DEMOGRAPHIA INTERNATIONAL HOUSING AFFORDABILITY

2024 EDITION

WENDELL COX

CHAPMAN UNIVERSITY

Acknowledgments

“Demographics is destiny” has become a somewhat overused phrase, but that does not reduce the critical importance of population trends to virtually every aspect of economic, social and political life. Concern over demographic trends has been heightened in recent years by several international trends —notably rapid aging, reduced fertility, and before large scale migration across borders. On the national level, shifts in attitude, generation and ethnicity have proven decisive in both the political realm and in the economic fortunes of regions and states.

The Center focuses on research and analysis of global, national and regional demographic trends and also looks into policies that might produce favorable demographic results over time. The Center involves Chapman students in demographic research under the supervision of the Center’s senior staff. Stu-dents work with the Center’s director and engage in research that will serve them well as they look to develop their careers in business, the social sciences and the arts. They also have access to our advisory board, which includes distinguished Chapman faculty and major demographic scholars from across the country and the world

Center for Demographics and Policy
Chapman University

The Frontier Centre for Public Policy (FCPP) is an independent Canadian public policy think tank based in western Canada whose mission is to explore options for the future by undertaking research and education that supports economic growth and opportunity.

Our research aims to analyze current affairs and public policies and develop effective and meaningful ideas for good governance and reform. We provide a platform for public debate and engage with the public through our numerous publications and events.

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Cover image: Sydney, Australia by New Matilda (Sydney is the second most unaffordable market in this report).

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INTRODUCTION

For two decades the *Demographia International Housing Affordability* report (this year authored by Wendell Cox) has been the gold standard for people looking at the cost of housing. In those decades the Demographia reports have become ever more critical as housing inflation has grown all around the world.

Ultimately, as the report suggests, these high prices are largely the product of policies that seek to limit growth on the periphery, which has been the usual way that cities have grown. The Demographia report has shown that where such policies predominate, for example in the United Kingdom, California, Washington, Oregon, Colorado, New Zealand, Australia and much of Canada, the results are disastrous, at least for potential homebuyers.

For us at the Chapman Center for Demographics and Policy, the study also has grave implications on the prospects for upward mobility. High housing prices, relative to incomes, are having a distinctly feudalizing impact on our home state of California, where the primary victims are young people, minorities and immigrants. Restrictive housing policies may be packaged as progressive, but in social terms their impact could better be characterized as regressive.

As with any problem, the first step towards a resolutions should be to understand the basic facts. This is what the Demographia study offers, and why we are so proud to be partners with Canada's Frontier Centre for Public Policy. Now comes the hard part: convincing policy makers to change directions before the new generation loses all hope of home ownership.

Joel Kotkin
Director,
Center for Demographics and Policy
Chapman University

The Frontier Centre for Public Policy and the Chapman University Center for Demographics and Policy are pleased to present the 2024 edition of *Demographia International Housing Affordability*. This report provides housing affordability ratings for the third quarter of 2023 for 94 major markets (metropolitan areas) in eight nations.

In its 20 annual editions, *Demographia International Housing Affordability* has robustly documented the deterioration of housing affordability. Housing affordability measures necessarily relate the costs of housing to income. Demographia uses the median multiple, a price-to-income ratio that divides the median house price by the median household income.

Because housing is usually the most expensive element of household budgets, this deterioration has been the principal driver of the present cost of living crisis affecting the middle and working classes. Generally, housing affordability is worse, and the cost of living is higher, where land use regulation is the most restrictive at the housing market (metropolitan area) level.

Coming out of the turbulence of the COVID-19 lockdowns, housing affordability remained severely challenged across most markets in 2023 with slightly increasing unaffordability in major Canadian markets surveyed. In some smaller markets, there have been improvements as remote working (telework) continues to accelerate movements to more affordable places. This should flatten or even reduce prices in the highest-cost housing markets as other households seek less costly housing elsewhere.

There is a genuine need to substantially restore housing affordability in many markets throughout the covered nations. In Canada, policy makers are scrambling to "magic wand" more housing but continue to mostly ignore the main reason for our dysfunctional costly housing markets – suburban land use restrictions.

Peter Holle
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DEMOGRAPHIA

EXECUTIVE SUMMARY

This annual report assesses housing affordability in 94 major markets across eight nations (Australia, Canada, China, Ireland, New Zealand, Singapore, United Kingdom and the, United States). The 2024 edition focuses on data from the third quarter of 2023.

KEY POINTS

Ratings: The report uses a median price-to-income ratio ("median multiple") to determine affordability.

Affordability Categories: Housing markets are rated from "affordable" to "impossibly unaffordable" based on their median multiple (Table (ES-1).

Geography: Housing markets are labor markets (which are also metropolitan areas or functional urban areas), largely defined by the "commuting shed." Housing affordability comparisons can be made, (1) between housing markets (such as a comparison between Adelaide and Melbourne) or (2) over time within the same housing market (such as between years in Adelaide).

Table ES-1
DEMOGRAPHIA HOUSING AFFORDABILITY RATINGS

Housing Affordability Rating	Median Multiple
Affordable	3.0 & Under
Moderately Unaffordable	3.1 to 4.0
Seriously Unaffordable	4.1 to 5.0
Severely Unaffordable	5.1 & 8.9
Impossibly Unaffordable	9.0 & Over

Median multiple: Median house price divided by median household income

Variations within Nations: The report emphasizes that affordability often varies significantly between markets within the same country. National averages aren't always representative.

Housing affordability in 2023 is summarized by affordability in *Table 3* and by geography in *Table 4*.

Table ES-2 Housing Affordability Ratings by Nation: Totals by Market							
Nation	**Affordable (3.0 &Under)**	**Moderately Unaffordable (3.1-4.0)**	**Seriously Unaffordable (4.1-5.0)**	**Severely Unaffordable (5.1 - 8.9)**	**Impossibly Unaffordable (9.0 &Over)**	**Total**	**Median Market**
Australia	0	0	0	2	3	5	9.7
Canada	0	1	1	2	2	6	5.6
China: Hong Kong	0	0	0	0	1	1	16.7
Ireland	0	0	1	0	0	1	4.8
New Zealand	0	0	0	1	0	1	8.2
Singapore	0	1	0	0	0	1	3.8
United Kingdom	0	2	12	9	0	23	5.0
United States	0	11	23	17	5	56	4.8
TOTAL	0	15	37	31	11	94	5.0

In the US, the most affordable market was Pittsburgh (PA), with a median multiple of 3.1, followed closely by Rochester (NY) and St. Louis (MO-IL) at 3.4, with Cleveland (OH) at 3.5. Rounding out the most affordable ten markets also includes one Canadian market, Edmonton, plus Buffalo (NY), Detroit (MI), Oklahoma City (OK) at 3.6, Cincinnati (OH-KY-IN) and Louisville (KY-IN) at 3.7. Singapore at 3.8 was also moderately unaffordable, along with, in the UK, Blackpool and Lancashire, and Glasgow at 3.9.

The least affordable market in the English-speaking world in 2023 was Hong Kong, with a median multiple of 16.7, followed by Sydney at 13.3, Vancouver at 12.3, San Jose (CA) at 11.9, Los Angeles at 10.9, Honolulu at 10.5, Melbourne at 9.8, San Francisco and Adelaide at 9.7, San Diego and 9.5, and Toronto at 9.3.

THE HOUSING AFFORDABILITY CRISIS: CAUSES AND A PATH FORWARD

Middle-income households face rapidly escalating housing costs, which is the primary cause of the present cost-of-living crisis. For decades, home prices generally rose at about the same rate as income, and homeownership became more widespread. But affordability is disappearing in high-income nations as housing costs now far outpace income growth. The crisis stems principally from land use policies that artificially restrict housing supply, driving up land prices and making homeownership unattainable for many.

Urban containment policies (greenbelts urban growth boundaries, densification) are designed to limit sprawl and increase density. While well-intentioned, these policies severely constrict the land available for housing. In constrained markets, higher land values translate to dramatically higher house prices.

ECONOMIC DYNAMICS

Land values naturally increase closer to urban centers. Urban containment policies are associated with abrupt value spikes at established boundaries. Research confirms this, finding land prices inside urban containment boundaries can be 8-20 times higher than outside.

NEW ZEALAND'S REFORMS: A MODEL

New Zealand provides a hopeful path forward. Recognizing the crisis is rooted in high land values, new policies are proposed to open up sufficient land to accommodate demand.

