Accessing the Adequacy of Housing Supply in Ontario

Research Report
September 2018

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About This Report

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Statistics Canada data and relevant literature were used to inform the computer simulation models used to produce the results of this report.

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OVERVIEW

Estimates of future need for housing provide municipalities with valuable information for planning decisions. Population and household growth projections can provide a simple measure of how much additional housing municipalities should plan to build. This method, however, does not guarantee that housing will be affordable to the future population.

Decreasing local affordability for residents can be a symptom of housing demand exceeding supply, causing a housing shortage. By this logic, increasing the housing supply in municipalities where housing prices vastly outstrip local residents' incomes may alleviate market pressures. Using this as a starting point, the Department for Communities and Local Government (DCLG) of the United Kingdom devised an approach to estimate the need for housing based on population growth and that adjusts upwards in currently unaffordable housing markets. The estimates of housing need generated incorporate demographic trends as well as market forces.

In Canada, housing prices in some regions, notably in the Greater Toronto Area (GTA) are rising much faster than the incomes of local residents, causing what many are calling an affordability crisis. This report applies the DCLG methodology to Ontario as a proof of concept exercise to determine its usefulness in aiding municipalities to consider affordability pressures in planning for growth.

Following the DCLG methodology, we calculate local affordability at the lower-tier municipal level as the ratio of median housing price to median income, giving the Local Affordability Ratio (LAR). In the original DCLG report, a threshold value of 4 is chosen as the level at which local housing prices are considered to be unaffordable. Considering the differences in housing market context between England and Ontario, we consider a range of affordability thresholds and supply sensitivity factors to ensure that the results of the analysis are not driven by an arbitrary choice of parameters.

The LAR of each region is then used to calculate an adjustment factor for each municipality in Ontario. Projected household growth is then multiplied by the adjustment factor to calculate additional supply needed locally to relieve affordability pressures. The applicable formulas are shown below:

$$Adjustment\ Factor = \frac{Local\ Affordability\ Ratio - Affordability\ Threshold}{Affordability\ Threshold} * Supply\ Sensitivity\ Factor$$

$$Additional\ Need = Adjustment\ Factor * Projected\ Household\ Growth$$

RESULTS AT A GLANCE

Applying the DCLG methodology of adjusting future housing need to account for market affordability adjusts these estimates upwards the most for municipalities in the GTA, notably Toronto. This reflects the affordability concerns voiced in the region:

- **Housing affordability in the GTA is much lower than in the rest of the province.** The regional median LAR for the GTA is 6.2. This is in comparison to a LAR of 3.8 in the rest of Ontario. This average is in part brought up by Toronto, which has an LAR of 9.2, meaning that the median local house price is over nine times higher than median incomes in the City.
- **The adjusted estimates of housing need generated by this approach are in large part driven by the choice of discretionary parameters.** The discretionary parameters are the affordability threshold and the supply sensitivity factor. Those chosen by the DCLG, 4 and 0.25, respectively, generate useful estimates when used to calculate additional housing supply needed in Ontario municipalities, i.e. they vary with local affordability ratio while remaining somewhat feasible.
- **Toronto is the City requiring the largest number of extra housing starts per year to adjust for affordability.** At well over 5,000 additional starts needed per year, Toronto has a large lead over the second highest municipality, Mississauga, which would require 1,000 starts per year.

CONCLUSIONS

Although the analysis is highly sensitive to the choice of parameters, it remains a useful heuristic by which to adjust housing need to account for market pressures by virtue of being simple and generating results that are simple to interpret. If applied province-wide, it can therefore can provide a good starting point for municipalities engaging in long-term planning decisions.

Currently, Ontario's Growth Plan outlines prescriptive population growth targets based upon land-use restrictions rather than population growth forecasts. While affordability is recognized as a challenge, notably in the GTA, the population density and land use targets are not informed by market forces. The approach piloted in this report to adjust the planned growth in dwelling supply takes into account market signals with the goal of reducing supply/demand mismatches by increasing development where high demand for housing is pushing up prices. However, it does not take into account the practical aspects of the additional development such as land use policy and availability of development. Ideally, any planning process would include both information obtained from market signals and that from detailed land use objectives. Future research should investigate a potential hybrid approach where local affordability factors and adjusted supply estimates are constrained by land use and development profiles.

Nonetheless, increasing the number of starts cannot by itself reduce affordability pressures in a community. In order to ensure community-wide affordability, municipal planners must also take into account housing suitability, the propensity for housing to be purchased as an investment good and how stimulating development could cause supply-side pressures and increase the price of inputs.

1.0 INTRODUCTION

An appropriate supply of housing for all members of the community is essential for the continued growth and well-being of any municipality or city. Ensuring that suitable and affordable housing is available for everyone in growing regions is a key challenge across Canada. Since the majority of the existing housing stock and the ongoing development of new stock is privately owned and managed, it is subject to market forces. Therefore, any approach to estimate how many dwellings must be built to meet the needs of a growing population must take market factors into account.

Population growth estimates and projections of household size can be used to determine how much and what type of stock will be required to suitably house the future population. However, this approach does not guarantee that housing will be affordable. There are many additional factors that drive the choice of dwelling, including income, affluence and local amenities. Therefore, basing planning decisions on the estimates generated from the straightforward method described above may result in affordability and sustainability issues in the future. F example, higher income households tend to prefer dwellings exceeding their minimum suitability requirements, resulting in increased competition for larger units, and creating affordability pressures.

While a full market analysis of future prices is difficult with many unquantified or unknown factors, more heuristic approaches have been proposed. One such approach, proposed by the Department for Communities and Local Government (DCLG) in the United Kingdom, attempts to adjust the new stock required as estimated from the expected population growth and takes into account current market signals.

This report applies the DCLG's methodology for estimating future housing need to Ontario. This exercise can help gauge the usefulness of this approach and its applicability to the Canadian context.

1.1 UK DEPARTMENT FOR COMMUNITIES AND LOCAL GOVERNMENT APPROACH

The government of the United Kingdom devised a methodology to estimate local housing need that all local authorities in England could apply uniformly. The goal of this exercise is to ensure that local decision making achieves a level of housing supply that both accounts for population growth and reduces affordability pressures across England. The basis for adjusting housing need estimates to account for affordability is that currently unaffordable areas face affordability pressures due to an ongoing undersupply of housing. This adjustment compensates for under housing and helps stabilize prices into the future by prescribing the building of more units than the minimum number required to house the projected population increase in areas that are currently considered unaffordable.

