

**COVID-19 Impact on
Residential Relocation
Choice in the GTA:
Result from a
Specialized Survey
Cycle I in Summer 2020**

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Introduction

The COVID-19 pandemic has changed GTA residents' daily schedule and travel behavior drastically. People are getting used to the "new normal" where in most cases, employees are telecommuting, students are taking online courses, and households are choosing online shopping choices more frequently. The extent that these new activities remain in the household's daily behavior after the COVID-19 pandemic is over is unknown. Once COVID-19 is no longer considered as a risk due to vaccination, there is a possibility that households keep some of their pandemic habits and change their lifestyles. The new lifestyle adoption will cause changes in long-term behaviors such as residential location choice and potentially cause suburbanization, requiring follow-up modifications in some policies and plans for the study area. This motivated us to design a survey and an SP experiment to capture the direct and indirect impacts of COVID-19 on households' residential relocation.



The survey consists of three main sections:

- 1) Households residential location choice information collection
- 2) Personal and households' general pandemic behavior information collection
- 3) Statement of the preferred choice experiment

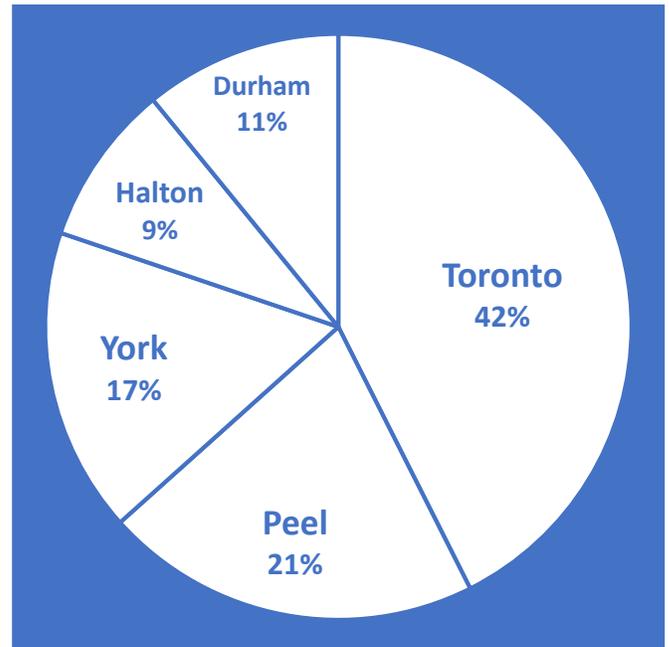


Figure 1- Sample Population Distribution

Sociodemographic Characteristics



44% Male
56% Female



19% Living alone



26% Couple with no child



47% Family with children

Survey Method

This study used a web-based survey tool for distributing the survey. In July 2020, a total of 1,387 invitations were sent randomly to individuals who live in the study area, out of which 1,045 completed the survey. In the data cleaning process, we eliminated inattentive responses based on the time spent on specific sections of the survey and choice experiments, and 968 responses remained for data analysis. Each individual faced nine hypothetical scenarios out of 18 and answered choice experiments under three different pandemic related conditions.

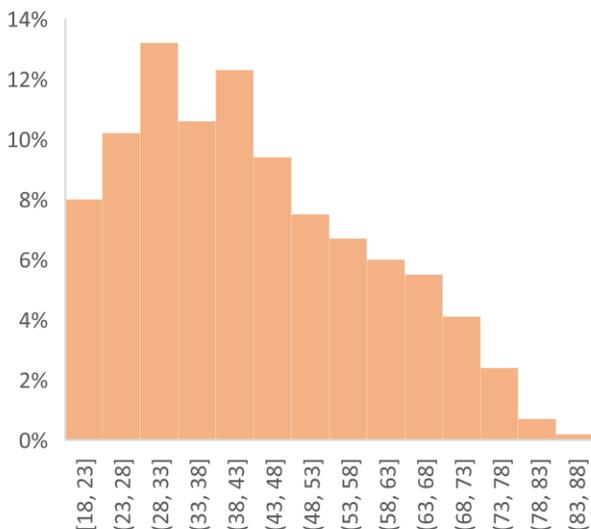


Figure 2- Sample age distribution

In the choice experiments design, we tried to capture both direct and indirect effects of COVID-19 by adding the mentioned pandemic-related conditions and telecommuting and office hours' flexibility to the choice experiments. Alongside pandemic related attributes, we included other attributes listed in the following table:

Choice experiment attributes
Three COVID-19 Conditions
Telecommuting levels
Office hours flexibility
Dwelling Type
Regions
Price
Tenure type
Area
Neighborhood quality
Access to public transit
Access to the highway network
Parking availability
Walk access to schools

The study area has been divided into 18 different regions, as presented in Figure 3. The definition of the regions has been made on a large scale to meet our interest, which is to test whether the COVID-19 pandemic can cause suburbanization in the Greater Toronto Area.



