

INVESTIGATING SOLUTIONS TO THE AFFORDABLE HOUSING SUPPLY CHALLENGES IN SYDNEY: TWO ALTERNATIVE TYPOLOGIES

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Abstract

Problem/Purpose: Affordable housing is a growing challenge for global cities as urbanisation of our global population continues to increase. The City of Sydney (CoS) has acknowledged this challenge in their Community Strategic Plan (2014), which in Target 4 states that “7.5% of all city housing ... will be affordable housing, delivered by not-for-profit or other providers.” However, CoS planners also acknowledge that a key challenge of meeting this target is that they do not control the development of the product. This research offers a new way of thinking about the affordable housing typology as well as insights into how third party providers can be engaged to provide these alternative affordable housing solutions.

Design/methodology: A desktop study was used to investigate alternative affordable housing typologies developed/implemented in other global cities as strategies to increase their affordable housing supply. Case examples are presented to demonstrate the effectiveness of the alternative typologies presented.

Findings: In contrast to programs currently utilised in Sydney - which predominately create housing of a single type, in a single location with only one ownership model - the strategies presented create a diversity of housing type, location and ownership. Micro-units and accessory dwelling units (ADUs) are explained, barriers are discussed, and a case example demonstrates their impact on the housing supply.

Originality/value: The case study cities investigated in this study have similar political challenges to the CoS, but have developed and implemented creative solutions with third party providers. Their solutions may assist the City of Sydney, as well as other Australian cities, in developing creative, alternative strategies to help achieve their affordable housing targets.

Keywords: micro-unit, accessory dwelling unit, ADU, secondary suite; laneway housing, social sustainability

Introduction

The challenges associated with creating and offering affordable housing to a growing population is an issue facing cities around the world. Australia’s cities are not immune to this challenge and many have set ambitious targets to alleviate the current lack of affordable housing in their urban areas. Target 4 in the City of Sydney’s *Sustainable Sydney 2030 Community Strategic Plan (2014)* identifies affordable housing as a key strategic area for the City, stating a target of “7.5% of all city housing ... will be affordable housing, delivered by not-for-profit or other providers.” This target equates to approximately 48,000 affordable dwellings. The question of how to achieve this target without controlling the production of the product is a challenge facing not only Sydney, but other Australian cities as well. Failing to reach the affordable housing target is a real risk which has been identified by planning staff within the Council, noting that Australian local governments (LGAs) are inhibited by the state in their ability to create policies to aid in attaining local (social and) affordable housing targets. This study investigates key strategies being implemented to engage third party providers to increase the supply of affordable housing in other global cities which are similarly

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'handcuffed', with regards to jurisdictional control. These solutions may help Australian cities to reconsider the traditional housing model and implement similarly creative solutions to achieve their local affordable housing targets.

The Affordable Housing Challenge in Sydney

Housing affordability is generally defined and assessed as a ratio of housing expenditure to household income (Mulliner, Smallbone & Maliene 2013). The housing cost to income ratio, commonly referred to as the '30/40 rule', is the most commonly applied benchmark globally to assess housing affordability (O'Neill et al. 2008) and is also the definition used by the City of Sydney (CoS 2015b). The '30/40 rule' refers to the point at which 30 per cent of gross income is spent on housing costs in a household that is earning in the lowest 40 per cent of the income distribution for a city; beyond this ratio, housing is deemed unaffordable (Yates et al. 2007). It should be noted that the '30/40 rule' does not consider variations across household structures and sizes in meeting further living costs, nor the inability to account for issues such as housing quality (Hulchanski 1995).

There is growing discussion around the housing affordability crisis in Sydney and across Australia. Both the government and the public have been increasingly concerned about affordability problems, as evidenced by the increasing coverage in the media as well as reports from key bodies (NSW Department of Housing 2013b; Tiley & Hill 2010; Yates et al. 2007). In July 2015, the Sydney housing market again made news when Domain Group announced that, after a surge of 22.9% in house prices over the past 12 months, the median house price in Sydney had in June exceeded AU\$1 million (Domain News, 2015). Median house prices in Sydney now top the average home prices in London and are fast approaching the costs of New York City (Wilson 2015a). It should, however, be noted that average house sizes are also larger in Sydney; when considered by cost per sqm Sydney's average cost of AU\$29,849 is well under both the London and New York average cost of AU\$58,276/sqm and AU\$35,994, respectively (Domain News 2015). Sydney's apartment market has also had a record growth in the 2014-2015 financial year with a 13.9% growth in prices and an average apartment/unit price of AU\$686,078. Cassells et al (2014) report that the average first-time homebuyer in Sydney will need to save for 6.3 years to accumulate a 20% down payment on a home.

