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Greater Toronto Area



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"By assessing the combination of commuting costs and housing costs one can gain a more comprehensive gauge of the total cost of location choices."



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GTA Location and Commuting Choices: The Effect of Commutes on Lower Priced Suburban Housing

The cost of housing in the Greater Toronto Area (GTA¹) increased rapidly in recent years, and as a result, many buyers looked to lower priced homes in the suburbs. Colloquially, this is referred to as the phenomenon of 'drive until you qualify', the process by which urban dwellers seek affordable larger homes in distant suburbs. However, as households move further from city centres, often their place of work, the cost of commuting rises. This migration away from city centres can result in significant monthly outlays that offset these lower housing costs.

This report explores the trade-off between location and commuting costs in the GTA, with a focus on commuting costs for those who work in the City of Toronto and seek lower priced single-detached housing in the suburbs. Commuting habits of GTA commuters were ascertained from Statistics Canada's Census of the population. Commuting costs are estimated as a weighted cost of the various modes of transportation for each GTA municipality. Actual commuting costs will vary greatly on an individual basis. The methodology behind the calculations is provided in an appendix to the report.

Report Highlights

- Many GTA households migrated to municipalities that offered more affordable single-detached housing, but also longer commutes.
- Often the cost of longer commutes can completely offset the savings from moving to more affordable municipalities.
- The use of public transit to commute can maintain housing cost savings.

Most commuters in the GTA work within the City of Toronto

In 2016, there were approximately 2.6M commuters in the GTA, with 1.3M of them commuting to a place of work within the City of Toronto. This made it the most common destination for GTA commuters. Roughly, two-thirds of these commuters lived within the City² itself, while the remaining commuted from the 905 areas³ of the GTA. Municipalities outside of the City of Toronto that had a high share of their commuters heading to work in the City tended to border it. Pickering had the highest share at 52.6%, followed by Ajax (48.4%), Markham (46.9%), Vaughan (40.8%) and Richmond Hill (39.1%). The City of Mississauga was an exception among neighbouring cities with a low share of 26.7%. Notably, Mississauga itself hosts many places of work. Other municipalities had shares ranging from a high of 32.2% in Whitby to a low of 11.4% in Halton Hills.

The most common mode of transport used by commuters working in the City was the car at 49%, while 40% took public transit. Suburban areas of the GTA are connected to the City of Toronto

through an extensive highway and rail network. For those who reside in the 905 areas and commute into the City, the share taking a car to work increased to 67%, with 21% taking public transport. Among the 905 commuters taking public transit, 56% took a commuter train to work in the City.

