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Housing affordability, central city economic productivity and the lower income labour market

authored by

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CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACRONYMS

ABS	Australian Bureau of Statistics
AHURI	Australian Housing and Urban Research Institute Limited
APM	Australian Property Monitors
AURIN	Australian Urban Research Infrastructure Network
CC	central city (employers, workforce, etc.)
HI	high-income (workers, households, etc.)
LGA	Local Government Area
LI	lower income (workers, households, etc.)
MI	middle income (workers, households, etc.)

EXECUTIVE SUMMARY

The objective of this research was to establish whether the diminishing supply of affordable housing options for lower income (LI) workers near job-rich central city (CC) locations is having an impact on CC businesses and on the overall productivity of CC economies. The findings of the specific research questions are summarised here. The research comprised a review of census and other data as to the housing market position of the LICC labour force in five of Australia's key metropolitan areas (metros)—Perth, Darwin, Melbourne, Sydney and Brisbane—as well as a series of interviews with employers in Sydney's CC and an analysis of the demand profile on recent infill development in the City of Sydney council area.

What is the current state of Australian and overseas practice in housing LICC workers?

There is evidence of growing recognition by major-city governments, both in Australia and overseas, of problematic high housing costs. To a large extent, policy consideration frames high housing costs as a social welfare and equity problem. However, there are emerging narratives in a number of strategic planning policies that explicitly address the direct impacts of housing costs on urban economic growth. In both Sydney and Melbourne, housing and economic development strategies note that housing costs can limit access to CCs, which can in turn thin LI labour markets, reduce productivity and, ultimately, act as a drag on the economic growth of CCs.

Specific research into the economic impact of high housing costs mostly concerns broad macro-economic consideration of reduced consumer spending and wage inflation. Very little research was uncovered identifying or quantifying constraints on productivity being caused by a shortage of LICC workers. One relevant body of literature concerns Kain's (1968) spatial mismatch hypothesis, which highlighted how jobs and low-cost housing were increasingly separated in cities. Although Kain's work concerned job growth on the urban periphery and poor inner-city neighbourhoods, much subsequent research has relevance to the suburbanisation of disadvantage. Importantly, a number of policy responses have been identified, broadly categorised as:

- → transport strategies connecting jobs and labour
- → distributed economic development strategies moving jobs closer to labour
- → inner-city housing strategies moving labour closer to jobs
- → job-finding strategies overcoming barriers to labour force participation.

Of particular concern, these four responses are likely to fall to separate policy arenas and government agencies: transport; planning and investment; housing; and social services, respectively. Further, the issue of spatial mismatch constraining LICC labour market thickness is likely to be a secondary driver in each of these policy arenas. Evidence of coordinated policy responses was very limited.

What is the extent of the spatial mismatch between LICC jobs and affordable housing?

LICC workers are spatially separated from their jobs to a much greater degree than LI workers in the metro more generally. Based on 2011 Census Journey to Work data, the median distance of the LICC workers was found to be roughly double that of the metro-wide median in all five case studies.

To some extent this can be expected, given that the volume and density of jobs in the CC is not matched by a volume and density of potential workers, a trend that keeps LI-worker commutes down across the metro as a whole. This additional distance to work is also more easily overcome by transport connections, particularly public transport connections, which uniquely service the CCs. Finally, again based on 2011 Census workforce data, there are a number of differences between the CC and the metro overall, in terms of LI jobs and, relatedly, workers. Specifically, the presence of LICC jobs across well-paid and growing professional industries is probably related to the much larger representation of younger, more educated and more mobile LI workers in the CC. Importantly, however, these differences were at the margins, and the overall impact of urban form—including job densities and transport connections—are intrinsically linked to housing costs.

Which employee groups are most affected, and what is their housing experience in terms of affordability and location?

One important disjunction between LI labour markets and low-cost housing markets is that, based on 2011 Census workforce and housing data, only one quarter of LI workers lived in LI households. This distribution of LI workers across household incomes was also consistent across different geographies. Similarly, the distribution of housing costs as a proportion of household incomes—including levels of housing stress—was consistent across different geographies. However, evidence of housing compromise—probably made to avoid housing stress—could be seen in other differences between LICC workers and LI workers generally. Some key findings were that LICC workers were more likely than LI workers across the metro to be:

- renting
- living with unrelated strangers or extended family
- living in an apartment
- showing signs of dwelling size compromise, in terms of bedrooms/occupant
- living further from their place of work.

Importantly, these compromises were mostly experienced to a greater degree among the LICC workforce because middle-income (MI) households connected to the CC labour force were more likely to be making compromises. The distance to work was also supported by analysis of the housing markets, which showed a clear geography of inner-city unaffordability in both rental and sales data. Sydney showed particular evidence of unaffordability with, for example, very low rates of affordable house sales within 25 kilometres of the CC.

Of course, these ‘compromises’ can only be considered as such in statistical aggregate. The extent to which LI workers perceived these differences as compromises, and therefore the extent to which they would serve to undermine the appeal of the CC as a place of work, cannot be unpacked in census data.

Which employer groups are most affected by this issue, what problems does this cause them and how do they deal with these problems?

Six industries were identified as likely to be affected by any shortage of LICC workers, based on a combination of the number of LICC workers, reliance on these workers, and competition for these workers from outside the CC. The industries were hospitality, retail, support services (like travel and recruitment agencies), professional services (like legal and accounting), finance-insurance, and government services.

Hospitality and retail were considered particularly vulnerable, with high numbers of LICC workers (around 35% of all LICC workers were in these industries), high proportions of LICC workers (LICC workers made up 60–70% of all CC workers in those industries), and greater rates of industry distribution (retail, e.g. had up to 20 LI jobs outside the CC for every LICC job).

Interviews with Sydney CC employers in all of these industries (except government services) revealed a number of more nuanced findings.

1. It was clear that some industries are far more aware of and concerned about the issue, most notably the hospitality industry (including tourism).
2. While many interviewees were not significantly concerned about the issue, almost all could offer some anecdotal evidence of recruitment, reliability or retention of LICC workers being connected to housing affordability.
3. While most interviewees recognised that high housing costs were a challenge, many suggested that employees are primarily bearing the burden of this expense, rather than employers.

Interviewees also identified a number of factors that mediated any impacts of high housing costs. For example, the CC was seen as offering a number of benefits and opportunities—both professional and lifestyle—for LI workers. This increased the supply of short-term workers (career starters, students and travellers), who were not always seen as a compromise in terms of employer choice for workers.

What role has the recent expansion of higher-density housing in inner-city areas played in housing the LICC workforce?

By analysing the demand profile for recent developments within the Sydney council area (a proxy for broader infill housing in CC-proximate locations), it was possible to unpack the extent to which a market response could reduce any spatial mismatch. This has important policy implications, because if such additional supply is unable to reduce housing costs significantly, it makes the case for considering non-market housing solutions stronger.

The analysis suggests that the new developments have only marginally eased the unaffordability for rental apartments, and not reduced sale prices to any noticeable extent. New developments were found to be more expensive, have higher rates of private rental, and have higher mortgage payments. In terms of the compromises outlined above, new growth offered little to remedy the diversity of affordable housing options closer to the CC.

High turnover and considerable proportions of private renters and group households suggest the new supply does provide housing for some LICC workers, particularly temporary and student workers. However, some kinds of housing—for instance, family-friendly housing that is affordable—is not being provided through market responses. As such, increases in supply of market housing within the broader labour market catchment of the CC seem to mitigate the observed spatial mismatch in only a limited way.

To the extent that mismatch is occurring, what are the broader implications for the stability, equity and efficiency of the central city economy?

The mitigating factors—such as the different job and worker profiles, good transport connections, and a supply of workers in MI and high-income (HI) households—seem to curtail the extent to which a shortage of affordable housing options affects the

thickness of the LICC labour market. There was little evidence of instability in the viability of current CC industries being due to labour market constraints. It remains a secondary concern among the businesses interviewed and also remains a secondary factor in policy arenas that could redress the issue—like transport, housing and social services.

The above-noted finding that MI households have to make housing compromises when they are connected to the CC labour market is potentially concerning. This was most evident in Sydney and was consistent with other findings that housing in Sydney is particularly unaffordable. This represented a significant differential that would discourage participation in the CC labour market for a much greater number of potential LI workers.

The greater recognition of the issue from the hospitality industry, particularly tourism and accommodation, speaks to the fact that this industry relies on a greater number of, and a greater diversity of, LICC workers. The observed compromises of MI households could be prohibiting this required diversity of workers. For now, the gap is able to be filled by student and other short-term workers who are willing to, for example, rent apartments with unrelated adults.

This suggests that, so long as the labour market is more flexible than the housing market, the extent to which housing costs can impact the CC economy is limited. On the other hand, the hospitality sector could be seen as a canary in a coal mine: other industries could begin to notice similar effects if housing options are constrained further.

What are the housing policy implications of the research?

This research suggests CC businesses, on the whole, are not currently constrained by a shortage of high-quality workers for lower income jobs. Despite the clear link between high housing costs and a spatial mismatch of LI workers from CC jobs, there are a number of mitigating factors at play. These factors—including a supply of short-term workers, lifestyle and professional benefits, and good transport links—have insulated businesses from the effects of high housing costs to a great extent. However, there are signs of constraints, particularly in the hospitality sector, that suggest labour market thickness is being affected by housing costs.

As such, and in the face of high housing costs and the absence of a national affordable housing strategy, ensuring the ongoing attractiveness of our CCs for LI workers will remain a state and local government concern. Consequently, the implications of the research presented in this report point to three key policy requirements with respect to our LICC workforces. In many ways, these policy requirements resemble those already proffered as prescriptions for other urban issues governments face—but they are nonetheless worth reiterating.

The first is a need for a continued focus on facilitating and delivering low-cost and affordable housing options wherever possible, through a combination of planning policy interventions, use of public lands, and state-funded housing support initiatives. Housing being supplied by the market in CC-proximate locations, while accommodating some LICC workers, is not directly increasing affordable or diverse housing options.

The second is a need for an ongoing commitment to public transport policy that fully acknowledges the needs of LI workers. These workers require efficient and affordable (i.e. subsidised) transport options to access CC employment. The role of public transport in connecting a greater pool of LI workers to CC jobs cannot be understated.

The third is the need for a holistic and integrated policy response at the metropolitan scale, involving collaboration between state and local government entities. The relative benefits and costs of possible transport or housing interventions, along with government interventions to distribute jobs to other centres and ensure an efficient land-use pattern, are rarely considered in concert.

1 INTRODUCTION

1.1 Research background

1.1.1 Objectives and purpose

The principal objective of this research has been to establish whether the diminishing supply of affordable housing opportunities in the job-rich central city (CC) areas in Australian cities is having an impact on CC businesses, by making it increasingly difficult to recruit and retain lower income (LI) workers. If so, then it can be argued that overall CC productivity could be affected, as lower-wage employees are every bit as essential to the functioning of central cities as their higher-paid colleagues. This will in turn affect the international competitiveness and economic wellbeing of Australian cities. As far as we can tell, this is the first research to focus specifically on this issue in Australia.

Previous AHURI research has identified the increasing shortage of affordable housing options for LI households within established parts of Australia's metros, and the ensuing trend that these households are increasingly located in the middle and outer suburbs, rather than in the inner cities. This geographic shift of LI households away from the CC has coincided with an ongoing growth of lower income central city (LICC) jobs, as employment at all levels has grown there. This increased *spatial mismatch* between LICC job opportunities and the increasing suburbanisation of LI households raised potential concerns, not just with regards to CC productivity but also other broader social welfare impacts. Yet little work has been done to explore the *economic* impacts of the trend, a gap this research seeks to fill.

1.1.2 Research context

The role housing plays in the broader economy has been widely recognised by policy-makers. To date, however, this has largely focused on macro-economic impacts, such as the economic multiplier effect generated by housing production and property transfers, or the outcomes and implications of housing debt and investment flows on the stability of national (and indeed international) financial systems. What has been less appreciated, and much less researched in Australia, is the relationship between the location and availability of affordable housing provision and the economic capacity of urban areas to function effectively and efficiently (Kelly, Mares et al. 2013; Rawnsley & Spiller 2012; SGS Economics & Planning 2012; Spiller 2013b). Central to this research is the question of how well the structure of housing provision in Australia's major urban centres supports or hinders the efficient functioning of the urban economy, particularly in terms of the access of essential LI workers to job-rich CC labour markets.

That this could be a growing issue can be deduced from the ongoing polarisation of housing opportunities in our largest cities, which has forced an increasing mismatch between the location of housing reasonably affordable to LI households and CC employment opportunities. AHURI research has shown conclusively that the greatest affordability problems are with the LI workers (Yates, Milligan et al. 2007). Other research has shown clearly the increasing role played by lower-value suburban housing markets for LI households (Randolph & Tice 2014). Building on this work, recent AHURI research has explored in more detail the increasing concentration of socio-economically disadvantaged populations in suburban Australia (Pawson, Hulse et al. 2015).

What is much less understood, however, is the impact that the spatial displacement of the lower paid workforce into more suburban housing markets has had on the ability

of employers to attract the workforce that underpins the economic productivity of CCs. High property values (both for sale and rent) and limited supply in relation to workforce numbers may be a substantial constraint to the LI workforce and for employers who rely on this workforce. This project focuses on this critical issue, which feeds into the concern shared by all CC authorities in Australia to maintain a globally competitive labour force. In particular, the City of Sydney, the research partner for this project, has become increasingly concerned about this issue through the recent development of its local *Economic development strategy* (City of Sydney 2013a) and *Housing issues paper* (City of Sydney 2015).

It can be argued that escalating housing costs are likely to have adversely affected CC business efficiency, in the form of difficulties of recruitment and retention. These difficulties may be reflected in high staff turnover, lengthy recruitment periods to find replacement staff, and the extra costs associated with training of staff and higher wage bills. For LI workers, a job in the CC may mean longer commutes at unsocial hours, incurring additional cost, both monetary and social. While this issue has been commonly characterised in policy debates as being one affecting professionals working in public sector jobs (so-called *key workers*), the most critical housing affordability issues are probably faced by low-paid service sector employees, in both the public and private sectors (Yates, Randolph et al. 2006). More recently, concerns have been raised that those employed in increasing numbers in often precarious professional employment, such as in the so-called creative economy that has become a global marker for city economic vitality and growth, may also face significant housing affordability problems (City of Sydney 2009).

However, the relationship between housing costs and business productivity is a complex one. The earlier AHURI study by Yates, Randolph et al. (2006) concluded that there was little direct evidence to support the claim that high-cost areas such as the inner city could not attract workers because of affordability problems *per se*. However, this in part was due to the increasing attraction of such areas to a new cohort of younger apartment renters co-locating in the inner city due to the recent apartment boom in these areas, who had substituted for older workers in these jobs. Nevertheless, these workers faced much higher housing costs than their suburban counterparts. Importantly, the study concluded that the impact of housing costs on an inner-city worker was significantly affected by a worker's position in their household, as well as their life-stage. Gender was also a key factor, as was the prevalence of shift and part-time employment, especially when associated with unsocial hours.

This earlier research focused on the affordability problems faced by LI workers in the wider urban workforce as a whole, rather than the problems faced by CC employers in attracting and retaining key workforce groups. In particular, the current housing market circumstances of LICC workers are largely unknown. To address this research gap, the current project explored the role that housing affordability plays in the productivity of CC economic performance through its impact on labour force stability, efficiency and equity in the LICC workforce.

In order to unpack this issue, the overarching issues covered by the research were defined in terms of seven distinct research questions.

- → RQ1: What is the current state of Australian and overseas practices in planning for affordable housing for LICC workers?
- → RQ2: What is the extent of the spatial mismatch between job structure and affordable housing provision in the labour markets of central Perth, Darwin, Melbourne, Sydney and Brisbane?

- RQ3: Which employee groups are most affected and what is their housing experience in terms of affordability and location?
- RQ4: Which employer groups are most affected by this issue, what problems does this cause them and how do they deal with these problems?
- RQ5: What role has the recent expansion of higher-density housing in inner-city areas played in housing the LICC workforce?
- RQ6: To the extent that mismatch is occurring, what are the broader implications for the stability, equity and efficiency of the CC economy?
- RQ7: What are the housing policy implications of the research?

The research therefore throws light on national and international debates on the opportunities that the new economic resurgence of central cities provides for the inclusion of lower-paid workers. The international evidence indicates that LI households have been increasingly moved away from the inner city and into middle and even outer city locations, as housing markets and job opportunities more generally have reconfigured urban structure (Commitee for Sydney 2013; Department of Infrastructure & Transport 2013; Katz & Bradley 2013; SGS Economics & Planning 2012). This apparent turn around in the fortunes of the inner city over the last two decades and the associated move of the urban poor into the suburbs has been termed the 'Great Inversion' (Ehrenhalt 2013; also Fishman 2005). In effect, the old crisis of the inner city has been substituted by a new crisis of suburbia (Randolph 2016; *forthcoming*).

To what extent has this meant that the LICC workforce has found its opportunities for either housing or jobs increasingly constrained, and what impact has this had on the capacity of CC employers to maintain this component of their workforce? In addressing these questions, this research project therefore directly addresses *AHURI Priority Topic 3: Housing Markets and Productivity*, as well as *AHURI Strategic Research Issue 16: Efficient land and housing markets that meet demand, enable labour market and other mobility and support productivity gains in the economy*.

The remainder of this chapter is structured as follows. First, we briefly outline the research methods adopted to explore the research questions identified above. These are discussed in more detail in the relevant chapter. Then the geographical basis of the research is explained, to establish the definitions used to identify the central city area of our five case study cities, together with their overall population profiles. The definition and profile of the LI populations that are the focus of this report are then discussed. A final section briefly outlines the structure of the rest of the report.

1.2 A brief summary of methods

In addition to a detailed literature and policy review, the project involved the use of quantitative and qualitative research methods to address the identified research questions. These methods were combined into five key components, as outlined below. While components one to three examined spatial mismatch issues across all five case study cities, components four and five focused solely on the Sydney experience.

Component 1: Literature and policy review

- Responds to Research Question 1 (five cities).
- Comprised a desk-based review of relevant literature and policies.

This initial review examined the academic literature on the economic impact of housing affordability as associated with CC labour force productivity, and

benchmarked the Australian experience against that of other key jurisdictions. This included a review of research and policies addressing labour market shortages, retention problems and economic efficiency.

Component 2: Profiling the LICC workforce analysis

- Responds to Research Questions 2, 3 and 4 (five cities).
- Comprised an analysis of the LICC workforce, sourced from the ABS 2011 Australian Census through TableBuilder.

In response to Research Question 2, this component examined workforce data from the 2011 Census for the five selected metros and their CCs. It established the relative size of the workforce catchment to determine the extent of a 'spatial mismatch' of LICC workers, and interrogated possible confounding variables affecting this catchment.

To explore the extent to which the workforce catchment is associated with different workforce characteristics, this component also yields insight into the workers affected by any spatial mismatch, as per Research Question 3. Also, in response to Research Question 4, the census data is used to reveal the industry sectors most affected.

Component 3: Housing constraints on the LICC workforce

- Responds to Research Question 3 (Five cities).
- Comprised an analysis of the housing position of the LICC workforce and the associated housing market, sourced from the 2011 Australian Census through commissioned data, and from Australian Property Monitors (APM) through the Australian Urban Research Infrastructure Network (AURIN).

Census data was used to examine the housing position of the LICC workforce, with some comparison made with the overall metro LI workforce and the overall CC workforce. A specially commissioned dataset was used to examine the housing experience of the LICC workforce, as TableBuilder cannot connect place of work data to household and dwelling data. A complementary analysis of the housing available to buy and rent for LI employees near CCs was also undertaken, using APM sales and advertised rental data from AURIN.

The analysis of the 2011 Census did not consider data from other periods. This places some limits on the analysis, particularly in identifying cyclical or structural trends over time. For example, employment rates and other cyclical economic trends will affect the preparedness and need for workers to travel further for work. In terms of structural trends, this snapshot in time could not identify if, for example, any spatial mismatch is growing in line with housing constraints or if, conversely, it is a residual effect of firms and workers yet to adjust to some changed industrial geography. The findings do, however, suggest time series analysis would be useful future research.

Component 4: Employer perspectives on LICC workforce constraints

- Responds to Research Question 4 (Sydney only).
- Comprised in-depth interviews with employers in the industry sectors identified as being most affected by a spatial mismatch.

In-depth stakeholder interviews in Sydney established the extent to which housing affordability is acting as a constraint on productivity through an impact on recruitment and retention. Topics covered included whether employers had experienced staff turnover or lengthy recruitment periods to find replacement staff; whether they incurred extra costs for recruiting, training or paying staff to cover shortages; and whether housing issues among the workforce had contributed to these issues.

The City of Sydney 2012 Floor-space and Employment Survey dataset was used to profile the industry businesses, and served as a guide for possible participants. A lengthy recruitment process across the selected industry sectors was undertaken, targeting either general managers or human resources (HR) managers of employers in 20 key industry sectors. A total of 266 contacts resulted in 24 successful interviews.

Component 5: Market responses and housing the LICC workforce

- Responds to Research Question 5 (Sydney only).
- Comprised a desk-based analysis of 2011 Australian Census data on the population of new housing, sourced through TableBuilder.

Strata registration data from the NSW Land and Property Information property database, along with the Floor-space and Employment Survey land-use data, was used to identify census SA1 tracts[1] where new higher-density housing has been developed over the last 10 years. This enabled a detailed understanding of the housing and demographic profile of these new developments from 2011 census data. This component provided an indication of the extent to which the market response to housing demand has met the specific needs—in terms of prices and tenure—of the LICC workforce.

Although the final two research components were confined to Sydney, the similarities between Sydney and the other metros analysed—in terms of industries and the extent of a spatial separation of LICC workers—make the findings relevant across Australia. Notably, broad reliance on the market to deliver the necessary housing supply is a common feature of the policy debates in other metros. Data available on the location of new infill housing is not uniform between Australian jurisdictions. Future research, with resources to analyse this diverse data, could entail a similar analysis to that undertaken for the Sydney council area here. Indeed, much of the research undertaken throughout this report serves as an initial foray into a largely unexplored area. Future research will undoubtedly offer more detailed and more technical economic analysis, and so further the discussion.

1.3 The analysed geographies

Flórez-Revuelta, Casado-Díaz et al. (2008) and Feng (2009) highlight the fact that labour markets tend to defy geographic definition. The workforce catchment for one employment centre will overlap with other employment centres that have their own workforce catchments, and so on. The result is that in large metros there is little self-containment within regions of a metro and, if there is, it pays scant attention to formal jurisdictional boundaries (Mitchell & Watts 2010). For these reasons, it is not possible to understand the CC labour market in isolation from the rest of the jobs and labour markets in the metro area.

This research examines five Australian metros: Sydney, Melbourne, Brisbane, Perth and Darwin. In addition to the four largest metros by both population and area, Darwin is included to enable a comparison across a broader set of Australian cities on whether housing affordability may be a constraint on labour productivity.

The metropolitan Greater Capital City Statistical Area (GCCSA) populations are used as a 'catchment' for potential workforce for each city. Note that, as per the purpose of this study, some parts of this area are not considered to be within the effective labour market of a CC, due to geography and transport barriers. However, the degree of integration is such that the population could be expected to move to within that

[1] Statistical Area level 1 (SA1) is the smallest geography in which the 2011 Census data is released; SA1s average 400 persons.

effective labour market, in the absence of housing costs and other impediments. The GCCSA is also a standard census geography, enabling comparison with other research undertaken that would not be possible if a bespoke metro boundary were concocted.

The CC is defined, for each of the five metros, as the SA2[2] with the largest number of jobs (or, specifically, the largest number of workers, as yielded by 2011 census place of work data). It is also, in qualitative terms and as commonly understood, the central business district or 'downtown' of the metro. CCs are typified by high job to resident ratios, although planning practice has in recent years spurned the commercial-residential demarcation (and equally spurned the term 'CBD'). The SA2s in all cases have notable resident populations too.

Table 1: Key features of case study central city SA2s

	Sydney	Melbourne	Brisbane	Perth	Darwin
Number of jobs[1]	251,452	186,129	116,132	134,275	11,527
Proportion of jobs in the metro area	13.7%	10.9%	12.8%	18.0%	20.8%
Number of resident workers[2]	11,101	9,735	4,692	14,940	2,764
Ratio of jobs to resident workers (for comparison, the median ratio for SA2s in the metro area)	22.7 (0.5)	19.1 (0.5)	24.8 (0.5)	9.0 (0.4)	4.2 (0.4)

Source: 2011 Australian Census, calculated from TableBuilder data. NB: Unlike later analysis in this research, the data in this table are not restricted to those with declared and positive incomes.

Notes: 1. Actually the number of people working in the SA2; 2. The employed population over 15 years old living in the SA2.

1.4 Overview of structure of the rest of the report

The report is structured into seven chapters, including this one. *Chapter 2* presents a literature review of academic theory and research on housing affordability, spatial mismatch theories, and the economic impacts of inelastic labour and housing markets. This chapter also provides a review of relevant policy positions, both in key international jurisdictions and across the five Australian metros examined here. The chapter finds that much of the academic literature on spatial mismatch focuses on its social welfare impact rather than its economic impact, and that the evidence regarding the relationship between spatial mismatch and urban productivity is mixed. At the same time, the chapter identifies how concerns about spatial mismatch and productivity are increasingly informing the urban policy landscape, particularly in 'global' cities like New York and London, and also in Australia's biggest metros. This suggests there will be growing interest in developing strategies to address the economic impact of spatial mismatches in Australian metros, and reinforces the need for more evidence-based research on how this issue is actually reshaping our cities.

Having thus demonstrated the need for this research, the next four chapters demonstrate how the methods employed in this project help us to better understand the economic impact of the spatial mismatch phenomenon. *Chapter 3* identifies the LICC workers for the five Australian case study metros and where they live, and explores the extent to which they are spatially mismatched with respect to the CC labour market. This chapter finds that LICC workers are, on average, much more

[2] Statistical Area level 2 (SA2) is a standard census geography intended to approximate a neighbourhood. SA2s average 10 000 residents, and there are between 44 and 281 SA2s in the GCCSAs studied.

separated—around twice as distant—from their place of work compared to the overall average for LI workers in the metro. To some extent this could be explained by a difference in the LI job profiles of the CC and the metro as a whole, and therefore the workers doing those jobs. Beyond the differences in the LI jobs and workforces in and outside the CC, however, the greater distance is probably a function of urban form.

Having identified the extent of a spatial mismatch between LICC workers and the job-rich CC, *Chapter 4* then turns to an examination of the housing position of these LICC workers. The analysis focuses on the extent to which housing constraints contribute to the 'distance premium' experienced by LICC workers identified in the previous chapter, and considers other possible contributing factors. The key findings of this chapter are that additional constraints on LICC workers manifest less as additional housing costs relative to income, and more as a greater degree of compromise on dwelling type, household type, or tenure. In particular, a greater degree of renting mostly explains any additional housing stress among the CC workforce, compared with overall metro rates.

Chapter 5 then turns to examine the labour market, exploring how housing affordability affects employers operating in Sydney's CC. It reports on the qualitative element of the research project, outlining how general managers or human resources professionals describe their experiences of hiring and retaining LI staff across key CC industry sectors. Three key findings emerge from these interviews:

1. Some industries are far more concerned about this issue than others (most notably the service industries).
2. While many interviewees were not significantly concerned, almost all offered anecdotal evidence of housing affordability issues shaping their business in some way.
3. While most interviewees recognised that housing affordability was a challenge, many suggested that it is employees, not employers, who primarily bear the burden of this expense.

Chapter 6 is the final research-based chapter, and examines whether recent expansion of inner-city higher density housing market is providing housing options for Sydney's LICC workforce. To ascertain the role of recent infill developments, we examine the resident profile of new developments in the City of Sydney council area in 2011, as a proxy for infill growth in general, and compare that with the resident profiles of the Sydney council area as a whole and the broader metro area. This chapter identifies four important trends:

1. New developments provide limited affordable housing opportunities for LICC workers.
2. Families with children are under-represented in the high density market, even though the proportion of young families was higher.
3. The house and newly developed apartment markets in the Sydney council area observed the highest rents for the metro area during the 2006–14 period.
4. There is a sharp decline in affordable sales in the newly developed market and Sydney's CC from 2006–14, which may explain why LI workers are increasingly forced out of these CC housing markets.

To complete the report, *Chapter 7* brings together the insights from the previous five chapters to identify some of the key implications of the research findings, and to suggest some policy steps which may be taken to address the spatial mismatch and housing affordability issues that emerge.

2 SPATIAL MISMATCH THEORIES AND POLICY CONSIDERATIONS

2.1 Chapter overview

After introducing the main economic theories, and framing the issue of spatial mismatch, this chapter examines the extent to which Australian urban policy has tackled the issue of a shortage of affordable housing affecting LI workers' access to the CC. This addresses Research Question 1 and, by examining how the issue is identified in current policies, provides some initial indications of Research Question 2.

- RQ1: What is the current state of Australian and overseas practices in planning for affordable housing for LICC workers?
- RQ2: What is the extent of the spatial mismatch between job structure and affordable housing provision in the labour markets of central Perth, Darwin, Melbourne, Sydney and Brisbane?

The chapter comprises a review of national and international policy. It also includes a review of scholarly literature exploring the economic impact of housing affordability issues associated with CC economic productivity.

The main finding of the chapter is that the issue of housing affordability near job-rich CCs is often recognised as a problem. This is typically framed in policy debates as a social welfare and equity problem. However, there is an emerging narrative that a lack of affordable housing options could adversely affect urban productivity.

The connection between urban productivity and housing costs is established in economic terms through labour market thickness, where the greater number of workers with a greater diversity of skills will better match the variety of jobs, through both labour pooling and labour division. If housing costs or compromises within a labour market catchment are not commensurate with job opportunities then a CC will not be able to attract the necessary workforce. Specific research, stemming from Kain's 1968 spatial mismatch hypothesis, has examined the causes and policy responses to affordable housing options being separated from job opportunities.

Notably, policy responses span a variety of government portfolios: transport infrastructure, housing markets and social housing, investment in economic activity outside the CC, and welfare and job-finding services. Further, the issue of spatial mismatch constraining LICC labour market thickness is probably a secondary driver in each of these policy arenas. This highlights the need, as ever, for more integrated policy development, with housing policy only reflecting part of any solution.

Among the policies reviewed for the case study cities, only the larger cities of Sydney and Melbourne have flagged the potential for housing costs to constrain economic growth. This is perhaps a function of their relatively higher volume of detailed policies available, rather than an indication of where the problem is greatest.

2.2 Spatial mismatch hypothesis

2.2.1 Urban form and labour markets

CCs continue to be the primary drivers of urban economies. This is particularly true for post-industrial, 'global' metros where the economy is increasingly driven by industries like business management, finance, insurance, real estate and similar. The urban form shapes around this commercial core with feeder residential neighbourhoods (Anas, Arnott et al. 1998). These neighbourhoods might contain a degree of self-containment in terms of where people work, but they do remain functionally attached

to a CC for a large part of their populations' employment. The viability and growth of the CC will in turn depend on the ease of connections to its neighbourhoods.

The workforce of CCs will include a large number of LI workers. As CCs grow, the number of LI workers will increase with the workforce as a whole. This growth impacts housing prices in the surrounding neighbourhoods as, all things being equal, the greater quantum of workers, particularly those on higher incomes, will price out and push LI workers from well-connected neighbourhoods to evermore functionally separated ones. At some point this will reduce the preparedness or ability of LI workers to go to the CC. This might be because the lower income will not be enough to make the considerable costs (both real and indirect) in reaching the CC worthwhile, given the time and resources needed to overcome functional barriers. Or it might be because there are an increasing number of jobs in the various neighbourhoods and centres closer to them than the CC. Reducing access to job-rich CCs for those already at a financial disadvantage is a clear social issue. Another question concerns the economic issue: will an inability to attract LI workers reduce the economic viability of the CC?

The need for a 'thick' labour market—that is, one with lots of jobs and lots of workers in the same area—to support economic growth of cities has long been recognised. Based on 'economies of agglomeration', a thick labour market is known to improve productivity—that is, the value of outputs for a given amount of inputs, particularly labour. Duranton and Puga (2004) categorise the underpinnings of these economies into sharing, matching and learning. The role of labour revolves around both labour pooling and labour specialisation. Labour specialisation generates learning (human capital) and innovation among workers to increase productivity. Labour pooling disperses and shares that knowledge to increase the quality of workers generally and the chance of matching good workers with jobs quickly, as well as enabling that knowledge to accumulate within firms. Pooling also promotes specialisation among workers through division of labour and diversity in intermediate suppliers, and enables the sharing of risks, like hold-ups in finding (more specialised) workers.

Both bigger and denser metros are known to have consistently higher productivity levels, which is associated with having a thicker labour market. However, within a metro area of a given size or density, not all workers will be able to geographically access all jobs easily. As such, urban form affects the thickness of the labour market for a given job centre—especially a CC—by affecting its effective size. That is, it affects the number of people who can access each job, and conversely the number of jobs available to each person.

CCs tend to have thick labour markets compared to the rest of a metro. This is because of their connection to large amounts of housing, through both good transport connections and higher building densities. This is both a cause and effect of the urban form. Urban form responds to centralised jobs market, and the jobs are then delivered in central areas. CCs are best positioned to benefit from economies of agglomeration, furthering their importance to the overall metropolitan economy. Jae Hong (2010) suggests the relationship between urban form and the labour market is one of the key areas where planning can influence economic growth.

Labour markets are closely linked to housing markets, and labour market elasticity to housing market elasticity. Glaeser, Gyourko et al. (2005) outline how an inelastic housing market—that is, one where a demand increase is met with a price increase rather than a supply increase—will constrain population (and so labour market) growth. This has a knock-on effect on wages and the potential for sustained economic growth to be achieved through increases in productivity. Analysis by Ball, Meen et al. (2010, p.267) similarly found that 'supply elasticities are highly variable and, among

other factors, are related to existing land-use patterns, topology and planning policy'. This is in conjunction with the other ways in which high housing costs can adversely affect broader economic trajectories (see Berry 2006).

To better understand these dynamics, it is necessary to segment both the labour and housing supply of CCs by income. Jae Hong (2010) highlights that different socio-economic groups are affected disproportionately by housing inelasticity and that a lack of affordable options will impact the LI labour market more (see also Yates, Randolph et al. 2006). LI households are, in turn, more likely to be separated from the CC jobs market (Dodson 2005). Importantly, the housing market needs to be elastic within the effective labour market or it will not add to the supply of labour, and have the comparable effect of an inelastic housing market. This is the focus of some research in Australia (Kelly, Mares et al. 2013; Randolph & Holloway 2007; Spiller 2013b), where there has been an increasing expectation that housing demand will be met on the urban periphery, but where it is beyond effective transport links to most of the metro job market, including job-rich CCs.

A limited housing supply that is both within the CC labour catchment and affordable to LI households will mean CCs might not have as high a supply of LI labour as they do of labour in other income brackets. This could be partly offset somewhat by LI workers coming from non-LI households. It could also be partly offset by moving sectors reliant on more LI workers outside CCs, as is historically the case with heavy industry and, more recently, with CC-based firms and industries having satellite offices in peripheral business parks, for IT workers or other LI-worker intensive parts of their businesses. Overall, however, there is the potential for a shortage of affordable housing options to constrain the LI labour market thickness, and in turn the productivity, of the CC economy.

> Jobs may remain vacant longer and employers may eventually have to raise wages and benefits to alleviate worker shortages. The welfare of [all] consumers will be directly impacted by these events as they see higher labor costs passed on to them in the form of higher prices and/or they experience poorer customer service. Hence, the exclusion of lower-skilled workers from [neighbourhoods near those jobs] is not without a potential price that must be paid by [the other] residents. (Ihlanfeldt 2006, p.408)

In strictly economic terms, no labour market is perfectly elastic. Labour market mobility is a complex phenomenon, not only related to access to work (Doogan 1996). Life stage and family structure (including second income sources), housing tenure, relative housing costs, location of family, friends and other amenities, and other factors will reduce the mobility of the labour force. And housing markets are equally unlikely to be perfectly elastic as planning, construction, infrastructure and the political economy of those benefitting from housing scarcity distort and delay the ability of supply to match demand shocks. And while policies seeking to increase housing market elasticity are laudable, a proportion of the LI workforce will always suffer from lack of market-delivered housing. In other words, there is likely an inelastic low-cost housing market within the labour catchment of a growing CC. This places constraints on the LI labour market for the CC. Relatively little work has been done on this front.

2.2.2 Spatial mismatch of low-paid jobs and low-cost housing

The result of relying on housing market elasticity to ensure thick labour market is an ever-distant (or more poorly connected) supply of low-cost housing, and a disproportionately thinner LICC workforce. That is, there may be affordable housing options, but they are not in appropriate locations to be able to add to the labour

market of the CC (although they could add to the metro labour market overall). This is called a spatial mismatch, a concept with a rich research history.

Most literature on spatial mismatch rightfully concerns the equity and welfare issues of lower employment opportunities experienced in disadvantaged parts of a metro. It is used in conjunction with 'skills mismatch' to explain unemployment (or under¬employment) and is thought to better explain geographic disparities in unemployment within metro-wide labour markets (Houston 2005). The social welfare emphasis does differ from this research, which instead focusses on economic impacts of a spatial mismatch. However, this existing literature is of interest because the policy implications will often align: more effectively connecting these populations with job opportunities increases labour market thickness.

The largest body of literature in this vein stems from Kain's thesis that espoused minorities—mostly African Americans—living in US inner cities have low employment options due to the suburbanisation of jobs centres (Kain 1968). There have been a number of reviews of the subsequent studies that confirmed this pattern (Holzer 1991; Ihlanfeldt & Sjoquist 1998). Importantly, Brueckner and Zenou (2003) demonstrate the effect of a spatial mismatch on employment prospects. And Gobillon, Selod et al. (2007) note that the role of commute costs is particularly supported as a contributing factor, with job search difficulties related to distance from job opportunities also weakly connected with inhibiting participation in the workforce. Covington (2009) found segregation levels have improved recently, mostly through poor people moving to job-rich areas. Li, Campbell et al. (2013) explore the impact of spatial mismatch on the economic wellbeing of the city as a whole, concluding that those groups need to be able to access job-rich areas.

There are some key differences between the literature concerned with the suburbanisation of jobs, and the interest here in the suburbanisation of low-cost housing away from CCs. Most notable is that Kain's work and that which followed has been concerned with the discrimination based on race, as much as the geographic segregation of jobs and workers. This has shaped how the problem is measured and defined (Ihlanfeldt & Sjoquist 1998). Race-based discrimination has not been as evident in Australian housing markets, so is less likely to be a factor. There is also the evident reversal of the mismatch, with jobs centralised and low-cost housing at the periphery in the case of a spatial mismatch with the jobs in the CC. This latter point is not as significant, with a number of parallels retaining the relevance of Kain's acolytes.

For example, in all spatial mismatches, it is argued a shortage of low-cost housing in particular locations is partly attributed to planning mechanisms that privilege home ownership and single houses (Levine 1998). Equally, in all cases there is a limit to how much more construction will attract LI households. This is due to the fact that house location choice will be affected 'by such factors as two-worker households, job mobility, race, and other issues affecting decisions about residential location' (Levine 1998, p.147), to which a cultural preference for lower-density urban typologies could be added. The barriers to mobility of LI households have drawn some attention in this respect. However, Doogan (1996) offers a critique to the argument that, in some instances, housing tenure—particularly public housing, which is often associated with job-poor areas—can reduce the degree of mobility among the workforce. He suggests lack of mobility is related to job insecurity: a sense of the devil you know and the greater risks associated with work outside familiar social networks.

More generalised spatial mismatch theories have emerged. Ihlanfeldt and Sjoquist (1998) highlight that spatial mismatch—and the exclusion of low-cost housing from job-rich areas—extends beyond the traditional inner-city 'ghetto'. The transformation of the economic base of cities—referred to as the 'Urban Inversion' (Ehrenhalt

2013)—reverses the spatial mismatch issue. Now, the wholesale gentrification of the inner city, and the concentration of growth sectors of the urban economy into more central locations, has led the growing exclusion of the LI workforce to more suburban locations, of which there is particularly strong evidence in Australian cities (Pawson, Hulse et al. 2015; Randolph & Tice 2014). There has also been recognition of the increasing costs of housing, particularly challenging for those on lower incomes (Yates, Milligan et al. 2007). More recently this academic literature has translated into more targeted policy-oriented discourses (Australians for Affordable Housing 2013; SGS Economics & Planning 2012; Spiller 2013a; Ting 2015), discussed further below.

Bill, Mitchell et al. (2008, p.304) did examine the degree to which low-skilled workers commute further around Sydney, and found 'little evidence that low-skill occupations have lower levels of employment accessibility, as evidenced by a longer minimum commute, and is in contrast to the notion that housing affordability problems are lengthening commutes for LI and low-skill workers pushed to the city fringe'. Unlike this research, it considers overall metro jobs and labour markets. As such its findings are likely to reflect the abovementioned trend for LI jobs to be found outside the CC.

2.3 Policy responses

2.3.1 Policy taxonomy

A spatial mismatch requires three things: a geographical separation of potential labour from jobs; barriers to relocating people closer to jobs or vice versa; and barriers to access between them (i.e. transport). Hughes (1995) categorises the three main geographical solutions to Kain's spatial mismatch as overcoming any one of these: mobility strategies to connect residents in poorer neighbourhoods to suburban jobs; development of the local economy near disadvantaged neighbourhoods; and the dispersal of disadvantaged populations to suburban neighbourhoods near jobs. For our purposes, this can be generalised to:

- → transport strategies connecting jobs and labour
- → peripheral economic development to move jobs closer to labour
- → housing strategies to move labour closer to jobs.

As Glaeser (2010) notes, all agglomeration economies relate to overcoming geographic distance. Mobility responses to a spatial mismatch include hard infrastructure—like roads, trains and buses—to areas with a surplus of labour, as well as other interventions to increase mobility of LI workers, such as travel subsidies (Chapple 2006). Research in Australia has identified that many neighbourhoods of LI households suffer 'transport disadvantage' (Burke & Stone 2014; Dodson 2005). While there is some evidence that increased car ownership levels improve employment prospects (Ong 2002), such approaches also would not be as applicable in the context of CC jobs market. Access to CCs is dominated by public transport—or, at least, more curtailed by congestion of private vehicle movement and parking—so improving public transport is likely to have a greater impact.

More generally, of the three responses, improving transport options to areas with existing labour supply is better at overcoming a lack of housing mobility (i.e. where people are less likely to move for work due to second incomes, schools, social networks, environmental amenity, and other factors). Also, transport options will improve aggregate mobility of the workforce, more ideal than simply thickening the CC labour market. This last factor, though, has a flip side. Better transport options remain a viable way to improve the thickness of a CC's *skilled* workforce, since such jobs are more concentrated in the CC. Increasing the low-skilled, and therefore lower income, CC workforce is less evident: transport options might not overcome the differential

attractiveness of non-CC locations for LI jobs. Any new connections could well reduce travel barriers (cost and time predominantly) to these alternate locations too. That is, distributed low-paid jobs will benefit from better transport, and increase potential connection to LI workers.

Policy responses that promote peripheral or distributed economic development, and so jobs closer to labour supply, through a multi-nodal city form for example, are also common (Anas, Arnott et al. 1998). The sense that the multiple nodes will in some way be more self-contained is questioned though. Cervero (1996), for example, found that even when there is local job–worker balances, there is little self-containment in poly-nodal conurbations. This holds intuitively, as the multiple nodes need to have some economic advantage over a geographically separated group of small towns. That economic advantage is the greater mobility between these nodes, capitalising on the economies of agglomeration of the metro labour market overall.

There is also a theoretical limitation to moving jobs to people, as this thins the job density and undermines other economies of agglomeration. For some industries the economy of agglomeration may not be such a factor, and the relative excess labour supply away from the CC could draw those industries out of the CC. Retail and hospitality sectors are possible candidates for this. One question is whether a CC economy can thrive in the absence of these sectors, as the amenity and consumer economy is often a key contributor to CC economies. These sectors are also central to efforts to attract workers and residents to the CC as part of re-populating efforts and residential urban infill. The economic development approach might achieve the preferred social outcomes of providing job opportunities to those in parts of the metro disconnected from job-rich areas. But it does not provide a thicker workforce for the CC jobs market.

The inverse, and third policy response, is moving LI labour closer to the CC with more affordable housing options. This is achieved through market forces—and better elasticity in housing sub-markets to increase supply in particular locations and keep housing costs down—as well as through other policy interventions in targeted low-cost housing—like rent control, key worker housing or other government subsidies. The former strategy—increase density to increase housing supply in CC-accessible areas—is usually more appealing in a private housing market as it requires less government intervention. Beyond a broad economic acceptance that greater supply for a given demand will equate with a lower price equilibrium point, the strategy is somewhat confused. In some instances, the new housing stock is expected to meet the demands of the diverse workforce—and so LI households. In other instances, new growth is acknowledged to be relatively unaffordable, but is expected to free up other stock that meets the demand for low-cost housing, through processes of ‘filtering’, such as downsizing to free up family homes. It is unlikely, though, that in a housing market constrained by community expectations about built form and urban amenity (realised through zoning and other density controls) that the relative scarcity can be satisfactorily overcome by market supply alone.

It is in this pragmatic context that the latter strategies, of non-market housing options, tend to exist. However, there are few examples of subsidised housing supply being justified through economic benefits (and are often considered anathema to free market economics) (Krugman 2000). More typically, these strategies are argued through equity, market failure and intrinsic need for affordable housing options. One notable exception is ‘key worker’ housing schemes, which subsidise housing for, usually, public sector workers to buy or rent in unaffordable areas. The goal is to improve recruitment and retention rates and allow these sectors—whose wages are often set by national standards—to remain in central locations without compromising

on workers. While such programs can help to bridge any salary divide between these public sector workers and similarly qualified workers in the private sector, it is important to note that the key workers targeted by such schemes aren't always the LICC workers struggling the most with housing affordability issues (Bill, Mitchell et al. 2008; Yates, Randolph et al. 2006).

Outside these three policy categories, Chapple (2006) highlights that programs to improve labour participation of LI earners are also important for overcoming functional separation from job opportunities. This includes social services and job-finding agencies connecting workers with distant jobs. In practice, these four responses are likely to fall to separate policy arenas. Transport strategies will fall to a transport agency, potentially separate roads and public transport agencies. Housing strategies will fall to a planning agency, potentially separate housing and planning agencies for public and private development, respectively. Economic development strategies will fall to industry and trade agencies. And job-finding interventions will fall to social services agencies. There has been little work done on integrating the policy areas, and comparing the relative benefits and costs of different interventions: say, is it better to build better train networks or more subsidised housing? One example, on which there is limited detailed research, is the Greater Manchester model of taking a holistic approach to infrastructure decisions, and measuring various options against common criteria of overall economic development and productivity (Atter 2012).

2.3.2 International comparisons

Concern about a shortage of LI labour near CCs is not unique to Australian cities. Highlighting the widespread nature of the issue, UN Habitat recognised the potential for housing affordability issues to affect urban competitiveness in 2011. In *The Economic Role of Cities*, it identified housing cost as one of the factors outside the direct control of firms, but which have a significant impact on the attractions of the city as a place for business. (UN Habitat 2011, p.22).

A number of factors will affect the likelihood of a shortfall of affordable housing options being available near CCs. The size of the city is one factor that affects the extent to which spatial mismatches occur (Ihlanfeldt & Sjoquist 1998). Large cities are also more closely tied to global trade and financing; a 'global city' model that is typified by greater social segregation (Hamnett 1994; Sassen 1991). This model is also evident in Australian cities (see Table 2), where workforce shifts from heavy industry to service and finance industries have been experienced (Forster 2006). Finally, Cassiers and Kesteloot (2012) link a similar socio-spatial polarisation pattern in Europe to neoliberal flexible accumulation urban growth models, that is also relevant to Australian cities (Gleeson & Low 2000).

While there are many cities around the world grappling with this issue, London and New York have been at the forefront of the public debate on housing unaffordability (see, e.g. City of Sydney 2015). While *The Observer* recently labelled London 'the city that ate itself' (Moore 2015), New York's new mayor declared a 'crisis of affordability … built on New York's success' (City of New York 2014). The economic impacts of these housing affordability issues are also part of the debate. In London, for example, the business community recently expressed high levels of concern about this issue in a local business survey:

> Housing was listed as one of the biggest threats to competitiveness in London this year, which is similar to last year where businesses cited housing as one of the major weaknesses for the capital. With the average price of a property in London now over £414 000 it is not surprising that companies are increasingly concerned about the lack of good quality affordable housing and the impact

this is having on their capacity to attract and retain staff. This is especially acute for entry-level and mid-level manager employees, where over half of companies surveyed considered access to and cost of housing to be having a negative impact on their recruitment ambitions. (CBI & KPMG 2014, p.2)

Table 2: Global ambitions of Australian cities

Sydney	**State**	*Vision for Sydney in 2031* The Government's vision for Sydney is: a strong global city, a great place to live. (NSW Government 2014, p.2)
	City	*2030 Vision* Global: The City will remain Australia's most significant global city and international gateway with world-class tourism attractions and sustained investment in cultural infrastructure, icons and amenities … (City of Sydney 2013b, p.16)
Melbourne	**State**	*The Vision for Melbourne* Melbourne will be a global city of opportunity and choice. (Victorian Government 2014, p.inside cover)
	City	*Goal 3: A prosperous city* Melbourne will have a global focus with first-rate infrastructure and services, a highly skilled workforce and affordable business accommodation. It will share knowledge, mentor emerging businesses, collaborate and attract global investment and visitors. (City of Melbourne 2013b, p.22)
Brisbane	**State**	*Regional Vision* … At its heart is Brisbane, state capital and subtropical world city … (Queensland Government 2009, p.10)
	City	*Our New World City* Target: By 2031 … Brisbane will be ranked in the top 20 world cities on independent global city ranking indices. (Brisbane City Council 2013, p.30)
Perth	**State**	*Key themes* Prosperous: Our success as a global city will depend on building on our current prosperity. (WA Government 2010, p.10)
	City	*Community vision* … As a global city, there is a diverse culture that attracts visitors. It provides city living at its best. Local and global businesses thrive here …. (City of Perth 2013, p.15)
Darwin	**State**	*Gateway between Australia and Asia* … Darwin is a globally competitive logistics and servicing hub [and will] provide access to markets and underpin trade growth. (NT Government 2015, p.7)
	City	*Strategic Plan: Evolving Darwin Towards 2020* Darwin is … one of Australia's most modern and multicultural cities, and Australia's natural gateway to Asia …. (City of Darwin 2012, p.15)

Given the level of concern, it is not surprising that both London and New York have implemented policies to try to minimise the economic impact of these housing affordability issues. In the UK, an important policy response has been around the narratives of key workers, which have grown in prominence in the 2000s (Raco 2008). It has largely been justified through public sector worker recruitment and retention

(Morrison 2003). One evaluation (specifically of the Key Worker Living Programme) found that a sizeable minority of key workers would have left their current post if not for the program, while 60 per cent of participants claimed they were more likely to remain in their occupation as a result of the assistance (Battye, Bishop et al. 2006). Another similar approach has been the adoption of 'London loading', where both public and private employers pay higher wages in London than they do for the same roles elsewhere. This approach has been promoted by the Living Wage Foundation, a non-profit that asks employers to commit to higher wages across the country, but especially in the capital. A 2012 study found that most organisations paying the London living wage saw some reduced staff turnover and illness rates for most organisations (Wills & Linneker 2012).

While these policies seek to improve the ability of LI workers to cope with expensive housing markets, other policy responses instead aim to address the shortage of affordable housing supply. A popular approach has been inclusionary zoning policies, which Calavita and Mallach (2010, p.12) describe as '… arguably the most significant new public policy direction in the realm of social and affordable housing in recent decades'. Broadly speaking, these policies either incentivise or oblige developers to include an allocation of affordable housing in their development projects. Since 1990, the UK has made 'provision of affordable housing … a material consideration for granting permission' (Whitehead 2006, p.33) for residential developments. In New York, the policy recently shifted to a mandatory approach for many new developments, as part of a broader plan designed to 'build and preserve 200 000 affordable units over the coming decade' (City of New York 2014, p.3). Inclusionary zoning is also common in other US jurisdictions and around the world, and has been used in Sydney for the Pyrmont-Ultimo and Green Square redevelopments.

New York also has a long-standing policy of regulating the rental market, with over a million apartments in 2011 subject to either rent control or rent stabilisation (Furman Center 2011). While economists have historically derided rent controls as an ineffective way of addressing housing affordability, some more recent work has raised questions about this view (Arnott 1995), as its effect will depend on the program's design and how it is combined with other policies. In an imperfect housing market, Arnott and Igarashi (2000) argue that rent control may have some benefits, even if other policy approaches may still be more effective.

2.3.3 Australian consideration

Spatial mismatch has been considered in the annual State of Australian Cities (SOAC) report for some years now. The most recent report (Department of Infrastructure and Regional Development 2015, p.41) explores the issue in detail, on the basis that:

> Australia's cities are now increasingly characterised by the significant spatial divide between areas of highly productive jobs and the areas of population based services, reflected through the price premiums associated with houses that have better access to the city centre. (p.41)

In its analysis, the SOAC report suggests that this divide has the potential to undermine the productivity of Australia's cities, arguing that:

> Ensuring that Australia's most productive regions—the inner areas of its cities—remain unconstrained, efficient and productive is critical. With such dense economic activity occurring within these relatively small areas, even minor inefficiencies can have a major impact on Australia's national economy and remedying those inefficiencies can reap large economic benefits. (p.64)

While the SOAC report does not offer empirical evidence of such inefficiencies occurring, the detailed focus on the spatial mismatch issue nonetheless highlights its increasing prominence as a topic for policy debate.

This prominence is also reflected in other recent contributions to public debate on the impact of a spatial mismatch. In 2013 the Grattan Institute argued that an analysis of 'Australia's four largest cities … reveals strains in the triangle of work, home and transport that could threaten national prosperity' (Kelly, Mares et al. 2013, p.1). This claim was based on the finding that 'labour markets are shallow in significant parts of Australia's biggest cities [because in] many suburbs—particularly outer suburbs—residents can reach fewer than 10 per cent of all metropolitan jobs with a reasonable commuting time'. To reach this conclusion the assumption was made that a 'reasonable commuting time' included anything up to 1 hour each way, so the findings do not reflect how far workers are willing to travel in practice to access good and/or available jobs. Nonetheless, the report highlights the potential for spatial mismatches to affect productivity as well as social impact, the latter of which has been the usual framing for research on these issues.

Not surprisingly, some of the most vocal policy advocacy on this issue has emerged from the Sydney context. As housing affordability has become an increasingly pressing political issue, there has been a growing tendency to point to constraints on urban productivity as one of the negative side-effects, although without necessarily exploring the connection in detail (see, e.g. Williams & Macken 2012). The Committee for Sydney has been particularly vocal in advocating on the necessity of 'ending the divide' between the CC and Western Sydney. The Committee proposes a range of policy approaches—including more affordable housing and better transport access, as well as a polycentric urban structure—designed to help improve productivity outcomes for the city as a whole (Commitee for Sydney 2014). At the same time, however, the Committee argues that simplistic narratives about the spatial mismatch need to be 'debunked' by exploring the nuances of the relationship between jobs and housing in Sydney, noting that the mismatch relates primarily to 'high value add service sectors' (Commitee for Sydney 2015, p.16). In doing so, the Committee highlights the need for more detailed research of the kind undertaken for this project.

While the increasing prominence of debates on spatial mismatch issues in the Australian policy discourse is notable, the implementation of associated policies has been less apparent. The Grattan Institute report points to two of the policy approaches discussed above: transport and housing. While transport projects can be effective at increasing the mobility of labour, they are also expensive, slow to implement and often politically controversial. For example, the new Sydney Metro train network will improve the commuting options from the north-west and south-west into the CC, but will not be fully operational until 2024, despite plans being made for it (in various guises) since at least the late 1990s.

At a federal level, a number of housing subsidies available—including Commonwealth Rent Assistance, the National Rental Affordability Scheme and the Housing Assistance Fund—tend to be promoted under the banner of social equity or economic stimulus, rather than improving productivity. Their effectiveness in addressing spatial mismatch is reduced by the fact that they are not geographically targeted, meaning they are likely to have greater impact in cheaper areas of the city, not necessarily job-rich areas. So, while they may improve housing affordability, there have been recommendations that housing subsidies do more to make a difference in areas close to job-rich CCs (Jobs Australia 2014).

2.4 Case-study context

Increasingly, local governments across state and territory jurisdictions are subscribing to integrated planning and reporting models, either by requirement of state government or voluntarily in line with best management practice. These documents give a good idea of the extent of, and relative priority given to, LICC housing as an issue.

In terms of specific policy documents, which are intended to either inform or respond to an overarching integrated plan, LICC housing often arises in either: a) economic development strategies—that is strategies within which labour force supply would be considered—or b) housing strategies—that is strategies within which housing affordability generally or affordable housing specifically would be considered. In both cases, there is, in some instances, further consideration in even more specific policies, such as: affordable housing, or even crisis housing, policies under the umbrella of social services; or industry sector-specific strategies, such as retail or tourism strategies. Finally, as noted, transport strategies sometimes argue the need to accommodate the workforce of the CC.

Local government structure in Australia's CCs varies by magnitude (let alone size). The 'capital' councils (i.e. the councils within which the CC falls) vary from residential populations of 15 000 to over 1 million. Equally—although not necessarily correlated with their relative catchment—there is a great variation in the degree to which housing the CC's workforce (and the LICC workforce) has a considered policy. All five case study cities fall within broader state/territory government strategic metropolitan planning, which cover the bulk of the remainder of the metros, in terms of housing and labour markets for the CCs.

2.4.1 Sydney

Not surprisingly, the relationship between housing affordability and economic productivity is a topic of more detailed policy consideration in Sydney, which is routinely recognised as one of the world's most expensive housing markets. In 2009 the City of Sydney released an *Affordable rental housing strategy 2009–2014*, which listed as a key consideration the 'economic impacts of decreasing housing affordability on the [council area's] economy' (City of Sydney 2009, p.1). The strategy dealt directly with the potential productivity impact of a spatial mismatch:

> Sydney is Australia's economic capital. As well as being of international and national significance, the [Sydney council area] is of enormous importance to the Sydney Metropolitan region. It is essential that the City maintain the strong and diverse labour force that drives the economy. Where people on very low to moderate incomes are unable to access appropriate and affordable housing in the City or in reasonable distance of the City it is likely that they will seek employment closer to the homes they can afford. Certain employment sectors that rely on a workforce of unskilled, semi-skilled and skilled workers are likely to experience difficulties in recruiting staff as access to affordable housing declines. (p.3)

A similar perspective informed the City of Sydney's *Economic development strategy* in 2013, which recognised that 'a key challenge that could constrain [Sydney's] future economic growth is the lack of an adequate supply of housing for a range of household types and income levels' (City of Sydney 2013a, p.32). It went on to note that:

> There is a need for affordable housing that is targeted to meet the needs of low to moderate income households which are crucial to the efficient

> functioning of a global city. Where households are disproportionately located in the outer ring of Sydney, access to labour in the inner city becomes increasingly restrictive and the communities more segregated. (p.35)

The inclusion of housing affordability in an economic development strategy is notable, as is the way the potential labour and social impacts of a spatial mismatch are addressed concurrently. A similarly high level of concern is apparent in the City of Sydney's recently released Housing issues paper (City of Sydney 2015). The paper argues that:

> Housing quality and affordability affect the city's ability to attract and retain a global workforce. Workers essential to the city are being priced out. This includes nurses, teachers, cleaners, bus drivers, administrative, hospitality and tourism sector workers, musicians and artists. (p.2)

This statement picks up on and expands the key worker argument, which was previously outlined in City of Sydney's 2013 strategic plan, *Sustainable Sydney 2030* (City of Sydney 2013b, p.53). While the strategic plan did not consider spatial mismatch issues in detail, it did identify '[e]nsuring that housing is available for low to middle income workers in "essential" activities such as teaching, nursing, police and emergency services' as a required action to achieve the goal of housing a diverse population.

For its part, the 2015 Housing Issues Paper offers a far more detailed policy analysis of the relationship between housing affordability and productivity.

> Sydney must be globally competitive to secure Australia's economic prosperity. The City of Sydney's economic output accounts for close to a quarter of the NSW economy and approximately 7 per cent of national GDP. It is currently estimated at $107 billion. Sydney continues to rank highly in indices of global cities, but very poorly on housing affordability and transport infrastructure quality … The housing affordability crisis, coupled with chronic undersupply of community rental housing for key workers, presents a challenge to Sydney's sustainable growth and productivity. Workers in essential urban services must be able to live in or near the city to support urban productivity and enable the economy to thrive. Businesses must be able to attract and retain a diverse workforce. Failure to address these issues can damage Sydney's reputation as a desirable global city, with broader economic impacts. (City of Sydney 2015, p.9)

After outlining a lengthy list of possible actions to improve housing affordability, the paper goes on to conclude that '[a]ction must start with a recognition of the fundamental importance of housing supply diversity and affordability to Sydney's liveability and continuing success as a global city'. (p.30)

The approach taken at the state government level in the most recent metropolitan strategy, *A Plan for Growing Sydney* (NSW Government 2014), is somewhat different. The link between housing affordability and economic productivity is less forcefully articulated and the primary policy goal is to 'Grow Strategic Centres—Providing More Jobs Closer to Home' (p.7). The logic for this does identify a link between affordability and productivity.

> Locating new housing in centres delivers a range of economic, environmental and social benefits to the community. Research by the Organisation for Economic Cooperation and Development (OECD) has similarly found that productivity benefits arise from a more compact city. (p.11)

Overall, however, the plan reflects a largely pragmatic, market-driven approach to housing policy, framing the government's role as removing barriers to private sector housing provision. As such, the plan focuses on strategies for locating economic activity closer to housing, as opposed to providing housing closer to existing job centres (primarily the CC). In doing so, the plan advocates more clearly for a shift towards a multi-nodal form (primarily focused on development of Parramatta as the 'second CBD'), rather than targeting housing policy towards providing additional housing for LI workers near the existing CC.

2.4.2 Melbourne

Policy-makers in Melbourne have been discussing the issue of spatial mismatch for a number of years. In 2013 the City of Melbourne released a housing discussion paper, which identifies '[h]ousing that supports the economy and cultural life of the city' (City of Melbourne 2013a, p.20) as one of the 'housing outcomes we want and need' (p.17). In doing so it identified particular groups of residents as particularly at risk of being forced to move beyond a reasonable commuting distance to the city. These groups included creative workers, whose presence was linked to having 'a city that enhances our reputation as a vibrant place where cultural diversity and innovation is celebrated. This requires affordable housing that supports those working in creative arts' (p.20). The paper also makes mention of knowledge workers, who 'prefer dense urban environments, large cities and seek cultural and educational opportunities and affordable housing, home ownership opportunities and options to live in single detached houses or large apartments' (p.20). The paper argues that '[h]ousing therefore has a vital role in ensuring that these workers are attracted to live in the city' (p.20) and therefore has the potential to impact on urban productivity.

> Sixty-seven per cent of workers in the City of Melbourne are knowledge workers. A lack of relatively affordable housing for this group could reduce the competitiveness of the city if housing costs rise to the level that they are a deterrent for highly qualified, mobile employees who have the greater freedom of choice in choosing their city of residence. (p.32)

Of more direct relevance to the current research, however, is the discussion of housing affordability for key workers and workers in lower paid service industries. On the issue of key workers, the argument was framed as both a social issue and an economic issue:

> The provision of affordable housing is important for key workers, on which the functionality of the city depends. Key workers can include, for example, emergency workers, nurses, teachers, police, hospitality workers and cleaners. If these workers can't afford to either live in the area or within a reasonable commute distance then their quality of life will be impacted by longer travel times and higher transport costs, employers will face additional costs to compensate employees for travel costs and inconvenience, and the provision of these services could be compromised in a given area. Exacerbating this situation, these employees are not usually so poorly paid that they are entitled to low-income housing assistance, making them more exposed to increased private housing costs. (pp.31–32)

In discussing the impact of LI workers being excluded from the housing market, however, the argument shifted more towards the social and equitable impact than the potential effect this may have on urban productivity.

> The unemployed and lower skilled, lower paid service based occupations such as sales assistants, hospitality workers, artists and some educational professionals are likely to be experiencing the greatest levels of housing

> stress. As affordability declines, these workers are forced to either live in medium or high rent dwellings … or to relocate to more affordable locations outside of the municipality. This impacts on the diversity of the city and decreases access to employment opportunities for these workers. (p.35)

It is interesting to note the inclusion of hospitality workers in both the key worker category and the service-based category of employees, highlighting some of the lack of clarity in the key worker narrative more broadly. However, neither affordable housing shortages nor the availability of employees are mentioned as issues in the *Melbourne Retail and Hospitality Strategy*, released jointly by the City of Melbourne and Victorian Government (2013).

The same year saw the release of *Plan Melbourne* (Victorian Government 2014), which provides more specific guidance on how the state government would aim to address housing affordability issues. While the plan does not explore the issue of spatial mismatch in as much detail as the housing discussion paper, it does note that 'growth has placed strains on the city's infrastructure and service systems and is increasingly responsible for issues, which, if left unchecked, will undermine the city's liveability and competitiveness over the coming decades' (p.5), and identifies housing affordability in areas close to the city as one of the issues. The plan also identifies 'locating housing closer to jobs and services' as a guiding principle of improving housing affordability in Melbourne, noting that:

> Melbourne's growth areas house about one-fifth of Melbourne's current workforce, but only 13 per cent of Melbourne's jobs are located in these areas. This means that many people have to travel outside their municipality for work. Some workers (e.g. emergency workers, nurses, teachers, police, hospitality workers and cleaners) need to live closer to where they work than others. Lack of affordable housing for workers closer to their workplace can impact on their quality of life, due to long commutes to work and higher transport costs. Our focus on encouraging mixed-use developments and greater housing density near jobs and transport will help achieve a greater level of choice for medium- and low-income households in terms of locating nearer to employment opportunities. (p.55)

This approach picks up on the key worker narrative, but again the primary focus is on improving the lifestyle impacts of spatial mismatch issues, rather than the broader economic productivity issues.

More recently, however, the City of Melbourne has released a new housing strategy (City of Melbourne 2015), building on the earlier discussion paper, which is more explicit in identifying the link between housing affordability issues and economic productivity. Again, creative industries and knowledge workers (including students) are identified as one of the key populations that need assistance in order to prevent a negative impact on productivity.

> Melbourne is well known as a vibrant city where education, cultural diversity and innovation are supported and celebrated. This requires housing that is affordable to students and those working in the creative arts and other similar fields. Our reputation as a thriving city of the arts and education could be threatened if housing affordability continues to decline … Considering the predicted growth, our aspiration for affordable, well designed housing is not only a basic requirement for people from all walks of life but is also an essential component in creating successful neighbourhoods and servicing a growing economy. It is important to leave a positive lasting legacy which

> successfully balances the social, environmental and economic needs in one of the world's most liveable cities. (p.12)

Key workers are also identified, although interestingly the housing strategy is clearer in identifying LI workers like service industry employees as part of this cohort, as well as public service employees.

> *Future Living* identified that there is a housing affordability issue for key workers such as receptionists, cleaners and those working in the hospitality industry who have poor to limited access to all rental dwellings within a 56 minute commute of the central city—almost three times the travel time suggested as desirable within *Plan Melbourne's* '20 minute neighbourhood' concept … The affordability of housing is now impacting households on incomes of up to $100 000 per year. This includes higher paid key workers such as nurses, teachers and emergency workers as well as mid-career knowledge workers … Living in the outer suburbs, remote from jobs, dependent on public transport investment and vulnerable to petrol price increases should not be the only option for low-income earners. (p.24)

Again, however, the primary concern raised in relation to the spatial mismatch is the social and/or lifestyle impact on the individuals affected, rather than broader economic effects.

In addition to broad policy statements like these, the housing strategy also outlines some more specific policy interventions that are intended to address these affordability issues. These adopt similar approaches to those outlined above, including commitments to 'support development bonuses' for developments in certain designated urban renewal zones, and to 'consider including up to 15 per cent of dwellings constructed' (p.5) by the City of Melbourne as affordable housing.

2.4.3 Brisbane

As the largest local government in Australia, Brisbane City Council has over a million constituents and responsibility for a far larger geographical area than other capital city governments. This remit means the local government area is a closer geographic match to the CC labour market catchment area than is the case for the other cities studied. It might therefore be expected that Brisbane City Council would be more active in advocating on housing affordability issues in the city, especially as they relate to the economic growth of the CC.

Recent policy documents suggest housing affordability is not currently a high priority, although it does rate a handful of mentions. The *Economic development plan 2012¬–2031* identified affordable housing as a factor that enhances a city's lifestyle, which in turn 'plays an ever-increasing role in creating a place where people want to live and work'. (Brisbane City Council 2012, p.24). The *Brisbane vision 2031*, released the following year, noted that since 2006 the council had '[e]nabled a potential 50 per cent increase in dwellings within a 5 kilometres radius of the Central Business District and more than 30 new towers in the city centre' (Brisbane City Council 2013, p.19). Building on this achievement, the plan sets the 2031 target of '156 000 new dwellings to meet anticipated growth, of which 138 000 will be infill dwellings, that is located within the existing urban area, in accordance with the *South East Queensland regional plan 2009–2031*' (p.36). There is little detail as to how this target will be achieved, however, other than that '[c]ouncil will collaborate with various levels of government, other organisations and international partners' to address 'housing choice' as one of a number of important issues facing the city (p.20).

