

## Understanding population growth, mobility and agglomeration impacts in Australian cities



Based on AHURI Final Report No. 371: Inquiry into population, migration and agglomeration

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### What this research is about

**This report investigates agglomeration economies and their ability to alter the economic productivity of cities, together with an examination of the key drivers of population growth and mobility in Australia.**

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### The context of this research

Agglomeration economies can be understood as the combination of cost savings, efficiencies and increased market potential that benefit firms when they locate in more heavily populated cities or cities with a greater diversity of firms, economic sectors and workers. Agglomeration economies are also applicable at regional level and may vary widely in scope and importance between economic sectors.

### Positive productivity

The international and Australian evidence suggest that there are positive productivity effects from agglomeration. However, the net benefits are mediated by the responsiveness of housing markets to demand, and by local supply conditions, regulation, and households' preferences for living and working in different locations. Rising housing costs associated with higher densities may reduce or eliminate the benefits created by agglomeration-driven productivity effects.

### The key findings

The research found that agglomeration economies occur through three principal processes:

1. **labour pooling** – where availability of large pools of labour with a diverse range of skills reduces firms' hiring costs
2. **shared-input markets** – where cities may gain economies of scale by reaching a size at which the provision of facilities or a type of service becomes possible or cost effective
3. **technological spillovers** – occur when firms are operating in proximity and derive a knowledge dividend from that, including when knowledge that is tacit rather than codified is exchanged through personal interactions in the course of work and business. Developing these relationships of trust can lead to a higher generation rate of new ideas and their faster transmission into innovations.

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Where agglomeration leads to higher wages, there is a strong possibility that this will also lead to higher housing costs, because workers are incentivised to bid up the price of housing in order to secure access to more productive localities and higher wages. This process may be particularly problematic if the effects of agglomeration on wages are not uniform for all workers.

## City size affecting wages

The research examined the relationship between productivity—as proxied by the real wage rate—and city scale (population). Agglomeration increases productivity at the city scale for US cities, but the evidence is weaker for European and Australian cities. Modelling identified the following wage to population elasticities:

- **US cities:** 0.076—moving from a city of 500,000 to 1M gives a 7.6 per cent higher wage rate
- **EU cities:** 0.144—moving from a city of 500,000 to 1M gives a 14.4 per cent higher wage rate, but this result is not statistically significant
- **Australian cities:** 0.061—moving from a city of 500,000 to 1M gives a 6.1 per cent higher wage rate, but this result is not statistically significant

For the US cities, this suggests that agglomeration economies begin to appear at a small city scale (about 100,000 population), and there is evidence they become larger as cities grow larger. For the Australian cities, the results suggest that city scale does increase productivity, and that the effect accelerates with city size. Below the metropolitan scale, there is stronger evidence that benefits also apply to Australian cities.

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There is no evidence of a drop in productivity at higher city scales—this would be a negative effect implying diseconomies. The research interprets this to mean that city scale would need to become very large—well above the scales observed in the US, European and Australian data—before diseconomies arising from congestion and pollution arise.

There is some evidence that large cities in closer proximity to other large cities—as in central Europe—exhibit stronger agglomeration / productivity effects, a concept referred to as the ‘borrowed size’ effect.

## The effects of agglomeration

Findings suggest the following:

- The characteristics of individuals and firms are important determinants of productivity and must be accounted for in the empirical estimations. However, these do not necessarily represent agglomeration effects.
- Spatial scale is important. There is some variation in the estimates when comparing across SA2 (suburb size areas) and SA4 (sub-regional areas) level agglomeration inputs, particularly relating to the presence of urbanisation and localisation economies.

A review of international approaches to planning for economic growth reveals a number of unique approaches that could be adapted to the Australian context, including:

- polycentric development of satellite cities linked to major metropolitan centres
- regional development of a network of decentralised centres linked to technology clusters
- identification of designated growth centres within an economic diversification strategy.

## The distribution of agglomeration benefits

Productivity benefits from higher wages do not accrue to all but are concentrated in the higher income distribution. Despite this, housing costs are pushed up across the income distribution. However, higher housing costs do not fully offset the gains from higher productivity.

The ‘key worker’ problem is a widespread manifestation of the misalignment of labour and housing market systems in contemporary metropolitan areas. The displacement of lower-income and middle-income households further into the suburbs may reduce lifetime earnings and productivity—primarily through the inability to capture knowledge-spillover benefits rather than transport cost savings. When workers are displaced away from employment cores, the solution is often seen as building new roads and transit systems. Insufficient attention is paid to how changes in housing mix and density closer to employment nodes might better resolve the issues for the long term.

Such findings reinforce that even if agglomeration effects apply to Australian cities and can be linked to increased productivity and higher wages, this does not automatically mean that there is a ‘social license’ to increase city scale or that public policy interventions should seek to move economic activities from one area to another. There is no guarantee that the gains from spatial areas receiving the redistribution of activities more than offset the losses of spatial areas that lose them.

## Attracting and retaining populations

Improvements in connectivity and social infrastructure meant that some regional centres were being viewed as a viable option for working-age people moving out of capital cities, even prior to the COVID-19 pandemic. Improving the digital infrastructure of regional cities is likely to support the development of industries such as data centres, back offices and tele-services, as well as specialist manufacturing opportunities—including medical or protective equipment.

