A QUESTION OF VALUES: MIDDLE-INCOME HOUSING AFFORDABILITY AND URBAN CONTAINMENT POLICY

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Research Assistant:
Ailin He

Media Inquiries and Information:
Deb Solberg
Tel: (403) 919-9335

Development Inquiries:
Samantha Leclerc
Tel: (403) 400-6862

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WENDELL COX

Wendell Cox is the Chair of the Housing Affordability and Municipal Policy program at the Frontier Centre for Public Policy. Cox is Principal of *Demographia*, an international consultancy based in St. Louis, Missouri, specializing in regional and municipal housing policy and related planning issues. He is co-author of the annual *Demographia International Housing Affordability Index*, which receives more than 1.3 million unique downloads each year. A former member of the Los Angeles Transportation Commission and Amtrak Reform Council, Cox has consulted extensively on urban planning and transportation issues.

AILIN HE (RESEARCH ASSISTANT)

Ailin He is an Intern at the Frontier Centre for Public Policy. She is a third year PhD candidate in Economics at McGill University. She carries a Master of Arts in Economics from Clemson University in Clemson, South Carolina. Her research interests lie in Labour Economics, Urban Economics and Macroeconomics.

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ABSTRACT

House prices in Canada have risen more than in most other high-income nations. Housing has become severely unaffordable, especially in Vancouver and Toronto. Housing affordability has also deteriorated markedly in London, Sydney, Auckland, San Francisco, Los Angeles and other metropolitan areas. The common thread is "urban containment policy," which severely limits the expansion of urban development. Consistent with the basics of economics, these supply limitations have been associated with rising house prices. The resulting higher house prices are a substantial problem for both households and the nation.

As house prices rise, households have less to spend on other goods and services, which leads to lower standards of living and greater poverty. Claims that the losses in housing affordability are the result of improved amenities are countered by weak internal migration to urban containment metropolitan areas. However, the consequences are far greater than the impact on middle-income households. Research indicates that strong land-use policies have "large negative externalities," including the substantial reduction of economic growth and increased inequality.

The losses in housing affordability associated with urban containment policy have been concentrated in Vancouver, Toronto and Montréal. Other metropolitan areas are beginning to adopt urban containment policy. This could spread the severe housing affordability crises now limited to just a few metropolitan areas to many more. Urban policy needs to be redirected toward the higher-order public objectives of improving the standard of living and reducing poverty while encouraging job creation and economic growth.

EXECUTIVE SUMMARY

Middle-income housing affordability is important to people and the economy: Canada's house prices have risen more than house prices in most other high-income nations. This is of concern, because higher house prices reduce discretionary incomes, which defines the standard of living and poverty. If discretionary incomes are reduced, households will have less to spend on other goods and services, which can retard job creation and economic growth. Improving the standard of living and eradicating poverty are among the highest-order domestic priorities (Section 1).

Urban containment policy can lead to higher house prices: Urban land-use regulation has become stronger in many metropolitan areas and often includes urban containment policy. Urban containment severely restricts or bans development in urban fringe areas. Consistent with basic economics, this increases land values and house prices (all else equal). The planning intention and expectation is that higher housing densities will offset the land-price increases and that housing affordability will be maintained (Section 2).

Severe losses in housing affordability have been experienced in urban containment markets: Top housing and economic experts attribute much of the loss in housing affordability to stronger land-use policy (Section 3).

Housing affordability losses have been sustained in the five nations this report focuses upon: Across the United Kingdom, Australia, New Zealand and some markets in Canada and the United States, house prices have nearly doubled or tripled compared with household incomes as measured by price to income ratios. Much of this has been associated with urban containment policy (Section 4).

Demand and supply: Some research suggests that the huge house-price increases have occurred due to higher demand and the greater attractiveness of metropolitan areas that have urban containment policy. However, the interaction of supply and demand sets house prices. Claims that metropolitan areas with urban containment policy are more attractive are countered by their net internal out-migration and diminished amenities for some households (Section 5.1).

An intrinsic urban containment amenity seems doubtful: Some urban containment advocates claim that urban containment policy intrinsically improves amenities (such as a dense urban lifestyle). However, whether a feature is an amenity depends on individual preferences. Moreover, the strong net internal migration away from many metropolitan areas with urban containment policy is an indication that there is no urban containment amenity for most households (Section 5.2).

Higher densities have not prevented huge losses in housing affordability: In contrast with planning expectations, the land-value increases expected from urban containment have not been nullified by higher densities within urban containment boundaries (Section 5.3).

Intervening urban containment boundaries are more influential than topographic barriers: It has been suggested that topographic barriers such as mountains and the ocean cause higher house prices. However, in urban containment metropolitan areas, urban containment boundaries are usually placed between the built-up urban areas and the topographic barriers. As a result, house-price increase associated with the land shortage will be principally associated with the urban containment boundary, not the topographic barrier (Section 5.4).

A competitive land supply is required for housing affordability: A risk with urban containment policy is that by limiting the land for sale, large landholders will seek to buy up virtually all of the land for future gain. Without urban containment, there will not be a land shortage, and there

will not be an incentive to monopolize the land supply. A sufficient land supply can be judged to exist only if prices relative to incomes are not higher than before the urban containment policy came into effect (Section 5.5).

Urban containment policy has been associated with reduced economic growth: Evidence suggests that urban containment policy reduces job creation and economic growth. The increased inequality noted by French economist Thomas Piketty is largely attributed to the housing sector and is likely related to strong regulation. Other research estimated a US$2-trillion loss to the U.S. economy, much of it related to strong land-use regulation, and called this "a large negative externality" (Section 6.1).

Urban containment policy has important social consequences: There are also important social consequences such as wealth transfers from younger to older generations and from the less-affluent to the more-affluent households (Section 6.2).

Urban containment policy has failed to preserve housing affordability: Some have expressed concern that urban containment policy might not have been implemented if there had been the expectation of losses in housing affordability. In fact, the administration of urban containment policy has been deficient, with corrective actions largely not taken despite the considerable evidence of losses in housing affordability. In urban containment markets, programs should be undertaken to stop the further loss of housing affordability and transition toward restoring housing affordability. Further, urban containment should not be implemented where it has not already been adopted (Section 7).

Canada could be at risk: Canada could be at greater risk in the future. Already, huge losses in housing affordability have been sustained in Vancouver and Toronto. Other metropolitan areas are strengthening land-use regulations. This could lead to severe consequences such as lowering middle-income standards of living and greater poverty with less job creation and less economic growth (Section 8.1).

The urban containment debate is fundamentally a question of values: Ultimately, the choice is between the planning values of urban design or urban form and the domestic policy values of improving the standard of living and reducing poverty. Urban containment policy appears to be irreconcilable with housing affordability. Proper prioritization requires that the higher-order values of a better standard of living and less poverty take precedence (Section 8.2).

SECTION 1: INTRODUCTION

Canada's housing market has been the subject of considerable attention in recent years. Domestic and international financial experts have described the performance of the housing market in terms ranging from healthy to being at risk of collapsing.[1] The Bank of Canada raised concerns and indicated that corrections might be possible in some markets, warning that there could be risks to the national economy.[2] Canada's house prices have risen more than house prices in 19 of 20 high-income nations, according to the International House Price Database of the Federal Reserve Bank of Dallas.[3]

These fears should not be taken lightly, especially in view of the financial devastation imposed on the United States by the housing collapse that triggered the worldwide Great Financial Crisis. Canada weathered the crisis well, unlike the United States and, to a lesser extent, the United Kingdom. Canada's better economic performance was in part due to its strong banks, which are rated as the most sound in the world by the World Economic Forum.[4] In comparison, the U.S. banking sector is ranked 49th, behind nations such as Mexico, Malaysia, Peru and Botswana (out of the 144 that are ranked).

Moreover, Canada continues to strengthen its role as one of the world's leading economies. Recent research indicates that Canada has the most-affluent middle class in the world, having passed the United States after its serious losses during the Great Financial Crisis.[5]

Yet, house prices in Canada have raced well ahead of household incomes since 2000. Canada's most significant housing affordability problems are in the Vancouver and Toronto metropolitan areas. There are housing affordability problems in other major metropolitan areas as well. Similar losses in housing affordability have occurred in other nations that share generally parallel cultures and institutions. Canada and these nations, the United Kingdom, the United States, Australia and New Zealand are covered in this report.

In three of the nations – the United Kingdom, Australia and New Zealand – virtually all of the major metropolitan areas have urban containment policy, and they have experienced significant losses in housing affordability.

In Canada, each of the six major metropolitan areas has adopted urban containment policy or is moving in that direction.[6] In the United States, some major metropolitan markets face a severe housing affordability crisis, and each has urban containment policy. Most U.S. metropolitan areas, however, have liberal land-use regulation. In Canada and the United States, significant housing affordability losses have also been associated with urban containment policy.

In urban containment markets, house prices have typically doubled or tripled compared with household incomes.

The most important feature of such systems is urban containment boundaries, which are drawn around built-up urban areas. Urban containment boundaries may be referred to as "urban growth boundaries" and "urban service boundaries" among other terms. Outside of these boundaries, urban development is either prohibited or severely limited. Economic theory predicts that limitations on supply will be associated with higher prices, all else equal. This means that under the normal circumstances of stable demand, house prices will increase if the supply of land is significantly limited.

Diminished housing affordability could represent a substantial threat not only to the well-being of households, but also to job creation and to the health of national economies. Recent research indicates that stronger housing regulation has imposed an annual reduction of nearly $2-trillion (U.S.) in the U.S. gross domestic product. Chang-Tai Hsieh of the University of Illinois and Enrico Moretti of the University of California referred to the effect as a "large *negative externality*" [emphasis in original].[7] Other research indicates that virtually all of the loss in

equality identified by Piketty was in the housing sector and likely related to excessive regulation[8] (Section 6.1). Similar regulation has spread to many metropolitan areas, including some in Canada.

The Threatened Middle Class: The middle class is often perceived as being threatened and in decline. This is an international concern. Virtually all nations rank prosperity as a principal objective of domestic policy. For example, in late 2014, the governments of nations as diverse as Canada, China, Russia, France, Japan, Australia and the United States, among others, adopted a communiqué declaring "better living standards" as their highest priority. They also made a commitment to eradicating poverty (at the G20 meeting in Brisbane).[9]

This report is a public policy narrative on the relationships between urban containment policy, housing affordability and national economies. It is a synthesis of economic and urban planning analysis that is offered as a policy evaluation of urban containment. The analysis is presented in the context of higher-order objectives of domestic policy: improving the standard of living and eradicating poverty.

1.1: Middle-Income Housing Affordability: Background

The primary focus of this report is middle-income housing affordability. It uses housing affordability metrics that reflect the middle of the housing market and are generally based on medians (middle) and averages.

Middle-income housing affordability relates to the housing segment provided by the private sector and is not typically subsidized. This is contrasted with low-income housing, which is typically subsidized by government programs.[10] The term "affordable housing" is often used to denote low-income housing, which includes subsidized housing and social housing. The distinction between housing affordability (middle-income household affordability) and affordable housing (low-income household affordability) is not always clear.

Nonetheless, the low-income housing sector and the middle-income housing sector are closely linked. As house prices rise in the middle of the market, they are similarly driven up in the lower-income segment. Any degradation of housing affordability for middle-income households is likely to increase the number of households requiring subsidies to pay for their housing expenses, increasing the size of the population requiring low-income housing subsidies. This could exacerbate the already scarce resources committed by governments to low-income housing. At the same time, the higher housing costs reduce discretionary incomes, leading to a lower standard of living and greater poverty.

Middle-income housing affordability is usually not a contentious political issue. However, with the large house-price increases relative to incomes in places such as Vancouver, Toronto, San Francisco, London and Sydney, middle-income housing affordability has risen to the top of the political agenda. Unlike low-income affordable housing, which applies to a minority of households, middle-income housing affordability is a matter of concern for the majority of households.

Governments tend to take middle-income housing affordability for granted. With governments often unable to meet the housing needs of low-income households, it is not surprising that attention to middle-income housing affordability is limited. Governments, which have not supplied sufficient funding to provide for the existing low-income housing need, are not likely to provide sufficient subsidies to make up for the losses in housing affordability experienced by middle-income households, as house prices increase in association with urban containment policy.

The local or regional focus of this report is entire metropolitan areas. Metropolitan areas are pivotal to housing affordability analysis, because they are the functional economic cities,[11] defined by commuting patterns. As a result, metropolitan areas are both housing markets and labour markets (employment markets).[12] Individual municipalities (such as the city of Vancouver or Surrey or the ville de Montréal are, with a single exception only parts of the metropolitan area.[13]

1.2: Importance of Middle-income Housing Affordability

Middle-income housing affordability is important to the economy and the quality of life. The nations reviewed in this report have developed strong middle-income sectors. Middle-income households provide much of the consumer demand that is so important to high-income economies.

In recent decades, housing has taken an increasing share of household incomes, especially in metropolitan areas that have implemented strong urban containment policies.

According to economist Steven Mayo, who conducted research for both the World Bank and the United Nations, housing is particularly important to an economy: "Housing, together with the land under it, is the single most important asset of households in most of the world's cities. Housing investment and the flow of housing services account for a total contribution to GNP of between seven and 18 percent in most countries."[14]

Housing costs usually constitute the largest expenditure category in the middle-income household budget.[15] Paul Cheshire of the London School of Economics and Wouter Vermeulen of VU University in Amsterdam described the importance of housing affordability:[16] "... [H]ousing being the dominant asset in most households' portfolios, there are also repercussions on saving, investment and consumption choices." Where housing is more affordable, households will have additional income available for purchasing goods and services or saving (which generates investment), both of which can contribute to a job creation and a stronger economy.

A vibrant and growing middle class is important to a strong economy. There is strong justification for governments to both monitor housing affordability[17] and alleviate or even prohibit policies that might erode it. Otherwise, middle-income households are likely to experience less growth in discretionary incomes (Box 1), and poverty is likely to increase. Discretionary income, which is the amount left after paying for necessities, largely determines the standard of living and poverty status of households.

BOX 1: DISCRETIONARY INCOME

Discretionary income is the amount a household has left after paying for necessities such as taxes, food, housing, transportation and clothing. Discretionary income largely defines the standard of living. Where there is more discretionary income, a household will generally have a higher standard of living and will be able to purchase more goods and services and save more money. On the other hand, where there is less discretionary income, a household will generally have a lower standard of living and may even live in poverty. Thus, discretionary incomes largely define the standard of living and poverty.

1.3: Measuring Middle-income Housing Affordability

The term "affordable" implies a relationship to income. To be affordable, a good or service must be within the financial means of a person or household. Thus, "housing affordability" is defined by the relationship between house prices and household incomes. If the price of housing increases relative to incomes, there will be a loss in housing affordability. If income increases relative to housing prices, housing affordability will be improved. Simple references to house prices without comparing them to household incomes do not measure housing affordability.

One of the most frequently used housing affordability indicators is price to income ratio. A United Nations publication said,[18]

> *If there is a single indicator that conveys the greatest amount of information on the overall performance of*

> *housing markets, it is the house price-to-income ratio. It is obviously a key measure of housing affordability. When housing prices are high relative to incomes, other things being equal, a smaller fraction of the population will be able to purchase housing.*

Price to income ratios have been used by the World Bank, the Organisation for Economic Co-operation and Development (OECD), the International Monetary Fund, the Bank for International Settlements, national government ministries, financial institutions and other organizations.

The median multiple is an important price to income ratio and is calculated by dividing the median house price (middle house price) by the median household income. Another often used price to income ratio is the average house price divided by the average household income.

This report uses the median multiple as its principal measure of housing affordability. Median measures better reflect the middle of the housing market and incomes. In contrast, average measures can be less representative, because especially high prices or incomes can result in a calculation that is not reflective of the middle. The median, on the other hand, is the middle of the market (such as the middle-income figure or the middle house price).

Housing affordability categories are based on the median multiple and are taken from the annual editions of the "Demographia International Housing Affordability Survey." This typology is based on the historic experience of housing affordability metrics in the five nations and has been adopted by various sources (Table 1).

Table 1
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

SECTION 2: URBAN CONTAINMENT POLICY

Urban containment policy is also known as compact city policy, smart growth, growth management, urban consolidation[19] and livability, among other terms. Among urban planners, there may be technical differences among the policies described by these terms. However, the defining feature and most important element of these policies is the urban containment boundary and other strategies that severely limit urban development on greenfield[20] land. Generally, where these stronger land-use regulatory approaches have been adopted, they have replaced liberal land-use regulation.

2.1: Background

Prolific urban containment thinkers Arthur C. Nelson of the University of Arizona and Casey J. Dawkins of the National Center for Smart Growth Research and Education at the University of Maryland defined urban containment policy in an American Planning Association Planning Advisory Service report:[21] "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." Nelson and James B. Duncan of Duncan and Associates described the rationale behind urban containment policy.[22]

> *Urban containment strategies represent an attempt to control the spatial pattern of development within a community or region. The benefits of successful urban containment techniques can include greater predictability of the development process, more cost-effective provision of public services, encouragement of* infill *and* redevelopment *of existing urban areas, reduction of urban sprawl, and protection of agricultural land and environmental resources.*

They describe "two fundamental purposes":

> (1) to promote compact and contiguous development patterns that can be efficiently served by public services[23] and
>
> (2) to preserve open space, agricultural land,[24] and environmentally sensitive areas that are not currently suitable for urban development.[25]

More recently, urban containment policy has also been driven by environmental considerations.[26]

For the purposes of this report, urban containment includes strategies that severely restrict or prohibit development on large areas of greenfield land within a metropolitan area (labour market).[27] These can include urban containment boundaries that encircle built-up urban areas,[28] urban service boundaries and so-called "growth areas" outside of which urban development is either prohibited or severely limited. There may also be virtual urban containment boundaries such as large government land holdings on which development is not permitted, as well as large minimum building-lot sizes.[29] Greenbelts and agricultural preserves can also constitute urban containment boundaries. Other land-use restrictions also contain urban development, e.g., NIMBY (Not In My Backyard) and BANANA (Build Absolutely Nothing Anywhere Near Anything) regulations.

2.2: Urban Containment and Economics

Land is a principal factor in the production of new housing and an important element of its cost. By reducing the amount of land available for urban development, urban containment has the potential to make housing less affordable.

Economists Richard Green of the University of Southern California and Stephen Malpezzi of the University of Wisconsin described the impact of housing regulations, including urban containment boundaries: "When the supply of any commodity is restricted, the commodity's price rises. To the extent that land-use, building codes, housing finance, or any other type of regulation is binding, it will worsen housing affordability."[30]

With the exception of outright bans or moratoria on development, urban containment boundaries are potentially the most disruptive strategy of urban containment policy. Urban containment boundaries have the potential to severely depress, if not stop, the production of new housing on the urban fringe while doing virtually nothing to reduce the underlying demand. In the process, the balance between housing demand and supply can be upset, and house prices can be forced more strongly upward.[31]

Urban Containment and the Land-value Gradient

The "land-value gradient" theory holds that land has the highest value in the city centre, and it declines toward the periphery of the urban area (where urban development meets rural or agricultural uses).[32] All else equal, there should be only nominal differences between the values per hectare of adjacent plots of land.[33]

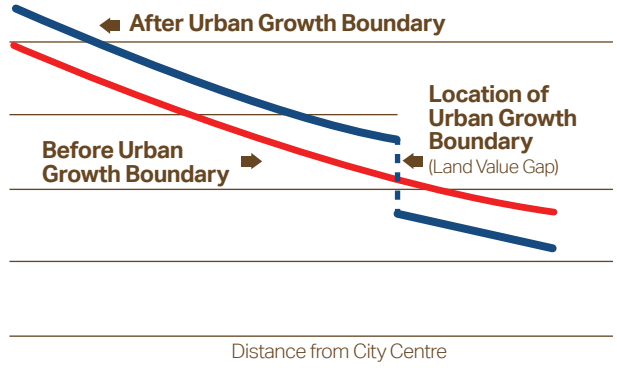
Portland State University professor Gerard Mildner summarized the land-value gradient theory:[34]

> *Land prices tend to decline from a peak at the center of a metropolitan area, until they meet the underlying value of agricultural land.*
>
> *At the margin, urban and agricultural land prices will equalize as farmers and developers compete for land.*

Figure 1 indicates that an urban containment boundary can be expected to alter the metropolitan area's land-value gradient, increasing land values on the inside and decreasing values on the outside (all else equal).[35] As a result, at the urban containment boundary, the gradual decline in land values becomes an abrupt drop, beyond which the land-value gradient continues to decline (albeit at a lower level). This report refers to this as the "land-value gap."

This relationship was identified earlier by University of Oregon economist W. Ed. Whitelaw: "If a land-use regulation affects the price of land, it does so by creating a gap in what we otherwise suppose would be a continuous or smooth locus of urban rents [values]."[36]

Figure 1
Urban Growth Boundary & Land Values
Theoretical Land Value Gradient



The increase in land values inside the urban containment boundary has the potential to create housing affordability losses, because land cost is an important element of the final house cost. The higher land values tend to increase the value of existing housing,[37] which necessarily reduces housing affordability compared with the past for people seeking to purchase houses. At the same time, existing property owners receive a windfall value increase.

Research also indicated the tendency for the land-value gap to increase over time, especially as the amount of land inside the urban containment boundary declines or planning authorities become more restrictive in their regulation (Section 3.2).

Economist Arthur Grimes, a former chairman of the Reserve Bank of New Zealand (New Zealand's central bank), confirmed these value relationships:

> *If effective [urban containment boundaries], they limit the expansion of a city beyond prescribed boundaries. If they are binding, land immediately on the inward side of the boundary will be valued at a higher rate (per hectare) than land immediately on the outward side of*

> *the boundary after controlling for other factors ….*[38]

Urban planning theorists acknowledge this. Moreover, and perhaps surprisingly, this impact is *an aim of urban containment policy* according to Nelson and Dawkins.

> *… [B]ecause land outside the containment boundary is restricted to resource uses or very-low-density residential development, the regional demand for urban development is shifted to the area inside the boundary. This shift should decrease the value of land outside the boundary and increase the value of land inside the boundary.*[39]

This is justified under urban containment theory as being necessary to create compactness and the desired higher population densities. Nelson and Dawkins stressed the importance of the land-value gap at the urban containment boundary. "If a gap in land values on both sides of the boundary does not emerge, either the boundary is too large in the near term or there is too much development potential remaining in rural areas regardless of any land-use restrictions."[40]

Periodic Review: Urban containment boundaries are normally reviewed on a regular basis, e.g., every five years. This provides the opportunity to assess housing affordability trends and make any necessary corrections. Current housing affordability metrics are compared with those before the urban containment boundary had an impact on land prices. For example, an increase in the price to income ratio could provide policy evaluation information to indicate that the housing affordability objectives of the urban containment policy are not being met. It would be expected that corrective action, such as regulatory relaxation, would be taken to restore housing affordability to pre-urban containment price to income ratios.

2.3: Urban Containment and Housing Affordability

There is a strong potential for urban containment policy to increase housing costs, because it elevates land values within the urban containment boundary, and land costs are an important component of house prices.