When applied uniformly, this approach provides an alternative to disjoint decision making at the Local Authority District level and ensures that local housing supply across the country will add up to the country-wide estimates of total housing need. It has the benefit of providing a simple and transparent way to 'allocate' future housing supply among local authorities according to need. This is especially important

given the interconnectedness of housing markets; the effectiveness of efforts to reduce housing shortages and stabilize prices in one area is highly dependent on the planning decisions of its neighbours.

In order to investigate the application of the DCLG's approach to Canada, it is necessary to understand how it was devised in the United Kingdom.

1.1.1 LOCAL AUTHORITIES IN THE UNITED KINGDOM

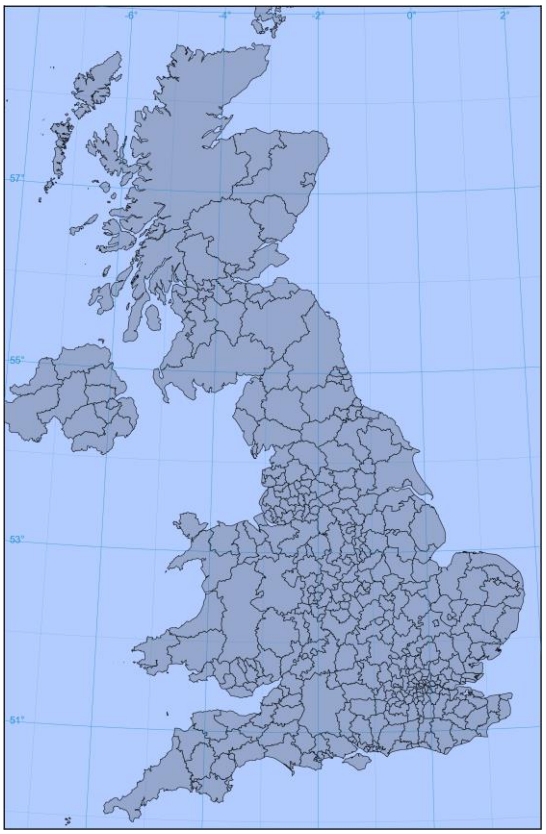
The United Kingdom is divided into 391 subnational divisions for local governmental purposes consisting of:

- 326 districts in England (36 metropolitan boroughs, 201 non-metropolitan districts, 55 unitary authorities, the City of London and the Isles of Scilly)
- 32 councils in Scotland,
- 22 principal areas in Wales, and
- 11 districts in Northern Ireland

Collectively, these various subnational divisions are referred to as Local Authority Districts and are responsible for the local governance. Figure 1 shows the geographic distribution of the Local Authority Districts across the United Kingdom. Based on 2017 population estimates, the average population of a Local Authority District in England was about 170,000 inhabitants or 72,700 households. The geographic scale, and governance responsibilities roughly correspond to upper tier municipalities in Ontario, and to census divisions and larger census subdivisions across Canada. For comparison, Canada's 293 census divisions have an average population of about 120,000 based on the 2016 census, though it does vary considerably across the country.

As in Canada, the Local Authority Districts in the United Kingdom have considerable control over the rate at which housing is developed within their boundaries, and there are many regions where housing affordability issues are a significant concern. In 2017, the DCLG proposed a heuristic method which is sensitive to market signals to better estimate the needed supply of dwellings to help alleviate affordability pressures based on the characteristics of the Local Authority Districts.

Figure 1 Map of Local Authority Districts in the United Kingdom[1]



1.1.2 LOCAL AFFORDABILITY RATIO

Under the method used by the DCLG, affordability is defined by the Local Affordability Ratio (LAR). The LAR is calculated for each of the Local Authority Districts as the ratio of median home prices to median income across the districts. In Canada, this would be equivalent to calculating the ratio for each census division or census subdivision. Despite the word 'local' in the name, the approach is still only applied to local authority districts which correspond to relatively large geographic regions.

As a rule of thumb, a LAR above three to four indicates low local affordability according to the notion that households can generally only afford to purchase homes that cost no more than three to four times their income without tapping into significant existing capital (such as an existing home, inheritance, or large gift). Under the UK methodology, an area where the median price of homes is higher than four times the median income signifies that most of the area's population would not be able to afford these homes as first time home buyers at today's market prices. A high ratio of price to income is interpreted as a market signal that there is a shortage of supply in the region which is driving up prices. In order to alleviate the

[1] Contains UK National Statistics data © Crown copyright and database right 2018; Contains OS data © Crown copyright and database right 2018

demand pressure, the DCLG proposed a heuristic method to use the LAR to adjust local estimates of need for new housing starts.

1.1.3 THE DCLG METHODOLOGY FOR ESTIMATING LOCAL HOUSING NEED

The most basic method to estimate the additional housing stock required in a regions is to simply use the expected household growth as the basis for the calculation. If 1,000 more households are expected to be in the region, 1,000 more homes would be required. While this approach might provide the correct number of dwellings, it does not address market issues such as the affordability of the dwellings. If there is significant market competition for those 1,000 homes, the prices may become too high for the households the new developments were designed to serve. The DCLG approach extends this basic method by using the market signals indicated by the LAR to increase supply where required.

Specifically, the LAR is measured at the Local Authority District level and then used to calculate the housing supply adjustment factor for areas under significant affordability pressure using the following formula:

$$Adjustment\ Factor = \frac{Local\ Affordability\ Ratio - 4}{4} * 0.25$$

The lower limit of the adjustment factor is restricted to 0, with a value of 0 signifying that no adjustment needs to be made to the housing supply need estimates based on household growth. Using the adjustment factor, the local housing need for a given region is calculated using:

$$Local\ housing\ Need = (1 + adjustment\ factor) * projected\ household\ growth$$

The parameters of the Adjustment Factor formula reflect the specific context of England, as well as the policy objectives of the DCLG. The affordability threshold value of 4 was chosen to represent the LAR above which housing is considered unaffordable, reflecting conventional notions of affordability. Any local authorities with a LAR higher than 4 is therefore targeted for additional supply (meaning additional units beyond what are required to accommodate forecasted population growth) with the objective of lowering the LAR and improving affordability.

The 0.25 in the adjustment factor formula is a supply sensitivity factor that specifies scale of additional supply need relative to how far the LAR is above threshold price to income ratio[2]. For the UK analysis, this value was chosen to ensure that the sum of all estimated Local Housing Need would be equal to an external estimate of the total need for housing in England.

The Local Housing Need estimates therefore provide a way of allocating additional supply among Local Authorities in England in proportion to where it is most needed. The values generated through this methodology can then be used for planning decisions at the Local Authority District Level. The government has, however, included provisions to cap the increase to ensure feasibility in the cases where calculated increase supply is very large.

