DEMOGRAPHIA

12th Annual Demographia International Housing Affordability Survey: 2016

Rating Middle-Income Housing Affordability

Australia • Canada • China (Hong Kong) • Ireland
Japan • New Zealand • Singapore
United Kingdom • United States

Introduction by
Senator Bob Day, AO
Senate of Australia

Data for 3rd Quarter 2015

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12th Annual Demographia International Housing Affordability Survey

INTRODUCTION

The Politics of Housing Affordability: A Contrived Crisis

Senator Bob Day, AO
Senate of Australia

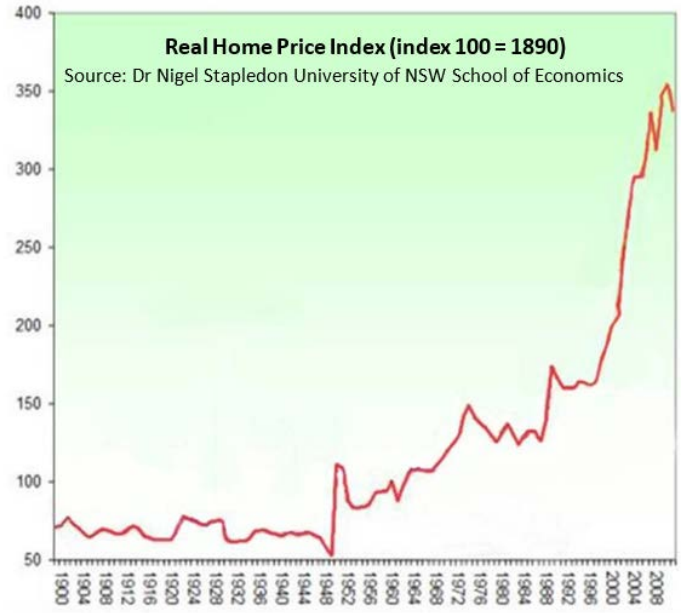
For more than 100 years the average Australian family was able to buy its first home on one wage. The median house price was around three times the median income allowing young home buyers easy entry into the housing market As can be seen from the graph below (" Real Home Price Index"), the median house price has increased, in real terms, by more than 300% - from an average index of 100 between 1900 and 2000 to an index over 300 by the year 2008. Relative to incomes, house prices have increased from three times median income to more than nine times income. That's $600,000 they are not able to spend on other things - clothes, cars, furniture, appliances, travel, movies, restaurants, the theatre, children's education, charities and many other discretionary purchase options.


Senator Bob Day, AO

It is a similar story in the UK, US, Canada, New Zealand, Ireland and Japan.

The economic consequences of this change have been devastating. The capital structure of these countries' economies have been distorted to the tune of hundreds of billions of dollars and for those on middle and low incomes the prospect of ever becoming homeowners has now all but vanished. Housing starts are below what they should be and so have all the jobs associated with them - civil construction, house construction, transport, appliances, soft furnishings, you name it. Not to mention billions of dollars in lost taxes and other housing-related revenue to the nation state.

The distortion in the housing market, this misallocation of resources resulting from the supply-demand imbalance is enormous by any measure and affects every other area of a country's economy. New home owners pay a much higher percentage of their income on house payments than they should. Similarly, renters are paying increased rental costs reflective of the higher capital and financing costs in turn paid by landlords.



The economic consequences of all that has happened over these past 15 years have been as profound as they have been damaging. The housing industries of these countries have been decimated as have industries supplying that sector. Economies have been distorted and getting them back into alignment is going to take some time. But it is a realignment that is necessary. A terrible mistake was made and it needs to be corrected.

Home ownership has long been a feature of western life. Levels of home ownership rose sharply in the postwar period. Home ownership had become both a symbol of equality and a means through which average citizens could provide security and stability for themselves and their families while building wealth and claiming a tangible stake in their nation. For the vast majority, owner-occupation of the home in which they live was, and remains, a great ambition.

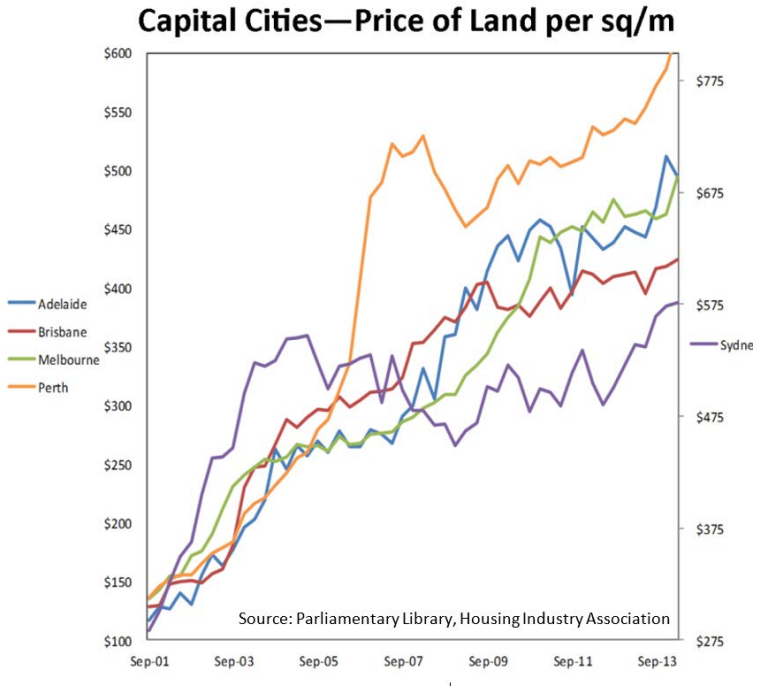
So what happened? Why have 'house prices' skyrocketed? While influential bodies in Australia like the Productivity Commission and the Reserve Bank focused their attention on demand drivers like capital gains tax treatment, negative gearing, interest rates, readily accessible finance, first home buyers' grants and high immigration rates, few were looking at the real source of the affordability problem - land supply for new housing stock.

It is undeniable that demand factors played a role in stimulating the housing market and those factors were, for the most part, in the hands of national governments. However, the real culprit, the real source of the problem, was the refusal of local and state governments and their land management agencies to provide an adequate and affordable supply of land for new housing stock to meet demand.

The graph below (Capital Cities: Price of Land per sq/m") highlights the **growth rate** in the price of serviced allotments in Australia's five mainland capital cities. This massive escalation in the price of land carries with it a multitude of detrimental impacts. Establishing affordable rental accommodation for those in greatest need becomes even more difficult for social and public housing authorities as they seek to purchase land and housing in a greatly inflated market. Road widening and major infrastructure projects experience cost blow-outs as land acquisition costs skyrocket, and establishing schools, community centres, health services and business facilities becomes difficult, and at times impossible. The whole community suffers as a result of increased

tax, transaction, finance and establishment costs.

It is important to remember that the "scarcity" that drove up land prices is wholly contrived - it is a matter of political choice, not geographic reality. It is the product of restrictions imposed through planning regulation and zoning.



The problem is, it is young home buyers, hit with spiraling costs of home ownership who end up paying. They are mostly forced into overpriced units and will never be able to afford their primary ambition – a free-standing family home of their own.

Quite apart from the economic foolishness of it all, it is morally wrong for legislators to be enriching some (established home owners) while impoverishing others (first home buyers).

We cannot deny the rising generation a home of their own merely to satisfy the ideological fantasies of urban planners and the financial concerns of State and Territory Treasury officials. We cannot deny ourselves the joys of grandchildren because young women have to work to pay mortgages instead of raising a family. The joke that high mortgages are the new contraceptive is becoming no laughing matter. Young women used to be afraid of getting pregnant, now, as they approach 40, they are afraid of not getting pregnant. We have to get back to the situation where a couple can pay off a mortgage on one income so they can start a family in their 20s, not in their late 30s or early 40s.

In creating the conditions for home ownership to become the privilege of the few rather than the rightful expectation of the many, governments have produced intergenerational inequity and breached the moral contract between generations. In human affairs this imprecise, and at times neglected, moral contract between generations dictates that we should leave things better than we find them. When it comes to home ownership this contract has been breached. In making home ownership much harder for the next generation we have denied them much more than a home. We have denied them the security and benefits that go with home ownership and the opportunity to build wealth that will provide them with options in later life. Many are now choosing to defer having a family in the hope that they will be able to somehow put together the funds to buy a home later in life. If they can't afford to buy a house, they certainly can't afford to have children!

When the time for retirement comes, those who own their homes have much more control over their lives than renters. They can choose where they will live and how they will live.

Given the vast social and economic benefits that flow from homeownership, restoring housing affordability should once again become one of a nation's most important priorities.

Senator Bob Day AO is a former National President of the Housing Industry Association. He was elected as a Senator representing the State of South Australia at the 2013 Australian Federal election.

Highlights from Previous Introductions to the *Demographia International Housing Affordability Survey*

	Dr. Shlomo Angel, New York University (#11: 2015)	We all understand what it means to prepare adequate lands for urban expansion, enough land to accommodate both residences and workplaces, so as to ensure that land—and particularly residential land—remains affordable for all. Unfortunately, municipalities of many rapidly growing cities often underestimate the amount of land needed to accommodate urban expansion. In the minority of cases where expansion is effectively contained by draconian laws, it typically results in land supply bottlenecks that render housing unaffordable to the great majority of residents.
	Alain Bertaud, New York University (#10: 2014)	It is time for planners to abandon abstract objectives and to focus their efforts on two measurable outcomes that have always mattered since the growth of large cities during the 19th century's industrial revolution: workers' spatial mobility and housing affordability. As a city develops, nothing is more important than maintaining mobility and housing affordability. Mobility takes two forms: first, the ability to travel in less than an hour from one part of a city to another; and second, the ability to trade dwellings easily with low transactions costs.
	Hon. Bill English, Deputy Prime Minister, New Zealand (#9: 2013)	Housing affordability is complex in the detail – governments intervene in many ways – but is conceptually simple. It costs too much and takes too long to build a house in New Zealand. Land has been made artificially scarce by regulation that locks up land for development. This regulation has made land supply unresponsive to demand.
	Robert Bruegmann, PhD, University of Illinois, Chicago (#8: 2012)	… I think it is fair to say that a growing number of people who have looked at the figures have tended to agree that a good many well-meaning policies involving housing may be pushing up prices to such an extent that the negative side-effects are more harmful than the problems the policies were intended to correct.

	Joel Kotkin, Chapman University (#7: 2011)	Although usually thought of as "progressive" in the English speaking world, the addiction to "smart growth" can more readily be seen as socially "regressive". In contrast to the traditional policies of left of center governments that promoted the expansion of ownership and access to the suburban "dream" for the middle class, today regressive "progressives" actually advocate the closing off of such options for potential homeowners.
	Dr. Tony Recsei, Save Our Suburbs, Sydney (#6: 2010)	During the 18th century, especially after the industrial revolution, rural dwellers desperate to make a living streamed into the cities, converting many areas into overcrowded slums. However, as the new economic order began to generate wealth, standards of living improved, allowing an increase in personal living space. Unless we are vigilant, high-density zealots will do their best to reverse centuries of gains and drive us back towards a Dickensian gloom.
	Dr. Shlomo Angel, New York University (#5: 2009)	For cities to expand outward at their current pace — to accommodate their growing populations or the increased demand for space resulting from higher incomes — the supply of land must not be artificially constrained. The more stringent the restrictions, the less is the housing market able to respond to increased demand, and the more likely house prices are to increase. And when residential land is very difficult to come by, housing becomes unaffordable.
	Dr. Donald Brash, Fomer Governor, Reserve Bank of New Zealand (#4: 2008)	...the affordability of housing is overwhelmingly a function of just one thing, the extent to which governments place artificial restrictions on the supply of residential land. Australia is perhaps the least densely populated major country in the world, but state governments there have contrived to drive land prices in major urban areas to very high levels, with the result that in that country housing in major state capitals has become severely unaffordable...

2007: 3rd Edition 2006: 2nd Edition 2005: 1st Edition

12th Annual Demographia International Housing Affordability Survey

Rating Middle-Income Housing Affordability

(2016 Edition: Data from 3rd Quarter 2015)

TABLE OF CONTENTS

FIGURES

TABLES

12th Annual Demographia International Housing Affordability Survey

Rating Middle-Income Housing Affordability

(2016 Edition: Data from 3rd Quarter 2015)

By Wendell Cox (Demographia) & Hugh Pavletich (Performance Urban Planning)

EXECUTIVE SUMMARY

The *12th Annual Demographia International Housing Affordability Survey* covers 367 metropolitan markets in nine countries (Australia, Canada, China, Ireland, Japan, New Zealand, Singapore, the United Kingdom and the United States). A total of 87 major metropolitan markets --- with more than 1,000,000 population --- are included, including five megacities (Tokyo-Yokohama, New York, Osaka-Kobe-Kyoto, Los Angeles, and London). The *Demographia Survey* may be the most comprehensive international comparison of housing affordability at the metropolitan area level.

Rating Middle-Income Housing Affordability

The *Demographia International Housing Affordability Survey* rates middle-income housing affordability using the "Median Multiple." The Median Multiple is widely used for evaluating urban markets, and has been recommended by the World Bank and the United Nations and is used by the Joint Center for Housing Studies, Harvard University. The Median Multiple and other similar price-to-income multiples (housing affordability multiples) are used to compare housing affordability between markets by the Organization for Economic Cooperation and Development, the International Monetary Fund, *The Economist*, and other organizations.

More elaborate indicators, which mix housing affordability and mortgage affordability can mask the structural elements of house pricing are often not well understood outside the financial sector. Moreover, they provide only a "snapshot," because interest rates can vary over the term of a mortgage; however the price paid for the house does not. If house prices double or triple relative to incomes, as has occurred in many severely unaffordable markets, mortgage payments become much higher.

Historically, the Median Multiple has been remarkably similar in Australia, Canada, Ireland, New Zealand, the United Kingdom and the United States, with median house prices from 2.0 to 3.0 times median household incomes. However, in recent decades, house prices have been decoupled from this relationship in a number of markets, such as Vancouver, Sydney, San Francisco, London, Auckland and others. Without exception, these markets have severe land use restrictions (typically "urban containment" policies that severely ration land for development on the urban periphery) that have been associated with higher land prices and in consequence higher house prices (as basic economics would indicate, other things being equal). Further, periodic reviews of housing supply, put in place to maintain housing affordability in these metropolitan areas have generally not succeeded.

However, encouraging developments have been implemented at higher levels of government in New Zealand and Florida, and there are signs of potential reform elsewhere.

The perspective of the *Demographia International Housing Affordability Survey* is that domestic public policy should, first and foremost be focused on improving the standard of living and reducing poverty.

The *Demographia International Housing Affordability Survey* is produced to fill the gap left by urban planning policies that have largely failed to meaningfully monitor housing affordability in the areas under their jurisdiction. Virtually all of the geographies covered in the *Survey* are facing more uncertain economic futures than in the past. As always seems to be the case in economic matters, younger people and lower income people tend to be at greater risk. In this environment, securing a standard of living for younger people that at least equals that of their parents and facilitates upward mobility for all must be a principal policy priority – – certainly one that is of higher and greater importance than urban form, how people travel or miniscule environmental gains.

Demographia uses the following housing affordability ratings (Table ES-1).

Table ES-1
Demographia International Housing Affordability Survey
Housing Affordability Rating Categories

Rating	Median Multiple
Severely Unaffordable	5.1 & Over
Seriously Unaffordable	4.1 to 5.0
Moderately Unaffordable	3.1 to 4.0
Affordable	3.0 & Under

Housing Affordability in 2015

The most affordable major metropolitan markets in 2015 were in the United States, which had a moderately unaffordable rating of 3.7.followed by Japan, with a Median Multiple of 3.9. Major metropolitan markets were rated "seriously unaffordable," in Canada (4.2), Ireland (4.5), the United Kingdom (4.6) and Singapore (5.0). The major markets of Australia (6.4), New Zealand (9.7) and Hong Kong (19.0) were severely unaffordable (Table ES-2).

The most affordable metropolitan markets (overall) were in the United States, with 14 markets rated as "affordable." The 10 most affordable markets were (#1-tie) Buffalo, Cincinnati, Cleveland, Rochester, (#5) Pittsburgh, (#6-tie) Detroit, Grand Rapids, Oklahoma City, St. Louis, (#10-tie) Columbus, Indianapolis and Kansas City, all with Median Multiples under 3.0, and rated as affordable.

Hong Kong's Median Multiple of 19.0 was the highest recorded (least affordable) in the 12 years of the *Demographia International Housing Affordability Survey.* Sydney was the second least affordable major market, with a Median Multiple of 12.2. Sydney's increase of 2.4 points from its 9.8 Median Multiple in 2014 is the largest year-to-year deterioration ever indicated in the 12 years of the *Demographia International Housing Affordability Survey.* It is also highest Median Multiple outside Hong Kong in the history of the *Survey*, exceeding the extremes experienced on the US West Coast during the housing bubble of the last decade. Vancouver was the third least affordable major market, with a Median Multiple of 10.8. Auckland, Melbourne and San Jose all had Median Multiples of 9.7. They were followed by San Francisco at 9.4, and London (Greater London Authority), at 8.5. Two other markets had Median Multiples of 8.0 or above, including San Diego and Los Angeles, both at 8.1.

The *Demographia* list of the least affordable metropolitan areas is largely echoed by UBS, the international financial services company headquartered in Switzerland. The five metropolitan areas ranked as most vulnerable to risk from a real estate bubble in the *UBS Global Real Estate Bubble Index* are each among the eight least unaffordable markets in the *Demographia Survey* (London, Hong Kong, Sydney, Vancouver and San Francisco).

Table ES-2
Housing Affordability Ratings by Nation: Major Markets (Over 1,000,000 Population)

Nation	Affordable (3.0 & Under)	Moderately Unaffordable (3.1-4.0)	Seriously Unaffordable (4.1-5.0)	Severely Unaffordable (5.1 & Over)	Total	Median Market
Australia	0	0	0	5	5	6.4
Canada	0	2	2	2	6	4.2
China: Hong Kong	0	0	0	1	1	19.0
Ireland	0	0	1	0	1	4.5
Japan	0	1	1	0	2	3.9
New Zealand	0	0	0	1	1	9.7
Singapore	0	0	1	0	1	5.0
United Kingdom	0	1	10	6	17	4.6
United States	13	24	5	11	53	3.7
TOTAL	13	28	20	26	87	4.2

Overall, among the 367 markets, there were 89 affordable markets, 75 in the United States, nine in Canada, three in Ireland and two in Australia. There were 112 moderately unaffordable markets, 90 in the United States, 14 in Canada, four in Australia, two in the United Kingdom and one each in Japan and Ireland. There were 74 seriously unaffordable markets and 92 severely unaffordable markets. Australia had 33 severely unaffordable markets, followed by the United States with 29 and the United Kingdom with 17. New Zealand and Canada each had six severely unaffordable markets, while China's one market (Hong Kong) was also severely unaffordable (Table ES-3).

Table ES-3
Housing Affordability Ratings by Nation: All Markets

Nation	Affordable (3.0 & Under)	Moderately Unaffordable (3.1-4.0)	Seriously Unaffordable (4.1-5.0)	Severely Unaffordable (5.1 & Over)	Total	Median Market
Australia	2	4	12	33	51	5.6
Canada	9	14	6	6	35	3.9
China (Hong Kong)	0	0	0	1	1	19.0
Ireland	3	1	1	0	5	2.8
Japan	0	1	1	0	2	3.9
New Zealand	0	0	2	6	8	5.2
Singapore	0	0	1	0	1	5.0
United Kingdom	0	2	14	17	33	5.1
United States	75	90	37	29	231	3.5
TOTAL	89	112	74	92	367	3.9

Beyond Ideology

Virtually all governments consider household economic issues as a top priority, especially increasing the standard of living and reducing or eradicating poverty. Yet economic growth has been laggard, and discretionary income trends are even more concerning. Housing costs, which represent the largest household expenditure category, have been rising much faster than incomes. The resulting stagnation or even decline in household discretionary incomes is at least as much a threat to prosperity and job creation as the limited gross income gains.

The largest losses in housing affordability have been associated with urban containment policy. Severely unaffordable housing (Median Multiple of 5.1 or higher) has occurred only in major metropolitan areas that have strong land use policy, especially urban containment boundaries and variations thereof.

Corrective measures that could halt or reverse losses in housing affordability from urban containment policy have either been absent or not been implemented. As a result, urban containment policy has been a profound policy failure, as house prices have doubled and tripled relative to incomes in many metropolitan areas.

Over the past year, the loss of middle-income housing affordability associated with urban containment policy has received greater attention. These include concerns about lost economic growth and the role concentration in housing wealth has played in increasing inequality. The difficulty that high house prices cause central bankers in their attempts to control inflation has been noted. New Zealand Deputy Prime Minister Bill English said that urban planning itself has become an externality, by virtue of its impact on house prices, equality and the economy in New Zealand.

According to Harvard University economist Edward Glaeser:

> "…we must never forget that any time we say 'no' to new building, whether in the city centre or on the edge, we are saying 'no' to families that want to experience the magic of urban life. We also ensure that every other family that lives in the city is paying more for their own homes."

Cheshire, et al. have offered a solution, recommending that "…observed price discontinuities – the difference in market prices across boundaries of use categories – should become a 'material consideration' leading to *a presumption in favour of any proposed development* unless (a very important 'unless') it could be shown that the observed monetary value of the discontinuity reflected wider environmental, amenity or social values of the land in its current use."

Emerging Consensus Across the Political Spectrum

Across the political spectrum, there is an increasing awareness of the economic damage that has been inflicted by strong land use regulation. New Zealand Labor Party Shadow Housing Minister Phil Twyford has written an opinion piece with business association executive Oliver Hartwich calling for land use policy reform. White House Chair of the Council of Economic Advisors Jason Furman has expressed concern about the consequences of strong land use policy. Nobel Laureate and prominent left-of-center Economics Professor Paul Krugman of Princeton University and columnist for *The New York Times* was quoted as saying " … this is an issue on which you don't have to be a conservative to believe that we have too much regulation."

LSE Economists Paul Cheshire, Max Nathan and Henry Overman remind that "… that the ultimate objective of urban policy is to improve outcomes for people rather than places" and that "… improving places is a means to an end, rather than an end in itself."

12th Annual Demographia International Housing Affordability Survey

(2015 Edition: Data from Third Quarter 2015)

By
Wendell Cox (Demographia) & Hugh Pavletich (Performance Urban Planning)

1. RATING MIDDLE-INCOME HOUSING AFFORDABILITY

The *12th Annual Demographia International Housing Affordability Survey* covers 87 major metropolitan markets (more than 1,000,000 population) in Australia, Canada, Hong Kong, Ireland, Japan, New Zealand, Singapore, the United Kingdom and the United States. These include five of the largest metropolitan areas in the high income world (Tokyo-Yokohama, New York, Osaka-Kobe-Kyoto, Los Angeles, and London). The *Demographia Survey* is the most comprehensive international comparison of housing affordability at the metropolitan area level. House price data is obtained or estimated from sources that account for the majority of existing dwellings sold in each of the geographies.

Housing tends to be the largest expenditure item in household budgets and in many countries is the principal driver of differences in real discretionary income between metropolitan areas. Discretionary income is the money left over after a household has paid income taxes and for necessities, such as housing, transportation, food and clothing. Discretionary income virtually defines the standard of living and poverty levels.

To measure housing affordability it is necessary to compare house prices to incomes.[1] Moreover, housing affordability needs to be measured in an historical context. Land use regulation has become considerably more restrictive in many of the major metropolitan markets in the *Demographia International Housing Affordability Survey*, typically through the implementation of urban containment policy (most importantly, policies that severely ration land for development on the urban periphery). Such policies have been associated with higher house prices relative to incomes.[2]

The *Demographia International Housing Affordability Survey* measures middle-income housing affordability, using median measures of existing house sales prices and household incomes.. Until the advent of urban containment policy, middle-income housing affordability was essentially guaranteed by allowing a liberal interplay of transactions between home buyers and sellers.

