

## HOUSING AFFORDABILITY IN WESTERN SYDNEY

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### ABSTRACT

Although housing affordability has been studied extensively in Australia, few studies have investigated housing affordability in Australia at a disaggregated level. This study examines housing affordability in an important Australian region, Western Sydney. With an average annualised growth rate of 13.1 per cent in weighted average residential property prices in Sydney over March 2013 and March 2016 (ABS, 2016), it validates the need to examine housing affordability across a city that is characterised by diverse socio-economic and demographic mix. This paper employs quantitative techniques to examine housing affordability in Western Sydney using data on local government areas (LGAs) from ABS, Housing NSW, and the Department of Employment (DoE). Preliminary findings indicate that there is a striking difference between Western Sydney and the other four regions of greater Sydney. Specifically, these results suggested that there are differences in key housing parameters between Western Sydney and the other regions of greater Sydney, which has a strong housing policy implication across the city.

**Keywords:** Housing affordability, Western Sydney, disadvantage, location

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### INTRODUCTION

Australia has a long history of high home ownership rate (Healey, 2016). Despite its traditional role of providing shelter, safety and stability (Holmes et al. 2008), housing is a great form of investment for many households in Australia (Lee, 2008). From an economic perspective, the property development industry contributes significantly to the Australia Gross Domestic Product (GDP) and it is the fourth largest industry in the Australia economy. The industry directly accounts for 7.3 per cent of GDP and indirectly delivers an extra 6.2 per cent to the national economy (UDIA, 2014). The industry also employs approximately one in ten Australian workers and generated both directly and through associated industries, around \$29.7 billion of State and Federal taxes in 2007-08 financial year (UDIA, 2014).

Statistics from the Australian Bureau of Statistics (ABS) reveal that in 2013-14, housing remained the single main asset for two-third of households' portfolio in Australia (Lee, 2017). Even though Australians have enjoyed long period of affordable home ownership, in recent years, this has taken a declining trend especially among the middle to low income earners in capital cities and major towns (Holmes et al., 2008). Housing affordability has become much more obvious over the last decade and house prices have increased faster than incomes (Berry, 2003; Healey, 2016; Worthington, 2012; Yates, 2008;). In the last ten years, incomes rose by 57 per cent, while house prices increased by 69 per cent over the same period (Healey, 2016). Australians are currently holding mortgages for longer and rent is also on the rise. This is supported by the fact that the proportion of outright home ownership plummets from 34 per cent in 2006 to 32 per cent in 2011, and the proportion of owned with a mortgage increased from 34.1 per cent in 2006 to 34.9 per cent in 2011 (ABS, 2013).

Using the income-rent index, Australia's property market is the second most expensive among advanced countries. Only Norway is more expensive than Australia (Healey, 2016). Maschaykh (2016) reported that Sydney is one of the least affordable cities in terms of housing in the world. The decline in housing affordability is negatively affecting both owner occupiers and private tenants (Berry, 2003). In particular,

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accessibility to housing for low to moderate income cohorts in Australia has experienced a significant decline since 2002 (Susilawati and Armitage, 2010).

Housing affordability has become a global issue. In the United States (US), several studies on affordable housing have shown the need for more affordable housing (Brassil, 2010; Downs, 2004; Hamidi et al., 2016). Downs (2004) used data from the 2001 American Housing Survey and discovered that almost 25 per cent of American households, including 85 per cent of poor households, spend more than 30 per cent of their incomes on housing. The rapid urbanization in India requires new strategies to meet the demand for affordable housing for the millions of low-income workers in the country (Burger et al., 2014). The high-income elasticity of house prices in the UK translates into higher levels of mortgage debt on households relative to household incomes which intrinsically makes UK household incomes more sensitive to interest rates volatility (Poon and Garratt, 2012). Many households in Organisation for Economic Cooperation and Development (OECD) countries especially low-income households are confronted with very high housing costs relative to their income (Del Pero et al., 2016).

Significant research has been done on housing affordability at international, national, state and city level in Australia and across the globe. So far, there is little empirical literature at regional level in general and Western Sydney region in particular. Few exceptions include Gleeson (2006), Mee (2002) and Latham (1992), who in their work examine the implications of rapid urbanisation in Sydney on affordable housing, the environment and public space of a socially and culturally diverse Western Sydney region. To fill this gap, this study examines housing affordability in Western Sydney using quantitative methodology. The study focuses on one of Australia's most populous, economically, socially and culturally diverse region, Western Sydney. It is a study that could shift the focus of researchers on housing to a more 'micro' level using quantitative techniques. This research departs from previous studies on housing affordability both in methodology and study region. It will be the first known research to examine housing affordability in Western Sydney using a quantitative methodology. The rest of the paper is structured as follows – Section two provides the conceptual framework of the study. While section three presents the relevant literature review, data and methodology used, section four outlines the uniqueness of Western Sydney in the context of housing market and housing affordability in this region. The final section discusses the results, conclusion and implications.