[2] Contrary to the description in the DCLG report, mathematically, the supply sensitivity factor is not an elasticity of response and is better thought of as a simple scaling factor.

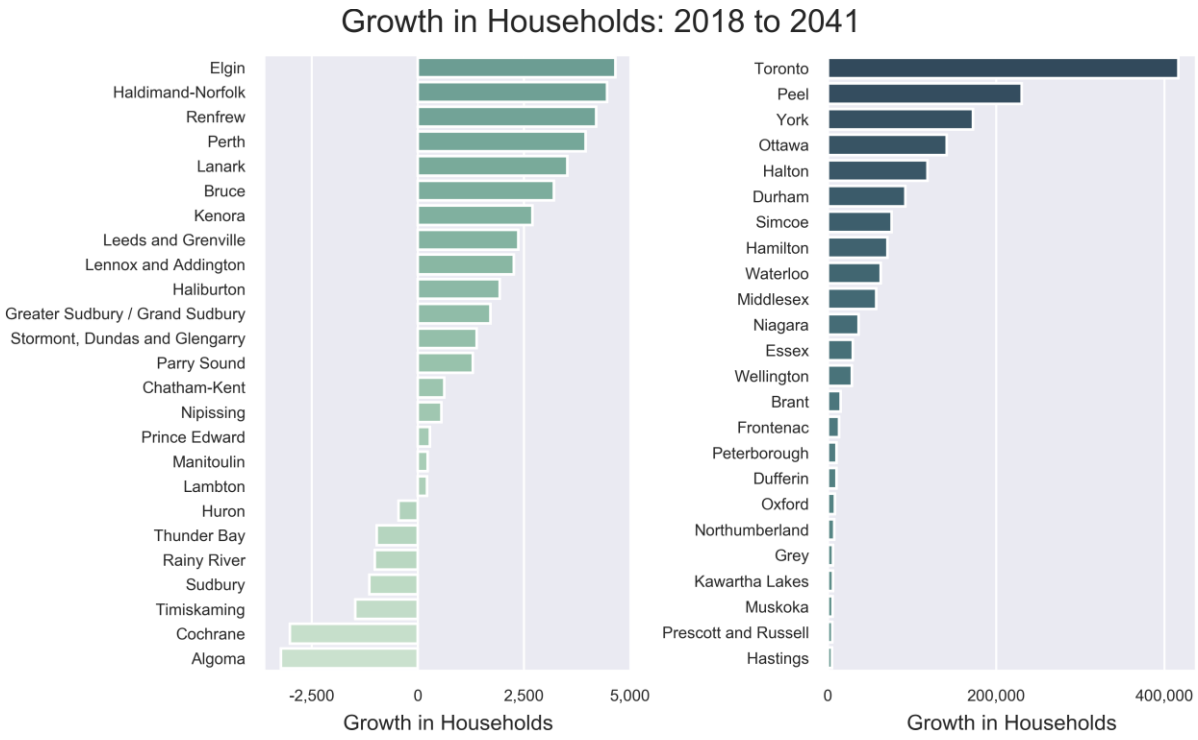
1.2 Application to Ontario

Since the formula applies across regions rather than at the small geospatial region, we apply the methodology to Ontario as a whole. Census subdivisions are used as a reasonable size of geographical unit in Canada to Local Authority Districts in England.

1.2.1 Baseline Household Growth

Baseline population growth is aligned to the Ontario Ministry of Finance forecasts (spring 2018 update), Figure 2 shows the estimated growth in the number of households over the next 23 years from 2018 to 2041.

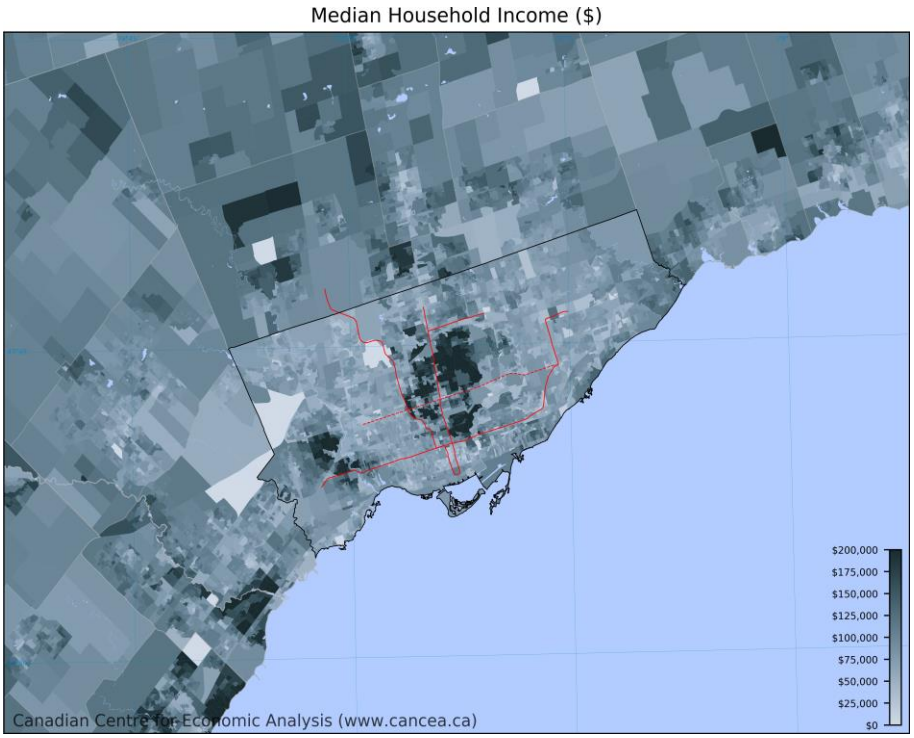
Figure 2 Expected growth in households for census divisions in Ontario



1.2.2 Median Household Incomes

Detailed distributions of incomes across the province are available from the 2016 Canadian census. Since all source of income (employment, investment, or transfers) are sources of funding for shelter, the median before-tax total household income was used to calculate the LAR. Figure 3 below shows the distribution of median incomes across the GTA. The wide variation of household incomes across the region is clearly visible.