In line with the steep increase in home ownership prices, Sydney's Inner Ring rental market also saw its largest annual increase in five years with a jump of 3.1% in median house rental rates over the past year to AU\$670/week for a two-bedroom house. Apartment/unit rents remained relatively steady over the past year with only a 1.6% increase to AU\$640/week for a two-bedroom unit (NSW DFCS, 2015). Sydney's eastern suburbs experienced the steepest increase in home rental rates with an 8.3% annual increase to AU\$975/week for a house, while the strongest increase in apartment rental rates were seen in the south and south-west which grew at 4.5% and 3.3%, respectively (Wilson 2015b). Population growth and a record number of investors in the market has impacted the increase in housing prices rates, which has had a carry-on impact on rental rates. These factors combined have resulted in potential first-time homebuyers being priced out of the purchase market and forced to remain renting while they save for a down payment (Robb 2015).

The dramatic change in the cost of housing has meant that the number and type of people needing affordable housing solutions is widening. Crawford (2011) found that essential service workers (e.g. nurses, teachers, police officers) face significant barriers to purchasing a home in Sydney. On the basis of the '30/40 rule', the report indicates that Sydney was the least affordable city for essential workers in Australia, with the median key worker house price to earnings ratio at 8.3 in 2010. In 84% of LGAs in Sydney, key workers faced house prices more than five times their salary, up from 77% of LGAs in 2009. Figure 1 illustrates the percentage of very low, low and moderate households experiencing housing stress as a result of increased homeownership and rental prices for Sydney homes and apartments. Figure 2 the diminishing affordable rental stock for very low, low and moderate households.

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Area	% of Very Low Income Households		% of Low Income Households		% of Moderate Income Households	
	Rental Stress	Purchase Stress	Rental Stress	Purchase Stress	Rental Stress	Purchase Stress
Sydney	98	83	91	74	73	63
Sydney SD	95	78	69	60	43	43

Figure 1. Percentage of very low to moderate income households in rental stress (Data source: ABS Census 2011: Special Tables - Local Government Housing Kit Database)

Area	Affordable Rental Stock for Very Low Incomes (%)				Affordable Rental Stock for Low Incomes (%)				Affordable Rental Stock for Moderate Incomes (%)			
	Jun 10	Jun 11	Jun 12	Jun 13	Jun 10	Jun 11	Jun 12	Jun 13	Jun 10	Jun 11	Jun 12	Jun 13
Sydney	2.6	2.5	2.6	2.8	9.9	8.2	8.1	9.5	33.5	31.3	29.7	33.9
Sydney SD	4.6	4.3	3.6	4.1	18.6	16.3	15.0	17.8	57.2	54.2	52.4	57.6

Figure 2. Table 2: Housing stock available for very low to moderate income households (Data source: NSW Department of Housing Rental Bond Board (RBB) Data – Local Government Housing Kit Database)

These figures are disheartening, particularly in the context that the NSW housing affordability challenge is expected to increase in coming years as the housing supply becomes further stressed by a growing population. The City of Sydney population is forecast to exceed 270,000 by 2013, more than double its 2001 population, with the majority of the residential growth expected to occur by 2022 (CoS 2015b). This is in line with the anticipated population growth for NSW, illustrated in Figure 3. Along with the growth in population, the demographic composition of the population is also expected to change. Additional stress on the housing supply is forecast from a variety of factors. Firstly, the number of households are expected to increase at a rate higher than that of the overall population growth. This change reflects the changing demographic makeup projected at the state-level, with a significant growth projected for the over 65 population (NSW AHT 2012) and in young professionals aged 27-32 (CoS 2015a). Secondly, lone person households are projected to grow by an average of 2.2% per year in Australia, from 1.9 million in 2006 to 3.2 million in 2031, making this demographic the fastest growing household type with the proportion of lone person households increasing from 24% to 28% in 2006 and 2031, respectively (de Vaus & Qu 2011).