A more recent planning document released by the Lord Mayor, *Brisbane 2022: New World City Action Plan* (Lord Mayor's Economic Development Steering Committee 2015), was released in 2015 as a follow up to the city hosting the 2014 G20 Meeting. The plan is very high level and makes no mention of housing issues, other than to note some industry feedback that if '[y]ou keep the city *liveable* and provide for density, housing and a metro system … your *knowledge workers* will stay in the city' (Lord Mayor's Economic Development Steering Committee 2015, pp.20, original emphasis). While this statement recognises the economic benefits of having the workforce near the CC, it does not indicate any particular concern about the living arrangements of the LI workers of interest in this research.

2.4.4 Perth

Until recently, Perth was experiencing rapid increases in property prices fuelled by population and investment growth largely fuelled by the mining boom. Nonetheless, the issue of a spatial mismatch undermining urban productivity does not seem to have been particularly high on the policy agenda to date. The City of Perth's *2029 Vision* focuses more on the need to ensure 'housing diversity' (City of Perth 2013, p.5) than housing affordability per se. The state government's *Directions 2031* planning policy is more direct in identifying a need to provide more affordable housing. While it does not discuss the impact on industries needing LI workers, it does connect this with economic impacts in certain skilled industries.

> We also need to develop Perth as a world class city that will attract people with the skills necessary to support the employment needs of our mining, manufacturing and construction industries and to provide affordable housing in a range of locations. (WA Government 2010, p.21)

In addition, *Directions 2031* proposes an infill development approach to housing provision, in line with a 'connected city scenario'. The underlying aim of this approach is in part economic, but not explicitly linked to enhancing productivity.

> One of the key objectives of Directions 2031 is to improve the relationship between where people live and where they work, to reduce commuting time and cost, and the associated impact on transport systems and the environment. (p.30)

2.4.5 Darwin

Housing affordability as a cause of spatial mismatch has not been a topic of targeted policy consideration by Darwin's local government (see City of Darwin 2012), which is unsurprising given the city's scale. It is currently possible to traverse the entire metro area by car in under 20 minutes, meaning unmanageable commutes are probably not an issue anywhere in the city. If there is an affordability problem—either in housing alone or in the combined cost of housing and transport—then it is a supply issue, not a spatial mismatch issue. The appropriate policy responses in this context would be to increase the supply of housing anywhere or to subsidise fuel costs as the Queensland government did until 2009.

2.5 Chapter summary

To sum up the relevant policy position on the issue of LICC housing constraints, as per the initial research question: there is evidence of growing recognition by major-city governments, both in Australia and overseas, of problematic high housing costs. To a large extent, policy consideration frames high housing costs as a social welfare and equity problem. However, there are emerging narratives in a number of strategic planning policies that explicitly identify the direct impacts of housing costs on urban

economic growth. In both Sydney and Melbourne, housing and economic development strategies note that housing costs can limit access to CCs, which can in turn thin LI labour markets, reduce productivity and, ultimately, act as a drag on the economic growth of CCs.

Specific research into the economic impact of high housing costs mostly concerns broad macro-economic consideration of reduced consumer spending and wage inflation. Very little research was uncovered identifying or quantifying constraints on productivity being caused by a shortage of LICC workers. Literature following Kain's (1968) spatial mismatch hypothesis does, however, identify a number of policy responses germane to the issue at hand. These were, to varying extents, considered in the case study cities: housing policies were particularly prominent in local government strategies, although recognition that local governments need to advocate better transport connections was also raised. Not surprisingly, policy approaches that sought to distribute economic activity—take jobs to the labour force—were more common in metro-wide planning strategies.

One aspect of the typical policy responses is the focus on social welfare over issues of productivity. While in many instances the outcomes of the two objectives align, a welfare focus has potential implications. For example, where housing subsidies are targeted to mitigate displacement of an established population, it may be more likely to reach those outside the workforce rather than potential workers. Also of concern is that policy responses are rarely considered in concert with one another. This also has policy implications. For example, a housing policy reducing the need for subsidy by locating assets in lower-cost parts of the housing market is likely to result in subsidised housing disproportionately located in transport disadvantaged neighbourhoods (Burke & Stone 2014). There is little evidence of direct comparison between the effects of, say, a new bus route with a new subsidised housing development, in terms of improving job opportunities.

Overall, there is little empirical research directly exploring the productivity effects of a lack of affordable housing options and a thinner LI labour market. There is little research exploring the mediating factors between labour and housing constraints, like household structure and housing wealth—many LI workers will not come from LI households or, if they do, from households with excessive housing costs. There is also little evidence that explores the sectoral profile of LICC workers, beyond the ill-defined narratives of 'key workers' and 'creatives'. These gaps are something the research of the following chapters goes some way to fill.

3 EXPLORING THE EXTENT OF A SPATIAL MISMATCH

3.1 Chapter overview

The purpose of this chapter is to identify the LICC workers for the five case study metros, where they live and any suggestion that they are spatially mismatched with respect to the CC labour market. As such it responds to Research Question 2.

- RQ2: What is the extent of the spatial mismatch between job structure and affordable housing provision in the labour markets of central Perth, Darwin, Melbourne, Sydney and Brisbane?

In examining this overarching question, this chapter also identifies the employees and employers affected by any spatial mismatch, in line with Research Questions 3 and 4, the second parts of which are explored in Chapters 4 and 5 respectively.

- RQ3: Which employee groups are most affected, and what is their housing experience in terms of affordability and location?
- RQ4: Which employer groups are most affected by this issue, what problems does this cause them and how do they deal with these problems?

As discussed in Chapter 2, a spatial mismatch of workers and jobs is likely to be a complicated phenomenon, influenced by multiple factors, such as a city's economic profile and recent history; its housing, transport and planning systems; and the mobility of its workforce. It is an impossible phenomenon to appreciate with a simple metric, but the phenomenon primarily relates to a geographic distancing of workers and jobs. As such, one important measure in the context of this research is how widely an employment centre, such as a CC, has to cast its net to capture its workforce.

This chapter finds that LICC workers are, on average, much more separated—around twice as distant—from their place of work compared to the overall average for LI workers in the metro. To some extent this could be explained by a difference in the LI job profiles of the CC and the metro as a whole, and therefore the workers doing those jobs. A sizeable proportion of LICC jobs are in industries with overall high levels of pay and good growth prospects. Also potentially related, workers are typically younger, more educated and more mobile than the LI workforce of the metro as a whole. There are, however, a number of LICC jobs in industries—like retail and hospitality—that are necessary for a viable tourism and amenity economy. These jobs will compete for workers with similar jobs outside the CC.

Beyond the differences in the LI jobs and workforces in and outside the CC, the greater distance is a function of urban form. CCs are, by definition, the most job-rich part of the metro. This job density is not matched by worker density, making a larger workforce catchment inevitable. To some extent this is offset by transport networks, particularly public transport networks, which make covering the greater distances immaterial in terms of time and costs. Finally, this chapter finds that, particularly in Melbourne and Sydney, the job-rich hubs extend beyond the CCs as defined in this research. As such, competition for workers, and the effect of any spatial mismatch thinning the potential labour market, will have impacts on these other parts of the inner city. This includes industries that support and feed on the CC, like tourism and 'creative' hubs, major infrastructure and employment anchors surrounding the CC (universities, hospitals, ports and airports), and other industrial precincts.

The chapter is primarily based on 2011 Census data, using the workforce dataset available through the TableBuilder interface. The population used in the analysis is generated by restricting the resident population of the metro to the segment of the working population that has all the relevant data (Table 3).

Table 3: Overview of populations analysed

1. Start with total resident population of the metropolitan area										
	Sydney		**Melbourne**		**Brisbane**		**Perth**		**Darwin**	
	4,392,000		4,000,000		2,066,000		1,729,000		121,000	
2. Restrict to those aged 15 years and above (as per place of work census datasets)										
	3,548,457		3,260,797		1,651,494		1,396,459		95,209	
3. Restrict to those employed[3] (i.e. not unemployed, students, retirees, etc.)										
	2,063,265		1,927,926		1,010,616		857,637		63,043	
4. Restrict to those with disclosed and positive incomes										
	2,009,716		1,872,359		985,683		837,710		61,423	
5. Filter to those with the central city (SA2) as place of work										
	CC	**All**	**CC**	**All**	**CC**	**All**	**CC**	**All**	**CC**	**All**
	242,869	2,009,716	177,788	1,872,359	108,868	985,683	130,360	837,710	10,876	61,423
6. Split into three income-based groups (described below)										
Lo	44,248	784,328	37,979	791,759	20,842	403,973	25,989	312,891	2,212	17,590
M	79,444	710,517	65,197	682,705	41,890	370,176	46,191	297,163	4,895	27,670
Hi	119,177	514,871	74,612	397,895	46,136	211,534	58,180	227,656	3,769	16,163

The main cohort of interest to this research is the LICC group (shaded above). The other income groups, along with the comparable groups for the broader metropolitan area, provide points of comparison. The workforce sizes vary greatly between the metros, although the overall splits by income, and the size of the CC relative to the overall metro, are broadly comparable.

The metropolitan population examined includes all those of working age, irrespective of where they work. As a result it includes those who work outside the metro area, and doesn't include those who work within the metro area but live outside the metro area. However, there is a high degree of self-containment (Table 4). The analysed population represents over 95 per cent of those working in the CC and metro areas. Similarly, the vast majority of the analysed metropolitan population also works in the metro area. The remainder mostly work in neighbouring areas outside the metro boundary.

[3] Achieved using labour force status data; or, for the same effect, by excluding those with 'not applicable' for place of work or industry sector. Note that, while excluding unemployed persons would not be necessary when looking solely at the labour force (as unemployed persons are potential workers), here the number of workers in a location is also used as a proxy for the number of jobs in a location. Unemployed persons (i.e. workers without jobs) have an inverse in job vacancies (i.e. jobs without workers), which is also excluded by these counts, but germane to any discussion around recruitment and retention. It is a limitation of the data source.

Table 4: Metro workforce self-containment

	Sydney	Melbourne	Brisbane	Perth	Darwin
What proportion of the CC workforce lives in the metro area?	97.8%	96.7%	94.6%	98.2%	95.8%
What proportion of the metro workforce lives in the metro area?	97.5%	97.5%	95.0%	98.5%	96.1%
What proportion of the metro working population works in the metro area?	89.2%	89.5%	87.6%	86.8%	87.1%
What proportion of the metro workforce works in the CC?	12.1%	9.5%	11.0%	15.6%	17.7%

Source: 2011 Australian Census, calculated from TableBuilder data

As the metropolitan population includes all those of working age, irrespective of where they work, it includes those working in the CC too. The overlap—that is the proportion of the larger metro population included in both counts—is also shown in Table 4 and is between, approximately, one in ten (9.5% in Melbourne) and one in six (17.7% in Darwin) of the working metro population, with a larger overlap in the high-income band. This will dampen any differences identified between the two figures. However, by representing the metro total—rather than the remainder of the metro workforce without the CC—it enables the presentation of a more useful second dataset in its own right. It also aligns with the easiest way to obtain household data (i.e. from TableBuilder), used in Chapter 4.

The lower income range is based on the available income brackets in the 2011 Census data. The lowest that captures the minimum wage is the $400–599/week bracket (in 2011 minimum wage was $589.30, it is currently $656.90). However, restricting a definition of 'lower income' to the brackets below $600 would skew results to a disproportionate number of part-time workers. As such, lower income is defined as up to $799/week, incorporating the next census personal income bracket. This grouping also approximates the bottom two quintiles of workers by income across Australia and in most metros (Table 5). Correspondingly, a grouping of census income brackets that approximate the next two quintiles is used to define 'middle income' as $800–1499/week. 'High-income' is then defined as the remainder of the workforce, those earning above $1500/week.

Table 5: Proportion of all workers in defined income bands

	Australia	Sydney	Melbourne	Brisbane	Perth	Darwin
Excluded (negative or nil)	*1%*	1%	1%	1%	1%	1%
Lower income workers ($1–799/week)	*43%*	39%	42%	41%	37%	28%
Middle-income workers ($800–1,499/week)	*35%*	35%	36%	37%	35%	45%
High-income workers ($1,500 or more)	*21%*	25%	21%	21%	27%	26%

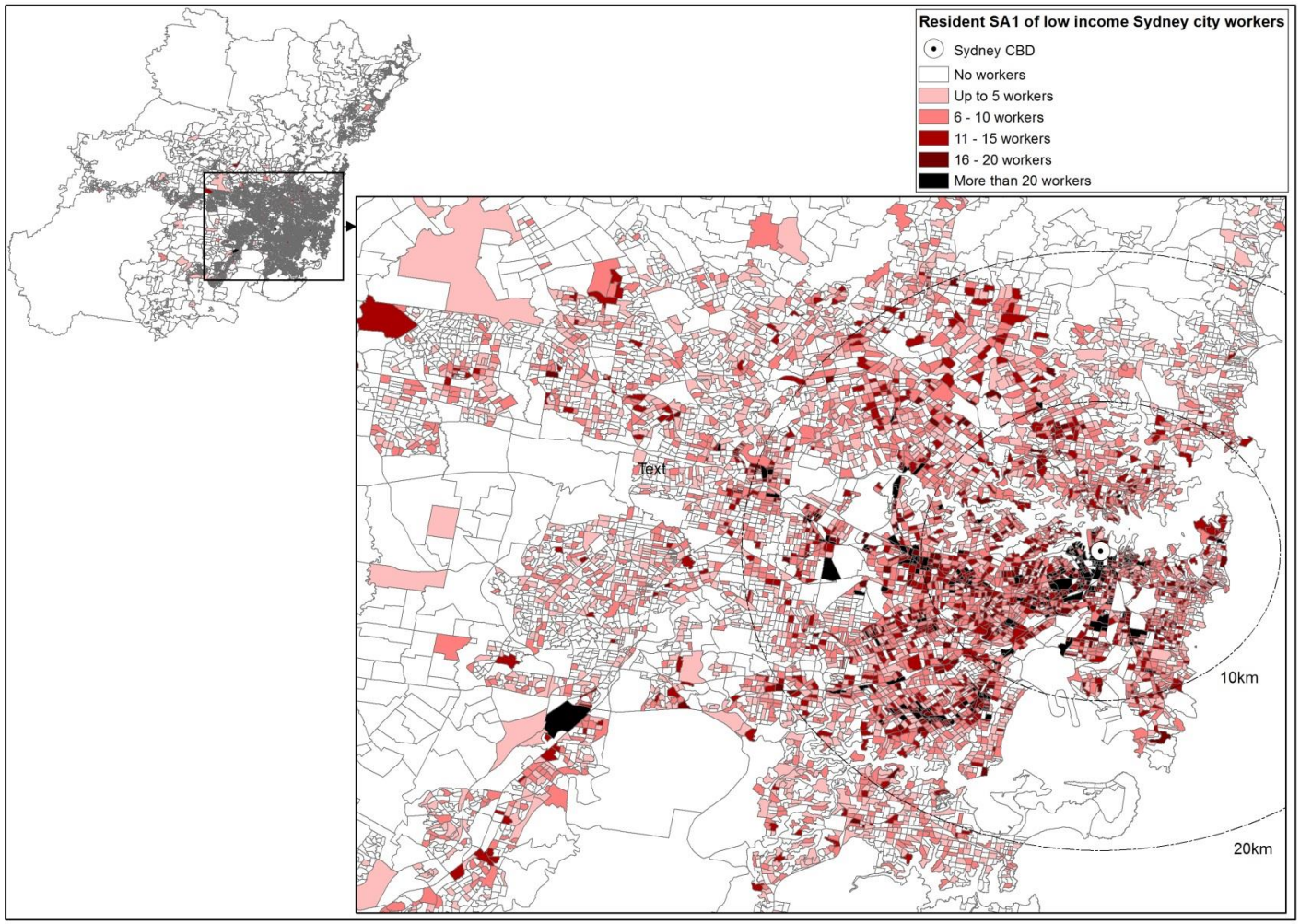
Source: 2011 Australian Census, calculated from TableBuilder data

3.2 Lower income central city workers live further from work than other lower income workers

This section analyses the distribution of the LICC workforce for the five metros. Figures 1 to 15 show the LICC workforce distribution. Three maps are shown for each city: the origin of the LICC workforce in raw numbers; the extent to which each origin point is within the 'gravitational pull' of the CC, shown by the proportion of resident LI workers that work in the CC; and, for comparison, the proportion of all resident workers travelling to the CC.

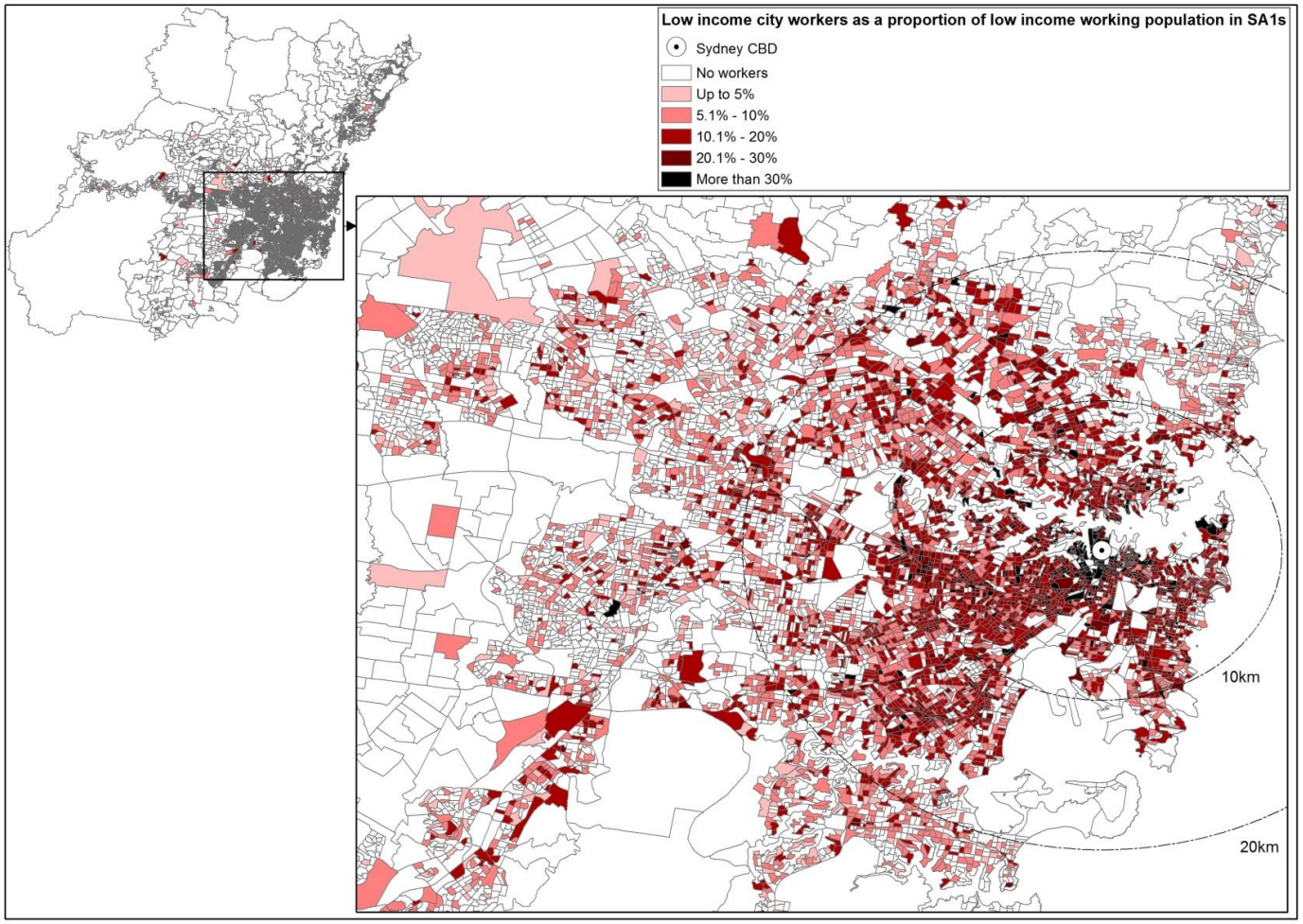
The patterns revealed reflect a broadly predictable distribution across the case study metros. Fewer LI workers in neighbourhoods further from the CC worked in the CC, and a smaller proportion of the total number of LI workers living in neighbourhoods further from the CC worked in the CC. Also, more LICC workers come from parts of the metro where more LI workers live. There is also, in many instances, evidence of the effect of public transport networks extending the catchment of the CC workforce.

Figure 1: Origin of LICC workers, Sydney



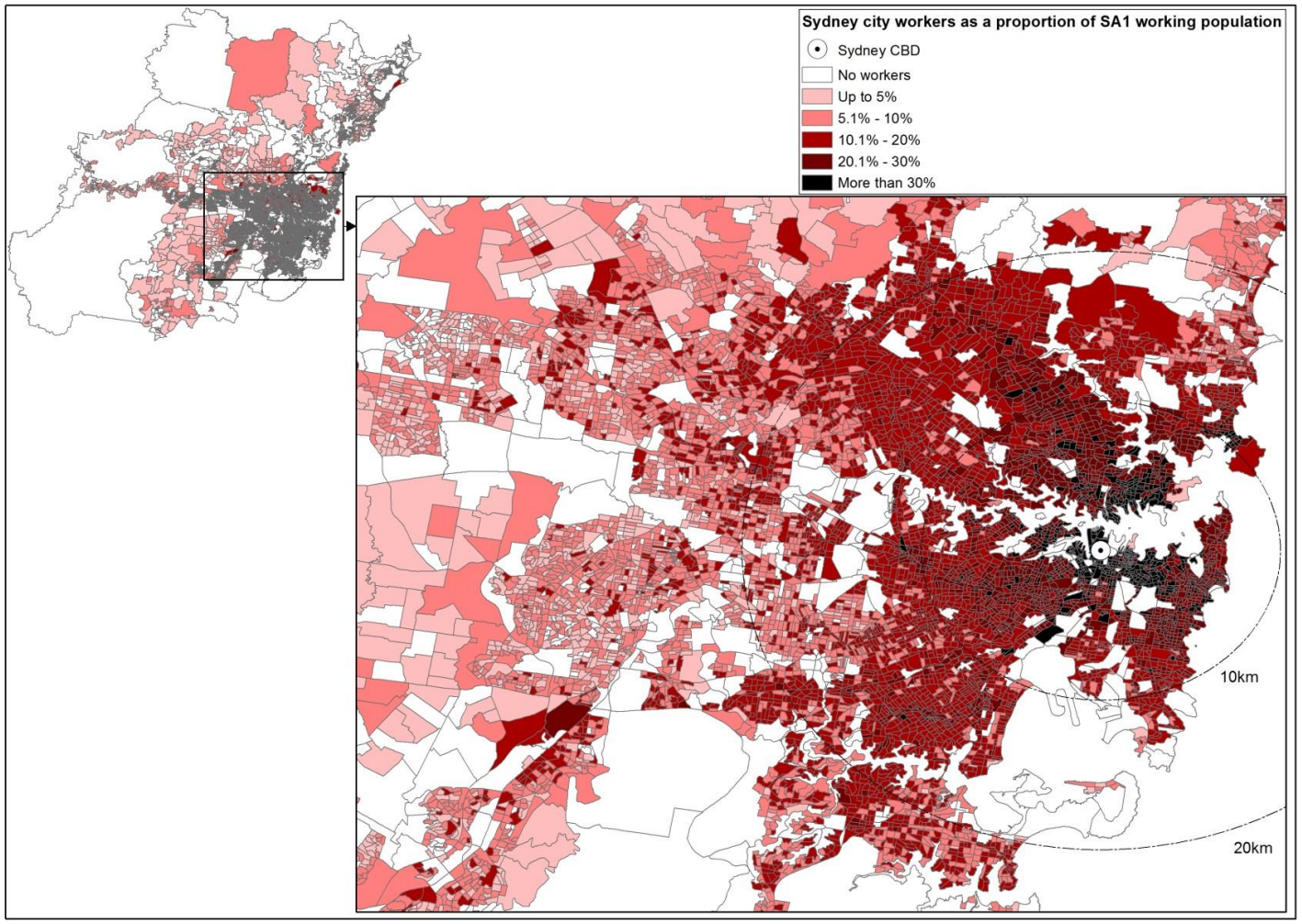
Source: Based on ABS 2011 Census data and ABS digital boundaries.

Figure 2: Proportion of resident LI workers travelling to CC, Sydney



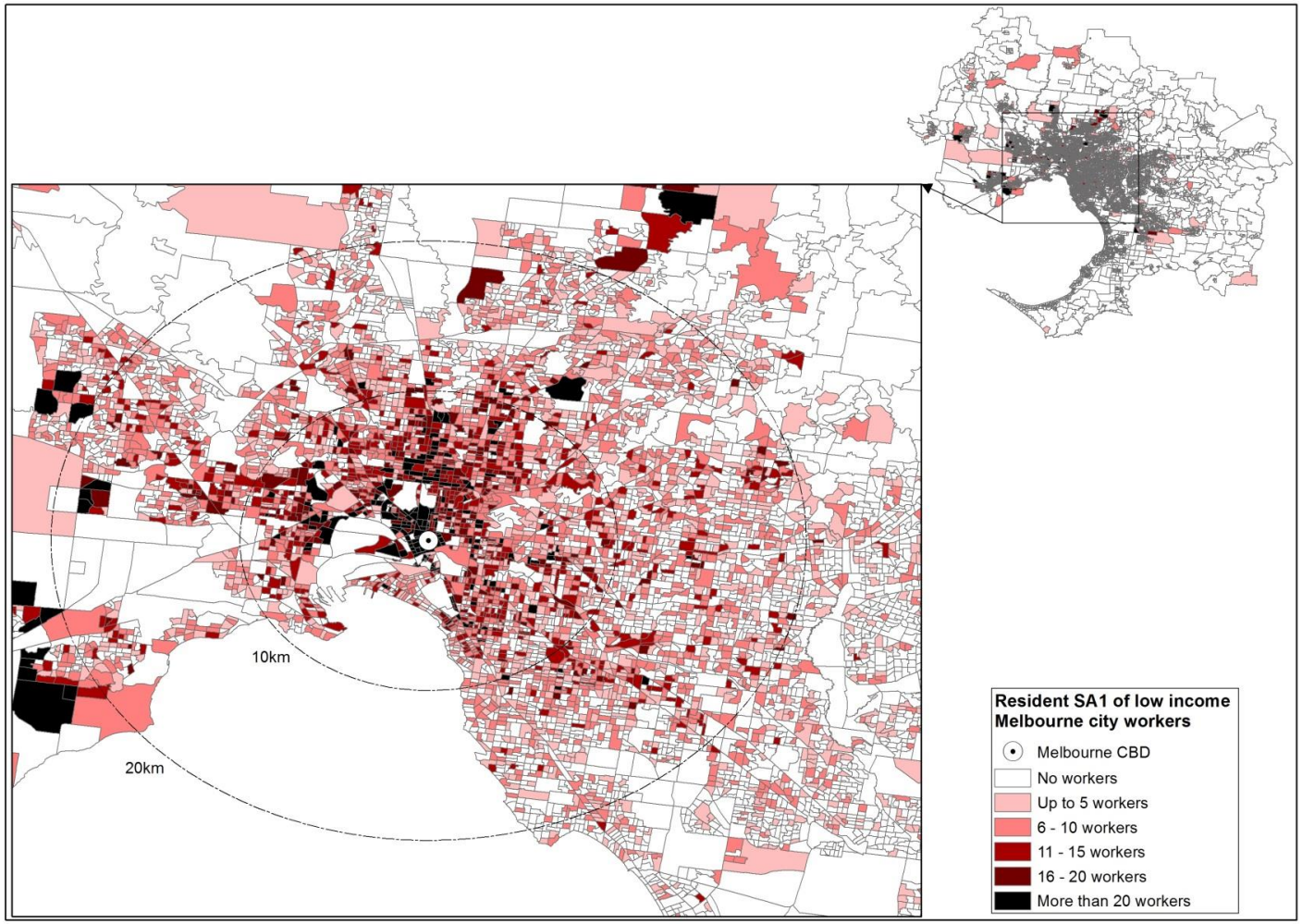
Source: Based on ABS 2011 Census data and ABS digital boundaries.

Figure 3: Proportion of resident workers travelling to CC, Sydney



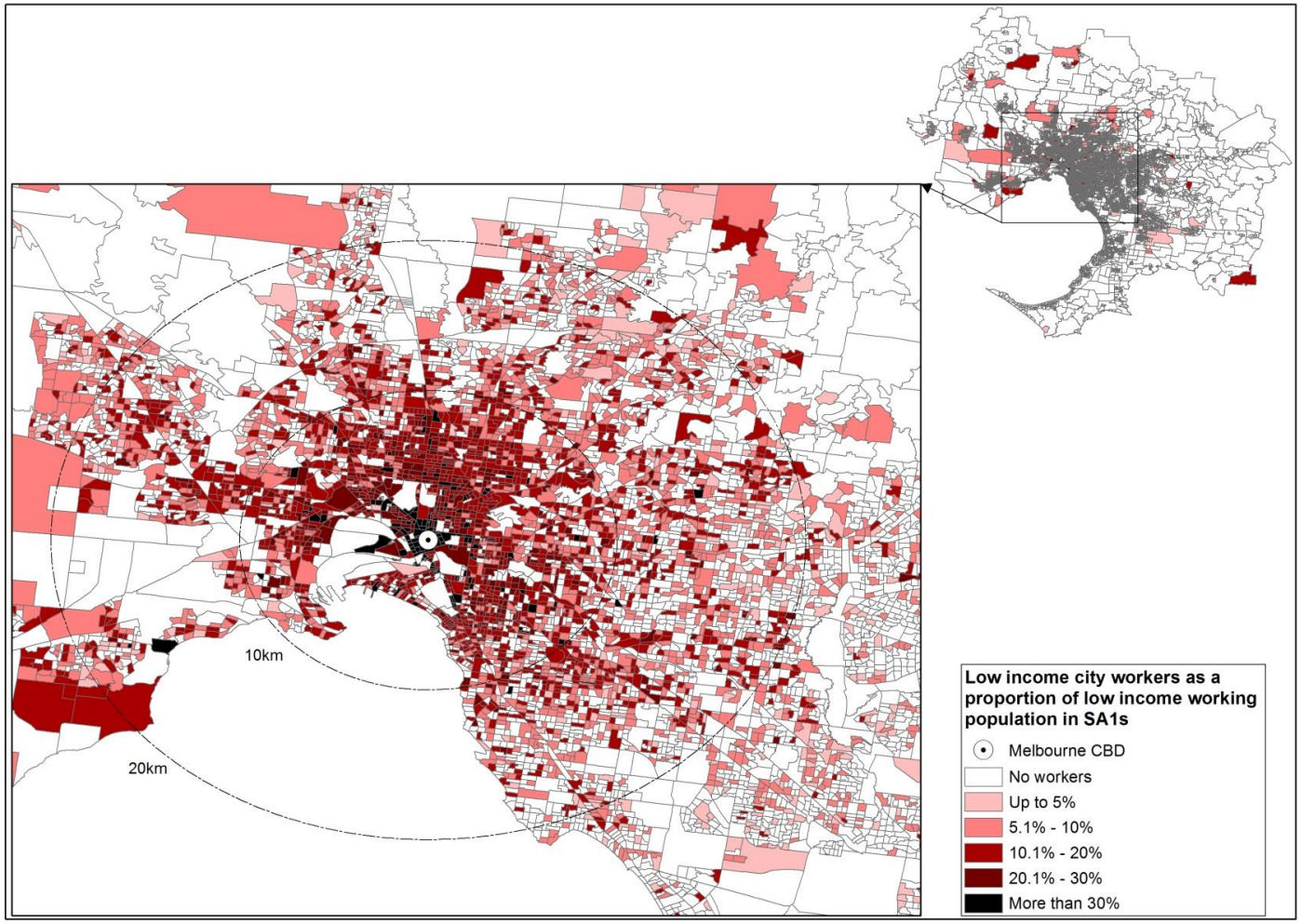
Source: Based on ABS 2011 Census data and ABS digital boundaries.

Figure 4: Origin of LICC workers, Melbourne



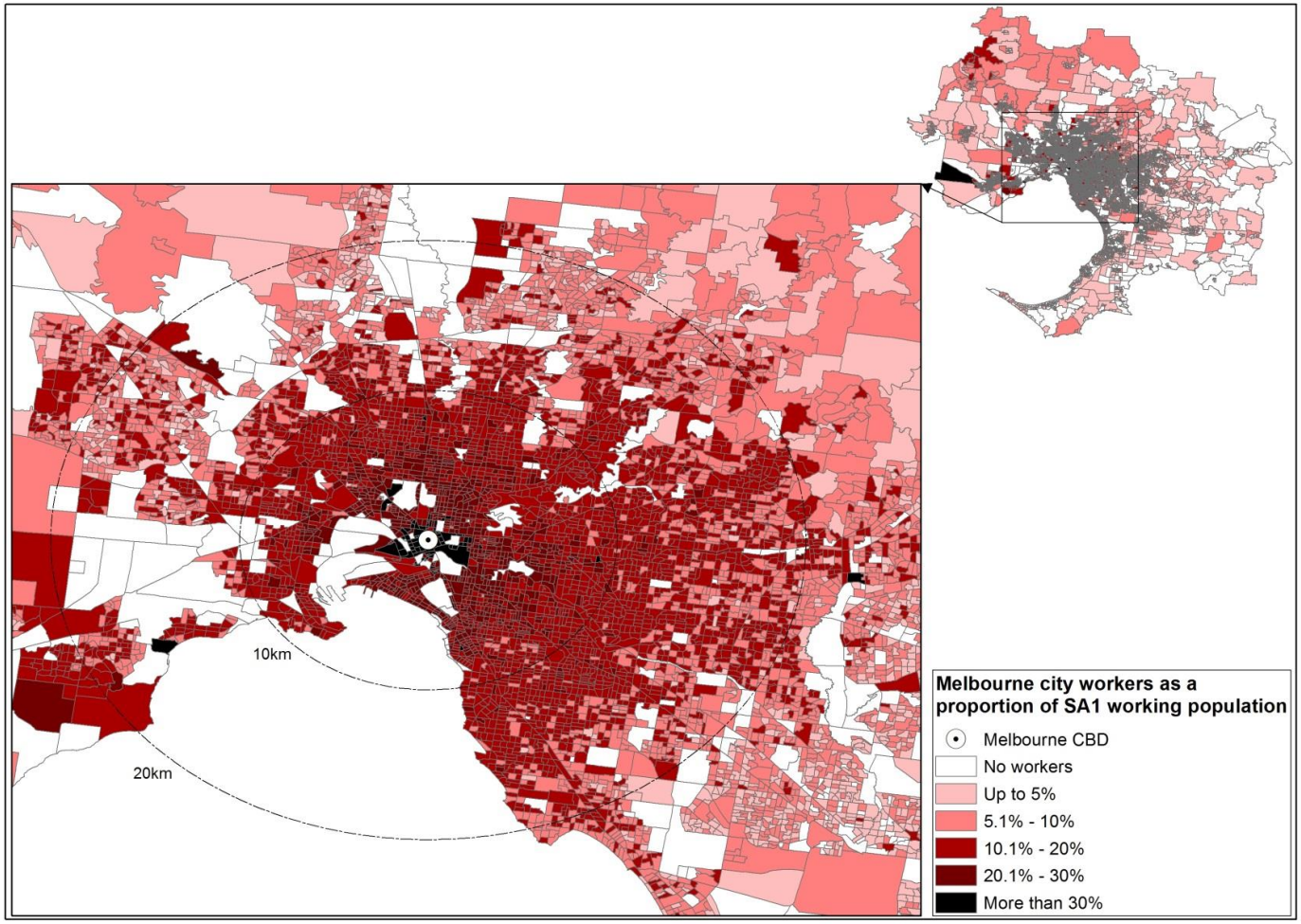
Source: Based on ABS 2011 Census data and ABS digital boundaries.

Figure 5: Proportion of resident LI workers travelling to CC, Melbourne



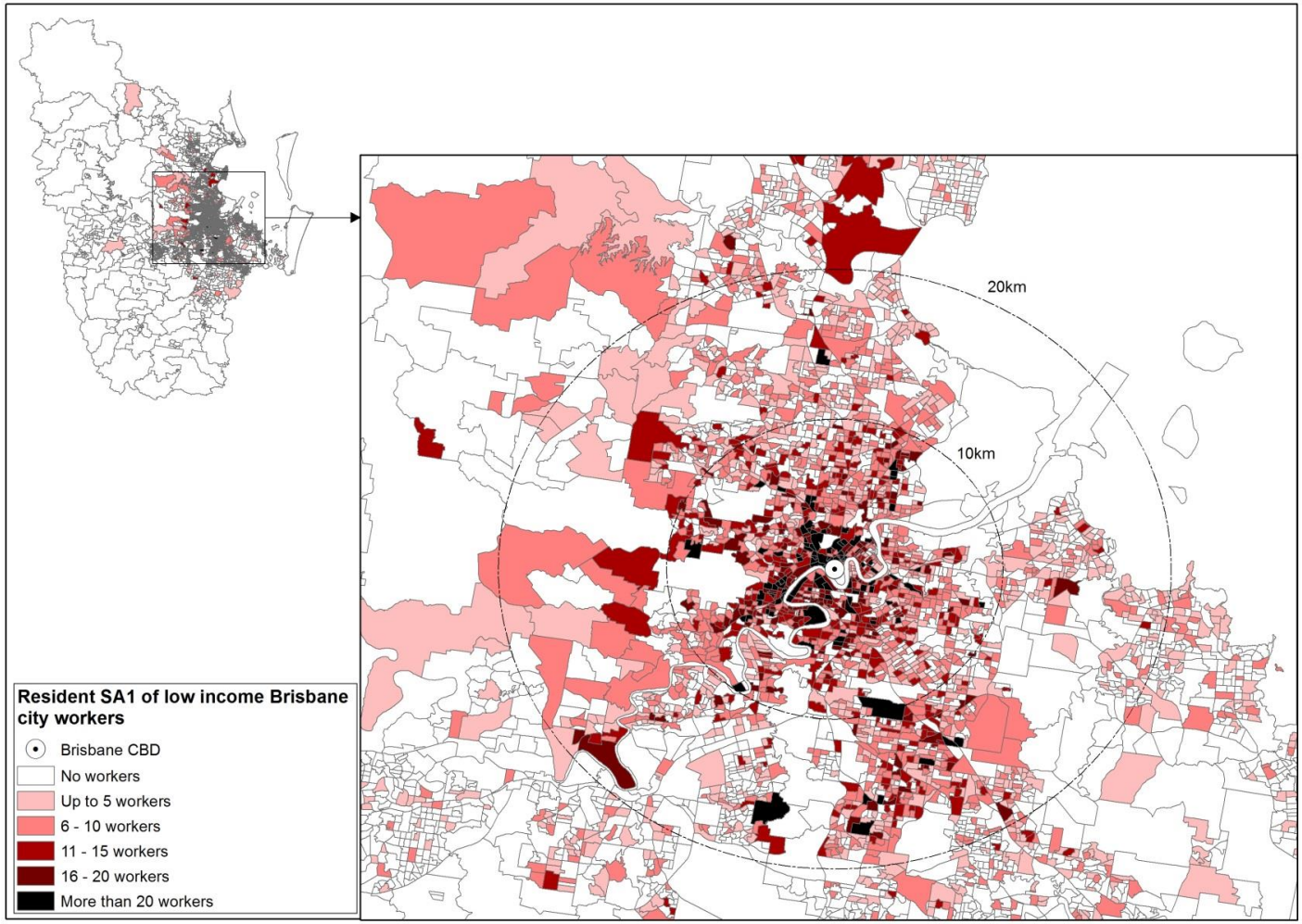
Source: Based on ABS 2011 Census data and ABS digital boundaries.

Figure 6: Proportion of resident workers travelling to CC, Melbourne



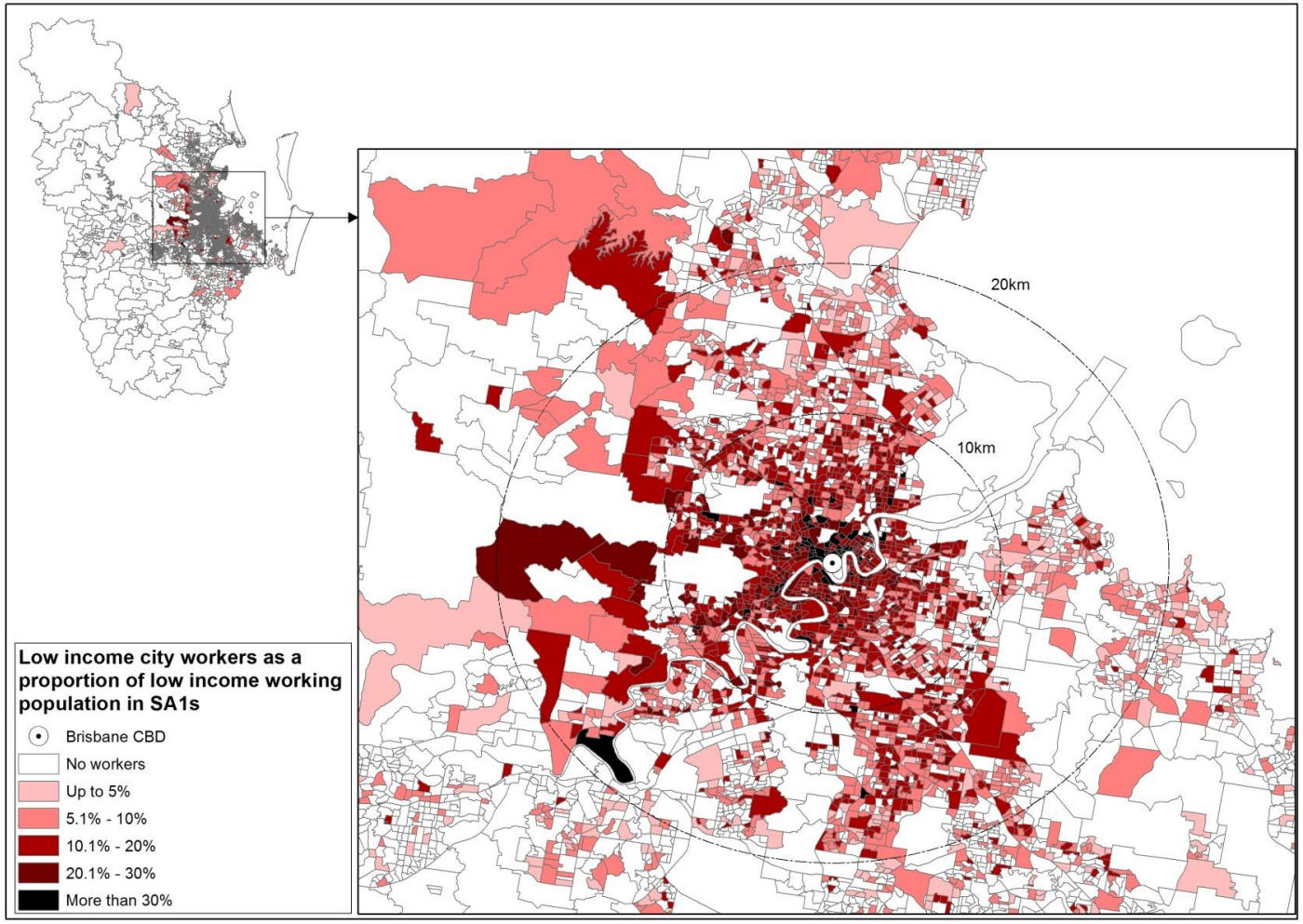
Source: Based on ABS 2011 Census data and ABS digital boundaries.

Figure 7: Origin of LICC workers, Brisbane



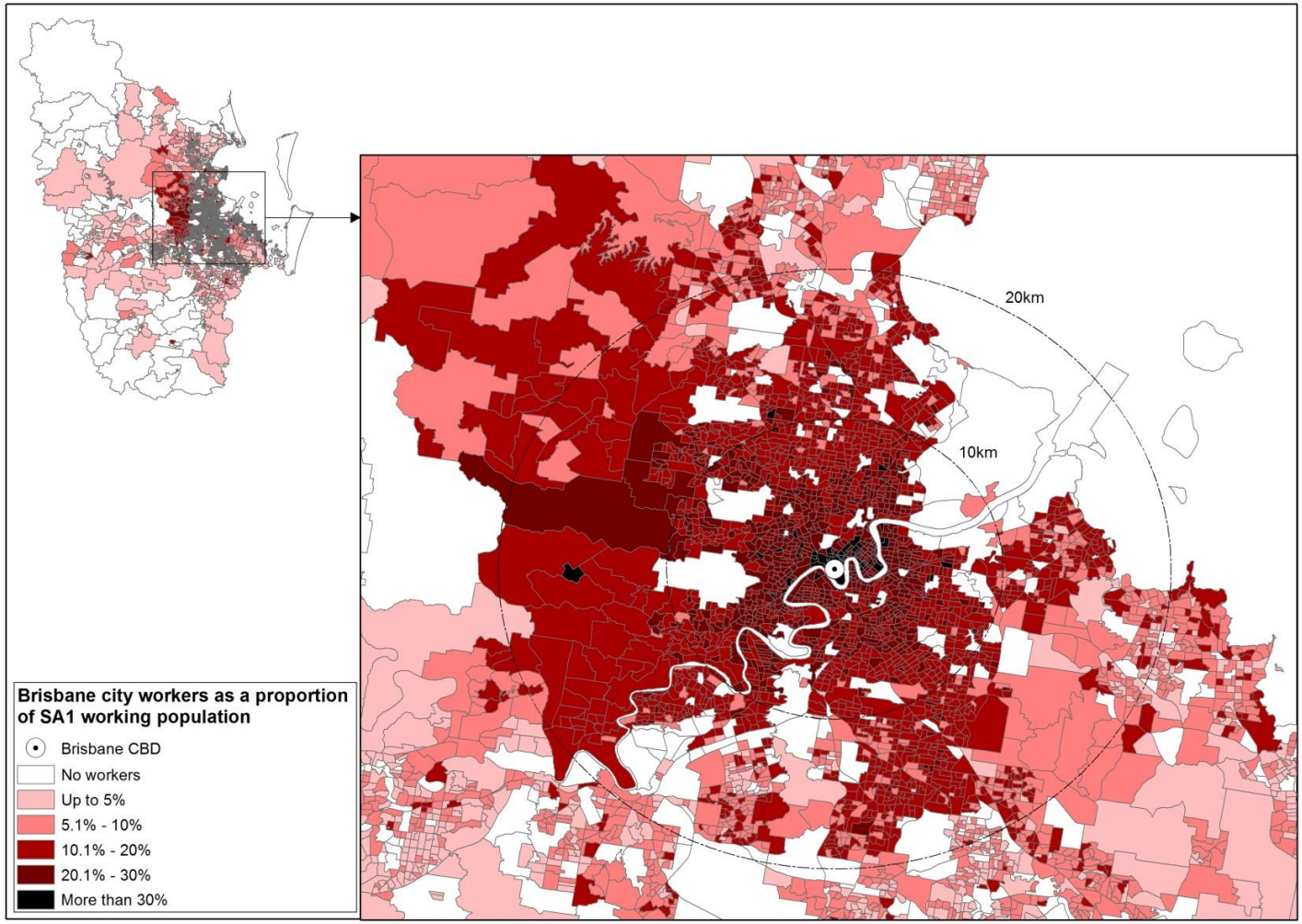
Source: Based on ABS 2011 Census data and ABS digital boundaries.

Figure 8: Proportion of resident LI workers travelling to CC, Brisbane



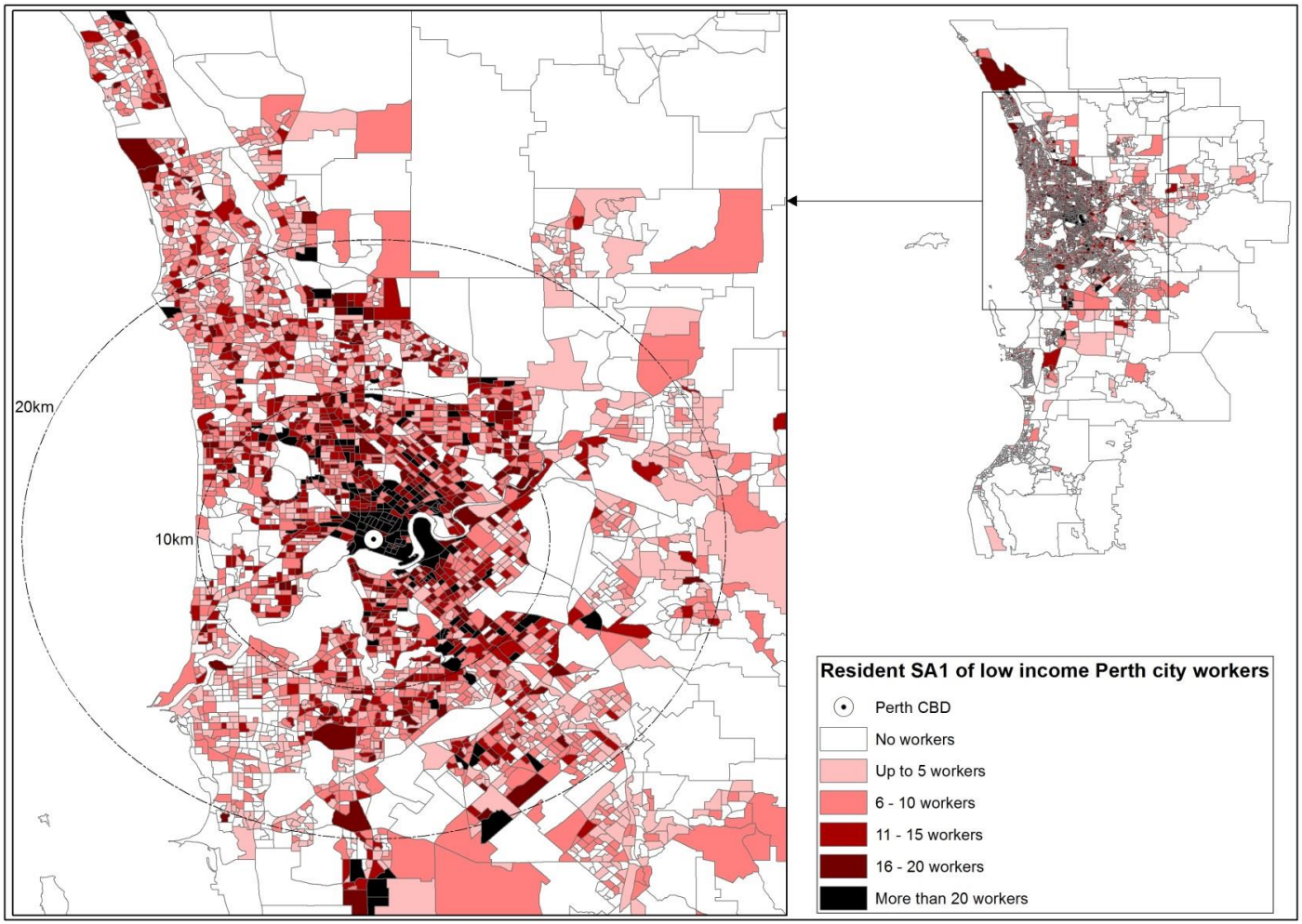
Source: Based on ABS 2011 Census data and ABS digital boundaries.

Figure 9: Proportion of resident workers travelling to CC, Brisbane



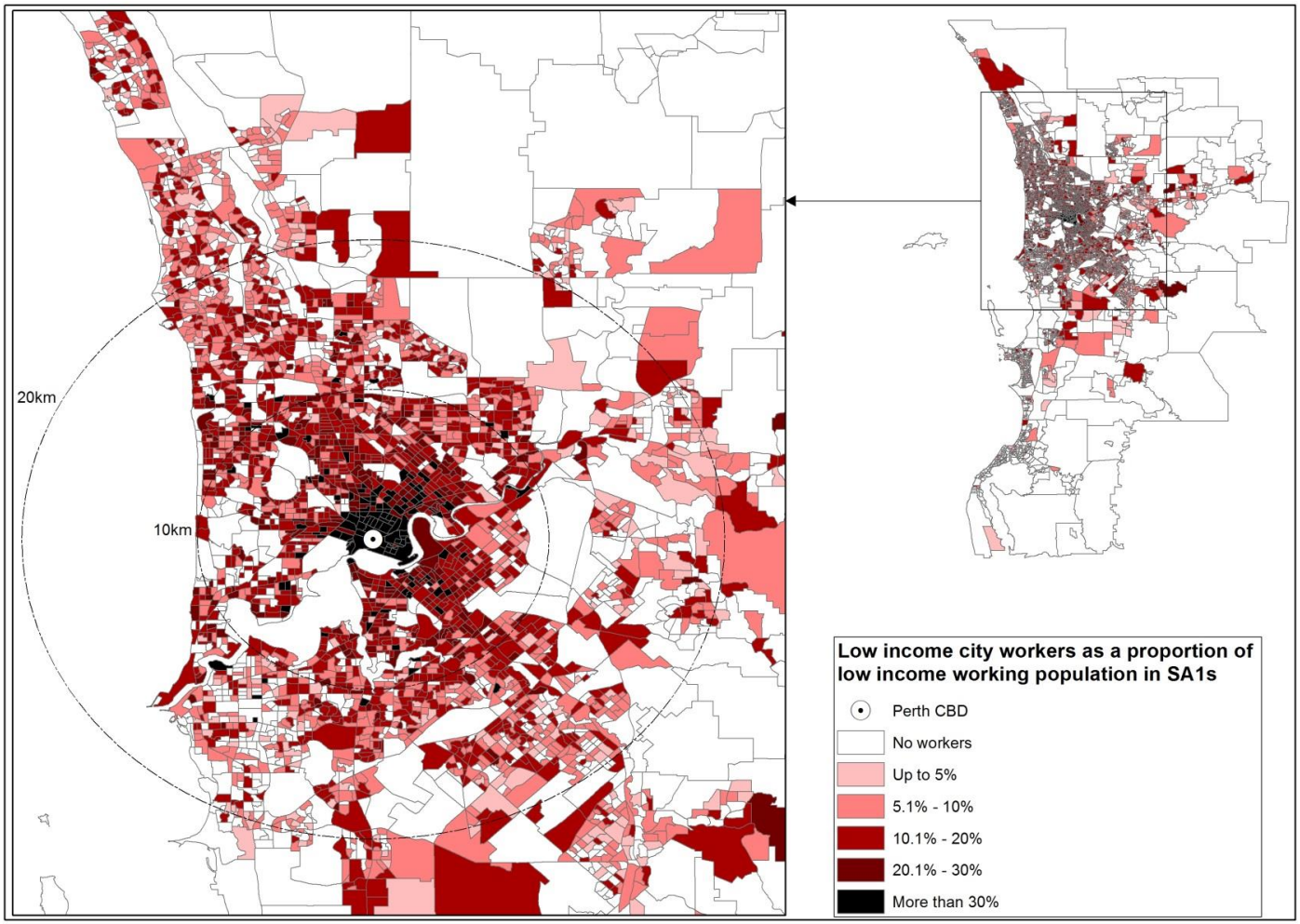
Source: Based on ABS 2011 Census data and ABS digital boundaries.

Figure 10: Origin of LICC workers, Perth



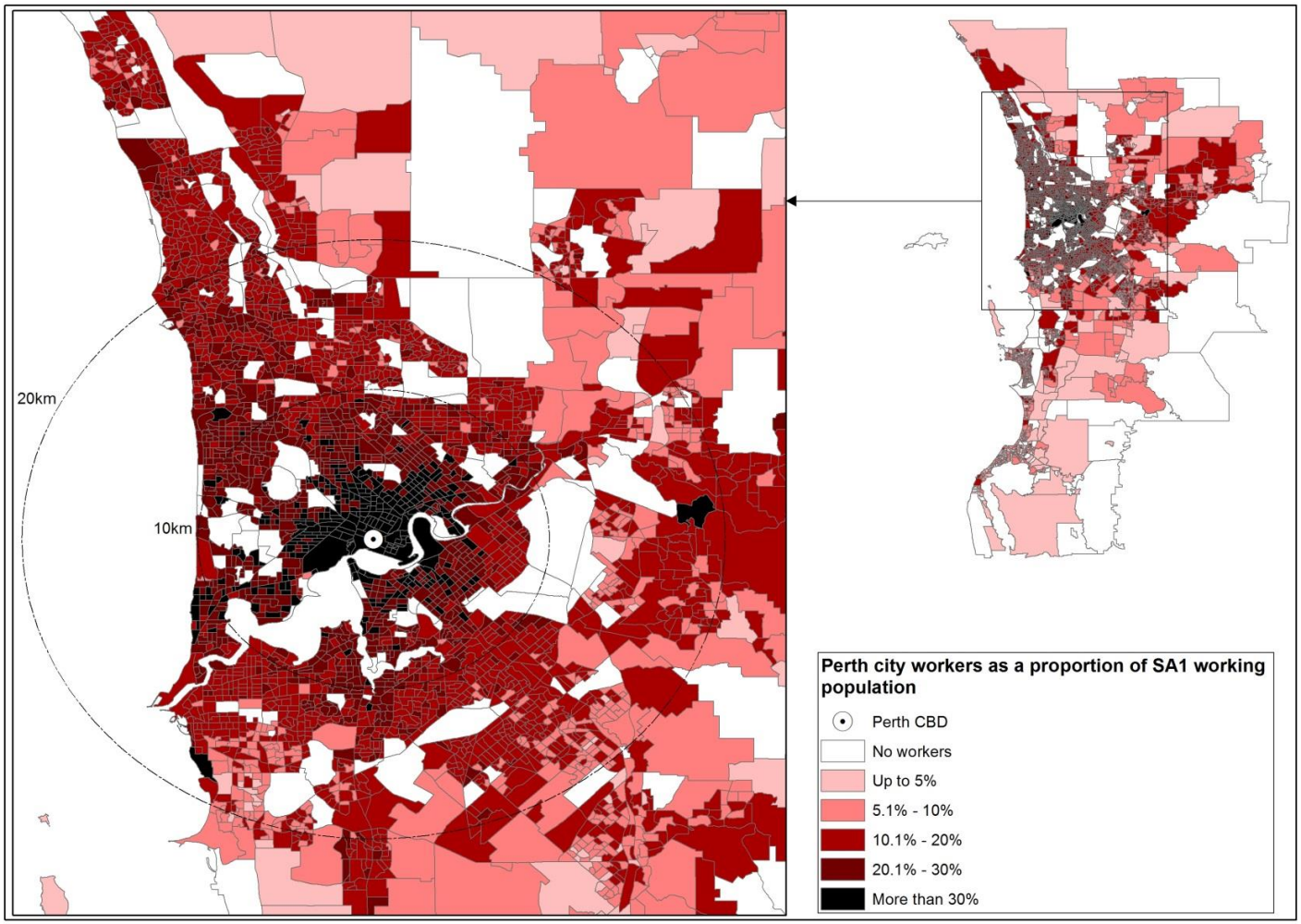
Source: Based on ABS 2011 Census data and ABS digital boundaries.

Figure 11: Proportion of resident LI workers travelling to CC, Perth



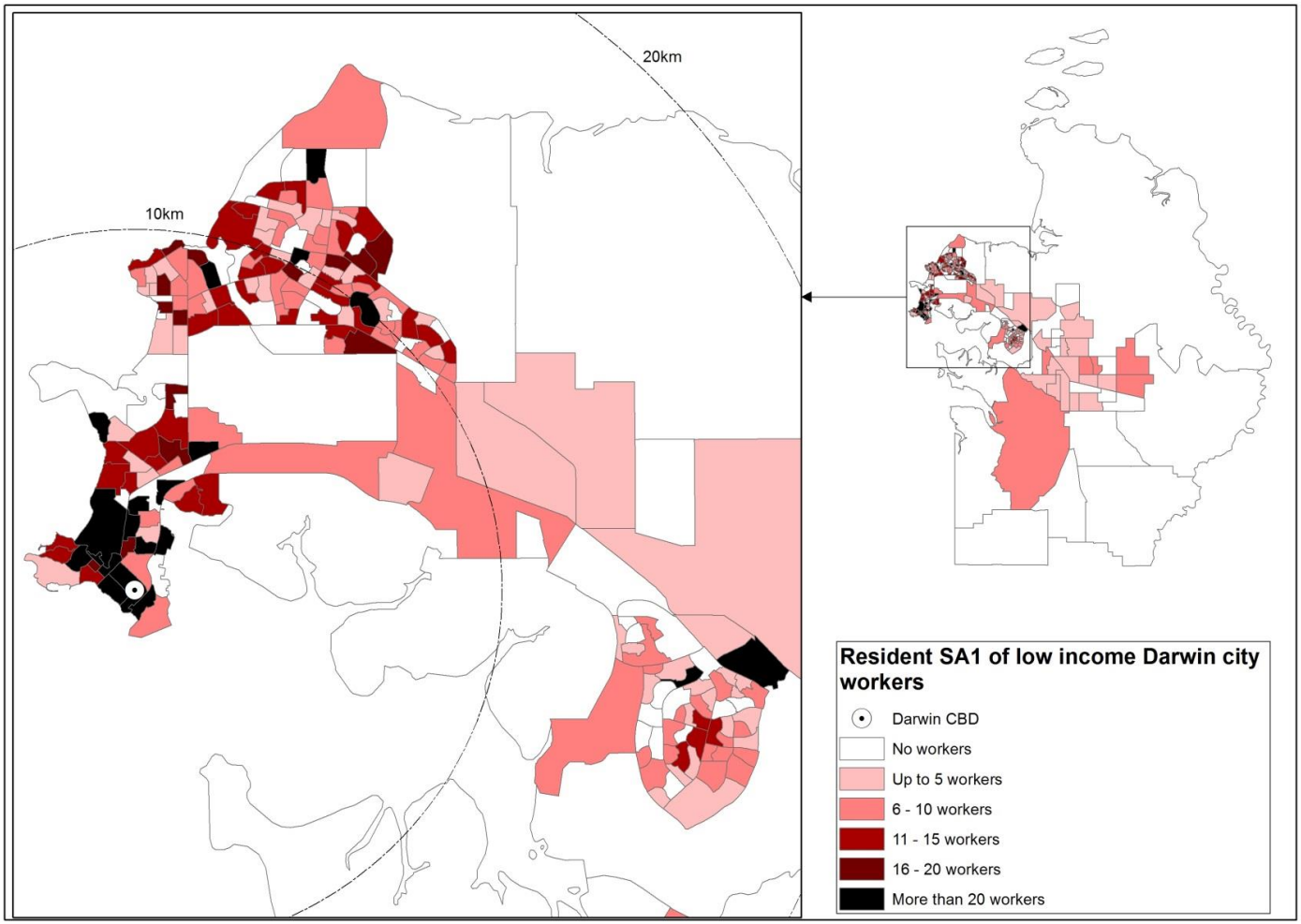
Source: Based on ABS 2011 Census data and ABS digital boundaries.

Figure 12: Proportion of resident workers travelling to CC, Perth



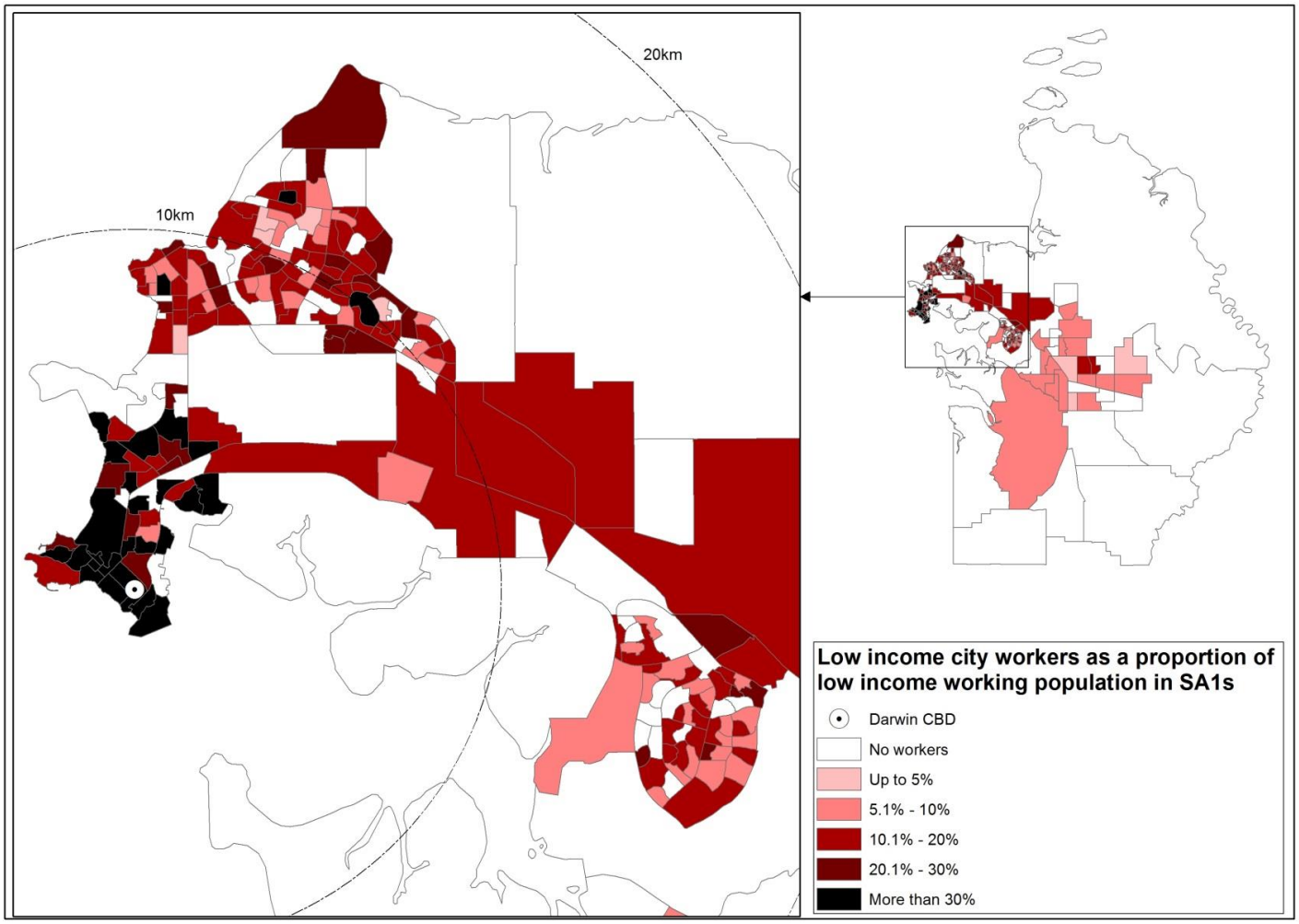
Source: Based on ABS 2011 Census data and ABS digital boundaries.

Figure 13: Origin of LICC workers, Darwin



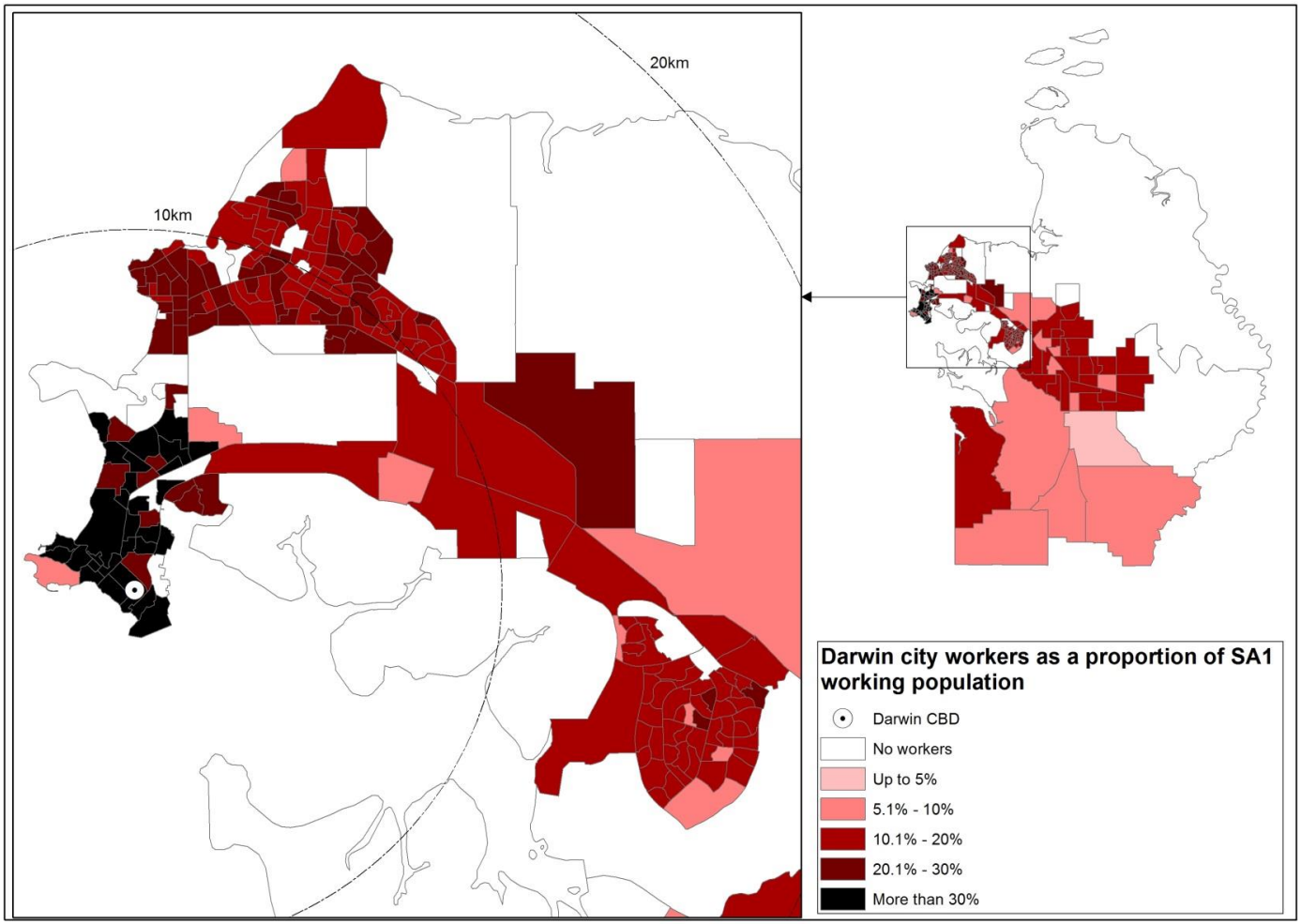
Source: Based on ABS 2011 Census data and ABS digital boundaries.

