

DEMOGRAPHIA

10th Annual
Demographia
International Housing
Affordability
Survey: 2014

Ratings for Metropolitan Markets

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

With an Introduction by

Alain Bertaud, Urbanist

Stern School of Business, New York University

Former Principal Planner-The World Bank

Data for 3rd Quarter 2013

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10th Annual Demographia International Housing Affordability Survey

Introduction

URBAN PLANNING AND HOUSING AFFORDABILITY

By **Alain Bertaud, Urbanist,**

Senior Research Scholar, Stern School of Business, New York University

Former Principal Planner - The World Bank

<http://alainbertaud.com/>

This year, Demographia is publishing its 10th Annual International Housing Affordability Survey. It ranks 360 metropolitan markets in nine countries.



Photo Dennis Letbetter

Are planners in the worst performing cities paying any attention? And are they drawing any conclusions on how to improve the situation? Or do local governments conclude that the best way to increase the supply of affordable housing is to impose new regulations that will mandate developers to build housing units at prices, standards, and in locations selected by the government? The last approach, under the name of inclusionary zoning is unfortunately the most common response, as recently seen, for instance, in New York and Mexico City.

Urban planners have been inventing all sorts of abstractly worded objectives to justify their plans for our future cities – smart growth, livability, sustainability, are among the most recent fads.

There is nothing wrong, of course, for a city to try to be smart, liveable, or sustainable.

But for some reasons these vague and benign sounding objectives usually become a proxy for imposing planning regulations that severely limit the supply of buildable land and the number of housing units built, resulting in ever higher housing prices. In the name of smart growth or sustainability, planners decide that densities should be lower in some places and higher in others. Population densities are not a design parameter whose value depends on the whim of planners but are consumption indicators which are set by markets.

Even the Communist Party of China recently declared that resource allocation is best achieved through markets; why can't urban planners in so-called market economies reach the same conclusions and let markets decide how much land and floor space households and firms will consume in different locations?



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.

Housing mobility allows households to move to the location that best maximize their welfare. Affordability is the ability for any urban household to be able to rent a dwelling for less than a 25% of its monthly income, or to buy one for less than about three times its yearly income.

The mobility and affordability objectives are tightly related. A residential location that only allows access to only a small segment of the job market in less than an hour commuting time has not much value to households, even if it is theoretically affordable.

For instance, the government of South Africa has been building several million units of heavily subsidized "affordable" housing in areas that require long and expensive commute – transport costs representing in some cases more than 50% of a worker salary. In this case, affordability without mobility is only a poverty trap. Affordability and spatial mobility are therefore inseparable objectives.

Urban planners should routinely monitor land and housing prices and rents by location in the metropolitan area in which they work. Monitoring the market supply side should be one of their main tasks. They should also monitor the changes in households' income distribution, the demand side. That way, they may learn how markets work.

How many urban planning departments publish annually variations in land and housing prices? If they did, they would be obliged to provide their own diagnostic to explain real estate price variations and propose remedial action when housing affordability decrease in an unacceptable manner.

Land use regulations and the availability of trunk infrastructure heavily constrain the supply of developable land. Planners, therefore, have a key role to play in ensuring an elastic supply of land by auditing land use regulations and by planning new trunk infrastructure that would allow the development of new areas or faster travel time to already built-up areas.

A periodic regulatory audit should weed out obsolete regulations to allow an elastic land supply and to increase households' ability to consume the amount of land and floor space that would maximize their welfare in the location of their choice. Part of the audit should concern the regulations, taxes, and administrative practices that unnecessarily increase transaction costs when building new housing units or selling or buying existing ones.

The twin objectives of maintaining mobility and housing affordability should drive the design, financing, and construction of trunk infrastructure.

Because the building of trunk infrastructure often requires the use of eminent domain, governments have a monopoly on its design and construction. Here is a new simple job description for urban planners: plan the development of trunk infrastructure to maintain a steady supply of developable land for future development, but leave land and floor consumption per dwelling to the market.



There is no silver bullet to increase the supply of affordable housing. But if planners abandoned abstracts – and unmeasurable objectives like smart growth, liveability and sustainability to focus on what really matters – mobility and affordability – we could see a rapidly improving situation in many cities. I am not implying that planners should not be concerned with urban environmental issues. To the contrary, those issues are extremely important, but they should be considered a constraint to be solved not an end in itself.

Urban development should remain the main objective of urban planning.

Until now, Demographia has focused its annual affordability survey on a limited number of OECD countries. This is understandable as the data collection task is difficult enough in advanced economies. In many cities, the scarcity of credible data on affordability further demonstrates how little interest the planning profession has in the issue.

However, the housing affordability problem is even worse in emerging economies than the ones in the OECD cities covered by the Demographia survey. In emerging economies, rapidly increasing households income combined with severe constraints on the supply of developable land are putting an enormous pressure on housing prices.

The constraints on land supply are usually due to obsolete regulations, overzealous and predatory bureaucracies - and in deficiencies in timely trunk infrastructure investments.

In Mumbai, for instance, in spite of a spectacular increase in real households' income through the last twenty years, the number of people living in slums has increased and includes now more than half of the population. Paradoxically, a large part of the Mumbai population that has recently reached middle class status is now living in slums!¹

In the case of Mumbai, the severe housing deficiencies are not due to poverty, but to political and bureaucratic inertia.

It is hoped that the clear quantitative approach demonstrated by the Demographia survey would incite local think tanks in India, Brazil and China to develop the data base and the methodology to analyse the affordability problem and find a market solution to solve it.

Alain Bertaud
Urbanist & Senior Research Scholar
Stern School of Business
New York University
Former Principal Urban Planner – World Bank
<http://alainbertaud.com/>

Biographical information follows...

¹ [Patricia Clarke Annez](#), [Alain Bertaud](#), [Bimal Patel](#) and [V. K. Phatak](#), *Working with the market: a new approach to reducing urban slums in India*, The World Bank Elibrary, November 2010. <http://elibrary.worldbank.org/doi/book/10.1596/1813-9450-5475>



About Alain Bertaud ...

Alain Bertaud is a senior research scholar at the NYU Stern Urbanization Project. At the moment, he is writing a book about urban planning that is tentatively titled *Order Without Design*. Bertaud previously held the position of principal urban planner at the World Bank. After retiring from the Bank in 1999, he worked as an independent consultant.

Prior to joining the World Bank he worked as a resident urban planner in a number of cities around the world: Bangkok, San Salvador (El Salvador), Port au Prince (Haiti), Sana'a (Yemen), New York, Paris, Tlemcen (Algeria), and Chandigarh (India).







Bertaud's research, conducted in collaboration with his wife Marie-Agnès, aims to bridge the gap between operational urban planning and urban economics. Their work focuses primarily on the interaction between urban forms, real estate markets and regulations.

Bertaud earned the Architecte DPLG diploma from the Ecole Nationale Supérieure des Beaux-Arts in Paris in 1967.



10th Annual Demographia International Housing Affordability Survey (2013: 3rd Quarter)

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

 <p>Hon. Bill English, Deputy Prime Minister, New Zealand (#9: 2013)</p> <p>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.</p>	 <p>#9: 2012: Robert Brueggmann, PhD, University of Illinois, Chicago (#8: 2012)</p> <p>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.</p>
 <p>Joel Kotkin, Chapman University (#7: 2011)</p> <p>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.</p>	 <p>Dr. Tony Recsei, Save Our Suburbs, Sydney (#6: 2010)</p> <p>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.</p> <p>Unless we are vigilant, high-density zealots will do their best to reverse centuries of gains and drive us back towards a Dickensian gloom.</p>
 <p>Dr. Shlomo Angel, New York University (#5: 2009)</p> <p>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.</p> <p>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.</p>	 <p>Dr. Donald Brash, Former Governor, Reserve Bank of New Zealand (#4: 2008)</p> <p>...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.</p> <p>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...</p>
<p>2007: 3rd Edition</p>	<p>2006: 2nd Edition</p>



From the Authors
Demographia International Housing Affordability Survey



We are pleased to present this *10th Annual Demographia Housing Affordability Survey*. Over the last decade, the *Demographia Surveys* have brought attention to the public policy driven deterioration of housing affordability, and thus the cost of living, to public attention around the world. Indeed, there is no more compelling domestic public purpose than to maintain and improve the standard of living and minimize poverty.

The proliferation of large cities is a less than two-century old phenomenon. The largest cities have emerged only over the past century. The rise of cities, along with technologies and ubiquitous mobility have transformed a world of poverty into a one with better lives for nearly all, and where nearly all aspire to a higher standard of living. This requires an affordable cost of living, which requires housing affordability.

Yet, the dominant strain of planning, urban containment, *increases* the cost of living. This would be fine in a world of Maslow's "self-actualizers," for whom "making ends meet" is at most a memory. Unacceptably, it condemns a much larger number to lower standards of living, and relegates more to poverty. *The first principle of livability is affordability.* There is an urgent need to facilitate the competitive land markets on which housing affordability depends.

The *Demographia Surveys* seek to fill the void created by the general failure of governments to monitor housing affordability, which is a prerequisite to the steps necessary to maintain and restore it.

The Economist may have best stated the imperative for reform: *the alternative is worse: a nation of renters and rentiers, where only the rich own houses.*

Wendell Cox



The purpose of the *Demographia Surveys* is to alert the public and policy-makers if housing exceeds 3.0 times annual household incomes, that there is institutional failure at the local level. The political and regulatory impediments with respect to land supply and infrastructure provision must be dealt with.

Indeed – the United Nations within its 2007 World Population Report is very forthright when it states –

“Once policymakers and civil society understand and accept the demographic and social composition of urban growth, some basic approaches and initiatives suggest themselves.”

“These could have a huge impact on the fate of poor people and the viability of the cities themselves. “

“Throughout the report, the message is clear. Urban and national governments, together with civil society and supported by international organizations, can take steps that make a huge difference for the social, economic and environmental living conditions of a majority of the world’s population.”

“ Three policy initiatives stand out in this connection.”

“First, preparing for an urban future requires at a minimum, respecting the rights of the poor to the city. As Chapter 3 shows, many policymakers continue to try to prevent urban growth by discouraging rural – urban migration.....”

“These attempts to prevent migration are futile, counterproductive and wrong – a violation of people’s rights.”

Hugh Pavletich



10th Annual Demographia International Housing Affordability Survey

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10th Annual Demographia International Housing Affordability Survey

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

The *10th Annual Demographia International Housing Affordability Survey* covers 360 metropolitan markets in nine geographies (Australia, Canada, Hong Kong, Ireland, Japan, New Zealand, Singapore, the United Kingdom and the United States). A total of 85 major metropolitan markets --- with more than 1,000,000 population --- are included, including five of the six largest metropolitan areas in the high income world (Tokyo-Yokohama, New York, Osaka-Kobe-Kyoto, Los Angeles, and London).

1. Rating Housing Affordability

The *Demographia International Housing Affordability Survey* rates housing affordability using the “Median Multiple” in the analysis of Australia, Canada, Hong Kong, Ireland, New Zealand, Singapore, the United Kingdom and the United States. 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 Harvard University Joint Center on Housing.

Average multiple data (average house price divided by average household income) is used in Japan, where data for estimating medians is not readily available.

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. The reality is that, if house prices double or triple relative to incomes, as has occurred in many severely unaffordable markets, the sum total of mortgage payments will also rise substantially.

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 having generally been from 2.0 to 3.0 times median household incomes. The Average Multiple reached as low 3.5 and 3.9 in the major metropolitan areas of Japan within the last decade, though further historical data has not been identified.

The historic affordability relationship continues in many housing markets of the United States and Canada. However, housing affordability has deteriorated sharply in the past decade in Australia, Ireland, New Zealand, and the United Kingdom and in some markets of Canada and the United States (evidenced by sharply higher Median Multiples). In every market where there has been a sustained and significant increase in the Median Multiple, more restrictive land use policies have been implemented. These policies are referred to in this *Survey* as "urban containment" (also called as "smart growth," "urban consolidation," "compact city policy," "growth management," "densification policy," etc.).

Regrettably, virtually no government administering urban containment policy effectively monitors housing affordability. However, encouraging developments have been implemented at higher levels of government in New Zealand and Florida, and there are signs of potential reform elsewhere.



Typically, land use policy authorities fail to compare credible measures of housing affordability with historical standards. Moreover, when faced with the reality house cost rises disproportionately high relative to incomes, seek to identify virtually any cause except for the principal cause itself: the destruction of the competitive market for land.

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 an important endeavor. 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, 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 higher of 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 <i>Demographia International Housing Affordability Survey</i> 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 2013

Housing affordability deteriorated somewhat in the major metropolitan markets. The most affordable major metropolitan markets were in the United States, Ireland and Japan, each of which had a moderately unaffordable rating (between 3.1 and 4.0). Canada was rated "seriously unaffordable," with a Median Multiple of 4.5, along with the United Kingdom, at 4.7. Singapore had a Median Multiple of 5.1, for a severely unaffordable rating. Other severely unaffordable geographies included Australia (6.3), New Zealand (8.0), and Hong Kong (14.9). (Table ES-2).

The most affordable major metropolitan markets (Figure ES-1) were in the United States (Figure ES-1), led by Pittsburgh (2.3) and including burgeoning Atlanta (2.7) and growing Indianapolis (2.7). Hong Kong's Median Multiple of 14.9 is the highest recorded (least affordable) in the 10 years of the *Demographia International Housing Affordability Survey*. Again, Vancouver was second only to Hong Kong, with a Median Multiple of 10.3 Perhaps the most important development is a return to housing unaffordability in coastal California that rivals the levels leading to the housing bust, in San Francisco (9.2), San Jose (8.7), San Diego (7.9) and Los Angeles (7.9) Sydney (9.0) was the fourth least affordable major market. Highly elevated Median Multiples were also recorded in Melbourne (8.4), Auckland (8.0) and London (7.3).



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	6.3
Canada	0	2	2	2	6	4.5
China SAR	0	0	0	1	1	14.9
Ireland	0	1	0	0	1	3.7
Japan	0	1	1	0	2	4.0
New Zealand	0	0	0	1	1	8.0
Singapore	0	0	0	1	1	5.1
United Kingdom	0	1	9	6	16	4.7
United States	14	24	6	8	52	3.5
TOTAL	14	29	18	24	85	4.0

All Markets: Among all 360 markets in the principal analysis, there were 95 affordable markets, 84 in the United States, seven in Canada and four in Ireland. There were 122 moderately unaffordable markets, 100 in the United States, 17 in Canada, three in the United Kingdom and one each in Japan and Ireland. There were 67 seriously unaffordable markets and 76 severely unaffordable markets.

Australia had 25 severely unaffordable markets, followed by the United States with 23 and the United Kingdom with 15. New Zealand had five severely unaffordable markets, while Canada had five (Table ES-3).

Most & Least Affordable Major Markets

DEMOGRAPHIA HOUSING AFFORDABILITY SURVEY

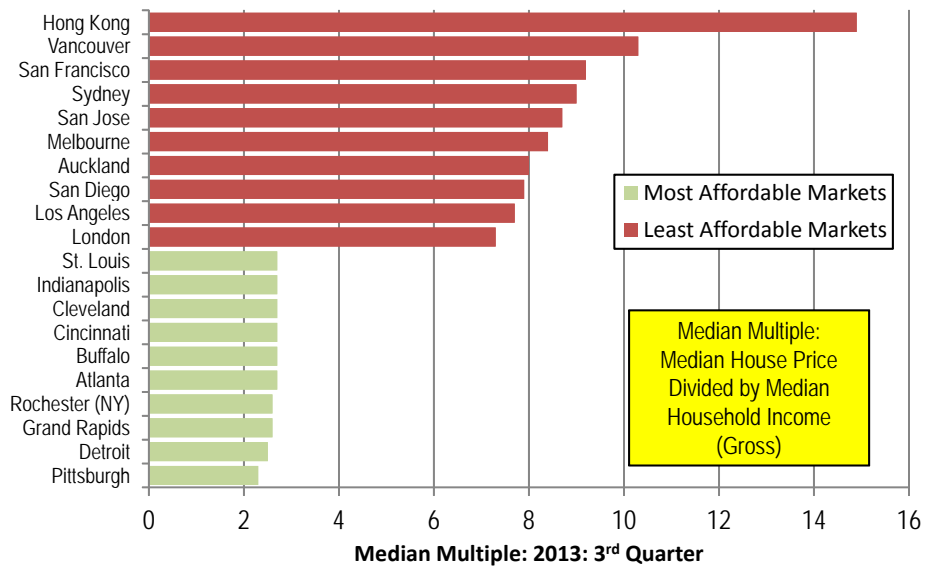


Figure ES-1



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	0	0	14	25	39	5.5
Canada	7	17	6	5	35	3.9
China SAR (Hong Kong)	0	0	0	1	1	14.9
Ireland	4	1	0	0	5	2.8
Japan	0	1	1	0	2	4.0
New Zealand	0	0	2	6	8	5.5
Singapore	0	0	0	1	1	5.1
United Kingdom	0	3	15	15	33	4.9
United States	84	100	29	23	236	3.4
TOTAL	95	122	67	76	360	3.7

3. House Size and the Standard of Living

Housing affordability is an important determinant of the standard of living, because higher cost housing leaves less in discretionary incomes. There is an important irony between the geographies in the *Demographia Survey*. The smallest houses are in the most expensive market (Hong Kong), while the largest houses are in the United States, which has the best major market housing affordability (Ireland has the best overall housing affordability). Other things being equal, living space is an important component of the standard of living. On this score, those who pay the most get the least, while those who pay the least get the most.

4. The Market Relationship: House Prices and Household Incomes

In recent decades, there has been a fundamental decoupling of house prices from household incomes in some metropolitan markets from the maximum 3.0 affordability standard. House prices have risen at much greater trajectories than household incomes in many markets. This has invariably been associated with urban containment policy and is most evident in Australia, New Zealand and United Kingdom and some markets of Canada and the United States. All markets rated severely unaffordable (Median Multiple over 5.0) have more restrictive land use (principally urban containment) policies, which means that no markets rated severely affordable have liberal land use policy. The same has been true over the entire decade of *Demographia Surveys*.

Severely unaffordable markets are also more attractive to buyers seeking extraordinary returns on investment, short term profits. This further raises prices in markets where urban fringe development is largely prohibited by urban containment's land rationing policies. Substantial international investor activity has been reported in London, Vancouver, the US West Coast markets of Vancouver, Seattle, the San Francisco Bay Area, Los Angeles and San Diego and others. These price increases make such metropolitan areas less livable for average and lower income households.

The key to preserving housing affordability is a "competitive land supply," which appears to be incompatible with urban containment policy both in economic theory and practice. Further, out-of-control house price escalation destabilizes economies, retarding metropolitan area economic growth and job creation.



Concerns have often been voiced in the United Kingdom, the birthplace of urban containment. In 1971, Sir Peter Hall characterized the outcomes of Britain's land use policy as being inconsistent "with the objective of providing cheap owner occupied housing." More recently, John Muellbaur of Oxford University noted its "resource misallocations that can only be described as grotesque."

5. Prospects for a Better Standard of Living

Much of the high income world still mired in laggard economic growth. Household incomes have stagnated or are even declining in real terms. The cost of housing could become an even greater burden for households when artificially low mortgage interest rates rise to historic norms.

The prospects are mixed among the severely unaffordable markets. All of Australia's major markets and Canada's larger major markets are severely unaffordable and thus at particular risk. Failure to jettison the Dublin area's destructive regulations could set Ireland up for a replay of its recent financial nightmare.

Yet there are regions of hope. The central government of New Zealand has recognized the problem and is pursuing strategies to open up land supply and reduce housing costs. Both political parties in the United Kingdom are committed to reforms to improve housing affordability. Singapore's well-designed regulatory structure, with its emphasis on sufficient supply and affordability is capable of restoring housing affordability.

There is even hope in Canada and the United States, where substantial areas of liberal land use policy remain, which permit residents to move to areas with lower costs of living. This is most evident in the United States, where the urban containment markets of coastal California (least affordable in the nation), long renowned for their attractiveness to domestic migrants, lost more than a 2,000,000 net domestic migrants to other parts of the nation during the 2000s. For many, especially young households, the "California" dream requires moving to Texas, Indiana or Georgia.

6. Planning for People

Urban containment policy has rested on various justifications through its long life. Now, urban containment's principal justification is its purported potential to reduce greenhouse gas emissions. However, urban containment policy is ineffective in reducing greenhouse gas emissions. Its reductions are miniscule, while its costs are far beyond any rational level. The European Conference of Ministers of Transport noted the importance of achieving greenhouse gas emissions "at the lowest overall cost to avoid damaging welfare and economic growth."

The Role of Cities: Throughout history, people have moved to cities for better lives, responding to the much greater and more focused economic opportunities they provided. Cities, in combination with the technological and transport advances of the last two centuries have facilitated unparalleled affluence in many nations and have replaced universal poverty with far better lives virtually everywhere. Former World Bank principal urban planner Alain Bertaud (2004) noted that: *Large labor markets are the only raison d'être of large cities.*

Most governments place the highest priority on achieving a ***higher standard of living and less poverty.*** Yet, these principal objectives are subverted by urban planning policies that place the urban form or means of transport above the betterment of people. There is a need to reorient planning to achieve more fundamental purposes.



10th Annual Demographia International Housing Affordability Survey

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

1. RATING HOUSING AFFORDABILITY

The *10th Annual Demographia International Housing Affordability Survey* covers 85 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 six largest metropolitan areas in the high income world (Tokyo-Yokohama, New York, Osaka-Kobe-Kyoto, Los Angeles, and London).¹ House price data is obtained from house price indexes or developed from statistical databases that account for the vast majority of existing dwellings sold in each of the geographies.

