

Executive Summary

This report explores the short- and long-term effects that COVID-19 has had on the commute patterns of Queen's University employees. The pandemic has greatly altered the way people work and how they commute to their jobs. While COVID-19 is playing less of a role in our everyday lives today, its effects on commuting and work arrangements are an important area of study for urban planners who seek to promote sustainable modes of transportation, such as active transportation (walking and cycling) and using transit. As the City of Kingston and Queen's University push for more trips being made by sustainable mode of transportation, the effects of COVID-19 on the commute patterns of Queen's employees remain an important consideration for the future transportation patterns in a mid-sized Canadian city.

Much of the existing academic research has largely focused on larger metropolitan areas in North America with significantly greater transportation systems and resources at their disposal. Meanwhile, Kingston, Ontario has seen recent success in improving its transit service and boasted the highest share of sustainable transportation among all Canadian cities with less than 100,000 commuters in 2019 (Statistics Canada, 2019). As Kingston's largest employer, Queen's University provides an optimal population sample to study COVID-19's effects on Kingston and mid-sized cities by extension.

To study these effects, this study asked the following research questions:

1. How do Queen's University employees currently commute to campus, and how do these patterns compare to those prior to and during the COVID-19 pandemic?
2. Why did Queen's University employees change their commutes during the COVID-19 pandemic?
3. Based on these findings, what considerations need to be made to promote sustainable commuting choices among Queen's employees in a post-COVID-19 context?

To address these questions, a two-phased explanatory mixed-methods study was used to combine quantitative findings from a survey sent to Queen's employees and the qualitative findings from follow-up interviews with survey respondents. The survey received 2530 responses (response rate of 48%) and identified employees' modes of travel to work; commute satisfaction; commute characteristics; Kingston Transit use; attitudes towards Kingston Transit; and socio-demographics. Nine semi-structured interviews were held with employees who had changed their commute modes during the pandemic. These interviews helped explain the reasons why employees changed their commute modes and document their perspectives on sustainable transportation in Kingston. The quantitative data from the survey were primarily used to answer the first research question, the qualitative data from the interviews were primarily used to answer the second question, and both data sources were combined to answer the final question.

The changes in employees' commute mode share are found in *Figure I*. Overall, this study found that COVID-19 has affected employees' commute patterns in the following ways:

1. Almost half of employees (46.7%) started working from home in 2020, compared to only 1.3% in 2019.
2. The majority of employees (82.5%) who took transit in 2019 started taking other modes in 2020, representing the largest shift among all commute modes between 2019 and 2020.
3. Employees' commute mode shares have now nearly returned to pre-pandemic levels, except for working from home which has grown to 8.7% in 2022.
4. Employees now work fewer days on campus, as only 43% of employees now work on campus for 5 days per week, compared to 81.2% in 2019.

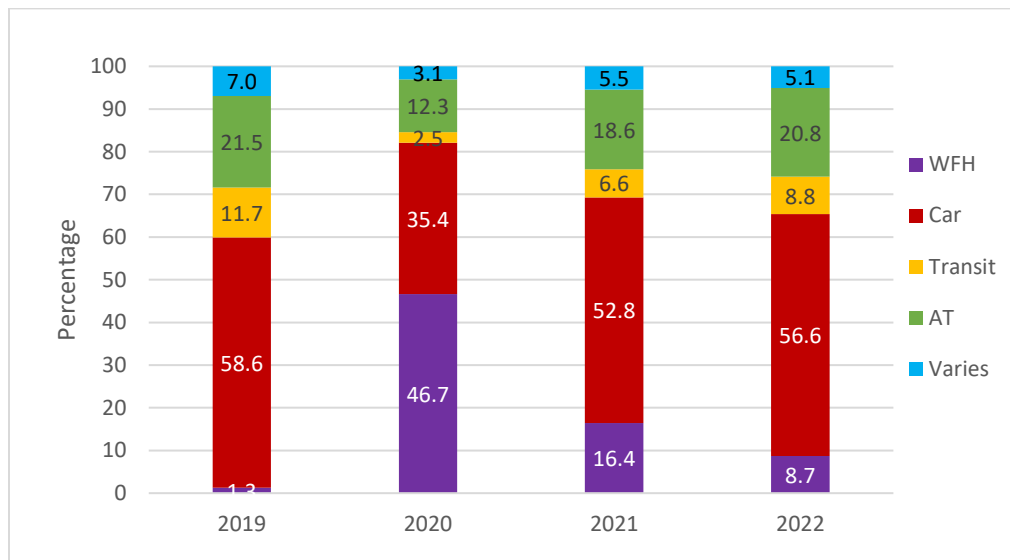


Figure I: Queen's University employees' commute mode shares between 2019-2022. 'AT' stands for active transportation which includes walking and cycling.