Respondents made their relocation decisions under three hypothetical COVID-19 conditions:

- 1) Going back to normal status
- 2) Adapting to the new normal and social distancing
- 3) Experiencing a new strict lockdown phase after the second wave

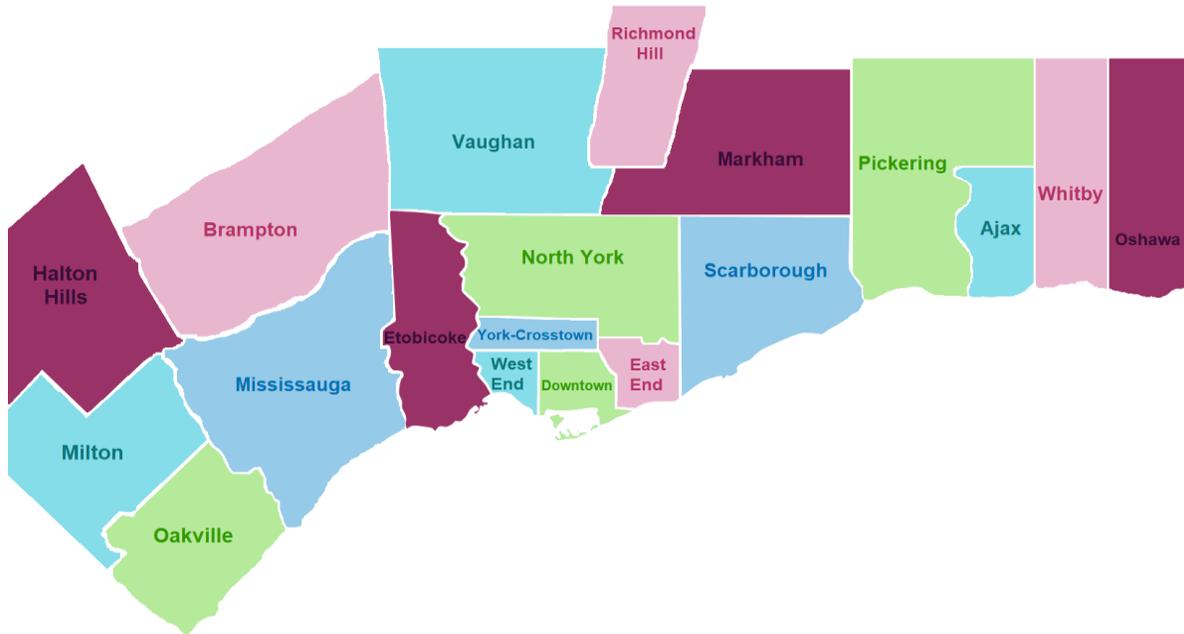


Figure 3- Map of defined regions in choice experiments

A total of 18 hypothetical scenarios were designed in the survey where households could choose to relocate or stay in their current residence. For each respondent, only nine scenarios were randomly drawn and presented to keep the questionnaire concise and avoid respondent fatigue. A sample of the statement of preference choice experiments is shown in figure 4.

Preliminary Findings

Households in Toronto live in their residence for 11.8 years on average. Homeowners are the least flexible group in residential relocation, where they relocate every 14.2 years. On the other hand, renters relocate every seven years. The most flexible group in relocation are non-family households who rented their residence. The least flexible group in relocation are couples who are both retired and own their property. Before the start of the pandemic, 19% of households reported that they were thinking about changing their residence.