The *Demographia International Housing Affordability Survey* is unique in providing standardized comparisons of housing affordability² between international housing markets. The *10th Annual Demographia International Housing Affordability Survey* includes estimates from the September quarter (third quarter) of 2013.

Many housing affordability reviews 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 2007.³ 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 where historical similarities are indicated between housing affordability indices.

Historically, the Median Multiple has been remarkably similar among the nations surveyed, with median house prices generally being 3.0 or less times median household income.

¹ The sixth is Seoul.

² Housing affordability is considered in the *Demographia Survey* at the middle of the market, and thus uses median house prices and median household incomes. This is to be contrasted with "affordable housing," which often refers to low-income housing or social housing. Affordable housing is important and is exacerbated by the same restrictive land use policies that have destroyed the historic relationship between house prices and incomes. Housing policy requires a strong focusing on affordable housing, but it also requires a broader focus relating to the entire population. The consequences, among others are slower economic growth, less job creation and greater poverty.

³ 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 reflect these differences. Details on this divergence in affordability by market in the United States is covered in a [Heritage Foundation](#) policy report.



1.1 The Standard: The Median Multiple

The *Demographia International Housing Affordability Survey* uses the “Median Multiple”⁴ (median house price divided by gross annual median household income⁵) to assess housing affordability. The Median Multiple is widely used for evaluating urban markets, and has been recommended by the World Bank⁶ and the United Nations and is used by the Harvard University Joint Center on Housing.⁷

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 markets.

1.2 The Median Multiple: Historical International Consistency

Historically, the Median Multiple has been remarkably similar among six of the nations surveyed for the stock of homes included in principal national reports. Reserve Bank of Australia research has shown that the price-to-income ratio was at or [below 3.0](#) in Australia, Canada, Ireland, New Zealand, the United Kingdom and the United States until the late 1980s or late 1990s, depending on the nation (See Section 4). This historic affordability relationship of a Median Multiple in the range of from 2.0 to 3.0, with 3.0 as the outer bound of affordability continues in many housing markets of the United States and Canada.⁸ The 3.0 standard [was noted in research](#) by Arthur C. Grimes, of Motu Economics and Policy Research and Chair of the Board of the Reserve Bank of New Zealand.

This makes comparisons between these nations, such as those made by international organizations (such as by the International Monetary, the Organization for Economic Cooperation and Development and the World Bank), central banks and other analysts especially appropriate.

In recent decades, housing affordability has deteriorated materially across Australia, Ireland, New Zealand⁹ and the United Kingdom, virtually without regard to market size or demand. There has also been substantial housing affordability deterioration in some markets of Canada and the United States. Severe losses in housing affordability have occurred in Hong Kong.

The causes of deteriorating housing affordability are not a mystery. As long-time [Governor of the Reserve Bank of New Zealand Donald Brash put it in his introduction](#) to the *4th Annual Demographia International Housing Affordability Survey*:

⁴ Also called a price-to-income ratio.

⁵ This is to be contrasted with median "family" income, which is higher and would produce a *lower* multiple.

⁶ *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.

⁷ *Indicators of Sustainable Development: House Price-to-income Ratio*: http://esl.jrc.it/envind/un_meths/UN_ME050.htm.

⁸ A value below 2.0 is affordable, but may indicate depressed economic conditions.

⁹ Interest.co.nz also provides housing affordability data using a Median Multiple measure. Interest.co.nz uses a standardized household, rather than the median income household (see: http://www.interest.co.nz/HLA/house_price_to_income_ratio.asp)



...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.

Operating at cross-purposes, many governments have adopted urban containment land regulations (also referred to as "densification," "compact development," "urban consolidation," "growth management," "smart growth," or "livability" policies). that ration land for development. Urban containment severely rations land for development, leading to [materially higher land prices, which makes houses more expensive](#), just as rationing oil increases the price of petrol (Table 1).

Table 1
LAND USE REGULATION CLASSIFICATIONS

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

Urban Containment (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. Generally, it is an urban planning objective to make urban containment the *only* legal regulatory structure. There is a strong campaign to make the principal alternative, liberal regulation (below), illegal.

Urban containment¹⁰ may also be characterized by terms such as "densification policy," "compact development", "urban consolidation", "growth management" and " smart growth." 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.

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. In addition to higher costly housing costs relative to incomes, the higher densities in urban containment markets are associated with [greater traffic congestion and longer average work trip journey times](#).

Urban containment policies are normally 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 "urban containment." In these markets, residential development is allowed to occur based upon consumer preferences, subject to reasonable environmental regulation.¹¹ Generally, liberal land use regulation is "demand-driven" There is a presumption allowing land 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 costly housing costs relative to incomes, lower population densities in 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.

¹⁰ The term "urban containment" is used throughout the *Survey* to denote more restrictive land use regulation.

¹¹ Liberal land use policy may vary widely, from the near deregulation in some areas of Texas to the "light-handed" zoning based regulations operating throughout much of the rest of the United States.



Regrettably, virtually no government administering urban containment policy effectively monitors housing affordability. However, encouraging developments have been implemented at higher levels of government in New Zealand and Florida, and there are signs of potential reform elsewhere.

Typically, land use policy authorities fail to compare credible measures of housing affordability with historical standards (above). Moreover, when faced with the reality house cost rises disproportionately high relative to incomes, seek to identify virtually any cause except for the principal cause itself: the destruction of the competitive market for land.

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, 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 higher of greater importance than urban form, motive transport or miniscule environmental gains.

Housing Affordability Ratings: The *10th Annual Demographia International Housing Affordability Survey* uses existing house sales transaction data to rate housing affordability in the 360 markets. 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 2013

2.1 International Summary

The distribution of housing affordability in the 85 major metropolitan markets¹² (those with more than 1,000,000 residents) has deteriorated over the past year (Figure 1 and Table 3). Hong Kong remains the least affordable, with a Median Multiple of 14.9, while Vancouver is second least affordable, at 10.3. The most important development, however, is a return to Median Multiples reminiscent of ratios at the peak of the housing crisis in California, especially in San Francisco (9.2), San Jose (8.7), San Diego (7.9) and Los Angeles (7.7). Across the major markets of California, the Median Multiple has increased at more than three times the national rate, following the trough of 2009. Melbourne deteriorated to a Median Multiple of 8.4, while Auckland was at 8.0 and London at 7.3 (Figure 2).

¹² Grand Rapids, Michigan, in the United States was added as a major metropolitan market in 2013.



Housing Affordability: 2004-2013

MAJOR MARKETS (OVER 1,000,000 POPULATION)

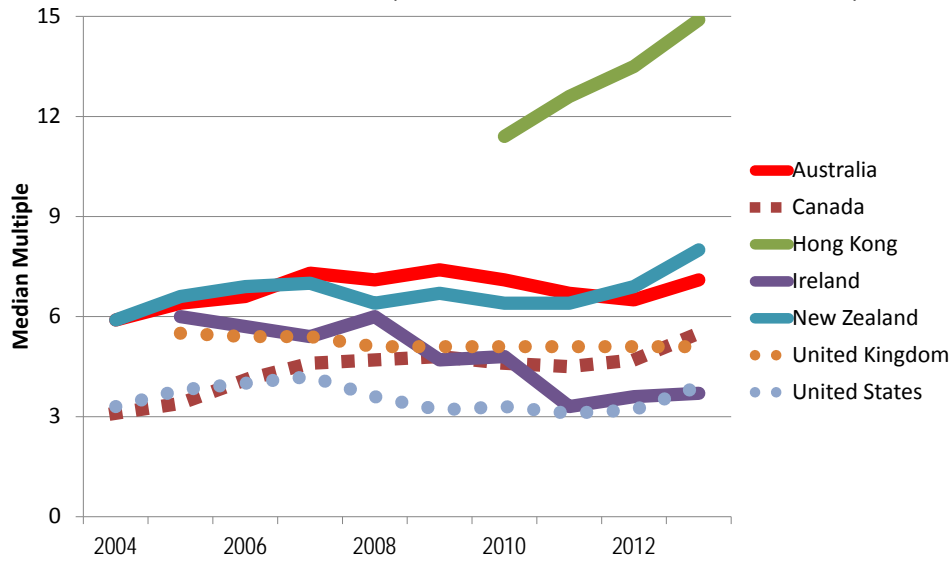


Figure 1

Most & Least Affordable Major Markets

DEMOGRAPHIA HOUSING AFFORDABILITY SURVEY

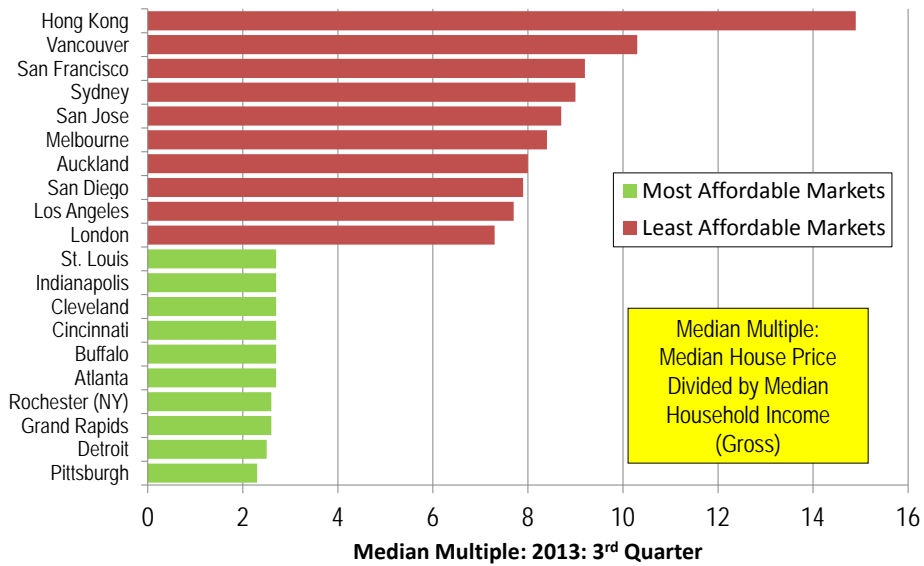


Figure 2



The number of affordable markets dropped to 14 from 20, while there was an increase in the number of moderately unaffordable markets (from 23 to 29). The number of seriously unaffordable markets increased from 14 to 18, while the number of severely unaffordable markets rose by one to 24.

Rating	Median Multiple	Major Markets (Number)	All Markets (Number)
Affordable	3.0 or Less	14	95
Moderately Unaffordable	3.1 to 4.0	29	122
Seriously Unaffordable	4.1 to 5.0	18	67
Severely Unaffordable	5.1 & Over	24	76
TOTAL		85	360

All 14 of the affordable major markets were in the United States. Among the 29 moderately unaffordable markets, 24 were in the United States, two in Canada, one each was in Ireland, the United Kingdom and Japan. All of the major markets of Australia, New Zealand, Hong Kong and Singapore were severely unaffordable. Nearly one-third of the major markets in the United Kingdom and one-third of the major markets in Canada were severely unaffordable. Eight of the 52 major US markets were severely unaffordable (Table 4).

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	6.3
Canada	0	2	2	2	6	4.5
China SAR	0	0	0	1	1	14.9
Ireland	0	1	0	0	1	3.7
Japan	0	1	1	0	2	4.0
New Zealand	0	0	0	1	1	8.0
Singapore	0	0	0	1	1	5.1
United Kingdom	0	1	9	6	16	4.7
United States	14	24	6	8	52	3.5
TOTAL	14	29	18	24	85	4.0

The most affordable major market was Pittsburgh (2.3), followed by Detroit (2.5), Grand Rapids and Rochester (2.6). Fast-growing Atlanta had a Median Multiple of 2.7. There were 29 moderately unaffordable major markets. These were distributed between four geographies, the United States (25), Canada (2), Ireland (1), and Japan, where megacity Osaka-Kobe-Kyoto had an Average Multiple of 3.5. There were 18 seriously unaffordable major markets.

*Hong Kong, Vancouver
San Francisco, Sydney,
Melbourne and
Auckland were the
most unaffordable
major markets...*

There were also 24 severely unaffordable markets. Hong Kong had most unaffordable housing, with a Median Multiple of 14.9. This was the fourth year in a row that Hong Kong was the least affordable. Vancouver (10.3) was the second most unaffordable.



This was the sixth year in a row that Vancouver ranked as one of the two least affordable major markets in the *Survey*. Third ranking San Francisco's housing affordability deteriorated markedly, from 7.8 to 9.2. Sydney ranked fourth most unaffordable of the major markets, at 9.0, followed by San Jose (8.7), Melbourne (8.4) and Auckland (8.0).

As in the past, each of seriously unaffordable and severely unaffordable markets were characterized by urban containment regulation. 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).

All Markets: Among the 360 metropolitan markets, Ireland's were most affordable, with a Median Multiple of 2.8 (Figure 4). This is the most affordable national rating in the 10 years of the *Survey*. The United States was the second most affordable, at 3.4, followed by Canada (3.9) and Japan (4.0). The least affordable markets were in Hong Kong (14.9), Australia (5.5) and New Zealand (5.5), Singapore (5.1) and the United Kingdom (4.9).

Housing Affordability & Land Regulation METROPOLITAN AREAS OVER 2,000,000 POPULATION

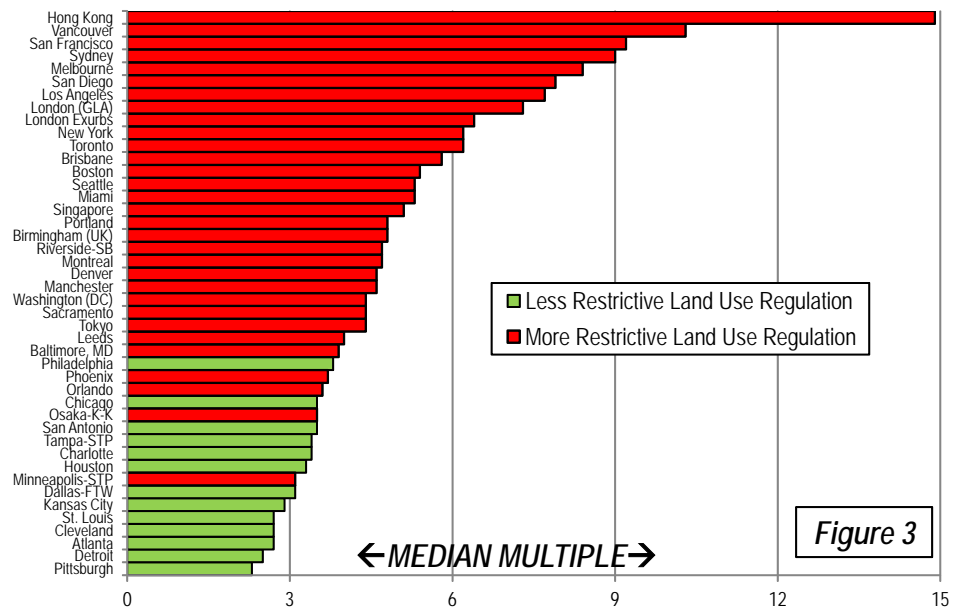


Figure 3

Among all markets, 95 were affordable (Median Multiple of 3.0 or less). There were 122 moderately unaffordable markets (Median Multiple of 3.1 to 4.0) and 67 seriously unaffordable markets (Median Multiple of 4.1 to 5.0). A total of 76 markets were severely unaffordable markets (Median Multiple of 5.1 or higher). Overall, the Median Multiple was 3.7 (Table 4).

The 360 markets are ranked by housing affordability in Schedule 3. All of the 95 affordable markets (having a Median Multiple of 3.0 or below) were in Ireland (4), Canada (7) and the United States (84). Of the 17 most affordable markets, 16 were in the United States and one was in Ireland. There were no affordable markets in Australia, Hong Kong, Japan, New Zealand, Singapore or the United Kingdom.

The 122 moderately unaffordable markets were divided between the United States (100 and), Canada (17), the United Kingdom (3), Ireland (1) and Japan (1). There were no moderately unaffordable markets in Australia Hong Kong, New Zealand or Singapore (Table 5).



The 76 severely unaffordable markets were divided between Australia (25), the United States (23), the United Kingdom (15), New Zealand (6), Canada (5), Hong Kong (1) and Singapore (1).

Overall Housing Affordability: 2013 MEDIAN MULTIPLE (HIGHER IS LESS AFFORDABLE)

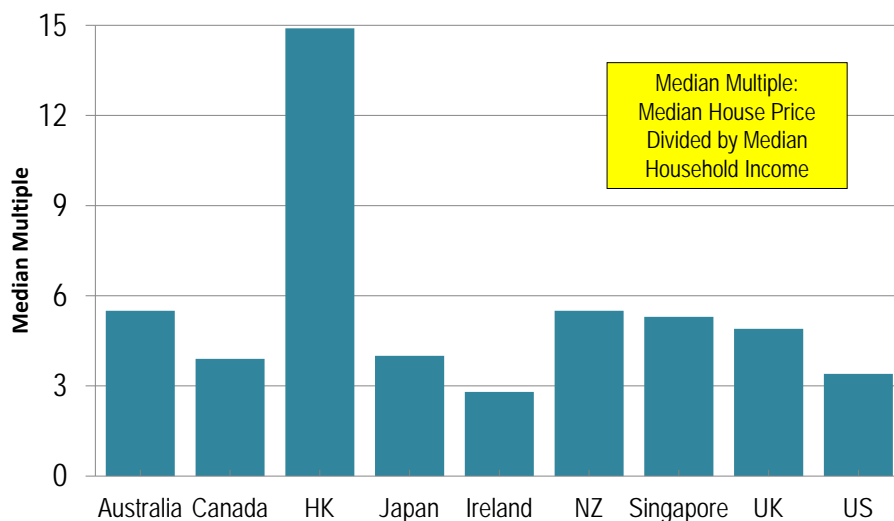


Figure 4

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	14	25	39	5.5
Canada	7	17	6	5	35	3.9
China SAR (Hong Kong)	0	0	0	1	1	14.9
Ireland	4	1	0	0	5	2.8
Japan	0	1	1	0	2	4.0
New Zealand	0	0	2	6	8	5.5
Singapore	0	0	0	1	1	5.1
United Kingdom	0	3	15	15	33	4.9
United States	84	100	29	23	236	3.4
TOTAL	95	122	67	76	360	3.7

2.2 Summary by Geography

The housing affordability situation is summarized by nation below. Major metropolitan area details are provided in Schedules 1 and 2.



Australia: Each of the five major markets continues of Australia continues to be severely unaffordable (Table 6).¹³ Moreover, each of Australia's major markets has been severely unaffordable for all 10 years of the Survey (a distinction shared only with New Zealand, with its single major market, Auckland). Each of Australia's major markets, with the exception of Sydney had housing affordability within the 3.0 Median Multiple norm during the 1980s, before the widespread adoption of urban containment policies, which is referred to as "urban consolidation" in Australia (Figure 4).

The overall Median Multiple was 6.3 among the major metropolitan markets. Housing affordability deteriorated markedly in Sydney, from a Median Multiple of 8.3 to 9.0 in 2013. Melbourne also experienced a substantial loss in housing affordability, from a Median Multiple of 7.5 in 2012 to 8.4 in 2013. Adelaide (6.3), Perth (6.0) and Brisbane (5.8) were little changed from last year.

... each of Australia's major markets has been severely unaffordable for all 10 years of the "Demographia Survey"

Among all markets, Australia's Median Multiple remained at a severely unaffordable 5.8. After major markets Sydney (9.0) and Melbourne (8.4). Port Macquarie (NSW) was third most unaffordable, at 8.1, followed by the Sunshine Coast (QLD), at 8.0 and the Gold Coast (QLD) at 7.7.

None of Australia's markets was rated either affordable or moderately unaffordable. The land rich Pilbara mining region of Western Australia was generally more affordable than the rest of Australia, but both markets were seriously

unaffordable. Karratha had a Median Multiple of 4.1, Australia's best, while Port Hedland had a Median Multiple of 5.0.

Other seriously unaffordable markets included Gladstone (QLD) with a median multiple of 4.2, Townsville (QLD) and Mildura (VIC) with a Median Multiple of 4.5 and nine others.

Housing Affordability Trend: Australia MAJOR MARKETS: 1981-2013

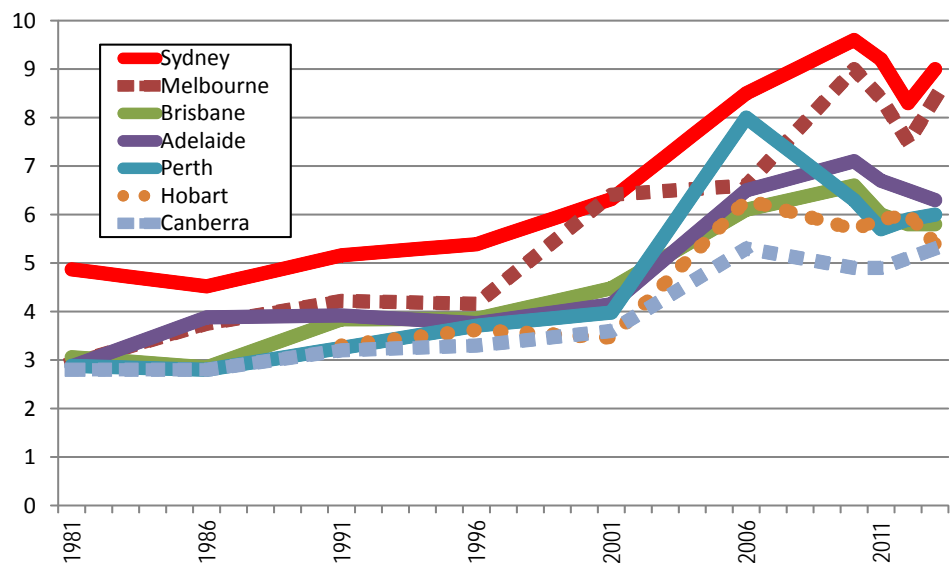


Figure 5

¹³ House price data for Australia is from multiple sources, the most important being the Real Estate Industry Association of Queensland, 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. Data for some smaller markets is for the year ended September 2013.