Figure 3 Median household before-tax total income across the GTA at the dissemination area level

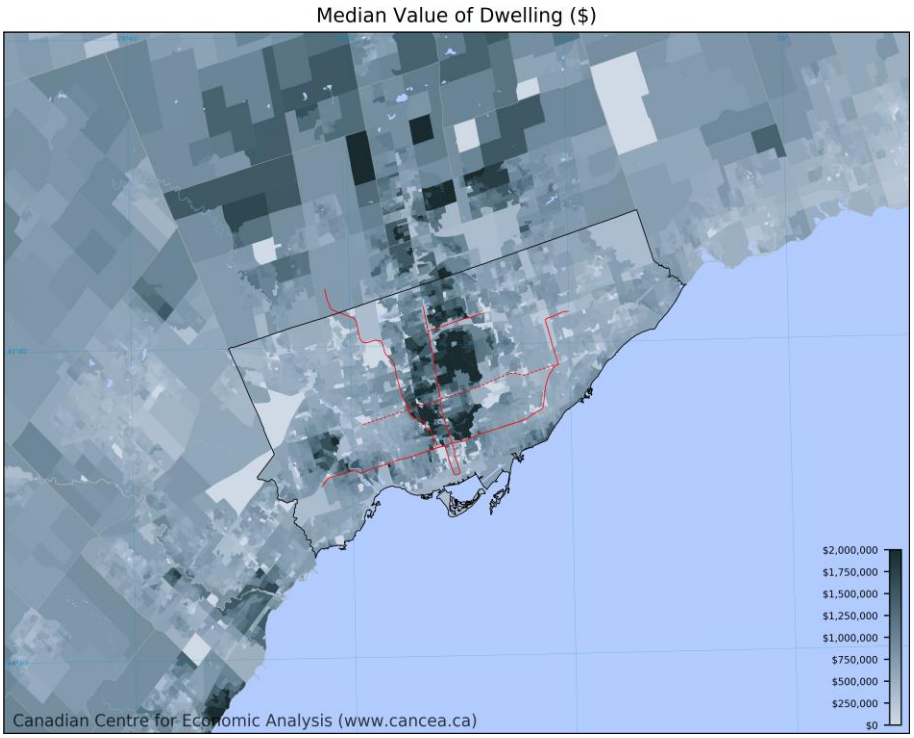


1.2.3 PRICES OF DWELLINGS

The current market prices for homes in Ontario is tightly controlled information. While property taxes are based on assessed values by the Ontario Municipal Property Assessment Corporation, access to the database is not publically available. Historical sale prices were also not available in Ontario until recently[3], and only limited data is currently available. Consequently, we used data from the 2016 census on the values of dwellings. It is important to note that these values are provided by the owners themselves, which may over or underestimate the current individual dwelling market values. However, since only the median of the distribution is used in the analysis, it should provide a reasonable estimate of median dwelling prices. Figure 4 shows the median values dwellings across the GTA.

[3] TREB competition ruling comment

Figure 4 Median dwelling values across the GTA at dissemination area level



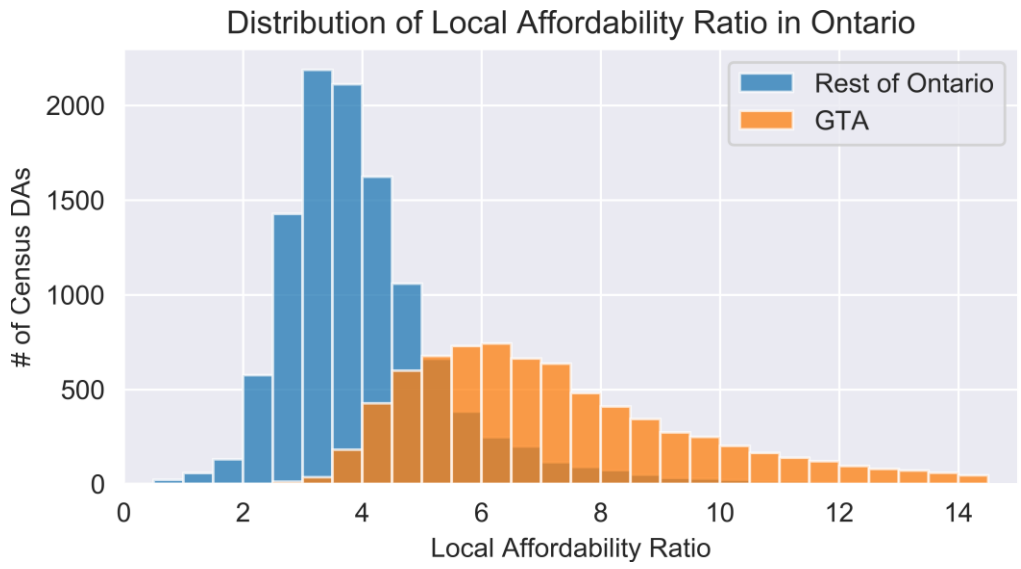
2.0 RESULTS

The household incomes, dwelling values, and growth expectations presented in section 1.2 enable the calculation of the LAR across the GTA and Ontario, local adjustment factors and the adjusted local housing need. Section 2.1 examines LARs in Ontario and compares them to the GTA. Section 2.2 investigates the adjustment factor based on the LAR and the sensitivity of the conclusions to the chosen LAR threshold and supply sensitivity factor.

2.1 LOCAL AFFORDABILITY RATIO

The first step in the analysis is to calculate the ratio of median house prices to median incomes across Ontario. This can be calculated at different geographic levels. In order to understand the variability of the LAR across the province, it is first useful to examine in at the dissemination area level. Figure 5 shows the distribution of the LAR across the province, comparing those in the GTA to those in the rest of the province. Across the province, the median value is 4.7. While slightly above the accepted affordability range of 3 to 4, ratios vary significantly across the province. If we separate out the GTA, the median LAR of all DAs outside of the GTA is a reasonable 3.8, but the GTA median LAR is a considerably higher 6.9.

Figure 5 Distribution of LAR in Ontario dissemination area



A closer look at the City of Toronto highlights how affordability pressures continue to increase (see Figure 6). The average LAR across the City is already high at 9.1, but many neighbourhoods, especially in the downtown core and along major transit lines experience much higher LARs, many exceeding 15. For the vast majority of potential first time buyers[4], following the rule of thumb that recommends purchasing a home that is 3 to 4 times one's income level is impossible.

[4] Property shuffling among current homeowners may further drive up the price of homes, as they can comfortably use the profits of the sale of their current home at market price towards the purchase of a new home.

