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## EXECUTIVE SUMMARY

FINAL REPORT NO. 420

# Improving small area population projections

**From the AHURI Inquiry:** Inquiry into projecting Australia's urban and regional futures: population dynamics, regional mobility and planning responses

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**Publication Date** May 2024

**DOI** 10.18408/ahuri3130101



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**ISBN**

978-1-922498-88-5

**Key words**

Population, Housing, Projections, Small area, Forecasting

**Series**

AHURI Final Report

**Number**

420

**ISSN**

1834-7223

**Publisher**

Australian Housing and Urban Research Institute Limited  
Melbourne, Australia

**DOI**

10.18408/ahuri3130101

**Format**

PDF, online only

**URL**

<https://www.ahuri.edu.au/research/final-reports/420>

**Recommended citation**

Baker, E., Coffee, N. T., Page, K., Daniel, L. and Sarkar, S.  
(2024) *Improving small area population projections*,  
AHURI Final Report No. 420, Australian Housing and  
Urban Research Institute Limited, Melbourne, <https://www.ahuri.edu.au/research/final-reports/420>, doi:  
10.18408/ahuri3130101.

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**Acknowledgements**

This material was produced with funding from the Australian Government and state and territory governments. AHURI Limited gratefully acknowledges the financial and other support it has received from these governments, without which this work would not have been possible.

AHURI Limited also gratefully acknowledges the contributions, both financial and in-kind, of its university research partners who have helped make the completion of this material possible.

We also acknowledge the generous and insightful contributions of the industry and policy members of our Expert Panel.

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# Executive summary

## Key points

- Demographic factors are vital components to understanding future population, economic, environmental and social change.
- Projections are utilised in a broad range of ways, but the scale of decision-making tends to dictate the type and source of projection used.
- Projection accuracy degrades over time, with five to 10 years generally regarded as the usable timeframe.
- To improve decision-making there is a need to make error and uncertainty in the available projections more explicit.
- The report highlights the need, not for a single solution, but many solutions (top-down and bottom-up), to meet the very different requirements of a diversity of users.
- Overall this work reinforces the need for consistency, including agreed methods, definitions, shared datasets, accepted and explicit error boundaries.
- The use and creation of projections in Australia was more conservative than anticipated – with more limited uptake of novel datasets than we expected (such as the Geocoded National Address File (GNAF)).
- This research has highlighted a shared and generous concern. Across government, policy and industry stakeholders there is a need to work together on improving the projection landscape in Australia.

## Key findings

The key to successful planning is the utilisation of good information. Quality population projections provide us with the ability to plan for the short and long term, while making explicit the underlying assumptions, data, and potential for error (Wilson and Rees 2005; Rayer 2008). Demographic factors are vital components to understanding future population, economic, environmental and social change.

Data describing births, deaths, migration flows (international, interstate and intrastate) and land availability form the basis of most population projection methodologies (Wilson and Rees 2005). Typically, these variables are drawn from the preceding five to 10 years of data, a practice often referred to as 'walking backwards into the future' (Klosterman 2013). Other components that can influence (both positively and negatively) the assumptions applied to population projections include (but are not limited to) proposed land developments, building infrastructure availability and capacities (such as power, water, and so on), perceived job and educational opportunities, and broader housing and population targets set by state and territory governments.

Several different population projection methodologies are utilised by the Australian Bureau of Statistics (ABS) and state and territory planning authorities, upon whose data local government and other public agencies depend (Wilson 2012). However, there is a paucity of recent published evidence on how these projections have been developed and how their associated assumptions compare over time with actual population change. Existing Australian reviews acknowledge that error margins increase with distance from real data (Wilson and Rowe 2011; Wilson 2015; Wilson 2016). Consequently, while available population projections may provide a long term view of 20—50 years into the future, the reliable time span is generally five to 10 years. This means that even if a long term view is provided, projections will still usually be updated at least every five years in line with the national Census of Population and Housing (and more often if a significant change is evident).

Local government planning and resourcing depend on accurate population data. Therefore, concerns are often expressed over discrepancies between projections and actual outcomes, or the transparency and accuracy of baseline assumptions. As highlighted in recent AHURI research, these concerns are particularly evident in local government areas experiencing rapid growth, such as those in metropolitan greenfield locations where population increases can lead to infrastructure lags (Sarkar, Moylan et al. 2021). Concerns about the accuracy of population projections have also long been expressed by local councils in non-metropolitan regions. In particular, those with smaller base communities, where transitory peaks and ongoing churns associated with visitors or fly-in/fly-out workers can be difficult to capture via traditional methods and data sources (Hugo and Harris 2013; Hugo, Barrie et al. 2019).