A FOCUS ON PEOPLE, NOT PLACES

The housing crisis demands prioritizing the well-being of people over abstract planning ideals. The planning orthodoxy, while aimed at improving cities, has worsened affordability. This undermines the economic opportunity essential for thriving middle- and lower-income households.

DEMOGRAPHIA INTERNATIONAL HOUSING AFFORDABILITY: 2024 EDITION

RATING MIDDLE-INCOME HOUSING AFFORDABILITY

"One thing I can say with confidence, however, is that house prices will not return to more affordable levels until land becomes available at more reasonable prices."

- Reserve Bank of New Zealand Governor Donald Brash (1988-2002)[1]

Demographia International Housing Affordability[2] rates middle-income housing affordability in 94 major housing markets in eight nations: Australia, Canada, China, Ireland, New Zealand, Singapore, the United Kingdom, and the United States. The 2024 edition rates housing affordability for the third quarter of 2023 (September quarter). This is the 20th annual edition in the series. The 2016 edition was featured in the International Montary Fund Global Housing Watch newsletter.

Aerial view of housing and lakes Victoria Australia, Robert Lynch

1 Governor Brash, Introduction to the 4th Annual Demographia International Housing Affordability Survey (2008).

2 *Demographia International Housing Affordability* provides analysis similar to the major market analysis in the 16 editions of the *Demographia International Housing Affordability Survey*, co-authored by Wendell Cox and Hugh Pavletich (2005 to 2020).

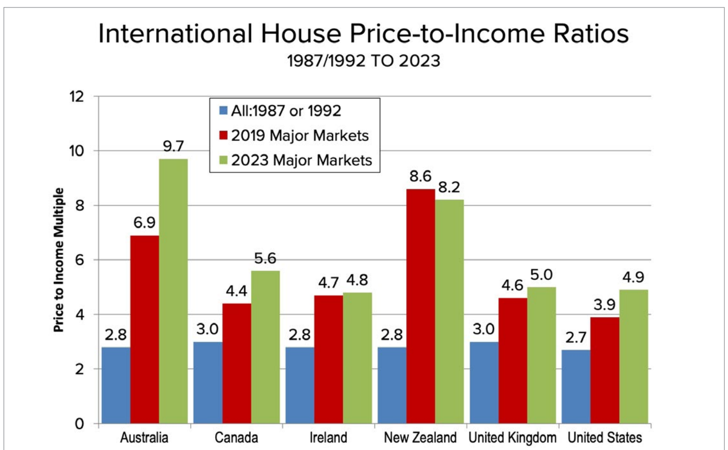
1: ASSESSING HOUSING AFFORDABILITY

Sometimes, housing affordability is evaluated simply by comparing house prices. However, without consideration of incomes, housing affordability cannot be accurately assessed. Housing affordability is house prices in relation to incomes.

Demographia International Housing Affordability uses a price-to-income ratio, the "median multiple" to rate middle-income housing affordability. The median multiple is a price-to-income ratio of the median house price divided by the gross median household income. Price-to-income ratios have been widely used, such as by the World Bank,[3] the United Nations, the Organization for International Cooperation and Development (OECD), the Joint Center for Housing Studies at Harvard University and others. Median price and income measures better reflect the economic impacts on middle-income and lower-income households, as opposed to averages, which are skewed upward by the inclusion of the highest incomes and prices.[4]

AFFORDABILITY: THE HISTORICAL CONTEXT

In a well-functioning market, median priced houses should be affordable to middle-income households, as they were in virtually all markets before the inception of more restrictive land use policies, especially urban containment. Only a few markets had adopted such policies by the 1970s, with many more to follow. As late as about 1990, national price-to-income ratios were "affordable," at 3.0 or less in Australia, Canada, Ireland, New Zealand, the United Kingdom, and the United States (Figure 1).



Derived from Reserve Bank of Australia and *Demographia*

Figure 1

RATINGS

Middle-income housing affordability has been rated in four categories, ranging from the most affordable ("affordable") to the least affordable (severely unaffordable), for the first 19 annual Demographia International Housing Affordability editions.

With this 20th annual edition, we add a new category, "impossibly unaffordable," which will apply to markets with a median multiple triple or more the "affordable" standard (3.0) which predominated in most

3 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.

4 The median multiple has been criticized for not taking into account other factors that can affect housing affordability, such as interest rates, mortgage availability, and housing quality. However, these factors tend to vary little between markets within nations. Moreover, the historic, pre-urban containment median multiples were remarkably similar even between the nations in the ***Demographia*** series (Section 1).

geographies only three decades ago.

The term ‘impossible’ was selected to convey the extreme difficulty faced by middle-income households in affording housing at a median multiple of 9.0. This level of unaffordability did not exist just over three decades ago. Furthermore, securing financing for a house at this median multiple is largely impossible for middle-income households (Table 1).

Many international housing affordability comparisons are at the national level. This is understandable, with much of the business press focusing on national housing affordability indicators. However, there remain substantial differences in housing affordability between housing markets in the same nation . For this reason, Demographia focuses at the housing market level within nations.

Table 1
DEMOGRAPHIA HOUSING AFFORDABILITY RATINGS

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

Median multiple: Median house price divided by median household income

Housing markets are synonymous with labor markets and correspond to metropolitan areas, broadly defined by their commuting zones. While some analyses use city-specific affordability data, these often represent only a segment of housing market, with cities being sub-components, often representing a relatively small percentage of the entire metropolitan areas.

In Demographia International Housing Affordability, core cities (core municipalities) encompass entire metropolitan areas only in Auckland, Hong Kong, Honolulu, and Singapore. Another exception is Greater London, with its huge greenbelt, with three times the land area of London’s urbanization. Greater London is considered a housing market, as are the London exurbs (East of England and Southeast England) beyond the greenbelt.

All of the other 89 markets encompass multiple local jurisdictions, including core municipalities and other local government areas.

Our analysis prioritizes the market as a whole over these sub-market segments.

Demographia International Housing Affordability treats Greater London, which is a municipality, as a housing market because of the fact that it is a distinctively different functional urban area (built-up urban area) with virtually no continuous urbanization between it and the outer suburbs (East of England and Southeast England).

NATIONAL AND HOUSING MARKET AFFORDABILITY

The differences between markets can be substantial even within nations (Figure 2).

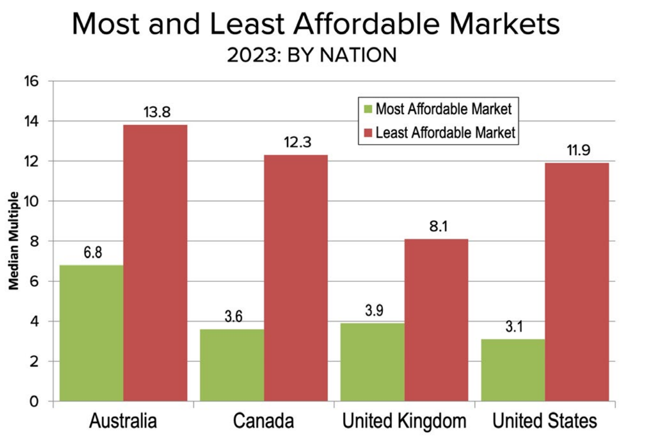


Figure 2

For example, among the major housing markets covered in this edition, the least unaffordable housing market in Australia (Perth) is at least 50% more affordable than the most unaffordable market (Sydney). In Canada, the least unaffordable housing market (Edmonton) is at least two-thirds more affordable than the of the most unaffordable market (Vancouver). In the United Kingdom, the least unaffordable housing market (Blackpool & Lancashire and Glasgow) is at least 50% more affordable than the of the most unaffordable market (London). The least unaffordable housing market in the United States (Pittsburgh) is nearly 75% more affordable than the most unaffordable market (San Jose).

2: THE SITUATION

During the pandemic, the increase in remote work (working at home) fueled a demand increase as many households were induced to move from more central areas to suburban, exurban and even more remote areas. The result was a demand shock that drove house prices up substantially, as households moved to obtain more space, within houses and in yards or gardens.

In the United States, the hours of work performed at home are now reported to be four times that of pre-pandemic 2019. Indeed, after at least six decades of unsuccessfully seeking to reduce the use of cars in commuting, the latest data shows an unprecedented ***decline*** in automobile miles driven from pre-pandemic levels.