Figure 14: Proportion of resident LI workers travelling to CC, Darwin



Source: Based on ABS 2011 Census data and ABS digital boundaries.

Figure 15: Proportion of resident workers travelling to CC, Darwin



Source: Based on ABS 2011 Census data and ABS digital boundaries.

Table 6 shows the average distances travelled by CC workers of different income levels for each of the five metros. It also shows the average distances travelled by workers across the metro as a whole for each of these income levels. The figures are based on calculations of straight-line distances between SA2 centroids for workers' *place of work and usual residence*, as reported in the 2011 census. It shows that, in all cities, LICC workers travel comparable distances to workers on middle and high incomes. (An anomaly in this comparison is the smaller average distance travelled by HI workers in Sydney, which suggests a greater degree of gentrification in neighbourhoods close to the CC there.)

Table 6: Distance to work (km) by personal income, CC vs metro averages

	Sydney		Melbourne		Brisbane		Perth		Darwin	
	CC	**All**	**CC**	**All**	**CC**	**All**	**CC**	**All**	**CC**	**All**
Lower income	16.3	9.1	15.5	9.9	11.7	8.4	9.2	6.9	7.6	5.9
Middle income	17.0	12.9	16.6	13.8	12.7	11.8	9.6	9.3	8.6	7.9
High income	13.5	13.2	15.0	14.0	11.1	11.3	9.3	9.7	8.0	8.0
Overall	*15.1*	*11.6*	*15.7*	*12.3*	*11.8*	*10.3*	*9.4*	*8.5*	*8.2*	*7.4*

Source: 2011 Australian Census, calculated from TableBuilder data.

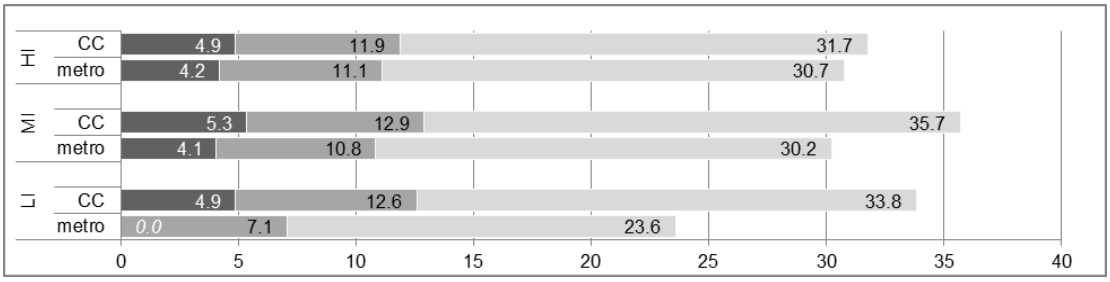
Table 6 also shows that, across all income levels, working in the CC correlates with a higher average distance to work compared with the overall average for the metro workforce at the same income level. This difference is most pronounced for LI workers. This stems from the fact that the distance travelled by the metro workforce decreases with income, but this decrease is not seen for the CC workforce. Taking the CC and metro-wide workforces as interchangeable (an assumption unpacked later in this chapter), this suggests something of a spatial mismatch of the LICC workforce. LICC workers incur a 'distance premium' because they are relatively separated from their place of work compared with LI workers overall.

The distance premium that LICC workers incur is shown in greater detail in Figure 16. It shows the catchment for the 'closest' 20 per cent of workers (i.e. those travelling the shortest distance to work), the catchment for half the workers (i.e. the median distance to work), and the catchment for 90 per cent of workers. These percentiles show that the averages in Table 6 are a good reflection of the typical distances travelled. LICC workers travel similar distances to the middle- and high-income CC workers. And the difference between the distances CC workers travel compared to the metro workers on similar incomes is most pronounced at lower income levels. The missing bars (showing 20% of the LI metro workforce) are due to the fact that at least 20 per cent of the LI metro workforce works in the same SA2 as they live, meaning their commute is calculated as 0 kilometre.

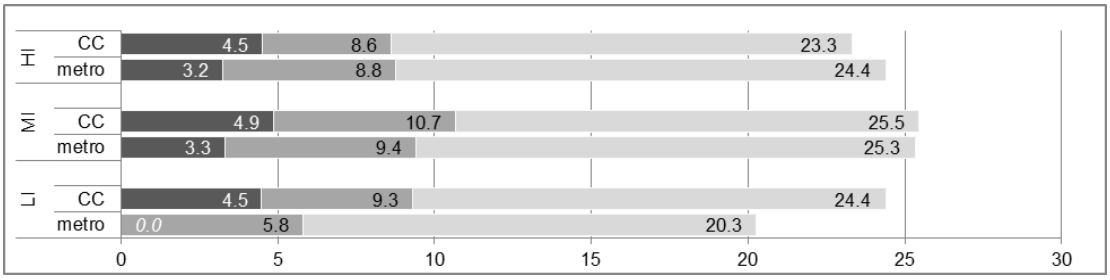
Figure 16: Distance workers live from place of work, five metros and CCs

Sydney

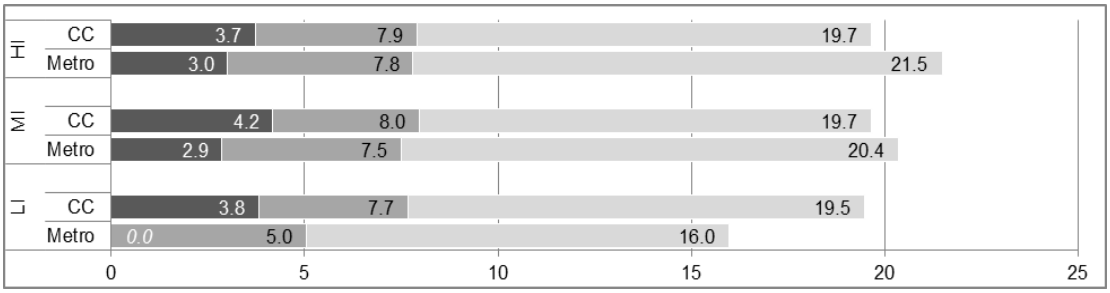
Melbourne



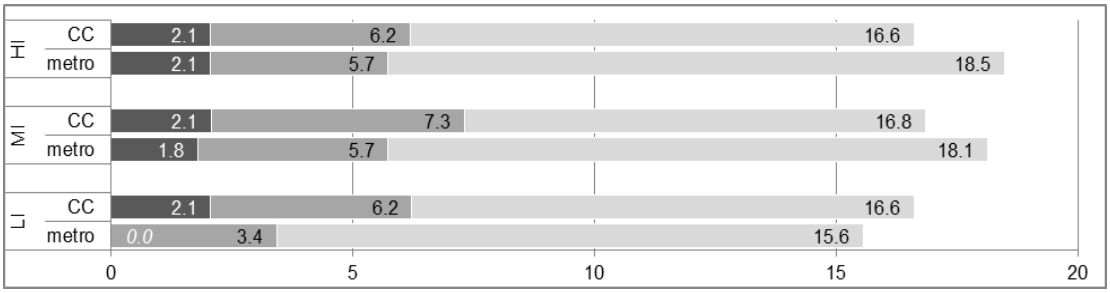
Brisbane



Perth



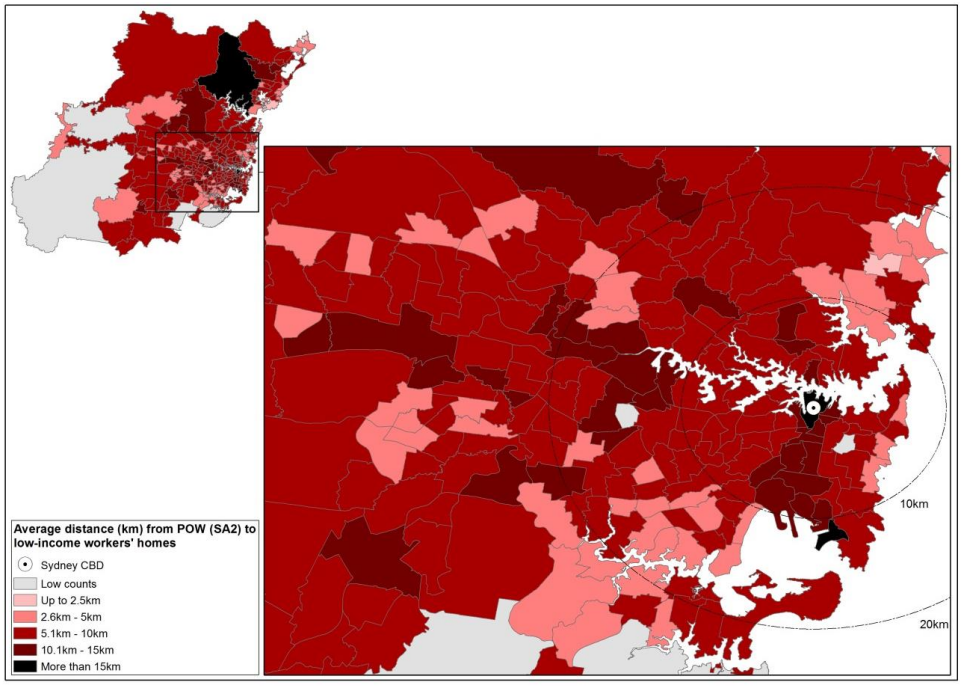
Darwin



Source: 2011 Australian Census, calculated from TableBuilder data.

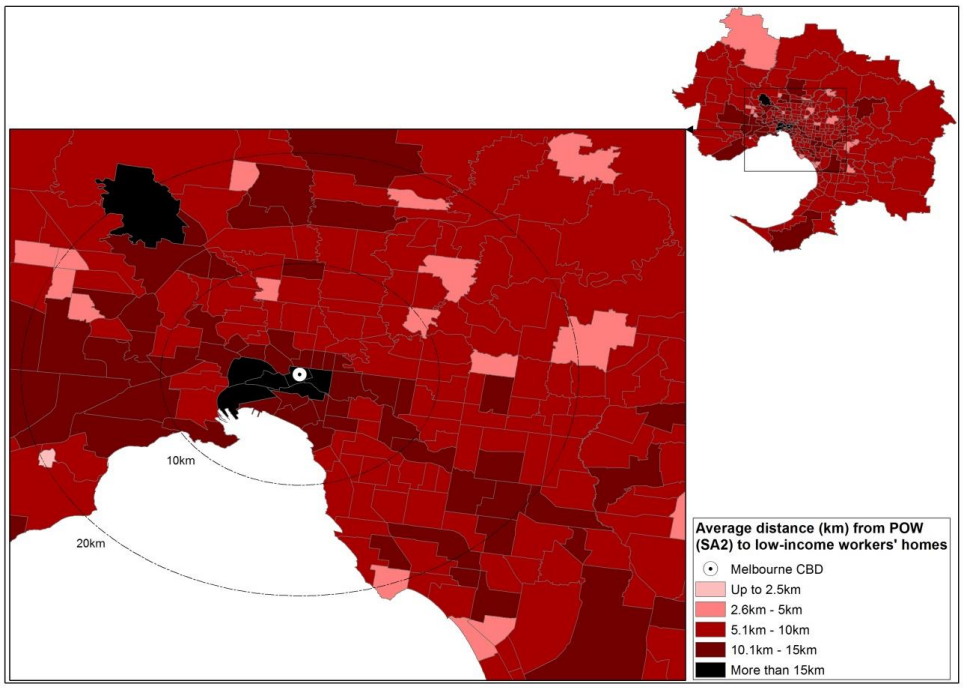
The metro-wide 'localness' of LI workforces is also shown in Figures 17 to 21. They show the distance LI workers travel, on average, to each SA2. They highlight how unusual it is for CCs to draw their LI workforce from such large distances, compared to the average distance travelled by LI workers in other SA2s within the metro area. Other major industrial hubs, with little or no resident workforce in the SA2, like ports (and, as a quirk of the method, large or non-contiguous SA2s that distort the distance calculations) have comparable catchments for LI workers.

Figure 17: Average distance to LI workers' homes for each place of work, Sydney



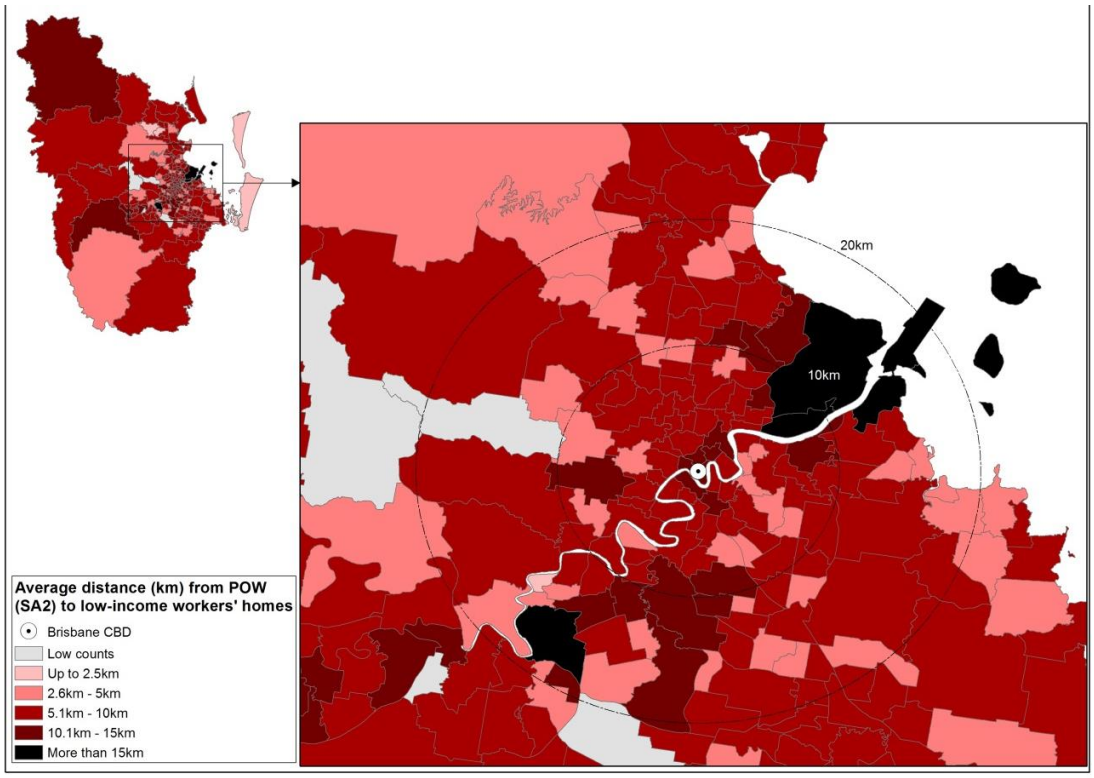
Source: Based on ABS 2011 Census data and ABS digital boundaries.

Figure 18: Average distance to LI workers' homes for each place of work, Melbourne



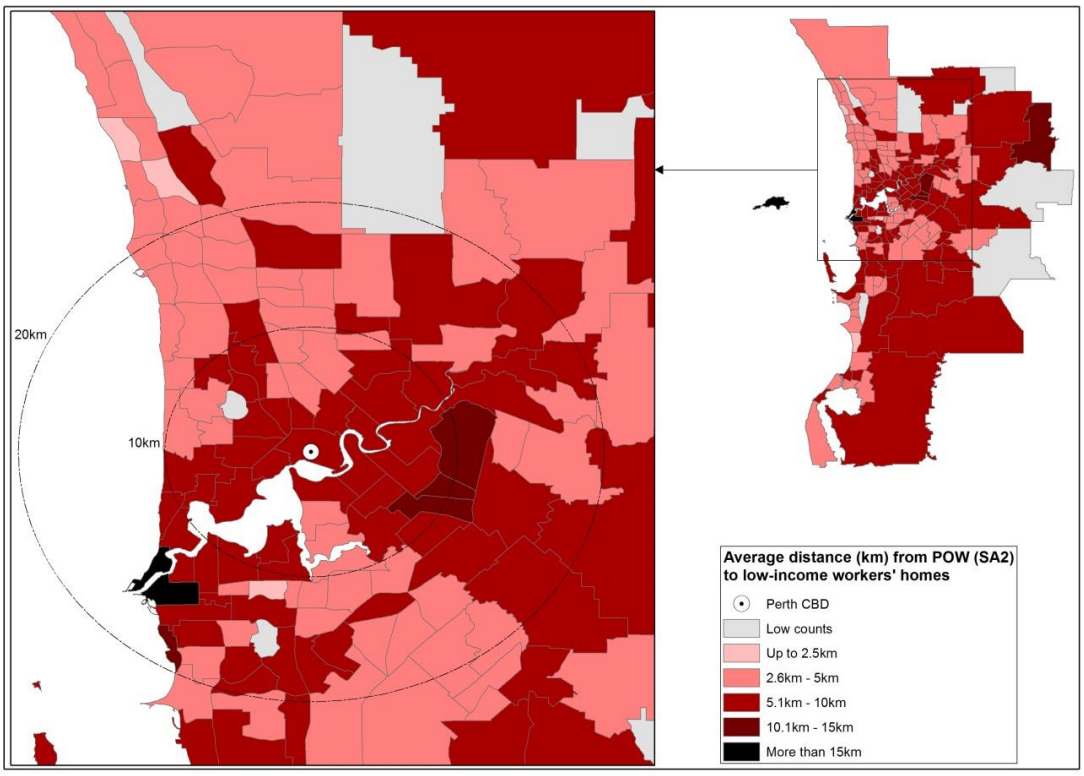
Source: Based on ABS 2011 Census data and ABS digital boundaries.

Figure 19: Average distance to LI workers' homes for each place of work, Brisbane



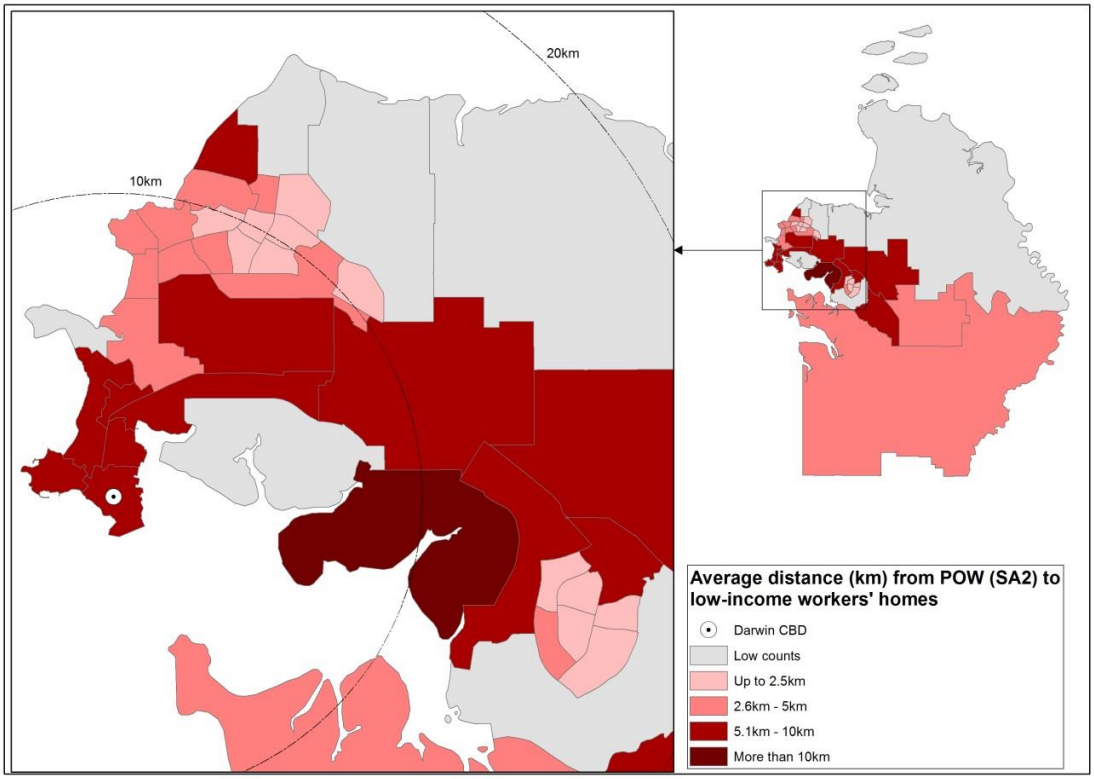
Source: Based on ABS 2011 Census data and ABS digital boundaries.

Figure 20: Average distance to LI workers' homes for each place of work, Perth



Source: Based on ABS 2011 Census data and ABS digital boundaries.

Figure 21: Average distance to LI workers' homes for each place of work, Darwin



Source: Based on ABS 2011 Census data and ABS digital boundaries.

3.3 The mismatch is partly explained by transport and by differences with lower income jobs outside the central city

The evidence that LICC workers travel a greater distance to work does not reveal the reasons behind such a spatial mismatch. This section explores the multiple possible factors contributing to why the LI workforces of the CCs are not as local as the metros on the whole. This research is primarily interested in the role housing costs play in this mismatch, but three other factors—albeit potentially related to housing—are worth teasing out: the sheer volume of jobs; the ease of covering that distance (i.e. transport connections); and the types of jobs available (which can also affect the types of people doing them).

3.3.1 Sheer volume of jobs in the CCs

By definition CCs are the most job-rich parts of the metros. So it is a trite observation that it is necessary to draw a workforce (LI or otherwise) from a broader area. The CC in each metro accounts for between 9 per cent and 18 per cent of all metro jobs (see Table 7). Larger polycentric metros, most notably Melbourne, have a relatively lower concentration of jobs in the CC, whereas the smaller metros, most notably Darwin, tend to concentrate a higher proportion of jobs in the CC.

Table 7: Proportion of all metropolitan jobs that are in the CC

	Sydney	Melbourne	Brisbane	Perth	Darwin
Lower income	6%	5%	5%	8%	13%
Middle income	11%	10%	11%	16%	18%
High income	23%	19%	22%	26%	23%
Overall	*12%*	*9%*	*11%*	*16%*	*18%*

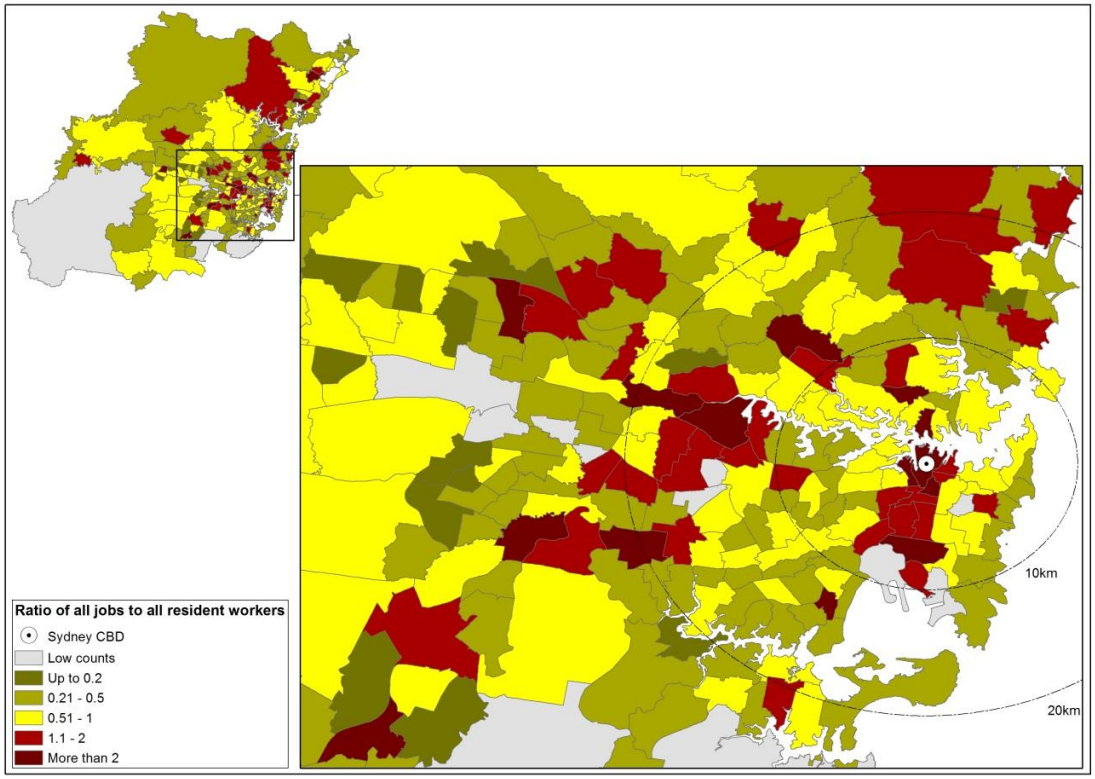
Source: 2011 Australian Census, calculated from TableBuilder data.

There are three aspects of this high concentration of jobs that will impact LI workers. The first, also shown in Table 7, is that CCs have high volumes of jobs at all income levels. Between 5 per cent and 13 per cent of all LI metro jobs are in the CCs. But even higher proportions, between 19 per cent and 26 per cent, of HI metro jobs are located in the CC. This will increase demand (disproportionately for the metro as a whole) for CC-proximate housing among HI households, so pushing up house prices. What is notable—as shown for Sydney, Melbourne and Brisbane in Table 6 earlier in the chapter—is that the 'high-income' CC workforce does not, on average, travel as far as the low- and middle-income CC workforces. This suggests housing costs, or some other financial burden, are a factor in the spatial distancing of the CC workforces there, as the higher income earners are more likely to be able to afford to pay a premium to be close to the CC, whereas those on lower incomes will be pushed to lower cost housing markets.

The second aspect of the CC's job concentration is that this job density is not matched with a workforce density. Figures 22 to 26 show the worker surplus or deficit for each SA2; that is, the difference between the working resident population in each SA2 and the number of jobs there. It demonstrates that CCs have a uniquely high ratio of jobs to workers. To some extent, the higher demand for housing, and higher price points, will overcome barriers to higher-density housing typologies closer to the CC—like fragmented ownership, existing improvements (land uses), and construction costs. Hypothetically, it is conceivable that if sufficient supply of housing around the CCs were able to meet this higher demand, the distance premiums observed would be completely mitigated. The role of recent high-density developments around the CCs in reducing the cost of housing and the spatial mismatch for LICC workers is explored in Chapter 6. In practice, though, housing density is unlikely to completely offset the job density, not least because of the differing housing typologies, and lifestyle and amenities offered, in neighbourhoods with high residential densities.

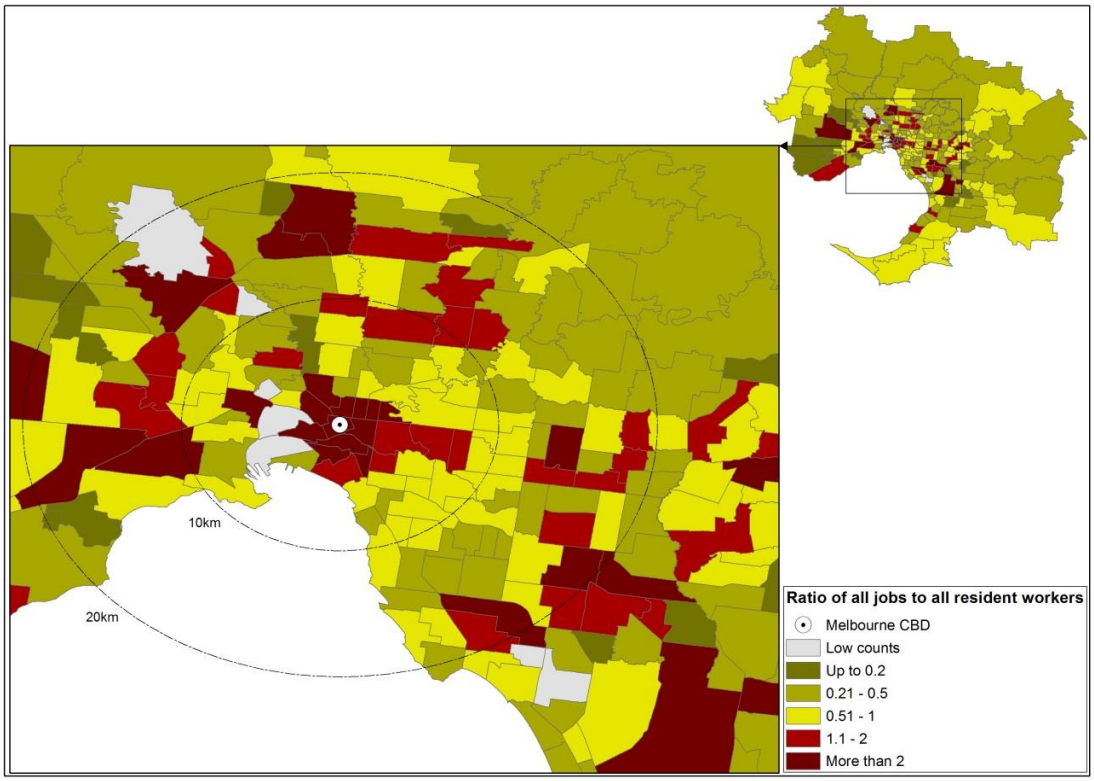
The third aspect, also shown in Figures 22 to 26, is that CCs are surrounded by other relatively job-rich areas. This adds to the demand for nearby workers and increases the likelihood that CC workers will need to be drawn in from further afield. As discussed further below, where those surrounding areas' economies are more reliant on LI workers (including older industrial precincts), they could be undermined if potential workforces are, like that of the CC itself, spatially distanced from those jobs. Further, where those areas' economies support the growth of the CC economy itself (like emerging 'creative' precincts), undermining the economies of these fringe areas could have knock-on effects to the health of the CC economy.

Figure 22: Ratio of jobs to resident workers, Sydney



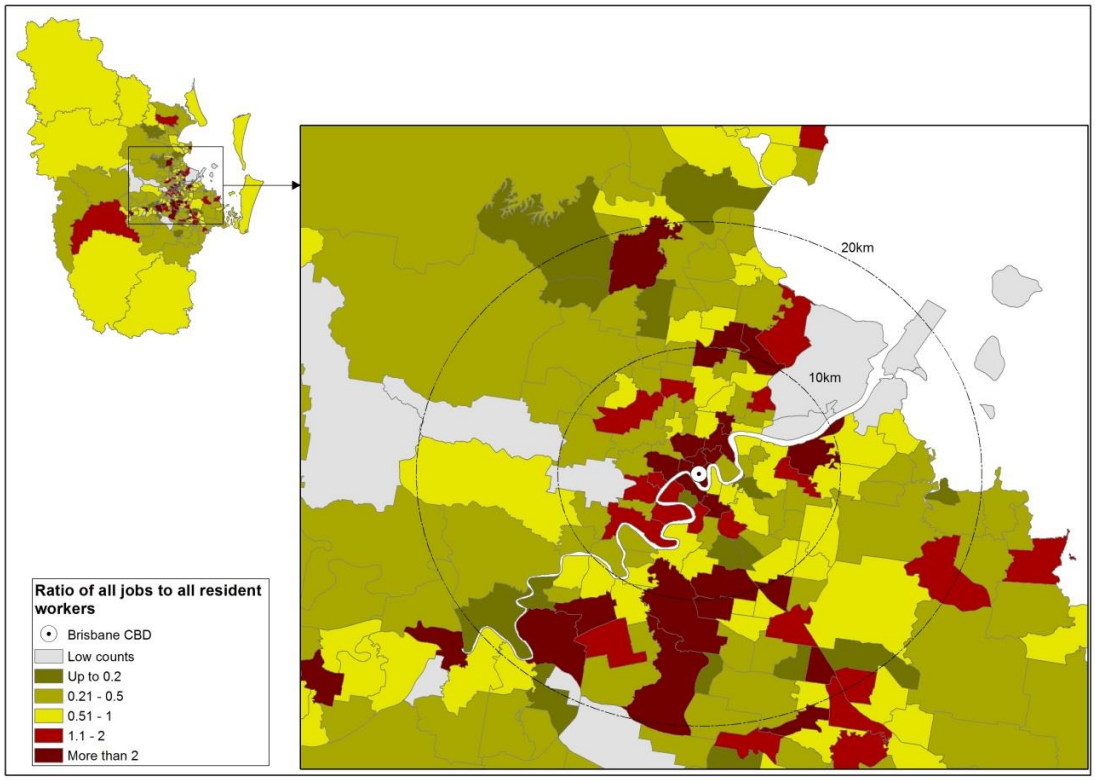
Source: Based on ABS 2011 Census data and ABS digital boundaries.

Figure 23: Ratio of jobs to resident workers, Melbourne



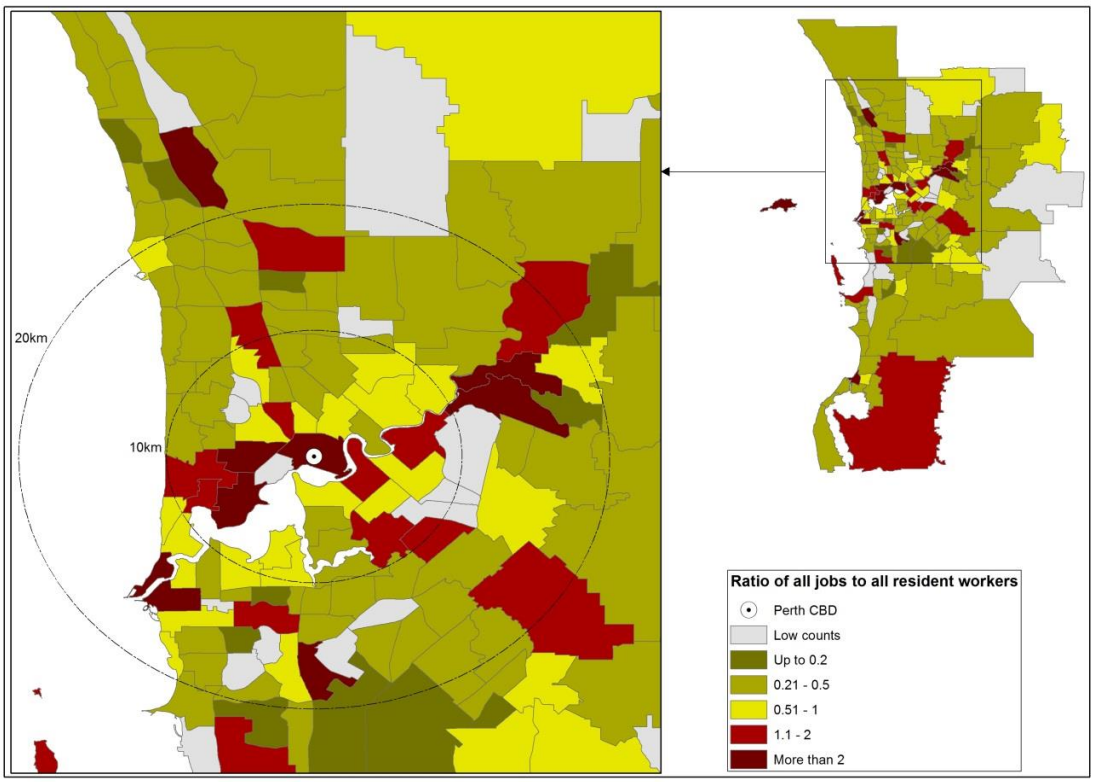
Source: Based on ABS 2011 Census data and ABS digital boundaries.

Figure 24: Ratio of jobs to resident workers, Brisbane



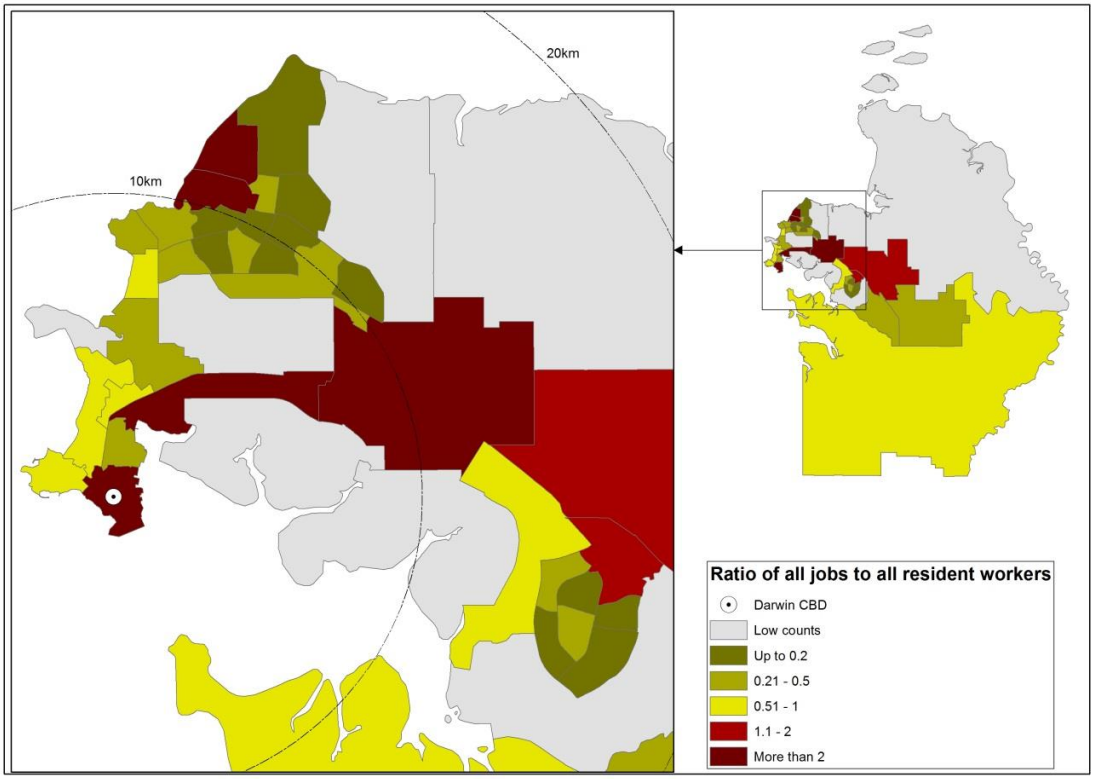
Source: Based on ABS 2011 Census data and ABS digital boundaries.

Figure 25: Ratio of jobs to resident workers, Perth



Source: Based on ABS 2011 Census data and ABS digital boundaries.

Figure 26: Ratio of jobs to resident workers, Darwin



Source: Based on ABS 2011 Census data and ABS digital boundaries.

3.3.2 Ease of travel to the CCs

In the absence of a worker density meeting the job density, another factor related to the observed distance premiums is the potential for CCs to be more easily accessed from other parts of the metro, compared with accessing jobs outside the CC. In practice, *time* and *cost* of getting to work are more likely to discourage labour market participation (i.e. a preparedness to work in the CC), rather than distance covered. This report does not analyse transport networks in detail, but the next few figures give some indication of the key points.

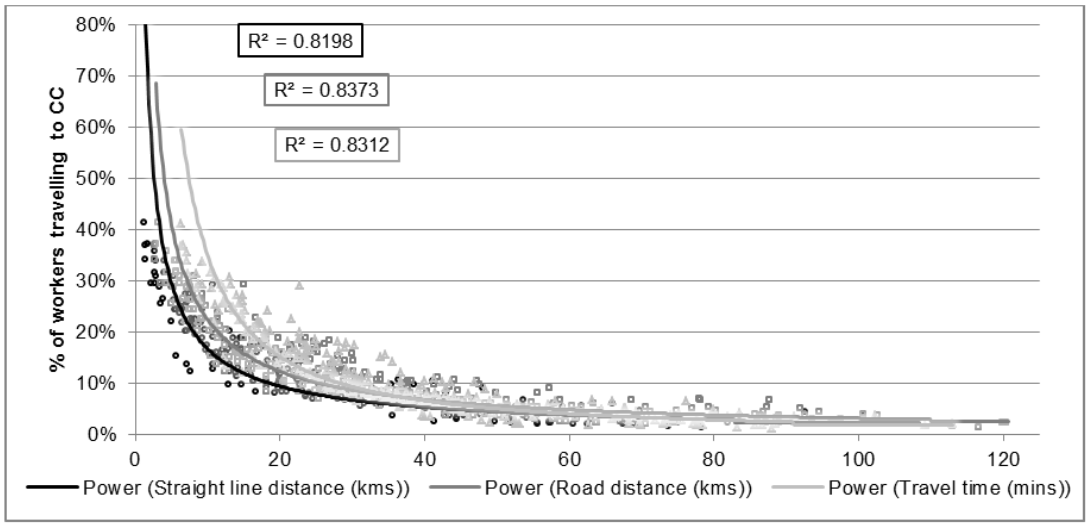
The length of commutes, measured in *time*, could highlight a limitation of the above use of straight-line distance to work as the measure of spatial separation. That is, it could highlight that the greater distances do not equate to greater travel time. However, neither road distance nor drive time is particularly more closely correlated with the likelihood that a worker commutes to the CC.

Figure 27 shows, as an example, that the R-squared values for the monomial best fit lines (i.e. inverse proportion) for all three are comparable in the case of Sydney. Also, the nature of road networks has a minimal effect on the relative ease of getting to the CC compared to other parts of the metro. Figure 28, as an example, compares the drive times between a sample of points across Sydney (centroids of each SA3[4]), and the drive time from those points to the CC (SA2 centroid). It shows that the CC is not particularly more well-connected than the metro as a whole by roads: for commutes of a given distance, there is roughly a 6 per cent time saving if driving to the CC (based on the gradients of the best-fit lines). It also shows a large variation for a given

[4] SA3 is, in the context of major metros, a subregional ABS Census geography. There are, for example, 47 SA3s in the Sydney metro area.

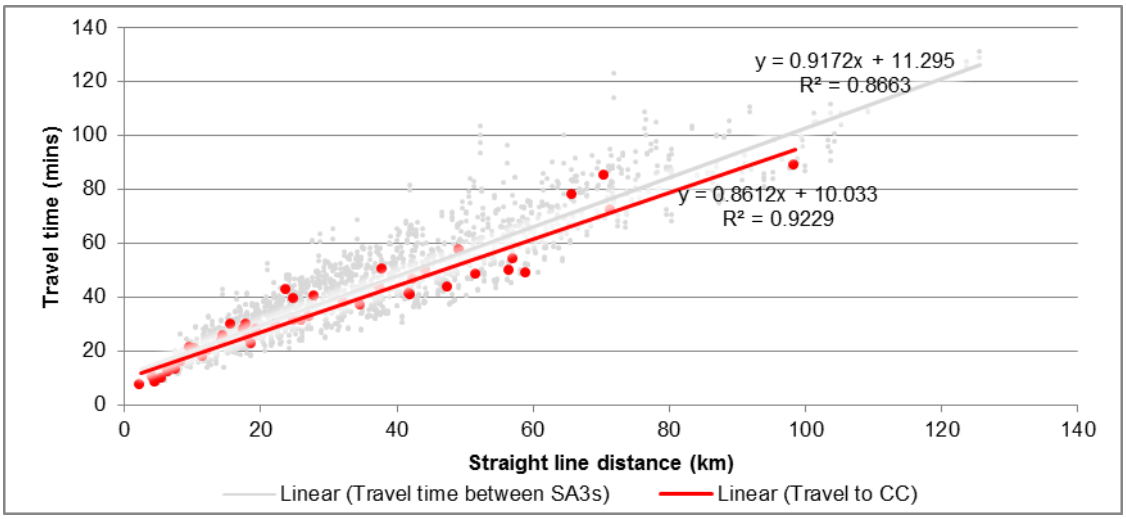
distance (commutes around 50 kilometres can be anything from around 40 to 100 minutes).

Figure 27: Travel time, road distance and straight-line distance vs proportion of workforce travelling to CC (Sydney SA2s)



Sources: Place of work data, 2011 Australian Census calculated from TableBuilder data; travel time and road distance data calculations © Google Maps 2014. NB: 14 SA2s are excluded because of insufficient resident workers, or because of a 0 kilometre travel distance/time; that is the workforce living in Sydney's CC itself.

Figure 28: Distance vs driving time, around Sydney and to the CC

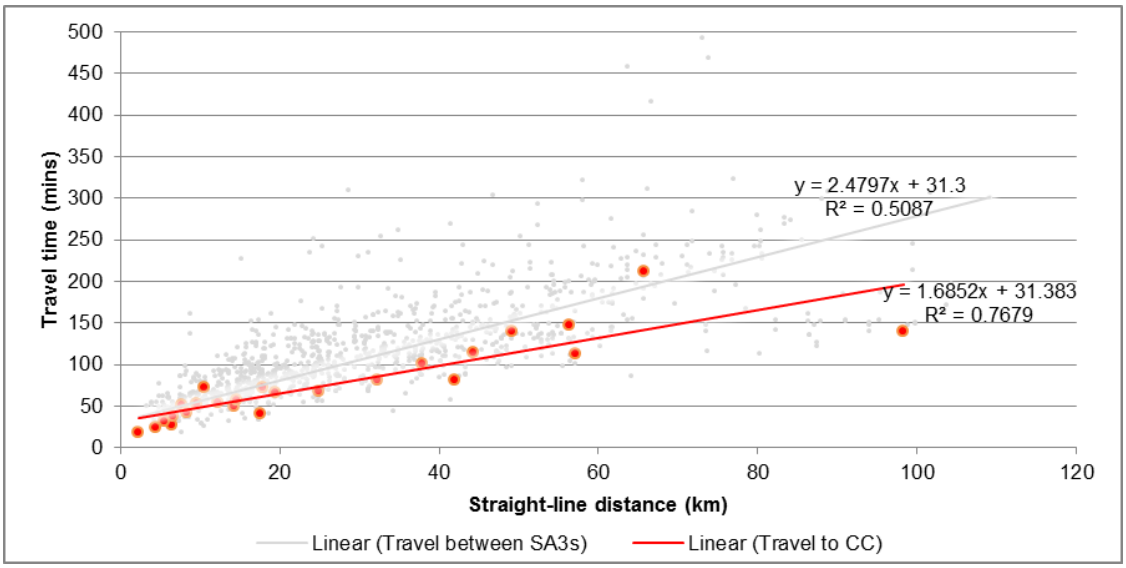


Source: © Google Maps 2014. NB: Three centroids were manually repositioned (to the nearest road) as the actual centroid was too far from a road for Google Maps to make the necessary calculations.

A similar exercise to that above, but for public transport, is shown in Figure 29. However, it is much less reliable as a snapshot of commutes. The sample points do not reflect the distribution of the population, which will have a much greater impact on public transport commute times (since it will probably entail a very long walk to the nearest public transport option) compared with driving commute times. The result is a much weaker correlation between commute times and the straight-line distance covered. This is, though, probably partly attributable to a genuine absence of correlation, with train commutes from further afield particularly flattening the time to cover a given distance. The data used does not account for the use of both car and

public transport, or the coordination with public transport timetables that will reduce commute times. With these caveats in mind, Figure 29 indicates that, on average, it is around 30 per cent faster to cover a given distance when travelling to the CC, compared with travelling around the metro as a whole (shown by the different gradients of the best fit lines).

Figure 29: Distance vs public transport travel time, around Sydney and to the CC



Source: © Google Maps 2014. NB: A dummy arrival time of 9am Monday was used for the calculations. Commutes calculated to be over 500 minutes are excluded. The metro-wide best-fit line is adjusted to have the same intercept as the CC, although the R-squared value is only negligibly lower.

In addition to time, the *cost* of travelling to work will be a factor in the workforce's preparedness to commute longer distances to get to the CC. This, to a large extent, also translates to a greater availability of public transport, which is typically cheaper than driving (depending on how car ownership and related costs are amortised). The role of public transport in mitigating the observed distance premium is, therefore, twofold. It helps to overcome both the time and cost of longer commutes that would make the observed distance premium a barrier to labour market thickness.

To support this indicative finding, and intuitive acceptance, that the CC is more easily accessed with public transport, it is possible to examine the relative modal share of public transport. The proportion of workers travelling by public or active transport modes to get to the CC, compared with the metro as a whole, also reveals the relative accessibility of the CC by public transport. Table 8 shows that, in all metros, the CCs are much more likely to be reached by public transport[5]. It also shows that the LI workforce is more likely to take public transport to the CCs, but notably not (other than in Darwin) more reliant on public transport to get to work across the metros overall.

[5] The 235 categories in the census method of travel to work (MTWP) are grouped as follows. *Private vehicle*: any category containing only combinations of 'Car, as driver'; 'Car, as passenger'; 'Truck'; 'Motorbike/scooter'; and 'Other' as an additional mode. *Public transport*: any category containing only combinations of 'Train'; 'Bus'; 'Ferry'; 'Tram'; 'Taxi'; 'Bicycle'; 'Walked only'; and 'Other' as an additional mode. Mixed: any category containing combinations from both the above groupings. *Excluded*: 'Worked at home'; 'Did not go to work'; 'Not stated'; and 'Other' by itself.

Table 8: Travel to work modal split between public, private & mixed mode of travel

		Sydney		Melbourne		Brisbane		Perth		Darwin	
		CC	All	CC	All	CC	All	CC	All	CC	All
Public transport	low	80%	26%	70%	19%	67%	17%	43%	15%	28%	18%
	mid	78%	24%	66%	17%	63%	16%	41%	12%	18%	12%
	high	69%	30%	57%	22%	52%	21%	38%	17%	13%	11%
Private vehicle	low	12%	72%	20%	79%	20%	80%	45%	83%	71%	81%
	mid	11%	72%	20%	80%	22%	81%	45%	85%	82%	88%
	high	21%	66%	32%	74%	36%	75%	52%	79%	86%	88%
Mixed	low	8%	2%	10%	2%	13%	2%	11%	2%	2%	1%
	mid	11%	3%	14%	3%	15%	3%	14%	3%	1%	1%
	high	10%	4%	11%	4%	12%	4%	10%	4%	1%	1%

Source: 2011 Australian Census, aggregated from TableBuilder.

Overall, then, the availability of public transport does go some way to overcome the additional distances workers need to travel to get to the CC. However, the difference in 'distance premium' between income groups suggests it cannot be explained by transport alone. For example, if a 50 per cent increase in income meant a preparedness to travel 50 per cent further to work (as is, at least qualitatively, the case for the metro workforce), all else being equal, there should be a similar difference between the distances travelled by the different income levels of the CC workforce. As noted, this is not the case. Also, even if a commute, when measured by time and cost, is a greater distance to the CC, there will still be jobs within a similar commute (again by time and cost) outside the CC attracting many LI workers. This would mean, all else being equal, jobs in the CC attract less suitable candidates. A final factor then, potentially contributing to the distance premium that LI workers pay to work in the CC, is the kinds of jobs available there.

3.3.3 Different LI jobs in the central cities

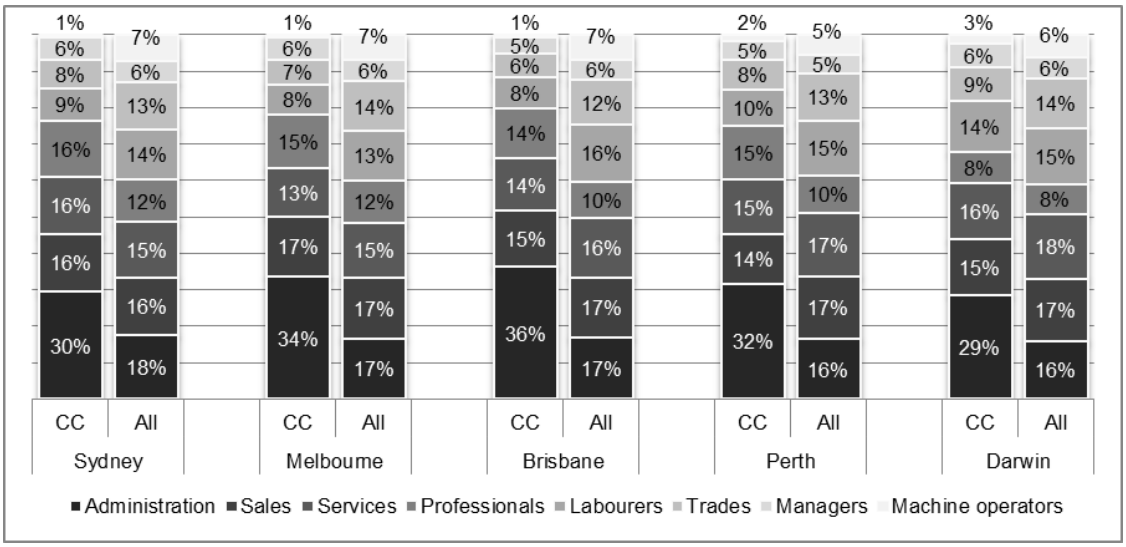
Part of the reason the LICC workforce is travelling further than the metro as a whole could potentially be attributed to the different jobs available there. For example, some LI workers might be prepared to pay the distance premium for the potential for higher income later in their career. Or the LI jobs better match a skill set of, or in some other way attract, the necessary workers despite the distance premium.

Occupation categories in the 2011 Census reveal the differences between the LI jobs of the CCs, compared to the metros as a whole (Figure 30). The biggest difference between the LICC and the overall LI metro job profile is that 'administration' jobs are, proportionally, twice as common. Other differences are, roughly across all metros, a lower proportion of 'labourers', 'machine operators' and 'trades' and a higher proportion of 'professionals'. Looking more closely within 'services' reveals some difference between CCs and metros overall. 'Hospitality' workers account for around two thirds of 'services' (8–10% out of the 13–16% shown in Figure 30) in each CC, but around one third (4–5% out of the 15–18% shown in Figure 30) for each metro as a whole. In comparison, across each metro the biggest sub-category within 'services' is 'carers and aides' (6–8% out of the 15–18% shown in Figure 30), which only accounts for around 1–3 per cent within the CCs.

The other notable occupation category is 'professionals', which accounts for around the same proportion of LI jobs in the CCs as 'sales' and 'services'. The biggest sub-

category is ‘business, HR and marketing professionals’ which accounts for a little under half the ‘professional’ occupations. The other notable professional sub-categories appear to be influenced by the presence of anchors in the CC: for example ‘health professionals’ jump in Perth because the CC includes the large employer of Royal Perth Hospital, and the proportion of ‘education professionals’ will depend on the presence of schools and tertiary education institutions in each CC. Of the other categories, around half the ‘labourers’ category for the CCs is ‘cleaners’ and between a half and a third of the ‘trades’ category in the CCs is ‘food trades’ (including chefs, bakers, etc.), largely connected to the above-mentioned ‘hospitality’ occupations.

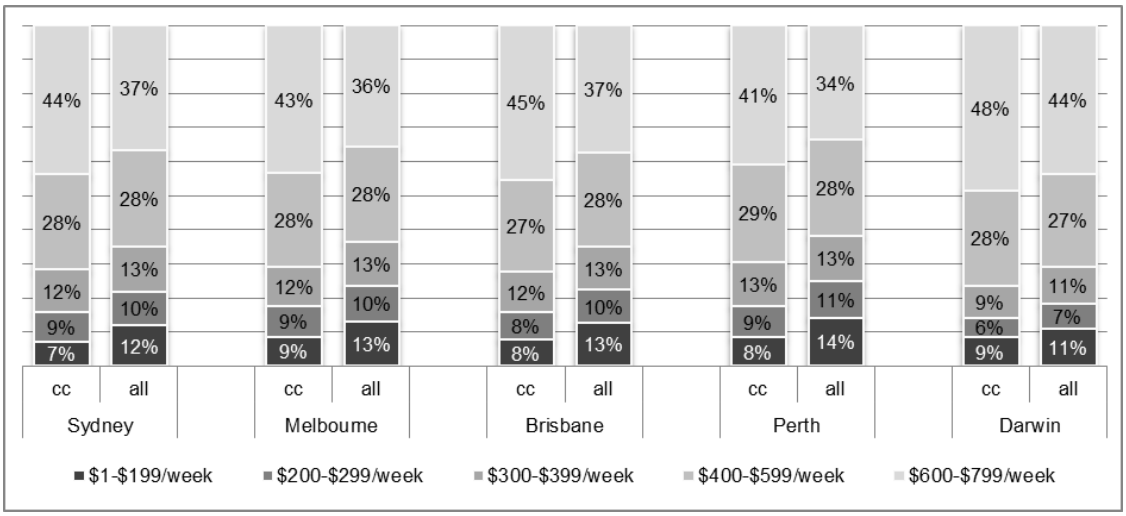
Figure 30: Proportional split of LI workers by occupation



Source: 2011 Australian Census, calculated from TableBuilder data.

At the margins, another difference between LI jobs in the CC compared with the metro overall is the relative income within the LI bracket, defined as below $800/week in this research. CCs have a notable, but small, over-representation in jobs at the upper end of the LI bracket. In other words, LI jobs in the CC pay slightly better on average than LI jobs across the metro. This potentially partly explains why the LI workforce is prepared to travel greater distances.

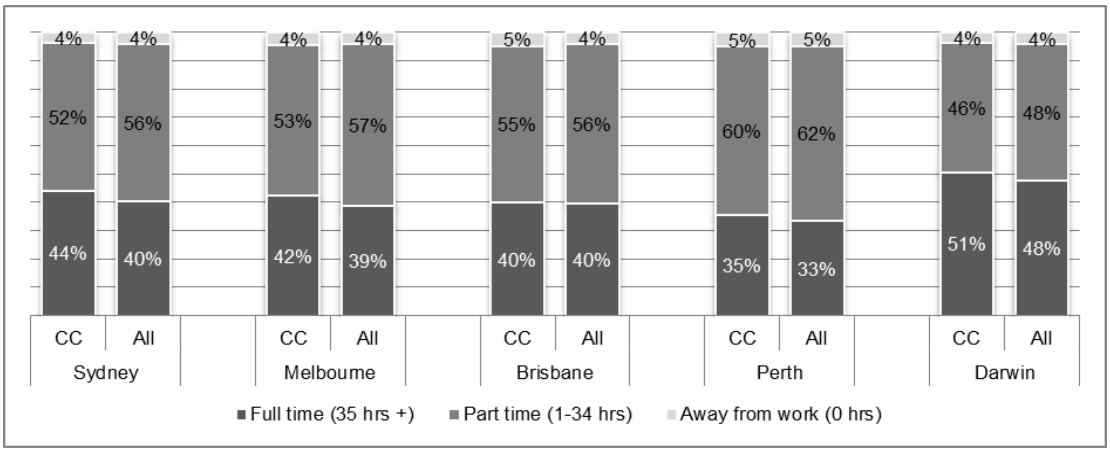
Figure 31: Proportional split of LI workers by income band



Source: 2011 Australian Census, calculated from TableBuilder data.

There is little evidence of a marked difference in full- and part-time work in the two geographies. Such a difference could have explained the distance premium, since income is based on reported weekly incomes, irrespective of hours worked. The LI workforce includes large proportions of part-time workers across all geographies, although it is very slightly lower in the CCs compared to the same metros (Figure 32).

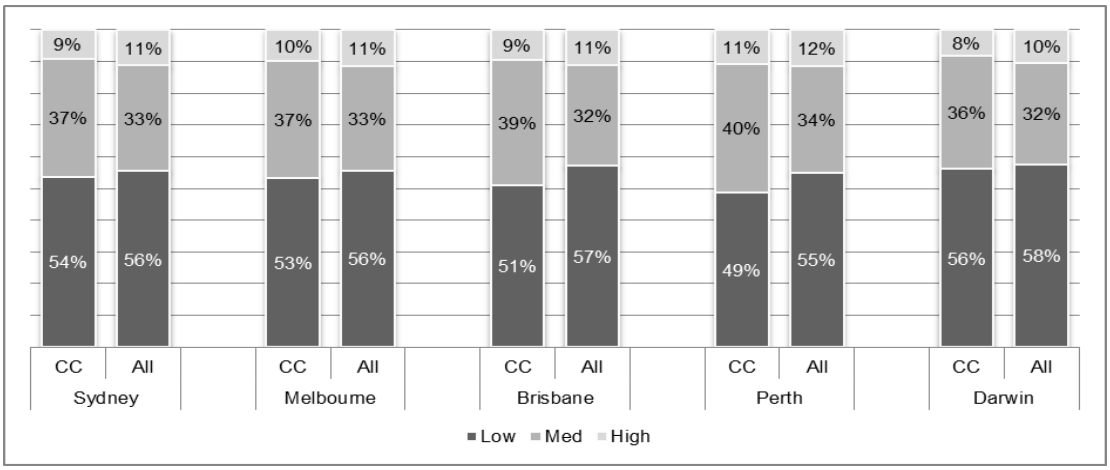
Figure 32: Proportional split of LI workers by hours worked



Source: 2011 Australian Census, calculated from TableBuilder data.

There is also little evidence that the part-time LI workers are better paid in the CC, which could also have concealed a difference with the metro-wide LI jobs. That is, for some LI part-time workers the pay-rate might be equivalent to a middle- or high-income full-time job. Using more detailed analysis of part-time LI workers[6], Figure 33 shows a calculated distribution of the full-time equivalent income levels for both CC and metro part-time LI workforces. It shows little difference, in terms of the effect part-time workers have on the workforce figures, between LI jobs in the CCs and the metros.

Figure 33: Proportional split of part-time LI workers by full-time-equivalent income band



Source: 2011 Australian Census, calculated from TableBuilder data.

[6] A 'full-time-equivalent' income distribution is calculated based on the reported weekly income ranges (INCP) and reported hours worked (HRSP) (e.g. working 10 hours and earning $200–299 is taken to be the equivalent to working 35 hours and earning $700–1047). The counts in each resulting income range ($700–1047 in the example) are apportioned into the usual census ranges assuming a flat distribution (e.g. $700–1047 is split as follows: 29% into the $600–799 range; 58% into the $800–999 range; and 14% into the $1000–1249 range).

This difference in job profile could also relate to a difference in the workforce most attracted, and best suited, to the LI jobs in the CC. It is difficult to distinguish with descriptive statistics whether the people doing the work are the result of a lack of alternatives or the result of an effective skills-matching labour market. These issues are explored further in Chapter 5. However, some notable differences are outlined below.

Figure 34 shows that LI workers are more likely to be female, and also that females tend to be even more over-represented in the CCs than in the metros overall. Figure 36, however, shows CCs having a lower proportion of LI workers being the spouse in a family household. This undermines (but does not preclude) any theory that those female workers are the secondary incomes in a family household, and so able to share housing costs.

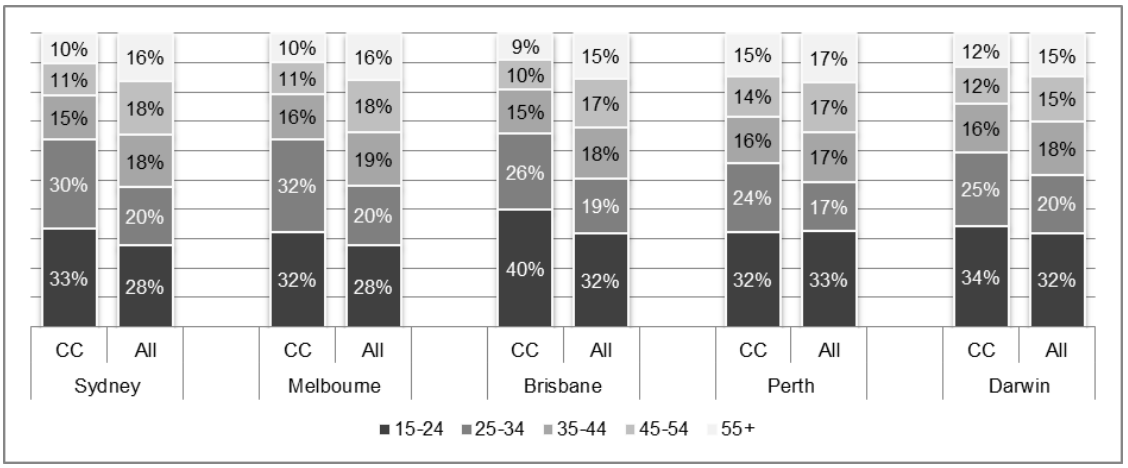
Figure 34: Proportional split of LI workers by sex

Source: 2011 Australian Census, calculated from TableBuilder data.

Figure 35 shows that the LICC workforces are notably younger than the metros overall. Again, Figure36 shows this is not attributable to any notably higher proportion of LI workers being the children (dependent or non-dependent) of family households. Figure 36 does, though, show a higher proportion of jobs filled by non-family households (most prominently group households but also singles), which could partly explain the younger workforce.

The younger workforce could reflect the relative scarcity of older workers for LI jobs, since older workers are more likely to have families, want larger houses and have higher housing costs; all of which would position them further from the CC. It could also, however, support the theory that CC jobs lead to higher paid positions more quickly, meaning there are relatively fewer career-long LI workers. It is impossible to establish which is correct on these figures alone, but the issues are explored further through interview data in Chapter 5.

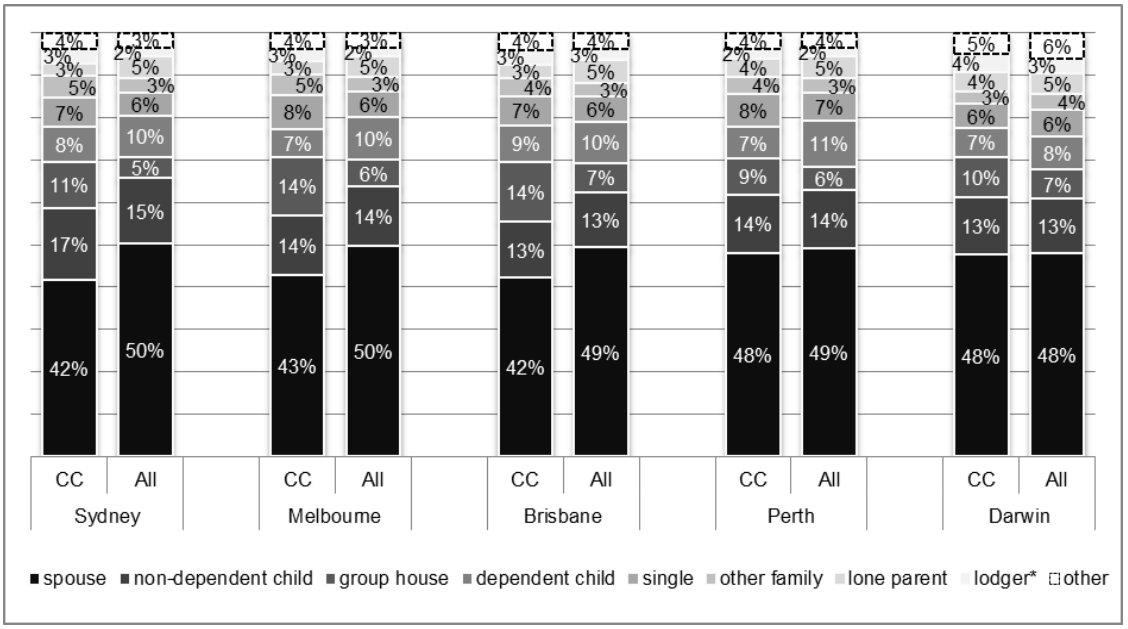
Figure 35: Proportional split of LI workers by age



Source: 2011 Australian Census, calculated from TableBuilder data.

Further to the figures shown in Figure 36, other income brackets have higher proportions of non-family households in the CC workforce (although the split of group and single households reverses for the HI workforce). This further suggests a shortage of affordable larger housing that would be suitable for families, a point worth noting as most market-rate housing that hits affordable price points for LI workers tends to be much smaller.

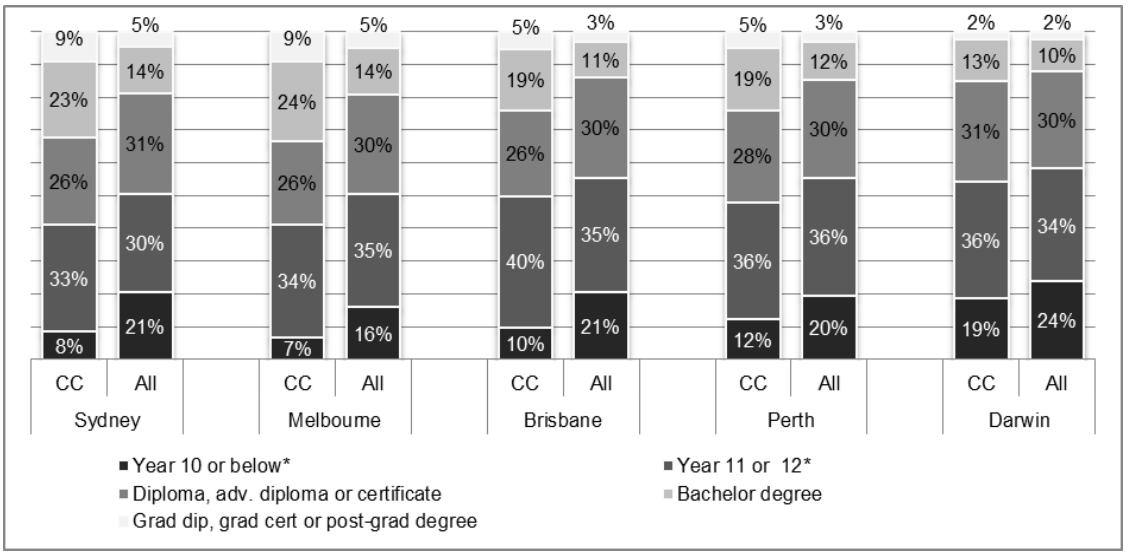
Figure 36: Proportional split of LI workers by relationship to household reference person



Source: 2011 Australian Census, calculated from TableBuilder data. *a non-family member living in a family household

Figure 37 shows that LICC workforces tend to be more educated than the metro workforces overall. This supports the theory that more of the LI jobs in the CC are entry-level positions, rather than career-long LI jobs.