Table 6
 AUSTRALIA MAJOR METROPOLITAN MARKETS
 AFFORDABILITY AND SEVERE UNAFFORDABILITY

AFFORDABLE Median Multiple: 3.0 & Under	SEVERELY UNAFFORDABLE Median Multiple 5.1 & Over
NONE	Adelaide, SA Brisbane, QLD Melbourne, VIC Perth, WA Sydney, NSW

Canada: Housing affordability worsened in Canada's major metropolitan markets, which have an overall rating of severely unaffordable, at a Median Multiple of 4.5 (Table 7).¹⁴ A recent [Deutsch Bank report](#) rated Canada's housing as the most overvalued among 20 OECD nations. The housing affordability losses were concentrated in Vancouver, which continues to be the most unaffordable metropolitan area except for Hong Kong (10.3) and Toronto, which now has a Median Multiple of 6.2, its highest in history (Figure 6).

A recent [Deutsch Bank report](#) rated Canada's housing as the most overvalued among 20 OECD nations.

Among all markets, housing in Canada is moderately unaffordable with a Median Multiple of 3.9, somewhat worse than last year's 3.6. Housing had been affordable overall in Canada [as late as 2000](#).

Canada's most affordable market was Moncton (NB), with Median Multiple of 2.3. Saint John (NB) had a Median Multiple of 2.5, followed by Fredericton (NB) with a Median Multiple of 2.6 and Windsor (ON), at 2.7. Thunder Bay (ON), Charlottetown (PEI), and Trois-Rivieres (QC) were also rated affordable.

In addition to Vancouver, the three most unaffordable metropolitan markets were in British

Housing Affordability Trend: Canada
 MAJOR MARKETS: 2004-2013

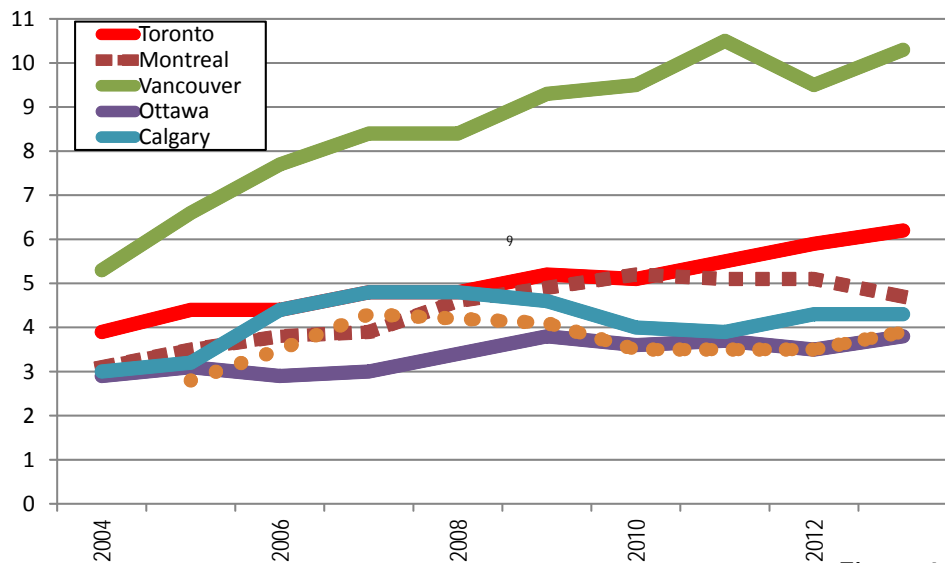


Figure 6

¹⁴ House price data for Canada is based on data from the Canadian Mortgage and Housing Corporation, the Toronto Real Estate Board, Fédération des chambres immobilières du Québec, Chambre immobilière du Grand Montréal, the Calgary Real Estate Board, the Edmonton Real Estate Board, the Canadian Real Estate Association and the Realtors Association of Hamilton-Burlington.



Columbia, including Victoria (6.9), Kelowna (5.9) and the Fraser Valley (5.9). Like Vancouver, house prices in these markets have been driven extraordinarily higher relative to incomes by urban containment regulations.

Table 7 CANADA MAJOR METROPOLITAN MARKETS AFFORDABILITY AND SEVERE UNAFFORDABILITY	
AFFORDABLE Median Multiple: 3.0 & Under	SEVERELY UNAFFORDABLE Median Multiple 5.1 & Over
NONE	Toronto, ON Vancouver, BC

Hong Kong (Special Administrative Region, China): Hong Kong, had the most unaffordable housing in the *Survey* for the fourth straight year, with a Median Multiple of 14.9¹⁵ (Table 8). Hong Kong has the most unaffordable Median Multiple in the history of the *Demographia International Housing Affordability Survey* (Los Angeles reached 11.5 in 2007, at the height of the California-led US housing crisis, which precipitated the world-wide Great Financial Crisis).

Hong Kong, had the most unaffordable housing in the Survey for the fourth straight year, with a Median Multiple of 14.9

Hong Kong's housing affordability has declined materially in recent years. The Chinese University of Hong Kong's' Quality of Life Index indicated that its house price to household income ratio had risen more than 170 percent in 2002. Further, academic research has demonstrated that house prices have been driven considerably higher by land-use restrictions in Hong Kong.¹⁶

Moreover, the Hong Kong Median Multiple is nearly three times that of Singapore, which has a broadly similar housing stock. It is more than three times the Average Multiples of megacities Tokyo-Yokohama and Osaka-Kobe-Kyoto, which have substantial higher rise multi-family owned housing stock, similar to that in Hong Kong. Housing affordability in Hong Kong is rated as severely unaffordable.

Ireland has the distinction of having earned the most favorable Median Multiple in the history of the "Demographia Survey," at 2.8

[Savills](#) which rates housing affordability for luxury residential space rates Hong Kong as the most expensive city in the world, a title Hong Kong has held for the past five years.

Table 8 HONG KONG: MAJOR METROPOLITAN MARKETS AFFORDABILITY AND SEVERE UNAFFORDABILITY	
AFFORDABLE Median Multiple: 3.0 & Under	SEVERELY UNAFFORDABLE Median Multiple 5.1 & Over
NONE	Hong Kong

¹⁵ House price developed from the Land Registry data.

¹⁶ Hui, C. M. & F. K. Wong (n.d.), "Dynamic Impact of Land Supply on Population Mobility with Evidence from Hong Kong," http://www.prrs.net/Papers/Hui_Dynamic_impact_of_land_supply_on_population_mobility.pdf.



Ireland: Ireland house prices have now nearly returned to normal affordability as a result of the housing bust. Ireland has the distinction of having earned the most favorable Median Multiple in the history of the *Demographia Survey*, at 2.8.¹⁷ Dublin, the only major metropolitan market, was the least affordable with a Median Multiple of 3.7 (Table 9). Waterford (2.0) was rated as the most affordable in Ireland and fourth most affordable out of the 360 metropolitan areas in the *Survey*. All of Ireland's other markets (Cork, Galway and Limerick were also rated affordable).

Table 9 IRELAND: MAJOR METROPOLITAN MARKETS AFFORDABILITY AND SEVERE UNAFFORDABILITY	
AFFORDABLE Median Multiple: 3.0 & Under	SEVERELY UNAFFORDABLE Median Multiple 5.1 & Over
NONE	NONE

Japan: Data is available for only two of Japan's two major metropolitan markets, Tokyo-Yokohama¹⁸ and Osaka-Kobe-Kyoto.¹⁹ Tokyo-Yokohama is the world's largest urban area (37 million), and the metropolitan areas covers all or part of four prefectures, Tokyo (called the "Tokyo metropolis," though only part of the metropolitan area),²⁰ 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 covers all or part of Osaka, Hyogo, Kyoto and Nara prefectures.

... Japan has the most affordable housing of any megacities (over 10,000,000 residents) in the "Demographia Survey."

Housing is seriously unaffordable in Tokyo-Yokohama, with a 4.4 Average Multiple (average house price divided by average household income).²¹ Osaka-Kobe-Kyoto has an Average Multiple of 3.5 and is thus rated as moderately unaffordable (Table 10).²² Despite these ratings, Japan has the most affordable housing of any megacities (over 10,000,000 residents) in the *Demographia Survey*.

Table 10 JAPAN: MAJOR TWO LARGEST METROPOLITAN MARKETS AFFORDABILITY AND SEVERE UNAFFORDABILITY	
AFFORDABLE Median Multiple: 3.0 & Under	SEVERELY UNAFFORDABLE Median Multiple 5.1 & Over
NONE	NONE

¹⁷ House prices calculated from the Residential Property Price Register of the Property Services Regulatory Authority.

¹⁸ The Tokyo metropolitan area is principally located in the prefectures of Tokyo, Chiba, Kanagawa and Saitama. It is not to be confused with the "Tokyo metropolis," which is another name for the prefecture of Tokyo.

¹⁹ The Osaka-Kobe-Kyoto metropolitan area is largely contained in the prefectures of Osaka, Hyogo, Kyoto and Nara.

²⁰ This popularly used 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.

²¹ The Average Multiple is used because there is insufficient data from which to estimate a Median Multiple. The Average Multiple tracks closely with the Median Multiple, where such comparisons can be made. For example, in both Canada and the United States, the Average Multiple was 0.2 lower than the Median Multiple in 2010 (Calculated from Statistics Canada National Household Survey: 2011 data and National Association of Realtors data in the United States). The ratings are considered provisional because the Median Multiple and Average Multiple may not be strictly comparable.

²² House prices are estimated from The Land Institute of Japan data (<http://www.lij.jp/english/>).



New Zealand: New Zealand's only major metropolitan market, Auckland, is severely unaffordable, with a Median Multiple of 8.0 (Table 11). Auckland ranks as the seventh most unaffordable among the 85 existing major markets. Auckland, like Australia's five major metropolitan markets, has been rated severely unaffordable in all 10 *Demographia International Housing Affordability Surveys*.

Overall, housing in New Zealand was severely unaffordable, with a Median Multiple of 5.5.²³ Six of New Zealand's markets were severely unaffordable, while two markets were seriously unaffordable. Outside of Auckland, Tauranga-Western Bay of Plenty was the most unaffordable, with a Median Multiple of 6.6. The second and third largest markets were severely unaffordable, with Christchurch at 5.8, and Wellington at 5.4. Two markets were seriously unaffordable, Palmerston North-Manawatu, at 4.5 and Hamilton-Waikato, at 4.8

Table 11 NEW ZEALAND: MAJOR METROPOLITAN MARKETS AFFORDABILITY AND SEVERE UNAFFORDABILITY	
AFFORDABLE Median Multiple: 3.0 & Under	SEVERELY UNAFFORDABLE Median Multiple 5.1 & Over
NONE	Auckland

Singapore: The Median Multiple in Singapore was estimated at 5.1 in the third quarter of 2013,²⁴ for a rating of severely unaffordable (Table 12). Singapore has perhaps the most land constrained geography of any major metropolitan area in the world, both by virtue of its being an island and having no mainland periphery. As a result, there is virtually no potential for greenfield development.²⁵

In Singapore, publicly sponsored but privately owned housing (under the aegis of the Housing and Development Board (HDB) represents nearly 90 percent of the owned market. Singapore has an overall 88 percent rate of home ownership, the highest of any geography 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 that may be occurring from globalization of the real estate market in places like Vancouver, coastal California, Hong Kong and London.

Singapore's housing is three times as affordable as Hong Kong's, though less affordable than Tokyo and Osaka-Kobe-Kyoto

With severely unaffordable housing, Singapore has not been as successful as might have been hoped. In some years insufficient supply was produced, which resulted in the now elevated costs. But, by comparison to metropolitan areas that have followed the British urban containment model, Singapore's results have been stellar. 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 7.0 to nearly 15.0.

Part of the of the reason Singapore has not experienced the catastrophic housing affordability of Hong Kong, Vancouver, San Francisco and Sydney is that its regulation is focused on maintaining an adequate supply of affordable housing. This is virtually the opposite of urban containment regulatory regimes, which to severely limit land supply and to virtually ignore the housing affordability impacts.

²³ Part of the variation in New Zealand Median Multiples since last year was due to recalibration of income data based on the 2013 Census (which had been delayed from 2011 due to the Christchurch earthquakes)

²⁴ Median house price from the Singapore Real Estate Exchange.

²⁵ 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.



It is notable that Singapore has a housing stock generally similar to that of Hong Kong, less developable land, larger houses and a Median Multiple approximately two-thirds lower.

Table 12 SINGAPORE: MAJOR METROPOLITAN MARKETS AFFORDABILITY AND SEVERE UNAFFORDABILITY	
AFFORDABLE Median Multiple: 3.0 & Under	SEVERELY UNAFFORDABLE Median Multiple 5.1 & Over
NONE	Singapore

United Kingdom: Among the major markets, housing is seriously unaffordable in the major markets, with a Median Multiple of 4.7 (Table 13). London (the Greater London Authority) was the least affordable market, with a median multiple of 7.3. The next least affordable major markets were Plymouth & Devon, at 7.0 and the London Exurbs (East and Southeast England, virtually all outside the London greenbelt) at 6.4. Three other major markets, Bristol – Bath, Liverpool & Merseyside, and Stoke-on-Trent & Staffordshire were severely unaffordable. There were no moderately unaffordable nor any affordable major markets.²⁶

Among all markets, the United Kingdom has a Median Multiple of 4.9, slightly improved from last year's 5.1. Falkirk had the best housing affordability, with a Median Multiple of 3.5, followed by Belfast, at 3.6. Each of these markets was rated moderately unaffordable. There are no affordable markets in the United Kingdom Bournemouth & Dorset was the most unaffordable of all UK markets, with a Median Multiple of 8.6.

Table 13 UNITED KINGDOM: MAJOR METROPOLITAN MARKET AFFORDABILITY AND SEVERE UNAFFORDABILITY	
AFFORDABLE Median Multiple: 3.0 & Under	SEVERELY UNAFFORDABLE Median Multiple 5.1 & Over
NONE	Bristol-Bath Liverpool & Merseyside London (GLA) London Exurbs (E & SE England) Plymouth & Devon Stoke-on-Trent & Staffordshire

United States: Housing affordability deteriorated in the major markets²⁷ of the United States from a Market Median of 3.2 to 3.5.²⁸ This year, 14 major markets are rated as affordable, down from 20 last year (Table 14). There are 24 moderately unaffordable major markets, six seriously unaffordable markets and eight severely unaffordable markets (Figure 7).

The most affordable major markets are Pittsburgh (2.3), Detroit (2.5), Grand Rapids (2.6), Rochester (2.6) with six additional markets having a Median Multiple of 2.7. This includes Atlanta, which has been among the fastest-growing large metropolitan areas in the high income world for three decades.

²⁶ Median house prices are calculated from the Land Registry of England and Wales, the Registers of Scotland and the University of Ulster data.

²⁷ Grand Rapids, Michigan has been added by the United States Census Bureau as the 52nd metropolitan area with more than 1,000,000 population.

²⁸ House prices derived from the National Association of Realtors, the National Home Builders Association, Realcomp (Detroit), the Clarksville (Tennessee) Association of Realtors, the Coastal Carolinas Association of Realtors and the Arkansas Realtors Association.



Houston, which has virtually always been rated affordable is now moderately unaffordable, with a Median Multiple of 3.3. This increase has been attributed to the rapid increase in demand for housing, which strained local land developers in the delivery of finished lots.²⁹ This is likely to be a temporary situation.

The least affordable markets were San Francisco (9.2) and San Jose (8.7). They were joined by two other California metropolitan areas, San Diego (7.9) and Los Angeles (7.7). New York was the fifth most unaffordable with a median multiple of 6.2, followed by Boston (5.4), Seattle (5.3), Miami (5.3) and Portland (4.8).

The 10 year history of housing affordability in the 10 largest metropolitan areas of the United States indicate that four are now severely unaffordable (Los Angeles, New York, Boston and Miami), all of which have more restrictive land use regulation (Table 1). The recent serious deterioration of housing affordable in Los Angeles is particularly evident. Washington, also with more restrictive land use regulation, is seriously unaffordable. Philadelphia, Chicago, Dallas-Fort Worth, Houston and Atlanta, which straddle the maximum affordability Median Multiple of 3.0 (Figure 6), with the most liberal regulation in the latter three.

Soon-to-be major metropolitan area Honolulu was the least affordable in the US... at 9.4.

Among all US markets, 36 markets were rated affordable. The most affordable markets were Rockford, Illinois and Utica, New York (both 1.7). Warner Robbins, Georgia had a median multiple of 1.9 while four metropolitan areas, Appleton, Wisconsin, Decatur, Illinois, Lansing, Michigan and Toledo, Ohio had Median Multiples of 2.0.

Soon-to-be major metropolitan area³⁰ Honolulu was the least affordable in the US, which at 9.4. In the international rankings Honolulu trailed only Hong Kong and Vancouver. Santa Barbara was second least affordable (9.3) San Francisco (9.2) ranked third, with nearby Santa Cruz as third fourth least affordable, at 9.0. San Jose was the fifth least affordable market (8.7). Eleven of the twelve most unaffordable markets in the United

Housing Affordability Trend: United States 10 LARGEST MAJOR MARKETS: 2004-2013

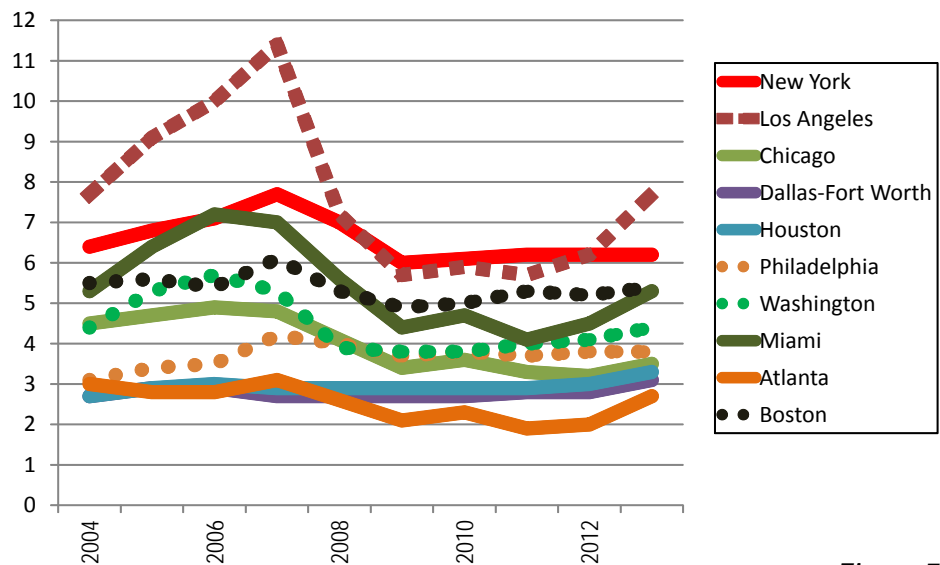


Figure 7

²⁹ David Wessell and Kris Hudson (August 19, 2013), "Houston Hits Housing Hurdle," The Wall Street Journal, <http://online.wsj.com/news/articles/SB10001424127887323455104579017182650412434>.

³⁰ At the present growth rate, Honolulu will exceed 1,000 residents by 2015.



States were in California, including five in the San Francisco Bay area (San Francisco, San Jose, Santa Cruz, Napa and Santa Rosa).

There are indications of a substantial worsening housing affordability situation in California, which was the core of the US housing bust of the last decade that precipitated the Great Financial Crisis. House prices in the six major markets of California have risen nearly 40% relative to incomes since bottoming out in 2009. Even at the 2009 low point, however, four of the six markets had Median Multiples well above historic norms. By comparison, in the other 46 major markets, house price increases have averaged only 12%, less than one-third that of the California markets. The Median Multiple has been returned to near peak pre-bust levels in San Francisco (9.2) and San Jose (8.7), while San Diego (7.9) and Los Angeles (7.7) are close behind. The largest increases have been in Riverside San Bernardino, which has risen 57% to 4.4 and Sacramento, which has risen 42% to 3.8. California's draconian urban containment law seems likely to drive these prices even higher.

Overall, the US Median Multiple was 3.4 (moderately unaffordable). The United States had 84 affordable markets, 100 and moderately unaffordable markets, 29 seriously unaffordable markets and 23 severely unaffordable markets.

Table 14
UNITED STATES: MAJOR METROPOLITAN MARKETS
AFFORDABILITY AND SEVERE UNAFFORDABILITY

<i>AFFORDABLE</i> Median Multiple: 3.0 & Under		<i>SEVERELY UNAFFORDABLE</i> Median Multiple 5.1 & Over	
Atlanta, GA	Indianapolis, IN	Boston, MA-NH	New York, NY-NJ-PA
Buffalo, NY	Kansas City, MO-KS	Los Angeles, CA	San Francisco-Oakland, CA
Cincinnati, OH-KY-IN	Louisville, KY-IN	Miami, FL	San Jose, CA
Cleveland, OH	Memphis, TN-MS-AR	San Diego, CA	Seattle, WA
Columbus, OH	Pittsburgh, PA		
Detroit, MI	Rochester, NY		
Grand Rapids, MI	St. Louis, MO-IL		

4. HOUSE SIZE AND THE STANDARD OF LIVING

But housing affordability differences identified in the *Demographia International Housing Affordability Survey* go much deeper than simple housing affordability. House sizes vary even more than housing affordability among the nine geographies³¹ (Figure 8). Other things being equal, living space is an important component of the standard of living.