Research by John Mondragon at the Federal Reserve Bank and Johannes Weiland at the University of California[5], San Diego estimated that nearly two-thirds of the US house price increase in the demand shock could be attributed to the shift to remote work.

5 https://www.nber.org/system/files/working_papers/w30041/w30041.pdf

Home Ownership: There is substantial variation in the home ownership rates of the covered geographies (Figure 3). The highest home ownership rate is in Singapore at 89%. Ireland ranks second at 70%, with Canada at 67%, Australia and the United States at 66%, New Zealand at 65% and the United Kingdom at 63%. Hong Kong has the lowest home ownership rate at 51%.

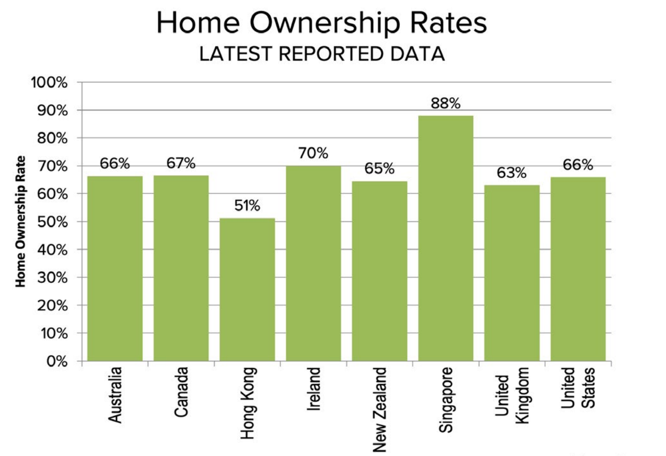


Figure 3

3: INTERNATIONAL HOUSING AFFORDABILITY IN 2023

There was a general improvement in housing affordability in 2023, but not enough to restore the more affordable pre-pandemic situation (2019 and before). The number of severely unaffordable markets dropped from 52 to 42 (made up of 31 severely unaffordable and 11 impossibly unaffordable), with seriously unaffordable markets increasing from 29 to 37 and moderately unaffordable markets increasing from 13 to 15.

Table 2
Housing Affordability Ratings by Nation: Totals by Market

Nation	Affordable (3.0 &Under)	Moderately Unaffordable (3.1-4.0)	Seriously Unaffordable (4.1-5.0)	Severely Unaffordable (5.1 - 8.9)	Impossibly Unaffordable (9.0 &Over)	Total	Median Market
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Singapore	0	1	0	0	0	1	3.8
United Kingdom	0	2	12	9	0	23	5.0
United States	0	11	23	17	5	56	4.8
TOTAL	0	15	37	31	11	94	5.0

Details on housing affordability for all 94 markets, displayed by median multiple, are provided in *Table 3* and by geography in *Table 4*.

Australia: Australian markets have a median multiple of 9.7, having deteriorated from 6.9 in 2019. This represents an increase of 2.8 years of median household income, in just three years. All five of Australia's major housing markets have been severely unaffordable since the early 2000s or before.

Sydney has the least affordable market, with an impossibly unaffordable median multiple of 13.8, making it the second least affordable market internationally (ranking 93rd in affordability out of 94 markets) (Figure 4). Sydney has had the first, second or third least affordable housing of any major market in 15 of the last 16 years.

Melbourne, with a impossibly unaffordable median multiple of 9.8, is the 88th least affordable of the 94 markets. Even far less renown Adelaide had an impossibly unaffordable median multiple of 9.7, ranked 86th among the 94 markets. Three other markets were severely unaffordable: Brisbane at 8.1, ranked 80th, while Perth at 6.8, was the 75th least unaffordable market.

The range between the most affordable and least affordable markets has grown from 2.0 median multiple points in 1981 to 7.0 median multiple points 2023 (Figure 5), the equivalent of a five times incomes increase over the period (see Table 2).

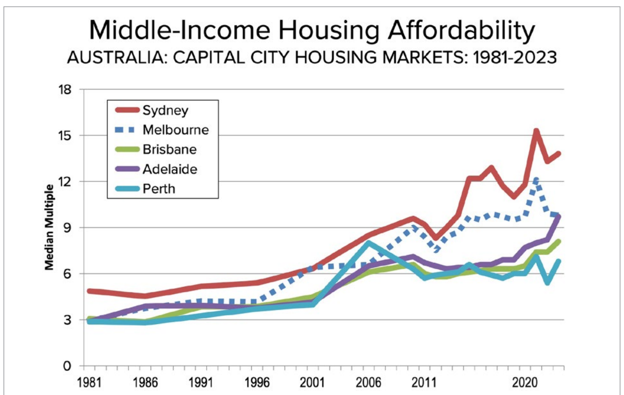


Figure 4

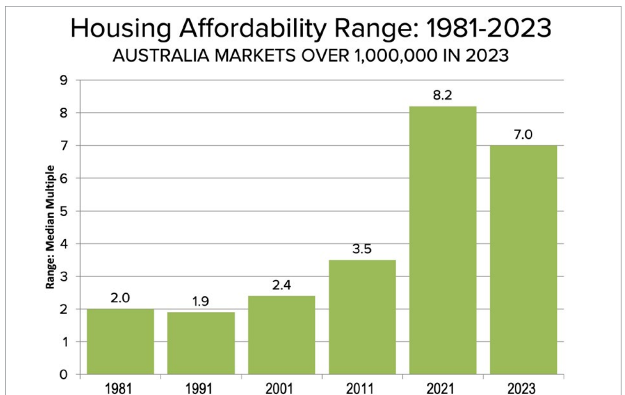


Figure 5

Canada: The markets in Canada have a median multiple of 5.6, up from 4.4 in 2019. Four of the six markets in Canada are rated severely unaffordable. There has been a considerable loss of housing affordability in Canada since the mid-2000s, especially in the Vancouver and Toronto markets (Figure 6). In contrast, there had been no deterioration in housing affordability in Toronto from 1971 to 2004 --- more than three decades.

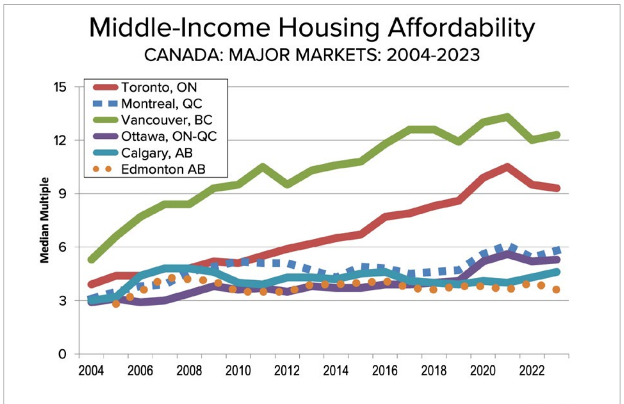


Figure 6

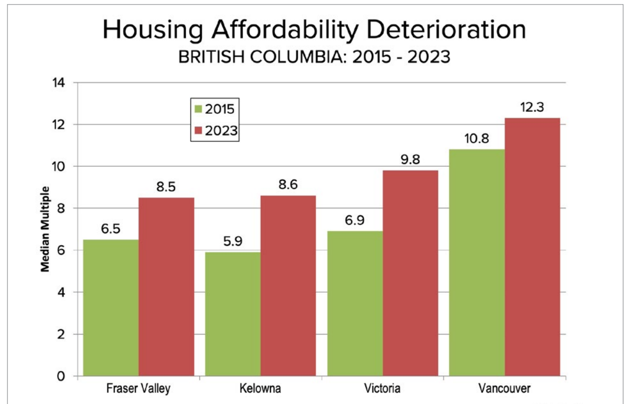


Figure 7

Vancouver is the least affordable in Canada and the third least affordable of the 94 markets, with an impossibly unaffordable median multiple of 12.3, making it more unaffordable than all markets except Hong Kong and Sydney. Vancouver has been the first, second or third least affordable major market for each of the last 16 years. The median multiple has slightly deteriorated from the pre-pandemic 11.9 in 2019.

