

> We [deliver] public housing. But in terms of the quantum of private housing, we don't. We're not developers. We try and get the planning settings right to enable that growth and change to occur to accommodate the forecast populations (State Government Stakeholder)

While state and territory governments can release appropriate land and plan for essential infrastructure to meet population growth projections, they are reliant on the private sector to deliver new housing supply. The drivers of private sector housing delivery, notably market demand and development costs, are out of their control (Rowley, Gilbert et al. 2020).

3.1.2 Local government perspective

In using population projections, local governments typically preferred to develop their own projections for small areas, as the assumptions can more readily be updated to account for changes in land use. Broader area projections developed by state and territory governments were also considered, often as a secondary resource. Interviewees preference population forecasts developed by commercial businesses who offer services in the delivery of population forecasts as well as housing and economic profiles. As one stakeholder from a high-growth area explained:

> We have [a commercial forecaster] prepare our population estimates. So we engage them annually to update our population estimates. And the data that we provide to [the commercial forecaster], we then provide to the Urban Development program [which then informs Victoria in Future] … So, we rely on [the commercial forecaster's] work, we don't tend to use Victoria in Future estimates or the federal government estimates we use our own. (High growth SA3, Metropolitan Victoria)

Similarly in low-growth areas, ABS and state-derived projections are considered. However, local governments work with commercial companies to the extent that:

> the point of reference that council has is the [commercial forecaster outputs] … Certainly [Victoria in Future] has been referenced, but I think it's probably more of the local obtained data [through the commercial forecaster] that informs decision- making rather than [Victoria in Future] … (High growth SA3, Metropolitan Victoria)

> We use [a commercial forecaster] … primarily because we find it more accurate. We also compare it with the [ABS Cat.] 3218.0, the regional population growth projections which come out each year off the ABS just to ensure that what we say we're achieving is reflected by the actual government statistics that do talk about the growth [that has] occurred (High growth SA3, Metropolitan WA)

The importance of local area population projections is particularly evident is areas of new residential land development where local governments can transition from few to multiples zones of development, and therefore rapid population growth, in a short period of time. A stakeholder in a Victoria urban growth area explained the shift from:

> … having no development in an area … to having 12 estates developed simultaneously … So that's where [the forecasting businesses] come in, they try and workout how many people they think will go into the [LGA] … and provide a guide on what they think each of the suburbs will accommodate in a given year, in the coming year and the coming five years (High growth SA3, Metropolitan Victoria).

Similarly in WA, it was explained that:

> … the ABS gives you almost a snapshot in time which is great if you're a pretty stable local government, that is not growing as fast as we are … because we are so fast growing we can't just rely on 2016 figures, we have to find alternative ways of projecting our information. (High growth SA3, Metropolitan WA)

The data used by commercial companies to regularly update small area forecasts may use more up-to-date information about the base population, such as building approvals, newly registered lots and occupancy rates. In WA, a stakeholder explains:

> We've found the way that they do population projections is really good because it takes the Census information and it adds things like the building plans. Every few years, it happens every three years, they physically count the number of houses and things like that. We've found that, for our part … very important … What we've found is that things change pretty rapidly and they have been able to give us pretty good estimations; they're pretty much on the money as far as our population figures go. (High growth SA3, Metropolitan WA)

This fine-grained process allows local governments, particularly in high growth areas, to recalibrate the expected population 'for each suburb, of how many people we actually think are in there now and then we have a recalibrated forecast for the years ahead' (High growth SA3, Metropolitan Victoria). There is therefore a temporal difference between the projections created by the state and the forecasting undertaken by companies. This temporal difference has a notable impact on the accuracy of projections with stakeholders recognising that it was hard to be exact in the short-term when delivering long-term projections, prompting expenditure on regular population updates:

> … and that's why we have an annual update. So what [commercial forecasters] were able to capture is that information on how many residential lots were released and in which suburb, the statement of compliance is issued, the occupancy permits issued, new curb side collections, which were listed and birth notices. (High growth SA3, Metropolitan Victoria)

Local governments have contracted, and work with, companies to update the forecasts with annual or three-yearly frequency, substantially more frequent when compared to what is possible at a state level. As a state government stakeholder explains:

> Sometimes it's just about the timing of when projections are produced. … if they do them a year ahead of ours, they'll have more up-to-date information and vice versa. (State Government Stakeholder)

Informing strategies to support social and economically competitive communities

From a local government perspective, population projections support and inform business cases, housing strategies and infrastructure such as leisure, retail and early childhood strategies and community infrastructure planning. In areas of low growth, projections also inform population attraction and retention strategies. As stakeholders from a high growth LGA explained of population projections:

> They're absolutely essential. They have to be. We can't plan without having that kind of data. (High growth SA3, Metropolitan WA)

> So some plans we will definitely use our population projections a lot. So recent ones, which we've done that is our housing diversity strategy our retail and activity centre strategy and our integrated transport strategy. So all three of those have definitely used it. Uh, other plans that council prepares use those as well. We have a community infrastructure plan. So how much community infrastructure is required and when should it be delivered and what stages. And our leisure and recreation strategies also use at extensively too. We are currently preparing an early childhood strategy as well. So … council across the board uses a lot of the population data to inform what we going to deliver and when we going to deliver it. (High growth SA3, Metropolitan Victoria)

Population projections, and, in particular, data that illuminates the changing demographic character of populations over time, are useful for targeted area planning and providing guidance about when services and infrastructure need to be delivered to populations. For example, the magnitude and rate of population growth will determine the delivery of resources required for younger people, such as sport and recreation or community facilities. Subsequently, local government stakeholders were concerned not only by the total number projected, but also the changing demographic characteristics of that population.

Population projections inform the timing and nature of land use planning and infrastructure delivery, the community and recreation services required, jobs needed and investment opportunities for businesses. They inform education needs, the number of key workers required and retail services. For some local governments, they also form the basis of housing need studies, which help set targets around dwelling diversity and affordable housing. While the total number of the population size is important, this needs to be understood in the context of the population structure. It is this understanding, which informs the development of housing and urban policies.

3.2 Population projection variance

Population projections are not growth targets, rather they provide information on what might occur over a specified time period. They also provide a tool for examining how, if policy settings are altered, the population size and demographic structure might change (Department of Planning Industry and Environment 2020). As noted in WA Tomorrow, population projections are 'particularly important to health and education providers in planning future infrastructure and service requirements such as primary schools and hospitals' (Department of Planning Lands and Heritage and WA Planning Commission 2019: 3).

Large area projections, typically developed by state governments, are designed to inform strategic planning at a macro-level:

> The state government projections are, in the first instance, done for macro-planning, really done for big infrastructure planning. They [are] done for hospital planning … planning that looks at large catchments. (State Government Stakeholder)

> … it doesn't matter when we hit these population benchmarks. … at a state government level, if one local government is growing and another is not, or one regional centre versus another … we might realise that state-level population growth over 15 years, [but] it was really bumpy and difficult for those communities along the way. (State Government Stakeholder).

> For local governments, small area projections that revise the base population data and adjust assumptions using localised information about dwelling approvals and occupancy are useful for enabling local government to plan for their service delivery activities.

The use and development of different projections, per se, is not problematic. Population projections are neither considered as targets nor considered to be absolute. Assumptions can be varied, and often are depending on the geographic and temporal scale of the model, with one stakeholder explaining:

> And we look at our projections and [if] they are wildly different and we don't know why … and we ask questions, but I'm sure it does cause issues that people do come to discussions with a different view of the future and the finer you slice and dice things down to smaller areas, the more likely it is that we have a different view, but then the more likely I'd be to trust the councils numbers because they've done lots of work at the very very very simple area, and we haven't necessarily. (State Government Stakeholder)

3.2.1 Drivers of population growth exceeding projections

Land rezoning and development for housing is the key driver of why areas experienced population growth in excess of projected growth. If a site is re or up-zoned, and built out during the projection period, this would lead to a greater number of people living in that location than would have originally been projected. If, for example, an area with a low density residential zoning was up-zoned to higher density, this will lead to an increase in population. This is also true where sites are brought forward for development that were not within scope during original population projections. As a local government stakeholder from WA commented, that rapid population increases at the SA3 level were 'predominantly driven by greenfield development … the transition of rural land into residential communities' (High growth SA3, Metropolitan WA). This is common across all states outside NSW (Rowley, Gilbert et al. 2020).

Other types of planning controls, outside broad zoning, were another factor identified as generating a mismatch between the forecast and actual populations. Stakeholders from east coast LGAs explained that planning controls stipulate a minimum lot size, however, there is no maximum across development areas. According to these stakeholders, planning departments draft planning controls in urban growth areas with flexibility in mind, not knowing when the land will be developed and cognisant that population needs may occur over time. However, 'they haven't left enough tools for those planning controls to be a little bit dynamic and respond to what's happening. Likewise, be able to at the very least put a cap and collar on it and say, no, it's going to be within this band.' (High growth SA3, Metropolitan NSW).

The impact of these planning controls wasn't immediate, rather, it was with hindsight that stakeholders began to see the patterns emerging in the development areas. As one stakeholder explained, 'the markets shifted and there was more appetite for smaller household lots and density is increasing, there was more appetite for say apartment construction. Developers will [therefore] be maximising as much return as they can and building the maximum density as it possibly can.' (High growth SA3, Metropolitan NSW).

For example, one local government in Victoria expected the growth area to deliver a minimum density of 16.5 dwellings per hectare. Instead, the 'precinct structure plan areas … [are] getting something closer to 18 dwellings per hectare being delivered (High growth SA3, Metropolitan Victoria). Similarly, in NSW the developers were thought to be achieving a '25 per cent higher yield out of the precincts than … they would have projected at a precinct local level (High growth SA3, Metropolitan NSW).

Subsequently, not only have the minimum number of dwellings been underestimated, the expected number of people per household has also differed. One local government in Victoria, found that while the planning documents forecasted for 2.8 people per household, they count '… somewhere between 3.2 and 3.6 people per household (High growth SA3, Metropolitan Victoria). Therefore, such planning controls can deliver population outcomes, which are different than expected.

Strong growth has occurred in many greenfield areas with households attracted to the urban growth areas by the affordable land prices, particularly when compared to sites located in more established locations and the subsequent shortage of affordable land and housing more generally. One stakeholder explained that:

> I think one of the main things was relatively cheap land; because we are on the outskirts of Perth … we had land that was available at relatively cheap prices and it just went gangbusters. … I think the main momentum was because it was relatively cheap land. (High growth SA3, Metropolitan WA)

However, local government has little control over the rate that developers bring forward stages within a master-planned subdivision, for example, or determine when the time is right for a new apartment development. Market conditions are therefore a key driver of the ability of a local government to accommodate population growth and rates of development may be different to those anticipated even within short-term growth forecasts.

Unsurprisingly, there are parallels between the factors driving the supply of housing and those driving population growth. These findings mirror those described by Rowley, Gilbert et al. (2020) in their examination of factors driving housing supply in NSW and WA. They too found the combination of increased land re-zoned for residential development, strong market conditions and the impact of development controls around height and density, inter alia, were driving new housing supply, which in turn, has resulted in a population size in these SA3s beyond the projected numbers.

3.2.2 Factors leading to population growth not meeting population projections

Not all SA3s had population growth rates that resulted in greater than projected populations. A small proportion of regional locations recorded actual populations, which lagged behind projections. Factors such as demographic change, commodity driven economies and the nature of those workforces and a lack of investment in major infrastructure, were described by stakeholders as primary contributors to the lower than expected annual growth rate.

Demographic change

Demographic change in these communities is a function of a structurally ageing population. Interviewees indicated that the population aged 65 years and over are ageing in place, moving to the SA3 for retirement or remaining employed and reside in the community for longer periods of time. These decisions to remain are paralleled by an outmigration of younger cohorts. Interviewees described how 'young people … were going to go on to further study or go back to their trades' (Low growth SA3, Regional NSW), a well-researched migration pattern (Argent and Walmsley 2008; Davies 2008). A stakeholder also explained that as children start or finish primary school, parents make decisions about the educational and associated opportunities that can result in them moving to the capital city. Counter-migration was also a factor noted to be shaping the population where young people had previously left, not always to a capital city, before returning:

> there's a flight of youth, that are going to not necessarily Melbourne, but regional centres, … uni[versitie]s for example in Warrnambool and also Geelong … where they're having to leave the Shire to study … but then return for that family connection. (Low growth SA3, Regional Victoria)

In one low growth SA3, 25–34 year olds were moving to the community for key worker employment such as police officers, teachers, allied health workers, nurses and doctors. Regional placements were often viewed as a stepping stone to their next career move, compelling the local government to consider how to retain them for a longer period of time:

> We've got this influx of 25–34 [year olds] and they all love it that have a ball. … but how do we keep them beyond that? (Low growth SA3, Regional NSW)

Community expectations and patterns of investment

Community expectations or preferences create challenges in both attracting and retaining the population for low growth SA3s. A stakeholder from a low growth SA3 expressed the view that expectations or preferences were 'a key driver of why people [want] to live in cities and coastal locations' (Low growth SA3, Regional WA). Mobility was thought to be driven by the availability of services and amenities viewed as being important for day to day and weekly needs. These might include state infrastructure such as transport, health, education, policing; as well as amenities that can be provided by the local government, for example childcare and recreation infrastructure. State and national investment in low growth SA3s was therefore, also thought to be a factor in the mismatch between population projections and actual population.

Investment in transport options were argued to shape the "… attractiveness of living in regional Australia" (Low growth SA3, Regional WA). One stakeholder in a regional location saw the absence of a local railway station to have contributed to the lower population growth, explaining that "where you put in good transport infrastructure that's where people go. It's one of the key things that people need to consider a place to live" (Low growth SA3,

Regional Victoria). Transport options not only need to be available, but they need to be affordable as well. Stakeholders in regional, low growth SA3s were conscious of the importance of being connected to other locations to be able to visit family and friends or go on holidays. However, as one stakeholder noted 'but when you got airfares that are one way or $1,100, which is the price of a return flight to the US … you can understand why connectedness becomes a real issue in regional Australia' (Low growth SA3, Regional WA). Regional stakeholders argue it will require a multi-government approach to provide the transparency and policy mechanisms required "to ensure that regional cities and locations have reasonable access to fast, affordable travel" (Low growth SA3, Regional WA).

Investment in social service infrastructure was also highlighted as an important aspect in creating a liveable environment that meets the needs of the population, supporting population growth or retaining existing populations. The following interviewee explains how a lack of infrastructure in education and health, in particular, has shaped the ability for population growth in their LGA as households are pulled towards locations with greater services:

> The biggest issue is people aren't going to go there [to low growth SA3s] because schools and education and health, so those places haven't grown. They were predicted to grow to significant amounts and now … families and things want to stay closer in residential areas, closer to major hospitals, major airports, major health campuses, education campuses. (Low growth SA3, Regional WA).

Patterns of investment influence the decisions of households to move to, or stay in a location and are considered by stakeholders to have contributed to the low population growth. One interviewee explained that it is the 'bigger infrastructure pieces that we need to improve liveability [and] we are struggling to get a little bit of traction at the moment' (Low growth SA3, Regional NSW). A function of state and national policy directions, stakeholders in low growth SA3s explained that investment in regional Australia by both the state and Australian Government is concentrated on the coast or around water, contributing to the lower growth in some inland regions, for example:

> They design road transport and stuff up and down [the coast] … major infrastructure doesn't get delivered in regional WA, because of state and federal policy. (Low growth SA3, Regional WA)

Despite WA having some of the geographically largest federal seats in Australia, stakeholders argue the relatively small populations within these seats shape the level of investment received. As one stakeholder from WA explained:

> There's just not the state or federal will to invest in regions, so there's just not the political appetite and will to—I don't blame them. That's their policy positions and things and there's not enough people there, … that's not how they get elected. … (Low growth SA3, Regional WA)

In some cases, developments and improvements are a result of private investment, often by mining companies, rather than the state or Australia Government. This investment takes they form of 'housing or contributions to community programs, sporting events, contributions to really local government' (Low growth SA3, Regional WA). Subsequently, services such as education, health and transport potentially remain underfunded. It could also be argued that while the view of planners is that they are responding to population change, there may be a role in them recognising their potential role in influencing change.