Housing affordability is approximately four times better in the major metropolitan markets of Ireland and the United States than in the most unaffordable market, Hong Kong. However, the difference in relative cost per square meter or square foot approach 20 times as high in Hong Kong as in the United States.

In living space those who pay the most get the least, while those who pay the least get the most.

³¹ Third quarter 2013 data for the United States indicates that average and median sized houses have increased further in size, reach all time records in both indicators (data from the US Census Bureau).



The differences between the United States (with the least costly major markets) and other geographies are smaller, with cost per square meter or square foot estimated at 1.5 times as high in Canada, 1.8 times as high in Australia and Japan, 2.5 times as high in Ireland and New Zealand and 3.5 times as high in Singapore and the United Kingdom (Figure 9).³² In living space those who pay the most get the least, while those who pay the least get the most.

In this regard, Roy Thomas pointed out in *The Containment of Urban England* that "the economical use of land

has not made construction of dwellings cheaper."³³ The combination of unaffordability and reduced house size in these markets directly refute claims that affordability can be maintained by trade-offs between land consumption and household space."

Average New House Size GEOGRAPHIES IN DEMOGRAPHIA SURVEY

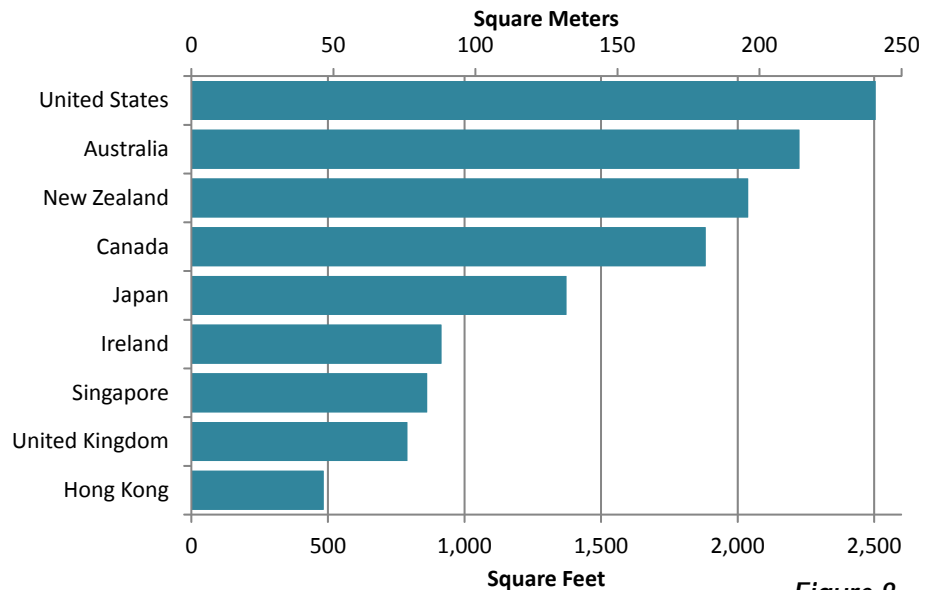


Figure 8

4. THE MARKET RELATIONSHIP: HOUSE PRICES AND HOUSEHOLD INCOMES

As noted above, there has been a fundamental relationship between house prices and household incomes, where regulatory systems permit consumer preference to operate (as has been noted above). National price-to-income ratios were at 3.0 or below in Australia, Canada, Ireland, New Zealand, the United Kingdom and the United States until the late 1980s or late 1990s (Figure 9).³⁴ This historic Median Multiple affordability range of 2.0 to 3.0 continues in markets of the United States, Canada and Ireland (Table 15).³⁵

Decoupling of House Prices from Household Incomes

In recent decades, there has been a fundamental decoupling of house prices from household incomes in some metropolitan markets. House prices have risen at much greater trajectories than household incomes in many

³² Using the housing affordability relationships identified in this *Demographia Survey*.

³³ P. Hall, R. Thomas, H Gracey and R. Drewett (1973), *The Containment of Urban England*, George Allen & Unwin.

³⁴ 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).

³⁵ A value below 2.0 is affordable, but may indicate depressed economic conditions.



markets This has invariably been associated with urban containment policy and is most evident in Australia, New Zealand and United Kingdom and some markets of Canada and the United States. The obvious impact of this supply rationing, indicated by economic theory, is higher house prices, other things being equal. In recent years, it has been typical for the most rigidly regulated urban containment markets to have Median Multiples from 1.5 to four times (or more) the 3.0 standard.

Table 15
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.

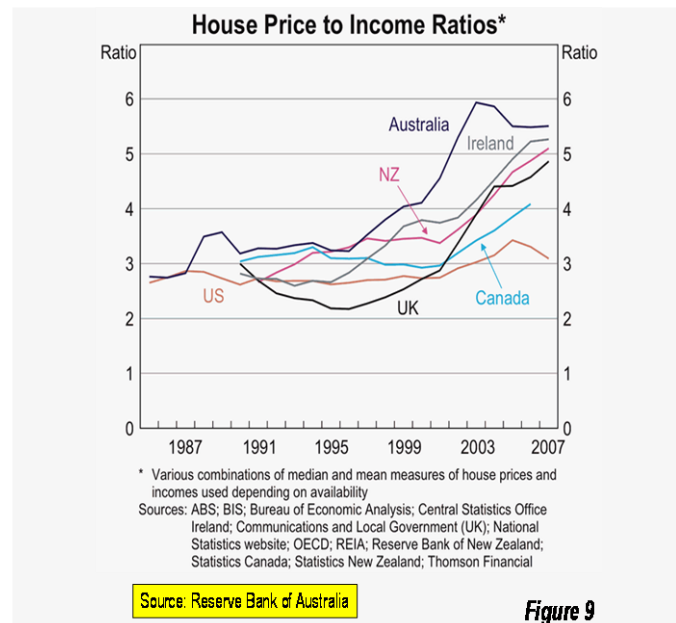
The critically important Development Ratios³⁶ for this new fringe starter housing, should be 17 - 23% serviced lot / section cost - the balance the actual housing construction.

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

Housing has become severely unaffordable in many of the markets covered by *Demographia International Housing Affordability Survey*, most obviously Australia, New Zealand and United Kingdom, including both vibrant and depressed markets. At the same time, in markets that have averted wide ranging urban containment policies, housing has remained far more affordable.

In fact, over the 10 years of the *Demographia International Housing Affordability Survey*, all metropolitan areas that have reached severe housing affordability (a Median Multiple of more than 5.0) have had restrictive land-use regulation, especially urban containment policy. On the other hand, no liberally regulated metropolitan area has reached severe housing affordability. An examination of longer historical data (available in Australia, Canada, New Zealand, the United Kingdom and the United States) confirms this for earlier years.



³⁶ 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*.



From Homes to Global Investment Portfolios

Until recently, metropolitan area housing markets were largely relatively local in scope and catered principally to households seeking primary residences. There was always some investment activity, even where Median Multiples were in the affordable range, as investors sought normal returns on investment.

However, the extraordinary returns arising from the rigged markets of urban containment have, understandably, attracted additional investors (pejoratively called "speculators"). This has been noted in research on the US housing crisis.³⁷ Moreover, economic research has associated urban containment with [greater price volatility](#) and [more intense speculation](#).³⁸ Further evidence provided in research finding that, among 247 US metropolitan areas in the US housing boom and bust, those with more restrictive regulation were significantly more vulnerable to greater house price volatility than those with more liberal regulation.³⁹

...with greater access to local real estate market conditions around the world, metropolitan housing markets with urban containment policies are becoming more attractive to global investors, seeking extraordinary investment returns.

Now, with greater access to local real estate market conditions around the world, metropolitan housing markets with urban containment policies are becoming more attractive to global investors, seeking extraordinary investment returns. Substantial international investor activity has been reported in [London](#), Vancouver, the US West Coast markets of Vancouver, Seattle, the San Francisco Bay Area, Los Angeles and San Diego and others.

This intensifies the need to respond with policies that right the balance between supply and demand, facilitating not only better housing for local residents, but also greater economic stability.

Metropolitan Competitiveness Impaired by Urban Containment Policy

At the same time, research in the United States, the United Kingdom and the Netherlands associates slower economic growth and job creation with strict land use policies, such as urban containment.

... research in the United States, the United Kingdom and the Netherlands associates slower economic growth and job creation with strict land use policies, such as urban containment.

Raven Saks (US Federal Reserve Board) found that where housing supply is more constrained by regulations, employment growth is generally lower than expected.⁴⁰ Vermeulen (Netherlands Bureau of Economic Analysis) and Van Ommeren (VU University) associated slower employment growth in the Randstad, with its

³⁷ A. D. Haughwout, J. Tracy & W. van der Klaauw (2011), "Real Estate Investors, the Leverage Cycle and the Housing Market Crisis," Federal Reserve Bank of New York.

³⁸ E. L. Glaeser, & J. Gyourko (2008), Rethinking Federal Housing Policy: How to Make Housing Plentiful and Affordable, American Enterprise Institute.

³⁹ A. H. Anundsen & Christian Heeboll, "Supply restrictions, subprime lending and regional US housing prices,"

http://www.dallasfed.org/assets/documents/research/events/2013/13housing_heeboll.pdf

⁴⁰ R. E. Saks (2005), *Job Creation and Housing Construction: Constraints on Metropolitan Area Employment Growth*, Federal Reserve Board.



more stringent housing supply limitations.⁴¹ Urban containment policy has also been associated with higher commercial development costs⁴² and higher retail prices,⁴³

Economists [Brian Jensen](#) and urban economist [Edwin Mills](#) concluded that restrictive land use regulations played a negatively decisive role in the Great Financial Crisis:

“Indeed, it is difficult to imagine another plausible cause of the 2008–2009 financial crisis. Popular accounts simply refer to a speculative housing price bubble. But productivity growth in housing construction is faster than in the economy as a whole and the US has an aggressive and competitive housing construction sector. In the absence of excessive controls, housing construction would quickly deflate a speculative housing price bubble.”⁴⁴

There is a [considerable literature](#) on the economic consequences of urban containment policy.

The key to preserving housing affordability is a "competitive land supply," according to Brookings Institution economist Anthony Downs.⁴⁵ This requires continual attention to land costs. A sufficient supply of land cannot be reliably measured by administrative attempts to match projections of supply with demand (such as a "20 year land supply") are not fundamentally rooted in the price of land. There is a simple measure of land supply: there is enough if raw land prices permit development of new housing at historic price ratios to incomes.⁴⁶

These are not new concerns. In 1973, Sir Peter Hall, Ray Thomas, Harry Gracey and Roy Drewett published a two-volume evaluation of the impacts of the 1947 Town and Country Planning Act. They characterized the results as being inconsistent "with the objective of providing cheap owner occupied housing" and further found that that the greatest burdens had been placed on lower income households.⁴⁷

There is a simple measure of land supply: there is enough if raw land prices permit development of new housing at historic price ratios to incomes

Paul Cheshire and Stephen Sheppard of the London School of Economics conclude that “over time controlling land supply by fiat has generated price distortions on a par with those observed in Soviet bloc

⁴¹ W. Vermeulen and J. Van Ommeren (2008), "Does Land Use Planning shape Regional Economies?" Tinbergen Institute, <http://www.tinbergen.nl/discussionpapers/08004.pdf>

⁴² P. C. Cheshire, & C. Hilber (2008), Office Space Supply Restrictions in Britain: *The Political Economy of Market Revenge*, London School of Economics, http://www2.lse.ac.uk/geographyandenvironment/pdf/office_per_cent20space_per_cent20supply_per_cent20restrictions_per_cent20in_per_cent20britain.pdf

⁴³ B. Lewis, M. Ballek, C. Craig, V. Harris, B. Levi, H. Mullings, I. Osborne, S. Anthoy, D. Bugrov, J. Kondo, V. Palmade, J. Rames, S. Fidler, N. Lovegrove & M. Baily (1998), *Driving productivity and growth in the UK economy*, McKinsey Global Institute, http://www.mckinsey.com/insights/mgi/research/productivity_competitiveness_and_growth/driving_productivity_and_growth_in_the_uk_economy

⁴⁴ Brian N. Jansen, Edwin S. Mills (2011), Distortions Resulting from Residential Land Use Controls in Metropolitan Areas, *J Real Estate Finan Econ* (2013) 46:193–202

http://download.springer.com/static/pdf/168/art%253A10.1007%252Fs11146-011-9310-7.pdf?auth66=1389980141_f43aadde1fe3e4d2aaec56499c5e152c&ext=.pdf

⁴⁵ Downs, Anthony. *New Visions for Metropolitan America* (Brookings Institution Press, 1994).

⁴⁶ Research on the association between urban containment policy and higher housing costs relative to incomes is summarized at ["The Association between Prescriptive Land Use Regulation and Higher House Prices."](#)

⁴⁷ P. Hall, R. Thomas, H Gracey and R. Drewett (1973), *The Containment of Urban England*, George Allen & Unwin.



countries during the 1970s and 1980s. They further contend that the major aim of restrictive land use policy is “to constrain space consumptions irrespective of any price effects...”⁴⁸ John Muellbaur of Oxford University characterizes the United Kingdom’s restrictive land use system as leading “to resource misallocations that can only be described as grotesque.”⁴⁹

5. PROSPECTS FOR A BETTER STANDARD OF LIVING

Much of the high income world still mired in laggard economic growth. In some nations, such as the United States, real incomes have fallen, while income growth has been modest, at best, elsewhere. The cost of housing could rise even more in the years to come as the artificially low interest rates of recent years become a thing of the past.

In most nations, housing is the most significant element of the household budget. As a result, housing costs are an important determinant of the standard of living. Within nations, income adjusted housing prices (measured by the Median Multiple) tend to vary more than other household expenditures between metropolitan areas. Maintaining and restoring housing affordability, therefore, is important to maximizing the standard of living and minimizing poverty.

Summary

The prospects are mixed among the severely unaffordable markets. All of Australia's major markets and Canada's larger major markets are severely unaffordable and thus at particular risk. Failure to jettison the Dublin area's destructive regulations could set Ireland up for a replay of its recent financial nightmare.

Yet there are regions of hope. The central government of New Zealand has recognized the problem and is pursuing strategies to open up land supply and reduce housing costs. Both political parties in the United Kingdom are committed to reforms to improve housing affordability. Singapore's well-designed regulatory structure, with its emphasis on sufficient supply and affordability is capable of restoring housing affordability.

*For many ... the
"California" dream
requires moving to Texas,
Indiana or Georgia.*

There is even hope in Canada and the United States, where substantial areas of liberal land use policy remain, which permit residents to move to areas with lower costs of living. This is most evident in the United States, where the urban containment markets of coastal California (least affordable in the nation), long renowned for their attractiveness to domestic migrants, lost more than a 2,000,000 net domestic migrants to other parts of the nation during the 2000s. For many, especially young households, the "California" dream requires moving to Texas, Indiana or Georgia.

More Detailed Prospects

Australia: As the data cited above indicates, house prices have been decoupled from their historic nexus with household incomes in Australia. There have been hopeful signs in New South Wales and Western Australia, but there is much more to be done.

⁴⁸ Paul Cheshire & Stephan Sheppard (2006), "The Introduction of price signals into land-use planning decision making: a proposal," London School of Economics, http://eprints.lse.ac.uk/568/1/Price_Signals_Planning_DecisionsSept6.pdf

⁴⁹ John Muellbauer (2005), "Property Taxation and the Economy after the Barker Review," *The Economic Journal*, 115 (March), <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.149.8037&rep=rep1&type=pdf>



The greatest price is paid by young households. As [The Guardian](#) put it, the biggest burden is "The increase in prices across the board – but especially at the lower to median level – means that for many young people the great Australian dream of home ownership will forever remain a dream."

Canada: Until recently, Canada had favorable housing affordability. The exception was Vancouver, where housing affordability has deteriorated markedly for decades under its strong urban containment policies. The Royal Bank of Canada reports that detached housing, which is preferred in Canada, now requires more than [80 percent of the median household income for mortgage payments](#) in the Vancouver area. This is more than 2.5 times the 32 percent guideline of the Canada Mortgage and Housing Corporation for mortgage eligibility.

The future for the household standard of living in Canada could be grim. In recent years, the province of Ontario has adopted strong urban containment policies to apply to the Toronto metropolitan area. House prices have risen well above incomes, consistent with expectations (and the principles of economics). Montréal has adopted urban containment policy that may be as strict as those in Vancouver and Toronto. Similar policies have also been adopted in Calgary. Montréal and Calgary have also experienced substantial increases in house prices relative to incomes.

The Royal Bank of Canada reports that detached housing, which is preferred in Canada, now requires more than [80 percent of the median household income for mortgage payments](#) in the Vancouver area.

Without reform, Median Multiples in Toronto, Montréal, and Calgary could trend a housing affordability crisis approaching that of Vancouver, the second most unaffordable metropolitan area (after Hong Kong) in this year's *Demographia International Housing Affordability Survey*. Meanwhile, with virtually no political prospect of land use liberalization in Vancouver, housing affordability could deteriorate even further there.

housing accords have been reached with the city of Auckland that will loosen regulation for new greenfield and infill housing. **Hong Kong:** Hong Kong's unprecedented housing unaffordability has been the focus of political demonstrations, as well as attention by the government. In his 2014 [annual policy](#) address Chief Executive C. Y. Leung noted that: "a housing supply shortage is the major cause of the upsurge in property and rental prices." He committed the government to increasing land supply and measures that would curb property speculation, which like higher house prices typifies urban containment markets. The challenges may be overwhelming, but at least Hong Kong's political leadership understands the economics and recognizes the problem, unlike in the urban containment markets of Australia, Canada, Ireland and the United States.

Ireland: Probably no geography covered in the *Demographia International Housing Affordability Survey* suffered more from the housing bust [than Ireland](#).

Yet, important policy reforms that could prevent a recurrence remain to be implemented. As economist [Colm McCarthy of University College Dublin](#) has indicated, the rising demand for housing in the Dublin area could lead to substantial house price escalation unless the overly restrictive land use regulations are reformed. McCarthy has called for repeal of Ireland's urban containment land use policies that were fashioned after the British Town and Country Planning Act of 1947.

The reforms that Colm McCarthy recommends may be crucial, to avoiding a repeat of Ireland's recent financial distress.

Ireland's challenges could be great. The national statistics bureau, the Central Office of Statistics (CSO) recently projected that the Dublin metropolitan area will [experience population growth of 22 percent](#) between



2011 and 2031. The high projected population growth seems could lead to house price increases that could equal those of the last decade. The reforms that Colm McCarthy recommends may be crucial, to avoiding a repeat of Ireland's recent financial distress.

New Zealand: The progress noted in last year's *Demographia Survey* continues. The central government has undertaken significant reforms of land markets, which were outlined by Deputy Prime Minister Bill English in his introduction to the [9th Annual Demographia International Housing Affordability Survey](#). As a result of recently enacted legislation, housing accords have been reached with the city of Auckland that will loosen regulation for new greenfield and infill housing. Cooperation between the central government and local authorities is leading to important expansion of the land supply on the fringes of other major centers as well.

United Kingdom: There is considerable discussion of the means by which to improve housing affordability in the United Kingdom, which was the cradle of restrictive land-use regulation beginning with the Town and Country Planning Act of 1947.

... housing accords have been reached with the city of Auckland that will loosen regulation for new greenfield and infill housing.

The Conservative – Liberal Democrat coalition government has proposed liberalization of the regulations. Planning Minister Nick Boles Minister Boles called Britain's lack of housing affordability "the biggest social justice crisis we have (see last year's [Demographia Survey](#)).

The Labour Party opposition has promised that, if elected in 2015, [steps will be taken](#) to increase land supply and housing affordability, so that "working people and their children" have the "[decent homes they deserve](#)."

Noting the heightened level of public discourse on Britain's planning laws, [The Economist commented](#):

"Building on fields in a country that is as crowded as England will always rile some people, however well-designed the system. But the alternative is worse: a nation of renters and rentiers, where only the rich own houses."

The British electorate may finally witness a land-use policy debate that would have been overdue four decades ago.

The British electorate may finally witness a land-use policy debate that would have been overdue four decades ago.

United States: The United States continues to be home to some of the most productive land use regulation in the world, which has resulted in its superior housing affordability (for example, Atlanta, Dallas-Fort Worth, Houston and Indianapolis). The United States is also home to some of the most counter-productive land use regulation,⁵⁰ which is evidenced by severely unaffordable housing (for example, San Francisco, San Jose, Los Angeles, San Diego, New York and soon-to-be major metropolitan area, Honolulu⁵¹).

There are both hopeful and worrisome signs. In a positive development, Florida repealed its statewide urban containment legislation and housing affordability has remained near historic norms, except in Miami where strict local urban containment regulations continue. Yet, there is a continuing effort by the urban

William Fischel of Dartmouth University cites the housing affordability losses from urban containment policies in the United Kingdom and Korea and notes that: "American planners seem unaware of this evidence."

⁵⁰ Because of its negative effect on housing affordability, which leads to a lower standard of living and greater poverty.

⁵¹ Honolulu could exceed 1,000,000 in population by 2015, at the current growth rate.



planning community, with support from the federal government, to extend urban containment policy to other metropolitan areas.

At a minimum, the problem in the United States results from a failure to sufficiently consider economics. William Fischel of Dartmouth University cites the housing affordability losses from urban containment policies in the United Kingdom and Korea and notes that: "American planners seem unaware of this evidence."⁵²

6. PLANNING FOR PEOPLE

Much of the current justification for urban containment policy rests on an expectation of its potential to reduce greenhouse gas emissions. However, ***urban containment policy is not an effective strategy for reducing greenhouse gas emissions.*** Its strategies provide minimal reductions, at best, and a costs much greater than other alternatives.

