HOUSING MARKET INFORMATION

HOUSING MARKET INSIGHT

TORONTO, MONTRÉAL & VANCOUVER

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Location of Housing Starts in Major Canadian Urban Areas

Highlights

- This study analyzes the intra-metropolitan location of new housing in major Canadian urban areas. It contributes to explaining long-term trends for housing supply, like suburbanization and gentrification. A better understanding of supply and its external costs is fundamental to recognize housing challenges within CMAs.
- Outside of city cores, housing completions are increasing with the distance from the city centre because lots are available and cheap. This confirms the suburbanization phenomenon in Canada.
- Central areas have their own dynamic in which housing completions are booming thanks to condominium apartments in taller buildings. This leads to an unexpected U-shaped curve representing the level of completions by distance from the city centre.
- The transportation mode analysis confirms a U-shaped curve representing the level of completions in Toronto and Montréal, with a high level of supply in active core and auto suburbs. However, in Vancouver, the level of housing completions in the different urban areas is relatively stable.
- The population density analysis shows that housing completions tend to increase with population density in Vancouver, but decrease with population density in Montréal. This result suggests a strong pattern for suburbanization in Montréal and a much more limited one in Vancouver.
- The family income analysis reveals that the level of housing completions is the highest in middle-class areas. The lower level of housing starts in low-income areas in Montréal (and to a lesser degree in Toronto) may indicate affordability challenges in those neighbourhoods.

"Outside the downtown areas of the major CMAs, housing starts are mainly increasing with the distance from the city centre because lots are available and cheap. This suburbanization leads to external costs that may affect the efficiency of housing policies in the long run."

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Introduction

Looking precisely at patterns of housing supply within Canadian urban areas is required to understand long-term trends, like suburbanization and gentrification. Sprawling suburban areas increase the cost of infrastructure investments, the social and economic costs of roadway congestion, and the dependence on automobiles, which, in turn, accelerates greenhouse gas emissions. Those external costs affect the efficiency of housing policies. In city cores, gentrification comes with affordability challenges for low-income households. Furthermore, understanding these patterns may shed light on what might inhibit accelerating housing supply that could increase affordability.

This report describes patterns of housing development in different locations within the three largest Canadian CMAs (Toronto, Montréal and Vancouver). In other words, it provides an overview of the location and types of housing supply being added within these CMAs. Moreover, we explored what factors are associated with these housing supply patterns. Based on the urban economics literature, we analyzed the level of housing completions using several metrics: distance from the city centre, transport choices, population density and family income.

CMHC's database of residential completions in the three largest Canadian CMAs for the period 1990-2018 was used. Data are broken down by forward sortation area (FSA) to capture location within CMAs. FSAs are larger than census tracts and allow us to avoid some confidentiality issues that might restrict our analysis, especially with income. However, FSAs are still a relatively small geographical unit to enable us to analyze different urban areas in major CMAs.[1] In order to explain housing supply data, we sorted them by the most-used metrics: the distance from the city centre (as the crow flies), the share of the main mode of commuting, the population density and the average family income. Most of those data are from 2016 and come from Statistics Canada.

In summary, our results indicate a strong pattern for suburbanization in Montréal. The level of housing completions increases with distance from the city centre, and the new housing supply level peaks in the auto suburbs. Like Montréal, Toronto has experienced urban sprawl with a high level of housing development in remote suburbs. However, Toronto has also seen a boom in housing construction in its active core. Urban sprawl is more limited in Vancouver, as the British Columbian metropolitan area has a relatively stable level of construction in its urban areas.

Housing supply and distance from the city centre

What do we expect in theory: Are housing completions higher close to the city centre or in the suburbs?

The simplest way to analyze housing supply location within an urban area is to use the monocentric model developed by Alonso (1964), Mills (1967) and Muth (1969). This model assumes that there is a single employer located in the central business district (CBD), one mode of transportation and the cost per unit of distance is constant. To minimize commuting costs for work trips to the CBD, central areas are developed first, and then as land in the central city becomes filled in, development occurs on open tracts of land in the suburbs (Mieszkowski and Mills, 1993). In theory, distance from the city centre gives us an easy look at the location of housing supply within a city, especially when we compare the inner city to remote suburbs.