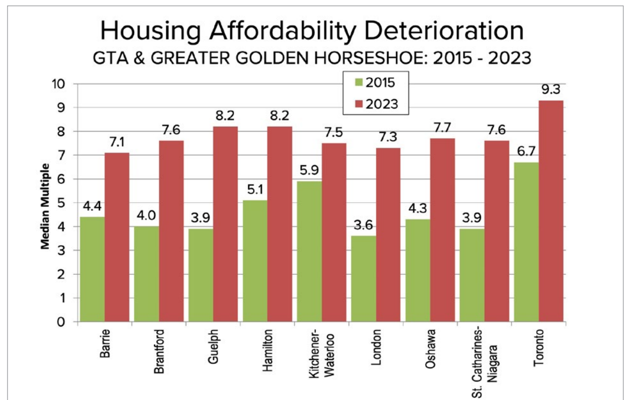


Figure 8

Troublingly, impossibly unaffordable housing in the Vancouver market has also has spread to smaller BC markets in British Columbia, such as Chilliwack, the Fraser Valley, Kelowna, and markets on Vancouver Island. From 2015 to 2023, housing affordability worsened by the equivalent of 2.5 years of median household income in smaller markets outside Vancouver, an even greater loss than the 1.2 years in the Vancouver market itself (Figure 7, above).

Toronto is the second least affordable market in Canada and ranks 84th out of 94 markets in international affordability, with a impossibly unaffordable median multiple of 9.3, above its pre-pandemic median multiple of 8.6 (2019). As in Vancouver, severely unaffordable housing has spread to smaller, less unaffordable markets in Ontario, such as Kitchener-Cambridge-Waterloo, Brantford, London, and Guelph, as residents of metro Toronto seek lower costs of living outside the Toronto market. From 2015 to 2023, housing affordability has worsened by the equivalent of 3.3 years of median household income in smaller markets outside Toronto, a greater loss than the 2.6 years in the Toronto market itself (Figure 8, above).

Montreal (5.8) and Ottawa-Gatineau (5.3) are also severely unaffordable. The most affordable Canadian market is Edmonton, with a moderately unaffordable median multiple of 3.6. Calgary, with a median multiple of 4.6, was seriously unaffordable.

The range between the most affordable and least affordable markets has risen from 1.5 median multiple points in 1971 to 8.7 points in 2023. The increase is the equivalent of 7.2 years of median household income (Figure 9).

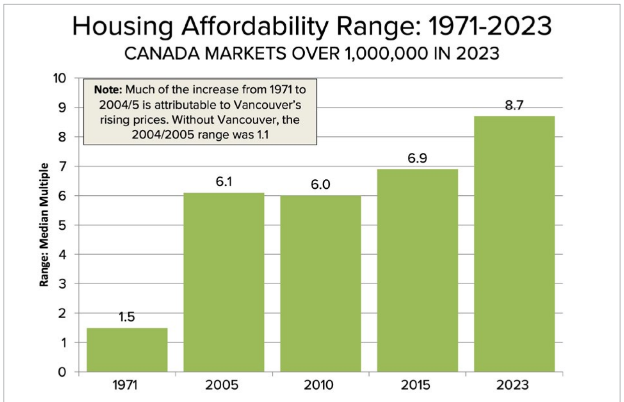


Figure 9

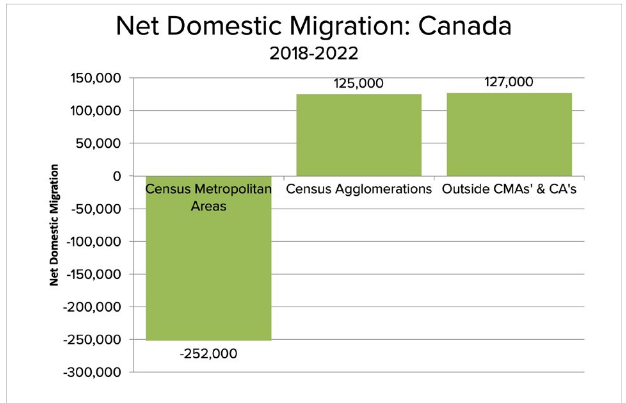


Figure 10

NET DOMESTIC MIGRATION

There is a strong association between net domestic migration and housing affordability. This is illustrated by Statistics Canada data indicating that the six major metropolitan areas lost 444,000 domestic residents to other areas of the nation from 2018 to 2022. The six major metropolitan areas had a median multiple of 7.9. Net domestic migration is strongly out of the metropolitan areas, to the census agglomerations (smaller markets) and the rest of the nation (Figure 10, above)

China: Hong Kong is the least affordable market in *Demographia International Housing Affordability*, with a median multiple of 16.7, and the only market covered in China. This is an improvement from the pre-pandemic 20.8 in 2019. the result of declining house prices and improved incomes. Hong Kong has had the least affordable housing in each of the 13 years of coverage by *Demographia*.

China's central government has given Hong Kong a clear responsibility to improve housing affordability and increase house sizes, which are among the smallest in the world.

Two major projects could add substantially to Hong Kong's housing stock. The "Northern Metropolis," virtually adjacent to neighboring Shenzhen would add more than 900,000 new housing units over the next two decades, with a target of more than 40% to be completed by 2032. Another project, Lantau Vision Tomorrow would add more than 200,000 new housing units on reclaimed islands near Hong Kong International Airport. This significant addition of housing units could moderate Hong Kong's still high housing costs.

Ireland: Dublin, Ireland's sole major metropolitan area, had a seriously unaffordable median multiple of 4.8, slightly higher than the 2019 median multiple of 4.7.

New Zealand: Auckland has a severely unaffordable median multiple of 8.2. This is an improvement from the 8.6 in the last pre-pandemic year (2019). Important drivers were strong income trends, combined with the recovery of about half of the Covid-era demand shock that occurred from 2019 to 2021.

Proposed New Land Use Policies: The newly elected Coalition government (National/ACT/New Zealand First) government plans to implement a housing policy, based principally on moderating the land costs that have skyrocketed in the urban containment policy environment over the past 30 years. This is summarized in Section 5.

Singapore: Singapore's median multiple has improved by adjustments to account for the longstanding and broad based first home buyer grant (initiated three decades ago). Overall, the median multiple for the resale market of Housing and Development Board (HDB) flats, is a moderately unaffordable 3.8. Singapore ranks as the 11th most affordable market this year.

In the early 1960s, Singapore faced a desperate housing situation, characterized by unhygienic slums and crowded squatter settlements. To address this, Singapore established the Housing and Development Board (HDB), adopted policies to …*encourage a property-owning democracy in Singapore and to enable Singapore citizens in the lower middle-income group to own their own homes*.

This objective has been largely achieved, with Singapore's home ownership rate at+ 90%. This is by far the highest home ownership rate among the eight nations in *Demographia International Housing Affordability*. Approximately 78% of Singapore households live in HDB housing. The 2020 edition includes a description of Singapore's housing policy ("Focus on Singapore").

The commitment in Singapore to home ownership and housing affordability remains strong. In his National Day Message in 2023, Prime Minister Lee Hsien Loog reiterated Singapore's dedication to home ownership and housing affordability:

> "Decade after decade, the Government has invested heavily to build affordable, accessible, and high-quality HDB flats for millions of Singaporeans…Even amidst this changing landscape, we must still ensure public housing is accessible and affordable for Singaporeans of all income groups. We must also keep our housing schemes fair and inclusive for all. This is how we keep our national housing story going strong for current and future generations. This is my Government's commitment to you, and we will deliver on it."
>
> - *Singapore Prime Minister Lee Hsien Loog, 2023*

United Kingdom: In 2023, the United Kingdom had a median multiple of 5.0, up from 4.6 in 2019. Among its markets, 9 were severely unaffordable, and another 10 are severely unaffordable. Two markets were moderately unaffordable.

