Final Report

Housing Affordability, Occupation and Location in Australian Cities and Regions

authored by

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EXECUTIVE SUMMARY

The research undertaken for this report was motivated by a concern that high housing costs in central city regions are excluding many lower paid workers from jobs in those regions. Such concerns suggest labour market shortages in some occupations can be attributed to shortages of affordable housing in locations that provide ready access to the central city where there is a high concentration of specific types of jobs. This paper examines the affordability, occupation and location outcomes that have contributed to these concerns.

Key findings

- High rates of housing stress are found among lower income working households.
- Hospitality workers experience the highest incidence of housing stress.
- Sales assistants record the greatest numbers in stress.
- Public sector occupations such as police or teachers face below average incidence of affordability problems.
- Affordability problems are driven primarily by low incomes rather than occupation *per se*.
- Relatively high rates of both residential and employment self-containment in regions in Melbourne, Sydney and Brisbane/Gold Coast.
- Increases in self-containment likely to be associated with growth of a suburban service-based economy with jobs following people.
- Commuting patterns revealed that only some occupations (such as computing professionals) had an increased proportion of workers facing long commutes – because they chose to live further out (where they could afford to buy) and their work was more likely to be located in inner locations. Most workers had a reduced incidence of commuting beyond their own or a neighbouring SSD
- Greatest proportions of persons commuting long distances live in outer regions.
- Choice to stay in high cost inner city locations is related to age (with young households choosing to rent).
- Increases in proportions living in central city locations likely to have arisen because of increased supply of rental stock in inner areas (although there are issues about the affordability of this stock).

Overview

Affordability outcomes

Affordability problems for those in particular occupations need to be seen in the context of the overall level of housing stress. The results reported in Chapter 2 show:

- in Australia in 2001, some 836,000 households or just over 13 per cent of all households were in housing stress with housing cost ratios of 30 per cent of more of their gross household income.
- Of these, 455,000 had a reference person who was in either full time or part time employment; and,

- of the working households in housing stress, 229,000 were low income households with gross household incomes below $600 per week (or $30,000 per annum) and 100,000 were moderate income households with gross household incomes in the range of $800 - $1200 per week range (or $40,000 to $60,000 per annum).
- At the extreme, there are 126,000 low income working households with housing cost ratios of 40 per cent or more of their gross household income.

The detailed information on outcomes at an occupational level reported in Chapter 2 shows

- the highest incidence of housing stress occurs amongst hospitality workers and
- the greatest absolute number in housing stress occurs for sales assistants.

Both these jobs are more likely to be lower skilled, casualised, part-time and to offer few career prospects. Most critically, the detailed results in Chapter 2 also show the primary driver for households in housing stress is their low household income. At an occupational level, this result is even more apparent: 47 per cent of hospitality workers, who have the highest incidence of housing stress of all working households, have reported household incomes below $400 per week and 80 per cent of them have incomes below $600 per week.

Finally, the results in Chapter 2 reinforce the well established fact that housing affordability problems are highly correlated with high housing costs. This highlights the fact that high housing costs as well as low incomes are the major contributor to housing affordability problems for working households. The results show:

- the highest incidence of housing stress amongst working households is found in the Sydney metropolitan region; and
- other regions with a high incidence of stress are in south-east Queensland and in the inner regions of Melbourne.

Occupation and location outcomes

The question of whether occupation is a contributing factor to housing stress independent of income is likely to depend on the extent to which households are able to independently choose their residential location and their place of work. Given the cost constraints imposed on residential location, this will depend on the nature of the employment conditions associated with particular occupations. Workers in occupations dominated by casual or part-time employment, for example, may be less likely to be able or willing to travel long distances than are workers in occupations dominated by full-time employment. Poorly paid workers unable to afford the expense of owning a car and in occupations dominated by shift-work are also less likely to be able or willing to travel long distances when public transport is not readily available.

When jobs for each occupation are dispersed, households are more likely to be able to choose residential locations that reflect their capacity to pay. When jobs in a particular occupation are concentrated in the high cost regions, then lower income households in these occupations are more likely to face long commuting times as they trade-off housing costs with location or to have affordability problems than are households in occupations that are spatially dispersed.

The location of jobs in relation to the location of workers in those jobs is the focus of the results presented in Chapter 3 and Chapter 4. The analysis in these chapters is based on journey to work data from the census and is limited to the high cost greater metropolitan regions of Sydney, Melbourne and Brisbane and to four ‘indicator occupations’ (computing professionals, nursing professionals, cleaners and hospitality

workers), selected as being broadly representative of essential jobs emerging or remaining with the structural changes taking place in the economy. The results presented in these chapters show:

- there is a high degree of residential and employment self-containment at a broad sub-regional level within these key metropolitan regions with approximately half of the workforce living and working locally;
- the central business district and inner cities remain the predominant workplace location and have significant shortages of workers despite a 'back to the city' movement amongst some of the workforce resident in the higher cost locations Sydney and Melbourne; and
- suburbanisation processes for the personal service workers represented in the 'indicator' occupations are continuing with a relative shift in both the residence and workplace away from higher cost central locations towards the lower cost suburbs.
- The exception to this generalisation occurs for the 'symbolic analysts' which means jobs for computer professionals are becoming increasingly concentrated in the city centres.

The relatively centralised location of jobs for some workers and more dispersed nature of them for others mean there are considerable differences in the amount of commuting that is undertaken within the city. Maps presented in Chapter 3 show that the burden of commuting is more likely to be borne by those who live in the outer regions of the city rather than by those who can afford to live closer to the main centres of employment.

The results presented in Chapter 4 focus on the differences in the patterns of places of residence and work outcomes by occupation. These are summarised in a number of dissimilarity indexes which combine origin and destination data for individual workers and describe the proportion of jobs or people within each occupation that would have to relocate to different areas to eliminate the spatial mismatch that occurs between workers' places of residence and employment. These results show these are

- greatest for computing professionals, reflecting the significant concentration of employment opportunities; and are
- significantly lower for the other three indicator occupations, reflecting a relatively greater dispersion of work locations for these personal service occupations.

The final key result from that part of the journey to work analysis which focuses on workers with employment in the regions containing the CBD is that

- those who work in these high cost, job rich inner city regions tend to commute from nearby regions, but that
- the inner city areas themselves have attracted increasing proportions of the local workforce to live there, particularly for nursing and computing professionals.

This is likely to reflect increasing opportunities for rental in higher density developments in these areas.

Choices and trade-offs made by those working in high cost areas

The results in Chapter 5 focus on the location, tenure and other trade-offs made by households with at least one person working in Inner Sydney, selected as a representative of the job-rich high cost locations which are providing an increase in the housing opportunities available. They show:

- a disproportionate share of households with a person working in Inner Sydney choose to live in the higher cost inner areas rather than travel long distances to work;
- the choice to live close to work in Inner Sydney is associated with above levels of housing stress;
- there are relatively more couple only and group households living in Inner Sydney than in the rest of Sydney; and
- the most significant characteristics that identifies households working in Inner Sydney is household income and household structure rather than occupation.

The results also reinforce previously established strong relationships between income, age, tenure and location choices. For those working in Inner Sydney:

- housing outcomes are strongly influenced by economic and life-cycle characteristics;
- the propensity to rent decreases with age; and, for both young and old,
- renting declines both as household income increases and with distance from the CBD;
- similarly, the probability of being in housing stress decreases with age, decreases with income and decreases as the distance workers live from Inner Sydney increases.

Detailed analysis by occupation is constrained since the small numbers involved limit the extent to which the above characteristics can be controlled for. The analysis above shows these are critical to explaining outcomes.

The analysis by occupation, however, does show that disproportionate shares of persons in the lower skilled hospitality and cleaner occupations who work in Inner Sydney are neither the reference person nor the partner in the household. As such they are likely to be secondary workers in the household and their affordability problems may be managed by their willingness either to remain in their parental home or to share in a group household. Despite this, hospitality workers also have the highest levels of housing stress.

Conclusions and policy implications

The report draws a number of conclusions from the data and analysis.

First, claims that structural change has led to a re-urbanisation of the inner city regions of global cities and an increasing reliance on new economy jobs in the inner city regions are only partly correct.

- There has been significant growth and concentration of computing professionals in the inner city areas
- There has been much greater growth in jobs in the locations where an increasing proportion of workers are living in the suburbs.

Second, there is little *direct* evidence to support the claims of those who express concerns that employers in high cost areas such as the inner city cannot attract key workers because of housing affordability problems. To an extent, the higher density apartment boom in the CBDs of our major cities has created opportunities for some workers to live closer to employment. These appear to be largely younger, in professional occupations and willing to rent. However, there is evidence to support the claim that those who work in inner city areas and live there experience significantly

greater housing affordability problems compared to those who work in the inner city but live elsewhere.

- This suggests an inner city housing affordability problem which signifies a wider process of income and spatial polarization that is reducing housing options for lower income earners in general.
- The affordability problems faced by essential workers are the same as those faced by any lower paid household.

The implications of a lack of appropriate affordable housing are that many workers either pay a high proportion of their incomes in meeting their housing costs and/or travel longer distances in order to work in their chosen location. The consequence is that the inner high cost regions of the city will be populated by the young, those who rent, the affluent and those without children. This suggests a bigger issue that needs to be addressed is whether such spatially polarised cities are sustainable in the long run.

The results presented here suggest that the inability of employers to recruit and retain key or essential workers is likely to be part of a much broader and potentially more insidious process.

Low paid workers who are the breadwinners in their household are being displaced from high cost regions. Much of this displacement is because their jobs are also being displaced as a result of high-cost residential development displacing many of the traditional sources of employment for the residents of those areas. With the exception of the CBD, the numbers of persons employed in jobs in high cost regions have declined. These jobs have been replaced by jobs in the middle and outer regions.

It is part of a process by which the low paid increasingly are being excluded from the range of choices available to those who are benefiting from the economic growth arising from economic restructuring. Employers can address their problems by providing better wages and better conditions to a revolving supply of young, mobile workers. The costs associated with continuous retraining will be passed on in higher prices.

The ultimate cost, however, will be cities that have lost the diversity that made them great in the first place.

Both the UK and the US have implemented affordable housing policies. In London these require 50 per cent of all new housing developments to be affordable. In a number of States in the US, they require 15 to 25 per cent of all housing developments to be affordable. The renewal of lower Manhattan includes a 20 per cent affordability quota. In both countries, these policies are underpinned by national and state based financial arrangements that ensure such policies are feasible. It is time to introduce such policies in Australia's metropolitan regions.

1 INTRODUCTION AND OVERVIEW

"Central Sydney is being starved of basic-wage workers - those who clean offices and hotel rooms, wait on tables, work in kitchens - because they cannot afford to live within reasonable travelling distance from the city." (O'Malley, Sydney Morning Herald, 2nd June, 2005).

1.1 Context

The research undertaken for this report was motivated by a concern such as that expressed in the above quote from a recent press report: viz. by a concern that high housing costs in central city regions are excluding many lower paid workers from jobs in those regions. Such concerns suggest labour market shortages in some occupations can be attributed to shortages of affordable housing in locations that provide ready access to the central city where there is a high concentration of specific types of jobs. Because many of the jobs for moderate and lower paid workers are in occupations considered important to the proper functioning of the city, the recruitment and retention problems that employers experience potentially can have broader ramifications through their negative impact on the competitiveness of the city. An associated policy issue, therefore, is whether affordable housing and affordable housing policies should be targeted to workers in the specific occupations where problems have been identified.

The research was framed to answer three key questions:

- How can the occupational circumstances of a household (rather than an individual) be appropriately defined with regard to assessing the housing affordability outcomes of households?
- What are the travel to work patterns for the occupational categories identified for analysis? What is the appropriate geographical unit for analysing both residential and employment locations?
- What are the housing affordability outcomes for households in selected locations for the occupational categories identified? This will include an assessment of the extent to which the answers to the questions above are affected by household characteristics.

The rationale for addressing these specific questions was that they would provide the information needed to address the broader concern of whether employment of workers in specific occupations has been affected by housing affordability and accessibility problems, particularly in higher cost, job rich locations.

The presumption is that such effects will show up in one of two ways: either the identified workers would face high housing affordability problems or they would face significant commuting costs (reflected in distance travelled). If high housing affordability problems imposed unsustainable pressures on affected workers, they may be likely to re-locate to lower cost areas. If high commuting costs impose unsustainable pressures on affected workers, they may look for employment closer to their current place of residence. Either response is likely to contribute to labour market shortages in high cost areas.

The conceptual issues raised in question 1 were discussed in depth in the Positioning Paper as were the second parts of questions 2 and 3 (Yates, et al, 2005). The key points raised are summarised below. This summary is preceded by a brief overview of the background to the research and of the literature relevant to it. Again, both are covered in more detail in the Positioning Paper.

Chapter 2 provides an overview of the affordability position for households with at least one person working. These results are presented for Australia as a whole and by occupational grouping. They identify regions and occupations where concentrations of households in housing stress are highest and provide insight into the relationship between occupation and housing affordability outcomes.

Chapter 3 presents a summary analysis of the residential and workplace locations of employed persons within the three metropolitan areas chosen for detailed study (Sydney, Melbourne and Brisbane). This covers 2001 and changes between 1996 and 2001. The results highlight the relationship between housing and labour markets and identify regions both where there are high concentrations of employment and where there are mismatches between the number of jobs and the number or workers, which, in turn, require workers to commute to the available jobs.

Chapter 4 then undertakes a detailed analysis of journey to work patterns within these three cities in both 2001 and 1996 for Melbourne and Sydney and for 2001 only for Brisbane (analysis of 1996 data for Brisbane was not possible due to changes in area definitions). It then repeats this analysis for each of four indicator occupations chosen to best illustrate the relationship between residential location, workplace location and housing affordability issues in these cities (see below). This is followed by an analysis of changes in the residential location of workers in these indicator occupations who work in the high cost cores of these three cities between 1996 and 2001 for Sydney and Melbourne and for 2001 only for Brisbane. The results of this analysis are summarised in Chapter 4 but the detailed results have been relegated to the Appendix at the end of the report. A final section offers an alternative summary by analysing two indices of economic concentration in the three cities and the changes in these indices in Sydney and Melbourne between 1996 and 2001.

Chapter 5 looks at the evidence of the trade offs made by working households living in Sydney and working in the inner area of the city. Here, the data are analysed by location, affordability (housing stress), household income, household type, tenure, age and occupation of households where at least one person is in work. Due to the complexity and cost of the datasets, this analysis has been restricted to Sydney only, given the comparatively more significant problem of unaffordability in this city compared to Melbourne or Brisbane. Nevertheless, the findings suggest comparable results would be obtained for these two cities.

Finally, Chapter 6 offers some conclusions concerning the complexity of the relationships explored in the report.

The remainder of this introductory chapter has three specific aims. The first is to place concerns about the impact of housing costs on labour market outcomes into a broader context relating to structural change over the past twenty-five years; the second is to review the US, UK and Australian literature that focuses on what more generally is described as the “key worker” or “essential worker” problem in order to determine whether there is agreement on which occupations are central to the broader debate on the issues raised in the press report quoted. The final aim is to raise some of the conceptual issues that arise in attempting to relate incomes, occupations and housing outcomes.

1.2 Background

Concerns about the impact of high housing costs on labour market outcomes in city centres, particularly on the east coast of Australia, have emerged with the increasing pressures associated with the economic restructuring and growth of new economy jobs. In Newman's words, "Increasingly these jobs are occurring within city centres, and inner city areas, and they are promoting a re-urbanisation process, a resurgence of the inner city and central city living, that is associated with the need to be part of this global city phenomenon." (Peter Newman, ABC Background Briefing, September 7th 1997)

Economic change associated with labour market reform has resulted in an increased casualisation of employment, a growth of part-time rather than full-time jobs and increased earnings disparities.1 At the same time, there has been strong growth both in the number of people employed in the highly skilled professional group and in the numbers employed as relatively unskilled clerical, sales and services workers (Watson et al., 2003). This is consistent with the Reichian notion of the symbiotic relationship between the growth of well-paid symbolic analysts or knowledge workers in new economy jobs and the lower paid in-person service workers such as retail sales workers, hospitality workers, cleaners, health care workers and the like whose services tend to be person to person, cannot be sold world wide and have not been eliminated by the restructuring that has taken place (Reich, 1991). These changes have contributed to a significant polarisation of household incomes (Saunders, 2003, 2005). Social change, which has resulted in increases in the incidence of single person households and of dual income households, has compounded the effects of these economic changes.

Income and occupational polarisation is one aspect of the global city-social polarisation thesis in Reich's work. Excellent overviews of the broader literature on this are provided in Dodson (2004) and, in the context of Sydney, Baum (1997). Baum specifically highlights the shift in occupational structure, which has resulted in the growth of high paid professionals associated with new economy jobs along with a cluster of lower paid service workers and suggests this shift "results in an increasing polarisation of the occupational structure as jobs become concentrated in the high-skill/high-status and low-skill/low-status sectors" (Baum, 1997, p1885). Stimson (2001) highlights the extent to which the growth in Reich's symbolic analysts between 1986 and 1996 has been concentrated in Sydney and has been closely associated with re-urbanisation in the inner suburbs of Australia's big cities.

Economic and social change also has contributed to significant spatial polarisation in housing markets. As Hamnett (1994, p401) has argued, occupational polarisation "is linked to changes in housing demand leading to a gentrification of parts of the inner city and to a concentration of the less skilled in the less desirable parts of the housing market. Thus, occupational polarisation is accompanied by growing social, tenurial and ethnic segregation." Sassen (1991:185) likewise has suggested that the rapid growth and concentration of high income workers has contributed to the rapid growth of high-priced real estate market with a premium for central locations. Randolph (1991) provides an early analysis of why such outcomes might arise. Winter and Stone (1998, 1999), Yates (2002), Burke and Hayward (2001) and Randolph et al (2004) provide more recent evidence in the case of Australian cities. In essence, the gap between dwelling prices in central and outer locations has increased. At the same time, the supply of low rent housing has decreased and the bulk of that which remains is located well away from the city centre.

[1] The proposals to continue with industrial relations reform and to change workplace relations introduced in Australia in late 2005 suggest these trends will continue.

The impact of widening house price differentials on employment opportunities has been a key concern of the spatial mismatch literature for well over a quarter of a century (reviews of which can be found in Ihlanfeldt and Sjoquist, 1998 and Kain, 1992).[2] This (largely US based) literature focuses on the adverse employment outcomes for low-paid (Black) workers and is predicated on the assumption of a steady dispersal of jobs (and particularly low skilled jobs) from central cities to the suburbs and a concentration of minority workers in inner city ghettoes. In broader terms, however, it applies to cases where there is a spatial disconnection between residential and work locations for particular workers. In other words, it applies equally well to the case where jobs are concentrated and where low-paid workers are dispersed.

Gobillon et al (2003, p21) provide an overview of a number of underlying mechanisms that potentially explain how distance to job opportunities could be harmful and develop theoretical arguments to support the main intuitions embodied in these. Other than those that directly relate to discrimination, the potential mechanisms are as follows:

i. The efficiency of job search decreases with distance to jobs because workers obtain less information about distant job opportunities or firms resort to local recruiting methods.

ii. Incentives may be too low for workers residing far away from jobs to search intensively. If dwelling rents are sufficiently low or search costs sufficiently high, workers may be discouraged from searching.

iii. Workers may refuse jobs that involve too long commutes because commuting is too costly relative to the wages paid. As a result, they may restrict their job searches to their residential neighbourhood.

iv. Transport is inadequate, thus reinforcing the search and commuting costs at (ii) and (iii).

v. Employers may refuse to hire, or may pay lower wages, to distant workers because commuting long distances makes them tired, more likely to be absent and hence less productive.

The first mechanism listed, focuses on both the demand for and supply of labour; the second and third mechanisms, reinforced by the fourth, focus on labour supply; the fifth focuses on labour demand.

Smith and Zenou (2003) develop a similar framework. They suggest spatial mismatch can be the result of optimizing behaviour on the part of workers who may choose low amounts of search and long-term unemployment if they reside far away from jobs. They choose not to relocate closer to jobs because the short-run gains (represented by low land rent and large housing consumption) are big enough compared to the long-run gains of residing near jobs (represented by higher probability of finding a job). In other words, distance to jobs is seen as the main culprit.

In broad terms, the concerns raised by the international literature both on global cities and on spatial mismatch, despite starting from different geographies about the changing location of jobs and workers, form the basis of a rethinking of the focus of affordable housing policies in the UK and US as well as in Australia. Recent affordable housing debates have broadened from focussing on targeting the most needy (often those excluded from the labour market) to including workers seen as

[2] A number of relatively recent papers in Urban Studies have used spatial-skill-mismatch (Ong and Blumenberg, 1998 or Immergluck, 1998) or skills mismatch (Stoll, 2005) rather than spatial mismatch or have distinguished between spatial mismatch and skills mismatch (Houston, 2005). Whilst these terms may have different implications in terms of residential and occupational mobility, these difference are not germane to this paper.

essential to the efficient operation of the local economy but at risk of being squeezed out of local housing markets by high housing costs.

In the UK, affordable housing initiatives have been targeted on a group of what have been called “key workers” following a Housing Green Paper commitment (DETR, 2000) to help them buy homes in high demand, high price areas so that they can live within or near the communities they serve (Renewal, 2002). In the US, the Urban Land Institute (ULI) Workforce Housing Forum was convened because “the lack of affordable housing in urban areas is leading many households to locate far from their jobs, creating all the problems associated with sprawl, including traffic congestion, air pollution, environmental degradation, and requests for public funds to be used for the construction of new roads, schools, libraries, etc. In some areas, the lack of workforce housing has become an economic development issue as corporations decide not to locate in areas where their employees cannot acquire decent, safe, and affordable housing." (Haughey, 2001, p2). In other words, concerns with affordability problems for those in the workforce extend beyond the difficulties faced by employers in recruiting and retaining staff. They extend to issues of urban form, the environment, public health and wellbeing, public infrastructure and local economic development.

This broad overview suggests there are a number of structural reasons why high cost locations may be starved of essential workers and a number of reasons why this might be seen as a problem. It also provides some insights into the processes that might lead to the need for, but exclusion of, particular groups of workers within global cities. The following section focuses more specifically on who these essential or key workers might be.

1.3 The key worker/essential worker literature

One of the first questions to be addressed is which low-paid jobs are seen as essential for the proper functioning of the city. In some sense it could be argued that, almost by definition, all jobs satisfy this criterion. Much of the UK and US and the emerging Australian literature, however, has started from a pre-determined definition of who are key workers or essential workers.[3]

1.3.1 UK literature

Early key worker affordable housing policy initiatives in the UK, for example, were targeted at teachers, health workers and the police (DETR, 2000) and have since been extended to a broader range of public sector workers, a full list of which is available in the relevant documents from the Office of the Deputy Prime Minister (ODPM) (for example, ODPM, 2004a). The fact that the list was extended to include planners in London and fireman in Hertfordshire underlines a political aspect to the selection.[4] In general terms, a key worker in the UK is someone who is employed by the public sector; in a frontline role delivering an essential public service; or in a sector where there are serious recruitment and retention problems (ODPM, 2004b). In specific terms, affordable housing policies are directed at key workers in London and the South East, where housing has become increasingly unaffordable; where problems are being encountered recruiting and retaining key workers; where the social

[3] A complete list of the occupations covered by the UK, US and Australian literature can be found in Yates et al (2005).

[4] The former were added in response to political pressure after a series of strikes in 2003 by the politically aggressive Fire Brigades Union which resulted in the army being called in to provide firefighting services <http://news.bbc.co.uk/1/hi/uk/2704501.stm>. In London, planners were added to the key worker list because Keith Hill, the Minister for Planning at the time, was also the Minister for London.

rented sector is unable to provide low cost housing for rent or shared ownership; and where concerns have been raised about the staffing of key services (Renewal, 2002).

Monk et al (2002) take a broader view to defining the target group for affordable housing policies. They suggest that the most relevant definition of key workers relates to their role in the local economy, as either employment in essential services or in the growth industries required to sustain the local economy into the future. There are also other signs of acceptance of the need for a broader definition as a result of a blurring of the distinction between public and private sector jobs arising from outsourcing and privatization (eg ATIS Real Weatheralls 2002) and because of concerns that local economic development and the health of the local economy could be threatened by recruitment and retention difficulties within the private sector (for example, Fordham Research, 2005). This latter rationale suggests generalization of the definition at a national level may be problematic.

1.3.2 US literature

A broader definition of key workers is closer to that employed in one of the several strands of the equivalent US literature. The first strand comes from a national level perspective and is reflected in the work done by the Essential Worker Immigration Coalition (EWIC). EWIC is a coalition of businesses, trade associations and other organizations across the industry spectrum concerned with the shortage of both skilled and lesser skilled ('essential worker') labour. The second comes from a local perspective and is reflected in the work done by the National Housing Conference (NHC) and by the Urban Land Institute (ULI).

The focus on shortages at a national level arises from a focus on immigration policies rather than housing policies. It is relevant, however, because the essential workers nominated by EWIC include restaurant workers, retail clerks, construction trades people, manufacturing line workers, hotel service workers, food production workers, landscape workers, and health care aides.[5] These overlap considerably with shortages identified at a local level. EWIC have argued that these are the jobs that many Americans do not choose, but which are 'essential' to keep the American economy growing. To support their argument they claim companies are reporting difficulties in retaining permanent staff and hiring replacements and are curtailing expansion plans, and many small businesses are struggling to survive without enough employees.

It is the second strand of the US literature from a local perspective, however, which reflects a concern with the impact of housing affordability on labour shortages. This literature is as much concerned about the implications for urban sprawl as it is with attracting and retaining workers to support local business or to provide essential community services. It focuses specifically on workers in service industries whose location is determined by the service they provide. "Where affordable housing does exist…it usually is located far from where most people work. ...This...brings with it all the undesirable aspects of sprawl: grinding traffic congestion, school overcrowding, air pollution, and a loss of open space. Yet most major institutions - governments, hospitals, and the like - are located in or near the central city and cannot move out to follow the workforce. This dynamic makes it hard to recruit and retain moderate-income employees such as teachers, fire fighters, nurses, and so forth. Private businesses, on the other hand, are more mobile. Many are moving to the outer fringes to be closer to their workforce. While this might appear to solve the jobs/housing imbalance, it actually further compounds the cycle of sprawl by driving up land costs and forcing affordable housing even farther out." (Haughey, 2002, p2)

[5] http://www.immigration.com/newsletter/news22ess.html

This view of essential workers has focused on those whose wages are tied to the old economy (Stegman et al, 2000). These include janitors, retail sales workers, teachers, nurses and police. Wages in these occupations are seen as being typical of wages in other essential occupations. Jobs have not been eliminated by economic restructuring and there are a reasonably large number of jobs that are attracting relatively low skilled first time entrants to the workforce (Fiore and Lipman, 2003). They might also be described as occupations in which the scope for productivity increases is relatively limited.

1.3.3 Australian literature

One of the earliest and most comprehensive studies in Australia that specifically is concerned with affordability, occupation and location is that undertaken by O'Connor and Healy (2002) whose work (on Melbourne) identifies only high and low status workers broadly defined according to their occupations. Their work suggests central Melbourne is becomingly increasingly separate from the rest of the metropolitan region and is consistent with Sassen's social and spatial polarisation or Fainstein's divided cities hypotheses (Fainstein, 1992; Sassen, 1991). However, it does not specifically focus on the potential difficulties faced by the low status workers employed in central Melbourne.

Sydney based studies have followed the pre-determined approach to defining occupations of interest that is the hallmark of the related international literature. Randolph et al (2004) focused on computer professionals, registered nurses, primary and secondary teachers, truck drivers and sales assistants. These five occupational groups were a pragmatic choice: they were chosen to provide examples from both the public and private sectors and because they contained relatively large numbers of the middle income workers who were the focus of their study. A significant result of their study was that outcomes differed considerably for different occupations, reflecting in part the extent to which jobs were dispersed.

In their study of the Northern Beaches area in Sydney, Epic DotGov (2004) employed a list of sixteen occupations seen as providing key services to the community in the area of health, education, transport, child care and property protection. These cover low or modestly paid workers such as teachers, nurses, police, sales assistants and cleaners defined as key workers in the UK and US work. They also include paramedics, motor mechanics, automotive electricians, fire fighters, child-care workers, bus drivers and train drivers. The results of their study suggested there were more key workers than jobs in the region and that there were few problems in filling jobs as a result. Housing costs were seen as unimportant because many key workers fully owned their own homes.

Cottrell (2004) based her (Eastern Suburbs) study on the same list as Epic DotGov. Blunden et al (2004), who also covered the Eastern Suburbs, to date have examined only bus drivers. Cottrell's results suggest that the number of key worker (as defined) jobs in the Eastern Suburbs exceeded the number of key workers living in Eastern Suburbs and that the shortfall of workers was aggravated by an out-migration of younger key workers who can't afford to buy and remain in the region. The majority of workers covered by Blunden et al's survey travelled less than 30 minutes to work but almost 20 percent travelled more 60 minutes or more to get to work. Their interview based results suggested that the main issues arising for those who worked in the region were the long commute (generally undertaken by car as this was more predictable); poor work schedules (not enough time to go home with broken shifts); and not seeing enough of their family because they have to live further away than desired because of affordability problems.

In NSW, a limited demonstration policy initiative defined key workers as those who provide a service that contributes to the well being of the community and are unable to

afford appropriate accommodation on the open market. The definition includes, but is not limited to, hospital workers, teachers, childcare workers, police, transport workers or fire fighters (NSW DoH, 2004).

In Queensland, a Department of Housing report, whilst accepting the broad intent of identifying occupations necessary to the efficient functioning of a community and targeting policies to workers who provide an essential service in areas where they cannot afford to live and who may face long commutes as a result, suggests a number of criteria might be applied to identifying such workers (Queensland DoH, 2003). In their view, for policy purposes, key workers are likely to have low incomes; are likely to rely on penalty rates or overtime to boost basic wages; are likely to have a predominance of casual or part-time work, or lack long-term job security; may work night shifts, split shifts or irregular hours, including times when public transport is irregular or unavailable; may work in areas where employee car parking is not provided and alternative public transport is not practical; and generally lack higher tertiary qualifications (although some groups such as community service workers, teachers and nurses are seen as exceptions to this). These criteria move the concept of what constitutes a key worker away from a focus on occupational categories to a more constructive focus on the labour market conditions that govern work. They also raise the possibility that income earned and the conditions under which workers are employed, rather than occupation per se, are the key drivers of the concerns raised in the quotation at the start of this chapter.

1.4 Conceptual issues and methodological approach

1.4.1 Defining occupations of interest

The above suggests the issue of defining relevant occupations or workers is one that has economic, regional, industrial relations, and political overtones. In economic terms, key workers have been defined as those needed to support local business or provide essential services, whose shortage is likely to affect the ability of a region to grow or function efficiently. The definition of exactly what occupations are required is open to debate and, in regional terms, is likely to vary according to whether the region is growing or declining. In other words, it varies because local economies vary. In industrial relations terms, relevant workers are likely to be those in casualised or part-time jobs for whom the costs of travel or housing are not compensated for in their inadequate wages. In political terms, key workers are likely to be seen as those who can hold governments to ransom at politically inopportune times. Illustrations of how this might be done are strikes by transport workers or teachers. Each of these broad interpretations has been embodied in the literature reviewed above.

For the purposes of this report, the competing demands made by these different interpretations on defining key workers have been addressed by limiting the focus of the analysis to the issues that arise in a specific local economy by use of what can be called ‘indicator occupations’.

The indicator occupations chosen for this study are, at the least skilled end of the spectrum, cleaners (ASCO code 911) and hospitality workers (ASCO code 632) and, at a higher skill level, nursing professionals (ASCO code 232) and computer professionals (ASCO code 223). According to Reich's taxonomy workers the first three occupations would all be described as 'in-service workers'. They are occupations where employers are constrained in their location choice by the nature of the service provided but the jobs are likely to be relatively dispersed. Workers in the fourth occupation, include those who would be described as 'symbolic analysts'. They include (but are not solely) those who are part of the new economy and who are likely

to be better paid as a result. Their jobs are those that are likely to be concentrated in the centres of the cities.

This selection builds on the lessons learned from the studies reviewed above. It includes occupations with large numbers of workers who receive low or moderate wages and which meet a number of other criteria. It includes occupations likely to be regarded as essential to the proper functioning of the city and likely to be in short supply in high cost locations as a result of housing affordability issues (rather than as a result of general labour market shortages). It includes occupations that are representative of those used in other studies but are sufficiently different from each other to enable differences between them to be identified. It includes occupations that provide representation across private and public sector employers and occupations that have both a dominance of females and a dominance of males. It includes occupations whose workers have been identified as facing above average affordability problems and who therefore are most at risk of being excluded from jobs in high cost areas because of housing costs. A detailed analysis of occupational groups and affordability, which underpins the selection of these indicator occupation groups, is presented in chapter 2.

1.4.2 Defining regions of interest

This report focuses specifically on workers who live in Sydney, Melbourne and Brisbane. This decision was based on the significantly higher housing costs that are observed in these areas compared with other metropolitan regions. Within each city, two key choices arise in relation to the choice of region when examining the impact of housing affordability on labour market outcomes. The first is the choice of the appropriate level of spatial disaggregation within the metropolitan region; the second, simpler, choice is determination of which of the spatially disaggregated areas within metropolitan regions are of interest.

The issues that underpin the first of these choices are the same as arise in attempts to define housing or labour markets. The Bureau of Transport and Regional Economics (BTRE), for example, describes a labour market region as "the area within which people are willing to commute from their place of residence to their place of employment." BTRE (2003, p17) They use residential containment, based on commuting patterns revealed by the 2001 census, to define these regions with a labour market defined as one in which the majority (typically at least 70%) of employed residents work. On this definition, they define each greater metropolitan region as one labour market.

However, this definition defeats one of the key aims of this paper. It does not allow for an examination of the extent to which affordability within a particular metropolitan region affects the residential location choices of workers in that region. For example, in Sydney, periodic transport surveys suggest that the journey to work time and distance travelled has remained fairly constant since 1999 with an average work trip duration of around 30 minutes and an average commuting trip of around 16 kilometres per day (DIPNR, 2004). This suggests that an appropriate choice is to base the analysis on the statistical sub-division (SSD) level of which there are 17 in the greater Sydney area (i.e. including Newcastle and Wollongong) and 18 in the greater Melbourne metropolitan area (including Geelong). SSDs broadly define areas within which it is possible to meet these average travel times and distances.[6] In Brisbane, the nature of the administrative divisions made it difficult to use SSDs in this area. As such, statistical regions (SRs) in conjunction with local government areas (LGAs) were used in Brisbane instead of SSDs. Areas such as Newcastle and Wollongong in NSW, Greater Geelong and West Barwon in VIC, and the Gold Coast in QLD are

[6] Local Government Areas and Statistical Local Areas were seen as being too small to define a labour market.

added to capture those prepared to undertake commutes to work that are significantly longer than 30 minutes. The extent of residential and employment self-containment at the chosen level of spatial disaggregation is examined in Chapter 3 below.

The second choice, that of determining which regions are most likely to be those where labour recruitment and retention issues arise, was based on balancing the housing costs in each region with the extent to which there was a labour deficit (or jobs surplus). Almost by definition, these constraints lead to the choice of the region containing the CBD, which is that used in this study. Data to support these claims are provided below (see Chapter 3). Previously, the authors have established that the highest housing cost sub-regions in Australia correspond to areas in the metropolitan areas of Sydney, Melbourne and Brisbane (Yates, et al, 2005). Table 1.1 presents the analysis of high cost regions defined in terms of median rent levels in 2001 from the Positioning Paper. The distribution of absolute rental levels clearly places inner and northern Sydney, inner Melbourne and inner west Brisbane well ahead of the rest of the country, with a few minor exceptions most of which are based on relatively small area data such as certain suburbs in Canberra. Similarly, there are few non-metropolitan areas that match metropolitan cost levels (with the exception of South East Queensland, which can properly be seen as part of the Greater Brisbane metropolitan area). From this, it was decided that, as long as the Gold Coast is included within the Brisbane region, the study would not cover non-metropolitan areas.