## CONCEPTUAL FRAMEWORK

There is no universally accepted definition of housing affordability. However, most of the widely-used definitions have key elements in common which provide useful guidelines in explaining affordable housing. Some of the prominent definitions of housing affordability are as follows:

- *The Urban Development Institute of Australia (UDIA), the peak body representing the interests of the development industry around Australia defined “housing affordability at its most basic level to mean the level of income required attaining a reasonably adequate standard of housing. Housing may be considered to be unaffordable if it requires a high proportion of household income (above 30% is a common guideline) or if the level of housing expenditure impacts on the ability of households to meet other basic needs. Whilst ‘housing affordability’ for rental households is simply a function of rents, for owner occupier households, affordability depends predominantly on mortgage repayments at prevailing median house prices, and the size of the deposit required to enter the market” (UDIA 2014).*
- *In the National Housing Strategy (NHS), the term affordable housing “conveys the notion of reasonable housing costs in relation to income: that is, housing costs that leave households with sufficient income to meet other basic needs such as food, clothing, transport, medical care, and education” (NHS, 1991).*
- *According to the Revised European Social Charter (RESC) of 1996, “a dwelling is considered affordable if it costs less than 30 per cent of the household’s pre-tax income. This is different for renters and house-owners: for renters it includes rent and utilities such as water, fuel and municipal services; for home-owners it includes all the utilities, as well as mortgage repayments, property taxes and any condominium fees” (Maschaykh, 2016).*

- *The 30:40 rule is the preferred measure of housing affordability among many Australian policy makers, lobby groups, researchers and the media – housing is unaffordable if a household in the bottom forty per cent of income distribution spends more than 30 per cent of their income on housing costs Costello (2009); Yates (2008, 2007); Beer et al. (2007)*

Despite some slight differences, there is a point of convergence in these definitions that gives good insights into what affordable housing entails. The definitions reveal that the use of 30 per cent of household income is a key component of housing affordability. In terms of its computation, Worthington (2012) and Holmes et al. (2008) discuss some of the most widely used indices of housing affordability in Australia, which includes, Real Estate Institute of Australia Housing Affordability Index, BIS Shrapnel Home Loan Affordability Index, Housing Affordability Index, and the UDIA/Matusik Affordability Measure.

The first three indices place great emphasis on the ability of the household to repay mortgage without direct consideration for renters, location/site value, and the housing stress that it puts on households. Because housing analysis at national level ignores regional effects that may also impact on housing affordability (Worthington and Higgs, 2013), it validates the need to examine housing affordability at a more ‘micro’ level. This is the fundamental purpose of this paper to examine housing affordability at disaggregated level using the price-income index in a city that is characterised by varying demographic and socio-economic composition.

## LITERATURE REVIEW

Empirical work on housing affordability in Australia and in other advanced countries continues to attract the active attention of researchers, policy makers, lobby groups and the media. Existing literature on housing affordability in Australia is largely on institutional make-up, evidence of declining housing affordability, affordability analysis for various geographical levels, and advocacy for more affordable housing. Among the prominent researchers on housing affordability in Australia are Berry, (2003, 2005); Gurran et al., (2007, 2011); Lee, (2008); Milligan et al., (2007); Worthington, (2012, 2013), Yates, (2007a, 2007b, 2008). In addition, research and property development agencies have regularly published related papers and reports on housing affordability such as the Australia Housing and Urban Research Institute (AHURI), and Urban Development Institute of Australia (UDIA) as well as governance institutions such as the Department of Housing, Western Sydney Regional Organisation of Councils (WSROC), Macarthur Regional Organisation of Councils (MACROC), South Sydney Regional Organisation of Councils (SSROC), and local councils.

From an institutional perspective, recent studies on housing affordability highlighted the processes and policies that regulate housing supply in Australia. Ruming et al. (2011), for instance, used a case study and key informant interview approach and found that the planning process in Australia contribute greatly to the cost of building a house, and by extension, raises the price of houses for both existing and new building sites. Development levies and charges deemed as contribution to local infrastructure are directly impacting on house prices (Healey, 2016; Holmes et al., 2008; Ruming et al., 2011). In a related study, Nouwelant et al. (2015) found that urban renewal has the propensity to raise land and house prices, causing a decline in the availability of affordable housing. Thus, strong government role in urban policy and land regulation is strategic for the successful provision of affordable housing, as it was seen in the United Kingdom and the Netherlands. In Australia, the limited role of Commonwealth Government in urban policy and planning is affecting the delivery of affordable housing (Austin et al., 2014; Gurran et al., 2007; Gurran and Whitehead, 2011). In other words, the public sector has been less committed in the direct provision of affordable housing (Susilawati and Armitage, 2010). Since 2004, there has been a push towards a policy framework that supports a larger and more diversified affordable housing sector. Thus, authorities in Australia tend to integrate housing, planning and regulatory frameworks that support not-for-profit housing providers to expand in their service delivery. However, by the start of 2008, evidence shows that not-for-profit providers could not grow substantially, primarily due to limited public investment (Milligan et al., 2009).