Several papers have used this distance metric to characterize the different urban areas of CMAs. For example, Turcotte (2008) considered that central neighbourhoods in the largest Canadian CMAs are located less than 5 kilometres from the city centre, and farther neighbourhoods are regarded as peripheral, with the most peripheral being 25 kilometres or more from the city centre. Bunting et al. (2000) defined the central city "core," as census tracts within 1.5 km or 2 km of the centre of the CBD (2 km for CMAs with over one million residents and 1.5 km for the remainder), and the "inner city" at large (which includes the core), as tracts within reasonable walking distance from the CBD.

Following this natural evolution theory, average completions should be increasing with the distance from the city centre, since there is still available land in remote areas. Furthermore, the population of Canada is growing relatively faster in the suburbs than in the active cores (Gordon, Hindrichs and Willms, 2018), which also suggests higher completions in the most peripheral areas. That said, there are also some elements that could lead to a higher level of housing starts in the central areas. The few lots available close to the city centre are often used for taller buildings with hundreds of housing units. The best illustration is the condominium apartment boom[2] in the heart of the biggest Canadian cities. Gentrification is another reason for the high level of construction in the central areas.

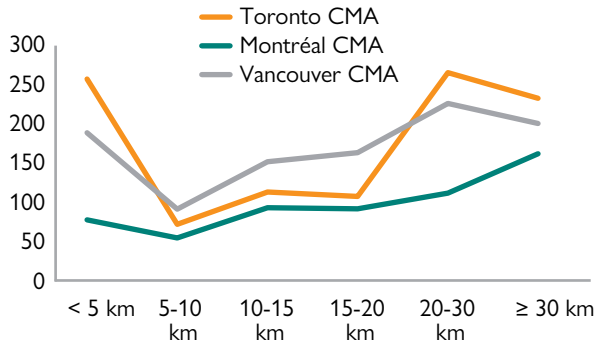
What patterns are we seeing from the distance analysis in Toronto, Montréal and Vancouver?

Figure 1 shows that, in the three largest Canadian CMAs, the level of housing completions is relatively high in the FSAs farthest from the city centre. Vancouver and Toronto have a peak in areas within 20-30 km, while Montréal's peak is even further, at above 30 km. Above the 5 km line, the level of housing completions in FSAs mainly increases with the distance from the city centre in the three CMAs. For all of them, construction activity has been the lowest in the 5 km to 10 km range. It leads to an unexpected U-shaped curve representing the level of completions by distance, especially in Toronto and Vancouver. The reason for this result is the fact that, in these closest suburbs, there are fewer available lots to build single-family homes (compared to remote suburbs) and, at the same time, there are fewer incentives to build tall apartment buildings, since there are no employment nodes (compared to central areas).

[1] The Toronto, Montréal and Vancouver CMAs have respectively 174, 192 and 93 FSAs.

[2] See table 1 for more details.

Figure 1: Average Annual Completions of FSAs by Distance (1990-2018)



Source: CMHC

In central areas (within 5 km), completions are relatively high in Toronto and Vancouver. This strong activity is mainly supported by condominium apartment buildings located in their respective downtown. In comparison to those two CMAs, Montréal has a relatively low level of housing completions in its central core. Limitations in the height and shape of the buildings may have contributed to limiting the housing supply in Montréal.[3]

These results mean that outside of the CBDs the natural evolution theory is true in major Canadian CMAs. The level of housing completions in FSAs is mainly increasing with the distance from the city centre because lots are available and cheap. However, inner cities have their own dynamic in which residential completions are booming thanks to condominium apartments in taller buildings.

What type of housing is built where?