Table 1.1: Median rents for top 20 regions in Australia, 2001

City/State	SSD for non-metro regions	SSD/SLA	Median Rent ($pw)
Sydney		Eastern Suburbs	300
RoQld	Gold Coast City - B	Main Beach-Broadwater	300
Sydney		Lower Northern Sydney	295
Sydney		Northern Beaches	290
Sydney		Central Northern Sydney	288
Sydney		Inner Sydney	250
Sydney		Inner Western Sydney	245
RoQld	Gold Coast City - B	Robina	235
RoQld	Gold Coast City - B	Hope Island	230
Sydney		St George-Sutherland	225
RoQld	Sunshine Coast	Noosa (S) - Noosa-Noosaville	220
RoQld	Gold Coast City - B	Benowa	215
RoQld	Gold Coast City - B	Broadbeach Waters	215
Melbourne		Inner Melbourne	210
Melbourne		Boroondara City	210
RoQld	Gold Coast City - B	Bundall	210
RoQld	Gold Coast City - B	Parkwood	210
RoNSW		Snowy River (A)	200
RoQld	Gold Coast City - B	Broadbeach	200
RoQld	Gold Coast City - B	Burleigh Waters	200

Source: Special request table from 2001 Census of Population and Housing.

1.4.3 Relating individual to household characteristics

Some of the results from the literature reviewed above signal other conceptual issues that need to be addressed when examining the relationship between occupation and affordability. The most important of these is that occupation is defined at an individual level whereas affordability and choices regarding residential location are affected by household characteristics.

For the UK, Tym et al (2003) and Morrison (2003) distinguished problems of recruitment for people aged under 30 from problems of retention for those in the 30-34 age range. Workers in the 25-34 age range were seen to be moving from a housing solution where house sharing was not just acceptable but even popular because of the social benefits associated with it. Living with friends or family was a significant option for younger key workers under age 25 but its acceptability dropped sharply thereafter as workers partnered, had children and aspired to a garden and access to good schools. A report for prepared for the Greater London Authority showed "commuting was relatively low among certain groups, particularly ethnic minorities and women, among those with fewer qualifications and less experience and in certain employment sectors - notably health and education" (GLA, 2001, p16).7 It also showed a significant proportion of key workers were looking for jobs outside of London, with those most wanting to leave London being younger workers aged 18-34 rather than older workers (GLA, 2001, p18).

In Australia, one of the conclusions of Epic DotGov (2004) was that there were relatively few problems in filling key worker jobs in the Northern Beaches region despite a marked deterioration in affordability. In part this was attributed to the fact that many key workers lived in owner-occupied housing. Key workers can afford to live there because they have done so for a long time. Cottrell (2004) showed a significant reduction in the numbers under 40 who can't afford to live in the Eastern Suburbs and so look elsewhere when they are ready to purchase. The interviews undertaken by Blunden et al (2004) provide support for this. Analysis undertaken at an individual level shows many of the current young workers in the occupations of interest as living in owner-occupied housing. When the analysis is undertaken at an individual rather than household level, this outcome is as likely to reflect the tenure of their parents as of the individual of concern. This highlights a further difficulty in defining the target group of interest and indicates that results based on housing outcomes for individual workers must be interpreted with care.

These results from the literature also suggest that issues of retention may differ from issues of recruitment, primarily because of the difference in the ages and lifestyle preference of the workers involved. In this paper, the persistent conclusion that life-cycle factors are relevant is taken into account only indirectly. Housing affordability is assessed at a household level with the occupation of the reference person in the household being taken as the identifying occupational characteristic. One justification for this is that the reference person may reasonably be taken as the person who is most likely to be dominant in the decisions that affect housing and location choices. It is, however, problematic in that there are more than twice as many persons in employment as there are households where the reference person is in employment and a focus on the reference person is likely to mean many secondary and part-time workers, who form an increasingly important part of the labour supply, are likely to be excluded from consideration. This issue will be addressed below.

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[7] This report also highlighted differences in commuting patterns between occupations with nurses and bus drivers wanting to live near where they work but police officers not wanting to.

1.4.4 Determining the impact of affordability on labour market outcomes

The final and most difficult conceptual issue is the inherent difficulty in determining the impact of housing costs on labour market shortages. This cannot be determined solely from affordability measures because lower income workers who work in high cost areas might simply undertake longer commutes from areas where housing is more affordable. Consequently, the analysis of their housing cost or affordability position per se may show relatively little to be concerned about. The downside, however, is increasing commuting costs, social stress and poor traffic and environmental outcomes, rather than labour market shortages.

This difficulty was addressed by taking a three staged approach. The first stage was to examine the extent to which different households are in housing stress. The analysis at this first stage was undertaken at a household level because individual circumstances do not reflect capacity to pay for housing costs and because affordability outcomes are inherently related to household income and household structure. This step also was used to refine the choice of indicator occupations for which the more detailed analysis was undertaken.

The second stage was to focus on a specific high cost region within Sydney, Melbourne and Brisbane and determine the travel to work patterns for all those who work in this region. The third stage was to undertaken a case study of just one region to link these travel to work patterns which were defined at an individual level, to the characteristics of the household in which the individual lives (as either a reference person or as a secondary earner). This provides additional insights into the extent to which younger workers in particular currently have housing solutions (such as sharing, renting, living at home) which may not meet their longer term aspirations problems as their household circumstances change.

2 HOUSING AFFORDABILITY OUTCOMES

2.1 Overview

The focus in this report is on the housing affordability, occupation and location situation of working households, defined as households in which at least one member is currently employed. Whilst there may be some logic to extending the analysis to those in the labour force but currently unemployed, this was not an option because occupation is not defined for unemployed persons in the census data required for this study because of the spatial and journey to work information provided. Occupation is also not defined for persons not in the labour force. Thus, the unemployed and those not in the labour force are excluded from the analysis which also means low income households solely dependent on benefits or pensions are excluded.

In this chapter, a simple national overview of affordability outcomes is provided for households cross-classified by the occupation of the reference person in the household in order to indicate the extent to which affordability problems can be associated with specific occupations. To set these results in context, however, this section first presents indicative affordability ratios on an Australia wide basis. The aim is to highlight those households that might be considered in most risk of having housing costs that are unaffordable in relation to their incomes. This will guide the detailed city level analysis of occupation, location and affordability undertaken in the following chapters. This chapter first reviews the incidence of affordability problems of working households by income level, employment status, location (cities and rest of state/territory), housing tenure and occupation. It then analyses the affordability position of working households by statistical subregions across Australia, highlighting the position of the three capital cities.

The data used in this chapter have been obtained from the 1 per cent household sample file (HSF) from the 2001 census. Cases where income or housing costs are partial or not stated have been ignored and affordability ratios have been derived by taking the mid points of the categorical household income and rent or mortgage repayment categories for which data are recorded in the 2001 household census file. Housing costs for purchasers are limited to mortgage repayments. Housing costs for outright owners are set to zero in the absence of relevant information on, or needed to generate estimates of, operating costs. All data are measured in $2001. The more detailed results in following sections have been generated from a special request matrix tabulation from the 2001 Census. This has enabled a more detailed disaggregation by occupation and location than is possible from the sample file.

2.1.1 All households

Whilst the focus of this research is on households with one person in the workforce, working households can be put into a broader focus by examining their affordability outcomes in relation to those for the population as a whole. Table 2.1 and Table 2.2 below have been generated for all households in Australia in 2001 (other than visitor only and non-classifiable households). Employment status applies to the reference person. Thus, it is possible that some households classified as being not in the labour force or as unemployed do, in fact, have at least one member of the household employed if that person is other than the reference person. The case study undertaken in chapter 5 examines cases where the person employed is other than the reference person. With the exception of Table 2.1 to Table 2.4 below (both of which apply to all households), all tables in this report apply to the 3.4 million working households in occupied private dwellings for whom relevant data are available; cases with missing data are ignored.

Table 2.1: Household affordability ratios by employment status, 2001 ('000s)

	housing cost ratio (%)							
employment status	<20	20<25	25<30	30<35	35<40	40<50	50+	All
unemployed	97	16	20	20	13	22	35	223
employed	2,263	453	266	160	106	90	100	3,436
not in labour force	1,506	95	84	83	45	64	99	1,976
All households	3,866	563	370	264	164	175	233	5,635

Source: Household Sample File, 2001 census, ABS

Table 2.1 (which gives the total number of households in '000s) and Table 2.2 (which gives the row percentages) together highlight the fact that, based on a housing cost ratio that exceeds 30 per cent of household income, the vast majority of households did not have a housing affordability problem in 2001. Overall, 85 per cent of all households had housing cost ratios below 30 per cent of their gross household income. There are, however, 15 per cent of households, amounting to 836,000 households, for whom housing costs in 2001 exceeded 30 per cent or more of gross household income. These households are described as being in housing stress in this report. Just over one third of these (229,000 households) had a reference person not in the labour force. This leaves 545,000 households with a reference person in the labour force and with housing costs in excess of 30 per cent of household income. Of these, only 90,000 had a reference person who was unemployed. The remaining 455,000 had a reference person in either full time or part time employment.[8]

Table 2.2: Household affordability ratios by employment status, 2001 (%)

	housing cost ratio (%)							
employment status	<20	20<25	25<30	30<35	35<40	40<50	50+	All
unemployed	43	7	9	9	6	10	16	100
employed	66	13	8	5	3	3	3	100
not in labour force	76	5	4	4	2	3	5	100
All households	69	10	7	5	3	3	4	100

Source: Household Sample File, 2001 census, ABS

The focus on this study is on the occupation and location characteristics of these 455,000 households who were employed in 2001 and who faced high housing cost ratios (a significant proportion of which are in excess of 40 per cent or even 50 per cent of household income). The occupation and location characteristics both of these households and the greater number of households who did not face high housing cost ratios in 2001 but who may have not done so only because of their residential location choices in relation to their work place locations, is examined in chapter 5.

In other words, the initial focus in this study is on working households who have high housing costs in relation to their income. Those in the workforce but unemployed are excluded because occupational classifications are available only for those in employment. The estimate of 455,000 households is a minimum estimate of working households facing housing market difficulties. It ignores households for whom no data are available. It ignores non-mortgage costs for purchasers. It ignores the trade-offs made by those for whom housing costs are reasonable but other costs, such as

[8] Work undertaken by Yates and Gabriel (forthcoming) suggest the restrictions imposed by missing data result in an underestimate of those with affordability problems. The estimates of those in stress presented here are based on all households but are broadly comparable with the estimates in Yates and Gabriel when the definition of housing stress is restricted to those in the lowest 2 income quintiles.

transport costs, may not be so. Later chapters examine some of the trade-offs made by households who may not have high housing costs in relation to their income.

2.1.2 All households by household income

Many of the households in housing stress, including those in employment, have relatively low reported household incomes as can be seen from the results in Table 2.3 and Table 2.4 which disaggregate the households represented in Tables 2.1 and 2.2 above by household income. Table 2.3 provides estimates of the numbers of households involved; Table 2.4 gives the proportions with in each income group.

Table 2.3: Household affordability ratios by household income and employment status, 2001 ('000s)

		housing cost ratio (%)							
employment statu	income	<20	20<25	25<30	30<35	35<40	40<50	50+	All
unemployed	$0-$399	37	7	4	12	6	15	30	112
	$400-$599	18	1	9	5	5	6	3	47
	$600-$799	13	3	5	1	2	1	1	25
	$800-$999	10	1	1	1	1	0	0	14
	$1000-$1199	6	1	0	0	0	0	0	8
	$1200-$1499	5	0	1	0	0	0	0	7
	$1500+	7	2	0	0	0	0	0	9
Total unemployed		97	16	20	20	13	22	35	223
employed	$0-$399	86	11	4	21	14	22	49	207
	$400-$599	167	20	68	35	34	28	27	379
	$600-$799	228	58	87	26	20	19	19	458
	$800-$999	280	80	47	13	15	18	3	456
	$1000-$1199	320	49	18	24	23	2	2	438
	$1200-$1499	365	23	27	29	0	1	0	444
	$1500+	816	212	15	13	0	0	0	1,056
Total employed		2,263	453	266	160	106	90	100	3,436
not in labour force	$0-$399	696	49	29	52	21	45	86	978
	$400-$599	298	8	28	19	17	13	9	393
	$600-$799	183	12	18	6	3	4	3	227
	$800-$999	108	10	6	2	2	2	1	130
	$1000-$1199	75	4	1	2	2	0	0	84
	$1200-$1499	58	2	2	2	0	0	0	64
	$1500+	88	10	1	1	0	0	0	100
Total not in labour force		1,506	95	84	83	45	64	99	1,976
All households	$0-$399	819	67	37	86	41	81	165	1,296
	$400-$599	484	29	105	59	56	47	40	819
	$600-$799	424	73	110	32	25	24	22	710
	$800-$999	398	91	54	15	18	20	4	600
	$1000-$1199	401	54	20	26	25	2	2	530
	$1200-$1499	429	25	30	32	0	1	0	516
	$1500+	912	224	16	14	0	0	0	1,165
Total all households		3,866	563	370	264	164	175	233	5,635

Source: Household Sample File, 2001 census, ABS

Table 2.4: Household affordability ratios by household income and employment status, 2001 (%)

		housing cost ratio (%)							
employment stat	income	<20	20<25	25<30	30<35	35<40	40<50	50+	All
unemployed	$0-$399	33	7	3	11	5	14	27	100
	$400-$599	39	3	18	10	10	12	7	100
	$600-$799	52	11	19	4	6	4	3	100
	$800-$999	73	8	8	4	4	1	2	100
	$1000-$1199	76	14	5	3	3	0	0	100
	$1200-$1499	75	4	15	6	0	0	0	100
	$1500+	76	18	2	4	0	0	0	100
Total unemployed		43	7	9	9	6	10	16	100
employed	$0-$399	42	5	2	10	7	10	24	100
	$400-$599	44	5	18	9	9	7	7	100
	$600-$799	50	13	19	6	4	4	4	100
	$800-$999	61	18	10	3	3	4	1	100
	$1000-$1199	73	11	4	6	5	0	1	100
	$1200-$1499	82	5	6	7	0	0	0	100
	$1500+	77	20	1	1	0	0	0	100
Total employed		66	13	8	5	3	3	3	100
not in labour forc	$0-$399	71	5	3	5	2	5	9	100
	$400-$599	76	2	7	5	4	3	2	100
	$600-$799	80	5	8	2	1	2	1	100
	$800-$999	83	8	4	1	2	1	1	100
	$1000-$1199	89	5	1	2	2	0	0	100
	$1200-$1499	91	2	3	4	0	0	0	100
	$1500+	88	10	1	1	0	0	0	100
Total not in labour force		76	5	4	4	2	3	5	100
All households	$0-$399	63	5	3	7	3	6	13	100
	$400-$599	59	4	13	7	7	6	5	100
	$600-$799	60	10	15	5	4	3	3	100
	$800-$999	66	15	9	2	3	3	1	100
	$1000-$1199	76	10	4	5	5	0	0	100
	$1200-$1499	83	5	6	6	0	0	0	100
	$1500+	78	19	1	1	0	0	0	100
Total all households		69	10	7	5	3	3	4	100

Source: Household Sample File, 2001 census, ABS

These tables show that the vast majority of households in housing stress (that is, with housing cost ratios of 30 per cent of income or more) had high housing cost ratios because they had extremely low incomes (less than $399 per week).

Of the 455,000 working households with a reference person in either full time or part time employment who had housing costs in excess of 30 per cent of income, half of had incomes below $600 per week (just over $30,000 per annum). More than 200,000, however, had incomes in the $600 to $1200 per week range (approximately from $30,000 to $60,000 per annum) and more than 40,000 had incomes in excess of $1200 per week.

2.1.3 Working households by location

A metropolitan and non-metropolitan level of disaggregation for each state is shown in the summary Table 2.5. Not surprisingly, the results in this table show that the proportion of working households in housing stress is greater in Sydney, Australia's largest capital city, than in any other region and is greater in each State capital city than for the rest of the State. On an Australian wide basis, 13 per cent of working households have housing cost ratios of 30 per cent or more of gross household income. In Sydney, however, 18 per cent of working households have such housing

cost ratios. The only other region with an above average propensity for working households to be in housing stress is the Northern Territory (where there are only 5,000 working households in housing stress compared with 129,000 in Sydney). A more disaggregated regional analysis to be presented in the following section, however, will indicated areas where there are pockets of housing stress for working households in relatively high cost areas in the other states.

Table 2.5: Proportion of working households in housing stress by location, 2001 (%)

	housing cost ratio		
	<30%	30%+	All working h'holds
Sydney	82	18	100
Rest of NSW	87	13	100
Melbourne	87	13	100
Rest of Victoria	91	9	100
Brisbane	88	12	100
Rest of Queensland	88	12	100
Adelaide	89	11	100
Rest of SA	93	7	100
Perth	88	12	100
Rest of WA	90	10	100
Tasmania	92	8	100
NT	84	16	100
ACT	90	10	100
All working h'holds	87	13	100

Source: Household Sample File, 2001 census, ABS

2.1.4 Working households by tenure

The final overview table in this section, Table 2.6, serves to highlight the fact that, with census data, housing costs, by definition, are zero for outright owners. Hence, by definition, no outright owners will be in housing stress (that is, no outright owners will face housing cost ratios in excess of 30 per cent of gross household income). Of the 3.4 million working households for whom relevant data are available on the 1 per cent household sample file for the 2001 Census, 1.1 million are outright owners. The remaining 2.3 million working households are households who are either purchasing or renting their dwellings. It is amongst these households that high levels of housing stress are found.

Table 2.6: Housing affordability ratios for working households by tenure, 2001 ('000s)

	housing cost ratio (%)							
tenure	<20	20<25	25<30	30<35	35<40	40<50	50+	All h'holds
outright owner	1,097	0	0	0	0	0	0	1,097
purchaser	678	313	129	85	61	51	46	1,362
private renter	350	127	122	67	43	36	50	795
public renter	37	9	11	6	1	2	1	66
other (incl rent free)	101	4	4	3	1	1	2	116
All employed h'holds	2,263	453	266	160	106	90	100	3,436

Source: Household Sample File, 2001 census, ABS

2.1.5 Summary

The overview results presented in this section can be summarised as follows. Just over 13 per cent of all households in Australia in 2001 were in housing stress, with housing cost ratios of 30 per cent of more of their gross household income. Two thirds of these households had a reference person in the labour force and more than half were working households, defined as being a household where the reference person is in full time or part time employment.

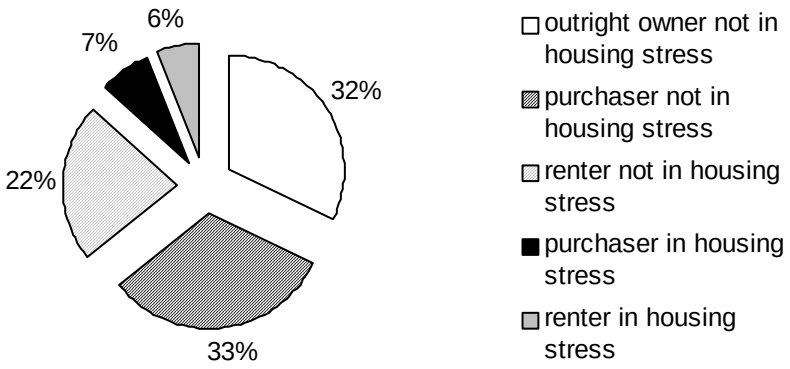
This leaves 455,000 working households who face housing cost ratios of 30 per cent or more of their gross household income. Approximately half of these had incomes below $600 per week (or $30,000 per annum) but half had incomes above this, with 100,000 working households in housing stress having incomes in the moderate income range of $800 - $1200 per week range (or $40,000 to $60,000 per annum) and over 40,000 with incomes above $1200 per week.

At the spatial level of aggregation reported in this section, a disproportionate share of these working households live in the Sydney metropolitan region.

All of the households where the reference person is employed who are in housing stress are either purchasing or renting their homes. These 455,000 households equate to just over 13 per cent of 3.4 million working households and just under 20 per cent of the 2.3 million working households who are either purchasing or renting their homes.[9] At the extreme, there are 190,000 working households who face housing cost ratios in excess of 40 per cent of gross household income. Figure 2.1 provides a graphical representation of the proportions of working households who do and do not have a housing affordability problem as a proportion of all working households.

[9] For whom relevant data are available in the household sample file.

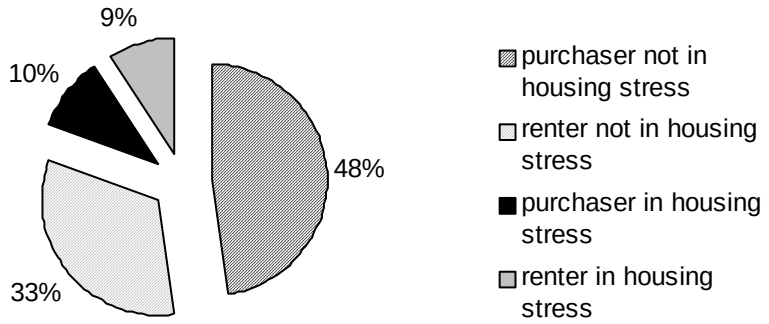
Figure 2.1: Working households by housing affordability outcomes



Source: Household Sample File, 2001 census, ABS

Figure 2.2 repeats the same information limited to the 2.3 million working households who are purchasing or renting, 455,000 of whom are in housing stress.

Figure 2.2: Proportion of working households purchasing or owning



Source: Household Sample File, 2001 census, ABS

The following section provides a more detailed analysis of the affordability outcomes for working households according to their occupational classifications and their household incomes.

2.2 Housing affordability outcomes by occupation

This section provides both occupation data at an aggregated and disaggregated level in order to determine the extent to which affordability outcomes are affected by the occupation of the reference person in the household. As indicated in the Positioning Paper for this project, the use of the reference person as a means of determining which occupations are likely to face affordability problems does have some limitations because of gender biases associated with different occupations and because of the

greater propensity for males to be classified as the reference person in a household which has both males and females present. These limitations are ignored in the data presented in this section but will be taken into account in the analysis presented in chapter 5.

2.2.1 Housing stress by occupation at the single digit classification level

Table 2.7 below provides an initial insight into the extent to which the proportion of working households who face affordability problems differs by their broad level occupational classification. The data all refer to those who are purchasing or renting their homes since, by definition, those who own their homes without a mortgage will not be in housing stress. Almost half of the 455,000 working households paying 30 per cent or more of their gross household income in meeting their housing costs are in 3 occupational groupings. The greatest numbers of those in housing stress are the 81,000 households in occupational classification 6, consisting of intermediate clerical, sales and service workers. A further 131,000 working households in stress have reference persons split almost evenly between two other groups: group 2, consisting of professionals and group 4, consisting of tradespersons and related workers.

Table 2.7: Housing affordability by occupation: working households, 2001

Occupation	% working h'holds in stress %	h'holds in stress no. ('000s)	all working households no. ('000s)
1 Managers and administrators	8	32	400
2 Professionals	9	66	696
3 Associate professionals	12	56	453
4 Tradespersons and related workers	13	65	490
5 Advanced clerical and service workers	14	13	90
6 Intermediate clerical, sales and service workers	17	81	466
7 Intermediate production and transport workers	14	45	327
8 Elementary clerical, sales and service workers	24	49	205
9 Labourers and related workers	17	44	261
All working h'holds	13	455	3,436

Source: Household Sample File, 2001 census, ABS

The occupations which have the greatest proportion of purchasing and renting households in housing stress, however, are the less skilled in the lower half or two thirds of the occupational listing. As many as 24 per cent of all households with a reference person in occupational classification 8 and working as an elementary clerical, sales or service worker were in stress. As suggested above, housing stress outcomes faced by these workers are likely to be largely associated with their low household incomes. Their jobs are more likely to be those which are casual or part-time as well as being jobs that are less well paid even when full time work is available. To a large extent, this explanation is supported by the data in Table 2.8 which provides income distribution data for each occupational grouping for all working households who are in housing stress. Table 2.9 and Figure 2.3 supplement this with the equivalent data for all working households.

Table 2.8: Income distribution of working households in stress by occupation, 2001

	Income distribution of working households in stress							
	$0-399	$400-599	$600-799	$800-999	$1000-1199	$1200-1499	$1500+	All working h'holds in stress ('000s)
1 Managers and administrators	10	15	19	13	22	10	10	32
2 Professionals	14	19	17	14	19	10	7	66
3 Associate professionals	16	19	21	14	15	9	5	56
4 Tradespersons and related workers	17	30	24	13	9	6	1	65
5 Advanced clerical and service workers	18	22	25	14	12	6	5	13
6 Intermediate clerical, sales and servic	32	30	15	8	8	5	1	81
7 Intermediate production and transport	21	35	21	10	8	4	0	45
8 Elementary clerical, sales and service	37	35	14	5	6	4	0	49
9 Labourers and related workers	36	33	16	6	6	3	0	44
All working h'holds in stress	23	27	18	11	11	7	3	455

Source: Household Sample File, 2001 census, ABS

Table 2.9: Income distribution of all working households by occupation, 2001

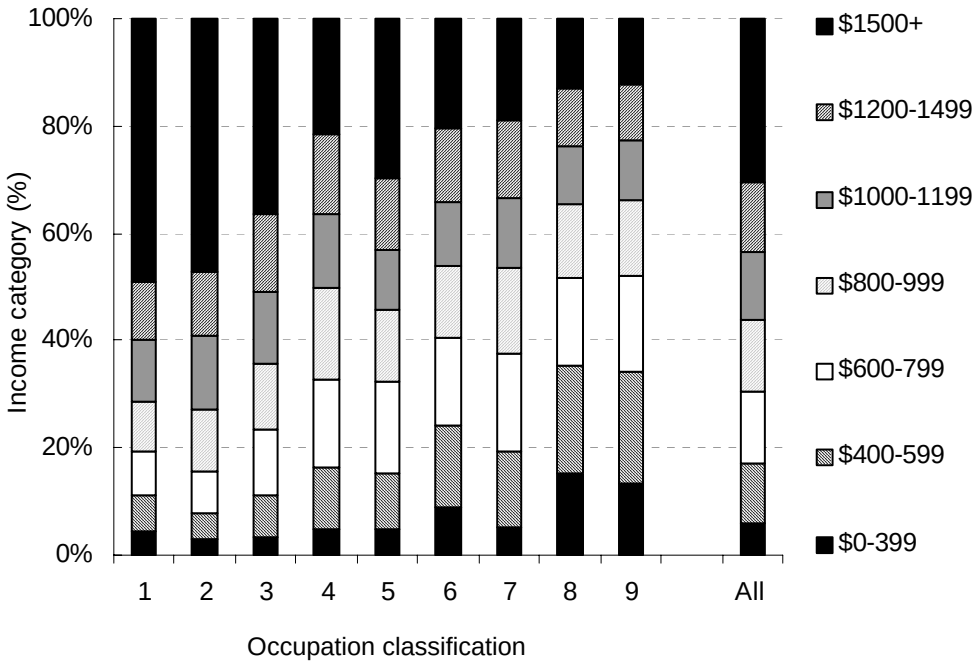
	Income distribution of working households							
	$0-399	$400-599	$600-799	$800-999	$1000-1199	$1200-1499	$1500+	All working h'holds ('000s)
1 Managers and administrators	5	7	8	9	12	11	49	420
2 Professionals	3	5	8	11	14	12	47	719
3 Associate professionals	3	8	12	12	13	14	37	472
4 Tradespersons and related workers	5	12	16	17	14	15	22	514
5 Advanced clerical and service workers	5	10	17	13	11	13	30	94
6 Intermediate clerical, sales and servic	9	15	16	13	12	14	20	486
7 Intermediate production and transport	5	14	18	16	13	14	19	345
8 Elementary clerical, sales and service	15	20	16	14	11	11	13	214
9 Labourers and related workers	13	21	18	14	11	10	12	276
All working h'holds	6	11	13	13	13	13	31	3,595

Note: household count differs slightly from Table 2.6 which excluded cases with missing housing cost data.

Source: Household Sample File, 2001 census, ABS

Together these two tables, which provide data on household income, reinforce conclusions drawn from data on individual income by occupation (provided in the Positioning Paper). As a group, households where the reference person is employed in what are generally regarded as lower skilled and lower status occupations have income distributions with lower means than those for households with a reference person in the higher skilled occupations. The differences in the household income distributions for each of the 9 occupational categories listed in Table 2.9 are clearly shown in Figure 2.3. Just over 30 per cent of all working households have a household income less than $800 per week. Across occupations, the proportion with incomes below this level varies from only 16 per cent in occupation category 2 (professionals) to 52 per cent in occupation categories 8 and 9 (consisting of elementary clerical, sales and service workers and labourers and related workers).

Figure 2.3: Distribution of household income of working households by occupation, 2001



Source: Household Sample File, 2001 census, ABS

2.2.2 Housing stress by occupation at the 3 digit classification level

Whilst some of the variation in household earnings within the single digit occupational classifications examined above can arise because of differences in household structure, a further reason is that they arise because of the considerable variation of occupation that occurs within each broad occupational grouping. A more detailed analysis of the extent to which households with the occupation of the reference person more specifically defined is provided in Table 2.10. These data have been generated from a special request tabulation from the 2001 Census. Because the Australian Bureau of Statistics has access to more detailed information than that provided in the sample file, the data on housing cost ratios have been calculated more precisely in the data presented in this section, with actual costs rather than mid-points of categorical ranges being available for housing cost data and with weighted mean rather than mid-point data available for income data. The results, however, do not differ substantively compared with those generated at a more aggregated level from the 1 per cent household sample file data used in the previous section although the numbers involved are different.

Table 2.10 ranks occupations according to the incidence of households in housing stress. These data are in the first column of the Table. The final two columns indicate, respectively, the total numbers of households in stress and the total number of households in each occupational classification (occupations with fewer than 500 households in total are not reported).

Table 2.10: Housing affordability by 3 digit occupation: purchasing or renting working households, 2001

Occupation	households in stress as % of all h'holds %	household in stress no.	total no. households no.
632 Hospitality Workers	27	10,900	39,600
993 Elementary Food Preparation and Related Workers	22	5,100	22,900
493 Hairdressers	21	3,000	13,900
829 Miscellaneous Elementary Sales Workers	19	7,000	36,200
821 Sales Assistants	19	23,000	124,000
613 Receptionists	16	5,800	35,300
631 Carers and Aides	16	13,300	82,300
911 Cleaners	16	12,700	78,400
332 Hospitality and Accommodation Managers	16	9,200	56,900
639 Miscellaneous Intermediate Service Workers	16	7,000	44,500
253 Artists and Related Professionals	16	8,000	51,000
451 Food Tradespersons	15	5,700	38,100
831 Elementary Service Workers	15	7,000	47,300
494 Textile, Clothing and Related Tradespersons	14	1,200	8,500
612 Keyboard Operators	14	3,000	21,700
331 Shop Managers	13	11,300	83,700
922 Product Packagers	13	2,600	19,500
341 Enrolled Nurses	13	1,100	8,200
721 Intermediate Textile, Clothing and Related Machine O	13	1,300	10,500
249 Miscellaneous Education Professionals	13	2,700	21,000
811 Elementary Clerks	12	4,200	34,200
462 Horticultural Tradespersons	12	3,900	32,200
492 Wood Tradespersons	12	1,900	15,700
900 Labourers and Related Workers, nfd	12	1,400	11,500
349 Miscellaneous Health and Welfare Associate Professio	12	1,200	10,300
511 Secretaries and Personal Assistants	11	5,900	51,600
591 Advanced Numerical Clerks	11	3,800	33,300
600 Intermediate Clerical, Sales and Service Workers, nf	11	200	1,700
799 Miscellaneous Intermediate Production and Transport	11	8,100	73,300
222 Sales, Marketing and Advertising Professionals	11	3,800	34,300
421 Automotive Tradespersons	11	7,100	64,900
399 Miscellaneous Associate Professionals	11	2,500	23,000
599 Miscellaneous Advanced Clerical and Service Workers	11	2,300	21,200
330 Managing Supervisors (Sales and Service), nfd	11	100	1,000
442 Final Finishes Construction Tradespersons	11	3,100	29,400
611 General Clerks	11	6,100	58,300
731 Road and Rail Transport Drivers	10	16,300	156,000

contd./

Table 2.10: Housing affordability by 3 digit occupation: purchasing or renting working households, 2001 /contd.

Occupation	households in stress as % of all h'holds %	household in stress no.	total no. households no.
342 Welfare Associate Professionals	10	1,000	9,400
999 Miscellaneous Labourers and Related Workers	10	3,500	34,600
621 Intermediate Sales and Related Workers	10	9,000	88,600
200 Professionals, nfd	10	1,100	10,500
614 Intermediate Numerical Clerks	10	7,000	69,700
920 Factory Labourers, nfd	10	500	5,000
619 Miscellaneous Intermediate Clerical Workers	10	5,500	56,600
232 Nursing Professionals	10	6,500	67,800
498 Miscellaneous Tradespersons and Related Workers	10	3,700	38,700
729 Miscellaneous Intermediate Machine Operators	10	2,000	21,000
610 Intermediate Clerical Workers, nfd	10	200	2,100
992 Agricultural and Horticultural Labourers	9	4,100	42,900
119 Miscellaneous Generalist Managers	9	5,100	54,000
111 General Managers and Administrators	9	5,900	62,900
991 Mining, Construction and Related Labourers	9	3,600	38,200
921 Process Workers	9	5,300	56,700
491 Printing Tradespersons	9	1,500	16,200
251 Social Welfare Professionals	9	3,700	40,100
100 Managers and Administrators, nfd	9	2,300	25,100
123 Sales and Marketing Managers	9	5,400	59,500
311 Medical and Science Technical Officers	9	1,400	15,600
443 Plumbers	9	2,500	28,300
441 Structural Construction Tradespersons	9	6,900	77,500
720 Intermediate Machine Operators, nfd	9	1,500	16,700
339 Miscellaneous Managing Supervisors (Sales and Servic	9	4,500	51,500
300 Associate Professionals, nfd	9	200	1,900
321 Finance Associate Professionals	9	3,900	44,900
615 Material Recording and Despatching Clerks	9	3,800	44,700
329 Miscellaneous Business and Administration Associate	9	11,500	133,900
431 Electrical and Electronics Tradespersons	8	7,300	85,900
242 University and Vocational Education Teachers	8	2,900	34,700
238 Miscellaneous Health Professionals	8	2,900	36,200
220 Business and Information Professionals, nfd	8	100	1,300
412 Fabrication Engineering Tradespersons	8	2,800	36,000
461 Skilled Agricultural Workers	8	600	7,000
700 Intermediate Production and Transport Workers, nfd	8	500	5,700
120 Specialist Managers, nfd	8	300	3,600
400 Tradespersons and Related Workers, nfd	8	600	8,100
252 Miscellaneous Social Professionals	8	2,600	32,800
711 Mobile Plant Operators	8	3,700	49,000
229 Miscellaneous Business and Information Professionals	7	5,300	71,500
231 Medical Practitioners	7	2,200	30,300
254 Miscellaneous Professionals	7	1,400	19,900
223 Computing Professionals	7	5,300	73,600
121 Resource Managers	7	2,600	38,800
221 Accountants, Auditors and Corporate Treasurers	7	4,100	61,500

contd./

Table 2.10: Housing affordability by 3 digit occupation: purchasing or renting working households, 2001 /contd.

Occupation	households in stress as % of all h'holds %	household in stress no.	total no. households no.
791 Intermediate Mining and Construction Workers	6	1,400	23,100
712 Intermediate Stationary Plant Operators	6	1,700	28,700
411 Mechanical Engineering Tradespersons	6	4,200	69,300
129 Miscellaneous Specialist Managers	6	3,300	56,400
122 Engineering, Distribution and Process Managers	6	4,100	70,100
312 Building and Engineering Associate Professionals	6	3,100	52,600
212 Building and Engineering Professionals	6	3,300	59,100
241 School Teachers	5	6,700	123,900
391 Police Officers	5	1,400	26,500
211 Natural and Physical Science Professionals	5	1,500	29,000
710 Intermediate Plant Operators, nfd	5	200	3,400
310 Science, Engineering and Related Associate Professio	4	100	3,000
131 Farmers and Farm Managers	4	4,600	116,000
Grand Total	10	407,300	3,975,300

Source: Special request tabulation, 2001 Census

In the disaggregate data used to generate these results, 407,000 working households, representing 10 per cent of all working households, pay 30 per cent of more of their household income in meeting their housing needs.10 At the top of the list, with the highest incidence of housing stress, are hospitality workers (including, inter alia, bar attendants, waiters and hospitality trainees), and, with the greatest numbers, sales assistants. In other words, the results presented in Table 2.10 suggest that working households with the highest incidence of housing stress and with the greatest number in housing stress are predominantly those where jobs are more likely to be casualised, part-time and offer few career prospects.

The results in Table 2.10 also indicate that the highest proportions of households in housing stress are found amongst the less skilled occupations. With the single exception of occupation category 253 (artists and related professionals), there a no occupations classified in the top occupational groupings (categories 1 and 2 in the tables in the previous sub-section) in which there is an above average proportion of households in housing stress. Again, workers in this occupational category, whilst skilled, are also likely to face fluctuating fortunes and little long term job security.