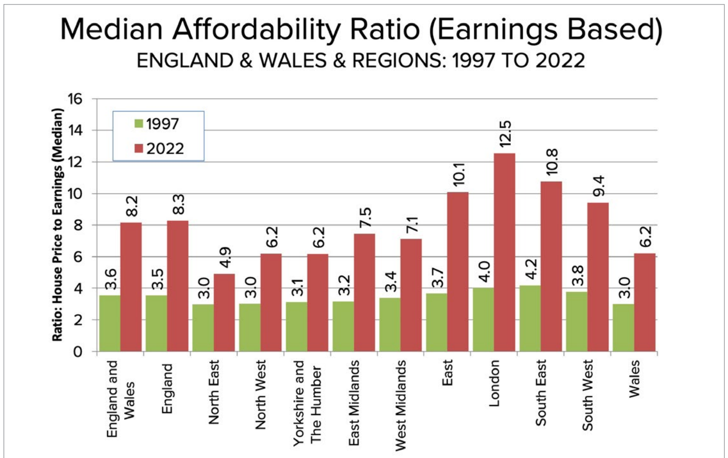


Figure 11

London is the least affordable market in the United Kingdom, with a median multiple of 8.1, ranking 80th out of 94 in affordability. But unaffordability ranges far from the capital as well. Bournemouth & Dorset has a median multiple of 7.5, ranking as the 79th least affordable, while Bristol-Bath was at 7.0 (77th) , and the London Exurbs (outside the greenbelt) had a median multiple of 6.7, ranking 73rd in affordability. Plymouth & Devon, Swindon, Northampton, Leicester & Leicestershire and the West Midlands were also severely unaffordable.

The most affordable markets were Glasgow, and Blackpool & Lancaster, with a median multiple of 3.9, tied at 12th in affordability out of 94. The United Kingdom's long experience with urban containment policy has seen house price increases outpacing incomes, contributing to the current cost-of-living crisis.

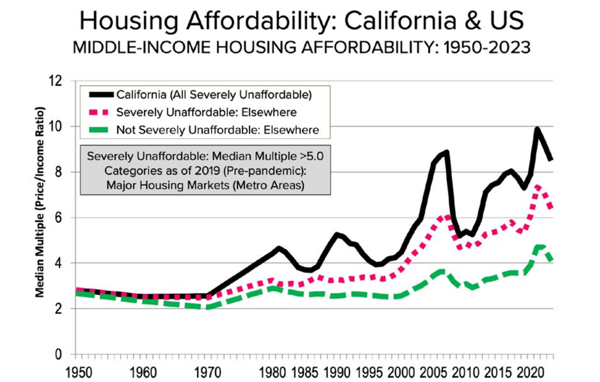
This is illustrated in Figure 11 (above), showing the change in the Office of National Statistics Median Affordability Ratio (median house price divided by median earnings). Over the last quarter century (1997-2022), median house prices have increased at 2.3 times the increase in median wages in England and Wales.

The largest increase has occurred in Greater London, where house prices increased at 3.1 times the rate of earnings between 1997 and 2022. In the Southwest and London exurbs (East and Southeast), house prices rose from 2.5 to 2.7 times incomes. In the Midlands , the Northwest as well as Yorkshire, prices rose at from 2.0 to 2.4 times incomes. The smallest increase was in the Northeast region, with house prices rising 1.6 times earnings. In Wales, house prices increased 2.1 times the rate of earnings.

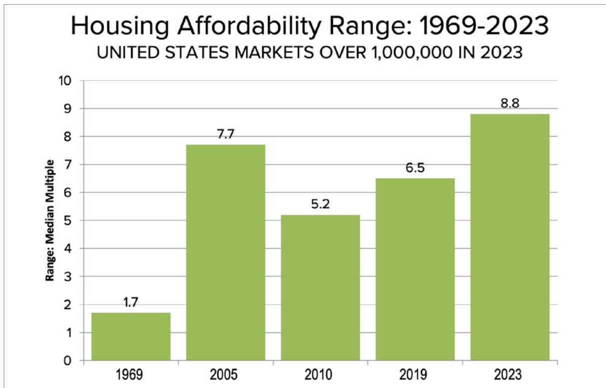
The current cost-of-living crisis in the United Kingdom has been significantly driven by these house price increases.

These increases began at about the same time that the Blair Labour Government imposed a planning target for 60% of new housing to be infill (brownfield development). This further market distortion may have contributed to these house price increases, making regulation even more restrictive than under the existing urban containment environment.

United States: The US median multiple in 2023 was 4.8, up from 3.9 in 2019, indicating an increase of 0.9 years of median household income since before the pandemic.



Derived from Census Bureau, Harvard University and Demographia. Figure 12



Derived from Census Bureau, Harvard Joint Center and *Demographia*. Figure 13

The United States had five impossibly unaffordable markets, four of which are located in California. San Jose was the least affordable major US housing market in 2023, with a median multiple of 11.9 (91st internationally). Los Angeles was the second least affordable in the US (90th internationally), with a median multiple of 10.9, ranking, while San Francisco (CA) had a 9.7 median multiple and San Diego's median multiple was 9.5. Honolulu was the third least affordable, with a median multiple of 10.5 (89th internationally). Figure 12 (above left) compares historical trends in housing affordability between California markets and other states.

There were 17 severely unaffordable markets. Miami (FL) was the least affordable, with a median multiple of 8.1 (80th internationally), followed by New York (NY-NJ-PA) at 7.0 (77th internationally).

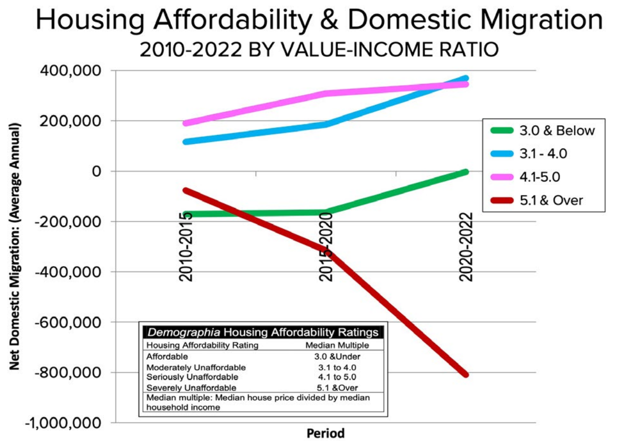
Other severely unaffordable US markets were Boston, MA-NH, Seattle, WA, Riverside-San Bernardino, CA, Denver, CO, Portland OR-WA, Las Vegas, NV, Salt Lake City, UT, Sacramento, CA, Orlando, FL, Fresno, CA, Tucson, AZ, Tampa-St. Petersburg, FL, Providence, RI-MA, Phoenix, AZ and Milwaukee, WI.

The most affordable market was Pittsburgh (PA), with a median multiple of 3.1, (the most affordable internationally), followed by Rochester (NY) and St. Louis, (MO-IL) at 3.4 and Cleveland at 3.5.

The range between the least affordable and most affordable markets in the US was 8.8 years of median household income in 2023, compared to 1.7 in 1969 (Figure 13, above right). This increase is the equivalent of 7.1 years of median household income.

HOUSING AFFORDABILITY AND NET DOMESTIC MIGRATION

As in Canada, there has been a strong association between severely unaffordable housing and net domestic out-migration. This is indicated in a review of housing affordability in virtually all of the geographies of the United States, using American Community Survey affordability data from 2018 to 2022 (value to income ratios).



Derived from Census Bureau data

Figure 14

Net domestic migration out of the severely unaffordable markets has increased substantially and is now by far the highest among the affordability categories. Between 2010 and 2015, the severely unaffordable markets (value to income ratio over 5.0) an net[6] average loss of 76,000 residents annually. This worsened to an average loss of 315,000 between 2015 and 2020 and had increased approximately 10 times, to an annual loss of 810,000 during the pandemic period in 2020 to 2022. Among the seriously unaffordable markets (value to income ratio of 4.1 to 5.0) and the moderately affordable markets (value to income ratio of 3.1 to 4.0) in-migration increased substantially. These areas accounted for nearly all of the net domestic migration losses in the severely unaffordable markets. Finally, the affordable markets (value to income ratio of 3.0 or less) rose from an annual net migration loss of 171,000 to 4,000 gain annually in 2020-2022 (Figure 14).