Housing affordability measures and evidence of declining housing affordability in Australia have been examined by various researchers using different quantitative tools and techniques. For example, Worthington (2012) used descriptive analysis of measures of affordability and found that the rate of decline in housing affordability in Australia is alarming. In Sydney, Australia’s largest city, for instance, in 1980, average house prices were 4.7 times average earnings. Ten years later, average house prices went up to 5.89 times average

earnings, and 6.58 times average earnings in 2000. By 2010 the average house prices were 10.1 times the average earnings. In another study, Worthington and Higgs (2013) employed an Auto-Regressive Distributed Lag (ARDL) approach to measure housing affordability using six sets of proxy variables ranging from economic, demographic, financial to social to examine the short and long-run determinants of housing affordability using quarterly data over the period September 1985 to June 2010. Their study found that, while economic and population growth are key determinants of housing affordability in the short run, housing taxation has enormous effect in the long run. Specifically, as economic growth adversely impact housing affordability in the short run, taxes related to housing affordability, including personal income tax, negative gearing, and the GST, have significant effect on housing affordability in the long run. In a similar study by Berry (2003), over the period 1986 and 1996, the percentage of low-income households living in housing stress in the nation's capital cities increased from less than 67 per cent to almost 75 per cent, with up to 80 per cent in Sydney. By mid-2000, low-income households could not meet the financial requirements of buying the standard, average price three-bedroom house in almost any area of Sydney or Melbourne (Berry 2003).

There are some region-specific studies on housing affordability across Australia. Mee (2002) uses the 1996 and 2001 inter-censal data and information to analyse the quality of life in Western Sydney with a focus on the environment and housing affordability. Mee (2002) argues that rapid urbanisation in Sydney is impacting on the environment of Western Sydney and this situation combined with changing government housing policy is affecting the affordability of the region's rental housing. Mee (2002) reiterated that these twin factors are eroding the capacity of Western Sydney to provide a liveable region to its residents including the most disadvantaged. Cook (2008) also uses a case study approach and concludes that there are strong limitations of state-market configurations in the St Marys and Warnervale fringe in Western Sydney. Other studies on Western Sydney include Gleeson (2006) and Latham (1992), who examine the impact of the growth of greater Sydney on the environment and public space.

This is growing advocacy for increasing affordable housing by governance institutions, researchers, lobby groups and the media. In their submission to Senate Select Committee on Housing Affordability in Australia in 2008, UDIA presents that housing affordability in Australia is a national issue that requires strong synergy among the three levels of government, with Commonwealth Government taking the leadership role (UDIA, 2008). At state level, in 2014, WSROC made a submission to NSW Upper House Inquiry into Social, Public and Affordable Housing, in which they articulated that the supply and upkeep of public and affordable housing is a crucial issue for many local councils in Western Sydney, a region that is characterised by high social disadvantage.

Existing literature suggests that in Australia, while international, national, state and city based studies on housing are well researched and established, the focus on sub-city level, which is a finer level index is still exploratory. To the best of the researcher's knowledge, the sub-city level analysis on housing in Australia is under-researched. Therefore, this research will be the first to examine housing dynamics in Western Sydney using quantitative techniques and analysis with a focus on the uniqueness of Western Sydney and housing affordability.

## **UNIQUENESS OF WESTERN SYDNEY IN THE CONTEXT OF HOUSING MARKET**

Western Sydney by definition combines two major urban regional governance groupings, the Western Sydney Regional Organisation of Councils (WSROC), which constitutes eleven local government areas (LGAs), and the Macarthur Regional Organisation of Councils (MACROC), representing three local government areas. This sums up to the following fourteen local government areas – Bankstown, Auburn, Blue Mountain, Fairfield, Holroyd, Parramatta, Blacktown, The Hills Shire, Penrith, Hawkesbury, Wollondilly, Camden, Campbelltown and Liverpool (Gleeson, 2006). This is identical to the geographical definition of the region highlighted in other research and policy papers such as Hodge (1996), Mee (2002), and Parramatta City Council (2012). This study will intuitively use this definition of Western Sydney. Similarly, the northern region combines both the Northern Sydney Regional Organisation of Councils (NSROC), which represents Ryde, Ku-ring-gai, North Sydney, Hornsby, Hunter Hills, Lane Cove and Willoughby, and the Shore Regional Organisation of Councils (SHOROC), which represents Manly, Mosman, Pittwater, and Warringah local government areas. The eastern, southern and inner-west regions were identified using the definition provided by the Southern Sydney Regional Organisation of Councils

(SSROC). Accordingly, the eastern region constitutes Waverly, Randwick and Woollahra, the southern region encompasses Botany-Bay, Hurstville, Rockdale, Kogarah and Sutherland Shire, and the inner-west envelopes Ashfield, Burwood, Canada Bay, Strathfield, Leichhardt, and Marrickville local government areas.

In examining social differences within metropolitan cities, the smaller the size of spatial determination, the more clearly these social contrasts will be seen (Randolph and Holloway, 2005). Socio-economic status is well determined by access to income or financial assets, networks, social capital and the interaction with other social and economic factors. Developing an index at geographical level is therefore one practical way of determining socio-economic status (Lim et al., 2011), since wealthy suburbs are almost always well-positioned in terms of infrastructure, public services, green space and shading (Taylor et al., 2016). Further to this, they can influence decisions around planning process including the location of high density communities thereby widening socio-economic inequality in cities (Taylor et al., 2016).