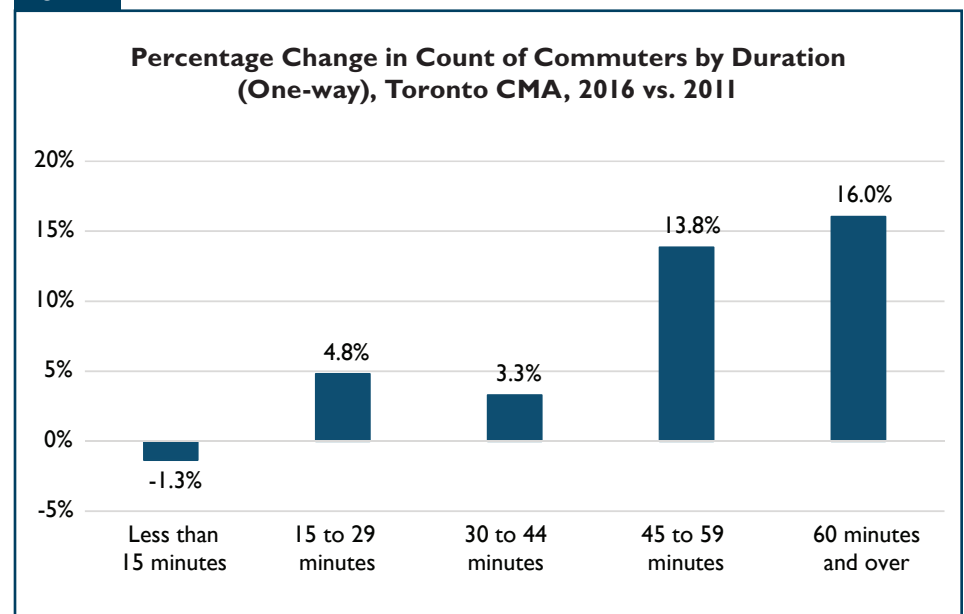
GTA commute times growing

The available evidence appears to support the claim that many households in the GTA moved further away from the urban core in order to afford the home they want. Recent surveys indicate that single-detached housing is still the most preferred housing type among prospective buyers⁴. Additionally, a survey by the Pembina Institute indicated that 44% of respondents preferred to live in places where they could afford a larger home, despite it being less location efficient.⁵

Those who work in the City of Toronto and choose to reside outside the City do so for various reasons, including relatively less expensive housing, larger property sizes, environment, and lifestyle. Regardless of this, there is a trade-off for suburban commuters in the form of longer commutes. Between 2011 and 2016, the average duration of commutes increased (see Figure 1). The fastest growing segment of the commuter population was among those who commuted one-way for 60 minutes or more, growing by 16%, followed by those who commuted 45-59 minutes (14%). Many of the areas with one-way commutes longer than 60 minutes were in suburbs, such as Aurora, Burlington, Milton, Newmarket, Oakville, and Oshawa.

Over this same time period, the existing home markets in suburban areas experienced greater demand pressures than the City. In fact, there was a positive correlation between the sales-to-new listings ratio (a measure of market condition⁶) and the duration of commutes.

Figure 1



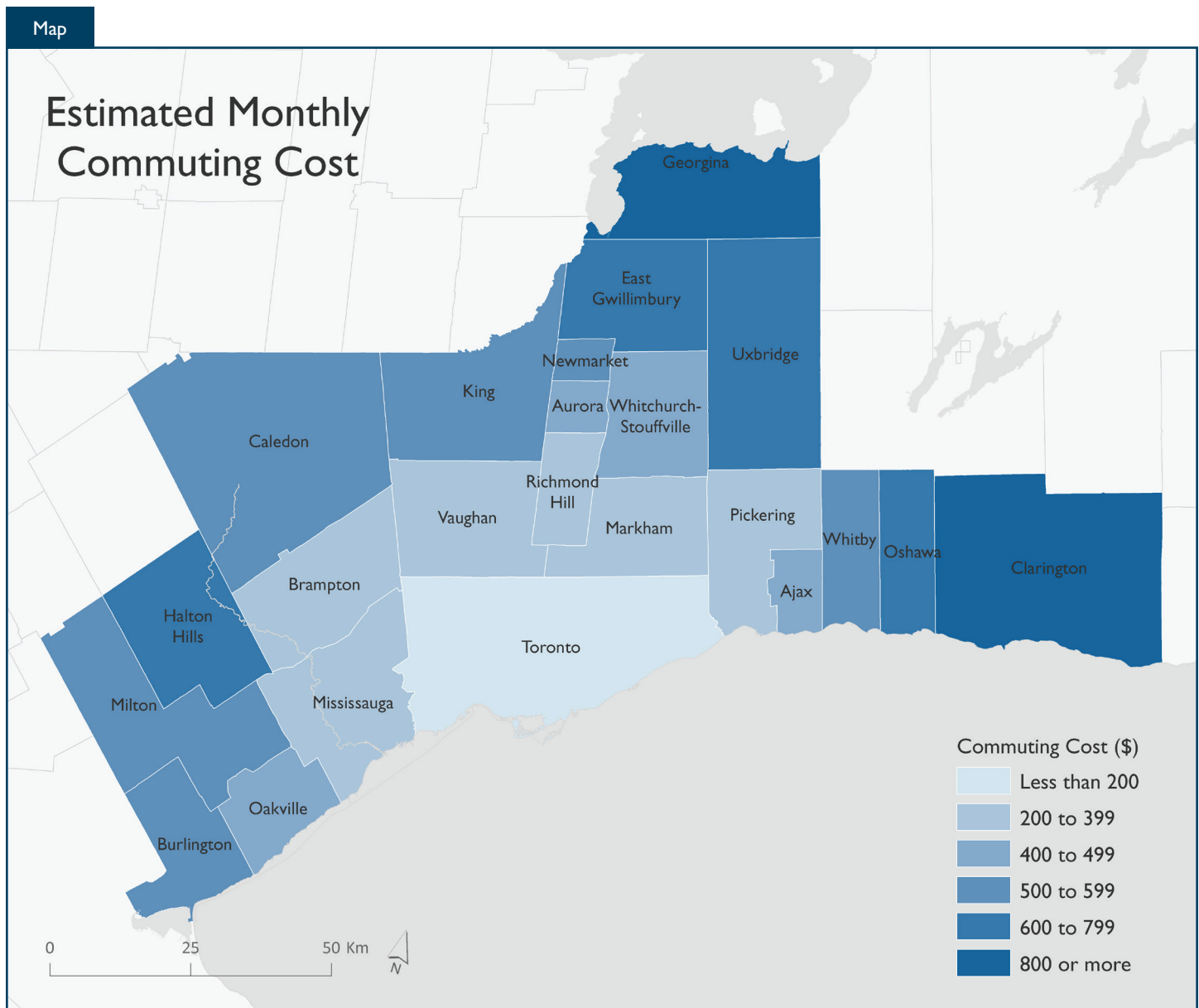
Source: Statistics Canada (Census 2016), CMHC calculations