This is acknowledged in *Costs of Sprawl – 2000*, by the National Research Council of the United States. The report indicates that urban containment boundaries "may cause rising land and home prices within the boundary …." The authors are some of the most-respected advocates of urban containment policy.[41]

Yet, it is urban containment's intention *to maintain housing affordability*. According to Gerrit Knaap of the National Center for Smart Growth Research and Education at the University of Maryland and Nelson, urban containment "boundaries … were not intended to raise housing costs."[42]

Higher Densities within the Urban Containment Boundary

The expectation among urban containment proponents is that higher-density housing developed inside the urban containment boundary will be less expensive and offset the increase in land values, thus retaining housing affordability. The theory is that house prices will remain affordable, because less land will be required per new dwelling, thus reducing the cost of the land element. The theory also assumes that the more-dense housing will have lower construction costs.

Nelson and Dawkins thought that house-price increases would not occur if a sufficient supply of buildable land were made available within the urban containment boundary.[43] They refer to Richard Peiser[44] of Harvard University, who indicated that urban containment boundaries are prudent land-use policies only when accompanied by policies that increase urban development density and intensity.

Nelson, Dawkins and Thomas Sanchez of Virginia Tech cite Portland as an example.

> *In the Portland, Oregon, metropolitan area, for example, local governments are required to increase residential development densities within the regional urban growth boundary. Thus, although land prices could rise, the finished house price would remain unchanged and, conceivably, the finished price could fall.*[45]

It is important, however, to recognize that this statement presents a theory, not a finding.

Higher-density housing must at least nullify the impact of the land-value increases from urban containment boundaries for urban containment to meet its housing affordability objective. Otherwise, as noted above, it can be expected that urban containment boundaries will lead to losses in housing affordability, all else equal. The experience with the expectation that higher densities would offset losses in housing affordability is described in Section 5.2.

Proponent Concerns about House-price Increases: The land-value gap at the urban containment boundary was a source of concern in early research. According to Knaap and Nelson, "Because increases in land value, and thus housing costs are politically unattractive, many supporters of land-use planning insist that UGBs do not influence land value, or at least not very much." They further indicated, "…[S]tudies showing that UGBs do indeed influence land value and thus serve as effective policy instruments have not been well received by supporters of Oregon's land use program." Nonetheless, Knaap and Nelson noted the effectiveness of the land-value gap in achieving the objectives of urban containment policy: "Contrary to popular beliefs, such evidence indicates that UGBs *are* effective policy instruments."[46] This is despite the acknowledgement that urban containment boundaries are associated with higher land costs.

The success or failure of higher densities to produce the lower-cost housing to offset urban containment's land-value increases depends in large measure on factors such as household preferences, the extent of the land-value increases and the availability of sufficient land in urban infill sites[47] for development. A potentially troublesome issue could be that households may not be indifferent to the lifestyle changes that could be required by compact development (Section 5.2). Further, the densification may fall short in offsetting the land-value increases, because the higher densities are not permitted or they require housing expenditure increases that are too great (Section 5.3).

This report describes research on urban containment policy and its impact on housing affordability. As will be shown, analysis of the extent of the association between urban containment boundaries and housing affordability can vary even within the same metropolitan areas and over time. This can happen because of the differences in regulatory systems, metropolitan area characteristics and other factors.

The public policy issue is whether, on balance, urban containment boundaries tend to reduce housing affordability. If they do, they are likely to reduce future standards of living and increase poverty while hampering job creation and economic growth.

SECTION 3: MIDDLE-INCOME HOUSING AFFORDABILITY: OVERVIEW

This section summarizes research on middle-income housing affordability and urban containment policy in Canada, the United Kingdom, the United States, Australia and New Zealand. There are larger bodies of research in the United Kingdom and the United States, where populations are larger and the economics of housing affordability have been examined more frequently. Section 4 contains a more detailed examination of cases in these five nations.

3.1: Summary of Research

Considerable economic research associates losses in housing affordability with urban containment policy. This section summarizes international and national research on urban containment and its association with housing affordability. More-focused national research is described in Section 3.2.

OECD Research: The Organisation for Economic Co-operation and Development may have published the most extensive international literature on the connection between strong land-use policy and losses in housing affordability.

The report from a 2008 OECD policy roundtable ("Land-use Restrictions as Barriers to Entry") indicated that land-use regulation "… deserves attention because these price increases can be non-trivial."[48]

Research by the OECD and others indicated that the supply of residential land has a strong influence on house prices and the volume of housing construction. Generally, where the land supply is large enough, substantial increases in demand lead to the building of more houses, which reflects a greater responsiveness of housing supply to higher demand. Where the land supply is more limited, house prices tend to increase.[49] "Indeed, existing evidence suggests that in supply-constrained markets, most of the adjustment occurs in the price of housing rather than in expanding housing supply."[50]

OECD research also identified a relationship between liberal land-use regulation of some areas in the United States and greater housing supply and lower prices.[51] OECD analysis reported research that price increases from higher demand would be 50 per cent higher in New Zealand with stronger land-use regulation than in Japan with more-liberal regulation.[52] Another report indicated, "[C]umbersome land use and planning regulations are associated with a less responsive housing supply in the long-run across OECD countries."[53]

An OECD report identified the failure of housing supply to keep up with customer demand as a factor in house-price increases. "Low supply responsiveness of new housing has tended to exacerbate the price effect of changes in housing demand."[54]

World Bank: A World Bank Policy Paper by Shlomo Angel of New York University and Mayo found that "[t]he most important housing sector distortions typically originate from the supply side." Noting that there is value in well-designed land-use regulation, Angel and Mayo cautioned, "Restrictive land use and zoning regulations, for example, agricultural greenbelts and master planning guidelines, restrict the availability and hence raise the price of residential land."[55]

Additional Research: Considerable research focuses on the national or regional level and some of it is described below.

Jan Brueckner of the University of California, Irvine, suggested that an urban area with an urban containment boundary will tend to have higher housing costs and that the evidence

> *… points to a potential pitfall in government land use interventions. Well-meaning interventions that cause land use outcomes to diverge substantially for free market outcomes run the risk of generating net social*

> *losses. The problem is that the expected benefits from large interventions may be swamped by unanticipated losses, which may be overlooked by government officials with an incomplete understanding of the operation of real estate markets.*[56]

Nelson et al. found an association between urban containment boundaries and higher house prices in California. "However, even well-intentioned growth management programs … can accommodate too little growth and result in higher housing prices. This is arguably what happened in parts of California where growth boundaries were drawn so tightly without accommodating other housing needs."[57]

In a literature review, John Quigley and Larry Rosenthal (University of California, Berkeley) found that

> *[a] number of credible papers seem to bear out theoretical expectations. When local regulators effectively withdraw land from buildable supplies – whether under the rubric of 'zoning,' 'growth management,' or other regulation – the land factor and the finished product can become pricier.*[58]

At the same time, the authors cautioned that there were research gaps. In a response, Yale University professor Robert Ellickson wrote that he "was struck by how guarded [Quigley and Rosenthal] are in their assessment." He further suggested, "A danger exists that growth controllers whose policies harm housing consumers will interpret Quigley and Rosenthal's excessively cautious discussion as exonerating."[59]

Christian Hilber of the London School of Economics and Frédéric Robert-Nicoud of the University of Geneva concluded in an analysis of U.S. metropolitan areas that land-use regulations "impose – via increasing housing costs – an enormous gross cost on households …."[60]

In an examination of 56 U.S. metropolitan areas, Malpezzi found a 51 per cent house-price premium in the highly regulated metropolitan areas.

3.2: Urban Containment and Land-value Increases: The Land-value Gap

As noted above, leading economists and urban planners generally agree that the imposition of an urban containment boundary is likely to create a land-value gap (Section 2.2). This gap, which usually occurs abruptly at the urban containment boundary, is indicated by an increase in land values inside the urban containment boundary and a decrease to the outside. This contrasts with what would be otherwise expected: A gradual drop in land value would start from the city centre, dropping in small measures with distance until it reaches the value of surrounding rural or agricultural land (Section 2.2). There would be no abrupt land-value gap surrounding the urban area at any one point.

Research that has examined this issue after the implementation of urban containment policy has found such a gap.

- Sir Peter Hall,[61] who was one of the world's leading urbanists and a professor at University College London, and his colleagues[62] found that by the early 1970s in the U.K., the "speculative value" of land with planning permission was five to 10 times that of land without planning permission.[63]

- A 400 times (40,000 per cent) gap was identified in the early 2000s by Cheshire and economics professor Stephen Sheppard of Williams College between comparable parcels with and without planning permission.[64]

- More recently, Cheshire found that agricultural land could increase in value 700 times (70,000 per cent)

when rezoned for residential development in Southeast England.[65]

- Research on Portland indicated the land-value gap across the urban containment boundary was less than two times in the early years.[66] By the mid-1990s, comparable land values inside Portland's urban containment boundary were more than six times those outside the boundary.[67] By 2009, the land-value gap had risen to 10 times.[68]

- Research in Melbourne is consistent with the land-value gap as predicted by economic theory and expected by urban containment theory. An analysis of land sales near the urban containment boundary (excluding much of the land inside the urban containment boundary) indicated that before its adoption, there was a land-value gradient of approximately two times on the urban fringe. Within five years of adopting the urban containment boundary, the broad gradient had expanded to six times. The research associated the announcement of the urban containment boundary with a 20 per cent increase in land prices inside the urban containment boundary in the year before adoption.[69]

- Data cited in a later Reserve Bank of Australia report indicated that that land increased in value from 12 to 20 times when brought within the urban containment boundary in Melbourne.[70]

- Arthur Grimes, who was chair of the Board of the Reserve Bank of New Zealand, and Yun Liang of Motu Economic and Public Policy Research examined the land-value gap at Auckland's urban containment boundary from 1991 to 2003. They found that the land value inside the boundary where urban development was permissible ranged from 7.9 to 13.1 times that of land outside the boundary.[71] Urban development was not permitted outside the urban growth boundary.

- The Barker Reviews indicated that land on which housing was permitted had a value of more than 250 times that of the agricultural land outside London on which housing was not permitted.[72]

- The Productivity Commission of New Zealand associated the Auckland urban containment boundary with a substantial increase in land prices. "After controlling for a range of other influences, the gradient in land prices (per hectare) from Auckland's CBD to the rural land adjacent to the city undergoes a step change at the point of the MUL [metropolitan urban limit or urban containment boundary]." The differential was identified at approximately 10 times and the Commission noted that it has increased and become "increasingly binding as housing demand pressures have intensified."[73]

Because land values tend to increase more where scarcity is greater, there is a potential for the land-value gap to increase as time passes. Land-value gap increases have been shown in the United Kingdom, Portland, Melbourne and Auckland, which are described above. It is possible that these increases result from planning processes that do not sufficiently expand the developable area (within the urban containment boundary), which would force the land-value gap to rise, all else equal.

3.3: Land-value and House Prices

Land cost is an important component of the total house price. Generally, research has shown that urban containment-associated house-price increases have been principally attributable to land-value increases. House construction costs have tended to remain stable in real terms.

Construction costs[74] vary little between the major metropolitan markets in Canada, but the variation in land costs is substantial. Figures from the Altus *Construction Cost Guide 2014* show that in Vancouver, with Canada's

worst housing affordability, house construction costs are estimated at 15 per cent higher than the average of eight markets.[75] Vancouver construction costs are 2 per cent higher than construction costs in Edmonton and 6 per cent higher than construction costs in Calgary. Yet, houses in Vancouver cost three times as much as houses in Edmonton compared with income, and they cost more than twice as much as houses in Calgary do. These huge house-cost differences reflect Vancouver's much higher land values (land values were much closer before urban containment policy was adopted in Vancouver. See Section 4.1).

Joseph Gyourko of the University of Pennsylvania illustrated the importance of land values in the housing affordability differences among U.S. metropolitan areas. He showed that "a decent quality, single-family home can be built for under $200,000 almost anywhere in the country." Yet, huge land-price differentials have developed between major metropolitan markets, with the highest costs concentrated in a small number of markets.[76]

A similar situation exists in Australia. As urban containment policy was implemented in Australia, the land component of housing rose steadily. In the five major capital cities, the land component of new detached housing cost between 14 per cent and 35 per cent in 1973 and rose to between 49 per cent and 73 per cent by 2003.[77]

3.4: Expert Perspectives

Based on their research, top economists and planning experts have shared perspectives on the association between urban containment policy and losses in housing affordability.

- A Reserve Bank of Australia paper noted,[78] "There is a growing body of international evidence on the role of supply-side constraints in limiting construction and driving up prices." They cite, for example, "Grimes and Liang (2007) for New Zealand; Barker (2003, 2004, 2006) for the United Kingdom; Green et al., Glaeser et al. (2006) and Saiz (2010) for the United States and Andrews et al. (2011) for a large sample of OECD economies."[79]

- Green and Malpezzi said, "[R]egardless of the index used, increased levels of regulations bring about higher house prices." They further indicated that more-restrictive regulations "increase costs, often without corresponding benefits …."[80]

- Green and Malpezzi also found that heavily regulated metropolitan areas always have constrained housing supplies.[81] This shortage of housing relative to demand would tend to lead to higher house prices.

- Gyourko[82] indicated, "Thus, there is a lengthy literature and an emerging consensus that local land use regulation has become a binding constraint on the supply of new housing units in certain markets and that this is leading to increased prices in the most constrained markets. There certainly is less of a consensus on the magnitude of the impacts, but improved data and research designs hopefully will improve that situation in the near future."

- Mayo, in documenting substantially higher house-price increases in more-strictly regulated metropolitan areas, noted that the cost of "systematic policy mistakes" has been high and "… that it is time for a general change in thinking about the aims and instruments of land and housing policy."[83]

- In studying a literature review often cited by urban containment advocates to support a view that urban containment has little or no impact on housing affordability, William Fischel said, "These optimistic views are unwarranted. The largest number of studies reviewed in this chapter actually show that tighter land-use controls of any type cause higher housing prices."[84]

- Fischel noted that urban containment boundaries had made "... British housing much more expensive than it needs to be." He suggested, "American planners seem unaware of this evidence." He further notes, "[T]he experience with comprehensive urban growth boundaries in South Korea is similarly cautionary."[85]

- Cheshire referred to "the irreconcilable conflict between current planning policies and underlying economic forces" in contending that housing affordability is not compatible with urban containment.[86]

- In his examination of global housing issues, Angel wrote,[87] "... [H]eavy-handed regulations and infrastructure shortages can constrain supply. The overall result can be a shortage of housing, accompanied by high prices and low affordability for all. If, on the other hand, supply-side policies are enabling, then housing supply may be able to expand quickly to meet demand, with the result that higher demand will result in more housing at affordable prices."

- Elsewhere, Angel said, "The housing impact of environmental legislation aimed at curtailing growth must become a prime concern of the housing sector, restraining those who myopically pursue an environmental agenda while blatantly disregarding basic human needs."[88]

- Four decades ago, Hall et al.[89] indicated that "perhaps the biggest single failure" of urban containment has been its failure to prevent losses in housing affordability.

- Brueckner cautioned,[90] "By greatly restricting urban expansion, such an attack might needlessly limit the consumption of housing space, depressing the standard of living of ... consumers."

- Edwin Mills of Northwestern University, one of the most renowned urban economists, concluded, "The result of controls on housing supply is high prices" that "... contribute to home prices that are not only high, but unstable as well." He advised that "advocates of controls should face the fact that an inevitable implication of the government actions they espouse is much more expensive and unstable metropolitan area housing." He expressed his concern about the impact on all households, but particularly on low-income households.[91]

At the same time, there is no compelling evidence that these house-price increases have been offset by reduced housing costs inside the urban containment boundaries, which was expected by proponents of urban containment policy (Section 5.3).

The evidence shows that housing affordability has seriously deteriorated in metropolitan areas with strong urban containment policies. House prices have risen so much that it now takes from nearly two to three times the percentage of a household income to buy a house[92] compared with before the adoption of urban containment policies. According to Brueckner,[93] "One lesson of the discussion is that policymakers should resist the temptation to impose stringent UGBs, recognizing that a substantial restriction of urban growth is likely to do more harm than good."

Massachusetts Institute of Technology professor of urban studies and planning Bernard J. Frieden warned early on, "An investigation of the new housing control turns up sterling evidence ... the public benefits are small, costs to the consumer's big and inequities unmistakable."[94]

SECTION 4: MIDDLE-INCOME HOUSING AFFORDABILITY: GEOGRAPHICAL FOCUS

This section describes research on urban containment policy in Canada, the United Kingdom, the United States, Australia and New Zealand.

More than two decades after Britain's *Town and Country Planning Act 1947* came into being, similar land-use planning systems were adopted in Vancouver, Portland and Sydney.[95] Municipalities in California adopted less-geographically comprehensive systems, and some came about through state legislative and administrative actions. More recently, a number of additional major metropolitan areas adopted urban containment policies.

For decades, the relationship between house prices and incomes had been similar in Canada, the United Kingdom, the United States, Australia and New Zealand. Moreover, the relationship was remarkably stable. As late as approximately 1990, price to income multiples tended to be 3.0 or less in each of the five nations (Figure 2). Carl Case and Robert Shiller, in a Federal Reserve Bank of Boston publication, indicated that in the United States "[p]rior to the 1970s, house prices moved at about the rate of inflation, and regional differences were relatively modest."[96]

Land-use Regulation

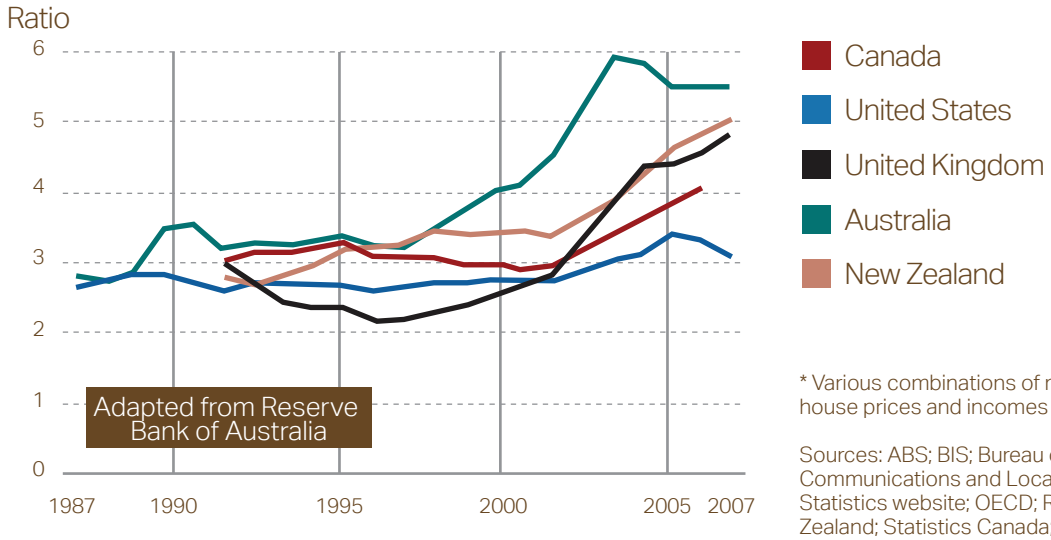
There is a strong association between the stringency of land-use regulation and the housing affordability measures indicated in Figure 2 and Table 1. Nearly all of the major metropolitan markets in Canada, the United States, Australia and New Zealand had more-liberal land-use regulation until at least the early 1990s. Virtually all of the markets in these nations that have severely unaffordable housing (median multiples of 5.1 or more) reached this level only after implementing urban containment policy. The same is true of Vancouver and Sydney, where adoption of urban containment policy was earlier.

In Canada, the United States, Australia and New Zealand, local land-use regulations tended to be more liberal until at least 1990, though there were exceptions such as Vancouver, Sydney, Portland and California metropolitan areas.

Since then, there have been serious losses in housing affordability, especially since 2000. Over the same period, urban containment policy has spread or been substantially strengthened.

- In Canada, average house prices increased at approximately three times the rate of average household incomes.[97]

Figure 2: House Price to Income Ratios
1987-2007



* Various combinations of median and mean measures of house prices and incomes uses depending on availability.

Sources: ABS; BIS; Bureau of Economic Analysis; Communications and Local Government (UK); National Statistics website; OECD; REIA; Reserve Bank of New Zealand; Statistics Canada; Statistics New Zealand; Thomson Financial.

- In the United Kingdom, average house prices have risen from 4.2 times average earnings in 2000 to 6.7 in 2013, a 60 per cent increase.[98]

- In the United States, major metropolitan areas experienced a median house-price increase from 2.9 times household incomes in 2000 to 4.1 in 2014.[99]

- In Australia, major metropolitan areas experienced a median house-price increase from 4.7 times household incomes in 2000 to 7.4 in 2014.[100]

- In New Zealand, the one major metropolitan area (Auckland) experienced median house-price increases from 5.0 times household incomes in 2000 to 8.2 in 2014.[101]

4.1: Canada

Canada's housing affordability had been relatively favourable until recently, with the significant exception of Vancouver.

In the 1970s, Vancouver was the first to adopt urban containment policy. Vancouver has experienced serious losses in housing affordability since then. In 2004, the first annual "Demographia International Housing Affordability Survey"[102] showed Vancouver had a 5.3 median multiple. By 2011, this had deteriorated to 10.6, as Vancouver became the second-least affordable market out of the 86 major metropolitan areas in nine nations that were rated in the Demographia Survey.[103] By 2015, the average price of apartment condominiums had exceeded the 2000 price of detached homes. Detached homes are now approaching an average of $1.5-million. The Vancouver City Savings Credit Union (Vancity) forecast that the price of detached houses could reach $2.1-million in 15 years.[104]

Toronto adopted urban containment policy in the early 2000s[105] and has seen huge increases in house prices relative to incomes since then. In 2004, Toronto had a median multiple of 3.9. By 2014, Toronto's median multiple had risen to 6.5, an increase of two-thirds. By 2015, the average price of apartment condominiums had exceeded the 2000 price of detached homes.

Montréal's urban containment policy is in the form of an agricultural reservation. Until recently, housing was affordable in Montréal.[106] For example, in the first annual "Demographia International Housing Affordability Survey," Montréal's median multiple was 3.2. In recent years, Montréal's median multiple has reached 5.2.

Calgary recently adopted urban containment policy. In 2004, as reported in the first annual "Demographia International Housing Affordability Survey," Calgary had a median multiple of 3.0. By 2014, Calgary's median multiple was 4.2.

Housing remains affordable in some smaller metropolitan markets in New Brunswick, Ontario and Prince Edward Island, with median multiples of 3.0 or below.

According to the RBC Housing Affordability measures for the first quarter of 2015, the share of household income required to purchase a house has reached excessive levels in two markets. In Vancouver, approximately 86 per cent of the median pre-tax household income was required to pay for the average detached bungalow. In Toronto, the figure was 58 per cent. In Calgary (where urban containment policy was implemented later) and in Edmonton 33 per cent of median pre-tax income was required.[107]

Urban Containment in Canada

Research by Wendell Cox of the Frontier Centre for Public Policy has associated Calgary's substantial losses in housing affordability since 2000 with urban containment policies. Single-family house prices relative to incomes rose 60 per cent from 2000 to 2012.[108]

In a report for the City of Calgary, Ray Tomalty, urban planning professor at McGill University, and Murtaza Haider, professor of Real Estate Management at Ryerson University, concluded that the substantial 2006-2007 increase in

local house prices was the result of demand rather than land-supply limitations. The authors characterized as a "demand shock"[109] factors such as increased migration and increasing income. Consistent with economic theory, the authors indicated an expectation that house prices would moderate as developers and homebuilders provided new supply in response to the "demand shock," thus restoring a balance between demand and supply.[110]

If the house-price increases were solely the result of the "demand shock," they would have been expected to eventually fall back to their previous level. However, only one-third of the median multiple increase in Calgary from 2000 to 2007 was recovered by 2014,[111] which indicates that urban containment may have been the more important factor.[112]

Cox found that house prices rose more than 80 per cent relative to household incomes in Toronto from 2000 to 2014.[113] In Vancouver, Cox found that house prices had risen nearly four times the rate of household income increases between 2004 and 2012.[114]

4.2: The United Kingdom

Before 1947 in Britain, planning permission was not generally required to build new houses, and housing was affordable.[115] Cheshire told an OECD meeting "the effects in Britain are some of the largest in the OECD." Cheshire noted land and house prices have increased substantially relative to inflation since the *Town and Country Planning Act 1947*, although they had been relatively stable before that.[116]

The housing bubble and bust were more severe in the United Kingdom than in Canada, Australia or New Zealand but less severe than in the United States. As noted in Section 4, the price to earnings ratio in the United Kingdom rose 60 per cent between 2000 and 2013. There continues to be considerable concern about middle-income housing affordability in the United Kingdom, including pronouncements in the last election by the three major political parties. There is also frequent coverage in the press.