Commodity driven economy, geographic labour mobility and technology

The fluctuations of commodity driven economies create waves of migration. Industries such as agriculture and mining are at the mercy of global markets. Interviewees explain, the impact on population numbers from a large or sustained downturn can be significant as these industries move quickly to release additional staff. For example:

> If the commodity price drops you would expect within three to six months there will be significant redundancies and changes to the workforce structure. So those things happen very, very quickly. (Low growth SA3, Regional WA)

The subsequent downturn reverberates through the community generating population change through a range of sectors, including those that support these industries. The shift in demand for support services can result in residents not directly employed by mining, agriculture or manufacturing activities being forced to move in search of employment.

Long distance commuting—FIFO and drive-in-drive-out employees—has been one solution to respond to deliver labour supply to regional Australia, particularly in resource sector, communities since the 2000s (McKenzie, Haslam McKenzie et al. 2014; Haslam McKenzie 2016; Mayes 2020). Employees either live outside the town or urban centre and drive in daily, while other employees fly-in for a period of time. The population numbers in town ebb and flow with these cycles, delivering a scenario where jobs are attracting people to the region, local services and amenities are in demand, however.

Changes to the FIFO operating models have impacted upon the total population numbers. According to stakeholders, mining companies previously managed the flow of contractors to site. Some would fly-in-fly-out, but a proportion would be resident in the mining town. The shift to using contractors to provide the labour force for the sites has changed the number of permanent residents living in the local area. The contractors recruit a geographically mobile workforce and deploy them where and when skills are required. Although the proportion of workers hired directly by the mining companies and living in town has stayed the same, because a majority of site employees are hired through the contractor and commute to site, the actual number of people permanently residing in these centres has significantly reduced. For example:

> They [mining companies] only report on the … percentage of their workforces [who are] residential, they only talk about the employees that they employ themselves, not their contracted workforce … if you looked at [a company] … They have around 450 employees employed directly, but another probably 750 that are contracted and so this is significant disparity. And so when they report on percentage residential, they're reporting on that 450. They're not recording on their total 1,200 workforce. (Low growth SA3, Regional WA)

Population losses can also be a result of technology advances. For example, improvements in robotic technology saw the loss of 400 mining jobs in a low growth SA3 in Regional NSW in 2008. In addition, locations with historically strong manufacturing bases noted that population growth slowed as processes were streamlined, or companies were sold off. Communities dominated by agriculture have experienced similar population losses as technology advances have influenced employment opportunities. Throughout SA3s with lower than expected growth, labour hire arrangements as well as climate conditions such as flood or drought, have affected the workforces required.

3.3 Impact of [and responses to] variances between projected and actual populations

This section looks at the impact of population variance on the community and examines how local governments respond. As shown in Table 3, the variance impacts high and low growth area differently. Nevertheless, the impacts relate broadly to infrastructure and amenities, employment and the creation of liveable spaces, which support the social and economic viability of the community. In response, local governments communicate with the state government advocating for the needs of the community (Table 3). This advocacy relates both to responding to the projected growth, as well as trying to influence projected growth, such as seeking government investment in infrastructure as a mechanism for stimulating population growth above projected rates.

Table 3: Impact and responses to variances between state projected and actual populations in SLAs with population grow which exceeded or lagged behind ABS projections

Impact	Responses
High	
• Lagging infrastructure • Employment not in catchment • Stretched urban framework • Limited amenities and pressure on those which exist • Difficulty in delivering liveable communities.	• Research and advocacy/communication with state government to inform the sequencing of infrastructure investment • Economic development strategies.
Low	
• Lack of infrastructure investment • Capacity to remain economically competitive • Downward spiral of funding • Challenge in retaining attracting and retaining population • Difficulty in delivering liveable communities.	• Advocacy and collaboration • Regional leadership • Economic development strategies • Migration strategies • Tourism strategies • Education strategies • Strategies to improve amenities and recreation infrastructure, liveability and growth plans.

Source: Authors.

3.3.1 Aligning infrastructure investment to population growth

For areas that have undergone substantive population growth, there will be some degree of lag between growth in demand for, and provision of, infrastructure and services. Minimising this lag is a core concern of planning, and one for which population projections are central. According to stakeholders, the most significant lags to infrastructure provision occurred in regard to education and health facilities and the capacity of roads, public transport, and utilities. As this example demonstrates, when the population grows at a rate faster than expected, the community feels the impact:

> We have a significant problem with schools, I would say … we identify a school location, and we calculate [based on] what our forecast is on population, how many schools we need and we have the spots for them … So, we've got all the land allocated for that, but they don't deliver that, they can't. They can give the land to the state Government, but it's up to the state Government as to when they deliver a school. (High growth SA3, Metropolitan NSW)

Shortfalls such as this not only impact on the residents moving into the growth areas (and indeed the developer's ability to sell land/housing), but the whole local school community. It results in class sizes being increased, multiple start and finish times at a single school and in some cases the capacity to drop children off at the classroom, as this example illustrates:

> The public school [in the area has] one of the highest class numbers in the state…
>
> Yeah, so that's probably an example of when you do get these big supply gluts … when you reach these thresholds so quickly, things like schools … if that projection is not picked up on, then, yeah, in the short-term there are some real pinches.
>
> I think they've had to stagger their pick-up and drop-off times as well, because … the traffic was so bad around there.
>
> Yeah, they weren't allowing parents inside the school because it was just too many parents. It's also not really anywhere kids can catch a bus too. Everyone drives their children, would be my observation as well, not many people walk their kids in. (High growth SA3, Metropolitan NSW)

A similar scenario unfolded in another area where the population growth placed pressure on existing schools and required residents from the growth area to travel some distance to school:

> We are currently have a deficit of three primary schools and whilst new primary schools are being built … we [have] still got a backlog of primary schools that need to be delivered, there's a backlog secondary schools that need to be delivered. Means that we've got development occurring and more people moving into our new growth area, who don't have a primary school within five kilometres of their home and don't have a bus being provided to their estate. (High growth SA3, Metropolitan Victoria)

Lags in the provision of public transport infrastructure in high growth areas have resulted in car dependent communities. In one case, even with rail infrastructure in place, delays in constructing planned railway stations were resulting in car congestion on the roads and in surrounding park and ride facilities. Another stakeholder commented that:

> What we have got is … a very car-dependent community. So, that population is growing and they're all just using cars currently. (High growth SA3, Metropolitan NSW)

Car dependence shaped the journeys to work and subsequently created 'a morning exodus and an evening influx of people coming into the communities' (High growth SA3, Metropolitan WA).

Concern regarding the lag in services and infrastructure extended to the delivery of utilities such as water and power. In addition to the implications of the lag for residents, concerns were raised about the complexity and associated costs of retrofitting infrastructure to provide for the needs of larger populations. For example, a stakeholder explained that utility providers had:

> put all this augmentation in to cater for a certain [sized] population, [and then they say] 'now you're telling me it's increasing significantly; we need to re-look at what we planned for before' … Similar thing with power; they build substations that can provide power to a certain number of houses, if that increases then you need to look at the capacity of that substation and whether you need to build more substations. (High growth SA3, Metropolitan NSW)

Such deficits, or lags, in service and infrastructure provision are not unknown by state agencies. However, there was a dominant perception that the reason for the lag was that state agencies lacked awareness of the local area population growth trends. Communicating the magnitude of some lags to the state was sometimes regarded as being challenging, as one local government planner describes:

> I think the biggest impact, because people didn't realise how fast we were growing … they saw the figures [provided by the LGA] but they didn't understand the implications of it. … they didn't realise how quickly things were developing and therefore weren't planning for things. They were basically reactionary and we'd get a developer going, 'well, can I have infrastructure such as water?' [state government providers] basically laughed at us and said, well, why do you need to develop [water infrastructure] there? … What's the point of doing that? (High growth SA3, Metropolitan WA)

In the above example, the local government were faced with a rapid influx of 20,000 people as the result of agricultural land being developed into housing. The new residents were not satisfied with the level of transport or education infrastructure provided in the area. One stakeholder recalled that disgruntled residents confronted their local members about the lack of infrastructure however 'when the politicians and the officers go up to the [state] agencies, the agencies basically say, well, there's nobody down there, why would you want to plan for that?' (High growth SA3, Metropolitan WA). This example highlights a communication issue between levels of government underpinned by the variance between projected and actual populations in this SA3. The stakeholder went on to explain that the development of a Coles supermarket, which recognised the huge increase in demand, became a catalyst for government to reconsider their infrastructure investment strategy in the area.

While the perception is that the state was not aware of the population growth, the infrastructure lag is more likely to be a result of state government models to prioritise and sequence the delivery of infrastructure in response to population demand, in contrast to the private sector which invests in anticipation of population growth in an area.

Infrastructure sequencing

From a state government perspective, the coordination and delivery of infrastructure such as utilities and roads, necessarily sits ahead of services that could be developed as the community matures. For example, a state government stakeholder puts the development of housing as the centre point, recognising that without that the population can't move in, the challenge arises when areas develop in response to market activity rather than where it was anticipated by population projections:

> … we talk about residential being the main thing that's going to change a population, although they need a job. But leaving that aside, the houses, they need pipes and wires, so you can't get your final approval if you don't have your water connection and you don't have your power connection, you don't have sewer. (State Government Stakeholder)

However, the interviews revealed that there is a concern regarding the misalignment of new residents' expectations about the provision of infrastructure such as school's health facilities and public transport and the realities of what and when these could be delivered. For example:

> We've been delivering housing reasonably well. I think in terms of the growth areas, the developers sell the future vision of the community to sell their product and then I think that there might not be that understanding [by purchasers] that some facilities will lag … so people come in expecting to have everything that they've been sold that are on the plan but then it's time for us to be able to deliver those. (State Government Stakeholder)

Nevertheless, the impact of these delays on the communities is recognised. For example, Plan Melbourne 2017–50 specifically notes the need to improve the coordination between the delivery of land supply and supporting infrastructure, as 'poorly managed releases of land can result in higher living costs for residents, as well as limiting access to workforce opportunities and education and health services' (Department of Environment Land Water and Planning 2017: 51). The implementation plan subsequently requires the preparation of a sequencing strategy in these growth areas to promote the coordinated release of land and infrastructure provision to ensure that basic community facilities are delivered including state and local infrastructure (Department of Environment Land Water and Planning 2017).

A communication issue

Improved communication between state agencies, local governments, developers, and community members was viewed as critical to improving the management of the lag in the delivery of high-level infrastructure, particularly in areas experiencing rapid growth, and managing community expectations about infrastructure. According to stakeholders in state government, population projections should inform the broad direction but should also be a conversation starter:

> I think conversation is the is the right word … it is about a conversation between government, developers, the community and … the best way to make something happen is to listen to the community and find out how they will accommodate it … it's not just top down, it's both ways, so I think it is conversation that the key word? (State Government Stakeholder)

In Victoria, a number of local government stakeholders described having a staff member working alongside the state planning department advocating for council and providing a conduit of information between the two agencies: ' … we liken it to the Victorian Planning Authority are in the driver's seat, and council … allocated an officer who act like the Navigator for the Victorian Planning Authority, so will work closely with them.' (High growth SA3, Metropolitan Victoria).

The advocacy role is strengthened by research that council uses to anticipate where the next infrastructure demands might occur. For example, in regard to transport rather than wait for the agency to undertake schedule monitoring, Council undertook their own works:

> … monitoring how our intersections are going into our roads … [to identify high flow areas] … to try and alleviate some of the congestion which is occurring within the municipality. (High growth SA3, Metropolitan Victoria)

In other cases, research has informed the development of advocacy policy as well as providing an evidence-base 'that supports the call that we make for infrastructure that's needing to be funded by other levels of government' (High growth SA3, Metropolitan Victoria). In these cases, infrastructure lags still exist, however, 'at least there is a conversation' (High growth SA3, Metropolitan Victoria).

By contrast in NSW and WA, the absence of a conduit between growth areas and the state government was viewed as a barrier—making it difficult for local governments to provide information back to state agencies:

> We spent a lot of time trying to convince [public transport authority], state departments, state agencies, [and] politicians that there were more people [in the growth area] than they were really expecting. (High growth SA3, Metropolitan WA)

> We've taken them on bus tours around and saying, those areas where … you said there weren't houses, well here's a street [laughs]. (High growth SA3, Metropolitan NSW)

Prioritising infrastructure delivery and supporting investment

Regardless of whether it is road, rail, education or health services in high growth or low growth area, the challenge for the state government is prioritising where investment in infrastructure should be made and when this should occur. A challenge for state governments can occur when high and rapid growth occurs on multiple fronts in the urban area, that is in multiple areas are reaching a range of infrastructure thresholds at once. As a state planner explained:

> We have to consider all of our infrastructure spend before we decide value for money, this area versus this other area is going to go ahead. Previously, there's been many, many development fronts, and I think as a state government, we're under financial pressures. (State Government Stakeholder)

State government provided infrastructure investment is ultimately, however, informed by the state government budget and decisions have to be made about where to plan to invest next. As a state planner explained, the purpose of the budget is to ensure that state delivered infrastructure are:

> … funded in a collective way. We work with treasury to make sure that they can have a spatial understanding of what is to be expected when, so they're making good funding decisions. (State Government Stakeholder)

3.3.2 Delivering liveable communities

From a local government perspective, the overarching impact of variances between projected and actual populations is their ability to deliver the low level infrastructure necessary to ensure the social and economic wellbeing of the community. Stakeholders often referred to this as 'liveability' that is, the availability of community services, local and regional transport links, economic and industry growth, education, health and recreation services and reaction facilities and public open space.

Population projections inform the delivery of local services including public open space, community centres, libraries, and recreation facilities. Some infrastructure is delivered by the local government, while other parts may be co-funded through state and national initiatives. Aside from investment in high level infrastructure, which local government has limited controls, other factors impeding the delivery of liveable communities include:

- Inadequate developer contributions and a mismatch between local employment opportunities in high growth areas and the number of people of working age.

- Employment opportunities (or knowledge of these opportunities) and supporting infrastructure, services and amenities in low growth areas.

Developer contributions and infrastructure delivery

Councils of new residential areas aim to align the delivery of the community infrastructure, to an extent, with the arrival of the new community. One substantial avenue to achieve this, is through developer contributions. Levied by the local government through the subdivision and development process, developer contributions are designed to meet and enable the coordinated delivery of physical and social community infrastructure (Department of Planning Lands and Heritage 2019). Contributions might be in the form of monetary contributions, land that may be used for schools, public open space or roads, construction of infrastructure to be transferred to relevant government agencies on completion, works-in-kind, or a combination of these (NSW Department of Planning Industry and Environment 2020, Victorian Auditor-General's Office 2020). Councils estimate the infrastructure required for the population and prepare a developer contribution plan outlining needs and costs. On this basis, a contribution rate, either per dwelling or on area, is levied. Once developer contribution schemes have been adopted by all parties, the ability to revise is limited.

Stakeholders reflected on how these schemes can impede infrastructure development in new residential areas, first in terms of the pace of delivery and secondly, when there is a shortfall of contributions due to a variance between projected and actual populations.

The first challenge described by local government was delivering infrastructure at a speed of delivery that matches the rate of local population growth. For example, a stakeholder from NSW described a development scenario that included multiple owners, all developing sites on different schedules with development contributions required at various times. It was explained that '200 different owners and each of them will pay us a certain amount of money. But we can't build things until we get the whole amount … we can't use a quarter of the money to go build a quarter of the park' (High growth SA3, Metropolitan NSW).

The second challenge was the ability to fund additional infrastructure when the actual population exceeds the projections upon which the funding was based. One stakeholder explained:

> When the population exceeds the projected numbers, it affects the capacity of the local government to provide the infrastructure for a socially and economically healthy community. For example, we forecast in our contributions how much open space is needed by population number. So, if those population numbers come up quite a bit higher than our forecast … you can't go and get that land back [to increase the community infrastructure]. (High growth SA3, Metropolitan NSW)

Further where such a variance occurs, smaller local governments with a less established rate base, could potentially be placed in precarious situations in trying to provide for these shortfalls in the bid to create a liveable community for all residents. For example:

> Things like ovals, pavilions, change rooms, district community centres, libraries, that kind of stuff. Activity play centre or activity parks. The shire has had to basically use ratepayers money to build infrastructure which has not been provided which obviously for a … shire with a relatively small rate base is putting us in a rather precarious position. (High growth SA3, Metropolitan WA)

In response, local governments often use local housing strategies to highlight the mismatch between population and community infrastructure or capital works programs to prioritise the early delivery of services in new suburbs. Alternatively, development contribution plans drafted 'which essentially asks the developers to pay for whatever infrastructure that they are putting in rather than getting it from the state because we're probably not going to get it from them' (High growth SA3, Metropolitan WA).