Middle-income housing affordability is to be contrasted with "affordable housing," which often refers to low-income housing or social housing. Affordable housing is important and its prices are driven up by the same restrictive land use policies that have been associated with driving up middle-income house prices. For example, in the United Kingdom, "lower quartile"[3] price-to-earnings ratios for rose nearly 2.5 times as fast as

[1] Jason Furman, *Barriers to Shared Growth: The Case of Land Use Regulation and Economic Rents,* Address to the Urban Institute, November 20, 2016. https://www.whitehouse.gov/sites/default/files/page/files/20151120_barriers_shared_growth_land_use_regulation_and_economic_rents.pdf.

[2] See: Wendell Cox, *A Question of Values: Middle Income Housing Affordability and Urban Containment Policy,* Frontier Centre for Public Policy, https://fcpp.org/a_question_of_values, 2015.

[3] Lowest 25 percent of houses by price and household incomes.

the overall average ratios between 1997 and 2000.[4] There is considerable justification for a public policy focus on low-income. But overall housing affordability developments require a much broadened focus, to include middle-income households.

The *Demographia International Housing Affordability Survey* provides perhaps the largest collection of housing affordability data by international market. The *12th Annual Demographia International Housing Affordability Survey* includes estimates from the third quarter (September quarter) of 2015.

Overall, housing affordability is rated for 367 markets in nine countries.

Housing affordability reviews often focus only on national data, masking significant differences between metropolitan markets. Yet metropolitan real estate markets can vary significantly in house price trends, as the experience in the United States indicated during the unprecedented house price increases that developed between 2000 and 2007.[5] In contrast, the *Demographia International Housing Affordability Survey* assesses housing affordability within nations, at the metropolitan market level. This approach not only compares housing affordability within nations, but also permits comparisons between international markets.

Historically, the Median Multiple has been remarkably similar among six surveyed nations, with median house prices from 2.0 to 3.0 times median household incomes.

1.1 The Housing Affordability Standard: The Median Multiple

The *Demographia International Housing Affordability Survey* uses the "Median Multiple"[6] (median house price divided by gross annual median household income[7]) to assess housing affordability. The Median Multiple (a house price-to-income ratio) is widely used for evaluating urban markets, and has been recommended by the World Bank[8] and the United Nations and is used by the Joint Center for Housing Studies, Harvard University.[9] Similar house price-to-income ratios (housing affordability multiples) are used to compare housing affordability between markets by the Organization for Economic Cooperation and Development, the International Monetary Fund, international credit rating services, media outlets (such as *The Economist*[10]) and others.

Without exception, severely unaffordable markets have severe land use restrictions (usually "urban containment policies")

[4] Calculated from data in Matthew Keep, "Regional House Prices: Affordability and Income Ratios, House of Commons Library: 2012.

[5] In the United States, housing became seriously unaffordable or severely unaffordable in a number of metropolitan markets (all of them with urban containment regulation). Yet in many other metropolitan markets, housing remained affordable. The national average trend in housing affordability does not adequately reflect these differences. Details on this divergence in affordability by market in the United States is covered in a Heritage Foundation policy report.

[6] Also called a price-to-income ratio.

[7] This is to be contrasted with median "family" income, which is higher and would produce a *lower* multiple.

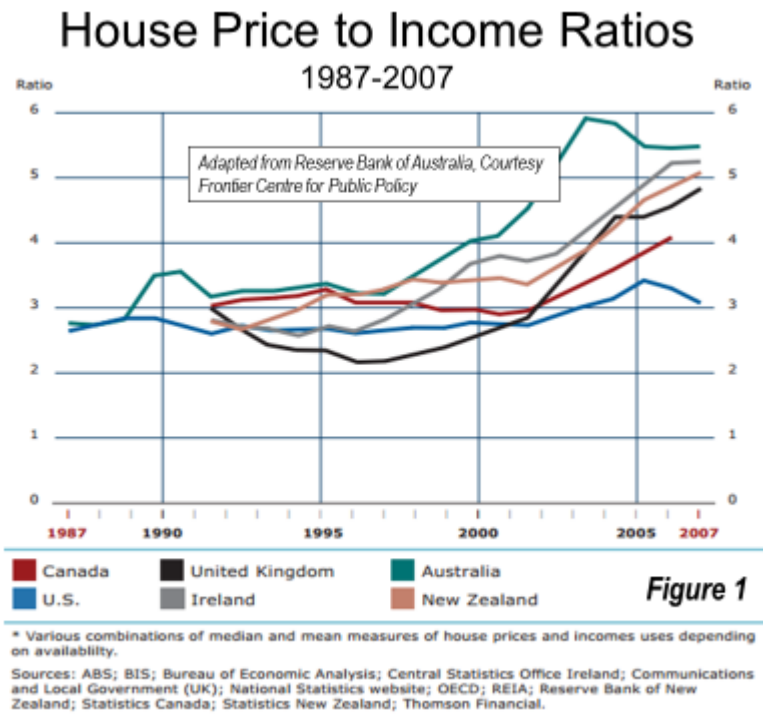
[8] *The Housing Indicators Program,* http://siteresources.worldbank.org/INTURBANDEVELOPMENT/Resources/336387-1169578899171/rd-hs7.htm. Also see Shlomo Angel, *Housing Policy Matters: A Global Analysis.* Oxford University Press, 2000.

[9] *Indicators of Sustainable Development: House Price-to-income Ratio*: http://esl.jrc.it/envind/un_meths/UN_ME050.htm.

[10] For example, *The Economist* publishes a housing affordability index for metropolitan areas in China (see Section 4).

More elaborate indicators, which often mix housing affordability and mortgage affordability can mask the structural elements of house pricing, are often not well understood outside the financial sector. The mixed indicators provide only a "snapshot," because interest rates can vary over the term of a mortgage; however the price paid for the house does not.

The Median Multiple is a reliable, easily understood and essential structural indicator for measuring the health of residential markets and facilitates meaningful and transparent comparisons of housing affordability. Further to this, the Median Multiple provides a solid foundation for the consideration of structural policy options for restoring and maintaining housing affordability in local metropolitan markets.



1.2 The Median Multiple: Historical International Consistency

Historically, the Median Multiple has been remarkably similar among six surveyed nations, with median house prices from 2.0 to 3.0 times median household incomes (Australia, Canada, Ireland, New Zealand, the United Kingdom and the United States). Housing affordability remained generally within this range until the late 1980s or late 1990s in each of these nations (Figure 1).[11] Definitive historical data has not been identified for Hong Kong, Japan and Singapore. The Median Multiple of 3.0 continues to be evident in some markets of the United States, Canada and Ireland.[12] The 3.0 standard was also cited in research by Arthur C. Grimes, of Motu Economics and Policy Research, who served as Chair of the Board of the Reserve Bank of New Zealand from 2000 to 2014.

In recent decades, housing affordability has deteriorated materially across Australia, New Zealand and the United Kingdom, virtually without regard to market size or demand. Huge losses in housing affordability were also registered in some markets of the United States and Canada.

Every metropolitan market with severely unaffordable housing in the 12 annual *Demographia International Housing Affordability Surveys* has significant land supply restrictions (virtually always urban containment policy). Moreover, severe housing affordability has arisen as housing regulation has been made more restrictive. In

[11] Anthony Richards, *Some Observations on the Cost of Housing in Australia,* Address to 2008 Economic and Social Outlook Conference The Melbourne Institute, 27 March 2008 http://www.rba.gov.au/speeches/2008/sp-so-270308.html. This research included all nations covered in the *Demographia International Housing Affordability Survey* except for Ireland. The Richards research is also illustrated in the of the National Housing Council of Australia, http://www.fahcsia.gov.au/sa/housing/pubs/housing/national_housing_supply/Documents/default.htm (Figure 1.1).

[12] A value below 2.0 is affordable, but may indicate depressed economic conditions.

virtually all of these markets, there are severe restrictions or even prohibitions on new housing development on and beyond the urban fringe.

Without exception, throughout the history of the *Demographia International Housing affordability Survey,* severely unaffordable markets have had strong land use restrictions (usually urban containment regulation). Such regulation has been associated with substantial losses in middle-income housing affordability (Table 1). This is consistent with basic economics.

Table 1
LAND USE REGULATION CLASSIFICATIONS

The land use regulation categories used in the *Demographia International Housing Affordability Survey* are as follows:

More Restrictive Land Use Regulation relies on intrusive land use regulation, and includes markets where residential development (new construction) is strongly controlled by comprehensive plans or development limits. More restrictive land use regulation seeks to outlaw the liberal regulation that has produced middle-income housing affordability.

Urban containment strategies are the most important of more restrictive land use regulation. Generally, urban containment regulation is "plan-driven," as planning departments and governments determine where new housing is allowed to be built. There is a "negative presumption," with new development generally prohibited, except in limited areas where it is permitted by government plans. Typically, urban containment policies include urban containment boundaries and related variations (such as urban growth boundaries, green belts, urban service districts, "growth areas" and other strategies that substantially reduce the amount of land available for house building. Urban containment policy may also be characterized by terms such as "densification policy," "compact development", "urban consolidation", "growth management" "and "smart growth."

By severely limiting or even prohibiting development on the urban fringe, urban containment eliminates the "supply vent" of urban fringe development, by not allowing the supply of housing to keep up with demand, except at prices elevated well above historic norms.

Urban containment policies are often accompanied by costly development impact fee regimes that disproportionately charge the cost of the necessary infrastructure for growth on new house buyers. There is particular concern about the cost increasing impacts of these fees and levies, especially in Australia, Canada (Canada Mortgage and Housing Corporation), New Zealand (New Zealand Productivity Commission) and California.

Liberal Land Use Policy (Less Restrictive Markets) applies in markets not classified as having more restrictive land use regulation. In these markets, residential development is allowed to occur based upon consumer preferences, subject to basic environmental regulation.[13] Generally, liberal land use regulation is "demand-driven" Land is allowed to be developed, except in limited areas, such as parks and environmentally sensitive areas. By allowing development on the urban fringe, liberal land use regulation allows the "supply vent" to operate, which keeps house prices affordable. Less restrictive regulation can also be called *traditional* or *liberal* regulation. In addition to lower housing costs relative to incomes, the lower population densities typical of liberal markets are associated with less intense traffic congestion and shorter average work trip journey times.

Classification of Major Markets: The classification of major markets (metropolitan areas with more than 1,000,000 population) is described in the Annex and in Figure 3.

1.3 Perspective

The perspective of the *Demographia International Housing Affordability Survey* is that domestic public policy should, first and foremost be focused on improving the standard of living and reducing poverty. This requires policies that facilitate both higher household incomes and lower household expenditures (other things being equal). Housing costs are usually the largest component of household expenditure and it is therefore important that land use policy encourages housing affordability. How well people live and less poverty are

[13] Liberal land use policy may vary widely, from the near deregulation in some areas of Texas to the "light-handed" zoning regulations operating throughout much of the rest of the United States.

more important than urban design or the physical layout of cities. This sense is well expressed in a recent book by London School of Economics and Political Science economists Paul Cheshire, Max Nathan and Henry Overman:

> … *the ultimate objective of urban policy is to improve outcomes for people rather than places; for individuals and families rather than buildings.*[14]

The *Demographia International Housing Affordability Survey* is produced to fill the gap left by urban planning policies that have largely failed to meaningfully monitor housing affordability in the areas under their jurisdiction. This is important information that should have been routinely made available by implementing governments through the decades of urban containment policy. Virtually all of the geographies covered in the *Survey* are facing more uncertain economic futures than in the past. As is always the case in such situations, younger people and lower income people tend to be at greater risk. In this environment, a better standard of living for all should be a principal policy priority (Section 5).

The perspective of the Demographia International Housing Affordability Survey is that domestic public policy should, first and foremost, be focused on improving the standard of living and reducing poverty

1.4 Housing Affordability Ratings

The *12th Annual Demographia International Housing Affordability Survey* uses existing house sales transaction data to rate housing affordability that is widely available on the Internet. Housing affordability ratings are assigned using the Median Multiple (Table 2).

Table 2
Demographia Housing Affordability Rating Categories

Rating	Median Multiple
Severely Unaffordable	5.1 & Over
Seriously Unaffordable	4.1 to 5.0
Moderately Unaffordable	3.1 to 4.0
Affordable	3.0 & Under

2. HOUSING AFFORDABILITY IN 2015: INTERNATIONAL SUMMARY

The *12th Annual Demographia International Housing Affordability Survey* provides housing affordability ratings on 87 major markets (over 1,000,000 population) and an overall total of 378 markets. Markets in 9 nations are rated.

2.1 Major Metropolitan Markets

Middle-income housing affordability worsened modestly in major metropolitan markets between 2014 and 2015. While the major metropolitan Median Multiple[15] remained constant at 4.2, the number of severely unaffordable major metropolitan markets rose from 24 to 26, with Portland and Denver becoming severely

[14] Paul Cheshire, Max Nathan and Henry G. Overman, *Urban Economics and Urban Policy*. Edward Elgar, 2015.
[15] Median of the Median Multiples.

unaffordable. There was a reduction in affordable major metropolitan markets from 14 to 13 (Table 3). Data for all metropolitan markets is in Schedules 1 and 2.

Table 3 Distribution of Markets by Housing Affordability Rating Category			
Rating	Median Multiple	Major Markets (Number)	All Markets (Number)
Affordable	3.0 or Less	13	89
Moderately Unaffordable	3.1 to 4.0	28	112
Seriously Unaffordable	4.1 to 5.0	19	74
Severely Unaffordable	5.1 & Over	27	92
TOTAL		87	367

For the third year in a row, the United States had the most affordable housing among major metropolitan markets, with a moderately unaffordable Median Multiple of 3.7. Japan had an Average Multiple of 3.9. Canada (4.2) Ireland (4.5), the United Kingdom (4.6), and Singapore (5.0) had seriously unaffordable housing. Three national markets were severely unaffordable, with Median Multiples of 5.1 or above. These included China (Hong Kong), with a Median Multiple of 19.0, New Zealand, at 9.7 and Australia at 6.4. Annual major metropolitan area Median Multiples are shown in Figure 2. Ireland, Japan and Singapore were the only nations with no severely unaffordable major metropolitan markets.

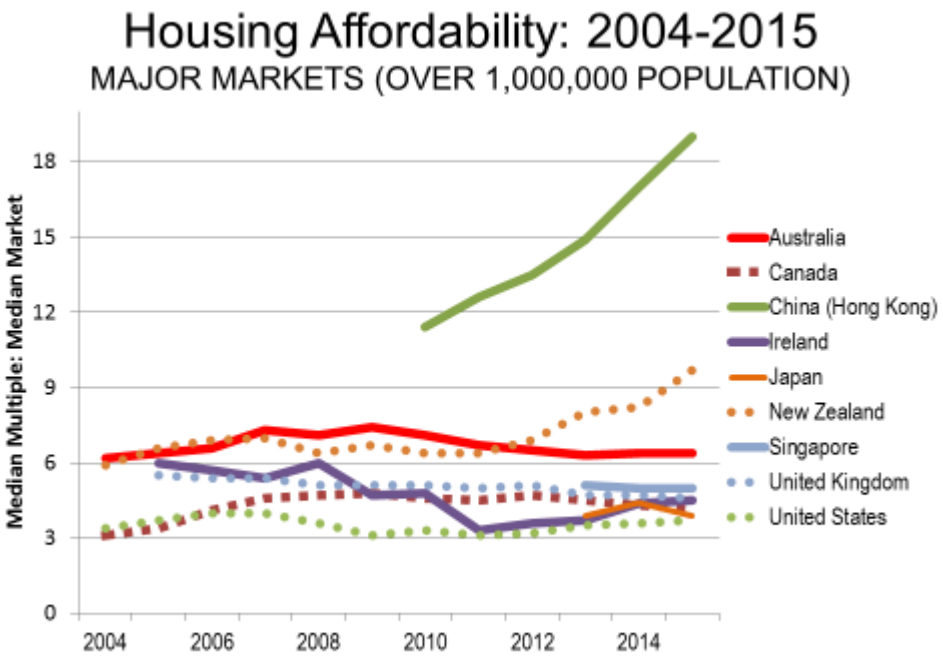


Figure 2

Most Affordable Major Metropolitan Markets: The 13 affordable major metropolitan markets are shown in Table 4. All 13 of the affordable major markets were in the United States. Among the 27 moderately unaffordable markets, 23 were in the United States, two in were in Canada, one each was in the United Kingdom and Japan. All of the major markets of Australia, China (Hong Kong), and New Zealand, were severely unaffordable. Approximately one-third of the major markets in the United Kingdom and Canada were severely unaffordable. Nine of the 52 major US markets were severely unaffordable (Table 4).

Four markets tied for most affordable, with a Median Multiple of 2.6, Buffalo, Cincinnati, Cleveland and Rochester. Pittsburgh ranked fifth with a Median Multiple of 2.7. There was a four-way tie for sixth place, at 2.8, between Detroit, Grand Rapids, Oklahoma City and St. Louis. Three markets tied for 10th most affordable, with a Median Multiple of 2.9, Columbus, Indianapolis and Kansas City. Louisville was the other affordable major market, with a Median Multiple of 3.0 (ranked 13th).

Table 4
Housing Affordability Ratings by Nation: Major Markets (Over 1,000,000 Population)

Nation	Affordable (3.0 & Under)	Moderately Unaffordable (3.1-4.0)	Seriously Unaffordable (4.1-5.0)	Severely Unaffordable (5.1 & Over)	Total	Median Market
Australia	0	0	0	5	5	6.4
Canada	0	2	2	2	6	4.2
China: Hong Kong	0	0	0	1	1	19.0
Ireland	0	0	1	0	1	4.5
Japan	0	1	1	0	2	3.9
New Zealand	0	0	0	1	1	9.7
Singapore	0	0	1	0	1	5.0
United Kingdom	0	1	10	6	17	4.6
United States	13	24	5	11	53	3.7
TOTAL	13	28	20	26	87	4.2

Least Affordable Major Metropolitan Markets: The 10 least affordable major metropolitan markets are shown in Table 6. Hong Kong had least affordable housing, with a Median Multiple of 19.0. This was the sixth year in a row that Hong Kong was the least affordable, with a substantial worsening from 17.0 in 2014. Sydney displaced Vancouver as the second least affordable major market, with a Median Multiple of 12.2. This is an increase from 9.8 in 2014. This 2.4 Median Multiple point increase is the ***largest ever recorded in the history*** of the *Demographia International Housing Affordability Survey*. Sydney's housing affordability is also the worst experienced outside Hong Kong in the 12 years and was worse than on the US West Coast during the housing bubble. Vancouver's middle-income housing affordability also deteriorated, with its Median Multiple rising to 10.8 from 10.6.

Table 5
Affordable Major Metropolitan Markets

Rank	Nation	Metropolitan Market	Median Multiple
1	U.S.	Buffalo, NY	2.6
1	U.S.	Cincinnati, OH-KY-IN	2.6
1	U.S.	Cleveland, OH	2.6
1	U.S.	Rochester, NY	2.6
5	U.S.	Pittsburgh, PA	2.7
6	U.S.	Detroit, MI	2.8
6	U.S.	Grand Rapids, MI	2.8
6	U.S.	Oklahoma City, OK	2.8
6	U.S.	Saint Louis, MO-IL	2.8
10	U.S.	Columbus, OH	2.9
10	U.S.	Indianapolis, IN	2.9
10	U.S.	Kansas City, MO-KS	2.9
13	U.S.	Louisville, KY-IN	3.0

There was a three-way tie for fourth least affordable middle-income housing between Auckland, Melbourne and San Jose. Auckland's loss in housing affordability, like that of Sydney, was huge. Auckland's Median Multiple increased to 9.7, from 8.2 in 2014. Melbourne also experienced a huge loss in housing affordability, with its Median Multiple rising to 9.7, from 8.7 in 2014. San Jose also experienced a substantial loss in housing affordability, with a Median Multiple of 9.7, up from 9.2 in 2014.

San Francisco was the seventh least affordable major metropolitan market, with a Median Multiple of 9.4, up from 9.2 in 2014. There was little change in London (8th), at 8.5 or in San Diego and Los Angeles, which tied at a Median Multiple of 8.1.

As in the past, each of the severely unaffordable major markets was characterized by more restrictive land use regulation, almost all with urban containment boundaries or variations.

At the same time, the affordable markets are generally characterized by liberal land use regulation, which is associated with greater housing affordability (Table 1, above and Figure 3).

Table 6
10 Least Affordable Major Metropolitan Markets

Rank: Least Affordable	Affordability Rank (Out of 87)	Nation	Metropolitan Market	Median Multiple
1	87	China	Hong Kong	19.0
2	86	Australia	Sydney, NSW	12.2
3	85	Canada	Vancouver, BC	10.8
4	82	Australia	Melbourne, VIC	9.7
4	82	N.Z.	Auckland	9.7
4	82	U.S.	San Jose, CA	9.7
7	81	U.S.	San Francisco, CA	9.4
8	80	U.K.	London (GLA)	8.5
9	78	U.S.	Los Angeles, CA	8.1
9	78	U.S.	San Diego, CA	8.1

Ranking Similarities: *Demographia* and the *UBS Real Estate Bubble Index*

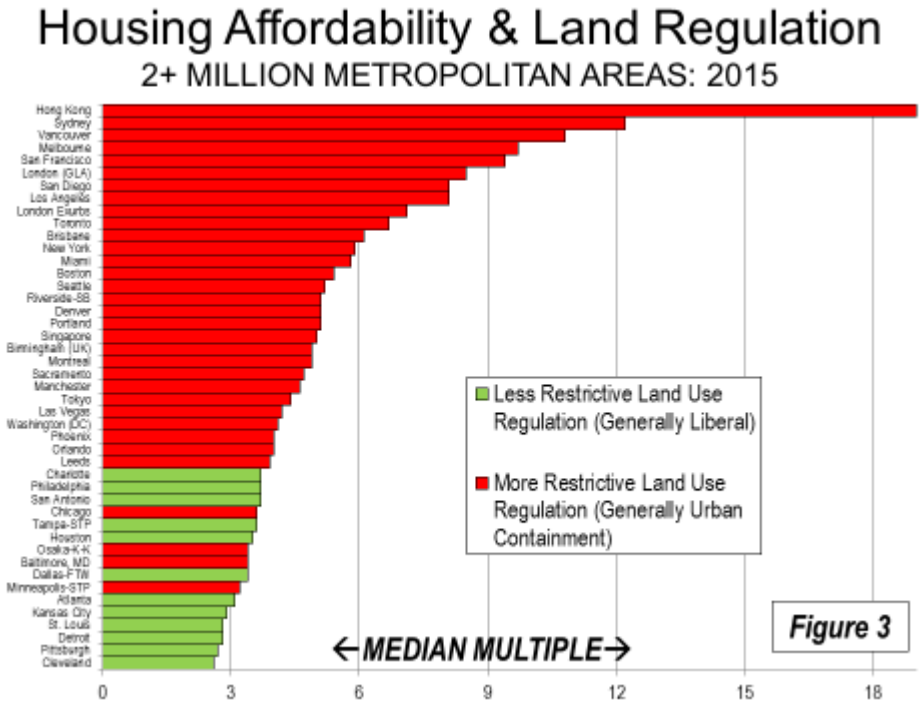
The *Demographia Survey* list of the least affordable metropolitan areas is largely echoed by UBS, the international financial services company headquartered in Switzerland. The *UBS Global Real Estate Bubble Index* ranks London, Hong Kong, Sydney and Vancouver as most vulnerable to risk from a real estate bubble. *Demographia* rates Hong Kong, Sydney and Vancouver as having the least affordable housing. Overall, the five cities rated by UBS as the most vulnerable are included among the eight least affordable in the *Demographia Survey*. The three other cities ranked in the least affordable eight by *Demographia* are not considered in the *UBS Index*.