Put another way, areas with longer commute times saw housing demand grow faster than supply compared to places with shorter commutes. Available data on migration within the GTA is limited, but we do know that over this period the City of Toronto had a net decline of 146,000 people to other parts of Ontario. Meanwhile, GTA regions that offered more affordable single-detached housing like Halton and Durham experienced the opposite.⁷

With lower home prices, come increased commuting costs

Given the finding that many households moved further out, we sought to examine the trade-off between less expensive housing and longer commutes. The City of Toronto and its large presence of employers was chosen as a focal point for our transportation cost

estimates. Recall that the most common commute in the GTA had a place of work within the boundaries of the City of Toronto. In terms of housing costs, this analysis examined the monthly carrying cost of single-detached homes⁸, which represent the most common dwelling type in the GTA. It was also the most likely form of housing that would magnetise urban dwellers to the suburbs.



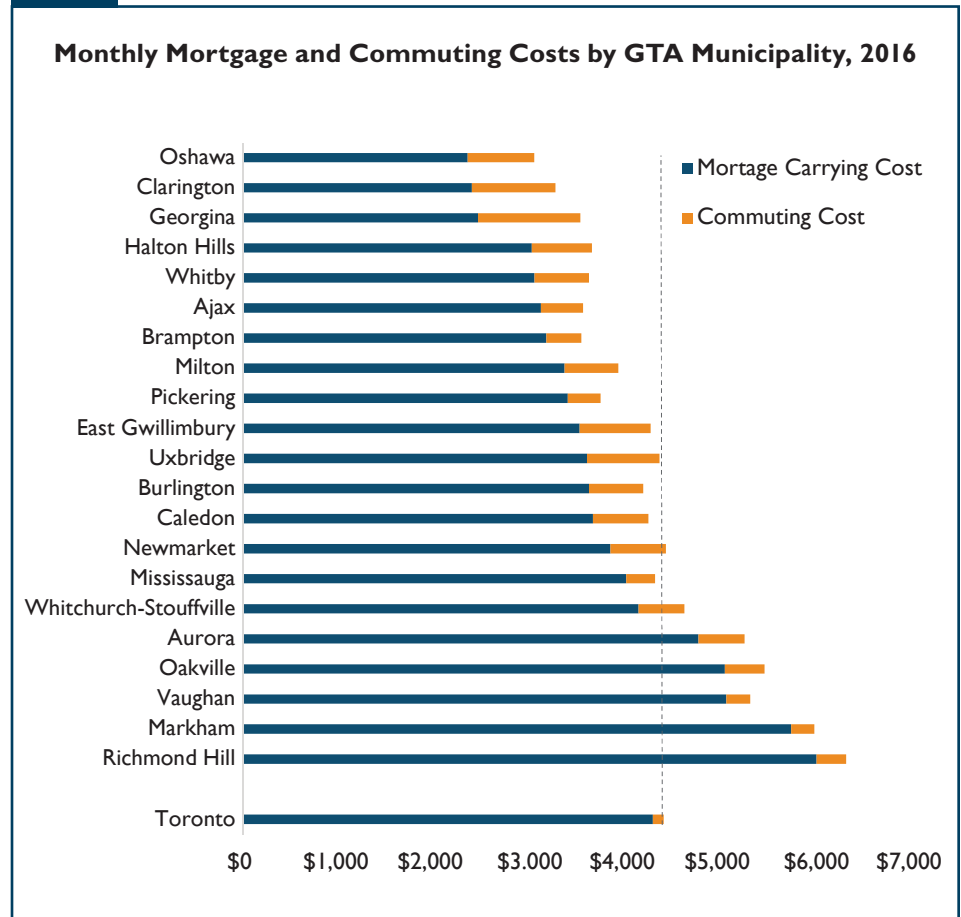
Source: CMHC calculations (see appendix for methodology)