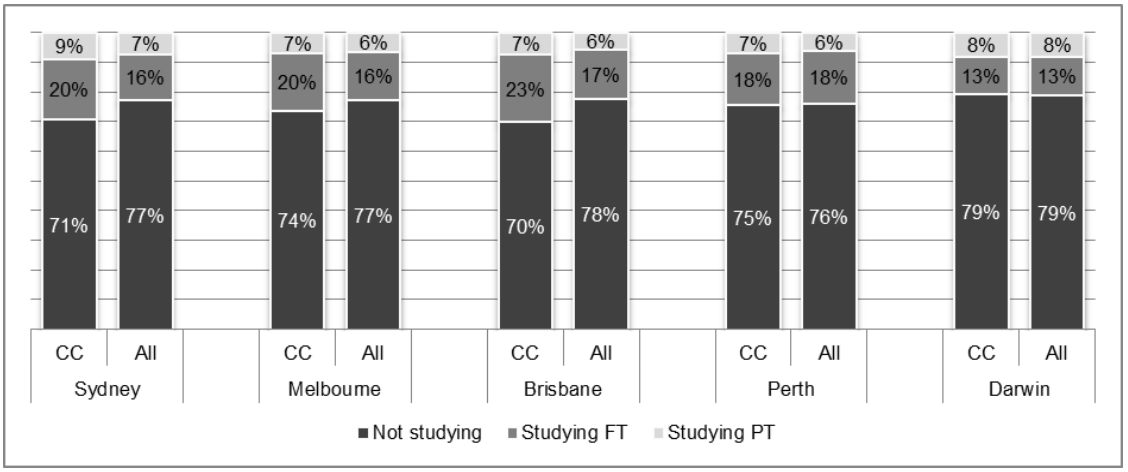
Figure 37: Proportional split of LI workers by educational attainment



Source: 2011 Australian Census, calculated from TableBuilder data. *Only respondents stating 'not applicable' for tertiary qualification (otherwise categorised under the stated tertiary qualification).

Figure 38 shows that LICC workforces are more likely to also be undertaking study of some kind. Perth and Darwin are exceptions to this, probably due to the smaller size of the tertiary institutions in or near those CCs.

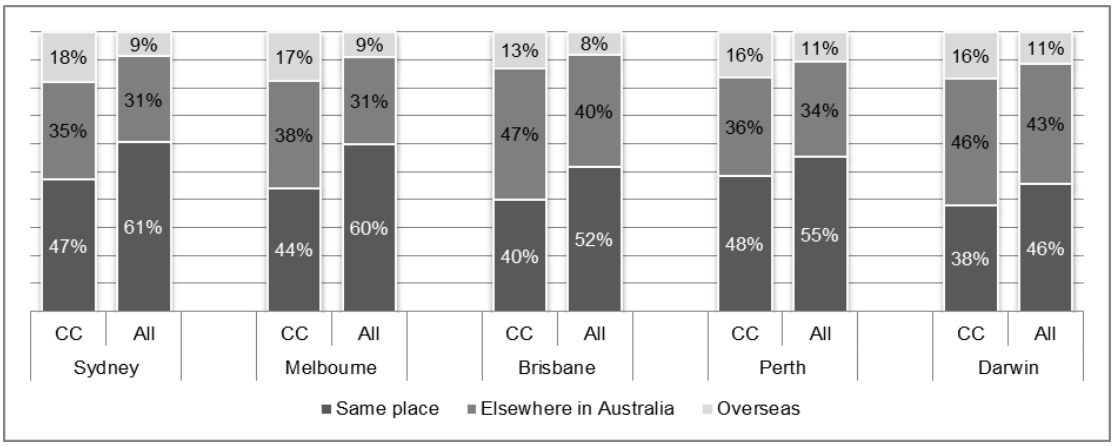
Figure 38: Proportional split of LI workers by current studying status



Source: 2011 Australian Census, calculated from TableBuilder data.

Aligning with the higher proportion of young people in LI jobs in CCs is the theory that the LICC workforce tends to be more transient. This helps distinguish whether the young LI workers start earning more money or move to other areas. While it only shows changes to usual residence, rather than place of work, Figure 39 gives some indication of the relatively higher mobility of the LICC workforce. The proportion of LICC workers living in the same place five years earlier is some 10–15 percentage points lower than the LI metro workforce overall.

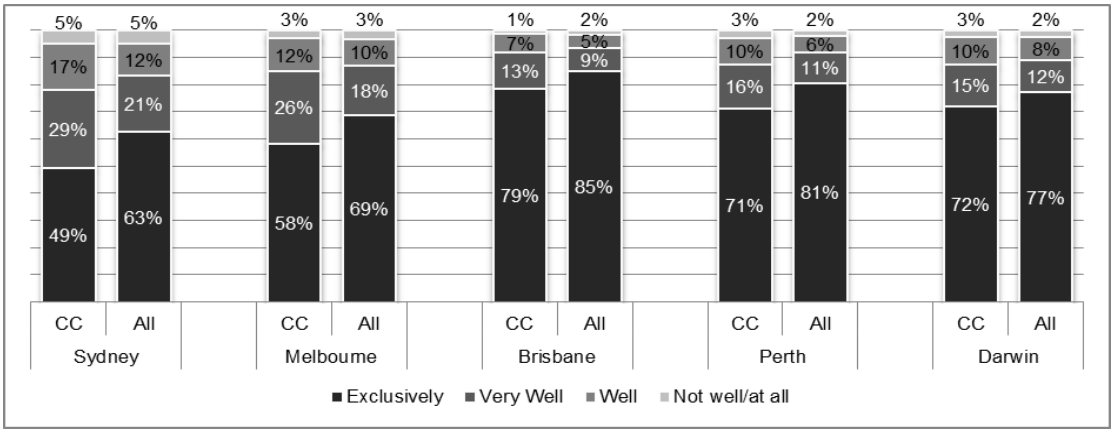
Figure 39: Proportional split of LI workers by usual residence five years ago



Source: 2011 Australian Census, calculated from TableBuilder data.

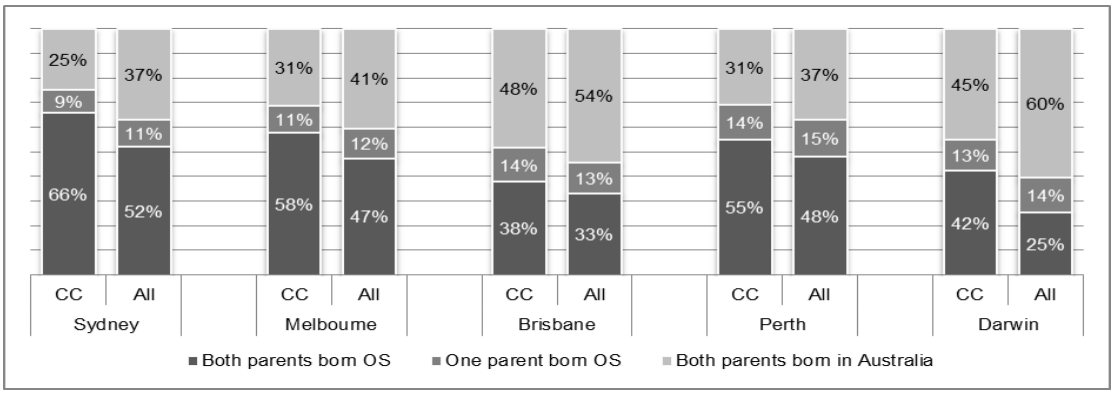
Another factor contributing to the higher mobility shown in Figure 39 is the higher incidence of migrant workers. Figures 40 and 41 further this, showing lower proportions of the LI workforce in the CCs are exclusively English speakers and lower proportions have both parents born in Australia. The housing experience of new migrants could, therefore, be a factor in the supply of a thick LI labour market. The extent to which migrant workers are preferred by employers, or are simply the only option available, is also explored further through interview data in Chapter 5.

Figure 40: Proportional split of LI workers by level of English spoken



Source: 2011 Australian Census, calculated from TableBuilder data.

Figure 41: Proportional split of LI workers by parents' birthplace



Source: 2011 Australian Census, calculated from TableBuilder data.

Indigenous populations are proportionally very small, so inevitably round to one or zero in a broad descriptive statistical analysis like that employed in this section. However, by examining the numbers in detail it is possible to see the degree of over- or under-representation. There are between 130 and 270 LICC workers identifying as indigenous in each metro, with Darwin's figures therefore representing a higher proportion—closer to 5 per cent. Table 9 shows rates of indigenous worker representation in different populations. In both metro-wide and CC-specific workforces, indigenous workers are over-represented in the LI brackets. Also, indigenous workers are under-represented in the CC workforce, both overall and in the LI band. The exception to this is Darwin, where indigenous workers are over-represented in the CC workforce, compared with the overall metro.

Table 9: Indigenous representation in metro and CC workforces

	Sydney	Melbourne	Brisbane	Perth	Darwin
Overall workforce	0.84%	0.32%	1.27%	0.82%	5.25%
LI workforce	1.07%	0.39%	1.63%	0.95%	6.54%
CC workforce	0.37%	0.25%	0.93%	0.75%	5.52%
LICC workforce	0.46%	0.35%	1.29%	0.96%	5.26%

Source: 2011 Australian Census, calculated from TableBuilder data.

The main findings of all this are that there are some discernible differences between both the LI jobs and the workers in the CC compared to the metro overall. The main differences in the jobs are a greater proportion of administrative and professional jobs, as well as a greater share of service jobs being in hospitality (at the expense of carers and aides). The greatest differences in workers are that LICC workers, compared with LI workers across the metro as a whole, are younger, more educated, less likely to be living with families, and more likely to be internationally mobile (either migrants or, at least, mobile Australians returning from overseas).

How much the differences in workers can be attributed to the different jobs, or the difference in availability of workers nearby (i.e. the jobs, whatever they are, are more likely to be filled with the available local workforce), is difficult to ascertain from descriptive data alone. Similarly, how much the difference in jobs or workers will translate a greater ability or willingness to pay higher proportion of income on housing is difficult to ascertain. Are workers willing to pay more for housing, or travel further because the job offers future prospects, or because there is no family to support? More importantly, from a productivity angle, how does that affect worker retention or skills matching? Would employers prefer older, less mobile workers, but have to settle for the workforce that is available? It is also important to reiterate that the differences are at the margins: there are still high proportions of older workers with less education and living in family households. So any difference will not entirely mitigate the observed distance premium, although it could contribute to the shift in average.

3.4 Hospitality and retail are most affected, with other central city specific industries also potentially affected

Expanding on the previous section's consideration of the LI jobs and workers of the CC economies, this section outlines the industries that provide those jobs. It is these industries that are expected to be affected by any spatial mismatch. Three factors are considered: the number of LICC workers employed in each industry; the LICC workforce footprint for each industry; and some sense of the competition for LICC workers in each industry from other parts of the metro. This last factor would see—all

else being equal—fewer suitable workers being prepared to cover the distance premium that working in the CC entails.

3.4.1 Number of LICC workers

In all five CCs there were common patterns for which industries employed the most LI workers. There was a high degree of industry concentration of the LICC workforce, with only a handful of industries (out of 19[7]) containing more than 5 per cent of the total LICC workforce for each CC (Table 10). Also, the top five industries, in terms of numbers of LICC workers, contained around 70 per cent of the total LICC workforce in most CCs, with only Perth having a marginally more distributed LICC workforce.

The hospitality and retail sectors were, almost unanimously, the top two industries for LICC workers. The professional services sector was also among the top five industries for LICC workers in all five CCs, representing at least 10 per cent of the LICC workforce in all cases but Darwin. The support services sector was also prominent, representing around 8 per cent of LICC workers in most CCs, with Darwin again having a slightly lower proportion (4.8%; not shown). The two other industries that represented at least 5 per cent of the workforce for the majority of the five CCs were the government services sector and the finance-insurance sector. These six sectors were also in the top seven or eight sectors, in terms of total CC workforce, across the five CCs examined[8].

Table 10: Industries with more than 5 per cent of the total LICC workforce

Sydney	Melbourne	Brisbane	Perth	Darwin
◆ Hospitality 22.8% (9,960) ◆ Pro. services 15.2% (6,635) ◆ Retail 15.2% (6,628) ◆ Finance-insure 10.5% (4,603) ◆ Sup. services 8.0% (3,489)	◆ Hospitality 20.1% (7,576) ◆ Retail 15.2% (5,735) ◆ Pro. services 13.8% (5,191) ◆ Finance-insure 10.1% (3,809) ◆ Sup. services 9.6% (3,612) ◆ Gov't services 5.8% (2,177) ◆ Education 5.4% (2,023)	◆ Hospitality 18.5% (3,821) ◆ Pro. services 15.1% (3,120) ◆ Retail 14.3% (2,966) ◆ Gov't services 12.2% (2,526) ◆ Finance-insure 9.1% (1,888) ◆ Sup. services 7.7% (1,595)	◆ Hospitality 17.6% (4,514) ◆ Retail 13.4% (3,438) ◆ Health 11.6% (2,989) ◆ Pro. services 11.2% (2,882) ◆ Sup. services 7.7% (1,991) ◆ Gov't services 7.7% (1,986) ◆ Finance-insure 7.6% (1,966)	◆ Hospitality 26.7% (594) ◆ Retail 16.0% (355) ◆ Gov't services 10.9% (242) ◆ Pro. services 8.6% (192) ◆ Health 6.0% (134) ◆ Other services 5.6% (124)

Source: 2011 Australian Census, calculated from TableBuilder data.

Notably, the representation of other industries associated with the public sector, like the education and health sectors, varied greatly between cities. This mostly depended on the presence of anchor institutions, both as direct employers and as a result of the clustering effect around them. In Perth, Royal Perth Hospital and The Mount Hospital increased the LICC health workforce count by about one half (from 1800 to 3000[9]). In Melbourne, RMIT increased the LICC education workforce count by about one half (from 1300 to 2000). Elsewhere, in the absence of individual anchors, these sectors are not particularly large. Other essential services—like policing—fall within the government services sector but, as shown below, they are also a fairly small LICC

[7] ANZSIC industry divisions are used, but shorter names adopted. Appendix 1 shows the full industry names.

[8] On this measure the other major industries were *health* in Perth and Darwin, *media-telecoms* in Sydney and Melbourne, *mining* in Brisbane and Perth, and *logistics* in Brisbane.

[9] Revealed through DZN maps of industry-specific LICC workforce distributions.

workforce. This suggests the 'key' or 'essential' worker narratives, discussed in Chapter 2, that often dominate discourses on the exclusion of LI workers are perhaps unwarranted. However, excluding government services when considering economic productivity because it is not a private industry is also unwarranted, since governance is as likely to benefit from thicker labour markets as any other industry. Finally, the 'other services' sector in Darwin mostly comprises hairdressing-beauty, automotive repairs and various labour and professional interest groups. The overall low numbers of workers in Darwin CC make this sector proportionally larger.

Table 11:Major subsectors and occupations

Industry	Most prominent subsectors	Most prominent occupations
Hospitality	Accommodation Cafes & restaurants Takeaway food Pubs & bars	Hospitality workers Food trades workers Cleaners & laundry workers Food preparation assistants Accommodation & hospitality managers
Retail	Clothing stores Department stores Supermarkets Various specialty retailing (e.g. watches/jewellery, cosmetics, footwear, books/newspapers & electronic appliances) (Darwin has no department store, but a larger supermarket subsector)	Sales assistants Retail managers Checkout operators & cashiers
Professional services	Legal Accounting Computer system design Market research & statistical Management consulting Engineering consulting (Sydney also has a notable proportion in advertising)	Accountants, auditors & company secretaries Personal assistants & secretaries General clerks Accounting clerks & bookkeepers Legal professionals Receptionists Clerical & office support workers (the catch-all 'miscellaneous clerical/administrative worker' category is actually the biggest code in all cities)
Finance-insurance	Banking General insurance Auxiliary finance & investment	Financial/insurance clerks General clerks Financial brokers, dealers & advisers Accounting clerks & bookkeepers Call centre clerks (Darwin is mostly 'financial/insurance clerks')
Support services	Travel agencies & tour companies Building cleaning services Employment, recruitment & labour supply services (Melbourne also had a notable proportion of both call centres and office administration services)	Cleaners & laundry workers Personal service & travel workers Human resource & training professionals Accounting clerks & bookkeepers General clerks (Melbourne has a high number of call centre workers and Perth has a high number of personal carers)
Gov't services	Central, state & local government administration Justice Investigation & security services	Prison & security officers General clerks Miscellaneous clerical/administrative workers Call centre clerks Information & organisation professionals Contract/project administrators

Source: 2011 Australian Census, calculated from TableBuilder data.

There were also similar patterns across the CCs within each of these six top industries, in terms of sub-sectors and occupations. An overview of the six industries, as well as noteworthy differences between the five CCs, is provided in Table 11. Hospitality was spread fairly evenly across its main subsectors. Retail was also spread evenly four ways across clothing stores, supermarkets, department stores and specialty retail stores. Professional services was dominated by legal services in all cities. Support services mostly comprised cleaning and HR-related services associated with office-based industries, although travel-related businesses could also be linked to hospitality via tourism. Government services were dominated by departmental and judicial administration—not, as might be expected, by front-line services like policing or emergency services (police services represented about 10% of government services LICC jobs in Brisbane and Perth, but were much smaller in the other cities).

To some extent, the prominent occupations suggest two kinds of workers are included in the LICC workforce. On one hand there was found to be a wide spread of jobs in CC-specific industries, including many that would be considered entry-level positions. This supports the sense that many LICC workers are paying the distance premium based on the potential future earnings as well as current earnings (so their travel patterns more closely resemble middle- and high-income workers). On the other hand are a large number of concentrated retail, hospitality, cleaning and office support jobs. Notably, hospitality and retail include managerial positions, which would not be entry-level.

3.4.2 Proportion of CC workers in the LI range

The hospitality and retail sectors were the CC industries most reliant on LI workers, with a higher proportion of all workers on a LI (see Table 12). In both industries the majority of the workforce—over 60 per cent in almost all instances—fell within the LI level. Of the six noted industries, only support services was also over-represented, in that its LICC workforce was proportionally higher than the LICC workforce as a whole. The other industries actually have relatively small LI footprints, with the high numbers of LICC workers reflecting the overall size of those sectors in the CC.

Table 12: Proportion of CC workforce on LI, selected industries

	Sydney	Melbourne	Brisbane	Perth	Darwin
◆ Hospitality	63% (9,960/15,815)	67% (7,576/11,389)	71% (3,821/5,413)	65% (4,514/6,932)	56% (594/1,065)
◆ Retail	62% (6,628/10,675)	68% (5,735/8,381)	75% (2,966/3,969)	65% (3,438/5,285)	60% (355/587)
◆ Pro. services	12% (6,635/53,197)	12% (5,191/42,021)	13% (3,120/23,648)	10% (2,882/28,852)	14% (192/1,401)
◆ Finance-insure	6% (4,603/72,888)	11% (3,809/34,381)	13% (1,888/14,181)	16% (1,966/12,601)	14% (78/558)
◆ Support services	28% (3,489/12,447)	38% (3,612/9,409)	30% (1,595/5,392)	34% (1,991/5,788)	24% (107/438)
◆ Gov't services	8% (1,601/19,198)	10% (2,177/22,827)	9% (2,526/27,799)	10% (1,986/19,019)	6% (242/4,000)
All sectors	*18% (43,749/240,888)*	*21% (37,633/176,384)*	*19% (20,706/108,307)*	*20% (25,715/129,170)*	*20% (2,222/10,880)*

Source: 2011 Australian Census, calculated from TableBuilder data.

A number of other industries in the CC were shown to be reliant on LI workers. Table 13 shows the other industries that were over-represented on this measure. Note that the proportions are liable to large swings in industries with small CC workforces. The industry, outside hospitality and retail, with the highest proportion of LI workers is the arts-leisure sector, with at least 40 per cent of its workforce in the LI level in all CCs except Sydney. The arts-leisure sector is often prominent in broader consideration of 'creative' sector narratives and, alongside parts of the hospitality and retail sectors, the 'amenity' economy and cultural tourism. Also shown are health and education, which—as already noted—feature prominently in many policy considerations on issues of access for 'key' workers. It Is notable that the industries more prominent in media and policy about the pressures on the LI workforce (i.e. those with key workers and the creative class) are those with high proportions of LI workers, rather than the sectors with overall large numbers of LICC workers. Similar proportions were found to be in the LI range in the very small sectors of wholesale trade and manufacturing, and in the 'other services' sector, which features above for Darwin but not elsewhere.

Table 13: CC industries with above average LI worker footprint

Sydney	Melbourne	Brisbane	Perth	Darwin
◆ Arts-leisure 33% (1,004/3,049)	◆ Arts-leisure 41% (618/1,491)	◆ Arts-leisure 45% (595/1,314)	◆ Arts-leisure 42% (484/1,162)	◆ Arts-leisure 52% (47/91)
◆ Other services 32% (1,515/4,762)	◆ Other services 40% (1,066/2,668)	◆ Other services 44% (580/1,329)	◆ Other services 37% (1,014/2,731)	◆ Manufacturing 44% (54/122)
◆ Health 29% (1,636/5,656)	◆ Health 35% (1,186/3,379)	◆ Education 27% (977/3,554)	◆ Agriculture 34% (30/88)	◆ Other services 39% (124/315)
◆ Education 27% (1,667/6,078)	◆ Manufacturing 32% (488/1,513)	◆ Health 23% (624/2,735)	◆ Health 29% (2,989/10,390)	◆ Health 29% (134/464)
◆ Wholesale 24% (650/2,656)	◆ Education 27% (2,023/7,426)	◆ Manufacturing 20% (191/948)	◆ Education 27% (871/3,181)	◆ Logistics 25% (68/267)
◆ Manufacturing 23% (588/2,584)	◆ Wholesale 25% (561/2,212)	◆ Wholesale 19% (155/814)	◆ Wholesale 25% (455/1,845)	◆ Media-telecoms 23% (82/355)
			◆ Manufacturing 23% (541/2,316)	◆ Wholesale 22% (16/72)
			◆ Media-telecom 23% (696/3,062)	

Source: 2011 Australian Census, calculated from TableBuilder data.

3.4.3 Competition for workers from outside the CC

A final consideration of the industries expected to be affected by a spatial mismatch is the extent to which there are similar jobs outside the CC. These non-CC jobs are potentially more accessible to the LICC workforce, reducing the likelihood that the CC will attract the best workers. Two ways to identify this kind of pressure on the CC sectors are used here. The first is to look at the proportion of LI jobs in the metro area that can be found in the CC. Table 14 shows that the CC retail sector faces the most competition for non-CC LI jobs with around 20 LI jobs outside the CC for every LI job within the CC. Notably, the potential competition drops in the smaller metros of Perth and Darwin, which do not have the same degree of secondary centres that the larger

metros have. In contrast, in the finance sector there are only two to four LI jobs outside the CC for every LICC job.

Outside the six identified industries, there are a number of other industries facing similar competition for workers (Table 15). Again, the ratios are subject to fluctuations due to small numbers (agriculture has been excluded for this reason) and, in general, the industries with a lot of non-CC competition for LI workers are not those associated with the CC economy: like manufacturing, logistics and wholesale trade. Health and education sectors are also more distributed as sectors, undermining the viability of CC employers. Construction, shown on this metric, is a notable absence from the industries examined thus far. A limitation of census data, the reported place of work for construction workers is liable to change, and the figures will not capture any sense of whether CC construction projects have a spatial mismatch from their LI workforce. To some extent, the unique nature of CC developments will limit competition from outside the CC, but there is scope for further research for this industry.

Table 14: Ratio of CC:non-CC LI jobs, selected industries

	Sydney	Melbourne	Brisbane	Perth	Darwin
◆ Hospitality	1:8 (9,960:83,086)	1:10 (7,576:78,304)	1:11 (3,821:43,252)	1:7 (4,514:31,346)	1:3 (594:1,704)
◆ Retail	1:19 (6628:124,444)	1:23 (5735:130,501)	1:23 (2,966:67,113)	1:16 (3,438:56,467)	1:8 (355:2,875)
◆ Pro. services	1:6 (6,635:37,129)	1:7 (5,191:34,819)	1:5 (3,120:16,371)	1:4 (2,882:11,281)	1:3 (192:542)
◆ Finance-insure	1:3 (4,603:15,900)	1:4 (3,809:13,693)	1:3 (1,888:5,960)	1:2 (1,966:3,665)	1:2 (78:128)
◆ Support services	1:9 (3,489:31,588)	1:9 (3,612:32,331)	1:10 (1,595:15,692)	1:6 (1,991:11,537)	1:7 (107:715)
◆ Gov't services	1:11 (1,601:17,032)	1:9 (2,177:19,190)	1:4 (2,526:9,033)	1:4 (1,986:7,485)	1:4 (242:958)
All sectors	*1:16 (87,498:1,431,568)*	*1:19 (75,266:1,462,718)*	*1:18 (41,412:746,068)*	*1:11 (51,430:559,584)*	*1:7 (4,444:30,040)*

Source: 2011 Australian Census, calculated from TableBuilder data.

Table 15: Industries with above-average ratio of CC:non-CC LI jobs

Sydney	Melbourne	Brisbane	Perth	Darwin
◆ Manufacturing 1:105 (588:61,935)	◆ Construction 1:218 (233:50,683)	◆ Manufacturing 1:178 (191:33,929)	◆ Construction 1:40 (467:18,767)	◆ Construction 1:34 (35:1,201)
◆ Construction 1:88 (547:48,185)	◆ Manufacturing 1:153 (488:74,451)	◆ Wholesale 1:95 (155:14,730)	◆ Manufacturing 1:38 (541:20,526)	◆ Manufacturing 1:32 (16:508)
◆ Health 1:58 (1,636:95,665)	◆ Health 1:82 (1,186:97,047)	◆ Construction 1:89 (255:22,710)	◆ Education 1:29 (871:25,142)	◆ Education 1:30 (7:207)
◆ Wholesale 1:50 (650:32,738)	◆ Wholesale 1:58 (561:32,717)	◆ Health 1:85 (624:52,746)	◆ Logistics 1:28 (383:10,564)	◆ Logistics 1:13 (134:1,782)
◆ Logistics 1:41 (831:34,068)	◆ Logistics 1:43 (721:30,958)	◆ Logistics 1:35 (489:17,105)	◆ Wholesale 1:23 (455:10,291)	◆ Wholesale 1:12 (54:654)
◆ Education 1:30 (1,667:50,479)	◆ Other services 1:35 (1,066:37,279)	◆ Other services 1:35 (580:20,022)	◆ Other services 1:15 (1,014:15,302)	◆ Other services 1:11 (47:504)
◆ Other services 1:25 (1,515:38,333)	◆ Arts-leisure 1:30 (618:18,475)	◆ Education 1:31 (977:30,090)	◆ Arts-leisure 1:14 (484:6,756)	◆ Arts-leisure 1:9 (7:61)
◆ Utilities 1:19 (122:2,336)	◆ Education 1:26 (2,023:52,854)	◆ Property-rental 1:26 (254:6,604)	◆ Health 1:13 (2,989:38,914)	◆ Health 1:8 (355:2,875)
	◆ Property-rental1:19 (512:9,750)	◆ Utilities 1:21 (70:1,478)		

Source: 2011 Australian Census, calculated from TableBuilder data.

A second metric for exploring competition from non-CC jobs is the industry-specific distance premium incurred. Using the same method as Table 6, earlier in this chapter, this metric shows how much further LICC workers are travelling compared to the metro-wide LI average. Some distance premium is common to most industry and occupation groups. There is, however, quite some variation in the figures (Table 16). It should be noted that this is partly due to the limitations of the data. First, when disaggregating the LICC workforce by both usual residence and industry or occupation, the individual counts are lower, and so statistically less reliable. This is particularly true for industries with low counts of LICC workers (Table 17) and in the case of Darwin generally. Also, the high degree of disaggregation means the counts are more likely to be subject to the randomisation that the ABS builds into census tables with low counts. In practice this has led to counts shifting people to categories with smaller distances (particularly no distance, i.e. where usual residence and place of work are in the same SA2), away from categories with larger distances, so underestimating the actual average distance (compare the 'all sector' lines in the tables below and LI line in Table 6). However, given the use of straight line distances between SA2 centroids does not provide the actual distance to work anyway; the relative averages are only used as indicators of distance travelled, and used in conjunction with other metrics.

The distance premium and the average distances travelled also show that LICC workers in professional and support services have the greatest travel burden, consistently higher than the LICC average for both the relative premium over the metro-wide average, but also among the greatest absolute average distance travelled. Government services and finance-insurance sectors also travel longer than average

distances in most cases. Hospitality and retail, as well as related sales as service jobs, travel relatively shorter distances, but still further than metro-wide averages for those industries and occupations. Education, construction and property-rental sectors are the most consistently above-average on this measure for industries other than the six main ones identified.

Table 16: LI distance premium, selected industries

	Sydney	Melbourne	Brisbane	Perth	Darwin
◆ Hospitality	2.0 (13.6/6.9km)	1.7 (12.4/7.5km)	1.7 (9.6/5.7km)	1.3 (7.3/5.4km)	1.3 (5.7/4.3km)
◆ Retail	1.9 (14.1/7.6km)	1.6 (13.1/8.1km)	1.3 (8.8/6.9km)	1.6 (8.9/5.8km)	1.3 (7.0/5.2km)
◆ Pro. services	2.5 (18.8/7.6km)	2.3 (17.5/7.7km)	2.1 (13.0/6.2km)	1.8 (9.5/5.2km)	1.9 (8.8/4.7km)
◆ Finance-insure	1.7 (20.2/11.9km)	1.5 (19.4/12.6km)	1.5 (13.1/8.5km)	1.6 (10.6/6.8km)	1.2 (11.3/9.7km)
◆ Support services	2.2 (17.5/8.1km)	1.8 (16.7/9.3km)	1.7 (10.7/6.5km)	1.7 (9.2/5.4km)	2.1 (9.9/4.7km)
◆ Gov't services	2.0 (19.7/9.8km)	1.8 (17.8/10.2km)	1.3 (13.3/10.6km)	1.4 (10.7/7.8km)	1.3 (9.4/7.3km)
All sectors	*2.1 (16.2/7.9km)*	*1.7 (15.1/8.7km)*	*1.6 (11.1/7.1km)*	*1.5 (9.0/6.0km)*	*1.4 (7.3/5.3km)*

Source: 2011 Australian Census, calculated from TableBuilder data.

Table 17: Industries with above-average LI distance premium

Sydney	Melbourne	Brisbane	Perth	Darwin
◆ Construction 3.5 (20.2/5.8km)	◆ Education 2.1 (14.5/7.0km)	◆ Arts-leisure 2.3 (11.1/4.8km)	◆ Construction 1.9 (8.9/4.6km)	◆ Education 4.6 (15.7/3.4km)
◆ Property-rental 2.8 (15.0/5.3km)	◆ Construction 2.0 (12.7/6.4km)	◆ Construction 2.2 (11.3/5.1km)	◆ Education 1.8 (8.7/4.9km)	
◆ Other services 2.4 (17.1/7.0km)	◆ Property-rental 1.9 (13.0/6.8km)	◆ Utilities 2.1 (18.0/8.7km)	◆ Property-rental 1.8 (7.2/4.1km)	
◆ Media-telecom 2.2 (17.8/8.2km)	◆ Other service 1.8 (14.3/7.7km)	◆ Property-rentals 1.9 (9.4/4.9km)	◆ Other services 1.6 (8.6/5.4km)	
◆ Education 2.1 (13.8/6.6km)	◆ Media-telecoms 1.8 (16.2/8.8km)	◆ Media-telecoms 1.8 (11.1/6.0km)	◆ Arts-leisure 1.5 (7.9/5.2km)	
		◆ Other Services 1.7 (11.0/6.6km)		
		◆ Education 1.7 (9.0/5.5km)		

Source: 2011 Australian Census, calculated from TableBuilder data.

Table 18: Average distance (km) to work for LICC workforce, by occupation

	Sydney	Melbourne	Brisbane	Perth	Darwin
Managers	2.1 (14.2/6.6km)	1.9 (14.1/7.6km)	1.7 (10.0/5.8km)	1.5 (8.2/5.4km)	1.5 (6.7/4.5km)
Professionals	2.0 (15.9/7.8km)	1.8 (15.3/8.4km)	1.7 (11.0/6.4km)	1.5 (9.2/6.2km)	1.9 (8.3/4.3km)
Sales workers	2.0 (14.7/7.2km)	1.8 (13.5/7.7km)	1.4 (9.3/6.5km)	1.7 (9.0/5.4km)	1.2 (5.6/4.8km)
Admin workers	1.9 (19.5/10.2km)	1.6 (18.2/11.1km)	1.5 (13.6/9.2km)	1.4 (10.2/7.4km)	1.4 (9.5/6.8km)
Service workers	1.9 (14.6/7.6km)	1.5 (12.2/8.3km)	1.5 (9.8/6.6km)	1.4 (8.2/6.0km)	1.4 (6.1/4.4km)
Labourers	1.8 (14.8/8.1km)	1.7 (14.2/8.5km)	1.4 (9.9/7.3km)	1.4 (7.6/5.6km)	1.5 (7.7/5.0km)
Technicians-tradies	1.8 (16.3/8.9km)	1.4 (13.3/9.3km)	1.3 (10.4/8.0km)	1.3 (9.1/7.0km)	1.0 (6.2/6.4km)
Operators-drivers	1.5 (14.2/9.3km)	1.5 (15.0/10.0km)	1.5 (13.6/9.3km)	1.3 (8.7/6.5km)	0.8 (4.8/6.2km)
All occupations	*2.0 (16.4/8.3km)*	*1.7 (15.3/8.9km)*	*1.5 (11.3/7.4km)*	*1.5 (9.1/6.2km)*	*1.4 (7.4/5.3km)*

Source: 2011 Australian Census, calculated from TableBuilder data.

3.5 Job-intensive areas around the central city could also be affected

The primary focus of this research is the LICC workforce, defined in this research as the SA2 with the highest number of workers in each of the metro areas. However, in many instances inner-city economies will extend to a number of locations around the CC. This is particularly true in larger metros, like Sydney and Melbourne, where the overall size of the CC means that, functionally, it is not contained by the SA2 boundaries. Any CC extension will probably include some lower-cost commercial real estate and potentially sectors reliant on LI workers, and so be subject to the same spatial mismatch (e.g. universities, hospitals, 'creative' industries). In each metro, the main 'CC extension' SA2 is identified as the SA2 adjacent to the CC with the largest number of jobs (Table 19).

Table 19: CC extension SA2

	Sydney	Melbourne	Brisbane	Perth	Darwin
CC 'spillover'	Nth Sydney-Lavender Bay	Southbank	South Brisbane	Subiaco-Shenton Park	Fannie Bay-The Gardens
Number of jobs	43,022	33,992	22,759	22,062	1,539
Workforce relative to CC	17.1%	18.3%	19.6%	16.4%	13.4%
Number of resident workers	5,626	6,896	2,703	8,078	1,757
Ratio of jobs to resident workers	7.6	4.9	8.4	2.7	0.9

Source: 2011 Australian Census, calculated from TableBuilder data. NB: Unlike analysis elsewhere in this chapter, the data in this table are not restricted to those with declared and positive incomes.

In Sydney, the adjacent (save for water) SA2 of North Sydney-Lavender Bay is the second biggest employment centre, and it shares a labour market and will have similar constraints caused by limited housing affordability within that labour market catchment. In Melbourne, Southbank is the third largest SA2 for job numbers, after the geographically discrete employment centre of Dandenong. In Brisbane, South Brisbane is similarly important in terms of jobs, at third behind the discrete employment centre of Rocklea-Acacia Ridge. In Perth, Subiaco-Shenton Park is the second biggest employment centre. In Darwin, the identified SA2 sits well down the list of SA2s by jobs (and has a job to resident worker ratio below 1.0). However, Woolner-Bayview-Winnellie, an SA2 near the CC, has over half the number of jobs of the CC.

In almost all cases, other adjacent SA2s also have a workforce at least one tenth that of the CC: Sydney also has Pyrmont-Ultimo; Melbourne also has Docklands and East Melbourne; Brisbane also has Fortitude Valley, Paddington-Milton and Spring Hill; and Darwin also has Larrakeyah. Additionally, in all cases, there is a contiguous area of SA2s with job to resident worker ratios above 1.0 surrounding the CC (see Figures 22 to 26). This suggests that in all metros there is a degree of job spillover from the CC. However, also in all cases, there is a large drop-off in terms of both numbers of jobs and of the dominance of commercial land uses (shown by the job to resident worker ratios). This means any analysis of an aggregated geography would be skewed to reflect the SA2s identified as the CCs.

Instead, this 'inner-city' economy is examined in more detail using Sydney as an example. Here the other SA2s in the same SA3 as the CC are analysed. The first point to note is that these surrounding SA2s have workforces that are at least a magnitude lower than the CC. However, they are still sizeable workforces overall: collectively, jobs in these surrounding SA2s represent about one third of the total number of workers in the SA3 (Table 20). There is also a lot of variance among the surrounding SA2s, with the numbers of workers ranging from about 6000 in Glebe to slightly fewer than 30 000 in Pyrmont.

Table 20: Number and distribution of jobs in Sydney SA3

	CC	Pyrmont	Surry Hills	Erskine-ville	Newtown	Waterloo	Potts Point	Darling-hurst	Redfern	Glebe
Lower inc.	44,269	6,103	6,236	6,126	5,320	3,930	2,726	3,064	2,578	2,488
(%column)	(18%)	(21%)	(28%)	(33%)	(33%)	(30%)	(25%)	(28%)	(24%)	(43%)
Middle inc.	79,440	11,116	8,901	7,907	5,950	5,542	4,502	4,547	4,303	1,955
(%column)	(33%)	(39%)	(40%)	(43%)	(37%)	(43%)	(41%)	(42%)	(40%)	(34%)
High inc.	119,174	11,350	7,261	4,362	4,977	3,468	3,719	3,215	3,881	1,343
(%column)	(49%)	(40%)	(32%)	(24%)	(31%)	(27%)	(34%)	(30%)	(36%)	(23%)
Total	*242,883*	*28,569*	*22,398*	*18,395*	*16,247*	*12,940*	*10,947*	*10,826*	*10,762*	*5,786*
(%row)	*(64%)*	*(8%)*	*(6%)*	*(5%)*	*(4%)*	*(3%)*	*(3%)*	*(3%)*	*(3%)*	*(2%)*

Source: 2011 Australian Census, calculated from TableBuilder data.

The differences in size of each SA2's workforce are partly revealed by the industry composition—both overall and in terms of LI workers. Four patterns are considered (Table 21). The first is CC *office spillover*. Of the six identified industries for LICC workers, government services and finance-insurance have little presence in other SA2s, although in the case of Sydney's CC, government services was not a particularly large industry (i.e. less than 5% of the LICC workforce). However, the other office-based industries of professional services and support services are, along with the media-telecommunications industry, prominent in a number of surrounding

SA2s. This includes particularly high proportions of the large workforces in the immediately adjacent Pyrmont-Ultimo and Surry Hills, as well as Redfern (although at a smaller scale).

Hospitality and retail are also major employers of LI workers in many of the surrounding SA2s. This reflects these SA2s' dual functions as both local commercial hubs (for shops and cafes), such as the Broadway shopping centre in Glebe, and as contributors to the broader *tourism-amenity* economy, such as the hub of Kings Cross in Potts Point. The former function is also reflected in the higher proportions of LI workers in the 'other services' industry.

Other major employers of LI workers in these SA2s reflect the presence of major employment *anchors*, which are often credited with generating industry clusters. This includes the oft-referenced 'eds and meds' anchors of hospitals and universities boosting the numbers of LI workers in the education and health industries. The main examples are the University of Technology Sydney in Pyrmont, St Vincent's Hospital in Darlinghurst, and both Sydney University and Royal Prince Alfred Hospital in Newtown. Further to these we could add the 'vets and bets' anchors of military facilities and casinos. In particular, the higher proportion of LI government services workers in Potts Point reflects the Garden Island naval facility, and the higher proportion of LI workers in the arts-leisure industry in Pyrmont reflects the Star Casino.

Finally, in the SA2s of Erskineville (which includes industrial parts of Alexandria) and Waterloo, a number of sectors associated with *heavy industry* remain major employers of LI workers. These are the logistics, manufacturing and wholesale sectors. While these industries are not pivotal in the CC economy, they are probably implicated in any spatial mismatch of LI workers stemming from high housing costs close to the CC. On one hand, LI workers in these locations will potentially be competing for CC-proximate low-cost housing, affecting the potential supply of LICC labour force thickness. On the other hand, inner-city industrial centres are also likely to suffer from a thinning LI workforce. In this particular case, the industrial precincts are geographically, and so functionally, connected to the adjacent air and sea ports along Port Botany. Collectively these areas are major employment centres for all workers, but particularly LI workers. If a relatively thinner labour force (compared with outer city industrial locations) displaces heavy industry from the inner city, it could have implications for the ongoing viability of infrastructure like the airport, which is more important to the CC economy.

Table 21: Industry distribution of LI workers in Sydney SA3

	Pyrmont	Surry Hills	Erskineville	Newtown	Waterloo	Potts Point	Darlinghurst	Redfern	Glebe
Office spillover	**29%**	**27%**	**10%**	**9%**	**11%**	**15%**	**12%**	**33%**	**14%**
◆ Pro. services	11%	14%	6%	4%	5%	9%	8%	14%	7%
◆ Support services	6%	8%	2%	3%	4%	5%	3%	7%	3%
◆ Media-telecoms	12%	5%	2%	2%	2%	2%	2%	12%	4%
Amenity	**22%**	**36%**	**25%**	**32%**	**34%**	**45%**	**37%**	**28%**	**54%**
◆ Hospitality	11%	19%	5%	17%	8%	30%	24%	13%	16%
◆ Retail	8%	10%	14%	10%	18%	10%	9%	11%	31%
◆ Other services	3%	7%	6%	6%	8%	5%	4%	4%	8%
Anchors	**34%**	**23%**	**8%**	**52%**	**11%**	**28%**	**44%**	**24%**	**19%**
◆ Education	14%	6%	1%	27%	3%	4%	6%	6%	7%
◆ Health	3%	10%	4%	21%	5%	15%	33%	8%	8%
◆ Arts-leisure	15%	4%	2%	3%	2%	4%	4%	5%	2%
◆ Gov't services	1%	3%	1%	0%	2%	6%	1%	5%	1%
Heavy industry	**7%**	**10%**	**52%**	**4%**	**38%**	**5%**	**3%**	**11%**	**7%**
◆ Logistics	2%	2%	23%	1%	8%	2%	1%	3%	1%
◆ Wholesale	3%	5%	14%	1%	16%	1%	1%	3%	3%
◆ Manufacturing	2%	3%	15%	2%	14%	2%	1%	5%	3%
Other sectors	**8%**	**4%**	**6%**	**4%**	**5%**	**7%**	**4%**	**4%**	**6%**

Source: 2011 Australian Census, calculated from TableBuilder data.

The average distance to work across the inner city, shown in Table 22 and using the same method as Table 6, reflects both the size of the LI workforce in each location as well as the industries that dominate the economy. The SA2s identified as having CC office spillover, as well as the heavy industry precincts, draw their workforces from further afield.

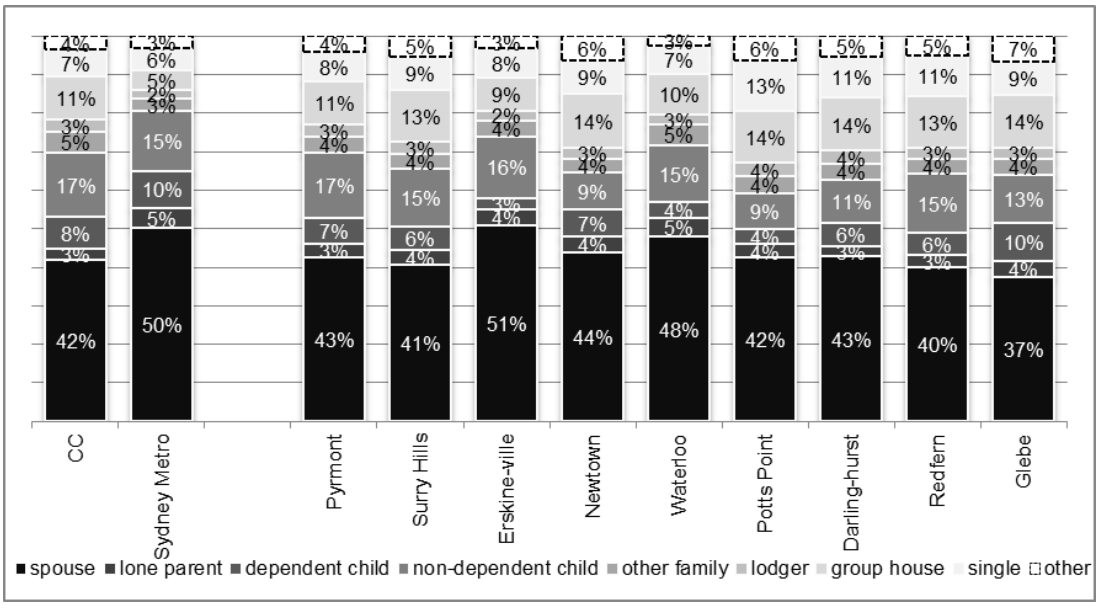
Table 22: Average distance to work (km) in Sydney SA3

	CC	Pyrmont	Surry Hills	Erskineville	Newtown	Waterloo	Potts Pt	Darlinghurst	Redfern	Glebe
Lower income	16.3	14.0	13.5	13.6	9.1	12.4	10.2	10.7	10.9	8.7
Middle income	17.0	14.8	14.2	14.5	10.8	14.1	11.6	11.0	13.7	10.7
High income	13.5	12.3	12.9	14.8	9.7	14.7	12.4	9.5	14.5	10.8

Source: 2011 Australian Census, calculated from TableBuilder data.

While this analysis does not extend to the demographic breakdown of the LI workforce provided for the five CCs above, it is worth noting that the workforce of the other inner-city LI workforces is more similar to the CC than to the metro as a whole in terms of household type (Figure 42). In particular, smaller proportions are drawn from family households (spouses or dependents) and larger proportions are drawn from lone person or group households. This extends the above-mentioned consideration that, like the CC, the inner-city workforce is more dependent on students, visitors and other non-family households to fill LI jobs. The extent to which this is a factor in productivity—via issues of turnover and training needs—is explored later, in Chapter 5. Where the workforce in these locations is more local, as revealed above, it probably reflects the resident profile of these neighbourhoods, which includes proportionally more single and group households and proportionally fewer family households. Two exceptions to this overall similarity between the LICC and neighbouring LI workforces are the industrial centres, noted above, of Erskineville and Waterloo, which draw closer to half their LI workforce from one of the spouses—that is, one of the household heads—of families.

Figure 42: LI worker relationship to household reference person, Sydney SA3



Source: 2011 Australian Census, calculated from TableBuilder data.

3.6 Chapter summary

LICC workers are spatially separated from their jobs to a much greater degree than LI workers in the metro more generally. Based on 2011 Census Journey to Work data, the median distance of the LICC workers was found to be roughly double that of the metro-wide median in all five case studies.

To some extent this can be expected given that the volume and density of jobs in the CC is not matched by a volume and density of potential workers, a trend that keeps LI-worker commutes down across the metro as a whole. This additional distance to work is also more easily overcome by transport connections, particularly public transport connections, which uniquely service the CCs. Finally, again based on 2011 Census workforce data, there are a number of differences between the CC and the metro overall, in terms of LI jobs and, relatedly, workers. Specifically, the presence of LICC jobs across well-paid and growing professional industries is probably related to the much larger representation of younger, more educated and more mobile LI workers in the CC. Importantly, however, these differences were at the margins, and the overall impact of urban form—including job densities and transport connections—are intrinsically linked to housing costs.

4 IDENTIFYING HOUSING CONSTRAINTS ON LOW-INCOME CENTRAL CITY WORKERS

4.1 Chapter overview

The purpose of this chapter is to examine the housing position of LICC workers. The analysis focuses on the extent to which housing constraints contribute to the 'distance premium' experienced by LICC workers, identified in the previous chapter. This chapter addresses the second part of Research Question 3.

→ RQ3: Which employee groups are most affected, and what is their housing experience in terms of affordability and location?

It continues from the previous chapter, which examined the first part of that research question, identifying the LICC workforce and considering other possible contributing factors to the distance premium.

One main finding of this chapter is that evidence of additional constraints on LICC workers is manifested less as additional housing costs relative to income, and more as a greater degree of compromise on dwelling type (e.g. living in smaller dwellings), household type (e.g. living with unrelated adults), or tenure (e.g. renting rather than purchasing). In particular, a greater degree of renting mostly explains any additional degree of housing stress among the CC workforce, compared with overall metro rates.

Another main finding of the chapter is that these compromises are experienced by MI households with worker connections to the CC to a greater extent than the overall rates across the metro workforce. This is important because nearly half of LI workers live in these households. For LI households, there is little to gain in housing position by moving away from the CC labour catchment. But for MI households, working in the CC is more likely to mean compromise, affecting the appeal of the CC to a larger proportion of the potential workforce.

These compromises are evidently weighed up in combination with any compromise on distance to work, establishing the equilibrium in the housing position of the population described by census data. However, as discussed in the previous chapter and revealed further in the next, the extent to which these differences in housing position are seen as compromises is debatable. Points of contention include: whether there is a preference for inner-city amenities over larger houses; whether good transport connections overcome the negatives of travelling greater distances to work; and whether long-term career prospects offset long commutes for low wages in the short term.

This chapter is based on the 2011 Census data, with additional analysis of the housing markets using APM data available through AURIN. Like the previous chapter, the populations examined are residents of the metro area, filtered to exclude those outside the workforce (including children under 15) and those without a positive-declared income. In some instances, additional people were excluded where relevant data was not disclosed, and are assumed to be distributed proportionally. Section 4.2 examines LI workers only. From Section 4.3 onwards, the chapter examines housing metrics, so it uses reference-person counts. The counts use the place of work of the reference person as the proxy for households containing CC workers, but do not filter by personal income of the reference person. This approach is discussed in Section 4.2. An overview of the counts is in Table 23.

Table 23: Description of census counts analysed

1. Start with all workers (as per 3.1 in Chapter 3)

Sydney		Melbourne		Brisbane		Perth		Darwin	
CC	**All**	**CC**	**All**	**CC**	**All**	**CC**	**All**	**CC**	**All**
242,869	2,009,716	177,788	1,872,359	108,868	985,683	130,360	837,710	10,876	61,423

2. Restrict to positive and declared household incomes

224,423	1,826,838	163,878	1,702,602	100,224	897,008	117,823	739,375	9,583	53,771

3. Split into household incomes

Hhd inc.										
Lo	14,939	239,087	13,941	256,232	6,397	122,042	8,873	95,757	571	5,030
M	74,038	825,439	65,806	849,140	40,892	456,553	43,286	338,213	3,878	24,993
Hi	135,446	762,312	84,131	597,230	52,935	318,413	65,664	305,405	5,134	23,748

4a. (Section 4.2) Restrict to lower income workers

Lo	10,580	190,831	9,949	204,310	4,227	96,158	6,060	73,871	378	3,563
M	19,822	353,126	17,792	369,858	9,915	195,054	11,111	132,844	1,001	8,056
Hi	9,810	163,269	6,817	140,920	4,723	74,863	5,939	69,424	587	4,107
All	*40,212*	*707,226*	*34,558*	*715,088*	*18,865*	*366,075*	*23,110*	*276,139*	*1,966*	*15,726*

4b. (Sections 4.3–4.4) Restrict to households (primary family or non-family reference persons)

Lo	9,961	157,201	9,448	169,133	4,440	80,077	6,207	64,717	426	3,413
M	39,868	403,624	36,265	414,426	23,284	223,920	24,725	173,053	2,189	12,979
Hi	68,072	321,637	43,281	249,487	27,013	132,459	34,860	132,080	2,324	9,651
All	*117,901*	*882,462*	*88,994*	*833,046*	*54,737*	*436,456*	*65,792*	*369,850*	*4,939*	*26,043*

4.2 Most lower income workers do not live in lower income households

This first section of the chapter examines the connection between household and personal incomes. Census data enables the populations examined in the previous chapter to be split by household income. Because ‘lower income’ approximates the bottom two quintiles’ workers in terms of personal income, ‘lower income household’ is similarly set to approximate the bottom two quintiles of all households by income. This equates to a dollar-figure threshold of $1000 per week. It is a figure that has been used in other AHURI examinations of LI households based on 2011 Census data (see Pawson, Hulse et al. 2015). To further align household income bands with the comparable personal income bands, ‘middle-income household’ approximates the next two quintiles, with ‘high-income household’ approximating the top quintile. The actual proportion of households captured by these splits varies (as shown in Table 24).

Table 24: Proportion of all households in defined income bands

	Australia	Sydney	Melbourne	Brisbane	Perth	Darwin
Excluded (Negative or nil)	*2%*	2%	2%	1%	1%	1%
Lower income households ($1–999/week)	*40%*	34%	36%	35%	34%	25%
Middle-income households ($1,000–2,499/week)	*38%*	38%	40%	41%	38%	44%
High-income households ($2,500 or more/week)	*20%*	26%	22%	22%	26%	30%

Source: 2011 Australian Census, calculated from TableBuilder data. NB: Includes all households, not just those with employed reference person.

Table 25 shows that, in all five metros, about one quarter of LI workers in the CC live in LI households. This varies from 18 per cent in Darwin to 28 per cent in Melbourne, partly attributable to the above-shown differences in the proportion of households below the $1000 threshold. The fact that around three quarters of the LICC workforce does not live in LI households across all geographies goes some way to decoupling housing constraints that affect LI households from LI workforce constraints that affect productivity. However, LI households are not the only households likely to feel the constraints of high housing costs, as discussed further below.

Table 25: Proportional split of LI workers by household income

	Sydney		Melbourne		Brisbane		Perth		Darwin	
	CC	All	CC	All	CC	All	CC	All	CC	All
LI household	26.3	27.0	28.8	28.6	22.4	26.3	26.2	26.8	18.6	22.7
MI household	49.3	49.9	51.5	51.7	52.5	53.3	48.1	48.1	51.6	51.2
HI household	24.4	23.1	19.7	19.7	25.0	20.5	25.7	25.1	29.8	26.1

Source: 2011 Australian Census, calculated from commissioned data and TableBuilder data.

It is also notable that the proportion of LICC workers living in LI households, and the broader distribution of LI workers across household incomes, is generally consistent between the CCs and the metros overall in each of the five cases. Were housing costs an impediment to working in the CC, then a higher proportion of LI workers could be expected to live in LI households for the corresponding metro-wide figure. But only Darwin and Brisbane have noticeable differences, and even here they are very small at about four percentage points.

The proportion of LI workers living in LI households is partly attributable to definition. First, LI workers' households will earn more than any household with irregular sources of income (i.e. those outside the labour force). This latter population makes up over half of the households in the bottom two quintiles of all households by income. Second, because of the respective thresholds of personal income for LI worker ($799) and household income for LI household ($999), the remainder of LI households (i.e. other than those with no regular source of income) are highly likely to be where the LI worker is the sole source of income. For LI workers where there are other sources of income, the household income is probably above the LI household threshold. Also, in some cases the additional sources of income are other LI workers, hinting at why LI workers largely come from MI households (which approximates the next two quintiles).

Table 26 shows the splits of workers by both household type (through the relationship with reference person) and household income. It supports the above-suggested role of multiple incomes in lifting LI workers' households above $1000/week. Around one fifth of LI workers are children in the household, dependent and non-dependent, and so are probably additional to other sources of household income. Further, the 'other family', 'lodger' (non-family member in family household) and 'visitor' categories—which account for another 10 per cent of LICC workers—are likely to be household categories with income sources other than the LICC worker. Group house members and couples (with or without children) will also have multiple income sources in many cases. In almost all cases, the proportion of LICC workers in LI households in these categories is below the overall proportion of LICC workers in LI households for that metro (i.e. approximately one quarter of LI workers). This is offset by the high proportions of single parents and lone persons that live in LI households. Based on the above-discussed personal and household income thresholds, where LI workers are in LI couple and group households, they are probably one of the main sources (if not only source) of income.

Comparing the distribution with the metro wide LI worker population by household type and income reveals few additional differences. As noted in the previous chapter, the biggest difference is the proportional increase in couple/family households for the metro as a whole, which is offset by a similar proportional decrease in group, other family and lodger household types. Notably, though, this difference in household type does not equate to a difference in household income distribution. A similar outcome is due to the increase in lone parents outside the CC matched by a decrease in single persons.

Table 26: LI workers by relationship to reference person & household income

	Sydney		Melbourne		Brisbane		Perth		Darwin	
	CC	**All**	**CC**	**All**	**CC**	**All**	**CC**	**All**	**CC**	**All**
Partner/spouse	*43%*	*51%*	*44%*	*51%*	*44%*	*50%*	*49%*	*50%*	*49%*	*48%*
LI Household	9%	12%	10%	12%	6%	10%	8%	10%	6%	8%
MI Household	25%	30%	28%	31%	28%	32%	29%	29%	32%	32%
HI Household	9%	10%	7%	8%	9%	8%	12%	11%	11%	9%
Lone parent	*3%*	*5%*	*3%*	*5%*	*3%*	*5%*	*4%*	*5%*	*4%*	*5%*
LI Household	2%	3%	2%	3%	2%	3%	3%	4%	2%	3%
MI Household	1%	2%	1%	2%	1%	2%	1%	2%	2%	1%
HI Household	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Single person	*8%*	*6%*	*9%*	*7%*	*7%*	*6%*	*9%*	*7%*	*7%*	*7%*
LI Household	8%	6%	9%	7%	7%	6%	9%	7%	7%	7%
MI Household	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
HI Household	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Group house	*11%*	*5%*	*13%*	*6%*	*13%*	*7%*	*8%*	*5%*	*9%*	*6%*
LI Household	3%	1%	3%	2%	3%	2%	2%	1%	1%	1%
MI Household	6%	3%	8%	4%	9%	4%	5%	3%	6%	4%
HI Household	2%	1%	2%	1%	2%	1%	1%	1%	3%	1%
Non-dep't child	*16%*	*15%*	*14%*	*14%*	*13%*	*13%*	*13%*	*14%*	*13%*	*13%*
LI Household	2%	2%	1%	2%	1%	1%	1%	1%	1%	1%
MI Household	8%	8%	7%	8%	6%	7%	6%	6%	4%	5%
HI Household	7%	6%	5%	5%	6%	5%	6%	6%	8%	7%
Dependent child	*8%*	*9%*	*7%*	*10%*	*8%*	*10%*	*7%*	*11%*	*6%*	*8%*
LI Household	1%	1%	1%	1%	1%	1%	1%	1%	0%	1%
MI Household	3%	4%	3%	4%	3%	4%	3%	4%	2%	3%
HI Household	4%	5%	3%	4%	5%	5%	4%	6%	4%	4%
Other family	*5%*	*3%*	*5%*	*3%*	*5%*	*3%*	*4%*	*3%*	*3%*	*3%*
LI Household	1%	1%	1%	1%	1%	1%	1%	1%	0%	0%
MI Household	3%	2%	3%	2%	3%	2%	2%	2%	2%	2%
HI Household	1%	1%	1%	0%	1%	1%	1%	1%	1%	1%
Lodger	*4%*	*2%*	*3%*	*2%*	*3%*	*3%*	*2%*	*2%*	*4%*	*3%*
LI Household	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
MI Household	2%	1%	2%	1%	2%	2%	1%	1%	2%	1%
HI Household	1%	1%	1%	1%	1%	1%	1%	1%	3%	2%
Visitor	*2%*	*2%*	*2%*	*2%*	*2%*	*3%*	*3%*	*3%*	*4%*	*6%*
LI Household	1%	1%	1%	1%	1%	1%	1%	1%	1%	2%
MI Household	1%	1%	1%	1%	1%	1%	1%	1%	1%	3%
HI Household	0%	0%	0%	0%	1%	0%	1%	1%	1%	1%

Source: 2011 Australian Census, calculated from commissioned data and TableBuilder data.

However, living with unrelated adults (in group houses, or as a lodger or visitor) or with extended family (in other family houses) could in aggregate be seen as being out of necessity rather than desire, and as a response to additional housing costs that can be more easily shared. In other words, instead of LI workers being distributed differently across household incomes when working in the CC, there are other signs of housing compromise that would provide an incentive for LI workers to move away from the CC's labour catchment. In this case, much like the metrics of housing compromise considered later in this chapter, there is some indication that housing constraints are more acute for LICC workers than the metro-wide LI workforce.

Finally, it is worth considering whether this decoupling of labour and housing constraints varied between industries affected. Table 27 shows, in general terms, some notable variations between the main LICC-employing industries identified in the previous chapter, in terms of the proportion of LICC workers living in LI households. Hospitality and retail draw above-average proportions of their workforces from LI households in all metros. In the case of Darwin, though, support and government services actually source higher proportions of their LICC workers from LI households.

On the other hand, LI workers in professional service and finance-insurance sectors are under-represented in LI households in all metros. Notably, these two sectors draw fewer of their workers from LI households in the CC than across the metro, a trend that is also common for government and support services. This could be attributable to a lack of LI households to draw workers from (i.e. something that would be expected in a housing-led spatial mismatch). However, hospitality and retail draw more of the LICC workers from LI households compared with LI workers in these sectors across the metros. The lack of consistency between industries, in terms of metro-wide and CC differences, suggests differences are probably attributable to industry-specific factors, such as the different jobs in these sectors in the CC compared with the rest of the metro, and, correspondingly, the people doing those jobs.

Table 27: Proportion of LI workers in selected industries living in LI households

	Sydney		Melbourne		Brisbane		Perth		Darwin	
	CC	**All**	**CC**	**All**	**CC**	**All**	**CC**	**All**	**CC**	**All**
Hospitality	30%	27%	35%	29%	25%	25%	30%	26%	20%	21%
Retail	29%	24%	31%	25%	26%	23%	26%	23%	18%	18%
Pro. services	21%	24%	23%	27%	18%	24%	22%	25%	16%	21%
Finance-insure	21%	20%	23%	24%	17%	20%	18%	20%	11%	14%
Support services	24%	31%	26%	34%	24%	32%	27%	33%	29%	29%
Gov't services	27%	27%	24%	29%	20%	26%	26%	28%	22%	21%
All industries	*26%*	*27%*	*29%*	*29%*	*22%*	*26%*	*26%*	*27%*	*19%*	*23%*

Source: 2011 Australian Census, calculated from commissioned data and TableBuilder data.

The remainder of this chapter turns to examine household-level data. Household-level data provides a better indication of housing constraints and demand, whereas individual data risks distorting any conclusions drawn regarding the housing market. LI workers who are household reference persons are not particularly indicative of the overall LICC workforce. They are more likely than the overall LI workforce to be living alone or, at least, to be the sole source of income. Also, they cannot be living with parents, with an unrelated family or with other family members—people who account for a sizeable proportion of the LI workforce. In addition, the rates of LI workers being

reference persons are lower than for the other personal income brackets, consistent with the presumption of the reference person being the 'main breadwinner'.

Instead, by using the place of work of the reference person in each household as a proxy for place of work for all workers in a household, it is possible to establish two populations: CC-households and metro-households, which can similarly be split into three household income bands (cf. personal income bands). Now all three income bands are of interest, as they each contain a proportion of the LI workers. This household data (based on counts of reference persons) is fairly representative of the overall workforce. Tables 28, 29 and 30 compare the reference persons with all persons (based on counts of employed persons) for household income, household type and industry of employment. They show the two data sets are broadly comparable, with differences largely demonstrating the expected effect of single-person households (and so single-income households), given all other households contain at least two people.

Table 28: Employed reference persons (and all employed persons) by household income

	Sydney		Melbourne		Brisbane		Perth		Darwin	
	CC	All	CC	All	CC	All	CC	All	CC	All
LI Household	8% (7%)	18% (13%)	11% (8%)	20% (15%)	8% (6%)	18% (13%)	8% (8%)	17% (13%)	8% (6%)	13% (9%)
MI Household	34% (33%)	46% (45%)	41% (40%)	50% (50%)	43% (41%)	51% (51%)	43% (37%)	47% (46%)	43% (40%)	50% (46%)
HI Household	58% (60%)	37% (42%)	49% (51%)	30% (35%)	49% (53%)	30% (36%)	49% (56%)	36% (41%)	49% (54%)	37% (44%)

Source: 2011 Australian Census, calculated from commissioned data and TableBuilder data.

Table 29: Employed reference persons (and all employed persons) by household type

	Sydney		Melbourne		Brisbane		Perth		Darwin	
	CC	All	CC	All	CC	All	CC	All	CC	All
2-parent family	42% (49%)	37% (42%)	41% (48%)	37% (41%)	39% (46%)	37% (41%)	38% (46%)	38% (42%)	35% (41%)	32% (37%)
Couple, no kids	23% (22%)	26% (27%)	23% (23%)	26% (28%)	25% (25%)	27% (29%)	25% (26%)	27% (29%)	27% (28%)	28% (31%)
Single person	19% (10%)	23% (13%)	20% (10%)	23% (13%)	18% (9%)	21% (12%)	20% (11%)	23% (13%)	20% (11%)	21% (11%)
1-parent family	8% (9%)	5% (6%)	9% (9%)	5% (6%)	9% (9%)	7% (7%)	9% (9%)	7% (7%)	9% (8%)	10% (8%)
Group house	4% (5%)	6% (7%)	5% (5%)	6% (8%)	5% (6%)	6% (8%)	4% (5%)	4% (5%)	6% (7%)	7% (8%)
Multiple families	2% (4%)	2% (3%)	2% (3%)	1% (2%)	2% (3%)	1% (2%)	1% (2%)	1% (2%)	2% (4%)	2% (3%)
Other family	1% (2%)	2% (2%)	2% (2%)	2% (2%)	2% (2%)	2% (2%)	2% (2%)	2% (2%)	1% (1%)	1% (2%)

Source: 2011 Australian Census, calculated from commissioned data and TableBuilder data.

Table 30: Employed reference persons (and all employed persons) by industry (selected)

	Sydney		Melbourne		Brisbane		Perth		Darwin	
	CC	All	CC	All	CC	All	CC	All	CC	All
Hospitality	5% (6%)	4% (6%)	5% (6%)	4% (6%)	3% (5%)	4% (6%)	3% (5%)	4% (6%)	3% (10%)	4% (6%)
Retail	3% (4%)	8% (10%)	3% (5%)	8% (11%)	2% (4%)	8% (10%)	2% (4%)	8% (11%)	2% (5%)	6% (9%)
Pro. services	22% (22%)	11% (10%)	24% (24%)	10% (9%)	22% (22%)	10% (9%)	22% (23%)	10% (9%)	22% (13%)	6% (6%)
Finance-insure	32% (31%)	7% (7%)	20% (20%)	5% (5%)	13% (13%)	4% (4%)	13% (10%)	3% (3%)	13% (5%)	2% (2%)
Support services	5% (5%)	3% (4%)	5% (5%)	4% (4%)	4% (5%)	3% (3%)	4% (4%)	3% (3%)	4% (4%)	3% (3%)
Gov't services	9% (8%)	7% (6%)	14% (13%)	6% (5%)	28% (26%)	9% (8%)	28% (15%)	8% (7%)	28% (36%)	24% (20%)

Source: 2011 Australian Census, calculated from commissioned data and TableBuilder data.

4.3 There is little evidence of a greater degree of housing stress among lower income central city workers

This section considers the extent of housing stress among the different household categories. It is based on 2011 Census data for household income, household tenure, mortgage payments and rental payments. This enables an estimate of the distribution of housing costs, as a proportion of household income for each population[10]. This mathematical inference requires fairly high counts, and in some cases, particularly Darwin, the analysis needs to be undertaken with some care.

Findings are shown in Figures 43 to 47. Three figures are shown for each case study: the distribution of rental costs, the distribution of mortgage costs and the overall distribution of housing costs[11]. Table 31 provides a summary of the extent of housing stress (housing costs exceeding 30% of household income) in each case study. It also infers a rate of housing stress for each LI worker population based on the distribution of LI workers by household income, as shown in Table 25. These final figures are all in the range of 27–36 per cent, with only Sydney exceeding housing stress rates of 30 per cent among LI workers. This is shown to be due to housing stress rates of around 30 per cent among MI households in Sydney, somewhat higher than the other metros.

[10] Rental costs relative to income are calculated with reported household income brackets (HIND) and reported rental payment brackets (RNTRD). Counts for each combination are apportioned into counts of relative rental cost, based on rounding to the nearest whole percentage point (0%, 1%, 2% … 80%, >80%), and assuming a flat distribution across both reported ranges. (e.g. Counts of a reported household income of $1250–1499 and a reported rental payment of $225–249 are apportioned as: 3.248% pay 15% of their income towards rental, 22.240% pay 16% of their income, 32.576% pay 17%, 27.392% pay 18%, 13.152% pay 19%, and 1.392% pay 20%.) The re-apportioned counts are then aggregated to provide a distribution of the total population across relative rental costs. Relative mortgage costs are calculated in the same way with reported mortgage payment brackets (MRERD). The highest (open) bracket is taken to have the same range as the second highest bracket in all cases.