Table 2.11 lists, in descending order, all occupations for which there are more than 5,000 households in housing stress.

[10] Whilst the general orders of magnitude are similar to those presented above, the estimates of the number of households in housing stress from the special request matrix is approximately 10 per cent lower than that derived from the Census Household Sample File used to generate the results presented in section 2.1. There are a number of possible reasons why this might be so. When numbers are small, as can be the case with highly disaggregated data, the data in the special request matrix is randomized to ensure confidentiality of the results. It is unlikely, however, that this would explain all of the difference. A second possibility arises from differences in assigning point incomes to the housing cost and income categories when determining housing cost ratios as indicated in the text above. These differences are not seen as substantive for the points made in this part of the report. Data in later chapters relies upon special request tabulations with data generated on the more precise methods reflected in Table 2.10.

Table 2.11: Occupations with greatest absolute numbers of purchasing or renting households in housing stress, 2001

Occupation	households in stress as % of all h'holds %	household in stress no.	total no. households no.
821 Sales Assistants	19	23,000	124,000
731 Road and Rail Transport Drivers	10	16,300	156,000
631 Carers and Aides	16	13,300	82,300
911 Cleaners	16	12,700	78,400
329 Miscellaneous Business and Administration Associate	9	11,500	133,900
331 Shop Managers	13	11,300	83,700
632 Hospitality Workers	27	10,900	39,600
332 Hospitality and Accommodation Managers	16	9,200	56,900
621 Intermediate Sales and Related Workers	10	9,000	88,600
799 Miscellaneous Intermediate Production and Transport	11	8,100	73,300
253 Artists and Related Professionals	16	8,000	51,000
431 Electrical and Electronics Tradespersons	8	7,300	85,900
421 Automotive Tradespersons	11	7,100	64,900
614 Intermediate Numerical Clerks	10	7,000	69,700
831 Elementary Service Workers	15	7,000	47,300
639 Miscellaneous Intermediate Service Workers	16	7,000	44,500
829 Miscellaneous Elementary Sales Workers	19	7,000	36,200
441 Structural Construction Tradespersons	9	6,900	77,500
241 School Teachers	5	6,700	123,900
232 Nursing Professionals	10	6,500	67,800
611 General Clerks	11	6,100	58,300
111 General Managers and Administrators	9	5,900	62,900
511 Secretaries and Personal Assistants	11	5,900	51,600
613 Receptionists	16	5,800	35,300
451 Food Tradespersons	15	5,700	38,100
619 Miscellaneous Intermediate Clerical Workers	10	5,500	56,600
123 Sales and Marketing Managers	9	5,400	59,500
223 Computing Professionals	7	5,300	73,600
229 Miscellaneous Business and Information Professionals	7	5,300	71,500
921 Process Workers	9	5,300	56,700
119 Miscellaneous Generalist Managers	9	5,100	54,000
993 Elementary Food Preparation and Related Workers	22	5,100	22,900

Source: Special request tabulation, 2001 Census

The results in Table 2.11 indicate that the occupations with the greatest absolute numbers of households in housing stress are sales assistants, road and rail transport drivers, carers and aides (including children's care workers), cleaners, miscellaneous intermediate workers (including dental assistants, prison officers, fitness instructors and travel and tourism agents), shop managers and hospitality workers.

One additional observation that can be drawn from the results in both Table 2.10 and Table 2.11 relates to the definitions of key workers conventionally employed in the international literature and discussed in detail in the Positioning Paper for this report. Key workers in the UK include nurses, teachers, police officers and prison staff. In the US, the list of essential workers includes cleaners, retail sales workers, teachers, nurses and police. The results above suggest that, at an aggregate level, in Australia, few households with a reference person classified as a key worker or essential worker household on either the UK or US definitions, face affordability problems any worse than the population as a whole. Only households with a reference person who is a cleaner (911), a sales worker (821) or a miscellaneous intermediate worker (639, which includes prison officers) have a disproportionate share of households in housing stress. Households with a reference person in occupation 241 (school teachers) or 391 (police), for whatever reason, have a very low proportion of purchasing or renting

households in housing stress and those with a reference person in occupation 232 (nurses) have roughly the same proportion of households in housing stress as the population as a whole. In absolute numbers, however, the sheer size of the teaching and nursing profession means that there are a significant number of households with the reference person in each of these professions in housing stress.

Table 2.12 provides a summary of the results for the occupations that are to be studied in more detail in the following chapters, for the occupations with high incidence of and high numbers in housing stress and of a selection of households in the occupations conventionally regarded as providing key workers or essential workers in the economy.

Table 2.12: Housing stress amongst selected occupations, 2001

Occupation	households in stress as % of all h'holds %	household in stress no.	total no. households no.
223 Computing Professionals	7	5,300	73,600
232 Nursing Professionals	10	6,500	67,800
241 School Teachers	5	6,700	123,900
391 Police Officers	5	1,400	26,500
631 Carers and Aides	16	13,300	82,300
632 Hospitality Workers	27	10,900	39,600
639 Miscellaneous Intermediate Service Workers	16	7,000	44,500
731 Road and Rail Transport Drivers	10	16,300	156,000
821 Sales Assistants	19	23,000	124,000
911 Cleaners	16	12,700	78,400
All working households	10	407,300	3,975,300

Source: Special request tabulation, 2001 Census

2.2.3 Household incomes of occupations in housing stress

As outlined section 2.1, one of the key factors that contribute to housing stress is household income. Table 2.13 below provides a disaggregation of the results presented in Table 2.11 by focussing on the income distribution of households in housing stress in those occupations identified as having at least an average incidence of working households in housing stress. In other words, it lists only those occupations which have 10 per cent or more of the households in each occupation who are paying at least 30 per cent of their income in meeting their housing costs. As above, occupation categories with fewer than 500 workers are not reported. The final row indicates the distribution of household income for all working households (equivalent to that initially presented in Table 2.9).

Table 2.13: Households in stress by household income and occupation, 2001

		Household income ($pw)							
	in stress (%)	$0-$399	$400-$599	$600-$799	$800-$999	$1000-$1199	$1200-$1499	$1500+	Total in stress
632 Hospitality Workers	27	47	33	11	4	2	1	1	10,900
993 Elementary Food Preparation and Relat	22	52	33	10	3	1	1	1	5,100
493 Hairdressers	21	33	37	13	9	5	3	1	3,000
829 Miscellaneous Elementary Sales Worke	19	42	34	12	5	3	2	2	7,000
821 Sales Assistants	19	39	36	13	6	3	2	2	23,000
613 Receptionists	16	28	43	16	5	3	2	3	5,800
631 Carers and Aides	16	45	38	9	4	2	2	1	13,300
911 Cleaners	16	48	32	10	5	2	2	1	12,700
331 Shop Managers	16	21	28	20	12	7	5	7	11,300
249 Miscellaneous Education Professionals	16	32	26	13	12	7	4	6	2,700
639 Miscellaneous Intermediate Service Wo	16	30	34	17	8	4	3	4	7,000
252 Miscellaneous Social Professionals	16	9	8	10	8	13	5	47	2,600
451 Food Tradespersons	15	31	36	17	8	3	2	2	5,700
831 Elementary Service Workers	15	39	34	14	6	3	2	2	7,000
494 Textile, Clothing and Related Tradesper	14	28	38	19	7	6	2	1	1,200
612 Keyboard Operators	14	23	42	20	6	4	3	3	3,000
922 Product Packagers	13	40	39	11	4	3	2	1	2,600
721 Intermediate Textile, Clothing and Relat	13	29	42	14	8	3	3	1	1,300
242 University and Vocational Education Tea	13	30	22	12	11	10	4	10	2,900
811 Elementary Clerks	12	33	33	16	7	4	3	3	4,200
462 Horticultural Tradespersons	12	29	34	17	9	5	4	3	3,900
492 Wood Tradespersons	12	19	38	22	10	5	5	1	1,900
900 Labourers and Related Workers, nfd	12	34	39	16	6	2	1	1	1,400
342 Welfare Associate Professionals	12	25	37	20	9	4	4	2	1,000
511 Secretaries and Personal Assistants	11	13	30	25	15	6	5	6	5,900
591 Advanced Numerical Clerks	11	19	30	20	12	6	5	7	3,800
799 Miscellaneous Intermediate Production a	11	25	38	18	8	4	4	2	8,100
221 Accountants, Auditors and Corporate Tr	11	7	13	16	14	13	8	28	4,100
421 Automotive Tradespersons	11	15	32	25	13	6	5	3	7,100
399 Miscellaneous Associate Professionals	11	23	26	18	11	7	6	9	2,500
599 Miscellaneous Advanced Clerical and S	11	13	23	19	15	13	5	12	2,300
229 Miscellaneous Business and Informatior	11	9	13	17	15	14	6	25	5,300
329 Miscellaneous Business and Administra	11	10	23	22	14	10	7	14	11,500
442 Final Finishes Construction Tradespersc	11	17	32	24	12	6	6	4	3,100
238 Miscellaneous Health Professionals	11	14	17	15	12	12	7	24	2,900
611 General Clerks	11	20	35	22	9	5	5	5	6,100
731 Road and Rail Transport Drivers	10	24	34	20	10	5	4	3	16,300
341 Enrolled Nurses	10	21	48	19	5	2	2	3	1,100
999 Miscellaneous Labourers and Related W	10	28	35	17	9	4	5	3	3,500
621 Intermediate Sales and Related Worker:	10	13	27	22	15	9	6	9	9,000
312 Building and Engineering Associate Pro	10	8	16	19	19	13	11	14	3,100
131 Farmers and Farm Managers	10	39	24	15	8	5	3	5	4,600
614 Intermediate Numerical Clerks	10	12	35	25	11	5	5	7	7,000
619 Miscellaneous Intermediate Clerical Wo	10	17	31	25	12	6	5	5	5,500
231 Medical Practitioners	10	2	3	4	7	11	4	69	2,200
498 Miscellaneous Tradespersons and Relat	10	18	27	20	14	8	6	7	3,700
729 Miscellaneous Intermediate Machine Op	10	16	37	19	11	7	6	4	2,000
All households in stress		23	28	17	11	7	5	9	407,300
All households	10	6	11	13	13	12	13	31	3,567,900

Source: Special request tabulation, 2001 Census

Table 2.13 shows that, of all households in housing stress, 23 per cent have incomes below $400 per week, despite having a reference person classified as being in employment. More than half of households in housing stress have gross household incomes below $600 per week and more than two thirds have household incomes below $800 per week. Only 12 per cent of working households in housing stress have household incomes of $1000 per week or more. This is in marked contrast with the income distribution data provided in the final row which indicated that only 6 per cent

of all working households had a household income below $400 per week and only 17 per cent had a household income below $600 per week. In other words, the primary driver for households in housing stress is their low household income.

At an occupational level, this result is even more apparent: 47 per cent of hospitality workers, who have the highest incidence of housing stress of all working households, have reported household incomes below $400 per week and 80 per cent of them have incomes below $600 per week.

The other occupational categories identified in Table 2.13 above as having a significant number of households in housing stress as well as a high incidence of housing stress are sales assistants, road, rail and transport drivers, carers and aides and cleaners. All of these have a disproportionate share of households with incomes below $400 or $600 per week. For sales assistants, the group with the largest numbers of purchasers or renters in housing stress, 75 per cent have incomes below $600 per week (compared with 51 per cent of all working households in stress and only 17 per cent of all working households). For cleaners, the proportion is 80 per cent. These are occupations likely to be found in very disparate industries and with very different spatial implications. A key conclusion of the Randolph et al study (2004) reviewed in the Positioning Paper (which looked only at middle income households in Sydney) was that employment and residential patterns differed significantly for the different occupations studied.

The final set of results for this chapter examines the extent to which location within as well as between capital cities and regions affects housing affordability outcomes. These are presented in the following section.

2.3 Housing affordability outcomes by location

2.3.1 Incidence of housing stress for working households

Whilst the absolute numbers in housing stress in any region will vary according to the geographical size and population of the region, the proportion in housing stress is not so affected. Table 2.14 provides a ranking of regions by the proportion of purchasing and renting households in housing stress. As outlined in the Positioning Paper, except for Brisbane, these regions are defined as statistical sub-divisions for the major capital cities (and surrounds for Sydney and Melbourne), chosen as an appropriate spatial level for which both housing and labour markets reasonably can be delineated. For Brisbane and surrounds, they reflect a mix of Statistical Regions and Local Government Areas.[11]

[11] These were identified by the Queensland members of the user group for this project. Non-metropolitan regions have been aggregated into a rest of State measure simply to provide a complete coverage of the whole of Australia. Regional housing cost data was provided in the Positioning Paper at an SLA level for regions outside of the capital cities to justify the focus on Sydney, Melbourne and Brisbane. With the exception of regions in south-east Queensland, these data indicated that housing cost problems in these capital cities dominate those elsewhere

Table 2.14: Housing affordability by region: working households, 2001

State/Region (+ surrounds)	sub-region	in stress (%)	h'holds in stress	all h'holds
Sydney	Inner Sydney	20	15,200	74,900
Sydney	Eastern Suburbs	20	11,200	57,200
Sydney	Northern Beaches	17	9,100	52,600
Sydney	Lower Northern Sydney	16	12,100	73,900
Brisbane	Gold Coast (C)	16	13,700	85,200
Brisbane	City Core	16	2,900	18,600
Sydney	Inner Western Sydney	16	5,300	34,100
Melbourne	Inner Melbourne	15	10,500	68,200
Sydney	Canterbury-Bankstown	15	7,200	49,800
Sydney	Central Western Sydney	14	7,500	53,600
Brisbane	Maroochy (S)	14	3,400	24,100
Sydney	St George-Sutherland	14	12,600	91,000
Brisbane	Western Inner	14	1,800	13,400
Sydney	Gosford-Wyong	14	7,300	53,600
Brisbane	Caloundra (C)	13	1,700	13,000
Sydney	Fairfield-Liverpool	13	7,300	55,100
Perth	Central Metropolitan	12	3,500	28,400
Sydney	Blacktown	12	6,000	49,500
Sydney	Outer South Western Sydney	12	5,400	46,400
Sydney	Central Northern Sydney	12	10,100	85,900
Sydney	Outer Western Sydney	12	7,900	67,800
Melbourne	Moreland City	11	2,900	25,800
Brisbane	Beaudesert (S)	11	1,300	11,200
Sydney	Illawarra SD Bal	11	2,500	22,200
Sydney	Wollongong	11	5,500	49,600
Melbourne	Southern Melbourne	11	9,700	88,100
Brisbane	Northern Inner	11	3,200	29,200
Melbourne	Boroondara City	11	3,800	35,500
Brisbane	Eastern Inner	10	2,300	21,800
Brisbane	Caboolture (S)	10	2,100	19,800
Brisbane	Eastern Outer	10	1,300	13,300
Melbourne	South Eastern Outer Melbourne	10	4,900	49,000
Melbourne	Northern Middle Melbourne	10	4,900	49,500
Brisbane	Redland (S)	10	2,500	24,600
Melbourne	Hume City	10	2,400	24,400
Sydney	Newcastle	10	8,800	89,600
Perth	North Metropolitan	10	9,100	92,500
Brisbane	Southern Inner	10	1,400	14,000
Perth	South West Metropolitan	10	5,800	60,100
Melbourne	Frankston City	10	2,400	24,500
Melbourne	Mornington Peninsula Shire	10	2,400	25,200
Brisbane	Redcliffe (C)	10	900	9,000

contd./

Table 2.14: Housing affordability by region: working households, 2001 /contd.

State/Region (+ surrounds)	sub-region	in stress (%)	h'holds in stress	all h'holds
Perth	South East Metropolitan	9	6,500	69,300
Adelaide	Eastern Adelaide	9	4,800	51,800
Melbourne	Western Melbourne	9	7,300	79,600
Brisbane	Southern Outer	9	2,900	31,400
Perth	East Metropolitan	9	4,700	51,800
Northern Territory	Northern Territory	9	3,500	38,800
Brisbane	Logan (C)	9	3,100	34,300
Melbourne	Northern Outer Melbourne	9	3,100	35,400
Adelaide	Western Adelaide	9	3,600	41,000
Melbourne	Melton-Wyndham	9	2,600	29,700
Melbourne	Yarra Ranges Shire Part A	9	2,700	31,100
Melbourne	Greater Dandenong City	9	1,800	21,400
Melbourne	Eastern Outer Melbourne	9	4,800	55,900
Rest of NSW	NSW Balance	9	24,800	291,100
Melbourne	Eastern Middle Melbourne	8	7,400	87,500
Brisbane	Pine Rivers (S)	8	2,300	27,900
Brisbane	Northern Outer	8	3,200	38,400
Brisbane	Western Outer	8	2,100	26,300
Adelaide	Southern Adelaide	8	5,600	70,100
Rest of Queensland	QLD Balance	8	21,000	272,400
Australian Capital Territory	Australian Capital Territory	8	5,900	77,300
Rest of WA	WA Balance	7	7,400	103,400
Melbourne	Greater Geelong City Part A	7	2,200	31,300
Adelaide	Northern Adelaide	7	4,900	69,000
Rest of Victoria	VIC Balance	7	15,300	229,100
Brisbane	Ipswich (C)	7	1,600	24,900
Tasmania	Tasmania	6	5,700	92,100
Melbourne	West Barwon (Minus Colac) SSD	6	200	3,500
Rest of SA	SA Balance	6	4,700	83,500
Australia	All households	10	407,300	3,975,300

Source: Special request tabulation, 2001 Census

The results presented in Table 2.14 highlight the basis of the decision to focus on the capital city regions made from data presented in the Positioning Paper. They also show that eight of the ten regions where the highest incidence of housing stress amongst working households is found, are all in the Sydney metropolitan region: in fact, every sub-region in the Sydney metropolitan region has an above average proportion of working households in housing stress. A few regions in south-east Queensland and in the inner regions of Melbourne also have above average proportions of such households in housing stress. These outcomes are highly correlated with high housing costs in the same regions and serve to highlight the probability that high housing costs as well as low incomes are the major contributor to housing affordability problems for working households.

The strong spatial component to affordability problems also raises the question as to whether the distribution of housing opportunities in high cost housing markets is adequate given the distribution of incomes of working households in those markets.

Table 2.15 lists all the regions in Australia's capital cities in which there are more than 5,000 working households in housing stress. As indicated above, the absolute numbers in this table are as much a reflection of the physical size of the region and of

its population. Nonetheless, it is at this level that pressure is likely to be put on local policies to help reduce the burden of high housing costs on working households and the local governments in the regions identified as having the largest numbers of households with high housing cost budgets are those most likely to bear the brunt of such pressures.

Table 2.15: Regions with greatest absolute numbers of purchasing or renting households in housing stress, 2001

State/Region (+ surrounds)	sub-region	in stress (%)	h'holds in stress	all h'holds
Sydney	Inner Sydney	20	15,200	74,900
Brisbane	Gold Coast (C)	16	13,700	85,200
Sydney	St George-Sutherland	14	12,600	91,000
Sydney	Lower Northern Sydney	16	12,100	73,900
Sydney	Eastern Suburbs	20	11,200	57,200
Melbourne	Inner Melbourne	15	10,500	68,200
Sydney	Central Northern Sydney	12	10,100	85,900
Melbourne	Southern Melbourne	11	9,700	88,100
Sydney	Northern Beaches	17	9,100	52,600
Perth	North Metropolitan	10	9,100	92,500
Sydney	Newcastle	10	8,800	89,600
Sydney	Outer Western Sydney	12	7,900	67,800
Sydney	Central Western Sydney	14	7,500	53,600
Sydney	Gosford-Wyong	14	7,300	53,600
Sydney	Fairfield-Liverpool	13	7,300	55,100
Sydney	Canterbury-Bankstown	15	7,200	49,800
Sydney	Blacktown	12	6,000	49,500
Perth	South West Metropolitan	10	5,800	60,100
Sydney	Wollongong	11	5,500	49,600
Sydney	Outer South Western Sydney	12	5,400	46,400
Sydney	Inner Western Sydney	16	5,300	34,100

Source: Special request tabulation, 2001 Census

2.3.2 Income and location

The results in section 2.2 suggested that income is likely to be the major determining factor in cases where households have an affordability problem associated with their occupation. By highlighting the higher incidence of housing stress in high cost areas, the results presented in section 2.3 have reinforced concerns that some household may be able to locate in high cost regions only by spending a high proportion of their income in meeting their housing costs.

Table 2.16 provides a disaggregation of the results presented in Table 2.14 by focussing on the income distribution of households in housing stress in areas identified as having an above average incidence of working households in housing stress. In other words, Table 2.16 lists only those areas which have more than 10 per cent of working households in housing stress.

Table 2.16: Households in stress by income category and region, 2001

			Income distribution of households in stress							
Capital city (+ surrounds)	sub-region	In stress (%)	$0-$399	$400-$599	$600-$799	$800-$999	$1000-$1199	$1200-$1499	$1500+	All
Sydney	Inner Sydney	20	13	22	18	15	13	5	15	15,200
Sydney	Eastern Suburbs	20	9	18	20	16	12	5	20	11,200
Sydney	Northern Beaches	17	7	16	18	15	13	9	23	9,100
Sydney	Lower Northern Sydney	16	8	16	18	14	13	4	27	12,100
Brisbane	Gold Coast (C)	16	25	37	18	9	5	3	4	13,700
Brisbane	City Core	16	32	29	18	8	5	3	6	2,900
Sydney	Inner Western Sydney	16	11	23	21	13	11	6	16	5,300
Melbourne	Inner Melbourne	15	21	25	18	11	9	3	14	10,500
Sydney	Canterbury-Bankstown	15	15	32	23	12	7	5	6	7,200
Sydney	Central Western Sydne	14	15	33	22	12	7	5	6	7,500
Brisbane	Maroochy (S)	14	31	38	17	6	3	2	3	3,400
Sydney	St George-Sutherland	14	10	23	21	14	11	8	14	12,600
Brisbane	Western Inner	14	32	27	15	9	6	3	9	1,800
Sydney	Gosford-Wyong	14	18	31	20	13	7	6	6	7,300
Brisbane	Caloundra (C)	13	30	38	16	8	3	2	3	1,700
Sydney	Fairfield-Liverpool	13	13	28	21	14	9	8	7	7,300
Perth	Central Metropolitan	12	28	20	13	8	8	4	20	3,500
Sydney	Blacktown	12	11	27	22	14	9	8	8	6,000
Sydney	Outer South Western S	12	13	28	19	16	9	8	8	5,400
Sydney	Central Northern Sydne	12	6	11	15	14	12	10	32	10,100
Sydney	Outer Western Sydney	12	15	28	20	13	9	7	8	7,900
Melbourne	Moreland City	11	27	33	18	9	4	4	5	2,900
Brisbane	Beaudesert (S)	11	15	31	22	17	6	3	5	1,300
Sydney	Illawarra SD Bal	11	26	32	18	11	4	4	5	2,500
Sydney	Wollongong	11	20	27	18	13	8	6	7	5,500
Melbourne	Southern Melbourne	11	18	25	18	11	7	4	16	9,700
Brisbane	Northern Inner	11	29	31	14	7	5	4	10	3,200
Melbourne	Boroondara City	11	15	22	14	10	8	5	25	3,800
All households in stress (%)		10	23	28	17	11	7	5	9	407,200

Source: Special request tabulation, 2001 Census

One of the observations that can be made from the results in Table 2.16 is that, in the main, working households in stress in high cost areas have household incomes that are generally higher than all working households in stress. In particular, in the high cost Sydney sub-regions, a considerably lower proportion of households in housing stress have low household incomes. In the Lower Northern Sydney region, for example, where there are 16 per cent of working households in stress, only 24 per cent have incomes less than $600 per week, compared with an Australia wide average of 51 per cent. At the opposite extreme, 27 per cent of working households in stress have incomes in excess of $1500 per week compared with an Australian average of 9 per cent for all working households. In such regions, low proportions of lower income households in stress possibly reflect their inability to either form independent households or to obtain accommodation within their capacity to pay within the region.

The observation that households in stress in high cost regions generally have higher incomes than households in stress generally does not hold for all of regions listed above (selected because they have an above average of incidence of working households in housing stress). For example, the Caloundra and Maroochy regions, all included as regions in or surrounding the region defined by the Brisbane statistical division, have an above average share of low income households contributing to the above average incidence of housing stress amongst purchasers and renters in those regions. In the Maroochy and Caloundra regions, respectively 69 and 68 per cent of purchasing and renting working households in stress have incomes below $600 per

week, compared with an Australia wide average of 51 per cent. Although the disproportionate share is somewhat lower, the Gold Coast, Brisbane City Core and Brisbane Western Inner regions likewise have above average shares of low income households contributing to the above average incidence of housing stress amongst purchasers and renters in those regions (with 62, 61 and 59 per cent respectively). The high proportion of low income households in stress in these Brisbane regions is partly explained by a disproportionate share of workers in the occupations identified as having a high number of households in stress.[12]

2.4 Affordability, occupation and location

The question of whether occupation is a contributing factor to housing stress independent of income is likely to depend on the extent to which households are able to independently choose their residential location and their place of work. Given the cost constraints imposed on residential location, this is likely to depend on the nature of the employment conditions associated with particular occupations. Workers in occupations dominated by casual or part-time employment, for example, may be less likely to be able or willing to travel long distances than are workers in occupations dominated by full-time employment. Poorly paid workers unable to afford the expense of owning a car and in occupations dominated by shift-work are also less likely to be able or willing to travel long distances when public transport is not readily available.

When jobs for each occupation are dispersed, households are more likely to be able to choose residential locations that reflect their capacity to pay. When jobs in a particular occupation are concentrated in the high cost regions, then households with these occupational skills are less likely to be able to choose residential locations that reflect their capacity to pay and, therefore, more likely to have affordability problems than are households where the work is spatially dispersed.

Occupation may also have an independent effect on housing affordability outcomes if particular occupations are more likely to attract workers who live in single, rather than multiple earner households. Such outcomes could be due to the age of the worker (for example, high tech jobs are more likely to attract younger workers who are more likely to be single) or to the type of work (for example, it might be difficult for households where there are dependent children to sustain a second job where the primary job is based around a non-standard working week or where the availability of work is uncertain on a day by day basis).

The location of jobs in relation to the location of workers in those jobs is the focus of the next chapter. This analysis is undertaken for all workers and, because of the costs of obtaining data for all occupations, then in relation only to a limited number of specific occupations.

[12] This observation is made from the same data used to produce Table 2.16. The census data obtained from a detailed special request tabulation from the ABS that underpin this observation are not reported as the table (based on a cross classification of more than 100 3 digit occupational codes by the 72 regions covered) is too large.

3 LABOUR MARKET OUTCOMES

3.1 Introduction

In examining the interactions between housing and labour markets this report to date has only analysed the affordability outcomes of households and specific occupations. However, there are a number of issues that need to be addressed when examining relationships between housing and labour markets. Interactions in these markets are influenced by travel patterns, residential locations, workplace destinations and household structures.

This chapter, together with chapter 4, examines residential and workplace locations of employed individuals and their travel patterns in the three case study locations of Sydney, Melbourne and Brisbane. Chapter 3 focuses on aggregate outcomes. Chapter 4 examines outcomes at an occupational specific level. In both chapters, the location of jobs and workers is analysed by SSD (or equivalent for Brisbane) within each city. Figure 3.2, Figure 3.4 and Figure 3.6 below map the locations of the sub-regions used in the analysis.

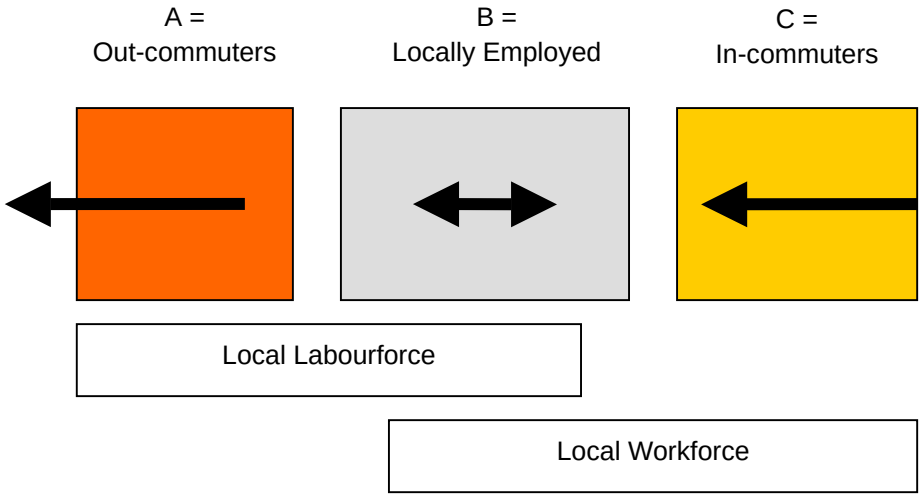
The main objective of the analysis in this chapter is to identify those regions in each city that have the greatest job-worker mismatch and which, therefore, function as employment centres within each city. It is these regions which are presumed to be most likely to face acute labour market shortages and it is these regions that will form the basis of the more detailed analyses which follows in chapters 4 and 5. The data used to derive this information, however, also provide information on the extent to which workers commute or work within the same region in which they live. Two separate summary results are presented here. These relate to the degree of employment self containment and residential self-containment. The former measures the number of workers who live and work in an SSD as a percentage of those who work in the SSD. The latter measures the number of persons who live and work in an SSD as a percentage of employed persons who live in that SSD. A low employment self-containment ratio suggests a relatively high degree of in-migration of workers to the region and more jobs than workers. A low residential self-containment ratio suggests a relatively high degree of out-migration from the region.

Epic DotGov (2004) provide the following useful explanation and diagrammatic representation of these concepts. In the representation below, B represents the number of workers who live and work locally; A represents those workers who migrate out of their local region and C represents those who migrate in from a different region. A+B give the total number of resident workers in a particular region; B+C give the total number of jobs in that region.

Residential Self Containment	= Number Employed Locally / Local Labourforce
	= B / A+B

Employment Self Containment	= Number Employed Locally / Local Workforce
	= B / B+C

Figure 3.1: Residential and Employment Self Containment



Source: Epic DotGov (2004)

The data in the following section provides an overview of the relationship between the places where people live and where they work. Section 3.3 provides an overview of the extent of commuting undertaken by employed persons in order to get to their places of work.

3.2 Job deficits and surpluses

The results in this section apply to all employed persons in the greater metropolitan regions of Sydney, Melbourne and Brisbane. The results, summaries of which are presented in Table 3.1 to Table 3.5, have been derived from journey to work (JTW) data from the 2001 and 1996 census. The JTW data report both place of residence and place of work for each worker in the various regions. Each table provides an aggregate overview of the numbers of resident workers in each region in the 3 study areas (defined by worker origin or place of residence) along with the numbers of jobs in each regions (defined by worker destination or place of work), with a slightly lower total for the latter because not all workers indicate where they work, not all have a clearly specified workplace destination and some work outside the regions listed. All have place of residence reported indicated. Where proportions have been calculated, cases where place of work is not stated have been excluded from the analysis but cases where place of work is undefined or outside the area have been retained although the results are not reported.

The critical results for this chapter are found in the final three columns of each table. The first of these gives an indication of the job-worker mismatch between the number of jobs in each region and the number of workers who live in that region with a job deficit (with a negative result) indicating that the region is a net exporter of workers and a surplus (with a positive result) indicating that the region is a net importer. At an aggregate level, recruitment problems are more likely to be felt in those regions which are net importers of workers. The final two columns give the employment and residential self-containment ratios.

Figure 3.2: Sydney statistical sub-divisions

3.2.1 Sydney

Table 3.1 provides an aggregate overview of the numbers of resident workers in each region in Sydney (defined by worker origin or place of residence) along with the numbers of jobs in each region (defined by worker destination or place of work).

The data in the first column in Table 3.1 are based on where workers live. They show there were 2.1 million employed persons in the greater Sydney area (Sydney, Newcastle and Wollongong) in 2001. Their places of residence are spread relatively uniformly across the chosen regions with the proportion of workers varying from 2 per cent of the total working population living in Illawarra to 9 per cent living in each of the large St.-George Sutherland and Central Northern Sydney regions.

The data in column two show that the most significant SSD as a workplace destination is, by far and away, Inner Sydney (with 421,000 jobs and 22 per cent of Sydney's total workforce). It also has a worker deficit which exceeds that in any other region by a factor of 5. For this reason and because it is one of the higher cost regions, Inner Sydney will be used for the more detailed case study undertaken below.

There are, however, also significant concentrations in Lower Northern Sydney (with 192,000 jobs accounting for 10 per cent of the workforce) and Central Western Sydney (150,000 jobs and 8 per cent of the workforce). Newcastle also has a large workforce (157,000), but is relatively self-contained (see below). Job locations are less uniformly spread than places of residence with the proportion of jobs varying from 2 per cent of the total jobs being in Illawarra to 22 per cent in Inner Sydney.

The figures for residential self-containment are mixed across the greater Sydney area. The highest residential self-containment ratios in 2001 were found in the outlying regions of Newcastle (85 per cent), Wollongong (74 per cent), the rest of the Illawarra region (79 per cent), Gosford-Wyong (64 per cent) and also in Inner Sydney (62 per cent), whereas the lowest residential self-containment ratios were recorded in Inner Western Sydney, Blacktown and Canterbury-Bankstown.

Overall, however, both employment and residential self-containment are relatively high with 53 per cent of workers in Sydney living in the same local area in which they work and 48 per cent working in the same local area in which they live.

Of all the SSDs in the greater metropolitan area only three have more jobs than employed residents: Inner Sydney (with a shortage of 278,000 workers), Lower Northern Sydney (with a 49,000 shortage) and Central Western Sydney (with a 35,000 shortage). Not surprisingly, these three SSDs also have the lowest employment self-containment ratios. Higher employment self-containment ratios are found in the outlying SSDs of Newcastle (98 per cent), Wollongong (96 per cent) and Gosford-Wyong (93 per cent). SSDs in outer Sydney areas - Northern Beaches and Outer South Western Sydney - also have higher employment self-containment ratios than the inner city SSDs indicating that the jobs that are in these regions are, to a large extent, taken up by workers who live there.

In absolute terms, the largest net exporters of workers were St George-Sutherland, Central Northern Sydney and Outer Western Sydney. In 2001, these areas served as major dormitory regions of the city. These regions have below average employment self-containment ratios: in other words, the number of jobs falls well below the number of workers.

Table 3.1: Employed persons in Sydney SSDs, 2001

	Employed Residents	Persons who work in SSD	Persons who live and work in SSD	Job deficit/ surplus	Employment Self-containment[a]	Residential Self-containment[b]
Blacktown	108,000	70,000	32,000	-38,000	46%	30%
Canterbury-Bankstown	113,000	86,000	33,000	-27,000	39%	30%
Central Northern Sydney	191,000	110,000	67,000	-81,000	61%	35%
Central Western Sydney	115,000	150,000	41,000	35,000	27%	35%
Eastern Suburbs	112,000	66,000	37,000	-46,000	55%	32%
Fairfield-Liverpool	127,000	93,000	47,000	-35,000	50%	37%
Gosford-Wyong	109,000	75,000	70,000	-33,000	93%	64%
Illawarra SD Bal	43,000	36,000	34,000	-6,000	93%	79%
Inner Sydney	143,000	421,000	89,000	278,000	21%	62%
Inner Western Sydney	72,000	58,000	17,000	-15,000	30%	24%
Lower Northern Sydney	143,000	192,000	64,000	49,000	33%	45%
Newcastle	181,000	157,000	153,000	-24,000	98%	85%
Northern Beaches	111,000	69,000	56,000	-42,000	81%	50%
Outer S W Sydney	99,000	54,000	41,000	-46,000	77%	42%
Outer Western Sydney	142,000	83,000	68,000	-58,000	81%	48%
St George-Sutherland	197,000	107,000	79,000	-89,000	73%	40%
Wollongong	102,000	80,000	76,000	-23,000	96%	74%
Grand Total	2,108,000	1,906,000	1,004,000	-202,000	53%	48%

a. Persons who live and work in SSD divided by Persons who work in SSD

b. Persons who live and work in SSD divided by persons who live in SSD

Source: Special request tabulation based on JTW data, 2001 Census

Table 3.2 provides the same information for 1996. In broad terms there is no change in the regions that act as employment centres within Sydney. There are, however, some changes in the degree of employment self-containment in the different regions within Sydney with noticeable increases in Inner and Inner Western Sydney suggesting more local residents or fewer in-commuters workers. Likewise, a decrease in the employment self-containment ratio in the Eastern Suburbs and Fairfield Liverpool suggests fewer local residents or more in-commuters. Areas where there have been noticeable increases in residential self-containment, such as outer western and south western Sydney, the Northern Beaches and Central Northern Sydney - all middle or outer regions of Sydney - suggest there are more locally employed workers or fewer out-commuters in these regions. Residential self-containment ratio has also increased in Inner Sydney.