Previous studies combine with key socio-economic and demographic characteristics reveal a striking difference between Western Sydney and the other regions of greater Sydney. Between 1996 and 2001, LGAs in Western Sydney accounted for 47 per cent of the population increase in greater Sydney (Mee, 2002). About one in ten Australians called Western Sydney home and in terms of population, it is the fastest growing region of NSW. By 2050, the region is expected to house around 70 per cent of the population in Sydney (PCC, 2013). There is a growing decline in the region's social infrastructure including schools and health and the general welfare and support for migrant families is becoming alarming (Gleeson, 2006). Parramatta City Council (PCC) recognises that, in 2011, it has the highest number of homeless households among all local government areas in Western Sydney (PCC, 2011). In 2016, Blacktown City Council (BCC) reported that 39.2 per cent of low income households were estimated to be in mortgage and rental stress (BCC, 2016).

Several socio-economic indexes computed by the Australian Bureau of Statistics (ABS) in 2011 show the relative disadvantage in Western Sydney. The index of relative socio-economic disadvantage is one of such measures that is derived from certain parameters such as low income, high unemployment, unskilled occupations and low education levels (see appendix 1). The index scores each area around a national mean of 1000. Localities with a score above 1000 are considered relatively more advantaged, while those with a score below 1000 are relatively disadvantaged (Randolph and Holloway, 2005). According to this index, as at 2011, 9 out of the 14 LGAs in Western Sydney had a score below 1000 which shows strong signs of relative socio-economic disadvantage in the region. Conversely, all the LGAs in the northern and eastern regions had a score above 1000, which means these LGAs have a relative advantage in terms of access to human and social capital. In the inner west region, with the exception of Burwood LGA, all the remaining LGAs have a score above 1000. In the southern region, 3 out of the 5 LGAs had a score above the national mean, which demonstrates that the region is relatively more advantaged than Western Sydney. With an average index of relative socio-economic disadvantage of 982, Western Sydney residents are more likely to get into poverty, deprivation and social exclusion than the other regions across greater Sydney. This is similar to the findings of Randolph and Holloway (2005), who pointed out that industrial and employment market reforms activated by economic globalisation in the policy domain continue to have major effects on the location and level of disadvantage in Australian cities. In Sydney, high public housing is evident in Mt. Druitt and around Blacktown in the west, Green Valley in Liverpool and Villawood on the Fairfield-Bankstown border as well as the five large estates in Campbelltown. In addition, communities with significant disadvantaged private housing can be found in parts of Penrith, and high concentrations in Fairfield, Liverpool, Auburn and Bankstown/Canterbury axis (Randolph and Holloway, 2005).

Using the 2011 percentile index of education and occupation for NSW (see appendix 1), whilst 10 per cent to 89 per cent of residents in Western Sydney are educated and have both formal qualifications and skills required to perform different occupations, about 91 per cent to 99 per cent of Eastern Sydney residents, 74 per cent to 85 per cent of Southern Sydney residents, 87 per cent to 100 per cent of residents in Northern Sydney, and 86 per cent to 97 per cent in Inner West are educated and skilled. This index indicates that Western Sydney region is likely to have a higher proportion of people without qualifications, without jobs, and/or with low skilled jobs than the other four regions in greater Sydney.

The 2011 decile index of economic resources for NSW (see appendix 1), which represents income levels and wealth accumulation, highlights that 9 out of the 14 LGAs in Western Sydney fall within the lowest and middle income bracket, defined as the annual household equivalised income between \$20,799 and \$52,000 (ABS, 2011). Auburn and Fairfield LGAs sit within the lowest income bracket, defined as the annual household equivalised income between \$1 and \$20,799. The remaining 7 LGAs - Bankstown, Campbelltown, Holroyd, Blacktown, Liverpool, Penrith, and Parramatta swing within the range of \$20,799 and \$52,000. Only 5 LGAs in Western Sydney fall within the highest income bracket, defined as the annual household equivalised income greater than \$52,000 (ABS, 2011). This is stunning when compared to LGAs in other regions across greater Sydney. While all the LGAs in the eastern region are either within or just outside the middle and top income level, 9 out of the 11 LGAs in the northern region fall within the highest income bracket, with the remaining 2 LGAs sitting just below the top income level. In the case of the southern region, only 1 LGA is within the highest income range with the remaining 4 LGAs within the middle income. Two of the LGAs in the inner west region are in the high-income bracket with the remaining 4 LGAs swinging between middle and high income levels. These indexes clearly indicate that most of the residents in Western Sydney region fall within the relatively low income bracket and are less likely to accumulate wealth, a corollary that has strong implication for the housing industry. This is akin to the findings of Gleeson (2006) who noted the growing disparities in economic status among residents in Greater Western Sydney. The region also constitutes some of the most dynamic and deprived communities of Sydney, and broadly speaking, income and educational attainments in this region are below average (Gleeson, 2006).