[11] Overall housing costs are based on the combined counts of mortgagees and renters, as well as a count of outright owners, who are assumed to have no housing costs. Outright owner counts are adjusted (to about 95% of the reported total) to reflect the proportion of the other two tenures that had reported income and rental/mortgage costs. Other tenures are excluded, but are vanishingly small in any event.

Importantly, the figures show little evidence of additional housing stress among LICC workers compared to the metro-wide rates of stress among LI workers. In short, it suggests that the housing market reaches a similar equilibrium—in terms of the stress it will bear—with the geographically larger catchment of CC workers a factor in that equilibrium. As would be expected, rates of housing stress are most acute for LI households in each case study (between 55% and 67%), but the difference between LICC households and LI households metro-wide is only 5–8 percentage points, except in Perth where it is negligible. As the tenure-specific figures show, however, the difference between LICC renters and LI-metro renters is typically negligible, as is the difference between LICC mortgagees and LI-metro mortgagees. This shows that the difference in housing stress rates is mostly attributable to a differing split in tenures, discussed below.

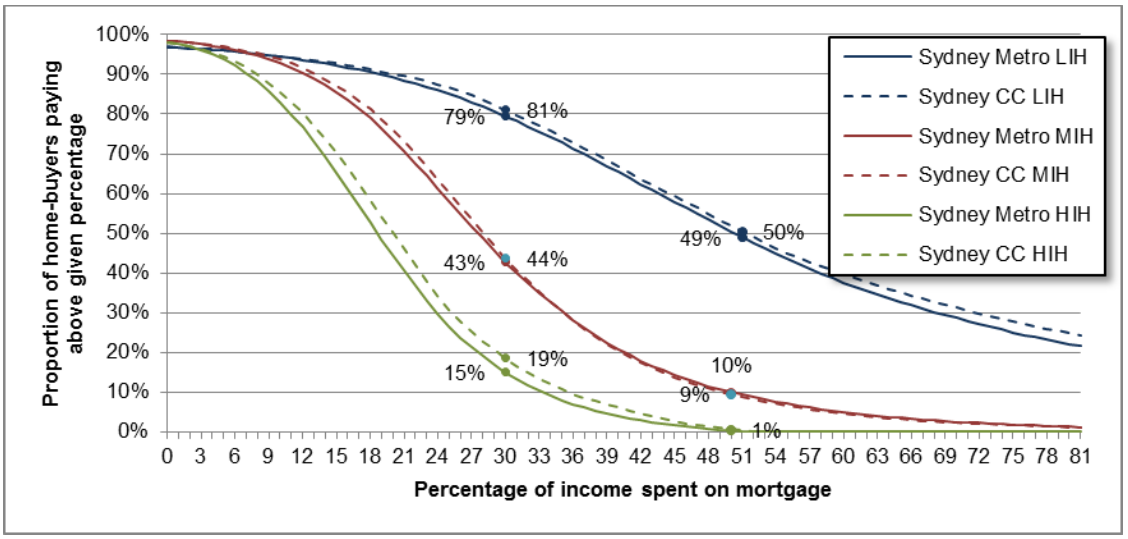
Table 31: Rates of housing stress by household income; with inferred rate for LI workers

	Sydney		Melbourne		Brisbane		Perth		Darwin	
	CC	**All**	**CC**	**All**	**CC**	**All**	**CC**	**All**	**CC**	**All**
LI Household	67%	62%	60%	55%	63%	58%	55%	54%	63%	55%
MI Household	31%	29%	20%	20%	21%	21%	24%	23%	27%	26%
HI Household	10%	8%	6%	6%	6%	6%	8%	7%	6%	6%
LI workers	*35.3%*	*33.1%*	*28.8%*	*27.3%*	*26.6%*	*27.7%*	*28.0%*	*27.3%*	*27.4%*	*27.4%*

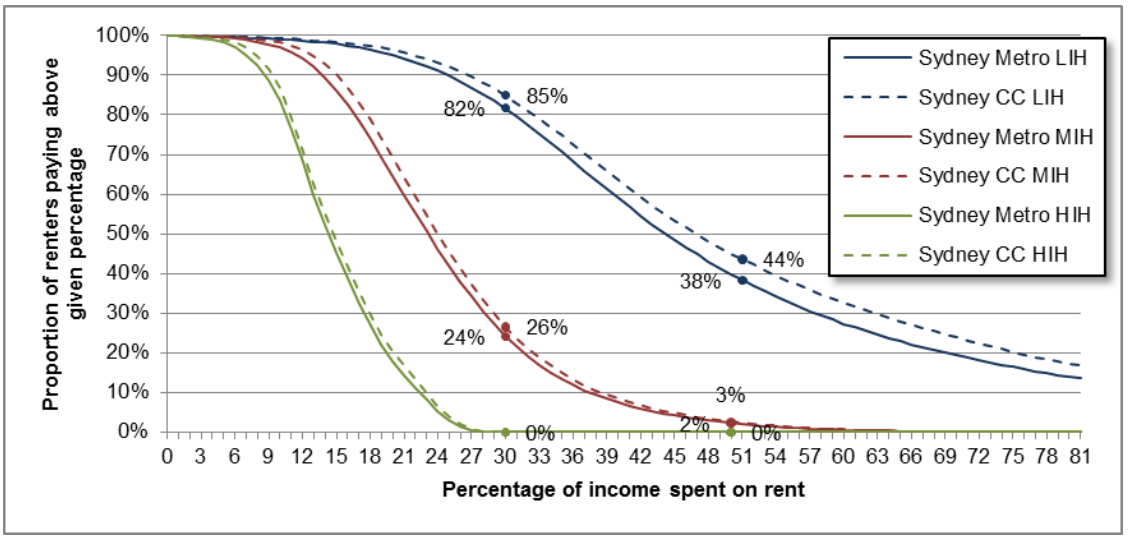
Source: 2011 Australian Census, calculated from commissioned data and TableBuilder data.

Figure 43: Sydney housing stress

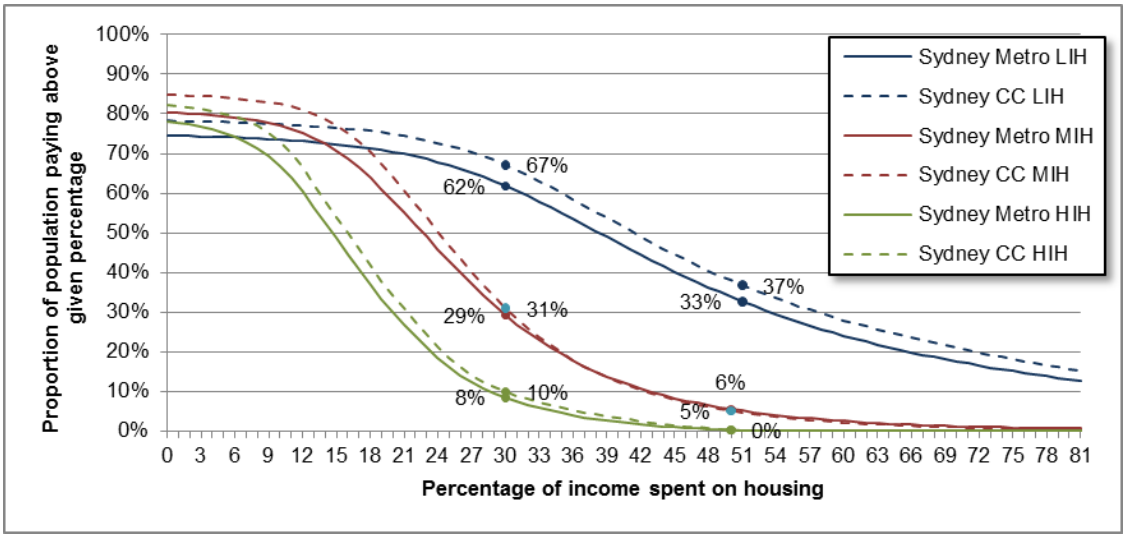
Buyers



Renters



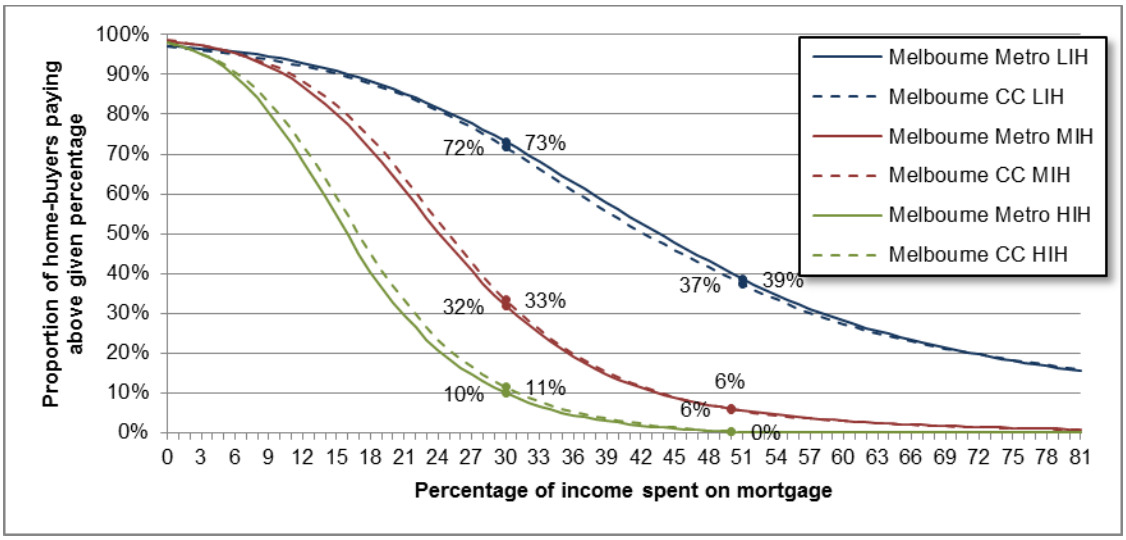
Everyone



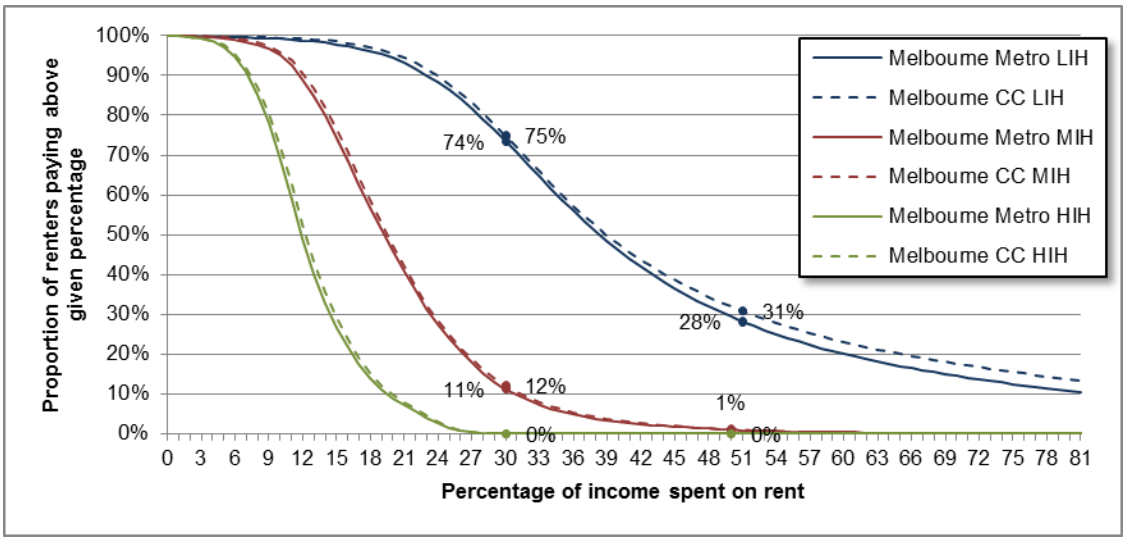
Source: 2011 Australian Census, calculated from commissioned data and TableBuilder data.

Figure 44: Melbourne housing stress

Buyers



Renters



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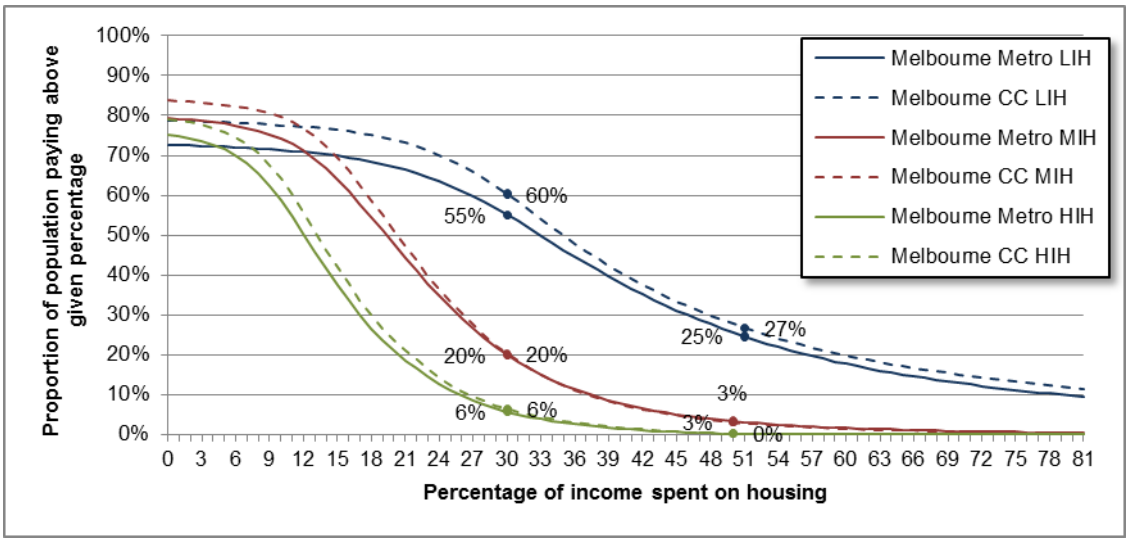
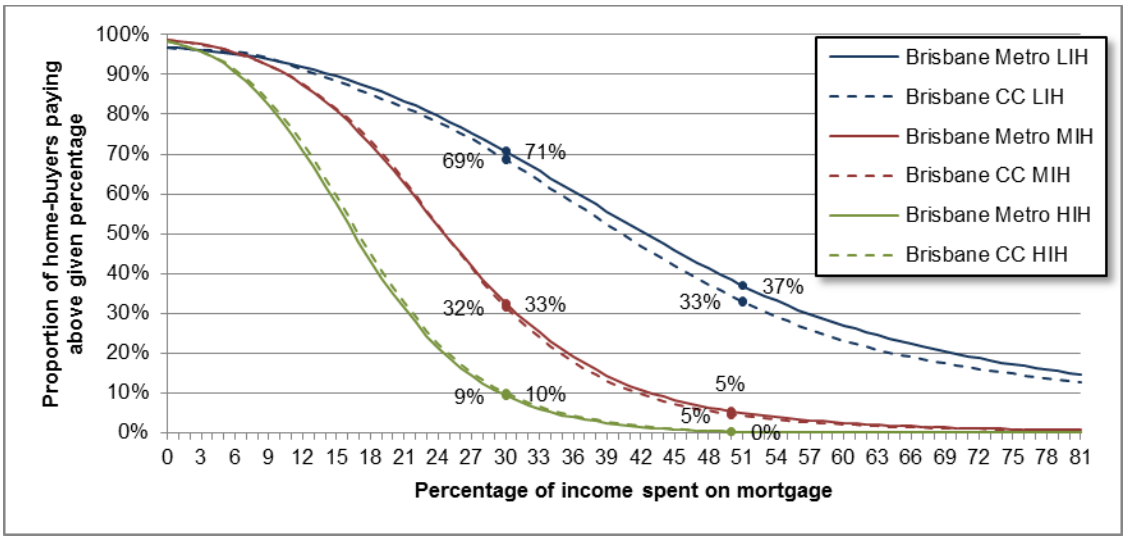


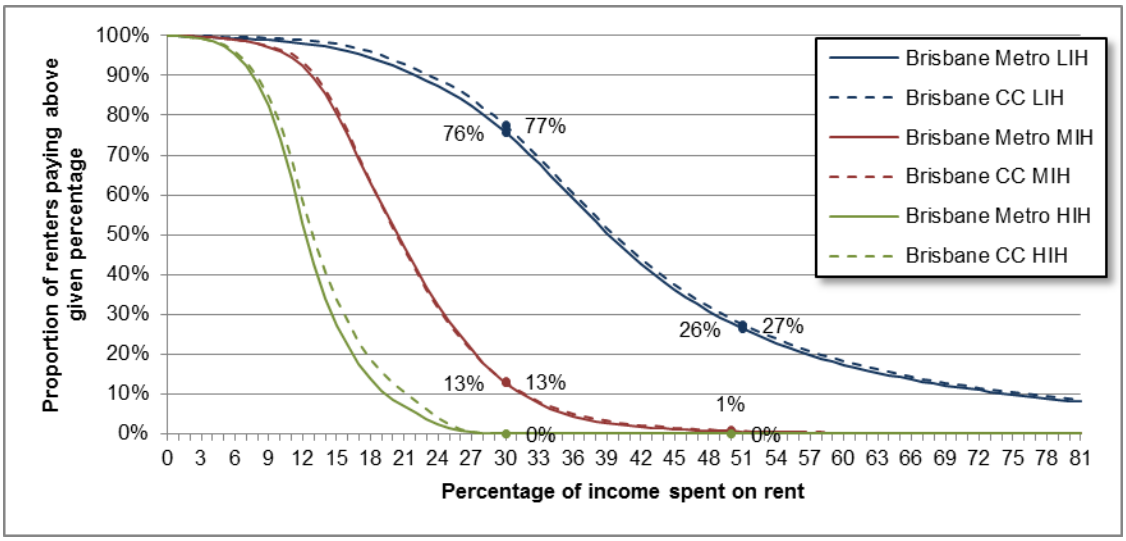
Source: 2011 Australian Census, calculated from commissioned data and TableBuilder data.

Figure 45: Brisbane housing stress

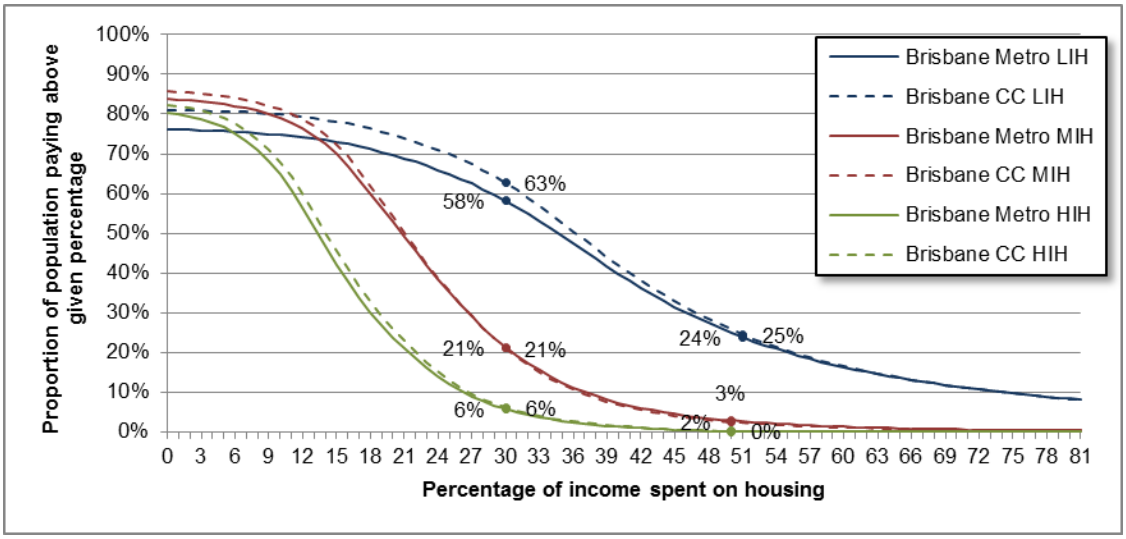
Buyers



Renters



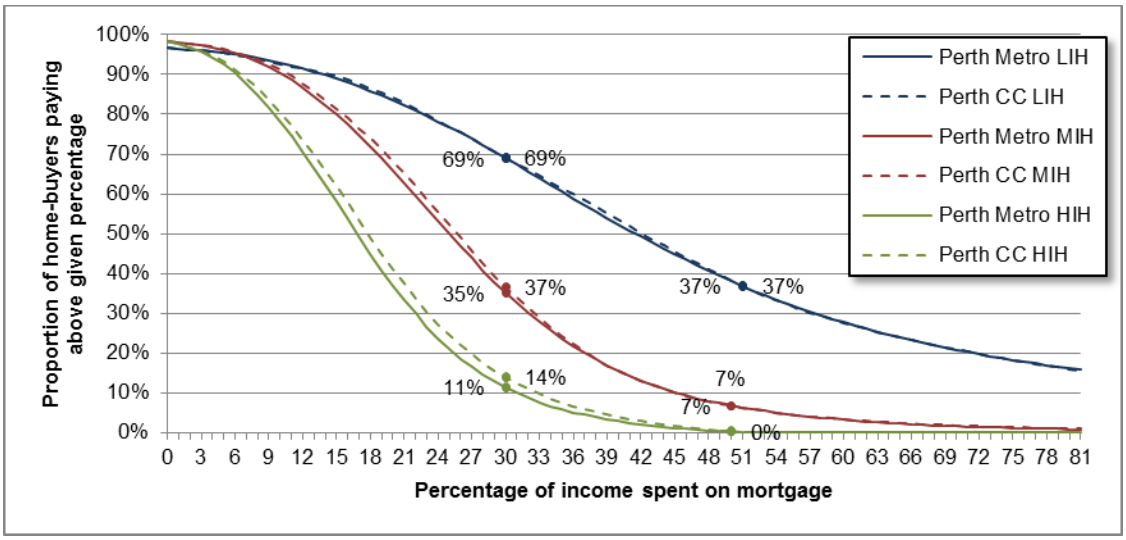
Everyone



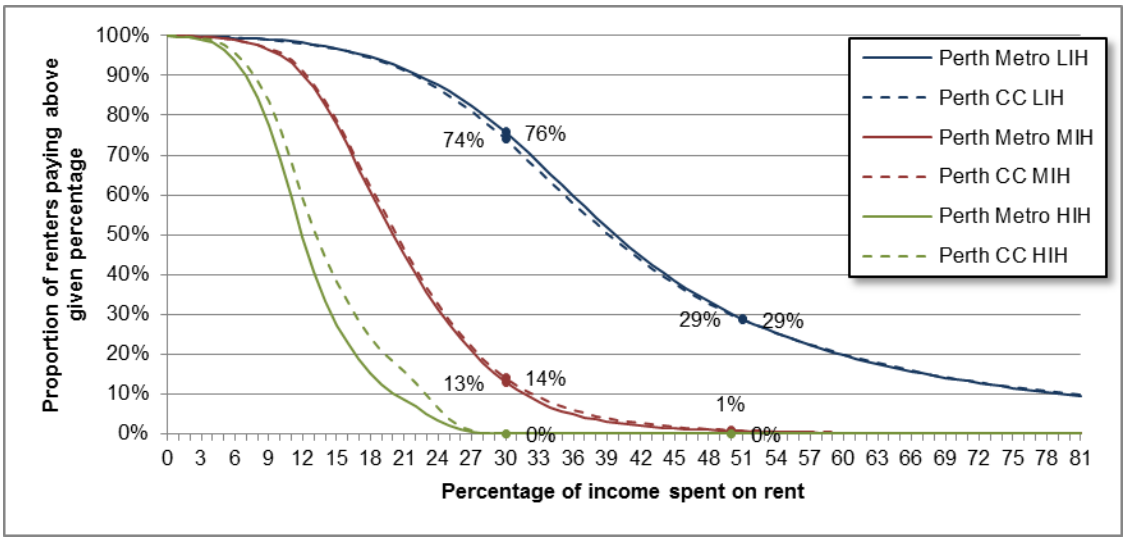
Source: 2011 Australian Census, calculated from commissioned data and TableBuilder data.

Figure 46: Perth housing stress

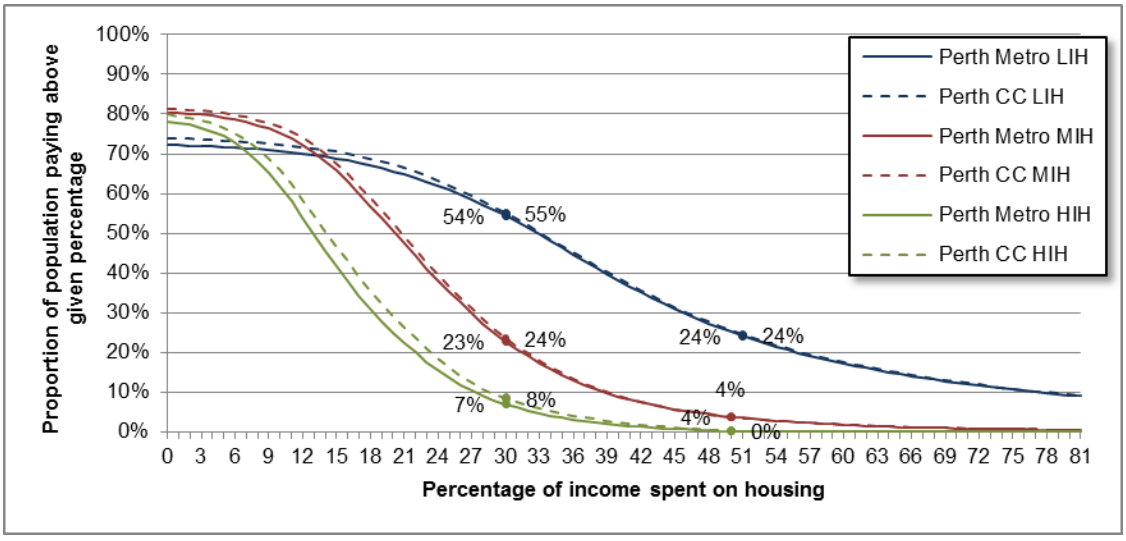
Buyers



Renters



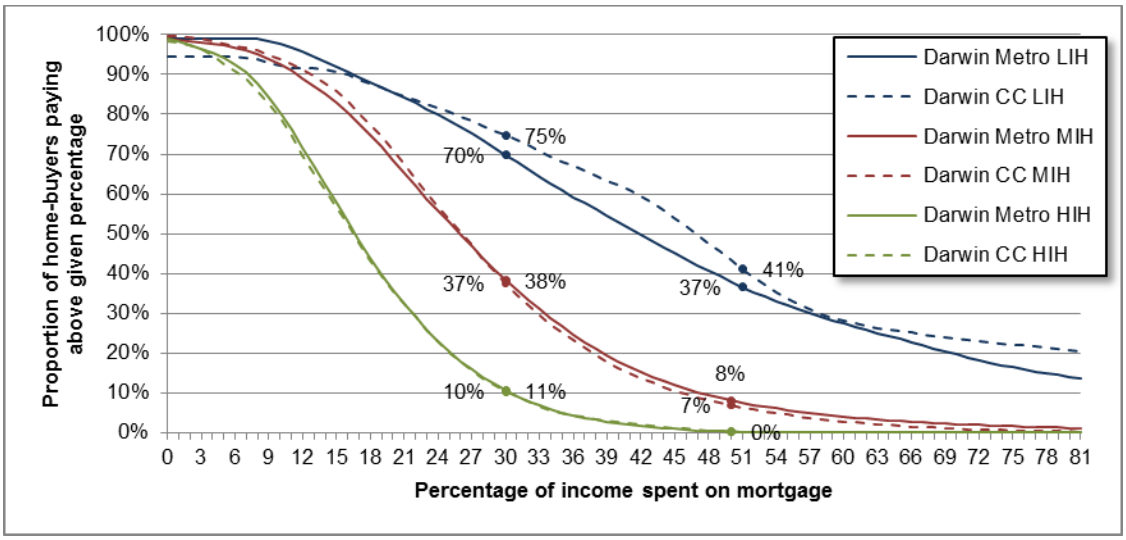
Everyone



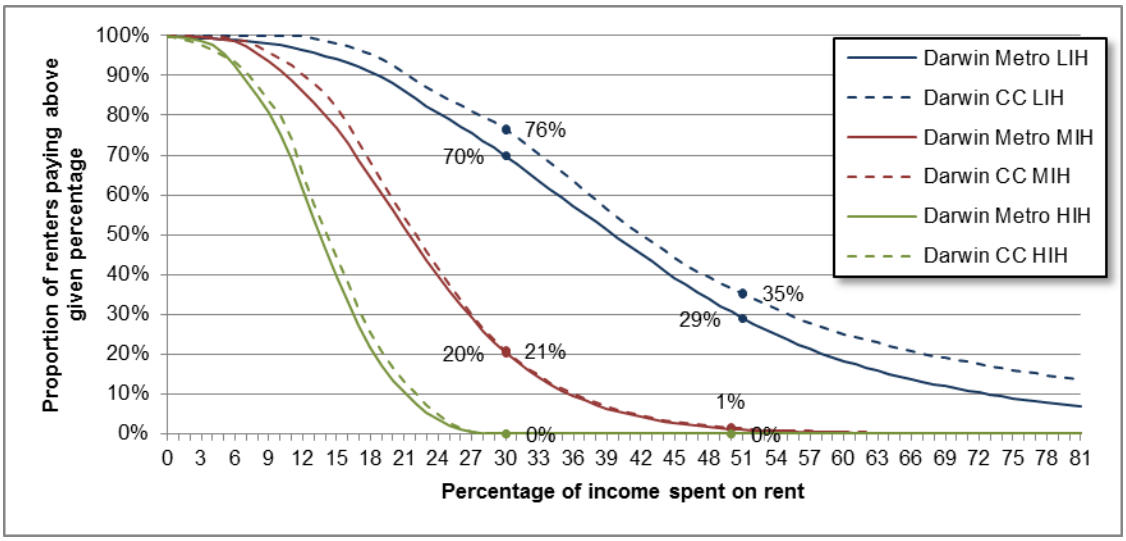
Source: 2011 Australian Census, calculated from commissioned data and TableBuilder data.

Figure 47: Darwin housing stress

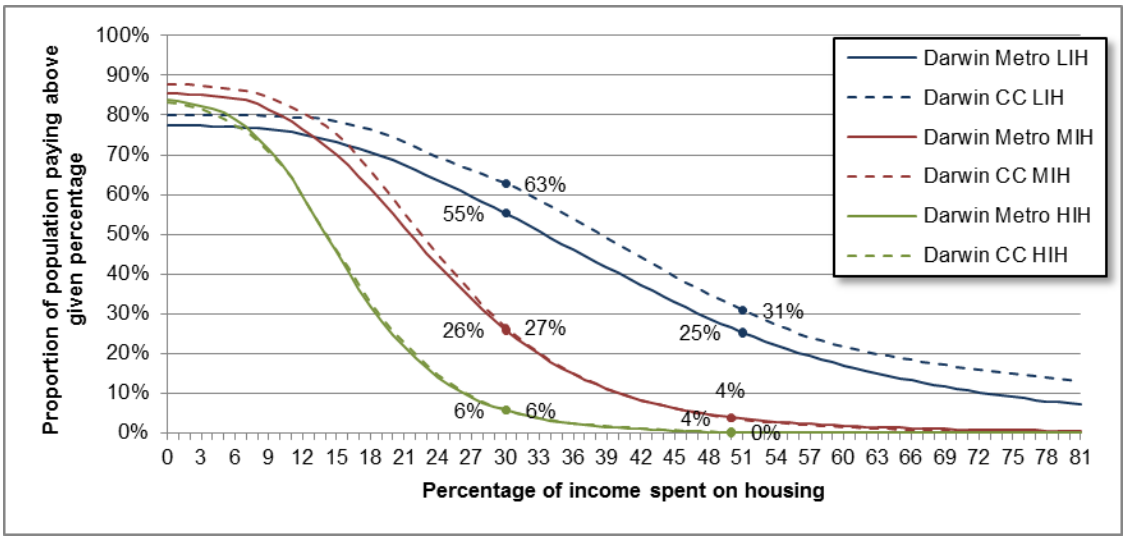
Buyers



Renters



Everyone



Source: 2011 Australian Census, calculated from commissioned data and TableBuilder data.

4.4 Middle-income households compromise more on housing when connected to the central city labour force

This section explores other indications of housing constraints among LICC workers. Three measures, all based on 2011 Census data, are explored: evidence of more insecure tenure; evidence of dwelling structure compromise; and evidence of more crowding. The measures are not considered definitive, but are indicative of constraints that would result in the spatial mismatch explored in this research. As is the case so far in this research, comparisons of the LICC workforce are made with other CC workers and other LI workers in the same metro.

The overarching finding of these indicators is that the kinds of constraints more typically experienced by LI households, irrespective of location, are also experienced by MI households of CC-workers, to a greater extent than MI households more generally. As outlined above, MI households account for about half of the LICC workforce. So, given that these households have something to gain (in terms of housing position) by decoupling from the CC labour market, the differential could undermine the supply and diversity of LICC workers.

Each indicator, however, has a number of particular qualifications, which are unpacked below. For example, these metrics do not account for the plethora of other factors that account for housing choices, such as access to amenities, services and social networks. However, assuming these can broadly be accommodated in both CC-proximate and distant locations, a difference in housing position of the two populations (households in the metro where the reference person is CC worker, and households in the metro generally) would indicate compromise to work in the CC—and so, in line with factors already discussed, could result in CCs not attracting the best/most possible workers and thinning the labour force.

4.4.1 Tenure compromise

To the extent that, in aggregate, there will be a preference for owning your own home, or at least to be working towards paying off a home, over renting, a hierarchy of tenures can reveal a sense of housing compromise. Table 32 shows that, as expected, this compromise in tenure is more common among LI households in all populations, with LI households around twice as likely to be renting as HI households (e.g. 53% of LICC households and 42% of LI-metro households in Sydney[12], vs 29% of HICC and 23% of HI-metro households).

Table 32 also shows that, overall, CC households are more likely to rent than the metro-wide populations (e.g. 37% vs 31% in Sydney). The difference is most pronounced in the larger metros, with virtually no overall difference between the two populations in Brisbane, Perth and Darwin. When segmented by household income, LICC households are more likely to be renting in all metros (e.g. 53% vs 42% in Sydney), again with the most pronounced difference in the larger metros. However, it is notable that MICC households have higher rates of renting than the overall CC workforce, while MI households across the metros more closely track the overall rate of renting (e.g. 46% of MI vs 37% overall for Sydney CC, and 34% of MI vs 31% overall for Sydney metro).

This trend can be partly attributed to the higher proportion of HI workers in the CC workforce (discussed in the previous chapter) bringing down the overall rate of renting, compared with the overall metro workforce. However, the effect is a very real

[12] Sydney is cited as an example to indicate where the data is on the table but, unless noted, the trends identified hold across all metros.

compromise in housing position for MI households that are tethered to the CC workforce. Unless offset by some other benefits, this compromise in housing position would lead to CC workforces being limited to those unable to realise the same level of income outside the CC.

Finally, it is worth noting that social and community housing tenants are a very small proportion of the workforces. There is no evidence of non-market housing off-setting the relatively higher costs of housing in CC-tethered labour markets, with marginally higher proportions for LI metro households compared to LICC households (5% vs 3% in Sydney).

Table 32: Housing tenure, by place of work and household income

	Sydney		Melbourne		Brisbane		Perth		Darwin	
	CC	**All**	**CC**	**All**	**CC**	**All**	**CC**	**All**	**CC**	**All**
Owner										
LI Household	20%	23%	19%	25%	17%	22%	23%	25%	16%	20%
MI Household	14%	18%	15%	19%	13%	15%	17%	18%	11%	13%
HI Household	16%	21%	19%	23%	16%	18%	19%	20%	15%	15%
Overall	*16%*	*20%*	*17%*	*22%*	*15%*	*17%*	*18%*	*20%*	*13%*	*14%*
Mortgagee										
LI Household	24%	29%	26%	33%	24%	27%	30%	31%	24%	25%
MI Household	40%	47%	44%	51%	48%	49%	50%	52%	43%	40%
HI Household	54%	56%	56%	57%	62%	62%	61%	62%	55%	54%
Overall	*47%*	*47%*	*48%*	*49%*	*53%*	*49%*	*54%*	*52%*	*47%*	*43%*
Private renter										
LI Household	53%	42%	52%	39%	55%	46%	43%	39%	50%	44%
MI Household	46%	34%	41%	29%	38%	35%	32%	29%	44%	45%
HI Household	29%	23%	24%	19%	22%	19%	21%	18%	29%	30%
Overall	*37%*	*31%*	*34%*	*28%*	*32%*	*32%*	*27%*	*27%*	*37%*	*39%*
Soc-com tenant										
LI Household	3%	5%	3%	3%	3%	5%	4%	4%	9%	11%
MI Household	1%	1%	0%	1%	1%	1%	0%	1%	2%	2%
HI Household	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
Overall	*0%*	*1%*	*0%*	*1%*	*1%*	*1%*	*0%*	*1%*	*2%*	*3%*
Other										
LI Household	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
MI Household	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
HI Household	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Overall	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*

Source: 2011 Australian Census, calculated from commissioned data and TableBuilder data.

4.4.2 Dwelling structure compromise

To the extent that, in aggregate, there will be a preference for detached over attached houses, and for attached houses over apartments, a hierarchy of dwelling structures can reveal a sense of housing compromise.

Table 33 shows that, as would be expected, there is a greater degree of apartment households among CC workers (e.g. 44% vs 28% for Sydney), and a corresponding

lesser degree of detached house households (e.g. 41% vs 59% for Sydney). It also shows that, as would be expected, a greater degree of compromise is experienced by LI households compared with HI households for both populations (e.g. 64% vs 35% for LI and 36% vs 23% for HI in Sydney apartments; with the reverse for detached houses).

What is revealing is the differing extent of such compromise. For CC households, those with a LI are almost twice as likely to be in apartments as HI households (e.g. 64% vs 35% in Sydney) and half as likely to be in a detached house (e.g. 24% vs 49% in Sydney). Whereas for households across the metro, the difference between high and LI households is not as pronounced (e.g. 36% of LI households in Sydney in apartments vs 23% for HI households).

Also, and unlike workers' households across the metro, MI households are over-represented in apartments and under-represented in detached houses (e.g. 54% of MI households of CC workers in Sydney are in apartments, compared to the overall rate of 44%, while 29% of MI households of all metro workers are in apartments compared to an overall rate of 28%). This 'spreading' of LI compromise to MI households of CC workers is most pronounced in Sydney.

Table 33: Dwelling structure, by place of work and household income

	Sydney		Melbourne		Brisbane		Perth		Darwin	
	CC	**All**	**CC**	**All**	**CC**	**All**	**CC**	**All**	**CC**	**All**
Apartment										
LI Household	64%	36%	47%	23%	39%	17%	24%	14%	41%	27%
MI Household	54%	29%	33%	16%	24%	11%	17%	9%	31%	23%
HI Household	35%	23%	19%	12%	15%	9%	10%	6%	21%	16%
Overall	*44%*	*28%*	*28%*	*16%*	*21%*	*12%*	*14%*	*9%*	*27%*	*21%*
Attached house										
LI Household	12%	13%	14%	12%	14%	12%	20%	15%	18%	18%
MI Household	13%	12%	15%	11%	12%	8%	17%	11%	17%	14%
HI Household	16%	13%	17%	13%	6%	5%	12%	9%	11%	10%
Overall	*14%*	*12%*	*16%*	*12%*	*9%*	*8%*	*14%*	*11%*	*14%*	*13%*
Detached house										
LI Household	24%	51%	39%	65%	47%	70%	55%	70%	39%	50%
MI Household	33%	59%	52%	73%	64%	80%	67%	80%	51%	61%
HI Household	49%	65%	64%	75%	79%	86%	79%	85%	67%	74%
Overall	*41%*	*59%*	*57%*	*72%*	*70%*	*80%*	*72%*	*80%*	*57%*	*64%*
Other										
LI Household	0%	0%	0%	0%	0%	1%	0%	1%	1%	5%
MI Household	0%	0%	0%	0%	0%	0%	0%	0%	1%	2%
HI Household	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%
Overall	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*1%*	*2%*

Source: 2011 Australian Census, calculated from commissioned data and TableBuilder data.

4.4.3 Dwelling size compromise

To the extent that, in aggregate, there will be a preference for additional bedrooms over fewer ones, a hierarchy of additional rooms relative to household size can reveal a sense of housing compromise. This metric is calculated as the difference between

the number of usual residents of a household (up to eight persons) and the number of bedrooms in the dwelling (up to eight bedrooms), as reported in the 2011 Census.

This metric has the most noise masking any signal, so needs to be read with a degree of caution. The most evident aspect of this noise is the counter-intuitive higher rates of 'spare bedrooms' among LI households, compared to MI and HI households of the same population. This is mostly due to what might be called the 'semi-retired' effect. This effect is difficult to tease out of the data, and cannot be expanded upon in depth here. In brief, the data used is confined to those in the workforce, so will exclude skews caused by retirees that are (housing) asset rich but (work-related) income poor. However, the effect is not eliminated entirely.

Table 34 does indicate, however, similar trends to the above metrics. Namely, LICC households are less likely to have spare bedrooms than LI households across the metro (in Sydney, 13% vs 20% have two or more spare bedrooms). Also, when considering household proportions with any spare bedrooms, this difference—and this evidence of compromise—between CC and metro-wide households is not observed in other income bands, except a small difference in Sydney MICC households (notably, the MICC households in Brisbane and Perth are better off than metro-wide equivalent populations). Also note that CC households in Darwin do not, overall, seem to experience such compromise, with higher proportions in all income bands having at least one spare bedroom, compared with the metro-wide populations.

Table 34: Number of bedrooms relative to number of residents, by place of work and household income

Metro hhds	**Sydney**		**Melbourne**		**Brisbane**		**Perth**		**Darwin**	
POW (of RP)	**CC**	**All**	**CC**	**All**	**CC**	**All**	**CC**	**All**	**CC**	**All**
-2 or lower										
LI Household	7%	8%	4%	5%	2%	3%	2%	3%	6%	5%
MI Household	8%	10%	5%	7%	3%	6%	3%	4%	7%	10%
HI Household	6%	8%	5%	6%	4%	5%	3%	4%	7%	9%
Overall	*7%*	*9%*	*5%*	*6%*	*3%*	*5%*	*3%*	*4%*	*7%*	*9%*
-1										
LI Household	18%	15%	13%	12%	9%	9%	6%	7%	10%	14%
MI Household	21%	21%	18%	20%	13%	15%	11%	13%	16%	17%
HI Household	23%	23%	22%	24%	16%	17%	15%	16%	19%	20%
Overall	*22%*	*21%*	*19%*	*20%*	*14%*	*15%*	*13%*	*13%*	*17%*	*18%*
0										
LI Household	34%	27%	35%	27%	29%	24%	22%	20%	27%	28%
MI Household	38%	32%	37%	32%	31%	29%	26%	26%	30%	29%
HI Household	40%	36%	37%	35%	34%	33%	32%	32%	33%	32%
Overall	*39%*	*33%*	*37%*	*32%*	*32%*	*29%*	*29%*	*27%*	*31%*	*30%*
+1										
LI Household	29%	29%	30%	31%	34%	33%	32%	31%	42%	33%
MI Household	24%	24%	28%	28%	33%	30%	32%	30%	32%	30%
HI Household	22%	22%	25%	24%	29%	28%	29%	28%	29%	27%
Overall	*23%*	*24%*	*27%*	*27%*	*31%*	*30%*	*31%*	*29%*	*31%*	*29%*
+2 or more										
LI Household	13%	20%	19%	25%	27%	32%	37%	40%	16%	21%
MI Household	9%	13%	13%	14%	20%	20%	29%	27%	15%	14%
HI Household	9%	11%	10%	11%	17%	17%	20%	20%	13%	12%
Overall	*9%*	*13%*	*12%*	*15%*	*19%*	*21%*	*25%*	*27%*	*14%*	*14%*

Source: 2011 Australian Census, calculated from commissioned data and TableBuilder data.

4.5 Housing distribution shows the need to live away from central cities to avoid housing stress and compromise

This section provides a snapshot of the housing market for LI workers. The analysis is based on APM data available through AURIN. Nineteen price points—one for every fifth percentile (i.e. 5th, 10th … 90th and 95th)—are available at the SA2 level for a variety of data sets. This analysis uses the 2014 calendar year data for: houses sold; apartments (units) sold; houses advertised for rent; apartments (units) advertised for rent. Using the price points, the proportion of sales and advertised rents that would be affordable to both LI and MI households in each SA2 was calculated[13]. These were mapped to reveal the geography of housing affordability or otherwise.

For LI households, very few neighbourhoods (SA2s) in any of the metros had a proportional number of apartments (i.e. around 40% of sales) affordable to purchase, other than those on the very urban periphery. One exception was the western suburbs of Melbourne around Sunshine. And virtually none had affordable houses for sale to LI households. However, given the nature of the income thresholds, already discussed, the bottom two quintiles by income are probably not looking to purchase—being either outside the labour force or having a single, lower income, earner. As such, sales data maps are not shown for LI households. The rental market for this population is more revealing. Even here, though, the data suggests compromise will need to be either in location, housing stress or structure. Neighbourhoods with a proportionate amount of affordable *houses* were far from the CC in Brisbane and Melbourne (the Braybrook area was an exception) and non-existent in Sydney, Perth and Darwin.

Brisbane and Melbourne had a number of CC-proximate neighbourhoods with affordable *apartments*, with Perth also having a handful of neighbourhoods, partly because of lower numbers of apartments in this smaller city. In Sydney, even neighbourhoods with a proportionate amount of affordable apartments to rent were largely separated from the CC, the closest being in the Fairfield area, over 25 kilometres away. As a result, neither distance nor tenure nor dwelling-size compromise provided a supply of affordable housing to avoid housing stress. In Darwin, there were no affordable neighbourhoods at all, although the data there is too limited to draw any conclusions.

For MI households, all metros contained numerous neighbourhoods with affordable houses and apartments for rent. Sydney and, to a lesser extent, Melbourne and Perth contained notable contiguous areas where houses for rent fell below the proportionate level for this income threshold. In those metros, though, this was largely confined to wealthier suburbs, with plenty of affordable neighbourhoods in other CC-accessible parts of the metro. In Sydney, for example, Mascot, Marrickville and Leichhardt had a proportionate amount (i.e. around 80%) of rentals affordable to MI households.

However, in an inverse to LI households, MI households, which take in all but the top 20 per cent of household incomes, are more likely to expect to be able to afford to purchase. The sales data, though, indicates that living in a CC-accessible neighbourhood would entail some compromise in some metros. In all metros but Sydney, most neighbourhoods with a supply of apartments were relatively affordable, including those adjacent to the CC itself. Purchasing a house without going into

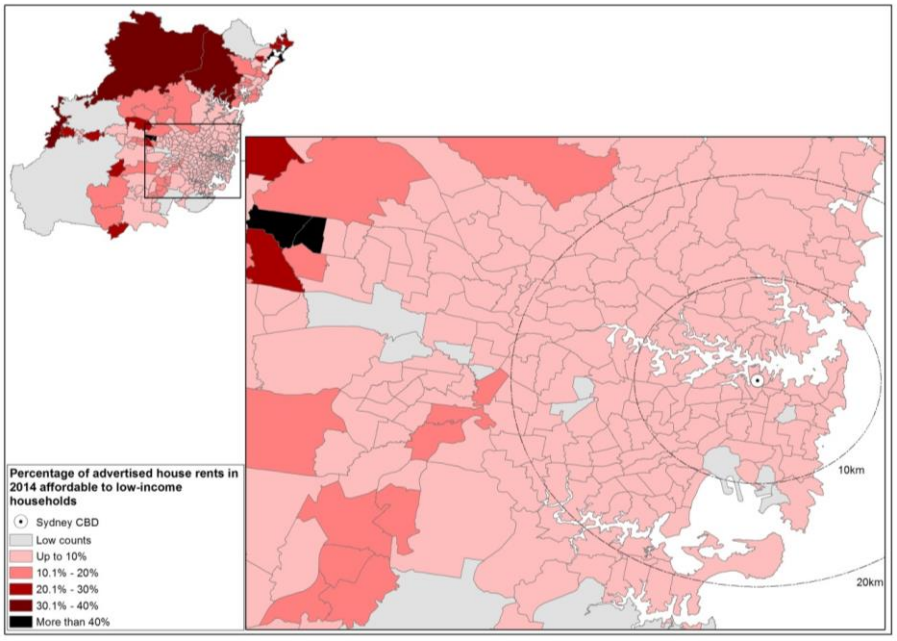
[13] The 2011 thresholds for low- and middle-income households ($1000 and $2500, respectively) were adjusted using ABS wage inflation figures, an increase of 9.4 per cent to reflect 2014 incomes. Taking 30 per cent of these adjusted incomes produced weekly housing cost limits. The housing cost limit equates to the maximum rent payable, and—using a 25-year loan term, a 5.3 per cent interest rate, and assuming sufficient savings for a 20 per cent deposit and to cover stamp duty and other costs—the housing cost limit was translated into a maximum purchase price.

housing stress, though, would mean compromising on proximity to the CC: in Brisbane and Melbourne only a handful of neighbourhoods within 10 kilometres had a proportionate amount of affordable houses, with slightly closer affordable neighbourhoods in Perth and Darwin.

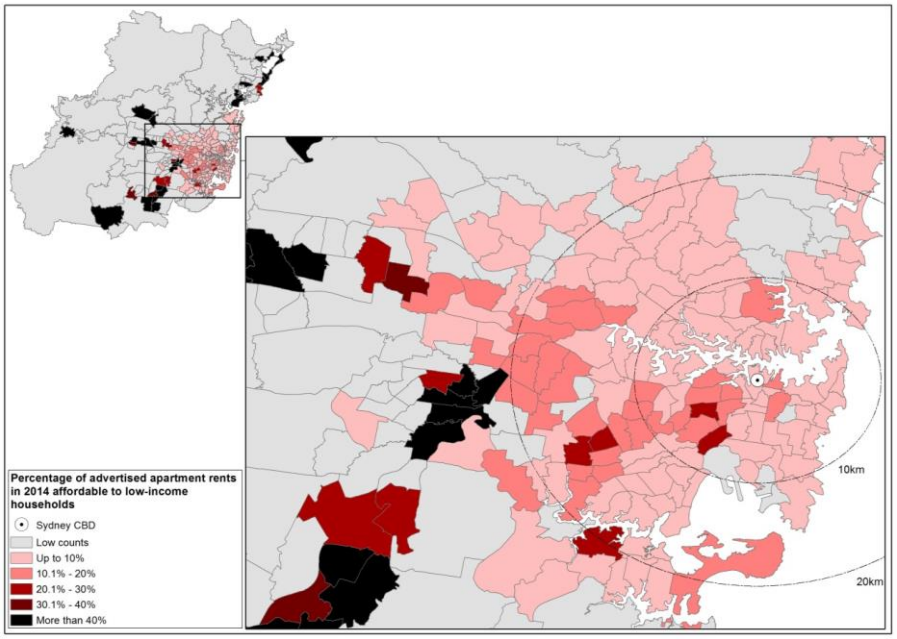
In Sydney, uniquely, the extent of housing costs exceeding the means of even MI households was notable. The apartment sales prices in Sydney resemble the houses in other metros—a ring of unaffordable neighbourhoods out to about 10 kilometres from the CC, with a handful of affordable exceptions (Pagewood, Lane Cove, Marrickville). House sales, though, are largely unaffordable until at least 25 kilometres from the CC (in Sefton), with more affordable neighbourhoods beyond that.

Figure 48: Rental affordability for LI households, Sydney

Houses



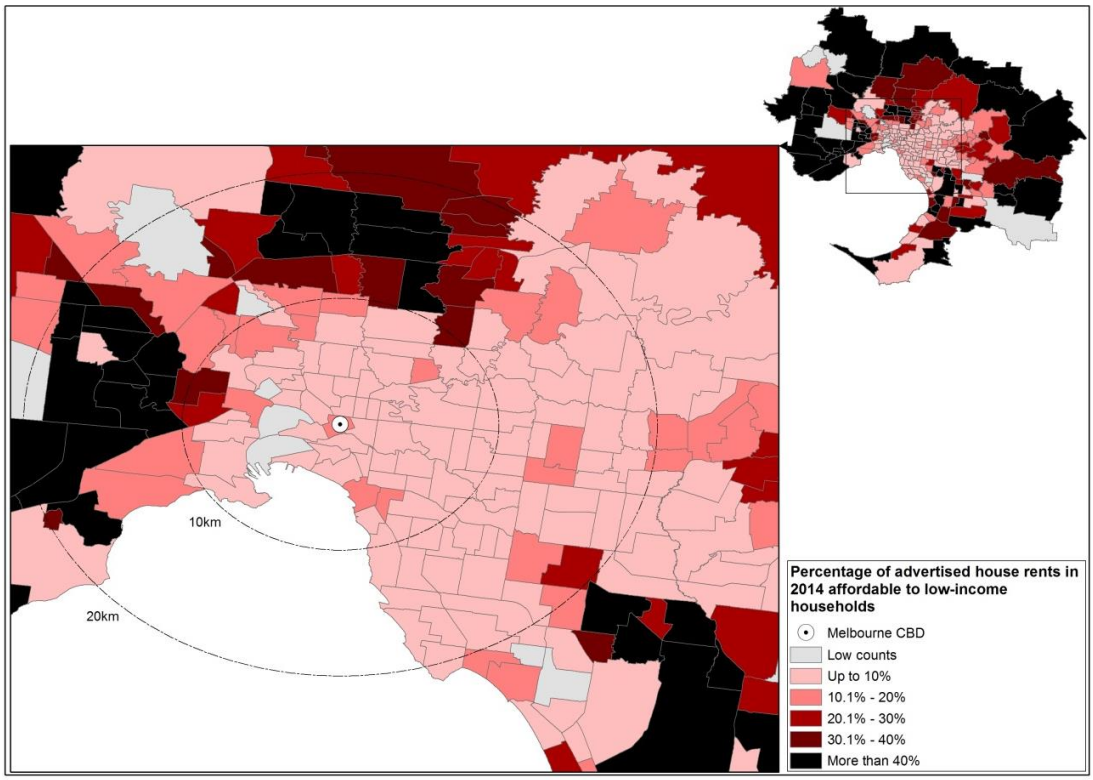
Apartments



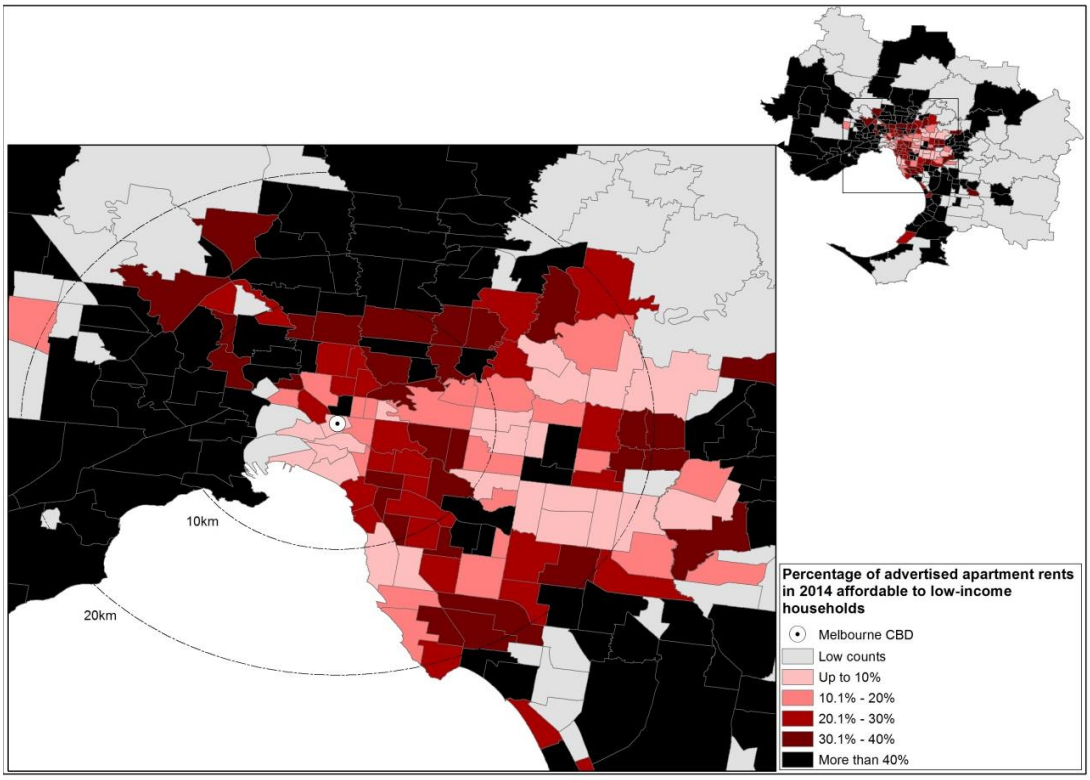
Source: Based on APM data sourced from AURIN Portal and ABS digital boundaries.

Figure 49: Rental affordability for LI households, Melbourne

Houses



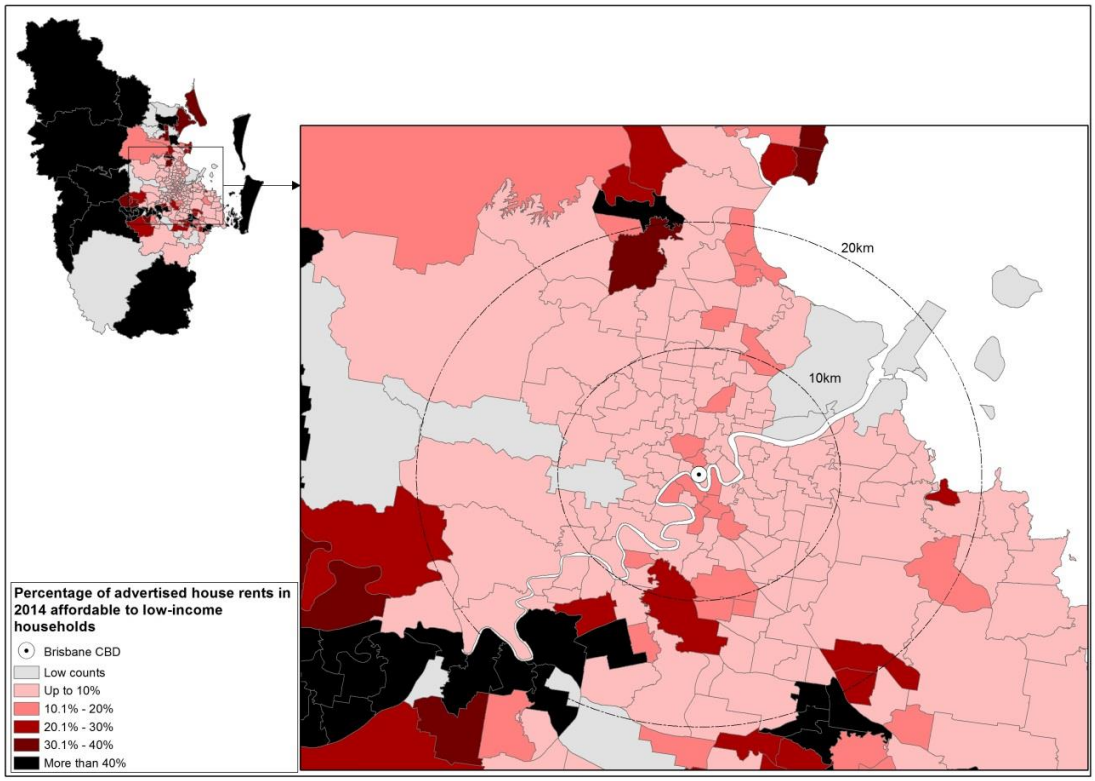
Apartments



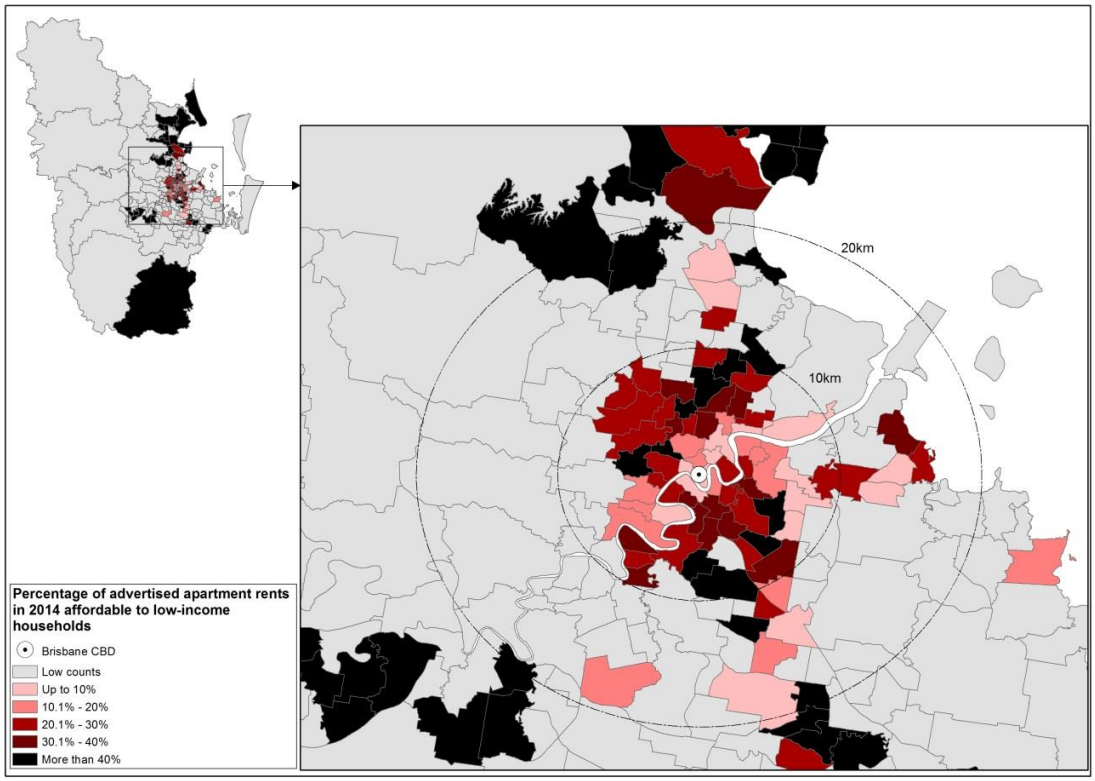
Source: Based on APM data sourced from AURIN Portal and ABS digital boundaries.

Figure 50: Rental affordability for LI households, Brisbane

Houses



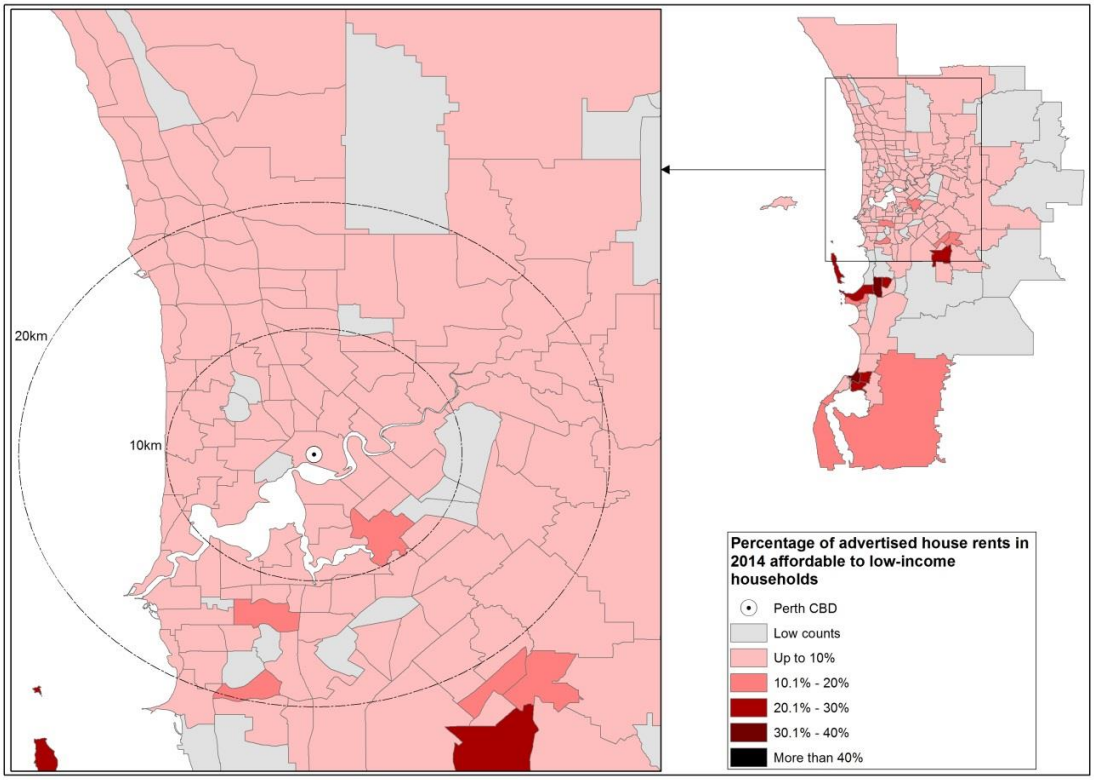
Apartments



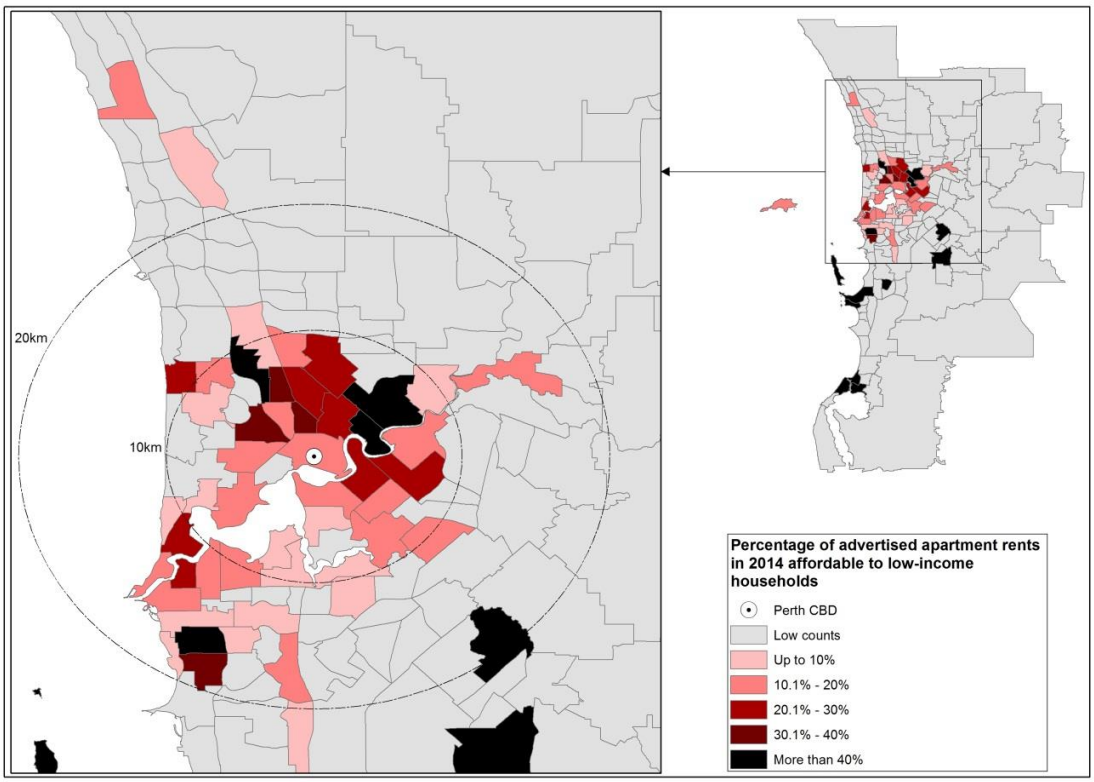
Source: Based on APM data sourced from AURIN Portal and ABS digital boundaries.