Table 3.2: Employed persons in Sydney SSDs, 1996

	Employed Residents	Persons who work in SSD	Persons who live and work in SSD	Job deficit/ surplus	Employment Self-containment[a]	Residential Self-containment[b]
Blacktown	98,000	61,000	28,000	-37,000	46%	29%
Canterbury-Bankstown	113,000	89,000	35,000	-24,000	39%	31%
Central Northern Sydney	180,000	99,000	61,000	-81,000	62%	34%
Central Western Sydney	112,000	151,000	42,000	39,000	28%	38%
Eastern Suburbs	114,000	64,000	36,000	-50,000	56%	32%
Fairfield-Liverpool	113,000	87,000	42,000	-26,000	48%	37%
Gosford-Wyong	97,000	67,000	63,000	-30,000	94%	65%
Illawarra	39,000	32,000	30,000	-7,000	94%	77%
Inner Sydney	125,000	401,000	76,000	276,000	19%	61%
Inner Western Sydney	68,000	59,000	17,000	-9,000	29%	25%
Lower Northern Sydney	141,000	185,000	62,000	45,000	34%	44%
Newcastle	174,000	153,000	149,000	-22,000	97%	86%
Northern Beaches	111,000	66,000	54,000	-44,000	82%	49%
Outer S W Sydney	89,000	46,000	36,000	-43,000	78%	40%
Outer Western Sydney	132,000	75,000	61,000	-57,000	81%	46%
St George-Sutherland	188,000	101,000	74,000	-87,000	73%	39%
Wollongong	97,000	79,000	75,000	-18,000	95%	77%
Total	1,991,000	1,816,000	941,000	-175,000	52%	47%

a. Persons who live and work in SSD divided by Persons who work in SSD

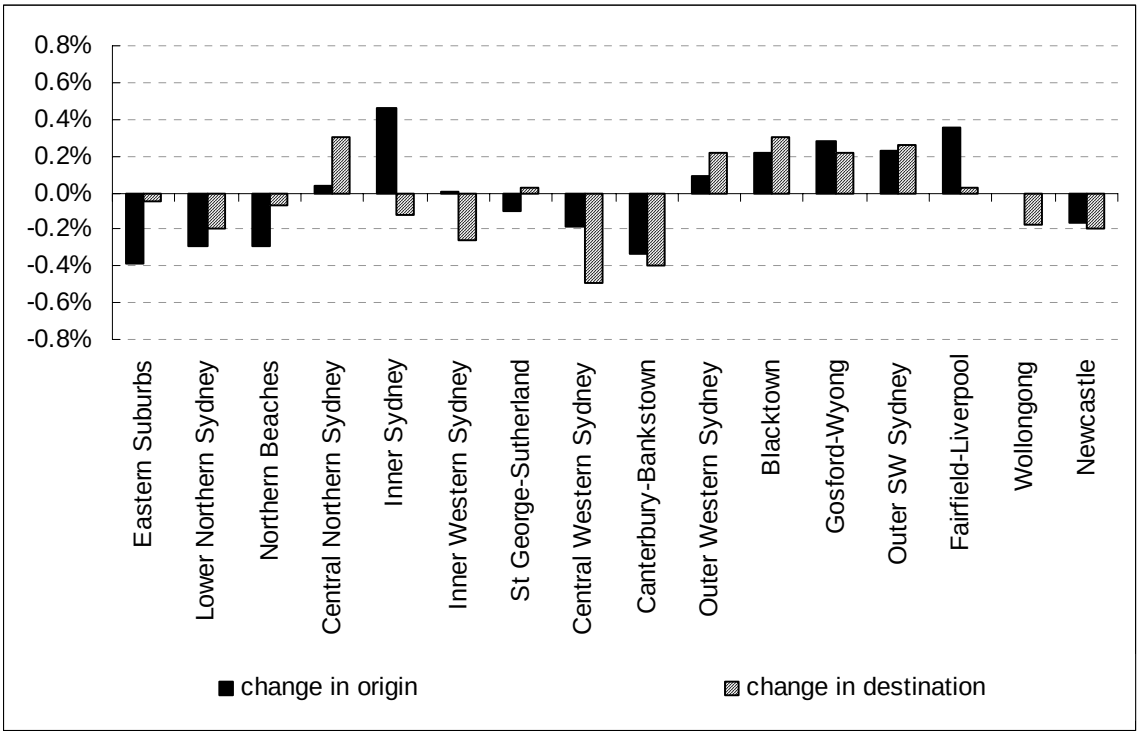
b. Persons who live and work in SSD divided by persons who live in SSD

Source: Special request tabulation based on JTW data, 2001 Census

Figure 3.3 below illustrates some of the changes between 1996 and 2001 that contributed to changes in these measures of self containment. This chart has been drawn to provide some insight into the relationship between labour markets and housing markets. It shows changes in place of residence and employment between 1996 and 2001 and has regions ranked by median rent from left to right. In other words, at an SSD level, the highest median rents in 2001 in Sydney were in the Eastern Suburbs and Lower Northern Sydney SSDs; the lowest in Newcastle.

The results presented in Figure 3.3 show a small but clear realignment of the origin and destination of employed persons in Sydney between 1996 and 2001. Broadly speaking, both the proportion of jobs and workers fell in much of the higher cost regions in inner and middle Sydney, while they increased in the lower cost outer regions. With the exception of an increase in the proportion of workers living in Inner Sydney (presumably a reflection of the considerable increase in higher density housing supply in that region) and a decline in workers and jobs in the old manufacturing regions of Newcastle and Wollongong, there was a movement of workers out of regions where housing costs (as reflected in median rents) were above average towards regions where they were below average. The increase in workplace destinations in Central Northern Sydney reflects the expansion of the northern end of Sydney's 'Global Arc' around Chatswood and Macquarie University.

Figure 3.3: Change in proportions of workers living and working in each region: Sydney 1996-2001



Source: Special request tabulation based on JTW data, 1996 and 2001 Censuses

The increase in the proportion of persons who live and work in Outer South Western Sydney, Outer Western Sydney, Blacktown, Gosford-Wyong and Central Northern Sydney, reflects the population growth in these areas but also confirms earlier research by Fagan *et al (2003)* that jobs have followed people into these areas.

The most prominent change, however, was the increase in the proportion of workers who live in the relatively high cost Inner Sydney region even though the proportion of jobs located there fell marginally. Some of this increase was offset by decreases in the proportion of employed persons who lived in the high cost Eastern Suburbs and Lower Northern Sydney regions which also suggests that the effect of the increased housing supply in the inner regions has been to provide increase choices for those who can afford to pay the relatively high rents in these regions.

The largest decreases in the proportion of employed persons occurred in the mid rent and middle Central Western Sydney and Canterbury-Bankstown regions but there were also declines in the proportions of workers who lived in these regions. This suggests growth at the fringe has been at the expense of these middle ring regions. While most of these movements are consistent with the continued suburbanisation of both population and workplaces, the growth of population in Inner Sydney marks a reversal of decades of decline under the impact of urban consolidation.

Figure 3.4: Melbourne statistical sub-divisions

3.2.2 Melbourne

The results presented for Melbourne follow the same pattern as those presented for Sydney. Figure 3.4 illustrates the sub-divisions on which the analysis is based. Table 3.3 and Table 3.4 provide an aggregate overview of the number of resident workers and the number of jobs in each region for 2001 and 1996 respectively. The last three columns in each of these tables also provide the key estimates of job-worker mismatch and the related residential and employment self-containment ratios for each region.

Table 3.3: Employed persons in Melbourne SSDs, 2001

	Employed Residents	Persons who work in SSD	Persons who live and work in SSD	Job deficit/ surplus	Employment Self-containment[a]	Residential Self-containment[b]
Boroondara City	70,000	54,000	18,000	-16,000	34%	27%
Eastern Middle Melbourne	182,000	158,000	66,000	-23,000	42%	36%
Eastern Outer Melbourne	113,000	87,000	44,000	-26,000	51%	39%
Frankston City	47,000	30,000	16,000	-17,000	54%	35%
Greater Dandenong City	44,000	65,000	15,000	21,000	23%	34%
Greater Geelong City Part A	58,000	50,000	46,000	-8,000	93%	80%
Hume City	50,000	53,000	19,000	3,000	37%	39%
Inner Melbourne	119,000	402,000	85,000	283,000	21%	72%
Melton-Wyndham	59,000	32,000	19,000	-26,000	59%	32%
Moreland City	51,000	30,000	10,000	-21,000	34%	20%
Mornington Peninsula Shire	48,000	32,000	26,000	-16,000	80%	54%
Northern Middle Melbourne	99,000	69,000	31,000	-30,000	45%	31%
Northern Outer Melbourne	76,000	39,000	22,000	-37,000	57%	29%
SE Outer Melbourne	96,000	42,000	31,000	-54,000	73%	32%
Southern Melbourne	169,000	136,000	69,000	-33,000	50%	41%
West Barwon (Minus Colac)	5,000	3,000	2,000	-2,000	59%	36%
Western Melbourne	161,000	120,000	68,000	-41,000	57%	42%
Yarra Ranges Shire Part A	62,000	32,000	23,000	-31,000	72%	37%
Total	1,507,000	1,434,000	611,000	-73,000	43%	41%

a. Persons who live and work in SSD divided by Persons who work in SSD
b. Persons who live and work in SSD divided by persons who live in SSD
Source: Special request tabulation based on JTW data, 2001 Census

Table 3.3 shows there were 1.5 million employed persons in Melbourne in 2001. The spatial regions in Melbourne, however, are less uniform that in Sydney, with the proportions of workers residing in the various SSDs varying from close to 0 per cent of the total in West Barwon to 12 per cent in Eastern Middle Melbourne.

As with Sydney, the most significant SSD as a workplace destination, by far and away, is Inner Melbourne (with 402,000 jobs representing 28 per cent of all jobs which means jobs are even more concentrated in Melbourne than in Sydney). There is also a concentration of employment in the nearby Eastern Middle Melbourne (158,000 representing 11 per cent of all jobs) but this is significantly lower than that of Inner Melbourne. To a greater extent than in Sydney, job locations in Melbourne are less uniformly spread than places of residence with a proportion of jobs varying from almost 0 in West Barwon to the 28 per cent reported for Inner Melbourne.

The figures for residential self-containment in 2001 reflect a similar pattern to those observed in Sydney. The highest residential self-containment ratios were found in both the extreme outer (Greater Geelong with 80 per cent) and inner regions (Inner Melbourne with 72 per cent). The lowest residential self-containment ratios were

recorded in the inner regions of Moreland (20 per cent) and Boroondara City (27 per cent).

Overall, the residential self-containment ratio in Melbourne is 41 per cent, which is considerably lower than Sydney (48 per cent) and Brisbane (46 per cent).[13] This is consistent with the greater concentration of jobs in Melbourne than in either of the other two cities which means a higher proportion of workers commute outside of their local area.

In absolute terms, the largest net exporter of workers was the outer regions of South Eastern Outer Melbourne (with a 54,000 worker surplus), but a number of outer and more central regions have significant worker surpluses (or job shortages).

Of all the SSDs in Melbourne only three have more jobs than residents with the worker deficit of 283,000 in Inner Melbourne which exceeds by more than tenfold that in the more distant regions of Greater Dandenong (with a 21,000 deficit) and Hume City (with a 3,000 deficit). Consistent with this, Greater Dandenong and Inner Melbourne have the lowest employment self-containment ratios. As in Sydney, the highest employment self-containment ratios are found in the outer regions of Melbourne: Greater Geelong (93 per cent) and Mornington Peninsula (80 per cent).

As above, because it is the focus of much of the employment in Melbourne, because it has a very large worker deficit and because it is one of the higher cost regions in Melbourne, Inner Melbourne is used for the more detailed case study undertaken below.

Table 3.4: Employed persons in Melbourne SSDs, 1996

Origin	Employed Residents	Persons who work in SSD	Persons who live and work in SSD	Job deficit/ surplus	Employment Self-containment[a]	Residential Self-containment[b]
Boroondara City	66,000	53,000	17,000	-13,000	33%	26%
Eastern Middle Melbourne	177,000	144,000	62,000	-33,000	43%	35%
Eastern Outer Melbourne	102,000	81,000	40,000	-20,000	49%	40%
Frankston City	43,000	26,000	15,000	-17,000	56%	34%
Greater Dandenong City	46,000	61,000	16,000	15,000	26%	34%
Greater Geelong City Part A	54,000	48,000	44,000	-6,000	93%	83%
Hume City	45,000	46,000	17,000	1,000	38%	38%
Inner Melbourne	101,000	368,000	71,000	268,000	19%	70%
Melton-Wyndham	47,000	24,000	15,000	-23,000	61%	31%
Moreland City	48,000	33,000	11,000	-15,000	33%	22%
Mornington Peninsula Shire	40,000	26,000	21,000	-13,000	80%	53%
Northern Middle Melbourne	94,000	73,000	32,000	-21,000	44%	34%
Northern Outer Melbourne	68,000	31,000	18,000	-37,000	57%	26%
SE Outer Melbourne	79,000	32,000	23,000	-47,000	72%	30%
Southern Melbourne	157,000	129,000	64,000	-28,000	49%	41%
West Barwon (Minus Colac)	4,000	3,000	2,000	-2,000	62%	38%
Western Melbourne	149,000	111,000	66,000	-37,000	59%	44%
Yarra Ranges Shire Part A	56,000	26,000	19,000	-30,000	73%	34%
Total	1,375,000	1,316,000	552,000	-59,000	42%	40%

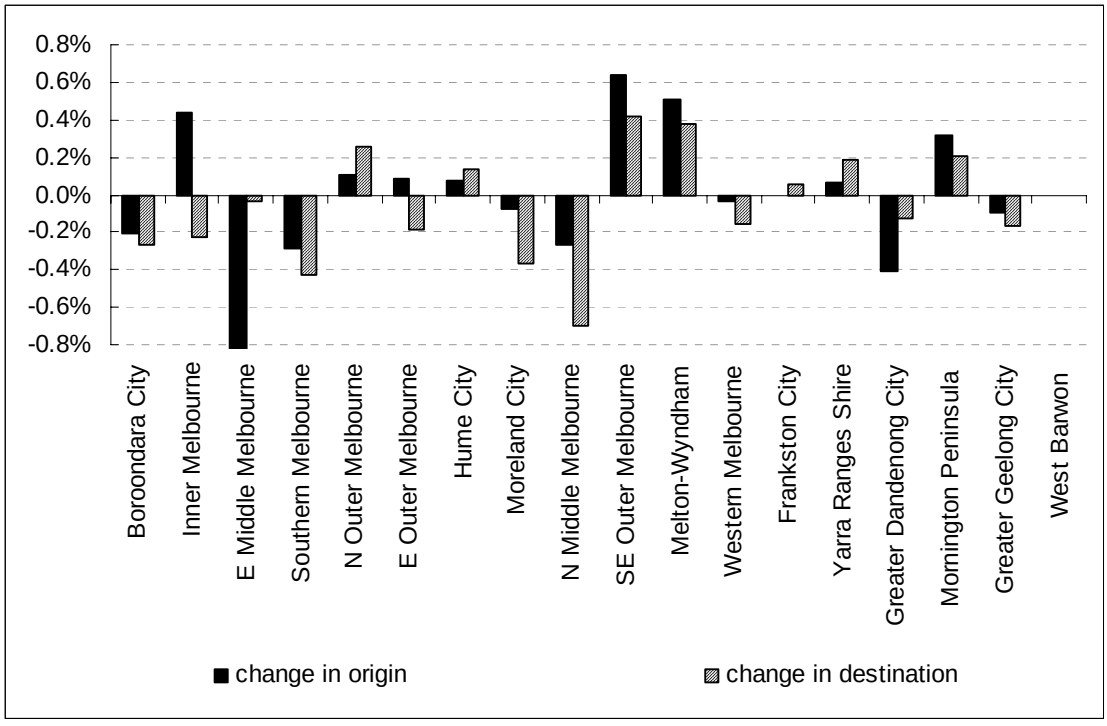
a. Persons who live and work in SSD divided by Persons who work in SSD
b. Persons who live and work in SSD divided by persons who live in SSD
Source: Special request tabulation based on JTW data, 2001 Census

[13] The results for Brisbane are presented in section 3.2.3.

A comparison of the results presented in Table 3.3 and Table 3.4 shows that, between 1996 and 2001 the largest increases in employment self-containment were recorded in Inner Melbourne, Boroondara City and Moreland with significant decreases being recorded in West Barwon, Greater Dandenong and Western Melbourne. On the other hand, large increases in residential self-containment between 1996 and 2001 were recorded in Northern Outer Melbourne and South Eastern Outer Melbourne, while large decreases were found in Northern Middle Melbourne and West Barwon

Figure 3.5 illustrates the change in the proportions of workers by their origin and destination that contributed to these outcomes. As for the equivalent chart for Sydney, the results are ranked by median rents in the relevant regions, with Boroondara and Inner Melbourne having the highest median rents and Mornington Peninsular (along with Greater Geelong and West Barwon) the lowest, in order to focus on the relationships between housing and labour markets.

Figure 3.5: Change in proportions of workers living and working in each region: Melbourne SSDs, 1996-2001



Source: Special request tabulation based on JTW data, 1996 and 2001 Censuses

As with the chart for Sydney, the results here show a small and possibly not quite so clear realignment of the origin and destination of employed persons in Melbourne between 1996 and 2001. In terms of place of origin, with the exception of Inner Melbourne, the largest decreases in the proportions of workers generally are in the higher cost regions of Melbourne and the largest increases are in the mid rent or lower rent regions. The results tend to show a greater loss of workers than jobs in the high cost regions, the same impact of urban consolidation with a redistribution of workers from high cost areas to the inner city and, as with Sydney, are consistent with the continued suburbanisation of both population and workplaces.

3.2.3 Brisbane

The final greater metropolitan region to be examined is the Brisbane region, defined here to also include the Gold Coast and surrounds. Figure 3.6 below illustrates the regions covered.

Table 3.5, which provides the summary results for these regions for 2001,[14] shows there were just under 900,000 persons employed in the greater Brisbane area in 2001. The regions selected for analysis are such that the places of residence of these workers, with the very significant exception of the Gold Coast, are relatively evenly spread across the greater metropolitan region with proportions of workers varying from 2 per cent of workers living in each of Redcliffe and Beaudesert to 8 per cent living in the Northern Outer region. The Gold Coast alone, however, is home to at least 17 per cent of workers in the greater metropolitan region.

Table 3.5: Employed persons in Brisbane for selected areas, 2001

	Employed Residents	Persons who work in SSD	Persons who live and work in SSD	Job deficit/ surplus	Employment Self-containment[a]	Residential Self-containment[b]
Beaudesert LGA	22,000	11,000	8,000	-11,000	79%	39%
Caboolture LGA	34,000	18,000	14,000	-16,000	76%	40%
Caloundra LGA	24,000	19,000	15,000	-5,000	76%	61%
City Core SR	32,000	185,000	21,000	153,000	12%	66%
Eastern Inner SR	41,000	25,000	9,000	-15,000	36%	23%
Eastern Outer SR	26,000	22,000	9,000	-4,000	39%	33%
Gold Coast LGA	156,000	137,000	127,000	-18,000	93%	82%
Ipswich LGA	47,000	36,000	26,000	-11,000	73%	56%
Logan City LGA	65,000	44,000	24,000	-22,000	54%	36%
Maroochy LGA	42,000	39,000	33,000	-3,000	84%	78%
Northern Inner SR	52,000	37,000	12,000	-15,000	33%	23%
Northern Outer SR	75,000	69,000	28,000	-6,000	40%	37%
Pine Rivers LGA	55,000	25,000	15,000	-30,000	61%	28%
Redcliffe LGA	17,000	12,000	7,000	-5,000	58%	42%
Redland LGA	49,000	26,000	20,000	-23,000	77%	41%
Southern Inner SR	26,000	16,000	4,000	-10,000	28%	17%
Southern Outer SR	62,000	65,000	23,000	3,000	35%	36%
Western Inner SR	25,000	27,000	7,000	2,000	27%	29%
Western Outer SR	50,000	35,000	15,000	-15,000	43%	31%
Total	899,000	849,000	417,000	-50,000	49%	46%

a. Persons who live and work in SSD divided by Persons who work in SSD
b. Persons who live and work in SSD divided by persons who live in SSD
Source: Special request tabulation based on JTW data, 2001 Census

The greater metropolitan region of Brisbane differs from its Sydney and Melbourne counterparts in that it has two, not one major centres of employment. These are the City Core (with 185,000 jobs employing 22 per cent of the region's total workforce) and the Gold Coast (with 137,000 jobs employing 16 per cent of the region's total workforce). Similar to the southern cities, however, it is only in the City Core where

[14] It was not possible to obtain data for the regions identified (based on a combination of statistical regions and local government areas) for 1996 as ABS were unable to provide these on a comparable spatial scale. Hence no comparisons over time can be provided for Brisbane.

there is a very significant shortage of workers as a result of a 153,000 job surplus. The Gold Coast, by way of contrast, has a surplus of workers. For the same reasons given for the choice of Inner Sydney and Inner Melbourne as the basis for the more narrowly defined case study to be presented in a later chapter, this outcome led to the City Core in Brisbane as the sub-region choice for the case study.

Of all the areas in the greater Brisbane area only three have more jobs than employed residents: the City Core, and the Southern Outer region (with a deficit of 3,000 workers) and Western Inner region (with a deficit of 2,000). These three areas also have the lowest employment self-containment ratios, reflecting their larger (or, for the City Core, considerably larger) workforce than local population. As with Sydney and Melbourne, higher employment self-containment ratios are found in the outlying areas of Gold Coast (93 per cent) and Maroochy (84 per cent). In other words, there is relatively little in-migration of workers into these outlying regions.

The figures for residential self-containment are mixed across the greater Brisbane area. The highest residential self-containment ratios in 2001 were found in Gold Coast (82 per cent) and Maroochy (78 per cent) and City Core (66 per cent). In other words, those who live in these regions, also work in them. The lowest residential self-containment ratios were recorded in Southern Inner (17 per cent), Eastern Inner (23 per cent) and Northern Inner (23 per cent). These areas are net exporters of workers to other regions. In absolute terms, however, the greatest net exporters are the Pine Rivers, Logan City and Redlands regions.

Both residential and employment self-containment are relatively high in the greater Brisbane region with 49 per cent of workers living in the same region in which they are employed and 46 per cent working in the same region in which they live.

Figure 3.6: Brisbane regions

3.2.4 Summary

In the introduction to this report it was noted that there were two choices arising in relation to the choice of a local area within each city as a case study area for examining the impacts of housing affordability on labour market outcomes. The first choice – determining the appropriate level of spatial disaggregation – was addressed in the Positioning Paper and summarised in Chapter 1 of this report. The second choice was to determine the most likely local areas in each city where labour recruitment and retention issues might arise. These areas were to be selected on the basis that they had both significant labour deficits (and job surpluses) and relatively high housing costs.

A detailed analysis of housing costs was presented in the Positioning Paper and summarised in Chapter 1. This sub-section has determined which sub-regions within the three metropolitan areas have the greatest job surpluses: that is, where jobs significantly outnumber residents. Based on the data presented above and the taking into account the median rental housing costs of the relevant regions in each city, the areas selected for the specific journey to work case studies to be presented in the following chapter are Inner Sydney, Inner Melbourne and the City Core SR in Brisbane. These are the sub-regions in each greater metropolitan area that have vastly greater pressures in terms of meeting their need for workers from without their boundaries as a result of the significant mismatch between local jobs available and local workers for those jobs. All have above average housing costs (and, in some instances, significantly above average housing costs). Compared to the other regions analysed in this chapter, these three areas best satisfy inclusion on both housing cost and job surplus grounds.

3.3 Journey to work

An important by-product of the data needed to determine the extent to which different regions are likely to face recruitment and retention problems as a result of a potential shortage of workers, for Sydney, Melbourne and Brisbane in 2001 has been the data generated on residential and employment self-containment and, for Sydney and Melbourne, on changes in places of residence and work between 1996 and 2001.

At a metropolitan wide level, these data show that a relatively high proportion of workers reside in the local area in which they work and, conversely, a high proportion of workers live in the same local area in which they work. That this second outcome is not a corollary of the first can be seen in the sub-regional residential and employment self-containment ratios. The inner city or CBD regions identified for further consideration have extremely low employment self-containment ratios (of 21 per cent in Sydney and Melbourne and 12 per cent in Brisbane) as a result of a significant amount of in-migration of workers to fill the surplus of jobs over workers who reside locally. However, each of these inner city regions has a high residential self-containment ratio (62 per cent in Sydney, 66 per cent in Brisbane and 72 per cent in Melbourne) which shows that the increasing, but still relatively small, proportion of workers who do live in the inner city also work there.

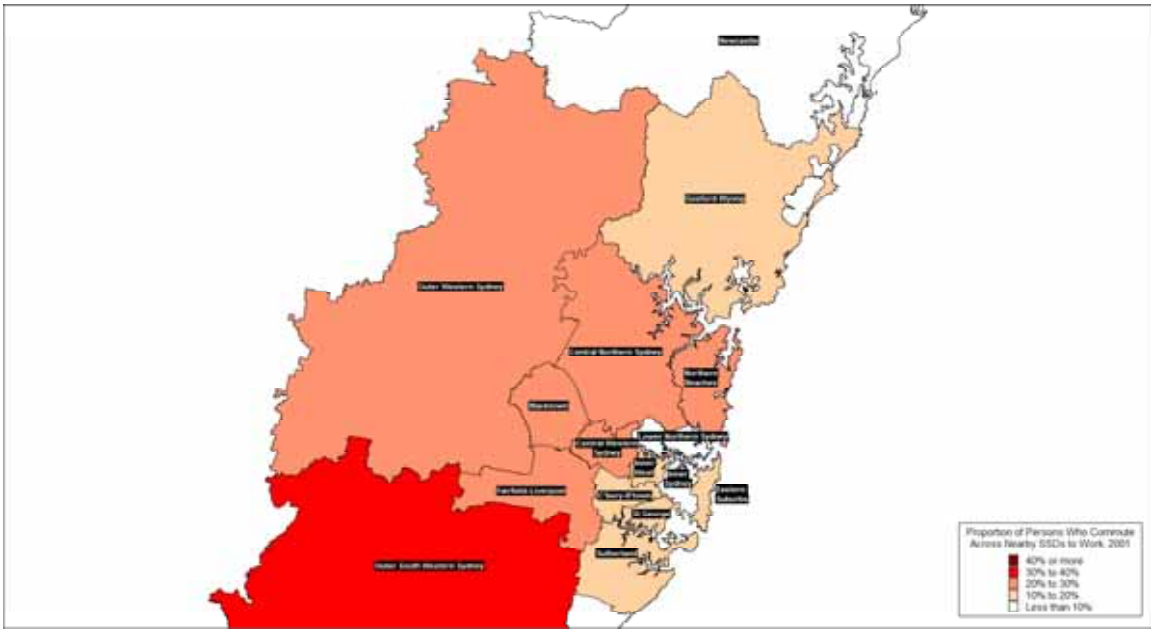
The data, however, also provide information on the still high proportion of workers who commute to work beyond their local SSD. One of the questions raised in the introduction was whether workers were trading off affordable housing with high levels of commuting. This final section in this chapter provides an overview of the extent to which this might be the case.

3.3.1 Extent of commuting in 2001

As indicated in Chapter 1, the level of spatial aggregation embodied in the results presented in this chapter was selected because the SSD (or equivalent in Brisbane) broadly defined an area within which it was possible to meet journey times and distances that, at an average level, have remained relatively constant over the time period covered by the data being analysed. An indication of the spatial distribution of travel times can be generated by examining the proportion of workers who neither work locally (that is, within the SSD in which they reside) nor work in an adjoining SSD. Workers who are required to travel across an SSD adjacent to the one in which they live are likely to have above average travel to work times and distances.

The three charts illustrated in below in Figure 3.7, Figure 3.8 and Figure 3.9 provide a visual overview of these results for the 3 metropolitan regions studied. Areas a shaded from clear, where fewer than 10 per cent of workers commute across a neighbouring region to get from where they live to where they work, to dark, where 40 per cent or more of workers do so. Although the subregions are of different physical sizes, the larger ones tend to be the outlying regions where, although distances travelled may be further, the time taken to cover a given distance is likely to be considerably lower than in the inner regions where greater congestion is likely to result in relatively longer commuting times.

Figure 3.7: Proportions of workers commuting across an SSD: Sydney, 2001



Source: Special request tabulation based on JTW data, 2001 Census

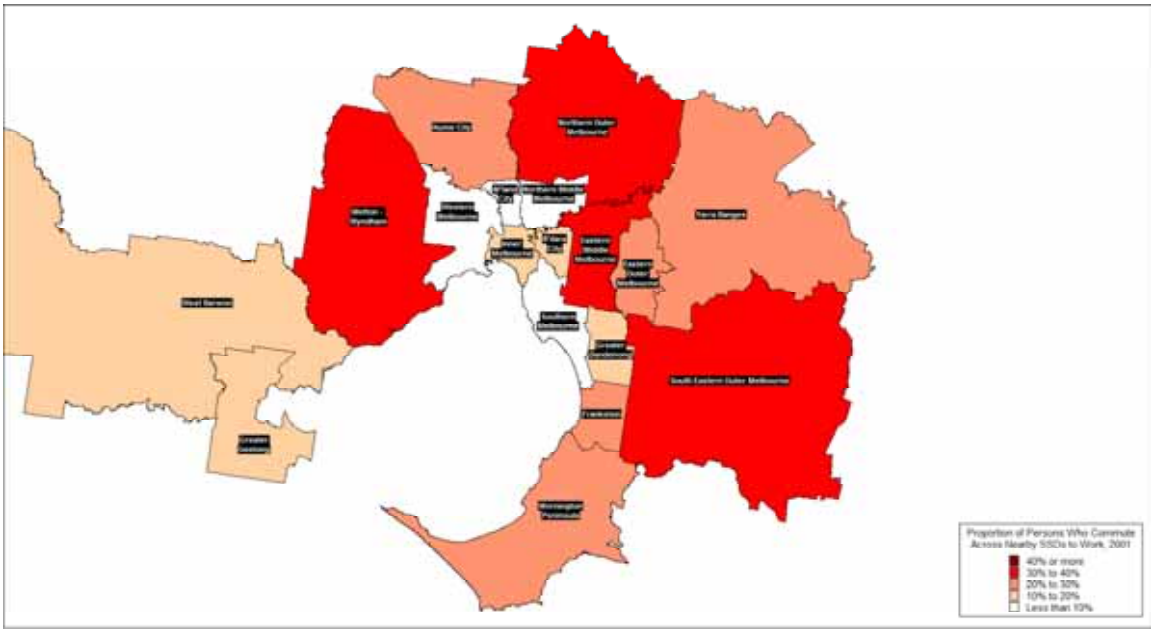
Figure 3.7, for Sydney, shows a clear pattern with a much higher proportion of workers in outer regions commuting beyond their neighbouring SSD.[15] This is in marked contrast with workers who live in the inner regions where a much lower proportion of workers commute beyond their neighbouring regions. It is consistent with the centralisation of employment in the CBD and the net deficit of jobs in the

[15] With the exception of the Newcastle and Wollongong regions (only a small part of the latter is shown in the chart). Consistent with high employment and residential self-containment, there is little commuting out of Newcastle and Wollongong.

outer regions. This outcome, in combination with the low levels of residential self-containment in these regions, suggests that those who live in the outer regions of Sydney and who are unable to find jobs locally have to travel some considerable distance in order to maintain their status as an employed person.

The results for Melbourne, shown in Figure 3.8 show a broadly similar pattern. However, the above minimum proportion of workers who live in Inner Melbourne and Boroondara who commute beyond a region that is adjacent to that in which they live is worthy of comment. Unlike Inner Sydney, the level of residential self containment in these inner regions of Melbourne is low. A relatively small proportion of those who live in the region, also work in the same region.

Figure 3.8: Proportions of workers commuting across an SSD: Melbourne, 2001



Source: Special request tabulation based on JTW data, 2001 Census

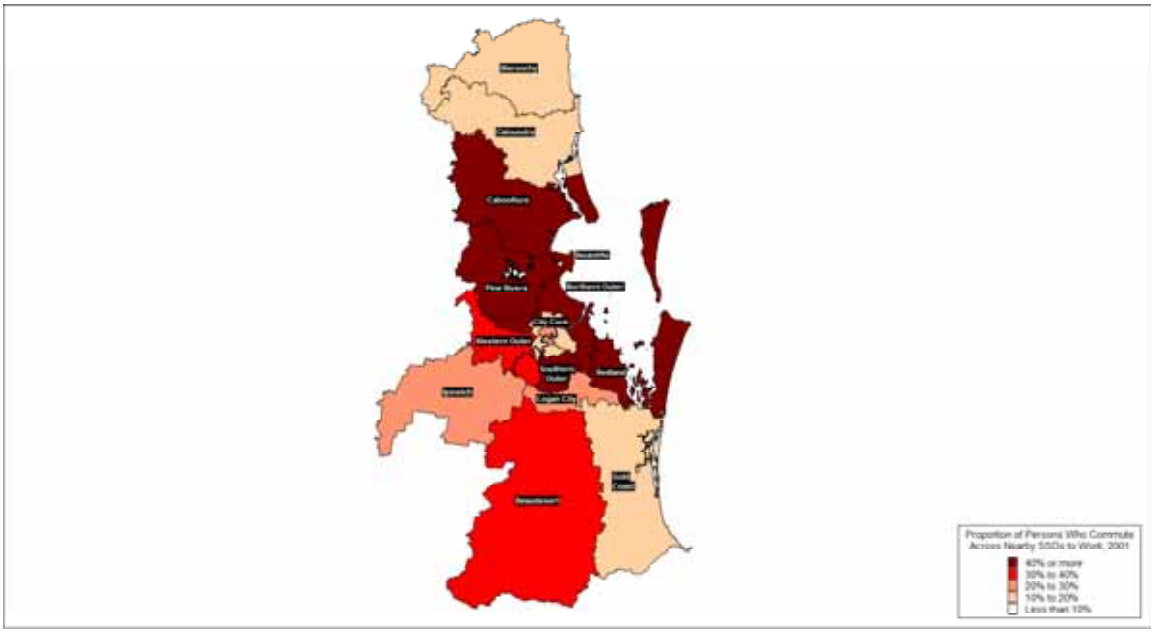
However, in terms of proportions who commute across SSDs, those who live in these inner regions are still considerably better off than those who live in the outlying regions which have similarly low residential self-containment ratios but considerably higher proportions of resident workers who commute beyond their adjoining SSDs in order to get to work.

At first glance, the results for Brisbane shown in Figure 3.9 appear to be quite different from those for Sydney and Melbourne. Despite the apparently more dispersed work place locations and the existence of two key centres of employment rather than one, the proportions commuting beyond any SSD contiguous with that in which they live are much higher. However, this is likely to be a result of the greater number of regions considered for Brisbane than for the other two metropolitan regions.16 The two significant employment centres are the Gold Coast and the City Core. The high level of both employment and residential self-containment within the

[16] There are 19 regions covered for Brisbane compared with 17 and 18 respectively for the considerably larger Sydney and Melbourne regions. The data provided by the ABS were more disaggregated than the 13 regions requested which, in turn, were defined by the Queensland members of the user group for this project as being those which were likely to be most useful for policy analysis within Queensland.

Gold Coast region results in a relatively high proportion of workers working within the region. If the City Core had been defined to include the regions in the (broadly defined) ring around it, a considerable proportion of those currently classified as commuting across regions would no longer be so defined. This notwithstanding, the results illustrated are consistent with the extremely low level of employment self-containment in the City Core and the resultant high level of in-migration.