***The UBS 5 markets most vulnerable to risk from a real estate bubble are all rated in the least affordable 8 in the* Demographia Survey**

2.2 All Markets

Among the 367 markets, housing affordability worsened from a Median Multiple of 3.8 in 2014 to 3.9 in 2015. Ireland was the most affordable housing among all 367 metropolitan markets, with a national Median Multiple of 2.8, earning an "affordable" rating. This is the third year in a row that Ireland has had the best housing affordability. In all previous years, either Canada or the United States was rated with the best housing affordability. Two national markets were moderately unaffordable. These included the United States (3.5), Canada (3.9), and Japan (3.9). Singapore (5.0) was moderately unaffordable. The least affordable markets were China (Hong Kong), at 19.0, Australia (5.6) and New Zealand (5.2) and the United Kingdom (5.1), all of which were severely unaffordable (Figure 4).

Overall, 88 were affordable (Median Multiple of 3.0 or less). There were 111 moderately unaffordable markets (Median Multiple of 3.1 to 4.0) and 74 seriously unaffordable markets (Median Multiple of 4.1 to 5.0). A total of 92 markets were severely unaffordable, with a Median Multiple of 5.1 or higher (Table 7).



The 367 markets are ranked by housing affordability in Schedules 3 and 4. The 89 affordable markets (having a Median Multiple of 3.0 or below) were in Australia (2), Ireland (3), Canada (9) and the United States (75). There were no affordable markets in China (Hong Kong), Japan, New Zealand, Singapore or the United Kingdom. The 367 markets are ranked by housing affordability in Schedules 3 and 4. The 89 affordable markets (having a Median Multiple of 3.0 or below) were in Australia (2), Ireland (3), Canada (9) and the United States (75). There were no affordable markets in China (Hong Kong), Japan, New Zealand, Singapore or the United Kingdom.

Table 7
Housing Affordability Ratings by Nation: All Markets

Nation	Affordable (3.0 & Under)	Moderately Unaffordable (3.1-4.0)	Seriously Unaffordable (4.1-5.0)	Severely Unaffordable (5.1 & Over)	Total	Median Market
Australia	2	4	12	33	51	5.6
Canada	9	14	6	6	35	3.9
China (Hong Kong)	0	0	0	1	1	19.0
Ireland	3	1	1	0	5	2.8
Japan	0	1	1	0	2	3.9
New Zealand	0	0	2	6	8	5.2
Singapore	0	0	1	0	1	5.0
United Kingdom	0	2	14	17	33	5.1
United States	75	90	37	29	231	3.5
TOTAL	89	112	74	92	367	3.9

Out of the 12 metropolitan areas ranked 10th or better in affordability (three were tied for 10th), 10 were in the United States, and two in Ireland. The most affordable markets was Limerick (Ireland), as well as Rockford with a Median Multiple of 1.8. Eight markets tied for second most affordable, with a Median Multiple of 2.1, including Waterford, Ireland and seven US markets.(Table 8).

Table 8
All 367 Markets: 10 Most Affordable Markets

Rank	Nation	Metropolitan Market	Median Multiple
1	Ireland	Limerick	1.8
2	Ireland	Waterford	2.1
2	U.S.	Cumberland, MD-WV	2.1
2	U.S.	Decatur, IL	2.1
2	U.S.	Elmira, NY	2.1
2	U.S.	Kankakee, IL	2.1
2	U.S.	Rockford, IL	2.1
2	U.S.	Topeka, KS	2.1
2	U.S.	Youngstown, OH-PA	2.1
10	U.S.	Peoria, IL	2.2
10	U.S.	Saginaw, MI	2.2
10	U.S.	Springfield, IL	2.2

Among the 92 severely unaffordable markets, 33 were in Australia, 29 in the United States, 17 in the United Kingdom and six in both Canada and New Zealand. There was one severely unaffordable market in both China (Hong Kong) and Ireland.

The 367 markets are ranked by housing affordability in Schedules 3 and 4. The 89 affordable markets (having a Median Multiple of 3.0 or below) were in Australia (2), Ireland (3), Canada (9) and the United States (75). There were no affordable markets in China (Hong Kong), Japan, New Zealand, Singapore or the United Kingdom.

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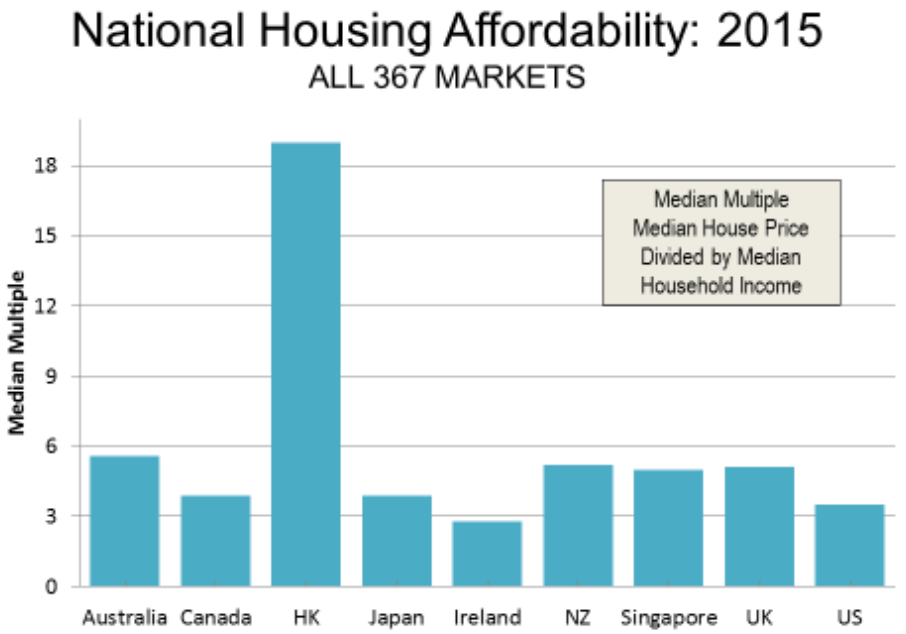

Figure 4

Table 9 All 367 Markets: 10 Least Affordable Markets				
Rank: Least Affordable	Affordability Rank (Out of 367)	Nation	Metropolitan Market	Median Multiple
1	367	China	Hong Kong	19.0
2	366	Australia	Sydney, NSW	12.2
3	365	Canada	Vancouver, BC	10.8
4	364	Australia	Melbourne, VIC	9.7
4	364	N.Z.	Auckland	9.7
4	364	U.S.	San Jose, CA	9.7
7	361	U.K.	Bournemouth & Dorsett	9.6
7	361	U.S.	Santa Cruz, CA	9.6
9	359	U.S.	San Francisco, CA	9.4
10	358	Australia	Tweeds Heads, NSW	9.3

3. HOUSING AFFORDABILITY IN 2015: GEOGRAPHICAL SUMMARIES

The housing affordability situation is summarized by geography below.

3.1 Australia

Australia had a severely unaffordable major market Median Multiple of 6.4 in 2015 and a severely unaffordable Median Multiple of 5.6 overall.

Major Markets: For the 12th year in a row --- each of the years the *Demographia International Housing Affordability Survey* has been published -- all of Australia's five major metropolitan areas were severely unaffordable (Figure 5)[16]

Among the major metropolitan area markets the overall Median Multiple was 6.4. The least affordable market was Sydney, with a Median Multiple of 12.2. Sydney ranked as the second least affordable major market in this year's *Survey* and was rated as the third most vulnerable market to real estate bubble risk by UBS. Sydney's 2.4 Median Multiple point increase from last year's 9.8 and is the largest ever recorded in the history of the *Demographia International Housing Affordability Survey.*[17] It is also the highest Median Multiple recorded outside Hong Kong, and higher even than the elevated levels reached on the US West Coast during the housing bubble.

Housing affordability also deteriorated in Melbourne, rising to a Median Multiple of 9.7 from 8.7 in 2014. Melbourne was tied (with Auckland and San Jose) for the fourth least affordable major market housing in 2015 overall, was the second least affordable in Australia. Perth had the third least affordable housing in Australia, at a Median Multiple of 6.6. The Adelaide Median Multiple was 6.4 and Brisbane was 6.1.

[16] House price data for Australia is from multiple sources, the most important being the Real Estate Industry Association of Queensland (*Queensland Market Monitor*), the Real Estate Institute of Victoria, the Real Estate Institute of South Australia, the Real Estate Institute of Western Australia, Australian Property Monitors, the Real Estate Institute of Australia and various real estate internet web sites. House price data for some smaller markets is year to date data.

[17] The previous record was set by Hong Kong, which experienced a Median Multiple increase of 2.1 points from 14.9 in 2013 to 17.0 in 2014.

All Markets: Among all markets, Australia's Median Multiple remained severely unaffordable, at 5.6. After major market Sydney (12.2), and Melbourne (9.7), Tweed Heads (NSW) was the least affordable, with a Median Multiple of 9.3. Other markets with Median Multiples of 8.0 or above were Bowral-Mittagong, the Sunshine Coast, Port Macquarie, the Gold Coast and Wollongong.

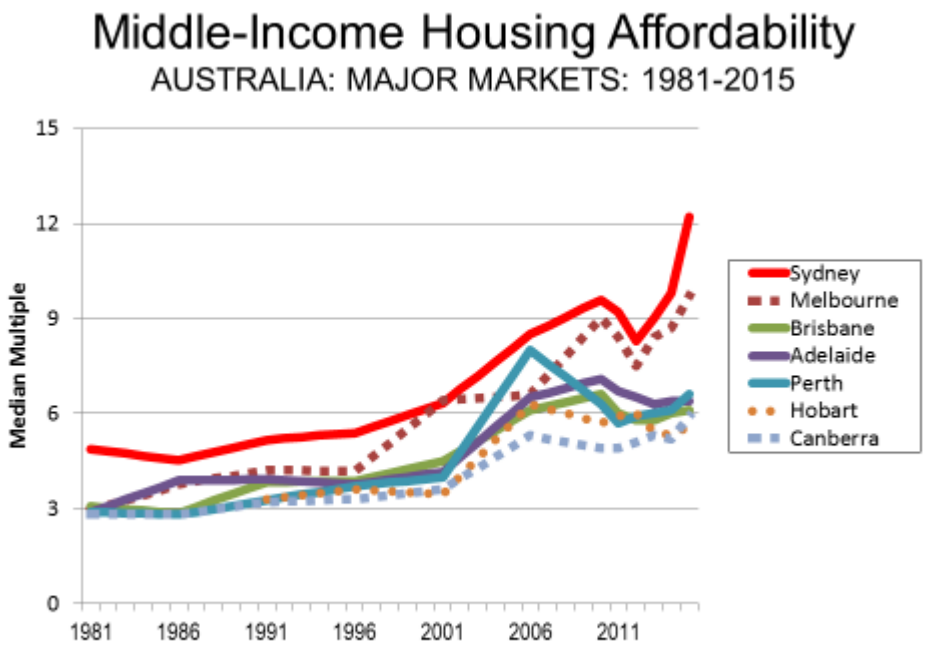

Figure 5

The most affordable market in Australia was Karratha, with a Median Multiple of 2.5, and rated "affordable." Kalgoorlie was also affordable, at 2.9. Both have been hit hard by declining resource markets.

Historical Context: Australia's generally unfavorable housing affordability is in significant contrast to the broad affordability that existed before implementation of urban containment (urban consolidation) policies. As is indicated in Figure 1, the price-to-income ratio in Australia was below 3.0 in the late 1980s. All of Australia's major metropolitan markets have severely unaffordable housing and all have urban containment policy.

***Sydney's 2.4 Median Multiple point increase (from 9.8 to 12.2) is the largest ever recorded in the history of the* Demographia Survey**

Senator Bob Day, AO, provides additional historical perspective on middle-income housing affordability in Australia in the *Introduction* to this *12th Annual Demographia International Housing Affordability Survey.*

3.2 Canada

Canada had a seriously unaffordable major market Median Multiple of 4.2 in 2015 and a moderately unaffordable Median Multiple of 3.9 overall.[18]

Major Markets:. Vancouver continued to be among the most unaffordable markets. Vancouver's Median Multiple deteriorated from 10.6 in 2014 to 10.8 in 2015. This represents a more than *doubling* from the *1st Annual Demographia International Housing Affordability Survey.* Vancouver ranked as the third least affordable major market in this year's *Survey* and was rated as the fourth most vulnerable market to real estate bubble risk by UBS. Nonetheless, it has been predicted that Vancouver's house prices could rise much more. The

[18] Median house prices are estimated using Canada Mortgage and Housing Corporation *(Housing Now)*, provincial and metropolitan real estate associations and the Statistics Canada National Household Survey data.

Vancouver City Savings Credit Union ("Vancity") forecasted that detached house prices could reach $2.1 million in 15 years.[19]

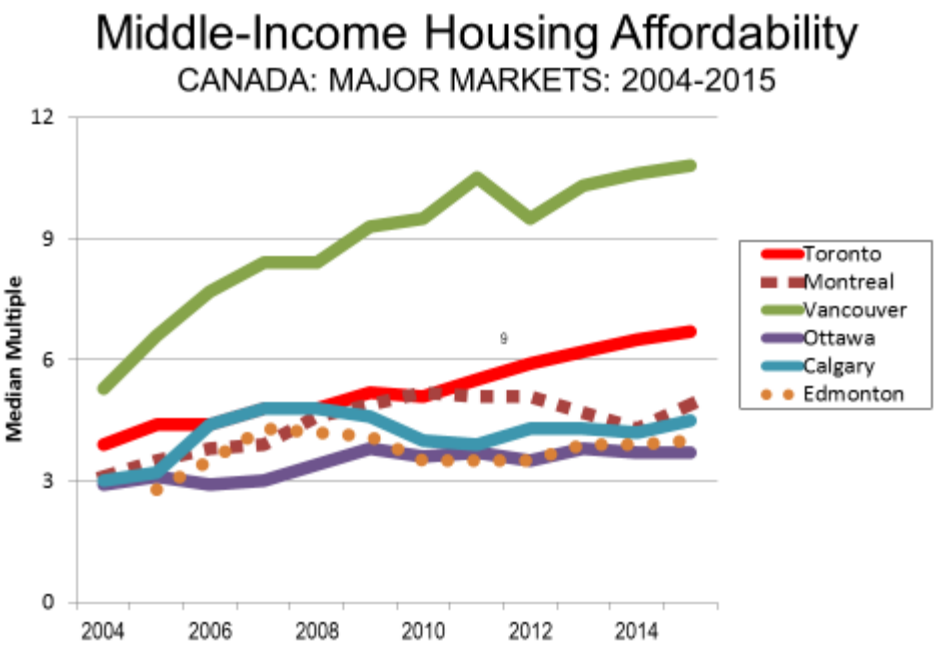

Figure 6

The deterioration of housing affordability continued in Toronto under the province of Ontario's urban containment policy ("Places to Grow"), rising to 6.7. This is an increase of more than 70 percent in the 12 years of the *Demographia International Housing Affordability Survey* (Figure 6). By contrast, housing affordability in Toronto had *improved* between 1971 and 2001.[20]

All Markets: Among all markets, housing in Canada is remained moderately unaffordable with a Median Multiple of 3.9. Housing had been affordable overall in Canada as late as 2000.

It has been predicted that Vancouver's house prices could rise much more.

Canada's most affordable market again was Moncton (NB), with a Median Multiple of 2.3, with which Saint John (NB) earned a tie. Fredericton had a median multiple 2.4, followed by Saguenay at 2.5. Charlottetown, Trois-Rivières, Windsor, Thunder Bay and Sudbury were also rated as affordable, (Median multiple of 3.0 or less).

As in 2014, four of the five least affordable metropolitan markets were in British Columbia. Vancouver (10.8) was the least affordable. Victoria ranked second least affordable (6.9), the Fraser Valley ranked fourth least affordable (6.4) and Kelowna ranked fifth least affordable (5.9). Toronto ranked third least affordable out of all markets in Canada (6.7).

Historical Context: **H**ousing was affordable in Canada until the early 1990s (Figure 1), when the price-to-income multiple was approximately 3.0. Canada's severely unaffordable major metropolitan markets, Toronto and Vancouver both have urban containment policy

Over 12 years, Toronto's house prices have risen 70 percent compared to household incomes.

[19] Vancouver City Savings Credit Union, "Downsizing the Canadian Dream: Homeownership Realities for Millennials and Beyond," March, 2015. Available online at https://www.vancity.com/SharedContent/documents/News/Downsizing_Canadian_Dream_March2015.pdf.
[20] Calculated from Census data.

3.3 China

Hong Kong is China's only market in the *Demographia International Housing Affordability Survey*. Hong Kong had the least affordable housing for the sixth straight year, with a Median Multiple of 19.0.[21] This is the least affordable Median Multiple ever recorded in the *Survey*, an increase of 2.0 Median Multiple points since 2014. As noted above, however, this is less than Sydney's record housing affordability loss of 2.4 Median Multiple points over the last year. Hong Kong was rated as the second most vulnerable market to real estate bubble risk by UBS.

Hong Kong, had the least affordable housing for the fifth straight year, with a Median Multiple of 19.0, the highest ever recorded.

Historical Context: Hong Kong's housing affordability was far better in the early 2000's. According to *The Chinese University of Hong Kong's' Quality of Life Index* the house price-to-income ratio rose approximately 275 percent between 2002 and 2014.[22] Academic research has indicated that house prices have been driven considerably higher by land-use restrictions in Hong Kong.[23]

3.4 Ireland

Ireland had a seriously unaffordable major market (Dublin) Median Multiple of 4.5 in 2015. Ireland's overall Median Multiple is an "affordable" 2.8, the best in the *Survey* for the third year in a row.[24]

All Markets:. With the exception of Cork (3.3), all of the other markets were rated affordable, with Median Multiples of 3.0 or less (Galway, Limerick and Waterford). Limerick had the best housing affordability among the surveyed nations, with a Median Multiple of 1.8.

In early 2015, the Central Bank of Ireland implemented strong mortgage loan to value regulations in a strategy intended to avoid future housing bubbles, such as led to the economic devastation of the Great Financial Crisis in the late 2000s.

Historical Context: As is indicated in Figure 1, Ireland had a price-to-income multiple of less than 3.0 in the early 1990s. After experiencing severely unaffordable housing during the housing bubble, most markets are affordable, though Dublin, has seriously unaffordable housing. Ireland has strong land use regulations.

3.5 Japan

Readily available data on housing affordability in Japan is limited. Moreover, there is insufficient data to calculate Median Multiples for the markets in Japan. However, average house price and average household income data is available. As a result, an Average Multiple (average house price divided by average household income) is used.[25] Japan had a moderately unaffordable major market Median Multiple of 3.9 in 2015.

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[21] Estimated from Hong Kong Residential Units Consideration Range and Hong Kong Private Domestic Price Index.
[22] Average house price divided by median income.
[23] Hui, C. M. & F. K. Wong (n.d.), "Dynamic Impact of Land Supply on Population Mobility with Evidence from Hong Kong," http://www.prres.net/Papers/Hui_Dynamic_impact_of_land_supply_on_population_mobility.pdf.
[24] Median house prices calculated from the Residential Property Price Register of the Property Services Regulatory Authority.
[25] The Average Multiple is generally comparable to the Median Multiple in the United States and Canada (see the *10th Annual Demographia Housing Affordability Survey*).

Major Markets: Data is available for only two of Japan's two major metropolitan markets, Tokyo-Yokohama and Osaka-Kobe-Kyoto. Tokyo-Yokohama is the world's largest urban area (38 million). The metropolitan areas covers all or part of four prefectures, Tokyo (called the "Tokyo metropolis," though only one-third of the metropolitan area),[26] as well as largely suburban Kanagawa, Saitama and Chiba. Osaka-Kobe-Kyoto ranks as the 14th largest urban area in the world (17 million) and the third largest metropolitan market covered in the *Demographia International Housing Affordability Survey* (After Tokyo and New York). Osaka-Kobe-Kyoto covers all or part of Osaka, Hyogo, Kyoto and Nara prefectures.[27]

Tokyo-Yokohama and Osaka-Kobe-Kyoto have the most favorable housing megacity affordability (10+ million residents) in the Demographia Survey.

Osaka-Kobe-Kyoto was the most affordable megacity (over 10 million population) in the *Survey* this year, with an Average Multiple of 3.4, earning a moderately unaffordable rating. Tokyo-Yokohama as the second most affordable megacity, with a seriously unaffordable Average Multiple of 4.4..

Historical Context: Historical price-to-income multiple data has not been identified for Japan.

3.6 New Zealand

New Zealand had a severely unaffordable major market (Auckland) Median Multiple of 9.7 in 2015 and a severely unaffordable Median Multiple of 5.2 overall.

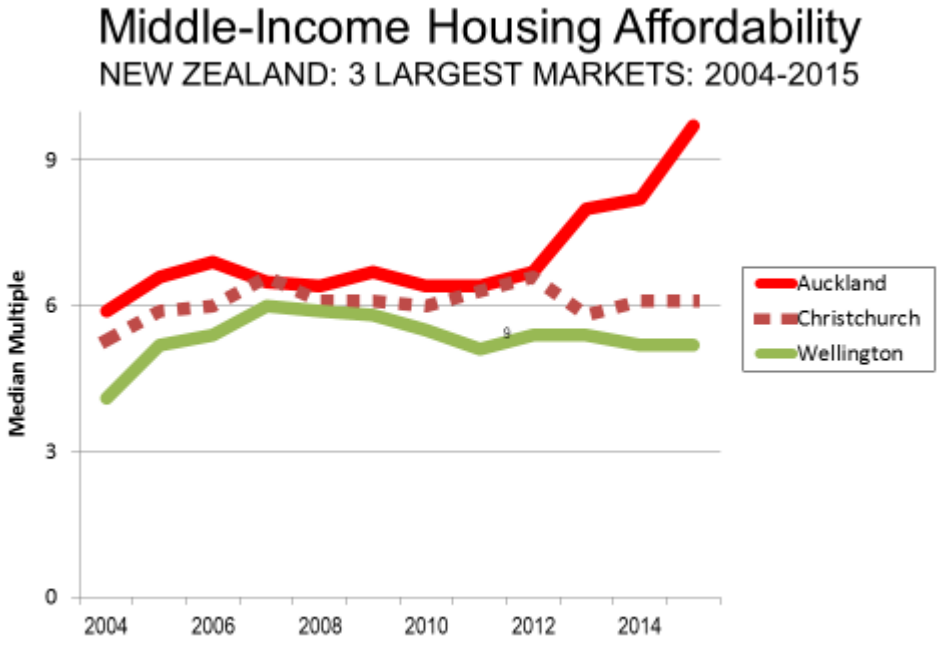

Figure 7

Major Market: New Zealand's only major metropolitan market, Auckland, was severely unaffordable, with a Median Multiple of 9.7. This has deteriorated markedly from 8.2 in 2014. Auckland tied for the fourth least affordable among the 87 major markets (tied with Melbourne and San Jose). Auckland has been rated severely unaffordable in all 12 *Demographia International Housing Affordability Surveys.*[28]

[26] The official and popular term "metropolis" is misleading, because it does not apply to the metropolitan area. The failure to understand this distinction has resulted in invalid demographic analyses from time to time.
[27] See *Demographia World Urban Areas: 2015*, http://demographia.com/db-worldua.pdf.
[28] Median house prices are from the Real Estate Institute of New Zealand.

The Productivity Commission of New Zealand has recommended an "event trigger" to release sufficient greenfield land to restore housing affordability when housing affordability discontinuities associated with urban containment boundaries reach a defined threshold (Section 5).

Auckland has been rated severely unaffordable in all 12 Demographia Surveys

Historical Context: As is indicated in Figure 1, New Zealand's price-to-income ratio was below 3.0 in the early 1990s. Since that time urban containment policy has been widely adopted. There is considerable concern about Auckland's middle income housing affordability crisis, which is discussed in Section 5.