London (the Greater London Authority) had severely unaffordable housing (a median multiple of 6.9) in its first year in the "Demographia International Housing Affordability Survey" (2005). London's housing became even more severely unaffordable during the housing crisis (with a median multiple of 8.3). The London exurbs (outside the greenbelt) Bristol-Bath also reached severe unaffordability (with median multiples of 7.4 and 7.3 respectively). In addition, the United Kingdom's other major metropolitan areas reached severe levels of housing unaffordability during the housing crisis.

In 2014, London's housing affordability deteriorated further, with a severely unaffordable median multiple of 8.5. London was the first major market in the United Kingdom or the United States to exceed its housing crisis peak. Other major markets remained at severe unaffordability: Plymouth-Devon (median multiple of 7.3), the London exurbs (median multiple of 6.9,) Bristol-Bath (median multiple of 6.0) and Stoke-on-Trent–Staffordshire (median multiple of 5.2). Perhaps most significantly, Liverpool, which has been among the most depressed metropolitan areas of the United Kingdom for at least 80 years, also has severely unaffordable housing with a 5.2 median multiple.[117]

In the early 2000s, the Blair Labour government strengthened Britain's land-use regulations by requiring 60 per cent of new housing to be built on urban infill sites rather than on greenfield sites. This could have caused a greater decline in housing affordability by further tightening the supply of greenfield land available for development.

Urban Containment in the United Kingdom

There have been two preeminent reviews of land-use regulations in the United Kingdom over the past 50 years, *The Containment of Urban England* and the Barker Reviews.

The Containment of Urban England: In the early 1970s, Hall et al. performed an extensive policy evaluation of urban

containment policy results under the *Town and Country Planning Act of 1947*. They concluded that the Act[118] had achieved the policy intention of containing the geographic expansion of urban areas. However, they identified losses in housing affordability to be of substantial concern.

The researchers found unprecedented house-price increases, with most of the increase in land costs, noting, "… [p]erhaps the biggest single failure of the 1947 Act is that it failed to check the rising land prices, which has probably been the largest and most potent element of Britain's postwar inflation."

Their analysis indicated that less-affluent homeowners and poorer renters had paid the greatest price for Great Britain's urban containment policy, and they indicated concern about the impact of urban containment policy on the "ideal of a property owning democracy."[119] Further, they said, "It seems clear, for instance, that the objective of urban containment has in practice proved inconsistent in some important ways with the objective of providing cheap owner occupied housing."

The Barker Reviews: Kate Barker, then a member of the Monetary Policy Committee of the Bank of England, was commissioned by the Blair government to prepare reports on housing affordability and land supply in the United Kingdom. Her assignment was to "conduct a review of issues underlying the lack of supply and responsiveness of housing in the UK," focusing on the impact of planning and building issues. The two reports are referred to as the Barker Reviews.[120]

Barker described her intention to "set out the costs and benefits of a better housing supply and to identify ways in which housing supply, as it currently operates, affects our economic and social well-being." In the process, the report estimates the "scale of the housing shortage" and the "poor supply response of housing supply." The report also identifies the principal "causes of the shortage and unresponsiveness" of the housing supply.

The Barker Reviews determined that house prices had been rising more than twice as fast in inflation-adjusted terms as housing in continental Europe over the previous three decades. To increase the housing supply to match demand, the Barker Reviews stressed the importance of making more land available for new residential development (while maintaining sufficient environmental protections).

Barker found that the rate of home construction was very low, finding "[h]ousing was being built at such a slow pace, that it would take 1,200 years to replace the UK's housing stock." According to Barker, to bring the rising cost of housing under control would require building between 70,000 and 120,000 houses annually, in addition to the 125,000 built in 2003.

The Barker Reviews also anticipated no serious difficulty in finding the land necessary for the greater house-building volume. In a memorandum to a Parliamentary committee, Barker indicated that even if the proposed additional 120,000 homes per year were built only in the South East region of England, under existing planning regulations, it would take only 0.75 per cent of the land.[121]

The complexity of the planning system was criticized for enabling stronger firms to unduly influence decisions such as where development should be allowed, while they were able to hire the additional consultant and legal assistance necessary to contend with the more-bureaucratic processes.

Broader Impact on the U.K. Economy: The economic consequences were assessed as substantial. If housing supply had been more responsive to demand since 1994, Barker estimated that up to 380,000 more houses would have been built in 2002, the gross domestic product would have been between £3-billion and £16-billion higher and there would have been as many as 650,000 additional jobs.

Trends since the Barker Reviews: The housing construction situation has deteriorated since the Barker

Reviews. Private sector homebuilding failed to reach the Barker Reviews targets and fell 20 per cent from previous levels.[122]

Responses to the Barker Reviews: Various reports were issued in response to the Barker Reviews.

The Barker Reviews recognized the importance of balanced priorities, according to Martin Wolf of *The Financial Times*. "We cannot have a rising population, spacious housing for each household and an unchanged quantity of undeveloped countryside."

Geoffrey Meen[123] at the University of Reading agreed that the planning system bore responsibility for the high house prices. However, this research suggested the additional factor that developers were postponing house building on the assumption that extraordinary returns could be made in the longer run (pejoratively referred to as "speculation").

However, it could be argued that this impact may have also been the result of the planning system itself. The strong constraints of the regulatory system encouraged this investment behaviour. In a competitive market (without the land constraints), there would be no potential for extraordinary profits and thus no economic incentive for speculation (Section 5.5).

Cheshire agreed generally with the Barker Reviews, though he indicated a view that the consequences of the land-use regulations on housing affordability were *greater* than indicated.[124]

One response suggested that the Barker Reviews had overestimated the brownfield land that could be committed to house building.[125]

The Campaign to Protect Rural England (CPRE) was critical of the Barker Reviews.[126] CPRE disputed the concern about affordability, claiming, "House prices have generally risen faster than other prices over the past few decades – but no faster than the rise in average earnings." CPRE blamed the high house prices on demand factors such as low interest rates and more-flexible mortgage products (Section 5.1).

CPRE also said:

> ***But we strongly disagree with the Barker Review recommendation that house prices should play a leading role in the planning of new homes, with more land being released when prices are high. We also question the need for housing affordability targets. It would be better to base housing targets on people's needs,*** *using indicators such as levels of overcrowding, homelessness acceptances and concealed households, rather than the ratio of house prices to earnings. [emphasis in original]*

In fact, there is no necessary conflict between government attention to housing affordability targets and other important issues such as homelessness and overcrowding. It can be argued that if governments had effectively monitored housing affordability and taken corrective action, much of the present housing affordability crisis and overcrowding might have prevented.

4.3: United States

Between World War II and 1970, housing was affordable, on average, in 49 of the 51 largest U.S. metropolitan areas,[127] which had average median multiples of 1.9 to 3.0. This was sufficient to accommodate a wide range of local factors including the complete array of amenity levels (metropolitan attractiveness) and demand levels. Virtually all of the metropolitan areas had liberal land-use regulations.

Two metropolitan areas, New York and New Orleans, were moderately unaffordable, each with a median multiple averaging 3.1. The California coastal markets were affordable, with a median multiple of 2.8.[128]

This was to change substantially in the 1980 Census,

which showed eight major metropolitan areas with median multiples of 3.5. Six of these were in California, where strong land-use regulation had begun during the early 1970s.[129] Even so, from 1980 to 2000, housing was affordable, with an average median multiple of 3.0 or less in the major metropolitan areas, except briefly (in 1980 and 1981).[130] No liberally regulated market has reached severe unaffordability (a median multiple of 5.1 or greater).

The first major metropolitan area in the United States to be subjected to urban containment policy was Portland, Oregon (Section 4.3). This occurred in the 1970s, under state legislation. At about the same time, the state, municipal and county jurisdictions in California began implementing stronger land-use regulations. Co-ordination between county and local governments cartelized annexation and municipal incorporation policy,[131] making it more difficult to develop greenfield land.

Later, Florida, Tennessee, Washington and Maryland implemented programs intended to contain the expansion of the urban areas. In the Denver area, a "voluntary" urban containment boundary was adopted by a regional organization of local governments, and various governments around the country implemented their own urban containment programs. Florida, however, repealed its growth management law in 2012.

Finally, two major metropolitan areas, Las Vegas and Phoenix, had virtual urban containment boundaries in the ownership of large tracts of land by the federal and state governments, which significantly limited the land available for development during the real estate bubble (Section 5.4). In the Washington, D.C., area, various urban containment strategies were adopted in the counties surrounding the federal district.

At the peak of the housing bubble, Los Angeles, San Diego, San Francisco and San Jose all had severely unaffordable housing at elevated median multiples of 10 or more. Riverside-San Bernardino and Sacramento also had severely unaffordable housing, which rose to median multiples of 7.9 and 6.8 respectively. Miami was severely unaffordable at 8.8. New York reached a severely unaffordable 7.9, and severe unaffordability was experienced in Las Vegas, Washington, Seattle and Portland.

Following the housing collapse, housing affordability was substantially improved in most markets. By 2009, the median multiple had dropped by 50 per cent in Los Angeles, 40 per cent in San Francisco and San Diego and 30 per cent in San Jose. In each case, however, housing remained severely unaffordable and was far less affordable than before the housing crisis, when none of the four markets was severely unaffordable (1995).[132]

However, by 2014, the unaffordability of housing was trending its worst median multiples of the housing crisis. The median multiple had returned to 9.2 in both San Francisco and San Jose. San Diego had reached 8.3 and Los Angeles 8.0. Severe unaffordability returned to Boston, Miami and Seattle. The most spectacular swing was in Riverside-San Bernardino, which achieved affordable status in 2009 (median multiple of 3.0) but slipped back into severe unaffordability by 2014 (median multiple of 4.9).

Each of the U.S. metropolitan areas described above has urban containment policy. Most have urban containment boundaries; others have so-called "growth areas," or urban containment boundaries defined by government land ownership. Boston is a unique case, where the land shortage is the result of large-lot zoning throughout most of the suburban area, which has left comparatively little land for development.

Fourteen major metropolitan markets remain affordable, with median multiples of 3.0 or less. Another 23 markets have median multiples under 4.0. Out of the 52 major metropolitan areas, 37 have housing costs that are one-half or less the cost of housing relative to incomes in San Francisco, San Jose, San Diego and Los Angeles.

Nearly all of the difference in housing costs among major metropolitan markets is a result of higher land costs. For example, construction costs are approximately 20 per cent to 30 per cent higher in the San Francisco Bay Area than in Pittsburgh or Atlanta. Yet, the median multiple in the San Francisco Bay Area is more than three times that of Pittsburgh or Atlanta, or more than 200 per cent higher.[133] By comparison, on average, the total land cost has historically been 20 per cent of the new house price in the United States.[134]

Urban Containment in the United States

The largest volume of research covers the United States, which, like Canada, retains a mix of metropolitan land-regulation systems (from liberal to urban containment) but has many more large metropolitan areas than Canada does.[135]

California: Stronger land-use regulation was implemented in California in the 1970s through court decisions and local governments. William Fischel of Dartmouth University showed that California house prices had risen substantially compared with the rest of the nation during the 1970s and 1980s.[136] During this period, strong local urban containment policies were adopted, and the courts increasingly sided with anti-development interests.

Fischel examined potential causes for the divergence of California house prices from those in the rest of the nation. He dismissed construction costs, because there was little difference over the period in relation to national trends. He also dismissed rising demand, since California's population growth was falling. In the 1960s, California household growth was 70 per cent above the national rate but fell to only 20 per cent greater in the 1970s. This is the opposite of house-price trends. In the 1960s, house prices rose only modestly, but they rose strongly during the 1970s. Demand had, in fact, fallen as house prices were increasing.

Fischel acknowledged that the quality of life is perceived to be better in California than in other parts of the United States. However, he found "little reason to suspect" that California expanded its quality of life relative to the rest of the nation after 1970. Fischel also found plentiful land for development. He attributed the extraordinary inflation of house prices in California to the stricter regulatory environment adopted during the period, both by the courts and the planning authorities.

The Legislative Analyst's Office (LAO), a non-partisan state government agency that advises the California legislature on budget and policy issues, produced a more recent analysis (2015) of regulation and housing affordability.[137] The LAO reached conclusions similar to Fischel's. LAO documented large house-price increases relative to the national average, not only in the coastal metropolitan areas, but also in inland areas. The LAO blamed various factors such as growth management controls, community resistance to development, strong state environmental reviews and land shortages,[138] noting that the competition for land "bids up home prices and rents."

Florida: Florida enacted a growth management law in 1985, which included urban containment strategies. Jerry Anthony,[139] an urban planning professor at the University of Iowa, examined the association between growth management and housing affordability. He found environmental benefits but concluded that housing affordability had been reduced. Because of the losses in housing affordability, Anthony decided that the growth management act "clearly increased social inequity," and that it inflicted "uncompensated welfare losses." As a result, he suggested that the "legitimacy of the practice of planning as a means of increasing societal welfare is also called into question." He further indicated, "These problems raise concerns about the long-term sustainability of Florida's growth management efforts."[140]

This observation was prescient. Florida repealed its growth management act. Housing affordability had deteriorated during the mid-2000s, which was associated with a temporary period of domestic out-migration, the first in more than 50 years.[141]

Portland (Oregon): Portland has attracted considerable research attention because of its early adoption of urban containment policy. However, nearly all of that research was published too early to reflect the losses in housing affordability that have occurred since 2000.

From the 1950s through the 1980s, Portland was among the most-affordable major housing markets in the United States. Even more than a decade after adopting its urban containment boundary, Portland ranked 18th most affordable among the 52 major U.S. markets, with a median multiple of 2.4 in 1990.[142]

Research by Justin Phillips of the United States Department of Justice and Eban Goodstein of Lewis and Clark College has been cited to suggest that the hoped-for reduction in house prices within the urban containment boundary has been achieved in Portland. However, the researchers provided no evidence of price reduction, only reciting an *expectation* that "[i]ncreasing density should substitute for higher land prices."[143]

In fact, as Fischel indicated, in the early 1990s, as a part of their legislatively required view of land capacity, However, Portland "authorities decided not to expand the urban growth boundary as much as had been previously projected, and housing prices shot upward."[144]

Even so, a recent publication commended Portland and complimented its management, which has purportedly prevented housing affordability losses.[145] "There are some examples of successful urban containment and relative price stability over time, notably Portland, Oregon, but successful management requires planners to be pro-active in monitoring and adjusting land supply." In fact, Portland's housing affordability losses have been substantial, especially since 2000, and sufficient "pro-active monitoring" and adjustment of land supply have simply not occurred, as the results below seem to indicate.

Comparing Portland with Liberal Markets: Rather than maintaining its housing affordability, housing affordability deteriorated significantly in Portland. House prices doubled compared with income between 1990 and 2010. The median multiple rose from an affordable 2.4 in 1990 to a seriously unaffordable 4.8 in 2010. This contrasts sharply with the housing affordability performance of Atlanta, Dallas-Fort Worth and Houston, liberally regulated markets that had similar housing affordability histories as Portland. In 1950, 1960, 1970 and during the 1980s, Portland's median multiple was less than that of each of these three metropolitan areas.[146]

Like Portland, Atlanta and Dallas-Fort Worth were affordable in 1990, with median multiples of 2.4, while Houston's median multiple was 2.2.[147] House prices rose much more in line with incomes in Atlanta, Dallas-Fort Worth and Houston than they did in Portland. By 2010, Portland's median multiple was more than 75 per cent above that of Dallas-Fort Worth (2.7) and Houston (2.6) and more than double that of Atlanta (2.3). In a period of only two decades, housing had become the equivalent of two years of annual income more expensive in Portland compared with increases equivalent to approximately three months or less in Dallas-Fort Worth and Houston and a reduction in Atlanta.

Portland fell from 18th most affordable in 1990 to 44th by 2010 (out of 52 major metropolitan areas) or the 9th least affordable.[148]

Significantly, the demand for housing was *less* in Portland than in the liberally regulated metropolitan areas. Portland's population growth[149] was less than that of Atlanta, Dallas-Fort Worth and Houston. With lower demand, it might be expected that Portland's housing would decline in cost relative to the liberally regulated areas.

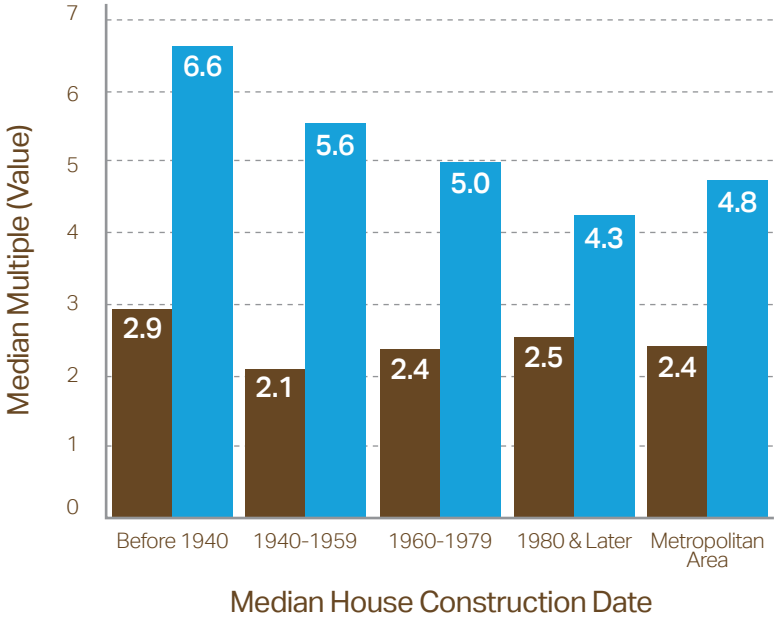
Portland's Pervasive Housing Affordability Losses: In fact, there has been a serious loss of housing affordability in virtually every Portland market segment since 2000. Among the oldest houses (median house construction dates before 1940), house prices increased 3.7 times annual household incomes.[150] The smallest increase was

1.8 times annual household incomes among houses with a median construction date of 1980 or later (Figure 3).[151] Portland's loss of housing affordability between 1990 and 2010 was severe, with prices doubling relative to incomes.

Research by urban planning professor Myung-Jin Jun of Chung-Ang University (Seoul)[155] has been cited to indicate a minimal association between Portland's urban containment boundary and losses in housing affordability.

Figure 3. Portland: Housing Affordability: 1990 & 2010

Price to Income Ratio by House Age Cohort



At the same time, Portland's housing affordability had not deteriorated to the levels of some California cities where Nelson et al. indicated that prices had been driven up by urban containment boundaries that were too tightly drawn (above).[152]

The liberal amount of land within the original urban containment boundary probably aided Portland in not suffering the extreme unaffordability that now afflicts coastal California. Housing affordability was also aided by the "safety valve" of Clark County, Washington,[153] which is a part of the metropolitan area but not within the urban containment boundary. The rate of new house construction grew much faster in Clark County than it did in the Oregon portion of the metropolitan area, which could have moderated the house-price increases.[154]

Jun showed that house prices were similar on both sides of the urban containment boundary in 2000. However, the research did not provide a before and after comparison of housing affordability metrics *within the urban growth boundary*. This would have required an analysis beginning in the early 1970s before the urban containment boundary could have had an effect on house prices. As noted above, every housing age sector of the Portland housing market experienced huge losses in housing affordability between 1990 and 2010 (Figure 3, above).

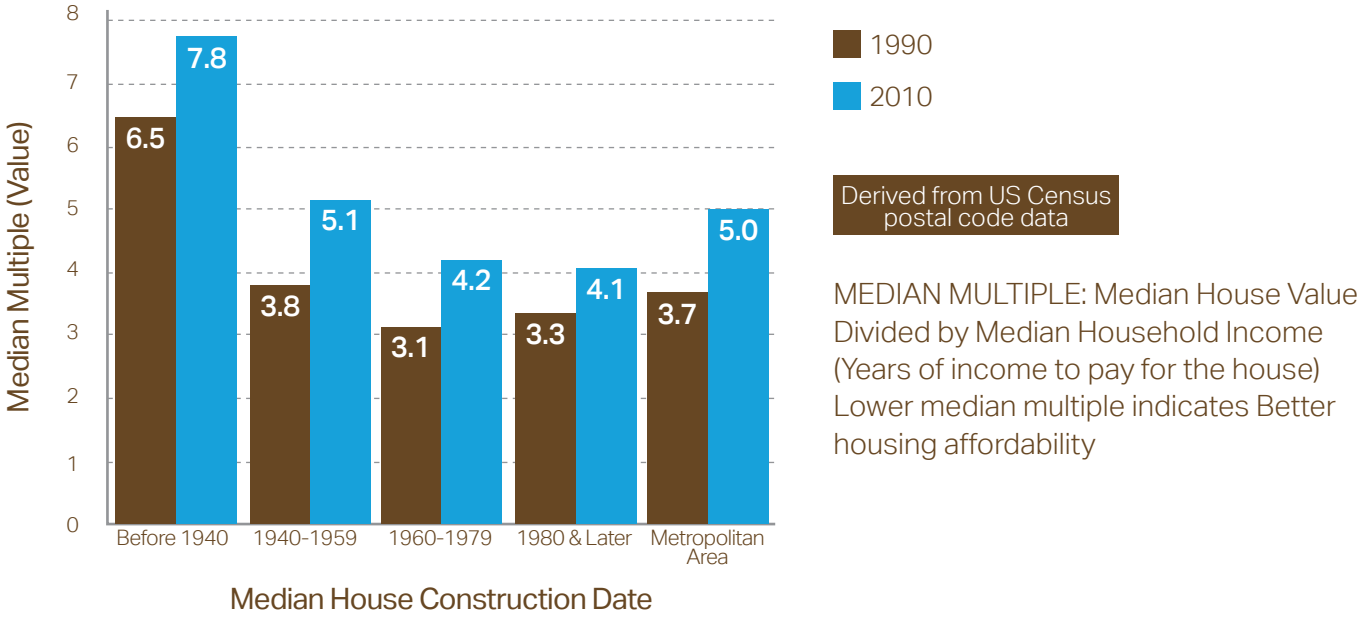
Seattle: Similarly, Shishir Mathur of the Urban and Regional Planning Department at San Jose State University[156] showed that there was little difference in house prices across the urban containment boundary in Seattle in the mid-2000s.[157] However, the research did not provide a before and after comparison of housing affordability

metrics *within the urban growth boundary*. This would have required an analysis beginning in the early 1980s, before the urban containment boundary could have had an effect on house prices. As in Portland, houses in every age sector of the Seattle housing market experienced huge losses in housing affordability between 1990 and 2010[158] (Figure 4).

greater than any in the world outside of New York.[163] The urban population density in the Boston metropolitan area is at least two-thirds below that of Los Angeles, less than one-half that of New York and about one-third less than that of Portland.[164]

Figure 4. Seattle: Housing Affordability: 1990 & 2010

Price to Income Ratio by House Age Cohort



Atlanta, Dallas-Fort Worth and Houston in the Real Estate Bubble: The Federal Reserve Bank of Dallas analysis noted that the liberally regulated markets of Atlanta, Dallas-Fort Worth and Houston largely avoided these house-price increases by "… weathering increased demand largely with new construction rather than price appreciation because of the ease of building new homes."[159]

Boston: Harvard University economics professor Edward Glaeser, Jenny Schuetz and Bryce Ward[160] have associated the high housing costs of Boston with the large-lot zoning, annual housing caps and age-restricted zoning[161] that is widespread in the metropolitan area outside the urban core. Boston is a unique case. The artificially low density required by urban planning has produced an extent of urbanization in the larger metropolitan area (combined statistical area[162])

4.4: Australia

Australia's first implementation of urban containment policy was in Sydney.[165] By the middle 1980s, Sydney's median multiple had risen to 4.5. The first annual "Demographia International Housing Affordability Survey"[166] indicated severely unaffordable housing in Sydney (median multiple of 8.8), which worsened to 9.8 by 2011. There has been considerable concern that Sydney's median detached house price has recently risen above $1-million (AUD).[169]

Australia's other four major metropolitan areas adopted urban containment policy somewhat later. Each of these, Melbourne, Brisbane, Perth and Adelaide, had affordable housing markets for part of the 1980s (median multiples of 3.0 or below). In 2014, all of these metropolitan areas

had severely unaffordable housing, ranging from 6.0 times incomes in Brisbane to 8.7 in Melbourne. In most cases, smaller markets were also severely unaffordable.