Figure 3.9: Proportions of workers commuting across a sub-region: Brisbane, 2001



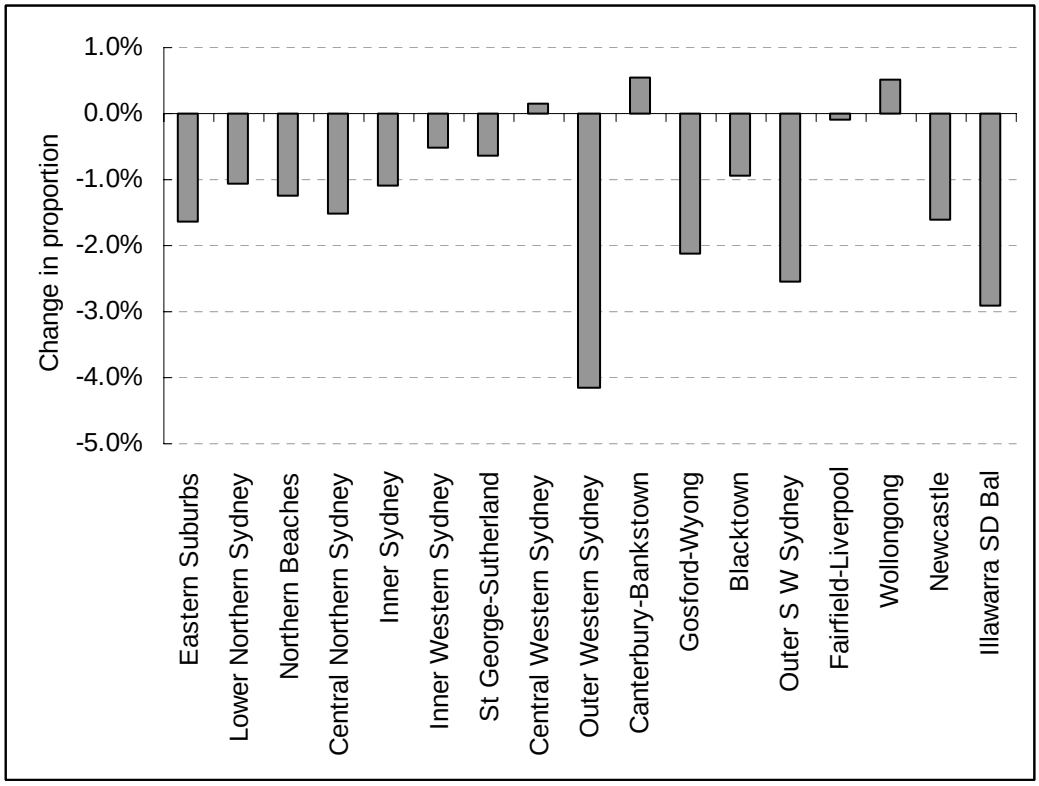
Source: Special request tabulation based on JTW data, 2001 Census

3.3.2 Changes in commuting between 2001 and 1996

The final overview data for this chapter illustrate the changes in commuting patterns that have taken place between 2001 and 1996. In the absence of 1996 data for Brisbane, these are provided only for Sydney and Melbourne.

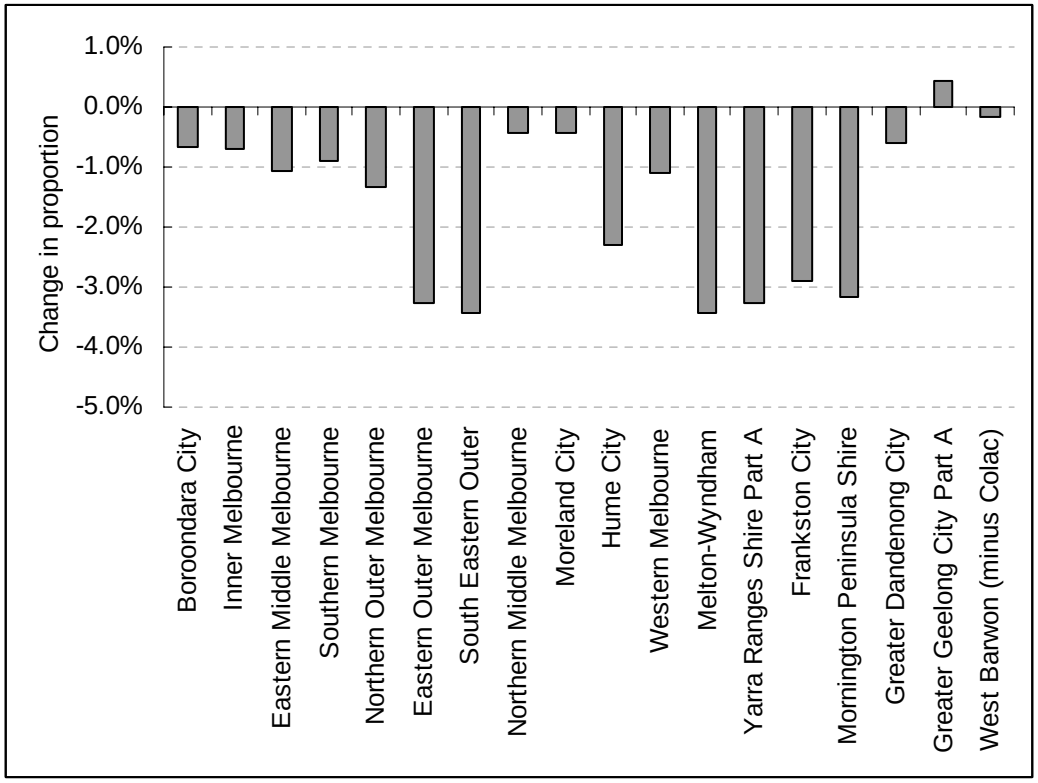
As in section 3.2, these results are ranked by housing market data, from the regions with the highest median rents in 2001 on the left of the charts to those with the lowest median rents on the right. Both the data for Sydney (in Figure 3.10) and for Melbourne (in Figure 3.11) show a decline in the proportion of persons in each SSD who commute across nearby SSDs to work. In other words, proportionally more persons worked locally in 2001 than in 1996.

Figure 3.10: Change in commuting across SSDs: Sydney, 1996-2001



Source: Special request tabulation based on JTW data, 2001 and 1996 Census

Figure 3.11: Change in commuting across SSDs: Melbourne, 1996-2001



Source: Special request tabulation based on JTW data, 2001 and 1996 Census

Declines in the proportion of workers commuting across an SSD tend to be greatest in the regions where housing costs are lowest which provides additional support for the tentative conclusion reached at the end of the previous section. They are consistent with the suburbanisation of place of work, suggesting that jobs are following people into the suburbs.

To a large extent, such outcomes might be expected with economic restructuring that has resulted in the growth of new economy service jobs.

3.3.3 Summary

The supplementary data reported in section 3.2 also showed that there have been discernible changes in residential location and in the location of jobs. With the exception of the increases in the respective CBDs, compared with 1996, in 2001 smaller proportions of workers lived in the higher cost regions (which are more likely to be close to the CBD) and higher proportions in the middle and outer areas where housing costs are lower. Similarly, compared with 1996, in 2001 a higher proportion of jobs were also located away from the inner region and in the outer regions in Sydney and Melbourne.[17]

A critical question is which people and which jobs have changed and whether the aggregate job-worker match or mismatch is greater or less once the skills, or more broadly the occupations, of different workers are taken into account. These are the issues which are to be addressed in the following chapter.

Also addressed is the question of how far those who work but do not live in the inner city have to travel. An analysis of socio-economic and demographic characteristics of those who work and live in the inner city compared with those who work but do not live in the inner city is addressed in Chapter 5.

[17] It is important to remember that these outcomes relate to employed persons, not to the population as a whole. One explanation of a changing spatial structure of jobs is that employment opportunities in different occupations are differentially affected by the business cycle.

4 JOURNEY TO WORK BY OCCUPATION[18]

4.1 Introduction

While Chapter 3 provided a description of the overall workplace and residence balance of working households by sub-region within the three case study metropolitan regions, this chapter shifts attention to these outcomes at an occupational level.

The analysis focuses on the four 'indicator occupations' identified in Chapter 1 to illustrate the nature of the job-home relationship of workers typical of the new economy in these cities: computing professionals, nursing professionals, cleaners and hospitality workers. As discussed in the Positioning Paper and summarised in Chapter 1, these four occupations were chosen because they were representative of new economy jobs, because they had relatively large numbers of workers involved and because they covered the spectrum from low skilled to high skilled occupations. Nursing professionals, cleaners and hospitality workers were seen as occupations where jobs were likely to be relatively dispersed; computing professionals were seen as occupations where jobs were likely to be concentrated in the city centres.

Section 4.2 starts with a summary of the equivalent to the aggregate data provided in Chapter 3 for each of these 4 indicator occupations. Detailed results indicating the origin and destination for workers in each of these occupations for Sydney and Melbourne for 2001 and 1996 and the changes in these between these two periods and results for Brisbane for 2001 are provided in Appendix A. This is followed in section 4.3 by a further unpacking of the patterns, by narrowing the focus of attention specifically to the three high cost, job rich sub-regions of Inner Sydney, Inner Melbourne and the Brisbane City Core identified by the analysis in the previous chapter. Again only summary results are presented here. Detailed results charting the shifting residential locations of those who worked in these locations are presented in Appendix B.

4.2 Labour market outcomes

4.2.1 Job deficits/surpluses by occupation

Table 4.1, Table 4.2 and Table 4.3 show, respectively, the job deficits and surpluses for the 4 indicator occupations in the sub-regions of each of the 3 greater metropolitan regions examined at an aggregate level in Chapter 3.

The final row in each table indicates the total number of jobs in these occupations in the 3 regions covered. As can be seen from the data in these final rows, each of the four occupations selected does have a significant workforce in each metropolitan region. Computing professionals represent 2.3 per cent of the total workforce in the greater Sydney region, 2.2 per cent in Melbourne but only 1.4 per cent in Brisbane.[19] This signals a greater role played by the former in providing symbolic analysts or workers in the information technology.

[18] As with the in the previous chapter, the data presented here are based on persons, not households.

[19] These proportions and those that follow can be derived by dividing the totals here by the total numbers of employed persons reported in the respective summary tables in Chapter 3.

Table 4.1: Job deficit/surpluses by indicator occupations: Sydney, 2001

	223 Computing Professionals	232 Nursing Professionals	632 Hospitality Workers	911 Cleaners
Blacktown	-	-	-500	-
Canterbury-	-	-100	-600	-
Central Northern	-	-	-800	-200
Central Western	-800	1,90	-100	-500
Eastern	-	200	-900	-100
Fairfield-	-	300	-500	-
Gosford-	-800	-300	-200	-700
Illawarra	-100	-100	0	-200
Inner	13,20	1,10	4,30	1,90
Inner Western	-	200	-600	-200
Lower Northern	5,90	1,00	100	600
Newcastle	-100	-300	-200	-700
Northern	-	-800	-400	-500
Outer South Western	-800	-700	-500	-700
Outer Western	-	-	-300	-700
St George-	-	-300	-900	-
Wollongong	-400	-300	-200	-600
Total	44,40	38,20	33,40	30,30

Source: Special request tabulation based on JTW data, 2001 Census

Table 4.2: Job deficit/surpluses by indicator occupations: Melbourne, 2001

	223 Computing Professionals	232 Nursing Professionals	632 Hospitality Workers	911 Cleaners
Boroondara City	-700	-700	-600	200
Eastern Middle Melbourne	-2,300	-500	-900	-500
Eastern Outer Melbourne	-1,600	-600	-400	-500
Frankston City	-400	200	-100	-300
Greater Dandenong City	-200	700	-100	-400
Greater Geelong City Part A	-200	-100	-100	-300
Hume City	-100	-500	-200	-200
Inner Melbourne	16,000	6,000	5,000	3,600
Melton-Wyndham	-700	-700	-200	-700
Moreland City	-1,000	-500	-800	-700
Mornington Peninsula Shire	-300	-400	0	-300
Northern Middle Melbourne	-1,800	-200	-700	-900
Northern Outer Melbourne	-900	-700	-600	-900
South Eastern Outer Melbourne	-1,000	-1,200	-300	-1,200
Southern Melbourne	-3,300	-600	-600	-300
West Barwon (minus Colac)	0	-100	0	0
Western Melbourne	-2,200	-700	-1,100	-2,200
Yarra Ranges Shire Part A	-600	-1,100	-200	-500
Total jobs	34,900	33,700	23,100	27,800

Source: Special request tabulation based on JTW data, 2001 Census

Table 4.3: Job deficit/surpluses by indicator occupations: Brisbane, 2001

	223 Computing Professionals	232 Nursing Professionals	632 Hospitality Workers	911 Cleaners
Beaudesert LGA	-100	-300	-100	-200
Caboolture LGA	-200	-300	-100	-500
Caloundra LGA	0	-200	-100	-300
City Core SR	5,800	5,400	2,800	2,200
Eastern Inner SR	-700	-700	-300	-300
Eastern Outer SR	-200	-300	-100	-200
Gold Coast LGA	-300	-200	-300	-1,000
Ipswich LGA	-200	-200	-100	-600
Logan City LGA	-300	-300	-300	-1,100
Maroochy LGA	0	0	0	-200
Northern Inner SR	-600	-1,200	-300	-200
Northern Outer SR	-700	-200	-300	-200
Pine Rivers LGA	-600	-1,100	-300	-700
Redcliffe LGA	-100	200	0	-200
Redland LGA	-400	-500	-200	-500
Southern Inner SR	-400	-100	-300	-100
Southern Outer	-500	-500	-300	-300
Western Inner SR	-200	500	-300	200
Western Outer SR	-800	-700	-400	-300
Total jobs	11,700	18,700	16,100	17,300

Source: Special request tabulation based on JTW data, 2001 Census

The proportions of the total workforce in the 3 in-person service occupations, however, are very similar with between 2.0 and 2.2 per cent of the workforce employed as nursing professionals, between 1.5 and 1.9 per cent employed as hospitality workers and 1.6 and 2.0 per cent as cleaners.

For the purpose of this chapter, however, the key results that can be observed from the data presented in Table 4.1, Table 4.2 and Table 4.3 relate to the differences in labour market outcomes in each sub-region as reflected in the job deficit and surplus data reported.

As can be seen from these tables, for computer professionals, the most significant job deficits follow the same pattern reported in Chapter 3: they are concentrated in Inner Sydney, Inner Melbourne and the City Core regions or in the CBD in each city and there are only 1 or 2 other regions where deficits also are found. This is particularly so for Sydney and Melbourne where there are a disproportionate share of computer professionals. The pattern of job deficits and surpluses for the remaining three occupations, however, are much less pronounced. Whilst there are not quite as many regions where there is a deficit as there are regions where there is a surplus, the extent of the mismatch between labour supply (in terms of where people live) and labour demand (in terms of where people work) is much lower. This suggests that, as expected, jobs are more dispersed for the in-person service professions.

4.2.2 The spatial concentration of indicator occupations

In order to summarise the spatial concentration of place of residence and work at an occupational level and to explore the changing spatial concentration of these groups in a more systematic manner, a series of Dissimilarity Indices (DIs) were calculated

for both 2001 and 1996. The Dissimilarity Index was regarded as being the most useful summary statistic for this purpose as it combines origin and destination data and can be interpreted as a spatial mismatch index. As measured it ranges from 0 to 1, with higher values indicating greater segregation between people and jobs. Generally, index scores between 0 and 0.3 indicate a low degree of separation, between 0.3 and 0.6 a moderate degree of separation, and over 0.6 a high degree of separation or segregation.

As applied to the data that underpin Table 4.1 to Table 4.3, the Dissimilarity Index describes the extent to which the areas in which employed persons in each occupation live differ from the areas in which jobs in the respective occupation are located. In this context, it can be interpreted as the proportion of either population or jobs within the each occupation that would have to relocate to different areas to completely eliminate any geographic imbalance.

As Table 4.4 shows, in 2001 the aggregate Dissimilarity Index for all occupations varied from 0.22 in Melbourne to 0.19 for Brisbane with Sydney at 0.21. This suggests there was little overall difference in the spatial match between workplaces and homes between the three cities. A similar result held for 1996, confirming the overall, relative shift of both jobs and people outwards moved in parallel between 1996 and 2001.

Table 4.4: Dissimilarity Indices for indicator occupations in Sydney, Melbourne and Brisbane, 1996-2001

	Sydney	Melbourne	Brisbane
2001			
Computing Professionals	0.44	0.48	0.51
Nursing Professionals	0.14	0.22	0.33
Cleaners	0.14	0.22	0.16
Hospitality Workers	0.15	0.25	0.18
Other Occupations	0.21	0.21	0.19
Total	0.21	0.22	0.19
1996			
Computing Professionals	0.40	0.46	NA
Nursing Professionals	0.14	0.23	NA
Cleaners	0.16	0.23	NA
Hospitality Workers	0.15	0.27	NA
Other Occupations	0.22	0.22	NA
Total	0.21	0.22	NA

Source: Special request tabulation based on JTW data, 2001 and 1996 Census

Two comparisons can be made with the dissimilarity index. The first is between occupations; the second is over time for each occupation. These are undertaken below.

Within the individual indicator groups, computing professionals clearly have a much greater degree of segregation between workers' homes and their workplaces. For computing professionals in 2001 the DI was 0.44 in Sydney, 0.48 in Melbourne and 0.51 in Brisbane in marked contrast with the all worker indices of around 0.2. As noted above, this is a clear reflection of the concentration of these jobs in limited areas of the inner city, such as the Global Arc in Sydney (which runs from through Chatswood through North Sydney the CBD and towards the airport) and in Inner

Melbourne. Moreover, this degree of segregation between computer professionals and their workplaces has increased over time. In Sydney and Melbourne, where such a comparison can be made, there has been a notable increase between 1996 and 2001 in the DI for computing professionals, up from 0.40 in Sydney and from 0.46 in Melbourne. This would arise if these jobs were becoming more concentrated or if computer professionals increasingly were unwilling or unable to live near the places where work is available. The most likely explanation is that both of these factors operate.

By way of contrast, nursing professionals, cleaners and hospitality workers all have a much lower DIs. In Sydney, these varied between 0.14 and 0.15 in 2001 and were well below the value of 0.21 for all occupations. In Melbourne they were much closer to the all occupation average as they were in Brisbane, with the exception of nursing professionals, where the index was noticeably higher although still well below that for computer professionals. These results suggest that these latter three occupations are more likely to live and work in the same areas compared with computing professionals although there is a higher degree of spatial separation between their workplaces and homes in Melbourne and Brisbane than in Sydney. The relatively high value for nursing professionals in Brisbane compared with the same occupational category in the other two cities suggests either than jobs in nursing are more concentrated in Brisbane than in either Sydney or Melbourne or that the places of residence of nursing professionals are more spatially concentrated.

These differentials between cities for these in-person service occupations have remained relatively stable over time although there have been marginal changes. In Sydney, for example, the DI for cleaners fell by -0.02 and, in Melbourne, the DI for hospitality workers fell by the same amounts. In other words, whilst the degree of separation between home and workplace for computer professionals increased between 1996 and 2001, it fell marginally for some of the other indicator occupations.

These changes are on the margins, but nevertheless potentially are significant. It is possible that for computer workers, the increasing concentration of jobs in what are higher cost areas has meant that many of the new workers have not been able to, or have chosen not to , live in the local areas where the jobs have increased, which are all high cost areas. This has would lead to a dispersion of the workforce into lower cost locations at a time when jobs were becoming more concentrated. Nevertheless, as the detailed data reported in Appendix A shows, there has been a major increase in the proportions of computer professionals living in the Sydney and Melbourne inner cities, most likely following the expansion of higher density housing there. There are, therefore, more complex patterns at work here. The following section provides a brief overview of the results presented in Appendix A; the following chapter explores some aspects of the more complex patterns at work in more detail.

4.3 Occupational outcomes

4.3.1 Place of work and residence

The results indicating the location of the places of residence for workers in the indicator occupations are reported in Table A.1, Table A.3 and Table A.5 in Appendix A. The results indicating the location of their jobs are reported in Table A.2, Table A.4 and Table A.6. Charts equivalent to Figure 3.3 and Figure 3.5 in Chapter 3 showing changes between 1996 and 2001 in these of the four indicator occupations

in Sydney and Melbourne are presented in Figure A.1 to Figure A.8.[20] As with the equivalent data for all workers in Chapter 3, these results are ranked from high housing cost locations to low housing cost locations.

The main observation that can be drawn from these more detailed data has been identified in the summary data presented in Table 4.4. It is that there are considerable differences in outcomes primarily between occupations but also between cities and, to a lesser extent, over time. Whilst this makes generalisation of the results problematic, there are a number of additional observations that can be drawn in relation to the specific indicator occupations covered.

The results indicating the location of jobs for workers in the indicator occupations show that, as predicted by the literature reviewed in Chapter 1, the workplaces for computer professionals, as the representative occupation of the highly skilled symbolic analysts at the forefront of economic restructuring, are both concentrated in the CBD regions of all cities (as well as being concentrated in the two larger cities). They are also becoming increasingly concentrated in the inner city as can be seen from Figure A.1 and Figure A.5 which shows the change in proportions from 1996 to 2001.

The results in Chapter 3 showed that between 20 and 35 per cent of all jobs were located in the CBD regions in the three metropolitan regions being analysed. In Sydney, however, 40 per cent of all workers employed as computer professionals worked in Inner Sydney and nearly 70 per cent work in either Inner Sydney or the adjacent Lower Northern Sydney (up from 36 per cent and 53 per cent respectively in 1996). This represents a significantly greater concentration than the 22 per cent for all workers in Inner Sydney in 2001. In Melbourne and Brisbane, a similar degree of concentration exists in the other two metropolitan regions with 62 of all computer professionals working in Inner Melbourne in 2001 (up from 58 per cent in 1996) and 59 per cent in the City Core in Brisbane in contrast to 28 per cent for all workers in Melbourne and 22 per cent for Brisbane. This concentration is only partly offset by the concentration of computer professionals who live in the same region as that in which they work.

Of the indicator occupations selected, it is only for hospitality workers that a similar (but lower) disproportionate share of the workforce can be found in the CBD region (and also in the Gold Coast in the in the Brisbane region). This presumably reflects the central role played by tourism in these regions. However, in Melbourne, there was a noticeable decrease between 1996 and 2001 in the proportion of hospitality workers whose jobs were in Inner Melbourne.

The jobs for nursing professionals are considerably less concentrated in the CBD region than those for all workers in Sydney and marginally so in Melbourne but are more concentrated in the City Core in Brisbane. Whilst jobs for nursing professionals are found across a range of health service providers, the results for Brisbane may reflect the centralised location of large hospitals or health service providers. The concentration of jobs for nursing professionals in Central Western Sydney, Gosford-Wyong, Newcastle and St. George-Sutherland does reflect the location of major hospitals in the greater metropolitan region.

Finally, the results showing the location of jobs for cleaners show these are considerably under-represented in the CBD regions in all three metropolitan regions but are relatively evenly distributed in relation to all jobs across all other regions (although there is a disproportionate concentration of jobs in the outer regions of

[20] Comparative data are not available for Brisbane.

Newcastle and Gosford Wyong in the Sydney region, of Geelong in the Melbourne region and in the Gold Coast in the Brisbane regions.)

To some extent, the results indicating the places of residence for workers in the indicator occupations reflect these patterns with, for example, higher concentrations of computer professionals living in the regions where there are high concentrations of jobs for computer professionals although these tendencies are not sufficient to eliminate job surpluses in these regions. As was seen by the results in section 4.2, with the exception of these results for computer professionals, there is relatively little pattern to the job deficits and surpluses arising from differences in the locations of work and places of residence for the remaining three indicator occupations.

The changes between 1996 and 2001 are discussed below.

4.3.2 Changes between 1996 and 2001

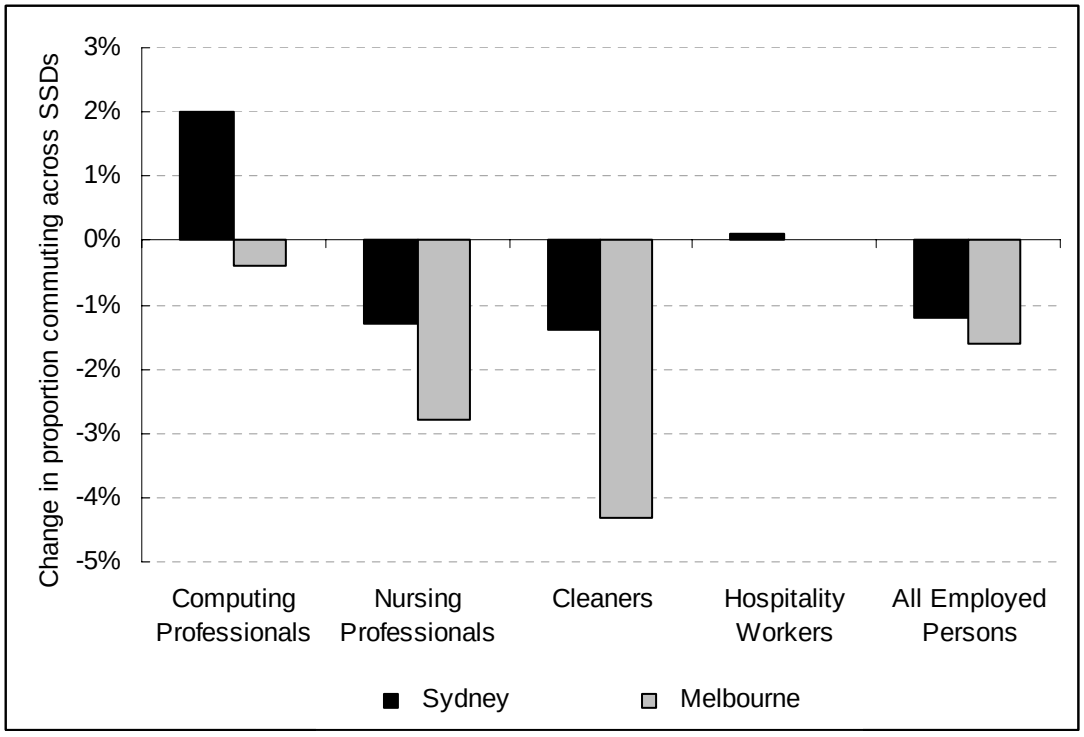
As can be seen from the results illustrated in Figure A.1 for Sydney and Figure A.2 for Melbourne, changes in the places of origin and destination for computer professionals run counter to the broad trends identified in Chapter 3. There is no obvious relocation of either jobs or people from the high cost inner regions to lower cost outer regions.

For the remaining three indicator occupations, however, the trends observed in Chapter 3 remain clear. For each of these in-person service occupations, there has been a general outward shift of both jobs and people from the high cost locations to lower cost locations. This can be seen in Figures A.3 and A.4 for nursing professionals in Sydney and Melbourne; in Figures A.5 and A.6 for hospitality workers and in Figures A.7 and A.8 for cleaners. Whilst data are not available on the changes between 1996 and 2001 for workers in Brisbane, the aggregate comparative data for 2001 presented in the previous section suggests that similar results are likely.

An indication of both the differences between occupations and the changes over time can be seen in the changes in the proportion of workers who can be regarded as not working locally, as described in the previous chapter. Figure 4.1 shows the change in the proportion of workers who commute beyond the borders both of the SSD in which they live and those of any adjoining SSD. The final set of bars shows that between 1996 and 2001 a smaller proportion of workers commuted long distances to work. Reductions are well above the average both for nursing professionals and cleaners and are greater in Melbourne than in Sydney. In other words, for both of these professions the work place and place of residence have become more closely aligned.

The differences in outcomes for computing professionals, particularly in Sydney, are clear. In Sydney, there has been a movement against the trend with an increase in what might be described as long distance despite the increase in the proportion of computing professionals who live in Inner Sydney where their jobs are concentrated.

Figure 4.1: Change in commuting across SSDs by occupation: Sydney and Melbourne



Source: Special request tabulation based on JTW data, 2001 and 1996 Census

4.4 Journey to Work by Inner City Case Study Areas

4.4.1 Introduction

The analysis to so far has examined the journey to work relationships of the indicator groups at the level for the city as a whole, attempting to account for the overall shift in work and home for these groups. In this section it concentrates on those areas of the city which have the highest housing costs, as identified in Chapter 2. The areas chosen as high cost case study locations were Inner Sydney, Inner Melbourne and Brisbane City Core. The analysis in Chapter 2 showed these areas had the greatest housing stress concentrations as well as the highest housing costs. As shown above and in Chapter 3, they were also the areas with highest concentrations of workers.

This section provides a brief summary of these results relating to the residential location of workers who worked in each case study area in 2001 and to changes in residential location between 1996 and 2001. This provides a background to the more detailed case study in Chapter 5 which relates the journey to work patterns identified in this section and the socio-demographic and economic characteristics of the workers involved to their housing outcomes.

4.4.2 Overview of journey to work trends in Inner Sydney

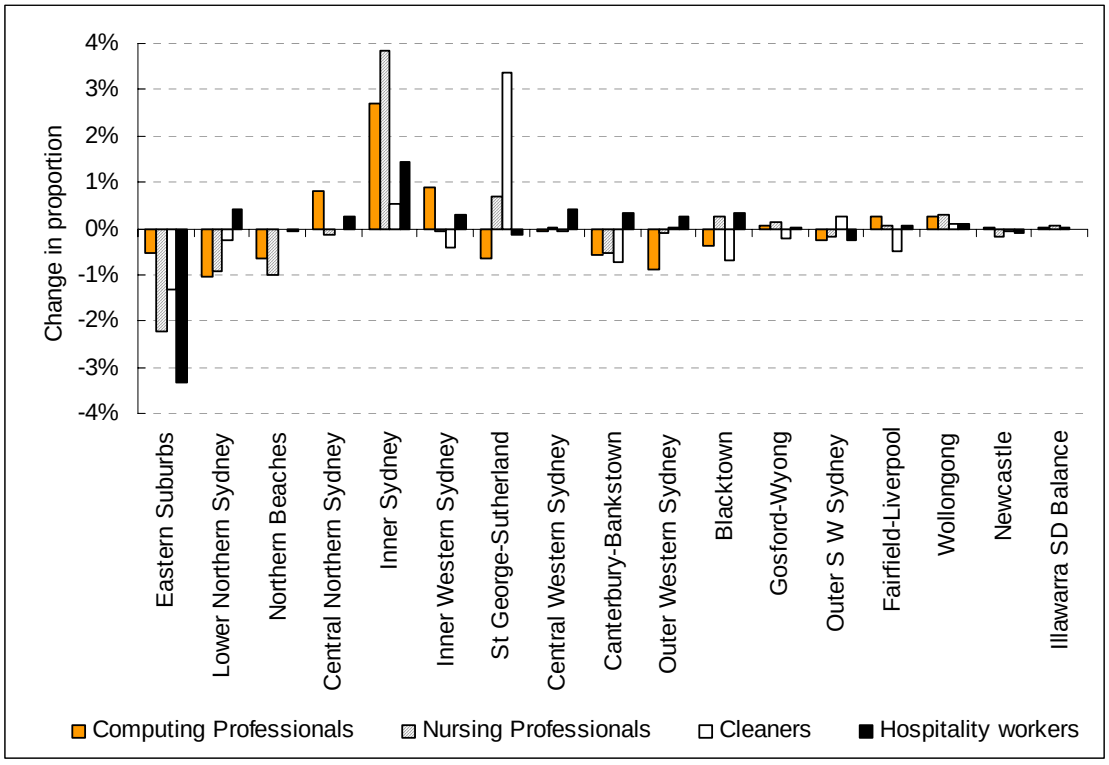
Table 4.5 provides a breakdown of the residential location of workers in Inner Sydney in 2001. Figure 4.2 show how the proportions change between 1996 and 2001.

Table 4.5: Origin of workers in Inner Sydney by occupation, 2001

ORIGIN	223 Computing Professionals	232 Nursing Professionals	632 Hospitality Workers	911 Cleaners	Total
Blacktown	4%	1%	2%	3%	3%
Canterbury-Bankstown	5%	5%	6%	15%	7%
Central Northern Sydney	13%	5%	4%	1%	8%
Central Western Sydney	6%	3%	4%	5%	4%
Eastern Suburbs	9%	17%	14%	6%	12%
Fairfield-Liverpool	4%	1%	2%	7%	4%
Gosford-Wyong	2%	1%	1%	1%	2%
Illawarra SD Bal	0%	0%	0%	0%	0%
Inner Sydney	16%	34%	36%	29%	21%
Inner Western Sydney	6%	10%	7%	7%	6%
Lower Northern Sydney	13%	9%	8%	3%	10%
Newcastle	0%	0%	0%	0%	0%
Northern Beaches	5%	3%	2%	1%	4%
Outer S W Sydney	2%	1%	2%	3%	3%
Outer Western Sydney	2%	1%	1%	1%	2%
St George-Sutherland	11%	8%	9%	18%	13%
Wollongong	1%	1%	1%	1%	1%
Total no. of jobs	17,900	3,500	8,300	4,300	420,700

Source: Special request tabulation based on JTW data, 2001 and 1996 Census

Figure 4.2: Change in proportion of workers working in Inner Sydney by occupation, 1996-2001



Source: Special request tabulation based on JTW data, 2001 and 1996 Census

In 2001, there were 421,000 persons who worked in Inner Sydney. Of these, only 21 per cent lived in the Inner Sydney SSD itself although there was a significant increase in the proportion that did so between 1996 and 2001. Most of workers commuted from nearby SSDs. Only a small percentage commuted from the outer suburbs to work in Inner Sydney SSD.

As in the previous cases, the data in Figure 4.2 (and also in Figure 4.3 below) have been ranked from left to right according to housing costs. For Sydney, there were noticeable decreases in the proportions working in Inner Sydney who lived in the high cost regions and increases in the proportions living in Inner Sydney itself. Whilst there are increases in both the proportions of computer professionals and of nursing professionals, the former needs to be interpreted against a backdrop of an 80 per cent increase in the number of computer professional workers in Inner Sydney whereas the latter has to be interpreted against a backdrop of a 12 per cent decrease in the total number of nursing professionals working in Inner Sydney.

There is little evidence to explain the increase in the proportion of Inner Sydney cleaners who live in the St George-Sutherland region, but anecdotal reports suggest this might arise from the clear ethnic patterns amongst those working as cleaners and the residential sorting that are often associated with ethnicity. Other AHURI research by Randolph and Holloway (2006, forthcoming), has shown that low income renters who work in Sydney CBD are heavily concentrated in Hurstville and Kogerah, both LGAs in the St George-Sutherland SSD.

4.4.3 Overview of journey to work trends in Inner Melbourne

Table 4.6 and Figure 4.3 below repeat the same information for Inner Melbourne.

Despite the marginally smaller workforce in Melbourne compared with Sydney, the greater degree of concentration of employment on the CBD meant there were a similar number of workers in Inner Melbourne in 2001 as there were in Inner Sydney. In total, 402,200 persons worked in Inner Melbourne of whom 21 per cent lived in Inner Melbourne itself. As with Inner Sydney, relatively few people who worked in Inner Melbourne commuted from outer fringe areas.

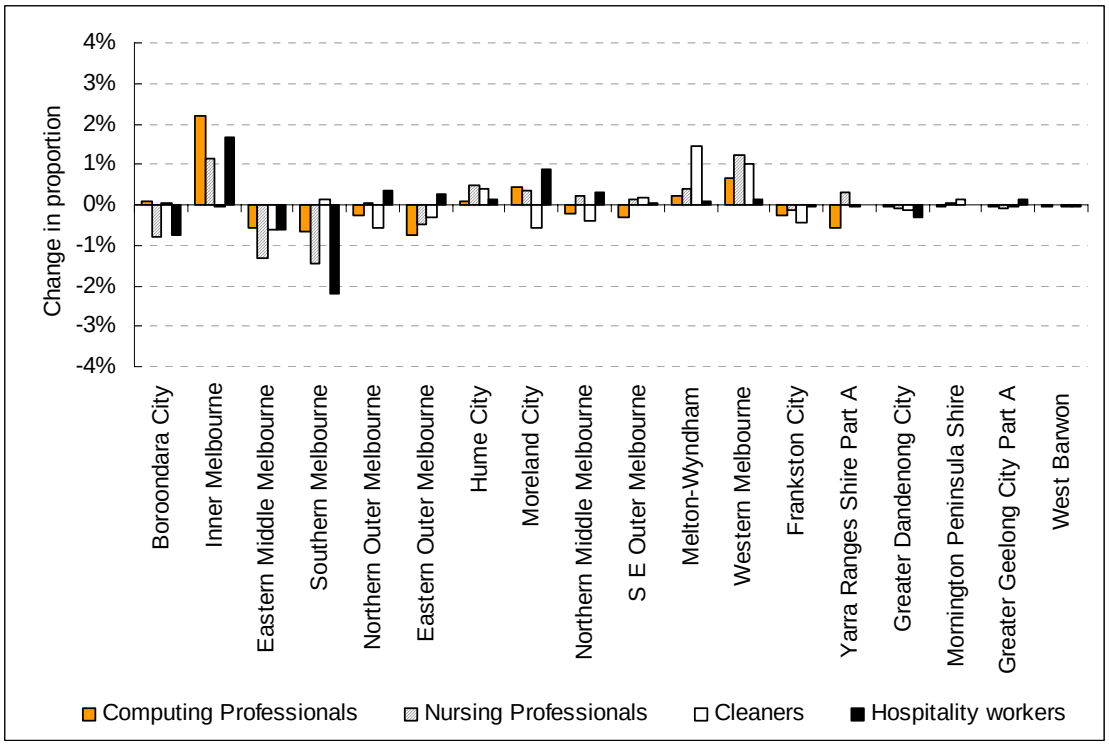
Between 1996 and 2001 there was a significant increase in employed persons who live and work in Inner Melbourne - in this case from regions with marginally lower housing costs but, as with Sydney, much of the changing proportions of where those who work in the inner region live has been a re-allocation amongst relatively high cost regions all of which are accessible to the CBD.