3.7 Singapore

Singapore has perhaps the most land constrained geography of any major metropolitan area in the world, in being confined to an island and having no mainland periphery. As a result, there is virtually no potential for greenfield development and it is difficult to maintain a competitive supply of land.[29]

These unique circumstances led the Singapore government to establish a publicly sponsored housing construction program, which sells houses to consumers. The result of this public program is a vibrant private housing market. This program, under the aegis of the Housing and Development Board (HDB) represents nearly 90 percent of the owned market. Further, Singapore has an overall 88 percent rate of home ownership, the highest of any country in the *Survey*. Buyers are free to sell their own houses, without any further intervention by HDB. Further, there are restrictions on foreign ownership, which may have shielded Singapore from the heightened cost escalation occurring from globalization of the real estate markets in an environment of significant land supply restrictions (such as urban containment policy).

The Median Multiple in Singapore was 5.0, for a seriously unaffordable rating. However, housing affordability for new houses appears to be better (Table 10: New Houses in Singapore: Affordability).[30] Moreover, the Housing and Development Board, which accounts for approximately 90 percent of housing (which after sale is privately owned) has increased production and reduced new house prices, which has led to lower prices.

Nonetheless, Singapore has been far more successful in controlling housing affordability than in markets that have followed the British urban containment model. Housing affordability has virtually spiraled out of control in places like Hong Kong, Vancouver, San Francisco, San Jose, Sydney, Melbourne, Auckland and London, reaching levels of from 8.0 to 19.0.

… the Housing and Development Board has had a strong mandate to ensure housing affordability.

In contrast to these experiences, the Housing and Development Board has had a strong mandate to ensure housing affordability: As HDB transitioned from a program principally aimed at rented social housing to one of home ownership, the 1964 *HDB Annual Report,* stated its intention to

> *...encourage a property-owning democracy in Singapore and to enable Singapore citizens in the lower middle income group to own their own homes*[31]

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[29] Faced with a similar situation, treaties between Switzerland, France and Germany effectively create international metropolitan areas (labor markets) by the use of cross border commuting permits in the Basel and Geneva areas.
[30] Median house price is from the Singapore Real Estate Exchange.
[31] *Housing and Development Board 1964 Annual Report.*
http://www.globalurban.org/GUDMag07Vol3Iss1/Yuen.htm.

In the intervening years, Singapore has succeeded in this objective. The contrast is great between the present situation and that of 50 years ago, when there were large squatter settlements.

Historical Context: Historical price-to-income multiple data has not been identified for Singapore.

Table 10
NEW HOUSES IN SINGAPORE: AFFORDABILITY

In recent years, the Housing and Development Board has taken actions to improve housing affordability. One strategy has been to increase what are effectively "across the board" subsidies for all new houses (not counting special grants, such as for first home buyers). The result has been to reduce new house prices to levels well below those of existing houses.

Unfortunately, there is not a median price index for new HDB homes. However, anecdotal data from the Housing and Development Board Annual Report indicates a lower Median Multiple for new houses than in resale houses.[32]

Should the present policy continue, it is likely that resale house prices will rise slower or even fall in the future, improving Singapore's housing affordability. At the same time, price-reducing grants are available to eligible resale house buyers. As in other nations, the *Survey* does not account for these grants in measuring housing affordability.

3.8 United Kingdom

The United Kingdom had a seriously unaffordable major market Median Multiple of 4.6 in 2015 and a severely unaffordable Median Multiple of 5.1 overall.[33]

Major Markets: London (the Greater London Authority, inside the London greenbelt) was the least affordable market, with a median multiple of 8.5. London ranked as the eighth least affordable major market in this year's *Survey* and was rated as the most vulnerable market to real estate bubble risk by UBS. Despite London's high Median Multiple, it has been predicted that London's house prices could double over the next 15 years.

Five other major markets were rated as severely unaffordable, including Plymouth & Devon, at 7.3, the London Exurbs (East and Southeast England, virtually all outside the London greenbelt) at 7.1, Bristol-Bath (6.1) as well as Liverpool-Merseyside (5.3) and Stoke on Trent & Staffordshire (5.2). The severely unaffordable housing in Liverpool-Merseyside illustrates that urban containment policy can produce major housing affordability losses in even metropolitan areas that have experienced weak economies.

Ten major markets were rated as seriously unaffordable. The least unaffordable major market was Leeds-West Yorkshire, with a Median Multiple of 3.9. There were no affordable housing markets in the United Kingdom.

All Markets: Among all markets, the United Kingdom had a Median Multiple of 5.0. There were no affordable housing markets in the United Kingdom. The most affordable markets were moderately unaffordable, including Falkirk (3.9) and Leeds-West Yorkshire (3.9). Bournemouth & Dorsett was the least affordable of all UK markets, with a Median Multiple of 9.6.

[32] Estimated from data in Housing and Development Board, *Key Statistics: 2014-2015.*
[33] Median house prices are calculated from the Land Registry of England and Wales, the Registers of Scotland and Northern Ireland Residential Property Price Index.

Historical Context: Through the years, various analyses have documented the association between UK's urban containment policies and its excessively high house prices. For example, the Blair government commissioned reports by Kate Barker (2004 and 2006), and then a member of the Monetary Policy Committee of the Bank of England, which attributed much of the nation's housing affordability loss to its urban containment policies (which have evolved from the Town and Country Planning Act of 1947). Sir Peter Hall, et al, expressed concerns about the housing affordability impacts of urban containment in the early 1970s.[34] The Organization for Economic Cooperation and Development has raised similar concerns:[35]

> ***… the need to "…unblock supply and build more housing." (Financial Times)***

> *In the United Kingdom, complex and inefficient local zoning regulations and a slow authorisation process are among the reasons for the rigidity of housing supply, underlying both the trend rise of house prices and their high variability.*

A country report by the International Monetary Fund[36] reiterated the problems:

> *In contrast to other OECD countries, housing cycles in the UK are marked by sharp movements in prices and an inelastic response of residential investment, owing notably to supply constraints. Housing cycles in the UK also tend to have a large impact on economic activity, with booms generally associated with a worsening of household balance sheets and a rise in relatively high-risk mortgages. Alleviating supply-side constraints, notably pertaining to planning restrictions, is imperative for a moderation of housing cycles in the UK, while risks to financial stability in the context of the current house price inflation could be addressed by pursuing targeted macroprudential measures.*

In an article entitled "Britain's Self Perpetuating Property Racket," Financial Times Chief Financial Commentator Martin Wolf echoes Senator Bob Day (*Introduction,* above) about the contrivance of the land use restrictions that lead to losses in housing affordability: "The restrictions on land availability are man-made." A more recent *Financial Times* editorial reiterated the need to "unblock supply and build more housing."

> ***… urban containment policy … can have even more devastating effects on low income households***

The consequences have been even more severe for lower income households. The lower quartile average house price-to-earnings ratio has risen approximately 2.5 times as rapidly as the overall average (Figure 8).[37] This is powerful evidence that urban containment policy not only reduces the discretionary incomes of middle-income households, but can have even more devastating effects on low income households. This was noted more than by Sir Peter Hall, et al, who found that urban containment policy had injured lower income households the most, [38] the opposite of the intended effect.

Recently, Paul C. Cheshire, Max Nathan and Henry G. Overman, all economists at the London School of Economics and Political Science published *Urban Economics and Urban Policy: Challenging Conventional Policy*

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[34] Hall, Peter Geoffrey, Ray Thomas, Harry Gracey and Roy Drewett. *The Containment of Urban England: The Planning System: Objectives Operations, Impacts*. Vol. 2 Allen and Unwin [for] PEP, 1973.
[35] OECD. "Recent House Price Developments: The Role of Fundamentals." *OECD Economic Outlook 78*, 2005. Available online at http://www.oecd.org/eco/monetary/35756053.pdf.
[36] International Monetary Fund, Country Report: United Kingdom: Selected Issues, http://www.imf.org/external/pubs/ft/scr/2015/cr14234.pdf, 2015.
[37] Keep, 2012.
[38] Hall, et al.

Wisdom, which makes an urgent case for reversing the causes of lost housing affordability under urban containment policy (Section 4).[39]

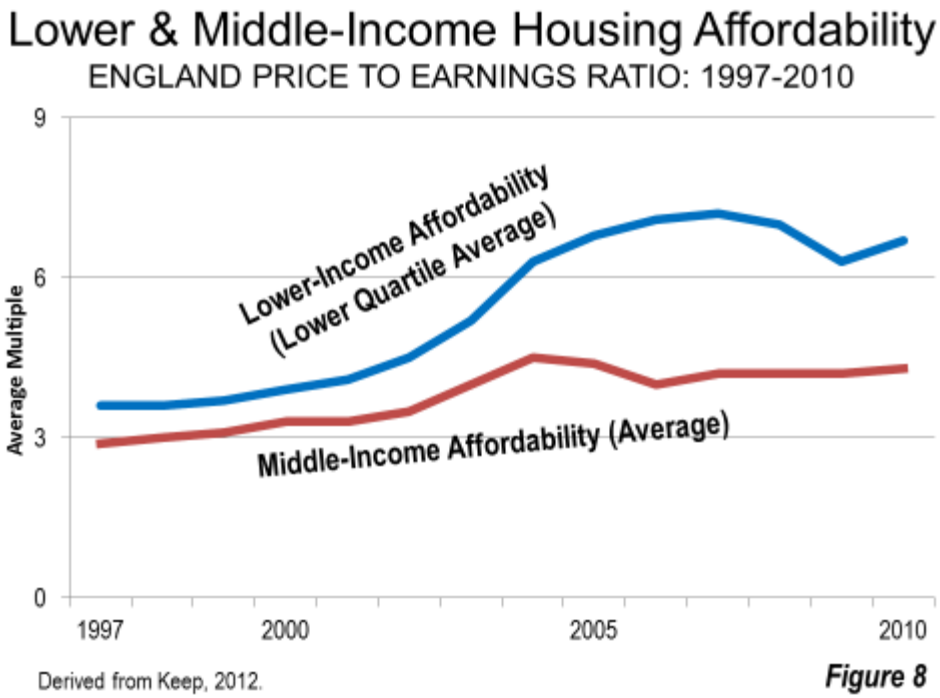


Figure 8

As Figure 1 indicates, the price-to-income ratio was below 3.0 until after 2000 in the United Kingdom. The Town and Country Planning Act (1947) contained the first important urban containment restrictions and has been a model for such restrictions around the world. Land use restrictions were substantially strengthened during the 1990s and early 2000s. All markets have urban containment policy.

3.9 United States

The United States had a moderately unaffordable major market Median Multiple of 3.7 in 2015 and a moderately unaffordable Median Multiple of 3.5 overall. [40]

Major Markets: Housing affordability worsened slightly in the major markets of the United States, from a Median Multiple of 3.6 to 3.7. As before, the least affordable housing was in the California markets. California housing affordability seems likely to worsen, since a much stronger, statewide urban containment law is now being implemented (Senate Bill 375). More restrictively regulated markets outside California also had materially worse housing affordability than the liberally regulated markets. This is illustrated in Figure 9, which also illustrates the greater price instability in the more regulated markets.[41]

San Jose ranked as the 4th least affordable market in this year's *Survey* (tied with Melbourne and Auckland). San Francisco ranked as the 7th least affordable major market in this year's *Survey* and was rated as the 5th most vulnerable market to real estate bubble risk by UBS.

[39] Paul Cheshire, Max Nathan and Henry Overman. *Urban Economics and Urban Policy: Challenging Conventional Policy Wisdom*, 2015, Edward Elgar.
[40] Median house prices from the National Association of Realtors and the National Home Builders Association, Zillow and metropolitan area real estate associations.
[41] Glaeser, Edward L., Joseph Gyourko, and Albert Saiz. 2008. Housing supply and housing bubbles. Journal of Urban Economics.

Thirteen major markets were rated as affordable. There are 24 moderately unaffordable major markets and five seriously unaffordable markets. There were 11 severely unaffordable markets, up from nine in 2014.

The 13 affordable major markets were led by Buffalo, Cincinnati, Cleveland and Rochester, all with Median Multiples of 2.6. Pittsburgh had a Median Multiple of 2.7 and ranked fifth most affordable. There was a four way tie for sixth most affordable (at a Median Multiple of 2.8), Detroit, Grand Rapids, Oklahoma City and St. Louis. Three metropolitan areas tied at a Median Multiple of 2.9 (ranked 10th), Columbus, Indianapolis, and Kansas City. Louisville was also +rated affordable, with a Median Multiple of 3.0 (ranked 13th).

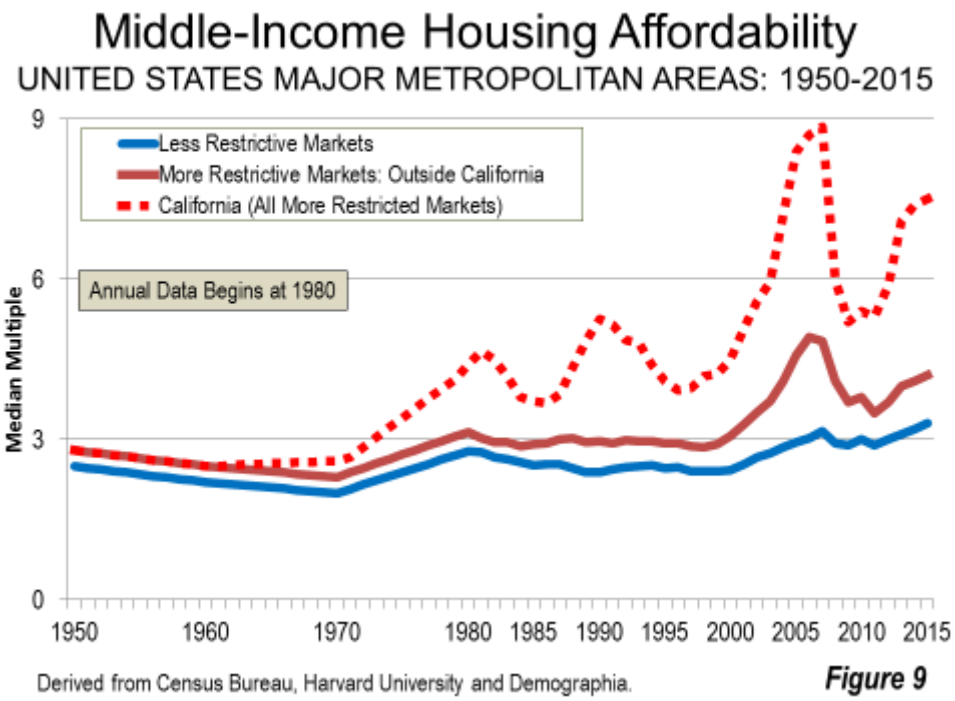


Figure 9

The least affordable major market was San Jose (9.7), which deteriorated from a 9.3 Median Multiple in 2014. All of 2014 severely unaffordable major markets remained severely unaffordable in 2015, including San Francisco (9.4), San Diego (8.1), Los Angeles (8.1), New York (5.9), Miami (5.8), Boston (5.4), Seattle (5.2) and Riverside-San Bernardino (5.2). Portland[42] and Denver were became severe unaffordability, with Median Multiples of 5.1.

All of the severely unaffordable major markets have experienced substantial housing affordability losses since the beginning of the housing bubble. With the substantial decline in demand that followed the housing bust, it would be expected that housing affordability would have been restored to former levels in these markets. Yet, the housing affordability measure (Median Multiple) remains far above pre-real estate bubble levels. House prices are approximately 75 percent higher relative to incomes than they were in the pre-bubble year of 1995 (Figure 10).

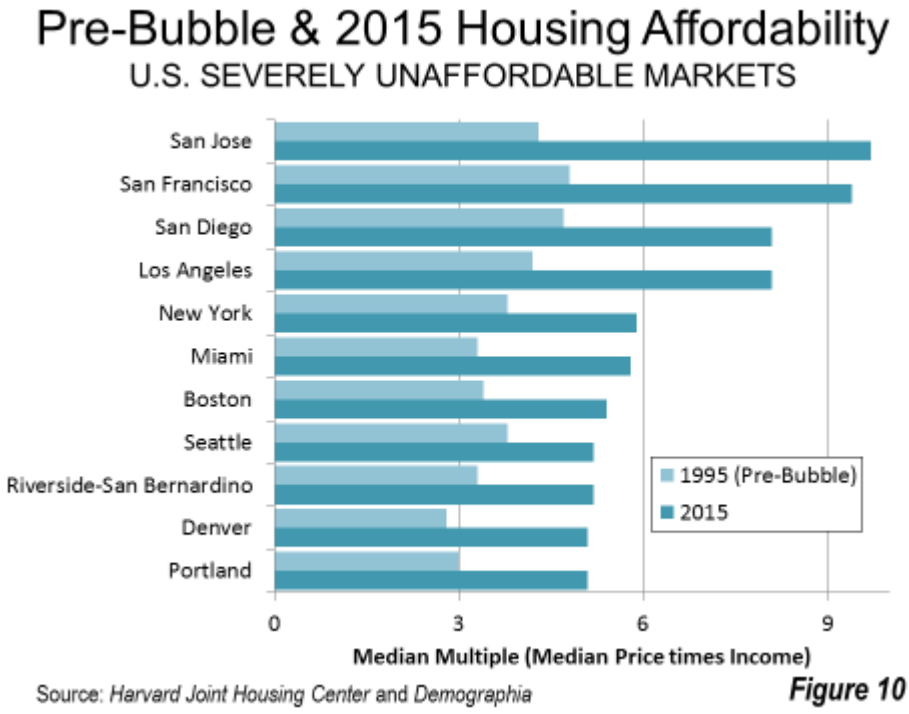
It is likely that housing affordability losses will continue, unless there is significant liberalization of land use regulations.

[42] Portland's housing affordability losses appear to have been moderated by the less restrictive land use polices existing in the state of Washington portion of the metropolitan area (see: Myung-Jin Jun, "The Effects of Portland's Urban Growth Boundary on Housing Prices," *Journal of the American Planning Association* Vol. 72, Issue 2 [2006]).

Each of the severely unaffordable major markets has serious restrictions on greenfield housing construction, principally urban containment policy. The association between middle-income housing affordability trends and more restrictive land use regulation is consistent with the basics of economics. It is likely that housing affordability losses will continue, unless there is significant liberalization of land use regulations.

All Markets: Among all US markets, ten were tied for the most affordable markets, with a Median Multiple of 2.1 (rated affordable). These included Cumberland (MD-WV), Decatur (IL), Elmira (NY), Kankakee, (IL), Rockford, (IL), Topeka (KS), Youngstown (OH-PA), Peoria (IL), Saginaw (MI) and Springfield (IL). There were 64 additional markets with affordable ratings.

Outside of major markets San Francisco and San Jose, Santa Cruz (CA) was the least affordable market in the US, at 9.6, followed by Honolulu, at 9.2 . In addition to San Diego and Los Angeles, other markets had a Median Multiple of 7.0 or more, including Kahului (HI), Kapaa (HI), Napa (CA), Salinas (CA), San Luis Obispo (CA), Santa Rosa, and Santa Barbara (CA).



Source: *Harvard Joint Housing Center* and *Demographia*

Figure 10

4. BEYOND IDEOLOGY

The past year has seen the formation of a broader consensus among policy makers and economists on the importance of housing affordability (broadly defined in Table 11).

4.1 Universal Principles: A Rising Standard of Living and Less Poverty

Virtually all governments consider household economic issues as a top priority, especially increasing the standard of living and reducing or eradicating poverty. This was illustrated in the 2014 "Group of 20" (G20) summit in Brisbane, Australia when governments from countries as diverse as China, Russia, France, Japan, Canada, Australia and the United States and 14 others adopted a communiqué declaring "better living standards" as a highest priority and a commitment to poverty eradication. The communiqué also indicated an objective of increasing the "G20's GDP by at least an additional two per cent by 2018." Yet, a year later, it is clear that this annual growth rate has not been achieved.

Even as growth has been laggard, discretionary income trends are even more concerning. Housing costs, which represent the largest household expenditure category, have been rising much faster than incomes. The resulting stagnation or even decline in household discretionary incomes is at least as much a threat to prosperity and job creation as the limited gross income gains.

Table 11
AFFORDABLE HOUSING MARKETS: DEFINITION

For metropolitan areas to rate as 'affordable' and ensure that housing bubbles are not triggered, housing prices should not exceed three times gross annual household earnings. To allow this to occur, new starter housing of an acceptable quality to the purchasers, with associated commercial and industrial development, must be allowed to be provided on the urban fringes at 2.5 times the gross annual median household income of that urban market.

The critically important Development Ratios[43] for this new fringe starter housing should be 17 - 23% serviced lot / section cost - the balance the actual housing construction.

Ideally through a normal building cycle, the Median Multiple should move from a Floor Multiple of 2.3, through a Swing Multiple of 2.5 to a Ceiling Multiple of 2.7 - to ensure maximum stability and optimal medium and long term performance of the residential construction sector.

-Hugh Pavletich
Performance Urban Planning

4.2 The Association with More Restrictive Land Use Regulation

The largest losses in housing affordability have been in markets with more restrictive land use policies.[44] Severely unaffordable housing (Median Multiple of 5.1 or higher) has occurred only in major metropolitan areas that have more restrictive land use policy, especially urban containment boundaries or their variations (Section 2.2).

In the worst cases, urban containment metropolitan areas become investors markets, attracting buyers principally interested in housing for the extraordinary short term profits typical of distorted markets in which demand substantially exceeds supply (whether in housing, commodities or other goods). Investors may be local, from outside the metropolitan area or outside the country. This can accelerate house price increases, making it even more difficult for middle-income households to purchase dwellings.

In the worst cases, urban containment metropolitan areas become investors markets, attracting buyers principally interested in housing for the extraordinary short term profits typical of distorted markets in which demand substantially exceeds supply…

Corrective measures that could halt or reverse losses in housing affordability from urban containment policy have either been absent or not been implemented. As a result, urban containment policy has been a profound policy failure, as house prices have doubled and tripled relative to incomes in many metropolitan areas.[45] Moreover, the consequences of urban containment policy are often denied by proponents. According to Cheshire et al:

[43] The development ratio is the cost of the finished land (underlying infrastructure complete) divided by the house construction cost plus the finished land. This issue is extensively discussed with respect to the United States market in the *Demographia Residential Land & Regulation Cost Index*.
[44] Cox, *A Question of Values.*
[45] Cox, *A Question of Values.*

> *However, it is not helpful for public debate to pretend that the costs we have documented do not exist; or even that they are negligible. Existing research shows that this is simply not the case; indeed research shows the costs are very substantial even if some are difficult to measure exactly.*[46]

Yet, according to Harvard University economist Edward Glaeser:

> *…we must never forget that any time we say 'no' to new building, whether in the city centre or on the edge, we are saying 'no' to families that want to experience the magic of urban life. We also ensure that every other family that lives in the city is paying more for their own homes.* [47]

4.3 Increased Attention to the Consequences

Over the past year, the loss of middle-income housing affordability associated with more restrictive land use regulation has received greater attention.

One dimension is the extent to which higher house prices have been associated with distortions in geographic mobility, as the former convergence of incomes between metropolitan areas has declined. For example, Chang-Tai Hseih of the University of Illinois, Chicago and in Enrico Moretti of the University of California, Berkeley have estimated that by 2009 there was an annual economic loss to the United States equal to more than 10% of its gross domestic product that can be traced to the impacts. They characterized this loss as "almost entirely driven" by regulatory constraints on housing.[48]

Increasing inequality has also been associated with higher house prices. Matthew Rognlie of the Massachusetts Institute of Technology builds on Thomas Piketty's ground-breaking research on rising inequality and concluded that much of the observed inequality is from housing wealth. According to Rognlie, "... [T]he literature studying markets with high housing costs finds that these costs are driven in large part by artificial scarcity through land use regulation .... A natural first step to combat the increasing role of housing wealth would be to re-examine these regulations and expand the housing supply."[49]

The higher house prices also have an impact on monetary policy. Cheshire, et al also note that urban containment policy: "…makes monetary policy more difficult even for independent central bankers since it becomes increasingly difficult to ignore housing-market pressures rather than just inflation targeting."[50]

"…planning … has become the externality.
-New Zealand Deputy Prime Minister Bill English

New Zealand Deputy Prime Minister Bill English said that urban planning in New Zealand has become the externality, by virtue of its impact on house prices, equality and the economy in New Zealand.