Factor	2006	2036	% change	% of total population
Total Population	6.8 million	9.1 million	33% increase	
Population over 65 years	918,000	1.96 million	> 100% increase	21.5% of population
Lone Households	1.9 million	3.2 million	59%	28% of population
Number of Households			41% increase	

Figure 3. Projected NSW Demographic Changes 2006-2036 (Modified from: NSW Affordable Housing Taskforce 2012, p. 6)

With the looming increase in households and its changing demographic characteristics, we must consider whether a change in the type(s) of dwelling and associated amenities will be demanded to meet the varied needs of the City's future population. Hayden (2002) notes that while living arrangements, and by extension the demand side of apartments, have dramatically changed over the past decades, the supply of both apartments and stand-alone houses are still being designed for nuclear families. Klinenberg (2012) asserts that traditional forms of housing no longer suit today's requirements and that this mismatch of supply and demand impacts the affordability of the housing supply as a result of a lack in appropriate supply. These findings are supported by Been et al (2014), who make the case that there is a need for new forms of housing. The authors discuss in detail how existing housing supply falls short of prospective occupier needs in terms of affordability, size and configuration of dwellings as a result of changing household demographics.

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Mirroring the changing demographics in Sydney, household sizes are shrinking in many global cities resulting in a misalignment of the housing stock and the needs of prospective tenants (Palmer 2006; Williams 2006; Hammermann 2012; Djukic 2015). The misalignment is further exacerbated by land use regulations and building codes that have not kept pace with evolving housing demands. With an overall deficiency in the affordable housing supply in Sydney, now is the time to reconsider the traditional (affordable) housing typology in favour of one that more closely meets the changing demands of the market. Four different strategies for alternate housing typologies are investigated below. The case examples demonstrate how these strategies create more units, in less space, at a lower development cost.

Micro-Unit Development

Micro-units can meet needs of smaller metropolitan households through the reconsideration and redesign of the residential unit (Klinenberg 2012) while also reducing the demand among singles for shared two- to four-bedroom units, thereby making those units available (and affordable) to lower-income families (Kallach, 2012). Djukic (2015, p. 196) provides a definition of the micro-unit as follows:

A micro-unit, also called micro-home, micro-flat, micro-apartment, shoebox apartment, efficiency dwelling unit or Mickey Mouse apartment, is a space-efficiently-designed apartment, typically located near public transit in urbanised centres. Micro-units are characterised by their small space and low rents in comparison to absolute affordability and/or housing size in the units area, and are compliant with all building codes. With reduced individual living space, the micro-unit is typically an element of a larger concept that includes a variety of communal spaces and amenities residents can use.

Similar to single-room occupancy (SRO) units which have long been used to create affordable housing for low- and moderate-income individuals (Kallach, 2012), micro-units are designed to appeal to young professionals willing to accept smaller units in exchange for access to urban and cultural amenities and a more social way of life in downtown locations. In contrast to SROs, micro-units are typically elements of a broader concept which includes a variety of communal spaces and amenities for residents. In addition, they are often designed to include custom-designed, built-in furniture to maximise the use of space (Djukic, 2015).

It should be noted that the lower monthly rents for micro-units is as a result of size, not cost per square foot. For example, rents are anticipated to range from \$5.91 to \$6.82 per square foot for one of the new micro-unit projects in development in San Francisco; this is significantly above the average rental rate of \$4.21 per square foot for the average sized studio in the city (Been et al, 2014). This has raised concerns by some that the higher per square foot rents may also lead to higher rents in larger units and drive up land prices, thereby forcing affordable housing developers out of the market (ibid).

However, proponents strongly argue that micro-units are beneficial for cities aiming to attract and retain young professionals who wish to live in inner urban areas. Communal spaces and amenities in micro-unit developments foster relationships between neighbours and help residents build social capital, thereby giving occupants a reason to put down roots in the community. A recent Cambridge Innovation Center study confirmed that young professionals in the Boston/Cambridge area identified a need for more affordable housing options in the downtown area and indicated a willingness to live in smaller spaces if there were also communal areas that could be used to interact with others. Been et al (2014) note that:

... [micro-units] can add diversity to the stock of units in a local housing market, allowing the local market to better respond to demographic changes, and provide a range of housing options for different kinds of households and for people at different stages of the life-cycle (p. 21).

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Barriers to Micro-Unit Development

A NYU Furman Center report (Been et al, 2014) discusses in detail the regulatory obstacles to micro-unit development. The authors note that local regulatory requirements for minimum unit sizes and parking requirements are the key challenges for micro-unit development, but also identify lot regulatory requirements related to lot coverage, building height, building setback, density and interior space requirements as factors that can impact project feasibility. For example, density regulations that limit the number of units allowed per lot (e.g. New York), may not allow enough units to be included to make a micro-unit development profitable. Height and setback requirement can create design challenges, e.g. providing sufficient light and air to units as a result of layout challenges, thereby impacting the cost-effectiveness of micro-units. The purpose of these requirements should be analysed and weighed against the benefits of affordability. In addition, density requirements should be reconsidered in light of shrinking household sizes, increased populations and lack of available land upon which to build affordable housing in most cities (ibid; Infranca, 2014).