Reviewing contribution schemes

Developer contributions are not working as effectively as they could in helping state and local governments respond to infrastructure needs. For example, the development industry in WA is critical of local governments not spending the funds collected to deliver the intended social infrastructure (Emery 2018; REIWA 2019). In Victoria, the Growth Area Infrastructure Contribution, payable by developers of land brought into the urban growth boundary in 2005–2006 was implemented to fund essential state infrastructure in within the new growth areas (Victorian Planning Authority n.d). Despite the additional funding, a recent audit of developer contributions found this contribution to be ineffective in providing the infrastructure required (Victorian Auditor-General's Office 2020). A strategic planning coordinator explained that:

> The growth area infrastructure charge only really covers about 15% of the cost of that new state infrastructure. So already there's quite a gap … the further we stretch the city the more challenging is the task of providing that infrastructure to those communities because it all has to be delivered by the one state budget. (High growth SA3, Metropolitan Victoria)

The infrastructure contributions system is currently under review in NSW in recognition of the continued growth in demand and costs for infrastructure, under supply of housing, challenges associated with the bushfires and COVID-19 at the state level (NSW Productivity Commission 2020). From a local government perspective, councils increasingly need provide services, despite a regulated rates budget and against a backdrop of population growth, demographic change and rising costs (NSW Productivity Commission 2020). In WA, as part of their response to the draft State Planning Policy on infrastructure contributions, industry is seeking transparency regarding how funds are calculated, who pays the funds and better management of the funds (REIWA 2019). This response has been prompted by concerns that LGAs are not spending developer contributions on infrastructure and have amassed considerable funds.

Supporting local employment growth

Land releases and subsequent housing developments have drawn populations into the growth areas at a faster rate than local job creation. In one local area 'the 2016 Census [recorded that] there were 25,000 jobs … and … 60,000 workers within the municipality' (High growth SA3, Metropolitan Victoria). Limited local employment forces the working age population to journey away from the SA3s to access employment further exacerbate the car dependence in areas of higher population growth.

Local governments are responding to this deficit through the creation of economic development strategies. This was a big focus for a number of LGAs with high population growth, although also a challenge 'without some of the big counter lever pieces of infrastructure which can drive that along' (High growth SA3, Metropolitan NSW). In one example, funding from a national and state grant was used to establish a 'business accelerator and centre of excellence … a business incubator … that's really helping grow the maturity of businesses within the municipality' (High growth SA3, Metropolitan Victoria). Employment is also being aligned with further projected population growth with the identification of employment precincts to generate local opportunities through a centres and employment land strategy. It has been recognised that 'those local opportunities could be missed if that land's not set aside' (High growth SA3, Metropolitan NSW) before more land for housing development is released.

Community infrastructure to maintain and grow populations

According to stakeholders, the impact of actual populations lagging behind projections is cumulative. It's the impact of a range of factors which leads to the population being either maintained or growing. As a stakeholder explained:

> … so you need jobs, [and then people] will move through the region to work, but they are going to stay and be attracted the regions because the services and amenities are comparable to other centres. So the minute either the jobs stop or the liveability and the services drop then your population is going to be impacted (Low growth SA3, Regional WA).

Councils have worked to identify and improve the lifestyle characteristics within the LGAs. These include community infrastructure, heritage festivals, projection lighting projects on heritage buildings street activation.

> We are very focussed as a Council on improving the liveability of the city so people want to come and live here. All projects are about … those things that people want. Especially when you're in the desert and you don't actually have a physical water source … so we need to be very inventive with our parks and gardens … those sort of outdoor spaces and that require money … we've got so many plans and strategies and projects and shovel ready projects ready to go and they're all about encouraging people to live here and want to live here. (Low growth SA3, Regional NSW)

Similarly, in identifying infrastructure that communities wanted, another stakeholder spoke about recreational facilities and the expansion a water based recreation centre, in recognition of the importance, and absence, of the beach to community members.

Aspects that add to the liveability of a place include those services that enable people to go to work, including early childhood facilities. To attract people into the region to work, the services need to be available to support them to enter the local labour market. A number of stakeholders noted that their council was encouraging investment into this area 'because that's one of the top things people look at it that can't get childcare that both can't work, they won't come here. So, we are pursuing that pretty avidly' (Low growth SA3, Regional WA).

Councils work with different organisations to provide education and training opportunities from pre-school through to tertiary and vocational training opportunities within the LGA to encourage individuals and families from moving out as well as attracting people into the region. In recognition of the importance of education as a reason people leave regional Australia, one council has developed a training and education guide to provide an 'overview of all the schools and opportunities and programs that were done so it was bundled up in a single hard and digital copy that parents and residents and people thinking about moving to Kalgoorlie could access' (Low growth SA3, Regional WA). Specialties on offer also align with future jobs in the region.

3.4 Summary

Population projections are central to urban decision-making policies including housing, employment, education and health infrastructure as well as those components of place that contribute to a community's lifestyle. While state governments use projections with broad assumptions typically in line with those underpinning the ABS population projections, local governments frequently utilised small area projections, which considered information about land releases, building approvals and occupancy rates.

Macro-scale population projections over the long-term largely align with overall population changes, however, individual localities do experience variance. In urban areas that experienced higher than projected population growth between 2006 and 2016, this was typically the result of significant residential land development projects. Regional areas were more likely to experience lower than anticipated growth rates. With small based populations such variability is not unanticipated.

Stakeholders, in reflecting on experiences in managing very rapidly growing populations and also those where population growth was lower than anticipated, identified the importance of timely and appropriate infrastructure development. They also signalled the importance on local employment to longer term sustainability and liveability of areas. This was designed and commenced before the COVID-19 pandemic, when questions around the 'future of work' and technological change, including digital connectivity were being considered by the Australian Government (Leishman, Gurran et al. (forthcoming)). During 2020–21, the number of people working from home increased. While it is yet to be seen if workplaces can support working from home arrangements over the longer term, there is potential that population settlement patterns could be disrupted if people are able to live at a distance greater than a daily commute from their workplace (Davies 2021).

It is a challenge for local government to coordinate infrastructure delivery that meets the needs, and timing, of the private sector delivering housing development. Infrastructure can often lag housing development, which becomes problematic for residents deprived of amenity and puts pressure on local and state government to fund promised infrastructure. While developers contribute to essential infrastructure, through funding or direct delivery, the responsibility remains with government, especially when infrastructure serves more than a single development scheme and, without it, pressure is placed on other local services.

Population projections help government make the case for infrastructure funding and delivery, both in response to projected population growth and also in planning for strategies to promote population growth in particular locations. More detailed projections based on the potential demographics of an area, for example the number of school age children, are even more useful in identifying specific infrastructure needs. To do this effectively, all levels of government need to understand what drives household mobility and location choices and this is the subject of the next chapter.

4. Mobility and location choice decisions: key drivers

- Housing considerations are some of the most significant drivers of mobility and location choice decisions with over one-third of moves driven by the desire to get one's own place or move into a larger place.

- Housing tenure has a major impact on the decision to move versus stay, with renters being three times as likely to move as owners. This may reflect high transaction costs of home purchase that deter labour market moves as well as a lack of tenure security in the private rental sector.

- There are important links between labour market related decisions and housing decisions. Personal unemployment and area unemployment are both important drivers of moves. A person who is unemployed has a 20 per cent higher chance of moving compared to an employed person.

- The likelihood of moving decreases as one gets older and the duration in one's current place of residence gets longer. The average Australian adult has resided in his or her current place of residence for about 10 years. After residing in one's residence for 10 years continuously, the odds of a person moving are reduced by some 37 per cent.

- Life course transitions, especially changes in family composition, feature consistently as important drivers of moves. Singles are some 30 per cent less likely to move than couples and couples with children are about half as likely to move as lone persons.

- The desire to get one's own place or move into a larger dwelling are key drivers of intra-urban or intra-regional moves.

- Australians are more likely to travel long-distance from urban to regional areas or regional to urban areas as a result of a need to be closer to one's place of employment or study, or for lifestyle reasons.

This report has so far discussed the importance of population projections for both state and territory and local government and highlights some of the reasons why population growth is often higher or lower than predicted. A key driver of population outcomes is the availability of housing supply which, in turn, is driven by the availability of sites and the ability of the developer to make a profit (Rowley, Gilbert et al. 2020). A developer will not proceed with a scheme if there is no market demand for it, as they will not generate enough revenue to deliver a profit. Given this, they will not be able to secure finance and proceed with the development. Developers must therefore know the market and what consumers want. Government should also know these drivers to help predict supply going forward and the demographics of those who will consume this supply.

This chapter addresses the report's second key research question to identify the key drivers of different mobility and location choice decisions by Australians. It discusses both housing and location related drivers and compares them to household level drivers, including life events such as marriage, losing employment, for example, at different stages of the life course. This chapter will provide an understanding of why households make decisions to move and help explain patterns of mobility, which can inform population projections moving forward.

The research approach adopts a two-tiered quantitative framework, which comprises econometric modelling and statistical analysis. Importantly, mobility decisions and location choices reflect transitions over time. Mobility decisions will result in an individual either moving or staying in the same location between period t and t+x; for those who choose to move, the decision to move is paralleled or followed by another decision, which focuses on the destination that one would move to by t+x. This analysis is supplemented by the findings of a recent, large scale survey conducted for AHURI into the housing aspirations of Australians. Section 4.4 discusses some of the key findings relating to those households looking to move and the reasons behind such decisions.

4.1 Existing research

There is a significant body of migration and residential mobility literature, which feature studies on the key drivers of moves. Many of the early work highlights the importance of life course events in driving mobility decisions. These events, such as marriage, divorce and childbirth, tend to result in a change in family composition, which in turn gives rise to a change in household circumstance and subsequently the need to move (See for instance, Mulder and Wagner 1993; Clark 2013). Indeed, a seminal study by Rossi (1955: 61) identified the major function of mobility as 'the process by which families adjust their housing to their housing needs that are generated by the shift in family composition that accompany life cycle changes.'

However, Clark (2017) observes that there has long been a disconnect between studies of mobility and studies of housing markets (see also Myers 1996), noting that geographers did not always link mobility studies to housing or neighbourhood outcomes. On the other hand, researchers from different disciplinary backgrounds have pursued specific interests. For instance, economists on the links between housing markets and mobility, demographers on the links between fertility and mobility, and planners on issues around design and functionality. In recent years, however, interest has grown significantly in the combined ways in which housing markets, wider demographic change, and life course transitions influence mobility decisions (see for instance, Mulder 2006, Mulder 2007, Falkingham, Sage et al. 2016).

In recent decades, the availability of panel data has also allowed for more sophisticated dynamic analysis of residential moves. These datasets have allowed studies to track people as they go through different life course, and labour market, transitions to examine how these interact with moves (Coulter, van Ham et al. 2011; de Groot, Mulder et al. 2011; Clark and Lisowski 2017). Panel data has allowed a deeper analysis into the impact of attachment to place on the probability of moving versus staying. Indeed, Morrison and Clark (2016) note that moves can be viewed as points or events along a continuum of staying.

This chapter contributes to the extensive body of literature that analyses mobility. However, it contributes in two distinct ways by exploiting Australia's only nationally representative longitudinal dataset, the HILDA Survey.

Firstly, it captures a wide range of potential predictors of the decision to move versus stay at three levels—individual, housing, and area levels. Predictors that capture personal socio-demographic circumstances and transitions, and also housing-related and area-related variables were explored. The range of personal predictors considered not just changes in family composition but also decisions around work, highlighting links between family change and work to residential mobility decisions. The area-based variables reflect contemporary Australian-specific housing and labour market conditions. This is a much needed national update on previous Australian studies such as Wulff and Reynolds (2010), which used data from 2001 to 2006 for Melbourne only.

Secondly, we analyse not just the decision to move versus stay, but also the decisions surrounding location choice. In particular, given Australia's highly urbanised nature, we examine whether decisions to move from urban to regional areas and regional to urban areas are driven by different factors than drivers of intra-urban or intra-regional moves. Hence, our analysis builds on previous older literature on cities both internationally and in Australia, which have highlighted the influence of interrelated changes in economic, political, and social structures on growing urban socio-spatial divisions (Kesteloot 1998; Randolph and Holloway 2005; Baum et al. 2006).

4.2 Data, sample and methodology

4.2.1 Data and sample

We exploit Australia's only nationally representative panel dataset, the HILDA Survey, which contains a rich array of variables ideal for uncovering the drivers of mobility and location choice decisions from a nationally representative sample. Of particular importance to this report is information relating to individuals' and households' housing circumstances and the areas they live in, as well as changes in their socio-demographic characteristics throughout their life course. The HILDA Survey began in 2001 by interviewing around 14,000 adult respondents; the survey has continued to track these adults (to the extent possible) in each subsequent year.

We pool together cases from all 17 available waves of the HILDA Survey covering the time period 2001–17, with wave one reflecting 2001, wave two reflecting 2002, and so on. The sample comprises adult persons aged 15 years or over; those who are aged 15 years or over but who are still dependent on their parents or guardians are excluded from the analysis.

As the dataset is panel in nature, each person can appear in the dataset in multiple waves. Hence, our final dataset is a person-wave or person-year dataset of all persons aged 15 years or over. Take for instance a person aged 20 years old in wave one and who appears in the dataset in each subsequent wave. This person would be accounted for the final dataset across 17 person-waves. Take another person aged 10 years old in wave one and appears in the dataset in each subsequent wave. The person turns 15 years old in wave six. Hence, the person is accounted for in the final dataset across 12 person-waves (from waves six to 17).

4.2.2 Mobility decisions: an econometric model specification

We deploy a binary logit model to estimate the odds of an individual making a move or staying at the same address between t and $t+1$. Since we are attempting to model a mutually exclusive choice—to stay or to move, a suitable econometric model for this outcome is the binary choice model. If the probability of moving is p, then the probability of staying is $1-p$. These probabilities can be estimated by maximum likelihood estimation. In a panel framework the probabilities will differ by individuals as well as time. The two standard binary outcomes models are logit and probit models. The main difference between them is the distributional assumption. For the purpose of this report, we conservatively choose the logit model. The logit model specification is estimated by maximum likelihood methods, so we are able to predict the odds of each move relative to staying as a function of individual, housing, and area predictors. Given the length of the panel used in the modelling, we apply panel data modelling techniques to estimate the effect of key drivers on mobility decisions. Various recent studies modelling the decision to move versus stay have also deployed panel data modelling techniques, including Whelan and Parkinson (2017) and Clark and Lisowski (2017). Following several of these panel data studies, we apply a random effects logit model specification. The model function can be expressed as follows:

$$M_{it.t+1} = f(S_{it,} X_{it,} H_{it,} A_{it})$$

where i indexes individuals, t indexes time, M represents the mobility decision of whether to move between t and $t+1$. Here, S consists of personal characteristics and circumstances. Work, education and income characteristics are captured by X. While H represents housing circumstances at the place of origin and A represents area-related variables at the place of origin. All of the above quantities, vary by both individual and time. As such, the model captures 'push' factors prevailing at the place of origin.

The vector S is intentionally designed to capture the influence of personal circumstances at different stages of the life course on mobility. It comprises of variables such as age, marital status and household type capturing family formation stages and stages of changes in family composition. Sex and country of birth are also included to reflect background on the mobility decision. The second X describes human capital related variables, including educational qualifications, labour market status and income. The housing variables, H, capture key housing-related factors, in particular the household's housing tenure and duration of residence at the current address. Area effects, A, are represented by such variables as the socio-economic status of the neighbourhood at the statistical local area (SLA) level, area unemployment rate and time spent travelling to and from one's area of employment.

Table 4 defines the mobility decision variable, as well as the full range of predictors that are included in the model. As per the means, the average mobility rate between t and $t+1$ is 15.7 per cent. The typical person in the sample is Australian born, married in a couple household, employed with individual gross income of \$46,800, and a home owner with average tenure at their address of 10 years.