Figure 6 Local affordability ratio for the City of Toronto and surrounding regions

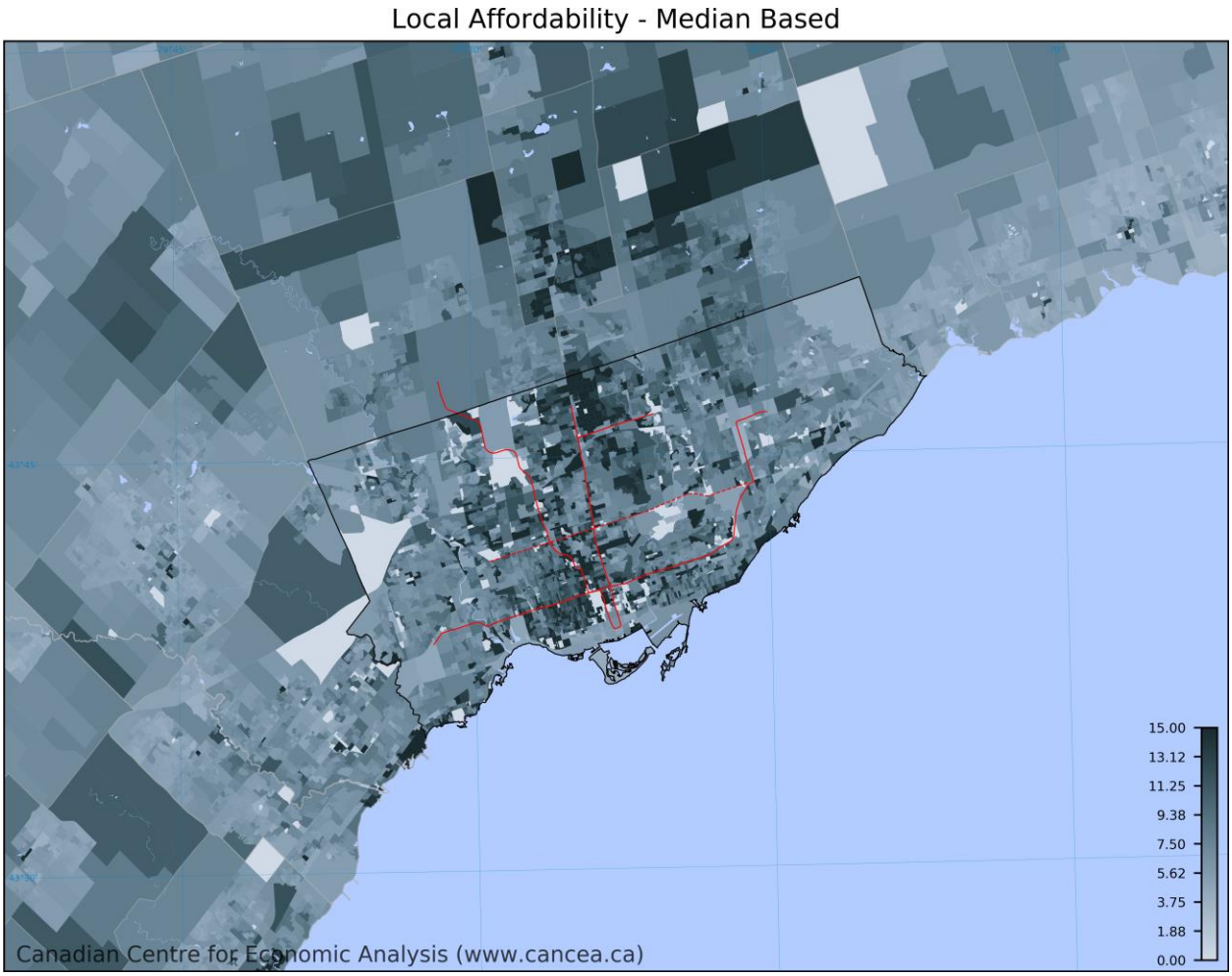


Table 1 Key statistics

Statistics	City of Toronto	GTA	Ontario	Canada
Median Income	$65,829	$78,373	$74,287	$70,336
Median Dwelling Value	$601,922	$647,648	$400,496	$341,556
Median DA Local Affordability Ratio	8.1	6.9	4.7	4.1
Average Local Affordability Ratio	9.1	8.3	5.4	4.9

2.2 Market Signal-Adjusted Local Housing Need

2.2.1 Applying the LAR-Adjusted Methodology to Ontario

While the LAR can be calculated at a detailed geographic resolution, housing supply is a more of a macro-concept. Since any calculation of the adjusted local housing need depends on the expected population growth in the region, census subdivisions (lower-tier municipalities) represent the most appropriate geographical level at which to perform the calculation. This is primarily due to the fact that to estimate the growth at yet a lower level would require knowing the location of planned developments at the sub-municipal level.

In addition to the LAR, which is calculated at the census subdivision level, the supply adjustment factor also depends on:

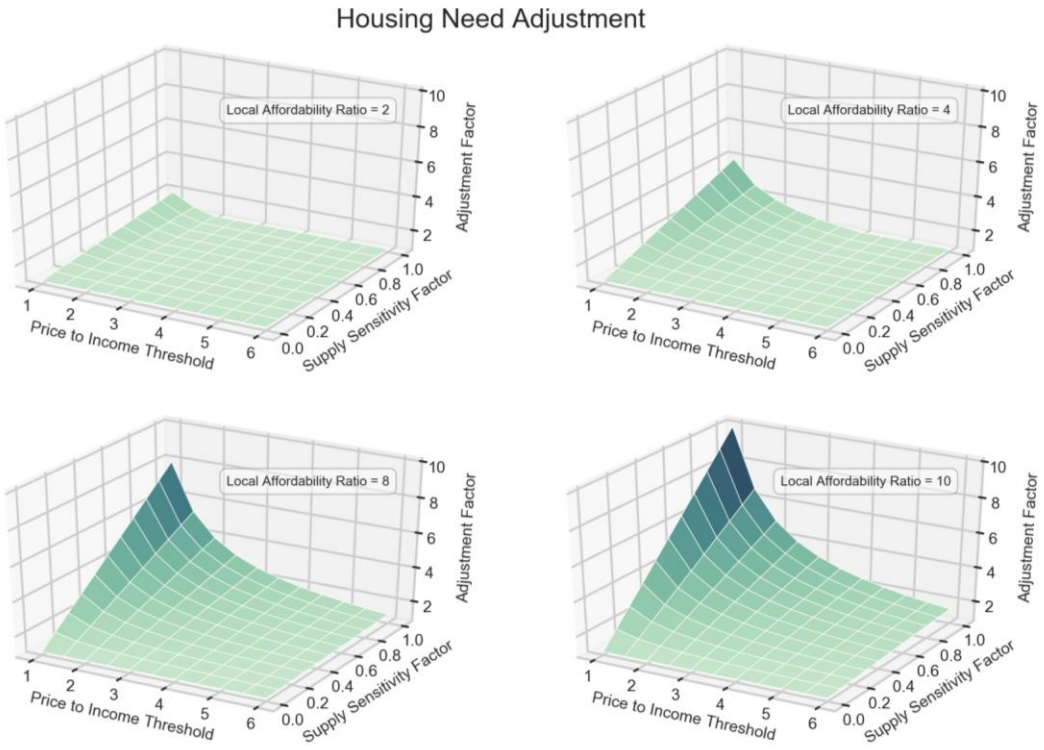
- the chosen LAR threshold at which housing is no longer affordable, and
- the supply sensitivity factor used.