Spending more than necessary to reduce greenhouse gas emissions is inherently anti-economic and would lead to lower standards of living and greater poverty. This was emphasized by the [European Conference of Ministers of Transport](#):

"It is important to achieve the required emissions reductions at the lowest overall cost to avoid damaging welfare and economic growth."

The Intergovernmental Panel on Climate Change (IPCC) has found that sufficient greenhouse gas emissions reductions can be achieved for a range of from \$20 to \$50 per tonne. Urban containment strategies cost much more. Figures of \$1,000 per tonne have been estimated for mass transit approaches, while house price increases could [escalate the cost to many times that](#). A US report by [McKinsey and the Conference Board](#) concluded that substantial and cost effective GHG emission reductions were possible, "while maintaining comparable levels of consumer utility," which was defined as "no change in thermostat settings or appliance use, no downsizing of vehicles, home or commercial space and traveling the same mileage." In other words, there is no need to interfere with people's lives or preferences

The Role of Cities

Throughout history, people have moved to cities for better lives, responding to the much greater and more focused economic opportunities they provided. In 1800 there was only one urban area with more than 1,000,000 residents (Beijing) and the world's urban population was on the order of 10 percent. [By 1900 there were 16](#) urban areas with more than 1,000,000 residents. Now there are [approximately 475 urban areas](#) with more than 1,000,000 population, and the world is more than one-half urban. The largest urban area, Tokyo-Yokohama, is six times as large as 1900 London, which was the largest at that time.

Cities, in combination with the technological and transport advances of the last two centuries have facilitated unparalleled affluence in many nations and have replaced universal poverty with far better lives virtually everywhere. Cities have grown because of the economic aspirations that they are able to turn into reality.

⁵² William A. Fischel, *Comment on "The Link Between Growth Management and Housing Affordability: The Academic Evidence,"* in Anthony Downs, editor (2004), *Growth Management and Affordable Housing: Do They Conflict?*, Brookings Institution Press,



Former World Bank principal urban planner Alain Bertaud (2004) noted that: *Large labor markets are the only raison d'être of large cities.*⁵³

Most governments place the highest priority on achieving a ***higher standard of living and less poverty.***⁵⁴ Yet, these principal objectives are subverted by urban containment policy, which places the urban form how people travel over the betterment of people. Urban planning should be refocused on more fundamental purposes.

⁵³ Alain Bertaud, "The Spatial Organization of Cities: Deliberate Outcome or Unforeseen Consequence?" *World Development Report 2003: Dynamic Development in a Sustainable World: Background Paper*, http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2004/02/13/000265513_20040213120824/Rendered/INDEX/wdr27864.txt

⁵⁴ Wendell Cox (2012), *Toward More Prosperous Cities*, <http://demographia.com/towardmoreprosperous.pdf>.



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): 2013 – 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
18	1	17	U.S.	Pittsburgh, PA	2.3	\$116,000	\$51,400
27	2	24	U.S.	Detroit, MI	2.5	\$130,000	\$51,200
36	3	32	U.S.	Grand Rapids	2.6	\$135,700	\$51,600
36	3	32	U.S.	Rochester, NY	2.6	\$132,100	\$51,600
41	5	36	U.S.	Atlanta, GA	2.7	\$152,300	\$55,600
41	5	36	U.S.	Buffalo, NY	2.7	\$137,100	\$51,200
41	5	36	U.S.	Cincinnati, OH-KY-IN	2.7	\$142,100	\$53,400
41	5	36	U.S.	Cleveland, OH	2.7	\$127,000	\$47,800
41	5	36	U.S.	Indianapolis, IN	2.7	\$143,500	\$52,800
41	5	36	U.S.	St. Louis, MO-IL	2.7	\$143,700	\$53,200
58	11	52	U.S.	Columbus, OH	2.8	\$152,100	\$54,700
68	12	61	U.S.	Kansas City, MO-KS	2.9	\$162,300	\$55,500
68	12	61	U.S.	Louisville, KY-IN	2.9	\$145,100	\$49,800
80	14	72	U.S.	Memphis, TN-MS-AR	3.0	\$137,500	\$46,500
96	15	85	U.S.	Dallas-Fort Worth, TX	3.1	\$181,300	\$58,000
96	15	85	U.S.	Minneapolis-St. Paul, MN-WI	3.1	\$208,000	\$67,500
117	17	105	U.S.	Houston, TX	3.3	\$186,600	\$57,000
117	17	105	U.S.	Oklahoma City, OK	3.3	\$161,100	\$49,500
117	17	105	U.S.	Raleigh, NC	3.3	\$202,700	\$61,400
117	17	105	U.S.	San Antonio, TX	3.3	\$175,000	\$52,400
130	21	117	U.S.	Charlotte, NC-SC	3.4	\$183,800	\$53,500
130	21	117	U.S.	Nashville, TN	3.4	\$177,300	\$52,500
130	21	117	U.S.	Tampa-St. Petersburg, FL	3.4	\$151,800	\$45,200
142	24	1	Japan	Osaka-Kobe-Kyoto*	3.5	¥18,380,000	¥5,200,000
142	24	129	U.S.	Chicago, IL-IN-WI	3.5	\$209,000	\$60,400
142	24	129	U.S.	Hartford, CT	3.5	\$238,500	\$68,000
142	24	129	U.S.	Jacksonville, FL	3.5	\$170,600	\$49,000
142	24	129	U.S.	Richmond, VA	3.5	\$205,000	\$57,800
142	24	129	U.S.	Virginia Beach-Norfolk, VA-NC	3.5	\$200,500	\$57,000
161	30	144	U.S.	Birmingham, AL	3.6	\$173,700	\$47,600
161	30	144	U.S.	Las Vegas, NV	3.6	\$181,900	\$50,500
161	30	144	U.S.	New Orleans, LA	3.6	\$162,500	\$45,200
161	30	144	U.S.	Orlando, FL	3.6	\$167,800	\$46,900
171	34	5	Ireland	Dublin	3.7	€215,000	€58,000
171	34	152	U.S.	Austin, TX	3.7	\$225,300	\$60,500
171	34	152	U.S.	Phoenix, AZ	3.7	\$191,700	\$52,300
184	37	15	Canada	Ottawa ON-QC	3.8	\$303,900	\$79,400
184	37	162	U.S.	Philadelphia, PA-NJ-DE-MD	3.8	\$231,600	\$61,200
184	37	162	U.S.	Salt Lake City, UT	3.8	\$235,000	\$61,200
198	40	18	Canada	Edmonton, AB	3.9	\$336,000	\$87,200
198	40	173	U.S.	Baltimore, MD	3.9	\$266,500	\$68,200
211	42	3	U.K.	Leeds & West Yorkshire	4.0	£130,000	£32,700
211	42	181	U.S.	Milwaukee, WI	4.0	\$211,800	\$53,600
224	44	4	U.K.	Glasgow	4.2	£117,400	£28,200



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): 2013 – 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
232	45	28	Canada	Calgary, AB	4.3	\$392,400	\$91,800
232	45	5	U.K.	Derby & Derbyshire	4.3	£136,000	£31,300
232	45	5	U.K.	Nottingham & Nottinghamshire	4.3	£126,300	£29,700
240	48	2	Japan	Tokyo-Yokohama*	4.4	¥28,040,000	¥6,360,000
240	48	198	U.S.	Providence, RI-MA	4.4	\$241,400	\$55,300
240	48	198	U.S.	Sacramento, CA	4.4	\$255,900	\$57,900
240	48	198	U.S.	Washington, DC-VA-MD-WV	4.4	\$392,500	\$89,900
248	52	8	U.K.	Blackpool & Lancashire	4.5	£125,000	£27,700
257	53	9	U.K.	Hull & Humber	4.6	£133,800	£29,300
257	53	9	U.K.	Manchester & Greater Manchester	4.6	£128,000	£28,100
257	53	9	U.K.	Sheffield & South Yorkshire	4.6	£120,000	£25,900
257	53	209	U.S.	Denver, CO	4.6	\$286,900	\$62,600
264	57	29	Canada	Montreal, QC	4.7	\$264,000	\$56,300
264	57	211	U.S.	Riverside-San Bernardino, CA	4.7	\$249,100	\$52,700
268	59	13	U.K.	Birmingham & West Midlands	4.8	£134,100	£28,000
268	59	13	U.K.	Newcastle & Tyneside	4.8	£128,200	£26,500
268	59	212	U.S.	Portland, OR-WA	4.8	\$276,200	\$58,000
285	62	1	Singapore	Singapore	5.1	\$438,000	\$86,000
285	62	19	U.K.	Stoke on Trent & Staffordshire	5.1	£141,000	£27,500
289	64	21	U.K.	Liverpool & Merseyside	5.3	£125,000	£23,500
289	64	214	U.S.	Miami, FL	5.3	\$252,200	\$47,500
289	64	214	U.S.	Seattle, WA	5.3	\$354,700	\$66,900
297	67	23	U.K.	Bristol-Bath	5.4	£192,000	£35,600
297	67	217	U.S.	Boston, MA-NH	5.4	\$393,700	\$73,100
312	69	23	Australia	Brisbane, QLD	5.8	\$442,100	\$75,900
319	70	25	Australia	Perth, WA	6.0	\$508,000	\$84,800
323	71	33	Canada	Toronto, ON	6.2	\$453,900	\$73,100
323	71	222	U.S.	New York, NY-NJ-PA	6.2	\$405,400	\$65,200
327	73	28	Australia	Adelaide, SA	6.3	\$392,000	\$61,800
328	74	29	U.K.	London Exurbs (E & SE England)	6.4	£225,000	£34,900
336	75	31	U.K.	Plymouth & Devon	7.0	£183,600	£26,300
339	76	32	U.K.	London (GLA)	7.3	£326,000	£44,800
344	77	229	U.S.	Los Angeles, CA	7.7	\$448,900	\$58,300
346	78	230	U.S.	San Diego, CA	7.9	\$485,000	\$61,500
347	79	8	N.Z.	Auckland	8.0	\$561,700	\$70,600
351	80	38	Australia	Melbourne, VIC	8.4	\$595,500	\$70,800
353	81	232	U.S.	San Jose, CA	8.7	\$805,000	\$92,400
354	82	39	Australia	Sydney, NSW	9.0	\$722,700	\$80,500
356	83	234	U.S.	San Francisco-Oakland, CA	9.2	\$705,000	\$76,300
359	84	35	Canada	Vancouver, BC	10.3	\$670,300	\$65,000
360	85	1	China SAR	Hong Kong	14.9	\$4,024,000	\$270,000

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): 2013 – 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
327	73	28	Australia	Adelaide, SA	6.3	\$392,000	\$61,800
312	69	23	Australia	Brisbane, QLD	5.8	\$442,100	\$75,900
351	80	38	Australia	Melbourne, VIC	8.4	\$595,500	\$70,800
319	70	25	Australia	Perth, WA	6.0	\$508,000	\$84,800
354	82	39	Australia	Sydney, NSW	9.0	\$722,700	\$80,500
232	45	28	Canada	Calgary, AB	4.3	\$392,400	\$91,800
198	40	18	Canada	Edmonton, AB	3.9	\$336,000	\$87,200
264	57	29	Canada	Montreal, QC	4.7	\$264,000	\$56,300
184	37	15	Canada	Ottawa ON-QC	3.8	\$303,900	\$79,400
323	71	33	Canada	Toronto, ON	6.2	\$453,900	\$73,100
359	84	35	Canada	Vancouver, BC	10.3	\$670,300	\$65,000
360	85	1	China SAR	Hong Kong	14.9	\$4,024,000	\$270,000
171	34	5	Ireland	Dublin	3.7	€215,000	€58,000
142	24	1	Japan	Osaka-Kobe-Kyoto*	3.5	¥18,380,000	¥5,200,000
240	48	2	Japan	Tokyo-Yokohama*	4.4	¥28,040,000	¥6,360,000
347	79	8	N.Z.	Auckland	8.0	\$561,700	\$70,600
285	62	1	Singapore	Singapore	5.1	\$438,000	\$86,000
268	59	13	U.K.	Birmingham & West Midlands	4.8	£134,100	£28,000
248	52	8	U.K.	Blackpool & Lancashire	4.5	£125,000	£27,700
297	67	23	U.K.	Bristol-Bath	5.4	£192,000	£35,600
232	45	5	U.K.	Derby & Derbyshire	4.3	£136,000	£31,300
224	44	4	U.K.	Glasgow	4.2	£117,400	£28,200
257	53	9	U.K.	Hull & Humber	4.6	£133,800	£29,300
211	42	3	U.K.	Leeds & West Yorkshire	4.0	£130,000	£32,700
289	64	21	U.K.	Liverpool & Merseyside	5.3	£125,000	£23,500
339	76	32	U.K.	London (GLA)	7.3	£326,000	£44,800
328	74	29	U.K.	London Exurbs (E & SE England)	6.4	£225,000	£34,900
257	53	9	U.K.	Manchester & Greater Manchester	4.6	£128,000	£28,100
268	59	13	U.K.	Newcastle & Tyneside	4.8	£128,200	£26,500
232	45	5	U.K.	Nottingham & Nottinghamshire	4.3	£126,300	£29,700
336	75	31	U.K.	Plymouth & Devon	7.0	£183,600	£26,300
257	53	9	U.K.	Sheffield & South Yorkshire	4.6	£120,000	£25,900
285	62	19	U.K.	Stoke on Trent & Staffordshire	5.1	£141,000	£27,500
41	5	36	U.S.	Atlanta, GA	2.7	\$152,300	\$55,600
171	34	152	U.S.	Austin, TX	3.7	\$225,300	\$60,500
198	40	173	U.S.	Baltimore, MD	3.9	\$266,500	\$68,200
161	30	144	U.S.	Birmingham, AL	3.6	\$173,700	\$47,600
297	67	217	U.S.	Boston, MA-NH	5.4	\$393,700	\$73,100
41	5	36	U.S.	Buffalo, NY	2.7	\$137,100	\$51,200
130	21	117	U.S.	Charlotte, NC-SC	3.4	\$183,800	\$53,500
142	24	129	U.S.	Chicago, IL-IN-WI	3.5	\$209,000	\$60,400
41	5	36	U.S.	Cincinnati, OH-KY-IN	2.7	\$142,100	\$53,400
41	5	36	U.S.	Cleveland, OH	2.7	\$127,000	\$47,800



SCHEDULE 2
MAJOR MARKETS BY GEOGRAPHY (Over 1,000,000 Population)
 Median Multiple (Median House Price/Median Household Income): 2013 – 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
58	11	52	U.S.	Columbus, OH	2.8	\$152,100	\$54,700
96	15	85	U.S.	Dallas-Fort Worth, TX	3.1	\$181,300	\$58,000
257	53	209	U.S.	Denver, CO	4.6	\$286,900	\$62,600
27	2	24	U.S.	Detroit, MI	2.5	\$130,000	\$51,200
36	3	32	U.S.	Grand Rapids	2.6	\$135,700	\$51,600
142	24	129	U.S.	Hartford, CT	3.5	\$238,500	\$68,000
117	17	105	U.S.	Houston, TX	3.3	\$186,600	\$57,000
41	5	36	U.S.	Indianapolis, IN	2.7	\$143,500	\$52,800
142	24	129	U.S.	Jacksonville, FL	3.5	\$170,600	\$49,000
68	12	61	U.S.	Kansas City, MO-KS	2.9	\$162,300	\$55,500
161	30	144	U.S.	Las Vegas, NV	3.6	\$181,900	\$50,500
344	77	229	U.S.	Los Angeles, CA	7.7	\$448,900	\$58,300
68	12	61	U.S.	Louisville, KY-IN	2.9	\$145,100	\$49,800
80	14	72	U.S.	Memphis, TN-MS-AR	3.0	\$137,500	\$46,500
289	64	214	U.S.	Miami, FL	5.3	\$252,200	\$47,500
211	42	181	U.S.	Milwaukee, WI	4.0	\$211,800	\$53,600
96	15	85	U.S.	Minneapolis-St. Paul, MN-WI	3.1	\$208,000	\$67,500
130	21	117	U.S.	Nashville, TN	3.4	\$177,300	\$52,500
161	30	144	U.S.	New Orleans, LA	3.6	\$162,500	\$45,200
323	71	222	U.S.	New York, NY-NJ-PA	6.2	\$405,400	\$65,200
117	17	105	U.S.	Oklahoma City, OK	3.3	\$161,100	\$49,500
161	30	144	U.S.	Orlando, FL	3.6	\$167,800	\$46,900
184	37	162	U.S.	Philadelphia, PA-NJ-DE-MD	3.8	\$231,600	\$61,200
171	34	152	U.S.	Phoenix, AZ	3.7	\$191,700	\$52,300
18	1	17	U.S.	Pittsburgh, PA	2.3	\$116,000	\$51,400
268	59	212	U.S.	Portland, OR-WA	4.8	\$276,200	\$58,000
240	48	198	U.S.	Providence, RI-MA	4.4	\$241,400	\$55,300
117	17	105	U.S.	Raleigh, NC	3.3	\$202,700	\$61,400
142	24	129	U.S.	Richmond, VA	3.5	\$205,000	\$57,800
264	57	211	U.S.	Riverside-San Bernardino, CA	4.7	\$249,100	\$52,700
36	3	32	U.S.	Rochester, NY	2.6	\$132,100	\$51,600
240	48	198	U.S.	Sacramento, CA	4.4	\$255,900	\$57,900
184	37	162	U.S.	Salt Lake City, UT	3.8	\$235,000	\$61,200
117	17	105	U.S.	San Antonio, TX	3.3	\$175,000	\$52,400
346	78	230	U.S.	San Diego, CA	7.9	\$485,000	\$61,500
356	83	234	U.S.	San Francisco-Oakland, CA	9.2	\$705,000	\$76,300
353	81	232	U.S.	San Jose, CA	8.7	\$805,000	\$92,400
289	64	214	U.S.	Seattle, WA	5.3	\$354,700	\$66,900
41	5	36	U.S.	St. Louis,, MO-IL	2.7	\$143,700	\$53,200
130	21	117	U.S.	Tampa-St. Petersburg, FL	3.4	\$151,800	\$45,200
142	24	129	U.S.	Virginia Beach-Norfolk, VA-NC	3.5	\$200,500	\$57,000
240	48	198	U.S.	Washington, DC-VA-MD-WV	4.4	\$392,500	\$89,900

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): 2013 – 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	U.S.	Rockford, IL	1.7	\$88,900	\$51,600
1		1	U.S.	Utica, NY	1.7	\$80,000	\$47,500
3		3	U.S.	Warner Robbins, GA	1.9	\$103,900	\$55,500
4		1	Ireland	Waterford	2.0	€92,500	€46,900
4		4	U.S.	Appleton, WI	2.0	\$124,600	\$61,300
4		4	U.S.	Decatur, IL	2.0	\$91,000	\$45,400
4		4	U.S.	Lansing, MI	2.0	\$100,000	\$49,500
4		4	U.S.	Toledo, OH	2.0	\$87,500	\$44,100
9		8	U.S.	Springfield, IL	2.1	\$120,600	\$56,700
9		8	U.S.	Youngstown, OH-PA	2.1	\$85,000	\$41,400
11		10	U.S.	Augusta, GA	2.2	\$99,800	\$45,600
11		10	U.S.	Davenport-Moline, IA-IL	2.2	\$114,300	\$52,600
11		10	U.S.	Flint, MI	2.2	\$92,000	\$41,100
11		10	U.S.	Kankakee, IL	2.2	\$115,200	\$52,700
11		10	U.S.	Peoria, IL	2.2	\$120,000	\$54,500
11		10	U.S.	Saginaw, MI	2.2	\$90,000	\$41,100
11		10	U.S.	Topeka, KS	2.2	\$106,900	\$49,400
18		1	Canada	Moncton, NB	2.3	\$141,800	\$62,300
18		17	U.S.	Canton, OH	2.3	\$107,000	\$46,000
18		17	U.S.	Ft. Wayne, IN	2.3	\$116,700	\$50,200
18		17	U.S.	Lansing, MI	2.3	\$112,700	\$49,500
18	1	17	U.S.	Pittsburgh, PA	2.3	\$116,000	\$51,400
23		2	Ireland	Galway	2.4	€119,600	€50,400
23		21	U.S.	Binghamton, NY	2.4	\$117,500	\$49,000
23		21	U.S.	Dayton, OH	2.4	\$111,100	\$46,400
23		21	U.S.	South Bend, IN	2.4	\$108,600	\$45,600
27		2	Canada	Saint John, NB	2.5	\$154,400	\$62,200
27		24	U.S.	Akron, OH	2.5	\$125,300	\$50,700
27		24	U.S.	Bloomington, IL	2.5	\$156,500	\$63,300
27	2	24	U.S.	Detroit, MI	2.5	\$130,000	\$51,200
27		24	U.S.	Elmira, NY	2.5	\$116,100	\$46,800
27		24	U.S.	Erie, PA	2.5	\$119,600	\$47,400
27		24	U.S.	Syracuse, NY	2.5	\$130,700	\$52,200
27		24	U.S.	Waterloo, IA	2.5	\$130,800	\$51,700
27		24	U.S.	Wichita, KS	2.5	\$125,600	\$49,400
36		3	Canada	Fredericton, NB	2.6	\$165,700	\$64,600
36		32	U.S.	Elkhart, IN	2.6	\$122,000	\$46,200
36	3	32	U.S.	Grand Rapids	2.6	\$135,700	\$51,600
36		32	U.S.	Harrisburg, PA	2.6	\$146,000	\$55,800
36	3	32	U.S.	Rochester, NY	2.6	\$132,100	\$51,600
41		4	Canada	Windsor, ON	2.7	\$160,200	\$60,200