Table 4: Model outcome and predictors – definitions and means

Variable	Variable categories	Definition	Binary or continuous	Mean
Mobility decision		1 if moved between t and $t+1$; 0 otherwise	Binary	0.157
Age		Age in years	Continuous	46.795
Sex	Female	1 if female; 0 otherwise	Binary	0.530
Country of birth	Australia (omitted)	1 if born in Australia; 0 otherwise	Binary	0.777
	Main English-speaking	1 if born in United Kingdom, New Zealand, Canada, United States, Ireland or South Africa; 0 otherwise	Binary	0.102
	Other	1 if born outside Australia or main English-speaking countries; 0 otherwise	Binary	0.121
Marital status	Legally married (omitted)	1 if legally married; 0 otherwise	Binary	0.533
	De facto	1 if de facto; 0 otherwise	Binary	0.139
	Separated	1 if separated; 0 otherwise	Binary	0.030
	Divorced	1 if divorced; 0 otherwise	Binary	0.066
	Widowed	1 if widowed; 0 otherwise	Binary	0.054
	Single never married	1 if single never married; 0 otherwise	Binary	0.178
Household type	Couple household with children	Household in which the primary family unit comprises a couple with a child under 15 years old (others may be present)	Binary	0.347
	Sole parent household	Household in which the primary family unit comprises a sole parent with a child under 15 years old (others may be present)	Binary	0.060
	Couple household with no children	Household in which the primary family unit comprises a couple with no children under 15 years old (others may be present)	Binary	0.318
	Other household type	Household made up of other family types	Binary	0.095
	Lone person household (omitted)	Lone person household	Binary	0.179

Variable	Variable categories	Definition	Binary or continuous	Mean
Highest qualification	Postgraduate	1 if highest qualification is postgraduate degree; 0 otherwise	Binary	0.044
	Graduate diploma	1 if highest qualification is graduate diploma; 0 otherwise	Binary	0.056
	Bachelor	1 if highest qualification is bachelor degree; 0 otherwise	Binary	0.139
	Diploma	1 if highest qualification is diploma; 0 otherwise	Binary	0.095
	Certificate 3 or 4	1 if highest qualification is certificate 3 or 4; 0 otherwise	Binary	0.218
	Year 12	1 if highest qualification is Year 12; 0 otherwise	Binary	0.143
	Other (omitted)	1 if highest qualification is Year 11 or under, certificate 1 or 2, or undetermined; 0 otherwise (omitted)	Binary	0.306
Labour force status	Employed (omitted)	1 if employed; 0 otherwise	Binary	0.646
	Unemployed	1 if unemployed; 0 otherwise	Binary	0.031
	Not in the labour force	1 if not in the labour force; 0 otherwise	Binary	0.323
Income	Income	Individual financial year gross income in $'00,000	Binary	$46.834
Housing tenure	Owner (omitted)	1 if residing in an owner-occupied household; 0 otherwise	Binary	0.694
	Renter	1 if residing in a renter household; 0 otherwise	Binary	0.278
	Rent-free	1 if residing in a rent-free household; 0 otherwise	Binary	0.028
Years spent at current address		Years spent at current address	Continuous	10.141
SEIFA index of relative socio-economic advantage/ disadvantage		The ABS Socio-Economic Indexes for Areas (SEIFA) capture area-related socio-economic characteristics. The SEIFA index of relative socio-economic advantage/disadvantage represents a continuum of disadvantage (low index) to advantage (high index) and considers variables such as the proportion of families with high incomes, people with a tertiary education, and people employed in a skilled occupation. It is constructed at the SLA level.	Continuous	1001.299
Area unemployment rate		Unemployment rate in major statistical region	Continuous	5.232
Travel time to and from work		Number of hours and minutes spent travelling to and from place of employment each week	Continuous	1.351

Source: Authors' own calculations from the 2001–17 HILDA Survey.

4.2.3 Location choice decisions

In the second stage of our analysis, we restrict our focus to movers only. Hence, from the sample of person-years comprising adults aged 15 years or over in the previous stage, we select those who have moved between *t* and *t*+1. For instance, consider a person who was observed in all 17 waves and was aged 20 years at the start of the survey. Suppose this person moved between waves three and four, seven and eight, and again between waves 15 and 16. This person would be captured as a mover three times in our sample and contribute three person-year moves to the sample. Another person who has moved five times during the survey timeframe would contribute five person-year observations to the sample in this second stage.

The HILDA Survey offers a comprehensive array of variables that describe the main reasons for moves, which are not mutually exclusive. These can be classified into four broad categories that are consistent with the four classes of predictors in the previous stage, which are:

• Socio-demographic characteristics many, which reflect important life course transitions:

  • to get married or move in with partner

  • marital breakdown

- - to move closer to family

  - lifestyle change

  - health reasons.

- Work and study:

  - to look for work

  - to start a new job

  - to start a new business

  - work reasons

  - to move closer to place of study.

- Housing:

  - to get own place

  - to move into a larger place

  - to move into a smaller place.

- Area:

  - to be closer to amenities

  - to move into a better neighbourhood.

Using this rich array of variables, we profile the key drivers of moves to different locations by Australian movers over the period 2001–17. In particular, we analyse four key location choices reflecting moves within and between urban and regional areas. The analysis therefore highlights differences and similarities in key drivers of moves across different areas.

To facilitate the analysis, moves are classified into four types. Firstly, urban-urban moves, reflecting moves within urban areas. Secondly, urban-regional moves, reflecting moves from urban to regional areas. Thirdly, regional-regional moves, reflecting moves within regional areas. Fourthly regional-urban moves, reflecting moves from regional to urban areas. We make use of the Greater Capital City Statistical Areas (GCCSAs) to distinguish between urban and regional locations. The GCCSAs are designed to capture the functional or socio-economic extent of each capital city. We classify Greater Sydney, Greater Melbourne, Greater Brisbane, Greater Adelaide, Greater Perth and the ACT as largely urban areas. Meanwhile, the rest of NSW, rest of Victoria, rest of Queensland, rest of SA, rest of WA, Tasmania and NT are largely regional areas.

4.3 Key drivers of mobility and location choice decisions

4.3.1 Key drivers of mobility decisions

Table 5 documents the coefficients from the random effects logit model of mobility decision described in the previous subsection. While the coefficient estimates are reported in the table, it is common, and more intuitively appealing, to transform each coefficient estimate into an odds ratio (see for instance, Wood and Ong 2011; Wood, Smith et al. 2017; Ong, Wood et al. 2019). Given binary variables, the odds ratio is the odds of a 'move' decision eventuating when a person is divorced relative to the odds of a 'move' decision eventuating when a person is legally married (the reference category). The odds ratio is then a measure of how likely a person is to move when divorced relative to when legally married. If the odds ratio is less than one (as is the case in the table), a person is less likely to move when divorced than when legally married. If the odds ratio is greater than one, a person is more likely to move when divorced than when legally married. We follow this practice of using odds ratios in the discussion of model findings below.

The array of statistically significant predictors in the table indicate that socio-demographic, work, housing, and area variables all make important contributions to the 'move versus stay' decision of Australian adults.

We first turn to socio-demographic characteristics. The odds ratio attached to the age predictor is less than one, indicating that the likely of moving decreases as one grows older. Every additional year of age reduces the odds of moving by around 3.3 per cent. This is an expected finding. Other studies have found that tenure churning is more common among younger people, possibly due to the need to maintain labour market flexibility to take up emerging job opportunities (Wood, Smith et al. 2013) while ageing in place is a strong expressed preference of older people (Ong, Jefferson et al. 2013; James, Rowley et al. 2019). It was found that migrants' mobility behaviour varies depending on their country of birth. Those born in mainly English-speaking countries are more mobile, while those from other cultural backgrounds tend to be more averse to moving. Those who are married are more mobile, suggesting that marriage is a key factor prompting moves, as this important life course transition will often entail one partner moving in with another, or both members of the married couple moving out of their current dwelling into a new dwelling. The odds ratios attached to a divorced or single never married status are around 0.7 indicating that these groups are 30 per cent less likely to move than those who are married. Those households with children are also less mobile than lone persons, possibly due to the added tenure security that children require. Indeed, couple households with children are only about half as likely to move as lone persons while couple households with children are about 62 per cent as likely to move as lone persons.

Work and income characteristics are also important mobility determinants. Higher income levels also provide the resourcing needed to support residential moves. On the other hand, unemployment is an important catalyst for moves. Unemployment increases the odds of a change in residence by nearly 20 per cent when compared to someone in an employed state. This may be necessitated by the need to move to take up new job opportunities opening up areas far away from one's place of residence or the need to move into lower-cost housing to cope with reduced income from a spell of unemployment.

Housing variables are critical. The model confirms the especially significant effect that home ownership has on mobility. Those living in the rental sector or living rent-free are over three times as likely to decide to move than owner-occupiers (although we don't know to what extent this move is forced or by choice). This finding confirms other studies such as Oswald (1996; 1997) that have suggested the transaction costs associated with home purchase deters labour market moves following the loss of employment among home owners. Wood, Ong et al. (2012) and Ong, Wood et al. (2017) highlight the role of transaction costs (e.g. stamp duties) in disincentivising moves by home owners. Indeed, the Productivity Commission (2014) has also identified stamp duties as a move deterrent, resulting in decisions that impede Australians' labour mobility and the long-term productive capacity of regional economies. On the other hand, the Australian private rental sector is lightly regulated so the large odds ratios attached to the 'renter household' variable will likely also reflect greater tenure insecurity in the private rental housing market. Attachment is also important and more important than age. Every additional year of residence at one's current address reduces the odds of moving by around 3.7 per cent.

Interestingly, area variables are also important drivers of mobility. The odds of moving increases as the SEIFA[1] index of one's place of original increases. It is possible that individuals living in more advantaged areas have to cope with higher housing cost burdens, which may drive mobility decisions into less advantaged areas to cope with housing cost burdens. Furthermore, the higher the prevailing unemployment rate in one's area of residence, the greater the odds of a move out of the area.

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[1]   SEIFA is a suite of four indexes that have been created from social and economic Census information. Each index ranks geographic areas across Australia in terms of their relative socio-economic advantage and disadvantage. The four indexes each summarise a slightly different aspect of the socio-economic conditions in an area.

In summary, the odds ratios attached to housing tenure are of the largest magnitude among all the predictors in model, highlighting the critical importance of housing tenure in determining mobility decisions. The average Australian adult has resided in his or her current place of residence for about 10 years. At 10 years' duration in one's place of residence, the odds of moving would be reduced by some 37 per cent. The odds ratio attached to personal unemployment is also high in magnitude. Furthermore, personal and area unemployment are both important determinants of moves, highlighting the important and intrinsic links between labour market and housing decisions. Life course transitions are important, particularly family formation. Singles are some 30 per cent less likely to move than married people, and couples with children are about half as likely to move than lone persons.

Table 5: Random effects logit model of mobility decision, 2001-17

Predictors	Coef.	Std. error	Sig.	Odds ratio
Age	-0.034	0.001	0.000	0.967
Female	0.025	0.015	0.094	1.025
Born in main English-speaking countries	0.102	0.025	0.000	1.107
Born in other countries	-0.169	0.024	0.000	0.845
De facto	0.016	0.022	0.470	1.016
Separated	-0.059	0.073	0.423	0.943
Divorced	-0.251	0.070	0.000	0.778
Widowed	-0.125	0.079	0.117	0.882
Single never married	-0.343	0.067	0.000	0.710
Couple household with children	-0.771	0.066	0.000	0.463
Sole parent household	-0.260	0.031	0.000	0.771
Couple household with no children	-0.476	0.066	0.000	0.621
Other household type	0.068	0.026	0.010	1.070
Postgraduate degree	0.037	0.039	0.346	1.038
Graduate diploma	0.066	0.036	0.067	1.068
Bachelor degree	0.055	0.025	0.025	1.057
Diploma	0.031	0.028	0.281	1.031
Certificate 3 or 4	0.031	0.021	0.132	1.031
Year 12	0.028	0.022	0.212	1.028
Unemployed	0.174	0.033	0.000	1.190
Not in the labour force	0.010	0.020	0.609	1.010
Income	0.005	0.002	0.002	1.005
Renter household	1.233	0.017	0.000	3.432
Rent-free household	1.130	0.036	0.000	3.096
Years at current address	-0.038	0.001	0.000	0.963
SEIFA index of advantage/disadvantage	0.001	0.000	0.000	1.001
Area unemployment rate	0.023	0.007	0.001	1.023
Travel time to and from work	-0.007	0.001	0.000	0.993
Constant	-0.644	0.117	0.000	
Number of observations (person-years)	184,880			
Number of persons	22,084			

Source: Authors' own calculations from the 2001–17 HILDA Survey.

### 4.3.2 Key drivers of location choice decisions

Figure 4 compares moves within urban areas with moves from urban to regional areas. Each percentage reflects the share of a move type. For instance, in Figure 4, 7.3 per cent of urban-urban moves and 6.7 per cent of urban-regional moves are made to get married or move in with one's partner However, the moves are not mutually exclusive, so the percentages do not sum up to 100 per cent.

It is clear that moves within urban areas are dominated by housing considerations with nearly 40 per cent of moves within urban areas driven by the desire to get one's own place or move into a larger place. Downsizing into a smaller dwelling also features as an important driver though they reflect only 8 per cent of main reasons of urban-urban moves. Socio-demographic considerations are next in terms of scale of importance in driving urban-urban moves. Changes in family composition (through marriage or formation of de facto relationships, or marital breakdown) together account for 13 per cent of urban-urban moves. Many moves in later stages of the life course may be driven by the need to be closer to one's family or lifestyle reasons, and these account for some 15 per cent of urban-urban moves.

Urban-regional moves are distinctly different from urban-urban moves in that the former are less driven by housing and area related decisions. Lifestyle considerations appear more important for urban-regional moves than urban-urban moves. Starting a new job or needing to be closer to a place of study are also more likely to precipitate an urban-regional move than an urban-urban move.

However, it is also important to note similarities in some drivers across these two types of moves. Family formation, family break-up, the need to be closer to family, and health reasons are more or less equally important in driving both kinds of moves.

Figure 4: Key drivers of location choice among movers, urban-urban versus urban-regional, 2001–17
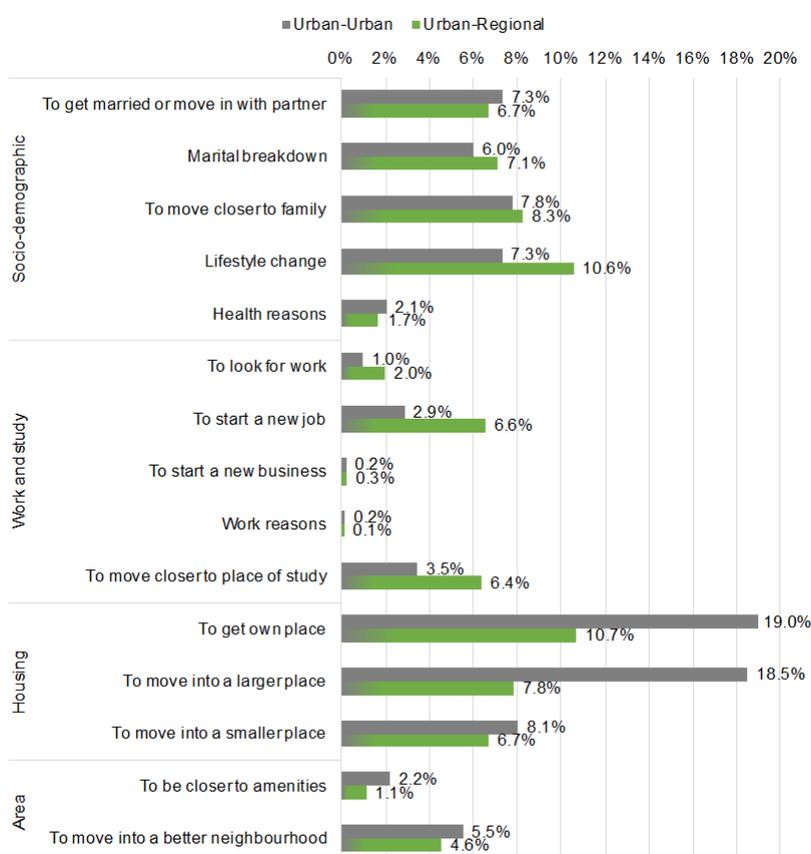
Source: Authors' own calculations from the 2001–17 HILDA Survey.