We perform a sensitivity analysis in order to understand the extent to which the choice of parameters drives changes in the adjustment factor, i.e. to understand the sensitivity of any conclusions to the chosen parameters. In the sensitivity analysis, we allow the minimum threshold to vary from 2 to 6 and the supply sensitivity factor to vary from 0 to 0.6. Note that as the affordability threshold increases and/or the supply sensitivity factor decreases, the adjustment factor goes to zero.

The additional supply of dwelling starts calculated (adjusted local housing need minus projected household growth – see equation below) varies considerably depending upon the chosen LAR and supply sensitivity factor, and this variability increases with LAR, as seen in Figure 7.

$$Additional\ supply = Adjustment\ Factor * Projected\ Household\ Growth$$

Figure 7 Sensitivity of the adjustment factor to the affordability threshold and supply sensitivity factor for various affordability ratios



For any given expected population growth rate for Ontario (consistent with the Ontario Ministry of Finance long term demographic forecast for each on Ontario's 49 census divisions), applying the adjustment factor to calculate local housing need results in a greater number of dwellings than is technically required, which is consistent with the objective to reduce pressures on prices. Figure 8 and Figure 9 shows the additional supply required over the growth-driven estimate, as well as the required percentage increase in starts relative to the baseline growth, depending upon the price to income threshold and elasticity. (Note that Toronto has a different scale in Figure 8 that the other regions.)

Figure 8 Annual additional supply starts required by census subdivision. Note that Toronto is on a different scale than the other regions.

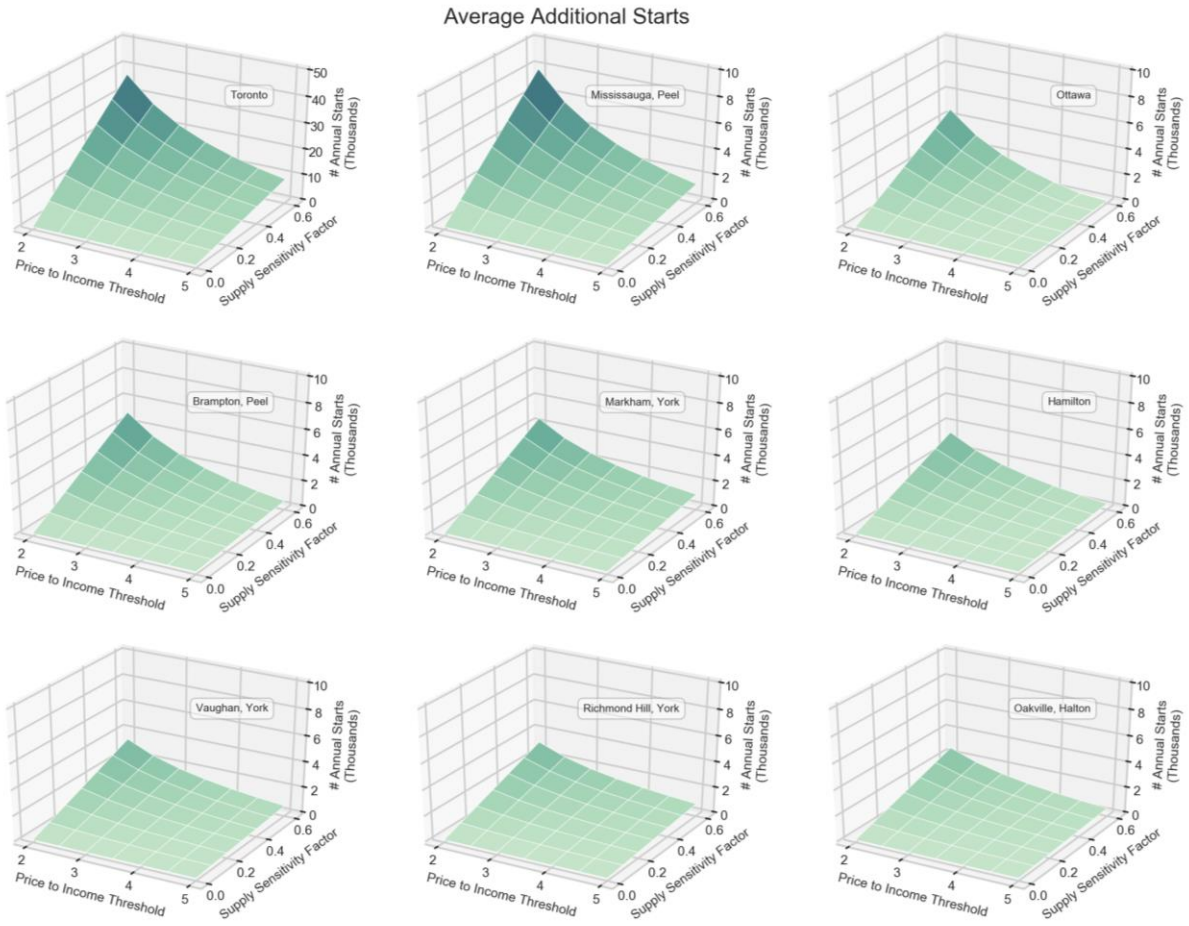
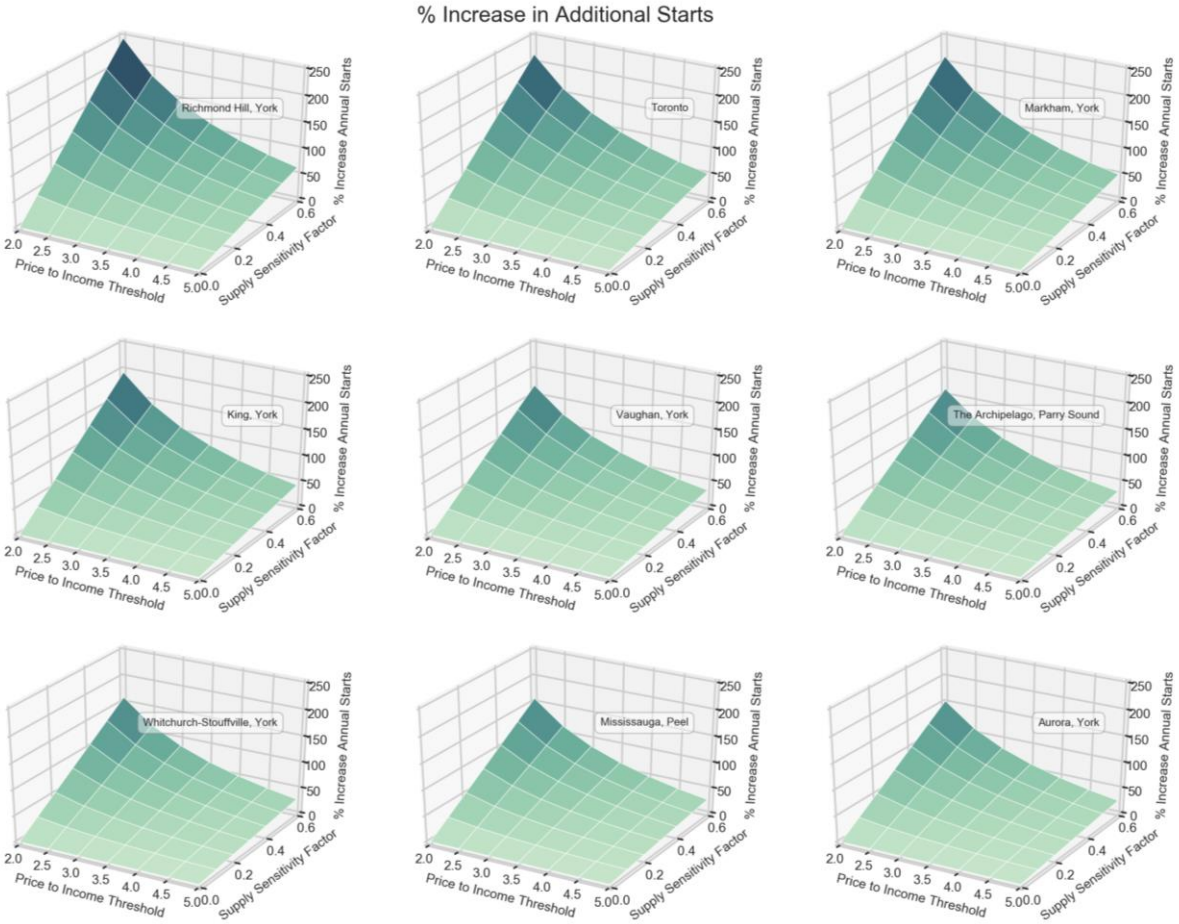