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[46] Cheshire et al.
[47] Foreword to Cheshire, et al.
[48] Chang-Tai Hsieh and Enrico Moretti, "Why Do Cities Matter? Local Growth and Aggregate Growth," The National Bureau of Economic Research, May 2015. Available online at http://www.nber.org/papers/w21154.
[49] Matthew Rognlie, "A Note on Piketty and Diminishing Returns to Capital," June 15, 2014. Available online at http://www.mit.edu/~mrognlie/piketty_diminishing_returns.pdf.
[50] Cheshire et al.

4.4 Negating the Consequences

Various proposals have been put forward to improve housing affordability in more restrictively regulated markets.

The Chief Economist of the Auckland City Council has recommended a program to cut the price-to-income ratio in Auckland nearly in half, from over 9.0 to 5 .0 by 2030. This recommendation has been adopted by the Auckland City Council Development Committee.

The Productivity Commission of New Zealand has offered a finding that could be useful in improving middle-income housing affordability. The Productivity Commission has recommended an "event-driven trigger" to increase the availability of greenfield land for development where urban fringe land prices have become distorted. As the Commission indicated: ""Where large discontinuities emerge between the price of land that can be developed for housing and land that cannot be developed, this is indicative of the inadequacy of development capacity being supplied..."[51]

Adoption of a recommendation to cut the price-to-income ratio in Auckland nearly in half

Cheshire, et al. note that these discontinuities are price signals that the demand for housing in an area is far greater than the supply. These "…observed price discontinuities – the difference in market prices across boundaries of use categories – should become a 'material consideration' leading to *a presumption in favour of any proposed development* unless (a very important 'unless') it could be shown that the observed monetary value of the discontinuity reflected wider environmental, amenity or social values of the land in its current use."[52]

… strong urban planning regulations are making New Zealand poorer

4.5 Emerging Consensus Across the Political Spectrum

Across the political spectrum, there is an increasing awareness of the economic damage that has been inflicted by strong land use regulation.

In New Zealand, Labour Party Housing Shadow Minister Phil Twyford joined with Oliver Hartwich, executive director the New Zealand Initiative (a "think tank" and association of business leaders) in a *New Zealand Herald* commentary in which they indicated that higher house costs from the strong urban planning regulations are making New Zealand poorer.

In the United States, Jason Furman, Chair of the White House Council of Economic advisers raised significant concerns about land-use regulations in a recent policy speech.

George Mason University Law Professor Ilya Somin wrote of the expanding consensus in a *Washington Post* column ("The emerging cross-ideological consensus on zoning"), He quotes Nobel Laureate and prominent left-of-center Economics Professor Paul Krugman of

"…s the ultimate objective of urban policy is to improve outcomes for people rather than places"

[51] New Zealand Productivity Commission (NZPC). "Using Land for Housing." September 2015. Available online at http://www.productivity.govt.nz/inquiry-content/2060?stage=4.
[52] Cheshire et al.

Princeton University and columnist for *The New York Times* as saying " … this is an issue on which you don't have to be a conservative to believe that we have too much regulation."

The growing recognition that excessive land use regulation has serious consequences needs to be accompanied by fundamental reforms. Otherwise the huge losses in housing affordability are likely to continue, as Cheshire, et al indicate:

> *The problem is it is utterly unviable in the long term. With every passing decade the problems would get worse, the wider economic costs would become more penalising, the economy and monetary policy more unmanageable and the outcomes – the divide between the property haves and the property have-nots – more unacceptable.*[53]

Cheshire, et al also remind that "… that the ultimate objective of urban policy is to improve outcomes for people rather than places" and that "… improving places is a means to an end, rather than an end in itself."[54]

[53] Cheshire, et. al
[54] Cheshire, et. al

SCHEDULE 1
MAJOR MARKETS RANKED BY AFFORDABILITY: Most Affordable to Least Affordable
(Markets over 1,000,000 Population)
Median Multiple (Median House Price/Median Household Income): 2015 – 3rd Quarter
Demographia International Housing Affordability Survey

International Affordability Rank	Major Market Rank	National Rank	Nation	Metropolitan Market	Median Multiple*	Median Price	Median Household Income
32	1	25	U.S.	Buffalo, NY	2.6	$136,800	$51,800
32	1	25	U.S.	Cincinnati, OH-KY-IN	2.6	$150,300	$57,700
32	1	25	U.S.	Cleveland, OH	2.6	$132,000	$51,600
32	1	25	U.S.	Rochester, NY	2.6	$138,000	$52,800
45	5	35	U.S.	Pittsburgh, PA	2.7	$148,000	$54,100
59	6	49	U.S.	Detroit, MI	2.8	$150,000	$54,300
59	6	49	U.S.	Grand Rapids, MI	2.8	$155,400	$56,200
59	6	49	U.S.	Oklahoma City, OK	2.8	$153,900	$54,200
59	6	49	U.S.	Saint Louis, MO-IL	2.8	$160,000	$57,500
69	10	58	U.S.	Columbus, OH	2.9	$170,800	$58,300
69	10	58	U.S.	Indianapolis, IN	2.9	$157,300	$54,100
69	10	58	U.S.	Kansas City, MO-KS	2.9	$174,000	$59,000
82	13	69	U.S.	Louisville, KY-IN	3.0	$158,400	$52,700
90	14	76	U.S.	Atlanta, GA	3.1	$178,900	$58,100
95	15	81	U.S.	Hartford, CT	3.2	$229,200	$70,900
95	15	81	U.S.	Memphis, TN-MS-AR	3.2	$154,000	$47,400
95	15	81	U.S.	Minneapolis-St. Paul, MN-WI	3.2	$228,700	$71,500
110	18	1	Japan	Osaka-Kobe-Kyoto*	3.4	¥19,530,000	¥5,780,000
110	18	95	U.S.	Baltimore, MD	3.4	$252,300	$74,000
110	18	95	U.S.	Dallas-Fort Worth, TX	3.4	$210,000	$61,600
125	21	109	U.S.	Houston, TX	3.5	$217,200	$62,100
125	21	109	U.S.	New Orleans, LA	3.5	$171,800	$48,400
138	23	121	U.S.	Chicago, IL	3.6	$229,300	$63,700
138	23	121	U.S.	Tampa-St. Petersburg, FL	3.6	$175,000	$48,500
138	23	121	U.S.	Virginia Beach-Norfolk, VA-NC	3.6	$217,500	$60,900
148	26	12	Canada	Ottawa-Gatineau, ON-QC	3.7	$296,700	$80,900
148	26	129	U.S.	Birmingham, AL	3.7	$180,900	$48,700
148	26	129	U.S.	Charlotte, NC-SC	3.7	$203,100	$55,400
148	26	129	U.S.	Philadelphia, PA-NJ-DE-MD	3.7	$234,700	$64,300
148	26	129	U.S.	Raleigh, NC	3.7	$241,700	$64,500
148	26	129	U.S.	Richmond, VA	3.7	$231,000	$63,000
148	26	129	U.S.	San Antonio, TX	3.7	$199,300	$54,500
163	33	140	U.S.	Jacksonville, FL	3.8	$199,000	$52,900
163	33	140	U.S.	Nashville, TN	3.8	$209,100	$54,500
177	35	1	U.K.	Leeds & West Yorkshire	3.9	£135,000	£34,300
177	35	153	U.S.	Salt Lake City, UT	3.9	$254,000	$64,800
177	35	153	U.S.	Tucson, AZ	3.9	$183,600	$47,400
191	38	22	Canada	Edmonton, AB	4.0	$354,600	$88,000
191	38	159	U.S.	Austin, TX	4.0	$264,000	$65,800
191	38	159	U.S.	Orlando, FL	4.0	$201,200	$49,900
191	38	159	U.S.	Phoenix, AZ	4.0	$218,800	$55,200
202	42	166	U.S.	Milwaukee, WI	4.1	$226,800	$55,000
202	42	166	U.S.	Washington, DC-VA-MD-WV	4.1	$388,600	$94,300
239	49	28	Canada	Calgary, AB	4.2	$391,500	$94,000
211	44	4	U.K.	Glasgow	4.2	£123,800	£29,500

SCHEDULE 1
MAJOR MARKETS RANKED BY AFFORDABILITY: Most Affordable to Least Affordable
(Markets over 1,000,000 Population)
Median Multiple (Median House Price/Median Household Income): 2015 – 3rd Quarter
Demographia International Housing Affordability Survey

International Affordability Rank	Major Market Rank	National Rank	Nation	Metropolitan Market	Median Multiple*	Median Price	Median Household Income
211	44	173	U.S.	Las Vegas, NV	4.2	$221,500	$53,000
216	46	2	Japan	Tokyo-Yokohama*	4.3	¥30,160,000	¥7,070,000
228	47	6	U.K.	Blackpool & Lancashire	4.4	£128,800	£29,000
228	47	6	U.K.	Nottingham & Nottinghamshire	4.4	£136,500	£31,200
239	49	5	Ireland	Dublin	4.5	€263,000	€59,000
239	49	8	U.K.	Derby & Derbyshire	4.5	£147,000	£32,800
239	49	8	U.K.	Hull & Humber	4.5	£137,000	£30,700
239	49	8	U.K.	Middlesborough & Durham	4.5	£115,000	£25,700
239	49	8	U.K.	Sheffield & South Yorkshire	4.5	£122,500	£27,200
239	49	188	U.S.	Providence, RI-MA	4.5	$258,100	$57,800
249	56	12	U.K.	Manchester & Greater Manchester	4.6	£136,000	£29,400
252	57	13	U.K.	Newcastle & Tyneside	4.7	£130,000	£27,800
252	57	192	U.S.	Sacramento, CA	4.7	$291,400	$62,100
264	59	29	Canada	Montréal, QC	4.9	$293,100	$59,400
264	59	16	U.K.	Birmingham & West Midlands	4.9	£144,000	£29,300
270	61	1	Singapore	Singapore	5.0	$408,000	$81,900
276	62	203	U.S.	Denver, CO	5.1	$353,000	$69,200
276	62	203	U.S.	Portland, OR-WA	5.1	$319,300	$62,300
283	64	19	U.K.	Stoke on Trent & Staffordshire	5.2	£149,000	£28,800
283	64	205	U.S.	Riverside-San Bernardino, CA	5.2	$292,500	$56,500
283	64	205	U.S.	Seattle, WA	5.2	$386,300	$73,700
292	67	22	U.K.	Liverpool & Merseyside	5.3	£130,000	£24,600
298	68	210	U.S.	Boston, MA-NH	5.4	$420,800	$78,300
308	69	212	U.S.	Miami, FL	5.8	$290,000	$50,100
310	70	213	U.S.	New York, NY-NJ-PA	5.9	$410,500	$69,400
316	71	32	Australia	Brisbane, QLD	6.1	$480,000	$78,600
316	71	28	U.K.	Bristol-Bath	6.1	£227,000	£37,300
321	73	34	Australia	Adelaide, SA	6.4	$430,000	$66,700
329	74	38	Australia	Perth, WA	6.6	$589,000	$88,800
330	75	33	Canada	Toronto, ON	6.7	$529,800	$78,700
338	76	29	U.K.	London Exurbs (E & SE England)	7.1	£260,000	£36,500
340	77	30	U.K.	Plymouth & Devon	7.2	£199,000	£27,500
346	78	224	U.S.	Los Angeles, CA	8.1	$506,800	$62,600
346	78	224	U.S.	San Diego, CA	8.1	$554,400	$68,500
352	80	32	U.K.	London (GLA)	8.5	£400,000	£46,900
359	81	229	U.S.	San Francisco, CA	9.4	$809,400	$86,100
362	82	50	Australia	Melbourne, VIC	9.7	$730,000	$75,600
362	82	8	N.Z.	Auckland	9.7	$748,700	$77,500
362	82	231	U.S.	San Jose, CA	9.7	$965,000	$99,800
365	85	35	Canada	Vancouver, BC	10.8	$756,200	$69,700
366	86	51	Australia	Sydney, NSW	12.2	$1,032,000	$84,600
367	87	1	China	Hong Kong	19.0	$5,561,000	$293,000

Financial data in local currency.
*Average Multiple (Japan)

SCHEDULE 2 MAJOR MARKETS BY GEOGRAPHY (Over 1,000,000 Population) Median Multiple (Median House Price/Median Household Income): 2015 – 3rd Quarter *Demographia International Housing Affordability Survey*							
International Affordability Rank	Major Market Rank	National Rank	Nation	Metropolitan Market	Median Multiple*	Median Price	Median Household Income
321	73	34	Australia	Adelaide, SA	6.4	$430,000	$66,700
316	71	32	Australia	Brisbane, QLD	6.1	$480,000	$78,600
362	82	50	Australia	Melbourne, VIC	9.7	$730,000	$75,600
329	74	38	Australia	Perth, WA	6.6	$589,000	$88,800
366	86	51	Australia	Sydney, NSW	12.2	$1,032,000	$84,600
239	49	28	Canada	Calgary, AB	4.2	$391,500	$94,000
191	38	22	Canada	Edmonton, AB	4.0	$354,600	$88,000
264	59	29	Canada	Montréal, QC	4.9	$293,100	$59,400
148	26	12	Canada	Ottawa-Gatineau, ON-QC	3.7	$296,700	$80,900
330	75	33	Canada	Toronto, ON	6.7	$529,800	$78,700
365	85	35	Canada	Vancouver, BC	10.8	$756,200	$69,700
367	87	1	China	Hong Kong	19.0	$5,561,000	$293,000
239	49	5	Ireland	Dublin	4.5	€263,000	€59,000
110	18	1	Japan	Osaka-Kobe-Kyoto*	3.4	¥19,530,000	¥5,780,000
216	46	2	Japan	Tokyo-Yokohama*	4.3	¥30,160,000	¥7,070,000
362	82	8	N.Z.	Auckland	9.7	$748,700	$77,500
270	61	1	Singapore	Singapore	5.0	$408,000	$81,900
264	59	16	U.K.	Birmingham & West Midlands	4.9	£144,000	£29,300
228	47	6	U.K.	Blackpool & Lancashire	4.4	£128,800	£29,000
316	71	28	U.K.	Bristol-Bath	6.1	£227,000	£37,300
239	49	8	U.K.	Derby & Derbyshire	4.5	£147,000	£32,800
211	44	4	U.K.	Glasgow	4.2	£123,800	£29,500
239	49	8	U.K.	Hull & Humber	4.5	£137,000	£30,700
177	35	1	U.K.	Leeds & West Yorkshire	3.9	£135,000	£34,300
292	67	22	U.K.	Liverpool & Merseyside	5.3	£130,000	£24,600
352	80	32	U.K.	London (GLA)	8.5	£400,000	£46,900
338	76	29	U.K.	London Exurbs (E & SE England)	7.1	£260,000	£36,500
249	56	12	U.K.	Manchester & Greater Manchester	4.6	£136,000	£29,400
239	49	8	U.K.	Middlesborough & Durham	4.5	£115,000	£25,700
252	57	13	U.K.	Newcastle & Tyneside	4.7	£130,000	£27,800
228	47	6	U.K.	Nottingham & Nottinghamshire	4.4	£136,500	£31,200
340	77	30	U.K.	Plymouth & Devon	7.2	£199,000	£27,500
239	49	8	U.K.	Sheffield & South Yorkshire	4.5	£122,500	£27,200
283	64	19	U.K.	Stoke on Trent & Staffordshire	5.2	£149,000	£28,800
90	14	76	U.S.	Atlanta, GA	3.1	$178,900	$58,100
191	38	159	U.S.	Austin, TX	4.0	$264,000	$65,800
110	18	95	U.S.	Baltimore, MD	3.4	$252,300	$74,000
148	26	129	U.S.	Birmingham, AL	3.7	$180,900	$48,700
298	68	210	U.S.	Boston, MA-NH	5.4	$420,800	$78,300
32	1	25	U.S.	Buffalo, NY	2.6	$136,800	$51,800
148	26	129	U.S.	Charlotte, NC-SC	3.7	$203,100	$55,400
138	23	121	U.S.	Chicago, IL	3.6	$229,300	$63,700
32	1	25	U.S.	Cincinnati, OH-KY-IN	2.6	$150,300	$57,700
32	1	25	U.S.	Cleveland, OH	2.6	$132,000	$51,600
69	10	58	U.S.	Columbus, OH	2.9	$170,800	$58,300
110	18	95	U.S.	Dallas-Fort Worth, TX	3.4	$210,000	$61,600

SCHEDULE 2
MAJOR MARKETS BY GEOGRAPHY (Over 1,000,000 Population)
Median Multiple (Median House Price/Median Household Income): 2015 – 3rd Quarter
Demographia International Housing Affordability Survey

International Affordability Rank	Major Market Rank	National Rank	Nation	Metropolitan Market	Median Multiple*	Median Price	Median Household Income
276	62	203	U.S.	Denver, CO	5.1	$353,000	$69,200
59	6	49	U.S.	Detroit, MI	2.8	$150,000	$54,300
59	6	49	U.S.	Grand Rapids, MI	2.8	$155,400	$56,200
95	15	81	U.S.	Hartford, CT	3.2	$229,200	$70,900
125	21	109	U.S.	Houston, TX	3.5	$217,200	$62,100
69	10	58	U.S.	Indianapolis, IN	2.9	$157,300	$54,100
163	33	140	U.S.	Jacksonville, FL	3.8	$199,000	$52,900
69	10	58	U.S.	Kansas City, MO-KS	2.9	$174,000	$59,000
211	44	173	U.S.	Las Vegas, NV	4.2	$221,500	$53,000
346	78	224	U.S.	Los Angeles, CA	8.1	$506,800	$62,600
82	13	69	U.S.	Louisville, KY-IN	3.0	$158,400	$52,700
95	15	81	U.S.	Memphis, TN-MS-AR	3.2	$154,000	$47,400
308	69	212	U.S.	Miami, FL	5.8	$290,000	$50,100
202	42	166	U.S.	Milwaukee, WI	4.1	$226,800	$55,000
95	15	81	U.S.	Minneapolis-St. Paul, MN-WI	3.2	$228,700	$71,500
163	33	140	U.S.	Nashville, TN	3.8	$209,100	$54,500
125	21	109	U.S.	New Orleans, LA	3.5	$171,800	$48,400
310	70	213	U.S.	New York, NY-NJ-PA	5.9	$410,500	$69,400
59	6	49	U.S.	Oklahoma City, OK	2.8	$153,900	$54,200
191	38	159	U.S.	Orlando, FL	4.0	$201,200	$49,900
148	26	129	U.S.	Philadelphia, PA-NJ-DE-MD	3.7	$234,700	$64,300
191	38	159	U.S.	Phoenix, AZ	4.0	$218,800	$55,200
45	5	35	U.S.	Pittsburgh, PA	2.7	$148,000	$54,100
276	62	203	U.S.	Portland, OR-WA	5.1	$319,300	$62,300
239	49	188	U.S.	Providence, RI-MA	4.5	$258,100	$57,800
148	26	129	U.S.	Raleigh, NC	3.7	$241,700	$64,500
148	26	129	U.S.	Richmond, VA	3.7	$231,000	$63,000
283	64	205	U.S.	Riverside-San Bernardino, CA	5.2	$292,500	$56,500
32	1	25	U.S.	Rochester, NY	2.6	$138,000	$52,800
252	57	192	U.S.	Sacramento, CA	4.7	$291,400	$62,100
59	6	49	U.S.	Saint Louis, MO-IL	2.8	$160,000	$57,500
177	35	153	U.S.	Salt Lake City, UT	3.9	$254,000	$64,800
148	26	129	U.S.	San Antonio, TX	3.7	$199,300	$54,500
346	78	224	U.S.	San Diego, CA	8.1	$554,400	$68,500
359	81	229	U.S.	San Francisco, CA	9.4	$809,400	$86,100
362	82	231	U.S.	San Jose, CA	9.7	$965,000	$99,800
283	64	205	U.S.	Seattle, WA	5.2	$386,300	$73,700
138	23	121	U.S.	Tampa-St. Petersburg, FL	3.6	$175,000	$48,500
177	35	153	U.S.	Tucson, AZ	3.9	$183,600	$47,400
138	23	121	U.S.	Virginia Beach-Norfolk, VA-NC	3.6	$217,500	$60,900
202	42	166	U.S.	Washington, DC-VA-MD-WV	4.1	$388,600	$94,300

Financial data in local currency.
*Average Multiple (Japan)

SCHEDULE 3 ALL MARKETS RANKED BY AFFORDABILITY: Most Affordable to Least Affordable Median Multiple (Median House Price/Median Household Income): 2015 – 3rd Quarter *Demographia International Housing Affordability Survey*							
International Affordability Rank	Major Market Rank	National Rank	Nation	Metropolitan Market	Median Multiple*	Median Price	Median Household Income
1		1	Ireland	Limerick	1.8	€92,800	€51,200
2		2	Ireland	Waterford	2.1	€100,000	€47,700
2		1	U.S.	Cumberland, MD-WV	2.1	$82,400	$39,900
2		1	U.S.	Decatur, IL	2.1	$101,400	$49,200
2		1	U.S.	Elmira, NY	2.1	$108,800	$52,000
2		1	U.S.	Kankakee, IL	2.1	$126,500	$60,400
2		1	U.S.	Rockford, IL	2.1	$102,800	$50,100
2		1	U.S.	Topeka, KS	2.1	$116,400	$56,300
2		1	U.S.	Youngstown, OH-PA	2.1	$90,700	$43,700
10		8	U.S.	Peoria, IL	2.2	$126,700	$58,100
10		8	U.S.	Saginaw, MI	2.2	$100,000	$46,500
10		8	U.S.	Springfield, IL	2.2	$124,200	$56,900
13		1	Canada	Moncton, NB	2.3	$146,500	$64,300
13		1	Canada	Saint John, NB	2.3	$155,700	$67,000
13		11	U.S.	Utica, NY	2.3	$112,000	$49,400
16		3	Canada	Fredericton, NB	2.4	$163,500	$67,800
16		12	U.S.	Appleton, WI	2.4	$151,400	$62,200
16		12	U.S.	Binghamton, NY	2.4	$121,100	$49,900
16		12	U.S.	Davenport, IA-IL	2.4	$126,200	$53,200
16		12	U.S.	Decatur, AL	2.4	$111,900	$46,100
16		12	U.S.	Ft. Wayne, IN	2.4	$120,700	$51,100
16		12	U.S.	Salisbury, MD	2.4	$135,000	$56,000
23		1	Australia	Karratha, WA	2.5	$440,000	$174,800
23		4	Canada	Saguenay, QC	2.5	$167,700	$66,600
23		18	U.S.	Akron, OH	2.5	$130,400	$52,300
23		18	U.S.	Canton, OH	2.5	$125,000	$49,400
23		18	U.S.	Oshkosh, WI	2.5	$133,200	$54,200
23		18	U.S.	Scranton-Wilkes Barre, PA	2.5	$115,000	$46,800
23		18	U.S.	South Bend, IN	2.5	$118,100	$48,200
23		18	U.S.	Syracuse, NY	2.5	$134,200	$53,700
23		18	U.S.	Waterloo, IA	2.5	$135,600	$54,800
32		5	Canada	Charlottetown, PEI	2.6	$172,100	$66,900
32		5	Canada	Trois-Rivières, QC	2.6	$147,600	$56,300
32		5	Canada	Windsor, ON	2.6	$177,300	$67,900
32	1	25	U.S.	Buffalo, NY	2.6	$136,800	$51,800
32		25	U.S.	Cedar Rapids, IA	2.6	$167,800	$64,000
32	1	25	U.S.	Cincinnati, OH-KY-IN	2.6	$150,300	$57,700
32	1	25	U.S.	Cleveland, OH	2.6	$132,000	$51,600
32		25	U.S.	Duluth, MN	2.6	$135,000	$52,000
32		25	U.S.	Lansing, MI	2.6	$131,900	$51,400
32		25	U.S.	Lansing, MI	2.6	$131,900	$51,400
32	1	25	U.S.	Rochester, NY	2.6	$138,000	$52,800
32		25	U.S.	Toledo, OH	2.6	$121,000	$47,200
32		25	U.S.	Wichita, KS	2.6	$138,900	$54,000