In addition to regulatory barriers to micro-unit development, two key non-regulatory barriers to compact unit development were identified: financial lending (Been et al, 2014; Infranca, 2014) and neighbourhood opposition (Been et al, 2014; Infranca, 2014). Micro-unit developments may face problems obtaining traditional financing because of the lack of comparable properties. The report notes that because market demand has not yet been established in most cities, micro-unit developments may not receive as high a valuation by banks as larger-unit multi-family projects, where demand has been established. Another interesting requirement that some lenders require is parking, even when regulations do not, which may drive up construction costs and eliminate price incentives for non-car owners. Neighbourhood opposition concerns are most commonly related to concerns that large numbers of micro-units will change the character of a neighbourhood and/or that the higher density development will put a strain on on-street parking (particularly in cities without parking requirements, such as Seattle).

Case Example: San Francisco, California, United States

The San Francisco Planning and Urban Renewal Association (SPUR) first presented “housing that is affordable ‘by design’” as a solution to San Francisco’s housing affordability problem in *SPUR Report: Affordable by Design* (2007). They argue that small, efficiently designed units, with lower price points and without parking spaces should be considered a viable part of San Francisco’s middle-income housing strategy. As a supplement to the San Francisco’s 100% affordable projects, subsidised with funds, and units developed by private developers to meet inclusionary housing requirements, SPUR presents micro-units as a housing typology that targets young professionals in the lower middle class, a stratum of the San Francisco housing market that the is most lacking. They reiterate their support for micro-units in their 2014 report, *8 Ways to Make San Francisco More Affordable: Proposals from SPUR*, where they call for a removal of city-wide caps on micro-units.

In 2011, Scott Wiener (District 8 Supervisor) began his campaign for the San Francisco Board to consider a variety of flexible housing types to provide affordable living options for its residents. The San Francisco Building Code at the time allowed the construction of micro-units [called efficiency units in the code] in San Francisco that met the following requirements: 300 sq.ft. minimum consisting of a minimum 220 square feet of living space, plus a closet, bathroom and kitchen. In June 2012, Wiener presented legislation to the Board amend the Building Code to allow units with a maximum of 220 square feet (including living space, closet, bathroom and kitchen). In November 2012, the San Francisco Board of Supervisors approved a reduction of the minimum size for new residential units to 220 square feet (with living area to be no less than 150 sq.ft.) for a maximum of 375 micro-units (BF 120191/Ordinance No 235-12).

In January 2013, the Board resolved that the Planning Department should monitor and analyse the production of these new, smaller units [Board File No. 12-0996, Ord. No. 242-12] after 325 have been developed to determine the effects of the units on meeting affordability demands and satisfying market needs for the target market before additional units could be approved. After the approval of 325 units, the Department, in collaboration with the Mayor’s Office of Housing, must submit a report to the Board of

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Supervisors to help evaluate whether more of the units should be allowed. Two additional amendments to the Ordinance were also included:

- Section 135: requires that whenever possible, *Efficiency Dwelling Units with Reduced Square Footage* provide common usable open space rather than private open space.
- A new Section 140.1: requires the provision of interior common areas in buildings in which there are twenty or more *Efficiency Dwelling Units with Reduced Square Footage*.

The Board created a new Planning Code Section 318 to define *Efficiency Dwelling Unit with Reduced Square Footage* as:

- Dwelling units measuring less than 220 square feet;
- Dwelling units that meet the criteria described in Building Code Section 1208.4; and
- Dwelling units that are not otherwise considered affordable housing, group housing or student housing, as defined in the Planning Code (SFPD, 2013).

Panoramic Interests, a Bay Area micro-unit developer, were among the first to take advantage of the new legislation. Having previously built twenty-three 300 sq.ft apartments [the previous minimum] in San Francisco's South of Market neighbourhood using pre-fabricated units to cut costs, and with an additional 160 micro-units under construction in Mid-Market, Panoramic Interests was already considered to be the "micro maven" (Curbed, 2015) of San Francisco. The Mid-Market project includes nearly 3,400 sq. ft. of ground floor retail and parking for 240 bicycles. In addition, a rooftop garden offer residents open space and a flashy lobby offers interior communal space. The building was also constructed with sustainability in mind putting in Energy Star appliances, sustainable building materials, storm-water management systems, and low-flow plumbing fixtures. Due to shortages of student housing in the City, the units were leased by the California College of Arts.