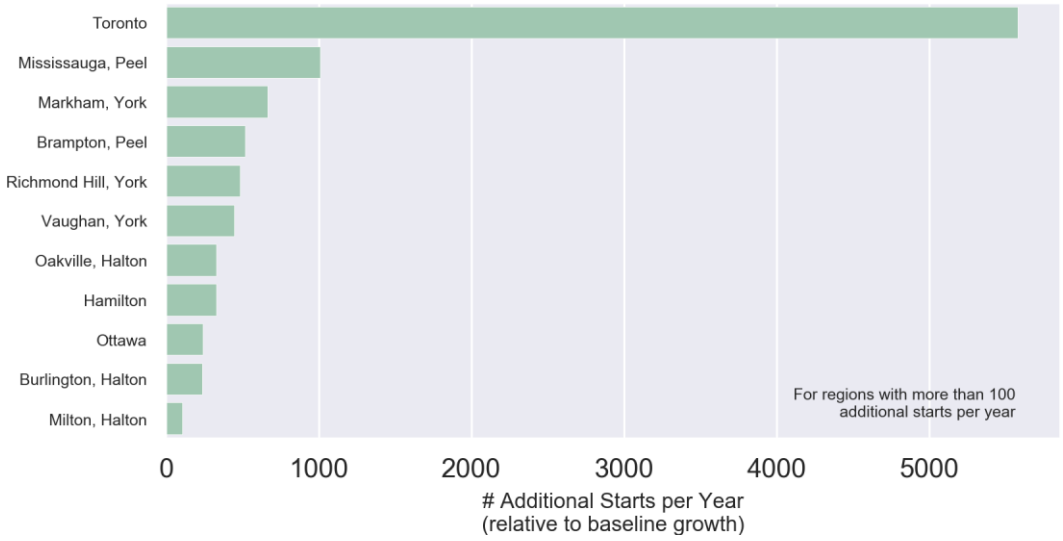
Figure 9 Percentage increase in annual starts relative to baseline growth estimates for the regions with the highest values



As is apparent in Figure 9, small thresholds or larger sensitivity factors can easily result in unrealistically high additional housing supply requirements. For example, in Richmond Hill, using the thresholds of less than 3.5 and supply sensitivities above 0.4 can result in requiring a doubling or more housing starts relative to the baseline requirements in the region. On the other hand, sensitivities lower than 0.2 or large thresholds above 5 result in very little change. Therefore, the values originally adopted by the DCLG of an affordability threshold of 4, and a supply sensitivity factor of 0.25 appear to be reasonable choices.

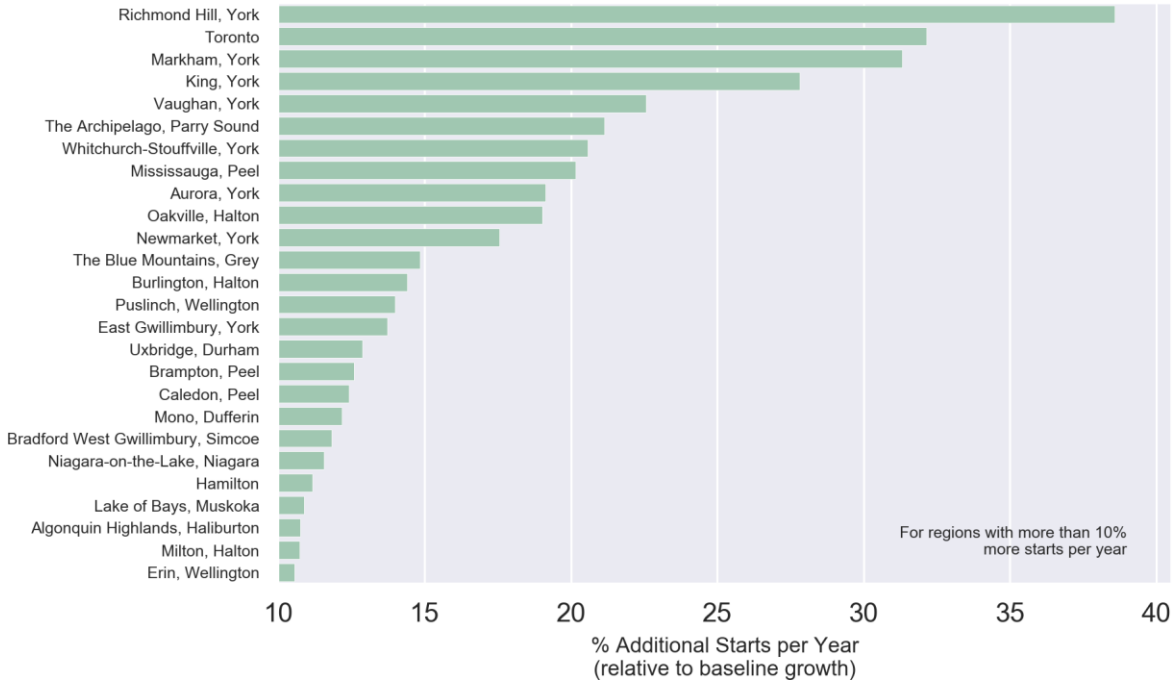
Figure 10 shows the estimated additional supply of starts needed annually for all single and lower tier municipalities in Ontario. Note that the additional supply varies linearly with the expected growth in the region. Therefore, if the number of household in Toronto was expected to grow by 10% more than in the current baseline, the additional starts required would also increase by 10%. For the City of Toronto, this corresponds to about 5,500 most starts per year than dictated solely by household growth.