SCHEDULE 3

ALL MARKETS RANKED BY AFFORDABILITY: Most Affordable to Least Affordable

Median Multiple (Median House Price/Median Household Income): 2013 – 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
41	5	36	U.S.	Atlanta, GA	2.7	\$152,300	\$55,600
41	5	36	U.S.	Buffalo, NY	2.7	\$137,100	\$51,200
41		36	U.S.	Cedar Rapids, IA	2.7	\$160,100	\$58,300
41	5	36	U.S.	Cincinnati, OH-KY-IN	2.7	\$142,100	\$53,400
41	5	36	U.S.	Cleveland, OH	2.7	\$127,000	\$47,800
41		36	U.S.	Decatur, AL	2.7	\$114,900	\$42,900
41		36	U.S.	Duluth, MN	2.7	\$130,000	\$47,700
41		36	U.S.	Green Bay, WI	2.7	\$138,400	\$51,700
41		36	U.S.	Houma, LA	2.7	\$132,300	\$49,800
41	5	36	U.S.	Indianapolis, IN	2.7	\$143,500	\$52,800
41		36	U.S.	Ocala, FL	2.7	\$103,600	\$37,800
41		36	U.S.	Omaha, NE-IA	2.7	\$149,500	\$55,200
41		36	U.S.	Palm Bay-Melbourne, FL	2.7	\$125,800	\$47,000
41		36	U.S.	Scranton-Wilkes Barre, PA	2.7	\$117,000	\$43,700
41	5	36	U.S.	St. Louis,, MO-IL	2.7	\$143,700	\$53,200
41		36	U.S.	York, PA	2.7	\$155,800	\$56,700
58		3	Ireland	Cork	2.8	€144,000	€50,900
58		52	U.S.	Columbus, GA-AL	2.8	\$122,200	\$43,800
58	11	52	U.S.	Columbus, OH	2.8	\$152,100	\$54,700
58		52	U.S.	Gulfport-Biloxi, MS	2.8	\$116,800	\$42,000
58		52	U.S.	Kalamazoo, MI	2.8	\$127,000	\$45,200
58		52	U.S.	Killeen , TX	2.8	\$138,000	\$49,500
58		52	U.S.	Lincoln, NE	2.8	\$144,900	\$51,600
58		52	U.S.	Little Rock, AR	2.8	\$138,700	\$48,700
58		52	U.S.	Mobile, AL	2.8	\$114,800	\$40,400
58		52	U.S.	Salisbury, MD	2.8	\$140,000	\$50,300
68		4	Ireland	Limerick	2.9	€144,000	€50,000
68		61	U.S.	Charleston, WV	2.9	\$140,200	\$48,500
68		61	U.S.	Clarksville, TN	2.9	\$132,500	\$45,200
68		61	U.S.	Deltona-Daytona Beach, FL	2.9	\$120,400	\$40,900
68		61	U.S.	Des Moines, IA	2.9	\$177,600	\$60,300
68		61	U.S.	Hickory, NC	2.9	\$109,500	\$38,100
68	12	61	U.S.	Kansas City, MO-KS	2.9	\$162,300	\$55,500
68		61	U.S.	Lakeland, FL	2.9	\$123,800	\$42,100
68	12	61	U.S.	Louisville, KY-IN	2.9	\$145,100	\$49,800
68		61	U.S.	McAllen, TX	2.9	\$100,000	\$34,400
68		61	U.S.	Reading, PA	2.9	\$153,700	\$53,000
68		61	U.S.	Springfield, MO	2.9	\$123,500	\$43,100
80		5	Canada	Charlottetown, PEI	3.0	\$187,300	\$63,200
80		5	Canada	Thunder Bay, ON	3.0	\$187,500	\$61,800
80		5	Canada	Trois-Rivieres, QC	3.0	\$145,500	\$48,700
80		72	U.S.	Champaign-Urbana, IL	3.0	\$147,900	\$48,500
80		72	U.S.	Columbia, SC	3.0	\$148,100	\$49,700
80		72	U.S.	Cumberland, MD-WV	3.0	\$109,900	\$36,300
80		72	U.S.	Glens Falls, NY	3.0	\$162,400	\$54,400
80		72	U.S.	Greenville, NC	3.0	\$115,800	\$38,500
80		72	U.S.	Hagerstown-Martinsburg, MD-WV	3.0	\$158,700	\$52,300



SCHEDULE 3

ALL MARKETS RANKED BY AFFORDABILITY: Most Affordable to Least Affordable

Median Multiple (Median House Price/Median Household Income): 2013 – 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
80		72	U.S.	Lancaster, PA	3.0	\$170,000	\$55,800
80		72	U.S.	Lexington, KY	3.0	\$147,000	\$48,800
80	14	72	U.S.	Memphis, TN-MS-AR	3.0	\$137,500	\$46,500
80		72	U.S.	Roanoke, VA	3.0	\$145,000	\$47,900
80		72	U.S.	Sioux Falls, SD	3.0	\$158,100	\$52,700
80		72	U.S.	Tulsa, OK	3.0	\$146,500	\$48,900
80		72	U.S.	Winston-Salem, NC	3.0	\$131,000	\$43,000
96		8	Canada	Saguenay, QC	3.1	\$173,000	\$56,100
96		85	U.S.	Abilene, TX	3.1	\$139,000	\$44,200
96		85	U.S.	Amarillo, TX	3.1	\$145,900	\$47,300
96		85	U.S.	Beaumont, TX	3.1	\$139,200	\$44,200
96		85	U.S.	Chattanooga, TN-GA	3.1	\$139,500	\$44,300
96	15	85	U.S.	Dallas-Fort Worth, TX	3.1	\$181,300	\$58,000
96		85	U.S.	Fargo, ND-MN	3.1	\$165,200	\$52,500
96	15	85	U.S.	Minneapolis-St. Paul, MN-WI	3.1	\$208,000	\$67,500
96		85	U.S.	Montgomery, AL	3.1	\$141,600	\$45,500
96		85	U.S.	Ogden, UT	3.1	\$198,000	\$63,000
96		85	U.S.	Pensacola, FL	3.1	\$159,800	\$50,800
96		85	U.S.	Yuma, AZ	3.1	\$125,000	\$40,200
108		96	U.S.	Corpus Christi, TX	3.2	\$160,000	\$50,000
108		96	U.S.	Fayetteville, AR-MO	3.2	\$147,100	\$46,500
108		96	U.S.	Florence, SC	3.2	\$122,700	\$38,900
108		96	U.S.	Greensboro-High Point, NC	3.2	\$136,100	\$42,500
108		96	U.S.	Huntsville, AL	3.2	\$178,500	\$55,600
108		96	U.S.	Kingston, NY	3.2	\$187,000	\$58,600
108		96	U.S.	Norwich-New London, CT	3.2	\$215,300	\$67,800
108		96	U.S.	Punta Gorda, FL	3.2	\$147,900	\$46,100
108		96	U.S.	Spartanburg, SC	3.2	\$133,900	\$41,600
117		9	Canada	Sudbury, ON	3.3	\$216,300	\$64,900
117		105	U.S.	Albany-Schenectady, NY	3.3	\$205,800	\$61,800
117		105	U.S.	Ann Arbor, MI	3.3	\$190,000	\$57,400
117		105	U.S.	Brownsville, TX	3.3	\$103,000	\$31,500
117		105	U.S.	El Centro, CA	3.3	\$135,000	\$41,000
117	17	105	U.S.	Houston, TX	3.3	\$186,600	\$57,000
117		105	U.S.	Kennewick-Richland, WA	3.3	\$189,600	\$58,300
117		105	U.S.	Lafayette, LA	3.3	\$157,000	\$47,700
117	17	105	U.S.	Oklahoma City, OK	3.3	\$161,100	\$49,500
117		105	U.S.	Port St. Lucie, FL	3.3	\$143,900	\$43,100
117	17	105	U.S.	Raleigh, NC	3.3	\$202,700	\$61,400
117	17	105	U.S.	San Antonio, TX	3.3	\$175,000	\$52,400
117		105	U.S.	Tyler, TX	3.3	\$157,000	\$47,200
130		117	U.S.	Baton Rouge, LA	3.4	\$173,200	\$51,200
130		117	U.S.	Bismarck, ND	3.4	\$217,500	\$63,200
130		117	U.S.	Boise City, ID	3.4	\$168,400	\$49,900
130	21	117	U.S.	Charlotte, NC-SC	3.4	\$183,800	\$53,500
130		117	U.S.	Dover, DE	3.4	\$185,400	\$53,900
130		117	U.S.	Fayetteville, NC	3.4	\$154,700	\$45,700



SCHEDULE 3
ALL MARKETS RANKED BY AFFORDABILITY: Most Affordable to Least Affordable
Median Multiple (Median House Price/Median Household Income): 2013 – 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
130		117	U.S.	Gainesville, GA	3.4	\$173,000	\$50,700
130		117	U.S.	Knoxville, TN	3.4	\$152,900	\$45,600
130		117	U.S.	Longview, TX	3.4	\$145,800	\$43,300
130		117	U.S.	Manchester-Nashua, NH	3.4	\$241,800	\$70,400
130	21	117	U.S.	Nashville, TN	3.4	\$177,300	\$52,500
130	21	117	U.S.	Tampa-St. Petersburg, FL	3.4	\$151,800	\$45,200
142		10	Canada	Kingston, ON	3.5	\$231,800	\$66,100
142		10	Canada	St. Catherines-Niagara, ON	3.5	\$210,800	\$60,600
142	24	1	Japan	Osaka-Kobe-Kyoto*	3.5	¥18,380,000	¥5,200,000
142		1	U.K.	Falkirk	3.5	£98,000	£27,900
142		129	U.S.	Allentown-Bethlehem, PA-NJ	3.5	\$197,400	\$56,800
142		129	U.S.	Athens, GA	3.5	\$137,200	\$38,700
142		129	U.S.	Cape Coral-Fort Myers, FL	3.5	\$164,500	\$47,100
142	24	129	U.S.	Chicago, IL-IN-WI	3.5	\$209,000	\$60,400
142		129	U.S.	Dover, DE	3.5	\$187,000	\$53,900
142		129	U.S.	El Paso, TX	3.5	\$143,600	\$41,100
142	24	129	U.S.	Hartford, CT	3.5	\$238,500	\$68,000
142		129	U.S.	Jackson, MS	3.5	\$153,300	\$43,400
142	24	129	U.S.	Jacksonville, FL	3.5	\$170,600	\$49,000
142		129	U.S.	Palm Coast, FL	3.5	\$151,100	\$43,700
142		129	U.S.	Panama City, FL	3.5	\$164,500	\$46,900
142		129	U.S.	Poughkeepsie, NY	3.5	\$238,000	\$67,900
142	24	129	U.S.	Richmond, VA	3.5	\$205,000	\$57,800
142	24	129	U.S.	Virginia Beach-Norfolk, VA-NC	3.5	\$200,500	\$57,000
142		129	U.S.	Waco, TX	3.5	\$143,000	\$41,400
161		12	Canada	Regina, SK	3.6	\$286,600	\$79,000
161		2	U.K.	Belfast	3.6	£104,400	£29,200
161	30	144	U.S.	Birmingham, AL	3.6	\$173,700	\$47,600
161		144	U.S.	Columbia, MO	3.6	\$157,400	\$44,000
161		144	U.S.	Greeley, CO	3.6	\$205,000	\$56,400
161		144	U.S.	Lake Havasu City, AZ	3.6	\$125,000	\$35,100
161	30	144	U.S.	Las Vegas, NV	3.6	\$181,900	\$50,500
161	30	144	U.S.	New Orleans, LA	3.6	\$162,500	\$45,200
161	30	144	U.S.	Orlando, FL	3.6	\$167,800	\$46,900
161		144	U.S.	Wilmington, NC	3.6	\$185,300	\$50,900
171		13	Canada	Halifax, NS	3.7	\$243,300	\$65,700
171		13	Canada	London, ON	3.7	\$222,100	\$60,700
171	34	5	Ireland	Dublin	3.7	€215,000	€58,000
171	34	152	U.S.	Austin, TX	3.7	\$225,300	\$60,500
171		152	U.S.	Crestview-Fort Walton Beach, FL	3.7	\$196,800	\$53,800
171		152	U.S.	Durham, NC	3.7	\$191,600	\$51,200
171		152	U.S.	Greenville, SC	3.7	\$165,500	\$44,500
171		152	U.S.	Hanford, CA	3.7	\$175,300	\$46,800
171		152	U.S.	Merced, CA	3.7	\$165,800	\$44,400
171		152	U.S.	Olympia, WA	3.7	\$220,000	\$59,300
171	34	152	U.S.	Phoenix, AZ	3.7	\$191,700	\$52,300



SCHEDULE 3

ALL MARKETS RANKED BY AFFORDABILITY: Most Affordable to Least Affordable

Median Multiple (Median House Price/Median Household Income): 2013 – 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
171		152	U.S.	Spokane, WA	3.7	\$181,600	\$48,500
171		152	U.S.	Yakima, WA	3.7	\$164,100	\$44,800
184		15	Canada	Brantford, ON	3.8	\$237,100	\$62,000
184	37	15	Canada	Ottawa ON-QC	3.8	\$303,900	\$79,400
184		15	Canada	St. John's, NL	3.8	\$281,000	\$74,100
184		162	U.S.	Albuquerque, NM	3.8	\$180,700	\$47,600
184		162	U.S.	Bremerton, WA	3.8	\$230,000	\$60,200
184		162	U.S.	Farmington, NM	3.8	\$178,300	\$47,300
184		162	U.S.	Kingston, NY	3.8	\$220,700	\$58,600
184		162	U.S.	Madison, WI	3.8	\$229,200	\$60,000
184	37	162	U.S.	Philadelphia, PA-NJ-DE-MD	3.8	\$231,600	\$61,200
184	37	162	U.S.	Salt Lake City, UT	3.8	\$235,000	\$61,200
184		162	U.S.	Shreveport, LA	3.8	\$170,500	\$44,900
184		162	U.S.	Springfield, MA	3.8	\$201,400	\$52,500
184		162	U.S.	Tucson, AZ	3.8	\$172,400	\$45,600
184		162	U.S.	Worcester, MA	3.8	\$241,800	\$63,700
198	40	18	Canada	Edmonton, AB	3.9	\$336,000	\$87,200
198		18	Canada	Guelph, ON	3.9	\$288,800	\$74,400
198		18	Canada	Kitchener, ON	3.9	\$282,700	\$71,600
198		18	Canada	Quebec, QC	3.9	\$231,900	\$60,000
198		18	Canada	Winnipeg, MB	3.9	\$244,700	\$63,400
198		173	U.S.	Anchorage, AK	3.9	\$283,000	\$72,800
198	40	173	U.S.	Baltimore, MD	3.9	\$266,500	\$68,200
198		173	U.S.	Colorado Springs, CO	3.9	\$222,100	\$56,400
198		173	U.S.	Laredo, TX	3.9	\$145,800	\$37,300
198		173	U.S.	Prescott, AZ	3.9	\$175,000	\$44,900
198		173	U.S.	Sebastian-Vero Beach, FL	3.9	\$160,300	\$41,200
198		173	U.S.	Tallahassee, FL	3.9	\$176,500	\$45,600
198		173	U.S.	Visalia, CA	3.9	\$159,700	\$41,100
211		23	Canada	Saskatoon, SK	4.0	\$304,600	\$75,700
211		23	Canada	Sherbrooke, QC	4.0	\$195,300	\$49,100
211	42	3	U.K.	Leeds & West Yorkshire	4.0	£130,000	£32,700
211		181	U.S.	College Station, TX	4.0	\$166,000	\$41,100
211		181	U.S.	Gainesville, FL	4.0	\$167,800	\$42,000
211	42	181	U.S.	Milwaukee, WI	4.0	\$211,800	\$53,600
211		181	U.S.	Salem, OR	4.0	\$184,900	\$46,500
218		1	Australia	Karratha, WA	4.1	\$679,000	\$166,800
218		25	Canada	Barrie, ON	4.1	\$299,000	\$73,500
218		25	Canada	Peterborough, ON	4.1	\$247,300	\$60,600
218		185	U.S.	New Haven, CT	4.1	\$247,800	\$60,400
218		185	U.S.	Pittsfield, MA	4.1	\$194,200	\$47,400
218		185	U.S.	Provo, UT	4.1	\$241,000	\$59,300
224		2	Australia	Gladstone, QLD	4.2	\$400,000	\$94,200
224		27	Canada	Oshawa, ON	4.2	\$335,300	\$79,800
224	44	4	U.K.	Glasgow	4.2	£117,400	£28,200
224		188	U.S.	Atlantic City, NJ	4.2	\$216,700	\$52,100
224		188	U.S.	Bakersfield, CA	4.2	\$196,500	\$46,800



SCHEDULE 3
ALL MARKETS RANKED BY AFFORDABILITY: Most Affordable to Least Affordable
 Median Multiple (Median House Price/Median Household Income): 2013 – 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
224		188	U.S.	Madera, CA	4.2	\$178,600	\$42,800
224		188	U.S.	Modesto, CA	4.2	\$197,300	\$47,300
224		188	U.S.	Yuba City, CA	4.2	\$193,100	\$46,500
232	45	28	Canada	Calgary, AB	4.3	\$392,400	\$91,800
232	45	5	U.K.	Derby & Derbyshire	4.3	£136,000	£31,300
232	45	5	U.K.	Nottingham & Nottinghamshire	4.3	£126,300	£29,700
232		193	U.S.	Fort Collins, CO	4.3	\$247,000	\$56,900
232		193	U.S.	Fresno, CA	4.3	\$184,400	\$42,400
232		193	U.S.	Portland, ME	4.3	\$236,000	\$54,700
232		193	U.S.	Redding, CA	4.3	\$198,500	\$46,300
232		193	U.S.	Trenton, NJ	4.3	\$298,900	\$69,300
240	48	2	Japan	Tokyo-Yokohama*	4.4	¥28,040,000	¥6,360,000
240		7	U.K.	Dundee	4.4	£122,800	£28,200
240		198	U.S.	Asheville, NC	4.4	\$195,000	\$44,000
240		198	U.S.	Myrtle Beach, SC	4.4	\$181,800	\$41,100
240	48	198	U.S.	Providence, RI-MA	4.4	\$241,400	\$55,300
240	48	198	U.S.	Sacramento, CA	4.4	\$255,900	\$57,900
240		198	U.S.	Sarasota-Bradenton, FL	4.4	\$213,500	\$48,700
240	48	198	U.S.	Washington, DC-VA-MD-WV	4.4	\$392,500	\$89,900
248		3	Australia	Mildura, VIC	4.5	\$213,000	\$46,900
248		3	Australia	Townsville, QLD	4.5	\$346,000	\$76,400
248		1	N.Z.	Palmerston North-Manawatu	4.5	\$231,100	\$50,900
248	52	8	U.K.	Blackpool & Lancashire	4.5	£125,000	£27,700
248		204	U.S.	Burlington, VT	4.5	\$279,900	\$62,000
248		204	U.S.	Charleston, SC	4.5	\$227,700	\$51,000
248		204	U.S.	Reno-Sparks, NV	4.5	\$224,800	\$50,000
248		204	U.S.	Stockton, CA	4.5	\$232,900	\$51,700
248		204	U.S.	Vallejo, CA	4.5	\$287,100	\$63,200
257		5	Australia	Shepparton, VIC	4.6	\$237,000	\$51,400
257		9	U.K.	Edinburgh	4.6	£152,900	£33,400
257	53	9	U.K.	Hull & Humber	4.6	£133,800	£29,300
257	53	9	U.K.	Manchester & Greater Manchester	4.6	£128,000	£28,100
257	53	9	U.K.	Sheffield & South Yorkshire	4.6	£120,000	£25,900
257		209	U.S.	Bellingham, WA	4.6	\$240,000	\$52,400
257	53	209	U.S.	Denver, CO	4.6	\$286,900	\$62,600
264		6	Australia	Launceston, TAS	4.7	\$250,000	\$53,200
264		29	Canada	Hamilton, ON	4.7	\$323,000	\$68,400
264	57	29	Canada	Montreal, QC	4.7	\$264,000	\$56,300
264	57	211	U.S.	Riverside-San Bernardino, CA	4.7	\$249,100	\$52,700
268		7	Australia	Alice Springs, NT	4.8	\$469,500	\$97,100
268		7	Australia	Rockhampton, QLD	4.8	\$318,300	\$66,600
268		7	Australia	Tamworth, NSW	4.8	\$260,000	\$54,500
268		2	N.Z.	Hamilton-Waikato	4.8	\$303,400	\$62,800
268	59	13	U.K.	Birmingham & West Midlands	4.8	£134,100	£28,000
268		13	U.K.	Middlesborough & Durham	4.8	£118,000	£24,600
268	59	13	U.K.	Newcastle & Tyneside	4.8	£128,200	£26,500
268		13	U.K.	Northampton & Northamptonshire	4.8	£155,000	£32,300