Sorting housing completions by intended market (table 1) provides a deeper analysis of supply. As we could have expected, condominiums took the lion's share of completions close to the city centre (within 5 km) compared to homeowner (single-family, semi-detached and row houses) and rental units. This condominium boom is explained by the relatively high price of lots in central areas. In fact, building an apartment complex ensures a much higher profit per square foot of housing. As we move further away from the city centre, the condominium supply mainly decreases in Toronto and Montréal.

In the three largest Canadian CMAs, homeowner housing completions increase with distance from the city centre. Single-family, semi-detached and row homes present almost the same patterns.[4] This reflects the increasing availability of lots when we move away from the city centre. This also confirms that these CMAs are monocentric in terms of housing density. Finally, the level of rental completions by distance from the city centre is relatively stable.

[3] Building heights in Montréal should not exceed the height of Mount Royal's summit, which is 232.5 m above sea level. Furthermore, buildings must respect the centre's skyline. Source: City of Montréal. http://ville.montreal.qc.ca/portal/page?_pageid=2762,31013878&_dad=portal&_schema=PORTAL.

[4] See table A1 in the appendix for more details on housing completions by dwelling type.

Table 1: Average annual completions in FSAs by intended market and distance in Toronto, Montréal and Vancouver (1990-2018)

	< 5 km	5-10 km	10-15 km	15-20 km	20-30 km	≥ 30 km
Toronto CMA						
Condominium	225.7	41.4	82.2	68.1	75.6	20.9
Homeowner	6.9	20.1	22.1	31.2	176.1	208.1
Rental	25.2	12.7	9.2	10.5	13.7	5.1
Montréal CMA						
Condominium	62.6	32.6	40.0	30.3	22.3	24.0
Homeowner	1.7	6.9	37.6	40.8	72.5	114.9
Rental	12.1	15.7	16.0	21.5	19.1	25.0
Vancouver CMA						
Condominium	137.7	44.3	108.1	104.1	130.1	94.2
Homeowner	18.1	37.0	39.6	48.1	86.1	98.1
Rental	35.0	12.2	6.3	12.7	11.4	10.3

Source: CMHC
Note: This table excludes co-ops.

Housing supply and transit (main mode of commuting)

What do we expect in theory: Are housing completions traditionally higher in active cores, transit suburbs or auto suburbs?

The main limitation of the distance analysis is the assumption of monocentric cities. In fact, polycentricity has been strongly encouraged in many CMAs by recent planning policies that attempt to cluster development around higher-access nodes in the transit system through mobility hubs and transit-oriented development. Thus, the location of different urban areas by transport metrics has emerged as the most reliable method, in particular journey-to-work data (Gordon and Janzen, 2013).

Transit metrics are particularly useful in the three largest Canadian cities since they have efficient rapid transit systems. The Toronto subway, first opened in 1954, has currently 75 stations and 76.9 kilometres of route. The Montréal subway, inaugurated in 1966, has 68 stations along 69.2 kilometres of track. Vancouver's SkyTrain opened its first stations in 1986 and has 53 stations and 79.6 kilometres of route.

We follow Gordon and Janzen (2013) by defining urban areas in function of the share of the main mode of commuting in each FSAs:

i. **Active cores** regroup FSAs in which active transportation (walking and cycling) is greater than 150% of the metro average for the journey to work. Housing supply here is mainly supported by the condominium apartment booms.

ii. **Transit suburbs** regroup FSAs in which transit use is greater than 150% of the metro average for the journey to work and active transportation is less than 150% of the metro average. Housing supply here has been encouraged by transit-oriented development (TOD).

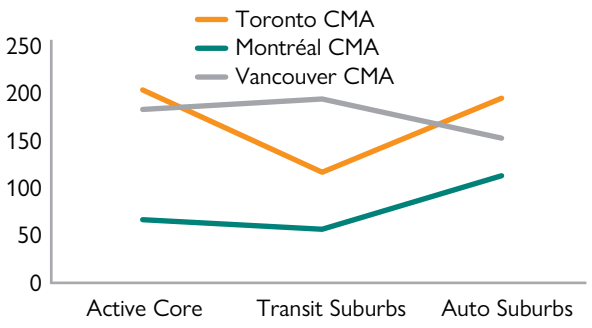
iii. **Auto suburbs (and exurban)** regroup FSAs in which transit use is less than 150% of the metro average and active transportation is less than 150% of the metro average. Mainly composed of single-family homes, housing supply here is naturally fuelled by the availability and the low cost of land.