As of August 2020, our study results show that households are less flexible in changing their residence. Since households are uncertain about the future of COVID-19, they are less likely to make a long-term decision during the pandemic. Although our overall results indicate a lack of interest in relocation, households who think that the next similar pandemic is happening in less than five years show more relocation flexibility. The least flexible households in terms of

In **this scenario**, you have four different options to relocate your household residential location, please carefully review your options:

(i) Move your cursor here to review the map

	Detached House	Semi-detached house	Condo/Apartment	Townhouse
Region	Whitby	East End Toronto	North York	Oshawa
Tenure type	For sale	For rent	For rent	For sale
Overall price/rent compared to your current dwelling (Including utilities, property taxes, maintenance fees, and etc.)	20% lower	20% higher	10% lower	30% lower
Overall dwelling area compared to your current dwelling	No change	20% larger	20% larger	20% smaller
Neighborhood quality	Green and quiet area	Located at an area with moderate traffic and noise level	Located at an area with moderate traffic and noise level	Close to the main road with high traffic and noise level
Parking availability in the neighborhood	Moderately available	Moderately available	Easily available	Limited and requires a parking permit
Access to public transit and service quality	Walking access to bus/streetcar transit which is usually crowded during peak hours	Walking access to bus/streetcar which is moderately uncrowded during peak hours	Walking access to all types of public transit	Walking access to bus/streetcar which is moderately uncrowded during peak hours
Access to highways and service quality	Immediate access to a highway which has moderate/low traffic volume	Immediate access to a highway which has moderate/low traffic volume	No immediate access to the highway network	Immediate access to a highway which has high traffic volume
Walk access to local schools	No	Yes	No	Yes
Office hours status of your employment	Strict with no flexible office hours			
Work from home flexibility of your employment	Maximum four days a week telecommuting is allowed			

35. Please choose your preferred option, under every one of the conditions described below: *

	Detached house in Whitby (i)	Semi-detached house at East End Toronto (i)	Condo/apartment in North York (i)	Townhouse in Oshawa (i)	Not to relocate (i)
COVID-19 is no longer considered a threat due to mass vaccination, and everything goes back to the normal status *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The world's health care system fails to find a vaccine for COVID-19 which means we cannot go back to the normal status. We adapt to a new normal where our interactions are based on social distancing *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
COVID-19's second wave or another pandemic hits our community, and we should go back to the strict lockdown phase once again *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 4- sample of the statement of preference choice experiments presented to respondents. Each respondent answered to 9 random scenarios out of 18.

relocation are those who think there would not be a similar pandemic to COVID-19 in at least 30 years. Our choice experiments indicate that those who are willing to relocate during the pandemic are significantly more interested in relocating to a single detached unit than choosing other dwelling types.

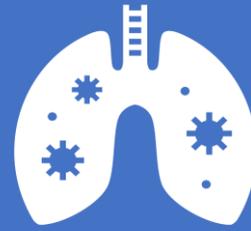
In terms of COVID-19 conditions, going back to the strict lockdown phase has the most impact on the housing market, and households show more relocation tendencies under those circumstances. Under the condition that everything goes back to normal status, households show the least interest in relocation. In other words, households are waiting and hoping that everything goes back to normal before relocating their residence. This means the longer we fail to vaccinate the population, the higher the chance households relocate their

residence, and in the case of GTA, this relocation would be towards suburbanization.

95% of households reported easy access to public transit out of which 61% considered proximity to public transit in choosing their current residence. After their pandemic experience, 23% of households no longer consider proximity to public transit important as a factor in choosing their next residence.

In terms of telecommuting and office hours options, in general, households who were considering relocation before the pandemic did not show any change of behavior. On the other hand, households who did not consider relocating demonstrated more flexibility when they had flexible office hours in hypothetical relocation scenarios.

Figure 5 presents the relocation behavior captured by our choice experiments. Green points are the location of households who are happy with their current residence and not willing to change their current residence. Red points are households who are willing to change their location to another region than their current one. Yellow points are households eager to stay in their current area, but they are interested in changing their residence dwelling.



On average, in every five households there is a member who is over 60 years old and at higher risk for severe illness from COVID-19.

As of August 2020, there is no dominant relocation behavior; however, our choice experiments indicate the chance of suburbanization among households GTA in their next relocation.