To investigate the reasons behind the changes in commute modes, employees were asked to describe how each of their commute modes have changed. The most common changes in driving patterns was driving less because of the ability to work from home, rather than commute to campus. The most common reason for changing transit patterns was to avoid transit to minimize the risk of contracting COVID-19. The most common change in employees' active transportation patterns (AT), was employees walking and cycling more than they did prior to COVID-19. Despite these changes throughout the pandemic, the survey and interview results revealed how monetary costs, convenience, and comfort remain the primary factors in influencing employees' commute choice.

These findings have significant implications on promoting sustainable commuting in a post-COVID context. Most importantly, many employees are not working in-person on campus nearly as much as they used to, meaning they will commute less overall. Secondly, many employees reported that they are driving more than they used to, continuing to avoid transit, and that they have fallen out of the habit of walking and cycling to work. Therefore, a large group of

employees have adopted less sustainable transportation patterns during the pandemic, and they may maintain these transportation patterns well into the future. This highlights the importance for Queen's University and the City of Kingston to lower the barriers associated with sustainable transportation and encourage employees to adopt sustainable modes as they continue to work in a hybrid work environment.

In light of this importance, this report makes the following recommendations to preserve the ability to work from home while encouraging employees to adopt more sustainable modes for the times when they do come to campus.

Recommendation #1: Preserve and expand a hybrid work arrangement for employees

Over the course of the pandemic, studies have found that working from home has led to significant environmental benefits, including less carbon dioxide and nitrogen dioxide being emitted from cars being used for commuting, as no commuting must take place. Preserving this ability and expanding it to employees who do not currently enjoy the ability to work from home can further advance the sustainability of Queen's employees' commute patterns.

Recommendation #2: Conduct a parking study of Queen's University

As the car commuting share approaches 2019 levels and employees spend fewer days on campus, Queen's University must adapt its parking policies and parking supply to a hybrid work arrangement. The ability for employees to work from home leads to a dramatic change in the traditional commuting and parking patterns among employees and calls for a parking study to be completed with this in mind. At the same time, the parking study must promote sustainable transportation by limiting the number of parking spots provided by Queen's to discourage driving to campus for those who have other commuting options.

Recommendation #3: Increase the number of secure bike storage facilities on campus

Another finding among cyclists was the concern of bike parking security on campus. Bike theft is very common in Kingston and fearing the loss of one's bike may discourage them from biking to campus. Queen's currently has one secure bike storage facility, but there are no more memberships available for it. Therefore, to continue to encourage employees to cycle to campus, Queen's must minimize the threat of bike theft by building more secure bike storage facilities in visible areas on campus to increase their presence and security at the same time.

Recommendation #4: Improve the city's cycling infrastructure surrounding campus

One of the most common findings from interviewees and survey respondents in relation to active transportation was the inadequacy of cycling infrastructure surrounding campus. In order to encourage employees to start cycling more to campus, the City and the University must work together to make employees' bike routes safer. This primarily involves building protected bike lanes to separate cyclists from vehicles and improve cyclist comfortability.

Recommendation #5: Adopt the PRESTO pass payment system for Kingston Transit

As employees commute to campus less regularly, they need a transit pass that provides them with flexibility. The survey found that many employees are unwilling to take advantage of a one-month free-trial for Kingston Transit and several interviewees cited the current transit pay system as a barrier to using transit. The PRESTO pass solves these issues as it lowers the barriers to taking transit by eliminating the commitment level required by a monthly pass, and makes it more convenient to pay for transit through its online system. Therefore, this program best fits the needs of employees who occasionally commute and do not need a monthly pass, while making it easier for employees to start taking transit.

Recommendation #6: Better promote voluntary masking on Kingston Transit

One common finding from the survey was the persistent concern for COVID-19 on transit. Many employees who currently take transit described how buses would get crowded during rush-hours, making them less comfortable. Similarly, many of the reasons behind employees' transit patterns changes involve the avoidance of transit because of COVID-19. Better promotion of masking on transit through advertising could encourage more people to start masking voluntarily even when they are not sick. This could change social norms and lead to more people masking out of respect of others. As more people start wearing masks, it could make others feel more comfortable about taking transit, thereby increasing ridership.