Suburbanization is a common pattern in most North American cities. Gordon, Hindrichs and Willms (2018) found that between 2006 and 2016, the population of Canadian auto-dependent communities grew much faster than the national growth rate, and the national pattern is similar regarding the construction of new dwelling units. This means that average completions should be higher in auto suburbs.

What patterns are we seeing from the transit analysis in Toronto, Montréal and Vancouver?

During the period of our study (1990-2018), average annual completions in FSAs in the active core (204.3) and auto suburbs (195.6) have been relatively high in the Toronto CMA (figure 2). There are clearly two patterns. First, the apartment boom in the active core fuelled by the growth in white-collar service activities downtown and the surge of people seeking an urban lifestyle. Second, suburbanization pushed more families into auto suburbs and exurban areas. Conversely, transit suburbs saw the lowest average of completions in the Toronto CMA. An explanation is the fact that transits suburbs are often located in the 5 to 15 km range[5] in which there are fewer incentives to build tall apartment buildings when compared to central areas.

Figure 2: Average Annual Completions of FSAs by Urban areas (1990-2018)



Sources: CMHC and Statistics Canada (2016 Census)

Housing supply in the Montréal CMA showed the strongest pattern of suburbanization. In fact, the average annual completion in auto suburbs (113.7) is almost double that of the active core (67.3) and transit suburbs (57.2). As we have seen in the distance analysis, housing supply increases with distance from the city centre and peaks in remote suburbs above the 30 km line. Let's recall that Montréal is located on an island where available land is relatively scarce, so most housing developments occur outside the Island where public transit is less efficient. Moreover, Montréal has seen less construction in its active core compared to Toronto and Vancouver.

Housing supply in the Vancouver CMA is relatively stable in the different urban areas. Contrary to Toronto and Montréal, this CMA has seen less suburbanization. The average annual completions in FSAs in auto suburbs (153.4) are even lower than for the active core (183.7) and the transit suburbs (194.8). This result is in line with Gordon, Hindrichs and Willms (2018) who found that the Vancouver region set the best example in the nation from 2006 to 2016 by recording the lowest overall proportion of population growth in auto suburbs and exurban areas.

Housing supply and population density

What do we expect in theory: Are housing completions higher in denser areas?

The monocentric model works for density in pretty much the same way as distance does. Let's recall that in this model, central areas are developed first and, as land in the central city becomes filled in, then development moves to the suburbs. Commuting cost differences within an urban area must be balanced by differences in the price of living space. This means that dwelling sizes increase the further away from the city centre. Buildings are taller near the city centre than in the periphery. Thus, population density decreases with distance (Brueckner, 1987). Researchers also agree that local density is positively associated with non-auto mode shares for several reasons: higher congestion in the urban core and greater frequency of transit service (Levinson and Kumar, 1997).

Following this theory, we could expect a high level of housing starts in low-density areas (the main characteristic of remote suburbs). However, it is highly possible we could see the opposite result in reality. In fact, the recent condominium apartment boom, gentrification and TOD occurred in relatively denser areas.

[5] The average distances of transit suburbs in Toronto, Montréal and Vancouver are respectively 10.7 km, 8.9 km and 10.4 km.

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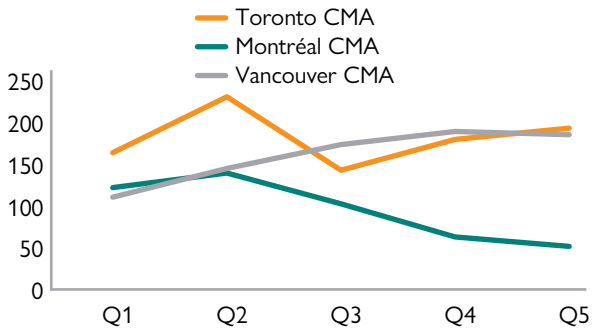
What patterns are we seeing from the density analysis in Toronto, Montréal and Vancouver?