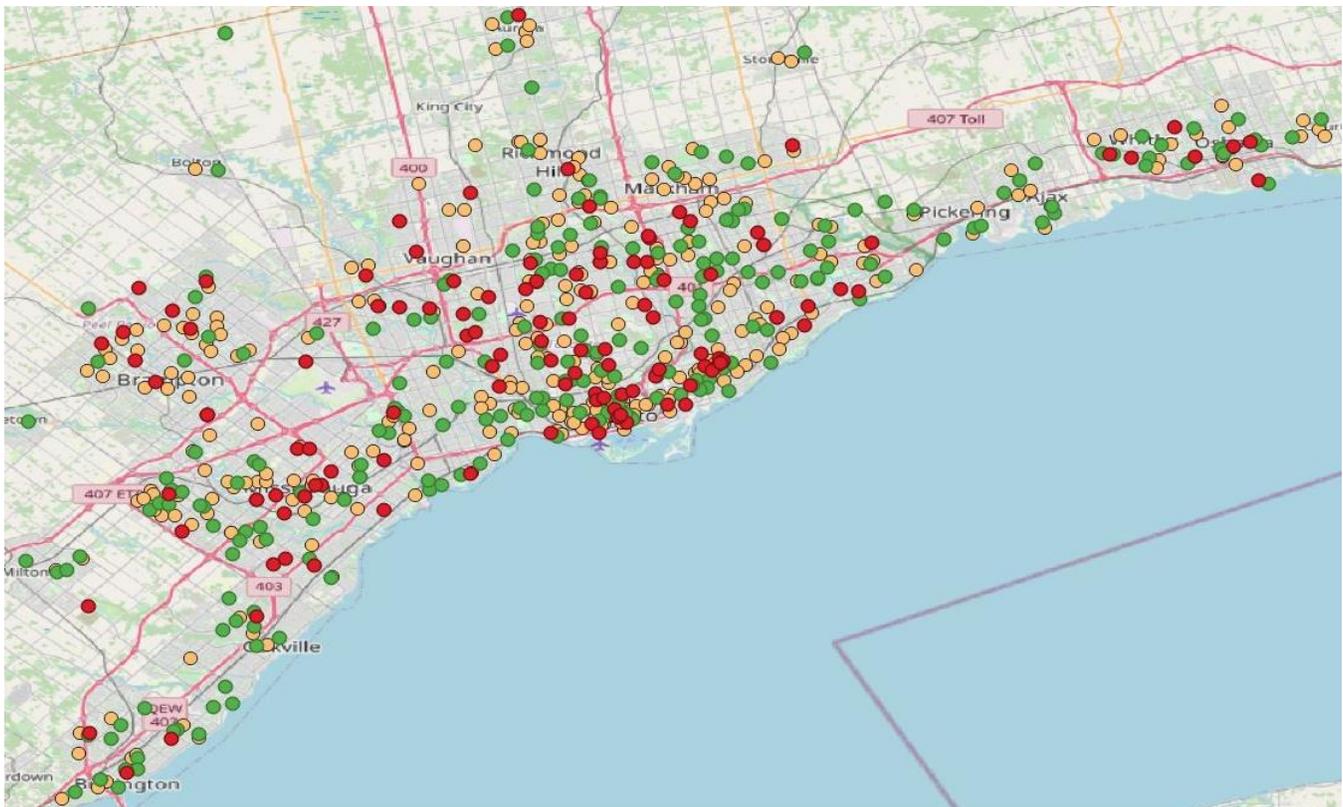


Figure 5- Data distribution over the region and relocation behaviors

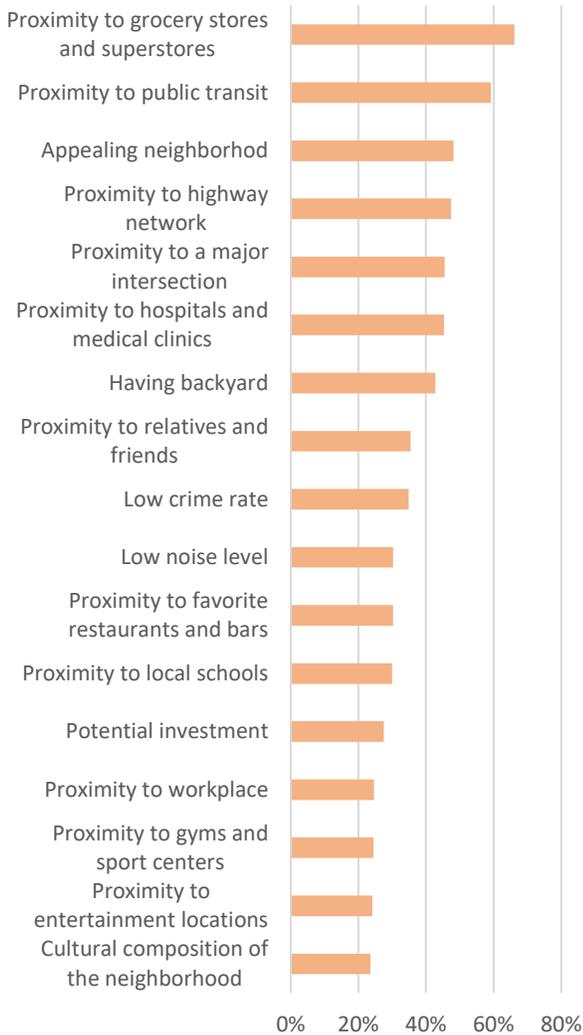


Figure 6- Ranking of factors Households considered in their current residential location

Figure 6 shows the percentage of households considered certain factors in choosing their current residential location. This question came with a follow-up question in which we asked if the respondent lost interest in any of them when choosing their next residential location due to their pandemic experience. Figure 7 ranks the affected factors by COVID-19 based on the number of times households chose them. For example, 59.1% of respondents reported considering the proximity to public transit in

choosing their current residence (Figure 6). After they experienced the lockdown, 24.6% of them are no longer interested in being close to public transit (Figure 7). These numbers are not