Although population projections have an established role in policy and planning, the substantial shifts in migration, population and mobility brought about by the COVID-19 pandemic have initiated a widespread rethink on the reliability, accuracy, scale and applicability of the population projections that inform policy.

Our aim in this report is to critically assess the population projection resources available to Australian decision-makers and planners in this time of change, examining:

- how projections are used to inform policy decision-making
- the types of decision-making supported by current projection datasets
- the relative trade-offs made around reliability and certainty
- what opportunities exist for methodological and data improvement, and future innovation.

In order for future policy to be based on solid and reliable estimates of how many and what people are where in Australia, this project suggests that we prioritise:

- consistent approaches and shared information sources
- good quality, reliable and timely data

- better methods (especially for estimating small area populations)
- a more widespread understanding of error and accuracy.

Overall, this work reinforces the need for consistency, including agreed methods, definitions, shared datasets, and accepted and explicit error boundaries.

## Policy development options

While the need for consistency is reinforced in this report, we also acknowledge and highlight the diverse uses (and users) of population projections. This means that one package of projections cannot meet the diversity of applications required. Different scales, error tolerances, and foundational data, for example, are necessary to meet the decision-making needs of local governments versus Australian Government agencies. Perhaps a less expected finding of this project was the value placed on more responsive, detailed bottom-up generated estimates. Looking more broadly to the characterisation of what projections Australia should have in its decision-making support armoury, there is a place for strong top-down projections, and more flexible and targeted bottom-up ones.

The data landscape for population projections has almost certainly changed in recent years, and we should be considerate of these changes in our future planning. Traditionally the data components of projections were tied to national Censuses and large-scale agency collections. Recent (and potential) developments in technology have almost certainly expanded the depth and diversity of data that can form the basis of reliable population projections. Many of our expert panel participants, for example, referred to the usefulness of a diversity of residential dwelling data, such as from sales, land development applications or the planning system.

Finally, projections should be seen as well-informed estimates of what our population will look like in future, and so it is no surprise that considerations of error are an important finding of this work. In terms of future policy, a certain amount of 'error tolerance' in projections is implicit. However, better decision-making comes from making the error more explicit, and therefore a component of the decision process.

This project has also revealed a population projection landscape in Australia that is slightly different to the one we anticipated. Firstly, it is a more conservative landscape than anticipated, with a very limited uptake of novel datasets (such as GNAF, Geoscape, and the Survey of Tourist Accommodation) than expected. Secondly, this research responded to an assumption posed by the policy community, that there was the potential for a one-size-fits-all solution to undertaking projections better in Australia. Our assumptions as researchers, also reflected that assumption in the design of the project. What clearly came through, however, was the need, not for a single solution, but many solutions to meet the very different requirements of a diversity of users, who are using projections for a very wide set of decision-making purposes.

## The study

Given the value of population projections to inform the future housing, infrastructure and service needs of urban and regional communities, it is important to review the methods and data sources used by planning authorities across Australia. This project is one of four in the *Inquiry into projecting Australia's urban and regional futures; population dynamics, regional mobility, and planning responses*, which address this need by responding to the overall Inquiry research question:

***How effective are local area population projections; and how can a best practice, nationally consistent program of local area population projections be implemented?***

Within the broader Inquiry, this project focuses on understanding, and critically assessing, the population projection resources available to Australian decision-makers and planners. It is structured around four Research Questions:

1. How valid are the Australian population projections examined in this study – when considering spatial scales, time spans, strengths and weaknesses, and metropolitan and rural differentiations?
2. What are the opportunities for future data components for pragmatic, more responsive, tailored, or more accessible population projections (housing supply, international migration proxies, and so on)?
3. How do stakeholders use population projections to inform decision-making?
4. What recommendations should be made for a national program for local area population projections, and how could these recommendations be implemented?

This project supports the broader Inquiry's aim by offering a critical review of population projection modelling in Australia. Informed by consultations with key stakeholders from Australian Government, state, territory and local agencies, as well as private sector experts, the project will assess existing and new options for a nationally consistent approach to small area population projections and planning.



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