In each of Australia's five major metropolitan areas, the median price of apartment condominiums units exceeds the 2004 price of detached houses.[168]

Urban Containment in Australia

Alan Moran of the Institute of Public Affairs showed that new residential land prices rose strongly in the major Australian cities following the adoption of urban containment policies.[169] Overall, new house prices increased approximately 250 per cent, inflation adjusted, from 1989 to the middle 2000s. As is predicted by economic theory, the higher land costs for new houses have been reflected in the prices of existing houses, which rose slightly more. Moran showed that there is ample land suitable for development adjacent to all of the cities. Over the same period, high-rainfall agricultural land did not rise relative to inflation. Thus, the high cost of land was not related to higher agricultural land costs or the lack of land.

Kulish, Richards and Gillitzer of the Reserve Bank of Australia[170] concluded tentatively that the association between strong land-use regulation and higher house prices in Australia is consistent with other economic research.

The Australian Government Productivity Commission examined international evidence that indicated that housing is considerably less affordable in Australia. The Commission found that "[t]he sluggish supply response to changes in effective demand is likely to have resulted in higher housing prices ...."[171]

Nicole Gurran[172] of the University of New South Wales doubted that Australia's urban containment policies led to higher house prices.[173] Gurran took issue with the concept that new housing on the urban fringe can influence prices downward throughout the entire metropolitan area. This is in contrast with the views of both economists and urban planning theorists. Urban containment boundaries result in a land-value gap that increases land values inside the urban containment boundary (Section 2.2 and Figure 1) regardless of the fact that a relatively small percentage of the housing stock is added each year (in contrast, new houses account for 20 per cent to 30 per cent of house sales).[174]

Likewise, Gurran doubted an association between urban containment policy and losses in housing affordability. The research did not compare housing affordability metrics within urban containment boundaries before adoption of urban containment policy with current affordability metrics (there was no before and after analysis).[175]

4.5: New Zealand

Urban containment policy began to spread around New Zealand in the early 1990s, when housing was affordable (a median multiple of 3.0 or less). New Zealand's one major metropolitan area, Auckland, experienced substantial losses in its housing affordability, and by the first annual "Demographia International Housing Affordability Survey," it had reached severe unaffordability (a median multiple of 5.9). By 2014, Auckland's median multiple had deteriorated to 8.2. More recently, it has been predicted that Auckland's median house price could soon reach $1-million (NZ).[176]

Concern about the deteriorating housing affordability has been growing for some time. In 2012, New Zealand's National Party government enacted reforms to improve housing affordability and the efficiency of the housing market. Perhaps the most important are housing accords between the central government and local authorities that are intended to accelerate housing construction and designate special housing areas that circumvent the planning regulations (such as urban containment boundaries) that retard housing affordability. Deputy Prime Minister Bill English said that "planning had become the externality" in describing its impacts on housing affordability in New Zealand.[177] He contrasted that with the mitigation of negative externalities as a principal justification for urban planning.

Urban Containment in New Zealand

A Productivity Commission of New Zealand report found

> *[t]he widespread planning preference for increasing residential densities and limiting greenfield development to achieve this places upward pressure on house prices across the board. In Auckland the MUL [metropolitan urban limit or urban containment boundary] is a constraint on the supply of land for urban growth and has worked to increase section [lot] prices within Auckland city.*[178]

Later research by Guanyu Zheng of the Productivity Commission of New Zealand reaffirmed these findings, indicating, "The empirical results presented in this paper indicate that the containment of Auckland region via the MUL results in upward pressure on residential land prices within the urban areas." The research found the impact to be "much larger … on land at the lower end of the price distribution," resulting in effects that were "most pronounced for those at the lower end of the housing market."[179] Zheng wrote,

> *When an artificial 'fence' delineates residential land from non-residential land on the urban fringe, it limits the supply of lower priced land, with a resulting impact on prices at the lower end of the housing market. And, when the supply of land on the urban periphery is restricted, the price of available residential land rises and new builds tend to be larger and more expensive houses. This suggests that the MUL has become increasingly binding at this end of the market as housing demand has intensified in the Auckland region.*

As is shown above, there is considerable evidence of a strong association between urban containment policy and losses in housing affordability in each of the five nations.

SECTION 5: ANALYSIS OF ISSUES

This section considers the issues raised above and provides additional analysis, including research that discounts the association of urban containment with losses in housing affordability.

5.1: Demand and Supply

The price of housing, like every other good or service, is set by the interaction of demand and supply. Housing affordability involves a balance between demand and supply at reasonable prices. Before urban containment policy, there was such a balance. Housing was affordable for most households in virtually all metropolitan areas of Canada, the United Kingdom, the United States, Australia and New Zealand.

CPRE and others suggest that housing affordability has been lost because of demand factors such as low interest rates and more-flexible mortgage products (Section 4.2).[180]

Large, unexpected increases in demand factors such as population increases and household income increases can drive prices up without urban containment or enlarge the price increases that might already have occurred in urban containment markets. The same is true of supply shortages such as materials or labour.

However, it can be expected that if the supply market is permitted to respond and is not constrained by an urban containment boundary or other binding constraint, housing affordability will eventually return to the normal historic range.[181]

However, demand factors, in and of themselves, do not diminish the role of supply in setting the price for housing. In the absence of government interference, price is always a function of demand and supply. Housing affordability depends on a responsive supply side. If the supply side is not permitted to respond to demand as it did before urban containment, there will likely be an excess of demand, which drives house prices up compared to household incomes.

Like every other purchase decision, consumers tend to pay as little as possible for a fixed quantity of a product of a desired quality. This common human characteristic multiplied by the number of purchasers in the market drives the price to an equilibrium between demand and supply, all else equal.

Hall et al. added, "Non-economists generally seem to believe that the price of land in property is the inevitable result of uncontrollable forces of demand and supply. In fact, under a planning system, the supply of land on the open market depends upon conditions which are almost entirely created by government action."[182]

5.2: The "Urban Containment Amenity"

Amenities found in the local natural and built environments are surely important to people as they make their residential location choices. However, urban containment advocates have added a new element: the idea of an "urban containment amenity".

According to Robert Bruegmann, professor emeritus of Art History, Architecture and Urban Planning at the University of Illinois at Chicago,

> *Many environmentalists and anti-sprawl advocates are unwilling to see their policies blamed for declining housing affordability: They maintain that the rise in prices in an urban area such as Portland, Oregon is not due to curtailed housing supply, but to demand. They contend that it is precisely because these areas have created important regulations on land development that they have become attractive to people who might wish to move there.*[183]

Bruegmann talks about the political dynamics that have led to these restrictive land-use policies.

> *One of the major consequences of these choices, probably unintended by many of those on either side of the political spectrum, has been an extraordinary shift of wealth. In this transfer, wealth has been shifted away from younger, less affluent citizens and future generations and toward an 'incumbents' club,' a group of established, mostly older families.*[184]

According to Gurran, the impact of urban containment "[is] likely to relate to the preservation of locational advantage … and the creation or protection of the urban amenity …."[185] Creation of this urban amenity could be a bold assertion, while protection of such an amenity (not improving on it) would seem an exceedingly expensive result in view of the doubling to tripling of house prices to incomes across Australia (and elsewhere).

Nelson, Dawkins and Sanchez are more circumspect, indicating that "[e]ven if housing prices were to rise despite increasing densities, the increase itself might reflect savings and benefits realized by households because of urban containment. Research does not yet support this view, however."[186]

Articles indicating that losses in housing affordability are associated with improved urban containment amenities rather than with constraints on land supply typically include little or no quantitative evidence.

The Urban Containment Amenity in Context

Thus, at least some analysts have suggested that demand has been improved (perhaps virtually intrinsically) by urban containment policy itself, though its nature is unclear. Perhaps it is an assumption that urban containment facilitates a dense urban lifestyle.[187]

Amenities Are in the Eye of the Beholder: As is indicated below, the validity of any urban containment amenity has been undermined by weak or even declining demand and the huge costs imposed on large segments of the metropolitan area.

Amenities are matters of personal preference. Simply put, amenities are in the eye of the beholder. This is the case with dense urbanization as well. An implication that dense urbanization (or urban containment itself) is universally valued would be akin to suggesting unanimity of political or religious belief.

Nonetheless, many households value dense urbanization. The number of people who live in the dense cores of metropolitan areas is ample evidence of this. At the same time, other households would think that dense urbanization represents an inferior quality of life, as they are repelled by the smaller houses, smaller yards, less privacy and different community attributes. There is also ample evidence of this, from the overwhelming majority of households situated outside the dense urban cores in nearly all metropolitan areas of the high-income world (below).

The Urban Containment Amenity: Winners and Losers

As noted above, individual households decide whether a feature of a metropolitan area is perceived and valued as an amenity.

The Winners ("Incumbents' Club"): Bruegmann's "incumbents' club" (above) is composed of households that owned or were buying their own homes before the urban containment boundary had an effect on house prices.[188] Under the economic factors described in Section 2.2 (and Figure 1), these households would have received windfall increases (profit) in their house equity by virtue of the land-value increase associated with the imposition of the urban containment boundary.

This increase in value may be the principal urban containment amenity. However, it is a windfall to incumbents only. Most incumbent homeowners suffer

little from the increased costs of housing, because they have already paid for their houses or they may be locked into smaller mortgages that are based on the formerly lower house prices.

The winners may have no incentive to move, but if they move within the same metropolitan area, they may have substantial equity from their windfall increase in equity that can be applied to a more expensive house. As a result, the winners may never have to face the much higher housing prices that have resulted. However, winners who stay in the urban containment metropolitan area may also experience losses in amenities such as intensification of traffic congestion and slower journey times (below).

Some of these winners may "cash in" on the financial gain from the house-value increases and move to another part of the nation where housing is considerably less expensive. Despite exiting the urban containment metropolitan area, such householders would be winners, since householders (who determine their own preferences) tend to move to improve their quality of life, all else equal.

The Losers (Those Not Yet Homeowners): In the five nations that are the focus of this report, most householders own or are buying their homes. In each of the nations, there is generally a public policy preference for homeownership and the behaviour of householders demonstrates their preference for homeownership.

The losers from the urban containment amenity are those who are not already homeowners. Those who wish to purchase housing after the losses in housing affordability will have to pay more. This will leave them with less discretionary income, which will mean a lower standard of living.

Some of the losers will be upper-middle income or even upper-income households that buy their first homes after the losses in housing affordability associated with urban containment occur, perhaps because they are younger or they migrate from another metropolitan area. Because of the higher house prices, these households will have less discretionary income. This would result in a lower standard of living or a reduced rate of savings or investment, which would mean a lower standard of living in time.

For other households, especially with middle income and lower-middle-incomes, the losses in housing affordability associated with urban containment policy could make homeownership impossible, rendering them lifetime losers if they stay in their metropolitan area. Some of these households may be forced into subsidized housing, which would lead to greater poverty.

In the beginning, there will be generally fewer losers than winners in the urban containment metropolitan area, because most households own or are buying their homes. However, as time goes on, the number of losers will exceed the number of winners, especially as younger people begin to enter the market for owned housing.

Some of the losing households could limit their losses by moving to more-affordable metropolitan areas. However, most households are not likely to move, for a variety of reasons ranging from family ties, to employment, to personal preferences. However, each of these general categories of households is likely to experience a lower standard of living (reduced amenities) from urban containment. Those who move are likely to be seeking a better standard of living, since households do not move to seek a worse life (all else equal).

With respect to the winners and losers from losses in housing affordability, Fischel noted, "Those who purchased before, of course, enjoy an extra capital gain on their homes, but we generally do not think that the well-being of the beneficiaries of monopolies outweighs the losses of the victims of monopoly."[189]

Further, as Fischel indicated, urban containment could be creating a new form of exclusionary zoning that denies access to a quality standard of living based on income by artificially retarding housing affordability (Section 6.2).

Within the urban containment metropolitan area, the effect of losses in housing affordability would be to reduce the overall standard of living and increase poverty. Neither of these effects can be considered a desirable public policy outcome.

An Enormous Urban Containment Amenity Preference Required

The preference among households for the urban containment amenity within a metropolitan area would need to be enormous to justify the huge price increases relative to incomes that occur in urban containment metropolitan areas.

In urban containment markets, house prices have typically doubled or tripled compared with household incomes. Thus, in extreme cases, house prices have risen to 200 per cent *higher or more* than before urban containment.

For example, the difference between the highest and lowest house prices relative to incomes among Canada's six largest metropolitan areas was 186 per cent in 2014 (Vancouver compared with Ottawa).[190] This is more than four times the 48 per cent that separated the highest and lowest in 1971 (Toronto compared with Montréal).[191]

A similar divergence of housing affordability is apparent in the United States. The difference between the highest and lowest house prices relative to incomes among the 52 largest U.S. metropolitan areas was 260 per cent in 2014. In comparison, from 1950 to 1970, the average highest median multiple was 90 per cent above that of the lowest.[192] Thus, the differential between the least affordable and most affordable markets nearly tripled. By 1980, after much of California implemented much stronger land-use policies, the differential had expanded to 190 per cent.

Further, the most expensive urban containment markets have experienced significant housing affordability losses. From 1971 to 2014, house prices relative to incomes virtually tripled in Vancouver.[193] House prices relative to incomes more than tripled in San Francisco and San Jose and nearly tripled in Los Angeles and San Diego.[194]

The differences between housing affordability metrics in major metropolitan areas with and without urban containment policy are large and unprecedented. Similarly, the differences between housing affordability metrics within the same metropolitan areas before and after urban containment policy are also large and unprecedented.

Yet, as is shown below, the huge increases in demand that would be necessary to demonstrate amenity improvements have not materialized, with net internal migration losses in metropolitan urban containment areas and a continuing revealed preference for lower-density living.

Moreover, there seems to be no indication that urban containment theorists anticipated the extent of these losses in housing affordability. Indeed, fears were expressed that even relatively minor house-price increases associated with urban containment boundaries might have precluded implementation in additional metropolitan areas.[195]

Urban Containment and the Cost of Living

The cost of living can be an important element of an amenity package for households. In the United States, for example, the most expensive urban containment markets of coastal California have a median household income that averages 34 per cent more than the average for major metropolitan areas. Yet, when adjusted for the higher cost of living (largely the result of higher housing costs), the advantage drops to 6 per cent.[196] The extent to which higher housing costs contribute to the higher costs of living is not evident in this data. However, in nearly all urban containment markets, housing affordability continues to deteriorate, which would suggest that even this small advantage in real income could be diminished or even disappear.

Assessing the Urban Containment Amenity Effect

The most reliable indicator of metropolitan attractiveness is the choices that people actually make – where households move. If the dense urban amenity effect were as strong as it would need to be to offset the huge housing affordability losses, then strong net internal migration would occur in spite of high housing costs. That is not generally the case, as is shown below.

Internal Migration: Internal migration is an indicator of the improved attractiveness of a metropolitan area.[197] The best indicator may be internal migration[198] (migration between locations within nations). Strong housing regulation may induce some households to move to metropolitan areas with housing choices that better match their preferences, something that is evident in the internal migration data in all five nations (Section 6.1).

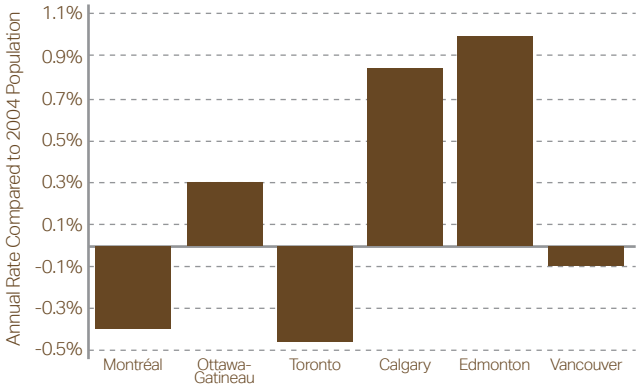
Some of the most expensive urban containment metropolitan areas have substantial net internal *out-migration*. It would be expected that metropolitan areas with superior amenities would enjoy substantial positive internal migration. The opposite is the case in the most costly urban containment markets.

Vancouver: The Vancouver metropolitan area lost more than 20,000 internal migrants to other parts of Canada from 2003/4 to 2013/4, according to Statistics Canada. This represents an annual loss of 0.1 per cent relative to the 2004 population.

Toronto: The Toronto metropolitan area has lost than 225,000 internal migrants to other parts of Canada since 2003/4. This is an annual loss of 0.5 per cent.

Montréal: Housing is not as severely unaffordable in Montréal as it is in Vancouver or Toronto, but it has been deteriorating rapidly. The Montréal metropolitan area has lost approximately 140,000 internal migrants since 2003/4, for an annual loss of 0.4 per cent (Figure 5).

Figure 5
Net Internal Migration: Canada
Major Metropolitan Areas: 2003/4-2013/4



Source: Derived from Statistics Canada data

London: London has the least affordable housing in the United Kingdom, and it lost approximately 0.8 per cent of its population to net internal out-migration in 2014.[199] Inner London, perceived as one of the most attractive urban environments in the world, experienced an internal migration loss of 1.1 per cent. This is a continuation of long-term trends. From 2003 to 2014, London (the Greater London Authority) lost more than 650,000 internal migrants.[200] The Office for National Statistics (ONS) noted that the net in-migration of people 29 years of age and younger is more than offset by the out-migration of those aged 30 and over. ONS indicated,[201] "A key factor for people in their 30s and 40s who move out of London could be the cost of housing. Young couples wishing to buy their first house or a larger one for a growing family may find prices in London prohibitively expensive and therefore choose to live outside of London."

ONS added,

> *Another important reason may be that people with children are more likely to move out of London because of environmental or social factors. For example, they may be seeking somewhere greener and quieter, and*

> *may also perceive that a less urban neighborhood offers a better social and educational environment for children. Moves of adults with children also explain why there is a net outflow of children from London.*

Sydney: In Sydney, with the worst housing affordability in Australia, net internal out-migration averaged 0.6 per cent between 2007 and 2014, according to the Australian Bureau of Statistics.[202]

Auckland: Perhaps most surprisingly, Auckland, with approximately one-third of New Zealand's population and much of its economic activity, has also begun to experience substantial net outward internal migration. From 2001 to 2006,[203] a net 60 per cent of all interregional movers left Auckland for other regions of New Zealand. This was a turnaround from a decade earlier (1991 to 1996) when Auckland received substantial net interregional in-migration. At the same time, housing affordability was deteriorating markedly.

Los Angeles, San Francisco, San Diego and San Jose: The coastal California metropolitan areas, with the worst housing affordability in the United States, have all experienced strong net internal out-migration. Between 2000 and 2013, San Jose experienced an annual net internal migration loss of 1.2 per cent. The net internal migration loss was 1.1 per cent in Los Angeles, 0.6 per cent in San Francisco and 0.4 per cent in San Diego. More than two million people (net) departed coastal metropolitan areas for other parts of the United States between 2000 and 2013.[204] This is in stark contrast rapid population growth in the coastal metropolitan areas from World War II to the 1990s.

At the same time "Rust Belt" metropolitan areas in the U.S. East and Midwest have experienced significant deindustrialization and out-migration. Yet, net internal migration losses between 2000 and 2013 have been less than in coastal California in Rust Belt metropolitan areas such as Pittsburgh at 0.1 per cent annually, Buffalo 0.1 per cent and Cleveland 0.7 per cent. Even Detroit, with an urban core decline unrivaled in the high-income world, experienced an annual net internal migration loss that was less than either Los Angeles or San Jose (0.8 per cent annually).[205]

Overall U.S. Internal Migration and Housing Affordability: In the United States, where there is a greater variety of land-use regulation systems, internal migration has been strongly skewed toward more-affordable metropolitan areas and away from less-affordable ones.[206] This was demonstrated between 2000 and 2009, during which United States Census Bureau estimates of internal migration indicated a net 3.2 million people moved away from the less-affordable metropolitan areas,[207] while a net 1.5 million moved to more-affordable metropolitan areas.[208] The balance of 1.7 million people moved away from the major metropolitan areas.[209]

Population Shift Away after Urban Containment Adoption: Fischel noted a shift in population trends away from areas with stronger land-use regulation: "The question is why supply has not responded to increases in demand."[210] He added,

> ... [T]he present subject is that the region of the country [United States] with the highest population growth and highest growth in personal income in the last thirty years has been the South. Yet housing prices in the South have risen quite a bit less than in the West and the Northeast. Maybe it is a coincidence that the regulatory regimes have been less restrictive in the South, but it does form a *powerful counterexample to the proposition that the highly regulated places have housing price inflation just because demand has shifted."* [emphasis added]

Fischel noted, "... [T]he population of the West [of the United States] actually grew faster in the 1950s and 1960s than in later decades, yet house prices did not start taking off until the new regulatory regimes of the 1970s were put in place."

General Population Density Trends

Recently, new analysis methods have been developed for analyzing the metropolitan areas of Canada and the United States based upon their lifestyle function (urban core, suburban or exurban), rather than at the municipal jurisdiction level. This is important because large municipalities may include a range of development from older urban core with significant transit ridership, to suburban areas where most transportation is by car. This is the case, for example, in central municipal jurisdictions[211] such as Calgary, Edmonton, Winnipeg, Los Angeles and Houston. Both of these analysis methods document population trends in small areas within metropolitan areas and indicate an overwhelming revealed preference for lower density, suburban or exurban living that is generally opposed by urban containment proponents.

