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Réseau express métropolitain (REM) Survey : Pilot

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Contents

TRAM

List of Figures

TRAM

List of Tables

Section I – Summary

In 2018, the infrastructure branch of the *Caisse de dépôt et placement du Québec* (CDPQ-Infra) broke ground on the $6.3-billion *Réseau express métropolitain* (REM). This report provides description of a pilot survey conducted by the Transportation Research at McGill (TRAM) Group and Sphere lab in 2019. The survey is to be used as a benchmark for the multi-year project titled "Impacts of the new *Réseau Express Métropolitain* (REM) on mobility, health and equity: A pre-post intervention study*"* funded through the federal government's Collaborative Health Research Projects (CHRP) program. This report documents the methodology used for the survey, as well as a summary of the findings from Wave 1 - Pilot, and outlines potential future directions for the study.

Survey: Pilot Wave 1

After obtaining ethics approval (REB File 99-0719) in September 2019, an online bilingual (French and English) survey was developed on LimeSurvey with a series of questions about various aspect of the REM project. The survey also gathered socioeconomic characteristics for participants. Each respondent answered questions regarding their knowledge of the REM project and stages of construction. Based on their answers, respondents received a series of travel-behavior questions. Through in-person and digital recruitment strategies, we collected a total of 4,148 completed responses.

Preliminary Data Cleaning

As part of the data cleaning process for this initial report, we sought to eliminate responses that potentially reflected inadequate attention or contained otherwise impossible or highly improbably answers. The principal criterion was response time: We grouped the survey responses based on their answers and complexity of the survey questions they experienced and then removed the fastest 10 percent of responses from each group, leaving us with a sample of 3,733 complete responses. Additional data cleaning was conducted based on age and number of minutes spent traveling using various modes, leaving us with a sample of 3,683 responses to be analyzed. (Note: We applied these techniques for purposes of this initial analysis. No responses have been deleted from the base data set. After consultation with researchers and knowledge

TRAM

users, other data-cleaning techniques may be adopted applied for purposes of assembling the panel for further waves of data collection.)

Sample Characteristics and Preliminary Findings

The preliminary analysis provided substantial insight into the REM project. Our retained sample included more public transport users, with higher incomes compared to information obtained from the Census data for the area around the project. With respect to mode choice, results showed an overrepresentation towards public transit users (47.41%) for commuting to work compared to the rest of the Montreal CMA and the population directly affected by REM construction. These could be attributed to (1) the expected closure of the then-impending Mount Royal tunnel, which serves mostly affluent suburban neighborhoods and is expected to impact public transport users, especially commuter train users, and (2) our efforts to target recruitment among these users.

Key Preliminary Findings

- **Perceptions of the REM**. Some 81% of respondents expected that the REM would have a positive impact on the Montreal region and 79% either agreed or strongly agreed with the premise that the REM will be good for the environment. Respondents were less inclined to point the REM as a good thing for their own neighborhoods (40%).

- **Construction Impacts**.

    o Mode Choice. During the survey period, the majority of people did not have to change their typical commute mode. However, more than 40% of respondents, both men and women, indicated that they would in the future be forced to change their mode of transport because of REM construction within proximity to their homes. Among existing Deux-Montagne train users, only 45% were certain they would continue to use transit for their work or school commute during the Mont-Royal tunnel's closure. Among Mascouche line users, only 23% were certain to use public transit for commuting during the closure.

    o Mood and Environment. Most respondents did not find REM construction anxiety-inducing while 20% found that noise and/or air pollution had increased because of REM construction.

T R A M

- **Future Use.** Around 44% of car drivers indicated they would use the REM once it becomes operational (likely and very likely). Many cyclists and Metro users indicated they would use the REM in the future. Across all current modes, 972 people, or 53% of respondents receiving the question, said they were likely or very likely to replace their current commute mode with the REM.

Ethica Movement Data

At the end of the survey, participants were asked to include their email address to be contacted in the future rounds of the survey and to be included in a GPS-tracking exercise. Among those who completed the online survey, 313 respondents used Ethica, a smartphone app for 20 days. Ethica Data is a research app which records smartphone data on a user's movement (accelerometer, activity recognition, and pedometer data), location (GPS and WiFi), and responses to short daily surveys.

Future Directions

The research team plans for Wave 2 in the fall of 2020 and this report includes a series of new additional questions to reflect the current situation regarding the COVID-19 pandemic. Knowledge users and researchers will participate in a joint planning session in September 2020, part of which will be dedicated to further refining the survey tool and panel recruitment efforts. The original questions for the Wave 1 – Pilot, which ran from October to November 2019, are included in the appendix to the full report. The research team also calculated a series of spatial data to accompany the Wave 1 data analysis. A data dictionary is included.