suitable for making conclusions on how households' behavior has changed as they are not considering the trade-off that exists in real-life situations (which we simulate in the SP choice experiments). However, the numbers can help in designing and choosing attributes for choice experiments for the future cycle.

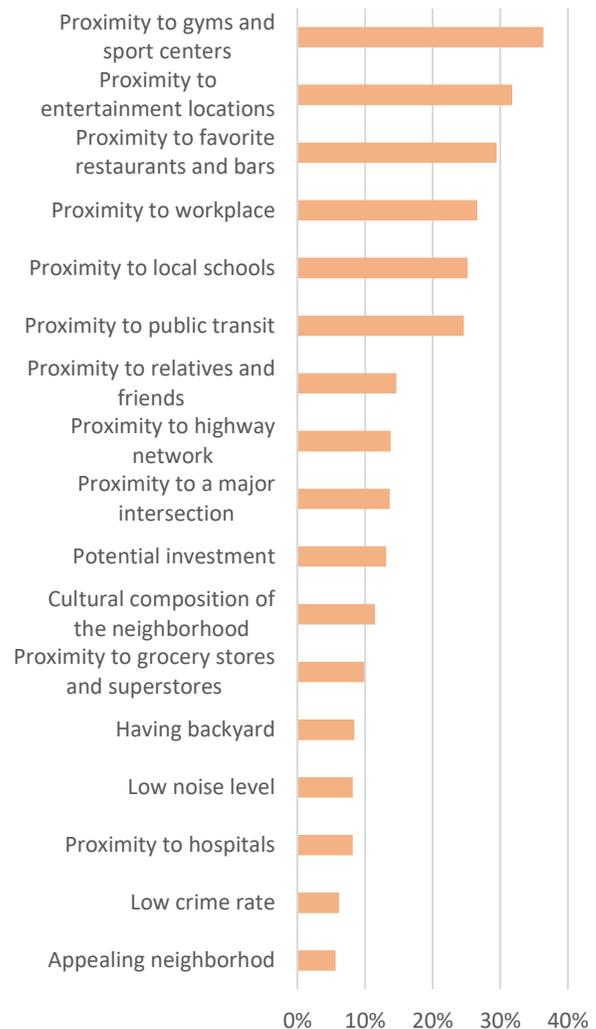


Figure 7- Ranking of factors Households no longer considered in relocating their residential location

We were also interested to see how COVID-19 has affected peoples’ employment, school enrolment; the online shopping experience has changed as they could be related to future residential relocation choice. Figure 8 indicates to what extent COVID-19 has affected employment in the GTA. Since the start of the COVID-19 pandemic, 33% of the population has tried telecommuting, some of whom indicate that they will continue working from home after the situation goes back to normal.