David L.A. Gordon and Isaac Shirokoff of Queen's University led the first of these efforts.[212] They classified metropolitan area census tracts into four categories: "active cores," "transit suburbs," "auto suburbs" and "exurban." Between 2006 and 2011, nearly 90 per cent of metropolitan growth was in the two least-dense categories, "auto suburbs" and "exurban." In Toronto, 83 per cent of growth was in the two least-dense categories. In Vancouver and Montréal, it was 76 per cent and 95 per cent respectively.

Similar results were obtained in the subsequently developed "City Sector Model" by Wendell Cox,[213] which classified all zip code geographies in the 52 largest metropolitan areas of the United States into five categories: "urban core: downtown," "urban core: outside downtown," "earlier suburbs," "later suburbs" and "exurbs." The urban core classification is defined as having densities and travel patterns similar to before World War II and is roughly analogous to the Queen's University "active core" and "transit suburbs." Between 2000 and 2010, slightly more than 100 per cent of metropolitan growth was in the suburbs and exurbs in the United States. There were population losses in the urban cores, though there were gains in the very centres (which were more than cancelled out by losses in the balance of the urban cores.) As in Canada, the least-dense areas gained the most population. In San Francisco, 99 per cent of the population growth was in the suburban and exurban areas. In Los Angeles, the figure was 98 per cent. Suburban and exurban areas attracted 99 per cent of the growth in Portland, 97 per cent in San Diego and 97 per cent in San Jose.

In both nations, much attention has been given to the population growth in the densest urban sectors, which are indicated by the "active core" in the analysis of Canada and the "urban core: downtown" in the U.S. analysis. Yet, only 2.2 per cent of metropolitan growth in Canada was in these densest urban sectors.[214] An even smaller 1.0 per cent of metropolitan growth was in the densest urban sectors of the United States.[215] While these population increases are large compared to other post-World War II decades, they are small in the context of current metropolitan area populations. This, along with the internal migration trends (above), indicates that demand for the urban containment amenity is weak.

The possibility of an urban containment amenity strong enough to support itself in huge house price increases throughout a metropolitan area is implausible. Transforming a low-density urban area into one characterized by dense urban living is at best a slow, if not glacial, process. For example, in Vancouver, which may have made the most progress toward the urban containment "ideal," high densities are largely limited to the urban core, even after more than 40 years of urban containment policy. Gordon and Shirokoff[216] indicated that more than 75 per cent of the Vancouver metropolitan area remains principally automobile oriented. Dense urbanization has not engulfed Vancouver's suburbs, which have far lower densities than the urban core does and are where the overwhelming share of the population lives. To the extent that an urban containment amenity has developed, its influence has been limited.

Urban Containment Amenities for Foreign Investors?

The data on migration indicates a strong movement of residents away from urban containment markets that have the worst housing affordability. As noted above, this should not be considered an improvement.

At the same time, there have been claims by local activists and citizens groups in metropolitan areas such as London, Sydney, Vancouver, Los Angeles, San Francisco and Auckland that very wealthy foreign investors have entered these markets. There are indications of higher percentages of foreign purchasers in a number of urban containment markets.

This would have produced additional demand in already constrained metropolitan areas and, if the critics are right, could have contributed even more to the losses in housing affordability. It might be suggested that if there has been an urban containment amenity improvement in these metropolitan areas, it has been to the benefit of foreign investors and at the cost of existing residents.

Greater Traffic Congestion and Longer Travel Times

The expected shorter trip lengths in more-compact cities cannot be expected to reduce travel times,[217] because when densities are higher, traffic congestion tends to be greater and travel times tend to be longer.[218]

Hong Kong is an illustration of this. It could be argued that Hong Kong is the world's ultimate urban containment city. Its urban population density is more than 26,000 residents per square kilometre. This is more than nine times the urban density of Toronto (North America's most-dense urban area), 10 times the urban density of Los Angeles (North America's second-most dense urban area), nearly 20 times that of Portland, more than 10 times that of Sydney or Auckland and 12 times that of the average larger urban area in Canada. Yet, all of this unparalleled concentration of residents and employment in Hong Kong produces a one-way work-trip travel time that is among the longest in the high-income world, 47 minutes.[219]

In contrast, much-lower-density urban areas have shorter travel times. Toronto has an average work-trip travel time of 33 minutes, and in even lower-density Dallas-Fort Worth, the work trip averages 27 minutes. These two urban areas are comparable in population to Hong Kong. Smaller and less-dense urban areas have even faster work-trip travel times. For example, the average worker travels 26 minutes in Edmonton and 23 minutes in Kansas City. Longer travel times make a metropolitan area less attractive (all else equal).[220]

Implausible Urban Containment Amenities

It is doubtful that improved metropolitan attractiveness could have been a significant factor in the higher house prices relative to incomes that predominate in urban containment markets. The differences in housing affordability between the most expensive urban containment markets and liberal markets are unprecedented compared with historic housing affordability metrics, both between metropolitan areas and within the same metropolitan area.

In fact, it is only in urban containment metropolitan areas that losses in housing affordability of this magnitude have occurred in the five nations. Among the major markets evaluated by the annual "Demographia International Housing Affordability Survey," none has reached severe unaffordability (median multiple of 5.1 or higher) except for markets with urban containment or related constraints.

Fischel raised doubts that improvements in the quality of life led to California's house-price explosion. He showed that patterns of metropolitan growth shifted strongly away from California after 1970 (above) at the same time as land-use regulation became much stronger.[221]

In a recent analysis, Moretti found that the higher concentration of skilled workers in more-productive metropolitan areas of the United States had more to do with job opportunities than with amenities.[222] In another paper, Hsieh and Moretti found that labor market distortions attributable to housing regulation have been "almost entirely driven by" supply constraints, rather than amenities.[223]

Henry Pollakowski of Harvard University and Susan Wachter of the University of Pennsylvania[224] found that supply constraints are more important than improved attractiveness where there are regional urban containment boundaries.

Mills also raised doubts: "Advocates of growth and compactness controls may believe that the benefits of such controls outweigh the costs. I have no idea what such benefits might be (and am unable to find a coherent argument that substantial benefits even exist)."[225]

5.3: Higher Housing Densities and Housing Affordability

The key to maintaining housing affordability under urban containment policy is for the higher land costs to be offset by net reductions in total housing costs (land and construction costs) in denser housing within the urban containment boundary (Section 2.3).

Portland is an example of steep losses in housing affordability across all sectors of the housing market. In 2000, Fischel suggested, "Portland's policy of promoting infill development does not seem to have offset the containment effects of its urban growth boundary." Nevertheless, he reserved judgment.

> *... [W]hether Portland's plan keeps regional housing prices in line is an important test of the efficacy of its infill policy. Economists know that if you declare large fractions of desirable, developable land off limits to developers, housing prices will rise. What we do not know for sure is whether the effects of greenfield preservation can be offset by infill policies. That is what is at stake here.*[226]

Proponents have acknowledged that in some cases higher house prices have occurred. According to Nelson et al., "... **The housing price effects of growth management policies depend heavily on how they are designed and implemented.** If the policies tend to restrict land supplies, then housing-price increases are expected."[227] [emphasis in original]

The Housing Industry Association (HIA) indicated that there has been a "persistent shortage of residential land" in Australian cities and associated this with urban containment policies. HIA indicated the failure of urban containment policy: "The planning goal of 'densification' by and large was not accompanied by a compensating increase in the availability of sites in established suburbs, reflecting community opposition to higher-density development." HIA continued: "A combination of strong demand conditions for housing in the face of constraints on the supply of land for green-field and in-fill development created a 'pressure cooker' effect which saw marked increases in the price of existing housing and residential land prices ...."[228]

Why Higher Densities Have Not Prevented Housing Affordability Losses

There are various reasons higher densities have not prevented the losses in housing affordability that have been associated with urban containment.

Incompatible Household Preferences: Generally, it appears that urban containment advocates have assumed that householders are largely indifferent to yard sizes, house sizes and smaller, less private types of housing. The transition to more-compact development (urban containment purpose #1, above) would require that houses are smaller with smaller yards or no yards at all, that there is greater production of multi-family dwellings (apartments

and apartment condominiums) and that there is less privacy as opposed to the detached or semi-detached housing typical of so much development in the five nations.

If, on the other hand, households value larger yards, larger houses and detached houses rather than apartment units, then the objectives of urban containment cannot be achieved without impairing the quality of life (an outcome that can only be judged by householders themselves). To the extent that householders have these preferences, urban containment could induce some to leave the area (Section 5.2) and others to take less-attractive housing (reduced amenities), making them worse off.[229]

Fischel suggested that the "planning ideals of high density transit oriented development are at odds with the demands of so many households."[230] A similar point was made in the Barker Reviews.[231]

Land Cost Increases Higher than Expected: The large urban containment land-value increases that have been noted in Canada, the United States and Australia seem likely to have been greater than expected based on the substantial run-up in house prices (Section 4). At the same time, even if the lower-density housing could have been constructed for less, the margin for cost reductions was probably less than the increase in land value in many cases (below).

High Costs of Higher-Density Housing: Data in the 2013 Altus *Construction Cost Guide*[232] indicates that the construction costs[233] of multi-family housing can be much higher than that of detached housing in Canada's metropolitan areas. Apartments and condominiums cost from 70 per cent to 170 per cent more per square metre than detached houses do. A household buying higher-density housing would have to pay far more to obtain the same amount of space that is available in a detached home or live in a far smaller space for the money available in their budget. Either result would make the household that prefers more space worse off by requiring that they live in a smaller space or that they pay much more for the space they prefer (and forego other purchases that might improve their standard of living).

Insufficient Land-use Liberalization: It is possible that land-use regulations were not sufficiently liberalized within urban containment boundaries for the necessary volume of higher-density housing to be built.

On the other hand, it is possible that no level of regulatory liberalization would have been sufficient to overcome the resistance to smaller houses, smaller yards and housing types perceived to be less desirable and the huge rise in land prices or the higher construction costs of multi-family dwellings. Indeed, the expectation that denser housing within the urban growth boundary would be more affordable may not have been realistic from the start.

5.4: Topography and Housing Affordability

Housing supply can be constrained by legal barriers such as urban containment boundaries, or by topographic features such as steep slopes, mountains or large bodies of water (these may also be called geographic features). In either case, it can be expected that housing affordability will be retarded if the competitive market for land is constrained (Section 5.4), all else equal. The housing affordability influence of topographic barriers on housing prices, however, seems likely to be generally neutralized by urban containment boundaries that are closer.

Albert Saiz,[234] of the Massachusetts Institute of Technology, examined topographic barriers and found an association with higher house prices. The topographic barriers in his research were generally far from the urban fringes, and in some cases, the metropolitan areas had urban containment boundaries.

However, where there is a binding urban containment boundary, the land available for development can be substantially less than indicated by the topography. A binding urban containment boundary is likely to produce

the same or similar effect as would be produced by a topographic barrier that is more remote or in the same place. Moreover, as is indicated in Section 5.5, housing affordability can be preserved with a much smaller supply of land inside an urban containment boundary than would be indicated by topographic boundaries.

Portland, which is among the more topographically constrained metropolitan areas in the United States, illustrates this. Yet, Mildner[235] identified a land-value gap of approximately 10 times at the urban containment boundary. The urban containment boundary was (and remains) well inside the topographic barriers (principally the steep slopes of hills and mountain ranges to the east and west, beyond the valleys with urbanization and agricultural land). It is likely that this proximate barrier (the urban containment boundary) with its 10 times land-value gap has a far greater impact on the increase in land value than does the far-more remote topographical barriers.

For example, urban development in the San Francisco Bay Area is often said to be limited by topographic barriers. However, strong land-use regulations and urban containment boundaries forbid development on a substantial amount of suitable land. There is more than enough suitable land in the San Francisco Bay (San Jose-San Francisco) combined statistical area to expand the developed area[236] to more than equal the New York urban area, which is the most geographically extensive in the world. There is no shortage of suitable land for development in the San Francisco Bay Area.[237]

On the other hand, Dallas-Fort Worth and other land-rich metropolitan areas could, in fact, seriously retard housing affordability by imposing binding urban containment boundaries or strong peripheral land-use policies. This is illustrated by California's flat, land-rich Central Valley (San Joaquin Valley), which is subjected to strict land-use regulation. Metropolitan areas such as Modesto and Fresno are surrounded by ample flat land with no nearby topographic barriers.

Yet, during the housing crisis, the median multiples in both metropolitan areas exceeded 7.0, a level not reached by any U.S. metropolitan area until the housing bubble. Even in 2014, long after the housing collapse and significant house-price reductions, housing affordability had again deteriorated to serious unaffordability (4.7 in Fresno and 4.5 in Modesto). This is approximately 60 per cent higher than the long-term maximum in liberally regulated areas.

Saiz also suggested a political connection between stronger land-use regulations and topographic barriers. Strong land-use regulation may be induced by a political perception of scarcity that can be objectively erroneous (as in the cases of Portland and the San Francisco Bay Area, above).[238] Gyourko[239] wrote, "Whether this is an indication that more stringent land use regulation gets adopted in places where residents think there is something scarce to protect is an open question."

5.5: A Competitive Land Supply

Brookings Institution economist Anthony Downs has indicated that a "competitive land supply" is required to maintain housing affordability.[240] A "competitive land supply" means, for example, that there is enough land available such that there is no incentive for developers to try to "corner the market." If urban containment policy so limits land that just a few developers can profit by buying virtually all of it, large landowners might be able to virtually name their price in the market. On the other hand, if there is enough land available, there will be no incentive for developers to corner the market, because there will be far too much land available to make extraordinary profits, as sellers compete with one another on price.

Regional Plans as Speculator's Guides: It is difficult, if not impossible, to maintain a competitive market for land under urban containment. Hall et al. described the problem thusly:[241] "Even if the planning authority scrupulously provides just the right amount of land for the expected increase [in housing], by definition it will not be enough."

One reason for this, according to Hall et al., is that "[t]he Development Plan ... will act as a speculator's guide. Land with planning permission or likely planning permission becomes a desirable item which will be traded at increasing prices, or hoarded."

Where there is a shortage of land, and planning documents show the limited areas where development will be allowed,[242] all of the incentives are in place for longer-term real estate investment (speculation) that can drive land prices (and house prices) far above pre-urban containment levels. The shortage of land under urban containment creates the potential for buying and holding land on the expectation that the scarcity will drive prices up. This type of real estate investment has been cited as one of the contributing factors to the losses in the housing market of the United States during the Great Financial Crisis.[243]

The Australian Government Productivity Commission discussed the connection between urban containment policy and speculation.[244] Developers may establish land banks purchased for development in future years. This can also be pejoratively called "hoarding." As unseemly as this may be perceived, it is a rational response to a situation in which the inventory businesses need to survive is severely limited. It should be expected that investors would rush to buy up as much land as possible in an environment of perceived shortage. If there is no perceived shortage, such as is typical under liberal regulation, there will be no economic imperative for developers to buy more land than is required in the short term. Land banking and hoarding are logical consequences of urban containment policy.

Malpezzi noted, "[S]peculation is more a symptom than a cause of a poorly performing housing market."[245] In reviewing the land-regulation research, Kyung-Hwan Kim of Sogang University in Seoul, Sock-Yong Phang of the Singapore Management University and Wachter suggested that more attention could be placed on the expectation of house-price increases in supply-constrained markets. This would better document the influence of speculation, the enabling conditions for which are established by urban containment policy itself.[246]

Price: The Indicator of a Competitive Land Supply

Downs further noted that there is no definitive research on how much land is needed to preserve a competitive land supply.[247] Yet, there are indications that it may not be excessive.

Portland and Las Vegas are illustrations of this. As noted in Section 4.3, Portland retained its historic housing affordability through 1990, despite more than 10 years of experience with its urban containment boundary. This is an indication that the competitive supply of land had been retained.[248] As late as 2000, there was still substantial land for development within the urban containment boundary and nearly 10 times as much suitable land outside the urban containment boundary (measured by agricultural acreage, see above).[249] Portland officials subsequently adopted more-rigorous urban containment policies. This reduced the land available for development, and strong land-price increases followed.[250]

From observing the vast desert areas adjacent to the Las Vegas urban area, a visitor might surmise that there is no shortage of land for development. Yet, the federal government owns nearly all of the land that could be developed.

This land is available for urban development by federal land auctions only, which did not add enough land to the supply during the housing bubble to retain a competitive market for land. The encircling federal land represents a virtual urban containment boundary[251] well inside the topographic barriers in the Las Vegas area.

A competitive supply of land had been retained and housing was affordable through 2000. However, Las Vegas was the fastest-growing major metropolitan area in the United States, and urbanization was expanding rapidly. Land became scarcer, and developers had to rely on federal land auctions to continue development.

Predictably, the shortage led to skyrocketing prices. Winning bids in auctions had reached five times the 2000 average per acre by 2008.[252] Housing affordability deteriorated substantially. House prices have nearly doubled in comparison with household incomes. A similar situation has been observed in Phoenix, where the state of Arizona owns much of the land available for urban fringe development.[253]

The Test of a Competitive Land Supply

Even with the urban containment boundaries, Portland managed to maintain a competitive land supply through the 1980s, as did Las Vegas through the early 2000s. However, as land supplies became more scarce, land and housing prices rose throughout both metropolitan areas.

The sufficiency of land supply to maintain price stability and housing supply affordability can only be assessed using price. Claims that there is enough land for a certain number of years of development (such as 10, 20 or 30 years) are fundamentally unreliable unless they are based on analyses demonstrating affordable land prices.The test of a competitive land supply is price of land and its consistency with the pre-urban containment relationship to household incomes.

SECTION 6: BROADER SOCIAL AND ECONOMIC IMPACT

The losses in housing affordability associated with urban containment policy can have important social and economic consequences beyond the housing sector.

6.1: Economic Impact of Urban Containment

Cheshire pointed out that land-use regulation is the "single most potent and influential form of regulation" in OECD countries as "measured by the size of economic asset overseen." He noted, "[P]rice distortions arising from land use planning can be extraordinarily large."[254] As a result, land-use regulation can have significant impact on economic performance. A growing body of research indicates this.

- Early on, Hall et al. suggested the possibility that urban containment policy had "throttled up the rate of economic growth."[255] They also noted the occurrence of "land and house inflation on a scale never before witnessed in British history."

- Urban containment policy has been associated with higher commercial development costs[256] and higher retail prices[257] in the United Kingdom.

- In the United States, Ganong and Shoag found that "tight [housing market] regulations weaken [regional] convergence in per capita income."[258] This can make it too expensive for people to migrate from poorer areas to more-affluent areas, despite greater economic opportunities.[259]

- U.S. Federal Reserve Board economist Raven Saks found that where housing supply is more constrained by regulations, employment growth is likely to be retarded.[260]

- Constrained housing supply also increases house-price stability. OECD research indicated that the prices tend to be more stable (less volatile) where housing supply is more responsive to demand.[261] The Barker Reviews echoed this concern.[262] This is a particularly serious matter in view of the damage that house-price volatility did to the U.S. economy and the world economy in the Great Financial Crisis.

- Brueckner indicated the potential for urban containment boundaries to harm consumer welfare: "[T]he higher housing prices caused by the UGB[263] lead to a lower standard of living, harming the city's residents. Unless there are offsetting benefits ... a UGB is a counterproductive land use intervention that makes consumers less well off."[264]

The Larger Economy

The consequences of urban containment can extend to the entire economy.

- Referring to the depressed level of house building attributed to the U.K.'s urban containment land-use recommendations, Barker warned of a prospect for "... decline in standards of public service delivery and increasing the costs of doing business in the UK – hampering our economic success."[265]

- Cheshire estimated that the welfare loss from Britain's planning system at the equivalent of a 3.9 per cent tax on personal incomes.[266]

- Economist John Muellbauer of Oxford University characterized the U.K.'s land-use regulatory system as leading to "resource misallocations that can only be described as grotesque."[267]

- Matthew Rognlie[268] of the Massachusetts Institute of Technology examined Piketty's[269] groundbreaking

research on rising inequality and concluded that much of the observed inequality is from housing wealth.[270] According to Rognlie, "... [T]he literature studying markets with high housing costs finds that these costs are driven in large part by artificial scarcity through land use regulation .... A natural first step to combat the increasing role of housing wealth would be to re-examine these regulations and expand the housing supply." Rognlie suggested that a better title for Piketty's work would have been "*Housing in the Twenty-First Century.*"

- As noted above (Section 1), Hsieh and Moretti attributed a significant loss of U.S. economic growth to more-restrictive regulatory policy.[271] According to their research, the annual GDP of the United States had been reduced by $1.95-trillion by 2009 (13.5 per cent of the U.S. GDP). They characterized this loss as "almost entirely driven" by regulatory constraints on housing. "We conclude that the aggregate gains in output and in welfare from spatial reallocation of labor are likely to be substantial in the U.S., and that a major impediment to a more efficient spatial allocation of labor is the growing constraints to housing supply in high wage cities." They added, "These constraints limit the number of US workers who can work in the most productive of American cities."

- Hsieh and Moretti added, "[T]his lowers income and welfare of *all* US workers and amount to a large *negative externality* imposed by a minority of cities on the entire country." [emphasis in original]

These studies raise important ethical, political and perhaps even constitutional questions. It seems inappropriate for planning authorities (or other sub-national units of governments) to adopt policies that can impose negative externalities on housing access, job creation and the national economy.

6.2: Social Impact of Urban Containment

Urban containment can lead to social consequences, especially because of its association with higher house prices.

The Barker Reviews indicated, "For many people, housing has become increasingly unaffordable over time. The aspiration for homeownership is as strong as ever, yet the reality is that for many this aspiration will remain unfulfilled unless the trend in real house prices is reduced." The potential social implications were cited: "This brings potential for an ever widening social and economic divide between those able to access market housing and those kept out."[272]

Referring to the depressed rate of house building attributed to the urban containment regulations in the U.K., Barker wrote, "I do not believe that continuing at the current rate of housebuilding is a realistic option, unless we are prepared to accept increasing problems of homelessness, affordability and social division ...."[273] Barker also notes the increasing difficulties first-time homebuyers have in accessing home ownership.[274]

The California Legislative Analyst's Office identified a number of social consequences to strong land use policy, such as households (1) spending a greater share of their income on housing, (2) postponing or foregoing homeownership, (3) living in more crowded housing, (4) commuting further to work each day, and (5) choosing to work and live elsewhere. The latter effect is illustrated by the substantial net internal migration[275] from coastal metropolitan areas between 2000 and 2014 (Section 5.2).[276]

Downs indicated, "Higher prices then reflect a pure social cost because the efficiency of society's resource allocations has decreased."[277] This means that if households have to

pay more for their basic living expenses, e.g., housing, they will have a lower standard of living. He further noted that even a modest 10 per cent increase in house prices makes it impossible for 4 per cent of households to purchase a home and concludes that such an effect is "socially significant."

Ethical Concerns: Hall et al. made a sobering conclusion about the impact of urban containment policy in the United Kingdom:

> *Overall, the idealized system obviously had a strong element of planning for the least fortunate; urban containment, and the creation of self-contained communities, were supposed specifically to help the less advantaged members of society. But in practice the system seems almost systematically to have had the reverse effect: it is the most fortunate who have gained the most benefits from the operation of the system, while the least fortunate have gained very little.*[278]

This enlarged income inequality.

Exclusionary Zoning Between Metropolitan Areas? Fischel echoed similar ethical concerns, suggesting that urban containment policy could be creating a new form of exclusion that largely reserves metropolitan areas with superior topographic amenities for the more affluent, to the detriment of lower-income households. The term "exclusionary zoning" to which Fischel referred is used in the United States to describe practices intended to keep households of particular ethnicities (such as African Americans) or with lower incomes out of a neighborhood.