4: THE EXISTENTIAL THREAT TO THE MIDDLE-CLASS

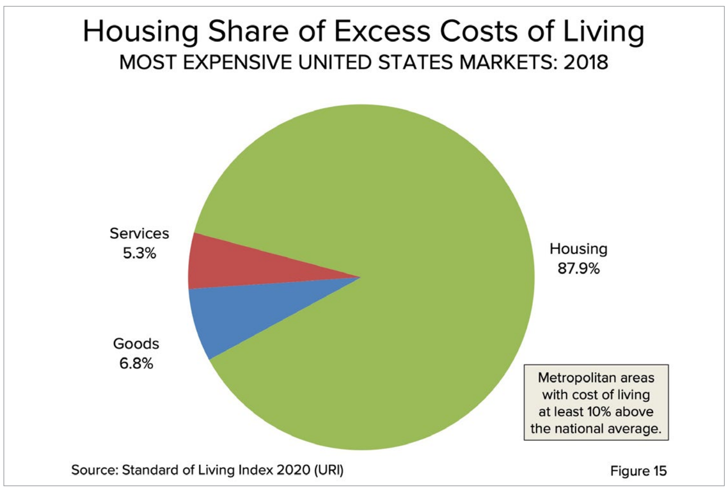
For decades in the high-income world, a hallmark of a strong middle class was the widespread ability to own a home – house prices generally rose in line with household incomes. As late as the 1990s, house prices were three times or less than household incomes in most, if not all, the housing markets of New Zealand, Canada, the US, Australia, the UK and Ireland.

However, this nexus has been broken in many markets, with house prices escalating far above household incomes (measured by the price to income ratio, or “median multiple”). Land prices are now much more expensive, and house prices relative to household incomes have tripled in markets such as San Francisco, Sydney, Vancouver, Honolulu and Auckland. These early urban containment markets have each had house prices that are the equivalent of 9 to 15 years of household income.

6 In-migrants minus out-migrants.

> “the middle-class faces ever rising costs relative to incomes and…its survival is threatened.”
>
> - *Organization for Economic Cooperation and Development (OECD)*

In *Under Pressure: The Squeezed Middle-Class*, the OECD: “finds that the middle-class faces ever rising costs relative to incomes and that its survival is threatened.” Further that “…, the cost of essential parts of the middle-class lifestyle have increased faster than inflation; house prices have been growing three times faster than household median income over the last two decades.” Housing is generally the most expensive item in the household budget. This trend has reduced standards of living and increased poverty.



In the United States, where there is the greatest gap between the most expensive and least expensive housing markets, more than 85% of the cost-of-living difference between the most expensive markets is due to higher housing costs (Figure 15).

Outside the United States, the same effect can be seen in comparing price-to-income ratios over time among the impossibly unaffordable markets, such as the last five decades in Vancouver and Sydney, the last three decades in Auckland, Melbourne and Adelaide and the last two decades in Toronto.

5: THE INTERNATIONAL PLANNING ORTHODOXY AND THE HOUSING AFFORDABILITY CRISIS

Over the last half-century, urban planners have successfully managed to shape housing policies implemented to reflect their visions. Fundamentally, these policies seek to stop the expansion of urban areas (sprawl) and increase urban population densities. This international planning orthodoxy relies on urban containment, with its strategies of greenbelts, urban growth boundaries, rural zoning (large lot zoning) on urban peripheries and compact city policies (densification).

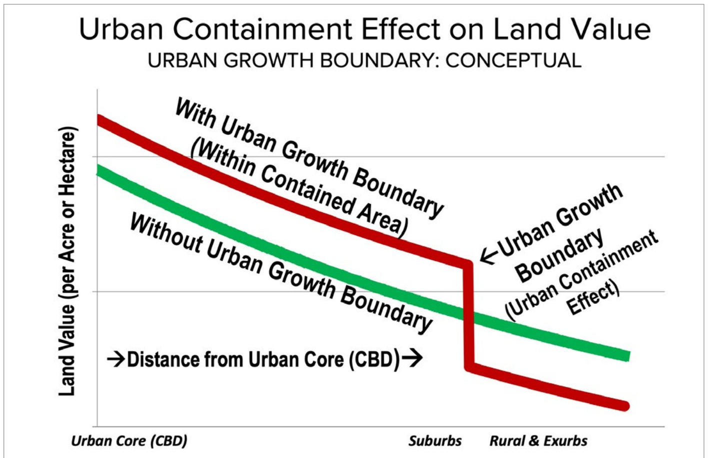
Urban containment, as explained by its own proponents, is contrasted with "...traditional approaches to land use regulation by the presence of policies that are explicitly designed to limit the development of land outside a defined urban area..."[7] Each of these strategies reduces the land available for development of middle-income housing in the form that most households prefer (ground oriented, such as detached and semi-detached or row houses).

The middle-class is under siege principally due to the escalation of land costs. As land has been rationed in an effort to curb urban sprawl, the excess of demand over supply has driven prices up. This is consistent with economic principles. Alain Bertaud, former principal urban planner at the World Bank, asserts that "arbitrary limits on city expansion" (such as urban growth boundaries and greenbelts) result in "predictably higher prices."[8] Moreover, rising house prices can be driven even higher by the attractive returns from speculative activity. The net effect is that land values and house prices have become skewed against the middle-class, whose existence depends upon the very competitive land market destroyed by the planning orthodoxy.[9]

All of the Impossibly Unaffordable Markets in *Demographia International Housing Affordability* follow the "international planning orthodoxy" as do nearly all of the severely unaffordable markets. A central message of this report is that the most severe housing affordability losses have occurred in markets that follow the international planning orthodoxy.

7 Arthur C. Nelson and Casey J. Dawkins (2004), "Urban Containment in the United States: History, Models and Techniques for Regional and Metropolitan Growth Management, "American Planning Association Planning Advisory Service.
8 Bertaud, Order without Design.
9 Anthony Downs (1994), ***New Visions for Metropolitan America***, Brookings Institution Press.

6: ECONOMICS OF URBAN CONTAINMENT



Adapted from Fischel (2015) and Nelson & Dawkins (2004) Figure 16

Generally, land values in the physical city (built-up urban area) naturally increase towards the urban center (all else being equal).[10] Urban containment disrupts this pattern, associated with abrupt land value spikes at the edges of areas allowed to develop, and generally drive higher land prices throughout the contained area (Figure 16[11]).

Planning theorists Arthur C. Nelson and Casey J. Dawkins defined urban containment policy in an American Planning Association Planning Advisory Service report:

> "In its most basic form, urban containment involves drawing a line around an urban area. Urban development is steered to the area inside the line and discouraged (if not prevented) outside it." Further, they add that, higher land prices are both an expected and *intended* result.[12]

At the same time, proponents of urban containment expected that higher urban population densities would occur with continued population growth. Further, they did not expect that this would increase housing prices.[13]

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10 William Alonso (1964), Location and Land Use: Toward a General Theory of Land Rent (Cambridge, Massachusetts, Harvard University Press).

11 Figure is adapted from other works dealing with urban growth boundaries. Other graphical representations of this relationship can be found in Gerrit Knaap and Arthur C. Nelson, The Regulated Landscape: Lessons on State Land Use Planning from Oregon, Cambridge, Massachusetts: Lincoln Institute of Land Policy, 1992; William A. Fischel, Zoning Rules! The Economics of Land-use Regulation, Lincoln Institute of Land Policy, 2015; Gerard Mildner, "Public Policy & Portland's Real Estate Market," Quarterly and Urban Development Journal, 4th Quarterly 2009: 1-16, and others. Under traditional land use regulation, where there is no urban containment boundary, the land price gradient would be smooth (the green line labeled "Before Urban Growth Boundary"). On the other hand, an abrupt increase occurs at an urban boundary (the red line labeled "After Urban Growth Boundary").

12 Arthur C. Nelson and Casey J. Dawkins, Urban Containment in the United States: History, Models and Techniques for Regional and Metropolitan Growth Management, American Planning Association Planning Advisory Service. *https://www.researchgate.net/publication/288101674_Urban_containment*

13 Gerrit J. Knaap, and Arthur C. Nelson, "The Effects of Regional Land-use Control in Oregon: A Theoretical and Empirical Review, The Review of Regional Studies Vol. 18, No. 2 (1988).

Yet, the land price increases were far too large to be neutralized by higher population densities. Research suggests that land value spikes around UGBs, with land being 8 to 20 times more costly inside urban containment boundaries than outside.[14]

The extent to which land prices drive the final cost of houses is illustrated in Figure 17, which compares the urban containment housing markets of Vancouver and Toronto `to the generally liberally regulated market of Winnipeg. The estimated construction costs for a 1,500 square foot house in Toronto were less than five percent more than that of Winnipeg, compared to a more than nine times (900 percent) difference in land and related costs. In Vancouver, the construction costs for the 1,500 square foot house were less than 30 percent more than that of Winnipeg, compared to a more than 12 times (1,200 percent) difference in land and related costs.