TRAM

Section II –Introduction

In 2018, the infrastructure branch of the *Caisse de dépôt et placement du Québec* (CDPQ-Infra) broke ground on the $6.3 billion *Réseau express métropolitain* (REM). The state-of-the art, fully automated 67-kilometer light-rail project is expected to become operational in stages between 2021 and 2023, knitting together Montreal's downtown, its international airport, and far-flung suburban destinations with high-frequency service. With a predicted initial ridership of more than 167,000 passengers per day, the REM has the potential to radically alter land-use and transport patterns across the Island of Montreal and well beyond, as projects at this scale have done elsewhere. The implications for physical and mental health and social wellbeing are significant, as public transport improvements are broadly understood to yield public health, environmental, and economic benefits. But the REM's impacts will be felt long before the first train rolls. The breadth of construction activities and the associated disruption of well-used existing public-transport facilities will have consequences for travel time and behaviour, health, satisfaction, and well-being. The REM will inherit the right of way from a suburban commuter train (Deux Montagnes line) with 28,015 riders per day in 2018. These riders will be provided with alternative public transport service till the completion of the REM project. The project will also impact riders of the Mascouche commuter train since both lines used to reach downtown Montreal through the Mount Royal tunnel, which will be closed for three years as part of the construction of the REM. On the South shore of Montreal, the REM will be replacing a series of buses commuting to Downtown and served by the *Réseau de transport de Longueuil* (RTL). Such disruption in the existing service is expected to impact the travel behavior of commuters and their well-being.

The bilingual (French and English) REM survey intends to provide a longitudinal insight into the respondent's perception of REM's impact and therefore improve overall understanding of such infrastructure developments on the population. The survey was answered by people recruited directly by the TRAM team through online and in-person. An additional method of recruitment was undertaken by the Leger agency, who ensured that 1,800 people would answer the survey's first wave. Leger will continue this procedure for the remaining waves. The agency will strive to collect data from the same respondents, to provide substantial insight into how perception evolves over time. In the off chance that previous respondents are not available for

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follow up, Leger will maintain the aforementioned 1,800 respondents quota by seeking to fulfill the missing completes with a new sample.

In addition to the online survey, participants were invited to use a smartphone app to passively contribute GPS and physical activity data for 20 days. These data provide objective
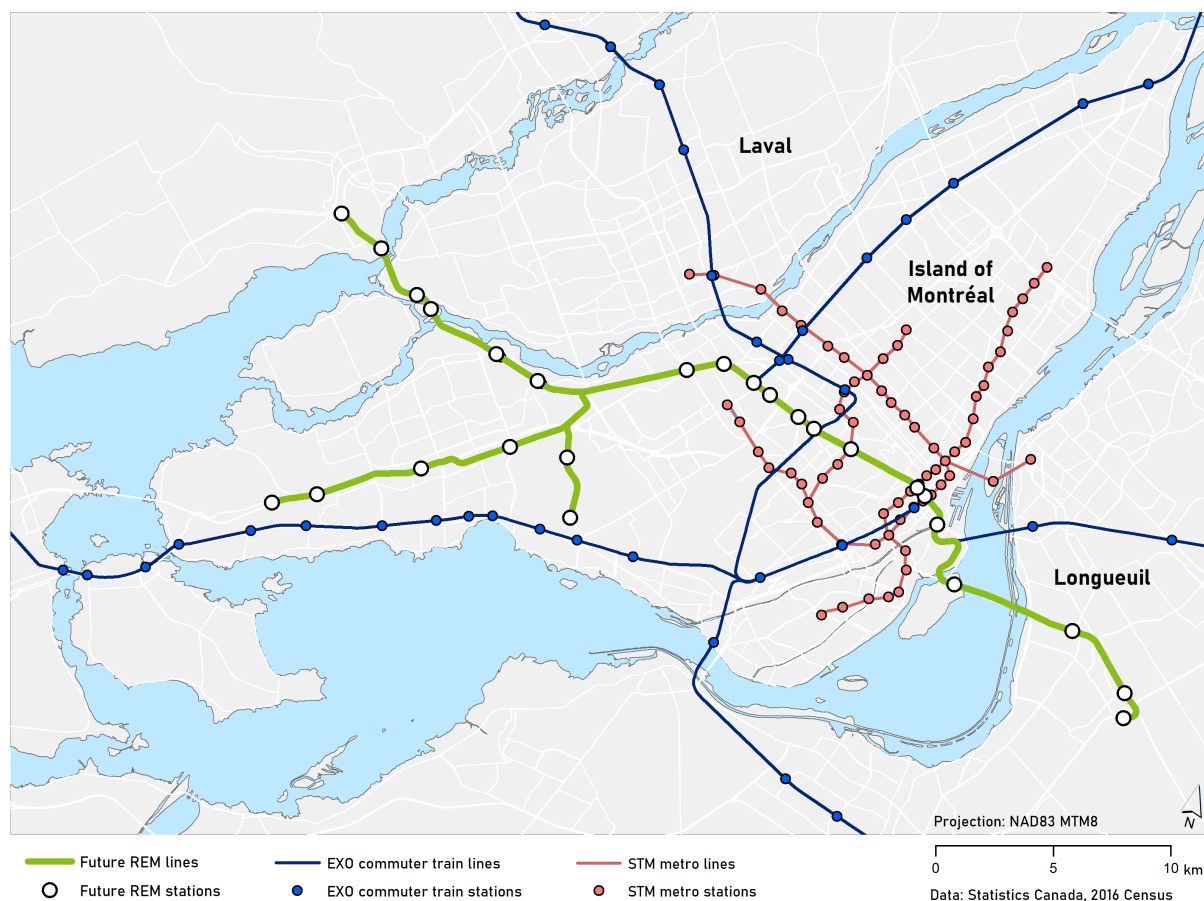
FIGURE 1 – MONTREAL PUBLIC TRANSPORT SYSTEM, INCLUDING PROJECTED REM LINE