**Table 1: Percentage in Quarterly Median Sale Prices (\$'000)**

Region	December 2000	December-2015	% Change
West	228	672	195
East	440	1150	161
North	525	1280	144
South	347	880	154
Inner West	344	930	170
Greater Sydney	294	788	168
NSW	230	600	161

Source: Authors' calculations using data from Housing NSW

The annual growth of house prices in Western Sydney gives another challenging scenario. House prices in Sydney continue to show an increasing trend with an average annualised growth rate of 13.1 per cent in weighted average residential property prices over March 2013 and March 2016 (ABS, 2016). From table 1 above, between the quarters of December 2000 and December 2015, median house prices for all dwellings in Western Sydney increased by 195 per cent, whilst there was 168 per cent increase in greater Sydney and 161 per cent in NSW. In fact, the increase in median sale price in Western Sydney exceeded all the other regions within the same period (Housing NSW, 2016). With the region having the lowest income level, this upsurge in price posits a significant housing challenge for its residents especially for first home buyers. The study also uses ABS data on average total income, housing arrangements, estimated population in LGAs, and regional indicators as well as unemployment data from the Department of Employment (DoE) to compute several indexes on key housing parameters for the five regions of greater Sydney – west, east, north, south and inner west.

Western Sydney continues to exhibit rising population growth. Table 2 shows that as at 2015, total estimated population in Western Sydney is slightly more than the sum of the four other regions. With a total population of more than 2 million, the region continues to be home to most of Sydney's residents. This is further demonstrated by the region's annualised population growth rate of 1.84 per cent over 2005 and 2015. Using another finer characteristic of the population, average household size in Western Sydney also exceeded all the other four regions. These population characteristics clearly highlight that there is greater demand for housing in Western Sydney than the other regions.

**Table 2: Comparative Analysis of Key Housing Parameters across Regions in Sydney**

Housing Parameter	West	East	North	South	Inner West
Total Estimated Resident Population as at 2015 (no)	2071511	277828	907008	530575	352649
Average Annual Estimated Population Growth 2005-2015 (%)	1.84	1.45	1.38	1.15	1.72
Outright Home Ownership 2013 (%)	28.85	29.62	35.23	34.7	29.17
Owned with a Mortgage 2013 (%)	40.4	23.86	32.32	33.18	29.2
Rent through State Housing Authority 2013 (%)	5.37	2.89	1.85	3.95	3.07
Rent through Real Estate 2013 (%)	15.38	29.77	20.38	18.73	27.43
Average total Income as at 2012-13 (\$)	55278	84629	87684	59005	66261
Average annual income growth rate 2005-06 to 2010-11 (%)	4.20	5.16	4.39	4.40	4.34
Average Household Size as at 2010 (no)	2.9	2.3	2.5	2.7	2.5
Average Unemployment Rate 2009-2013 (%)	6.56	2.96	3.42	4.29	4.47
Average Index of Relative Socio-Economic Disadvantage	982	1076	1093	1017	1033

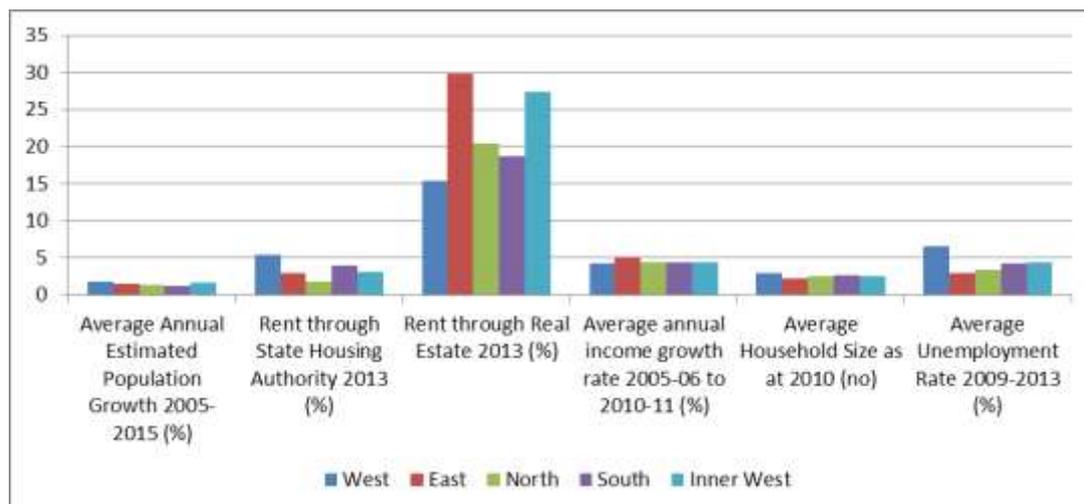
Source: Authors' calculations using data from ABS and DoE

A closer look into the average total income from all sources (sum of all income derived from employee income, own unincorporated business, superannuation and annuities, investment and other income excluding Government pensions, benefits or allowances) as at 2012-13 reveals that residents in Western Sydney have the lowest income level. This is particularly the case when compared to the northern and eastern regions giving a difference of almost \$30,000 per annum. Western Sydney's annualised income growth over 2005 and 2011 is also the lowest across regions in greater Sydney. This is consistent with the findings of Randolph and Holloway (2004) who noted that economically, there is a well-known division in Sydney between the high income suburbs in the north and east, and the low income southern and western suburbs of the city (Randolph and Holloway, 2004). Using unemployment data from the Department of Employment for the period 2009 to 2013, the average unemployment rate in Western Sydney is more than double the eastern region and close to doubling the northern region. As at November 2013, the 6.6 per cent unemployment rate in Western Sydney is higher than the national unemployment rate of 5.8 per cent (DoE, 2014).