To represent completions by population density in different areas within the CMAs, we chose an analysis by quintile (figure 3). In effect, quintiles ensure an equal distribution of FSAs among five groups and allow the comparison between different CMAs. The first quintile (Q1) contains FSAs in which the population density is among the 20% lowest in the CMA. The fifth quintile (Q5) contains FSAs in which the population density is among the 20% highest in the CMA.

Figure 3: Average Annual Completions of FSAs by Population Density Quintile (Q), (1990-2018)



Sources: CMHC and Statistics Canada (2016 Census)

The Montréal CMA showed results in line with the monocentric theory model. In fact, the level of housing supply decreased with population density. As we have seen from the distance and commuting analysis, suburbanization leads to high residential construction outside the active core.

By opposition, in the Vancouver CMA, the level of housing supply increased with population density. This confirms that suburbanization is less effective in Vancouver (as we saw in the transit analysis) and the boom in condominium towers has ensured the highest level of housing supply in its dense active core. Even though the housing supply varies a lot with population density in the Toronto CMA, no conclusion can be made on this relationship.

Housing supply and family income

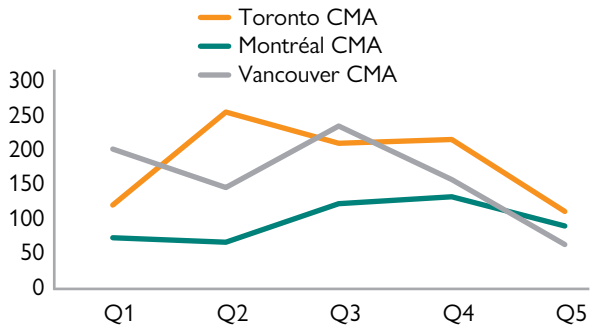
What do we expect in theory: Are housing completions higher in wealthier family areas?

According to the monocentric model, when income rises in a city, desired housing consumption increases, and since housing per square foot is cheaper at greater distances, consumers have an incentive to move to less central locations in order to buy a bigger dwelling. This desire to relocate drives up house prices at distant locations and depresses prices in the now less-attractive central part of the city (Brueckner 1987). This leads to the richest families living in the suburbs. In fact, travel distances have typically been found to be longer for high-income people, who more often live in the suburbs (Levinson and Kumar 1997). We could then indirectly expect a high number of housing starts in high-income family areas.

What patterns are we seeing from the income analysis in Toronto, Montréal and Vancouver?

To represent completions by family income in different areas within the CMAs, we chose again an analysis by quintile (figure 4). In fact, income varies a lot between these three CMAs. From our data, in 2016, the average family income for all FSAs in Toronto, Vancouver and Montréal were respectively $98,635, $89,300 and $78,400.

Figure 4: Average Annual Completions of FSAs by Familly Income Quintile (Q), (1990-2018)



Sources: CMHC and Statistics Canada (T1 Family File, 2016)

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Our results showed the highest number of completions in average-income family areas for the three largest Canadian CMAs. Residential housing completions peaked in the second quintile in Toronto, in the third quintile in Vancouver and in the fourth quintile in Montréal. This means that new developments have mainly attracted the middle class, especially in the suburbs.

Another interesting pattern for Toronto and Vancouver is the relatively low level of construction in the wealthiest areas (Q5). Municipal rules and not-in-my-backyard opposition may have constrained housing supply in those neighbourhoods. By opposition, Montréal has seen the lowest level of construction in its lower-income areas (Q1 and Q2). In line with the theory, this may be explained by desire of middle- and high-income families to buy bigger dwellings off the Island, which leads to a high rate of renters[6] (with lower income) in central areas. The few housing developments in low-income areas in Montréal (and to a lesser degree in Toronto) may indicate affordability challenges in those neighbourhoods.