Figure 51: Rental affordability for LI households, Perth

Houses



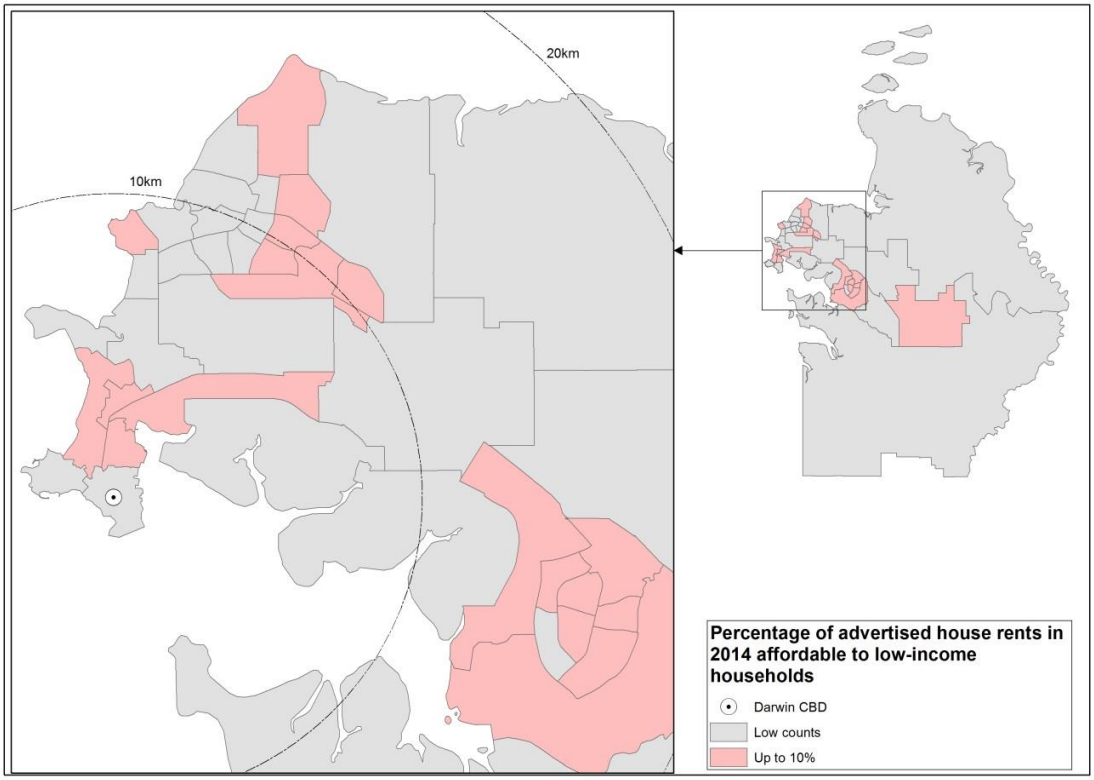
Apartments



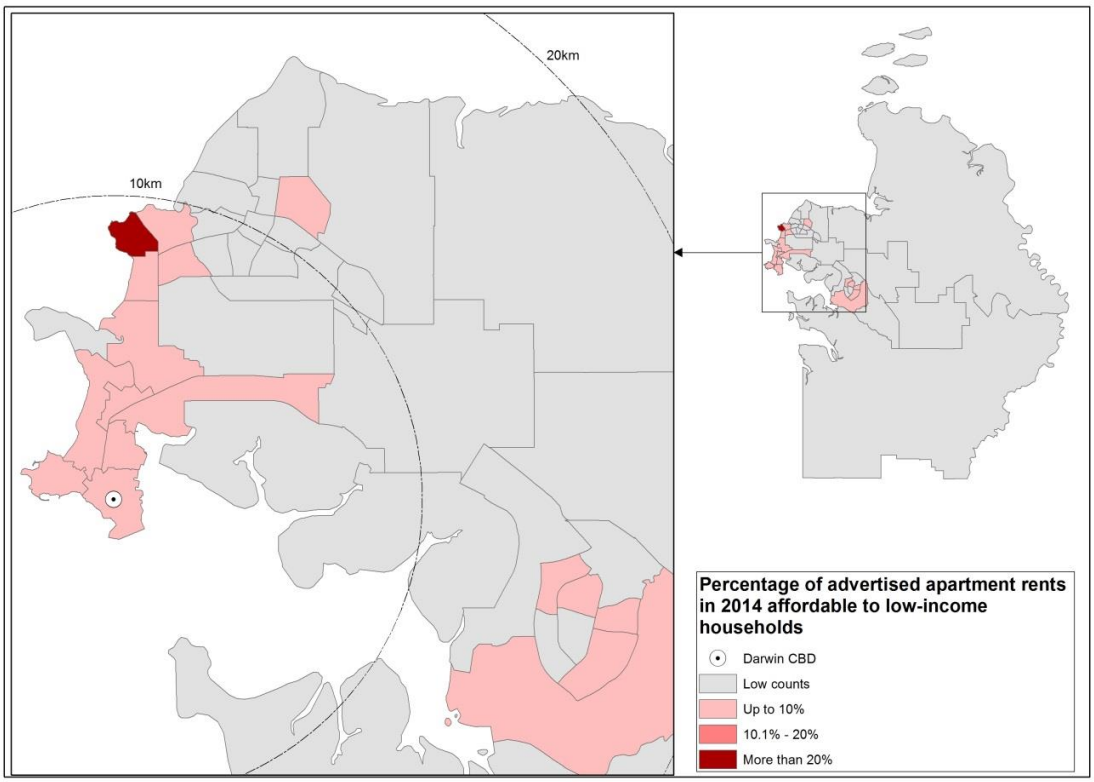
Source: Based on APM data sourced from AURIN Portal and ABS digital boundaries.

Figure 52: Rental affordability for LI households, Darwin

Houses



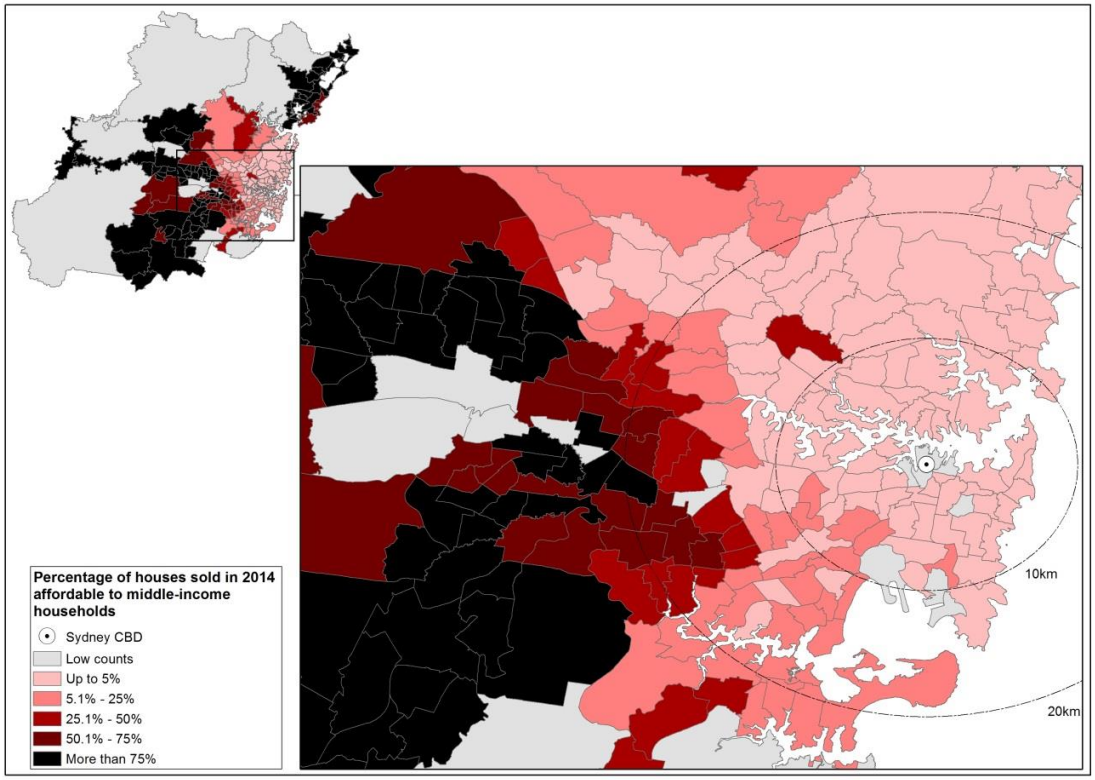
Apartments



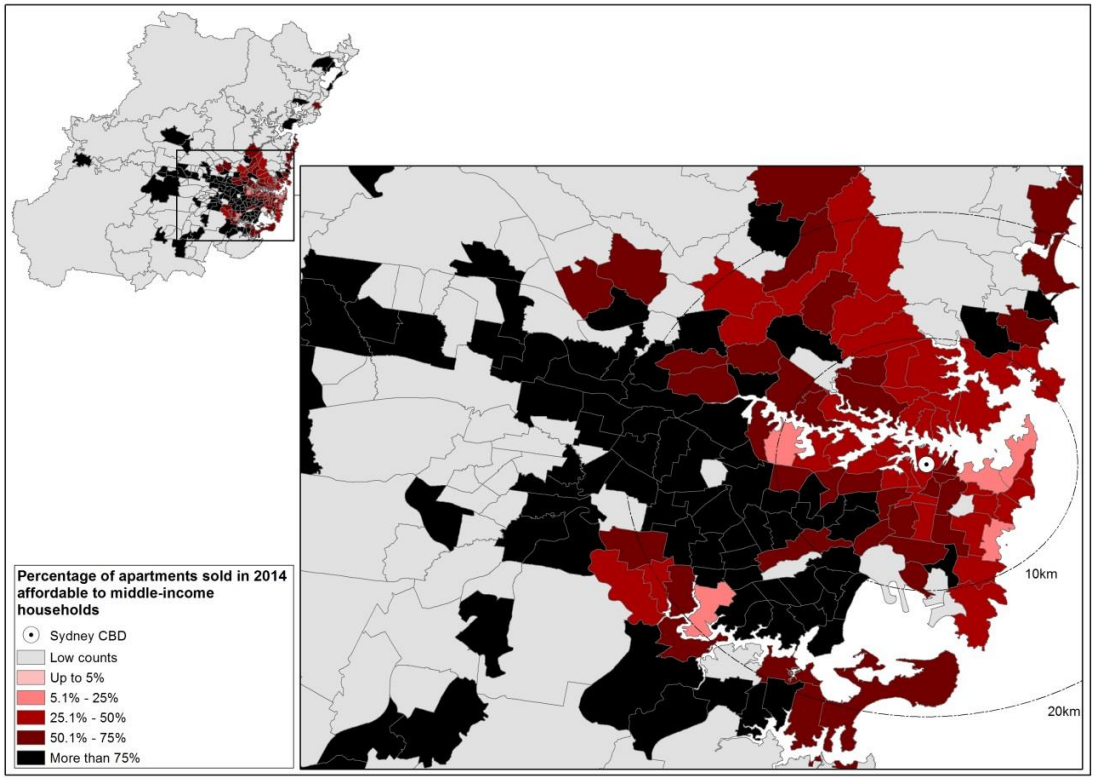
Source: Based on APM data sourced from AURIN Portal and ABS digital boundaries.

Figure 53: Sales affordability for middle-income households, Sydney

Houses



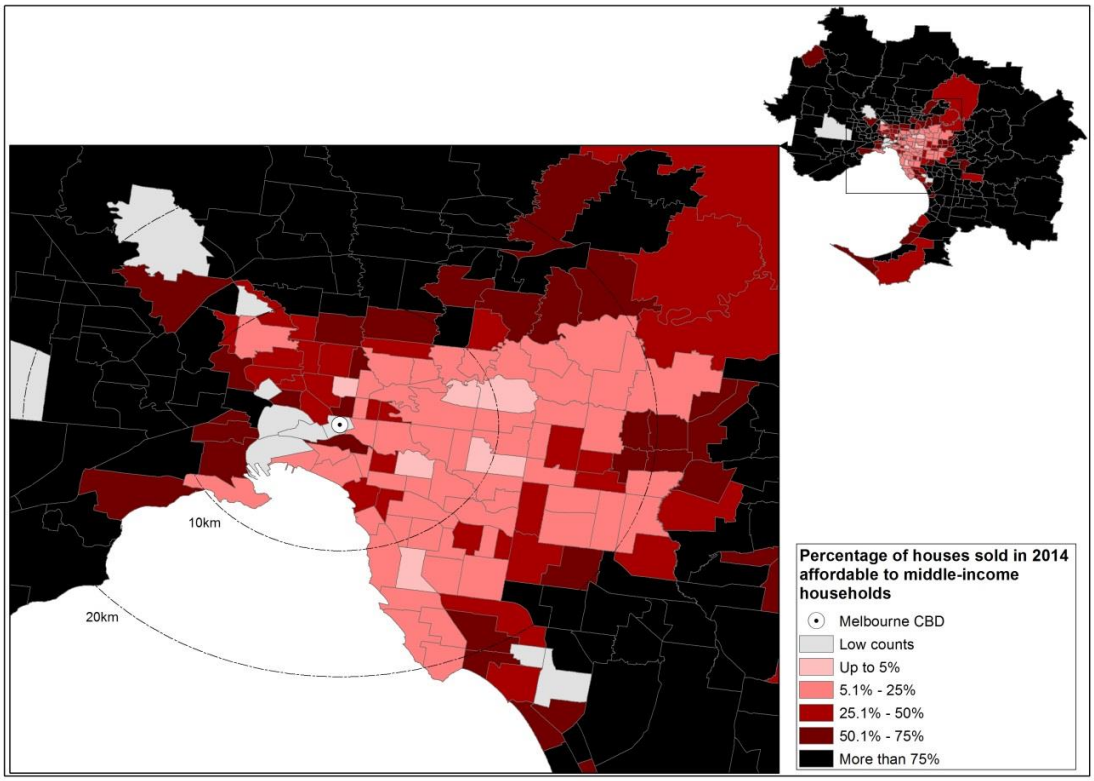
Apartments



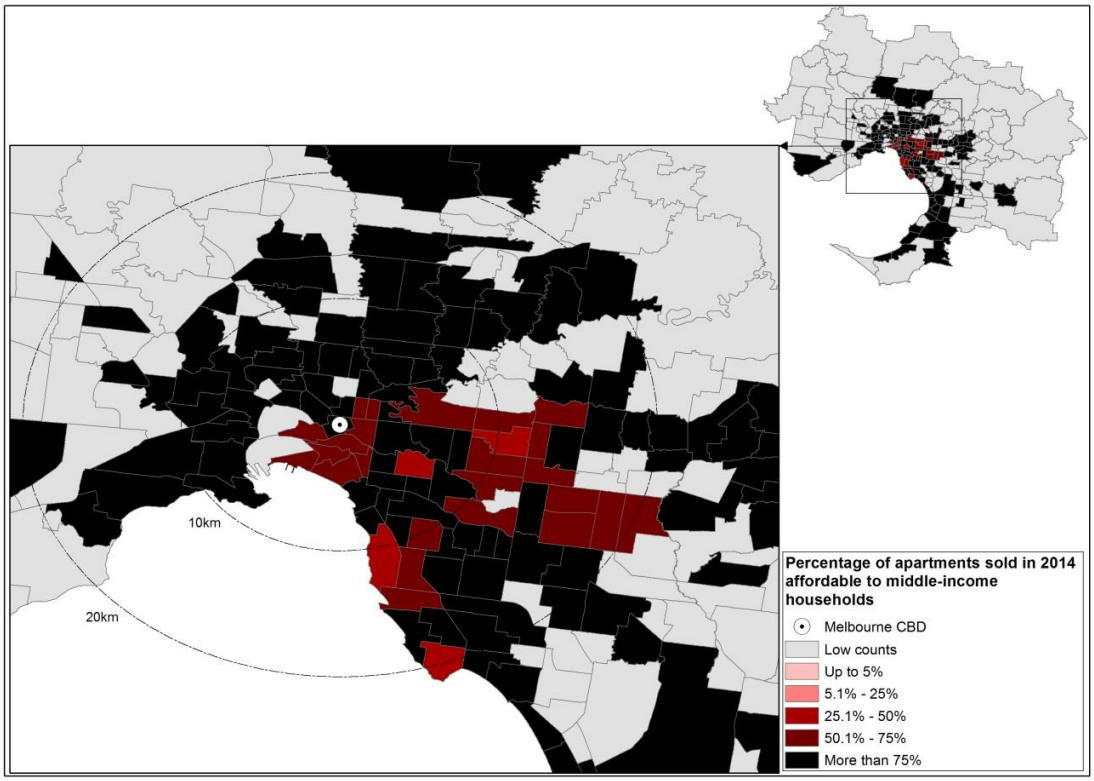
Source: Based on APM data sourced from AURIN Portal and ABS digital boundaries.

Figure 54: Sales affordability for middle-income households, Melbourne

Houses



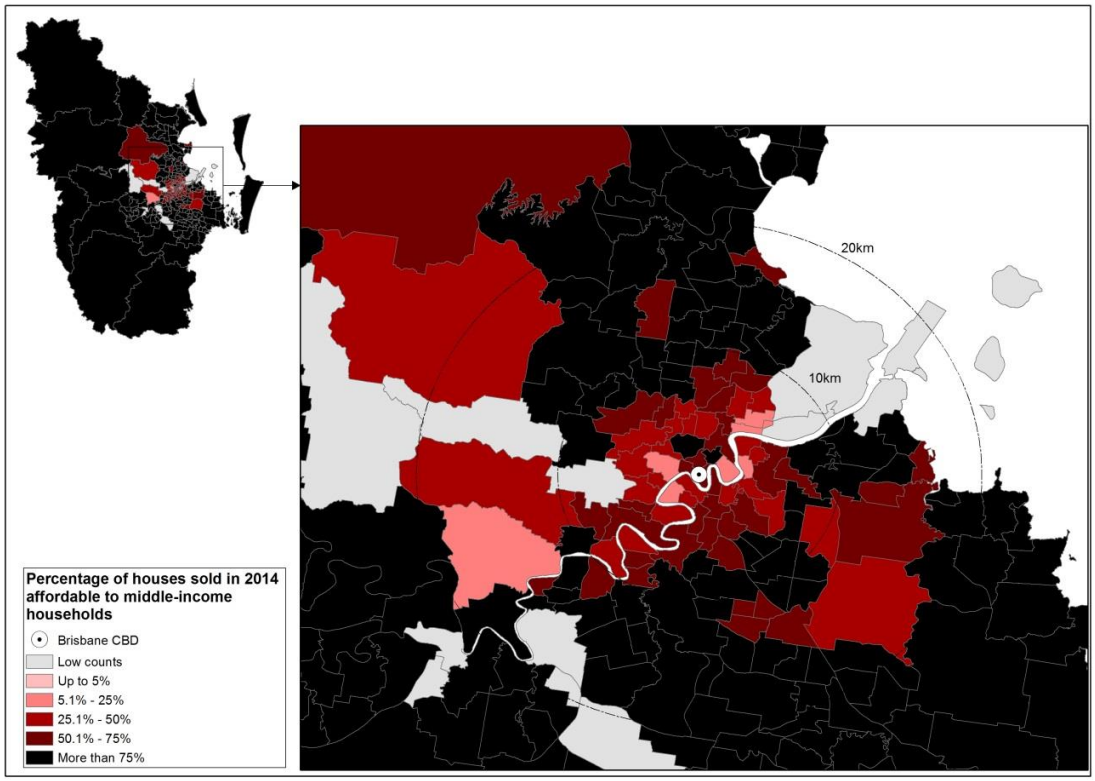
Apartments



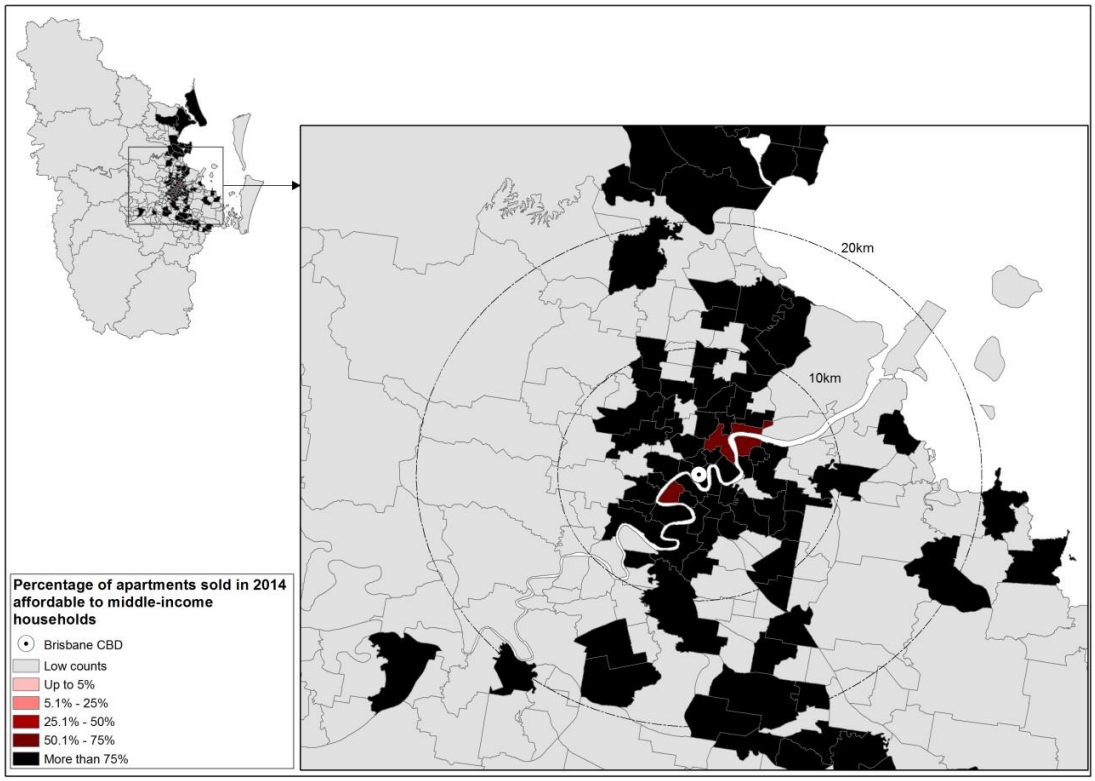
Source: Based on APM data sourced from AURIN Portal and ABS digital boundaries.

Figure 55: Sales affordability for middle-income households, Brisbane

Houses



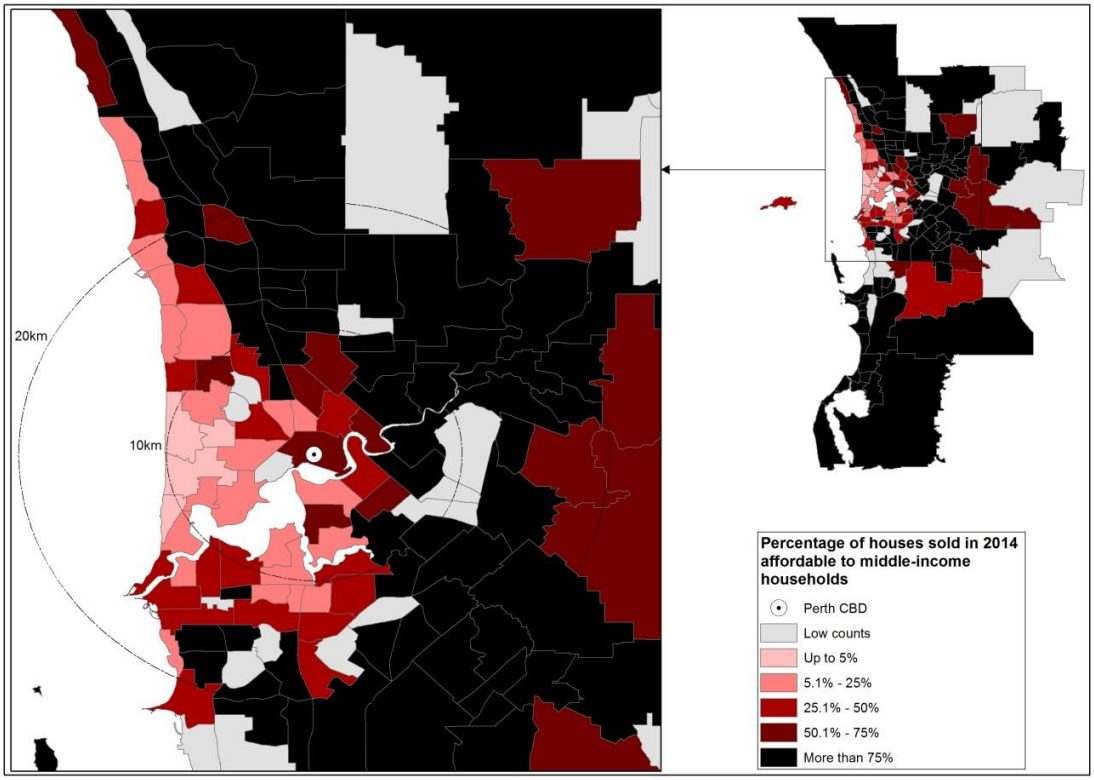
Apartments



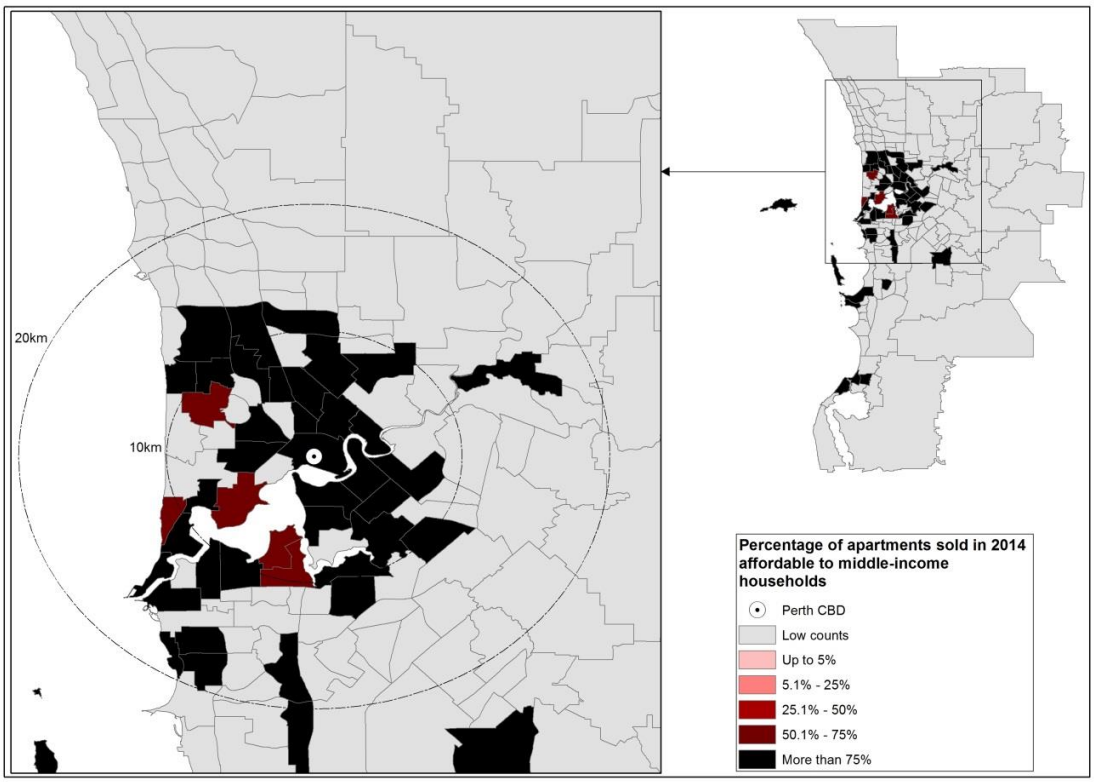
Source: Based on APM data sourced from AURIN Portal and ABS digital boundaries.

Figure 56: Sales affordability for middle-income households, Perth

Houses



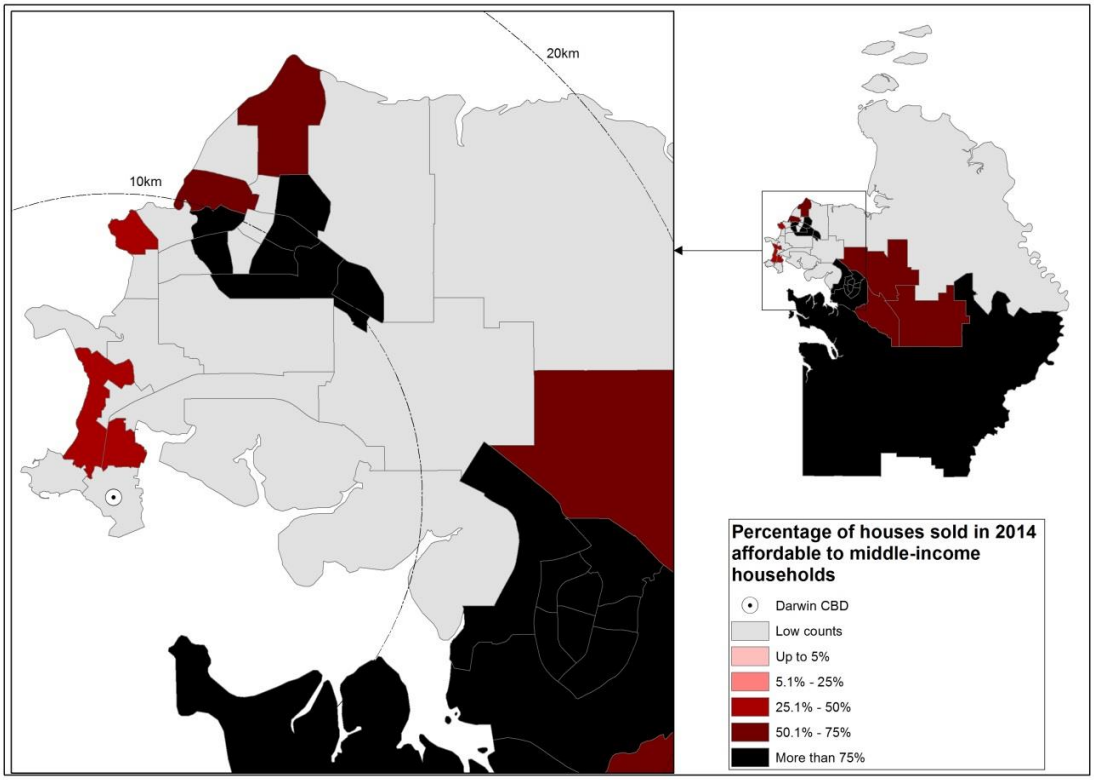
Apartments



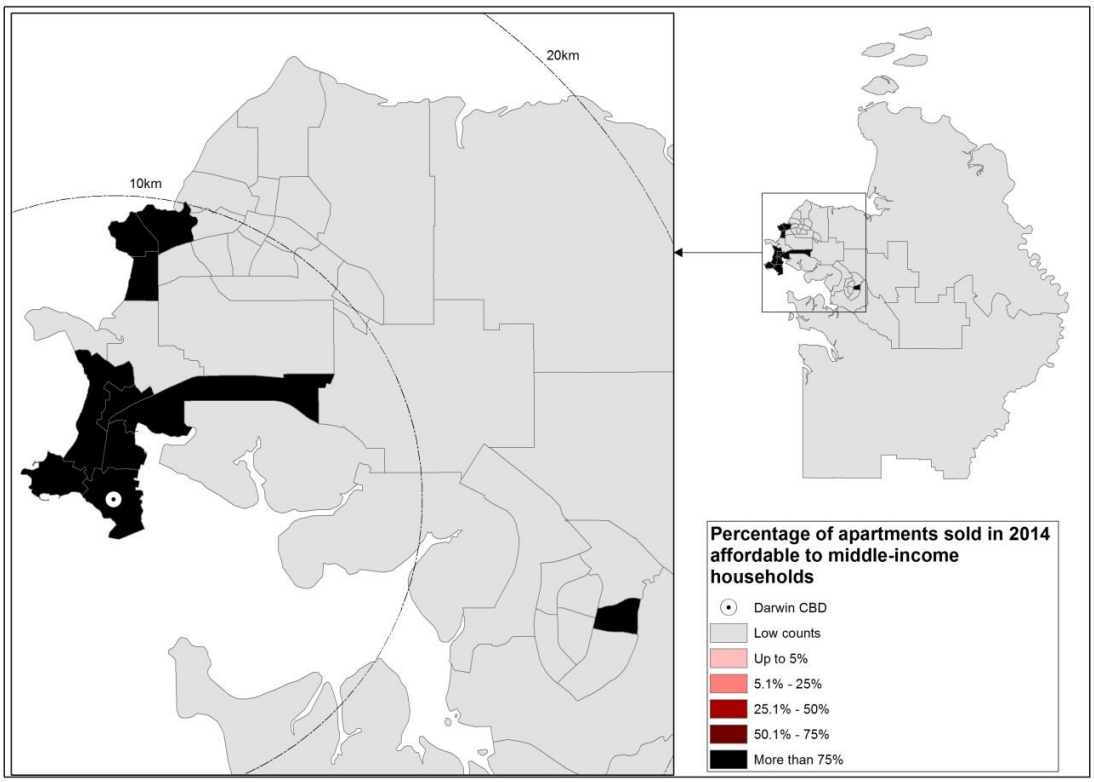
Source: Based on APM data sourced from AURIN Portal and ABS digital boundaries.

Figure 57: Sales affordability for middle-income households, Darwin

Houses



Apartments



Source: Based on APM data sourced from AURIN Portal and ABS digital boundaries.

4.6 Chapter summary

The evidence from this analysis is that housing compromise takes a number of forms, and is much more nuanced than simply examining degrees of housing stress. In different cases, compromise will be reflected in where you live, what type and size of dwelling you live in, who you live with, or whether you rent or purchase.

One important disjunction between LI labour markets and low-cost housing markets is that, based on 2011 census workforce and housing data, only one quarter of LI workers lived in LI households. This distribution of LI workers across household incomes was also consistent across different geographies. Similarly, the distribution of housing costs as a proportion of household incomes—including levels of housing stress—was consistent across different geographies. However, evidence of housing compromise—most likely made to avoid housing stress—could be seen in other differences between LICC workers and LI workers generally. Some key findings were that LICC workers were more likely to be:

- renting
- living with unrelated strangers or extended family
- living in an apartment
- showing signs of dwelling size compromise, in terms of bedrooms/occupant
- living further from their place of work.

Importantly, these compromises were mostly experienced to a greater degree among the LICC workforce because MI households connected to the CC labour force were more likely to be making compromises. The distance to work was also supported by analysis of the housing markets, which showed a clear geography of inner-city unaffordability in both rental and sales data. Sydney showed particular evidence of unaffordability with, for example, very low rates of affordable house sales within 25 kilometres of the CC.

Of course, these ‘compromises’ can only be considered as such in statistical aggregate. The extent to which LI workers perceived these differences as compromises, and therefore the extent to which they would serve to undermine the appeal of the CC as a place of work, cannot be unpacked in census data.

5 IDENTIFYING HOW ANY SPATIAL MISMATCH AFFECTS EMPLOYERS

5.1 Chapter overview

This chapter examines the different ways in which housing affordability issues are affecting employers operating in the Sydney CC. This analysis thus addresses Research Question 4.

→ RQ4: Which employer groups are most affected by this issue, what problems does this cause them and how do they deal with these problems?

Escalating housing costs could contribute to difficulties in recruitment and retention of staff. These difficulties might be reflected in higher staff turnover leading to higher training costs, longer recruitment periods to find replacement staff, or the need to pay above-market wages to attract or retain staff.

In order to understand in more detail how housing affordability might be acting as a constraint on productivity, we undertook 24 in-depth, semi-structured interviews. Twenty of the interviewees were general managers or human resources professionals working for businesses across key CC industry sectors. The remaining four interviewees were policy and research staff from relevant representative organisations—three from industry peak bodies and one from a community association representing employees and employers across the Sydney metro. The industry sectors targeted were those which employ the greatest number of LICC workers in Sydney (Table 35).

Table 35: Industry sectors employing greatest number of LICC workers, 2011

Industry	LICC workers	Percentage of LICC workers
Hospitality	*10,056*	*23% of LICC workers*
Accommodation	3,336	
Cafe/Restaurant	3,331	93% of LICC hospitality workers
Takeaway	1,657	
Pub/Bar	1,066	
Professional services	*6,763*	*15% of LICC workers*
Legal	2,876	
Accounting	1,539	
Computer Systems	485	84% of LICC professions workers
Management / Consulting	471	
Advertising	337	
Retail	*6,741*	*15% of LICC workers*
Clothing	1,661	
'Specialty' (includes Watch & Jewellery; Footwear; Newspapers & Books; and Pharmaceutical, Cosmetic & Toiletry Goods)	1,556	68% of LICC retail workers
Department Store	901	
Supermarket	486	
Finance-insurance	*4,709*	*11% of LICC workers*
Banking	1,175	
Other Auxiliary Finance and Investment Services	1,108	68% of LICC finance workers
General Insurance	941	
Support services	*3,574*	*8% of LICC workers*
Travel Agency and Tour Arrangement Services	1,109	
Building and Other Industrial Cleaning Services	869	81% of LICC support service workers
Employment Placement and Recruitment Services	594	
Labour Supply Services	338	

Source: 2011 Australian Census, calculated from TableBuilder data.

Appropriate companies across these 20 key industry sectors were identified using data supplied by the City of Sydney, taken from the 2011 Floor Space and Employment Survey, to profile the industry businesses, dividing each industry sector into lists of large and small businesses. These 40 business categories served as a guide for identifying participants, and contact information for these businesses was then sourced online. Initial contact was made by calling the company's head office and asking to speak to the appropriate person from the management or HR team who

is responsible for recruitment. Where contact details for an HR manager were publicly available, this person was contacted directly.

This approach resulted in a lengthy recruitment process, in which a total of 266 organisations were contacted across these industry sectors over the course of nine months. In addition, a presentation seeking participants was made to the members of the City of Sydney's Retail Advisory Panel, who represent many of the large employers in the retail and hospitality industries in Sydney's CC. As a result, participants were sourced from 11 different industry sectors, as shown in Table 36.

Table 36: Industry, organisation type and role of interviewees

Industry sector	Organisation type	Role
Hospitality		
Accommodation	2 x large hotels	HR Manager
	2 x small hotels	HR Director
		General Manager
		Head of HR
Cafe/Restaurant	2 x small restaurant groups	Recruitment & Training Manager
		Head Chef & Owner
Pub/Bar	2 x large hospitality groups	Group Talent Manager
		People & Culture Manager
Professions		
Legal	2 x small firms	HR Manager
	1 x legal services provider	Manager of People & Culture Chief Operating Officer
Accounting	1 x large firm	Office Manager
Computer Systems	1 x large firm	Recruitment manager
Management / Consulting	1 x small firm	Managing Director
Advertising	1 x small firm	Managing Director
Retail		
Specialty	1 x independent business	Managing Director
Support services		
Travel Agency & Tour Arrangement Services	1 x corporate travel provider	Internal Recruitment Consultant
Employment Placement & Recruitment Services	2 x large recruitment firms	Senior Consultant
	1 x small recruitment firm	Senior Manager
		General Manager
Peak bodies and associations		
	3 x industry peak bodies (2 in finance/insurance, 1 in hospitality)	Human Resources Manager Research & Policy Manager Head of Corporate Affairs & Policy
	1 x community association	Community Organiser

Eight of the interviews were conducted in person at the interviewee's office, with the remainder conducted over the phone. Interviews lasted between 17 minutes and

43 minutes, and were loosely guided by a list of six broad themes, which were circulated to potential interviewees in advance (see Appendix 2). The interviews were recorded and professionally transcribed. The transcripts were then reviewed to identify key issues and themes. This process of analysis began while the interviews were still being conducted, allowing the interview questions to be refined in an iterative fashion as the research progressed.

The relatively low response rate to the request to participate (24/266) might be viewed as an indication that the issue is not a high priority for many organisations, and a lack of concern about this issue was cited by some HR representatives as the reason for choosing not to participate. However, it is also important to note that the participation rate was affected by the difficulty of identifying and accessing the appropriate person in some companies, particularly larger organisations. Of the 266 organisations contacted, approximately a third resulted in a conversation with the appropriate HR representative or manager, with successful contact made by email in a small number of additional cases. Given these challenges, the overall interview participation rate may not be a particularly meaningful indication of the level of interest in these issues at more senior levels of the CC business community. Overall, the interviews identified a great deal of variation in the extent to which CC employers perceived housing affordability as an issue affecting their business.

5.2 Housing affordability is a concern for some employers, but not all

The responses received from interviewees were diverse, ranging from some who suggested housing affordability was a significant consideration in their business strategies to others who felt it had no impact on their company's operations.

Interviews began by asking the interviewee to describe the organisation, their role, their staff numbers and where their employees live. All of the interviewees had staff who commuted to the CC from suburban areas, including some that travelled from outside the Sydney metro area (most notably Wollongong, the Central Coast and the Blue Mountains).[14] While some interviewees viewed these longer commutes as a function of affordability issues, others perceived them as individual lifestyle choices. Whether long commutes were seen as a negative also varied.

- Most people in this office are living in suburbia, so we all have to commute … nobody has really commented what a pain it is.
- Transport is so easy … if you offer them a role in the city that pays well, they don't mind travelling an hour or half an hour or 45 minutes and catching the train and catching the bus. So we really haven't had an issue.
- One of the senior guys in our cellar actually lives past Wollongong. He commutes every day. When you speak to him, it's just a choice that he's made; it's the lifestyle that he wants. It's cheaper, and for him that's worthwhile.
- There's one young secretary … she lives out in the Hills District somewhere and … it must take her an hour and a half to get to work … that's affordability driven.
- The ones that live in the city are … in an apartment with eight other people … I have a lot of employees that travel long distances … To be able to afford to live most of the employees do live further out.

[14] To avoid any confusion, it is important to note that 'the city' and 'CBD' are often used as synonyms for the CC, as defined here, and should be read as such in the interview excerpts that follow.

 We've actually got two people—support staff, PAs—that commute from Wollongong … One was affordability. She was living in the city—or renting in the city—and then bought a property, so she bought it down in Wollongong and has made a commute since, which is a big effort.

Given this variation, it is not surprising that there were also discrepancies in the way interviewees viewed the productivity impact of the workforce's living arrangements. Direct economic effects were linked to housing affordability and commuting in Sydney by a number of participants. For example, one hospitality business owner argued that housing affordability is having a 'massive, massive, massive impact' on productivity, as a significant contributor to the industry's chronic staffing shortages. Similarly, another interviewee felt that this research 'raises some important issues that are definitely going to be more and more significant for future generations if the current trends continue', referring to Sydney's growing housing unaffordability.

Overall, however, the impression emerging from the interviews was that housing affordability issues were not a major concern for most CC businesses. For example, one finance/insurance industry representative explained that there wasn't any clear evidence of issues like housing affordability creating shortages in the employment market, even though staffing was always a topic of discussion in the industry:

> … when we survey them, we find that it's actually probably not as big an issue as they relay in their general feelings … so it's probably more a mood than a factual issue … In terms of our lower level jobs … we definitely have had feedback that we don't have a problem in that area.

Likewise, an HR manager in the non-profit sector felt that while recruitment was a challenge, it was not possible to point to housing affordability as a reason.

> I don't think anybody in this sector would say that staff are easy to find, but … I actually don't think that we have issues that are directly linked to commuting issues or accommodation issues.

In most cases, employers are in fact unlikely to know why potential candidates do not apply for a position, so their perspective does not give a full picture of how housing affordability might affect CC recruitment options. However, when interviewees were asked more targeted questions about issues like recruitment, reliability and retention, some examples of problems did emerge.

Overall, three key patterns became apparent in the way interviewees described the relationship between housing affordability in Sydney and operating a business in the CC.

1. It was clear that some industries are far more cognisant of and concerned about this issue than others—most notably the service industries.
2. While many interviewees were not significantly concerned about the issue, almost all could offer anecdotal evidence of housing affordability issues having an impact on their work as an HR professional.
3. While most interviewees recognised that high housing costs were a challenge, many suggested that employees are primarily bearing the burden of this expense, rather than employers.

These three issues will be explored in more detail below.

5.3 The most concerned interviewees were predominantly from the service industries

Not surprisingly, the interviewees expressing the greatest concern about housing affordability were in industries that employ significant numbers of LI workers. Hospitality (including accommodation) employs the most LICC workers, and interview participants from this industry generally saw housing affordability as a problem. However, there seemed to be less concern among interviewees from the professions, the sector with the second highest number of LICC workers.[15]

The comments of a number of interviewees pointed to an explanation for this discrepancy. A LI position in a professional services firm may be seen as a good career stepping stone, likely to lead to more lucrative long-term career opportunities. Demand for these positions may therefore be high, even if the position itself is not overly desirable or the salary requires sacrifices in terms of living arrangements. For example, an office manager in an accounting firm told us he recently had a qualified accounting graduate apply for an office junior role just to 'get a foot in the door', while an advertising executive said she often hired unpaid interns who hoped the role would lead to permanent work after graduation. Interviewees from both legal and accounting firms mentioned that competition for entry-level professional roles was significant. As one legal HR representative explained, 'we get applications come through all the time … Mostly people about to graduate or just graduated … probably at least two a day.' Another legal HR representative echoed this sentiment, explaining that 'it's fiercely competitive. It's awful actually. There are a lot of good students out there who can't get work.'

By contrast, the issue of housing affordability appears to resonate most significantly in the hospitality and accommodation industries, which are experiencing staff shortages more broadly. While these shortages are a national issue, a disproportionate number of hospitality jobs are in Sydney's CC—the council area employs almost 12% of all hospitality and tourism workers in NSW (Tourism 2020 2014). Industry feedback has identified one of the policy issues contributing to these shortages as 'a [l]ack of affordable housing close to where job vacancies are (city and inner city areas)', with Sydney singled out as a particularly problematic case (Tourism 2020 2014). It is not surprising, therefore, that concerns about the relationship between housing affordability and staff shortages were raised in the interviews with Sydney CC-based hospitality and accommodation businesses.

Such shortages could contribute to significant business costs, with one hotel general manager explaining that 'the industry estimate for a five star hotel is about a quarter of a million dollars a year [as] the cost of staff turnover.' A number of interviewees noted that the industry is often viewed as a short-term 'stop-gap' by many employees, who tend to believe that 'this isn't a career path for me to take'. This perception could translate into difficulties filling lower wage positions in particular, as a hotel HR manager explained.

> I guess you're not going to get an average Australian young person wanting to work in housekeeping for example. Even in food and beverage now most of them have degrees or are studying. They are also people that we would employ [especially for] food and beverage but you won't find any of them wanting to work in housekeeping.

[15] Retail has almost as many LICC workers as the professions; given the limited participation from this sector, however, it is difficult to comment on the level of concern about housing affordability.

These career-related concerns about the hospitality industry may seem unrelated to housing affordability. As another restaurant owner explained, however, these issues actually overlap, due to broader socioeconomic and geographic shifts in Sydney.

> Families … from the Inner West, the Lower North Shore and Eastern Suburbs are not encouraging their children to become hospitality industry professionals. Society has gone beyond it. The areas where it is considered to be aspirational to be in this industry to the largest degree are in … [the] Western Suburbs of Sydney. I understand that … the operations out on the periphery of Sydney have way less difficulty in attracting staff …
>
> The biggest issue from where I sit is the fact that you've got apprentices and younger people that really want to work … [but it] just costs way too much for them to live in the city … which means—well, half of our staff, the young kids, we just don't roster them at night … Even when probably 65, 70 per cent of our revenue is generated at night, but you can't have them getting public transport at 11:30 at night down to Blacktown. Affordable housing is a massive, massive issue for Sydney. You get the doughnut effect where it's just—the people that want the jobs, particularly the youth, they can't afford to live in here.

In a similar vein, a hotel general manager suggested that while the employment situation was largely manageable at present, forecast industry growth could soon make the issue worse.

> The big fear is if the [house] prices keep getting higher, and … the rents do keep going higher, then it's going to get more challenging I think for everyone, especially given this big expansion of hotels [in the CC].

While not all expressed this level of concern, all of the interviewees from this sector identified occasions when housing affordability issues had affected their business. As one HR representative explained, ‘we’re not the only hospitality business having these conversations’, while an industry representative concluded:

> I don't think housing affordability is probably one of the core drivers of the difficulty in finding staff but I think it's probably an ‘exacerbator’ of what's going on … It does exacerbate the issue.

As this quote suggests, even in industries where housing affordability was commonly identified as a concern, it is one of a complex mix of factors affecting human resources. To better understand this mix, it is helpful to examine individual examples of ways housing affordability has influenced how interviewees do their jobs.

5.4 Examples emerged of recruitment, reliability and retention all being affected by housing affordability

It was not uncommon for interviewees to claim that housing affordability was not a concern for their business, but nonetheless identify anecdotal examples of the issue arising in the course of their work. To understand these seemingly inconsistent responses more clearly, interviewees were asked about three possible ways in which employers might see economic effects of housing affordability issues shaping their business: recruitment, reliability and retention.

5.4.1 Recruitment

Recruitment was the context in which most interviewees noticed housing affordability issues emerge. For example, a number of interviewees in the service industries noted that they would always discuss travel with potential employees during the interview.

- … we say, you might be required to work late nights in the venue. Would this be something that would impact you or your way to get to and from work?
- I mean at the end of the day I'm not going to dictate to someone that they can't look at a job because they don't live in the area. But it's definitely a conversation that we would have with every person.

Another interviewee noted that the issue factored into the résumé review process, to be raised as a point of discussion for potential employees from areas with limited transport links.

> Even when you're looking at résumés you do take into effect where the people live … if you live in Palm Beach you can't get home at one in the morning. There are no trains to the northern beaches.

An external recruiter made a similar point, explaining that 'It's one of the first questions we ask … How long does it take you to get into the city? Are you happy to travel that time?'

The restaurant owner quoted at length above also identified recruitment issues in relation to skills matching, with prestigious restaurants having to hire underqualified staff.

> … under normal circumstances in the old days they would not have even dreamt of putting that person on if the CV progress doesn't add up.

A few interviewees in professional sectors also identified recruitment issues arising in connection with commuting challenges. As an HR manager from the corporate travel industry explained:

> From a recruitment perspective, I have lost good candidates who want to work further out west. But unfortunately, the industry is based here simply because our clients are based here. This is where we do our business.

In those industries where decentralisation of offices has been possible, an external recruiter claimed that positions at suburban hubs were popular.

> We're getting a lot more people who are wanting to boycott the city because of the build-up. A lot of people want to work in these regional business centres like Norwest Boulevard, Macquarie Park, Rhodes Business Park, Homebush, Parramatta … Because of these regional satellite centres that have been developing around Sydney, Sydney CBD's not the same drawcard as it has been in the past as Sydney grows and changes and a lot more immigrants arrive in Sydney.

Another external recruitment consultant also suggested that long commutes could be an impediment to candidates taking a job.

> There's probably a pattern in the sense of, anything that's a travel time of less than an hour will get yeses, and if it's more … the rates of people saying no is probably a lot higher.

Balancing out these concerns, however, was the fact that most interviewees had plenty of applicants when they advertised new positions. For those who used online job boards (e.g. Seek.com.au), the number received was often in the hundreds, especially for less skilled roles. The percentage of these applicants with appropriate experience was usually low—most interviewees quoted figures around the 5 per cent mark—but this was nonetheless a sufficient pool to fill the role successfully. As one hotel HR manager explained, with regards to hiring housekeeping and food and beverage staff:

> If I put an ad up—we usually advertise through Seek—it's not uncommon for me to get 300 plus applicants for one role. Now, if you remove the quality from that, you're probably looking at about 15. Then you'd be—you'd cull further—you know, due to availability and stuff like that. But generally it's not too hard to find what you're looking for.

Thus while there were numerous examples offered of recruitment being affected by housing affordability issues, overall the interviews suggested that the impact on most CC industries has not been significant, at least for the time being.

5.4.2 Reliability

Looking beyond recruitment issues, some hospitality interviewees noted that they had encountered occasional problems with staff reliability and flexibility, and that these were the result of employees' living arrangements. In particular, a number of interviewees explained that non-standard work hours could exacerbate employees' commuting challenges, and that it was sometimes necessary to adjust work patterns to accommodate this. Again, however, not all viewed it as a significant problem. As one hotel HR representative explained, '[i]t's only those that tend to have to catch that horrible Nightrider and that stuff—that's the only problem but that would be very, very rare where we have problems.' Similarly, another hospitality HR representative noted that while late night transport was sometimes problematic, it could be managed with some flexibility from the business.

> We just make sure that we work a roster that works for the business, but then allows them to be out in time to catch that bus or train, whatever it is.

While this need for flexibility may potentially cost the business, reliability generally seemed to be less of a concern than recruitment, even for those interviewees who were particularly worried about housing affordability issues.

> The majority that are committed will do their best to get to work on time … I wouldn't say that that's gotten worse, not really. It's just a long commute for them.

For other interviewees across different industries, however, there were reliability issues not just with late-night services but with all public transport, given the lack of alternatives for lower wage staff.

- If there's train delays or bus breakdowns, or even ferries not running … we feel the impact of that, because our staff are, you know, our lower income earners won't drive into the city because there's nowhere to park and it's too costly.
- We have had reliability issues when we've had employees that have lived on the Central Coast or down in Wollongong, the travel is just too much … The thing is they need to catch the 5.15 train otherwise they have to wait another half an hour.
- A lot of chefs I've exit interviewed have said the travel has been … an issue. Or if they're moving onto something else a lot of people have said they're really excited about it because … it's like 20 minutes from home versus an hour travel in.

This comment also points to staff retention as a third way in which housing affordability might affect productivity for CC businesses.

5.4.3 Retention

Hospitality industry interviewees were again the most concerned about retention being a challenge, because 'it's quite an incentive if jobs come up in a place closer to where they [live]—they want to work where they live … That happens regularly.' The travel

industry HR manager also noted retention challenges, claiming that 'if an opportunity happens out west then, yes, people will raise their hand for it.'

This issue was also mentioned by a few interviewees from the legal industry. In one case—a legal services firm—two younger staff had recently left to take suburban positions, a decision which had come as a surprise to their manager.

> A couple of people recently have said 'Oh, I've got this job closer to home' and I sort of look at them and think 'but you're only 19, what does it matter?'

One external recruiter also claimed he saw some indication of a generational shift occurring, noting that 'young people are thinking differently too about wanting something closer to home. We get a lot of young people wanting that.'

In another case, the HR manager identified two staff who had recently taken positions closer to home—North Shore and Wollongong—although in the former case this move also involved a step up the career ladder. The possibility of staff leaving for a suburban practice was recognised as an ongoing concern, however, as the firm's particular area of law is one with good opportunities in suburban areas.

> All of our staff could easily go and get a job at a suburban practice. It's my job in order to keep them … we make sure that they feel valued and want to come into work as opposed to having to come into work. But they could easily pick up something somewhere else.

For many professional services firms, however, this risk was less of a concern, as these industries largely remain clustered in the CC, and only certain units within the business have been decentralised. In line with the findings in Chapter 3 about the centralisation of finance/insurance firms, an industry representative explained that:

> I can certainly think of some examples where banks have moved say IT staff to other locations … But in terms of headquarters it really is [in the CC].

Under this model, any staff with client-facing roles in this industry will have to commute to the CC, regardless of which firm employs them. As such, it was again those industries with greater competition in suburban areas—particularly hospitality—where concerns about retention were most clearly articulated.

Overall, then, while the level of concern varied greatly among interviewees, the interviews did identify all three of the predicted productivity effects—recruitment, reliability and retention—as having affected some businesses in the CC to some degree. Despite these impacts, however, it was only a handful of interviewees who saw them as a particularly serious problem for their business.

This prompts the question: why is it that most employers were generally not too concerned with this issue? The clearest explanation emerging from the interview data is that it is staff, not employers, who are bearing the burden of Sydney's housing affordability issues at present. The evidence and reasons for this are the focus of the next section.

5.5 Most employers recognised housing issues exist, but indicated the direct costs are mainly borne by employees

While interviewees diverged on the degree to which they were concerned about the productivity effects of housing issues, none suggested that housing affordability in Sydney wasn't a problem. In fact, many of those who didn't identify any business impact were nonetheless conscious of how the cost of housing affected their staff. Interviewees observed that many younger staff still lived at home with their parents,

that employees in rental accommodation were often sharing, and that staff would move further away once they started a family. For example:

- I mean, it's just the cold, hard facts that these kids can't afford to move out of home … These 'children' are in their twenties and still at home.
- I have one staff member … Really wanted to get a career in the city … she ended up moving to Ultimo to be closer to work, but it meant she had to share a room. That was the only way that she could afford to be close to work.
- A lot of people are sharing in houses just because of the affordability issue in terms of renting and the lower salary brackets … sharing accommodation in units is part and parcel of today's society.
- We used to have one of our finance girls … What she would do is she would live with mum and dad up at the Central Coast … and stay with her grandmother in order to commute to the city.
- There'll be them and their boyfriend or them and their girlfriend sharing one room, and another … a two-bedroom apartment will have four people living in it. They've learned how to do that.

There were also other stories of housing issues having negative career impacts on individuals. An HR manager at a celebrated restaurant cited examples of experienced staff leaving to take positions in less prestigious venues closer to home, while a hotel HR manager described a young employee forced to leave due to an unmanageable commute. Another hotel general manager told a similar story, of an employee unable to accept a full-time role because the longer hours would make his commute difficult.

> A young guy—who we wanted to make full-time, but where he lives, he's so far from the train station and getting from his home which is in a pretty tough area … he couldn't work the eight-hour shift, and finish at four or five o'clock here. Because he would be getting home too late, and he wouldn't feel comfortable … it's not safe to take that role on.

The business impact of any such turnover is anticipated to be more significant for highly skilled roles, which would normally require more intensive recruiting and retraining efforts than lower-skilled positions. Nonetheless, there are business costs in either case, which would be reduced if such commutes were minimised. The same hotel general manager also identified other cases of business and personal costs combining in this way, with employees buying properties moving further out and changing their shifts as a result.

> The majority [of our staff] would be renting, some would be at home, and but very, very few own their own houses. As I said, the ones that have recently gone down that route have had to rearrange their rosters, because they've had to move so far out. They're [much] further out than they were when they were renting, to get an affordable property. But that's the sacrifice they make.

There are also significant personal costs to these kinds of commutes, as one restaurant HR manager explained.

> It affects the kitchen probably the most because they will work long hours. They'll do a 12-hour day and then if you had to get on a train, an hour each way … There [are] legal requirements of having gaps between shifts, but even that itself, you don't have much time other [than] to get home, go to bed, get up again and go straight back to work … it can really have a huge impact on your quality of life.

Despite such personal sacrifices, however, employers' responses generally indicated that working in the CC is sufficiently beneficial—or the alternatives are sufficiently poor—that workers will accept these less-than-ideal living arrangements. Thus while many employers are sympathetic to these challenges, the financial impact of such commutes had not prompted major changes to business practices, for the most part.

Instead the interviews pointed to a shift in perception, with such living arrangements increasingly viewed as 'part and parcel of today's society'. A hospitality industry representative suggested that this view is prevalent, even in those industries that are more concerned about housing affordability from an economic perspective.

> There's no affordable housing located around the CBD so you find a lot of low-income positions that obviously service our sector living further and further out of Sydney, which again I think is a norm so no one necessarily really expects anything different.

And as it is not just LI workers making trade-offs, such expectations are shifting across the board, according to a legal HR representative.

> I think it really is about accessibility to good jobs and people will do things, in terms of where they live, to have access to a good job. I know of many lawyers here who live in very unrenovated houses and have young families, and would love to be able to do something but can't afford it. I mean, we could talk for much longer about this stuff, I'm sure. But people are making compromises to work in the city.

This observation aligns with the findings in Chapter 4, showing that the spatial mismatch arising as a result of housing unaffordability is affecting not just those in the lowest income brackets, but also many MI earners. If this is the case, it begs the question—what is it about the job opportunities in the CC that make workers willing to accept such compromises? While this is another complex issue, interviewees did identify some key features of the CC which may factor into this decision-making process.

5.6 The central city has other benefits that attract workers despite the high cost of living nearby

When asked what other factors might prompt an employee to take a job in the CC, interviewees identified three main drivers: better pay, better lifestyle, and ease of access. These will be examined in turn.

5.6.1 Salaries and opportunities are better in the CC

Reflecting the differences in LI salaries identified in Chapter 3 between the CC and the broader metro area, a few interviewees identified a noticeable difference between CC salaries and those paid by suburban businesses. This was particularly the case in professional services sectors, where the CC is generally home to the larger, more prestigious firms. For example, a law firm's HR representative explained:

> I know that lawyers even on the North Shore will charge, for example, $350 an hour. Okay? In the city: $500. So that's got to be indicative of salaries for others. We're only talking … the North Shore versus the CBD.

This interviewee went on to note that the difference between fees charged by CC and suburban firms is even more significant, thus suggesting an equally large difference in salaries. Similarly, the general manager of a legal services firm assumed a significant gap between CC and suburban salaries was a given, commenting that 'I suppose I've

always thought that the wages weren't high enough in the suburbs to want to work there, so I've never really looked at it.'

A finance/insurance industry representative also noted that firms in their largely CC-based industry generally paid higher wages, although it was unclear whether this had anything to do with housing affordability. Meanwhile, even if the salaries offered to entry-level staff are not significantly higher, the greater size, prestige and networks of CC-based firms can mean more opportunities for career advancement over time. As an external recruiter pointed out:

> When you get those types of entry-level positions you do find people like the city, they like the social aspect, they want to work for a big company. Especially if university is not for you … most people want to get into a company where they can grow and that's where they'll start their career, rather than on the education side, so they like coming into the city a lot.

Another recruiter suggested a CC-based job might be seen as a positive on a CV simply by association, as 'it's got that prestige of all the big organisations'. Prestige was also a factor in attracting hospitality employees to the city, according to the owner of a well-known restaurant.

> Most of the apprentices live out in [Western Sydney] … they're the ones that are interested in it … It's a big thing for them. They're working in these amazing restaurants with people that are in the paper and they're in magazines. So they're really interested in it.

By contrast, the hospitality industry representative felt it was primarily networking opportunities that made the CC appealing.

> I don't think prestige or lifestyle has anything to do with it but I think probably in terms of if they did want to switch or move to another company it is easier just simply by the concentration of establishments that will be in the CBD areas to then move … you'll generally find staff within one property will know the staff in another one just because the sector is so interconnected, so that it's easier in terms of if they do want a transition to another company.

Other interviewees indicated that because the CC attracts the best candidates, it enhances the work environment for everyone. As a recruiter explained:

> If you talk to the [recruitment] consultants in Parramatta, they will tell you that the candidates in the CBD are better. But I reckon that's probably just the fact that we have more roles that we advertise and the workforce is in the city I guess, so more people want to work in the city.

Similarly, a hotel HR manager noted that:

> I think also if I were to work as a HR manager in a regional hotel, because you've got a smaller supply or volume of people applying for the jobs and you've got less talent available to you, so you probably don't get to work with … as great a calibre of staff.

The result is a virtuous circle, in which the presence of good employees attracts more good employees, thus further reinforcing the appeal of the CC job market.

Yet while employment considerations like this were important, a number of employers also thought lifestyle factors were a key part of what drew employees to the CC.

5.6.2 The CC has amenities and 'buzz'

Also helping to counteract the negative effect of increasingly long commutes is the lifestyle appeal of the CC as a work location. As one interviewee noted, 'there's a magnetic attraction to the big city which perhaps also plays a part'; while another explained that 'this is where the buzz is'. Interviewees identified a range of different reasons for this.

- *Retail*—They like the shops. They love the accessibility to different shops. They talk about it … All the solicitors, all the secretaries know where the shops are, what sales are on. They all talk. They love it. All of them love it.
- *Services*—Someone just has gone to a dermatologist 10 minutes away, someone's going to go shopping at lunchtime; there's lots of other things the city has to offer.
- *Dining*—You can have a different national cuisine every day here for probably a year. There's so many eating places, which is a factor of enjoying your work.
- *Landmarks*—If you want to go for a walk at lunchtime, you go and walk around the Opera House. That's pretty nice, isn't it?
- *Entertainment*—They want to come into a job where it's a bit fun … we have BBQs on the balcony [overlooking the harbour] … the guys just absolutely love it, because for them it's something cool and they get to take their clients out to the bars downstairs and things. So that almost balances up with what you're getting.

While these may seem like secondary considerations when making job choices, some interviewees suggested the 'buzz' was a meaningful factor.

- Everyone wants to work in the city … it's just a better environment than … out in Parramatta which is an office on a random street in the middle of nowhere.
- When we do bring [in new lawyers] I think they've got their heart set on working in the city. Then when you say 'look the position might be in Parramatta' it's … no.
- I'd feel like I was missing out if I wasn't working in the city. That's not just from a work perspective, that's an after-work perspective. So that's the after-work drinks and lifestyle and clothes and shopping.

Likewise, an office manager for a professional services firm who commuted in from Sutherland Shire concluded that 'if this firm opened a little satellite office down in the Shire, I don't think I'd be saying I'll go and run it. I like working in town.'

Admittedly, these comments come from interviewees earning well above the LI wage bracket of interest in this research, and therefore likely to have more disposable income to enjoy the CC's lifestyle amenities. But while 'glamour' factors do add to the CC's appeal, pragmatic considerations remain a priority for most people, according to an HR manager in the tech industry.

> The CBD roles are definitely easier to recruit for and they are more attractive to people because we're in a really central location, we're in a nice location … So people prefer to work out of [the CBD] office; I know that when recruiting obviously. But in general it really is [the] commute from home, that's what I find is the biggest factor when people are deciding on roles and location and that sort of thing.

This view, reinforced by other interviewees, suggests that the CC's biggest advantage is its superior transport accessibility as the centre of the city's hub-and-spoke transit network.

5.6.3 Even with growing commutes, the CC remains accessible

As the terminus for most of Sydney's public transport routes, the CC is both accessible from more places and more easily accessible from many places. This was demonstrated in Chapter 3, and was reinforced by a number of the interviewees.

> … it's easy, pure and simple … There are buses from anywhere across the city region, there are trains, there are ferries, whatever it is … the public transport system is good enough to make the travel time to the city accessible and candidates love it, they really do.

The CC also has the best available late-night transport options, making it an advantageous location for hospitality businesses.

> For people that are finishing at four in the morning for example, you want to know they're going to be able to get home safely, it's really important. So I guess that's what's so attractive about the city and what makes it easier for the city.

In addition, a couple of interviewees told us that their business would pay for staff parking on the weekends, as a way of counteracting the challenges of more limited public transport. For this reason, the CC remains accessible even outside of normal business hours.

Meanwhile, the more limited accessibility of other locations had created some recruiting challenges. One hospitality HR representative mentioned that recruiting for their Eastern Suburbs venue was always more difficult, while another mentioned issues finding staff for their suburban beachside venues. The same distinction was also noticeable in the technology industry, according to an HR representative whose company also has offices in north-west Sydney.

> So [north-west Sydney] tends to be quite hard to recruit for … If I'm recruiting for a role out at [north-west Sydney] I'm like 'right, go and actually do the commute. And look at how you can do it in peak hour. Let me know if it's something that you actually want to do every day'. Because we've found [historically] … people who don't live in the area don't tend to stay very long. That's disruption to the business, disruption to the team. It means we're recruiting for the same role again. So we like to be pretty clear on where the role is and making sure the person's absolutely committed to making that commute.

In this case, the CC's superior accessibility means it remains the preferable work location for all but the most local of candidates. This raises the question of whether new housing or improved transport would ultimately be a better solution to those issues which do exist in finding staff for CC positions. The final section of this chapter will examine interviewees' responses to this question, along with identifying some additional factors that influence the relationship between productivity and housing affordability in Sydney.

5.7 Other issues shaping the complex relationship between housing affordability and central city productivity

As the interviews have demonstrated, CC employers express wide-ranging views on whether housing affordability is a productivity issue, and if so, how best to understand its drivers and potential solutions. These responses highlight the challenge of trying to clearly define the economic impact of the housing affordability issue, which affects different industries in very different ways and is enmeshed with many other factors shaping the CC labour market.

What is clear, however, is that some CC employers do find it difficult on occasion to find the staff they want—most notably in the service industries, but also in some other niche areas. As an HR representative in the not-for-profit sector explained:

> I think recruitment isn't what it used to be. It's difficult. I struggle to marry up the fact that I know that there are a lot of people out there looking for work with the fact that recruitment is difficult. It's really difficult finding the right person for the right role. There's just so many reasons for that.

For some of the employers we spoke to, a common solution to these recruitment problems was to employ staff on working holiday and student visas. While this approach has some benefits, it may also have some negative effects on both productivity and housing affordability.

5.7.1 What is the productivity impact of a short-term/foreign workforce?

Employers in the hospitality sector most frequently mentioned hiring employees on working-holiday and student visas, although recruiters noted that these groups regularly apply for administrative roles as well. The volume of these employees in some industries could be quite significant. For example, the HR manager of a hospitality business with over 2000 employees explained that 'literally a third of our business is on some form of visa', while a recruiter explained that 'within the admin space 50 per cent of applicants are working holiday visas'.

The availability of these staff seemed to be viewed as a mixed blessing. On one hand, these employees were generally highly valued, particularly in hospitality, where their skills and training were often considered superior to those of local candidates.

> Yes, we definitely have a lot of working holiday visas working at the group … we prefer to have a bit of a variety … So yes, they're only with us for a short amount of time, but the knowledge transfer and the experience that they have sometimes is just priceless.

Furthermore, a recruiter suggested that working holidaymakers were often taking positions for which the business lacked suitable local applicants.

> There are so many applicants out here on working holiday visas. They bring some really great skill sets in, they really do. To be completely honest, if we didn't have that demographic we probably wouldn't be able to fill half of the roles that we get on, because their flexibility in terms of—they're travelling, they're not there to improve their career, they'll do anything really, data entry, contact centre, anything like that. Although we would never get a client saying we want somebody with a working holiday visa and we would never advertise only for working holiday visas, often their flexibility could mean that they might end up pushing other people out of the market.

In this context, the flexibility and limited career ambitions of this workforce made them valuable to the market. On the other hand, however, the restrictions on working more than 6 months at one venue did create frustrations for many employers. A hospitality HR manager captured this tension clearly.

> So that's what we tend to attract at our restaurant [in the Eastern Suburbs], is working holiday chefs … [which is 100% not our preference]. No. No. We definitely look for long-term career professionals. It does work to a certain degree for particular roles … So in winter we need to cut down our team 50 per cent so that's when the working holiday guys tend to leave, which is great. Then we bulk up again heading into warmer weather. But the core team itself we obviously want long term.

For others in the hospitality industry, the restriction on keeping overseas staff for longer periods was viewed as putting a strain on their business. One hospitality HR manager explained that ‘if we have someone fantastic that we've spent six months with, it's heartbreaking to see them go’, while another broke down the costs:

> We have 80 staff here. In the last two years from April to March, April to March '12–'13 and '13–'14, both years we turned over 111 staff members. That's 140 per cent of the staff; for every one position it changes 1.4 times. About 70 per cent of them are on foreign visas that weren't allowed to stay; they're only allowed six months with you … So where we don't have a supply of [Australian] staff it's filled by people that can only work with you for six months, which is just a huge training cost. On my estimation it's $250 000 to $300 000 in retraining and advertising costs to foot the bill for those 111 people … So that is [a] massive cost. Apart from that, it's just stressful. You're constantly retraining people, you have people that don't want to go; some of them are in tears when they've got to leave. Some of them write me poetry because they're so grateful for the opportunity we've given them.