Figure 5 compares moves within regional areas with moves from regional to urban areas. Like moves within urban areas, moves within regional areas are dominated by housing considerations with around 33 per cent of moves within regional areas driven by the desire to get one's own place or move into a larger place. Downsizing into a smaller dwelling also features as an important driver though they reflect only 8 per cent of main reasons of regional-regional moves.

Regional-urban moves are distinctly different from regional-regional moves in that the former are less driven by housing and area related decisions. Moving closer to family, lifestyle considerations, starting a new job and moving closer to a place of study are more important for drivers of regional-urban moves.

Overall, it would appear that shorter-distance moves (intra-urban or intra-regional) are dominated by housing considerations, while lifestyle considerations and the need to be closer to a place of employment or study are more likely to precipitate longer-distance moves either from urban to regional areas or regional to urban areas. Life course transitions in the form of getting married or moving in with a partner, and marital breakdown appear to feature as relatively important reasons across all types of moves.

Figure 5: Key drivers of location choice among movers, regional-regional versus regional-urban, 2001–17
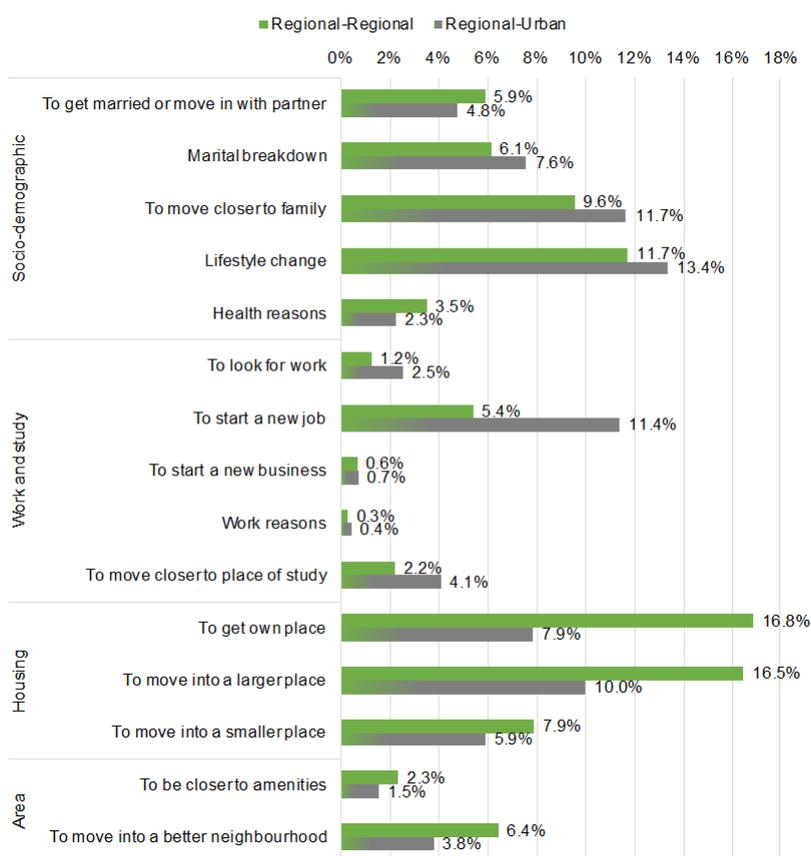
Source: Authors' own calculations from the 2001–17 HILDA Survey.

4.4 Australian housing aspirations survey

As part of AHURI funded research, a survey of over 7,400 Australian's was conducted in 2019 to establish households' short- and long-term housing aspirations using a sample representative of the overall Australian population (see James, Rowley et al. 2019; Parkinson, Rowley et al. 2019; Stone, Rowley et al. 2020)[2]. The survey asked a number of questions relevant to this research and this section provides a descriptive analysis of survey results to supplement the HILDA work reported above. This survey was carried out prior to the COVID-19 pandemic, and it is possible that attitudes may have changed.

4.4.1 Aspirations and move drivers

Survey respondents (around 7,500) were asked to identify their ideal location, tenure, dwelling type and size (number of bedrooms) with the results presented below (Table 6). They were given a number of responses to choose from and asked to select their preferred option, thinking about what they wanted in the future. No income constraints were applied. A clear preference for owner occupied houses emerged, ideally with three bedrooms. Location preferences were spread across a range of options with 36 per cent of respondents wanting to live in regional Australia. Table 7 describes the different aspirations of households currently living in metropolitan areas compared to those in regional areas. While there were some mobility preferences expressed. For example, 16 per cent of those living in regional areas wanted to move to metropolitan areas and a similar number wanting to go the other way, dwelling type, size and tenure preferences were very similar, albeit apartments with a slightly higher preference in metropolitan areas.

Table 6: The housing aspirations of Australian households

	All respondents			All respondents
Location			**Number of bedrooms**	
CBD of capital city	11%		One	3%
Inner suburbs of capital city	22%		Two	22%
Middle/outer suburbs of capital city	31%		Three	42%
Large regional city or town	17%		Four	28%
Small regional town	16%		Five or more	5%
Remote community	2%		**Tenure**	
Other	1%		Ownership (full, joint, shared)	83%
Dwelling type			Private rental	11%
House	73%		Social housing	3%
Apartment	17%		Lifestyle village	3%
Ancillary dwelling	2%			
Other	7%			

Source: Australian Housing Aspirations Survey: Unweighted, see https://www.ahuri.edu.au/research/final-reports/337a.

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[2]   Please refer to Stone, Rowley et al. 2020 and the survey technical appendix available on the AHURI website AHURI - The Australian Housing Aspirations (AHA) Survey (2018) Technical Report for full details of the survey methodology and response profile.

Table 7: Housing aspirations: Differences between regional and metro respondents

	Metro	Regional	Difference
Location			
CBD of capital city	14%	4%	10%
Inner suburbs of capital city	30%	5%	25%
Middle/outer suburbs of capital city	41%	7%	34%
Regional to Metro move		16%	
Large regional city or town	8%	40%	-32%
Small regional town	7%	40%	-33%
Remote community	1%	5%	-4%
Metro to Regional move	16%		
Dwelling type			
House	72%	76%	-4%
Apartment	19%	13%	6%
Ancillary dwelling	2%	2%	0%
Other	7%	9%	-2%
Number of bedrooms			
One	3%	3%	0%
Two	22%	20%	2%
Three	43%	41%	2%
Four	27%	31%	-3%
Five or more	5%	6%	-1%
Tenure			
Ownership (full, joint, shared)	84%	83%	0%
Private rental	10%	12%	-1%
Social housing	3%	3%	1%
Lifestyle village	3%	3%	0%

Source: Australian Housing Aspirations Survey: Unweighted, see https://www.ahuri.edu.au/research/final-reports/337a.

For the 300 respondents living in regional areas who expressed an aspiration to move to a capital city (16% of all regional respondents), 59 per cent were in the age group 18–34 while just 15 per cent were 65 and over. For the 690 capital city dwellers who wanted to move to regional areas (16% of all metropolitan respondents), 38 per cent were 65 and over and 27 per cent were in the 18–34 age group.

Survey respondents who expressed a preference to move between metro and regional locations were asked about dwelling and location factors important to them and which they would consider when deciding to move (Table 8). Safety and security and number of bedrooms topped the list with neighbourhood factors being as important as dwelling specific characteristics. There were no significant differences between respondents for metropolitan and regional locations.

Table 8: Main factors driving dwelling choice

Factor	
Safety and security	75%
Number of bedrooms	75%
Local shopping	69%
Good internal and external quality	69%
Dwelling security	65%
Dwelling type (separate house, townhouse, terraced house etc)	64%
Full ownership	63%
A walkable neighbourhood	62%
Adequate parking	61%
Security – long-term, stable housing	61%
Quality - well maintained, not dangerous	57%
Size of living area(s)	55%
Easy access to health services	54%
Access to high speed internet	52%
Quality public transport	50%
Number of bathrooms	50%

Source: Australian Housing Aspirations Survey: Unweighted, see https://www.ahuri.edu.au/research/final-reports/337a.

For those respondents who moved within the last three years, there were few differences in the trade-offs they made in order to access their current dwelling (Table 9). Regional respondents were more likely to have to move away from family and friends while metro respondents were more likely to take on a longer commute.

Table 9: Trade-offs made by households to access their current dwelling

	Metropolitan	Regional
Compromised on the neighbourhood	26%	28%
Moved away from family/friends	19%	24%
Increased time spent commuting	22%	15%
Rented / bought a smaller dwelling/lot than wanted	20%	19%
Rented / bought a different type of dwelling than wanted	16%	18%
Sacrificed other items of expenditure	19%	19%
Had to share a dwelling	11%	10%
Paid more in rent/mortgage than originally planned	22%	22%
Increased the number of hours worked	9%	7%
Delayed having children	5%	4%
Moved back in with parent(s)	6%	3%
Lived with parents for longer than planned	8%	7%

Source: Australian Housing Aspirations Survey: Unweighted, see https://www.ahuri.edu.au/research/final-reports/337a.

4.4.2 Short-term plans

The survey asked whether respondents would like to move in the next one to two years. This does not mean respondents would actually move but whether they had an aspiration to move in this short timeframe. From a policy perspective, it is useful to observe the characteristics of those who would like to move and where they would like to move to in order to ensure policies are in place to enable such mobility.

The majority of respondents (4,125) stated they would remain in their current dwelling in the short-term Table 10. There were slight variations by location with metro respondents more likely to want to move locally and regional respondents more likely to stay put. The characteristics of those planning on moving are compared to non-movers in the table below and there are some stark differences (Table 11).

Just over four per cent of survey respondents identified as being of Aboriginal or Torres Strait Islander origin (4.2 per cent). This group were much more likely to have an aspiration to move (5.7 per cent of all movers) than to stay in their current dwelling (2.9% of all movers). Australian citizens or permanent residents were less likely to move while households where the highest qualification was a university degree or above were much more likely to be in the move group (35.4% of movers had a university degree or above while 27.8 per cent of non-movers had the same qualifications). Other key differences include households on very low incomes (up to $31,000 per annum) being more likely to want to move and retired households much less likely. Generally, younger age cohorts were much more likely to want to move and older cohorts much less likely. In terms of dwelling tenure, private renters were far more likely to want to move than owners and so were those in one- or two-bedroom dwellings, most likely an apartment. In terms of location, respondents were slightly more likely to want to move if currently living in inner areas of capital cities and less likely to move if in middle/outer suburbs, but the latter is more of a function of the age profile in the location.

Table 10: Plans to move in the short-term

	Metro	Regional
Stay in your current dwelling?	55%	58%
Move to a different dwelling but remain in your local area i.e. within 10km?	23%	17%
Move to a different dwelling in a totally different part of your state/territory?	5%	9%
Move to a totally different location e.g. a different state or country?	5%	5%
Move to a different dwelling but remain in your region i.e. more than 10km from your existing dwelling?	12%	11%

Source: Australian Housing Aspirations Survey: Unweighted, see https://www.ahuri.edu.au/research/final-reports/337a.

Table 11: Differences between those planning to move and those not planning to move in the next 1-2 years

	Movers	Non-movers	Difference
Do you identify as being of Aboriginal or Torres Strait Islander origin?	6%	3%	3%
Australian citizen or permanent resident	78%	91%	-14%
Household contains dependent children	32%	28%	4%
Highest education qualification: University degree or higher	35%	28%	8%
Employment			
Work full-time	52%	46%	6%
Work part-time	18%	16%	2%
Unemployed	10%	8%	3%
Retired	9%	24%	-15%
Income group classification			
Very low income	24%	20%	4%
Low income	23%	25%	-2%
Moderate income	21%	20%	1%
High income	18%	17%	1%
Very high income	6%	7%	-1%
Age group			
Young cohort (18-34)	47%	24%	23%
Mid-life cohort (35-64)	33%	33%	0%
Older cohort (65+)	20%	43%	-23%
Current tenure			
Ownership	32%	62%	-29%
Private rental	52%	26%	26%
Current number of bedrooms			
1	8%	6%	3%
2	23%	17%	6%
3	40%	42%	-2%
4+	29%	36%	-7%
Current dwelling type			
House	74%	82%	-8%
Apartment	24%	16%	8%
Other	2%	1%	2%
Current location			
CBD of a capital city	12%	8%	5%
Inner suburbs of a capital city	23%	19%	4%
Middle/outer suburbs of a capital city	36%	42%	-6%
Regional city or large town	18%	18%	0%
Small, regional town	10%	12%	-2%
Remote community	1%	2%	0%

Source: Australian Housing Aspirations Survey: Unweighted, see https://www.ahuri.edu.au/research/final-reports/337a.

Twelve per cent of potential movers had plans to move outside their local area with a further 11 per cent planning to move within region. This suggests a fairly high degree of mobility within the survey sample. Of those planning to move outside their local area (854 respondents) they were more likely to be single, in the 18–24 or 65–74 age categories and currently living in the private rental sector. Almost 38 per cent of those expressing this preference to move lived in regional areas compared to 30 per cent of the full sample. Those living in small, regional towns were the most likely to express an intention to move outside their local area. Their ideal dwelling is a separate dwelling (59%) in the private rental market (45%) within a regional town or city (46%) in contrast to the whole population where it was ownership (49%) of a separate dwelling (65%) in the inner or middle suburbs of a capital city (62%). These are quite significant differences that largely reflect the desire for mobility within regional areas.

The reasons given by those 854 wanting to move outside their local area in the next one to two years differed from the full sample and the results are show in Table 12. The main difference is those 854 were much less likely to be moving to access a better quality or more suitable dwelling, or to purchase a dwelling, and far more likely to be moving to access employment opportunities and to move closer to family. These different motivations are interesting from a policy perspective as they highlight the importance of the private rental sector in regional and rural areas, particularly for young people, seeking access to employment and for older people seeking to return closer to family.

Table 12: Reasons for wanting to move in the next 1–2 years

	Planning to move outside local area	All respondents	Difference
To move to a better-quality location e.g. better amenities, transport links	8%	8%	0%
To move to a better-quality dwelling	5%	12%	-7%
To access to better employment opportunities	13%	7%	6%
To access a dwelling more suitable for your needs e.g. more bedrooms, larger/smaller backyard etc.	7%	15%	-8%
To move somewhere more affordable	10%	7%	2%
To gain some Independence	8%	11%	-2%
To feel more safe and secure	6%	5%	1%
To purchase a dwelling	5%	12%	-7%
To move closer to family	16%	7%	9%
To find somewhere that feels like home	9%	7%	2%
To downsize	3%	4%	-1%
Other	11%	6%	5%

Source: Australian Housing Aspirations Survey: Unweighted, see https://www.ahuri.edu.au/research/final-reports/337a.

4.4.3 Aspirations to move location

The survey asked respondents to select their ideal location in the medium to longer term and we identified those with an aspiration to move outside of their current location. 2,289 respondents fitted into this category, where around thirty per cent have an aspiration to move to a different classification of location. For example, from the middle and outer suburbs of a capital city into regional city or large town. From the data, we were able to identify net flows into and out of location classifications (Table 13). For example, there are 231 current respondents who want to move from the CBD of a capital city and 328 who want to move into the CBD of a capital city, a net inflow of 97. Of note, are the big outflows from the middle and outer suburbs and the flow into small regional towns. Hence, a large number of respondents (16% of all those with an aspiration to change locations) are expressing a clear aspiration to move into small regional towns. However, 45 per cent of these potential movers into small regional towns were actually from regional cities and large towns.

Table 13: Net flows into/out of location classifications

	Current location (n)	Aspirational location (n)	Net flow	Percentage of total
CBD of a capital city	231	328	97	4%
Inner suburbs of a capital city	470	546	76	3%
Middle/outer suburbs of a capital city	914	345	-569	-25%
Regional city or large town	439	430	-9	0%
Small, regional town	186	542	356	16%
Remote community	49	98	49	2%

Source: Australian Housing Aspirations Survey: Unweighted, see https://www.ahuri.edu.au/research/final-reports/337a.