SCHEDULE 3
ALL MARKETS RANKED BY AFFORDABILITY: Most Affordable to Least Affordable
Median Multiple (Median House Price/Median Household Income): 2015 – 3rd Quarter
Demographia International Housing Affordability Survey

International Affordability Rank	Major Market Rank	National Rank	Nation	Metropolitan Market	Median Multiple*	Median Price	Median Household Income
45		35	U.S.	Dayton, OH	2.7	$129,800	$48,300
45		35	U.S.	Elkhart, IN	2.7	$138,000	$51,700
45		35	U.S.	Erie, PA	2.7	$125,200	$47,100
45		35	U.S.	Gainesville, GA	2.7	$145,000	$54,300
45		35	U.S.	Green Bay, WI	2.7	$150,100	$55,000
45		35	U.S.	Hagerstown, MD-WV	2.7	$159,400	$58,500
45		35	U.S.	Harrisburg, PA	2.7	$162,900	$59,700
45		35	U.S.	Little Rock, AR	2.7	$137,400	$50,000
45		35	U.S.	Mobile, AL	2.7	$120,000	$45,100
45		35	U.S.	New London, CT	2.7	$187,800	$68,400
45		35	U.S.	Omaha, NE-IA	2.7	$159,800	$59,500
45	5	35	U.S.	Pittsburgh, PA	2.7	$148,000	$54,100
45		35	U.S.	Reading, PA	2.7	$158,200	$58,000
45		35	U.S.	York, PA	2.7	$165,200	$60,600
59		3	Ireland	Galway	2.8	€143,000	€50,800
59		49	U.S.	Bloomington, IL	2.8	$166,200	$59,600
59		49	U.S.	Des Moines, IA	2.8	$184,000	$64,600
59	6	49	U.S.	Detroit, MI	2.8	$150,000	$54,300
59		49	U.S.	Flint, MI	2.8	$121,000	$43,100
59	6	49	U.S.	Grand Rapids, MI	2.8	$155,400	$56,200
59		49	U.S.	Montgomery, AL	2.8	$138,400	$48,800
59	6	49	U.S.	Oklahoma City, OK	2.8	$153,900	$54,200
59		49	U.S.	Roanoke, VA	2.8	$148,000	$53,100
59	6	49	U.S.	Saint Louis, MO-IL	2.8	$160,000	$57,500
69		2	Australia	Kalgoorlie, WA	2.9	$350,000	$120,000
69		8	Canada	Sudbury, ON	2.9	$222,700	$76,100
69	10	58	U.S.	Columbus, OH	2.9	$170,800	$58,300
69		58	U.S.	Fort Smith, AR-OK	2.9	$117,300	$40,600
69		58	U.S.	Gulfport, MS	2.9	$131,900	$45,400
69	10	58	U.S.	Indianapolis, IN	2.9	$157,300	$54,100
69	10	58	U.S.	Kansas City, MO-KS	2.9	$174,000	$59,000
69		58	U.S.	Lancaster, PA	2.9	$175,000	$59,400
69		58	U.S.	Lexington, KY	2.9	$151,800	$52,000
69		58	U.S.	Lincoln, NE	2.9	$157,900	$53,800
69		58	U.S.	Ocala, FL	2.9	$121,000	$41,300
69		58	U.S.	Sioux Falls, SD	2.9	$178,900	$60,900
69		58	U.S.	Tulsa, OK	2.9	$151,700	$52,500
82		9	Canada	Thunder Bay, ON	3.0	$203,800	$68,700
82		69	U.S.	Amarillo, TX	3.0	$157,400	$53,100
82		69	U.S.	Champaign, IL	3.0	$149,400	$49,700
82		69	U.S.	Columbia, SC	3.0	$157,000	$51,800
82		69	U.S.	Huntsville, AL	3.0	$173,800	$58,400
82		69	U.S.	Kalamazoo, MI	3.0	$143,000	$47,300
82	13	69	U.S.	Louisville, KY-IN	3.0	$158,400	$52,700
82		69	U.S.	Springfield, MO	3.0	$126,200	$42,700
90		76	U.S.	Allentown, PA	3.1	$195,100	$62,400
90	14	76	U.S.	Atlanta, GA	3.1	$178,900	$58,100

SCHEDULE 3
ALL MARKETS RANKED BY AFFORDABILITY: Most Affordable to Least Affordable
Median Multiple (Median House Price/Median Household Income): 2015 – 3rd Quarter
Demographia International Housing Affordability Survey

International Affordability Rank	Major Market Rank	National Rank	Nation	Metropolitan Market	Median Multiple*	Median Price	Median Household Income
90		76	U.S.	Beaumont, TX	3.1	$138,500	$44,000
90		76	U.S.	Fayetteville, AR-MO	3.1	$160,800	$51,900
90		76	U.S.	Yuma, AZ	3.1	$129,000	$41,400
95		81	U.S.	Charleston, WV	3.2	$139,600	$44,200
95	15	81	U.S.	Hartford, CT	3.2	$229,200	$70,900
95	15	81	U.S.	Memphis, TN-MS-AR	3.2	$154,000	$47,400
95	15	81	U.S.	Minneapolis-St. Paul, MN-WI	3.2	$228,700	$71,500
95		81	U.S.	Ogden, UT	3.2	$215,000	$66,500
95		81	U.S.	Pensacola, FL	3.2	$165,000	$51,700
95		81	U.S.	Spartanburg, SC	3.2	$142,400	$44,700
102		4	Ireland	Cork	3.3	€171,250	€51,700
102		88	U.S.	Columbia, MO	3.3	$171,400	$51,800
102		88	U.S.	Columbia, MO	3.3	$171,400	$51,800
102		88	U.S.	Florence, SC	3.3	$136,800	$41,500
102		88	U.S.	Glens Falls, NY	3.3	$177,200	$53,700
102		88	U.S.	Kennewick, WA	3.3	$198,300	$60,000
102		88	U.S.	Lakeland, FL	3.3	$147,900	$44,300
102		88	U.S.	Waco, TX	3.3	$147,000	$44,700
110	18	1	Japan	Osaka-Kobe-Kyoto*	3.4	¥19,530,000	¥5,780,000
110		95	U.S.	Abilene, TX	3.4	$156,300	$45,800
110		95	U.S.	Albany, NY	3.4	$218,300	$64,400
110	18	95	U.S.	Baltimore, MD	3.4	$252,300	$74,000
110		95	U.S.	Chattanooga, TN-GA	3.4	$163,700	$48,200
110		95	U.S.	Corpus Christi, TX	3.4	$184,900	$53,800
110	18	95	U.S.	Dallas-Fort Worth, TX	3.4	$210,000	$61,600
110		95	U.S.	Daytona Beach, FL	3.4	$150,000	$43,900
110		95	U.S.	Dover, DE	3.4	$194,500	$57,100
110		95	U.S.	Dover, DE	3.4	$194,500	$57,100
110		95	U.S.	Fargo, ND-MN	3.4	$191,800	$55,700
110		95	U.S.	Jackson, MS	3.4	$165,600	$48,600
110		95	U.S.	McAllen, TX	3.4	$121,000	$36,000
110		95	U.S.	Palm Bay, FL	3.4	$167,000	$49,600
110		95	U.S.	Winston-Salem, NC	3.4	$152,600	$45,200
125		3	Australia	Gladstone, QLD	3.5	$342,000	$97,700
125		109	U.S.	Baton Rouge, LA	3.5	$186,000	$53,900
125		109	U.S.	El Paso, TX	3.5	$144,200	$41,500
125		109	U.S.	Farmington, NM	3.5	$178,400	$50,500
125		109	U.S.	Fayetteville, NC	3.5	$152,100	$43,600
125		109	U.S.	Fort Walton Beach, FL	3.5	$195,000	$55,500
125		109	U.S.	Greensboro, NC	3.5	$154,800	$44,000
125	21	109	U.S.	Houston, TX	3.5	$217,200	$62,100
125		109	U.S.	Kingston, NY	3.5	$212,100	$60,100
125		109	U.S.	Kingston, NY	3.5	$212,100	$60,100
125		109	U.S.	Knoxville, TN	3.5	$161,200	$46,700
125		109	U.S.	Manchester, NH	3.5	$261,900	$73,900
125	21	109	U.S.	New Orleans, LA	3.5	$171,800	$48,400
138		10	Canada	Kingston, ON	3.6	$247,800	$68,900

SCHEDULE 3
ALL MARKETS RANKED BY AFFORDABILITY: Most Affordable to Least Affordable
Median Multiple (Median House Price/Median Household Income): 2015 – 3rd Quarter
Demographia International Housing Affordability Survey

International Affordability Rank	Major Market Rank	National Rank	Nation	Metropolitan Market	Median Multiple*	Median Price	Median Household Income
138		10	Canada	London, ON	3.6	$236,600	$65,500
138		121	U.S.	Ann Arbor, MI	3.6	$233,000	$65,000
138		121	U.S.	Atlantic City, NJ	3.6	$205,900	$57,200
138		121	U.S.	Boise, ID	3.6	$192,000	$53,600
138	23	121	U.S.	Chicago, IL	3.6	$229,300	$63,700
138		121	U.S.	Kingsport, TN-VA	3.6	$148,000	$40,600
138		121	U.S.	Lake Havasu City, AZ	3.6	$141,000	$39,000
138	23	121	U.S.	Tampa-St. Petersburg, FL	3.6	$175,000	$48,500
138	23	121	U.S.	Virginia Beach-Norfolk, VA-NC	3.6	$217,500	$60,900
148		12	Canada	Halifax, NS	3.7	$254,000	$68,000
148	26	12	Canada	Ottawa-Gatineau, ON-QC	3.7	$296,700	$80,900
148		12	Canada	Québec, QC	3.7	$239,000	$65,200
148		12	Canada	Winnipeg, MB	3.7	$260,400	$69,500
148		129	U.S.	Anchorage, AK	3.7	$288,000	$78,300
148	26	129	U.S.	Birmingham, AL	3.7	$180,900	$48,700
148	26	129	U.S.	Charlotte, NC-SC	3.7	$203,100	$55,400
148		129	U.S.	Gainesville, FL	3.7	$175,000	$46,900
148		129	U.S.	New Haven, CT	3.7	$232,000	$62,500
148	26	129	U.S.	Philadelphia, PA-NJ-DE-MD	3.7	$234,700	$64,300
148	26	129	U.S.	Raleigh, NC	3.7	$241,700	$64,500
148	26	129	U.S.	Richmond, VA	3.7	$231,000	$63,000
148	26	129	U.S.	San Antonio, TX	3.7	$199,300	$54,500
148		129	U.S.	Trenton, NJ	3.7	$290,100	$77,500
148		129	U.S.	Vero Beach, FL	3.7	$175,000	$47,800
163		16	Canada	Sherbrooke, QC	3.8	$199,800	$52,800
163		140	U.S.	Albuquerque, NM	3.8	$185,600	$49,200
163		140	U.S.	Bismarck, ND	3.8	$248,500	$65,500
163		140	U.S.	Greenville, SC	3.8	$177,000	$46,300
163	33	140	U.S.	Jacksonville, FL	3.8	$199,000	$52,900
163	33	140	U.S.	Nashville, TN	3.8	$209,100	$54,500
163		140	U.S.	Olympia, WA	3.8	$245,000	$63,700
163		140	U.S.	Pittsfield, MA	3.8	$198,800	$51,900
163		140	U.S.	Port St. Lucie, FL	3.8	$185,000	$49,100
163		140	U.S.	Punta Gorda, FL	3.8	$170,000	$44,500
163		140	U.S.	Shreveport, LA	3.8	$166,700	$43,600
163		140	U.S.	Tyler, TX	3.8	$171,000	$45,500
163		140	U.S.	Worcester, MA	3.8	$250,600	$66,800
163		140	U.S.	Yakima, WA	3.8	$173,500	$46,200
177		4	Australia	Mackay, QLD	3.9	$345,000	$89,500
177		17	Canada	Guelph, ON	3.9	$331,700	$84,200
177		17	Canada	Kitchener, ON	3.9	$317,600	$81,000
177		17	Canada	Regina, SK	3.9	$309,600	$80,100
177		17	Canada	St. Catharine's-Niagara, ON	3.9	$242,500	$62,800
177		17	Canada	St. John's, NL	3.9	$286,700	$74,300
177		1	U.K.	Falkirk	3.9	£113,100	£29,200
177	35	1	U.K.	Leeds & West Yorkshire	3.9	£135,000	£34,300
177		153	U.S.	Madison, WI	3.9	$243,200	$63,000

SCHEDULE 3
ALL MARKETS RANKED BY AFFORDABILITY: Most Affordable to Least Affordable
Median Multiple (Median House Price/Median Household Income): 2015 – 3rd Quarter
Demographia International Housing Affordability Survey

International Affordability Rank	Major Market Rank	National Rank	Nation	Metropolitan Market	Median Multiple*	Median Price	Median Household Income
177	35	153	U.S.	Salt Lake City, UT	3.9	$254,000	$64,800
177		153	U.S.	Spokane, WA	3.9	$199,300	$51,000
177		153	U.S.	Springfield, MA	3.9	$207,400	$52,700
177		153	U.S.	Tallahassee, FL	3.9	$180,000	$45,800
177	35	153	U.S.	Tucson, AZ	3.9	$183,600	$47,400
191		5	Australia	Port Hedland, WA	4.0	$683,000	$171,500
191		5	Australia	Rock Hampton, QLD	4.0	$275,000	$69,100
191		22	Canada	Brantford, ON	4.0	$264,900	$66,800
191	38	22	Canada	Edmonton, AB	4.0	$354,600	$88,000
191	38	159	U.S.	Austin, TX	4.0	$264,000	$65,800
191		159	U.S.	Bremerton, WA	4.0	$254,000	$63,900
191		159	U.S.	Colorado Springs, CO	4.0	$243,100	$61,500
191	38	159	U.S.	Orlando, FL	4.0	$201,200	$49,900
191		159	U.S.	Panama City, FL	4.0	$183,400	$46,200
191	38	159	U.S.	Phoenix, AZ	4.0	$218,800	$55,200
191		159	U.S.	Portland, ME	4.0	$243,600	$61,600
202		1	N.Z.	Palmerston North-Manavati	4.1	$228,200	$55,900
202		3	U.K.	Belfast	4.1	£126,000	£30,600
202		166	U.S.	Cape Coral, FL	4.1	$210,000	$50,700
202		166	U.S.	Durham, NC	4.1	$222,800	$53,800
202		166	U.S.	Laredo, TX	4.1	$162,000	$39,600
202	42	166	U.S.	Milwaukee, WI	4.1	$226,800	$55,000
202		166	U.S.	Provo, UT	4.1	$261,000	$63,000
202		166	U.S.	Salem, OR	4.1	$211,800	$51,200
202	42	166	U.S.	Washington, DC-VA-MD-WV	4.1	$388,600	$94,300
211		24	Canada	Peterborough, ON	4.2	$276,700	$65,300
211	44	4	U.K.	Glasgow	4.2	£123,800	£29,500
211		173	U.S.	Greeley, CO	4.2	$268,000	$64,200
211	44	173	U.S.	Las Vegas, NV	4.2	$221,500	$53,000
211		173	U.S.	Myrtle Beach, SC	4.2	$191,100	$45,500
216		7	Australia	Bunbury, WA	4.3	$350,000	$81,100
216		7	Australia	Latrobe, VIC	4.3	$228,000	$53,400
216		7	Australia	Mount Gambier, SA	4.3	$239,000	$56,000
216		7	Australia	Townsville, QLD	4.3	$342,000	$79,200
216		25	Canada	Oshawa, ON	4.3	$385,400	$90,500
216	46	2	Japan	Tokyo-Yokohama*	4.3	¥30,160,000	¥7,070,000
216		5	U.K.	Dundee	4.3	£127,300	£29,600
216		176	U.S.	Bakersfield, CA	4.3	$212,000	$49,300
216		176	U.S.	College Station, TX	4.3	$189,000	$43,600
216		176	U.S.	Hanford, CA	4.3	$190,000	$44,300
216		176	U.S.	Visalia, CA	4.3	$190,400	$44,100
216		176	U.S.	Wilmington, NC	4.3	$214,700	$50,100
228		26	Canada	Barrie, ON	4.4	$349,900	$79,200
228		26	Canada	Saskatoon, SK	4.4	$338,700	$77,500
228	47	6	U.K.	Blackpool & Lancashire	4.4	£128,800	£29,000
228	47	6	U.K.	Nottingham & Nottinghamshire	4.4	£136,500	£31,200
228		181	U.S.	Asheville, NC	4.4	$215,000	$48,500

SCHEDULE 3
ALL MARKETS RANKED BY AFFORDABILITY: Most Affordable to Least Affordable
Median Multiple (Median House Price/Median Household Income): 2015 – 3rd Quarter
Demographia International Housing Affordability Survey

International Affordability Rank	Major Market Rank	National Rank	Nation	Metropolitan Market	Median Multiple*	Median Price	Median Household Income
228		181	U.S.	Bridgeport, CT	4.4	$388,700	$88,900
228		181	U.S.	Charleston, SC	4.4	$242,900	$55,400
228		181	U.S.	Madera, CA	4.4	$195,000	$43,900
228		181	U.S.	Merced, CA	4.4	$201,000	$45,600
228		181	U.S.	Sarasota, FL	4.4	$236,400	$53,900
228		181	U.S.	Yuba City, CA	4.4	$220,000	$49,800
239	49	28	Canada	Calgary, AB	4.2	$391,500	$94,000
239	49	5	Ireland	Dublin	4.5	€263,000	€59,000
239	49	8	U.K.	Derby & Derbyshire	4.5	£147,000	£32,800
239	49	8	U.K.	Hull & Humber	4.5	£137,000	£30,700
239	49	8	U.K.	Middlesborough & Durham	4.5	£115,000	£25,700
239	49	8	U.K.	Sheffield & South Yorkshire	4.5	£122,500	£27,200
239		188	U.S.	Burlington, VT	4.5	$290,700	$64,100
239		188	U.S.	Modesto, CA	4.5	$240,000	$52,800
239		188	U.S.	Prescott, AZ	4.5	$205,000	$45,800
239	49	188	U.S.	Providence, RI-MA	4.5	$258,100	$57,800
249		11	Australia	Alice Springs, NT	4.6	$458,000	$99,100
249		11	Australia	Shepparton, VIC	4.6	$254,000	$54,900
249	56	12	U.K.	Manchester & Greater Manchester	4.6	£136,000	£29,400
252		13	Australia	Launceston, TAS	4.7	$257,000	$55,000
252		13	U.K.	Edinburgh	4.7	£163,300	£35,000
252	57	13	U.K.	Newcastle & Tyneside	4.7	£130,000	£27,800
252		192	U.S.	El Centro, CA	4.7	$190,000	$40,600
252	57	192	U.S.	Sacramento, CA	4.7	$291,400	$62,100
252		192	U.S.	Vallejo, CA	4.7	$330,000	$70,300
258		14	Australia	Devonport, TAS	4.8	$235,000	$48,700
258		14	Australia	Wagga Wagga, NSW	4.8	$320,000	$66,700
258		15	U.K.	Perth	4.8	£161,400	£33,800
258		195	U.S.	Bellingham, WA	4.8	$265,000	$55,500
258		195	U.S.	Medford, OR	4.8	$225,000	$46,500
258		195	U.S.	Midland, TX	4.8	$244,000	$50,900
264		16	Australia	Geraldton, WA	4.9	$365,000	$74,900
264		16	Australia	Mildura, VIC	4.9	$245,000	$50,100
264	59	29	Canada	Montréal, QC	4.9	$293,100	$59,400
264	59	16	U.K.	Birmingham & West Midlands	4.9	£144,000	£29,300
264		198	U.S.	Eugene, OR	4.9	$226,200	$46,400
264		198	U.S.	Redding, CA	4.9	$220,000	$45,200
270		18	Australia	Orange, NSW	5.0	$340,000	$67,800
270		2	N.Z.	Napier-Hastings	5.0	$299,500	$59,600
270	61	1	Singapore	Singapore	5.0	$408,000	$81,900
270		200	U.S.	Chico, CA	5.0	$220,000	$43,800
270		200	U.S.	Fort Collins, CO	5.0	$295,000	$58,500
270		200	U.S.	Fresno, CA	5.0	$224,000	$44,900
276		19	Australia	Albury-Wodonga, NSW-VIC	5.1	$300,600	$58,900
276		30	Canada	Hamilton, ON	5.1	$373,300	$73,400
276		3	N.Z.	Hamilton-Waikato	5.1	$354,300	$69,000
276		17	U.K.	Cardiff	5.1	£140,500	£27,400

SCHEDULE 3
ALL MARKETS RANKED BY AFFORDABILITY: Most Affordable to Least Affordable
Median Multiple (Median House Price/Median Household Income): 2015 – 3rd Quarter
Demographia International Housing Affordability Survey

International Affordability Rank	Major Market Rank	National Rank	Nation	Metropolitan Market	Median Multiple*	Median Price	Median Household Income
276		17	U.K.	Swansea	5.1	£119,000	£23,400
276	62	203	U.S.	Denver, CO	5.1	$353,000	$69,200
276	62	203	U.S.	Portland, OR-WA	5.1	$319,300	$62,300
283		20	Australia	Dubbo, NSW	5.2	$325,000	$63,100
283		4	N.Z.	Dunedin	5.2	$292,300	$56,200
283		4	N.Z.	Wellington	5.2	$403,800	$77,300
283		19	U.K.	Newport	5.2	£160,000	£30,900
283		19	U.K.	Northampton & Northamptonshire	5.2	£175,000	£33,800
283	64	19	U.K.	Stoke on Trent & Staffordshire	5.2	£149,000	£28,800
283		205	U.S.	Bend, OR	5.2	$278,000	$53,800
283	64	205	U.S.	Riverside-San Bernardino, CA	5.2	$292,500	$56,500
283	64	205	U.S.	Seattle, WA	5.2	$386,300	$73,700
292		21	Australia	Warragul-Drouin, VIC	5.3	$305,000	$57,700
292		22	U.K.	Leicester & Leicestershire	5.3	£167,300	£31,800
292	67	22	U.K.	Liverpool & Merseyside	5.3	£130,000	£24,600
292		22	U.K.	Warrington & Cheshire	5.3	£175,000	£32,800
292		208	U.S.	Reno, NV	5.3	$290,000	$54,500
292		208	U.S.	Stockton, CA	5.3	$285,000	$53,400
298		22	Australia	Bathurst, NSW	5.4	$360,000	$66,400
298		25	U.K.	Aberdeen	5.4	£197,300	£36,300
298		210	U.S.	Barnstable Town, MA	5.4	$364,100	$67,600
298	68	210	U.S.	Boston, MA-NH	5.4	$420,800	$78,300
302		23	Australia	Warrnambul, VIC	5.5	$320,000	$58,200
303		24	Australia	Bundaberg, QLD	5.6	$269,000	$47,800
303		24	Australia	Hobart, TAS	5.6	$346,000	$61,500
303		24	Australia	Tamworth, NSW	5.6	$318,000	$57,200
303		26	U.K.	Warwickshire	5.6	£206,500	£36,900
307		27	Australia	Ballarat, VIC	5.7	$320,000	$56,000
308		27	U.K.	Telford & Shropshire	5.8	£165,000	£28,500
308	69	212	U.S.	Miami, FL	5.8	$290,000	$50,100
310		28	Australia	Canberra, ACT	5.9	$625,000	$105,600
310		28	Australia	Toowoomba, QLD	5.9	$353,000	$59,600
310		31	Canada	Kelowna, BC	5.9	$407,100	$69,200
310	70	213	U.S.	New York, NY-NJ-PA	5.9	$410,500	$69,400
314		30	Australia	Bendigo, VIC	6.0	$340,000	$56,300
314		30	Australia	Darwin, NT	6.0	$629,000	$105,700
316	71	32	Australia	Brisbane, QLD	6.1	$480,000	$78,600
316		32	Australia	Cairns, QLD	6.1	$400,000	$65,900
316		6	N.Z.	Christchurch	6.1	$388,200	$63,900
316	71	28	U.K.	Bristol-Bath	6.1	£227,000	£37,300
316		214	U.S.	Boulder, CO	6.1	$449,000	$74,000
321	73	34	Australia	Adelaide, SA	6.4	$430,000	$66,700
321		34	Australia	Newcastle-Maitland, NSW	6.4	$435,200	$68,100
321		215	U.S.	Eureka, CA	6.4	$268,500	$42,000
321		215	U.S.	Oxnard, CA	6.4	$500,000	$78,100
325		36	Australia	Albany, WA	6.5	$395,000	$60,500
325		36	Australia	Lismore, NSW	6.5	$330,000	$50,500