Additional discrepancies in key housing determinants between Western Sydney and the other regions of greater Sydney are contained in table 2. The northern and southern regions recorded the highest percentage of outright home ownership, followed by the eastern and inner west regions as at 2013. Western Sydney recorded the lowest outright home ownership across greater Sydney in the same period. In addition, Western Sydney has the highest percentage of tenancy with state housing authority and the lowest proportion of renters through a real estate. In Sydney, areas with high numbers of public housing have excessively high proportions of households whose incomes are below \$400 per week (Randolph and Holloway, 2005). The information further highlights that Western Sydney has the highest percentage of residents in a mortgage which points out the growing desire among residents in the region to realise the 'Australian dream' of owning a home (Holmes et al., 2008) amidst intense socio-economic challenges.

This reflects WSROC submission paper on affordable housing which notes that LGAs in Western Sydney are experiencing significant numbers of households going through mortgage or housing stress resulting from rising housing costs. The decline in housing affordability in the region means low income earners are often priced out of the market, a situation that is expected to further degenerate over the next decade due to high rates of unemployment (WSROC, 2014). This is also consistent with the findings of Berry (2003) who found out that one in every four low-income rental households outlays more than thirty per cent of their household incomes on housing - a strong pointer of intense housing stress among renters (Berry, 2003). Broadly, since 2002, there has been a growing decline in access to housing for low to moderate income brackets in Australia (Susilawati and Armitage, 2010).

**Figure 1: Percentage Change in Key Housing Parameters**



Source: Authors' construct using data from ABS and DoE

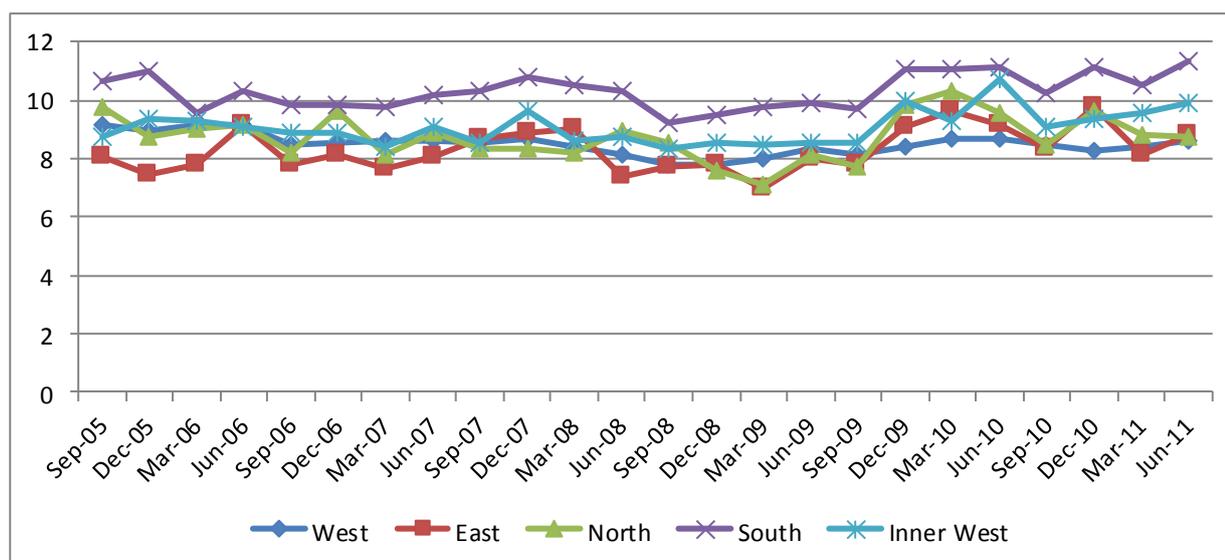
In summary, key population characteristics and housing affordability determinants such as rising population growth, relatively high dependency on state housing, growing homelessness, high average unemployment rate and relatively low levels of income in Western Sydney have motivated this research. This also raises the question of whether housing affordability in Western Sydney is more acute compared with other regions. A quantitative investigation into key parameters, drivers and policies of the housing sector in this region will provide useful evidence and tools for policy makers, researchers, investors and other relevant stakeholders in the housing sector in Australia.

## HOUSING AFFORDABILITY IN WESTERN SYDNEY

This section highlights the growing decline in housing affordability across Australia. Specifically, the drop in housing affordability in greater Sydney is much higher than the other cities across Australia. It is therefore imperative to examine housing affordability at disaggregated level, particularly in a city that is defined by diverse socio-economic circumstances. For the purpose of this study, housing affordability is measured by using the ratio of median sale price for all dwellings to average total income in a given local government area. Median sale price for the region is derived from the LGA's median sale prices in a given quarter. The house price-income index as an operational definition of housing affordability is extensively used in housing studies such as in Worthington (2012); Yates, (2007a, 2007b), and Holmes et al. (2008). Figure 2 below shows the quarterly house price-income index for the different regions of greater Sydney over the period September 2005 and June 2011.