Table 4.6: Origin of workers in Inner Melbourne by occupation, 2001

ORIGIN	223 Computing Professionals	232 Nursing Professionals	632 Hospitality Workers	911 Cleaners	Total
Boroondara City	7%	10%	8%	2%	7%
Eastern Middle Melbourne	17%	13%	9%	6%	12%
Eastern Outer Melbourne	6%	3%	2%	2%	4%
Frankston City	1%	0%	0%	1%	1%
Greater Dandenong City	2%	1%	1%	2%	1%
Greater Geelong City Part A	1%	1%	0%	1%	1%
Hume City	2%	2%	2%	4%	2%
Inner Melbourne	19%	20%	35%	15%	21%
Melton-Wyndham	3%	3%	2%	6%	3%
Moreland City	4%	6%	7%	8%	5%
Mornington Peninsula Shire	1%	0%	0%	0%	1%
Northern Middle Melbourne	7%	10%	8%	10%	8%
Northern Outer Melbourne	3%	3%	3%	5%	4%
S E Outer Melbourne	2%	1%	1%	2%	2%
Southern Melbourne	15%	11%	10%	6%	13%
West Barwon	0%	0%	0%	0%	0%
Western Melbourne	10%	13%	11%	29%	13%
Yarra Ranges Shire Part A	2%	1%	1%	0%	1%
Grand Total	20,800	8,500	8,800	4,700	402,200

Source: Special request tabulation based on JTW data, 2001 Census

Figure 4.3: Change in proportion of workers working in Inner Melbourne by occupation, 1996-2001



Source: Special request tabulation based on JTW data, 2001 and 1996 Census

4.4.4 Overview of journey to work trends in Brisbane City Core

Finally, Table 4.7 provides the data on the residential location of workers in the City Core in the Brisbane region.

As in Inner Sydney and Inner Melbourne those employed person who worked in the City Core SR tended to commute from nearby areas. This was true for computing professionals, nursing professionals and hospitality workers. While cleaners who worked in the City Core lived in nearby areas, they were nevertheless more likely than the other three occupations to commute from further out. The proportion of workers who lived and worked in the City Core SR is also lower than for Inner Sydney and Inner Melbourne.

Table 4.7: Origin of workers in Brisbane City Core by occupation, 2001

	223 Computing Professionals	232 Nursing Professionals	632 Hospitality Workers	911 Cleaners	Total
Beaudesert (S)	1%	1%	0%	1%	1%
Caboolture (S)	2%	1%	1%	2%	2%
Caloundra (C)	0%	0%	0%	0%	0%
City Core	12%	8%	24%	11%	12%
Eastern Inner	8%	10%	9%	9%	9%
Eastern Outer	3%	4%	2%	4%	3%
Gold Coast (C)	3%	1%	1%	3%	3%
Ipswich (C)	2%	2%	1%	4%	3%
Logan (C)	4%	5%	4%	10%	5%
Maroochy (S)	0%	0%	0%	0%	0%
Northern Inner	11%	15%	13%	9%	12%
Northern Outer	11%	12%	8%	11%	12%
Pine Rivers (S)	6%	7%	3%	6%	7%
Redcliffe (C)	1%	1%	1%	1%	1%
Redland (S)	4%	4%	2%	3%	4%
Southern Inner	5%	8%	6%	6%	5%
Southern Outer	9%	9%	9%	12%	9%
Western Inner	8%	4%	10%	2%	6%
Western Outer	9%	7%	6%	5%	7%
Grand Total	6,800	6,100	4,000	2,600	185,000

Source: Special request tabulation based on JTW data, 2001 Census

4.4.5 Summary

In all three case study areas there is a tendency for workers who live work in the central city area to commute from nearby areas, although this is changing. Further, it is also clear that the four indicator groups have different commuting patterns, with cleaners more likely to travel longer distances to work. In Melbourne, lower status hospitality and cleaning workers have shown a relative shift away from the gentrifying eastern and southern suburbs close to the CBD towards the less fashionable northern and western suburbs.

For both cities, the inner city areas themselves have attracted increasing proportions of the local workforce to live there, particularly for nursing and computing professionals, for whom the shift towards inner city living was the most prominent feature. This is likely to reflect increasing opportunities for rental in higher density developments in these areas.

5 HOUSEHOLDS WORKING IN SYDNEY AND INNER SYDNEY

The results of the previous two chapters suggests that there is a high degree of employment self containment in the regions analysed for this report. In other words, the majority of workers live in the same region in which they work. In part, this is associated with dispersed workplace locations. The extent of job dispersion, however, varies for the different occupations considered. However, the results also show that a large number of workers do commute to work and many commute large distances. The regions where there are the greatest job surpluses resulting in a net import of workers (and associated commuting) are the high cost inner city regions.

This chapter provides insights into the location, tenure and other trade-offs made by those who potentially face high housing stress because of their workplace location. It does so by undertaking a more detailed case study of housing affordability, occupation and location for different households working in Sydney generally and Inner Sydney specifically. The analysis has been limited to Sydney because of the complexity and cost of the data required. However, on the basis of the results presented in the previous chapters, it can be argued that trends evident in Sydney are likely to be broadly applicable in other comparable high cost metropolitan area in Australia. The preceding analyses have confirmed that while there are differences between the three cities, the broad analysis holds across all three. Focusing on Sydney, therefore, should exemplify the kinds of changes that have happened in other high cost metropolitan centres.

The analysis presented in this chapter draws on two different data sets, with the difference between them highlighting the issues over defining occupation at a household level discussed in detail in the Positioning Paper and summarised in Chapter 1 of this report. The key points are repeated below. The choice of Sydney for this detailed analysis was guided by the fact that this city is both the most expensive and has the highest numbers of working households with housing costs above 30 per cent of gross income (as shown in Chapter 2). If housing affordability was having a constraining influence on the residential location of working households, then this is likely to be most pronounced in Sydney.

Also, concentrating on Sydney allows the results of an earlier study of Sydney's moderate income working households undertaken for Landcom by Randolph et al (2004) to set the scene for the analysis presented here. Consequently, section 5.1 of this chapter summarises the main findings from Randolph et al (2004) that are relevant to this report. That study examined the affordability, location and occupation of reference persons living in Sydney in five occupational categories. Although it focused only on moderate income households, it provides insights into the location and other trade-offs made by households (in this case through the analysis of the household reference person who is, more likely than not, to be the primary income earner in the household).

Section 5.2 focuses more specifically on the affordability outcomes and tradeoffs made by households where at least one person in the household works in Inner Sydney, selected as the region in which employers are most likely to face recruitment and retention problems because of high housing costs. The basis for this choice was presented in the previous chapters. Unlike the Randolph et al study, the results presented in this section are able to delineate between persons in the household (e.g. spouses/partners of the reference person). Consequently, the section 5.2 results cover secondary as well as primary workers in the households.

5.1 Analysis by reference person in the household

5.1.1 Introduction

In 2004 Randolph, Holloway and Murray examined the location, tenure and age distributions of moderate income households (MIHs)[21] in Sydney, as part of a wider study on housing affordability in Sydney. The study used the reference person of these MIHs in five 'key worker' groups which included both public and private sector occupations. The choice of these occupations was pragmatic, although it was based upon a larger analysis of MIHs by occupation in Sydney. The five occupations selected for detailed analysis were computer professionals, registered nurses, primary and secondary teachers, truck drivers and sales assistants.

5.1.2 Residential Location and Workplace Destination for the Case Study Groups

As in this study, Randolph et al concluded that the concentration of workplace destinations was different for different occupations and that this was reflected in residential location choices and trade-offs made by household reference persons. The more dispersed employment patterns of nurses and teachers meant that the bulk of these workers had a lower degree of separation between job and home, or at least less pressure over their choice of residential location overall. The more highly constrained workplace locations of computer professional and to a lesser extent, truck drivers, resulted in a much greater degree of work-home separation. For some groups, therefore, the spatial concentrations of employment opportunities (sales assistants in the Sydney CBD and computer professionals in central and North Sydney, for example) meant that there was a greater dislocation between home and jobs for those working in these job rich locations.

The significance of the concentrations of the case study occupations was explored through an analysis of the workplace and residence at the LGA level. A significant number of suburban LGAs were clearly net exporters of workers from moderate income households (that is, they were home to more workers than were employed there) but some inner Sydney LGAs also showed consistent surplus of residents over workers (although this is in part due to their small size). Other LGAs, usually in higher income or job-rich locations, were net importers across most groups.

Among the individual 'key worker' groupings analysed by Randolph et al (2004), the concentration of MIH computing professional jobs in LGAs associated with Sydney's 'Global Arc' led to significant home-work dislocations for many of these workers. The more dispersed job market for sales assistants meant lower numbers of LGAs with net deficits, but there were clear concentrations of sales jobs in excess of residents in the Sydney CBD area. Truck drivers had a predominately outer suburban pattern of residence, but there were clear indications that LGAs associated with middle ring and inner industrial concentrations imported substantial numbers of this group. Teachers showed a range of locational choice, as relatively lower cost areas where schools were concentrated were net importers of this group. On the other hand several higher cost locations also had net deficits of teachers. Finally, several LGAs with concentrations of jobs for registered nurses also had concentrations of nurses. Whilst this may reflect the location of nursing accommodation, LGAs with hospital concentrations generally were also considerable net importers of nurses.

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[21] These were defined as households with incomes between the 40th and 60th percentile of income in Sydney, which corresponded to $800-$1199 per week or $40,000 to $62,000 per annum in 2001. The Randolph et al analysis was undertaken at an LGA rather than SSD level. In Sydney, the 45 LGAs in 2001 can be mapped directly into the 14 SSDs that form part of the Sydney Statistical District.

While it was clear that house prices were unaffordable for most MIH workers in key workers groups in the inner and eastern suburbs, many lived in these higher cost areas. This suggests age and life-stage is a relevant factor explaining location outcomes. The report concluded that a key generalisation was that MIH key workers in Sydney tended to rent in the inner city and buy in the suburbs. The location of home purchasers for each of the individual key worker groups was remarkably similar, with high concentrations of purchasers in the western parts of suburban Sydney. Exceptions tended to be found only in areas that recently have undergone change (for example through gentrification).

The Randolph et al analysis identified strong concentrations of MIH renters in the inner city, inner west and inner north suburbs for computing professionals, truck drivers and sales assistants and in the eastern suburbs, the inner west, lower north shore and northern beaches for nurses. Moderate income school teachers had the most diverse renting patterns, with concentrations in the inner city suburbs and the inner west, along with outer western areas. This was attributed to the fact that school teachers have one of the most diverse locations for work.

5.1.3 Location, Age and Housing Tenure Relationships

The report's analysis of variations in the location and tenure patterns among the five occupational groups indicated that the age composition of each group was a significant factor in understanding why some groups had a higher propensity to rent than others. The findings also implied that some key worker groups were less likely to rent across all age categories than others, possibly due to the wider distribution of their workplaces, which allowed greater location choice without incurring long work journeys.

The age by tenure analysis confirmed that the geography of the tenure distribution of the five MIH occupation groups was related to their age profile. Younger workers were much more likely to rent in inner city locations, while the middle age group were predominantly buyers predominately in suburban locations, and outright home ownership predominated among the older groups. This tended to hold for all the groups in the study, although it was more prominent for computer professionals and nurses.

Computer professionals were noticeably more reliant on private rental than the other groups. This in part reflected age differences between the groups, with computer professionals and, to a lesser extent, sales assistants, much more likely to be under 35 years old compared to the other groups. In contrast teachers were much less likely to rent than the other groups, with home purchase being their most common tenure. Truck drivers were also less likely to rent and more likely to be buying their home. Again, both these characteristics reflect the locations in which these two groups were found to be living. Nurses had a more ‘balanced’ tenure profile but there was a split between renting among younger nurses and home purchase or ownership among older nurses. Further, the analysis also highlighted the significant dependency on private rental and home purchase among these MIH key workers compared to the wider Sydney population.

5.2 Analysis by person identified with indicator occupation

5.2.1 Introduction

This section expands upon the case study approach of the previous section by examining the outcomes for households where at least one person worked in Inner Sydney in relation to their position in the household in which they live and by specifically relating these outcomes to housing affordability. It provides further insights into the trade-offs made between location, housing affordability and household structure.

The data used in this section are more complex than those used elsewhere in this report. This complexity arises because of the difficulty of assigning an occupational classification to a household consisting of a number of employed persons. For the analysis in this section, which is undertaken at a household level, households and workers within households were selected according to a well-defined protocol. The journey to work data analysed in the previous chapter was used to identify persons who worked in Inner Sydney. In the first instance, households which contained at least one employed person with one of the four indicator occupations covered in the analysis in Chapter 2 to Chapter 4 were identified. If households with at least one person with an indicator occupation contained more than one person with these occupational classifications of interest, the person listed first was selected. For these households, information was obtained on the position of the identified person in the household and, specifically, on whether the person identified was the reference person, a spouse/partner or child of the reference person or whether there was some other relationship to the reference person. Thus, the data set used in this section enables analysis of the extent to which workers in the Inner Sydney high cost regions are primary or secondary workers in the household in which they reside. It also enables analysis of the extent to which their housing affordability outcomes are affected by the status of the households in which they live.

Other households where there is at least one person working in Inner Sydney in an occupation other than those selected as the indicator occupations for this study have been identified on the basis of the first listed employed person in the household. In the vast majority of cases, this was the reference person. Only those households where no-one in the household is employed are classified as not being in the workforce.

In this way, the occupational classification remains with the individual, but the analysis is undertaken on the basis of household characteristics (which, in relation to age and tenure, were defined by the characteristics of the reference person whether or not this person was identified with an indicator occupation or in employment). Visitor only and not classifiable households have been excluded from consideration as have all visitors from the count of number employed in the household.

The analysis of the extent to which the person's position in the household affects their housing outcomes is presented in section 5.2.4, following an initial overview of the household level outcomes for all households identified as having someone in employment in Inner Sydney.

5.2.2 Location choices and affordability outcomes

Rather than examine location choices by each of the regions for which data have been mapped in earlier chapters, this section provides a synthesis by focusing on three zones: inner, middle and outer. Again, this is justified on the grounds of the complexity of undertaking the analysis at a more disaggregated spatial scale. The inner zone is broadly defined as being within a 10km radius of the CBD and covers

all regions within the average journey to work distance of 16 km and time of 30 minutes (DIPNR, 2004). Journey to work times for the middle zone (defined by default) are likely to exceed these averages. The outer zone is defined as the statistical sub-divisions on the fringe of the Sydney statistical division (covering Camden, Campbelltown, Wollondilly, Blue Mountains, Hawkesbury, Penrith, Gosford and Wyong as well as Newcastle, Wollongong and their surrounding regions). These regions involve long commutes to the CBD with journey to work distances and travel times of three times or more the Sydney average. Table 5.1 relates zones to regions (and sub-regions).[22]

Table 5.1: Detailed geography of Sydney Statistical Subdivisions

Zone	SSD	SLA
middle	Blacktown	Blacktown
middle	Canterbury-Bankstown	Canterbury, Bankstown
middle	Central Northern Sydney	Baulkham Hills, Hornsby, Ku-ring-gai
middle	Central Western Sydney	Auburn, Holroyd, Parramatta
inner	Eastern Suburbs	Randwick, Waverley, Woollahra
middle	Fairfield-Liverpool	Fairfield, Liverpool
outer	Gosford-Wyong	Gosford, Wyong
outer	Illawarra SD Bal	Shoalhaven, Wingecarribee
inner	Inner Sydney	Botany, Leichhardt, Marrickville, Sydney (C)
inner	Inner Western Sydney	Ashfield, Burwood, Canada Bay(Concord, Drummoyne), Strathfield
inner	Lower Northern Sydney	Hunter's Hill, Lane Cove, Mosman, North Sydney, Ryde. Willoughby
outer	Newcastle	Cessnock, Lake Macquarie, Maitland, Newcastle, Pt Stephens
middle	Northern Beaches	Manly, Pittwater, Warringah
outer	Outer S W Sydney	Camden, Campbelltown, Wollondilly
outer	Outer Western Sydney	Blue Mountains, Hawkesbury, Penrith
middle	St George-Sutherland	Hurstville, Kogarah, Rockdale, Sutherland
outer	Wollongong	Kiama, Shellharbour, Wollongong

Of the households with at least one person working in Inner Sydney in 2001, 50 per cent lived in the inner zone, 42 per cent lived in the middle zone and only 8 per cent lived in the outer zone. These results are shown in Table 5.2. By way of contrast, the spatial distribution of all working households in the Sydney statistical division indicates only 24 per cent of all working households in Sydney live in the inner zone whilst 33 per cent in the outer zone.

This represents an increased proportion (of almost 2 percentage points) of households living in the inner zone compared with 1996 and an offsetting decreased proportion (of 2 percentage points) of those in the middle and outer zones. In other words, at a time where there was a small increase in the numbers of households with at least one person working in Inner Sydney there has been a decline in both the proportion and the absolute numbers of such households who live in the outer zones.

The increase in the numbers and proportion of households who work in Inner Sydney and who live in the inner zone is likely to reflect, in large part, the changing structure of housing opportunities as a result of urban consolidation policies. It is also likely to reflect the increasing bifurcation of Sydney in terms of employment and residential

[22] Yates (2001) provides a rationale for this zoning classification which is based on a ring based system from the CBD. The inner zones contain statistical sub-divisions within ten kilometres of the city centre and have the highest population densities. The outer zones, contain statistical sub-divisions roughly 25 to 30 kilometres from the centre, have the lowest population densities and the greatest supply of land available for residential development. They also include Newcastle, Wollongong and surrounding regions

structure, with a reduced dependence on the inner city labour market for those living in the outer suburbs.[23]

Table 5.2: Spatial distribution of households with at least one person working in Inner Sydney

	inner zone	middle zone	outer zone	Total
2001				
numbers	122,000	102,000	20,000	244,000
proportion (%)	50.0	41.8	8.2	100
1996				
numbers	112,000	99,000	23,000	234,000
proportion (%)	48.0	42.3	9.7	100

Source: Special request tabulations 1996, 2001 Census

This observation supports the interim conclusion based on the person level data reported in Chapter 4. In Sydney, a disproportionate share of households and persons working in the central part of the city choose to live in the higher cost inner areas rather than travel long distances to work. The tendency for this to occur has increased. This notwithstanding, the results in Table 5.2 indicate that there were still more than 20,000 households who commute into Inner Sydney from the outer regions of Sydney in 2001.

For many, the choice to live close to work is associated with above levels of housing stress, as shown below in Table 5.3 and illustrated in Figure 5.1. However, as is also shown, a considerable proportion of those who commute long distances also have high levels of housing stress.

The 'all households' rows in the two parts of Table 5.3 show a higher incidence of housing stress in the inner compared with the outer zones. In 2001, for example, 20.4 per cent of all households in the inner zone were in housing stress compared to only 10.0 per cent in the outer zone. A similar result holds for 1996. The final column shows the significant extent to which the proportion of households in stress is related to household income with 43.8 per cent of low income households (with incomes below $800 per week) in housing stress in 2001 compared with only 7.2 per cent of high income households (with incomes of $1500 per week or more). The first three columns of Table 5.3 indicate the extent to which these proportions vary by household income and location. While half (49.7 per cent) of low income households in the inner zone are in housing stress, fewer than one in ten (8.8 per cent) higher income households living in this zone suffer housing stress. At the other end of the spectrum, only 3.6 per cent of high income households in the outer zone in housing stress in 2001, compared to 29.3 per cent of lower income households. The trends are clearly illustrated in Figure 5.1.

Whilst the magnitude of the increase in stress levels between 1996 and 2001 should be treated with some caution as household incomes are as reported in the respective Censuses and have not been adjusted for inflation, the differentials within each year are robust and the results over time are consistent with reports of increases in the proportion of those in housing stress in the five years from 1996 to 2001. This trend was most pronounced for those on lowest incomes.

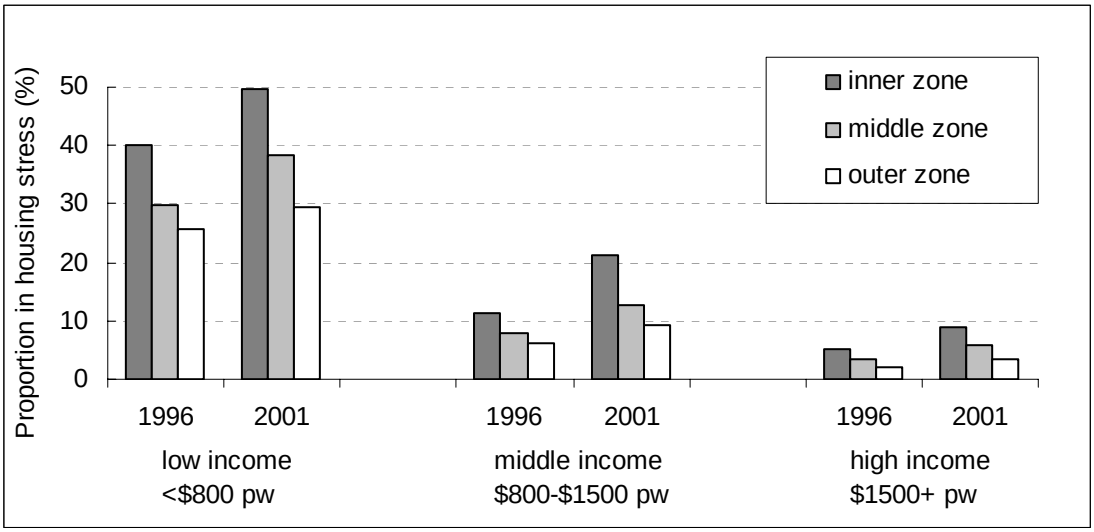
[23] See Randolph, B. and Holloway, D. (2003).

Table 5.3: Households working in Inner Sydney: proportion in stress by household income and zone of residence, 2001 and 1996

Household income ($pw)	inner zone	middle zone	outer zone	Total
2001				
$0-$799	49.7	38.2	29.3	43.8
$800-$1,499	21.3	12.5	9.1	16.2
$1,500+	8.8	6.0	3.6	7.2
All h'holds	20.4	13.3	10.0	16.6
1996				
$0-$799	40.2	29.9	25.7	35.1
$800-$1,499	11.4	7.9	6.0	9.2
$1,500+	5.0	3.4	1.9	4.1
All h'holds	19.3	12.5	10.7	15.6

Source: Special request tabulations 1996, 2001 Census

Figure 5.1: Households working in Inner Sydney: proportion in stress by household income and zone of residence, 2001 and 1996



Source: Special request tabulations 1996, 2001 Census

5.2.3 Housing choices and housing stress by age, and tenure and income

Housing stress levels are generally associated with life-cycle stages and with tenure choices. The following sub-section examines these interactions for households with at least one person employed in Inner Sydney.[24]

Table 5.4 indicates the proportion of such households in stress in 2001 according to their tenure status and the zone in which they live and the changes in these proportions since 1996.

The first column shows that 37 per cent of these households have no rent or mortgage costs, either because they live rent free or, more significantly, because

[24] In this section, unless otherwise indicated, household outcomes refer to those households where at least one person in the household works in the Inner Sydney SSD

they own their home outright. This proportion has declined marginally since 1996 with the decline for households living in the inner and middle zones being approximately twice that for households living in the outer zone. These declines are offset by an increase in the incidence of households who are renters or purchasers with marginally greater percentage point changes in the (smaller proportion) of those in stress. Again, a modest percentage point increase in those living in stress in the inner city was offset by a modest percentage point decline of those in stress living in the outer city.

Table 5.4: Households working in Inner Sydney by zone of residence, tenure and housing stress

	no rent/ no mortgage costs		renters/purchasers			
			not in stress		in stress	
zone	2001 (%)	change 1996-2001	2001 (%)	change 1996-2001	2001 (%)	change 1996-2001
inner	32	-1.5	48	0.5	20	1.0
middle	44	-1.3	44	0.5	13	0.9
outer	34	-0.7	57	1.3	10	-0.7
Total	37	-1.4	47	0.5	16	1.0

Source: Special request tabulations 1996, 2001 Census

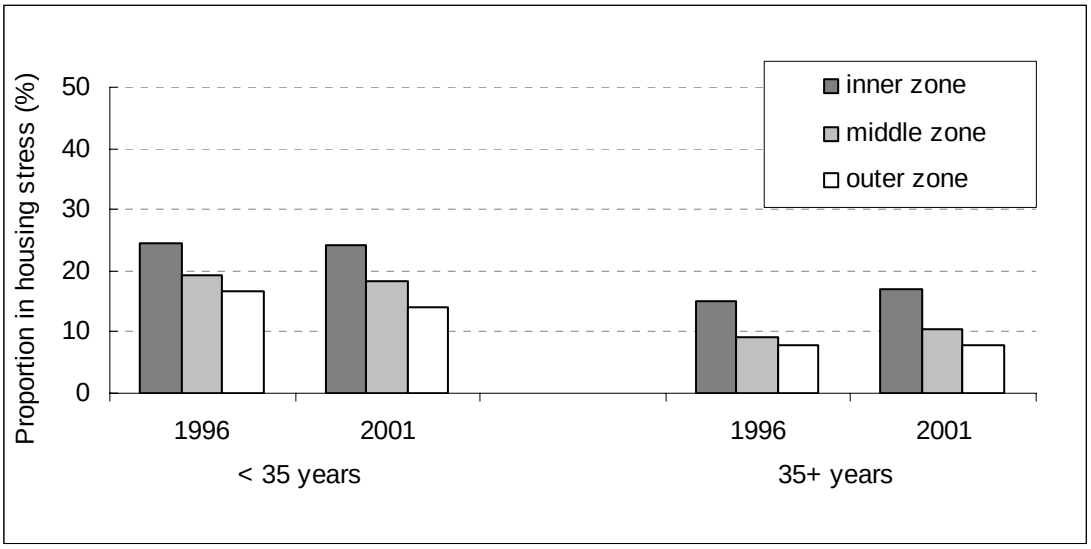
Table 5.5 and Figure 5.2 below disaggregate these results by age. As indicated, age is defined by the ABS designated reference person in the household rather than referring to the selected person with the indicator occupation or in employment when that person is a spouse/partner, child or other adult in the household.

Table 5.5: Households working in Inner Sydney, stress by age and zone of residence

		no rent/ no mortgage costs		renters/purchasers not in stress		renters/purchasers in stress	
age	zone	2001 (%)	change 1996-2001	2001 (%)	change 1996-2001	2001 (%)	change 1996-2001
15-34	1 inner	13.3	-0.9	62.5	1.1	24.2	-0.2
	2 middle	22.4	0.7	59.2	0.1	18.4	-0.8
	3 outer	16.7	0.6	69.1	1.8	14.1	-2.5
Total 15-34		16.7	-0.4	61.8	0.7	21.5	-0.4
35+	1 inner	43.7	-1.9	39.5	0.1	16.9	1.8
	2 middle	51.3	-2.3	38.1	0.8	10.6	1.5
	3 outer	40.2	-2.1	51.9	1.9	7.9	0.2
Total 35+		46.9	-2.1	39.9	0.4	13.2	1.6
All h'holds		37.2	-1.4	47.0	0.5	15.9	1.0

Source: Special request tabulations 1996, 2001 Census

Figure 5.2: Households working in Inner Sydney: proportion in stress by household age and zone of residence, 2001 and 1996



Source: Special request tabulations 1996, 2001 Census

A number of observations that reflect trends observed more generally can be made from the age related data presented in Table 5.5. In the first place, the results in the first columns indicate the higher proportion of households with a reference person 35 years or more with no rent or mortgage costs, reflecting the higher incidence of outright owners amongst older households.

Secondly, they highlight the general increase in housing stress between 1996 and 2001 amongst renters and purchasers, with the 15.9 per cent of all households in stress in 2001 representing a 1 percentage point increase (equivalent to a 6.7 per cent increase) over the proportion in stress in 1996. Thirdly, the table also highlights the greater incidence of stress amongst younger households, with 21.5 per cent of those living in a household where the reference person is aged less than 35 years in stress in 2001 compared with 13.2 per cent of those living in a household where the reference person is aged 35 years or more.

Finally, the results highlight the impact on housing stress of living in the inner zone compared with living in the middle or outer zone. For households where the reference person is young, 24.2 per cent of those who live in the inner zone and who have at least one person working in Inner Sydney are in housing stress compared with 14.1 per cent of such households living in the outer zone. The effect that residential location has on the incidence of housing stress is clearly illustrated in Figure 5.2.

This higher incidence of housing stress combined with the greater propensity of younger households to live in the inner zone results in 10,000 young households living in the inner zone of Sydney are in stress compared with less than 1,000 in the outer zone. In terms of proportions, a greater differential is observed for those living in a household where the reference person is aged 35 years or more. Of these, a considerably lower 16.9 per cent of those living in the inner zone are in stress (reflecting the higher proportion of older households who are outright owners) but this falls to just 7.9 per cent of older households living in the outer zone in stress. In terms of absolute numbers, however, these proportions are equivalent to 12,000 and 1,000 households respectively.

At the same time, the results in Table 5.5 also signal some results that are less well documented. For example, the final column shows that, for those working in Inner Sydney, there has been a decrease in the proportion in housing stress amongst younger households and an increase in the proportion in stress amongst older households. This raises the question of whether this outcome is related to household structure.

Before turning to this issue, which is covered below, the impact of age, income and location on the incidence of housing stress amongst those households who are purchasing or renting is presented in Table 5.6 and illustrated in Figure 5.3.

Table 5.6: Households working in Inner Sydney, stress by age and zone of residence

	inner zone		middle zone		outer zone	
Household income ($pw)	Purchasing	Renting	Purchasing	Renting	Purchasing	Renting
age < 35 years	%	%	%	%	%	%
< $800 pw	79	78	75	65	68	45
$800-$1500 pw	47	30	39	11	20	2
$1500+ pw	17	5	13	2	7	0
all households < 35	28	28	26	22	17	17
age 35+ years	%	%	%	%	%	%
< $800 pw	61	64	63	58	50	35
$800-$1500 pw	32	27	26	12	16	2
$1500+ pw	18	15	12	9	6	1
all households 35+	26	33	20	25	13	12

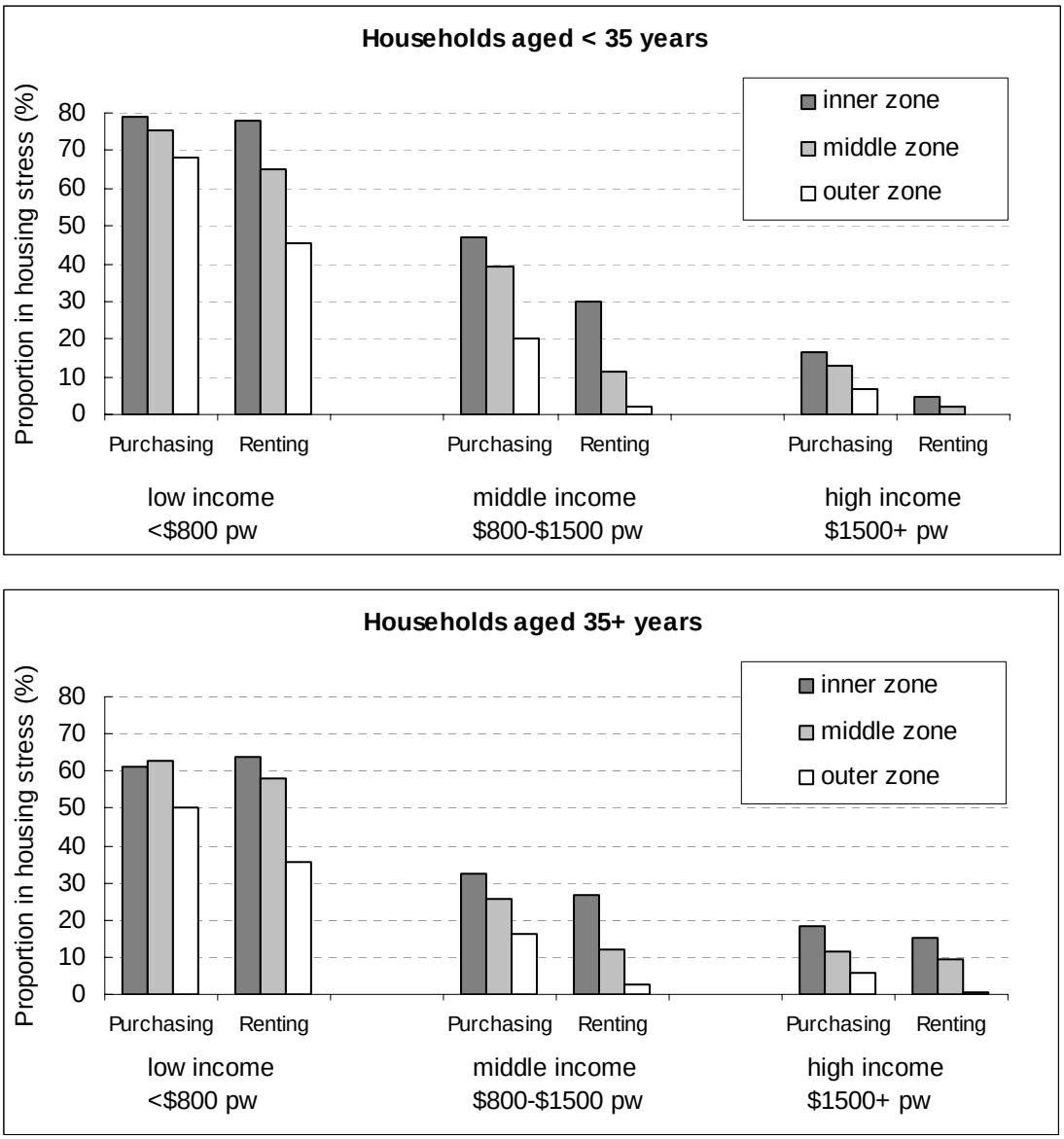
Source: Special request tabulations, 2001 Census

The results in Table 5.6 and Figure 5.3 highlight the severe incidence of stress amongst lower income households who live as well as work in the inner zone.

The numbers of households with incomes below $800 per week who are purchasing, however, is very low with fewer than 6 per cent of young and 12 per cent of older households purchasing (as distinct from owning outright). This can be seen in Figure 5.4 below. This suggests that few low income households are able to buy in inner Sydney. In fact, many more lower-income households own outright than are buying in this zone (respectively 9 per cent of young and 35 per cent of older households who work and live in the inner zone). These low income inner city outright owners represent an interesting group. It seems reasonable to conclude that they bought in the past when home ownership in the inner zone was much more affordable. They would be unable to buy if they were in the same position today, given their incomes. It may be that this group represents the parents of younger workers who still live at home, or are themselves mature workers in the latter part of their working lives. This group might be typified as a “remnant” low income cohort in an otherwise gentrified inner city.

The remaining households who have household incomes of less than $800 per week, who have at least one person working in Inner Sydney and who live in the inner zone, rent. As shown, a high proportion of these households pay high rents in relation their household incomes with more than three quarters of young renter households and almost two third of older renter households paying 30 per cent or more for their location choice.