SCHEDULE 3
ALL MARKETS RANKED BY AFFORDABILITY: Most Affordable to Least Affordable
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International Affordability Rank	Major Market Rank	National Rank	Nation	Metropolitan Market	Median Multiple*	Median Price	Median Household Income
325		32	Canada	Fraser Valley, BC	6.5	$498,100	$77,200
325		217	U.S.	Hilo, HI	6.5	$357,500	$54,600
329	74	38	Australia	Perth, WA	6.6	$589,000	$88,800
330	75	33	Canada	Toronto, ON	6.7	$529,800	$78,700
330		218	U.S.	Naples, FL	6.7	$400,000	$60,000
332		39	Australia	Fraser Coast, QLD	6.8	$300,000	$44,200
332		39	Australia	Hawkesbury, NSW	6.8	$550,000	$80,900
334		34	Canada	Victoria, BC	6.9	$458,300	$66,500
335		41	Australia	Mandurah, WA	7.0	$420,000	$60,400
335		219	U.S.	Santa Barbara, CA	7.0	$464,000	$66,000
335		219	U.S.	Santa Rosa, CA	7.0	$490,000	$70,100
338		42	Australia	Geelong, VIC	7.1	$420,000	$59,400
338	76	29	U.K.	London Exurbs (E & SE England)	7.1	£260,000	£36,500
340	77	30	U.K.	Plymouth & Devon	7.2	£199,000	£27,500
340		30	U.K.	Swindon & Wiltshire	7.2	£215,000	£30,000
340		221	U.S.	San Luis Obispo, CA	7.2	$475,000	$65,700
343		222	U.S.	Salinas, CA	7.4	$443,000	$59,900
344		223	U.S.	Napa, CA	7.6	$581,000	$76,700
345		43	Australia	Coff's Harbour, NSW	7.7	$402,000	$52,500
346		7	N.Z.	Taraunga-Western Bay of Plenty	8.1	$491,900	$60,400
346	78	224	U.S.	Los Angeles, CA	8.1	$506,800	$62,600
346	78	224	U.S.	San Diego, CA	8.1	$554,400	$68,500
349		226	U.S.	Kapaa (Kaui), Hi	8.2	$550,000	$67,100
350		44	Australia	Wollongong, NSW	8.3	$541,000	$65,000
350		227	U.S.	Kahului (Maui), HI	8.3	$573,300	$69,300
352	80	32	U.K.	London (GLA)	8.5	£400,000	£46,900
353		45	Australia	Gold Coast, QLD	8.6	$545,000	$63,700
354		46	Australia	Port Macquarie, NSW	8.7	$427,000	$48,900
354		46	Australia	Sunshine Coast, QLD	8.7	$496,500	$57,300
356		48	Australia	Bowral-Mittagong, NSW	8.8	$560,000	$63,900
357		228	U.S.	Honolulu, HI	9.2	$714,000	$77,200
358		49	Australia	Tweeds Heads, NSW	9.3	$450,000	$48,400
359	81	229	U.S.	San Francisco, CA	9.4	$809,400	$86,100
360		33	U.K.	Bournemouth & Dorsett	9.6	£258,000	£27,000
360		230	U.S.	Santa Cruz, CA	9.6	$650,000	$67,600
362	82	50	Australia	Melbourne, VIC	9.7	$730,000	$75,600
362	82	8	N.Z.	Auckland	9.7	$748,700	$77,500
362	82	231	U.S.	San Jose, CA	9.7	$965,000	$99,800
365	85	35	Canada	Vancouver, BC	10.8	$756,200	$69,700
366	86	51	Australia	Sydney, NSW	12.2	$1,032,000	$84,600
367	87	1	China	Hong Kong	19.0	$5,561,000	$293,000

Financial data in local currency.
*Average Multiple (Japan)

SCHEDULE 4 ALL MARKETS BY GEOGRAPHY Median Multiple (Median House Price/Median Household Income): 2015 – 3rd Quarter *Demographia International Housing Affordability Survey*							
International Affordability Rank	Major Market Rank	National Rank	Nation	Metropolitan Market	Median Multiple*	Median Price	Median Household Income
321	73	34	Australia	Adelaide, SA	6.4	$430,000	$66,700
325		36	Australia	Albany, WA	6.5	$395,000	$60,500
276		19	Australia	Albury-Wodonga, NSW-VIC	5.1	$300,600	$58,900
249		11	Australia	Alice Springs, NT	4.6	$458,000	$99,100
307		27	Australia	Ballarat, VIC	5.7	$320,000	$56,000
298		22	Australia	Bathurst, NSW	5.4	$360,000	$66,400
314		30	Australia	Bendigo, VIC	6.0	$340,000	$56,300
356		48	Australia	Bowral-Mittagong, NSW	8.8	$560,000	$63,900
316	71	32	Australia	Brisbane, QLD	6.1	$480,000	$78,600
216		7	Australia	Bunbury, WA	4.3	$350,000	$81,100
303		24	Australia	Bundaberg, QLD	5.6	$269,000	$47,800
316		32	Australia	Cairns, QLD	6.1	$400,000	$65,900
310		28	Australia	Canberra, ACT	5.9	$625,000	$105,600
345		43	Australia	Coff's Harbour, NSW	7.7	$402,000	$52,500
314		30	Australia	Darwin, NT	6.0	$629,000	$105,700
258		14	Australia	Devonport, TAS	4.8	$235,000	$48,700
283		20	Australia	Dubbo, NSW	5.2	$325,000	$63,100
332		39	Australia	Fraser Coast, QLD	6.8	$300,000	$44,200
338		42	Australia	Geelong, VIC	7.1	$420,000	$59,400
264		16	Australia	Geraldton, WA	4.9	$365,000	$74,900
125		3	Australia	Gladstone, QLD	3.5	$342,000	$97,700
353		45	Australia	Gold Coast, QLD	8.6	$545,000	$63,700
332		39	Australia	Hawkesbury, NSW	6.8	$550,000	$80,900
303		24	Australia	Hobart, TAS	5.6	$346,000	$61,500
69		2	Australia	Kalgoorlie, WA	2.9	$350,000	$120,000
23		1	Australia	Karratha, WA	2.5	$440,000	$174,800
216		7	Australia	Latrobe, VIC	4.3	$228,000	$53,400
252		13	Australia	Launceston, TAS	4.7	$257,000	$55,000
325		36	Australia	Lismore, NSW	6.5	$330,000	$50,500
177		4	Australia	Mackay, QLD	3.9	$345,000	$89,500
335		41	Australia	Mandurah, WA	7.0	$420,000	$60,400
362	82	50	Australia	Melbourne, VIC	9.7	$730,000	$75,600
264		16	Australia	Mildura, VIC	4.9	$245,000	$50,100
216		7	Australia	Mount Gambier, SA	4.3	$239,000	$56,000
321		34	Australia	Newcastle-Maitland, NSW	6.4	$435,200	$68,100
270		18	Australia	Orange, NSW	5.0	$340,000	$67,800
329	74	38	Australia	Perth, WA	6.6	$589,000	$88,800
191		5	Australia	Port Hedland, WA	4.0	$683,000	$171,500
354		46	Australia	Port Macquarie, NSW	8.7	$427,000	$48,900
191		5	Australia	Rockhampton, QLD	4.0	$275,000	$69,100
249		11	Australia	Shepparton, VIC	4.6	$254,000	$54,900
354		46	Australia	Sunshine Coast, QLD	8.7	$496,500	$57,300
366	86	51	Australia	Sydney, NSW	12.2	$1,032,000	$84,600
303		24	Australia	Tamworth, NSW	5.6	$318,000	$57,200
310		28	Australia	Toowoomba, QLD	5.9	$353,000	$59,600

SCHEDULE 4 ALL MARKETS BY GEOGRAPHY Median Multiple (Median House Price/Median Household Income): 2015 – 3rd Quarter *Demographia International Housing Affordability Survey*							
International Affordability Rank	Major Market Rank	National Rank	Nation	Metropolitan Market	Median Multiple*	Median Price	Median Household Income
216		7	Australia	Townsville, QLD	4.3	$342,000	$79,200
358		49	Australia	Tweeds Heads, NSW	9.3	$450,000	$48,400
258		14	Australia	Wagga Wagga, NSW	4.8	$320,000	$66,700
292		21	Australia	Warragul-Drouin, VIC	5.3	$305,000	$57,700
302		23	Australia	Warrnambul, VIC	5.5	$320,000	$58,200
350		44	Australia	Wollongong, NSW	8.3	$541,000	$65,000
				Median Market	5.6		
228		26	Canada	Barrie, ON	4.4	$349,900	$79,200
191		22	Canada	Brantford, ON	4.0	$264,900	$66,800
239	49	28	Canada	Calgary, AB	4.2	$391,500	$94,000
32		5	Canada	Charlottetown, PEI	2.6	$172,100	$66,900
191	38	22	Canada	Edmonton, AB	4.0	$354,600	$88,000
325		32	Canada	Fraser Valley, BC	6.5	$498,100	$77,200
16		3	Canada	Fredericton, NB	2.4	$163,500	$67,800
177		17	Canada	Guelph, ON	3.9	$331,700	$84,200
148		12	Canada	Halifax, NS	3.7	$254,000	$68,000
276		30	Canada	Hamilton, ON	5.1	$373,300	$73,400
310		31	Canada	Kelowna, BC	5.9	$407,100	$69,200
138		10	Canada	Kingston, ON	3.6	$247,800	$68,900
177		17	Canada	Kitchener, ON	3.9	$317,600	$81,000
138		10	Canada	London, ON	3.6	$236,600	$65,500
13		1	Canada	Moncton, NB	2.3	$146,500	$64,300
264	59	29	Canada	Montréal, QC	4.9	$293,100	$59,400
216		25	Canada	Oshawa, ON	4.3	$385,400	$90,500
148	26	12	Canada	Ottawa-Gatineau, ON-QC	3.7	$296,700	$80,900
211		24	Canada	Peterborough, ON	4.2	$276,700	$65,300
148		12	Canada	Québec, QC	3.7	$239,000	$65,200
177		17	Canada	Regina, SK	3.9	$309,600	$80,100
23		4	Canada	Saguenay, QC	2.5	$167,700	$66,600
13		1	Canada	Saint John, NB	2.3	$155,700	$67,000
228		26	Canada	Saskatoon, SK	4.4	$338,700	$77,500
163		16	Canada	Sherbrooke, QC	3.8	$199,800	$52,800
177		17	Canada	St. Catharines-Niagara, ON	3.9	$242,500	$62,800
177		17	Canada	St. John's, NL	3.9	$286,700	$74,300
69		8	Canada	Sudbury, ON	2.9	$222,700	$76,100
82		9	Canada	Thunder Bay, ON	3.0	$203,800	$68,700
330	75	33	Canada	Toronto, ON	6.7	$529,800	$78,700
32		5	Canada	Trois-Rivières, QC	2.6	$147,600	$56,300
365	85	35	Canada	Vancouver, BC	10.8	$756,200	$69,700
334		34	Canada	Victoria, BC	6.9	$458,300	$66,500
32		5	Canada	Windsor, ON	2.6	$177,300	$67,900
148		12	Canada	Winnipeg, MB	3.7	$260,400	$69,500
				Median Market	3.9		
367	87	1	China	Hong Kong	19.0	$5,561,000	$293,000

SCHEDULE 4
ALL MARKETS BY GEOGRAPHY
Median Multiple (Median House Price/Median Household Income): 2015 – 3rd Quarter
Demographia International Housing Affordability Survey

International Affordability Rank	Major Market Rank	National Rank	Nation	Metropolitan Market	Median Multiple*	Median Price	Median Household Income
102		4	Ireland	Cork	3.3	€171,250	€51,700
239	49	5	Ireland	Dublin	4.5	€263,000	€59,000
59		3	Ireland	Galway	2.8	€143,000	€50,800
1		1	Ireland	Limerick	1.8	€92,800	€51,200
2		2	Ireland	Waterford	2.1	€100,000	€47,700
				Median Market	2.8		
216	46	2	Japan	Tokyo-Yokohama*	4.3	¥30,160,000	¥7,070,000
110	18	1	Japan	Osaka-Kobe-Kyoto*	3.4	¥19,530,000	¥5,780,000
				Median Market*	3.9		
362	82	8	N.Z.	Auckland	9.7	$748,700	$77,500
316		6	N.Z.	Christchurch	6.1	$388,200	$63,900
283		4	N.Z.	Dunedin	5.2	$292,300	$56,200
276		3	N.Z.	Hamilton-Waikato	5.1	$354,300	$69,000
270		2	N.Z.	Napier-Hastings	5.0	$299,500	$59,600
202		1	N.Z.	Palmerston North-Manawatu	4.1	$228,200	$55,900
346		7	N.Z.	Taraunga-Western Bay of Plenty	8.1	$491,900	$60,400
283		4	N.Z.	Wellington	5.2	$403,800	$77,300
				Median Market	5.2		
270	61	1	Singapore	Singapore	5.0	$408,000	$81,900
298		25	U.K.	Aberdeen	5.4	£197,300	£36,300
202		3	U.K.	Belfast	4.1	£126,000	£30,600
264	59	16	U.K.	Birmingham & West Midlands	4.9	£144,000	£29,300
228	47	6	U.K.	Blackpool & Lancashire	4.4	£128,800	£29,000
360		33	U.K.	Bournemouth & Dorsett	9.6	£258,000	£27,000
316	71	28	U.K.	Bristol-Bath	6.1	£227,000	£37,300
276		17	U.K.	Cardiff	5.1	£140,500	£27,400
239	49	8	U.K.	Derby & Derbyshire	4.5	£147,000	£32,800
216		5	U.K.	Dundee	4.3	£127,300	£29,600
252		13	U.K.	Edinburgh	4.7	£163,300	£35,000
177		1	U.K.	Falkirk	3.9	£113,100	£29,200
211	44	4	U.K.	Glasgow	4.2	£123,800	£29,500
239	49	8	U.K.	Hull & Humber	4.5	£137,000	£30,700
177	35	1	U.K.	Leeds & West Yorkshire	3.9	£135,000	£34,300
292		22	U.K.	Leicester & Leicestershire	5.3	£167,300	£31,800
292	67	22	U.K.	Liverpool & Merseyside	5.3	£130,000	£24,600
352	80	32	U.K.	London (GLA)	8.5	£400,000	£46,900
338	76	29	U.K.	London Exurbs (E & SE England)	7.1	£260,000	£36,500
249	56	12	U.K.	Manchester & Greater Manchester	4.6	£136,000	£29,400
239	49	8	U.K.	Middlesborough & Durham	4.5	£115,000	£25,700
252	57	13	U.K.	Newcastle & Tyneside	4.7	£130,000	£27,800
283		19	U.K.	Newport	5.2	£160,000	£30,900
283		19	U.K.	Northampton & Northamptonshire	5.2	£175,000	£33,800
228	47	6	U.K.	Nottingham & Nottinghamshire	4.4	£136,500	£31,200

SCHEDULE 4
ALL MARKETS BY GEOGRAPHY
Median Multiple (Median House Price/Median Household Income): 2015 – 3rd Quarter
Demographia International Housing Affordability Survey

International Affordability Rank	Major Market Rank	National Rank	Nation	Metropolitan Market	Median Multiple*	Median Price	Median Household Income
258		15	U.K.	Perth	4.8	£161,400	£33,800
340	77	30	U.K.	Plymouth & Devon	7.2	£199,000	£27,500
239	49	8	U.K.	Sheffield & South Yorkshire	4.5	£122,500	£27,200
283	64	19	U.K.	Stoke on Trent & Staffordshire	5.2	£149,000	£28,800
276		17	U.K.	Swansea	5.1	£119,000	£23,400
340		30	U.K.	Swindon & Wiltshire	7.2	£215,000	£30,000
308		27	U.K.	Telford & Shropshire	5.8	£165,000	£28,500
292		22	U.K.	Warrington & Cheshire	5.3	£175,000	£32,800
303		26	U.K.	Warwickshire	5.6	£206,500	£36,900
				Median Market	5.1		
110		95	U.S.	Abilene, TX	3.4	$156,300	$45,800
23		18	U.S.	Akron, OH	2.5	$130,400	$52,300
110		95	U.S.	Albany, NY	3.4	$218,300	$64,400
163		140	U.S.	Albuquerque, NM	3.8	$185,600	$49,200
90		76	U.S.	Allentown, PA	3.1	$195,100	$62,400
82		69	U.S.	Amarillo, TX	3.0	$157,400	$53,100
148		129	U.S.	Anchorage, AK	3.7	$288,000	$78,300
138		121	U.S.	Ann Arbor, MI	3.6	$233,000	$65,000
16		12	U.S.	Appleton, WI	2.4	$151,400	$62,200
228		181	U.S.	Asheville, NC	4.4	$215,000	$48,500
90	14	76	U.S.	Atlanta, GA	3.1	$178,900	$58,100
138		121	U.S.	Atlantic City, NJ	3.6	$205,900	$57,200
191	38	159	U.S.	Austin, TX	4.0	$264,000	$65,800
216		176	U.S.	Bakersfield, CA	4.3	$212,000	$49,300
110	18	95	U.S.	Baltimore, MD	3.4	$252,300	$74,000
298		210	U.S.	Barnstable Town, MA	5.4	$364,100	$67,600
125		109	U.S.	Baton Rouge, LA	3.5	$186,000	$53,900
90		76	U.S.	Beaumont, TX	3.1	$138,500	$44,000
258		195	U.S.	Bellingham, WA	4.8	$265,000	$55,500
283		205	U.S.	Bend, OR	5.2	$278,000	$53,800
16		12	U.S.	Binghamton, NY	2.4	$121,100	$49,900
148	26	129	U.S.	Birmingham, AL	3.7	$180,900	$48,700
163		140	U.S.	Bismarck, ND	3.8	$248,500	$65,500
59		49	U.S.	Bloomington, IL	2.8	$166,200	$59,600
138		121	U.S.	Boise, ID	3.6	$192,000	$53,600
298	68	210	U.S.	Boston, MA-NH	5.4	$420,800	$78,300
316		214	U.S.	Boulder, CO	6.1	$449,000	$74,000
191		159	U.S.	Bremerton, WA	4.0	$254,000	$63,900
228		181	U.S.	Bridgeport, CT	4.4	$388,700	$88,900
32	1	25	U.S.	Buffalo, NY	2.6	$136,800	$51,800
239		188	U.S.	Burlington, VT	4.5	$290,700	$64,100
23		18	U.S.	Canton, OH	2.5	$125,000	$49,400
202		166	U.S.	Cape Coral, FL	4.1	$210,000	$50,700
32		25	U.S.	Cedar Rapids, IA	2.6	$167,800	$64,000
82		69	U.S.	Champaign, IL	3.0	$149,400	$49,700
228		181	U.S.	Charleston, SC	4.4	$242,900	$55,400

SCHEDULE 4
ALL MARKETS BY GEOGRAPHY
Median Multiple (Median House Price/Median Household Income): 2015 – 3rd Quarter
Demographia International Housing Affordability Survey

International Affordability Rank	Major Market Rank	National Rank	Nation	Metropolitan Market	Median Multiple*	Median Price	Median Household Income
95		81	U.S.	Charleston, WV	3.2	$139,600	$44,200
148	26	129	U.S.	Charlotte, NC-SC	3.7	$203,100	$55,400
110		95	U.S.	Chattanooga, TN-GA	3.4	$163,700	$48,200
138	23	121	U.S.	Chicago, IL	3.6	$229,300	$63,700
270		200	U.S.	Chico, CA	5.0	$220,000	$43,800
32	1	25	U.S.	Cincinnati, OH-KY-IN	2.6	$150,300	$57,700
32	1	25	U.S.	Cleveland, OH	2.6	$132,000	$51,600
216		176	U.S.	College Station, TX	4.3	$189,000	$43,600
191		159	U.S.	Colorado Springs, CO	4.0	$243,100	$61,500
102		88	U.S.	Columbia, MO	3.3	$171,400	$51,800
102		88	U.S.	Columbia, MO	3.3	$171,400	$51,800
82		69	U.S.	Columbia, SC	3.0	$157,000	$51,800
69	10	58	U.S.	Columbus, OH	2.9	$170,800	$58,300
110		95	U.S.	Corpus Christi, TX	3.4	$184,900	$53,800
2		1	U.S.	Cumberland, MD-WV	2.1	$82,400	$39,900
110	18	95	U.S.	Dallas-Fort Worth, TX	3.4	$210,000	$61,600
16		12	U.S.	Davenport, IA-IL	2.4	$126,200	$53,200
45		35	U.S.	Dayton, OH	2.7	$129,800	$48,300
110		95	U.S.	Daytona Beach, FL	3.4	$150,000	$43,900
16		12	U.S.	Decatur, AL	2.4	$111,900	$46,100
2		1	U.S.	Decatur, IL	2.1	$101,400	$49,200
276	62	203	U.S.	Denver, CO	5.1	$353,000	$69,200
59		49	U.S.	Des Moines, IA	2.8	$184,000	$64,600
59	6	49	U.S.	Detroit, MI	2.8	$150,000	$54,300
110		95	U.S.	Dover, DE	3.4	$194,500	$57,100
110		95	U.S.	Dover, DE	3.4	$194,500	$57,100
32		25	U.S.	Duluth, MN	2.6	$135,000	$52,000
202		166	U.S.	Durham, NC	4.1	$222,800	$53,800
252		192	U.S.	El Centro, CA	4.7	$190,000	$40,600
125		109	U.S.	El Paso, TX	3.5	$144,200	$41,500
45		35	U.S.	Elkhart, IN	2.7	$138,000	$51,700
2		1	U.S.	Elmira, NY	2.1	$108,800	$52,000
45		35	U.S.	Erie, PA	2.7	$125,200	$47,100
264		198	U.S.	Eugene, OR	4.9	$226,200	$46,400
321		215	U.S.	Eureka, CA	6.4	$268,500	$42,000
110		95	U.S.	Fargo, ND-MN	3.4	$191,800	$55,700
125		109	U.S.	Farmington, NM	3.5	$178,400	$50,500
90		76	U.S.	Fayetteville, AR-MO	3.1	$160,800	$51,900
125		109	U.S.	Fayetteville, NC	3.5	$152,100	$43,600
59		49	U.S.	Flint, MI	2.8	$121,000	$43,100
102		88	U.S.	Florence, SC	3.3	$136,800	$41,500
270		200	U.S.	Fort Collins, CO	5.0	$295,000	$58,500
69		58	U.S.	Fort Smith, AR-OK	2.9	$117,300	$40,600
125		109	U.S.	Fort Walton Beach, FL	3.5	$195,000	$55,500
270		200	U.S.	Fresno, CA	5.0	$224,000	$44,900
16		12	U.S.	Ft. Wayne, IN	2.4	$120,700	$51,100
148		129	U.S.	Gainesville, FL	3.7	$175,000	$46,900