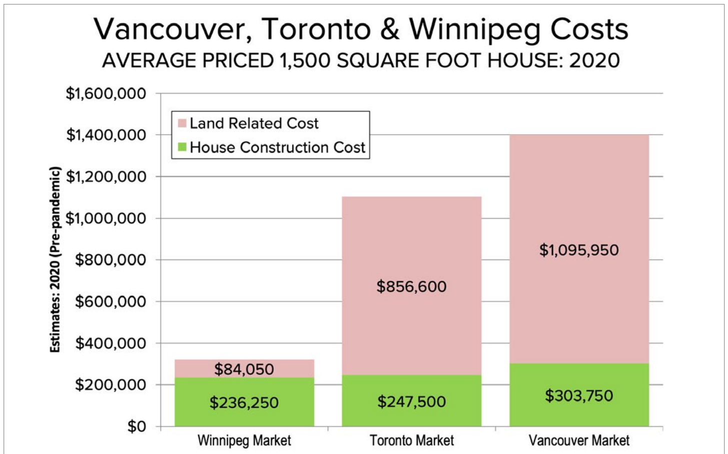

Figure 17

Even the OECD has raised the alarm about urban containment and worsening housing affordability. In ***Rethinking Urban Sprawl: Moving Toward Sustainable Cities***, the OECD has warned that without sufficient developable land within urban growth boundaries, housing affordability will deteriorate. Anthony Downs of the Brookings Institution stressed the need to maintain a competitive land market to counteract this effect.[15]

The housing affordability crisis is fundamentally a land cost issue, driven by the effects of the international planning orthodoxy.

14 Calculated from data in Mariano Kulish, Anthony Richards and Christian Gillitzer, "Urban Structure and Housing Prices: Some Evidence from Australian Cities," Research Discussion Paper, Reserve Bank of Australia, September 2011. http://www.rba.gov.au/publications/rdp/2011/pdf/rdp2011-03.pdf and Grimes, Arthur and Yun Liang (2008). "Spatial Determinants of Land Prices: Does Auckland's Metropolitan Urban Limit Have an Effect?" ***Applied Spatial Analysis and Polic***y. https://link.springer.com/article/10.1007/s12061-008-9010-8.

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

7: ADDRESSING LAND COSTS: THE NEW ZEALAND 2024 HOUSING AFFORDABILITY REFORMS

New Zealand's newly formed National/ACT/New Zealand First coalition government (the Coalition) has adopted a "Going for Housing Growth" based upon the understanding of the housing affordability as a land cost problem. They cite research showing that urban growth boundaries alone add a staggering NZ$600,000 (US$370,000) to the cost of land for houses on Auckland's edges.

"Going for Housing Growth" will seek to ensure abundant developable land within and around cities, preventing the artificial scarcity that drives up prices. This is in contrast to housing affordability policies that are limited to densification strategies.

A key part of "Going for Housing Growth" is to require local authorities to immediately zone for 30 years of housing growth. This prevents using sequential development, which would perpetuate the tight land market created by containment policies.

To finance infrastructure needs, the Coalition will utilize the funding mechanism (Special Purpose Vehicles or SPVs), as authorized by the 2020 Infrastructure Funding and Financing Act. This allows developers or public agencies to finance infrastructure costs, repaid by beneficiaries over a period of up to 50 years. This model, often known as Municipal Utility Districts (MUDs) has been proven in Texas and Colorado, with their municipal utility districts. This takes away the burden of infrastructure finance from local authorities.

Finally, the National coalition has withdrawn its support for the densification-only program enacted under the previous government. Densification will now be an optional tool for local authorities.

8: TOWARD ECONOMIC OPPORTUNITY

Legendary urbanist ***Jane Jacobs*** provided the ultimate test of planning: "If planning helps people, they ought to be better off as a result, not worse off." Yet, the planning orthodoxy, with its principal strategy of urban containment has been associated with worsened housing affordability. To state the obvious, this makes people *worse off*.

The threat to the middle-class and the deterioration of opportunity for lower income households by the planning orthodoxy is real. Rebecca Cavicchia of the Norwegian University of Life Sciences (NMBU), Department of Urban and Regional Planning, Norway, noted that Oslo house prices increased nearly three times that of wages in 17 years of densification policy and suggested that trade-off between zero sprawl policy (densification) and housing availability could arise.

Indeed. A trade-off that sacrifices housing affordability for densification is evident in the geographies covered by *Demographia International Housing Affordability*. Similar policies have been associated with greater inequality, deteriorated middle-income living standards and greater poverty.

The intensity of the housing affordability crisis suggests that we must reorient current policies on land use and focus on the most fundamental objective: what is good for people. Paul Cheshire, Max Nathan, and Henry Overman of the London School of Economics suggest that:

> “the ultimate objective of urban policy is to improve outcomes for people rather than places; for individuals and families rather than buildings.
>
> *- Paul Cheshire, Max Nathan, and Henry Overman of the London School of Economics*

Table 3
HOUSING MARKETS RANKED BY AFFORDABILITY: MOST AFFORDABLE TO LEAST AFFORDABLE
Median Multiple (Median House Price/Median Household Income): 2023: Third Quarter

Rank	Nation	Metropolitan Market	Median Multiple	Rank	Nation	Metropolitan Market	Median Multiple
1	U.S.	Pittsburgh, PA	3.1	48	U.K.	Greater Manchester	5.0
2	U.S.	Rochester, NY	3.4	48	U.K.	Nottingham	5.0
2	U.S.	St. Louis,, MO-IL	3.4	48	U.K.	Warrington & Cheshire	5.0
4	U.S.	Cleveland, OH	3.5	48	U.S.	Charlotte, NC-SC	5.0
5	Canada	Edmonton, AB	3.6	48	U.S.	Washington, DC-VA-MD-WV	5.0
5	U.S.	Buffalo, NY	3.6	53	U.K.	West Midlands	5.2
5	U.S.	Detroit, MI	3.6	53	U.S.	Milwaukee, WI	5.2
5	U.S.	Oklahoma City, OK	3.6	55	Canada	Ottawa-Gatineau, ON-QC	5.3
9	U.S.	Cincinnati, OH-KY-IN	3.7	56	U.S.	Phoenix, AZ	5.4
9	U.S.	Louisville, KY-IN	3.7	57	U.K.	Leicester & Leicestershire	5.5
11	Singapore	Singapore	3.8	58	U.S.	Providence, RI-MA	5.6
12	U.K.	Blackpool & Lancashire	3.9	59	U.S.	Tampa-St. Petersburg, FL	5.7
12	U.K.	Glasgow	3.9	59	U.S.	Tucson, AZ	5.7
12	U.S.	Tulsa, OK	3.9	61	Canada	Montreal, QC	5.8
15	U.S.	Indianapolis. IN	4.0	61	U.S.	Fresno, CA	5.8
16	U.K.	Middlesbrough & Durham	4.1	61	U.S.	Orlando, FL	5.8
16	U.S.	Columbus, OH	4.1	61	U.S.	Sacramento, CA	5.8
16	U.S.	Grand Rapids, MI	4.1	61	U.S.	Salt Lake City, UT	5.8
16	U.S.	Minneapolis-St. Paul, MN-WI	4.1	66	U.K.	Northampton	5.9
20	U.K.	Newcastle	4.2	67	U.K.	Swindon	6.2
20	U.S.	Chicago, IL-IN-WI	4.2	67	U.S.	Las Vegas, NV	6.2
20	U.S.	Hartford, CT	4.2	69	U.S.	Portland, OR-WA	6.4
20	U.S.	Kansas City, MO-KS	4.2	70	U.K.	Plymouth & Devon	6.5
20	U.S.	Memphis, TN-MS-AR	4.2	70	U.S.	Denver, CO	6.5
20	U.S.	Philadelphia, PA-NJ-DE-MD	4.2	70	U.S.	Riverside-San Bernardino, CA	6.5
26	U.K.	Liverpool	4.3	73	U.K.	London Exurbs	6.7
26	U.K.	Sheffield	4.3	73	U.S.	Seattle, WA	6.7
26	U.S.	Atlanta, GA	4.3	75	Australia	Perth, WA	6.8
26	U.S.	Baltimore, MD	4.3	75	U.S.	Boston, MA-NH	6.8
30	U.K.	Stoke on Trent & Staffordshire	4.4	77	U.K.	Bristol-Bath	7.0
30	U.S.	Birmingham, AL	4.4	77	U.S.	New York, NY-NJ-PA	7.0
30	U.S.	Houston, TX	4.4	79	U.K.	Bournemouth & Dorset	7.5
30	U.S.	New Orleans. LA	4.4	80	Australia	Brisbane, QLD	8.1
30	U.S.	Virginia Beach-Norfolk, VA-NC	4.4	80	U.K.	Greater London	8.1
35	U.K.	Edinburgh	4.5	80	U.S.	Miami, FL	8.1