SCHEDULE 3

ALL MARKETS RANKED BY AFFORDABILITY: Most Affordable to Least Affordable Median Multiple (Median House Price/Median Household Income): 2013 – 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
268	59	212	U.S.	Portland, OR-WA	4.8	\$276,200	\$58,000
277		10	Australia	Bunbury, WA	4.9	\$380,000	\$77,200
277		10	Australia	Mackay, QLD	4.9	\$420,000	\$86,300
277		10	Australia	Orange, NSW	4.9	\$317,000	\$64,600
277		17	U.K.	Perth	4.9	£158,800	£32,300
277		213	U.S.	Eugene, OR	4.9	\$204,000	\$41,400
282		13	Australia	Bathurst, NSW	5.0	\$313,300	\$63,200
282		13	Australia	Port Hedland, WA	5.0	\$818,000	\$163,700
282		18	U.K.	Leicester & Leicestershire	5.0	£151,000	£30,400
285	62	1	Singapore	Singapore	5.1	\$438,000	\$86,000
285		19	U.K.	Newport	5.1	£150,000	£29,500
285	62	19	U.K.	Stoke on Trent & Staffordshire	5.1	£141,000	£27,500
288		3	N.Z.	Dunedin	5.2	\$263,500	\$51,100
289		15	Australia	Canberra, ACT	5.3	\$562,200	\$106,400
289		15	Australia	Geraldton, WA	5.3	\$379,000	\$71,500
289		15	Australia	Wagga Wagga, NSW	5.3	\$333,700	\$63,500
289	64	21	U.K.	Liverpool & Merseyside	5.3	£125,000	£23,500
289		21	U.K.	Warwickshire	5.3	£186,000	£35,200
289	64	214	U.S.	Miami, FL	5.3	\$252,200	\$47,500
289		214	U.S.	Naples, FL	5.3	\$290,800	\$55,100
289	64	214	U.S.	Seattle, WA	5.3	\$354,700	\$66,900
297		18	Australia	Hobart, TAS	5.4	\$322,800	\$59,500
297		18	Australia	Toowoomba, QLD	5.4	\$309,000	\$57,500
297		4	N.Z.	Napier-Hastings	5.4	\$290,500	\$54,200
297		23	U.K.	Aberdeen	5.4	£187,800	£34,600
297	67	23	U.K.	Bristol-Bath	5.4	£192,000	£35,600
297		23	U.K.	Swansea	5.4	£120,000	£22,300
297		23	U.K.	Warrington & Cheshire	5.4	£170,000	£31,300
297	67	217	U.S.	Boston, MA-NH	5.4	\$393,700	\$73,100
297		217	U.S.	Bridgeport, CT	5.4	\$439,000	\$81,300
306		20	Australia	Ballarat, VIC	5.5	\$290,000	\$52,500
306		20	Australia	Cairns, QLD	5.5	\$351,500	\$63,600
306		5	N.Z.	Wellington	5.5	\$386,700	\$70,400
309		27	U.K.	Cardiff	5.6	£145,000	£26,100
310		22	Australia	Bundaberg, QLD	5.7	\$265,000	\$46,100
310		219	U.S.	Barnstable Town, MA	5.7	\$346,800	\$60,600
312		23	Australia	Albury-Wodonga, NSW-VIC	5.8	\$320,000	\$55,200
312	69	23	Australia	Brisbane, QLD	5.8	\$442,100	\$75,900
312		6	N.Z.	Christchurch	5.8	\$388,200	\$66,500
312		220	U.S.	Hilo, HI	5.8	\$296,700	\$51,200
316		31	Canada	Fraser Valley, BC	5.9	\$425,400	\$71,700
316		31	Canada	Kelowna, BC	5.9	\$372,200	\$62,900
316		28	U.K.	Telford & Shropshire	5.9	£161,800	£27,200
319		25	Australia	Bendigo, VIC	6.0	\$315,000	\$52,700
319		25	Australia	Newcastle-Maitland, NSW	6.0	\$385,700	\$64,800
319	70	25	Australia	Perth, WA	6.0	\$508,000	\$84,800
319		221	U.S.	Boulder, CO	6.0	\$410,900	\$68,200



SCHEDULE 3
ALL MARKETS RANKED BY AFFORDABILITY: Most Affordable to Least Affordable
 Median Multiple (Median House Price/Median Household Income): 2013 – 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
323	71	33	Canada	Toronto, ON	6.2	\$453,900	\$73,100
323		222	U.S.	Chico, CA	6.2	\$257,000	\$41,700
323		222	U.S.	Eureka, CA	6.2	\$257,000	\$41,400
323	71	222	U.S.	New York, NY-NJ-PA	6.2	\$405,400	\$65,200
327	73	28	Australia	Adelaide, SA	6.3	\$392,000	\$61,800
328	74	29	U.K.	London Exurbs (E & SE England)	6.4	£225,000	£34,900
329		29	Australia	Darwin, NT	6.5	\$673,500	\$103,600
329		30	U.K.	Swindon & Wiltshire	6.5	£185,000	£28,600
331		7	N.Z.	Taraunga-Western Bay of Plenty	6.6	\$364,800	\$55,000
332		30	Australia	Fraser Coast, QLD	6.8	\$290,000	\$42,600
332		30	Australia	Mandurah, WA	6.8	\$390,000	\$57,600
334		32	Australia	Wollongong, NSW	6.9	\$430,000	\$61,900
334		34	Canada	Victoria, BC	6.9	\$446,800	\$65,100
336	75	31	U.K.	Plymouth & Devon	7.0	£183,600	£26,300
336		225	U.S.	Salinas-Monterey, CA	7.0	\$412,800	\$59,200
338		33	Australia	Coff's Harbour, NSW	7.1	\$355,000	\$50,000
339		34	Australia	Geelong, VIC	7.3	\$405,000	\$55,700
339	76	32	U.K.	London (GLA)	7.3	£326,000	£44,800
341		226	U.S.	Napa, CA	7.4	\$518,400	\$69,800
342		227	U.S.	Santa Rosa, CA	7.5	\$461,100	\$61,100
343		228	U.S.	Oxnard, CA	7.6	\$550,400	\$72,900
344		35	Australia	Gold Coast, QLD	7.7	\$472,100	\$61,500
344	77	229	U.S.	Los Angeles, CA	7.7	\$448,900	\$58,300
346	78	230	U.S.	San Diego, CA	7.9	\$485,000	\$61,500
347		36	Australia	Sunshine Coast, QLD	8.0	\$440,000	\$55,300
347	79	8	N.Z.	Auckland	8.0	\$561,700	\$70,600
347		231	U.S.	San Luis Obispo, CA	8.0	\$488,300	\$61,400
350		37	Australia	Port Macquarie, NSW	8.1	\$378,000	\$46,600
351	80	38	Australia	Melbourne, VIC	8.4	\$595,500	\$70,800
352		33	U.K.	Bournemouth & Dorsett	8.6	£223,000	£25,800
353	81	232	U.S.	San Jose, CA	8.7	\$805,000	\$92,400
354	82	39	Australia	Sydney, NSW	9.0	\$722,700	\$80,500
354		233	U.S.	Santa Cruz, CA	9.0	\$621,200	\$69,000
356	83	234	U.S.	San Francisco-Oakland, CA	9.2	\$705,000	\$76,300
357		235	U.S.	Santa Barbara, CA	9.3	\$638,900	\$69,000
358		236	U.S.	Honolulu, HI	9.4	\$679,800	\$72,700
359	84	35	Canada	Vancouver, BC	10.3	\$670,300	\$65,000
360	85	1	China SAR	Hong Kong	14.9	\$4,024,000	\$270,000

Financial data in local currency.

*Average Multiple (Japan)



**SCHEDULE 4
ALL MARKETS BY GEOGRAPHY**

Median Multiple (Median House Price/Median Household Income): 2013 – 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
327	73	28	Australia	Adelaide, SA	6.3	\$392,000	\$61,800
312		23	Australia	Albury-Wodonga, NSW-VIC	5.8	\$320,000	\$55,200
268		7	Australia	Alice Springs, NT	4.8	\$469,500	\$97,100
306		20	Australia	Ballarat, VIC	5.5	\$290,000	\$52,500
282		13	Australia	Bathurst, NSW	5.0	\$313,300	\$63,200
319		25	Australia	Bendigo, VIC	6.0	\$315,000	\$52,700
312	69	23	Australia	Brisbane, QLD	5.8	\$442,100	\$75,900
277		10	Australia	Bunbury, WA	4.9	\$380,000	\$77,200
310		22	Australia	Bundaberg, QLD	5.7	\$265,000	\$46,100
306		20	Australia	Cairns, QLD	5.5	\$351,500	\$63,600
289		15	Australia	Canberra, ACT	5.3	\$562,200	\$106,400
338		33	Australia	Coff's Harbour, NSW	7.1	\$355,000	\$50,000
329		29	Australia	Darwin, NT	6.5	\$673,500	\$103,600
332		30	Australia	Fraser Coast, QLD	6.8	\$290,000	\$42,600
339		34	Australia	Geelong, VIC	7.3	\$405,000	\$55,700
289		15	Australia	Geraldton, WA	5.3	\$379,000	\$71,500
224		2	Australia	Gladstone, QLD	4.2	\$400,000	\$94,200
344		35	Australia	Gold Coast, QLD	7.7	\$472,100	\$61,500
297		18	Australia	Hobart, TAS	5.4	\$322,800	\$59,500
218		1	Australia	Karratha, WA	4.1	\$679,000	\$166,800
264		6	Australia	Launceston, TAS	4.7	\$250,000	\$53,200
277		10	Australia	Mackay, QLD	4.9	\$420,000	\$86,300
332		30	Australia	Mandurah, WA	6.8	\$390,000	\$57,600
351	80	38	Australia	Melbourne, VIC	8.4	\$595,500	\$70,800
248		3	Australia	Mildura, VIC	4.5	\$213,000	\$46,900
319		25	Australia	Newcastle-Maitland, NSW	6.0	\$385,700	\$64,800
277		10	Australia	Orange, NSW	4.9	\$317,000	\$64,600
319	70	25	Australia	Perth, WA	6.0	\$508,000	\$84,800
282		13	Australia	Port Hedland, WA	5.0	\$818,000	\$163,700
350		37	Australia	Port Macquarie, NSW	8.1	\$378,000	\$46,600
268		7	Australia	Rockhampton, QLD	4.8	\$318,300	\$66,600
257		5	Australia	Shepparton, VIC	4.6	\$237,000	\$51,400
347		36	Australia	Sunshine Coast, QLD	8.0	\$440,000	\$55,300
354	82	39	Australia	Sydney, NSW	9.0	\$722,700	\$80,500
268		7	Australia	Tamworth, NSW	4.8	\$260,000	\$54,500
297		18	Australia	Toowoomba, QLD	5.4	\$309,000	\$57,500
248		3	Australia	Townsville, QLD	4.5	\$346,000	\$76,400
289		15	Australia	Wagga Wagga, NSW	5.3	\$333,700	\$63,500
334		32	Australia	Wollongong, NSW	6.9	\$430,000	\$61,900
				Median Market	5.5		
218		25	Canada	Barrie, ON	4.1	\$299,000	\$73,500
184		15	Canada	Brantford, ON	3.8	\$237,100	\$62,000



**SCHEDULE 4
ALL MARKETS BY GEOGRAPHY**

Median Multiple (Median House Price/Median Household Income): 2013 – 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
232	45	28	Canada	Calgary, AB	4.3	\$392,400	\$91,800
80		5	Canada	Charlottetown, PEI	3.0	\$187,300	\$63,200
198	40	18	Canada	Edmonton, AB	3.9	\$336,000	\$87,200
316		31	Canada	Fraser Valley, BC	5.9	\$425,400	\$71,700
36		3	Canada	Fredericton, NB	2.6	\$165,700	\$64,600
198		18	Canada	Guelph, ON	3.9	\$288,800	\$74,400
171		13	Canada	Halifax, NS	3.7	\$243,300	\$65,700
264		29	Canada	Hamilton, ON	4.7	\$323,000	\$68,400
316		31	Canada	Kelowna, BC	5.9	\$372,200	\$62,900
142		10	Canada	Kingston, ON	3.5	\$231,800	\$66,100
198		18	Canada	Kitchener, ON	3.9	\$282,700	\$71,600
171		13	Canada	London, ON	3.7	\$222,100	\$60,700
18		1	Canada	Moncton, NB	2.3	\$141,800	\$62,300
264	57	29	Canada	Montreal, QC	4.7	\$264,000	\$56,300
224		27	Canada	Oshawa, ON	4.2	\$335,300	\$79,800
184	37	15	Canada	Ottawa ON-QC	3.8	\$303,900	\$79,400
218		25	Canada	Peterborough, ON	4.1	\$247,300	\$60,600
198		18	Canada	Quebec, QC	3.9	\$231,900	\$60,000
161		12	Canada	Regina, SK	3.6	\$286,600	\$79,000
96		8	Canada	Saguenay, QC	3.1	\$173,000	\$56,100
27		2	Canada	Saint John, NB	2.5	\$154,400	\$62,200
211		23	Canada	Saskatoon, SK	4.0	\$304,600	\$75,700
211		23	Canada	Sherbrooke, QC	4.0	\$195,300	\$49,100
142		10	Canada	St. Catherines-Niagara, ON	3.5	\$210,800	\$60,600
184		15	Canada	St. John's, NL	3.8	\$281,000	\$74,100
117		9	Canada	Sudbury, ON	3.3	\$216,300	\$64,900
80		5	Canada	Thunder Bay, ON	3.0	\$187,500	\$61,800
323	71	33	Canada	Toronto, ON	6.2	\$453,900	\$73,100
80		5	Canada	Trois-Rivieres, QC	3.0	\$145,500	\$48,700
359	84	35	Canada	Vancouver, BC	10.3	\$670,300	\$65,000
334		34	Canada	Victoria, BC	6.9	\$446,800	\$65,100
41		4	Canada	Windsor, ON	2.7	\$160,200	\$60,200
198		18	Canada	Winnipeg, MB	3.9	\$244,700	\$63,400
				Median Market	3.9		
360	85	1	China SAR	Hong Kong	14.9	\$4,024,000	\$270,000
58		3	Ireland	Cork	2.8	€144,000	€50,900
171	34	5	Ireland	Dublin	3.7	€215,000	€58,000
23		2	Ireland	Galway	2.4	€119,600	€50,400
68		4	Ireland	Limerick	2.9	€144,000	€50,000
4		1	Ireland	Waterford	2.0	€92,500	€46,900
				Median Market	2.8		
240	48	2	Japan	Tokyo-Yokohama*	4.4	¥28,040,000	¥6,360,000
142	24	1	Japan	Osaka-Kobe-Kyoto*	3.5	¥18,380,000	¥5,200,000
				Median Market*	4.0		



**SCHEDULE 4
ALL MARKETS BY GEOGRAPHY**

Median Multiple (Median House Price/Median Household Income): 2013 – 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
347	79	8	N.Z.	Auckland	8.0	\$561,700	\$70,600
312		6	N.Z.	Christchurch	5.8	\$388,200	\$66,500
288		3	N.Z.	Dunedin	5.2	\$263,500	\$51,100
268		2	N.Z.	Hamilton-Waikato	4.8	\$303,400	\$62,800
297		4	N.Z.	Napier-Hastings	5.4	\$290,500	\$54,200
248		1	N.Z.	Palmerston North-Manawatu	4.5	\$231,100	\$50,900
331		7	N.Z.	Taraunga-Western Bay of Plenty	6.6	\$364,800	\$55,000
306		5	N.Z.	Wellington	5.5	\$386,700	\$70,400
				Median Market	5.5		
285	62	1	Singapore	Singapore	5.1	\$438,000	\$86,000
297		23	U.K.	Aberdeen	5.4	£187,800	£34,600
161		2	U.K.	Belfast	3.6	£104,400	£29,200
268	59	13	U.K.	Birmingham & West Midlands	4.8	£134,100	£28,000
248	52	8	U.K.	Blackpool & Lancashire	4.5	£125,000	£27,700
352		33	U.K.	Bournemouth & Dorset	8.6	£223,000	£25,800
297	67	23	U.K.	Bristol-Bath	5.4	£192,000	£35,600
309		27	U.K.	Cardiff	5.6	£145,000	£26,100
232	45	5	U.K.	Derby & Derbyshire	4.3	£136,000	£31,300
240		7	U.K.	Dundee	4.4	£122,800	£28,200
257		9	U.K.	Edinburgh	4.6	£152,900	£33,400
142		1	U.K.	Falkirk	3.5	£98,000	£27,900
224	44	4	U.K.	Glasgow	4.2	£117,400	£28,200
257	53	9	U.K.	Hull & Humber	4.6	£133,800	£29,300
211	42	3	U.K.	Leeds & West Yorkshire	4.0	£130,000	£32,700
282		18	U.K.	Leicester & Leicestershire	5.0	£151,000	£30,400
289	64	21	U.K.	Liverpool & Merseyside	5.3	£125,000	£23,500
339	76	32	U.K.	London (GLA)	7.3	£326,000	£44,800
328	74	29	U.K.	London Exurbs (E & SE England)	6.4	£225,000	£34,900
257	53	9	U.K.	Manchester & Greater Manchester	4.6	£128,000	£28,100
268		13	U.K.	Middlesborough & Durham	4.8	£118,000	£24,600
268	59	13	U.K.	Newcastle & Tyneside	4.8	£128,200	£26,500
285		19	U.K.	Newport	5.1	£150,000	£29,500
268		13	U.K.	Northampton & Northamptonshire	4.8	£155,000	£32,300
232	45	5	U.K.	Nottingham & Nottinghamshire	4.3	£126,300	£29,700
277		17	U.K.	Perth	4.9	£158,800	£32,300
336	75	31	U.K.	Plymouth & Devon	7.0	£183,600	£26,300
257	53	9	U.K.	Sheffield & South Yorkshire	4.6	£120,000	£25,900
285	62	19	U.K.	Stoke on Trent & Staffordshire	5.1	£141,000	£27,500
297		23	U.K.	Swansea	5.4	£120,000	£22,300
329		30	U.K.	Swindon & Wiltshire	6.5	£185,000	£28,600
316		28	U.K.	Telford & Shropshire	5.9	£161,800	£27,200
297		23	U.K.	Warrington & Cheshire	5.4	£170,000	£31,300
289		21	U.K.	Warwickshire	5.3	£186,000	£35,200
				Median Market	4.9		



**SCHEDULE 4
ALL MARKETS BY GEOGRAPHY**

Median Multiple (Median House Price/Median Household Income): 2013 – 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
96		85	U.S.	Abilene, TX	3.1	\$139,000	\$44,200
27		24	U.S.	Akron, OH	2.5	\$125,300	\$50,700
117		105	U.S.	Albany-Schenectady, NY	3.3	\$205,800	\$61,800
184		162	U.S.	Albuquerque, NM	3.8	\$180,700	\$47,600
142		129	U.S.	Allentown-Bethlehem, PA-NJ	3.5	\$197,400	\$56,800
96		85	U.S.	Amarillo, TX	3.1	\$145,900	\$47,300
198		173	U.S.	Anchorage, AK	3.9	\$283,000	\$72,800
117		105	U.S.	Ann Arbor, MI	3.3	\$190,000	\$57,400
4		4	U.S.	Appleton, WI	2.0	\$124,600	\$61,300
240		198	U.S.	Asheville, NC	4.4	\$195,000	\$44,000
142		129	U.S.	Athens, GA	3.5	\$137,200	\$38,700
41	5	36	U.S.	Atlanta, GA	2.7	\$152,300	\$55,600
224		188	U.S.	Atlantic City, NJ	4.2	\$216,700	\$52,100
11		10	U.S.	Augusta, GA	2.2	\$99,800	\$45,600
171	34	152	U.S.	Austin, TX	3.7	\$225,300	\$60,500
224		188	U.S.	Bakersfield, CA	4.2	\$196,500	\$46,800
198	40	173	U.S.	Baltimore, MD	3.9	\$266,500	\$68,200
310		219	U.S.	Barnstable Town, MA	5.7	\$346,800	\$60,600
130		117	U.S.	Baton Rouge, LA	3.4	\$173,200	\$51,200
96		85	U.S.	Beaumont, TX	3.1	\$139,200	\$44,200
257		209	U.S.	Bellingham, WA	4.6	\$240,000	\$52,400
23		21	U.S.	Binghamton, NY	2.4	\$117,500	\$49,000
161	30	144	U.S.	Birmingham, AL	3.6	\$173,700	\$47,600
130		117	U.S.	Bismarck, ND	3.4	\$217,500	\$63,200
27		24	U.S.	Bloomington, IL	2.5	\$156,500	\$63,300
130		117	U.S.	Boise City, ID	3.4	\$168,400	\$49,900
297	67	217	U.S.	Boston, MA-NH	5.4	\$393,700	\$73,100
319		221	U.S.	Boulder, CO	6.0	\$410,900	\$68,200
184		162	U.S.	Bremerton, WA	3.8	\$230,000	\$60,200
297		217	U.S.	Bridgeport, CT	5.4	\$439,000	\$81,300
117		105	U.S.	Brownsville, TX	3.3	\$103,000	\$31,500
41	5	36	U.S.	Buffalo, NY	2.7	\$137,100	\$51,200
248		204	U.S.	Burlington, VT	4.5	\$279,900	\$62,000
18		17	U.S.	Canton, OH	2.3	\$107,000	\$46,000
142		129	U.S.	Cape Coral-Fort Myers, FL	3.5	\$164,500	\$47,100
41		36	U.S.	Cedar Rapids, IA	2.7	\$160,100	\$58,300
80		72	U.S.	Champaign-Urbana, IL	3.0	\$147,900	\$48,500
248		204	U.S.	Charleston, SC	4.5	\$227,700	\$51,000
68		61	U.S.	Charleston, WV	2.9	\$140,200	\$48,500
130	21	117	U.S.	Charlotte, NC-SC	3.4	\$183,800	\$53,500
96		85	U.S.	Chattanooga, TN-GA	3.1	\$139,500	\$44,300
142	24	129	U.S.	Chicago, IL-IN-WI	3.5	\$209,000	\$60,400
323		222	U.S.	Chico, CA	6.2	\$257,000	\$41,700
41	5	36	U.S.	Cincinnati, OH-KY-IN	2.7	\$142,100	\$53,400
68		61	U.S.	Clarksville, TN	2.9	\$132,500	\$45,200