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45		35	U.S.	Gainesville, GA	2.7	$145,000	$54,300
102		88	U.S.	Glens Falls, NY	3.3	$177,200	$53,700
59	6	49	U.S.	Grand Rapids, MI	2.8	$155,400	$56,200
211		173	U.S.	Greeley, CO	4.2	$268,000	$64,200
45		35	U.S.	Green Bay, WI	2.7	$150,100	$55,000
125		109	U.S.	Greensboro, NC	3.5	$154,800	$44,000
163		140	U.S.	Greenville, SC	3.8	$177,000	$46,300
69		58	U.S.	Gulfport, MS	2.9	$131,900	$45,400
45		35	U.S.	Hagerstown, MD-WV	2.7	$159,400	$58,500
216		176	U.S.	Hanford, CA	4.3	$190,000	$44,300
45		35	U.S.	Harrisburg, PA	2.7	$162,900	$59,700
95	15	81	U.S.	Hartford, CT	3.2	$229,200	$70,900
325		217	U.S.	Hilo, HI	6.5	$357,500	$54,600
357		228	U.S.	Honolulu, HI	9.2	$714,000	$77,200
125	21	109	U.S.	Houston, TX	3.5	$217,200	$62,100
82		69	U.S.	Huntsville, AL	3.0	$173,800	$58,400
69	10	58	U.S.	Indianapolis, IN	2.9	$157,300	$54,100
110		95	U.S.	Jackson, MS	3.4	$165,600	$48,600
163	33	140	U.S.	Jacksonville, FL	3.8	$199,000	$52,900
350		227	U.S.	Kahului (Maui), HI	8.3	$573,300	$69,300
82		69	U.S.	Kalamazoo, MI	3.0	$143,000	$47,300
2		1	U.S.	Kankakee, IL	2.1	$126,500	$60,400
69	10	58	U.S.	Kansas City, MO-KS	2.9	$174,000	$59,000
349		226	U.S.	Kapaa (Kaui), Hi	8.2	$550,000	$67,100
102		88	U.S.	Kennewick, WA	3.3	$198,300	$60,000
138		121	U.S.	Kingsport, TN-VA	3.6	$148,000	$40,600
125		109	U.S.	Kingston, NY	3.5	$212,100	$60,100
125		109	U.S.	Kingston, NY	3.5	$212,100	$60,100
125		109	U.S.	Knoxville, TN	3.5	$161,200	$46,700
138		121	U.S.	Lake Havasu City, AZ	3.6	$141,000	$39,000
102		88	U.S.	Lakeland, FL	3.3	$147,900	$44,300
69		58	U.S.	Lancaster, PA	2.9	$175,000	$59,400
32		25	U.S.	Lansing, MI	2.6	$131,900	$51,400
32		25	U.S.	Lansing, MI	2.6	$131,900	$51,400
202		166	U.S.	Laredo, TX	4.1	$162,000	$39,600
211	44	173	U.S.	Las Vegas, NV	4.2	$221,500	$53,000
69		58	U.S.	Lexington, KY	2.9	$151,800	$52,000
69		58	U.S.	Lincoln, NE	2.9	$157,900	$53,800
45		35	U.S.	Little Rock, AR	2.7	$137,400	$50,000
346	78	224	U.S.	Los Angeles, CA	8.1	$506,800	$62,600
82	13	69	U.S.	Louisville, KY-IN	3.0	$158,400	$52,700
228		181	U.S.	Madera, CA	4.4	$195,000	$43,900
177		153	U.S.	Madison, WI	3.9	$243,200	$63,000
125		109	U.S.	Manchester, NH	3.5	$261,900	$73,900
110		95	U.S.	McAllen, TX	3.4	$121,000	$36,000
258		195	U.S.	Medford, OR	4.8	$225,000	$46,500
95	15	81	U.S.	Memphis, TN-MS-AR	3.2	$154,000	$47,400

SCHEDULE 4
ALL MARKETS BY GEOGRAPHY
Median Multiple (Median House Price/Median Household Income): 2015 – 3rd Quarter
Demographia International Housing Affordability Survey

International Affordability Rank	Major Market Rank	National Rank	Nation	Metropolitan Market	Median Multiple*	Median Price	Median Household Income
228		181	U.S.	Merced, CA	4.4	$201,000	$45,600
308	69	212	U.S.	Miami, FL	5.8	$290,000	$50,100
258		195	U.S.	Midland, TX	4.8	$244,000	$50,900
202	42	166	U.S.	Milwaukee, WI	4.1	$226,800	$55,000
95	15	81	U.S.	Minneapolis-St. Paul, MN-WI	3.2	$228,700	$71,500
45		35	U.S.	Mobile, AL	2.7	$120,000	$45,100
239		188	U.S.	Modesto, CA	4.5	$240,000	$52,800
59		49	U.S.	Montgomery, AL	2.8	$138,400	$48,800
211		173	U.S.	Myrtle Beach, SC	4.2	$191,100	$45,500
344		223	U.S.	Napa, CA	7.6	$581,000	$76,700
330		218	U.S.	Naples, FL	6.7	$400,000	$60,000
163	33	140	U.S.	Nashville, TN	3.8	$209,100	$54,500
148		129	U.S.	New Haven, CT	3.7	$232,000	$62,500
45		35	U.S.	New London, CT	2.7	$187,800	$68,400
125	21	109	U.S.	New Orleans, LA	3.5	$171,800	$48,400
310	70	213	U.S.	New York, NY-NJ-PA	5.9	$410,500	$69,400
69		58	U.S.	Ocala, FL	2.9	$121,000	$41,300
95		81	U.S.	Ogden, UT	3.2	$215,000	$66,500
59	6	49	U.S.	Oklahoma City, OK	2.8	$153,900	$54,200
163		140	U.S.	Olympia, WA	3.8	$245,000	$63,700
45		35	U.S.	Omaha, NE-IA	2.7	$159,800	$59,500
191	38	159	U.S.	Orlando, FL	4.0	$201,200	$49,900
23		18	U.S.	Oshkosh, WI	2.5	$133,200	$54,200
321		215	U.S.	Oxnard, CA	6.4	$500,000	$78,100
110		95	U.S.	Palm Bay, FL	3.4	$167,000	$49,600
191		159	U.S.	Panama City, FL	4.0	$183,400	$46,200
95		81	U.S.	Pensacola, FL	3.2	$165,000	$51,700
10		8	U.S.	Peoria, IL	2.2	$126,700	$58,100
148	26	129	U.S.	Philadelphia, PA-NJ-DE-MD	3.7	$234,700	$64,300
191	38	159	U.S.	Phoenix, AZ	4.0	$218,800	$55,200
45	5	35	U.S.	Pittsburgh, PA	2.7	$148,000	$54,100
163		140	U.S.	Pittsfield, MA	3.8	$198,800	$51,900
163		140	U.S.	Port St. Lucie, FL	3.8	$185,000	$49,100
191		159	U.S.	Portland, ME	4.0	$243,600	$61,600
276	62	203	U.S.	Portland, OR-WA	5.1	$319,300	$62,300
239		188	U.S.	Prescott, AZ	4.5	$205,000	$45,800
239	49	188	U.S.	Providence, RI-MA	4.5	$258,100	$57,800
202		166	U.S.	Provo, UT	4.1	$261,000	$63,000
163		140	U.S.	Punta Gorda, FL	3.8	$170,000	$44,500
148	26	129	U.S.	Raleigh, NC	3.7	$241,700	$64,500
45		35	U.S.	Reading, PA	2.7	$158,200	$58,000
264		198	U.S.	Redding, CA	4.9	$220,000	$45,200
292		208	U.S.	Reno, NV	5.3	$290,000	$54,500
148	26	129	U.S.	Richmond, VA	3.7	$231,000	$63,000
283	64	205	U.S.	Riverside-San Bernardino, CA	5.2	$292,500	$56,500
59		49	U.S.	Roanoke, VA	2.8	$148,000	$53,100
32	1	25	U.S.	Rochester, NY	2.6	$138,000	$52,800

SCHEDULE 4
ALL MARKETS BY GEOGRAPHY
Median Multiple (Median House Price/Median Household Income): 2015 – 3rd Quarter
Demographia International Housing Affordability Survey

International Affordability Rank	Major Market Rank	National Rank	Nation	Metropolitan Market	Median Multiple*	Median Price	Median Household Income
2		1	U.S.	Rockford, IL	2.1	$102,800	$50,100
252	57	192	U.S.	Sacramento, CA	4.7	$291,400	$62,100
10		8	U.S.	Saginaw, MI	2.2	$100,000	$46,500
59	6	49	U.S.	Saint Louis, MO-IL	2.8	$160,000	$57,500
202		166	U.S.	Salem, OR	4.1	$211,800	$51,200
343		222	U.S.	Salinas, CA	7.4	$443,000	$59,900
16		12	U.S.	Salisbury, MD	2.4	$135,000	$56,000
177	35	153	U.S.	Salt Lake City, UT	3.9	$254,000	$64,800
148	26	129	U.S.	San Antonio, TX	3.7	$199,300	$54,500
346	78	224	U.S.	San Diego, CA	8.1	$554,400	$68,500
359	81	229	U.S.	San Francisco, CA	9.4	$809,400	$86,100
362	82	231	U.S.	San Jose, CA	9.7	$965,000	$99,800
340		221	U.S.	San Luis Obispo, CA	7.2	$475,000	$65,700
335		219	U.S.	Santa Barbara, CA	7.0	$464,000	$66,000
360		230	U.S.	Santa Cruz, CA	9.6	$650,000	$67,600
335		219	U.S.	Santa Rosa, CA	7.0	$490,000	$70,100
228		181	U.S.	Sarasota, FL	4.4	$236,400	$53,900
23		18	U.S.	Scranton-Wilkes Barre, PA	2.5	$115,000	$46,800
283	64	205	U.S.	Seattle, WA	5.2	$386,300	$73,700
163		140	U.S.	Shreveport, LA	3.8	$166,700	$43,600
69		58	U.S.	Sioux Falls, SD	2.9	$178,900	$60,900
23		18	U.S.	South Bend, IN	2.5	$118,100	$48,200
95		81	U.S.	Spartanburg, SC	3.2	$142,400	$44,700
177		153	U.S.	Spokane, WA	3.9	$199,300	$51,000
10		8	U.S.	Springfield, IL	2.2	$124,200	$56,900
177		153	U.S.	Springfield, MA	3.9	$207,400	$52,700
82		69	U.S.	Springfield, MO	3.0	$126,200	$42,700
292		208	U.S.	Stockton, CA	5.3	$285,000	$53,400
23		18	U.S.	Syracuse, NY	2.5	$134,200	$53,700
177		153	U.S.	Tallahassee, FL	3.9	$180,000	$45,800
138	23	121	U.S.	Tampa-St. Petersburg, FL	3.6	$175,000	$48,500
32		25	U.S.	Toledo, OH	2.6	$121,000	$47,200
2		1	U.S.	Topeka, KS	2.1	$116,400	$56,300
148		129	U.S.	Trenton, NJ	3.7	$290,100	$77,500
177	35	153	U.S.	Tucson, AZ	3.9	$183,600	$47,400
69		58	U.S.	Tulsa, OK	2.9	$151,700	$52,500
163		140	U.S.	Tyler, TX	3.8	$171,000	$45,500
13		11	U.S.	Utica, NY	2.3	$112,000	$49,400
252		192	U.S.	Vallejo, CA	4.7	$330,000	$70,300
148		129	U.S.	Vero Beach, FL	3.7	$175,000	$47,800
138	23	121	U.S.	Virginia Beach-Norfolk, VA-NC	3.6	$217,500	$60,900
216		176	U.S.	Visalia, CA	4.3	$190,400	$44,100
102		88	U.S.	Waco, TX	3.3	$147,000	$44,700
202	42	166	U.S.	Washington, DC-VA-MD-WV	4.1	$388,600	$94,300
23		18	U.S.	Waterloo, IA	2.5	$135,600	$54,800
32		25	U.S.	Wichita, KS	2.6	$138,900	$54,000
216		176	U.S.	Wilmington, NC	4.3	$214,700	$50,100

SCHEDULE 4 ALL MARKETS BY GEOGRAPHY Median Multiple (Median House Price/Median Household Income): 2015 – 3rd Quarter *Demographia International Housing Affordability Survey*							
International Affordability Rank	Major Market Rank	National Rank	Nation	Metropolitan Market	Median Multiple*	Median Price	Median Household Income
110		95	U.S.	Winston-Salem, NC	3.4	$152,600	$45,200
163		140	U.S.	Worcester, MA	3.8	$250,600	$66,800
163		140	U.S.	Yakima, WA	3.8	$173,500	$46,200
45		35	U.S.	York, PA	2.7	$165,200	$60,600
2		1	U.S.	Youngstown, OH-PA	2.1	$90,700	$43,700
228		181	U.S.	Yuba City, CA	4.4	$220,000	$49,800
90		76	U.S.	Yuma, AZ	3.1	$129,000	$41,400
				Median Market	3.5		
Financial data in local currency. *Average Multiple (Japan)							

ANNEX: USES, METHODS AND SOURCES

Most international housing affordability sources and "city" rating sources focus on higher end housing that would be demanded by executives who might be transferred from one nation to another (expatriates). The *Demographia International Housing Affordability Survey* is unique in focusing on the middle of the market --- housing affordability for average households.

Further, the focus is on metropolitan markets, rather than higher-cost inner areas or expensive neighborhoods. This is an important distinction. The data in the *Demographia International Housing Affordability Survey* does not relate, for example to Belgravia in London, New York's Upper East Side or Beverly Hills in Los Angeles. It rather encompasses entire metropolitan markets, which for example, in the New York metropolitan area includes more than 20 counties in the states of New York, New Jersey and Pennsylvania[55] (where included housing can be 75 miles [120 kilometers] or more from the upscale areas of the urban core, where prices are the highest).

Geographical Coverage: The nine nations and corresponding metropolitan markets that are included in the *12th Annual Demographia International Housing Affordability Survey* have sufficient current sources of house prices and household income data to estimate housing affordability using the Median Multiple (the similar "Average Multiple" is used in Japan).

Demographia receives periodic requests to expand its coverage to other nations. The addition of continental European nations, mainland China and India has been most frequently requested. *Demographia* would be pleased to add other nations and will do so wherever consistent data of sufficient quality can be identified. Readers are encouraged to contact the authors with any such information.

House Characteristics: The indexes and data on which the *Survey* is based reflect the majority of existing housing in each of the national markets. At the same time, there are differences in house types, housing characteristics and lot size between the geographies covered. The *Demographia International Housing Affordability Survey* does not adjust the Median Multiples to reflect these differences. For example, the average size of housing, particularly new housing, is abnormally small by New World standards, in the United Kingdom and Hong Kong.[56]

Methods: Median house price information is obtained from the leading national and metropolitan reporting agencies and includes the housing stock as reported upon. Where only average house prices are available, median house prices are estimated from historic conversion factors, except in Japan. The principal sources are generally real estate industry time series that have become established as authoritative, national sales transaction registries and other government sources.

Median household income data is estimated using national census data or surveys for each metropolitan market, where such data is available (such as the 2011 census in Australia, the 2011 National Household Survey in Canada , the 2013 New Zealand census, the annual American Community Survey in the United States and the annual Census and Statistics Department data in Hong Kong). Alternative government data is used to estimate incomes in Ireland and the United Kingdom, where comparable census data has not been identified. The income base is then adjusted to account for changes to produce an up-to-date estimate, using the best available indicators of income changes.

[55] As defined by the United States Bureau of Management and the Budget.
[56] See *2nd Annual Demographia International Housing Affordability Survey*, Pages 16-18.

Caution is urged in time-series comparisons in individual markets. Changes in data sources, base year income information, housing data sources and geographical definitions can make precise year to year comparisons less reliable. Comparisons should be generally limited to the housing affordability rating categories of "affordable," moderately unaffordable," "seriously unaffordable" and "severely unaffordable."[57]

Sources: The following principal sources have been consulted:

Australian Bureau of Statistics
Australian Property Monitors
Bank of Canada
Bank of England
Bank of Ireland
Calgary Real Estate Board
Canada Mortgage and Housing Corporation
Canadian Home Builders Association
Canadian Real Estate Association
Census and Statistical Office: Government of Hong Kong
Central Statistics Office, Ireland
Chambre immobilière du Grand Montréal
City Wire (Arkansas)
Communities and Local Government (Ministry), United Kingdom
Conference Board of Canada
Department of the Environment, Heritage and Local Government (Ireland)
Domain.com.au (Australia)
Edmonton Real Estate Board
Federal Reserve Board (United States)
Fédération des chambres immobilières du Québec
Harvard University Joint Center on Housing
Hawaii Information Service
Housing and Development Board (Singapore)
Housing Industry Association (Australia)
Ireland Environment, Heritage and Local Government
Japan Statistics Bureau
John Burns Real Estate Consulting
The Land Institute of Japan
Land Registry of England and Wales
The Land Registry (Hong Kong)
National Association of Home Builders (USA)
National Association of Realtors (USA)
National Statistics (United Kingdom)
Northern Ireland Research and Statistics Agency
Real Estate Institute of Australia
Real Estate Institute of New South Wales
Real Estate Institute of New Zealand
Real Estate Institute of Northern Territory
Real Estate Institute of Queensland

[57] Demographia attempts to use the most reliable available data at the time of report preparation. This necessitates adopting more representative sources as they become available, including new sources and updates.

Real Estate Institute of Tasmania
Real Estate Institute of Victoria
Real Estate Institute of Western Australia
Registers of Scotland
Reserve Bank of Australia
Reserve Bank of New Zealand
Residential Property Price Register of the Property Services Regulatory Authority (Ireland)
RP Data (realestate.com.au)
Singapore Department of Statistics
Singapore Real Estate Exchange (SRX)
Statistics Canada
Statistics New Zealand
Toronto Real Estate Board
United Kingdom Department of Communities and Local Government
United States Department of Commerce: Bureau of Economic Analysis
United States Department of Commerce: Bureau of the Census
United States Department of Housing and Urban Development
Urban Development Institute of Australia
Wells Fargo Bank
Zillow.com

Notes on Figures:

Figure 1: House Price-to-income Ratios: Reserve Bank of Australia data. Figure courtesy of Frontier Centre for Public Policy (https://www.fcpp.org/posts/housing-affordability-and-the-standard-of-living-in-toronto)

Figure 3: Housing Affordability & Land Regulation: In the United States, more restrictive regulation markets (Table 1) include those classified as "growth management," "growth control," "containment" and "contain-lite" in *From Traditional to Reformed A Review of the Land Use Regulations in the Nation's 50 largest Metropolitan Areas* (Brookings Institution, 2006) as well as markets Demographia has determined to have significant land rationing (urban containment) and rural zoning (large lot zoning) restrictions (New York, Boston, Chicago, Minneapolis-St. Paul, and Washington). Outside the United States, more restrictively regulated markets are identified based upon the extent of their use of urban containment strategies (significant restriction or prohibition of urban fringe development). This includes all of the United Kingdom (under the Town and Country Planning Act), Ireland (under the National Spatial Strategy), Hong Kong and all of the markets of Australia and New Zealand. In Canada, urban containment policy has been adopted in Toronto, Montréal, Vancouver, Ottawa and Calgary. Markets not classified as more restrictively regulated are classified as liberal (see Table 1).

Table 12 Metropolitan Market Selection	
Nation	Markets Included (Where Complete Data is Available)
Australia	Metropolitan markets corresponding to urban centres over 50,000 population & Pilbara
Canada	Metropolitan markets (CMAs) over 100,000 population
China	Hong Kong
Ireland	Metropolitan markets over 50,000 population
Japan	Two largest markets (only markets available)
New Zealand	Markets corresponding to urban areas over 75,000 population
Singapore	Singapore
United Kingdom	Markets corresponding to urban areas over 150,000 population and London Exurbs (E & SE England).
United States	Metropolitan markets (MSAs) over 200,000 population
Selected additional markets.	

Footer Illustrations: New Houses (Left to Right):

Suburban Kansas City, United States
Suburban Montréal, Canada
East of England (London Exurbs), United Kingdom
Suburban Tseung Kwan O (Hong Kong)
Suburban Dublin, Ireland
Suburban Auckland, New Zealand
Suburban Adelaide, Australia

BIOGRAPHIES

Wendell Cox

Wendell Cox is co-author of the *Demographia International Housing Affordability Survey*. He is a public policy consultant and principal of Demographia, an international public policy firm. He is Chair, Housing Affordability and Municipal Policy for the Frontier Centre for Public Policy in Canada (Winnipeg headquarters). He is a senior fellow at the Center for Opportunity Urbanism (Houston headquarters) and a member of the advisory board of the Center for Demographics and Policy at Chapman University in California.

Wendell Cox has also served as a visiting professor at the Conservatoire National des Arts et Metiers in Paris (a national university). He is has served as vice-president of CODATU, a Lyon (France) based international research organization dedicated to improving transport in developing world urban areas. He is a contributing editor at newgeography.com and author of the *Evolving Urban Form* series, which provides development profiles of individual world urban areas. Among his most recent policy reports were *A Question of Values: Urban Containment Policy and Middle-Income Housing Affordability* (Frontier Centre for Public Policy), *Putting People First: An Alternative Perspective with and Evaluation of the NCE Cities "Trillion Dollar" Report* (Center for Opportunity Urbanism), *Improving the Competitiveness of Metropolitan Areas* and *Evaluation of Plan Bay Area* and a "framing essay" entitled *Toward More Prosperous Cities*.

Wendell Cox has lectured widely, including a month long tour to all Australian state and territory capitals and university lectures in the United Kingdom, France, China, Egypt and Australia. He has also conducted transport and urban planning training seminars in Romania, Togo and Ethiopia, He has completed projects in the United States, Western Europe, Canada, Australia and New Zealand in urban policy, demographics and transport.

He was appointed to three terms on the Los Angeles County Transportation Commission by Mayor Tom Bradley and to the Amtrak Reform Council by Speaker of the U. S. House of Representatives Newt Gingrich.

Demographia annually publishes *Demographia World Urban Areas,* the only annual list of world urban areas (agglomerations) over 500,000 population with coordinate urban land area, population and population density estimates. Demographia sponsors three internet web sites, including demographia.com, www.publicpurpose.com and www.rentalcartours.net. The www.publicpurpose.com website has been twice honored by the *National Journal* as one of the nation's top internet transport sites. He is also author of the *Demographia Residential Land and Regulation Cost Index*.

In 2004 he teamed with Hugh Pavletich of Performance Urban Planning to develop the *Demographia International Housing Affordability Survey*.

Hugh Pavletich

Hugh Pavletich, the co-author of the *Demographia International Housing Affordability Survey,* resides in "severely unaffordable" (6.1 Median Multiple) Christchurch, New Zealand, which since 4 September 2010 has experienced in excess of 13,000 earthquakes. He has written extensively on these issues.

He operates the archival website Performance Urban Planning and is the Managing Director of Pavletich Properties Ltd, a commercial property development and investment company.

He commenced his working life as a farm worker and wool classer (wool classifier) in 1967 and moved to Christchurch in 1980, where he started developing small factory units and has developed commercial and industrial property on freehold and Maori leasehold land in other centers of the South Island as well.

His industry involvement commenced when elected President of the South Island Division of the Property Council of New Zealand (then the Building Owners & Managers Association – BOMA) soon after its inception in 1991, which he led for four years.

He has had extensive involvement with public policy issues of local authority financial management, land use regulation and heritage. In 2004, he was elected a fellow of the Urban Development Institute of Australia (UDIA) for services to the industry.

He felt there was a need for an international measure of housing affordability and teamed up with Wendell Cox in 2004, to develop the annual *Demographia International Housing Affordability Survey*.

DEMOGRAPHIA

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