Table 3, contd. HOUSING MARKETS RANKED BY AFFORDABILITY: MOST AFFORDABLE TO LEAST AFFORDABLE Median Multiple (Median House Price/Median Household Income): 2023: Third Quarter							
Rank	Nation	Metropolitan Market	Median Multiple	Rank	Nation	Metropolitan Market	Median Multiple
35	U.S.	Dallas-Fort Worth, TX	4.5	83	N.Z.	Auckland	8.2
35	U.S.	San Antonio, TX	4.5	84	Canada	Toronto, ON	9.3
38	Canada	Calgary, AB	4.6	85	U.S.	San Diego, CA	9.5
39	U.K.	Derby & Derbyshire	4.7	86	Australia	Adelaide, SA	9.7
39	U.K.	Leeds	4.7	86	U.S.	San Francisco, CA	9.7
39	U.S.	Richmond, VA	4.7	88	Australia	Melbourne, VIC	9.8
42	Ireland	Dublin	4.8	89	U.S.	Honolulu, HI	10.5
42	U.K.	Hull & Humber	4.8	90	U.S.	Los Angeles, CA	10.9
42	U.S.	Jacksonville, FL	4.8	91	U.S.	San Jose, CA	11.9
45	U.S.	Austin, TX	4.9	92	Canada	Vancouver, BC	12.3
45	U.S.	Nashville, TN	4.9	93	Australia	Sydney, NSW	13.8
45	U.S.	Raleigh, NC	4.9	94	China	Hong Kong	16.7

Table 4
ALL HOUSING MARKETS BY NATION
Median Multiple (Median House Price/Median Household Income): 2023: Third Quarter

Rank	Nation	Metropolitan Market	Median Multiple	Rank	Nation	Metropolitan Market	Median Multiple
81	Australia	Adelaide, SA	8.2	3	U.S.	Cleveland, OH	3.5
78	Australia	Brisbane, QLD	7.4	14	U.S.	Columbus, OH	4.1
86	Australia	Melbourne, VIC	9.9	34	U.S.	Dallas-Fort Worth, TX	4.9
50	Australia	Perth, WA	5.4	73	U.S.	Denver, CO	7.0
93	Australia	Sydney, NSW	13.3	8	U.S.	Detroit, MI	3.8
21	Canada	Calgary, AB	4.3	62	U.S.	Fresno, CA	6.1
11	Canada	Edmonton, AB	4.0	14	U.S.	Grand Rapids, MI	4.1
50	Canada	Montreal, QC	5.4	11	U.S.	Hartford, CT	4.0
46	Canada	Ottawa-Gatineau, ON-QC	5.2	91	U.S.	Honolulu, HI	11.8
85	Canada	Toronto, ON	9.5	28	U.S.	Houston, TX	4.7
92	Canada	Vancouver, BC	12.0	14	U.S.	Indianapolis. IN	4.1
94	China	Hong Kong	18.8	54	U.S.	Jacksonville, FL	5.5
43	Ireland	Dublin	5.1	11	U.S.	Kansas City, MO-KS	4.0
88	N.Z.	Auckland	10.8	71	U.S.	Las Vegas, NV	6.9
47	Singapore	Singapore	3.8	89	U.S.	Los Angeles, CA	11.3
21	U.K.	Blackpool & Lancashire	4.3	9	U.S.	Louisville, KY-IN	3.9
80	U.K.	Bournemouth & Dorset	8.0	28	U.S.	Memphis, TN-MS-AR	4.7
79	U.K.	Bristol-Bath	7.5	82	U.S.	Miami, FL	8.5
39	U.K.	Derby & Derbyshire	5.0	39	U.S.	Milwaukee, WI	5.0
34	U.K.	Edinburgh	4.9	14	U.S.	Minneapolis-St. Paul, MN-WI	4.1
19	U.K.	Glasgow	4.2	47	U.S.	Nashville, TN	5.3
83	U.K.	Greater London	8.7	28	U.S.	New Orleans. LA	4.7
54	U.K.	Greater Manchester	5.5	76	U.S.	New York, NY-NJ-PA	7.1
43	U.K.	Hull & Humber	5.1	5	U.S.	Oklahoma City, OK	3.6
39	U.K.	Leeds	5.0	64	U.S.	Orlando, FL	6.2
64	U.K.	Leicester & Leicestershire	6.2	14	U.S.	Philadelphia, PA-NJ-DE-MD	4.1
32	U.K.	Liverpool	4.8	60	U.S.	Phoenix, AZ	6.0
77	U.K.	London Exurbs	7.3	1	U.S.	Pittsburgh, PA	3.1
28	U.K.	Middlesbrough & Durham	4.7	70	U.S.	Portland, OR-WA	6.7
25	U.K.	Newcastle	4.4	57	U.S.	Providence, RI-MA	5.8
66	U.K.	Northampton	6.4	43	U.S.	Raleigh, NC	5.1
47	U.K.	Nottingham	5.3	34	U.S.	Richmond, VA	4.9
73	U.K.	Plymouth & Devon	7.0	73	U.S.	Riverside-San Bernardino, CA	7.0
25	U.K.	Sheffield	4.4	2	U.S.	Rochester, NY	3.2
34	U.K.	Stoke on Trent & Staffordshire	4.9	60	U.S.	Sacramento, CA	6.0
67	U.K.	Swindon	6.5	68	U.S.	Salt Lake City, UT	6.6

Table 4, contd. ALL HOUSING MARKETS BY NATION Median Multiple (Median House Price/Median Household Income): 2023: Third Quarter							
Rank	Nation	Metropolitan Market	Median Multiple	Rank	Nation	Metropolitan Market	Median Multiple
50	U.K.	Warrington & Cheshire	*5.4*	34	U.S.	San Antonio, TX	4.9
56	U.K.	West Midlands	5.7	84	U.S.	San Diego, CA	9.4
27	U.S.	Atlanta, GA	4.5	87	U.S.	San Francisco, CA	10.7
58	U.S.	Austin, TX	5.9	90	U.S.	San Jose, CA	11.5
21	U.S.	Baltimore, MD	4.3	71	U.S.	Seattle, WA	6.9
32	U.S.	Birmingham, AL	4.8	3	U.S.	St. Louis,, MO-IL	3.5
68	U.S.	Boston, MA-NH	6.6	62	U.S.	Tampa-St. Petersburg, FL	6.1
7	U.S.	Buffalo, NY	3.7	*58*	U.S.	Tucson, AZ	5.9
50	U.S.	Charlotte, NC-SC	5.4	*9*	U.S.	Tulsa, OK	3.9
19	U.S.	Chicago, IL-IN-WI	4.2	*21*	U.S.	Virginia Beach-Norfolk, VA-NC	4.3
5	U.S.	Cincinnati, OH-KY-IN	3.6	*39*	U.S.	Washington, DC-VA-MD-WV	5.0

SOURCES AND METHODS

House price data is estimated from sources reporting on housing types representing the majority of existing dwellings in each nation. Official government produced sales registers are used where available (Ireland, Scotland, England and Wales). Other sources include authoritative real estate time series and market reports. Pre-tax median household incomes for the present year are estimated based on official government data.

AUTHOR

Wendell Cox is principal of Demographia, a St. Louis based international public policy consulting firm and a senior fellow of the Center for Demographics and Policy. He is author of ***Demographia World Urban Areas***, the only regularly published resource for the population, land area and population densities of world urban areas.

Cox was appointed to three terms on the Los Angeles County Transportation Commission (LACTC) by Mayor Tom Bradley and was appointed by US House of Representative Speaker Newt Gingrich to complete the term of New Jersey Governor Christine Todd Whitman on the Amtrak Reform Council. He has served as a visiting professor at the Conservatoire National des Arts et Metiers (CNAM), a national university in Paris and as vice-president of CODATU, a France based research organization dedicated to improving transportation in developing countries. He holds a BA in Government from California State University, Los Angeles and an MBA from Pepperdine University in Los Angeles.

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