In addition to these employment challenges, an external recruiter pointed to a specific housing pattern associated with these workers. As the name suggests, many working holidaymakers are primarily seeking a lifestyle experience, meaning that their housing choices are often quite targeted.

> Those working holiday visas are [living] in the city. So if they are not in the city, then they are in Surry Hills, if they are not in Surry Hills then they are in Randwick or Bondi or Coogee. You don't hear of working holiday visas living out west, honestly for me that's probably unheard of.

A hotel general manager made a similar point about international students usually being close to the CC, noting that their proximity made them appealing employees.

> Student visas—yes [we employ them] … we like the fact that they're closer in the CBD. Because, especially for housekeeping and reception, it's a lot easier to get someone in from Ultimo, or Pyrmont, or even Randwick than it is from Campbelltown, if someone gets sick at the last minute.

As Hugo (2005, p.36) has argued, the impact of such temporary residents has been under-examined in housing research, and is particularly relevant to Sydney.

> A fundamental research question in Australian housing which has simply not been addressed is: What is the effect of the massive shift in Australia's international migration paradigm on the housing market. This is especially the case in Sydney which takes a disproportionate share of temporary residents coming to Australia. Last year more than a quarter of a million people obtained temporary residence in Australia. Probably more than half settled in the Sydney region. Yet this factor does not seem to be factored into discussion about Sydney's housing problem. (p.36)

These figures have increased since 2005; in 2011 there were approximately 100 000 working holidaymakers in Australia, almost double the number of a decade before (Connolly, Davis et al. 2011). The number of students on visas, who can work up to 20 hours a week (and more in between semesters), had more than tripled to close to 400 000 (Connolly, Davis et al. 2011). As such, there is now an even greater need to better understand the impact of these temporary residents, both on housing affordability and on the labour market.

5.7.2 What are the secondary effects of long commutes and housing shortages?

Looking beyond the immediate costs of turnover, it is interesting to contemplate whether the shift towards shared living and long commutes might also have negative secondary effects on urban productivity levels. Unfortunately, such indirect impacts are even more difficult to quantify. The community association representative argued that these effects are significant, and must be having consequential negative economic impacts in the longer term.

> So I work a lot with the Pacific community, the Samoan, Tongan, Fijian and there you will see that the children make sacrifices of income because family life is more important … [Others] often talked about how they cannot give extra support to their children with regards to homework … So I imagine there is an economic effect to that.

Some research does suggest that long commutes can have a detrimental impact on productivity. Sweet (2011, p.398) surveyed the field on 'second order' impacts of traffic congestion and concluded that:

> [The] research suggests that traffic congestion slows growth, it changes urban economic geographies, and it influences productivity. However, because it is endogenous to the economy, estimating its economic impact may be a matter of identifying congestion thresholds beyond which additional growth and productivity are inhibited.

In addition, a 2011 study found that a negligible commute would reduce absenteeism by 15–20 per cent, and that this finding is 'consistent with extended urban efficiency wage models' (van Ommeren & Gutiérrez-i-Puigarnau 2011).

Other researchers have raised concerns about the existence of a 'spatial leash' (Williams, Pocock et al. 2009) which restricts urban parents, particularly women, to jobs that are only a short commute from home. As Kelly (2015, p.59) notes, this constraint can force parents to accept lower-paid positions that do not take advantage of their full skill set. In doing so the spatial leash has a negative impact on individual careers, as well as the potential to enhance economic inequality across metro areas. Furthermore, if this geographical constraint results in the best quality candidates being unavailable to fill the most highly skilled roles, this spatial mismatch can also have negative productivity effects on the economy (as explored in Chapter 2). In this case, only one interviewee offered an example of businesses being forced to hire underqualified employees (the chefs mentioned in Section 5.4.1). Yet the comments in Section 5.5 about employees with children shifting further out also point to the possibility that this trend is having a negative impact on the Sydney CC labour market.

5.7.3 How does Sydney compare with other places?

While this chapter has focused on the Sydney CC, it is clear from previous chapters that Sydney is hardly alone in grappling with the challenge of housing affordability. A number of the interviewees either had experience working in other markets or worked for businesses which recruit or operate in other locations, allowing them to offer a personal perspective on how Sydney's situation compares. Again, interviewees in the hospitality industry were concerned that Sydney's lack of affordability could be a deterrent for candidates, both from overseas and interstate.

> … the cost of living in Sydney can actually be a deterrent for internationals—especially kitchen or the chefs, they would want to live and work somewhere that was a little bit more cost effective. So that can be difficult to attract them here.

> So when we're recruiting nationally—which we do a lot of … what comes up a lot is the cost factor. So when we talk about a salary with somebody, for them it's apples and oranges. Because when you compare what they're earning in another state, but they're moving here and they're going to be obviously paying rent in this city, they're always very aware of that difference … So it's definitely a conversation that happens, yeah.

On the flipside, a number of interviewees felt that the lifestyle appeal of Australia remained a strong incentive for overseas workers, despite the cost of living, as 'they're coming for a certain dream and that is the beaches and the weather'—factors that may also draw people to Sydney more than some other major cities. Sydney's public transport was viewed favourably by some overseas recruits as well.

> We actually get a lot of working holiday people … they come from London, Scotland, Ireland and they rave about the public transport and their work here, saying it's fantastic. So I mean if they're saying it [it] must be better than we think.

The appeal of Sydney for these workers is also supported by Hugo's (2005) observation about the high percentage of working holidaymakers choosing Sydney.

Beyond the potential impact on recruitment, some interviewees suggested that Sydney's housing and labour issues were an incentive either to relocate or to launch new businesses elsewhere. As one external recruiter explained:

> We've had businesses that we've been dealing with here that have moved operations from Sydney because of the expense and moved to Adelaide or opened up other offices.

A restaurant owner told a similar story when asked whether the situation would make him more likely to open new restaurants outside of Sydney's CC.

> I'll be honest with you, I'm more interested and excited about going offshore … the margins they run the businesses on are radically bigger than the average Australian. In terms of a commercial perspective, if you understand the market and you get it right, London is much more attractive than Sydney.

While the decision to relocate is probably not driven by affordability issues alone, the suggestion that housing shortages and long commutes figured in these kinds of decisions highlights how these concerns can shape perceptions of the city.

Such competition seems less significant within the Sydney metro area, however, particularly for high-end businesses. For example, a number of HR representatives of renowned restaurants explained that the CC remained the prime location for business, and there was not yet any real pressure to expand to places like Parramatta.

> I think [the draw of Parramatta] definitely would apply for a [chain restaurant]. So when you replicate a product you 100 per cent would want to have [one] in Chatswood, in Parramatta, on George Street. Our brands are very non-replicated in the sense that every time we do something it's to do something new and different. So therefore it would have to be in the CBD—it's a first of a first.

Another HR representative in a well-known business was even less worried.

> It's not even on our radar as a concern at this stage. Yeah, I would be really comfortable in saying that that stigma is still there and it's still probably going to be there for a while.

A hotel HR representative offered support for the idea that some corporate businesses were making this shift, and taking their accommodation needs with them.

> I think Parramatta is definitely becoming a big hub for accommodation, particularly I think a lot of our corporate accounts we see transferring their business out to Parramatta, again because I think it's too expensive for them to rent in the city.

If this is happening, it seems the appeal of Parramatta for other industries like high-end hospitality will continue to grow, meaning the business advantages of being located in the Sydney CC might diminish over time. For another hotel general manager, however, the shift west seemed unlikely to significantly affect the availability of staff in the CC for some time yet.

> If the Parramatta [offerings] … continue to expand, obviously more people will find work closer to home, so yeah, it could create some impact. But again, the bulk of the [current hotel industry] expansion is happening within proximity of the CBD … [it] would take a much bigger shift, and I don't see it being the key factor in the next five to 10 years.

5.7.4 For those concerned, what's seen as the best solution?

Not surprisingly, it was interviewees in the hospitality sector that seemed to have given this question the most thought. Some felt that either housing or transport improvements would help, as the industry representative explained.

> I think the two go hand-in-hand, if that makes sense. I think people don't mind living further out if the train lines and transport is consistent and available and … employers don't mind it either. But if the transport links aren't there, well then obviously there is a need to have more affordable housing closer to the city so that that transfer of workers to and from is a lot easier.

A couple of other interviewees suggested a preference for one approach over the other. One hospitality business owner was particularly supportive of a housing-focused solution.

> I don't like this word 'subsidised', right, but if there was subsidised housing for young trainees it would be something that I think would be … front and centre, would have a definite impact on people's willingness to work in the CBD, where we've got a massive shortage of this staff … Either a subsidy or allocated high-density public housing, definitely.

On the other hand, another hospitality HR manager pointed out that only providing new housing close to the city wouldn't solve the problem.

> If they were to build more houses in the city, they'd be apartments. You wouldn't be able to have—not to stereotype, but a lot of the families that live further out are usually not of Australian descent. So, they perhaps have their grandparents living with them, or have their families from other parts of the world coming to stay with them. So they need to have more space. So generally, it can be a lifestyle choice for them to stay out further, to have a bigger—more space for them. So I would say, transport would be a better—would be more helpful for them.

A community organiser working with many different cultural groups in Western Sydney was less convinced that this would be an impediment to finding tenants for affordable, inner city housing. Instead, he saw commute lengths as ultimately being the decisive factor.

> When they think of the Australian dream I don't think that they necessarily think of a backyard with a clothesline—but I don't have any evidence to back that up … The top priority is time. That is the top priority. Across the board, it's time.

Furthermore, a hotel HR manager made the point that time is not the only issue with Sydney's current public transport system; an effective transport-based strategy would also need to address the fact that safety conditions are an impediment for staff.

> Because of the areas that they're coming from, they don't feel safe travelling on the trains at night. Now, I have no doubt that part of that is their own perception. But there is also that some of those western train lines can get a little bit dodgy during the dark hours. So it's really hard to get them to attend social activities and team building activities outside of work hours.

Another accommodation industry interviewee noted similar concerns among his staff, which are exacerbated by the fact that 'early mornings can be just as dodgy as late nights'.

Ultimately, however, it seems likely that employers in CC industries struggling to find and retain sufficient labour would welcome any approach that made their businesses more accessible or appealing to potential employees. As the community organiser put it, 'housing and transport are inextricably linked in Sydney', and as such, the best solutions are likely to address both issues simultaneously.

5.7.5 Limitations, issues for further research

While the number of interview participants was sufficient to identify noticeable patterns emerging with regard to key issues, this qualitative element of the research would have benefited from additional participation. This is particularly the case across a number of industries where it did not prove possible to secure many participants, including retail and financial services.

5.8 Chapter summary

As this chapter has outlined, interviews with HR professionals and industry representatives identified significant variations in the extent to which housing affordability is considered a productivity issue across different CC industries. Perhaps nothing better illustrates this than the comments made in two back-to-back interviews, when participants were asked if they had any final thoughts.

- It's a very interesting topic and I think it's something that's very close to a lot of people's minds and hearts.
- I wish I was able to give you a little bit more information on it, but it's not something that really raises its head.

The interviews conducted here support the conclusion that the Sydney CC continues to offer advantages that override the challenges of growing commutes for many employees. However, many of these advantages are not necessarily unique to the Sydney CC—including the availability of jobs, lifestyle appeal, transport accessibility, employer prestige and wage rates. The productivity benefits associated with such factors may well reduce over time as the development of alternative commercial centres around Sydney—most notably Parramatta—continues apace. It is therefore worth contemplating whether the existence of more affordable housing near the Sydney CC may help to slow this shift in a way that is beneficial to established businesses in the area.

6 MARKET RESPONSES AND HOUSING THE SYDNEY LICC WORKFORCE

6.1 Chapter overview

This chapter examines the extent to which recent expansion of inner-city higher density housing market is providing housing options for Sydney's LICC workforce. In order to ascertain the role of recent infill developments, we undertake an examination of the resident profile of these *new developments in the City of Sydney council area* in 2011, as a proxy for infill growth in general, and compare that with the resident profiles of the local government area (LGA) as a whole and the broader Sydney metro area.

The analysis is undertaken in two steps. The first step identifies areas with recent (2001–11) high-density development within the council area. Strata scheme registration data for the 10 years up until 2011 from the NSW Land and Property Information database is sourced to identify Census SA1 tracts[16] where new high-density housing has been built. To this end, only strata schemes where the property is identified as a *residential land use* are counted. Schemes with one to two apartments were excluded, as they are probably terraces or townhouses and do not necessarily constitute infill developments. Also, only SA1s with more than 50 strata properties in total were considered, to identify SA1s with a sufficiently large representation of apartments. We defined as newly developed apartment markets those SA1s with 50 per cent or more strata property registrations during 2001–11. Table 37 presents the configuration of strata-titled units within SA1s in the Sydney local government area (LGA), while Figure 58 maps the newly developed areas.

Table 37: The configuration of strata-titled units within SA1s in Sydney LGA, 2011

Type of SA1	SA1s	%
SA1s with more than 50 total strata title units, >50% new units*	89	22.0
SA1s with more than 50 total strata title units, <50% new units*	163	40.2
SA1s with less than 50 total strata title units	67	16.5
SA1s with land uses other than 'residential'	86	21.2
Total SA1s	*405*	*100.0*

Notes: *New strata units are those built from 2001–11. Land uses other than 'residential' may include strata-titled units; however, it is not possible to identify those with the limited information available.
Source: Derived from NSW Land and Property Information strata registration database.

In the second step, an analysis of the demand profile of newly developed higher density housing markets is undertaken. We profile the identified newly developed SA1 tracts and establish the extent to which LICC workers are expected to be accommodated in this new housing market. The analysis uses 2011 Census data, extracting only data pertaining to households living in apartments—the 2011 census counts of different dwelling structures show an overwhelming majority of dwellings (83%) in the identified newly developed areas are apartments (Table 38). Further analysis focuses only on resident profiles of those living in apartments/units.

[16] An SA1 has 230 households on average.

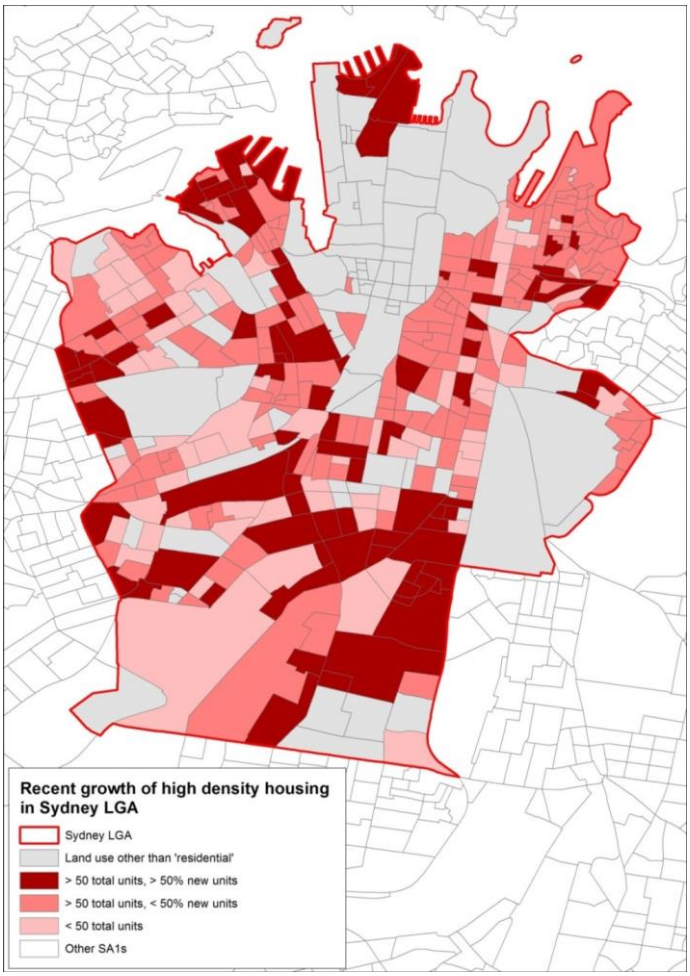
Table 38: Dwelling structure in the identified newly developed 89 SA1s, 2011

Dwelling structure	Dwellings	%
Separate house	379	2.0
Semi-detached/townhouse	2785	14.9
Apartment/flat	15476	82.7
Other	67	0.4
Total dwellings	*18707*	*100.0*

Source: 2011 Australian Census, calculated from TableBuilder data.

To understand the relative position of this new housing market, the profile of residents of these tracts in terms of income and housing market position is compared against those of the City of Sydney council area and the entire Sydney metro area in 2011. The detailed analysis also looks at income and housing characteristics of household cohorts living in different tenure types in the newly developed housing market. Household-level data required for these analyses were obtained via a customised report from ABS, to supplement material sourced from ABS TableBuilder person-level databases. The final section compares dwelling prices and entry rents in the new high-density market, Sydney LGA and metro area in 2006 and 2014, using data from the NSW Rental Bond Authority and NSW Valuer General's office.

Figure 58: New high density residential developments in Sydney LGA, 2001–11



Source: Based on NSW Land and Property Information data. Sydney LGA is based on ABS digital boundaries 2011.

As this chapter shows, four major trends emerged from this analysis, particularly when comparing the characteristics of new high-density developments with all residences in the Sydney LGA and the broader Sydney metro area. These trends are as follows.

1. It was clear that new developments provide limited affordable housing opportunities for lower wage city workers. Rather, they accommodate a high-income cohort of individuals and households who are paying higher weekly rentals and monthly mortgages.
2. Though the proportion of young families was higher in the new high-density market, some types of families (e.g. families with children) were under-represented. Also, the high churn rate in this market suggests it is not playing a role as a long-term accommodation provider for families.
3. The largest increase in real median apartment rent was reported for the newly developed market. Further, the largest increases in real median house rent and real median prices for both dwelling types were reported for Sydney LGA during 2006–14. These findings indicate that both these markets have observed the highest rents within the Sydney metro area. Also, the median apartment prices in the newly developed areas and Sydney LGA have moved further away from metro-wide medians during 2006–14.
4. Despite minor improvements in affordability of rental apartments in the newly developed areas and Sydney LGA between 2006 and 2014—suggesting that supply boom has eased unaffordability at least marginally—there is a sharp decline in the incidence of affordable sales in the newly developed market and Sydney LGA between 2006 and 2014. This may explain why LI workers are increasingly forced out of these CC housing markets.

These findings are explained and analysed in more detail below.

6.2 Demand profile of residents living in newly developed areas

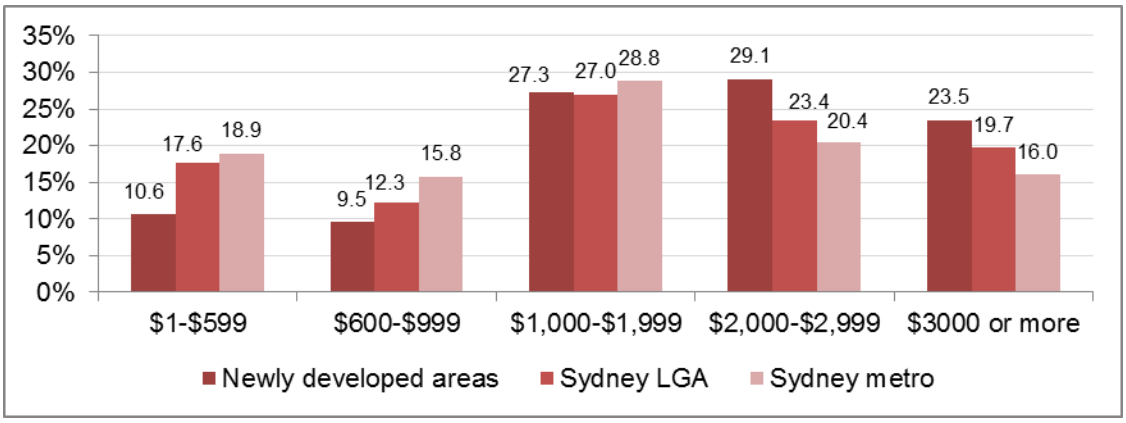
There are approximately 15 500 apartments in the SA1s that were identified as new high-density housing areas in Sydney LGA. This section looks at the detailed profile of households living in these newly developed areas, comparing this market with Sydney LGA as a whole and the Sydney metro area. A majority (52%) of the dwellings in the newly developed areas are privately rented, while a sizable number of them are owned with a mortgage (30%)—see Figure 61. Therefore, the analysis is extended to examine the socio-economic characteristics of households by tenure type and income group.

As the principal consideration of this report is housing options for the LI workers, this section starts by looking at household incomes, rental payments and mortgage payments. Subsequent subsections assess broader socio-economic characteristics.

6.2.1 Household income and tenure

As shown in Figure 59, households in newly developed areas are clearly skewed towards higher incomes. Some 53 per cent of households here have incomes over $2000 per week, compared to 36 per cent across the metro area as a whole. In contrast, while 35 per cent of metro-wide households have incomes below $1000 per week, this falls to 30 per cent of households in the Sydney LGA, and to only 20 per cent for households in new high-density developments.

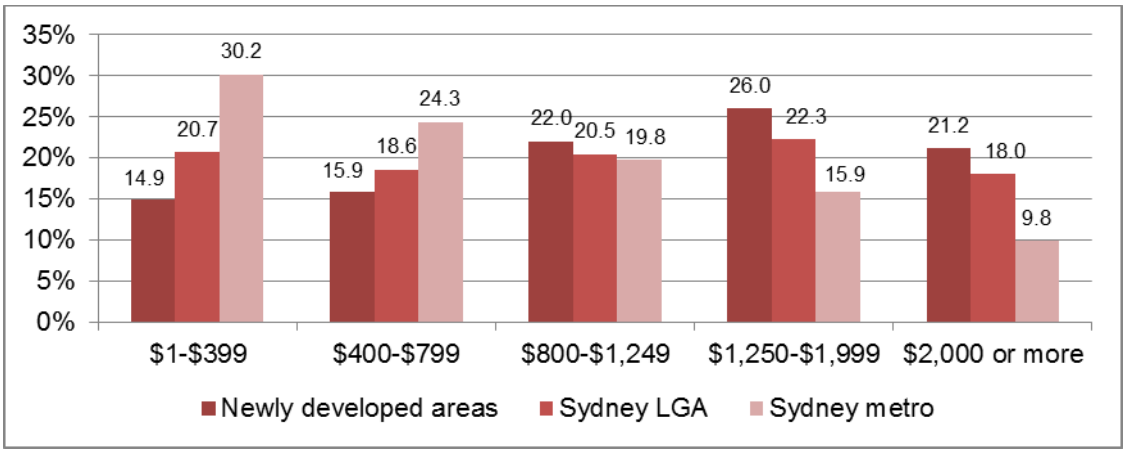
Figure 59: Household income splits of new developments, Sydney LGA and metro



Source: 2011 Australian Census, calculated from TableBuilder data.

The patterns of personal income are consistent with the household income trends. The proportion of residents with lower income (<$800) is 31 per cent (or 9100 individuals) in the newly developed areas, and this rate increases to 39 per cent (or 44 900 individuals) for Sydney LGA and to 55 per cent (or 1 545 000 individuals) for the Sydney metro area (Figure 60). Similar to household incomes, those with a higher personal income (>$1250) are plentiful in the newly developed areas (47%), compared to Sydney LGA (40%) and the metro area (26%). This data yet again indicates that the newly developed areas cater to a higher income cohort of residents in the city.

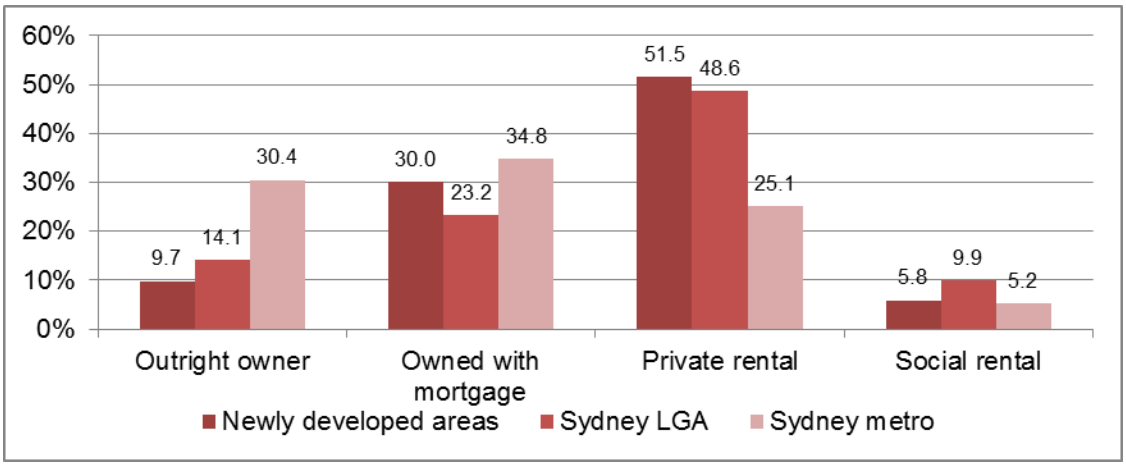
Figure 60: Personal income splits of new developments, Sydney LGA and metro



Source: 2011 Australian Census, calculated from TableBuilder data.

Part of the reason for the skew in new developments towards residents with higher incomes is the lower proportion of social housing in these areas, particularly when compared to the Sydney LGA, as shown in Figure 61. Figure 61 also shows that the overall over-representation of private renters in the LGA, when compared to the metro, is also seen in the new developments. More than half of all households are private renters in these new developments. In line with the above-noted finding that rental payments are often more than 30 per cent of household income (see Chapter 4), this suggests new developments will similarly have a high proportion of households living with some degree of housing stress.

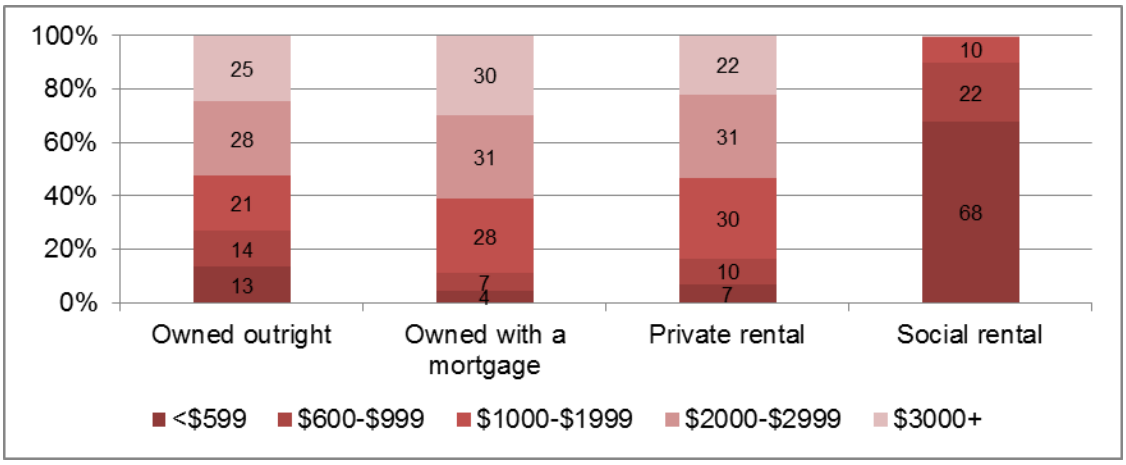
Figure 61: Tenure splits of new developments, Sydney LGA and metro



Source: 2011 Australian Census, calculated from TableBuilder data.

Among households living in the newly developed areas, about a third within the purchaser group earn more than $3000 a week, the largest tenure group in the highest income category (Figure 62). Overall, rates of mid-to-high income groups ($2000+) within outright owners, purchasers and private renters range from 53–61 per cent. This compares to 38–47 per cent in the Sydney metro area, excluding purchasers, a group that represents 70 per cent. Excepting the social rental sector, a high proportion (27%) of outright owners are at the lower end of the income scale (i.e. <$1000), compared to private renters (17%) and purchasers (11%). The corresponding figures in the Sydney metro area comprised 48 per cent of outright owners, 33 per cent of private renters and 15 per cent of purchasers. As expected, a large proportion of the social renters (68%) earn less than $600 a week. This clearly demonstrates, regardless of the tenure type, that new developments cater to a mid-to-high income cohort of households.

Figure 62: Household income splits in new developments by tenure



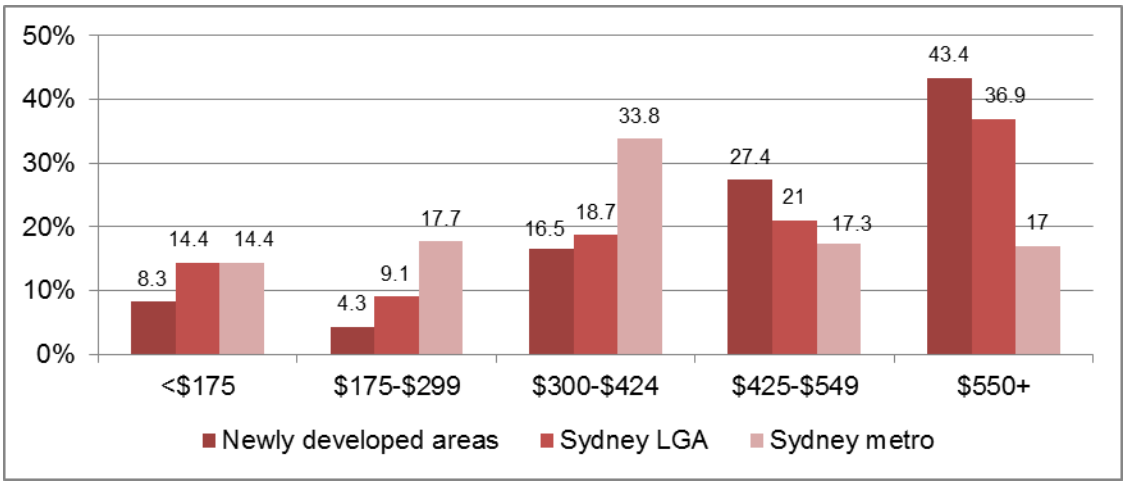
Source: 2011 Australian Census, calculated from TableBuilder data. NB. Data labels are not displayed for small percentages (<2%).

6.2.2 Weekly rental payments and monthly mortgage payments

The limited availability of social housing in the new developments is also evident in the weekly rent levels shown in Figure 63, with this market having around half the proportion of households paying less than $175 compared with the LGA and metro. This bracket is most likely to comprise subsidised rental options. Figure 63 also shows

that new developments are more expensive to rent than residences in Sydney LGA overall, and significantly more when compared with the metro figures—with 43 per cent paying over $550, a threshold that only 17 per cent of the metro-wide renting households reach. Clearly, the new high-density Sydney housing market is not targeted at a low-rental market.

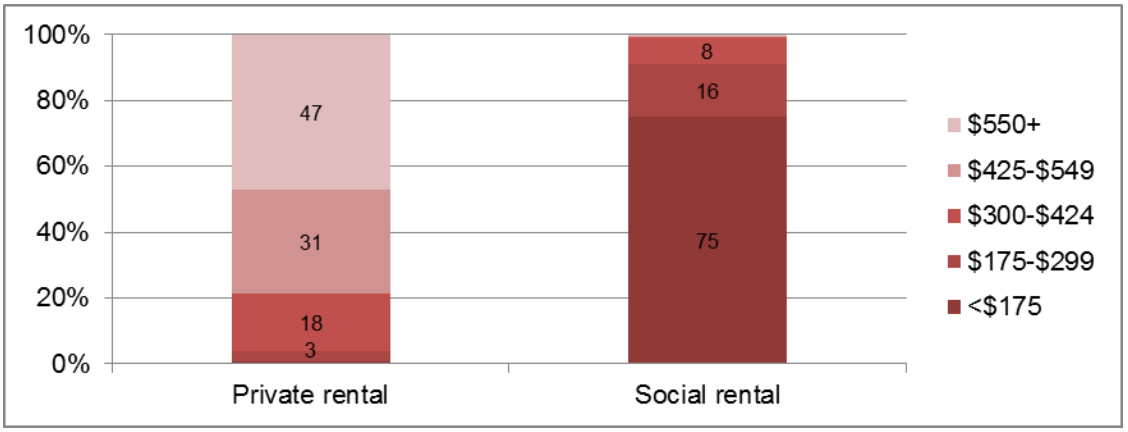
Figure 63: Rental payment splits of new developments, LGA and metro



Source: 2011 Australian Census, calculated from TableBuilder data.

Almost half of the households in the private rental market within new developments pay rents above $550 per week (Figure 64). The combined rate of households paying high rents (>$425) is 78 per cent. This confirms that new developments are predominantly a high-rental sector. There were only a small number of rental payments below $175 per week in the private rental sector. In considerable contrast, 75 per cent of social rentals were paying less than $175 per week, emphasising its role as the source of the most affordable housing in the city. However, this sector represents only 6 per cent of the total housing stock in the area (see Figure 61).

Figure 64: Rental payment splits in new developments by tenure

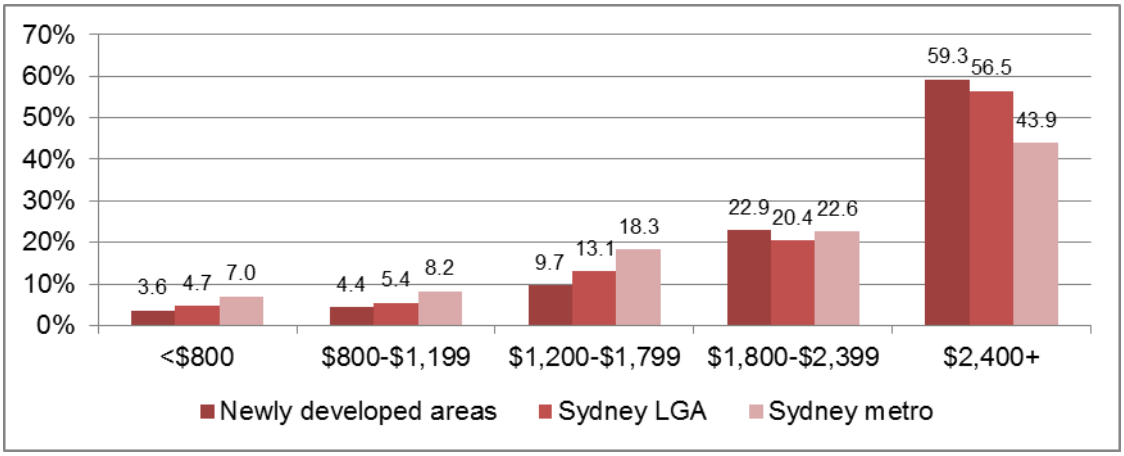


Source: 2011 Australian Census, calculated from TableBuilder data. NB: Data labels are not displayed for small percentages (<2%).

Monthly mortgage payments in new developments, Sydney LGA and the metro area display similar patterns to weekly rental payments in those areas (Figure 65). Although the dwellings in the newly developed areas are largely apartments, the proportion of households paying less than $800 in mortgage payments is lower in these areas compared to Sydney LGA and the metro area. Conversely, more than 82

per cent of households in new developments pay more than $1800 per month. This compares to 77 per cent in Sydney LGA and 67 per cent in the metro area. These trends substantiate the earlier suggestion that the new high-density housing market predominantly serves the upper end of the market. However, this skewing in data at least partly reflects the fact that new dwellings generally have higher mortgage payments compared to long-standing mortgages.

Figure 65: Mortgage payment splits of new developments, LGA and metro

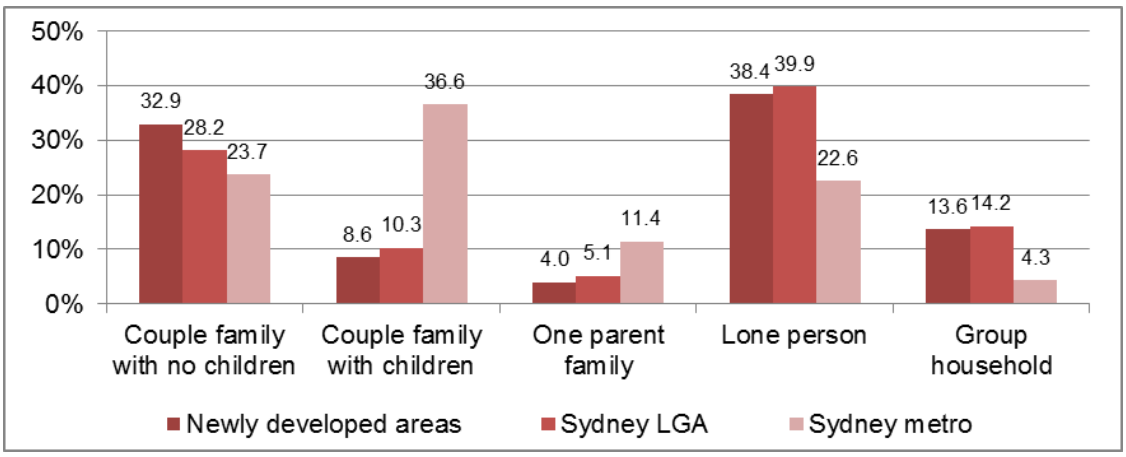


Source: 2011 Australian Census, calculated from TableBuilder data.

6.2.3 Household composition

Initial findings for households living in the newly developed areas show the exacerbation of a number of differences between the Sydney LGA and the metro as a whole. For example, Sydney LGA households are more likely to be couples without children than the metro as a whole, a feature even more pronounced in new high-density developments, as shown in Figure 66. It also shows that households with children, either with one or two parents, are much less likely to be in the new high-density developments and the Sydney LGA than across the metro. These patterns mean both lone-person and group households are over-represented within newly developed areas, as well as within Sydney LGA, compared to the metro area.

Figure 66: Household type splits of new developments, Sydney LGA and metro

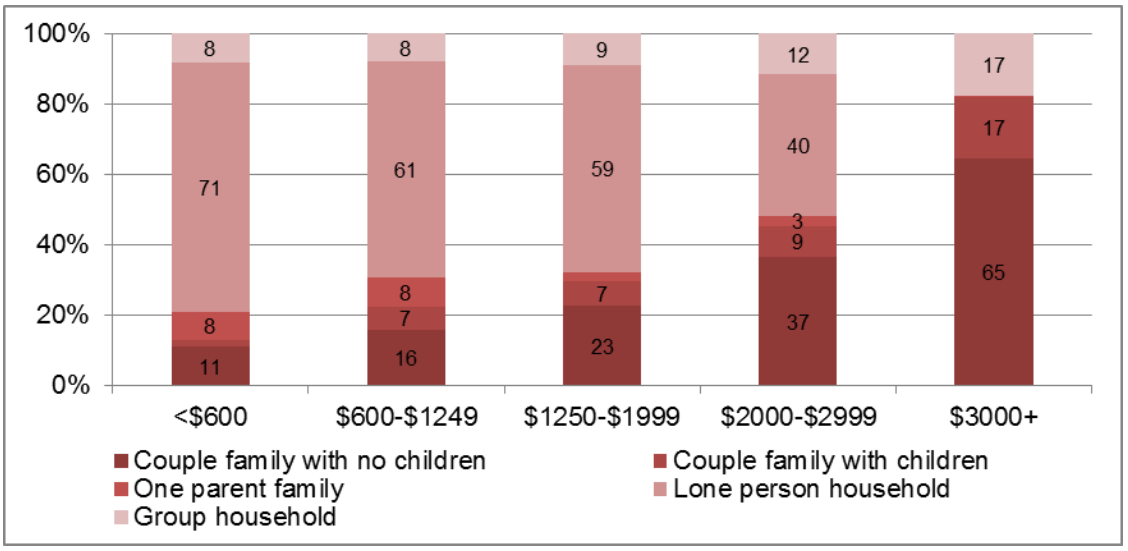


Source: 2011 Australian Census, calculated from TableBuilder data.

Household income within new developments varied significantly by household composition. Couples were most common in the higher income groups, and there were no single-person households earning over $3000 per week (Figure 67). At the

other end of the income scale, 71 per cent of households with income below $600 were single persons. Though couple families with children comprised 17 per cent within the highest income group ($3000+), households of this type with lower incomes are increasingly under-represented in new developments.

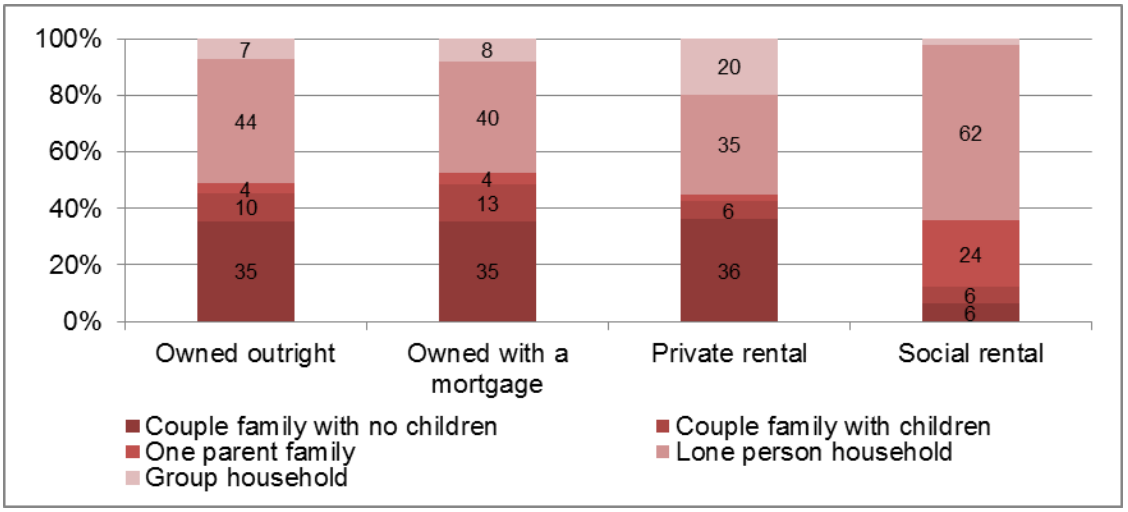
Figure 67: Household type splits in new developments by household income



Source: 2011 Australian Census, calculated from TableBuilder data. NB: Data labels are not displayed for small percentages (<3%).

In the private sector in new developments, lone persons and couples with no children were the dominant groups, accounting for 70–80 per cent of total households (Figure 68). The principal differences were the significant proportion of renters in group households (20%) and the under-representation of households with children (6%). Social housing tenants were predominantly single-person households (62%) with single parents comprising the second most numerous group (24%), clearly a very different profile.

Figure 68: Household type splits in the new developments by tenure

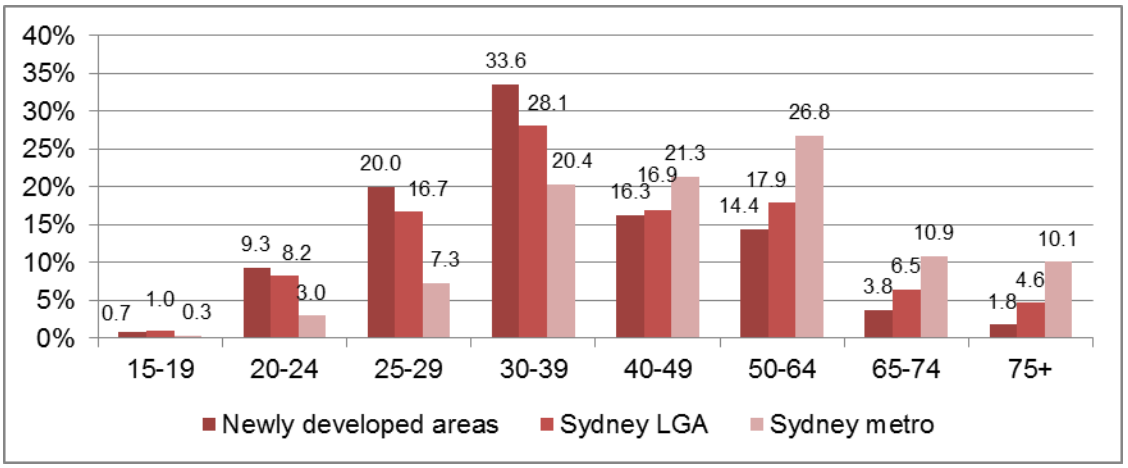


Source: 2011 Australian Census, calculated from TableBuilder data. NB: Data labels are not displayed for small percentages (<3%).

6.2.4 *Age of reference person*

The trends depicted in newly developed areas in terms of age of reference person tend to follow closely with Sydney LGA, whereas there is a clear difference between the newly developed areas and the metro area (Figure 69). The 20–39 years age cohort is the dominant age group in newly developed areas, comprising almost two thirds of reference persons in these areas. In contrast, the 40-plus group accounts for a similarly large proportion within the metro cohort of reference persons. Considering this finding with Figure 66 above, it suggests that newly developed areas are popular among young lone/group households.

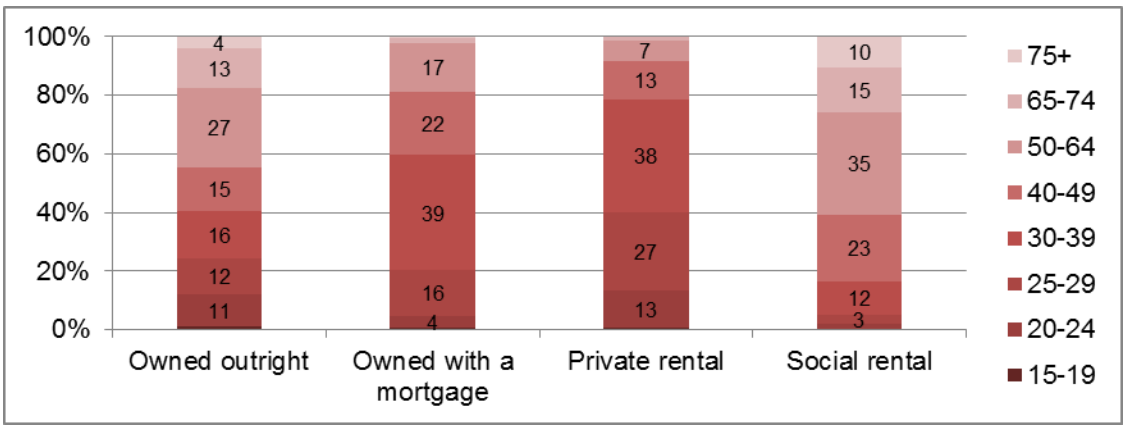
Figure 69: Reference person age splits in new developments, LGA and metro



Source: 2011 Australian Census, calculated from TableBuilder and customised data provided by ABS

In the newly developed areas, the proportion of reference persons in the age group 20–29 is highest among private renters, while the age group 30–49 is more prevalent within purchasers (Figure 70). Baby boomers make up a significant proportion (44%) of outright owners in the newly developed market. This variability of dominant age groups across tenures indicates that different tenures cater to different age groups within new developments. Given the high overall number of households in the private rental and purchaser categories, these tenures are most important in terms of understanding the population characteristics of new high-density dwelling stock.

Figure 70: Reference person age splits in new developments by tenure

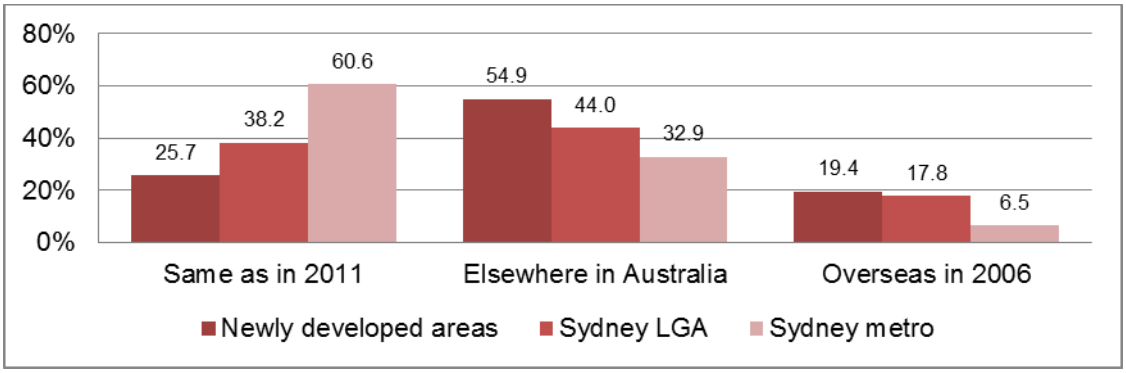


Source: 2011 Australian Census, calculated from customised data provided by ABS. NB: Data labels are not displayed for small percentages (<3%).

6.2.5 *Household location five years ago*

Figure 71 demonstrates that approximately 60 per cent of households living in the metro area in 2011 were living at the same address in 2006. This compares to 38 per cent in Sydney LGA and 26 per cent in the newly developed areas. In contrast, 55 per cent of households living in newly developed areas in 2011 had in fact moved from elsewhere in Australia since 2006. (Corresponding proportions in Sydney LGA and the metro area were 44% and 33% respectively.) A similar trend exists in terms of households arriving from overseas: 19 per cent of households in newly developed areas arrived from overseas over the preceding five years, compared to 18 per cent in Sydney LGA and only 7 per cent in the metro area. Whilst this pattern suggests newly developed housing markets and Sydney LGA are more likely to attract those moving from elsewhere in Australia and overseas, it also reflects the large proportion of new dwellings in the newly developed areas generating a higher mobility rate.

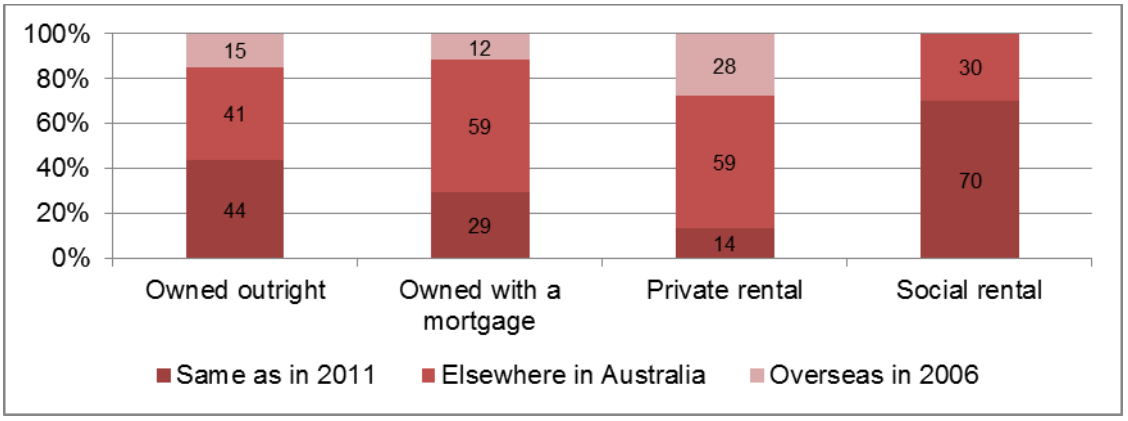
Figure 71: Reference person location five years ago splits of new developments, LGA and metro



Source: 2011 Australian Census, calculated from TableBuilder and customised data provided by ABS.

As might be expected, private renters were much more likely to have moved into their home in the newly developed area in the previous five years—just 14 per cent were resident in 2006. Over a quarter (28%) of renters were resident overseas in 2006. Outright owners were more likely to have been at the same address in 2006 (44%), as were seven in ten social renters. Figure 71 demonstrates that a large proportion (55%) of reference persons living in new developments had moved to these areas since 2006 from elsewhere in Australia. This group is represented well within purchasers and private renters, accounting for 60 per cent within each of these tenures (Figure 72). Those arriving from overseas are more likely to occupy private rental dwellings (28%) than dwellings owned outright (15%) or owned with a mortgage (12%).

Figure 72: Reference person location five years ago splits in new developments by tenure

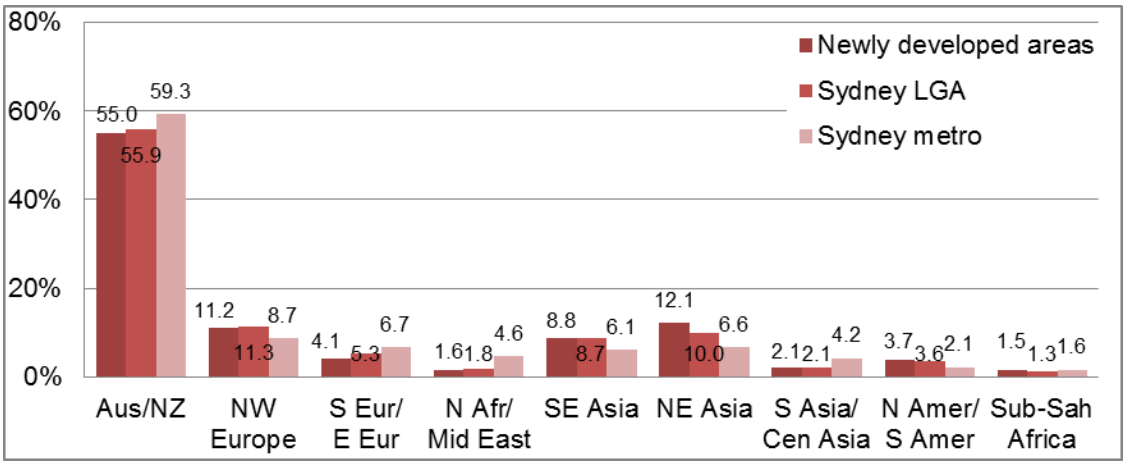


Source: 2011 Australian Census, calculated from customised data provided by ABS. NB: Data labels are not displayed for small percentages (<2%).

6.2.6 Place of birth of reference person

According to Figure 73, reference persons born in Northwest Europe, the Americas, Southeast Asia and Northeast Asia are more likely to be located in the newly-developed areas or Sydney LGA, compared to the metro area. On the contrary, household heads born in Australia/New Zealand, Southeast Europe, North Africa/Middle East and Southern/Central Asia are more likely to be located in the metro area. However, these differences were marginal and reference persons born in Sub-Saharan Africa, North Africa/Middle East and Southern/Central Asia were present in very low numbers.

Figure 73: Reference person birthplace splits in new developments, LGA and metro

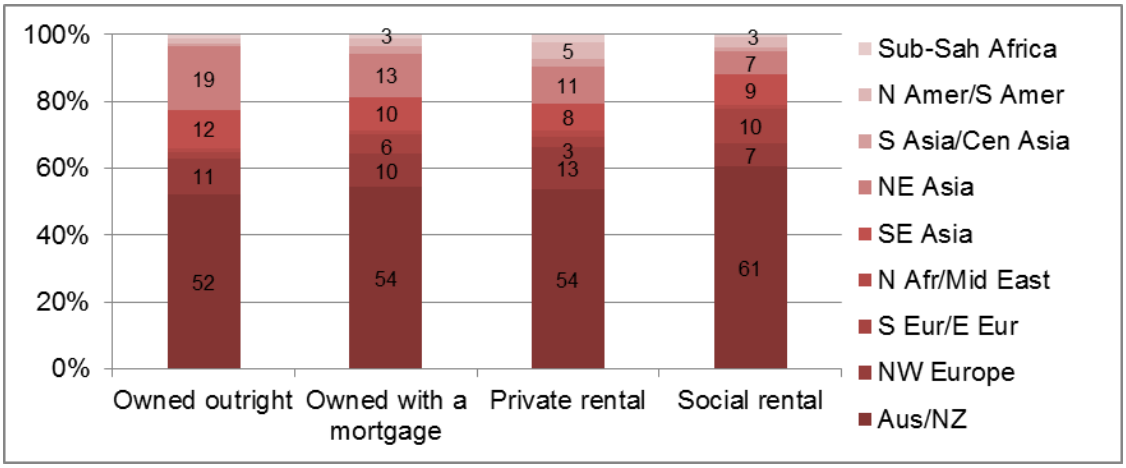


Source: 2011 Australian Census, calculated from TableBuilder and customised data provided by ABS.

There is only a small variation across tenures as regards the place of birth of reference persons in the newly developed areas (Figure 74). The rate of reference persons born in Northeast Asia in new developments is 12 per cent (Figure 73); however, this rate is higher among outright owners (19%). Similarly, the rate of reference persons born in Southeast Asia is 9 per cent (Figure 73), although this group displays a higher rate within outright owners (12%). The rates of reference persons born in Australia/New Zealand and Southern and Eastern Europe are slightly higher and those born in Northeast Asia and Northwest Europe are slightly lower for social renters, compared to the aggregate rates across all tenures.

While the majority of households in all four tenure groups were born in Australia or New Zealand, there are several notable features shown in Figure 74. Almost a third (31%) of outright owners were born in Asia, with one in five (19%) from Northeast Asia. This reflects a significant cohort of Chinese outright owners—these are unlikely to be older downsizers. Private renters were more heterogeneous compared to owners, with larger minorities from Northwest Europe and the Americas. One in 10 social renters was originally from Southeast Europe.

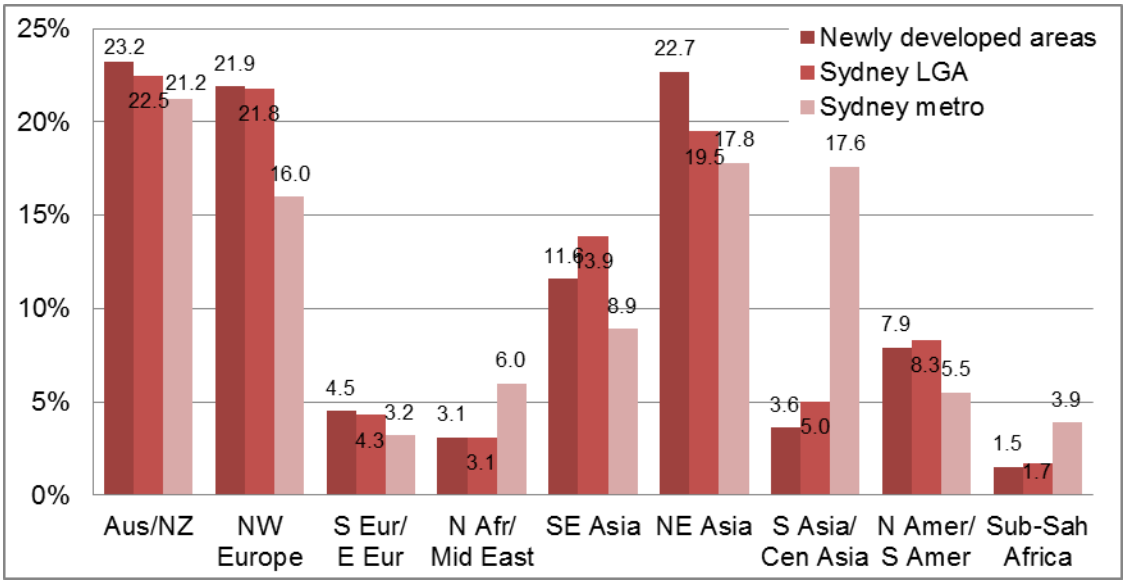
Figure 74: Reference person birthplace in new developments by tenure



Source: 2011 Australian Census, calculated from customised data provided by ABS. NB: Data labels are not displayed for small percentages (<3%).

Among households that had arrived from overseas since 2006 and moved to newly developed areas, a considerable proportion had reference persons born in New Zealand/Oceania (23%), Northeast Asia (23%) and Northwest Europe (22%)—see Figure 75. Among reference persons who moved to the metro area, Southern/Central Asia (18%) was also a prominent place of birth, in addition to the above-mentioned regions.

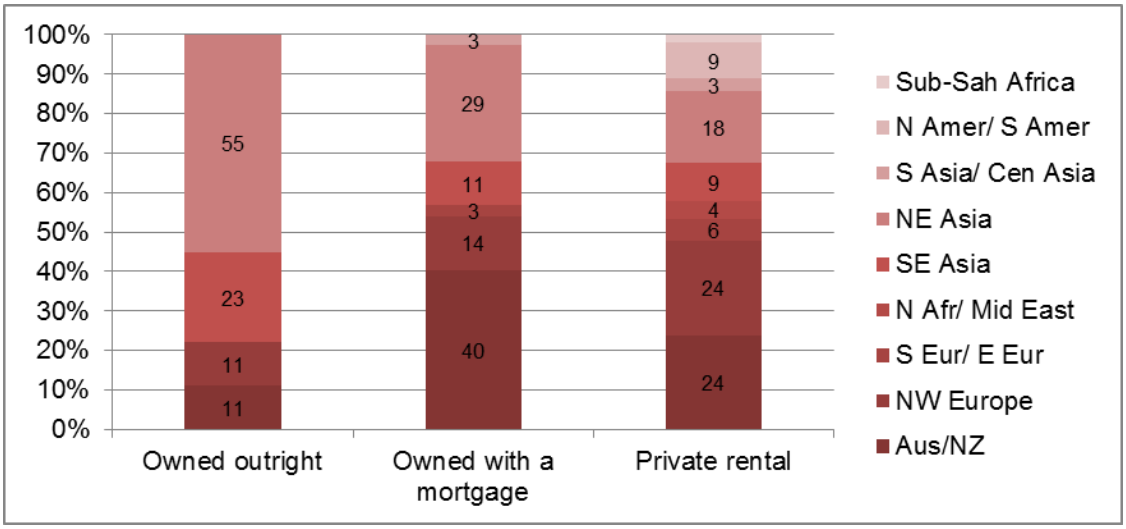
Figure 75: Reference person birthplace splits, if overseas in 2006, in new developments, LGA and metro



Source: 2011 Australian Census, calculated from TableBuilder and customised data provided by ABS.

The prevalence of households moving from Northeast Asia among outright owners in the new developments is shown in Figure 76. Over half (55%) of outright owners resident overseas in 2006 were born in this region and a further 23 per cent were from Southeast Asia. Australian and New Zealand born were the largest group among mortgagees (40%). As noted above, the origins of those moving from overseas into the private rental sector is much more varied, with about a quarter from Northwest Europe (24%).

Figure 76: Reference person birthplace splits, if overseas five years ago, in new developments by tenure

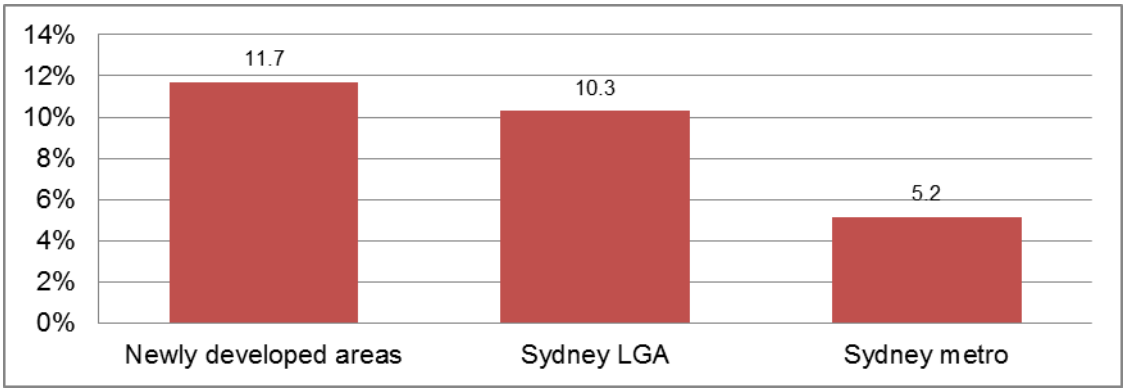


Source: 2011 Australian Census, calculated from customised data provided by ABS. NB: Data labels are not displayed for small percentages (<3%).

6.2.7 Tertiary students as a proportion of all residents

Higher levels of mobility within the newly developed areas and Sydney LGA are partly explained by the high proportion of tertiary-level students living in these areas (Figure 77). Approximately 12 per cent of the resident population in newly developed areas in 2011 were tertiary students, and this proportion decreases to 10 per cent for Sydney LGA, and to 5 per cent for the metro area.

Figure 77: Tertiary student rates in new developments, LGA and metro

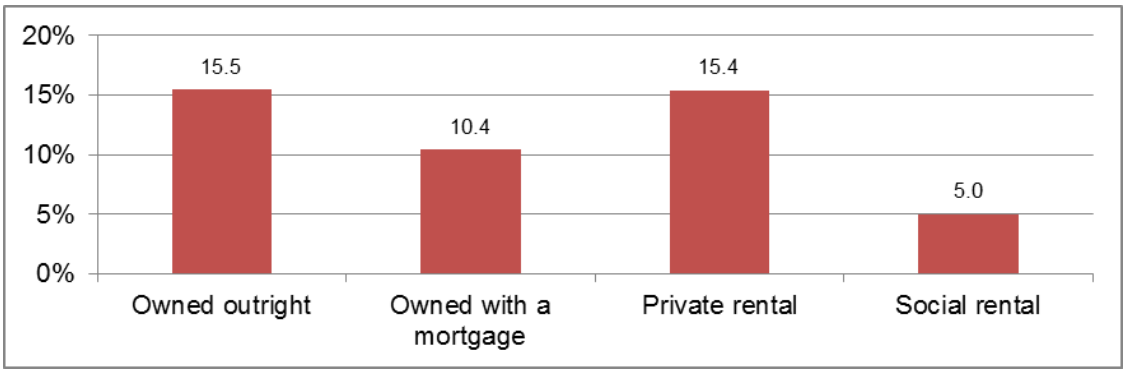


Source: 2011 Australian Census, calculated from TableBuilder and customised data provided by ABS.

In the newly developed areas, high rates of tertiary students are prevalent in dwellings with outright owners and private renters (Figure 78). Whilst students living in dwellings

owned outright are probably long-term residents, those in private rentals are more likely to be temporary residents such as those sharing group households.

Figure 78: Tertiary student rates in new developments by tenure



Source: 2011 Australian Census, calculated from customised data provided by ABS.

6.3 Dwelling prices and rents in the new high-density housing market 2006–14

The analysis so far of household income levels, ongoing weekly rental payments and monthly mortgage payments has established that certain cohorts of households are unlikely to afford the housing stock available in the high-density housing market, and thus are under-represented within that market. To better understand the price and rent levels, this section compares dwelling prices and entry rents in the new high-density market in 2006 and 2014. Also, relative affordability of prices and entry rents within the new high-density housing market are compared with Sydney LGA and the Sydney metro area.

6.3.1 Rental activity by volume and entry rents 2006–14

In this subsection, we examine the rental volumes and entry rents by type of dwelling in the high-density market, based on an analysis undertaken using data from the NSW state government rental bond authority. The dataset comprises individual records of all bonds lodged for private dwellings rented, as well as the dwelling type and weekly rental payments. These rents are termed 'entry rents' because they are the rents paid at the beginning of a tenancy. The dataset also includes bond lodgement dates and property addresses, enabling an assessment of newly lodged bonds over different time periods in different geographical areas.

In preparing the rental bond records for the analysis, the address fields needed to be thoroughly 'cleaned' to be able to match them with the addresses of the spatially referenced databases providing spatial coordinates to the established properties. Once addresses were matched, they were geocoded and mapped, so that aggregation to different geographical areas was possible.

The following analysis has been completed for separate dwelling types (i.e. houses and apartments), and covers a six-month period from January to June for both 2006 and 2014. To ascertain the relative position of the new high-density housing market, the following variables were calculated for the newly developed market, Sydney LGA and the Sydney metro area.

- Volume of new lets in 2006 and 2014.
- Median entry rents in 2006 and 2014.
- Change of real entry rents from 2006 to 2014.

The numbers of rental bonds lodged in the newly developed areas, Sydney LGA and the Sydney metro area remained relatively constant when comparing 2006 and 2014 (Table 39). There was approximately an 11–13 per cent decrease in new rental bonds lodged for apartments in both the newly developed areas and Sydney LGA between 2006 and 2014. In the Sydney metro area, new bonds lodged stayed at nearly the same level in 2006 and 2014.

The percentage increase in rental bonds lodged for houses (including semi-detached houses and townhouses) in the newly developed areas was significant (137%), although the increase was from a lower base in 2006. Similarly, there was a 32 per cent increase in rental bonds lodged between 2006 and 2014 for this dwelling type in Sydney LGA, again from a lower base of 926 dwellings in 2006.

Table 39: Rental turnover 2006 and 2014

	Apartments[1]			Houses[2]			All bonds[3]		
	2006	2014	% change	2006	2014	% change	2006	2014	% change
New dev't areas	2,061	1,800	-12.7	194	460	137.1	2,599	2,663	2.5
Sydney LGA	7,690	6,871	-10.7	926	1,219	31.6	10,014	9,801	-2.1
Sydney metro	40,622	39,924	-1.7	26,868	26,284	-2.2	79,652	78,668	-1.2

Source: NSW Fair Trading (Rental Bond Board), 2006 and 2014.

Notes: 1. Includes units and flats; 2. Includes semi-detached houses and townhouses; 3. Includes records without the dwelling type (therefore, the total number of apartments and houses does not match the total of 'all bonds').

In 2014, new rentals in the newly developed market represented about 3 per cent of the total Sydney metro rental market, while Sydney LGA represented 13 per cent (Table 40). As expected, there appears to be a higher proportion of new bonds for apartments than for houses, both in the newly developed areas (5%) as well as Sydney LGA (17%). The percentage of all new rental bonds in the newly developed areas and Sydney LGA remained relatively constant across dwelling types when comparing 2006 and 2014.