Table 14 explores the movements between the seven location classifications. Each row of the table represents the number of respondents currently living in the location, so 231 for the CBD. Each column represents the number of respondents with an aspiration to live in that location, which is 328 for the CBD hence the net inflow of 97. For the CBD, there are moves out mainly to the inner suburbs (113) while moves in come from the inner suburbs (146) and middle-outer suburbs (111). For the middle and outer suburbs there is a split between those wanting to move closer to the CBD and those wanting to move out to regional areas. For small, regional towns, moves in come from the middle and outer suburbs (218) and regional cities and towns (213). While much smaller moves out go to regional cities and towns (83) and 75 into metropolitan areas. There is a net transfer between small and large regional towns of 130, or 70 per cent of the 186 respondents currently living there.

So what are the characteristics of those respondents looking to move from capital cities into regional areas? There were 645 respondents seeking to move from the CBD, inner, middle or outer suburbs of a capital city into a small or large regional town (Table 15). The only clear differences are by age with regional movers much more likely to be in the older age cohort and much less likely to be in the youngest age cohort. Otherwise, the profile of those respondents with an aspiration to move from capital city areas to regional areas is very similar to the profile of all respondents.

Table 14: Current and aspirational locations – moves from and between locations

	CBD of a capital city	Inner suburbs of a capital city	Middle/ outer suburbs of a capital city	Regional city or large town	Small, regional town	Remote community	Current location (n)
CBD of a capital city	0	113	39	43	32	4	231
Inner suburbs of a capital city	146	0	173	80	56	15	470
Middle/outer suburbs of a capital city	111	343	0	216	218	26	914
Regional city or large town	47	62	92	0	213	25	439
Small, regional town	20	23	32	83	0	28	186
Remote community	4	5	9	8	23	0	49
Aspirational location (n)	328	546	345	430	542	98	2289

Source: Australian Housing Aspirations Survey: Unweighted, see https://www.ahuri.edu.au/research/final-reports/337a.

Table 15: Differences between the characteristics of regional movers and all respondents

	Regional movers	All respondents	Difference
Aboriginal or Torres Strait Islander origin?	4%	4%	-1%
Australian Citizen or permanent resident	85%	85%	0%
Highest qualification: University degree or higher	30%	32%	-2%
Employment status			
Work full-time	50%	49%	1%
Work part-time	16%	17%	-1%
Unemployed	8%	9%	-1%
Retired	17%	17%	0%
Age group			
Young cohort (18-34)	26%	34%	-8%
Mid-life cohort (35-64)	35%	33%	2%
Older cohort (65+)	39%	33%	6%
Income group			
Very low income	14%	14%	-1%
Low income	23%	20%	3%
Moderate income	18%	18%	0%
High income	18%	17%	1%
Very high income	7%	6%	1%
Current dwelling type			
House	79%	78%	1%
Apartment	18%	19%	-1%
Ancillary dwelling	1%	1%	0%
Other	2%	2%	0%
Current tenure:			
Ownership	53%	49%	3%
Private rental	37%	37%	1%
Current number of bedrooms			
1	7%	7%	0%
2	19%	20%	0%
3	41%	41%	0%
4+	28%	26%	1%

Source: Australian Housing Aspirations Survey: Unweighted, see https://www.ahuri.edu.au/research/final-reports/337a.

4.5 Policy development implications

The evidence presented in this chapter makes it clear that housing considerations are a major driver of mobility and location choice decisions however location factors such as safety and security are also important. Housing tenure is found to have the greatest impact on the decision to move versus stay among all the socio-demographic, work, income, housing, and area related predictors in the mobility decision model. Importantly, renters are three times as likely to move as owners. This may reflect the high transaction costs of home purchase impeding mobility. Such transaction costs deter labour market moves and may therefore contribute to a lack of labour market mobility on the part of Australian workforce as well as hinder the efficient functioning of labour markets. On the other hand, the greater mobility of renters may reflect a lack of tenure security in the private rental sector.

Housing tenure is found to be the most important driver of moves in our model. As such, these point to the importance of tenure-specific policies as potential areas for reform to counter the negative implications of either a lack of mobility among home owners or frequent mobility among private renters. There is a general consensus among economists as well as previous AHURI research that stamp duties are an inefficient tax that impedes not just home purchase but labour market mobility (Wood, Ong et al. 2012; Whelan and Parkinson 2017). We therefore add to calls for stamp duty reform to support labour market flexibility and efficient functioning of the economy. Furthermore, the housing aspirations survey shows there is an appetite for movement between metropolitan and regional areas, and within regional areas, so policies enabling mobility will benefit regional housing and labour markets. As for the private rental tenure, tenure insecurity has identified in existing AHURI research as an ongoing concern in the private rental sector (Ong, Jefferson et al. 2013; Hulse, Parkinson et al. 2018).

To the extent that our observed frequent mobility among private renters reflects tenure insecurity in the sector, the time may be ripe for policy reform that improves tenure security for private renters (Hodgson, James et al. 2018). It is important to note that while our data is drawn from the pre-COVID years, the pandemic has only served to highlight the importance of ensuring tenure security among renters. Lockdowns and 'stay at home' orders have been important public health policies used to minimise the spread of COVID-19 infections. Those suffering from tenure insecurity are likely to face more difficulty with abiding by these public health regulations in the absence of other tenure-related policies such as moratoriums on evictions.

The HILDA Survey evidence in this report shows that personal unemployment and area unemployment are both important determinants of moves. Further, it indicates that Australians are more likely to move long-distance from regional to metropolitan areas as a result of a need to be closer to one's place of employment or study. On the other hand, metropolitan to regional moves also occur; according to the HILDA Survey this is likely prompted by lifestyle considerations. In general, the housing aspirations survey shows there is also an appetite for movement between metropolitan and regional areas, and within regional areas, so policies enabling mobility will benefit regional housing and labour markets.

Thus, regardless of the direction of long-distance move, these findings suggest that it is important to ensure that housing supply in local areas can respond quickly to shifts in population demand. This requires both state and local governments to implement land release and infrastructure strategies that can quickly respond to demand shifts. In the case of metropolitan areas, housing supply needs to be elastic enough to meet the housing needs of workers or job seekers seeking employment in job rich areas. This is to ensure that potential productivity gains are not squandered in the form of rising house prices that may eat into wage increases or raise business costs (Ong, Wood et al. 2017). Given the time it takes to bring land to the market, a constant stock of shovel ready land in regional areas is also necessary to quickly deliver dwellings to meet demand.

Life course transitions, especially changes in family composition (marriage, moving in with a partner, or marital breakdown), feature consistently as relatively important reasons prompting all kinds of moves. This finding supports a case for improving the diversity of the housing stock to ensure the stock in the housing market continues to meet the needs of individuals and families as they transition through important stages of the life course.

5. Policy development options

This study drew on ABS population projection data to track how the Australian population has grown over the period 2006–16, and examined if and how this actual growth differed from projected growth. It then examined key drivers of population mobility in Australia, as well as the impact of these population and mobility trends and responses by local governments to contribute to the debates around housing and urban planning and population growth.

5.1 Effective policy development responses to population mobility trends in Australia

5.1.1 Projecting population trends

Population projections prepared by the ABS and various government agencies are calculated by applying the cohort component method to data from the ABS Population and Housing Census.

The study finds that macro-scale population projections over the long-term largely align with overall population growth. The bulk of Australia's population growth has been concentrated in major cities, where projections were exceeded on the outer edges and inner city areas. Regional Australia has shared overall population growth with only a few areas recording absolute population decline.

The higher than projected growth identified in some SA3s in major cities was underpinned by residential land development, planned to accommodate this growth. Most notably, the expansion of residential suburbs on the outer edges of cities, and the development of high-density housing in inner city areas underpinned the observed difference between projected population and actual observed population in 2016.Considering how past population projections differ from actual observations of population change provides insights into the economic, land-use and/or cultural drivers of population settlement. For regional Australia, higher than projected population growth was influenced by developments in primary industries, in particular mining, as well as lifestyle-led migration to high amenity areas, which generated increased employment opportunities.

5.1.2 Housing and urban policies that support labour market and life course transitions

Housing and location considerations are major drivers of mobility and location choice decisions. In our modelling from the HILDA Survey, the duration of housing tenure was found to have the single largest impact on the decision to move versus. The typical Australian adult has resided in his or her residential address for approximately 10 years. At 10 years' duration, we found that the odds of moving are reduced by more than one-third (37%). This represented a larger impact than other important variables, including unemployment, which increased the odds of moving by nearly one-fifth (19%) and life course transitions. In the case of the latter, couples with children were around half as likely to move as lone persons. Renters were found to be three times as likely to move as owners. This possibly reflects the high transaction costs of home purchase that impeded mobility and a lack of tenure security in the private rental sector.

Location choice was highlighted as another major factor in mobility decisions in our statistical analysis. Safety and security were highlighted concerns in the AHA Survey, with three-quarters of respondents nominating this as an important factor driving dwelling choice. Furthermore, neighbourhood characteristics such as local shopping and walkability were also important.

There are important policy implications arising from these findings.

First, the findings re-confirm ongoing concerns in policy circles that stamp duties are an inefficient tax that act as a barrier to home purchase and labour market mobility. The evidence provides further support for stamp duty reform to promote general and labour market mobility, which would improve the efficient functioning of the economy.

Second, tenure insecurity in the private rental sector is a pressing policy issue. The greater mobility of private renters observed through the modelling findings reflect at least, in part, tenure insecurity in the private rental sector. Given the continued tight rationing of the public housing stock, the private rental sector—already a sizable one-quarter of the Australian housing stock—will house growing numbers of Australians in the coming decades. This includes those renting in later stages of the life course as home purchase continues to be hindered by high real house prices for many young people.

Third, there is a need to promote housing supply responsiveness in both metropolitan and regional housing markets through land release and infrastructure strategies. Statistical analyses from the HILDA Survey suggests there is an appetite for moves from regional to metropolitan areas due to the need to be closer to one's place of employment or study. Hence, policies enabling long-distance mobility from metropolitan to regional areas are important to improve the labour market prospects of individuals. From a labour market angle, it is particularly important to ensure housing supply in local areas can respond quickly to the housing needs of workers or job seekers in job-rich areas so that potential productivity gains are not squandered in the form of rising house prices that eat into wage increases or business profits.

Fourth, the AHA Survey also offers indications of an appetite to move from metropolitan to regional areas, as well as within regional areas. The HILDA Survey findings suggest this is prompted by lifestyle considerations. Hence, policies that enable mobility from metropolitan to regional areas benefit regional housing and labour markets in general. These include land release and infrastructure strategies that promote housing supply responsiveness to shifts in demand in regional areas.

Fifth, expanding the diversity of the housing stock is critical for supporting important life course transitions. Changes in family composition (e.g. marriage, moving in with a partner, or marital breakdown), feature consistently as relatively important reasons prompting all kinds of moves. This finding supports a case for improving the diversity of the housing stock to ensure the stock in the housing market continues to meet the needs of individuals and families as they transition through important stages of the life course that give rise to different housing needs.

5.1.3 Delivering socially and economic sustainable communities

Population projections are central to informing decision-making including zoning land for housing, transport education and health infrastructure and those components of place, which contribute to a community's lifestyle, social and economic wellbeing. Macro-scale projections are determined using assumptions and data sources, which align with the ABS data. At the local level, these are combined with small area population and demographic data updated at more regular intervals. Macro-scale population projections over the long-term largely align with overall population changes. However, individual localities do experience variance.

Stakeholder interviews revealed that areas recording higher than projected population growth between 2006 and 2016, did so as the result of significant residential land development projects. Regional areas were more likely to experience lower than anticipated growth rates, with small-based populations, such variability is not unanticipated. These cases were influenced by demographic change, commodity driven labour forces and patterns of investment in the regions.

When reflecting on experiences in managing variances between actual and projected populations, stakeholders identified the importance of timely and appropriate higher-level infrastructure development. They also signalled the importance of local employment to longer-term sustainability and liveability of areas. The temporary transition to working-from-home arrangements in many workplaces as a public health response to the COVID-19 pandemic may have longer term implications for how people make location choices (Davies 2021). If some companies and sectors enable remote working arrangements longer-term, some households may choose to live beyond the commuting zone to better balance their other lifestyle goals.

Local governments are also challenged by the coordination of infrastructure delivery that meets the needs, and timing, of the private sector housing developments. Infrastructure can often lag housing development, which becomes problematic for residents deprived of amenity and puts pressure on local and state and territory governments to fund promised infrastructure. While developers contribute to essential infrastructure, through funding or direct delivery, the responsibility remains with local government, especially when infrastructure serves more than a single development scheme and, without it, pressure is placed on other local services. In addition, local governments with variances between actual and projected populations actively research and benchmark community needs, and develop strong communication and advocacy strategies with government and regional leadership. These are coupled with economic development and housing strategies, education, health and leisure infrastructure plans with a focus on enhancing liveability to attract and retain people to their communities.

The limited role of government in the provision of housing curtails its capacity to use private sector housing as a 'tool' in future policy focussed on stimulating or responding to population growth. Government has a role in planning strategically for urban areas but ultimately cannot control where market demand or development will occur within these areas. Where it does have a role is in the provision of infrastructure. There is a perception that state governments are not always aware of population changes taking place at the local level. The ability for state governments to respond is limited by budget constraints as well as priorities, some of which are a result of planning for projected populations.

A key policy response to mitigate the impacts caused by variances in actual and projected populations would be the development of robust communication structures, which informs all levels of government of changing population patterns. The communication strategy could be underpinned by a broadening of the utility of population projections across all levels of government, recognising that population growth is also casually impacted by planning decisions. Such a broadening of the utility of population projections would include a clear recognition that changes in the economic, environmental and social settings (including flexible workplace arrangements) impact where people live, and wish to live, with planners able to integrate this information into strategic land development initiatives.

Population variances influence the capacity of local governments to deliver the local level infrastructure, which supports socially and economically sustainable neighbourhoods. The structure of developer contributions is one aspect impeding the capacity for local government to deliver infrastructure. This is particularly in terms of the pace of infrastructure delivery and providing for actual populations, which are larger than those projected, and, from an industry perspective, trust that services are being delivered with contributions levied. Reviews are being undertaken to improve this effectiveness and the resulting structure should remedy the issues outlined here.

5.2 Final remarks

What are the key drivers of population growth and mobility in Australia, and what do the identified effects imply for housing and urban development policies seeking to facilitate and respond to population change?

Housing and location, including safety and security, are major drivers of mobility, and are shaped by employment and life course transitions. While Australia's population is highly residentially mobile, renters move at a more regular interval than home owners.

Population projections at a variety of geographical scales make assumptions as to where people will move. At a macro-level, these projections are largely accurate. The rate of growth among SA3s is not uniform and some regions recorded variances between actual and projected populations where populations grew at a faster or slower rate than expected. Population variances in high growth areas were driven by land releases and market change. In these places of higher than anticipated population growth the pace of population growth significantly outpaced the pace of infrastructure delivery, which had cascading impacts on the capacity of the residents to access appropriate social and economic supports and opportunities. Those areas that experienced lower than expected population growth typically also felt the effects of net population outmigration, which includes infrastructure underutilisation.

Policy has a role in ensuring that inefficient taxation does not act as a barrier to mobility. Moreover, it should ensure that mobility is not forced upon households—specifically renters—through a lack of tenure security. To achieve these ends, housing supply and infrastructure delivery in both metropolitan and regional markets must respond to the needs of the existing and future populations.

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Appendix 1: Methodology to convert 2006 data to National SA3

Data was retrieved from the Australian Bureau of Statistics data packs service, available from https://www.abs.gov.au/websitedbs/D3310114.nsf/Home/2016%20DataPacks.

## Process used to obtain population numbers for each geography (both SA3 and State)

- Click on Open Datapacks

- Step 1: Select 2016 census Datapacks from the dropdown menu

- Step 2: Select Time Series Profile from the dropdown menu

- Step 3: Select all geographies from the dropdown menu

- Step 4: Click on the download arrow - Under Aust label.

- This will download a zip file containing the data from the 2006, 2011 and 2016 census.

- Unzip the folder and select the one of the subfolders containing the appropriate geography. For the purpose of this project, we are using SA3 and GCCSA (state level data).