Montréal has seen the strongest pattern for suburbanization, with the level of housing supply increasing with distance from the city centre and decreasing with population density. Like Montréal, Toronto has experienced urban sprawl with a high level of housing development in remote suburbs. However, Toronto has also seen a boom in housing construction in its active core. Urban sprawl is more limited in Vancouver, as this CMA has a relatively stable level of construction in its urban areas.

This study highlights two main housing policy challenges. First, the increasing trend toward suburbanization may accelerate housing external costs (infrastructure investments, roadway congestion and greenhouse gas emissions). Second, the relatively low level of housing development in low-income areas in Montréal (and to a lesser degree in Toronto) may indicate affordability challenges in those neighbourhoods.

Conclusion

This report describes patterns of the intra-metropolitan location of new housing in the three largest Canadian CMAs (Toronto, Montréal and Vancouver) for the last three decades. We found that outside of the CBDs the theory of monocentric cities holds in those CMAs. The level of housing completions in FSAs is mainly increasing with the distance from the city centre because lots are available and cheap. However, inner cities have their own dynamic in which residential completions are booming thanks to condominium apartments in taller buildings.

[6] In 2016, the rate of renters was 63% in the city of Montréal, but only 44% in the Montréal CMA.

Additional Resources

Appendix

Table A1: Average annual completions in FSAs by dwelling types and distance in Toronto, Montréal and Vancouver (1990-2018)

	< 5 km	5-10 km	10-15 km	15-20 km	20-30 km	≥ 30 km
Toronto CMA						
Apartment	251.4	53.8	91.1	72.9	71.5	14.5
Row	4.3	4.9	9.1	12.9	48.5	43.0
Semi-detached	1.5	3.3	1.4	3.0	28.5	27.1
Single-family	2.2	12.9	14.4	21.5	119.0	150.4
Montréal CMA						
Apartment	77.2	48.1	53.8	50.5	40.5	52.9
Row	2.3	3.8	8.8	6.7	5.7	6.1
Semi-detached	0.3	1.9	5.5	7.3	9.2	8.7
Single-family	0.7	3.8	27.9	30.3	59.2	96.8
Vancouver CMA						
Apartment	167.5	50.2	85.5	97.7	91.5	53.9
Row	5.7	6.5	25.7	19.9	47.3	44.1
Semi-detached	5.0	3.7	8.3	8.3	6.4	8.9
Single-family	12.9	33.8	35.0	40.1	83.1	96.1

Source: CMHC

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Alternative text and data for figures

Figure 1: Average Annual Completions of FSAs by Distance (1990-2018)

CMA	< 5 km	5-10 km	10-15 km	15-20 km	20-30 km	≥ 30 km
Toronto	259	75	116	110	267	235
Montréal	81	58	96	95	115	165
Vancouver	191	94	154	166	228	203

Source: CMHC

Figure 2: Average Annual Completions of FSAs by Urban areas (1990-2018)

CMA	Active Core	Transit Suburbs	Auto Suburbs
Toronto	204	117	196
Montréal	67	57	114
Vancouver	184	195	153

Sources: CMHC and Statistics Canada (2016 Census)

Figure 3: Average Annual Completions of FSAs by Population Density Quintile (Q), (1990-2018)

CMA	Q1	Q2	Q3	Q4	Q5
Toronto	167	234	146	183	197
Montréal	126	143	106	67	55
Vancouver	114	148	177	193	189

Sources: CMHC and Statistics Canada (2016 Census)

Figure 4: Average Annual Completions of FSAs by Familly Income Quintile (Q), (1990-2018)

CMA	Q1	Q2	Q3	Q4	Q5
Toronto	123	258	213	218	114
Montréal	76	69	125	135	93
Vancouver	204	149	238	160	66

Sources: CMHC and Statistics Canada (T1 Family File, 2016)