We found that in 2016⁹, single-detached housing was relatively less expensive in 16 out of 21 GTA municipalities studied compared to the City of Toronto, the exceptions being Aurora, Markham, Oakville, Richmond Hill and Vaughan. In these exception areas, it has been observed that increased home sizes outweighed the effect of falling land values relative to the City¹⁰. Nevertheless, in most 905 municipalities a homebuyer would face lower median single-detached prices compared to the City of Toronto, ranging from \$489,304 less in Oshawa to \$57,551 less in Whitchurch-Stouffville¹¹. Therefore, the GTA largely exhibits a downward sloping price gradient, where house prices decreased as the distance from the City of Toronto increased.

Our analysis also estimated the monthly cost of commuting to the City by each municipality. Unsurprisingly, it was observed that commuting costs rose as the distance from the City increased (see Map). This negative relationship between transportation cost and location is well known among those studying land-use and spatial economics. In fact, Johann Heinrich von Thünen formalized it in the 19th century. His model was among the first to explain how differences in transportation costs determined the rent on agricultural plots of land surrounding a market. As transportation costs to a market decline, the rent will increase, and vice versa. The costs of housing and commuting to the job market in the City of Toronto exhibit a similar pattern.

The savings on housing costs from moving to the suburbs become less apparent once our estimated commuting costs are factored into the calculation. Indeed, when the estimated monthly mortgage carrying cost and monthly commuting

Figure 2



Source: Statistics Canada (Census 2016), Toronto Real Estate Board, CMHC Calculations

cost are combined, relatively lower priced municipalities such as East Gwillimbury, Newmarket, Mississauga, Whitchurch-Stouffville and Caledon end up costing more than or nearly as much as the City of Toronto (see Figure 2).

Notably, some GTA municipalities did retain their cost advantage. Even with significant commuting costs in areas like Georgina, Oshawa and Clarington, a large cost advantage remained due to the considerably lower cost of housing. However, our estimates assumed a single commuter per household. In reality, many of these households could have additional commuters into the City, and could see commuting costs that exceed our estimates.

Higher public transit use associated with lower cost commutes

The estimate of commuting cost for City of Toronto residents is significantly lower than other municipalities because not only are the distances shorter, but residents in the City were more likely to utilize less expensive commute options like public transit or active forms¹². Similarly, for suburban commuters who used public transit to get to work in the City, there was a lower cost of commuting. When we isolated the estimates to commuters in the suburbs who used public transit, including commuter trains, the results indicated that the cost savings of moving to a lower priced municipality remained intact.

Public transit provided a lower cost mode of commute, but did not necessarily present time savings. Commutes via public transit were significantly longer than those travelled by car. The median commute time for someone working in the City taking a car was 30 minutes, compared to 45 minutes for those taking public transit¹³. This time spent commuting can represent a large implicit cost.