Figure 5.3: Households working in Inner Sydney: incidence of housing stress amongst households who are purchasing or renting by household age, income and zone of residence, 2001



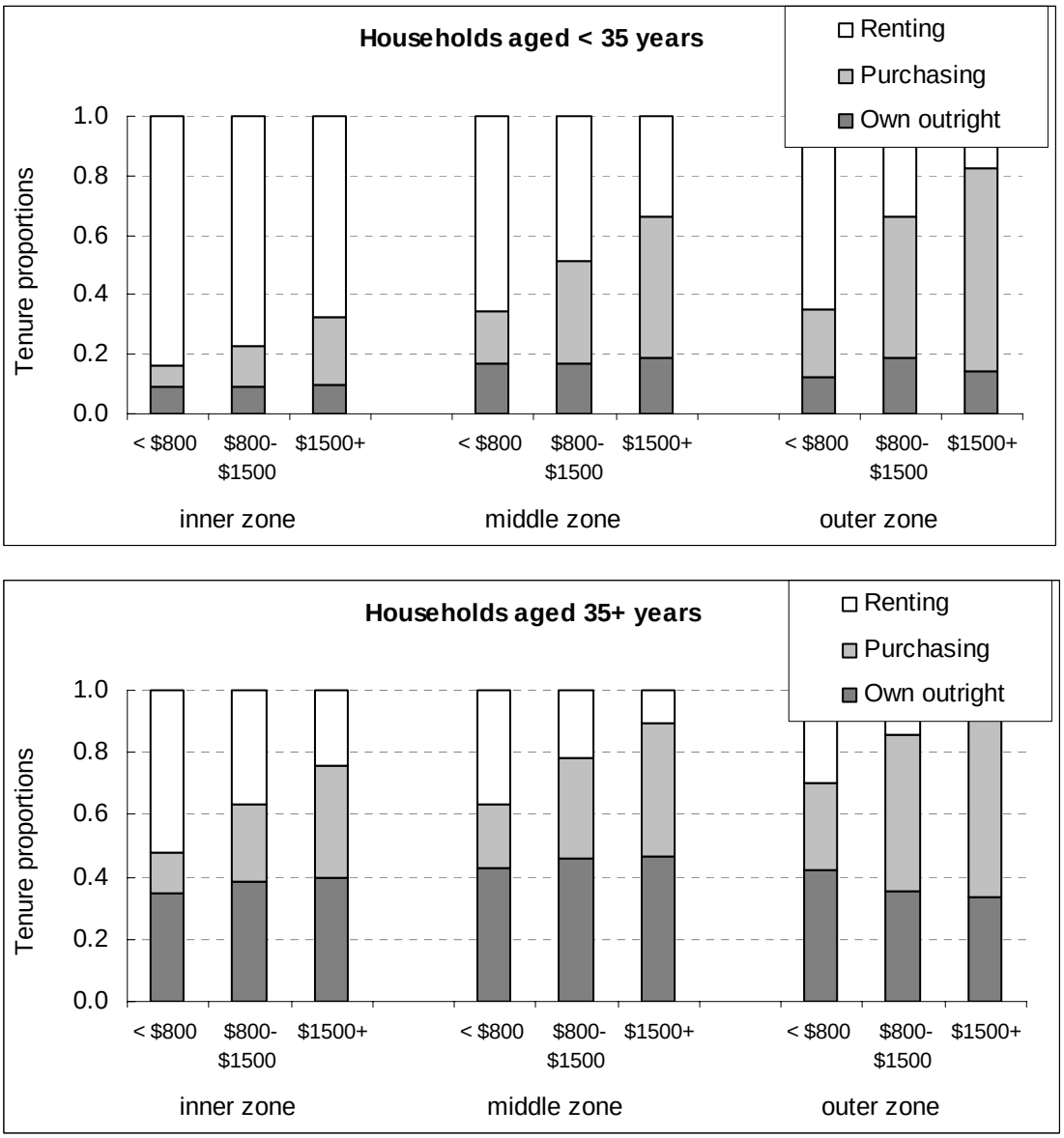
Source: Special request tabulation, 2001 Census

The results presented here reinforce the strong relationship between income and age and tenure and location choices noted above. Renting declines as income increases for both young and old and with distance from the CBD. Inner city residence for lower income inner city workers is only realistically available to those old enough to have bought many years ago (or who are living in these households), or those, usually younger workers, who rent. Few lower income inner city workers are purchasers. Younger inner city workers who want to buy are largely limited to living in (or choose to live in) middle or outer city locations where costs are lower.

For higher income households, the predominance of home purchase in the outer zone holds for both younger and older households, with notably lower proportions of outright owners among this group. But it is noticeable that younger higher income workers living in the inner zone are not markedly more inclined to buy their homes

compared to lower income younger workers living in the same zone. It would appear, therefore, that this group has a preference for rental that overrides their potential to purchase.

Figure 5.4: Households working in Inner Sydney: tenure shares by household age, income and zone of residence, 2001



Source: Special request tabulation, 2001 Census

The general conclusion from the previous two sub-sections is that households with an Inner Sydney workplace location and who live in the inner zone are likely to either choose or have to accept the high housing costs associated with inner zone living compared to the alternative of living in the outer zones. Moreover, they are prepared to rent if they cannot afford to buy. In other words, income constrained households whose choice of workplace requires them to travel to Inner Sydney to work, are likely to accept high housing costs in preference to high travel costs (or longer commuting times) and are prepared to forgo home ownership in order to meet their location preferences.

However, there are life-stage and life-style components to this. While home ownership increases with age, as might be expected, the differential between the rates of ownership (particularly purchasing) for younger inner Sydney workers who also live in inner Sydney is less than that for older inner city residents and also for those younger inner city workers who live in the middle or outer zones. While it can reasonably be concluded that most younger lower income inner city workers who live in the inner city have little option but to bear higher rents (and thereby suffer much higher unaffordability rates), many higher income younger workers who live and work in the inner city appear to be willing to rent rather than buy. There is also some indication that a remnant older low income workforce remains in the inner city as a result of purchase in earlier years.

5.2.4 Household choices

The final trade-off that persons might make in coping with the difficulties of working in a high cost location relates to their household structure and to the number of persons employed in the household. This is examined in this sub-section.

Table 5.7 shows the proportion of working households where there are at least two persons employed in the household. It shows that marginally higher proportions of households who live in the inner zone are multiple worker households when there is more than one person in the household. There are, however, marginally fewer households overall with at least two persons employed who work in Inner Sydney and live in the more expensive inner zone than who live in Sydney generally. So living in inner Sydney does not seem to be associated with higher proportion of multiple income households compared to those living in the suburbs. As can be seen in Table 5.7, this can be attributed in part to the greater proportion of lone person households in which there is only one worker.

Table 5.7: Percentage of households working in Inner Sydney with at least two persons employed, 2001

	Living in Sydney	Living in inner zone
Household type	%	%
Couple only	74	76
Couple with dependent child	64	66
Lone person	0	0
Lone parent with dependent child	29	27
Other Households	68	72
All employed households	54	52

Source: Special request tabulation, 2001 Census

Table 5.8 shows the household characteristics of households with at least one person in employment for different residential and workplace locations. It provides results for working households in Australia as a whole as a benchmark against which the Sydney data can be compared.

The first observation to make is that working households with children are under-represented amongst those who work in Inner Sydney with 31 per cent of all households who work in Inner Sydney being couples with a dependent child compared with 38 per cent of working households in Sydney (and in Australia as a whole). They are even more under-represented amongst those who work in Inner Sydney with just 22 per cent of all working couples with a dependent child compared with 38 per cent of such households in Sydney as a whole. A similar pattern is found

for lone parent households, albeit at much lower percentages. Workers who live and work in Inner Sydney are almost half as likely to have children compared to those who live elsewhere.

The converse applies to single persons and to persons without children and not living with a partner. Lone person households make up 27 per cent of all households working in Inner Sydney and living in the inner zone compared with 20 per cent working in Inner Sydney and just 17 per cent working in Sydney (and in Australia as a whole). Likewise, other households (which primarily consist of group households or family households with only non-dependent children) account for 21 per cent of all households working in Inner Sydney compared with 16 per cent in Sydney and just 14 per cent in Australia as a whole.

Table 5.8: Household structure by residential and workplace location: working households, 2001

working in living in	Australia Australia	Sydney Sydney	Inner Sydney Sydney	Inner Sydney inner zone
	%	%	%	%
Couple only	24	23	23	26
Couple with dependent child	38	38	31	22
Lone person	17	17	20	27
Lone parent with dependent child	7	5	4	4
Other Households	14	16	21	21
All employed households*	100	100	100	100

*data for households living and working in Sydney apply to reference person employed;
for those working in Inner Sydney they apply to at least one person in the household employed
Source: 2001 Census Household Sample File, Special request tabulation, 2001 Census

The most significant characteristics that identifies households working in Inner Sydney, however, is household income rather than the number of persons employed per household or household structure. The differences in household income of those who work in Inner Sydney compared with working households in Sydney or Australia as a whole is shown in Table 5.9. This table shows the much higher incidence of high income working households in Sydney compared with the rest of Australia. It also shows the much higher incidence of high income households working in Inner Sydney compared with the rest of Sydney. At least half of the households who work in Inner Sydney, regardless of whether or not they live in the inner zone, earn at least $1500 per week. Only 38 per cent of their Sydney counterparts and 27 per cent of their Australian counterparts do so. Conversely, only 19 per cent of households with at least one person employed in Inner Sydney have incomes below $800 per week compared with 30 per cent in Sydney and 38 per cent in Australia. As shown above, it is amongst these households that there is a high incidence of housing stress. It is also the equivalent of these households who are likely to be excluded from working in Inner Sydney because of high housing costs.

Table 5.9: Household income by residential and workplace location: working households, 2001

working in living in	Australia Australia	Sydney Sydney	Inner Sydney Sydney	Inner Sydney inner zone
Household income (pw)	%	%	%	%
$0-$799	38	30	18	19
$0800-$1,499	35	31	32	30
$1,500+	27	38	50	51
All employed households*	100	100	100	100

*data for households living and working in Sydney apply to reference person employed;
for those working in Inner Sydney they apply to at least one person in the household employed
Source: 2001 Census Household Sample File, Special request tabulation, 2001 Census

The analysis above has highlighted the role of household structure and income rather than occupation as a factor affecting affordability outcomes in relation to location and housing choices. The final part of this section returns the focus to occupation.

The following analysis is undertaken only for households where the selected person was employed in one of the four indicator occupations. As indicated in the introduction to this section, it is only for these households that the location of the person within the household was identified. They differ from the numbers reported in Chapter 5 because they provide a count of households whereas the Chapter 5 numbers provided a count of persons.

As was seen in Table 5.2, there 244,000 households where at least one person worked in the Inner Sydney region in 2001; 30,000 of these households (representing 1 in every 8 households) had at least one person employed as a computing professional, a nursing professional, a hospitality worker or a cleaner. Table 5.10 shows the distribution of persons identified as working in Inner Sydney according to their relationship to the person identified as the reference person. Figure 5.5 provides a graphical illustration of a summary of the results.

Table 5.10: Households working in Inner Sydney: location of selected person in household by occupation, 2001

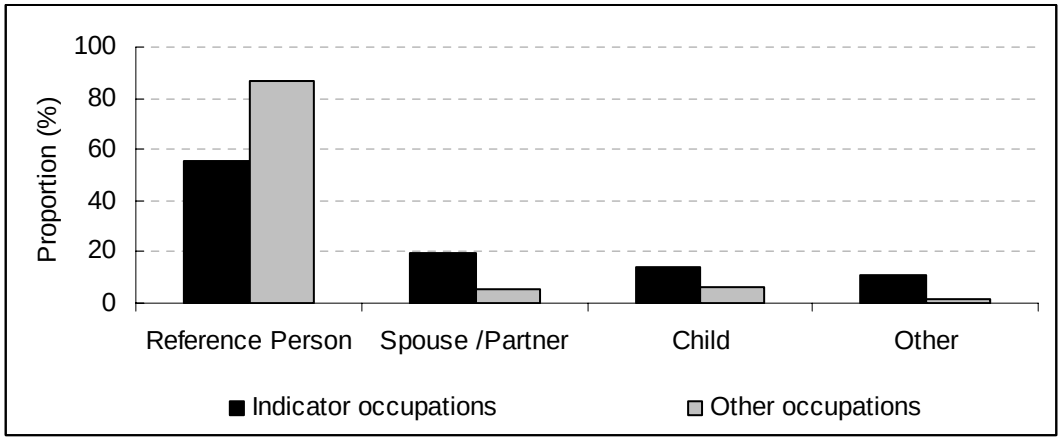
Occupation	Reference Person	Spouse /Partner	Child	Other	All selected persons
numbers					
223 Computing Professionals	10,200	2,800	2,000	1,300	16,300
232 Nursing Professionals	1,700	1,000	200	200	3,100
632 Hospitality Workers	2,700	900	1,800	1,400	6,900
911 Cleaners	2,000	1,100	300	400	3,700
Other occupations	185,500	11,800	12,800	4,100	214,200
All h'holds working in Inner Sydney	202,200	17,600	17,200	7,300	244,300
proportions (%)					
223 Computing Professionals	63	17	13	8	100
232 Nursing Professionals	55	32	6	7	100
632 Hospitality Workers	39	14	27	20	100
911 Cleaners	54	29	8	10	100
Other occupations	87	6	6	2	100
All h'holds working in Inner Sydney	83	7	7	3	100

Source: Special request tabulation, 2001 Census

These results show, firstly, that workers in the four occupational groups chosen for the in-depth analysis were significantly less likely to be the reference person in their household, or their partner, compared to all other workers in Sydney. This held for all four groups. While the selected person was the reference person for 87 per cent of all other occupations, he or she was as the reference person for only 55 per cent in the four indicator occupations (with individual proportions ranging from a low 39 per cent for hospitality workers to 63 per cent for computing professionals).

Thus a disproportionate share of persons identified as working in Inner Sydney as hospitality workers are neither the reference person nor the partner in the household. As a child of the reference person or as a worker in a family household with no dependent children or in a group household, they are likely to be secondary workers in the household. Their affordability problems are therefore managed by their willingness either to remain in their parental home or to share in a group household.

Figure 5.5: Households working in Inner Sydney: location of selected person in the household, indicator occupations and other occupations, 2001



Source: Special request tabulation, 2001 Census

Table 5.11 provides support for this. It shows a disproportionate share of hospitality workers live in shared households.[25] Of the households with at least one person working in Inner Sydney, 22 per cent live in shared households and a high 32 per cent of those who live in the inner zone live in such households. The equivalent proportions for all working households are, respectively, 16 per cent for Sydney and 14 per cent and for Australia.

For hospitality workers, however, the proportions who live in shared households are 42 per cent for those who work in Inner Sydney and 45 per cent for those who work in Inner Sydney and live in the inner zone which provides ready access to work. For cleaners, the results show a similar disproportionate share of workers who live in shared households.

It is these workers who were identified in Chapter 2 as having the highest levels of housing stress.

[25] Throughout this report, other households include single family households with only non-dependent children, multiple family households and, the most significant contributor to this classification, group households. In other words, all households other than the four types indicated. For simplicity, these will be referred to as shared households for the remainder of this chapter.

Table 5.11: Households working in Inner Sydney: household structure by occupation, 2001

occupation	Couple	Couple + dept child	Lone person	Lone parent + dept child	Other h'holds	All employed households
	%	%	%	%	%	%
Household living in Sydney						
223 Computing Professionals	26	36	13	2	23	100
232 Nursing Professionals	24	27	21	6	23	100
632 Hospitality Workers	18	24	10	6	42	100
911 Cleaners	19	32	10	4	35	100
All occupations	23	32	19	4	22	100
Household living in inner zone of Sydney						
223 Computing Professionals	32	22	19	2	25	100
232 Nursing Professionals	25	23	25	5	22	100
632 Hospitality Workers	20	16	13	5	45	100
911 Cleaners	19	26	14	4	36	100
All occupations	26	21	17	4	32	100

Source: Special request tabulation, 2001 Census

Table 5.12 shows the incidence of housing stress for households working in inner Sydney separately for all households and for those living in the inner zone, disaggregated by their occupation, their household type and household income. The table shows extraordinarily high levels of housing stress for different groups in the lowest household income category (that is, incomes below $800 per week or approximately $40,000 per year) who work in Inner Sydney and live in the inner zone. On average, approximately half of households in this income group are in housing stress, with the proportion varying little by household type. This compares with a still substantial 44 per cent for all lower income households who work in Inner Sydney regardless of their location choice. In part the relative comparability of the results arises because of the high proportion of Inner Sydney workers who live in the inner zone.

Disaggregating the data into the four occupational indicator groups generates even higher incidences. However, as can be seen by the data in Table 5.13 (which have been rounded to the nearest 100), the numbers of households involved in many cases are quite small and the results should therefore be treated with some caution. Nevertheless, Table 5.13 also shows that some 16,800 households with members working in Inner Sydney and on lowest incomes were in housing stress at this time: 10,400 lived in the inner zone. The largest group among these were single person households, who accounted for 54 per cent of the total of all households working in Inner Sydney and living in the inner zone. The final column in Table 5.13 indicates the total number of households in each category as a benchmark against which the numbers in stress can be compared.

Both in terms of the proportions in stress and the numbers involved, hospitality workers appear to be the most disadvantaged compared to the other indicator groups. The numbers of hospitality workers living in shared households with low or even moderate household incomes, however, are reasonably large and the incidence of housing stress for these workers (of 62 per cent of those in shared households with incomes below $800 per week and of 28 per cent of those in shared households with incomes as high as $1500 per or almost $80,000 per year) suggests that there are significant problems faced by those whose work is likely to be casualised and/or

part-time and for whom living any significant distance from their workplace location renders employment difficult. Similarly high proportions and numbers are evident for low income hospitality workers in lone person households.

Table 5.12: Incidence of housing stress for households working in Inner Sydney by occupation, household structure and household income, 2001

occupation / household income ($pw)	Couple	Couple + dept child	Lone person	Lone parent + dept child	Other h'holds	All employed households
$0-$799	%	%	%	%	%	%
Households living in Sydney						
223 Computing Professionals	52	41	50	30	59	48
232 Nursing Professionals	30	89	41	73	33	48
632 Hospitality Workers	63	39	68	53	62	60
911 Cleaners	31	52	47	41	23	40
All occupations	38	45	45	50	39	44
Household living in inner zone						
223 Computing Professionals	67	60	56	50	89	61
232 Nursing Professionals	17	75	44	79	25	47
632 Hospitality Workers	76	38	72	59	72	69
911 Cleaners	34	51	49	43	23	41
All occupations	47	49	50	52	50	50
$800-$1,499						
Households living in Sydney						
223 Computing Professionals	18	17	19	20	12	17
232 Nursing Professionals	18	16	20	25	16	18
632 Hospitality Workers	19	15	33	21	28	23
911 Cleaners	10	14	14	8	6	10
All occupations	14	17	20	20	12	16
Household living in inner zone						
223 Computing Professionals	24	20	22	33	17	21
232 Nursing Professionals	19	15	21	14	23	19
632 Hospitality Workers	23	14	37	25	36	29
911 Cleaners	9	15	17	0	9	11
All occupations	19	21	23	26	20	21
$1,500+						
Households living in Sydney						
223 Computing Professionals	5	6	8	6	1	5
232 Nursing Professionals	4	9	25	0	2	5
632 Hospitality Workers	6	5	0	6	5	5
911 Cleaners	8	3	0	0	1	3
All occupations	6	10	12	10	2	7
Household living in inner zone						
223 Computing Professionals	6	8	9	6	1	5
232 Nursing Professionals	2	11	33	0	3	6
632 Hospitality Workers	7	7	0	8	7	7
911 Cleaners	0	8	0	0	3	5
All occupations	7	13	14	13	3	9
All households						
Households living in Sydney	11	15	28	30	10	17
Household living in inner zone	13	19	31	34	15	20

Source: Special request tabulation, 2001 Census

Table 5.13: Households working in Inner Sydney in housing stress by occupation, household structure and household income, 2001

occupation / household income ($pw)	Couple	Couple + dept child	Lone person	Lone parent + dept child	Other h'holds	All employed households in stress	All employed households
$0-$799							
Households living in Sydney							
223 Computing Professionals	0	0	100	0	0	200	500
232 Nursing Professionals	0	0	100	0	0	200	400
632 Hospitality Workers	100	100	400	100	400	1,100	1,800
911 Cleaners	100	100	100	0	0	500	1,200
All occupations	1,800	2,900	8,000	1,800	2,200	16,800	38,300
Household living in inner zone							
223 Computing Professionals	0	0	100	0	0	200	300
232 Nursing Professionals	0	0	100	0	0	100	200
632 Hospitality Workers	100	0	400	0	300	900	1,200
911 Cleaners	0	100	100	0	0	200	600
All occupations	1,100	1,200	5,700	900	1,600	10,400	21,000
$800-$1,499							
Households living in Sydney							
223 Computing Professionals	100	200	200	0	100	600	3,300
232 Nursing Professionals	0	0	100	0	0	200	1,000
632 Hospitality Workers	100	100	0	0	300	500	2,100
911 Cleaners	0	100	0	0	0	100	1,200
All occupations	1,900	3,400	3,600	700	1,900	11,500	70,600
Household living in inner zone	0	0	0	0	0	0	0
223 Computing Professionals	100	100	100	0	0	300	1,400
232 Nursing Professionals	0	0	100	0	0	100	700
632 Hospitality Workers	100	0	0	0	200	400	1,400
911 Cleaners	0	0	0	0	0	100	500
All occupations	1,200	1,200	2,700	400	1,500	7,000	32,700
$1,500+							
Households living in Sydney							
223 Computing Professionals	200	200	100	0	0	500	11,200
232 Nursing Professionals	0	0	0	0	0	100	1,400
632 Hospitality Workers	0	0	0	0	0	100	2,000
911 Cleaners	0	0	0	0	0	0	800
All occupations	2,000	4,100	1,100	200	600	7,900	108,900
Household living in inner zone							
223 Computing Professionals	100	100	100	0	0	300	5,000
232 Nursing Professionals	0	0	0	0	0	100	1,000
632 Hospitality Workers	0	0	0	0	0	100	1,200
911 Cleaners	0	0	0	0	0	0	300
All occupations	1,400	2,100	900	100	400	4,900	55,900
All households							
Households living in Sydney	5,700	10,400	12,600	2,700	4,700	36,100	217,900
Household living in inner zone	3,600	4,500	9,300	1,500	3,500	22,300	109,600

Source: Special request tabulation, 2001 Census

5.3 Summary

The analysis in Chapter 5 has focused on the location, tenure and other trade-offs made by households with at least one person working in Inner Sydney, selected as a representative of the job-rich high cost locations which are providing an increase in the housing opportunities available. It has shown that a disproportionate share of households with a person working in Inner Sydney choose to live in the higher cost

inner areas rather than travel long distances to work and that the choice to live close to work in Inner Sydney is associated with above average levels of housing stress.

Housing outcomes for workers in Inner Sydney, however, are strongly influenced by economic and life-cycle characteristics. The propensity to rent decreases with age and, for both young and old, renting declines both as household income increases and with distance from the CBD. Similarly, the probability of being in housing stress decreases with age, decreases with income and decreases as the distance workers live from Inner Sydney increases.

Detailed analysis by occupation is constrained since the small numbers involved limit the extent to which the above characteristics can be controlled for. The analysis above shows these are critical to explaining outcomes.

The analysis by occupation, however, does show that disproportionate shares of persons in the lower skilled hospitality and cleaner occupations who work in Inner Sydney are neither the reference person nor the partner in the household. As such they are likely to be secondary workers in the household and their affordability problems may be managed by their willingness either to remain in their parental home or to share in a group household. Despite this, hospitality workers also have the highest levels of housing stress.

The results presented in Chapter 4 raise the possibility that the high levels of housing stress arise because the concentration of jobs for hospitality workers in the high cost regions means that low paid hospitality workers have few alternative workplace choices. They also raise the untested possibility that long distance commuting is problematic because of the employment conditions under which workers are employed, particularly when these involve shift work and unsocial hours.

6 CONCLUSIONS

A number of conclusions can be drawn from the discussion and data analysis above. These provide insights into the relationship between occupation and housing choice.

First, claims that structural change has led to a re-urbanisation of the inner city regions of global cities and an increasing reliance on new economy jobs in the inner city regions (such as that attributed to Newman in the introduction to this report) are only partly correct.

There has been significant growth and concentration of computing professionals in the inner city areas of Sydney and Melbourne, the occupation selected in this study as an indicator of new economy jobs, and there has been a move towards inner city living of those employed in this occupation. This has been accompanied by a comparable but more limited shift in the location of nursing professionals. Overall, however, there has been much greater growth in jobs in the locations where an increasing proportion of workers are living. In the case of Sydney, this is in the fringe regions of the city. The results for Sydney lend support to O'Connor and Healy's claims that jobs do follow people although care does need to be taken in drawing the implications about the direction of causality from correlations between growth in workplace and residential locations of workers.

Second, there is little *direct* evidence to support the claims of those who express concerns that employers in high cost areas such as the inner city cannot attract key workers because of housing affordability problems. Clearly, workers who can't afford to live in high cost areas don't live there. However, the study does provide evidence to support the claim that those who work in inner city areas and live there do have to endure significantly more unaffordable housing compared to outer city residents. This suggests that there is indeed a significant inner city housing affordability problem, but that this essentially a subset of a wider problem of general income and spatial polarisation which is reducing housing options for lower income earners in general. The affordability problems faced by essential workers are the same as those faced by any lower paid household. The data analysed here also indicate that, with the exception of the CBD, in recent years the proportion of workers who live in higher cost suburbs have fallen relative to those who live in outer areas.

For employers in high cost regions, the problem of retaining low paid workers is a key concern as there are high costs associated with labour market turnover. Such costs can arise from recruitment, from the need to retrain new employees and from failures to meet service standards or delays in meeting production deadlines (ANCER, 2004:16). Recruitment and retention difficulties increase the pressure on wages for employers who are likely to be faced with shortages of their lower skilled work-forces. Such wage increases are unlikely to be compensated for by productivity increases given the service orientation of a large number of these occupations.[26] Such difficulties are likely to be greater the greater is the reliance on younger and/or secondary workers in a household.

Finally, one of the key difficulties in relating the workplace of workers to their residential location is that labour is inherently heterogeneous in its skills (and hence

[26] It is important to remember that earnings are not the only factor that affects labour market supply. A detailed analysis of the persistent state of shortage of nurses by Dockery (2004), for example, suggests that this is attributable more to job satisfaction and poor career prospects than it is to wages (which are estimated to be in line with those of other women when typical human capital variables are taken into account). He concludes shortages are due "not only to institutional and policy settings in Australia, but also to intrinsic characteristics peculiar of the occupation." (Dockery 2004, p74)

in the income it can generate). Housing sub-markets, however, are becoming spatially homogeneous as general economic and population pressures increase land prices in locations where jobs are concentrated with the result that housing in those regions is becoming increasingly unaffordable for lower income households.

The implications of a lack of appropriate affordable housing are that many workers either pay a high proportion of their incomes in meeting their housing costs and/or travel long distances in order to work in their chosen location. Neither of these options is likely to be particularly sustainable. The pressure of high housing costs may be reduced by natural life-cycle events as young households moving away from high cost well located rental housing to less well located owner-occupied housing, much of which is still likely to impose a high housing cost burden on them throughout the early home purchase years. If these costs are reinforced by high commuting costs, a natural outcome may well be to search for new employment closer to the place of residence. High commuting costs, particularly if they are not compensated for by high housing consumption, are also likely to lead to a search for new employment closer to the place of residence.

The consequence is that the inner high cost regions of the city will be populated by young renters, the affluent and those without children. This suggests a bigger issue that needs to be addressed is whether such spatially polarised cities are sustainable in the long run. Back in the 1960's Jane Jacobs argued that living cities needed diversity (Jacobs, 1962). More recently, Richard Florida has suggested that it is creativity rather than knowledge that is at the base of the new economy and that the creative class wants to live in places that reflect this diversity. Vibrant cities need hospitality workers; they need cleaners; they need workers who work at all times of the day or night. Such diversity does not come from the occupational and age-based segregation that currently defining our cities. (Florida, 2002, 2005).

The results presented here suggest that the inability of employers to recruit and retain key or essential workers is likely to be part of a much broader and potentially much more insidious process. Low paid workers are being displaced from the high cost regions. However, much of this displacement is because their jobs are also being displaced from high cost regions. It is part of a process whereby high-cost residential development is displacing many of the traditional sources of employment for the residents of those areas. With the exception of the CBD, the numbers of persons employed in jobs in high cost regions have declined. These jobs have been replaced by jobs in the middle and outer regions. It is part of a process by which the low paid increasingly are being excluded from the range of choices available to those who are benefiting from the economic growth that has occurred as a result of the economic restructuring that has taken place in the last quarter of a century. Employers will be able to address their problems by employing a continuing supply of young, mobile workers by providing better wages and better conditions. The continued costs associated with retraining will be passed on in higher prices.

The ultimate cost, however, will be a city that has lost the diversity that made it great in the first place. Jane Jacobs knew the importance of diversity as long ago as 1962. Richard Florida has reminded us of it today.

Both the UK and the US have implemented affordable housing policies. In London these require 50 per cent of all new housing developments to be affordable. In a number of States in the US, they require 15 to 25 per cent of all housing developments to be affordable. The renewal of lower Manhattan includes a 20 per cent affordability quota. In both countries, these policies are underpinned by national and state based financial arrangements that ensure the policies are feasible. It is time to introduce such policies in Australia’s metropolitan regions.

REFERENCES

ATIS Real Weatheralls (2002) *Innovation and Good Practice: Affordable Rented Housing for Key Workers*, prepared for The Housing Corporation, UK. http://www.housingcorplibrary.org.uk/housingcorp.nsf/AllDocuments/32C43460E77D5E2380256C22005187F2

Burke, T. and Hayward, D. (2001) 'Melbourne's housing past, housing futures', *Urban Policy and Research*, vol. 19, no. 3, pp. 291-310

Blunden, H., Darcy, M. Perry, J. and Stubbs, J. (2004) "Housing Costs and Work Location in Sydney", paper presented at the 'A future that works' conference at Newcastle University 8-10 December, 2004

Department of Transport, Environment and the Regions (DETR) (2000) *The Housing Green Paper - Quality and Choice: A Decent Home for All*, DTLR: London

Department of Infrastructure, Planning and Natural Resources (DIPNR) (2004) 2002 *Household Travel Survey Summary Report*, http://www.planning.nsw.gov.au/tpdc/pdfs/htsreport_2004.pdf

Dockery, A. (2004) "Workforce experience and retention in nursing in Australia", *Australian Bulletin of Labour*, 30(2):74-102

Dodson, J. (2004) *Affordable housing and employment opportunity: is there a spatial mismatch?* Australian Housing and Urban Research Institute Positioning Paper, http://www.ahuri.edu.au/gobal/docs/doc723.pdf

Duncan, O. and Duncan, B. (1955) "A Methodological Analysis of Segregation Indexes", *American Sociological Review*, 20(2): 210-217

Epic DotGov (2004) *Northern Beaches Key Workers Study*, Final Report produced in association with Glazebrook and Associates for the Department of Infrastructure, Planning and Natural Resources, NSW Department of Housing, Manly Council, Warringah Council

Fagan, B., Dowling, R. and Langdale, J. (2004) *Suburbs in the Global City: Employment Profile of Greater Western Sydney*, Macquarie University and Western Sydney Regional Organisation of Councils, Blacktown.

Fiore, M. and Lipman, B. (2003) "Paycheck to Paycheck: Wages and the Cost of Housing in America", *New Century Housing*, 2(2), Center for Housing Policy/National Housing Conference http://www.nhc.org/nhcimages/paycheck03.pdf.

Florida, R. (2002) *The rise of the creative class*, New York: Basic Books

Florida, R. (2005) *The Flight of the Creative Class: The New Global Competition for Talent*, New York: HarperCollins

Fordham Research (2005) *Research into Key Worker Housing Needs*, report prepared for Chelmsford Borough Council, http://www.chelmsfordbc.gov.uk/planning/Policy/documents/KeyWorkerReport2004.pdf

Gobillon, l., Selod, H., Zenou, Y. (2003) "Spatial Mismatch: From the Hypothesis to the Theories", Institute for the Study of Labor (IZA), IZA Discussion Paper No. 693, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=382787

Hannah, L. and Kay, J. (1977) "Measures of Concentration", *Journal of the American Statistical Association*, 62:162-168

Houston, D. (2005) "Employability, skills mismatch and spatial mismatch in metropolitan labour markets" *Urban Studies*, 42(2):221-243

Immergluck, D. (1998) “Job Proximity and the Urban Employment Problem: Do Suitable Nearby Jobs Improve Neighbourhood Employment Rates?” *Urban Studies*, 35(1):7-23

Jacobs, J. (1962) *The death and life of great American cities*, London: Jonathon Cape.

Massey, D. and Denton, N. (1988) "The Dimensions of Residential Segregation" *Social Forces*, 67(2):281-315

Monk, S., Morrison N., Smith K., Stubley M. and Whitehead C. (2002), *Research into Key Worker and Affordable Housing in the Cambridge Area*, Research Report V, Department of Land Economy, University of Cambridge as quoted in Fordham Research (2005).

NSW Department of Housing (DoH) (2004) *Thornleigh Key Worker Affordable Housing Program.* A New South Wales Land and Housing Corporation Affordable Housing Demonstration Project, internal document

O'Connor, K. and Healy, E. (2002) The Links Between Housing Markets and Labour Markets in Melbourne, Australian Housing and Urban Research Institute Final Report. http://www.ahuri.edu.au

O'Malley, N. (2005) “Too far for clean run to city”, *Sydney Morning Herald*, June 2, 2005

Office of the Deputy Prime Minister (ODPM)(2003) *Improving the delivery of affordable housing in London and the South East*, http://www.odpm.gov.uk/stellent/groups/odpm_housing/documents/downloadable/odpm_house_023692.pdf

Office of the Deputy Prime Minister (ODPM) (2004a) *Key Worker Housing*, http://www.odpm.gov.uk/stellent/groups/odpm_housing/documents/page/odpm_house_027908.hcsp

Office of the Deputy Prime Minister (ODPM) (2004b) *Creating Sustainable Communities*, http://www.odpm.gov.uk/stellent/groups/odpm_housing/documents/page/odpm_house_027911.hcsp

Ong, P. and Blumenberg, E. (1998) “Job Access, Commute and Travel Burden among Welfare Recipients” *Urban Studies*, 35(1):77-93

Queensland Department of Housing (2003) *Housing Analysis for Kelvin Grove Village*, August 2003, internal report

Randolph, B. (1991) "Housing markets, labour markets and discontinuity theory", in Allen, J. and Hamnett, C. (eds) *Housing and Labour Markets*, London: Allen and Unwin

Randolph, B. and Holloway, D. (2003) *Shifting Suburbs: Population structure and change in Western Sydney*, Western Sydney Regional Organisation of Councils, Blacktown

Randolph, B., Holloway, D. and Murray, D. (2004) *The Need for Moderate Income Housing in the Greater Sydney Region*, prepared for Landcom, Faculty of the Built Environment, UNSW and Landcom.