Micro-units have been noted in other cities such as New York, Boston, Chicago, Seattle, Berkeley (CA), Providence (RI), Vancouver, Toronto and Tokyo to be ideal for youth, singles and seniors. While each city acknowledges that micro-units are not *the* 'silver bullet' that will solve the housing affordability problem, each City considers micro-units as one potential housing product to improve efficiency of land that is available for housing and believed to be an integral part of the affordability solution. For Sydney, and many other Australian cities, this will require an amendment to regulations requiring minimum unit sizes.

Accessory Dwelling Units (ADUs)

As discussed in the previous sections, households, generally, are becoming smaller and more people are living alone than ever before. At the same time, another demographic shift is happening in many cities - the 65 and over generation(s) is growing. As part of this phenomenon, the "multi-generational American family household is staging a comeback, driven ... by demographic changes that have been gathering steam for decades" (Pew, 2010a, p. 4). In 2008, a record 16.1% of households, representing 49 million people, lived in multi-generational households. Of the 49 million, roughly 47% are in family households with two adult generations (with the youngest adults ages 25 or older), 47% are in households with three or more generations and a small share of 2.8 million (5.7%) are in a household with a grandparent and grandchild (ibid). This is a significant trend reversal from the decline experience between 1940 and 1980, when the share of the American population living in multi-generational households dropped from 24.7% to 12.1%, respectively.

This trend reversal appears to be across all major demographic groups and is attributed to three primary factors. The first factor is the increase in immigrant households Latin American and Asian immigrants, who are more likely than native-born Americans to live in multi-generational households. Almost 19% of immigrant households are multi-generational, compared with 14.2% of native-born households (Pew, 2010a). The second factor effecting the growth of multi-generational households is associated with the aging population. Between 1980 and 2008 the percentage of 65 and over individuals living in multi-generational households has grown from 16.8% to 19.6%, respectively. The third factor is the rise in the median age of

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first marriages resulting in a cultural shift of 20-somethings continuing to live at home with their parents. The recent global financial crisis (GFC) further impacted this type of multi-generational household; one in eight young adults, aged 25 to 34, reported that the GFC caused them to move back in with their parents after having previously been living on their own (Pew, 2010b). Furthermore, nearly two-thirds of both Millennials (18-25) and GenXers (26-41) believe it is their responsibility to care for elderly parents (ibid), indicating that the increasing trend of multi-generational households is likely to continue. Each of these factors are also prevalent and growing in Sydney, therefore alternative solutions for affordable housing targeting multi-generational households should also be considered.

Some citiesⁱⁱ have specifically identified the rise of multi-generational households as a reason for permitting accessory dwelling units (ADUs). ADUs, often referred to as in-law units or secondary units, are individual housing units located within single-family homes or on the property of a single-family home. They may be attached to the primary residence, in a basement or above a garage (e.g. granny flat), or may be a separate structure (e.g. carriage house) and are particularly appropriate as a residential infill strategy in lower-density areas that could benefit from densification.ⁱⁱⁱ

As a strategy for increasing the amount of affordable housing, ADUs offer an easily attainable and relatively inexpensive option. Accessory dwelling units have demonstrated to be an alternative affordable housing typology (e.g. AC, 1991; Chapple *et al*, 2011; City of Seattle, 2010; Cobb and Dvorak, 2000; DHSA, 2010; Infranca, 2014), offering an alternative to apartment living and an opportunity to gain access to “more desirable single-family neighbourhoods for some who might not otherwise be able to afford to live there” (MRSC, 1995, p. 14). Infranca (2014) suggests that such neighbourhoods may have few rental opportunities and/or housing prices that prevent homeownership from becoming a realistic option.

Key community benefits of ADUs include efficient use of the existing housing stock, land and infrastructure at lower costs than newly built units (AC, 1991; MSRC, 1995). Furthermore, by increasing density in existing neighbourhoods, ADUs create affordable housing without changing its character or requiring additional infrastructure (NNC, 2001). In a report to the President, the Advisory Commission on Regulatory Barriers to Affordable Housing (1991) indicated that if “1 in every 10 of America’s owner-occupied single-family homes built before 1975 were to devote space to an accessory unit, 3.8 million rental units would be generated, increasing the supply of rental housing by about 10 percent” (pp.12), at little or no public expense.