The new exclusionary zoning would be between metropolitan areas rather than within them, resulting in a distinct class of metropolitan areas that are more "elite" due to the restrictiveness of their housing regulation. As distasteful as exclusionary zoning is within a metropolitan area, its application between regions of a country could represent a substantial escalation of a practice that violates the "equality of opportunity" principle espoused by Western nations.

Intergenerational Wealth Transfer: There are also issues of intergenerational equity. The huge house-value increases obtained under urban containment are transferred, in effect, from those who have not yet purchased their houses, especially younger people. The much higher prices make it far more difficult for younger households to purchase houses than it was for their parents' generation. Offspring fortunate enough to inherit the expensive properties are an exception. The increased importance of inheritance in the prosperity of future generations is a step backward from the ideal of an inclusionary property-owning democracy.

In fact, the topographic features that make an area attractive are often publicly owned, e.g., mountains and oceans. It seems inequitable that metropolitan areas with greater financial means can effectively deny the enjoyment of these features to middle-income and lower-income households through policies that increase the price of housing relative to incomes.

The higher house prices under urban containment are also associated with higher rents, which disproportionately affect low-income households. This is evident in California, which now has the highest poverty rate in the United States after adjusting for the cost of housing. California's poverty rate is 50 per cent above Mississippi's and nearly double that of West Virginia's.[279]

Other recently published international research associates strong housing regulation with a substantial expansion in inequality (Section 6.1).

Bruegmann summarized the situation: "What an irony that just at the moment that so many people so far down the socio-economic ladder are looking to buy at the urban periphery, they find the drawbridge has been pulled up."[280]

Mills added his own ethical concern: "I worry about housing

costs for everyone, but especially for low income families."[281]

Results such as these are counter to the objectives of improving the standard of living and reducing poverty.

Social Cohesion: Declining housing affordability could lead to less social cohesion in the longer term. Economist Benjamin Friedman of Harvard University has shown in *The Moral Consequences of Economic Growth* that broad-based economic growth is important to social stability:

> *Obviously nothing can enable the majority of the population to be better off than anyone else. ... The central question is whether, when people see that they are doing well (in other words, enjoying 'more') compared to the benchmark of their own prior experience, or their parents – or when they believe that their children's lives will be better still – they consequently feel less need to get ahead compared to other people.*[282]

The opposite trajectory, toward a loss of social cohesion, is already emerging in metropolitan areas with urban containment policy. There are serious political and press concerns about the loss of housing affordability in Vancouver, Toronto, London, Sydney, Auckland, San Francisco and elsewhere. In some cities, housing affordability problems have been the subject of protest demonstrations.

7: URBAN CONTAINMENT AND PUBLIC POLICY

This section provides an evaluation of urban containment and its impact on housing affordability.

7.1: The Politics of Urban Containment

Urban containment strategies such as urban containment boundaries are usually implemented directly by planning agencies without voter referenda. Moreover, it is rare for the public consideration of such regulations to include comprehensive discussion of the potential housing affordability consequences, even at the governing board level.

Indeed, an open consideration of the potential impact on housing affordability could have made it difficult to adopt urban containment boundaries. Knaap and Nelson noted that an early study[283] (by Beaton)[284] found no association between an urban containment boundary and higher land prices in Salem.[285] They surmised that "Had the Beaton study found otherwise, UGBs [urban containment boundaries] may never have been used anywhere in Oregon outside Salem."[286] Had a full consideration of the consequences preceded adoption of urban containment, it is possible that public opinion would have prevented adoption in Oregon and elsewhere.

Similarly, Anthony raised questions about the "long-term sustainability of Florida's growth management" program, just a year before it was repealed by the state legislature.[287]

Thus, there is a concern among urban containment policy proponents that housing affordability losses could threaten urban containment policy itself (or its implementation). It seems likely that if such concerns had been convincingly raised in the public forum before implementation, urban containment policy might not have been adopted in at least some metropolitan areas.

7.2: Urban Containment Policy Evaluation and Conclusions

The underlying need for examining the effectiveness of policy was raised by Nelson:[288] "If the market response to urban containment programs differs with those theoretical expectations, planners and policymakers should be alerted that the programs are not designed appropriately ...." Obviously, programs that are "not designed appropriately" should be reformed (Section 7.3). This, of course, requires policy outcomes, not simply citations of intentions (Box 2).

Achieving the goals of any public policy requires both rigorous monitoring and reforms to improve performance relative to objectives. This includes preservation of housing affordability. The losses in housing affordability have been pervasive among urban containment markets.

The administration of urban containment policy has been deficient. Nelson and Dawkins reported that their analysis "suggests that few growth management plans with an urban containment framework include a formal analysis of the projected land or housing value impact of their proposed urban containment policies."[289] The experience with rapidly escalating house prices in urban containment markets may indicate that housing affordability has not been sufficiently monitored.

The potential for urban containment policy to be associated with losses in housing affordability is known by economists and acknowledged by urban planners. These losses will occur, all else equal, if reductions in house prices within the urban containment boundary do not offset the land-value increases that are associated with urban containment boundaries (Sections 2.2, 2.3 and Figure 1). However, the land-value increase will vary over time based upon the extent to which the urban containment boundary restricts land supply (land shortage). This will vary over time and requires regular monitoring and periodic adjustment (Section 2.2).

Variations in the sufficiency of land supply are illustrated by Portland. Portland's urban containment boundary appeared to have little effect on housing affordability until more than a decade after implementation, because there was sufficient land for development. That changed as Portland's urban containment boundary policy became more stringent, and substantial housing affordability losses were sustained (Section 4.3).

Moreover, land-value gaps have been generally shown to increase over time, presumably because land supply has become more constrained (Section 3.2).

Thus, imposition of an urban containment boundary establishes a new responsibility for government: ensuring a sufficient supply of land to maintain housing affordability metrics at no worse than before the boundary had any effect on land values. This is fundamentally different from liberal regulation, where maintaining a sufficient land supply of competitively priced land is not the principal responsibility of government, but rather of the producers and consumers of new housing.

It has even been claimed by proponents of urban containment that part of the resulting loss in housing affordability has been attributable to a failure to allow sufficient densities within the urban containment boundaries.[290] This could indicate premature adoption of urban containment policy. It was known by planners that less-expensive, denser housing was required to retain price stability relative to incomes. To have proceeded with urban containment policy without the appropriate liberalization of land-use regulations was ill-advised.

There is an obligation on the part of planning authorities to implement corrective reforms at the first indication of house prices rising faster than incomes. Yet, there does not appear to be any indication that this was done. Perhaps part of the failure to implement corrective action was that neither housing affordability metrics nor legally binding commitments were adopted to retain housing affordability at no worse than before urban containment. Without such policy devices, it is not surprising that there have been substantial losses in housing affordability.

Corrective measures could have been adopted. Mildner, Kenneth Dueker and Anthony Rufolo of Portland State University suggested one for Portland in 1996.[291]

> *We propose that land prices should be used as signals to Metro [the planning agency] for deciding where the Urban Growth Boundary should be expanded. Thus, just as housing and land prices send signals to housing consumers to adjust their location patterns and housing consumption, land prices should send signals to local planners about the preferences of those consumers.*

In an environment where urban containment policy is not working as planning theorists had hoped and policy required, sufficient expansion of the urban containment boundary is essential to achieving the goal of not retarding housing affordability. Dawkins and Nelson proposed a similar approach in a 2001 paper.[292]

As house prices nearly doubled or tripled in comparison to household incomes, the administering public authorities have not implemented the corrective actions that Nelson[293] implied (above) could be necessary. Had planning agencies sufficiently monitored the housing market and taken corrective action, the losses in housing affordability outlined above might have been avoided (and this debate avoided as well).

Reforms have been implemented only in national and sub-national legislatures rather than by the planning authorities that have more direct oversight (an obligation) over land-use regulation. As noted above, Florida repealed its urban containment requirements, (Section 4.3) and the New Zealand Parliament implemented reforms to contain losses in housing affordability from urban containment (Section 4.5).

There may soon be an exception, however. Chris Parker, the chief economist of the City of Auckland has proposed that the Auckland Council adopt an objective to reach a price to income ratio of 5.0 by 2030. This would be a substantial improvement over the present[294] 8.2. Because Auckland's city government has jurisdiction over the entire metropolitan area, this would represent a metropolitan commitment.[295]

Nonetheless, as administered at the metropolitan area level, urban containment policy can be evaluated as a profound failure.

BOX 2: THE INADEQUACY OF INTENTIONS

There may be a tendency on the part of urban containment proponents to rely on statements of intention or expectation to judge success.[296] *For example, Phillips and Goodstein's statement to the effect that "[i]ncreasing density should substitute for higher land prices"*[297] *has been cited as evidence that the intended effect has occurred. Phillips and Goodstein made no such claim. Similarly, the expectation expressed by Nelson and Duncan*[298] *that Portland house prices within the urban containment boundary will offset land-value increases has been cited to suggest accomplishment. The authors simply expressed an expectation rather than a fait accompli.*

Statements of intentions are not evidence of the success of public policies. Achievement is necessary.

POLICY CONCLUSIONS

The following conclusions are drawn:

- **Urban containment is associated with severe losses in housing affordability:** Losses in housing affordability have been severe in a number of major metropolitan areas that have urban containment policies. Generally, house prices have risen to nearly double or even triple their previous relationship to household incomes. This is the principal cause of rapidly rising land costs, which increase housing costs. This association with urban containment policy is consistent with the basics of economics, all else equal.

- **Demand does not appear to be a major cause of the losses in housing affordability:** The losses in housing affordability in urban containment markets have been too substantial to be attributed to increased demand, including improved amenities.

- **Higher-density housing has not prevented the losses in housing affordability:** The expectation that higher-density housing within the urban containment boundaries would cancel out the land-value increases and thus avoid housing affordability losses has not been fulfilled. There is no compelling evidence that house prices are at or below their pre-urban containment levels in the urban containment policy areas with tightly drawn urban containment boundaries.

- **The losses in housing affordability are likely to intensify without fundamental reform:** It is likely that housing affordability will worsen where there is urban containment. This is because of the declining amount of land within the urban containment boundaries, the limited expansion of such boundaries and the intention of planning authorities to discourage lower-density development. Metropolitan areas that adopt urban containment boundaries in the future are likely to face similar losses in housing affordability.

- **The losses in housing affordability reduce the standard of living and increase poverty:** The higher cost of housing in urban containment metropolitan areas necessarily reduces the discretionary income of middle-income households, leading to a lower standard of living and greater poverty. Mortgage payments range from nearly double to triple the amounts that would be

paid had housing affordability not been retarded. The potential for higher mortgage interest rates in the next few years could further retard middle-income housing affordability.

- **The losses in housing affordability can retard job creation and economic growth:** Research is increasingly indicating an association between urban containment and lower levels of national job creation and economic growth.

In contrast, superior housing affordability has been retained in metropolitan areas with liberal land-use regulation, and affordability is similar to the situation before urban containment policy was adopted.

In fact, it is only in urban containment metropolitan areas that losses in housing affordability of this magnitude have occurred in the five nations. Among the major markets evaluated by the annual "Demographia International Housing Affordability Survey," none has reached severe unaffordability (median multiple of 5.1 or higher) except for markets with urban containment or related land-use constraints.

7.3: Principles for Reform

There is a need for reforms that produce policy outcomes consistent with the higher-order public policy goals of improving affluence and reducing poverty. Brueckner suggested, "[A] more cautious approach, which recognizes the damage done by unwarranted restriction of urban growth, should be adopted."[299] The purposes of such reforms should be to

- **Halt and reverse the deterioration in housing affordability:** In the urban containment metropolitan markets, reforms are needed to prevent further deterioration in housing affordability, moderate its severity and work toward eventual restoration of housing affordability. Such reforms might be similar to the New Zealand reforms (Section 4.5), the Florida repeal (Section 4.3) or the Portland proposal (Section 7.2), depending on the situation.[300] The currently pending Auckland price-to-income objective could provide a particularly useful example for urban containment metropolitan areas (Section 7.2).

- **Suspend further urban containment policy adoption:** Urban containment policy should not be adopted in other metropolitan areas. These metropolitan areas are virtually exclusively in Canada and the United States.

- **Review potential economy-wide corrections:** National governments and central banks may want to examine mechanisms to limit the potential of urban containment to detrimentally affect housing access, job creation and national economies.

- **Adopt housing affordability metrics, standards and monitoring systems:** In each metropolitan area, housing affordability metrics should be adopted and rigorously monitored. This should include the adoption of maximum price to income ratio standards (or similar standards that relate housing costs to middle-income household income). As noted above, implementation of such a policy may be imminent in Auckland (Section 7.2).

- **Require correction:** Corrective actions should be required should housing affordability not meet the adopted housing affordability standards.

The present urban containment planning practice, which monitors the capacity of land based on a planning principle (years of availability within an urban containment boundary) needs to be replaced by a standard based upon an economic principle that is supportive of housing affordability. Enough land is available only when housing (both new and existing) is available at the price-to-income ratios that prevailed before there was any prospect of urban containment policy.

SECTION 8: CONCLUSION: A QUESTION OF VALUES

One of the most important human advances of recent centuries is the rise of a broad middle class. The extreme inequality that characterized much of Western civilization has been substantially reduced, especially since World War II. Homeownership has been an important part of this advance. Yet, after only a few decades of much improved equality, this historic accomplishment is threatened with reversal.

House prices are rising so much in some countries and some metropolitan areas that they are threatening the standard of living for middle-income households and increasing poverty. Moreover, the rising house prices have been shown to retard both the job creation and the economic growth that have led to better lives for middle-income and low-income households.

8.1: Potential Risk to Canada

Despite the concerns about housing affordability and the suggested overvaluation of housing, Canada could be at even greater risk in the future.

Urban containment policy has not yet achieved wholesale adoption in Canada. Severe housing affordability remains confined to metropolitan areas that have urban containment policies. Housing affordability is far better in the metropolitan areas that have not yet adopted urban containment policy.

This is in stark contrast with the situation in the United Kingdom, Australian and New Zealand, where urban containment policy has become universal. Even in the smallest metropolitan areas, house prices have escalated strongly relative to incomes. Fewer than 10 per cent of metropolitan areas in the United Kingdom, Australia and New Zealand have house prices that are less than four times household incomes. In Canada, most metropolitan areas have housing that is either affordable (median multiple of 3.0 or less) or moderately unaffordable (median multiple of 3.2 to 4.0).

It is likely that adoption of urban containment policies in other metropolitan areas of Canada could result in a significant expansion of Canada's housing affordability crisis by forcing house prices up in relation to incomes.

Moreover, without reforms, the housing affordability crisis in places such as Vancouver, Toronto and even Montréal could become even worse, as house prices continue to rise compared to incomes.

The threat to Canada's middle-income households, low-income households, job creation and the economy could be substantial.[301]

8.2: A Question of Values

Ultimately, the urban containment debate is a question of values. Urban containment was not intended to retard housing affordability, yet it has had a strong association with higher house prices relative to incomes. In this regard, urban containment policy has failed to serve the more important human values of a better standard of living and eradicating poverty. Achieving the planning goals of urban containment appears to require degrading the quality of life for middle-income and low-income households. Moreover, this is at the very time that there is a rising concern, both domestic and international, about the survival of the middle class.

Urban planning, properly directed, is important. However, urban planning that is intended as a force for good cannot be justified if it retards standards of living. In commenting on urban containment policy in the London area and its association with retarded housing affordability, *The Economist* characterized its consequences as "severe."[302]

The association between urban containment policy and losses in housing affordability has already led to lower standards of living, greater poverty and substantial losses in job creation and economic growth. These results are incompatible with the most fundamental domestic policy objectives.

The fundamental public policy question is not whether urban containment is associated with 10 per cent, 20 per cent, 50 per cent or even 200 per cent increases in house prices relative to incomes.

Economics cannot give a precise answer given the variations among metropolitan areas, regulatory structures, research designs and the passage of time (typically associated with greater losses in housing affordability). Rather, the question is whether urban containment tends to retard housing affordability. The evidence says "yes." On balance, urban containment policy is associated with reduced housing affordability (Section 6).

Indeed, the housing affordability losses have been many times the 10 per cent threshold for social significance suggested by Downs.[303]

As former governor of the Reserve Bank of New Zealand Donald Brash[304] put it, "... [T]he 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."

The Choice: As noted above, urban containment policy appears to be irreconcilable with housing affordability. Ultimately, the choices are between urban planning and the fundamental human values of a higher standard of living and less poverty.

APPENDIX: PERSPECTIVES ON URBAN CONTAINMENT RATIONALES

There are varying perspectives about rationales for urban containment policy. Three of the most important are briefly summarized below.

(1) The Cost of Urban Dispersion

Generally, the urban containment advocates contend that less-dense development imposes a higher cost on taxpayers. Part of this is based on the increased infrastructure that is required in lower-density communities and the greater distances travelled by government vehicles.[305]

Others suggest that the cost of retrofitting existing developed areas for higher population densities is greater than the cost of greenfield development.[306] Others have noted that higher municipal unit operating costs in higher-density areas can more than nullify gains from higher densities.[307]

(2) Agricultural Preservation

Urban containment policy assumes the need to limit urban expansion to preserve agricultural land. There is also less than full agreement on this point.

Research by New York University professor Shlomo Angel suggested that the world has sufficient supplies of agricultural land for food security in the absence of urban containment policy.[308] University of Minnesota professor John Fraser Hart, one of the top U.S. agricultural experts, has written, "The loss of cropland to suburban encroachment may be cause for intense local concern, but attempts to thwart development cannot be justified on grounds of a net national loss of good cropland."[309] Concerns about local agricultural production and food security have also been addressed in a recent book.[310]

(3) Greenhouse Gas Emission Reduction

Chief among these environmental considerations cited for implementing urban containment policy is the reduction of GHG emissions.

However, there is disagreement about the effectiveness and cost-efficiency of urban containment policy in GHG emission reduction. Any GHG emission reduction program should be grounded in rigorous economic analysis that identifies and implements the most cost-effective strategies. The economic test is the cost per reduced metric tonne of GHG emissions. The failure to fashion public policy using economic metrics can lead to excessive job losses and lower incomes that would be avoided by the implementation of more economically viable strategies. This is likely to lead to a lower standard of living and greater poverty.

However, urban containment strategies are rarely subjected to the cost per tonne economic test. Urban transport is a case in point. Planning agencies routinely assume that urban automobile use should be discouraged and reduced, with travel demand shifted to mass transit. This is an exceedingly expensive strategy. In a rare examination by a planning agency of the costs per GHG tonne removed, the San Francisco Metropolitan Transportation Commission's *2035 Transportation Plan* estimated an annual cost of $200 (U.S.) to $800 (U.S.) per tonne of GHG for its bus improvement strategies and a cost of $800 (U.S.) to $5,800 (U.S.) per tonne for its rail and ferry improvements.[311]

In comparison, the fuel economy standards now in effect in Canada and the United States were found by the United States Environmental Protection Agency to reduce GHG

emissions approximately minus $300 (U.S.) per tonne.[312]

Any consideration of urban containment policy also needs to include the associated increased cost of housing as a part of the economic equation.[313]

McKinsey & Company has estimated that in the broader economy, sufficient GHG emissions can be achieved at an average cost of *minus* €6 per metric tonne.[314]

More recently, research by Christopher Jones and Daniel Kammen at the University of California, Berkeley, raised doubts about the effectiveness of some urban planning strategies in reducing GHG emissions.[315]

ENDNOTES

[1]See, for example: OECD, "OECD Economic Surveys CANADA," June 2014. Available online at http://www.oecd.org/eco/surveys/Overview%20_CANADA_2014.pdf.

[2]Tamsin McMahon, "Bank of Canada Warns of Housing Market Corrections," *The Globe and Mail*, April 15, 2015. Available online at http://www.theglobeandmail.com/report-on-business/economy/housing/canadian-average-resale-home-prices-jump-94-in-march/article23965948/.

[3]Inflation adjusted house price increase, 2000 to 2015, derived from the International House Price Database for 20 reported high income nations in the West, Australasia and East Asia. See Federal Reserve Bank of Dallas, "International House Price Database," *Globalization and Monetary Policy Institute*. http://www.dallasfed.org/institute/houseprice/.

[4]Klaus Schwab, "The Global Competitiveness Report 2014- 2015," World Economic Forum, 2014. Available online at http://www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2014-15.pdf.

[5]Wendell Cox, "Canada's Affluent Middle-Class at Risk," *The Huffington Post Canada*, August 26, 2015. Available online at http://www.huffingtonpost.com/wendell-cox/canadas-affluent-middlecl_b_8039302.html.

[6]Liberal regulation is broadly defined as the more-flexible arrangement that preceded urban containment policy and continues in many jurisdictions. These regulations require compliance with environmental regulation, and they are often developed in a framework of zoning for separate uses.

[7]Chang-Tai Hsieh and Enrico Moretti, "Why Do Cities Matter? Local Growth and Aggregate Growth," The National Bureau of Economic Research, May 2015. Available online at http://www.nber.org/papers/w21154.

[8]Matthew Rognlie, "A Note on Piketty and Diminishing Returns to Capital," June 15, 2014. Available online at http://www.mit.edu/~mrognlie/piketty_diminishing_returns.pdf.

[9]"G20 Leaders' Communiqué," "g20.org, November 2014. Available online at https://g20.org/wp-content/uploads/2014/12/brisbane_g20_leaders_summit_communique.pdf.

[10]It is also called social housing or public housing.

[11]Research for smaller geographical areas within a metropolitan area can be useful, but is insufficient for assessing the overall effect of urban containment policy in a city.

[12]Some U.S. research uses parts of metropolitan areas (metropolitan divisions or the obsolete primary metropolitan statistical areas). These are not functional or economic cities, and their use can produce misleading results.

[13]The exception among the 65 metropolitan areas with more than 1,000,000 population in the five countries is Auckland (New Zealand).

[14]Stephen K. Mayo, "Effects of Land and Housing Policies on Market Performance," *Land Lines*, Vol. 9, No. 3 (1997): 1-4. Available online at http://www.lincolninst.edu/pubs/480_Land-Lines---May-1997--Volume-9--Number-3.

[15]For example, see "Average Household Expenditure, by Province (Canada)," Statistics Canada, January 22, 2015. Available online at http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/famil130a-eng.htm.

[16]Paul Cheshire, and Vermeulen, W., *Land markets and their regulation: the welfare economics of planning*. In: Geyer, H. S., (ed.) International Handbook of Urban Policy, Vol. Ii: Issues in the Developed World. Elgar original reference. Edward Elgar Publishing, Cheltenham, UK. 2009. Available online at http://eprints.lse.ac.uk/30787/..

[17]The term "housing affordability" as used in this report generally refers to broad indicators of house price to household income. The potential for impairing the quality of life by essentially forcing households to accept smaller yards (gardens), smaller houses or to substitute apartments for detached or semi-detached housing is considered only where specifically mentioned. Each of these quality of life impairing factors is consistent with the objectives of urban containment policy.

[18]Shlomo Angel, Stephen K. Mayo and William L. Stephens, "The Housing Indicators Program: A Report on Progress and Plans for the Future," *Netherlands Journal of Housing and the Built Environment* Vol. 8, No. 1 (1993): 13-48. Available online at http://sollyangel.com/wp-content/uploads/2013/10/38.-1993-The-Housing-Indicators-Program.pdf.