In considering the demographic characteristics of people likely to move to regional areas, it is important to acknowledge that retaining local populations of young adults may also be a long-term strategy for larger regional centres and satellite cities. Traditionally, younger school-leavers have left regional areas for education or employment opportunities in the major cities. Improving higher educational facilities and diversifying local economies will help to retain this important cohort—or attract them to return. Similarly, diversifying housing options available for young single professionals, who often seek smaller rental units, may also be an important consideration for regional towns and cities characterised by homogenous housing and limited rental markets. Efforts to counter negative perceptions about regional areas and the lifestyle and employment opportunities they provide was also seen by the expert actors in this study as an important strategy.

## Infrastructure

The provision of infrastructure, lifestyle and life-cycle factors are important in determining some households' decisions to move to regional areas. However, there is a complicated relationship between attracting people to an area (city, or regional area) and the provision of infrastructure. There are various dimensions to this problem. For example, infrastructure provision is costly and lumpy, but the benefits and boost to economic productivity—via a feedback loop to tax receipts—play out slowly and over the longer term. Yet various forms of infrastructure promote the desirability and liveability of place, including educational institutions and health services, recreation, leisure and sports facilities.

The role of digital connectivity in rendering locations attractive to relocating population is also increasing. This became even more important during the COVID-19 pandemic, as urban dwellers and their employers begin to understand the possibilities for remote working—or even just more flexible working—in many fields. It is by no means clear whether changes to working practices and commuting experienced during COVID are temporary or permanent, or whether some hybrid or compromise may emerge in the longer term.

## Regional city case studies

The Inquiry examined the population and agglomeration situation in 21 case study cities, comprising satellite cities, regional centres and growth centres, each with a population between 80,000 and 250,000, and with annual population growth rates of 1 per cent or more (refer to AHURI Final Report No. 362 for full details on case studies).

All of the research case study regional cities have important regional service roles as administrative headquarters for local services and sometimes state services, as well as health, education, commercial and retail services. The economic mainstays of most regional cities were found to have been strongly linked to primary production in their regional hinterlands, mainly comprising transport and logistics (including port facilities) and processing of agricultural products.

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At the same time, these sectors no longer figured as major employers and were seen in some cases to have a limited future because of new technology or climate change (or both). Consequently, all of the case-study cities were pursuing economic diversification. Most of the regional cities had substantial employment in healthcare and social assistance, followed by either retail or education. However, there is evidence that employment in these sectors does not add a great deal to economic sustainability. Economic development leading to growth in managerial and professional positions was seen as essential to establish a diverse and sustainable economy.

Most of the cities studied host a university campus, with this generally being seen as a positive contribution to economic diversity, population retention and attraction, and cultural identity.

## Strengths of regional networks

Having multiple centres and towns operate as a regional network was found to offer strategic efficiencies through sharing of resources and infrastructure, but intra-city competitiveness can hamper strategic decision-making. This may suggest that funding interventions and arrangements need to support greater regional network cooperation rather than competitiveness. It was noted that almost all of the cities studied participate in some form of regional partnership organisation involving contiguous local government bodies and, in some cases, regional industry organisations and government service agencies.

Commuting was put forward as an important factor for growth in satellite cities and regional centres, along with the role of transport infrastructure in permitting this. Commuting does not simply involve regional residents moving to capital city workplaces, but also (to an extent) managerial staff travelling in the opposite direction and particularly within regional centres and satellite cities. Commutability has been argued to be a mixed blessing. Improving transport connectivity between regional cities and capital cities can make them more desirable places to live, but can push up the price of housing without necessarily attracting jobs.

The study also found strong linkages between infrastructure funding, transport connectivity and population growth. For example, faster rail links in cities closer to metropolitan areas were credited for expanding labour markets and enhancing business networks.

## What this research means for policy makers

Even if agglomeration economies do deliver higher productivity and hence higher wages, this does not automatically presume that public policy decisions should necessarily seek to move people or jobs (or both) from one place to another. There is no evidence to support the idea that gains from agglomeration fully offset—or more than offset—economic losses made elsewhere when economic activity is moved through intervention. But policy decisions about the location of new economic activity are another matter. Stronger economic outcomes are possible for

Australia by harnessing spatial planning and urban / regional policies that promote the growth of cities. This applies particularly where there are strong connections between cities.

### Policy recommendations include:

- productivity gains arise at relatively small (100,000 population) city scale and become stronger with city size and density. Policy should emphasise investment in major infrastructure for regional areas and cities (and satellite cities) that have already been identified as locations of population and economic growth.
- reflecting that regional and satellite cities perform best when integrated in highly connected networks, there should be increased support for transport connectivity between major and regional / satellite cities—these policies must be offset by other policies designed to maintain or improve housing affordability.
- there is a clear connection between economic diversification and further economic growth—particularly economic development aligned to knowledge-industry activities. These opportunities are not heavily location dependent. We encourage targeted support designed to capitalise on these growth opportunities.
- the strong role that tenure and housing affordability play in both facilitating and impeding labour-market mobility in Australia requires policy options that expand affordable rental supply in Australia's inner urban areas, and the development of diverse and affordable rental housing in regional areas in order to support mobility of lower-income workers.

## Methodology

The Inquiry was structured to include a range of quantitative and qualitative research methods, largely embedded within four supporting research projects. This included analysis of census data, housing aspirations survey data and key-actor interviews; statistical information—particularly on econometric analysis of secondary data; and international case-study evidence, Australian key-actor interviews and Australian case studies.

### To cite the AHURI research, please refer to:

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