Accessory dwelling units can also provide financial flexibility for homeowners by providing an opportunity to collect rental income for a portion of their existing property to maintain their property or to pay a portion of their mortgage or taxes (Santa Cruz, 2003), enabling people to age in place by making the ADUs available for a caregiver (Been *et al*, 2014), or by helping to accommodate multi-generational households by providing affordable and independent housing for elderly family members^{iv} or adult children (City of Seattle, 2010; DSHA, 2010).

Barriers to Accessory Dwelling Unit (ADU) Development

Barriers to accessory dwelling unit development can take several forms. Single-family zoning usually precludes accessory apartments and thus is an automatic barrier. A recently released report by the Bipartisan Housing Commission identified local restrictions on the development of accessory apartments as regulatory barriers that “increase the cost of housing and inhibit the development of new affordable rental housing.” (BPC, 2013, pp.) which was also a primary concern for micro-units. Been *et al* (2014) note that local regulatory requirements for caps on building sizes and impervious surfaces, off-street parking requirements, design requirements, and requirements that either the primary or secondary unit must be owner-occupied are the key challenges for the creation of ADUs. This is supported by a study from the Center for Community Innovation at the University of California at Berkeley’s Institute of Urban and Regional Development (Chapple *et al*, 2011) which found that homeowners were prevented from building ADUs in five East Bay cities as a result of regulatory requirement, despite the existence of a substantial market for this housing type in these cities. The report recommended moving from a permitting process to as-of-right development for ADUs; removing land use controls, such as minimum lot sizes, and parking requirements

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to allow a range of alternative solutions; establishing an amnesty program for existing units; establishing a revolving loan program to help finance development; and encourage development through programs similar to those which were successfully applied in Santa Cruz, which included technical assistance for prospective ADU landlords, pre-approved designs, low-interest loans and other resources.

ADU developers also face financial challenges. Although lenders most often include future rental income into consideration for new purchase or refinance considerations, they are often unwilling to consider future rental income from ADUs to support the provision of a construction loan. Owner-occupancy requirements by cities, as identified above, may also create an additional barrier to obtaining financing because lenders fear that, in the case of a foreclosure, they will be prohibited from renting both the units. Lack of sufficient local market data demonstrating increased property values due to the construction of ADUs, as well as an unfamiliarity with ADU models, may also cause resistance among lenders (Been et al, 2014; Infranca, 2014).

The Public Policy Institute of the American Association of Retired Persons (AARP) worked with the American Planning Association to create *A Model State Act and Local Ordinance* for accessory ADUs (Cobb and Dvorak, 2000), adoption of which they argue are the more effective strategy for removing barriers to ADU development. A few states have passed legislation that requires or encourages local municipalities to accommodate accessory dwelling units. California has implemented laws that require municipalities to allow ADUs to be built as-of-right, mandating that they be considered through a ministerial process that cannot involve discretionary review or public hearings (3CAL. GOV. CODE § 65852.2). Similarly, Washington requires all counties and cities with over 20,000 residents to encourage ADU development in family zones and Connecticut qualifies ADUs for purposes of the state's land use appeals procedure as long as the unit remains affordable for a minimum of ten years.

Case Example: Vancouver, British Columbia, Canada

Like Sydney, Vancouver faces severe housing challenges with the highest housing prices in Canada and low vacancy rates in the rental stock. With significant population growth projected, as well as a decrease in household size (Vancouver, 2015), affordable housing issues have become critical for the City. Nearly 40% of all Vancouver households spend more than 30% of their income on housing, with this statistic increasing to nearly 50% for residents under 34 years of age. In addition, much of the city's purpose-built rental stock was built in the 1960s and 1970s and is badly in need of renewal. The Mayor's Task Force on Housing Affordability noted that in addition to critical issues related lower-income and supportive housing efforts, Vancouver also needs to create a range of housing options for its middle and moderate income households, as most people in this category are unable to afford the costs of home ownership. The combination of low vacancy rates for rental stock and rising rental rates has exacerbated the affordable rental housing challenge. Furthermore, like Sydney, much of the housing exists in one of two typologies - single family homes on single lots and apartment buildings (largely strata and some purpose built rental). Very few options beyond these two typologies exist to meet the needs of families and smaller households (Vancouver, 2012).