[19]In Australia.

[20]Greenfield land is undeveloped land, generally on or beyond the urban fringe.

[21]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, (2004)2.

[22]Arthur C. Nelson and James B. Duncan, *Growth Management Principles and Practices*, APA Planners Press, 1995, p. 73.

[23]There is less disagreement about the effectiveness of urban containment policy regarding this objective. See Appendix Section 1.

[24]Some dispute the achievement of this objective through urban containment. See Appendix Section 2.

[25]Nelson and Duncan, *Growth Management*.

[26]There is less disagreement about the effectiveness of urban containment policy regarding this objective. See Appendix Section 3.

[27]Alain Bertaud, "Cities as Labor Markets," Working paper, Marron Institute of Urban Management at NYU, February 19, 2014. Available online at http://marroninstitute.nyu.edu/content/working-papers/cities-as-labor-markets.

[28]Called "population centres" by Statistics Canada starting with the 2011 census.

[29]This is also called "rural zoning."

[30]Richard K. Green and Stephen Malpezzi, *A Primer on U.S. Housing Markets and Housing Policy,* Urban Institute Press, 2003, p. 146.

[31]The increase in land values (and house prices) can precede the adoption of the urban containment boundary. Participants in the housing market, both buyers and sellers, may anticipate the higher prices as there are indications that stronger regulations may be adopted. For example, Ball et al. document an "announcement" effect on values in Melbourne, Australia, (Michael Ball, Melek Cigdem, Elizabeth Taylor and Gavin Wood, "Urban Growth Boundaries and Their Impact on Land Prices," Working Papers in Real Estate and Planning, Reading, U.K.: University of Reading, 2012).

[32]The land-value gradient theory is also called the "bid rent" theory. This is an idealized conception that assumes a monocentric metropolitan area with a single dominating central business district. In recent decades, metropolitan areas around the world have become more polycentric, with peaks in land prices at the location of secondary centres but generally below the values achieved in the central business district. See William Alonso, "Location and Land Use: Toward a General Theory of Land Rent," Cambridge, Massachusetts, Harvard University Press, 1964, and Richard F. Muth, *Cities and Housing: The Spatial Pattern of Urban Residential Land Use*, Chicago, IL: University of Chicago Press, 1969.

[33]Like any general theory, the land gradient theory is an ideal. The modern metropolitan area is likely to be multi-centric or even polycentric. Nonetheless, the model is useful for analysis, and land values tend to decline from higher values in the most important activity centres.

[34]Gerard Mildner, "Public Policy & Portland's Real Estate Market," *Quarterly and Urban Development Journal*, 4th Quarter 2009. Available online at http://www.pdx.edu/sites/www.pdx.edu.realestate/files/1Q10-4A-Mildner-UGB-1-31-10.pdf.

[35]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.

[36]W. Ed. Whitelaw, "Measuring the Effects of Public Policies on the Price of Urban Land," In *Urban Land Markets*, pp. 185-197. Urban Land Institute Washington, D.C., 1980.

[37]This is a general statement. It should not be assumed that the land-value gap or any other formula accurately predicts the extent of the change in value for a particular parcel of property.

[38]Arthur Grimes and Yun Liang, "Spatial Determinants of Land Prices: Does Auckland's Metropolitan Urban Limit Have an Effect?" *Applied Spatial Analysis and Policy* Vol. 2, Issue 1 (2009): 23-45.

[39]Nelson and Dawkins, *Urban Containment in the United States*.

[40]Ibid.

[41]Robert W. Burchell, George W. Lowenstein, William R. Dolphin, Catherine C. Galley, Anthony Downs, Samuel Seskin, Katherine Gray Still and Terry Moore, *Costs of Sprawl – 2000*, Washington, D.C., Transportation Research Board (2002).

[42]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): 37-46.

[43]Nelson and Dawkins, *Urban Containment in the United States*.

[44]Richard B. Peiser, "Density and Urban Sprawl," *Land Economics* Vol. 65, No. 3 (1989): 193-204. Available online at http://isites.harvard.edu/fs/docs/icb.topic646810.files/Peiser%20Land%20Economics%20Dens%20and%20Urb%20Sprawl%201989%203146665.pdf.

[45]Arthur C. Nelson, Thomas W. Sanchez, and Casey J. Dawkins, *The social impacts of urban containment*, Ashgate Publishing, Ltd., 2007.

[46]Knaap and Nelson, *The Regulated Landscape*, p. 42.

[47]Brownfield land.

[48]OECD, "Land-use Restrictions as Barriers to Entry," OECD Policy Roundtables, November 28, 2008. Available online at http://www.oecd.org/regreform/sectors/41763060.pdf.

[49]OECD, "Recent House Price Developments: The Role of Fundamentals," *OECD Economic Outlook 78*, 2005. Available online at http://www.oecd.org/eco/monetary/35756053.pdf. Arthur Grimes and Andrew Aitken, "Housing Supply, Land Costs and Price Adjustment," *Real Estate Economics* Vol. 38, Issue 2 (2010): 325-353.

[50]Aida Caldera Sánchez and Åsa Johansson, "The Price Responsiveness of Housing Supply in OECD Countries," OECD Economics Department Working Papers, No. 837, OECD Publishing, 2011. Available online at http://dx.doi.org/10.1787/5kgk9qhrnn33-en and OECD, "Recent House Price Developments."

[51]Caldera and Johansson, "The Price Responsiveness."

[52]OECD, "Housing and the Economy: Policies for Renovation," *Economic Policy Reforms: Going for Growth*, 2011. Available online at http://www.oecd.org/newsroom/46917384.pdf.

[53]OECD, "The Price Responsiveness."

[54]Dan Andrews, Aida Caldera Sánchez and Åsa Johansson, "Housing Markets and Structural Policies in OECD Countries," OECD Economics Department Working Papers, 2011. Available online at http://dx.doi.org/10.1787/5kgk8t2k9vf3-en.

[55]Stephen K Mayo, *Housing: Enabling Markets to Work; with Technical Supplements*, Washington, D.C.: World Bank, 1993.

[56]Jan K. Brueckner, "Government Land-use Interventions: An Economic Analysis," in *Urban Land Markets*, pp. 3-23, Springer Netherlands, 2009.

[57]Nelson et al., "The Link between Growth Management and Housing Affordability."

[58]John M. Quigley and Larry A. Rosenthal, "The Effects of Land-use Regulation on the Price of Housing: What Do We Know? What Can We Learn?" *Cityscape* Vol. 8, No. 1 (2005): 69-137.

[59]Robert C. Ellickson, "Response to 'The Effects of Land-use Regulation on the Price of Housing: What Do We Know? What Can We Learn?' by John M. Quigley and Larry A. Rosenthal," *Cityscape* Vol. 8, No. 1 (2005): 261-264. Available online at http://www.huduser.org/periodicals/cityscpe/vol8num1/res2.pdf.

[60]Christian A.L. Hilber and Frédéric Robert-Nicoud, "On the Origins of Land-use Regulations: Theory and Evidence from U.S. Metro Areas," *Journal of Urban Economics* Volume 75 (2013): 29-43.

[61]Hall served as president of the Town and Country Planning Association.

[62]Co-authors Ray Thomas, Harry Gracey and Roy Drewett, who were at Political and Economic Planning.

[63]Peter Geoffrey Hall, Ray Thomas, Harry Gracey and Roy Drewett, *The Containment of Urban England: The Planning System: Objectives, Operations, Impacts* Vol. 2, Allen & Unwin [for] PEP, 1973.

[64]Paul Cheshire and Stephen Sheppard, "The Introduction of Price Signals into Land-use Planning Decision-making: A Proposal," *Urban Studies* Vol. 42, No. 4 (2005): 647-663.

[65]Cheshire, "Urban Land Markets and Policy Failures."

[66]Knaap and Nelson, *The Regulated Landscape*.

[67]Justin Phillips, and Eban Goodstein, "Growth Management and Housing Prices: The Case of Portland, Oregon," *Contemporary Economic Policy* Vol. 18, Issue 3 (2000): 334-344.

[68]Mildner, "Public Policy & Portland's Real Estate Market."

[69]Ball et al., "Urban Growth Boundaries and Their Impact on Land Prices." Visual inspection of Figure 3 (2001 and 2008).

[70]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. Available online at http://www.rba.gov.au/publications/rdp/2011/pdf/rdp2011-03.pdf.

[71]Grimes and Liang, "Spatial Determinants of Land Prices."

[72]Kate Barker, *Barker Review of Land Use Planning*, Norwich, England: Her Majesty's Stationary Office, 2006. Available online at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/228605/0118404857.pdf.

[73]New Zealand Productivity Commission, "Housing Affordability Inquiry," March 2012.

[74]Land excluded.

[75]This is based on a comparison of construction cost per square foot mid-points. The data is derived from Altus Group, *Construction Cost Guide 2014*. Available online athttp://www.altusgroup.com/media/1160/costguide_2014_web.pdf.

[76]Joseph Gyourko, "Housing Supply," *Annual Review of Economics* Vol. 1 (2009): 295-318.

[77]Alan Moran, *The Tragedy of Planning: Losing the Great Australian Dream*, Institute of Public Affairs, Melbourne (2006). Available online at http://www.ipa.org.au/library/MORANPlanning2006.pdf.

[78]Kulish et al., "Urban Structure and Housing Prices."

[79]All cited in this report.

[80]Green and Malpezzi, *A Primer on U.S. Housing Markets and Housing Policy*.

[81]Richard K. Green, Stephen Malpezzi and Stephen K. Mayo, "Metropolitan-specific Estimates of the Price Elasticity of Supply of Housing, and Their Sources," *The American Economic Review*, Vol. 95, No. 2 (2005).

[82]Gyourko, "Housing Supply."

[83]Mayo, "Effects of Land and Housing Policies."

[84]William A. Fischel, "Comment on 'The Link between Growth Management and Housing Affordability: The Academic Evidence,'" in *Growth Management and Housing Affordability: Do They Conflict?* ed. Anthony Downs. Washington, D.C.: Brookings Institution (2004): 158-167.

[85]William A. Fischel, Ibid.

[86]Paul Cheshire, "Urban Containment, Housing Affordability and Price Stability – Irreconcilable Goals," SERC Policy Paper 4, Spatial Economics Research Centre, London, U.K., 2009.

[87]Shlomo Angel, *Housing Policy Matters: A Global Analysis*, Oxford University Press, 2000, p. 19.

[88]Angel, *Housing Policy Matters*.

[89]Hall et al., *The Containment of Urban England*.

[90]Jan K. Brueckner, "Urban Sprawl: Lessons from Urban Economics," *Brookings-Wharton Papers on Urban Affairs* (2001): 65-97.

[91]Edwin S. Mills, "Truly Smart Growth," *Cornell Real Estate Review* Vol. 1 (2002): 8-22. Available online at http://scholarship.sha.cornell.edu/cgi/viewcontent.cgi?article=1104&context=crer.

[92]The change in house prices adjusted for the change in household income.

[93]Jan K. Brueckner," "Growth Controls and Land Values in an Open City," *Land Economics* Vol. 66, No. 3 (1990): 237-248.

[94]Bernard J. Frieden, *The Environmental Protection Hustle*, Cambridge, Mass.: MIT Press, 1979.

[95]Honolulu adopted similar policies in the 1960s. It is projected that Honolulu will achieve major metropolitan status in 2015 (indicated by reaching 1 million people).

[96]Karl E. Case and Robert J. Shiller, "A Decade of Boom and Bust in the Prices of Single-family Homes: Boston and Los Angeles, 1983 to 1993," *New England Economic Review* (1994).

[97]Calculated from the latest available Statistics Canada household income data and the "Teranet – National Composite National House Price Index" for 2000 to 2011. Available online at http://www.housepriceindex.ca/.

[98]The calculations are from Live Table 577, Department for Communities and Local Government, "Live Tables on Housing Market and House Prices." Available online at https://www.gov.uk/government/statistical-data-sets/live-tables-on-housing-market-and-house-prices. As noted below, the Labour government implemented requirements for greater infill (as opposed to greenfield) development in the early 2000s.

[99]Wendell Cox and Hugh Pavletich, "11th Annual Demographia International Housing Affordability Survey: 2015," *Demographia*, 2015. Available online at http://www.demographia.com/dhi.pdf.

[100]The numbers are derived from Australian Bureau of Statistics and Real Estate Industry Association of Australia data.

[101]Cox and Pavletich, "11th Annual Demographia Survey."

[102]Wendell Cox and Hugh Pavletich, "Demographia International Housing Affordability: February 2005 Issue," *Demographia*, February, 2005. Available online at http://www.demographia.com/dhi-200502.htm.

[103]Only Hong Kong was less affordable.

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

[105]See Wendell Cox, "Myths about Urban Growth and the Toronto 'Greenbelt,'" Fraser Institute, 2004.

[106]Wendell Cox, "Housing and Transportation in Montreal," Montreal Economic Institute Research Papers, July 2006. Available online at http://www.iedm.org/files/juillet06_en_0.pdf.

[107]Royal Bank of Canada, "Housing Trends and Affordability," RBC Economics Research, June 2015. Available online at http://www.rbc.com/newsroom/_assets-custom/pdf/20150622-HA.pdf.

[108]Wendell Cox, "Housing Affordability and the Standard of Living in Calgary," Policy Series No. 162, Frontier Centre for Public Policy, April 2014. Available online at http://2015.fcpp.org/sites/default/files/calgary-housing.pdf.

[109]A "demand shock" is "[a] sudden surprise event that temporarily increases or decreases demand for goods or services," Investopedia. Available online at http://www.investopedia.com/terms/d/demandshock.asp.

[110]Ray Tomalty and Murtaza Haider, "Housing Affordability and Smart Growth in Calgary: Final Report," August 1, 2008. Available online at http://www.calgary.ca/_layouts/cocis/DirectDownload.aspx?target=http%3a%2f%2fwww.calgary.ca%2fPDA%2fpd%2fDocuments%2fPublications%2fplan-it-housing-afford-smarth-growth-report.pdf&noredirect=1&sf=1.

[111]Cox and Pavletich, "11th Annual Demographia Survey."

[112]Market uncertainty due to a multi-year annexation controversy involving the City of Calgary and Rocky View County may have also contributed to the higher house prices during the "demand shock." (See Cox, "Housing Affordability in Calgary").

[113]Wendell Cox, "Housing Affordability and the Standard of Living in Toronto," FCPP Policy Series No. 168, November 2014. Available online at http://2015.fcpp.org/sites/default/files/toronto-housing.pdf.

[114]Wendell Cox, "Housing Affordability and the Standard of Living in Vancouver," FCPP Policy Series No. 164, June 2014, Frontier Centre for Public Policy. Available online at http://2015.fcpp.org/sites/default/files/vancouver-housing.pdf.

[115]Hall et al., *The Containment of Urban England*.

[116]OECD, "Land-use Restrictions as Barriers to Entry."

[117]Cox and Pavletich, "11th Annual Demographia Survey."

[118]Including subsequent revisions.

[119]Hall et al., *The Containment of Urban England*.

[120]Kate Barker, *Review of Housing Supply: Delivering Stability: Securing Our Future Housing Needs: Final Report – Recommendations*, Norwich, England: Her Majesty's Stationery Office, 2004. Available online at http://webarchive.nationalarchives.gov.uk/+/http:/www.hm-treasury.gov.uk/consultations_and_legislation/barker/consult_barker_index.cfm and Barker, *Barker Review of Land Use Planning*. Available online at http://webarchive.nationalarchives.gov.uk/+/http:/www.hm-treasury.gov.uk/consultations_and_legislation/barker/consult_barker_background.cfm.

[122]Kate Barker, "Memorandum to the Select Committee on Environmental Audit," January 31, 2005. Available online at http://www.publications.parliament.uk/pa/cm200405/cmselect/cmenvaud/135/4072108.htm.

[122]The data are calculated from data in Live Table 209 (from 2007 through fiscal year 2015, which ended on March 31). This period included the Great Financial Crisis. See Department for Communities and Local Government, "Live Tables on House Building."

[123]Geoffrey Meen, "On the Economics of the Barker Review of Housing Supply," *Housing Studies* Vol. 20, Issue 6 (2005): 949-971.

[124]Paul Cheshire, "Reflections on the Nature and Policy Implications of Planning Restrictions on Housing Supply. Discussion of 'Planning Policy, Planning Practice, and Housing Supply' by Kate Barker," *Oxford Review of Economic Policy* Vol. 24, Issue 1 (2008): 50-58.

[125]Timothy Dixon and David Adams, "Housing Supply and Brownfield Regeneration in a post-Barker World: Is There Enough Brownfield Land in England and Scotland?" *Urban Studies* Vol. 45, No. 1 (2008): 115-139.

[126]Campaign to Protect Rural England, "Building on Barker," January 2005. Available online at http://products.ihs.com/cis/Doc.aspx?DocNum=275484.

[127]Metropolitan area populations as of 2010, as defined in 2003.

[128]The information is derived from the United States Census Bureau data, based on median house value.

[129]William A. Fischel, *Regulatory Takings: Law, Economics, and Politics*, Harvard University Press, 1995.

[130]The data is from the United States Census Bureau, National Association of Realtors and the Joint Center for Housing Studies of Harvard University.

[131]Dolores Tremewan Martin, "Entry Restrictions and Expenditure Effects in the Local Government Market," *The Annals of Regional Science* Vol. 14, No. 2 (1980): 12-22.

[132]*Demographia*, "Annual Demographia International Housing Affordability Survey," multiple years. Available online at http://www.demographia.com/.

[133]Construction cost differences are derived from *RS Means Residential Square Foot Costs: 2010*, Kingston, Massachusetts: RS Means, 2009.

[134]Ellickson, "Response to 'The Effects of Land-use Regulation.'"

[135]In Canada, there are six metropolitan areas with more than 1 million people compared with 52 in the United States (as of 2013).

[136]Fischel, *Regulatory Takings*.

[137]Legislative Analyst's Office, "California's High Housing Costs: Causes and Consequences," March 17, 2015. Available online at http://www.lao.ca.gov/reports/2015/finance/housing-costs/housing-costs.aspx.

[138]The LAO expresses a preference for high-density housing within currently developed areas, where land shortages are to be expected. The urban fringe land shortages have virtually the same effect.

[139]Jerry Anthony, "The Effects of Florida's Growth Management Act on Housing Affordability," *Journal of the American Planning Association* Vol. 69, No. 3 (2003): 282-295.

[140]Ibid.

[141]Wendell Cox, "New Census Data Reaffirms Dominance of the South," *Newgeography*, December 21, 2011. Available online at http://www.newgeography.com/content/002585-new-census-data-reaffirms-dominance-south.

[142]The information is derived from the United States Census Bureau information.

[143]Phillips and Goodstein, "Growth Management and Housing Prices."

[144]Fischel, *Zoning Rules!*, 306. Also see Gerard Mildner, Kenneth J. Dueker and Anthony M. Rufolo, "Impact of the Urban Growth Boundary on Metropolitan Housing Markets," Portland State University, Center for Urban Studies (1996).

[145]Sarah Monk, Christine Whitehead, Gemma Burgess and Connie Tang, "International Review of Land Supply and Planning Systems," Joseph Rowntree Foundation, March 2013. Available online at https://www.jrf.org.uk/report/international-review-land-supply-and-planning-systems.

[146]The information is derived from the United States Census and the Joint Center for Housing Studies of Harvard University and the "Demographia International Housing Affordability Survey."

[147]The information is derived from United States Census Bureau data for 1990 and 2010 (2012 American Community Survey 5-year Statistics) metropolitan areas as geographically constituted in 2013.

[148]The numbers are derived from United States Census Bureau data for 1990 and 2010.

[149]From 1990 to 2010, the Portland metropolitan population grew 50 per cent. Portland's growth trailed that of Atlanta (77 per cent), Dallas-Fort Worth (67 per cent) and Houston (65 per cent). Information derived from United States Census Bureau data.

[150]In U.S. metropolitan areas, lower-income households often dominate core areas, where housing is older. The diminished housing affordability in these areas is an indication of generally lower incomes, as well as the higher land values of a central area.

[151]The information is calculated from United States Census Bureau house-value data at the zip code level (metropolitan areas as geographically constituted in 2013).

[152]Nelson et al., "The Link between Growth Management and Housing Affordability."

[153]Largest city, Vancouver, Washington.

[154]Myung-Jin Jun, "The Effects of Portland's Urban Growth Boundary on Housing Prices," *Journal of the American Planning Association* Vol. 72, Issue 2 (2006): 239-243.

[155]Jun, "The Effects of Portland's Urban Growth Boundary."

[156]Shishir Mathur, "Impact of Urban Growth Boundary on Housing and Land Prices: Evidence from King County, Washington," *Housing Studies* Vol. 29, Issue 1 (2014): 128-148.

[157]Jun, "The Effects of Portland's Urban Growth Boundary."

[158]Seattle's housing remained affordable until the mid-1980s. At that point, King County, the largest county jurisdiction (which contains the municipality of Seattle) adopted an urban containment policy, followed in the early 1990s by a state growth management law (which required an urban containment boundary around the entire urban area). Housing affordability had deteriorated substantially by 1990.

[159]Amber C. McCullagh and Robert W. Gilmer, "Neither Boom Nor Bust: How Houston's Housing Market Differs from Nation's," *Houston Business*, Federal Reserve Bank of Dallas, January 2008. Available online at http://dallasfed.org/assets/documents/research/houston/2008/hb0801.pdf.

[160]Edward L. Glaeser, Jenny Schuetz and Bryce Ward, "Regulation and the Rise of Housing Prices in Greater Boston," Rappaport Institute for Greater Boston and the Pioneer Institute for Public Policy Research (2006).

[161]Planned residential developments in which houses can only be sold (or rented to) people above a certain age, such as 55.

[162]Combined statistical areas are designated in the United States to identify adjacent metropolitan areas that have strong economic connections. If, for example, Statistics Canada were to designate such larger metropolitan regions, the most obvious candidate would be the adjacent census metropolitan areas of Toronto, Hamilton and Oshawa.

[163]Other U.S. metropolitan areas have large-lot zoning but have not created land-supply shortages sufficient to materially erode housing affordability.

[164]Wendell Cox, "The Evolving Urban Form: Sprawling Boston," *Newgeography*, July 16, 2015. Available online at http://www.newgeography.com/content/004987-the-evolving-urban-form-sprawling-boston.

[165]Lachlan Abercrombie, "Metropolitan Planning for Sydney 1948-1988: Looking to the Past to Learn for the Future. Unpublished research paper, University of New South Wales, October 2008. Available online at https://www.be.unsw.edu.au/sites/default/files/upload/pdf/schools_and_engagement/resources/_notes/5A3_17.pdf.

[166]Cox and Pavletich, "Demographia International Housing Affordabilty: February 2005 Issue ."

[167]Michael Janda, "Sydney Housing Price Median Cracks a Million Dollars, Leaves Other Capitals Behind," ABC News, July 23, 2015. Available online at http://www.abc.net.au/news/2015-07-23/sydney-house-prices-crack-a-million-leave-other-capitals-behind/6642152. The Australian dollar was near parity with the Canadian dollar in early August 2015 ($1.03 (AUD) to $1.00 (CAD)).

[168]*Demographia*, "Unprecedented Housing Affordability Strongly Associated with Urban Consolidation (Smart Growth) Policies," Demographia International Housing Affordability, February 2005. Available online at http://www.demographia.com/dhi-200502.htm. and Michael Janda, "Sydney Housing Price Median Cracks a Million Dollars," ABC News, July 23, 2015. Available online at http://www.abc.net.au/news/2015-07-23/sydney-house-prices-crack-a-million-leave-other-capitals-behind/6642152.)