Figure 10 Annual number of additional starts for the municipalities with the highest values using an affordability threshold of 4, and a supply sensitivity factor of 0.25.



While the City of Toronto requires the highest number of additional starts, Richmond Hill's has the highest Adjustment Factor, with Toronto in second place (Figure 11).

Figure 11 Adjustment Factor for the top municipalities using an affordability threshold of 4, and a supply sensitivity factor of 0.25



It is important to note that constructing additional housing supply beyond population growth requirements could result in the local population growth exceeding the baseline expectation if lower market prices incentivize people to relocate from out of province. Since, in this analysis, we assume the

total population entering the province is assumed to be fixed, the change in market forces could result in higher growth where additional housing is supplied at the expense of lower growth elsewhere. Consequently, it is important to repeat the analysis frequently to understand how prices in the different municipalities adapt to the change in supply and how demographic growth diverges from the initial baseline.

2.3 Lessons for Ontario's Planning Approach

Ontario's Places to Grow (P2G) legislation provides growth targets to municipalities in the Greater Golden Horseshoe. The approach used in P2G to determine the targets is more prescriptive than predictive; it specifies where people should settle rather than following current trends to identify where people prefer to settle. While this approach is built around land use and population density, it is insensitive to market forces and provides no guarantee that growth would be affordable for complete communities. As a result, P2G could inadvertently limit supply relative to market demand resulting in price increases

The approach to adjust the planned growth in dwelling supply takes into account market signals with the goal of reducing supply/demand mismatches by increasing development where high demand for housing is pushing up prices. However, it does not take into account the practical aspects of the additional development such as land use policy and availability of development. The updated supply estimates are also focussed on the shorter term outlook and would require frequent updates as market and demographic forces evolve.

Ideally, any planning process would include both information obtained from market signals and that from detailed land use objectives. Future research should investigate a potential hybrid approach where local affordability factors and adjusted supply estimates are constrained by land use and development profiles.

2.4 Additional Factors Impacting Affordability

The effectiveness of providing additional supply as a way to reduce the pressure on housing prices in regions with high LARs is dependent on a number of factors: who and how many benefit from increased supply; and whether there are any adverse effects on housing suitability.

Investor Behaviour

Real-estate is considered both an investment good and a basic need (shelter), often by different segments of the population. Therefore, increasing the supply of dwellings that are appealing to investors may not increase affordability for residents who may continue to find themselves priced out of the market. Investor-friendly units are easy to rent out and low-maintenance, such as condo towers located in close proximity to employment centres where local going rent is high. An oversupply of this type of housing may therefore fail to reduce local affordability pressures and instead encourage more real-estate investing.

Type of Housing Built

Type of housing can describe the size of developments, level of density, as well as level of luxury. Each type of household, depending on number of members, their ages, income and lifestyle will have slightly different housing needs and wants. The balance of types of housing has implications for equity; if supply of future units doesn't match up with the projected growth in households (e.g. forecasts indicate a big increase in birthrates and family formation with 3 or more members, while developments are mainly one-bedroom units), different household configurations may face widely varying levels of affordability in the same locality.

Furthermore, an undersupply of luxury units can lead to significant changes in the character of neighbourhood or city; an increase in supply of larger modest dwellings may attract high-end buyers that purchase dwellings larger than they need, intending to upgrade them through renovation. This could in fact result in an overall decrease in affordability.

Ability to Construct Supply

Housing supply is itself subject to market forces, and the ability to construct additional supply quickly and in many regions concurrently can drive up the prices of inputs, such as construction labour, construction material and equipment. Supply factors may therefore also drive up the price of dwellings as inputs and capital funding become scarcer, potentially counteracting the increased affordability resulting from increased supply.

Land Use and Zoning Restrictions

All factors mentioned above may be affected by restrictions on land use and zoning. Restrictions on the location or type of development allowed in an area can slow down the development process and create a mismatch between types of unit supplied and those needed. Municipalities may also not have enough land ear-marked for development in order to accommodate the building of additional supply and may have to consider land-use trade-offs.

3.0 CONCLUSIONS

By incorporating market signals to adjust the growth in housing supply in areas with high affordability pressure using a heuristic method, it is estimated that the City of Toronto could require almost 5,500 more starts annual than that suggested solely by demographic growth. The goal of adjusting supply to account for market forces is to reduce demand-side pressure and lower the ratio of household prices to incomes, making homes more affordable. This methodology suggests that many municipalities besides Toronto, particularly in the GTA, plan to build stock beyond what is strictly needed to accommodate demographic growth.

Sensitivity analyses show that the exact number of additional starts estimated is highly sensitive to the price to income threshold and the supply sensitivity factor. Choosing the appropriate level for these parameters should therefore be a carefully considered decision, backed by additional studies, if this method were to be promoted province-wide. It would also be important to monitor LAR levels over time as additional stock is developed to better understand how regional housing markets responds to changes in supply.

The method developed by the DGLA provides a useful starting point and simple method for incorporating market signals into the municipal planning process, but following its recommendations is no guarantee of success for reducing affordability and housing the future population. It is critical to note that any additional supply must be matched to the demographic requirements of the population. Building a large number of dwellings that do not appeal to a significant number of households with different configurations would not contribute to solving the challenges of housing affordability and suitability.

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