**SCHEDULE 4
ALL MARKETS BY GEOGRAPHY**

Median Multiple (Median House Price/Median Household Income): 2013 – 3rd Quarter
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International Affordability Rank	Major Market Rank	National Rank	Nation	Metropolitan Market	Median Multiple*	Median Price	Median Household Income
41	5	36	U.S.	Cleveland, OH	2.7	\$127,000	\$47,800
211		181	U.S.	College Station, TX	4.0	\$166,000	\$41,100
198		173	U.S.	Colorado Springs, CO	3.9	\$222,100	\$56,400
161		144	U.S.	Columbia, MO	3.6	\$157,400	\$44,000
80		72	U.S.	Columbia, SC	3.0	\$148,100	\$49,700
58		52	U.S.	Columbus, GA-AL	2.8	\$122,200	\$43,800
58	11	52	U.S.	Columbus, OH	2.8	\$152,100	\$54,700
108		96	U.S.	Corpus Christi, TX	3.2	\$160,000	\$50,000
171		152	U.S.	Crestview-Fort Walton Beach, FL	3.7	\$196,800	\$53,800
80		72	U.S.	Cumberland, MD-WV	3.0	\$109,900	\$36,300
96	15	85	U.S.	Dallas-Fort Worth, TX	3.1	\$181,300	\$58,000
11		10	U.S.	Davenport-Moline, IA-IL	2.2	\$114,300	\$52,600
23		21	U.S.	Dayton, OH	2.4	\$111,100	\$46,400
41		36	U.S.	Decatur, AL	2.7	\$114,900	\$42,900
4		4	U.S.	Decatur, IL	2.0	\$91,000	\$45,400
68		61	U.S.	Deltona-Daytona Beach, FL	2.9	\$120,400	\$40,900
257	53	209	U.S.	Denver, CO	4.6	\$286,900	\$62,600
68		61	U.S.	Des Moines, IA	2.9	\$177,600	\$60,300
27	2	24	U.S.	Detroit, MI	2.5	\$130,000	\$51,200
142		129	U.S.	Dover, DE	3.5	\$187,000	\$53,900
130		117	U.S.	Dover, DE	3.4	\$185,400	\$53,900
41		36	U.S.	Duluth, MN	2.7	\$130,000	\$47,700
171		152	U.S.	Durham, NC	3.7	\$191,600	\$51,200
117		105	U.S.	El Centro, CA	3.3	\$135,000	\$41,000
142		129	U.S.	El Paso, TX	3.5	\$143,600	\$41,100
36		32	U.S.	Elkhart, IN	2.6	\$122,000	\$46,200
27		24	U.S.	Elmira, NY	2.5	\$116,100	\$46,800
27		24	U.S.	Erie, PA	2.5	\$119,600	\$47,400
277		213	U.S.	Eugene, OR	4.9	\$204,000	\$41,400
323		222	U.S.	Eureka, CA	6.2	\$257,000	\$41,400
96		85	U.S.	Fargo, ND-MN	3.1	\$165,200	\$52,500
184		162	U.S.	Farmington, NM	3.8	\$178,300	\$47,300
108		96	U.S.	Fayetteville, AR-MO	3.2	\$147,100	\$46,500
130		117	U.S.	Fayetteville, NC	3.4	\$154,700	\$45,700
11		10	U.S.	Flint, MI	2.2	\$92,000	\$41,100
108		96	U.S.	Florence, SC	3.2	\$122,700	\$38,900
232		193	U.S.	Fort Collins, CO	4.3	\$247,000	\$56,900
232		193	U.S.	Fresno, CA	4.3	\$184,400	\$42,400
18		17	U.S.	Ft. Wayne, IN	2.3	\$116,700	\$50,200
211		181	U.S.	Gainesville, FL	4.0	\$167,800	\$42,000
130		117	U.S.	Gainesville, GA	3.4	\$173,000	\$50,700
80		72	U.S.	Glens Falls, NY	3.0	\$162,400	\$54,400
36	3	32	U.S.	Grand Rapids	2.6	\$135,700	\$51,600
161		144	U.S.	Greeley, CO	3.6	\$205,000	\$56,400
41		36	U.S.	Green Bay, WI	2.7	\$138,400	\$51,700
108		96	U.S.	Greensboro-High Point, NC	3.2	\$136,100	\$42,500
80		72	U.S.	Greenville, NC	3.0	\$115,800	\$38,500



**SCHEDULE 4
ALL MARKETS BY GEOGRAPHY**

Median Multiple (Median House Price/Median Household Income): 2013 – 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
171		152	U.S.	Greenville, SC	3.7	\$165,500	\$44,500
58		52	U.S.	Gulfport-Biloxi, MS	2.8	\$116,800	\$42,000
80		72	U.S.	Hagerstown-Martinsburg, MD-WV	3.0	\$158,700	\$52,300
171		152	U.S.	Hanford, CA	3.7	\$175,300	\$46,800
36		32	U.S.	Harrisburg, PA	2.6	\$146,000	\$55,800
142	24	129	U.S.	Hartford, CT	3.5	\$238,500	\$68,000
68		61	U.S.	Hickory, NC	2.9	\$109,500	\$38,100
312		220	U.S.	Hilo, HI	5.8	\$296,700	\$51,200
358		236	U.S.	Honolulu, HI	9.4	\$679,800	\$72,700
41		36	U.S.	Houma, LA	2.7	\$132,300	\$49,800
117	17	105	U.S.	Houston, TX	3.3	\$186,600	\$57,000
108		96	U.S.	Huntsville, AL	3.2	\$178,500	\$55,600
41	5	36	U.S.	Indianapolis, IN	2.7	\$143,500	\$52,800
142		129	U.S.	Jackson, MS	3.5	\$153,300	\$43,400
142	24	129	U.S.	Jacksonville, FL	3.5	\$170,600	\$49,000
58		52	U.S.	Kalamazoo, MI	2.8	\$127,000	\$45,200
11		10	U.S.	Kankakee, IL	2.2	\$115,200	\$52,700
68	12	61	U.S.	Kansas City, MO-KS	2.9	\$162,300	\$55,500
117		105	U.S.	Kennewick-Richland, WA	3.3	\$189,600	\$58,300
58		52	U.S.	Killeen, TX	2.8	\$138,000	\$49,500
184		162	U.S.	Kingston, NY	3.8	\$220,700	\$58,600
108		96	U.S.	Kingston, NY	3.2	\$187,000	\$58,600
130		117	U.S.	Knoxville, TN	3.4	\$152,900	\$45,600
117		105	U.S.	Lafayette, LA	3.3	\$157,000	\$47,700
161		144	U.S.	Lake Havasu City, AZ	3.6	\$125,000	\$35,100
68		61	U.S.	Lakeland, FL	2.9	\$123,800	\$42,100
80		72	U.S.	Lancaster, PA	3.0	\$170,000	\$55,800
4		4	U.S.	Lansing, MI	2.0	\$100,000	\$49,500
18		17	U.S.	Lansing, MI	2.3	\$112,700	\$49,500
198		173	U.S.	Laredo, TX	3.9	\$145,800	\$37,300
161	30	144	U.S.	Las Vegas, NV	3.6	\$181,900	\$50,500
80		72	U.S.	Lexington, KY	3.0	\$147,000	\$48,800
58		52	U.S.	Lincoln, NE	2.8	\$144,900	\$51,600
58		52	U.S.	Little Rock, AR	2.8	\$138,700	\$48,700
130		117	U.S.	Longview, TX	3.4	\$145,800	\$43,300
344	77	229	U.S.	Los Angeles, CA	7.7	\$448,900	\$58,300
68	12	61	U.S.	Louisville, KY-IN	2.9	\$145,100	\$49,800
224		188	U.S.	Madera, CA	4.2	\$178,600	\$42,800
184		162	U.S.	Madison, WI	3.8	\$229,200	\$60,000
130		117	U.S.	Manchester-Nashua, NH	3.4	\$241,800	\$70,400
68		61	U.S.	McAllen, TX	2.9	\$100,000	\$34,400
80	14	72	U.S.	Memphis, TN-MS-AR	3.0	\$137,500	\$46,500
171		152	U.S.	Merced, CA	3.7	\$165,800	\$44,400
289	64	214	U.S.	Miami, FL	5.3	\$252,200	\$47,500
211	42	181	U.S.	Milwaukee, WI	4.0	\$211,800	\$53,600
96	15	85	U.S.	Minneapolis-St. Paul, MN-WI	3.1	\$208,000	\$67,500
58		52	U.S.	Mobile, AL	2.8	\$114,800	\$40,400



**SCHEDULE 4
ALL MARKETS BY GEOGRAPHY**

Median Multiple (Median House Price/Median Household Income): 2013 – 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
224		188	U.S.	Modesto, CA	4.2	\$197,300	\$47,300
96		85	U.S.	Montgomery, AL	3.1	\$141,600	\$45,500
240		198	U.S.	Myrtle Beach, SC	4.4	\$181,800	\$41,100
341		226	U.S.	Napa, CA	7.4	\$518,400	\$69,800
289		214	U.S.	Naples, FL	5.3	\$290,800	\$55,100
130	21	117	U.S.	Nashville, TN	3.4	\$177,300	\$52,500
218		185	U.S.	New Haven, CT	4.1	\$247,800	\$60,400
161	30	144	U.S.	New Orleans, LA	3.6	\$162,500	\$45,200
323	71	222	U.S.	New York, NY-NJ-PA	6.2	\$405,400	\$65,200
108		96	U.S.	Norwich-New London, CT	3.2	\$215,300	\$67,800
41		36	U.S.	Ocala, FL	2.7	\$103,600	\$37,800
96		85	U.S.	Ogden, UT	3.1	\$198,000	\$63,000
117	17	105	U.S.	Oklahoma City, OK	3.3	\$161,100	\$49,500
171		152	U.S.	Olympia, WA	3.7	\$220,000	\$59,300
41		36	U.S.	Omaha, NE-IA	2.7	\$149,500	\$55,200
161	30	144	U.S.	Orlando, FL	3.6	\$167,800	\$46,900
343		228	U.S.	Oxnard, CA	7.6	\$550,400	\$72,900
41		36	U.S.	Palm Bay-Melbourne, FL	2.7	\$125,800	\$47,000
142		129	U.S.	Palm Coast, FL	3.5	\$151,100	\$43,700
142		129	U.S.	Panama City, FL	3.5	\$164,500	\$46,900
96		85	U.S.	Pensacola, FL	3.1	\$159,800	\$50,800
11		10	U.S.	Peoria, IL	2.2	\$120,000	\$54,500
184	37	162	U.S.	Philadelphia, PA-NJ-DE-MD	3.8	\$231,600	\$61,200
171	34	152	U.S.	Phoenix, AZ	3.7	\$191,700	\$52,300
18	1	17	U.S.	Pittsburgh, PA	2.3	\$116,000	\$51,400
218		185	U.S.	Pittsfield, MA	4.1	\$194,200	\$47,400
117		105	U.S.	Port St. Lucie, FL	3.3	\$143,900	\$43,100
232		193	U.S.	Portland, ME	4.3	\$236,000	\$54,700
268	59	212	U.S.	Portland, OR-WA	4.8	\$276,200	\$58,000
142		129	U.S.	Poughkeepsie, NY	3.5	\$238,000	\$67,900
198		173	U.S.	Prescott, AZ	3.9	\$175,000	\$44,900
240	48	198	U.S.	Providence, RI-MA	4.4	\$241,400	\$55,300
218		185	U.S.	Provo, UT	4.1	\$241,000	\$59,300
108		96	U.S.	Punta Gorda, FL	3.2	\$147,900	\$46,100
117	17	105	U.S.	Raleigh, NC	3.3	\$202,700	\$61,400
68		61	U.S.	Reading, PA	2.9	\$153,700	\$53,000
232		193	U.S.	Redding, CA	4.3	\$198,500	\$46,300
248		204	U.S.	Reno-Sparks, NV	4.5	\$224,800	\$50,000
142	24	129	U.S.	Richmond, VA	3.5	\$205,000	\$57,800
264	57	211	U.S.	Riverside-San Bernardino, CA	4.7	\$249,100	\$52,700
80		72	U.S.	Roanoke, VA	3.0	\$145,000	\$47,900
36	3	32	U.S.	Rochester, NY	2.6	\$132,100	\$51,600
1		1	U.S.	Rockford, IL	1.7	\$88,900	\$51,600
240	48	198	U.S.	Sacramento, CA	4.4	\$255,900	\$57,900
11		10	U.S.	Saginaw, MI	2.2	\$90,000	\$41,100
211		181	U.S.	Salem, OR	4.0	\$184,900	\$46,500
336		225	U.S.	Salinas-Monterey, CA	7.0	\$412,800	\$59,200



**SCHEDULE 4
ALL MARKETS BY GEOGRAPHY**

Median Multiple (Median House Price/Median Household Income): 2013 – 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
58		52	U.S.	Salisbury, MD	2.8	\$140,000	\$50,300
184	37	162	U.S.	Salt Lake City, UT	3.8	\$235,000	\$61,200
117	17	105	U.S.	San Antonio, TX	3.3	\$175,000	\$52,400
346	78	230	U.S.	San Diego, CA	7.9	\$485,000	\$61,500
356	83	234	U.S.	San Francisco-Oakland, CA	9.2	\$705,000	\$76,300
353	81	232	U.S.	San Jose, CA	8.7	\$805,000	\$92,400
347		231	U.S.	San Luis Obispo, CA	8.0	\$488,300	\$61,400
357		235	U.S.	Santa Barbara, CA	9.3	\$638,900	\$69,000
354		233	U.S.	Santa Cruz, CA	9.0	\$621,200	\$69,000
342		227	U.S.	Santa Rosa, CA	7.5	\$461,100	\$61,100
240		198	U.S.	Sarasota-Bradenton, FL	4.4	\$213,500	\$48,700
41		36	U.S.	Scranton-Wilkes Barre, PA	2.7	\$117,000	\$43,700
289	64	214	U.S.	Seattle, WA	5.3	\$354,700	\$66,900
198		173	U.S.	Sebastian-Vero Beach, FL	3.9	\$160,300	\$41,200
184		162	U.S.	Shreveport, LA	3.8	\$170,500	\$44,900
80		72	U.S.	Sioux Falls, SD	3.0	\$158,100	\$52,700
23		21	U.S.	South Bend, IN	2.4	\$108,600	\$45,600
108		96	U.S.	Spartanburg, SC	3.2	\$133,900	\$41,600
171		152	U.S.	Spokane, WA	3.7	\$181,600	\$48,500
9		8	U.S.	Springfield, IL	2.1	\$120,600	\$56,700
184		162	U.S.	Springfield, MA	3.8	\$201,400	\$52,500
68		61	U.S.	Springfield, MO	2.9	\$123,500	\$43,100
41	5	36	U.S.	St. Louis,, MO-IL	2.7	\$143,700	\$53,200
248		204	U.S.	Stockton, CA	4.5	\$232,900	\$51,700
27		24	U.S.	Syracuse, NY	2.5	\$130,700	\$52,200
198		173	U.S.	Tallahassee, FL	3.9	\$176,500	\$45,600
130	21	117	U.S.	Tampa-St. Petersburg, FL	3.4	\$151,800	\$45,200
4		4	U.S.	Toledo, OH	2.0	\$87,500	\$44,100
11		10	U.S.	Topeka, KS	2.2	\$106,900	\$49,400
232		193	U.S.	Trenton, NJ	4.3	\$298,900	\$69,300
184		162	U.S.	Tucson, AZ	3.8	\$172,400	\$45,600
80		72	U.S.	Tulsa, OK	3.0	\$146,500	\$48,900
117		105	U.S.	Tyler, TX	3.3	\$157,000	\$47,200
1		1	U.S.	Utica, NY	1.7	\$80,000	\$47,500
248		204	U.S.	Vallejo, CA	4.5	\$287,100	\$63,200
142	24	129	U.S.	Virginia Beach-Norfolk, VA-NC	3.5	\$200,500	\$57,000
198		173	U.S.	Visalia, CA	3.9	\$159,700	\$41,100
142		129	U.S.	Waco, TX	3.5	\$143,000	\$41,400
3		3	U.S.	Warner Robbins, GA	1.9	\$103,900	\$55,500
240	48	198	U.S.	Washington, DC-VA-MD-WV	4.4	\$392,500	\$89,900
27		24	U.S.	Waterloo, IA	2.5	\$130,800	\$51,700
27		24	U.S.	Wichita, KS	2.5	\$125,600	\$49,400
161		144	U.S.	Wilmington, NC	3.6	\$185,300	\$50,900
80		72	U.S.	Winston-Salem, NC	3.0	\$131,000	\$43,000
184		162	U.S.	Worcester, MA	3.8	\$241,800	\$63,700
171		152	U.S.	Yakima, WA	3.7	\$164,100	\$44,800
41		36	U.S.	York, PA	2.7	\$155,800	\$56,700



SCHEDULE 4
ALL MARKETS BY GEOGRAPHY
 Median Multiple (Median House Price/Median Household Income): 2013 – 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
9		8	U.S.	Youngstown, OH-PA	2.1	\$85,000	\$41,400
224		188	U.S.	Yuba City, CA	4.2	\$193,100	\$46,500
96		85	U.S.	Yuma, AZ	3.1	\$125,000	\$40,200
				Median Market	3.4		

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 transfer from one nation to another. 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 25 counties in the states of New York, New Jersey and Pennsylvania⁵⁵ (where included housing can be 75 miles [120 kilometers] or more from the upscale areas of the urban core, where prices are the highest).

Price-to-income Ratios: Uses and Misuses: The use of house price-to-income multiples has become more popular in recent years. While the Median Multiple has been most frequently used, other price-to-income multiples have been developed. This is appropriate, so long as parallel and consistently calculated indices are provided. This has not always been the case.

In Australia, price-to-income ratios have been published that use *average* household incomes and *median* house prices. To make valid comparisons between international markets, it would be necessary to also calculate these "average/median" multiples for the markets outside Australia to which comparisons are made (and to provide historical data). [However, "average/median" multiples have been inappropriately compared to Median Multiples.](#) For example, Australian housing affordability has been portrayed more favorably than the reality, in sources using *average* household incomes (which are materially higher than *median* household incomes) and *median* household incomes.

Coverage: The nine nations and corresponding metropolitan markets that are included in the *10th 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 overwhelming majority of existing housing in the 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, the United Kingdom and Hong Kong.⁵⁶

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.



Methods: Median house price information is obtained from the leading national 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 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 median income growth.

Median house price estimates are provided for the 3rd quarter of 2012 (September quarter), or for the month of September where September quarter data is not available. In a few smaller markets, the latest available house prices are from the 2nd quarter of 2012.

Caution is urged in time-series comparisons in individual markets. Changes in data sources, base year income information, housing data sources and geographical definitions 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:

Arkansas Realtors Association
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
Clarksville (Tennessee) Association of Realtors
Coastal Carolinas Association of Realtors
Communities and Local Government (Ministry), United Kingdom
Daft.ie
Department of the Environment, Heritage and Local Government (Ireland)
Edmonton Real Estate Board

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.



Federal Reserve System (United States)
 Fédération des chambres immobilières du Québec
 Harvard University Joint Center on Housing
 Hawaii Information Service
 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)
 Louisiana Realtors
 National Association of Home Builders (USA)
 National Association of Realtors (USA)
 National Statistics (United Kingdom)
 North Carolina Association of Realtors
 Northern Ireland Research and Statistics Agency
 Notaires de France
 Realcomp (Detroit)
 Real Estate Board of Winnipeg
 Real Estate Center, Texas A&M University
 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
 Real Estate Institute of Tasmania
 Real Estate Institute of Victoria
 Real Estate Institute of Western Australia
 Realtors Association of Hamilton-Burlington
 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
 University of Ulster
 Urban Development Institute of Australia
 Zillow.com



Notes on Figures:

Figure 1: Housing Affordability: 2004-2013: From data in *Demographia Surveys*.

Figure 2: Most and Least Affordable Markets: From data in the *Demographia Survey*.

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, Chicago, Minneapolis-St. Paul, and Washington). Outside the United States, urban containment metropolitan markets are identified based upon their widespread use urban containment. 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 “urban containment” are classified as liberal.

Figure 4: Overall Housing Affordability: From data in the *Demographia Survey*.

Figure 5: Housing Affordability Trend: Australia: From data in the *Demographia Surveys*.

Figure 6: Housing Affordability Trend: Canada: From data in the *Demographia Surveys*.

Figure 7: Housing Affordability Trend: United States: From data in the *Demographia Surveys*.

Figure 8: Average New House Size: Data from US Census Bureau, housepricecrash.com, stproperty.sg, shrinkthatfootprint.com.

Figure 9: House Price-to-income Ratios: Reserve Bank of Australia.

Table 16 Metropolitan Market Selection Criteria	
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 (S.A.R)	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 has also served as a visiting professor at the Conservatoire National des Arts et Metiers in Paris (a national university) from 2002. He is 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 *Improving the Competitiveness of Metropolitan Areas* and *Evaluation of Plan Bay Area* and a "framing essay" entitled *Toward More Prosperous Cities*.

He is also associated with various public policy organizations, such as the Heritage Foundation (Washington), the Frontier Centre (Winnipeg), the Pacific Research Institute (San Francisco), the Texas Public Policy Foundation, the Independence Institute (Denver), Institut économique de Montréal, the National Center for Policy Analysis (Dallas), Georgia the Public Policy Foundation, the Virginia Institute for Public Policy and the Maryland Public Policy Institute.

Wendell Cox has lectured widely, including a month long tour to all Australian state and territorial capitals and university lectures in the United Kingdom, France, China, Egypt and Australia. 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" (5.8 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*.

Alain Bertaud: See Introduction



Demographia
(Wendell Cox Consultancy)
P.O. Box 841
Belleville, Illinois 62269 USA
(St. Louis Metropolitan Region)
www.demographia.com
demographia2@earthlink.net
Contact: Wendell Cox
+1.618.632.8507: United States

Performance Urban Planning

Performance Urban Planning
Christchurch, New Zealand
www.performanceurbanplanning.org/
hugh.pavletich@extra.co.nz
Contact: Hugh Pavletich
+64.3.343.9944