To address the supply shortage of rental housing, the City Council approved the Short Term Incentives for Rental (STIR) Program (2009) to incentivize purpose built rental housing development as well as increasing the opportunities for secondary rental development through the expansion of both the Laneway Housing program and the Secondary Suite program (which introduced two new forms of secondary dwellings) in single-family neighbourhoods. The Vancouver Housing and Homelessness Strategy, approved in July 2011 set a target of 5,000 new units of secured market rental housing to be achieved by 2021. Between January 1, 2010 and December 31, 2014, these programs added 3,783 units of secured market rental housing (representing a 660% increase in annual approved new rental units compared to the proceeding five years). This success demonstrates how incentive programs offered by the city can successfully encourage market rental supply without senior government assistance (Vancouver, 2015).

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Secondary suites (a form of ADUs) have been a facet of Vancouver's housing supply since the War Measures Act (1940) encouraged the creation of additional suites in single-family neighbourhoods as a way of relieving housing shortages. However, since that time secondary suites have experienced illegality (resulting from regulatory changes in 1956) but continued increase regardless. In 1988, a plebiscite was held as part of the civic election resulting and, in communities where voters responded favourably, rezoning resulted in 47% of the City's RS-1 properties being rezoned to RS-1S to enable secondary suites by 1992. In April 2004, City Council extended secondary suite zoning city-wide, permitting secondary suites in single-family dwellings in all RS, RT (two-family) and RM (multi-family) zoning districts. Between 2004 and 2006, Council also reduced the barriers hindering the legalization of existing suites and the creation of new suites. Metro Vancouver's assessment of regional residential capacity, using the 2009 BC Assessment Roll, estimates that of the 68,000 properties in Metro Vancouver, 24,000 (or about 35%) have a secondary suite (Vancouver, 2015).

The Laneway Housing program is a unique facet of the affordable housing strategy and has proven to be so successful that it was expanded to all residential zones in 2013. The program enables homeowners in all RS single family zones to build small detached units at the rear of their lot near a laneway, and include both a dwelling unit *and* parking /accessory uses. Laneway houses are permitted in addition to a secondary suite in the main house and may be used for family use (e.g. for multi-generational families) or rented to non-related individuals. The City believes this solution will provide new housing choices in single family residential areas, offer existing homeowners opportunities for additional income and/or to improve the value of their home, enhance laneways by making them greener and safer (Vancouver, 2013). Between 2009 and 2013, over 500 laneway dwellings were built in RS zones, with more on the pipeline.

In 2012, the Mayor's Task Force on Housing Affordability (The Task Force) proposed a number of initiatives to address the need to broaden the choices of housing form, achieve greater density and by extension increase the diversity and affordability of housing. The report focuses on four key strategies to improve housing affordability by increasing the supply and competition between housing providers. The first strategy focuses on increasing the supply and diversity of housing choice in low density areas. One recommendation proposes creating more opportunities for secondary suites and laneway houses, thereby optimizing affordability for both renters and home owners in the area. To support this effort, the report also proposes incentivizing a minimum standard of suite ready status in all new ground oriented housing (e.g. single family homes, medium-density housing) to make it easier for homeowners to add secondary suites. The report also recommended that the work of the City's Rental 100 - Secure Market Rental Housing Policy^{vi} (2012) - incentivizing construction of purpose built rental units through a density bonus, waiver of Development Cost Levies (DCLs), parking relaxations and other regulatory tools – should continue, while also being open to expanding opportunities for where new housing supply could be situated (e.g. built on top of existing buildings (including civic facilities), by converting underused parking lots or industrial areas, or the development of secondary suites from ancillary and storage space in existing housing stock). The Vancouver Charter authorizes DCL waivers for developments that meet the criteria under the definition of "for-profit affordable rental housing." Furthermore, the Task Force offered ideas to expand housing partnership opportunities, and recommended focusing on entities that have potential or underused land (e.g. churches, health care facilities, post-secondary institutions, etc.) (Vancouver, 2012; 2015).

Numerous other cities have also made substantial efforts to encourage ADUs, including Santa Cruz, San Diego, Boston, Austin, Stapleton, Denver, Seattle, and Washington D.C. While the type of ADU development allowed by local ordinance (internal, attached or external)^{vii} varies by city, each city considers ADUs as essential component of their affordable housing strategy. For Sydney, and many other Australian cities, this will require an amendment to zoning regulations.

Application of Strategies in Sydney: What strategies can be implemented to meet demand?