Table 40: Proportion of bonds lodged in the newly developed areas and Sydney LGA, 2006 and 2014

	Apartments[1]		Houses[2]		All bonds[3]	
	2006	2014	2006	2014	2006	2014
Newly developed areas	5.1	4.5	0.7	1.8	3.3	3.4
Sydney LGA	18.9	17.2	3.4	4.6	12.6	12.5
Sydney metro	100.0	100.0	100.0	100.0	100.0	100.0

Source: NSW Fair Trading (Rental Bond Board), 2006 and 2014.

Notes: 1. Includes units and flats; 2. Includes semi-detached houses and townhouses; 3. Includes records without the dwelling type (therefore, the total number of apartments and houses does not match the total of 'all bonds').

The proportion of bonds lodged for apartments in the newly developed areas and Sydney LGA decreased marginally between 2006 and 2014. In contrast, the proportion of bonds lodged for houses increased marginally between 2006 and 2014. However, it should be noted that these numbers only relate to new lets and not 'all current rentals' in these areas.

The proportion of new rental bonds for apartments was lower, and the proportion of new rental bonds for houses was higher, in 2014 than 2006, both in the newly developed area and Sydney LGA (Table 41). Regardless of the fact that the majority of existing rentals are likely to be apartments in these areas (see Table 38), new apartment rentals in 2014 fell behind compared to 2006, indicating that apartment rental market has slowed down recently. However, this finding should be treated with caution due to the large number of rental bond records (18%) with missing details about dwelling type.

Table 41: Proportion of bonds lodged by dwelling type, 2006 and 2014

	2006		2014	
	Apartments[1]	Houses[2]	Apartments[1]	Houses[2]
Newly developed areas	79.3	7.5	67.6	17.3
Sydney LGA	76.8	9.2	70.1	12.4
Sydney metro	51.0	33.7	50.7	33.4

Source: NSW Fair Trading (Rental Bond Board),, 2006 and 2014.

Notes: 1. Includes units and flats; 2. Includes semi-detached houses and townhouses.

In 2006, median entry rent for apartments in the newly developed market was higher than Sydney LGA and the metro area, although the difference between the newly developed market and Sydney LGA was marginal (Table 42). Similarly, median entry rent for houses in the new high-density market moved closely in line with median entry rent for that dwelling type in Sydney LGA. The same pattern was evident for 'all bonds'.

In comparison, median entry rents for apartments in both the newly developed market and Sydney LGA were 27¬–28 per cent higher than the metro-wide median. However, this difference was even more dramatic for rental houses in the newly developed areas and Sydney LGA—both 43 per cent higher than the metro-wide median.

Table 42: Median entry rents by dwelling type, 2006

	Apartments[1]		Houses[2]		All bonds[3]	
	Median rent	% of metro	Median rent	% of metro	Median rent	% of metro
New dev't areas	$385	128.3	$430	143.3	$380	126.7
Sydney LGA	$380	126.7	$430	143.3	$380	126.7
Sydney metro	$300	100.0	$300	100.0	$300	100.0

Source: NSW Fair Trading (Rental Bond Board), 2006.

Notes: 1. Includes units and flats; 2. Includes semi-detached houses and townhouses; 3. Includes records without the dwelling type (therefore, the total number of apartments and houses does not match the total of 'all bonds').

Possible reasons for the difference in median entry rents for apartments and houses in the newly developed market and Sydney LGA are the central location of these markets and the limited number of houses available—the limited availability of this dwelling type is likely to push rents up.

In 2014, median entry rent for apartments in the newly developed high-density market stood at 125 per cent of the metro-wide entry (apartment) rent, while median entry rent for the same dwelling type in Sydney LGA was recorded at 122 per cent of the metro-wide figure. However, median entry rent for houses in Sydney LGA was slightly

higher (138% of metro-wide median) than median entry rent for the same dwelling type in the newly developed areas (130% of metro-wide median).

Table 43: Median entry rents by dwelling type, 2014

	Apartments[1]		Houses[2]		All bonds[3]	
	Median rent	% of metro	Median rent	% of metro	Median rent	% of metro
New dev't areas	$600	125.0	$650	130.0	$620	129.2
Sydney LGA	$585	121.9	$690	138.0	$600	125.0
Sydney metro	$480	100.0	$500	100.0	$480	100.0

Source: NSW Fair Trading (Rental Bond Board), 2014.

Notes: 1. Includes units and flats; 2. Includes semi-detached houses and townhouses; 3. Includes records without the dwelling type (therefore, the total number of apartments and houses does not match the total of 'all bonds').

For 'all bonds', entry rents were 25–29 per cent higher in the newly developed housing market and Sydney LGA, compared to the metro area. This demonstrates that despite the recent housing supply boom in these areas, entry rents stand relatively high compared to the Sydney metro area. However, the gap between Sydney LGA and the Sydney metro area has declined when comparing 2006 and 2014 (Tables 42 and 43).

Comparing real rents in 2006 and 2014, median entry rents were higher for both dwelling types in the newly developed areas, Sydney LGA and the metro area in 2014 (Table 44). Disregarding the dwelling type, the absolute real entry rent change was largest in the newly developed market ($149) followed by Sydney LGA ($129). The *rate* of change in entry rents was also highest in the new high-density market.

The largest change in real entry rents for apartments was recorded in the newly developed market ($123), followed by Sydney LGA ($114). Notable here is the slightly lower *rate* of change in both those markets compared to the Sydney metro area. The largest change in real entry rents for houses was reported for Sydney LGA ($157), followed by the Sydney metro area ($128). Again, the *rate* of change in the Sydney metro area has outpaced the newly developed market and Sydney LGA.

Table 44: Change in median entry rents by dwelling type, 2006 and 2014

	Median rent 2006 (in 2014$)[4]	Median rents 2014	Real rent change 2006–2014	% change in real rent 2006–2014
Apartments[1]				
New dev't areas	$477	$600	$123	25.7
Sydney LGA	$471	$585	$114	24.2
Sydney metro	$372	$480	$108	29.0
Houses[2]				
New dev't areas	$533	$650	$117	21.9
Sydney LGA	$533	$690	$157	29.4
Sydney metro	$372	$500	$128	34.4
All bonds[3]				
New dev't areas	$471	$620	$149	31.6
Sydney LGA	$471	$600	$129	27.3
Sydney metro	$372	$480	$108	29.0

Source: NSW Fair Trading (Rental Bond Board), 2014.

Notes: 1. Includes units and flats; 2. Includes semi-detached houses and townhouses; 3. Includes records without the dwelling type (therefore, the total number of apartments and houses does not match the total of 'all bonds'); 4. 2006 rents have been CPI adjusted (x 1.24) to 2014 dollar values using the Australian All-groups CPI figures (2014 average 105.7 / 2006 average 85.2 = 1.24).

6.3.2 Incidence of affordable entry rentals in the newly developed areas and Sydney LGA, 2006 and 2014

Thus far, this section has discussed median rents by dwelling type. In this subsection, we explore entry rentals in the lowest quartile (i.e. the bottom 25% of all metro entry rentals), for both the newly developed market and Sydney LGA. These are entry rentals in the most affordable segment of the market and are referred to as 'affordable rentals'. The extent to which affordable rentals, defined in this way, were concentrated in the newly developed areas and Sydney LGA between 2006 and 2014 are shown in Table 45.

Table 45: Percentage of metro-wide lowest quartile rentals in the newly developed areas and Sydney LGA, 2006–14

	Apartments[1]		Houses[2]		All bonds[3]	
	2006	2014	2006	2014	2006	2014
Newly developed areas	3.9	5.7	6.2	1.5	5.9	5.3
Sydney LGA	9.9	11.2	5.5	3.5	11.4	11.3

Source: NSW Fair Trading (Rental Bond Board), 2006 and 2014.

Notes: 1. Includes units and flats; 2. Includes semi-detached houses and townhouses; 3. Includes records without the dwelling type (therefore, the total number of apartments and houses does not match the total of 'all bonds').

Sydney LGA had more than twice the affordable apartment rentals compared to the newly developed areas, and affordability in both these markets has improved slightly (1.5–2 percentage points) between 2006 and 2014. This suggests the supply boom

has eased unaffordability at least marginally in the apartment rental markets in these areas.

However, rental affordability of houses has declined in both the newly developed areas and Sydney LGA. While affordability in the newly developed market fell by a considerable margin (approx. 5 percentage points), the same market in Sydney LGA declined modestly, by 2 percentage points. Nevertheless, this pattern is of nominal consequence, as both the newly developed areas and Sydney LGA predominantly contain apartments.

Affordability of 'all rental dwellings' has declined only marginally from 2006–14 due to minor improvements in terms of affordability in the apartment markets. However, only a fraction of all rentals are affordable (5–11%) in these markets compared to the Sydney metro area (25%).

6.3.3 Selling activity by volume and sales prices 2006–2014

The dwelling sales data analysed in this subsection are provided by the NSW Valuer General's office. The data were supplied at the individual sale level, and included all the sales in 2006 and 2014 that fell within the Sydney metro area boundary. Each record in the dataset includes sale price, transaction date and the street address of the property.

The address field of each sale record was 'cleaned' through an extensive process, to accurately spatially assign them to the correct location. This involved adjusting the format of the address text to match with the address fields of the spatially referenced databases providing spatial coordinates to the established properties. Once addresses were matched, it allowed geocoding, mapping and aggregation of sales to the newly developed market, Sydney LGA and the Sydney metro area as required for the analysis. However, given this is an administrative dataset, it included a number of records with partial address information, and addresses without the street number had to be excluded from the analysis. Though this may lead to a slight under-representation of sales volumes, it does not pose a problem unless 'missing information' varies systematically by location. To avoid any chance of misrepresentation, proportions are used in most tables.

The Valuer General data does not include 'dwelling type' as a separate field. Therefore, we matched sales records with Cadastre data provided by NSW Land and Property Information to identify the respective dwelling types (based on the title information—i.e. Torrens or Strata). Dwellings with Torrens title were considered to be houses, and dwellings with Strata title were labelled as apartments. The median sales price, the mid-point of all sales, was calculated for the two main dwelling types: houses and apartments.

The volume of house sales in the newly developed market, Sydney LGA and the Sydney metro area increased between 2006 and 2014. Apartment sales also increased between these two years in Sydney LGA and the metro area, whereas sales volume slightly declined in the newly developed areas (Table 46).

Table 46: Sales turnover 2006 and 2014

	Apartments[1]			Houses[2]			All sales		
	2006	2014	% change	2006	2014	% change	2006	2014	% change
New dev't areas	1,539	1,461	-5.1	196	751	283.2	1,735	2,212	27.5
Sydney LGA	4,044	4,468	10.5	1,247	2,035	63.2	5,291	6,503	22.9
Sydney metro	31,038	35,134	13.2	41,846	57,274	36.9	72,884	92,408	26.8

Source: Derived from Valuer General dwelling sale records, 2006 and 2014.

Notes: 1. Includes units and flats; 2. Includes semi-detached houses and townhouses.

The newly developed areas saw approximately four-fold growth in house sales between 2006 and 2014. However, this large proportional change in house sales needs to be considered with caution due to its low base in 2006. House sales in Sydney LGA surged by two-thirds, and in the Sydney metro area by a third.

Despite the slight fall in apartment sales in the newly developed areas (5 percentage points), Sydney LGA reported an increase of 11 per cent and the Sydney metro area 13 per cent. For 'all sales', the patterns seen in the newly developed housing market and Sydney LGA are consistent with the Sydney metro area, all experiencing growth in sales albeit in different proportions.

Between 2006 and 2014 there was a marginal, proportionate increase in house sales (0.8 percentage points) and a similar decrease in apartment sales in the newly developed housing market, whereas 'all sales' stayed the same at 2.4 per cent of the metro-wide sales (Table 47). Similarly, apartment sales in Sydney LGA fell slightly between 2006 and 2014 as a proportion of all apartment sales in the metro (0.3 percentage points). This decline contributed to a similar proportional drop in all sales. Nevertheless, consistent with the trend shown in the newly developed area, Sydney LGA recorded a slight increase in house sales (0.6 percentage points).

Table 47: Proportion of sales in the newly developed area and Sydney LGA, 2006 and 2014

	Apartments[1]		Houses[2]		All sales	
	2006	2014	2006	2014	2006	2014
Newly developed areas	5.0	4.2	0.5	1.3	2.4	2.4
Sydney LGA	13.0	12.7	3.0	3.6	7.3	7.0
Sydney metro	100.0	100.0	100.0	100.0	100.0	100.0

Source: Derived from Valuer General dwelling sale records, 2006 and 2014.

Notes: 1. Includes units and flats; 2. Includes semi-detached houses and townhouses.

In 2006, house sales comprised 11 per cent of all dwelling sales in the newly developed areas, close to a quarter of all sales across Sydney LGA, and more than half of all sales across the Sydney metro area (Table 48). On the other hand, 89 per cent of sales in the newly developed areas, 76 per cent in Sydney LGA and 43 per cent in the Sydney metro were apartment sales.

Table 48: Proportion of sales by dwelling type, 2006 and 2014

	2006		2014	
	Apartments[1]	Houses[2]	Apartments[1]	Houses[2]
Newly developed areas	88.7	11.3	66.0	34.0
Sydney LGA	76.4	23.6	68.7	31.3
Sydney metro	42.6	57.4	38.0	62.0

Source: Derived from Valuer General dwelling sale records, 2006 and 2014.

Notes: 1. Includes units and flats; 2. Includes semi-detached houses and townhouses.

In 2014, houses represented 34 per cent of total sales in the newly developed areas, 31 per cent in Sydney LGA and 62 per cent in the metro area. Apartment sales as a proportion of total sales were recorded as: 66 per cent in the newly developed areas, 69 per cent in Sydney LGA and 38 per cent in the Sydney metro area. These figures are consistent with the large numbers of high-density apartments available within the newly developed market and Sydney LGA. On the other hand, compared to the other two markets, house sales were the largest in the Sydney metro area in both years.

In 2006, the median sales price of houses was 18 per cent more in the newly developed housing market and 22 per cent more in Sydney LGA than the median house price in the Sydney metro area (Table 49). The median sales price for apartments was also 18 per cent more in the newly developed market and 12 per cent more in Sydney LGA than the Sydney metro area. In terms of 'all sales', the newly developed areas and the Sydney LGA reported the same median price. Nevertheless, as expected, both the newly developed areas and Sydney LGA recorded higher median sales prices than the Sydney metro area for both dwelling types.

Table 49: Median price by dwelling type, 2006

	Apartments[1]		Houses[2]		All sales	
	Median price	% of metro	Median price	% of metro	Median price	% of metro
New dev't areas	$455,000	118.2	$589,000	117.8	$470,000	106.3
Sydney LGA	$430,000	111.7	$610,000	122.0	$470,500	106.4
Sydney metro	$385,000	100.0	$500,000	100.0	$442,000	100.0

Source: Derived from Valuer General dwelling sale records, 2006 and 2014.

Notes: 1. Includes units and flats; 2. Includes semi-detached houses and townhouses.

By 2014, the gap between the median sales price of houses in the newly developed areas and Sydney metro area had closed substantially (Table 50). However, without having information on dwelling sizes, it is difficult to determine if this difference is a result of smaller dwellings in the newly developed areas compared to the Sydney metro area. In contrast, the median price of apartments was highest in the newly developed areas (25% more than the metro-wide median), closely followed by Sydney LGA (22% more than the metro-wide median).

Table 50: Median price by dwelling type, 2014

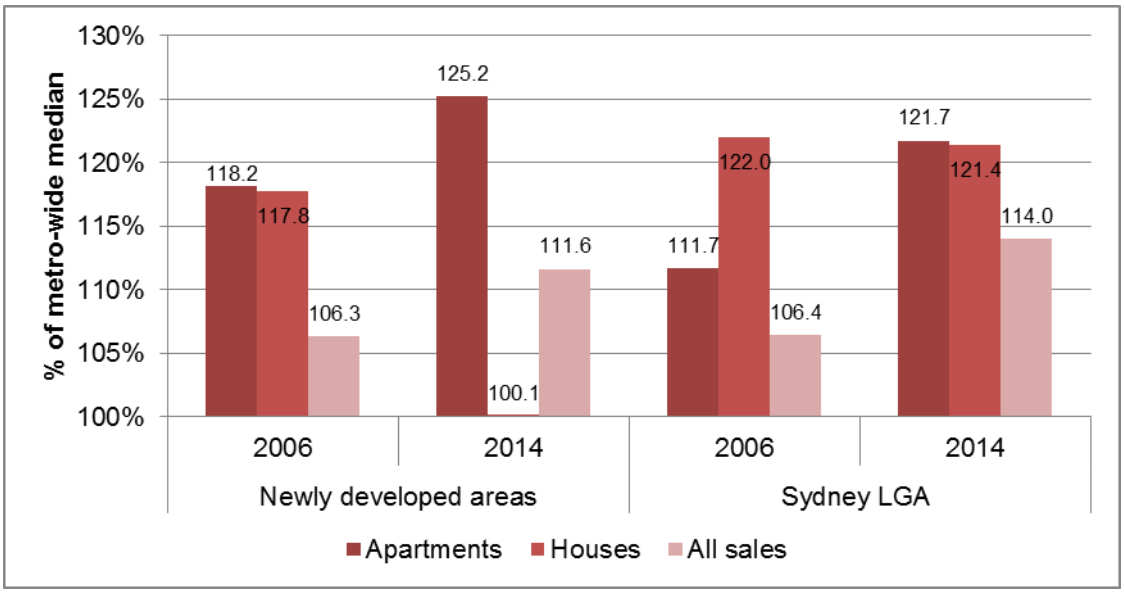
	Apartments[1]		Houses[2]		All sales	
	Median price	% of metro	Median price	% of metro	Median price	% of metro
New dev't areas	$720,000	125.2	$701,000	100.1	$710,000	111.6
Sydney LGA	$700,000	121.7	$850,000	121.4	$725,000	114.0
Sydney metro	$575,000	100.0	$700,000	100.0	$636,000	100.0

Source: Derived from Valuer General dwelling sale records, 2006 and 2014.

Notes: 1. Includes units and flats; 2. Includes semi-detached houses and townhouses.

Between 2006 and 2014, the median house price in the newly developed areas moved closer to the Sydney metro median at a greater rate than Sydney LGA (Figure 79). The median sales price of apartments increased more in both the newly developed market and Sydney LGA compared to the Sydney metro area, during 2006–14. Notably, the median apartment price in the newly developed market in 2014 is the highest observed, relative to metro-wide medians.

Figure 79: Percentage of metro-wide median price by dwelling type, 2006 and 2014



Source: Derived from Valuer General dwelling sale records, 2006 and 2014. NB: Apartments include units and flats; houses include semi-detached houses and townhouses.

In 2014, the highest median sales price was recorded for houses in Sydney LGA, whereas median house price in the newly developed market closely reflected Sydney metro median house price—however, this data needs to be read with caution due to the small number of house sales in the newly developed areas (Table 51). Within apartment markets, the newly developed market recorded the highest median price in 2014, followed by Sydney LGA. For 'all sales', median price in the Sydney LGA was slightly higher compared to the newly developed apartment market in 2014.

In terms of change over time (2006–14), the newly developed market recorded a decline of 4 per cent in the median real house price. Median real house prices in Sydney LGA and the Sydney metro area increased by 12–13 per cent. There were significant increases in median real apartment prices in the Sydney LGA (31%) and in the newly developed market (28%) between 2006 and 2014. During the same period, there was a modest increase in the median real apartment price in the Sydney metro

area (20%). Considering 'all sales', the median real price increased at a greater rate in Sydney LGA (24%) than in the newly developed area (22%) and the Sydney metro area (16%).

Table 51: Change in median price by dwelling type, 2006 and 2014

	Median prices 2006 (in 2014$)[3]	Median prices 2014	Real price change 2006–14	% change in real price 2006–14
Apartments[1]				
Newly developed areas	$564,200	$720,000	$155,800	27.6
Sydney LGA	$533,200	$700,000	$166,800	31.3
Sydney metro area	$477,400	$575,000	$97,600	20.4
Houses[2]				
Newly developed areas	$730,360	$701,000	-$29,360	-4.0
Sydney LGA	$756,400	$850,000	$93,600	12.4
Sydney metro area	$620,000	$700,000	$80,000	12.9
All sales				
Newly developed areas	$582,800	$710,000	$127,200	21.8
Sydney LGA	$583,420	$725,000	$141,580	24.3
Sydney metro area	$548,080	$636,000	$87,920	16.0

Source: Derived from Valuer General dwelling sale records, 2006 and 2014.

Notes: 1. Includes units and flats; 2. Includes semi-detached houses and townhouses; 3. 2006 prices have been CPI adjusted (x 1.24) to 2014 dollar values using the Australian All-groups CPI figures (2014 average 105.7 / 2006 average 85.2 = 1.24).

6.3.4 Incidence of affordable sales in the newly developed areas and Sydney LGA, 2006 and 2014

In this subsection, we assess sales in the lowest quartile of metro-wide sales (the most affordable market segment). Table 52 shows the incidence of 'affordable sales' in the new high-density market and Sydney LGA. Note, for comparison, that 25 per cent of metro-wide sales fall within the lowest quartile of sales price.

Sydney LGA had approximately twice the concentration of affordable apartments compared to the newly developed market in 2006. Though both these proportions had dropped in 2014, Sydney LGA still had twice the concentration of affordable sales compared to the newly developed areas. Both the newly developed areas and Sydney LGA reported the same proportions of 'affordable house sales' in 2006 and 2014, although the incidence declined in both markets by 3–4 percentage points between 2006 and 2014.

Considering 'all sales', the incidence of affordable sales dropped yet again in both markets between 2006 and 2014. The decline was by approximately half in both cases. The proportions in 2014 stood at 7 per cent for the newly developed areas and 12 per cent for Sydney LGA, compared to 25 per cent in the Sydney metro area.

Table 52: Percentage of metro-wide lowest quartile sales in the newly developed areas and Sydney LGA, 2006–14

	Apartments[1]		Houses[2]		All sales	
	2006	2014	2006	2014	2006	2014
Newly developed areas	9.4	6.4	8.7	5.1	15.6	7.1
Sydney LGA	17.7	12.3	8.0	5.0	20.9	11.6

Source: Derived from Valuer General dwelling sale records, 2006 and 2014.

Notes: 1. Includes units and flats; 2. Includes semi-detached houses and townhouses.

6.4 Chapter summary

This chapter examined the extent to which recent growth in inner-city apartments is providing housing options for the LI workforce in Sydney. To that end, the resident profile of these *new developments* in the City of Sydney council area, as a proxy for infill growth in general, was compared with the resident profiles of the council area as a whole and the Sydney metro area. The subsequent analysis considered the profile of households in different tenures in the recently developed apartment sector. The final section compared dwelling prices and entry rents in the new high-density market, Sydney LGA and the metro area in 2006 and 2014.

6.4.1 Demand profile of the new high-density market 2011

Findings indicate these new developments include large numbers of private rental units that are let on high rentals, implying they are affordable to a mid-to-high income cohort of residents rather than LI city workers. Almost half of the households in the private rental market in the new developments paid rents at the highest level ($550+), compared to only 17 per cent in the Sydney metro area. The proportion of households earning more than $2000 in the newly developed areas (53%) outnumbered the corresponding proportion in the Sydney metro area (36%), and the proportion of persons earning more than $1250 in the new developments (47%) was considerably higher than in the Sydney metro area (26%).

In the newly developed market, about a third within the purchaser group earned more than $3000 a week, the largest tenure group in the highest income category. Overall, rates of mid-to-high income groups ($2000+) within outright owners, purchasers and private renters range from 53–61 per cent. This clearly demonstrates that, regardless of the tenure type, new developments cater to a mid-to-high income cohort of households. These findings thus show that new developments provide limited affordable housing opportunities for lower wage city workers.

Furthermore, the new high-density market mainly accommodates particular demographic groups: couples with no children, lone person households and group households. These households are predominantly young. The detailed analysis shows, notwithstanding the significantly high rate of group households, families with children were significantly under-represented within the private rental market in new developments. Only 8 per cent of households in this sub-sector had children—the Sydney metro average is 49 per cent. In addition, while demand for these dwellings appears to be mainly locally driven, there was a significant proportion of households moving from overseas (especially from Europe, North-east Asia and South-east Asia). There was also a high proportion of students.

Moreover, only 14 per cent of private renters remained in the same dwelling as in 2006. This high turnover suggests that the private rental sector within new developments is not playing a role as a long-term accommodation provider in these

areas. Three times more overseas migrants were resident in the newly developed areas compared to the Sydney metro area. Detailed analysis further indicates that a considerable proportion of private renters are suspected to be temporary residents, such as those sharing group households.

Increases in supply of housing within the broader labour market catchment of the CC seem to mitigate the observed spatial mismatch in only a limited way. This analysis also suggests that the kinds of housing that are not being provided through market responses (for instance, family-friendly housing that is affordable) might be necessary to ensure LI jobs are filled not only by temporary and student workers.

6.4.2 Rental volume and median entry rents 2006–14

Though the volume of apartment rentals in the Sydney metro area stayed the same between 2006 and 2014, the bonds lodged for apartments in the newly developed areas and Sydney LGA decreased by 11–13 per cent. This suggests a slowdown in the rental apartment market between 2006 and 2014, as these numbers only relate to new lets and not 'all current rentals' in these areas.

The number of new house rentals increased considerably (137%) in the newly developed areas, and modestly (32%) in Sydney LGA during 2006–14. However, the increase in the number of house rentals in the newly developed areas was from a lower base in 2006. The volume of house rentals in the Sydney metro area stayed the same.

The newly developed areas comprised 5 per cent, and Sydney LGA comprised 17 per cent, of Sydney metro area *apartment rentals* in 2014. The newly developed areas contained 2 per cent, and Sydney LGA 5 per cent, of Sydney metro area *house rentals*. There was only a little change to this composition from 2006 to 2014.

In 2006, median rents for apartments and houses in the newly developed areas moved closely with median rents for the respective dwelling types in Sydney LGA. In both these markets, median apartment rent was approximately 27 per cent higher and median house rent was 43 per cent higher than the respective median rents in the Sydney metro area.

In 2014, the highest *median apartment rent* was recorded in the newly developed market (25% more than the metro-wide median), whereas the highest *median rent for houses* was recorded in Sydney LGA (38% more than the metro-wide median).

Though *real* median rents went up in all three markets during 2006–14, the largest increase ($123) in *real median apartment rent* was reported for the newly developed market and the largest increase ($157) in *real median house rent* was reported for Sydney LGA. The fastest *rates* of real median rent change for both dwelling types were recorded in Sydney metro area.

Minor improvements in affordability of rental apartments in the newly developed areas and Sydney LGA between 2006 and 2014 suggest that supply boom has eased unaffordability at least marginally.

6.4.3 Sale volume and median sales price 2006–14

The volume of apartment sales increased in Sydney LGA (11%) and the Sydney metro area (13%), whereas there was a slight decrease in the newly developed market (5%).

Number of house sales increased considerably (by almost three-fold) in the newly developed market, by a large proportion (63%) in Sydney LGA, and more modestly

(37%) in Sydney metro area. However, the volumes of house sales in the newly developed area and Sydney LGA were insignificant.

The proportion of sold apartments within all sales declined in all three markets between 2006 and 2014. This suggests that new construction of apartments may have already slowed down by 2014.

As expected, both the median house price and the median apartment price in the newly developed areas and Sydney LGA were higher than in the Sydney metro area in 2006 and 2014. In both years, median prices for apartments in the newly developed areas were higher, and the median prices for houses lower, than those in Sydney LGA. As such, in 2014, the newly developed market reported the highest median *apartment* price of $720 000 (at 125% of the metro-wide median), while Sydney LGA reported the highest median house price of $850 000 (at 121% of the metro-wide median).

Whilst *median apartment prices* in the newly developed area and Sydney LGA moved further away from metro-wide medians during 2006–14, *median house prices* in those two markets have moved closer to metro-wide medians.

Apartment sales in Sydney LGA recorded the largest change in *real median price* during 2006–14. This amounted to $167 000 at a rate of 31 per cent. The largest change in *real median house price* ($94 000) was also recorded in Sydney LGA. The *real median house price* in the newly developed areas fell slightly from 2006 to 2014—this may be a result of the very small number of sales or the small dwelling size in the newly developed areas.

There is a sharp decline in the incidence of affordable sales in the newly developed market and Sydney LGA between 2006 and 2014. This may explain why LI workers are increasingly forced out of these CC housing markets.

7 POLICY IMPLICATIONS

7.1 Summary of the research findings

The findings of this report support the conclusion that the 'urban inversion' is now redrawing the map of relative economic opportunities across our cities. Gentrification and new-economy jobs growth in the inner and central cities have reversed decades of job and population decline in these areas, contributing to the displacement of long-standing concentrations of lower-cost inner city housing.

The resulting suburbanisation of the LI workforce[17], now prevalent in all our major cities, means we are witnessing the reverse of the problem the term 'spatial mismatch' was originally coined to describe. As the working poor have been suburbanised, the opportunities for new-economy jobs have shifted into more central locations and along favoured economic corridors, often closely associated with higher value housing locations.

The resulting 'reversed spatial mismatch' process has prompted concerns among many commentators and policy-makers about the possible negative impact on the overall economic productivity of our cities. On the one hand, lower-skilled workers may be finding it harder to access job opportunities in job-rich CCs, as housing market factors push them away from the inner city. On the other hand, CC employers may be finding it harder to recruit and retain LI workers unable or unwilling to accept the increased commuting time and costs imposed by these housing constraints, and the disrupted personal lives that result.

To date, however, there has been little research that sheds light on whether such concerns about the impact of the reversed spatial mismatch on urban economic productivity are legitimate, or simply conjecture. This report helps to fill this gap through its analysis of how this issue is affecting five key Australian cities.

The findings of our research confirm that this is not a simple issue. Indeed, there appear to be a range of trade-offs and adjustments being made on both the employee and employer sides of the spatial mismatch problem. The key research findings will be briefly summarised here, before concluding the report with an interpretation of the policy implications that flow from these findings.

7.1.1 LICC workers bear a transport penalty, while CC employers pay a location loading

First, it is clear that LI workers in our central cities generally travel around twice as far to get to work as LI workers in the rest of the city (and in some cases, Sydney and Melbourne in particular, further than higher-income workers). This clearly indicates a disproportionate commuting penalty paid by LI workers to work in CC jobs. The greater availability of public transport to the CC compared to other work locations appears to go some way towards offsetting the impact of longer distances covered by these LI workers.

Nonetheless, this result suggests that housing opportunities close to jobs are indeed more restricted for LICC workers than for higher income CC workers, or for LI workers who have jobs elsewhere in the metropolitan area. Meanwhile, the qualitative research component suggests that despite the commuting costs involved, LICC workers benefit from additional advantages of working in the CC that often make the

[17] For the purpose of this report, 'lower income' was defined as workers with incomes up to $799 per week in 2011. Although reliant on census income definitions, this benchmark broadly equates to the two lower quintiles (i.e. 40th percentile) of worker incomes across Australia.

travel costs worth bearing. For example, LICC workers were found to receive slightly higher incomes compared to similar workers elsewhere. Excluding the differences caused by the different job profiles, and in the absence of productivity benefits to offset them, CC employers are paying a wage loading that compensates workers for increased commuting costs.

7.1.2 The particularities of the CC job market make the commute worthwhile for some LICC workers

There are a number of distinctive qualities of LICC workers that emerge from the research findings. For example, the analysis shows that LICC workers are more likely to be younger and female compared to LI workers across the metro as a whole. This is most likely due to the prevalence of two particular LI employment sectors in these locations—hospitality and retailing—which employ more young workers and women than other decentralised LI sectors like manufacturing.

LICC workers are also more likely to have higher levels of education or still be in education. The attraction of LI jobs that represent the first rungs of a professional career may be part of the story here, especially for those working in the professional services sector (the sector which accounted for the third greatest number of LICC workers overall). This conclusion is supported by the fact that this group of LI workers, together with their colleagues working in the financial sector, also had the longest commutes on average. Jobs of this kind predominantly exist in CCs and are worth making the commute due to the long-term potential they offer.

Nevertheless, the relative commuting distances between LICC workers and LI workers with jobs elsewhere in the metropolitan area can be taken as a clear indictor that housing constraints impose a travel penalty for this workforce.

7.1.3 Some LICC workers are insulated from housing constraints; others compromise to cope

So what are the housing constraints? A key finding is that most LI workers do not live in LI households (defined as households with incomes in the bottom two quintiles, or below $1000 per week in 2011). This should not be a surprise. These are children living at home, lodgers, visitors and secondary wage earners. Clearly, the housing position of LI workers will be moderated by the household structure in which they live.

Group houses—non-related adults sharing—are clearly over-represented among households that contain LICC workers, especially in Sydney and Melbourne, the two most expensive cities for housing. But overall, about a quarter of LICC workers live in LI households. These are probably single-income households. And in most cities, LICC workers in hospitality and retail employment are disproportionately from LI households.

The findings show that LICC workers do indeed have high incidences of housing stress (i.e. paying more than 30% of their income in housing costs). But the research also found that LI workers faced these costs wherever they worked, not just in the CC. In other words, LI workers basically face unaffordable housing costs across the city, regardless of workplace. Among the LI workforce, renters suffered the highest unaffordability problems, with as many as 85 per cent of LI households with CC workers in Sydney paying 30 per cent or more of their income in rent. LICC workers in the other cities are not much better off. These findings confirm earlier AHURI research into housing affordability, notably Yates, Milligan et al. (2007) and Yates, Randolph et al. (2006).

Rather than seeking more affordable housing, which clearly was well-nigh impossible given market conditions, LICC workers appear to have traded off other housing

attributes in order to find housing: in particular, they are renters rather than home buyers, they live in apartments rather than houses, and they live in group or extended family homes and may compromise on dwelling space. These compromises are in addition to the fact that they travel double the distance to get to work.

7.1.4 Increased CC housing supply has not greatly improved housing affordability for LICC workers …

A dominant policy response to housing affordability has been the call for increased housing supply to provide a restraint on housing costs and therefore improve affordability outcomes. To what extent, then, has the recent upswing in CC-accessible housing supply, largely in the form of multi-story apartments, assisted in providing housing for the LICC workforce? A discrete study of the City of Sydney council area housing market shed light on this. The overall finding was that recent new housing supply in the council area was dominated by rental (52%), with rents skewed heavily toward the higher end of the distribution. Home owners made up 40 per cent of new housing, with sales prices and mortgage payments again indicating a high-end market. Social housing comprised just 6 per cent in areas where new developments predominated.

Households with children were significantly under-represented in newly developed areas—this is a market dominated by younger couples, singles and group households. Nevertheless, while individual personal incomes were skewed heavily towards middle- and higher-income cohorts, some 31 per cent of individuals in these areas had weekly incomes under $800.[18] Similarly, 20 per cent of households were in the low household-income group. While many of these are students (12% of the population in these developments) and another tranche is accounted for by social-housing tenants, there is evidence that at least some of those housed in the new-build City of Sydney housing market are LICC workers. The presence of a significant group household population may, in part, account for this.

7.1.5 … but because LICC workers adapt, employers have borne only limited costs

So while the increasing unaffordability of housing for LICC workers is clearly affecting the living arrangements of these employees, to what extent are *employers* affected? Does this situation pose any significant constraints on their ability to hire and retain LI staff, to the overall detriment of the CC economy?

The evidence from the qualitative research suggests that while many employers are aware of this issue, it does not seem to have imposed an untenable strain on employment practices. This may well be due to the fact that they have already adopted employment strategies that reduce the need to employ LI staff for whom housing affordability is a long-term issue (e.g. mature workers with family commitments). There are indications that some employers have substituted staff who are either shielded from these costs due to their household situation or are willing to bear high housing costs temporarily, including students, backpackers, young people living at home and secondary wage earners.

The exceptions are the LICC workers who are the primary or sole income source in their household, for whom the full impact of housing unaffordability will be borne. While it is clear that some employer groups are aware of the housing costs faced by their workers as an issue, it is also clear that many see these costs as a burden borne

[18] This figure is based on 2011 data.

by the employees themselves, and the problem as one that can be accommodated by simply recruiting new staff in what is an attractive location to work.

7.2 Policy implications of these findings

What seems clear is that this is not simply an issue of housing policy—if the prevailing approach to managing housing affordability in Australia can be deemed coherent enough to be a 'policy' as such. As outlined elsewhere in the report, policy responses to the 'reversed spatial mismatch' problem could be sought across a range of key urban policy domains, especially housing, employment and transport (leaving aside social policy, taxation, education, immigration and other largely federal policy domains).

This immediately suggests that such a complex problem does not lend itself to a single policy response. While this is hardly a new conclusion, the first implication of these findings is the paramount need for a citywide, holistic policy framework to address this problem. The issues around the provision of appropriate and affordable housing choices for LICC workers clearly is not something CC councils can solve alone. There is a complex network of policy choices to be made, many of which lie well beyond local government's control.

The emergence of a new 'whole of city' strategic governance structure in Sydney and Melbourne offers an opportunity for these issues to be truly considered in the round. However, for urban policy-makers, there is a trade-off required between these key branches of public policy.

7.2.1 Housing policy approaches to addressing the spatial mismatch

Taking housing policy first, it is clearly not just about increasing housing supply—the dominant policy position of Australian governments at present. Supply is part of the solution, but not in terms of housing costs *per se*. As we have seen, if Sydney is anything to go by, the inner-city housing market is not generating anything like an 'affordable' housing product—rents and prices are simply too high for that. But household living arrangements mean that it does accommodate a notable proportion of individuals on lower incomes, even allowing for social housing tenants and the large student cohort.

In other words, people are adapting to the new housing circumstances on offer in central cities to meet their housing needs. One finding was that even MI households connected to the CC labour market are having to make compromises where other MI households are not. Whether additional CC housing supply would bring down price points enough to improve affordability and to shift renters into home purchase is unlikely—falling prices will only act to strangle supply. But importantly, this new supply would only house a modest proportion of the total LICC workforce.

An important finding of our research is that the newly developed housing market is failing to accommodate the diversity of possible LI workers. We found that some industries are able to source sufficient—and sufficiently capable—labour from young people who are able to adapt to this specific housing product. That is, there was a labour supply of those who are willing to share with unrelated adults, or rent, or spend more time and money commuting, or forego backyards and spare rooms, or combinations of these. But a significant proportion of the potential labour force is not prepared to make such compromises, particularly over the longer term, as they look to start families for example. The result is the higher turnover among the LI workforce, something that was most prevalent and most problematic in hospitality, where even some managerial jobs attract a lower pay. When even MI households are making

compromises, working in the CC will equate with lifestyle compromise for a greater proportion of LI workers.

The housing policy response therefore needs to be more nuanced than simply more supply. First and foremost, LI workers have a major housing affordability problem wherever they work. The levels of unaffordability are substantial across our cities, and the slightly higher incomes of LICC workers do not appear to compensate for their high relative housing costs, irrespective of where they live. This is a problem not of housing supply per se, but of a lack of housing that is affordable to households on lower incomes. The market will not produce this by itself.

Only government support for an affordable, sub-market housing sector can do this, be it with properties for sale or for rent. In the continuing absence of federal support for more affordable housing options (e.g. through an extension of the National Housing Affordability Scheme, reform of Commonwealth Rent Assistance to reflect local rent differentials, targeting of investor tax breaks to affordable housing, etc.), the solutions need to be found at state and local government level.

There is a range of planning-led instruments and initiatives that can be brought forward in this respect. For example, inclusionary zoning, land value capture, density bonuses and planning agreements. These strategies have been well canvassed and have been successful in international contexts (Davison, Gurran et al. 2012; Gurran, Milligan et al. 2008). Implemented together in a systematic and reinforcing policy package, such approaches could make a real difference in generating many more affordable homes in higher value locations. In addition, there is evidence supporting the use of alternative funding mechanisms for the production of new affordable housing, drawing on appropriate public subsidies where appropriate (e.g. Milligan, Hulse et al. 2015). The use of other public sector involvement to support affordable housing, such as through discounted land sales, is also a clear possibility (Rowley & Phibbs 2012).

In the absence of such an integrated policy response for affordable housing supply, LICC workers must make other trade-offs to remain in touch with the CC, where their greatest job opportunities are located: they pay disproportionate amounts of income for their housing; they rent; they double up; and they travel longer distances to get to work, possibly at unsocial hours. Once again, we are back to an overall recognition of the problems faced by all LI workers in finding affordable and appropriately located housing in the private market. Any policy response that puts affordable housing in places that help LI workers to better access employment opportunities in the CC would undoubtedly assist.

However, the LICC workforce is clearly not a homogenous community. While certain employment sectors predominate, it ranges across a wide range of occupations and skills—from part-time bar staff to younger professional workers. Policies to address their housing needs will need to account for these variations. Arguably, it's the position of LI households that is most critical, many of which are single-income households. Policy responses to support LI singles might therefore be a priority, as has been the case in Germany and other places (Reed 2015). And family households are also clearly relatively marginal players in the LICC workforce.

7.2.2 Transport policy approaches to addressing the spatial mismatch

Other policy domains also play a role here. At the metropolitan level, the research has clearly illustrated the places where LICC workers live, the distances they travel to get to their workplaces and their reliance on public transport. A clear implication of this is that, again in lieu of an integrated affordable housing policy response, metropolitan transport policies are a key driver of the reverse spatial mismatch issue.

For this reason, improved connectivity between more affordable suburban housing and central cities is clearly a critical issue. So should more funding be committed to public mass transit to improve connectivity and maintain affordability, to allow the now dispersed LI workforce to access these concentrated inner city jobs? This issue has recently surfaced in London, where the body responsible for the delivery of the city's public transport systems has recently argued the case for increased investment in public transport. At the heart of Transport for London's case was the need to improve access to central London for the many LI workers who are now increasingly being pushed into the suburbs due to housing affordability problems (Topham 2014).

Maintaining subsidy levels to ensure these connections remain (or become more) affordable to LICC workers is a necessity, given the reliance of CC workers on the public transport system. Road building does not offer a sustainable policy option in this context, as improving road access to central cities in the absence of improved mass transit alternatives can only lead to one thing: greater congestion (even assuming LI workers have cars and can afford parking fees). This will have obvious outcomes for urban productivity, especially in the central cities.

Whether a focus on improving affordable mass transit accessibility to CC locations represents a more viable policy response than providing more accessible affordable housing is beyond the scope of this report to consider. However, the integration of land-use and transport infrastructure offers a further alternative, particularly in the form of strategic planning policy to densify housing around existing transport nodes and corridors, especially radial heavy rail infrastructure.

Commonly known as Transit Orientated Development (TOD), this strategy offers the prospect of new opportunities for LI workers to rent or own housing with good accessibility to CC transport hubs. Questions do remain about how affordable to LI workers these new developments are in practice, and whether concentrating LI populations in these high-density suburban developments offers a socially sustainable outcome for our cities in the long term.

Moreover, there are serious concerns about whether existing rail and road networks have the capacity to accommodate a major expansion of commuting into central cities without commitments to significant new public transport investment. Yet despite these issues, these policies are now widely seen by metropolitan planning authorities as the solution to the land-use and transportation problems faced in our cities, and constitute the orthodox approach adopted in all strategic planning documents for Australian cities (Bunker 2014).

7.2.3 Employment policy approaches to the spatial mismatch

Finally, given the vibrancy of CC economies, broader spatial planning strategies could seek to decentralise employment growth into suburban centres. This enables a potentially more efficient land-use pattern, with LI 'routine' jobs that do not benefit from agglomerations located in lower-cost areas.

This approach is a key part of recent planning strategy in Sydney, with the promotion of Parramatta as 'Australia's next great city' and 'Sydney's second CBD'. While improving the number and quality of job opportunities in Parramatta will help to reduce commutes for some workers in Western Sydney over time, effective implementation of this strategy will require significant investment in public transport infrastructure, particularly connecting Parramatta CC and Sydney CC.

Without such investment, it will be difficult for Parramatta to attract the industries which provide many of the high-quality LI jobs currently available in and around Sydney's CC. This research—which focussed on finance, professional services,

tourism and other support services—suggests that a division of job types between Sydney CC and suburban centres has already occurred to some extent, with the industries and jobs that remain in the CC doing so out of necessity. The interviews also revealed the limited potential and appeal of distributing LICC jobs, at least in the absence of significant changes to the cultural and functional positioning of secondary centres like Parramatta.

7.3 Conclusion: a holistic policy approach remains the Holy Grail

In conclusion, in the face of ever-escalating CC-accessible housing costs and the absence of a national affordable housing strategy, solutions to the issue of retaining the attractiveness of our central cities for LI workers will remain a state and local government concern. Consequently, the implications of the research presented in this report point to three broad policy requirements with respect to our LICC workforces.

1. A holistic and integrated policy response at the metropolitan scale, involving collaboration between state and local government entities.
2. A continued focus on facilitating and delivering low-cost and affordable housing options wherever possible, through a combination of planning policy interventions, use of public lands and state-funded housing support initiatives.
3. A commitment to developing public transport policy that fully acknowledges LI workers' need for efficient and affordable (i.e. subsidised) transport options to access CC employment—and that actively plans for infrastructure investment to achieve that aim.

REFERENCES

Anas, A., Arnott, R. and Small, K.A. (1998) 'Urban spatial structure', *Journal of Economic Literature*, vol. 36, no. 3, pp.1426–1464.

Arnott, R. (1995) 'Time for revisionism on rent control?', *Journal of Economic Perspectives*, vol. 9, no. 1, pp.99–120.

Arnott, R. and Igarashi, M. (2000) 'Rent control, mismatch costs and search efficiency', *Regional Science and Urban Economics*, vol. 30, pp.249–288.

Atter, L. (2012) 'Taking a holistic view of economic growth', *Insight: The global infrastructure magazine*, No. 3, accessed 1 March 2016, www.kpmg.com/Global/en/IssuesAndInsights/ArticlesPublications/insight-magazine/Documents/insight-investmentv3.pdf.

Australians for Affordable Housing (2013) *Opening doors to employment: Is housing affordability hindering jobseekers?,* accessed 1 March 2016, http://housingstressed.org.au/wp-content/uploads/2011/09/Opening-doors-to-employment-2013.pdf.

Ball, M., Meen, G. and Nygaard, C. (2010) 'Housing supply price elasticities revisited: Evidence from international, national, local and company data', *Journal of Housing Economics*, vol. 19, no. 4, pp.255–268.

Battye, F., Bishop, B., Harris, P., Murie, A., Rowlands, R. and Tice, A. (2006) *Evaluation of key worker living: Final report*, Department for Communities and Local Government, London.

Berry, M. (2006) *Housing affordability and the economy: A review of macroeconomic impacts and policy issues*, NRV 3: Research Paper 4, Australian Housing and Urban Research Institute, Melbourne, www.ahuri.edu.au/research/nrv-research-papers/nrv3-4.

Bill, A., Mitchell, W. and Watts, M. (2008) 'The occupational dimensions of local labour markets in Australian cities', *Built Environment*, vol. 34, no. 3, pp.291–306.

Brisbane City Council (2012) *Brisbane economic development plan 2012–2031*, accessed 3 March 2014, www.brisbane.qld.gov.au/downloads/about_council/governance_strategy/economic_development_plan_2012-2031_full.pdf.

Brisbane City Council (2013) *Brisbane vision 2031*, accessed 3 March 2014, www.brisbane.qld.gov.au/documents/about%20council/Brisbane%20Vision%202031/Brisbane_Vision_2031_full_document.pdf.

Brueckner, J.K. and Zenou, Y. (2003) 'Space and unemployment: The labor-market effects of spatial mismatch', *Journal of Labor Economics*, vol. 21, no. 1, pp.242–262.

Bunker, R. (2014) 'How is the compact city faring in Australia?', *Planning Practice and Research*, vol. 29, no. 5, pp.449–460.

Burke, T. and Stone, J. (2014) *Transport disadvantage and low-income rental housing*, Positioning Paper no. 157, Australian Housing and Urban Research Institute, Melbourne, http://www.ahuri.edu.au/research/position-papers/157.

Calavita, N. and Mallach, A. (2010) *Inclusionary housing in international perspective: Affordable housing, social inclusion, and land value recapture*, Lincoln Institute of Land Policy, Cambridge, MA.

Cassiers, T. and Kesteloot, C. (2012) 'Socio-spatial inequalities and social cohesion in European cities', *Urban Studies*, vol. 49, no. 9, pp.1909–1924.

CBI and KPMG (2014) *London business survey (April 2014),* accessed 30 September 2015, www.cbi.org.uk/media/2712430/london-business-survey-april2014.pdf.

Cervero, R. (1996) 'Jobs-housing balance revisited: Trends and impacts in the San Francisco bay area', *Journal of the American Planning Association*, vol. 62, no. 4, pp.492–511.

Chapple, K. (2006) 'Overcoming mismatch: Beyond dispersal, mobility, and development strategies', *Journal of the American Planning Association*, vol. 72, no. 3, pp.322–336.

City of Darwin (2012) *Evolving Darwin towards 2020 strategic plan*, accessed 3 March 2014, www.darwin.nt.gov.au/sites/default/files/City_Darwin_Strategic%20Plan%202012_web.pdf.

City of Melbourne (2013a) *Future living: A discussion paper identifying issues and options for housing our community*, accessed 3 March 2014, www.melbourne.vic.gov.au/BuildingandPlanning/FutureGrowth/Documents/future_living_discussion_paper.pdf.

City of Melbourne (2013b) *Melbourne city council plan 2013–17*, accessed 1 March 2016, www.melbourne.vic.gov.au/SiteCollectionDocuments/council-plan-2013-17.pdf.

City of Melbourne (2015) *Homes for people: Housing strategy 2014–18*, accessed 30 September 2015, http://participate.melbourne.vic.gov.au/application/files/2714/2360/5676/Homes_for_People_Housing_Strategy_v8_FINAL_FOR_WEB_post_FMC.pdf.

City of Melbourne and Victorian Government (2013) *Melbourne retail & hospitality strategy 2013–17,* accessed 3 March 2014, www.melbourne.vic.gov.au/enterprisemelbourne/industries/retail/Strategy/Documents/Retail_Hospitality_Strategy_2013_17.pdf.

City of New York (2014) *Housing New York: A five-borough, ten-year plan*, Office of the Mayor, accessed 1 March 2016, www.nyc.gov/html/housing/assets/downloads/pdf/housing_plan.pdf.

City of Perth (2013) *Strategic community plan: Vision 2029+,* accessed 3 March 2013, www.perth.wa.gov.au/sites/default/files/documents/STRATEGIC%20COMMUNITY%20PLAN%20VISION%202029.pdf.

City of Sydney (2009) *Affordable rental housing strategy 2009–2014*, accessed 3 March 2014, www.cityofsydney.nsw.gov.au/__data/assets/pdf_file/0010/127369/affordable_rental_housing_strategy_amendments_FINAL_180510.pdf.

City of Sydney (2013a) *Economic development strategy*, accessed 30 September 2015, www.cityofsydney.nsw.gov.au/__data/assets/pdf_file/0006/156525/8946_FA5_Economic_Strategy_A4_UPDATE-Final-Low.pdf.

City of Sydney (2013b) *Sustainable Sydney 2030: Community strategic plan (2013)*, accessed 3 March 2014, www.cityofsydney.nsw.gov.au/__data/assets/pdf_file/0005/99977/6645_Final-version-Community-Strategic-Plan-IPR-Document_FA4-1_low-res.pdf.

City of Sydney (2015) *Housing issues paper*, accessed 30 September 2015, http://sydneyyoursay.com.au/housing-issues-paper/documents/21574/download.

Commitee for Sydney (2013) *City of choice: Sydney as a global talent hub*, Sydney Issues Paper 3, accessed 4 March 2014, www.sydney.org.au/media/uploads/Sydney%20Issues%20Paper%203%20-%20FINAL.pdf.

Commitee for Sydney (2014) *Sydney: Adding to the dividend, ending the divide (2014 update)*, accessed 30 September 2015, www.sydney.org.au/wp-content/uploads/2015/08/CfS-Issues-Paper-4-Adding-to-the-Dividend-Ending-the-Divide-2014-Update.pdf.

Commitee for Sydney (2015) *Big city analytics: Identifying sydney's economic, employment and population centres of gravity*, Issues Paper 5, accessed 1 March 2016, www.sydney.org.au/wp-content/uploads/2015/08/CfS-Issues-Paper-5-Big-City-Analytics-2015.pdf.

Connolly, E., Davis, K. and Spence, G. (2011) *Trends in labour supply*, Reserve Bank of Australia, accessed 1 March 2016, www.rba.gov.au/publications/bulletin/2011/jun/pdf/bu-0611-1.pdf.

Covington, K.L. (2009) 'Spatial mismatch of the poor: An explanation of recent declines in job isolation', *Journal of Urban Affairs*, vol. 31, no. 5, pp.559–587.

Davison, G., Gurran, N., van den Nouwelant, R., Pinnegar, S. and Randolph, B. (2012) *Affordable housing, urban renewal and planning: Emerging practice in Queensland, South Australia and New South Wales*, Final Report no. 195, Australian Housing and Urban Research Institute, Melbourne, http://www.ahuri.edu.au/research/final-reports/195.

Department of Infrastructure & Transport (2013) *State of Australian cities 2013*, accessed 3 March 2014, www.infrastructure.gov.au/infrastructure/pab/soac/files/2013_00_INFRA1782_MCU_SOAC_FULL_WEB_FA.pdf.

Department of Infrastructure and Regional Development (2015) *State of Australian cities 2014–2015: Progress in Australian regions,* accessed 30 Sep 2015, http://infrastructure.gov.au/infrastructure/pab/soac/files/2015_SoAC_full_report.pdf.

Dodson, J. (2005) *Is there a spatial mismatch between housing affordability and employment opportunity in Melbourne?,* Final Report no. 80, Australian Housing and Urban Research Institute, Melbourne, http://www.ahuri.edu.au/research/final-reports/80.

Doogan, K. (1996) 'Labour mobility and the changing housing market', *Urban Studies*, vol. 33, no. 2, pp.199–222.

Duranton, G. and Puga, D. (2004) 'Chapter 48: Micro-foundations of urban agglomeration economies', in Henderson, J.V. and Jacques-François, T. (eds), *Handbook of regional and urban economics, vol 4: Cities and geography*, Elsevier, Amsterdam, pp.2063–2117.

Ehrenhalt, A. (2013) *The great inversion and the future of the American city*, Vintage, New York.

Feng, Z. (2009) 'Fuzziness of travel-to-work areas', *Regional Studies*, vol. 43, no. 5, pp.707–720.

Fishman, R. (2005) 'Longer view: The fifth migration', *Journal of the American Planning Association*, vol. 71, no. 4, pp.357–366.

Flórez-Revuelta, F., Casado-Díaz, J.M. and Martínez-Bernabeu, L. (2008) 'An evolutionary approach to the delineation of functional areas based on travel-to-work flows', *International Journal of Automation and Computing*, vol. 5, no. 1, pp.10–21.

Forster, C. (2006) 'The challenge of change: Australian cities and urban planning in the new millennium', *Geographical Research*, vol. 44, no. 2, pp.173–182.

Furman Center (2011) *State of New York city's housing and neighborhoods*, accessed 2 Dec 2015, www.furmancenter.org/files/sotc/SOC_2011.pdf.

Glaeser, E.L. (2010) 'Introduction', in Glaeser, E.L. (ed.), *Agglomeration economics*, University of Chicago Press, Chicago.

Glaeser, E.L., Gyourko, J. and Saks, R.E. (2005) 'Urban growth and housing supply', *Journal of Economic Geography*, vol. 6, no. 1, pp.71–89.

Gleeson, B. and Low, N. (2000) *Australian urban planning: New challenges, new agendas*, Allen & Unwin, Sydney.

Gobillon, L., Selod, H. and Zenou, Y. (2007) 'The mechanisms of spatial mismatch', *Urban Studies*, vol. 44, no. 12, pp.2401–2428.

Gurran, N., Milligan, V., Baker, D., Beth Bugg, L. and Christensen, S. (2008) *New directions in planning for affordable housing: Australian and international evidence and implications*, Final Report no. 120, Australian Housing and Urban Research Institute, Melbourne, http://www.ahuri.edu.au/research/final-reports/120.

Hamnett, C. (1994) 'Social polarisation in global cities: Theory and evidence', *Urban Studies*, vol. 31, no. 3, pp.401–424.

Holzer, H. (1991) 'The spatial mismatch hypothesis: What has the evidence shown?', *Urban Studies*, vol. 28, no. 1, pp.105–122.

Houston, D. (2005) 'Employability, skills mismatch and spatial mismatch in metropolitan labour markets', *Urban Studies*, vol. 42, no. 2, pp.221–243.

Hughes, M.A. (1995) 'A mobility strategy for improving opportunity', H*ousing Policy Debate*, vol. 6, no. 1, pp.271–297.

Hugo, G. (2005) 'Implications of demographic change for future housing demand in Australia', *Australian Planner*, vol. 42, no. 2, pp.33–41.

Ihlanfeldt, K.R. (2006) 'A primer on spatial mismatch within urban labor markets', in Arnott, R.J. and McMillen, D.P. (eds), *A companion to urban economics*, Blackwell, Malden, MA, pp.404–417.

Ihlanfeldt, K.R. and Sjoquist, D.L. (1998) 'The spatial mismatch hypothesis: A review of recent studies and their implications for welfare reform', *Housing Policy Debate*, vol. 9, no. 4, pp.849–892.

Jae Hong, K. (2010) 'Linking land use planning and regulation to economic development: A literature review', *Journal of Planning Literature*, vol. 26, no. 1, pp.35–47.

Jobs Australia (2014) *Response to the interim report of the reference group on welfare reform*, accessed 30 Sep 2015,

www.ja.com.au/sites/default/files/response_to_the_interim_report_of_the_reference_group_on_welfare_reform.pdf.

Kain, J.F. (1968) 'Housing segregation, negro employment, and metropolitan decentralization', *The Quarterly Journal of Economics*, vol. LXXXII, no. 2, pp.175–197.

Katz, B. and Bradley, J. (2013) *The metropolitan revolution: How cities and metros are fixing our broken politics and fragile economy*, Brookings Institution Press, Washington DC.

Kelly, J.-F. (2015) *City limits: Why Australia's cities are broken and how we can fix them*, Melbourne University Press, Carlton, Vic.

Kelly, J.-F., Mares, P., Harrison, C., O'Toole, M., Oberklaid, M. and Hunter, J. (2013) *Productive cities: Opportunity in a changing economy*, Grattan Institute, accessed 4 March 2014, www.grattan.edu.au/static/files/assets/c422f26b/188_productive_cities.pdf.

Krugman, P. (2000) 'Reckonings: A rent affair', *The New York Times*, 7 June, accessed 2 December 2015, www.nytimes.com/2000/06/07/opinion/reckonings-a-rent-affair.html.

Levine, J. (1998) 'Rethinking accessibility and jobs-housing balance', *Journal of the American Planning Association*, vol. 64, no. 2, pp.133–149.

Li, H., Campbell, H. and Fernandez, S. (2013) 'Residential segregation, spatial mismatch and economic growth across U.S. Metropolitan areas', *Urban Studies*, vol. 50, no. 13, pp.2642–2660.

Lord Mayor's Economic Development Steering Committee (2015) *Brisbane 2022: New world city action plan*, accessed 30 Sep 2015, www.choosebrisbane.com.au/~/media/choose/pdf/brisbane2022planpdf.ashx.

Milligan, V., Hulse, K., Pawson, H., Flatau, P. and Liu, E. (2015) *Strategies of Australia's leading not-for-profit housing providers: A national study and international comparison*, Final Report no. 237, Australian Housing and Urban Research Institute, Melbourne, www.ahuri.edu.au/research/final-reports/237.

Mitchell, W. and Watts, M. (2010) 'Identifying functional regions in Australia using hierarchical aggregation techniques', *Geographical Research*, vol. 48, no. 1, pp.24–41.

Moore, R. (2015) 'London: The city that ate itself', *The Observer*, 28 June, accessed 28 June 2015, www.theguardian.com/uk-news/2015/jun/28/london-the-city-that-ate-itself-rowan-moore.

Morrison, N. (2003) 'Assessing the need for key-worker housing: A case study of Cambridge', *Town Planning Review*, vol. 74, no. 3, pp.281–300.

NSW Government (2014) *A plan for growing Sydney*, Department of Planning and Environment, accessed 30 September 2015, www.strategy.planning.nsw.gov.au/sydney/wp-content/uploads/sites/2/2015/02/A-Plan-For-Growing-Sydney_2015_updated_20Feb_.pdf.

NT Government (2015) *Northern Territory economic development strategy*, accessed 30 September 2015, https://ontrack.nt.gov.au/__data/assets/pdf_file/0008/180917/Northern-Territory-Economic-Development-Strategy.pdf.

Ong, P.M. (2002) 'Car ownership and welfare-to-work', *Journal of Policy Analysis and Management*, vol. 21, no. 2, pp.239–252.

Pawson, H., Hulse, K. and Cheshire, L. (2015) *Addressing concentrations of disadvantage in urban Australia*, Final Report no. 247, Australian Housing and Urban Research Institute, Melbourne, www.ahuri.edu.au/research/final-reports/247.

Queensland Government (2009) *South east Queensland regional plan 2009–2031*, Department of Infrastructure and Planning, accessed 11 March 2014, www.dsdip.qld.gov.au/resources/plan/seq/regional-plan-2009/seq-regional-plan-2009.pdf.

Raco, M. (2008) 'Key worker housing, welfare reform and the new spatial policy in England', *Regional Studies*, vol. 42, no. 5, pp.737–751.

Randolph, B. (2016; forthcoming) 'Emerging geographies of suburban disadvantage', in Hannigan, J. and Richards, G. (eds), *The handbook of new urban studies*, Sage.

Randolph, B. and Holloway, D. (2007) *Commonwealth Rent Assistance and the spatial concentration of low income households in metropolitan Australia*, Final Report no. 101, Australian Housing and Urban Research Institute, Melbourne, www.ahuri.edu.au/research/final-reports/101.

Randolph, B. and Tice, A. (2014) 'Suburbanizing disadvantage in Australian cities: Sociospatial change in an era of neoliberalism', *Journal of Urban Affairs*, vol. 36, no. s1, pp.384–399.

Rawnsley, T. and Spiller, M. (2012) 'Housing and urban form: A new productivity agenda,' in Tomlinson, R. (ed.), *Australia's unintended cities*, CSIRO Publishing, Collingwood, VIC.

Reed, R. (2015) 'Five reasons housing is more affordable overseas', *The Conversation*, 19 June, accessed 30 Sep 2015, www.theconversation.com/five-reasons-housing-is-more-affordable-overseas-43245.

Rowley, S. and Phibbs, P. (2012) *Delivering diverse and affordable housing on infill development sites*, Final Report no. 193, Australian Housing and Urban Research Institute, Melbourne, http://www.ahuri.edu.au/research/final-reports/193.

Sassen, S. (1991) *The global city: New York, London, Tokyo*, Princeton University Press, Princeton.

SGS Economics & Planning (2012) *Productivity and agglomeration benefits in Australian capital cities*, Final Report: COAG Reform Council, accessed 4 March 2014, www.sgsep.com.au/assets/productivity-and-agglomeration-benefits-COAG-report-final.pdf.

Spiller, M. (2013a) 'Affordable housing: The productivity dimension', *The Quarterly Magazine*, vol. 14, pp.8–11.

Spiller, M. (2013b) *Social division, social housing and productivity: A Brisbane case study*, SGS Economics & Planning Occasional Paper, accessed 4 March 2014, www.sgsep.com.au/assets/downloads/Social-housing-and-productivity-SGS-Occ-Paper.pdf.

Sweet, M. (2011) 'Does traffic congestion slow the economy?', *Journal of Planning Literature*, vol. 26, no. 4, pp.391–404.

Ting, I. (2015) 'The Sydney suburbs where minimum wage workers can afford to rent', *Sydney Morning Herald*, 9 June, accessed 1 March 2016, www.smh.com.au/nsw/the-sydney-suburbs-where-minimum-wage-workers-can-afford-to-rent-20150608-ghjc6v.html.

Topham, G. (2014) 'Looming London transport crisis 'risks sparking riots', says tfl chief (22 sep)', *The Guardian*, 22 September, accessed 28 November 2014, www.theguardian.com/uk-news/2014/sep/21/london-lack-affordable-transport-risks-sparking-riots-tfl-chief.

Tourism 2020 (2014) *Sydney tourism employment plan*, accessed 1 March 2016, http://www.industry.nsw.gov.au/__data/assets/pdf_file/0004/54157/Sydney-tourism-employment-plan.pdf.

UN Habitat (2011) *The economic role of cities*, United Nations Human Settlements Programme, accessed 3 March 2014, www.unhabitat.org/pmss/getElectronicVersion.aspx?nr=3260&alt=1.

van Ommeren, J.N. and Gutiérrez-i-Puigarnau, E. (2011) 'Are workers with a long commute less productive? An empirical analysis of absenteeism', *Regional Science and Urban Economics*, vol. 41, no. 1, pp.1–8.

Victorian Government (2014) *Plan Melbourne: Metropolitan planning strategy*, Department of Transport, Planning and Local Infrastructure, accessed 1 March 2016, www.planmelbourne.vic.gov.au/__data/assets/pdf_file/0016/131362/Plan-Melbourne-May-2014.pdf.

WA Government (2010) *Directions 2031 and beyond: Metropolitan planning beyond the horizon*, accessed 11 March 2014, www.planning.wa.gov.au/dop_pub_pdf/plan_directions2031_Part2.pdf.

Whitehead, C.M.E. (2006) 'Planning policies and affordable housing: England as a successful case study?', *Housing Studies*, vol. 22, no. 1, pp.25–44.

Williams, P., Pocock, B. and Bridge, K. (2009) *Linked up lives: Putting together work, home and community in ten Australian suburbs*, University of South Australia, Adelaide, SA.

Williams, T. and Macken, S. (2012) *Homes for all: The 40 things we can do to improve supply and affordability*, McKell Institute, accessed 1 March 2016, www.mckellinstitute.org.au/wp-content/uploads/2012/04/McKell_HomesForAll_A4.pdf.

Wills, J. and Linneker, B. (2012) *The costs and benefits of the London living wage*, Trust for London, accessed 30 Sep 2015, www.trustforlondon.org.uk/wp-content/uploads/2012/10/Living-wage-costs-and-benefits-FULL.pdf.

Yates, J., Milligan, V., Berry, M., Burke, T., Gabriel, M., Phibbs, P., Pinnegar, S. and Randolph, B. (2007) *Housing affordability: A 21st century problem*, Final Report no. 105, Australian Housing and Urban Research Institute, Melbourne, http://www.ahuri.edu.au/research/final-reports/105.

Yates, J., Randolph, B. and Holloway, D. (2006) *Housing affordability, occupation and location in Australian cities and regions,* Final Report no. 91, Australian Housing and Urban Research Institute, Melbourne, http://www.ahuri.edu.au/research/final-reports/91.

APPENDICES

Appendix 1: ANZSIC industry code short names

A.	Agriculture, Forestry and Fishing	Agriculture
B.	Mining	Mining
C.	Manufacturing	Manufacturing
D.	Electricity, Gas, Water and Waste Services	Utilities
E.	Construction	Construction
F.	Wholesale Trade	Wholesale
G.	Retail Trade	Retail
H.	Accommodation and Food Services	Hospitality
I.	Transport, Postal and Warehousing	Logistics
J.	Information Media and Telecommunications	Media-telecoms
K.	Financial and Insurance Services	Finance-insurance
L.	Rental, Hiring and Real Estate Services	Property-rentals
M.	Professional, Scientific and Technical Services	Prof. services
N.	Administrative and Support Services	Support services
O.	Public Administration and Safety	Gov't services
P.	Education and Training	Education
Q.	Health Care and Social Assistance	Health
R.	Arts and Recreation Services	Arts-leisure
S.	Other Services	Other services

Appendix 2: Interview themes

About you and your business	**(5 minutes)**
What is the business's main activity?	
How long has the business been operating?	
What is your role?	
How long have you worked here?	
Have you worked in similar roles before?	

About your workforce	**(5 minutes)**
How many employees work in the business?	
Do you have staff outside the city? In other parts of Sydney? Across Australia? Globally?	
What proportion of your staff would you say is on a lower income (i.e. below about $41 600/year: around $20/hour for full time staff; and $33/hour for someone working	
3 days/week)?	
What occupations fall in this lower income range?	

Recruiting workers	**(10 minutes)**
What is your usual strategy for filling job vacancies? And does it differ for lower income workers?	
What do you think is catchment for your workers (how far from the city)? And is it different for lower income workers?	
Do you ever find it difficult to fill lower income job vacancies? If so, is this to do with difficulties in getting people to commute into the city or some other reason?	
Have you ever had to pay more to fill a lower income position (compared with, say, industry standards)?	

Worker skills matching	**(10 minutes)**
Have you had issues finding people with the right skills/experience/assets, or had to make compromises in order to fill lower income vacancies? Like, having to take on younger workers; or multiple part-time workers instead of one full-time worker?	

Retention and turnover	**(10 minutes)**
Do you have problems of higher levels of turnover with lower income workers? If so, is this to do with difficulties they faced in commuting in or other housing related issues?	
Have you ever come across people leaving your employment to take jobs closer to home? Or simply because it is too hard to get to (or too expensive to live near) the city?	
Have you ever had a lower income worker's reliability or flexibility suffer because they live too far from the city?	

Housing constraints on the lower income workforce?	**(5 minutes)**
In general, do you think Sydney is affordable for lower income workers?	
Do you think it is affordable for them to live close enough to work in the city?	
Do you think travelling from far away is less worthwhile for lower income workers?	
Do any of your lower income workers have difficulties in terms of getting into work on time due to travel issues? If so, is this related to public transport or private car use?	
Do you think these costs of living/working in the city for lower income staff affect your business? Through recruitment, skills and retention, as already discussed? Or in other ways?	
In the other direction, do you think working in the city has benefits that attract workers?	
Any other comments about these issues?	

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