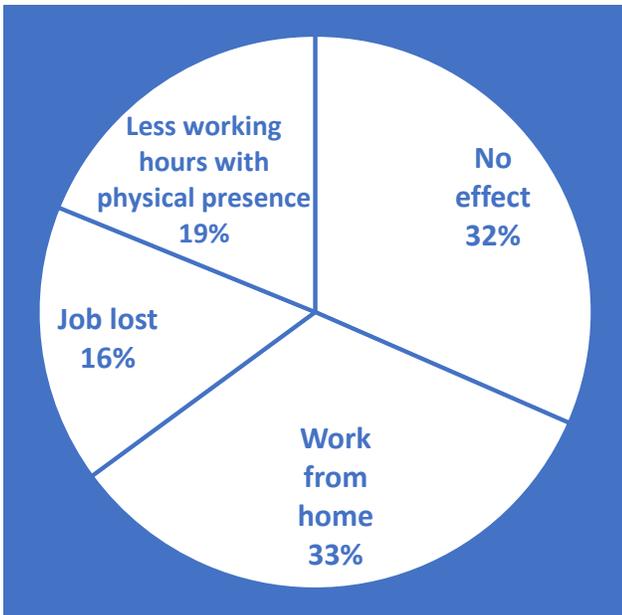


Figure 9- Percentage of COVID-19 effect on employed household members

In Figure 9 we explore the e-shopping experience of households during COVID-19. Similar to telecommuting, many households have tried their first online shopping experience in different categories for the first time. Online grocery shopping has been the most affected category. Considering that a large portion of households considers proximity to grocery shops an asset for their residence (Figure 6), this could have implications for residential relocation behavior. One finding regarding e-shopping is that, before the COVID-19 pandemic, 11.2% of respondents had never made an online purchase in any category. Since the COVID-19 pandemic, this number has dropped to 8.1%.

Conclusions

Early results show that the lifestyles of households have been changed through the COVID-19 pandemic. Many of them experienced telecommuting and e-shopping for the first time, and the experience lasted for several months. There is a significant chance that households keep some of these activities in their future lifestyles, affecting their future choices, such as their next residential relocation.

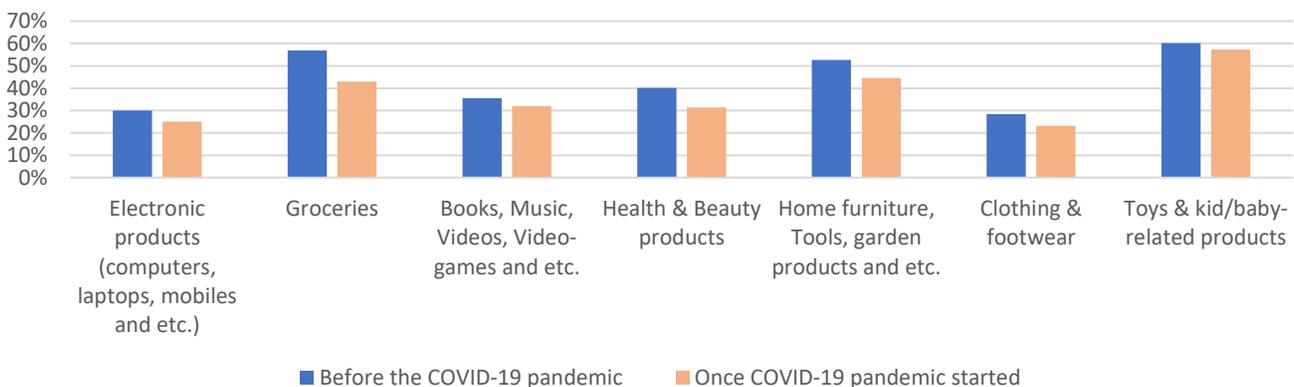


Figure 8- Percentage of households who never tried online shopping on each category before and since the start of the COVID-19 pandemic

Our initial modeling and analysis show that, as of August 2020, households think of the pandemic as a temporary event and are unwilling to make permanent changes in their residential location. Household residential choice behavior shows that COVID-19, at least at this stage, cannot be considered as a major "life event," and it is more like a demand shock that will dissipate in time.

However, depending on the amount of time households' pandemic experience remain, there is a possibility of getting used to the new pandemic lifestyle. This will perhaps cause a new relocation trend in GTA, leading to less interest in living in dense areas and potentially leading to urban sprawl in GTA.

This survey is only one of the first studies to investigate the impact of COVID-19 on long-term behavior, such as the household's relocation. As we are still in the middle of the pandemic and household's behavior is rapidly changing, more surveys and studies should be conducted to understand all aspects of COVID-19's impact on households' relocations.



“We have lived here for 35 years. We are close to transit, restaurants, grocery stores and six different hospitals. It would take a lot for us to give that up!”