From figure 2, despite having the highest population growth rate, lowest income level, lowest annualised income growth rate, coupled with relatively high unemployment rate and relative socio-economic disadvantage, the house price-income index in Western Sydney presents a different pattern relative to other regions across greater Sydney. With the exception of the southern and inner west regions, housing affordability in western Sydney in general is lower than the eastern and northern regions over September 2005 and September 2009. Housing affordability in Western Sydney was high between the quarters of December 2009 and December 2010 with the price-income index slightly declining from 8.4 to 8.3 during this period. This can be attributed to the First Home Owners Grant (FHOB) announced in October 2008 as part of the Australian Government's Economic Security Strategy, which shows that Sydney's middle and outer regions, and in particularly the lower income areas in the west and south west regions were the highest performing, both in numerical and value terms (Randolph et al. 2013). Post FHOB era shows that housing affordability in the west is quite similar to the northern and eastern regions. Reflecting on the housing parameters contained in table 2 above, the northern and eastern regions have the highest income levels and they are characterised by relative socio-economic advantages. Approximately six out of the fourteen LGAs in Western Sydney are within the bottom forty per cent in terms of access to income and wealth accumulation.

**Figure 2: Quarterly House Price-Income Index**



Source: Authors' construct using data from ABS and Housing NSW

These results have two implications. First, housing affordability becomes relatively low in Western Sydney only when heavily subsidised by the government; and second, residents in Western Sydney will be priced out with further decline in housing affordability as those with higher incomes in other regions may tend to move to relatively affordable areas. This is similar to the findings of Yates (2008), who reported that lower income households with tremendously high housing cost ratios are likely to be confronted with affordability problems than higher income households with identical housing cost ratios because they have less disposable income remaining after they expend on their housing (Yates, 2008). This is reinforced in the work of Wulff et al. (2011), who noted that there is limited supply of affordable housing being accessed by people with very low and low incomes in Australia. The availability of affordable private rental supply differs among capital cities and large regional centres across Australia (Wulff et al., 2011). These results also reflect the findings of Randolph and Holloway (2005), who found out that communities with significant disadvantaged private housing can be found in parts of Penrith, and high concentrations in Fairfield, Liverpool, Auburn and Bankstown/Canterbury axis (Randolph and Holloway, 2005)

## DATA AND METHODOLOGY

Annual and quarterly data on housing, unemployment and demographic were obtained from ABS, Housing NSW, and DoE at local government area level for the period 2005 to 2015. This paper employs statistical techniques to examine the uniqueness of key housing determinants in Western Sydney and estimate housing affordability indexes for various regions across greater Sydney – west, east, north, south, and inner-west. Various statistical tools were used to determine, analyse and compare key housing parameters such as population growth, average household size, income growth, homeownership, rent situation, and unemployment rate across the five regions of greater Sydney. These indicators were precursor for estimating and discussing housing affordability in these regions using the price-income index. Price-income index has an inverse relationship with housing affordability, which implies, the higher the price-income index, the lower will be housing affordability.

## RESULTS

Preliminary findings indicate that there is a striking difference in key indicators of housing affordability between Western Sydney and the other four regions of greater Sydney.

- As at 2015, total estimated population in Western Sydney is slightly more than the sum of the four other regions across greater Sydney. Western Sydney's annualised population growth rate of 1.84 over 2005 and 2015 is the highest and its average household size also exceeded the other four regions across greater Sydney. These demographics highlight that there is greater demand for housing in Western Sydney.

- In terms of average total income from all sources, residents of Western Sydney have the lowest income level in the 2012/13 fiscal year and the lowest annualised income growth rate over 2005 and 2011. This becomes more glaring when compared with the northern and eastern regions of Sydney giving a difference of approximately \$30,000 per year. These results are similar to the findings of Randolph and Holloway (2004), who reported that economically, there is a well-known division in Sydney between the high income suburbs in the north and east, and the low income southern and western suburbs of the city (Randolph & Holloway 2004).
- From an employment perspective, Western Sydney has the highest average quarterly unemployment rate across greater Sydney. Between March 2009 and December 2013, the average quarterly unemployment rate of 6.6 per cent in Western Sydney is more than double the eastern region and close to doubling the northern region. In fact, this level of unemployment in Western Sydney is higher than the national unemployment rate of 5.8 per cent as at November 2013 (DoE, 2014).
- Homeownership presents mixed results. In terms of home ownership, the northern and southern regions recorded the highest percentage of outright home ownership followed by eastern and inner west regions. Western Sydney recorded the lowest outright home ownership across greater Sydney as at end of 2013. Western Sydney also has the highest percentage of tenancy with state housing authority and the lowest proportion of renters through a real estate. However, Western Sydney has the highest percentage of residents in a mortgage which explains the growing desire by its residents to realise the ‘Australia dream’ of owning a home (Holmes et al., 2008).
- With the exception of the southern and inner-west regions, the price-income index of Western Sydney in general is higher than the eastern and northern regions over September 2005 and September 2009, which implies lower housing affordability. However, with the price-index in Western Sydney slightly declining from 8.4 to 8.3 between December 2009 and December 2010, it shows some improvement in housing affordability in the region. This can be attributed to the First Home Owners Grant (FHOG) introduced by the Australian Government as an Economic Security Strategy (Randolph et al. 2013).