- In this subfolder, the file "2016Census_T01_AUS_SA3.csv" was selected. This spreadsheet contains the number of the persons (by gender) in each SA3 region for the 2006, 2011 and 2016 census. However, only SA3 codes are available in this table. In addition to these, we will also need SA3 names. The following link maps each SA3 code to its corresponding name: https://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/1270.0.55.001July%202016?OpenDocument.

- Select the zip file corresponding to "Statistical Area Level (SA3) ASGS Edition 2016 in .csv format". Unzip this file and get "SA3_2016_AUST.csv"

- Prepare the data by extracting the relevant columns from "2016Census_T01_AUS_SA3.csv" and joining with file "SA3_2016_AUST.csv" to get SA3 names.

Appendix 2: Stakeholder Semi-Structured Interview Questions

1. Which population growth projections do you consider when drafting strategic plans?

2. To what extent to you consider population projections when drafting strategic plans? (Prompt for: Is it a key consideration, were other factors which are more important, are they used to develop planning or economic growth strategies? What data sources are used?)

3. What are the main reasons that the population growth exceeded or lagged over the 2006-2016 period? (specific housing initiatives, employment, land release)

4. What is the impact of a mismatch between the projections and actual population grow (prompt for community, housing, employment, infrastructure, funding considerations)

5. How does your State or Council respond to levels of population growth where they differ to the projections?

6. What sort of population growth do you anticipate over the next 10 years?

7. Are there any initiatives designed to respond to projected population growth? (Prompt for infill targets, general housing targets, pressure from state govt to deliver housing, impact on planning policy, economic development targets, infrastructure initiatives, land releases, community/recreational aspects which improve lifestyle, health services?)

Appendix 3: Australian states and territories Population Change 2006 - 2016

Figure A1: Change in the number of people in each SA 3 in New South Wales between 2006 and 2016 (map includes Australian Capital Territory)
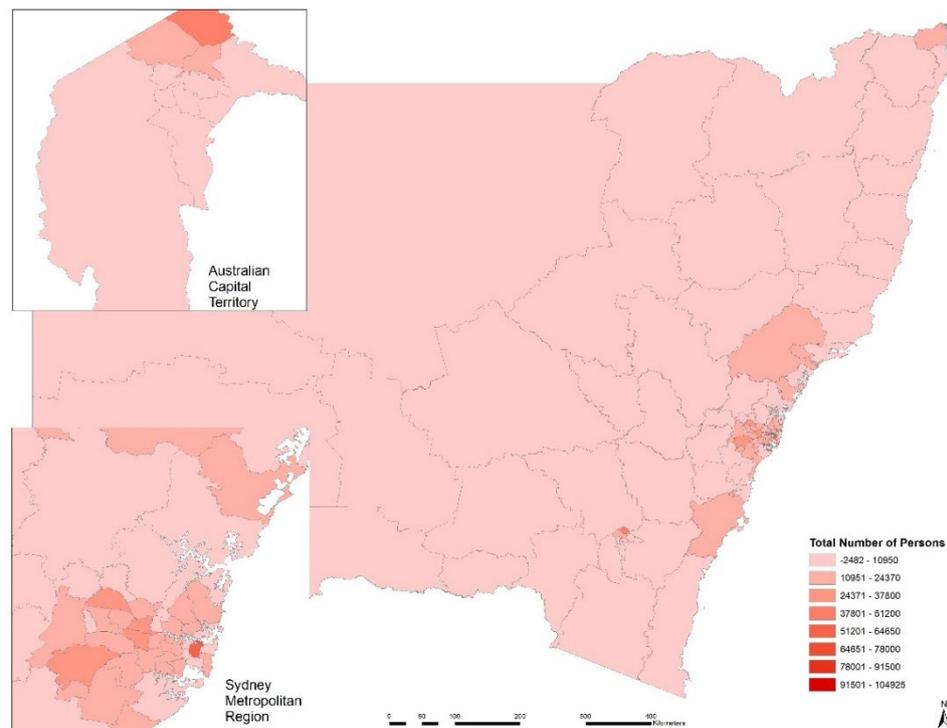
Source: Authors from the ABS 2019.

Figure A2: Average annual growth rate in each SA 3 in New South Wales between 2006 and 2016 (map includes Australian Capital Territory)
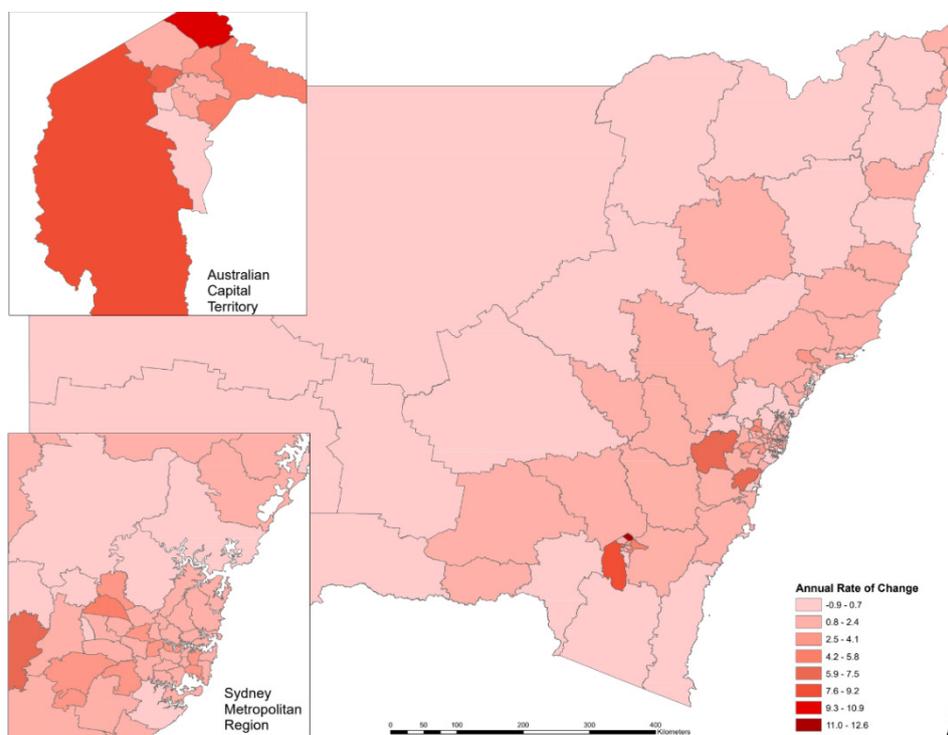

Source: Authors from the ABS 2019.

Figure A3: Change in the number of people in each SA 3 in Victoria between 2006 and 2016
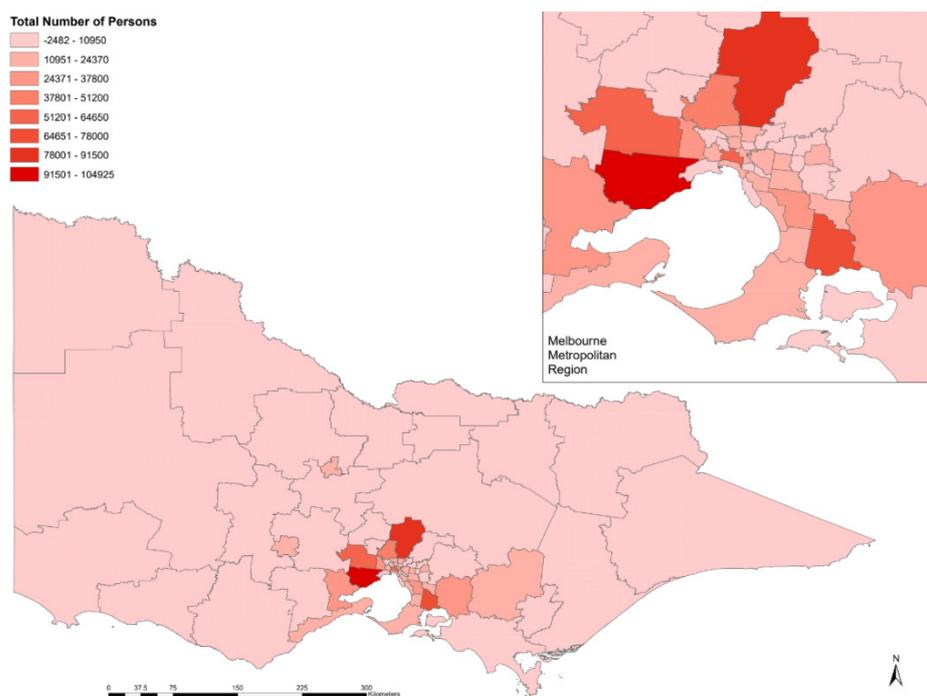
Source: Authors from the ABS 2019.

Figure A4: Average annual growth rate in each SA 3 in Victoria between 2006 and 2016
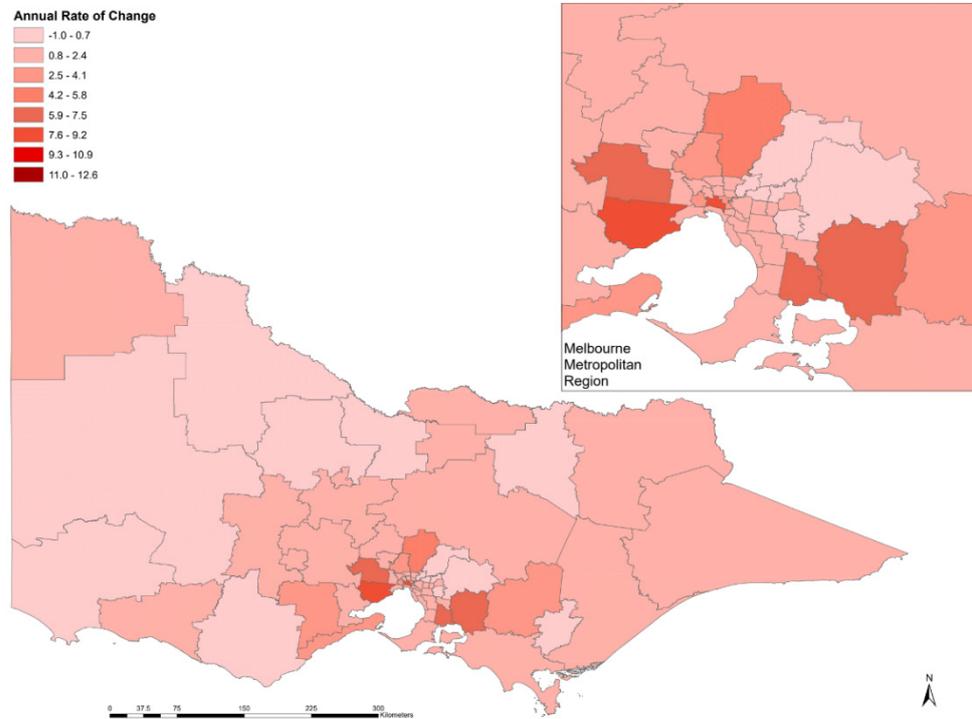
Source: Authors from the ABS 2019.

Figure A5: Change in the number of people in each SA 3 in Queensland between 2006 and 2016
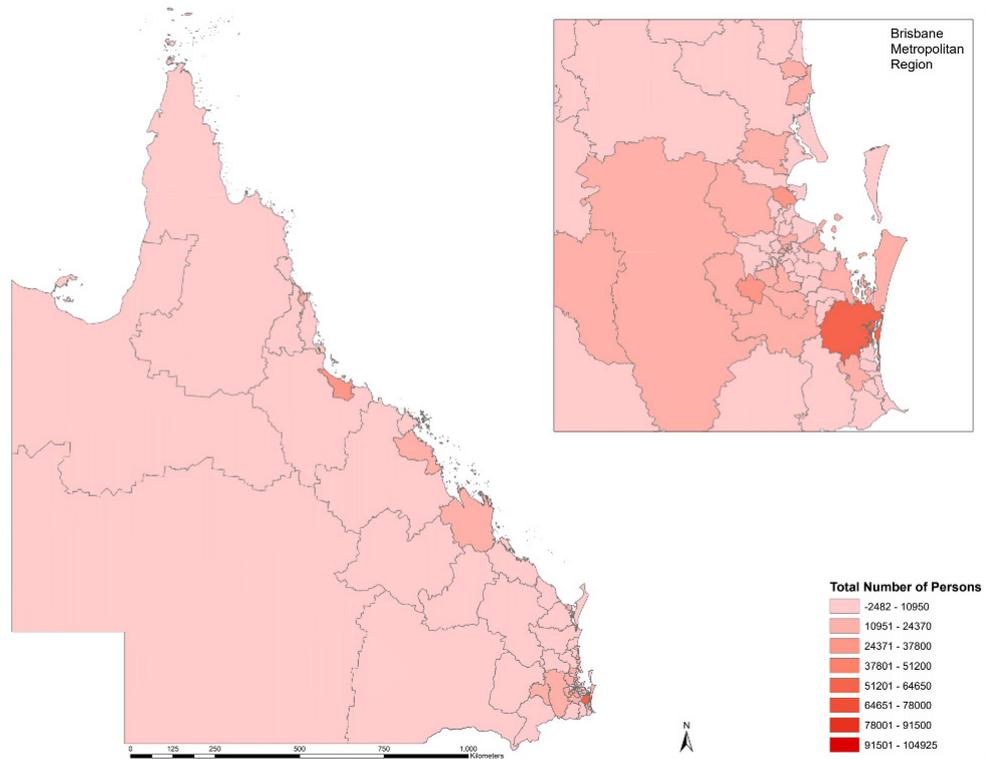
Source: Authors from the ABS 2019.

Figure A6: Average annual growth rate in each SA 3 in Queensland between 2006 and 2016
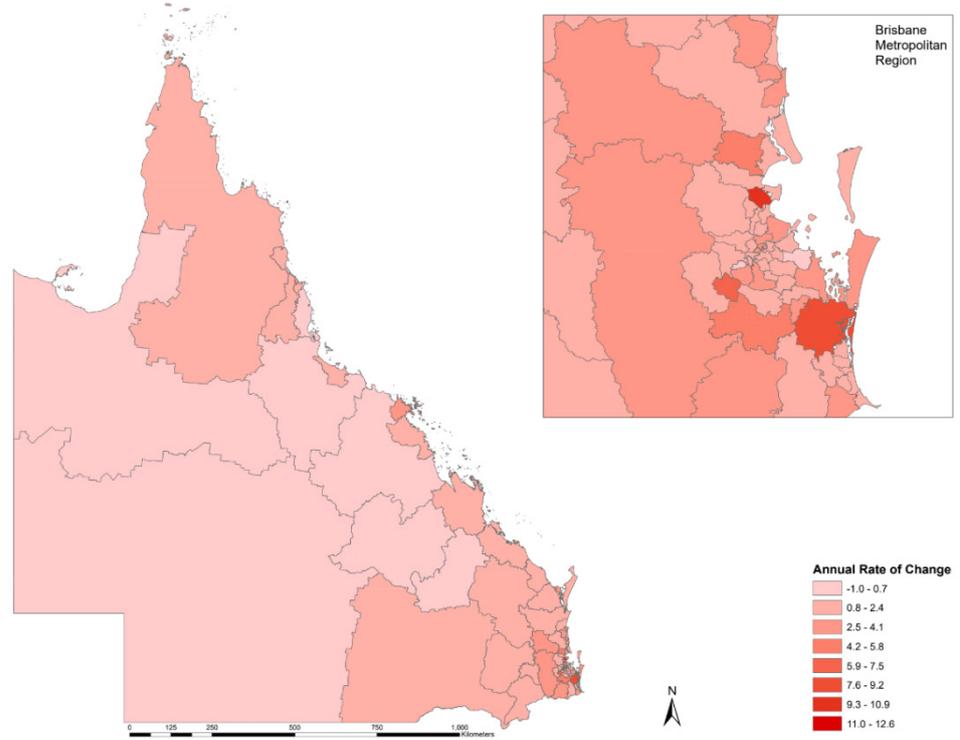
Source: Authors from the ABS 2019.