Significant time costs associated with lower priced housing

Many of the areas in the GTA with significantly lower single-detached home prices had commutes of nearly 60 minutes one way into the City. These long commutes can add the equivalent of over an additional workday per week for the typical worker. The average hourly wage in the GTA is \$26.74¹⁴, if we were to assume that individuals value their time at its market rate, then commuting can result in a very significant cost for individuals living in the 905 area and working in the City of Toronto. However, individuals may value their time differently than their market rate to take advantage of non-pecuniary benefits such as having more indoor and/or outdoor space. As a result, the following table provides the minimum dollar value an individual would have to value their time to make the cost of living in their respective municipality equal to living in the City of Toronto after factoring for housing, transport, and time costs. If an individual values their time more than this measure, they would incur implicit savings via lesser time costs by living in the City of Toronto or closer to it.

Municipality	Additional minutes per trip spent commuting	Additional hours spent commuting per month	Minimum \$ value of time required to equate living costs to Toronto
Pickering	12	8	\$83.27
Ajax	19	13	\$67.88
Brampton	20	13	\$65.79
Oshawa	31	21	\$65.57
Clarington	35	23	\$49.36
Whitby	27	18	\$44.14
Georgina	33	22	\$40.39
Halton Hills	32	22	\$35.12
Milton	35	23	\$20.72
Caledon	22	15	\$11.01
Burlington	34	23	\$9.46
Mississauga	16	10	\$8.66
East Gwillimbury	30	20	\$6.86
Uxbridge	31	21	\$2.09

Source: Statistics Canada (Census 2016), CMHC Calculations

Conclusion

By assessing the combination of commuting costs and housing costs one can gain a more comprehensive gauge of the total cost of location choices. Based on our estimates of the cost of commuting to the City of Toronto from each municipality in the GTA, areas with lower mortgage carrying costs for single-detached housing often had significantly higher commuting costs. In many cases, these increased commuting costs completely offset lower home ownership costs. The observed trade-off between location and commuting costs could have important implications for housing choices and policy. Although for many individuals, personal preferences and other factors may override these considerations.

Appendix

Methodology

Commuting Cost:

Using data from Statistics Canada's Census 2016, we utilized the median distances and modes of transport by census subdivision to construct a weighted cost of commuting. These estimates assume one commuter using a single mode of transport.

An estimated explicit cost was determined for each mode of transport.

- The cost of operating a vehicle in 2016 was \$0.54 per kilometre using calculations by the National Joint Council Travel Directive that take into account all vehicle-operating expenses¹⁵. It was assumed commuters travelled twice daily, to and from work, for 20 working days a month, resulting in 40 one-way trips per month.
- Those taking the bus and subway were assigned a cost of a TTC monthly transit pass of \$140. The cost for the GO train was estimated for each municipality as the monthly fare (40 one-way trips) to commute to Union Station.
- Those who used active transport (bicycle, walking, etc.) were assumed to have no explicit cost.

The estimated cost of each mode of transportation was then multiplied by its prevalence in each municipality, giving the weighted commuting cost per municipality.

Housing Cost:

For each municipality we estimated monthly mortgage carrying cost based on the 2016 median cost of a single-detached home from the Toronto Real Estate Board. Monthly carrying costs include municipal taxes and mortgage principal and interest amortized over 25 years at the prevailing conventional five-year fixed rate mortgage rate (3.7%) with a 20% down payment. We excluded utilities and maintenance costs as our data collection exercise determined these costs likely do not vary enough by municipality to affect location decision.

Median home prices were used given their better representation of the typical single-detached home in each census subdivision. Using a home price that controlled for square foot and bedroom type was considered for a more accurate comparison of housing prices across municipalities; however, data limitations rendered this approach unfeasible.

Time Cost of Commuting:

We provide the minimum dollar value of time required to equate living costs to the City of Toronto for census subdivisions with lower mortgage carrying costs. This measure is calculated by dividing the difference between total monthly housing costs (average mortgage carrying cost plus commuting costs) for the City of Toronto and each selected census subdivision by the additional average monthly hours of commute time for each selected subdivision.