Saunders, P. (2003) *Examining Recent Changes in Income Distribution in Australia*, SPRC Discussion Paper 130, http://www.sprc.unsw.edu.au/dp/DP130.pdf

Saunders, P. (2005) “Wage inequalities among full-time workers”, paper prepared for the Australian Social Policy Conference 2005, Looking back, Looking Forward, A Quarter of a Century of Social Change, University of New South Wales, 20-22 July 2005,

http://www.sprc1.sprc.unsw.edu.au/aspc2005/abstract.asp?PaperID=16

Smith, T. and Zenou, Y. (2003) "Spatial Mismatch, Search Effort and Urban Spatial Structure” *Journal of Urban Economics*, 54(1):129-56

Stegman, M., Quercia, R. and McCarthy, G. (2000) "Housing America’s Working Families", *New Century Housing*, 1(1), Center for Housing Policy, http://www.nhc.org/nhcimages/chprpt.pdf

Stimson, R. (2001) "Dividing Societies: The Socio-Political Spatial Implications of Restructuring in Australia" *Australian Geographical Studies*, 39(2):198-216

Stoll, M. (2005) “Geographical Skills, Mismatch and Race” *Urban Studies*, 42(4):695-717

Theil, H. (1972) *Statistical Decomposition Analysis*, Amsterdam: North-Holland

Tym, R. et al (2003) *Cambridge Sub-Region Key Worker Housing Research*, Final Report prepared for the Cambridge Sub-Regional Affordable Housing Working Group, http://www.cambridge.gov.uk/planning/reptdocs/key_worker_housing_research.pdf

Vipond, J., Castle, K. and Cardew, R. (1998) "Revival in Inner Areas", *Australian Planner* 35(4):215-222

Watson, I., Buchanan, J., Campbell, I. and Briggs, C. (2003) *Fragmented Futures: New Challenges in Working Life*, Leichhardt: The Federation Press

Wulff, M., Healy, E. and Reynolds, M. (2004) "Why don't small households live in small dwellings? disentangling a planning dilemma", *People and Place*, 12(1):58-71

Winter, I. and Stone, W. (1999) "Social Polarisation and Housing Careers: exploring the interrelationship of labour and housing markets in Australia" in O'Connor, K. (ed) *Houses and Jobs in Cities and Regions: Research in Honour of Chris Maher,* Brisbane: University of Queensland Press

Winter, I. and Stone, W. (1998) *Social Polarisation and Housing Careers*, Working Paper No.13, Australian Institute of Family Studies, Melbourne

Yates, J. (2001) "The Rhetoric and Reality of Housing Choice: The Role of Urban Consolidation ", *Urban Policy and Research*, 19(4):491-527

Yates, J. and Gabriel, M. (forthcoming) *Housing Affordability in Australia*, Australian Housing and Urban Research Institute Background Report for CRV3, 'Housing Affordability for Lower Income Australians'

Yates, J., Randolph, B., Holloway, D. and Murray, D. (2005) *Housing Affordability, Occupation and Location in Australian Cities and Regions*, Australian Housing and Urban Research Institute Positioning Paper, May 2005, http://www.ahuri.edu.au/global/docs/doc789.pdf

APPENDIX A:
JOURNEY TO WORK DATA BY OCCUPATION

A.1 Sydney

Table A. 1: Places of residence for workers in indicator occupations: Sydney, 2001

ORIGIN	223 Computing Professionals	232 Nursing Professionals	632 Hospitality Workers	911 Cleaners	Grand Total
Blacktown	4%	5%	3%	6%	5%
Canterbury-Bankstown	5%	4%	5%	8%	5%
Central Northern Sydney	15%	10%	7%	4%	9%
Central Western Sydney	7%	5%	4%	7%	5%
Eastern Suburbs	7%	5%	8%	3%	5%
Fairfield-Liverpool	4%	4%	4%	8%	6%
Gosford-Wyong	3%	7%	5%	6%	5%
Illawarra SD Bal	0%	2%	3%	3%	2%
Inner Sydney	10%	6%	11%	6%	7%
Inner Western Sydney	5%	3%	4%	3%	3%
Lower Northern Sydney	14%	6%	7%	4%	7%
Newcastle	3%	12%	11%	13%	9%
Northern Beaches	6%	5%	5%	4%	5%
Outer South Western Sydney	2%	4%	4%	5%	5%
Outer Western Sydney	3%	7%	6%	6%	7%
St George-Sutherland	9%	9%	9%	9%	9%
Wollongong	3%	5%	6%	6%	5%

Table A. 2: Location of jobs for workers in indicator occupations: Sydney, 2001

DESTINATION	223 Computing Professionals	232 Nursing Professionals	632 Hospitality Workers	911 Cleaners	Grand Total
Blacktown	1%	3%	2%	4%	4%
Canterbury-Bankstown	1%	3%	3%	5%	5%
Central Northern Sydney	6%	7%	5%	5%	6%
Central Western Sydney	6%	11%	4%	7%	8%
Eastern Suburbs	2%	6%	5%	4%	3%
Fairfield-Liverpool	1%	5%	3%	5%	5%
Gosford-Wyong	1%	6%	5%	6%	4%
Illawarra SD Bal	0%	2%	3%	3%	2%
Inner Sydney	40%	9%	25%	14%	22%
Inner Western Sydney	3%	4%	2%	3%	3%
Lower Northern Sydney	28%	9%	7%	7%	10%
Newcastle	3%	12%	10%	14%	8%
Northern Beaches	3%	3%	4%	3%	4%
Outer South Western Sydney	0%	2%	3%	4%	3%
Outer Western Sydney	1%	5%	5%	6%	4%
St George-Sutherland	2%	8%	7%	6%	6%
Wollongong	2%	5%	5%	6%	4%

Figure A. 1: The percentage point change in residential location and workplace destinations of computing professionals, Sydney SSDs, 1996-2001

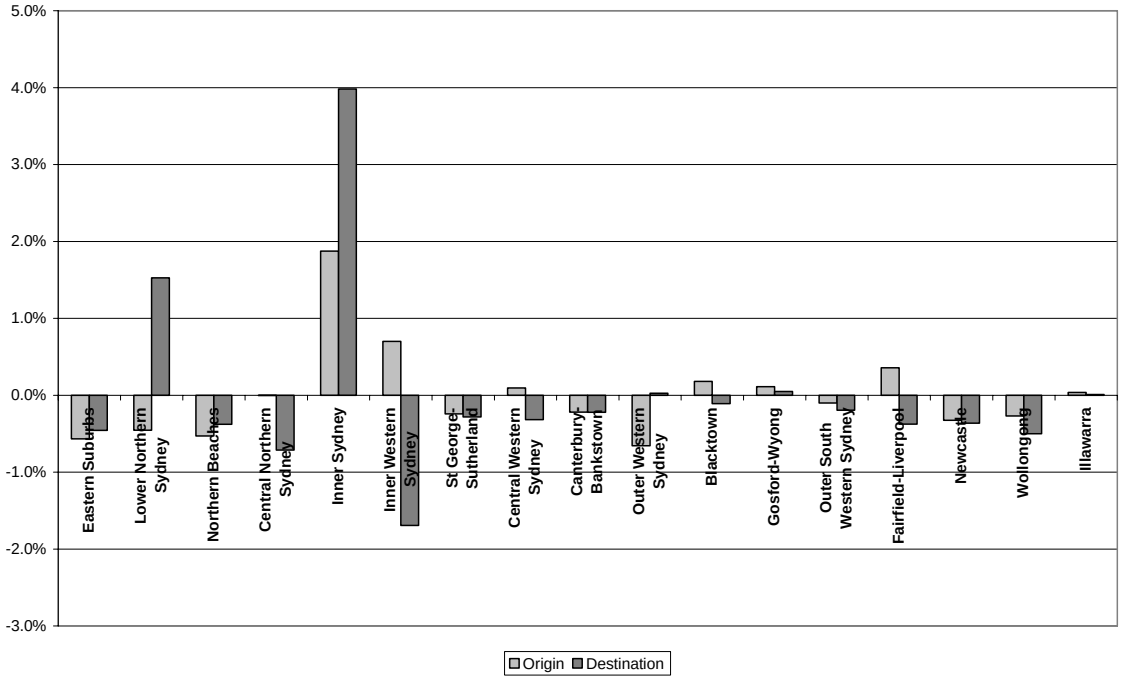


Figure A. 2: The percentage point change in residential location and workplace destination of nursing professionals, Sydney SSDs, 1996-2001

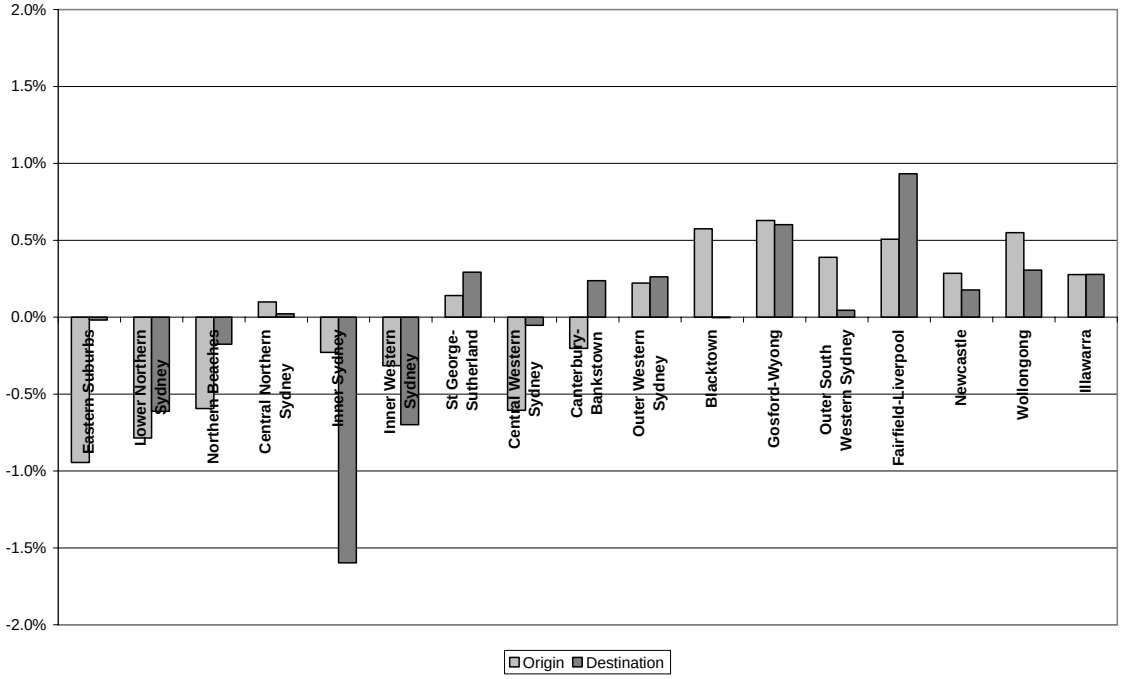


Figure A. 3: The percentage point change in residential location and workplace destination of cleaners, Sydney SSDs, 1996-2001

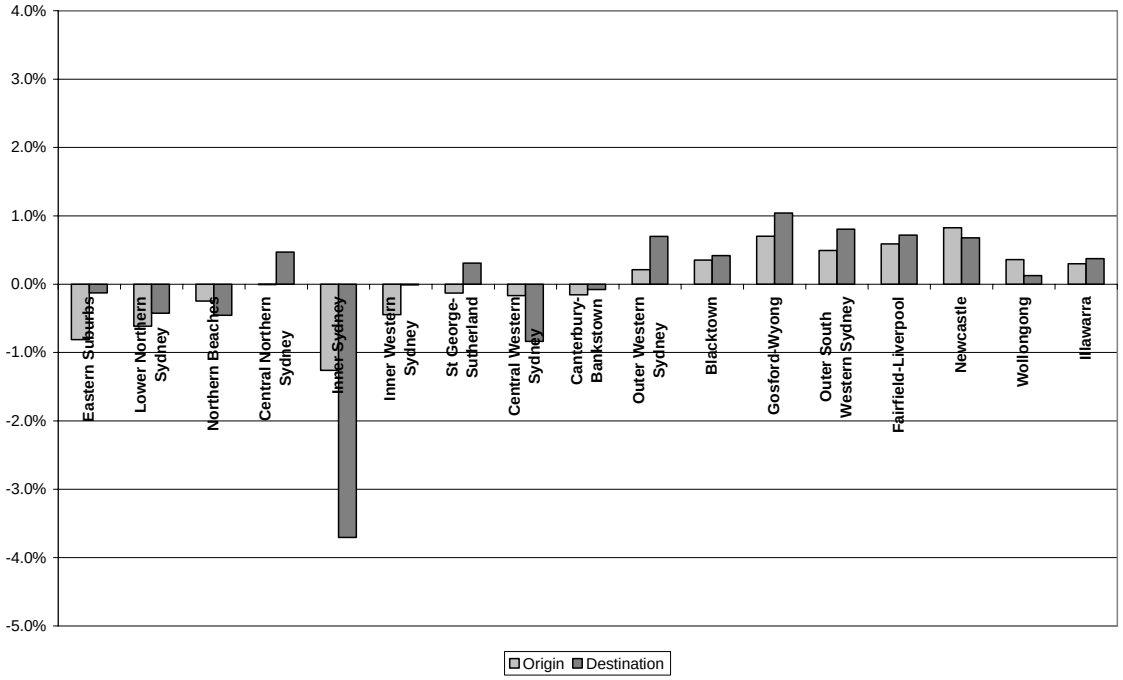
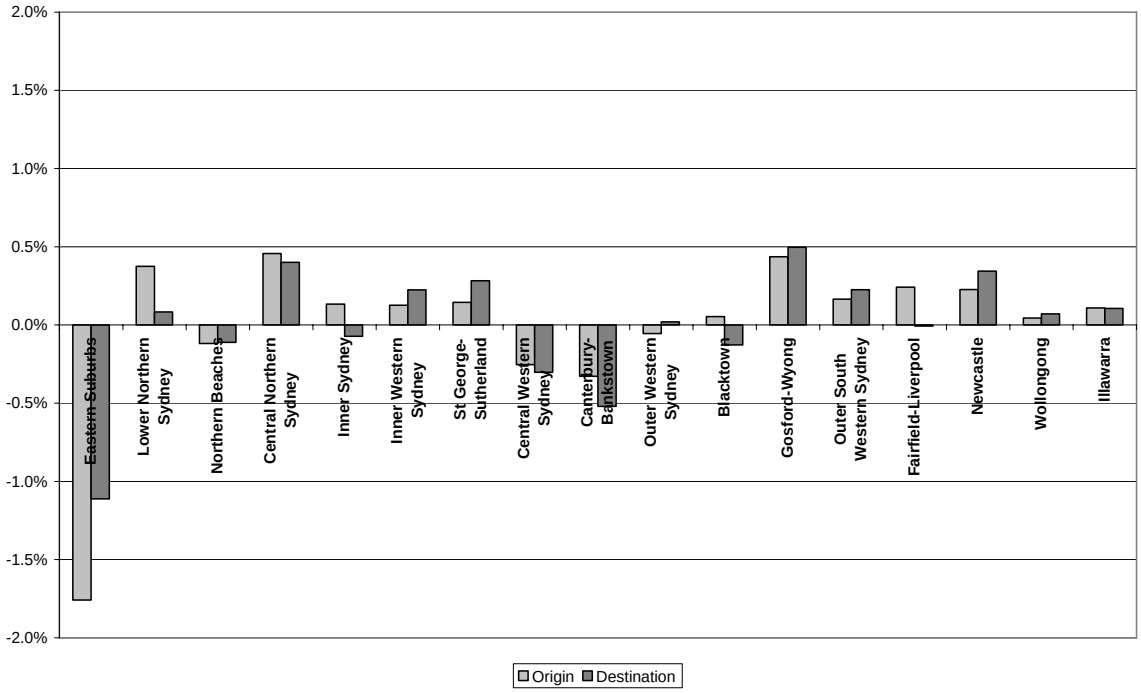


Figure A. 4: The percentage point change in residential location and workplace destination of hospitality workers, Sydney SSDs, 1996-2001



Summary of the Journey to Work Patterns in Sydney

In both 1996 and 2001 the highest concentrations of employed persons in Sydney reside in Newcastle SSD, Central Northern Sydney, St George-Sutherland and Lower Northern Sydney. The largest proportion of computing professionals live in Lower and Central Northern Sydney, while there are clear concentrations of cleaners who live in Newcastle and Fairfield-Liverpool. The largest proportion of nursing professionals live in Newcastle and Central Northern Sydney while there are high proportions of hospitality workers in Newcastle, Inner Sydney and St George-Sutherland.

In 1996 and 2001 by far and away the largest proportions of computing professionals work in Inner Sydney and Lower Northern Sydney. In fact, as a workplace destination Inner Sydney has clearly the largest proportion of employed persons who work as computing professionals, hospitality workers and cleaners. Inner Sydney is also the third largest employer of nursing professionals after Newcastle and Central Western Sydney. Newcastle is also a significant workplace destination for cleaners.

Between 1996 and 2001, there was a significant increase in the proportion of computing professionals who live in Inner Sydney and to a lesser extent Inner Western Sydney with fewer living in Outer Western Sydney, Lower Northern Sydney and Northern Beaches. There also was a large increase in the proportion of cleaners in Newcastle and Gosford-Wyong with significant decreases in the proportion of cleaners living in Eastern Sydney and hospitality workers in Eastern Suburbs. Nursing professionals have moved away from the Eastern Suburbs, Central Western Sydney, Lower Northern Sydney and Northern Beaches. As far as hospitality workers are concerned there has been increase of these workers who live in Lower and Central Northern Sydney.

There have been decreases in all four occupational categories for those living in the Eastern Suburbs, Central Western Sydney and Northern Beaches and increases of those living in Fairfield-Liverpool, Blacktown and Gosford-Wyong.

On the other hand, as far as workplace destinations are concerned there have been some very large increases and decreases between 1996 and 2001 in Sydney. There are significantly less nursing professionals and cleaners who work in Inner Sydney. There has also been a large decrease in hospitality workers in the Eastern Suburbs. There are considerably less computing professionals who work in Inner Western Sydney and Central Northern Sydney, whereas there has been increase in Inner Sydney and Lower Northern Sydney. The largest increase in the workplace destination of nursing professionals was in Fairfield-Liverpool. Interestingly there was a large relative loss of cleaners from Inner Sydney between 1996 and 2001 in Sydney compared to the other occupations.

Overall, the relative shift toward the suburbs of the residence and workplace of all four indicator groups is shown clearly in Figures 4.13 and 4.14. In residential terms, the greatest relative losses were experienced in the Eastern Suburbs and the Lower North Shore, both high cost areas. These losses have been larger than the loss of jobs from these areas, particularly for hospitality workers. The shift to the Inner Sydney and the Inner West by computer professionals is a marked countervailing trend, reflecting a move into the higher density housing market in these areas for this group of younger professionals. In terms of workplace locations, the pattern is more diverse, although the suburban shift also is clearly evident. Again, the workplace locations of computer professionals show a marked reversal with a significant growth in Inner and Lower Northern Sydney. For this group at least, the concentration of

jobs in the inner city has been, in part, matched by an accompanying increase in the proportion of this group living in these areas.

A.2 Melbourne

Table A. 3: Places of residence for workers in indicator occupations: Melbourne, 2001

ORIGIN	223 Computing Professionals	232 Nursing Professionals	632 Hospitality Workers	911 Cleaners	Grand Total
Boroondara City	7%	6%	6%	2%	5%
Eastern Middle Melbourne	19%	14%	12%	10%	12%
Eastern Outer Melbourne	7%	8%	5%	7%	7%
Frankston City	2%	3%	2%	3%	3%
Greater Dandenong City	2%	2%	2%	5%	3%
Greater Geelong City Part A	2%	4%	4%	6%	4%
Hume City	2%	3%	3%	4%	3%
Inner Melbourne	14%	7%	16%	4%	8%
Melton-Wyndham	2%	3%	3%	5%	4%
Moreland City	4%	3%	4%	4%	3%
Mornington Peninsula Shire	1%	4%	3%	3%	3%
Northern Middle Melbourne	7%	8%	6%	7%	7%
Northern Outer Melbourne	3%	5%	4%	5%	5%
S E Outer Melbourne	4%	5%	4%	7%	6%
Southern Melbourne	15%	12%	10%	8%	11%
West Barwon	0%	0%	0%	0%	0%
Western Melbourne	9%	9%	10%	15%	11%
Yarra Ranges Shire Part A	2%	4%	3%	4%	4%

Table A. 4: Location of jobs for workers in indicator occupations: Melbourne, 2001

DESTINATION	223 Computing Professionals	232 Nursing Professionals	632 Hospitality Workers	911 Cleaners	Grand Total
Boroondara City	5%	4%	4%	3%	4%
Eastern Middle Melbourne	13%	13%	9%	11%	11%
Eastern Outer Melbourne	3%	6%	4%	6%	6%
Frankston City	0%	4%	2%	3%	2%
Greater Dandenong City	1%	4%	2%	4%	5%
Greater Geelong City Part A	1%	5%	4%	6%	3%
Hume City	2%	1%	2%	5%	4%
Inner Melbourne	62%	26%	41%	22%	28%
Melton-Wyndham	1%	1%	2%	3%	2%
Moreland City	1%	2%	1%	2%	2%
Mornington Peninsula Shire	0%	3%	3%	3%	2%
Northern Middle Melbourne	2%	8%	4%	6%	5%
Northern Outer Melbourne	1%	3%	2%	3%	3%
S E Outer Melbourne	1%	1%	3%	4%	3%
Southern Melbourne	6%	10%	9%	8%	9%
West Barwon	0%	0%	0%	0%	0%
Western Melbourne	3%	7%	6%	9%	8%
Yarra Ranges Shire Part A	0%	1%	3%	3%	2%

Figure A. 5: The percentage point change in residential location and workplace destination of computing professionals, Melbourne SSDs, 1996-2001

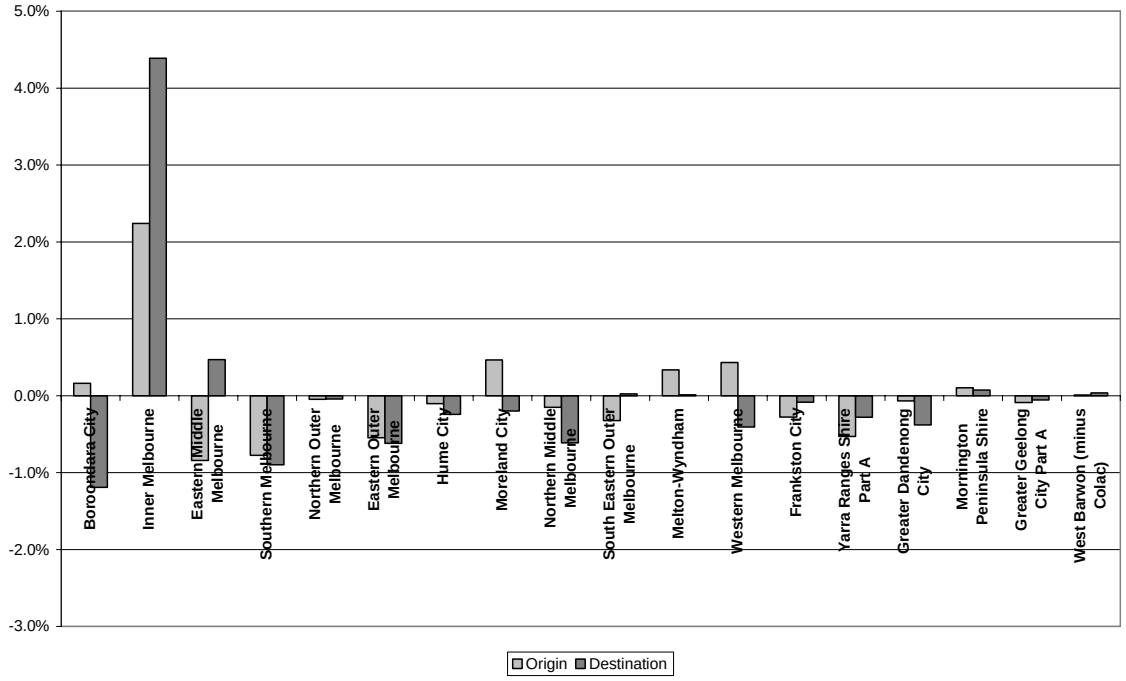


Figure A. 6: The percentage point change in residential location and workplace destination of nursing professionals, Melbourne SSDs, 1996-2001

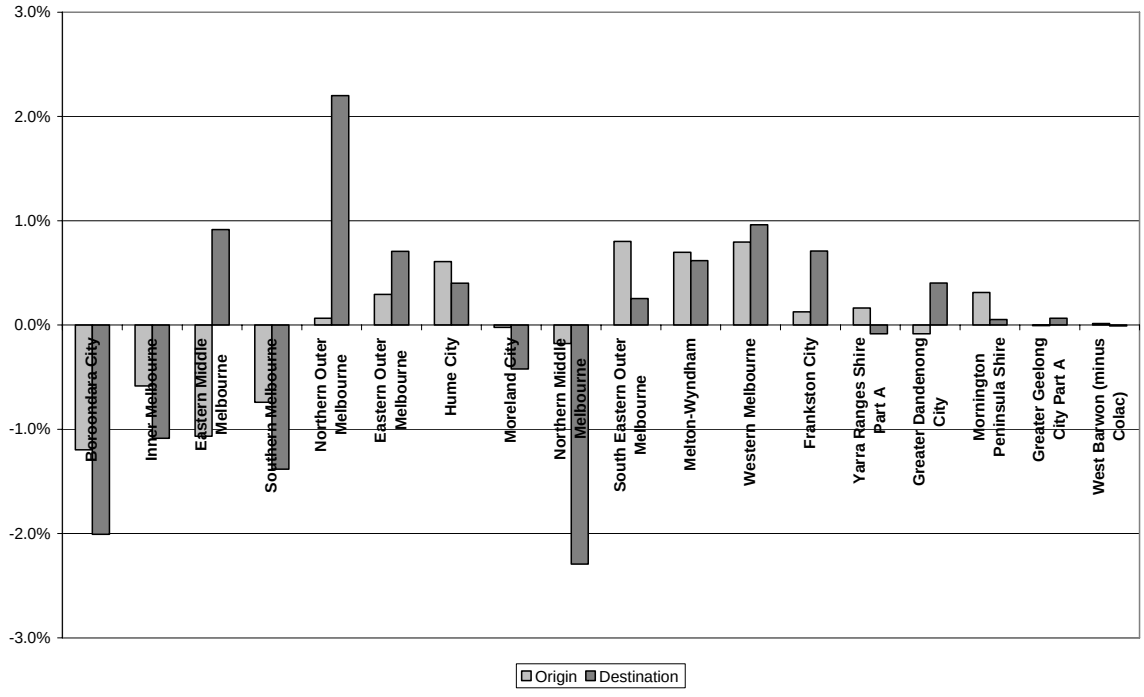


Figure A. 7: The percentage point change in residential location and workplace destination of cleaners, Melbourne SSDs, 1996-2001

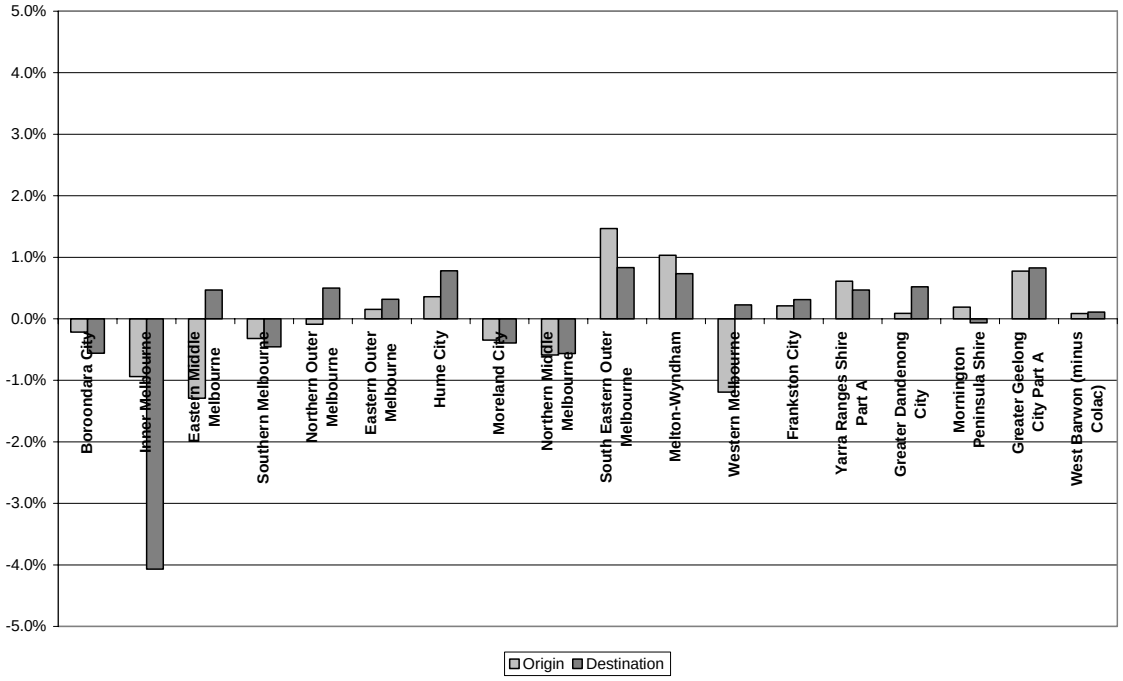
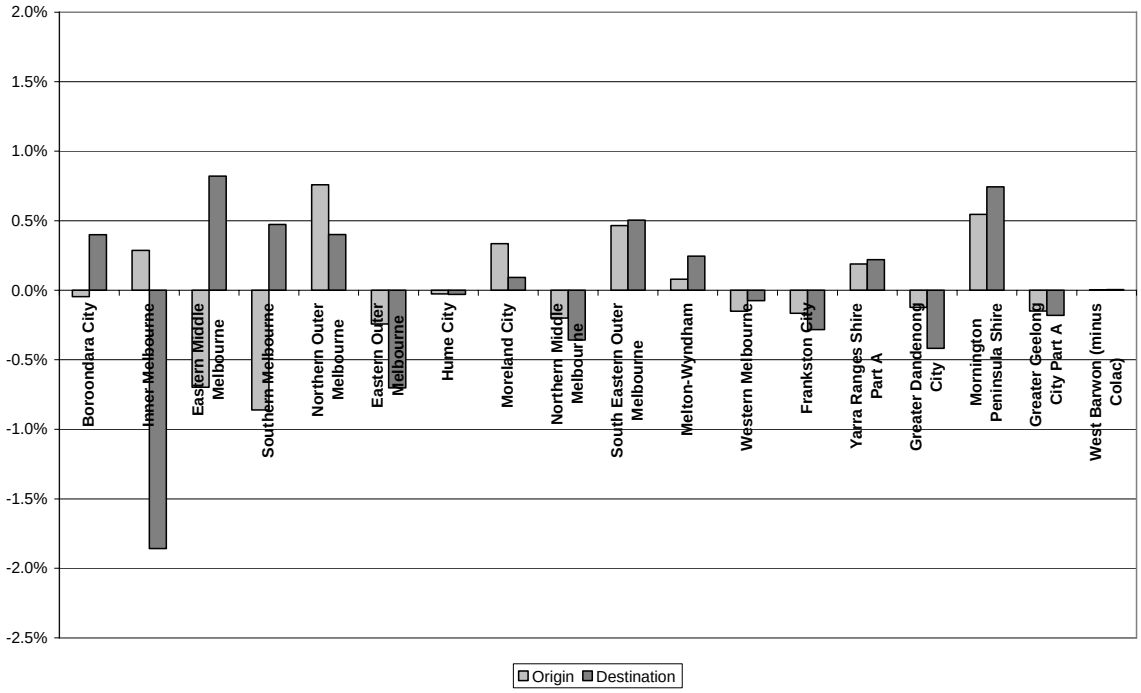


Figure A. 8: The percentage point change in residential location and workplace destination of hospitality workers, Melbourne SSDs, 1996-2001



Summary of the Journey to Work Patterns in Melbourne

In 1996 and 2001 there were four areas in Melbourne in which the largest proportions of employed persons lived: Eastern Middle Melbourne, Inner Melbourne, Southern Melbourne and Western Melbourne. Not surprisingly there were large proportions of computing professionals living in Eastern Middle Melbourne, Inner Melbourne and Southern Melbourne, while there were large proportions of hospitality workers in all four of the areas mentioned above. Nursing professionals tended to reside in Eastern Middle Melbourne and Southern Melbourne. By far and away the largest concentrations of cleaners lived in Western Melbourne.

Unlike Inner Sydney, Inner Melbourne was clearly the largest workplace destination of employed persons. Over 60% of computing professionals, over 40 per cent of hospitality workers, and over 20 per cent of nursing professionals, cleaners and other workers commuted to Inner Melbourne to work. This may, in part, reflect the differing spatial definitions of the inner areas in the two cities.

Although there were four areas in which a significant proportion of workers in Melbourne lived, there were a number of changes between 1996 and 2001. There were significantly fewer employed persons residing in Eastern Middle Melbourne and Southern Melbourne. There were also losses in the four occupations presented here living in Northern Middle Melbourne. As in Sydney, there was a large increase in the proportion of computing professionals living in Inner Melbourne, and a larger increase in cleaners in South Eastern Outer Melbourne. Conversely, there were fewer computing professionals in Eastern Middle Melbourne and nursing professionals in Boroondara City and Eastern Middle Melbourne. There was also a significant decrease in the proportion of cleaners in Eastern Middle Melbourne, Inner Melbourne and Western Melbourne. Further, fewer hospitality workers lived in Southern Melbourne and Eastern Middle Melbourne.

There were also significant changes in the workplace destination of employed persons in Melbourne. Again, paralleling Sydney's experience, there was an extraordinary increase in the proportion of computing professionals who work in Inner Melbourne between 1996 and 2001. On the other hand, the largest decrease in the numbers of computing professionals occurred in Boroondara City. Between 1996 and 2001 there was a large increase in the proportion of nursing professionals in Northern Outer Melbourne, while there were large losses in Boroondara City and Northern Middle Melbourne. The proportion of cleaners and hospitality workers who worked in Inner Melbourne also fell, perhaps surprisingly. With the exception of computing professionals, all other working groups fell proportional in Inner Melbourne between 1996 and 2001. At the same time, there was a decrease in the proportion of persons in our four occupational groups who worked in Northern Middle Melbourne, whereas there were increases across the groups in Eastern Middle Melbourne.

The labour market in Melbourne appears to be centralised than Sydney. As in Sydney, proportional increases in computer professional in both residential and workplace terms were recorded in Inner Melbourne. Similarly, the proportional decline in the workplace numbers of cleaners was most pronounced in Inner Melbourne. Exactly why there are proportionally fewer cleaners in these inner areas is impossible to determine from this analysis, but it may reflect an overall shift in service sector employment outwards with suburban population growth. This certainly appears to be the case for nursing professionals. The suburban movement of most of the indictor jobs reflects this peripheral shift.

A.3 Brisbane

Table A. 5: Places of residence for workers in indicator occupations: Brisbane, 2001

ORIGIN	223 Computing Professionals	232 Nursing Professionals	632 Hospitality Workers	911 Cleaners	Grand Total
Beaudesert LGA	1%	2%	2%	2%	2%
Caboolture LGA	2%	4%	2%	4%	4%
Caloundra LGA	1%	2%	3%	4%	3%
City Core SR	8%	3%	7%	2%	4%
Eastern Inner SR	7%	5%	5%	3%	4%
Eastern Outer SR	3%	3%	2%	3%	3%
Gold Coast LGA	10%	15%	26%	20%	18%
Ipswich LGA	3%	5%	3%	7%	5%
Logan City LGA	4%	5%	4%	9%	7%
Maroochy LGA	2%	5%	6%	6%	5%
Northern Inner SR	9%	8%	6%	4%	6%
Northern Outer SR	10%	10%	7%	8%	8%
Pine Rivers LGA	6%	6%	4%	6%	6%
Redcliffe LGA	1%	2%	2%	2%	2%
Redland LGA	4%	5%	4%	5%	5%
Southern Inner SR	5%	4%	3%	2%	3%
Southern Outer	9%	6%	6%	7%	7%
Western Inner SR	7%	3%	5%	1%	3%
Western Outer SR	9%	6%	4%	4%	6%

Table A. 6: Location of jobs for workers in indicator occupations: Brisbane, 2001

DESTINATION	223 Computing Professionals	232 Nursing Professionals	632 Hospitality Workers	911 Cleaners	Grand Total
Beaudesert LGA	0%	1%	1%	2%	1%
Caboolture LGA	0%	2%	1%	2%	2%
Caloundra LGA	0%	1%	3%	3%	2%
City Core SR	59%	32%	25%	15%	22%
Eastern Inner SR	2%	1%	3%	3%	3%
Eastern Outer SR	1%	1%	2%	3%	3%
Gold Coast LGA	8%	14%	26%	20%	16%
Ipswich LGA	2%	4%	3%	5%	4%
Logan City LGA	2%	3%	3%	5%	5%
Maroochy LGA	1%	6%	6%	6%	5%
Northern Inner SR	4%	2%	5%	4%	4%
Northern Outer SR	4%	9%	5%	9%	8%
Pine Rivers LGA	1%	1%	2%	3%	3%
Redcliffe LGA	0%	3%	2%	2%	1%
Redland LGA	1%	3%	3%	4%	3%
Southern Inner SR	1%	4%	1%	2%	2%
Southern Outer	5%	4%	4%	6%	8%
Western Inner SR	6%	5%	3%	3%	3%
Western Outer SR	2%	3%	2%	3%	4%

Summary of the Journey to Work Patterns in Brisbane

In 2001 the largest proportion of employed persons in the greater Brisbane area lived on the Gold Coast. This was true for all occupational categories, especially nursing professionals, hospitality workers, and cleaners. This is clearly both a reflection of the size of the Gold Coast in area, as well as its residential nature. In contrast, the proportion of working population living in the Brisbane City Centre was low. However, the Brisbane CBD together with the Gold Coast were clearly the largest workplace destinations in 2001, indicating that this metropolitan region has a dual centre structure in employment terms. Computer professionals were again most closely associated with the 'traditional' city centre location in Brisbane City Core. Although there was no time series data, the residential population of Brisbane Core did not appear to be as significant as that in Melbourne or Sydney in 2001, suggesting that the urban consolidation trends experienced in these two cities had not developed to such an extent within the Brisbane's CBD area at this time.

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