Figure A7: Change in the number of people in each SA 3 in Western Australia between 2006 and 2016
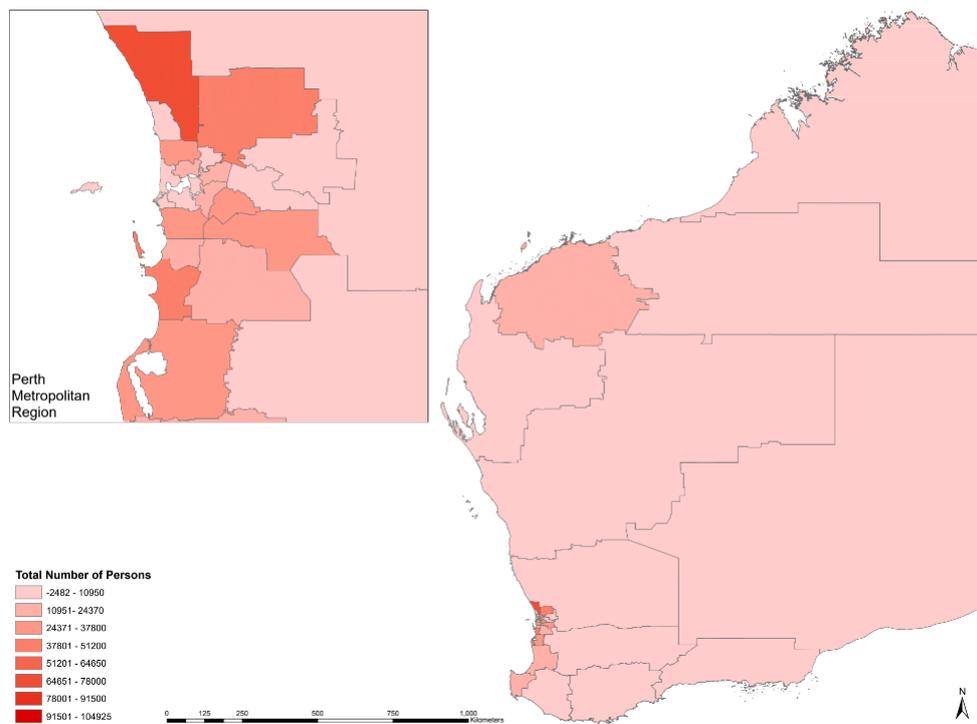
Source: Authors from the ABS 2019.

Figure A8: Average annual growth rate in each SA 3 in Western Australia between 2006 and 2016
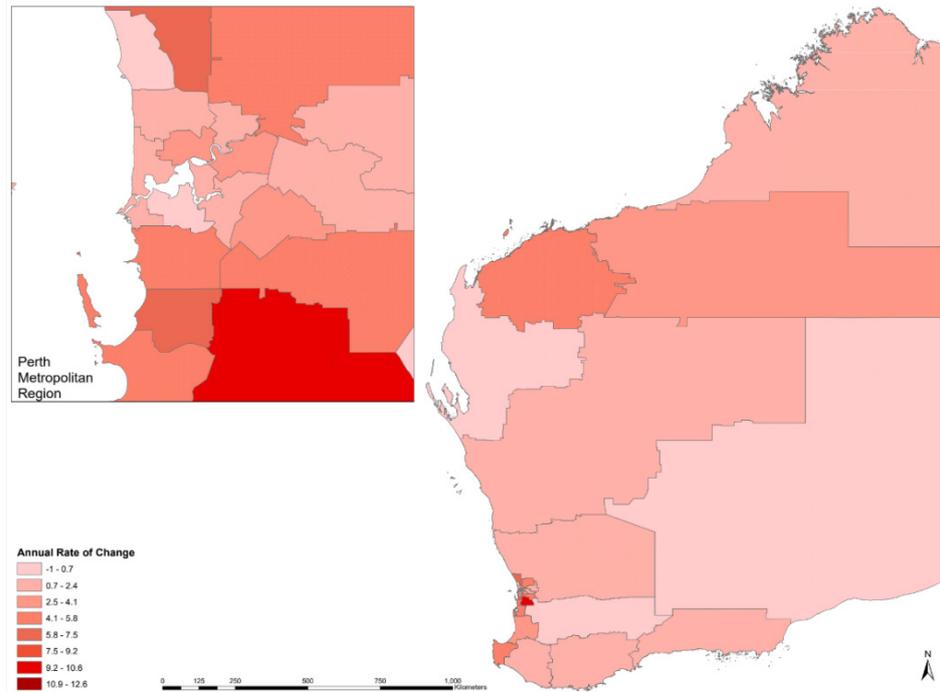
Source: Authors from the ABS 2019.

Figure A9: Change in the number of people in each SA 3 in South Australia between 2006 and 2016
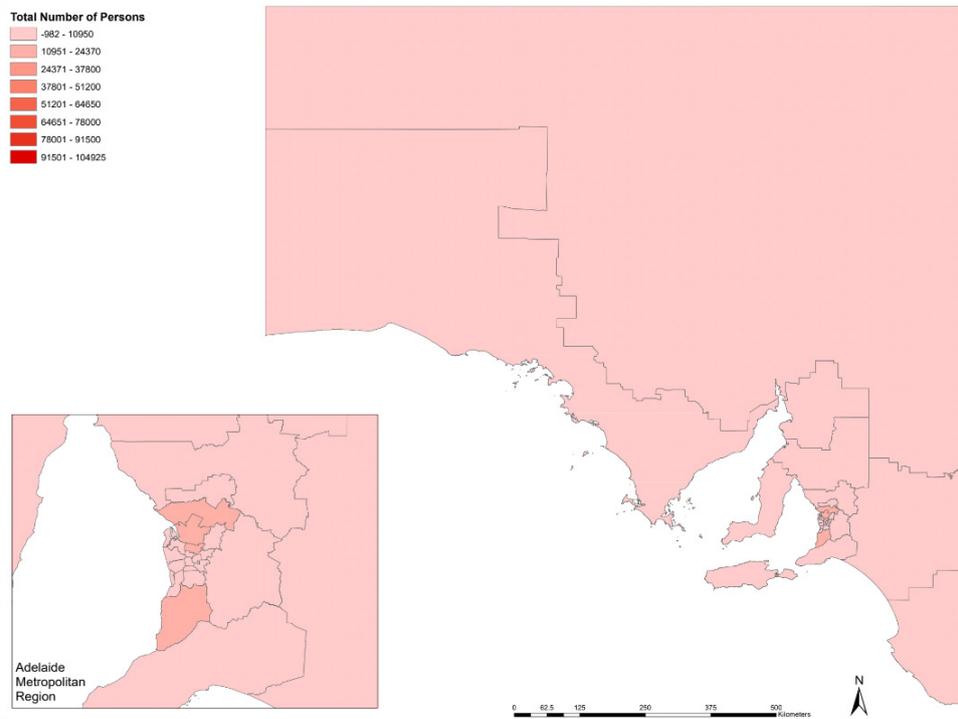
Source: Authors from the ABS 2019.

Figure A10: Average annual growth rate in each SA 3 in South Australia between 2006 and 2016
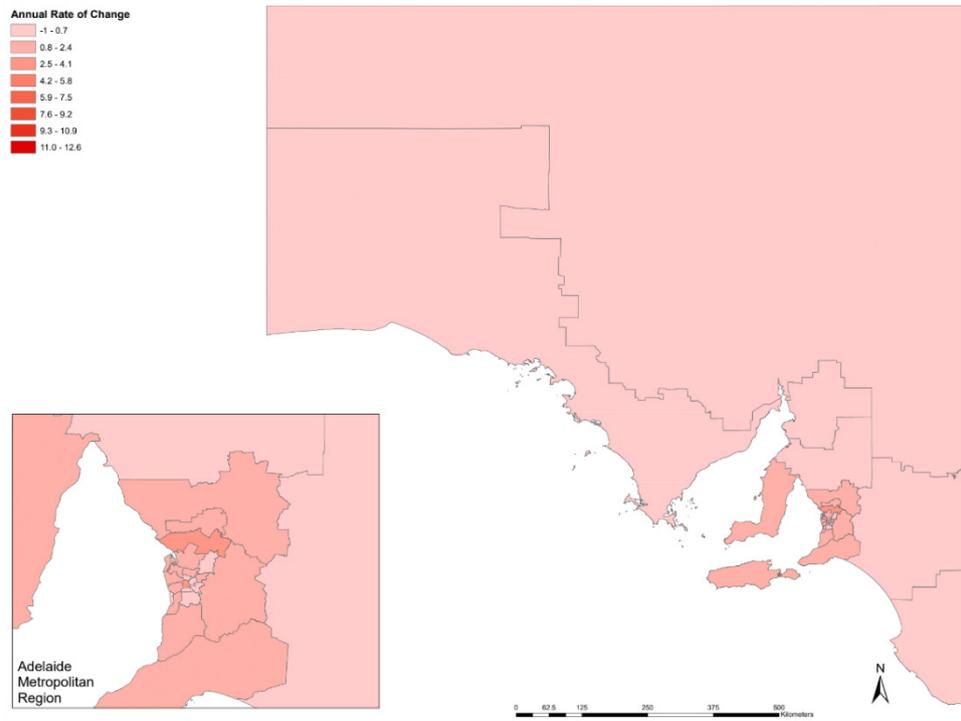
Source: Authors from the ABS 2019.

Figure A11: Change in the number of people in each SA 3 in Tasmania between 2006 and 2016
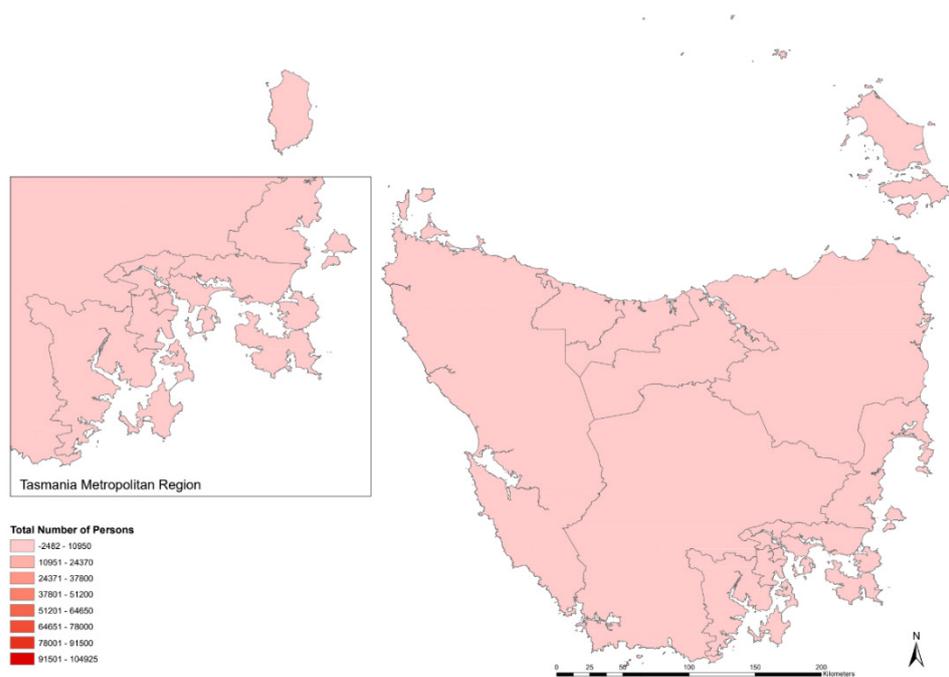
Source: Authors from the ABS 2019.

Figure A12: Average annual growth rate in each SA 3 in Tasmania between 2006 and 2016
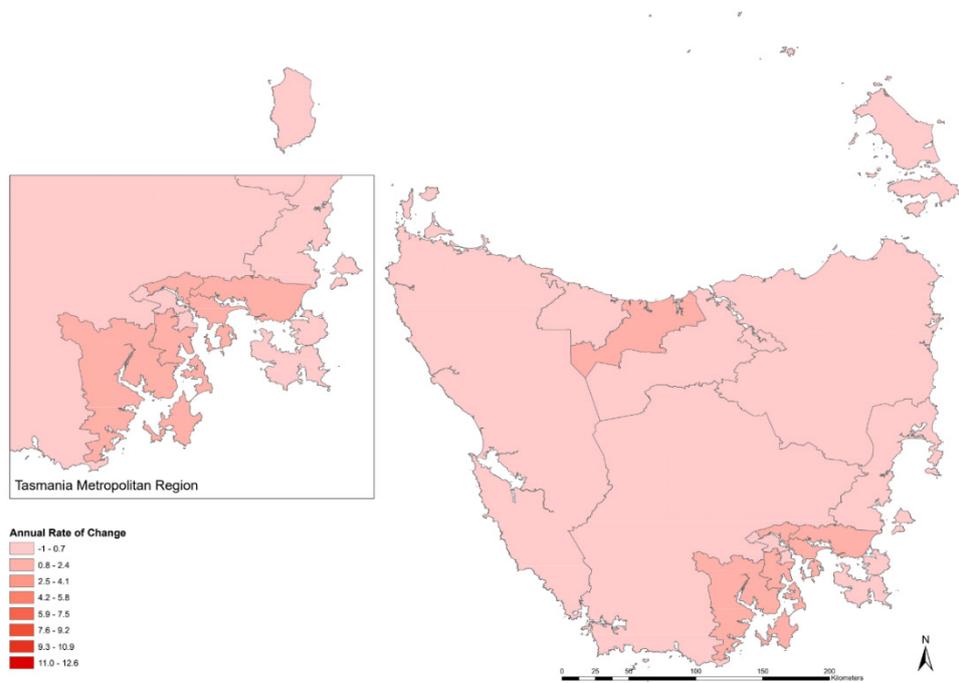
Source: Authors from the ABS 2019.

Figure A13: Change in the number of people in each SA 3 in the Northern Territory between 2006 and 2016
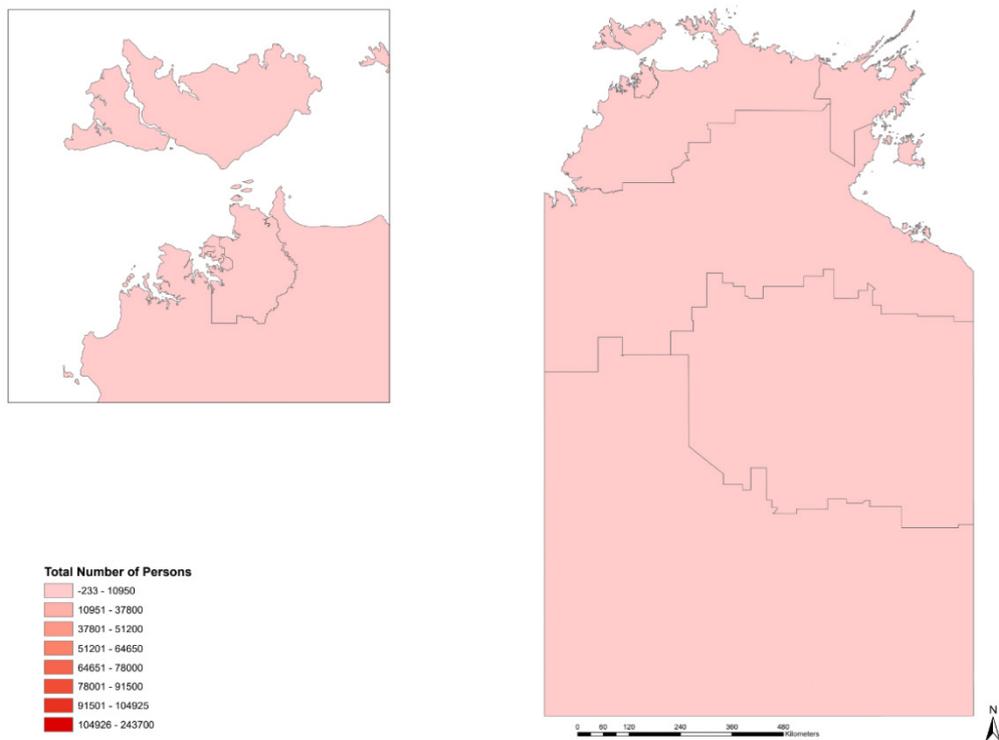
Source: Authors from the ABS 2019.

Figure A14: Average annual growth rate in each SA 3 in the Northern Territory between 2006 and 2016

Annual Rate of Change
- -1 - 0.7
- 0.8 - 2.4
- 2.5 - 4.1
- 4.2 - 5.8
- 5.9 - 7.5
- 7.6 - 9.2

Source: Authors from the ABS 2019.