[169]Moran, "The Tragedy of Planning."

[170]Kulish et al., "Urban Structure and Housing Prices."

[171]Australian Government Productivity Commission, "Performance Benchmarking of Australian Business Regulation: Planning, Zoning and Development Assessments," May 16, 2011. Available online at http://www.pc.gov.au/inquiries/completed/regulation-benchmarking-planning/report.

[172]Nicole Gurran, "Affordable housing: a dilemma for metropolitan planning?," Urban Policy and Research, Vol. 26, No.1 (2008): 101-110.

[173]In part, Professor Gurran responded to the *Demographia* "7th Annual Demographia International Housing Affordability Survey: 2011." Available online at http://www.demographia.com/dhi2011.pdf.

[174]The research indicated that new houses represent only 2 per cent of the housing stock. However, new houses (detached) are actually much higher than 2 per cent in the annual sales. In Canada, the 2013 figure was 29 per cent, and in Australia, the 2006 figure was 22 per cent (Canada Mortgage and Housing Corporation), "Canadian Housing Observer," 2014. Available online at http://www.cmhc-schl.gc.ca/odpub/pdf/68189.pdf?fr=1440247761223 and Real Estate Institute of Australia, "Profile: Australian Real Estate Industry Review 2005-2006," October 2006. Available online at http://www.realtor.org/cipshome.NSF/files/REIA%20Australia.pdf/$FILE/REIA%20Australia.pdf.

[175]Nicole Gurran, and Christine Whitehead, "Planning and Affordable Housing in Australia and the U.K.: A Comparative Perspective," *Housing Studies* Vol. 26, Issue 7-8 (2011): 1193-1214.

[176]Anne Gibson, "Experts predict Auckland median house price will break $1m mark in 18 months," *New Zealand Herald*, July 23, 2015. Available online at http://www.nzherald.co.nz/business/news/article.cfm?c_id=3&objectid=11485580. The New Zealand dollar was worth $0.86 (CAD) in early August 2015. The $1-million Auckland house would be worth approximately $860,000 (CAD).

[177]Bill English, "Speech on Housing Affordability," *beehive.govrt.nz*. Available online at https://www.beehive.govt.nz/speech/speech-housing-affordability.

[178]New Zealand Productivity Commission, "Housing Affordability Inquiry," March 2012. Available online at http://www.productivity.govt.nz/sites/default/files/Final%20Housing%20Affordability%20Report_0_0.pdf.

[179]Guanyu Zheng, "The Effects of Auckland's Metropolitan Urban Limit on Land Prices," New Zealand Productivity Commission, 2013. Available online at http://www.productivity.govt.nz/sites/default/files/research-note-mar-13-auckland-mul.pdf.

[180]Campaign to Protect Rural England, "Building on Barker," January 2005. Available online at http://products.ihs.com/cis/Doc.aspx?DocNum=275484.

[181]The same is true of house purchases by foreigners, which some have claimed exacerbate the housing affordability crises in Vancouver, London, Sydney, Auckland, San Francisco, Los Angeles and elsewhere.

[182]Hall et al., *The Containment of Urban England*, p. 404.

[183]Robert Bruegmann, "Land-use Regulation, House Prices and the New Social Contract," in *Zell-Lurie Review* Vol. 11, No. 1, (2007): 32-40. Available online at http://realestate.wharton.upenn.edu/research/papers/full/579.pdf.

[184]Ibid.

[185]Gurran and Whitehead, "Planning and Affordable Housing in Australia. "

[186]Nelson, Arthur C., Thomas W. Sanchez, and Casey J. Dawkins, *The social impacts of urban containment*. Ashgate Publishing, Ltd., 2007.

[187]Such an assumption is problematic, since converting a low-density urban area to a compact city is a slow process. For example, in Vancouver, even four decades later. The Gordon and Shirokoff research indicates that more than 75 per cent of the Vancouver metropolitan area remains principally automobile oriented, and the extent to which a dense urban lifestyle has developed in Vancouver's sprawling suburbs is arguable. This, and more-modest examples, raises questions about the potential for an urban containment amenity to account for the huge losses in housing affordability that have been observed.

[188]This includes households that own their homes outright and households that own their homes through a mortgage.

[189]Fischel, "Comment on 'The Link between Growth Management.'"

[190]Cox and Pavletich, "11th Annual Demographia Survey."

[191]The figures are from the Census of Canada, 1971, based on median house value.

[192]The information is derived from the United States Census, 1950, 1960 and 1970, based on median house value.

[193]The information is derived from Census of Canada, 1971, and Cox and Pavletich, "11th Annual Demographia Survey."

[194]The information is from the United States Census and the Joint Center for Housing Studies of Harvard University and the "Demographia International Housing Affordability Survey."

[195]For example, Nelson and Knaap suggested that additional urban containment boundary implementations might have been deferred had the early evidence (Salem) indicated losses in housing affordability (Section 7.1).

[196]The information is from U.S. Department of Commerce Bureau of Economic Analysis data using regional price parities and the United States Census Bureau American Community Survey median household incomes for 2012.

[197]Kyung-Hwan Kim, Young-Joon Park, James D. Shilling and Hoon Cho, "Do Higher Land Values Cause Higher House Prices, or Vice Versa?" KAIST Business School Working Paper Series No. 2008-015, November 13, 2008. Available online at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1300821.

[198]This is migration between jurisdictions within a nation. This is also referred to as "domestic migration." Internal migration is one of three contributors to a change in population, with the others being international migration (net immigration) and the natural change in population (births minus deaths).

[199]Office for National Statistics, "Internal Migration by Local Authorities in England and Wales, Year Ending June 2014," June 25, 2015. Available online at http://www.ons.gov.uk/ons/rel/migration1/internal-migration-by-local-authorities-in-england-and-wales/year-ending-june-2014/index.html.

[200]Over the period, London's population increased, driven by strong international migration and the natural increase (births in excess of deaths).

[201]Office for National Statistics, "Focus on London Moves," November 13, 2014. Available online at http://www.ons.gov.uk/ons/rel/migration1/internal-migration-by-local-authorities-in-england-and-wales/year-ending-june-2013/sty-2---focus-on-london-moves.html and derived from ONS data.

[202]Calculated from Australian Bureau of Statistics data, with a population base of 2007.

[203]Latest data available. Derived from Statistics New Zealand, "Internal Migration: Trends in Migration between Regions," 2009. Available online at http://www.stats.govt.nz/browse_for_stats/population/Migration/internal-migration/trends-in-migration.aspx.

[204]The numbers are derived from United States Census Bureau data.

[205]The numbers are calculated from United States Census Bureau data, with a population base of 2000.

[206]See, for example, Peter Ganong and Daniel Shoag, "Why Has Regional Income Convergence in the U.S. Declined?" HKS Working Paper No. RWP12-028, March 28, 2013. Available online at http://papers.ssrn.com/sol3/Delivery.cfm/SSRN_ID2241069_code1638787.pdf?abstractid=2081216&mirid=5.

[207]The more-affordable metropolitan areas had a maximum median multiple of 4.4 or less during the period, while the less-affordable ones had a maximum median multiple of 4.5 or more.

[208]*Demographia*, "Net Domestic Migration & Land Regulation by Severity of the Housing Bubble, Metropolitan Areas over 1,000,000 Population, Summary 2000-2009," (2011). Available online at http://www.demographia.com/db-bubblehaff.pdf. (This is based on annual United States Census Bureau internal migration estimates).

[209]Land-use regulation outside the major metropolitan areas tends to be more liberal.

[210]Fischel, "Comment on 'The Link between Growth Management and Housing Affordability.'"

[211]Core cities.

[212]David L.A. Gordon and Isaac Shirokoff, "Suburban Nation? Population Growth in Canadian Suburbs, 2006-2011," Council for Canadian Urbanism, 2014. Available online at http://www.canadianurbanism.ca/wp-content/uploads/2014/07/CanU%20WP1%20Suburban%20Nation%202006-2011%20Text%20and%20Atlas%20comp.pdf.

[213]Wendell Cox, "Major Metropolitan Areas: 2000 & 2010 Population by Sector," *Demographia*, 2015. Available online at http://www.demographia.com/csm2015-20002010.pdf and Wendell Cox, "City Sector Model," *Newgeography*, 2015. Available online at http://www.newgeography.com/category/story-topics/city-sector-model.

[214]Gordon and Shirokoff, "Suburban Nation."

[215]Cox, "Major Metropolitan Areas: 2000 & 2010 Population by Sector"

[216]Gordon and Shirokoff, "Suburban Nation."

[217]Plans in urban containment metropolitan areas typically seek more-compact development with higher population densities.

[218]Wendell Cox, "Urban Travel and urban Population Density," *JOURNEYS*. November, 2012. Available online at http://www.lta.gov.sg/ltaacademy/doc/J12%20Nov-p19Cox_Urban%20Travel%20and%20Urban%20Population%20Density.pdf

[219]Hong Kong Transport Department, "Travel Characteristics Survey 2011: Final Report," February 2014.

[220]Canadian data are from Statistics Canada, "National Household Survey 2011; U.S. data from the United States Census Bureau, "American Community Survey 2009-2013."

[221]Fischel, *Regulatory Takings*.

[222]Enrico Moretti, "Real Wage Inequality," *American Economic Journal: Applied Economics* 5(1) (2013): 65-103.

[223]Chang-Tai Hsieh and Enrico Moretti, "Why Do Cities Matter? Local Growth and Aggregate Growth,".

[224]H.O. Pollakowski and S.M. Wachter, "The Effects of Land-use Constraints on Housing Prices," *Land Economics* Vol. 66, No. 3 (1990): 315-324.

[225]Mills, "Truly Smart Growth."

[226]William A. Fischel, "Comment on Anthony Downs's 'Have Housing Prices Risen Faster in Portland than Elsewhere?'" *Housing Policy Debate* Vol. 13, No. 1 (2002): 33. Available online at http://content.knowledgeplex.org/kp2/cache/kp/937.pdf.

[227]Nelson et al., "The Link between Growth Management and Housing Affordability."

[228]Housing Industry Association Economic Group, "Land Prices, House Prices and New Dwelling Costs," December 2010. Available online at https://economics.hia.com.au/media/LAND%20PRICES,%20HOUSE%20PRICES%20AND%20NEW%20DWELLING%20COSTS.pdf.

[229]In economic terms, this is referred to as a "welfare loss" and is largely ignored by the urban containment literature.

[230]Fischel, *Zoning Rules!* p. 323.

[231]Barker, *Review of Housing Supply* and Barker, *Barker Review of Land Use Planning*.

[232]This is based on comparison of construction cost per square foot at lowest quality rated. The data are derived from Altus Group, "Construction Cost Guide 2013." Available online at http://www.altusgroup.com/services/cost-guide/.

[233]Land costs excluded.

[234]Albert Saiz, "The Geographic Determinants of Housing Supply," *The Quarterly Journal of Economics* 125 (3) (2010): 1253-1296. Also see: Haifang Huang and Yao Tang, "Residential Land-use Regulation and the U.S. Housing Price Cycle between 2000 and 2009," *Journal of Urban Economics* Vol. 71, No. 1 (2012): 93-99.

[235]Mildner, "Public Policy & Portland's Real Estate Market."

[236]This is based on agricultural land as reported in the United States Census of Agriculture data for 2012. See *Demographia*, "Agricultural Land 2012."

[237]This is simply a point of fact and does not indicate that such expansion should occur. Indeed, it is inconceivable, at current growth rates and the San Francisco Bay Area's density, that this amount of land could be required in the near future.

[238]This could be the result of individually formed perceptions or the response to frequent press and public statements to the effect that there is a shortage of land or that farmland is being exhausted.

[239]Gyourko, "Housing Supply."

[240]Anthony Downs, *New Visions for Metropolitan America*, Washington, D.C.: Brookings Institution Press, 1994, p. 38.

[241]Hall et al., *The Containment of Urban England*, p. 396.

[242]This is, of course, necessary in a transparent political process.

[243]See, for example, Andrew Haughwout, Donghoon Lee, Joseph S. Tracy and Wilbert Van der Klaauw, "Real Estate Investors, the Leverage Cycle, and the Housing Market Crisis," Federal Reserve Bank of New York Staff Reports No. 514 (2011).

[244]Australian Government Productivity Commission, "Performance Benchmarking of Australian Business Regulation: Planning, Zoning and Development Assessments," 2011.

[245]Stephen Malpezzi, "Some International Perspectives on Affordable Housing and Possible Lessons for Korea," *Housing Studies Review* Vol. 13, No. 3 (2005): 209-221.

[246]Kyung-Hwan Kim, Sock-Yong Phang and Susan Wachter, "Supply Elasticity of Housing," *International Encyclopedia of Housing and Home* 7 (2012): 66-74.

[247]Downs, *New Visions for Metropolitan America*.

[248]The moderating impact of less-regulated Clark County, Washington, also in the Portland metropolitan area, could have contributed to the retention of housing affordability. See Jun, "The Effects of Portland's Urban Growth Boundary."

[249]This information is based on the agricultural land quantified in the 2012 United States Census of Agriculture.

[250]Samuel R. Staley and Gerald C.S. Mildner, *Urban Growth Boundaries and Housing Affordability: Lessons from Portland*, Los Angeles: Reason Public Policy Institute, 1999. Available online at http://reason.org/files/65590101cc82afbe097e264f97deb13b.pdf.

[251]Wendell Cox, "Constraints on Housing Supply: Natural and Regulatory," *Econ Journal Watch* Vol. 8, No. 1, (2011): 13-27. Available online at http://econjwatch.org/articles/constraints-on-housing-supply-natural-and-regulatory.

[252]*Southern Nevada Public Land Management Act*, "Program Statistics," September 30, 2014. Available online at http://www.blm.gov/style/medialib/blm/nv/field_offices/las_vegas_field_office/snplma/pdf/reports.Par.12274.File.dat/SNPLMA%20September%202014%20Land%20Sale%20Statistics.pdf.

[253]*Demographia*, "Phoenix Land Market Analysis: Growth Management," January 7, 2010. Available online at http://www.demographia.com/db-phxland.pdf.

[254]OECD, "Land-use Restrictions as Barriers to Entry."

[255]Hall et al., *The Containment of Urban England*, p. 405.

[256]Paul C. Cheshire and Christian A.L. Hilber, "Office Space Supply Restrictions in Britain: The Political Economy of Market Revenge," *The Economic Journal* Vol. 118, No. 529 (2008): F185-F221.

[257]McKinsey Global Institute, *Driving Productivity and Growth in the U.K. Economy*, McKinsey Global Institute, 1998. Available online at: http://www.mckinsey.com/insights/mgi/research/productivity_competitiveness_and_growth/driving_productivity_and_growth_in_the_uk_economy.

[258]Peter Ganong and Daniel Shoag, "Why Has Regional Income Convergence in the U.S. Declined?" HKS Working Paper No. RWP12-028, 2013. Available online at http://papers.ssrn.com/sol3/Delivery.cfm/SSRN_ID2241069_code1638787.pdf?abstractid=2081216&mirid=5.

[259]This movement away from less-affordable metropolitan areas is discussed in Section 5.2.

[260]Raven Saks, "Job Creation and Housing Construction: Constraints on Metropolitan Area Employment Growth," *Journal of Urban Economics* Vol. 64, Issue 1 (2008): 178-195. Available online at http://www.sciencedirect.com/science/article/pii/S0094119007001180.

[261]Dan Andrews, "Real House Prices in OECD Countries: The Role of Demand Shocks and Structural and Policy Factors," OECD Economics Department Working Papers, No. 831, OECD Publishing, 2010. Available online at http://dx.doi.org/10.1787/5km33bqzhbzr-en.

[262]Barker, *Review of Housing Supply* and Barker, *Barker Review of Land Use Planning*.

[263]Urban growth boundary.

[264]Brueckner, "Government Land-use Interventions."

[265]Barker, *Review of Housing Supply: Delivering Stability*.

[266]Cheshire, "Urban Land Markets and Policy Failures."

[267]John Muellbauer, "Property Taxation and the Economy after the Barker Review," *The Economic Journal* Vol. 115, No. 502 (2005): C99-C117.

[268]Matthew Rognlie, "A Note on Piketty."

[269]Thomas Piketty, *Capital in the 21st Century*, Cambridge: Harvard University (2014).

[270]Also see "The Paradox of Soil," *The Economist*, April 4, 2015. Available online athttp://www.economist.com/news/briefing/21647622-land-centre-pre-industrial-economy-has-returned-constraint-growth.

[271]Hsieh and Moretti, "Why Do Cities Matter?"

[272]Barker, *Review of Housing Supply* and Barker, *Barker Review of Land Use Planning*.

[273]Ibid.

[274]Ibid.

[275]Migration within the nation, also called "domestic migration."

[276]The information is derived from United States Census Bureau data.

[277]Downs, *New Visions for Metropolitan America*.

[278]Hall et al., *The Containment of Urban England*.

[279]Kathleen Short, "The Supplemental Poverty Measure: 2013," Current Population Reports, October 2014. Available online at http://www.census.gov/content/dam/Census/library/publications/2014/demo/p60-251.pdf. Mississippi and West Virginia are well known for their high poverty rates.

[280]Bruegmann, "Land-use Regulation."

[281]Mills, "Truly Smart Growth," p. 2.

[282]Benjamin M. Friedman, *The Moral Consequences of Economic Growth*, New York: Albert A. Knopf, 2005.

[283]Because urban containment is associated with deteriorating housing affordability over longer periods of time, early studies may be premature.

[284]C.R. Beaton, "An Examination between Land-use Planning and Housing Costs in Oregon: 1970-1980," Willamette University, 1982.

[285]It is not surprising that an early analysis might find little land-value gap at the urban containment boundary. The gap tends to increase over time, as the land inside the urban containment boundary becomes scarcer. This is evident in Portland (Section 4.3), Melbourne (Section 4.4) and Auckland (Section 4.5).

[286]Knaap and Nelson, *The Regulated Landscape*.

[287]Anthony, "The Effects of Florida's Growth."

[288]Arthur C. Nelson, "Using Land Markets to Evaluate Urban Containment Programs," *Journal of the American Planning Association* Vol. 52, No. 2 (1986): 156-171.

[289]Nelson and Dawkins, "The Containment of Urban America."

[290]See for example Todd Litman, "Analysis of Public Policies that Unintentionally Encourage and Subsidize Urban Sprawl," NCE Cities – Sprawl Subsidy Report, *The New Climate Economy*, March 2015. Available online at https://files.lsecities.net/files/2015/03/NCE-Sprawl-Subsidy-Report-021.pdf.

[291]Gerard C.S. Mildner, Kenneth J. Dueker and Anthony M. Rufolo, "Impact of the Urban Growth Boundary on Metropolitan Housing Markets," Portland State University, Center for Urban Studies (1996).

[292]Dawkins and Nelson, "Urban Containment Policies and Housing Prices."

[293]Arthur C. Nelson, "Using Land Markets to Evaluate Urban Containment Programs," *Journal of the American Planning Association* Vol. 52, No. 2 (1986): 156-171.

[294]Chris Parker, "Housing supply, choice and affordability: Trends, economic drivers, and possible policy interventions," *Auckland Council*, 2015. Available online at http://www.aucklandcouncil.govt.nz/EN/AboutCouncil/businessandeconomy/Documents/housingsupplychoiceandaffordability.pdf/.

[295]As noted above, Auckland is the only metropolitan area over 1,000,000 population that is administered by a single local government in the five nations. It is expected that Honolulu will become the second such metropolitan area, when the 2015 population estimates are announced (in 2016).

[296]Fischel, "Comment on 'The Link between Growth Management and Housing Affordability.'"

[297]Phillips and Goodstein, "Growth Management and Housing Prices."

[298]Nelson and Duncan, *Urban Containment in the United States*.

[299]Brueckner, "Urban Sprawl: Lessons from Urban Economics."

[300]For example, see Paul Cheshire and Stephen Sheppard, "Taxes Versus Regulation: The Welfare Impacts of Policies for Containing Sprawl," 2002; the New Zealand government reforms, the Florida urban containment repeal and Cheshire, "Urban Land Markets and Policy Failures."

[301]Wendell Cox, "Urban Policy: A Time for a Paradigm Shift," Policy Series No. 151, Frontier Centre for Public Policy, July 2013. Available online at http://archive.fcpp.org/files/1/PS151_UrbanPolicy_JL03F2.pdf.

[302]"Places Apart, Essay: A Planet of Suburbs," *The Economist*, December 6, 2014. Available online at http://www.economist.com/node/21634591/sites/all/modules/custom/ec_essay.

[303]Downs suggested the 10 per cent level as "socially significant" in the number of households that could be denied homeownership.

[304]Donald Brash, "Introduction to the 4th Annual Demographia International Housing Affordability Survey," *Demographia*, 2008. Available online at http://demographia.com/dhi4-preface.pdf.

[305]For example, see "The Costs of Sprawl – Revisited," Transit Cooperative Research Program Report 39, 1998. Available online at http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_39-a.pdf.

[306]For example, see Claude Gruen, *New Urban Development: Looking Back to See Forward*, 1st ed. New Brunswick, N.J.: Rutgers University Press, 2010.

[307]For example, see Helen Ladd, "Population Growth, Density and the Costs of Providing Public Services," *Urban Studies* (1992), 273-295; Wendell Cox and Joshua Utt, "The Costs of Sprawl Reconsidered: What the Data Really Show," *Backgrounder* No. 1770 (2004): 10. Available online at www.demographia.com/costsofsprawlreconsidered.pdf; Wendell Cox Consultancy, "Growth, Economic Development, and Local Government Structure in Pennsylvania," *Demographia*, 2005. Available online at http://demographia.com/localgovtPA.pdf.

[308]Shlomo Angel, *Planet of Cities*, Lincoln Institute of Land Policy, 2012.

[309]John Fraser Hart, "Half a Century of Cropland Change," *Geographical Review* Vol. 91, No. 3 (2001): 525-543.

[310]Pierre Desrochers and Hiroko Shimizu, *The Locavore's Dilemma: In Praise of the 10,000-mile Diet* (2011), Public Affairs.

[311]Metropolitan Transportation Commission, "Transportation 2035: Change in Motion," April 2009. Available online at http://www.mtc.ca.gov/planning/2035_plan/.

[312]United States Environmental Protection Agency, "Final Rulemaking to Establish Light-duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards: Regulatory Impact Analysis," 2012. Available online at http://epa.gov/otaq/climate/regulations/420r10009.pdf.

[313]For example, see Wendell Cox, "Reducing Greenhouse Gases from Personal Mobility: Opportunities and Possibilities," Reason Foundation, November 2011. Available online at http://reason.org/files/reducing_greenhouse_gases_mobility_development.pdf.

[314]McKinsey & Company, "The Impact of the Financial Crisis on Carbon Economics: Version 2.1 of the Global Greenhouse Gas Abatement Cost Curve," 2010.

[315]Christopher Jones, and Daniel M. Kammen, "Spatial Distribution of U.S. Household Carbon Footprints Reveals Suburbanization Undermines Greenhouse Gas Benefits of Urban Population Density," *Environmental Science and Technology* Vol. 48, No. 2 (2014): 895-902. Available online at http://pubs.acs.org/doi/abs/10.1021/es4034364?journalCode=esthag.

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