Zoning regulations, building and housing codes, and other municipal ordinances have been developed to serve important interests, however, cities must be willing to re-evaluate these regulations in light of urban environment change and new developments in building technologies. With 54% of the global population

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living in urban areas and expected to exceed two-thirds of the total global population by 2050 (UN, 2014), the world's urban areas are all struggling to find solutions for the lack of supply of affordable housing.

In contrast to programs currently utilised in Sydney, which predominately create housing of a single type, in a single location with only one ownership model, the strategies presented have demonstrated that they can offer a diversity of housing type, location and ownership. Regulatory barriers have been identified as a key barrier for both micro-unit and ADU development. Regulators should consider the whether the purpose of the regulations are really in conflict with these alternative affordable housing typologies, and whether preventing - or limiting - micro-units and/or ADUs and thereby potentially driving up housing costs, reducing housing options for new households, encouraging sprawl, and excluding new residents is really in the best interest of their communities.

Throughout the literature, micro-units and ADUs have been championed as a means of attracting and retaining young professionals in expensive urban areas as well as being valuable selling points for attracting larger employers (e.g. Been et al, 2014). As demonstrated in the case examples, both micro-units and ADUs can help cities adjust to demographic changes by providing a diversity of housing options for different types of households for people of all ages.

From social sustainability and urban resilience perspective, ADUs allow multiple generations to live close to each other building strong bonds among family and/or neighbours while the common space provided by micro-unit developments are reported to fosters relationships among neighbours – a factor identified as important for retaining global talent.

To address the housing affordability in Sydney, the Council should encourage the development of innovative forms of housing, such as micro-units and ADUs, in conjunction with current strategies. Although these alternative typologies are often considered in isolation, San Francisco and Vancouver demonstrate how these unit types can provide alternative housing solutions which may be more appropriate for changing household compositions, deliver new sources of affordable housing, and reduce individual energy consumption. While these solutions should not be considered as 'silver bullet' solutions, with careful analysis and implementation these more compact housing units could become important components of our future housing policy.

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i Wintonyk and Steele (2012) quote Vancouver developer, Jon Stovell, whose 30 micro-units (ranging from 226-291 sq.ft.) were rented within days when released in September 2011 to “young people who have a different view of life in the big city. ‘The city is your living room. The city is your dining room. You don't need to use your own resources to recreate all that when you can just step out your door and enjoy a park, a beach, a restaurant, a café.’” With rents around \$800/month, Stovell indicates the units would be considered affordable for people making \$26,400/year if calculating rent as 30% of gross income.

ii For example, the Director of Building, Gary Mitchel, and Director of Zoning, Josh Frederick, in Colonial Beach, Virginia brought forward to the Planning Commission a draft of a zoning regulation change that would permit Accessory Dwelling Units (ADU) in Colonial Beach. “In order to keep up with the growing trend of multi-generational living within the same property, Mitchell proposed amending the zoning regulations to include ADUs” (Farneth, 2012). The proposal limited ADUs to the lesser of 750 sq.ft. or 25% of the habitable space in the main building.

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iii Chapple *et al.* noted that (2011, pp.) “Secondary units are particularly well-suited as an infill strategy for low-density residential areas because they offer hidden density, housing units not readily apparent from the street - and relatively less objectionable to the neighbors.”

iv “Although much of the attention given to Backyard Cottages revolves around their potential for increasing the supply of affordable housing opportunities, Backyard Cottages may also help to address other social issues, particularly those relating to housing options for the growing elderly population.” (City of Seattle, 2010, p. 2)

v “California is leading the pack with a new law that effectively forces cities to relax zoning codes and make it easier to get building permits for such rental units. Cities can’t ban granny flats, and homeowners no longer have to face angry neighbors at public hearings. “What has really caused a resurgence is the combination of the affordable housing crisis and increasing concerns over sprawl,” says Cathy Creswell, deputy director of the California Department of Housing and Community Development” (El Nassar, 2004)

vi The Secured Market Rental Housing Policy, adopted in 2012 (also referred to as “Rental 100”), is the successor of the Short Term Incentives for Rental (STIR) program, initiated in 2009

vii “*Internal ADUs* are built within part of an existing structure, such as an attic or basement. *Attached ADUs* are built as an addition to the primary structure. The line between internal and attached ADUs is often blurry and many jurisdictions do not distinguish between the two. *Detached ADUs* are physically separated from the primary dwelling but located on the same lot, such as backyard cottage or a unit above a garage.” (Been et al, 2000).