Data Tables

Data Table 1		
Municipality	Monthly Mortgage Carrying Cost	Monthly Commuting Cost
Toronto	\$4,319	\$115
Richmond Hill	\$6,047	\$311
Markham	\$5,778	\$244
Oakville	\$5,080	\$417
Vaughan	\$5,095	\$251
Aurora	\$4,801	\$485
Whitchurch-Stouffville	\$4,169	\$482
Mississauga	\$4,040	\$304
Newmarket	\$3,873	\$585
Uxbridge	\$3,626	\$764
Burlington	\$3,647	\$569
Caledon	\$3,689	\$584
East Gwillimbury	\$3,547	\$749
Pickering	\$3,422	\$346
Milton	\$3,389	\$567
Brampton	\$3,197	\$368
Ajax	\$3,139	\$443
Halton Hills	\$3,042	\$635
Whitby	\$3,072	\$572
Georgina	\$2,476	\$1,079
Clarington	\$2,412	\$880
Oshawa	\$2,368	\$702

Source: TREB, Statistics Canada, CMHC calculations

Data Table 2	
Municipality	2016 Median Single-Detached Home Price
Ajax	\$638,188
Aurora	\$1,032,412
Brampton	\$656,681
Burlington	\$780,820
Caledon	\$788,801
Clarington	\$491,506
East Gwillimbury	\$761,457
Georgina	\$509,594
Halton Hills	\$641,979
King	\$1,262,354
Markham	\$1,266,866
Milton	\$735,432
Mississauga	\$859,209
Newmarket	\$819,617
Oakville	\$1,103,871
Oshawa	\$461,143
Pickering	\$701,160
Richmond Hill	\$1,312,691
Toronto	\$950,447
Uxbridge	\$762,410
Vaughan	\$1,101,641
Whitby	\$620,958
Whitchurch-Stouffville	\$892,895

Source: TREB

ENDNOTES

- ¹ GTA includes the upper-tier municipalities of Durham, Halton, Peel, York and the City of Toronto.
- ² The City refers to the City of Toronto, which includes districts of Etobicoke, North York, York, East York, Scarborough and Old Toronto.
- ³ Includes the upper-tier municipalities of Durham, Halton, Peel and York.
- ⁴ Toronto Real Estate Board, Market Year In Review and Outlook Report, January 2016, http://www.trebhome.com/market_news/market_report_and_outlook/2016_TREB_year_in_review_and_outlook.pdf
- ⁵ Pembina Institute (2012). Home Location Study: Understanding Where GTA Residents Prefer to Live, Question 11. Retrieved from: <http://www.rbc.com/community-sustainability/assets-custom/pdf/20120716-pembina-gta.pdf>
- ⁶ A high sales-to-new listings ratio implies that a market is overheating, meaning that housing demand is outpacing supply, and vice versa.
- ⁷ Statistics Canada. Table 17-10-0084-01 Annual demographic estimates by census division, age and sex, based on the Standard Geographical Classification (SGC) 2011.
- ⁸ Monthly carrying costs include municipal taxes and mortgage principal and interest amortized over 25 years at the prevailing conventional five year fixed rate mortgage rate (3.7%) with a 20% down payment.
- ⁹ 2016 price data was used in order to match with the commuting data pulled from the 2016 Census. Our housing costs using 2017 price data showed similar relationships across municipalities.
- ¹⁰ Neptis Foundation (2004). Travel and Housing Costs in Greater Toronto Area: 1986-1996. Toronto. Retrieved from: <http://www.neptis.org/publications/travel-and-housing-costs-greater-toronto-area-1986-1996>
- ¹¹ Median prices were used given their better representation of the typical single-detached home in each census subdivision. Using a home price that controlled for square foot and bedroom type was considered for a more accurate comparison of housing prices across municipalities; however, data limitations rendered this approach unfeasible.
- ¹² Active modes of transport includes walking, bicycling, etc.
- ¹³ Statistics Canada – Census 2016.
- ¹⁴ Toronto CMA's 2016 average hourly rate (15 years and over, raw) obtained from Statistics Canada.
- ¹⁵ National Joint Council (2016). Kilometric Rates. Retrieved from: <http://www.njc-cnm.gc.ca/directive/d10/v10/s97/sv33/en>

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