The results show varying social, economic and demographic characteristics across the regions in greater Sydney, which have significant housing policy implications. The results indicate that Western Sydney residents are relatively disadvantaged in terms of housing affordability when compared to other regions. These findings are also well documented in the submission by WSROC (2014) to NSW Upper House inquiry into social, public and affordable housing, which underpins the growing need for housing affordability, particularly in Western Sydney which is increasingly becoming home for people from disadvantaged backgrounds including new arrivals, immigrants and refugees. Further to this, LGAs in Western Sydney are recording large numbers of families being affected by mortgage or housing stress due to rising rental costs, while high housing affordability means low income earners are often priced out of the market (WSROC 2014). Housing affordability is largely a problem of housing policies and governments that downbeat the problem by focusing on planning responses will not formulate the required policies to ensure that all households, and mainly low-income earners, can afford satisfactory and suitable accommodation (Beer et al, 2007).

## CONCLUSION AND IMPLICATIONS

The purpose of this paper is to examine key housing parameters across regions in greater Sydney using statistical techniques. We employ the house price-income index as an operational definition of housing affordability, combined with annualised growth rates and percentages to examine various socio-economic and demographic factors that impact on housing affordability over the period 2005 and 2015.

An obvious conclusion of this study is that there are significant variations in key housing parameters between Western Sydney and the other regions of greater Sydney – east, north, south and inner-west. Being relatively socio-economic disadvantaged, Western Sydney has the highest population growth rate, highest average household size, lowest income levels, lowest annualised income growth rate, highest average quarterly unemployment rate, a large proportion of its renters are with a state housing authority, and a large percentage of its population getting into mortgage are confronted with serious financial challenges. These factors are contributing to the declining housing affordability in Western Sydney region as evidenced by the price-income index of 8.6 in the quarter of June 2011. Because Western Sydney has the lowest income level, this index translates into a large proportion of household income in the region being spent on housing related

expenses which directly affects the consumption basket of non-housing needs. Low income earners will be financially troubled in the face of further decline in housing affordability.

To encapsulate, the findings of this paper have two important implications. First, housing affordability becomes relatively low in Western Sydney only when heavily subsidised by the government; and second, residents in Western Sydney will be priced out with further decline in housing affordability as those with higher incomes in other regions may tend to move to relatively affordable areas, which have strong housing policy implication across greater Sydney.

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## APPENDIX 1

### Various Socio-Economic Indexes

Region	2011 LGA Code	2011 LGA Name	State	Economic Index	Economic Index	Education and Occupation Index	Index of Relative Socio- Economic
				Decile	Percentile	Percentile	Score
West	10200	Auburn (C)	NSW	1	8	73	917
	10350	Bankstown (C)	NSW	3	29	56	932
	10750	Blacktown (C)	NSW	7	67	51	968
	10900	Blue Mountains (C)	NSW	9	85	84	1039
	11450	Camden (A)	NSW	10	97	71	1047
	11500	Campbelltown (C)	NSW	5	41	17	945
	12850	Fairfield (C)	NSW	2	12	10	854
	13800	Hawkesbury (C)	NSW	9	88	60	1020
	13950	Holroyd (C)	NSW	4	32	69	966
	14900	Liverpool (C)	NSW	8	73	52	951
	16250	Parramatta (C)	NSW	3	26	80	984
	16350	Penrith (C)	NSW	8	80	35	996
	17420	The Hills Shire (A)	NSW	10	100	89	1101
	18400	Wollondilly (A)	NSW	10	96	56	1034
East	16550	Randwick (C)	NSW	6	55	91	1043
	18050	Waverley (A)	NSW	8	71	94	1080
	18500	Woollahra (A)	NSW	9	87	99	1107
							<b>1076</b>
North	14000	Hornsby (A)	NSW	10	95	93	1085
	14100	Hunters Hill (A)	NSW	10	94	95	1092
	14500	Ku-ring-gai (A)	NSW	10	99	98	1121
	14700	Lane Cove (A)	NSW	10	93	97	1107
	15150	Manly (A)	NSW	10	91	96	1099
	15350	Mosman (A)	NSW	10	92	99	1111
	15950	North Sydney (A)	NSW	8	72	100	1105
	16370	Pittwater (A)	NSW	10	98	89	1094
	16700	Ryde (C)	NSW	8	78	90	1050
	18000	Warringah (A)	NSW	10	95	87	1077
18250	Willoughby (C)	NSW	9	88	95	1083	
							<b>1093</b>
South	11100	Botany Bay (C)	NSW	4	31	74	976
	14150	Hurstville (C)	NSW	7	65	81	1007
	14450	Kogarah (C)	NSW	8	80	85	1036
	16650	Rockdale (C)	NSW	6	54	78	991
	17150	Sutherland Shire (A)	NSW	10	93	83	1075
							<b>1017</b>
Inner West	10150	Ashfield (A)	NSW	3	30	88	1015
	11300	Burwood (A)	NSW	3	23	86	996
	11520	Canada Bay (A)	NSW	9	86	92	1067
	14800	Leichhardt (A)	NSW	9	83	97	1079
	15200	Marrickville (A)	NSW	5	41	91	1022
17100	Strathfield (A)	NSW	7	62	88	1022	
							<b>1033</b>