measurement indicators of activity and mobility, such as step count, activity levels, activity space, exposure to urban environment features, and more. The self-reported data obtained through the online survey and these data-driven indicators will allow stakeholders and researchers to draw a comprehensive picture of mobility pre and post transportation changes in Montreal.

This report details how the first wave of the survey unfolded and provides some preliminary results. Overall, it shows how the recruitment was carried out, the data cleaning methods used and provides a brief overview of results. The report follows with recommendations for the next

wave, particularly, new questions related to the COVID-19 pandemic. Finally, it details all questions asked in the first wave and the spatial data prepared by the TRAM group to help researchers and knowledge users when conducting analysis with the collected Wave 1 data.

Section III – Recruitment

Several recruitment strategies were carried out in the Wave 1 pilot to ensure a diverse and representative sample and in an effort to improve the response rate (Dillman et al., 2014). In order to circulate the survey, and recruit participants using various recommended methods from the literature two URLs were bought to host the surveys in English and French, www.mobility-montreal.ca and www.mobilite-montreal.ca.

On October 17, 2019, we started data collection through Leger, a company specializing in public opinion and surveys. They helped recruit 1,800 respondents from the postal codes surrounding future REM stations. Because Leger maintains a proprietary stable of potential survey respondents, participant e-mails were not available to the researchers. Instead a unique identifier, known as a "token" was created for each respondent and will be used to link responses in future waves of the survey.

Separately, the research used direct online recruitment and targeted Facebook advertisements to bolster recruitment. The research team placed Facebook ads for ten days, from October 25-26, November 21 – 27, and December 12, 2019. The Facebook advertisements in October and November were again targeted at postal codes surrounding the REM. Recruitment on December 12, was targeted to geographic areas beyond the future REM stations in order to establish a control group. Facebook announcements were also placed in the group page of the Deux Montagnes train users. This is a Facebook group formed by the users of this line to share information and perspectives among the current users of this line. The survey URL link was uploaded onto the Reddit r/Montreal channel. Research group members also circulated the link to the survey on their personal social media with Twitter posts during the recruitment period.

For the initial pilot phase, in-person recruitment was carried out on November 6th, 2019, at rush-hour, from 4 pm to 6 pm, at Gare Central, Montreal where both the Deux Montagnes and Mascouche commuter train lines commence. Flyers were also distributed near the connection between the Montreal Metro and Place Bonaventure where RTL has their downtown terminal. Volunteers handed out 2,000 bookmarks advertising the survey. Additionally, from November 26th to the 29th, flyers promoting the survey were placed on the counter of various shops around McGill University's campus. During this initial phase, in-person recruitment was conducted

T R A M

primarily to test its efficacy. In future waves, additional in-person recruitment will be carried out in areas adjacent to existing REM stations.

The TRAM group worked with the McGill media relations team to promote the survey. Members of the group issued a press release on November 18, 2019 and announced some of the preliminary findings from the 1,800 respondents collected by Leger. Students also conducted a radio interview in French with CBC Radio-Canada on November 14, 2019, and in English with LetsGo CBC on November 21, 2019.

In keeping with best practices for survey recruitment, incentives were employed to encourage participation in the survey (Dillman et al., 2014). The team advertised that there would be prizes distributed to survey respondents. The 41 prizes included personal electronics, BIXI passes, and various gift cards.

FIGURE 2 – RECRUITMENT REM WAVE 1 SURVEY FLYERS
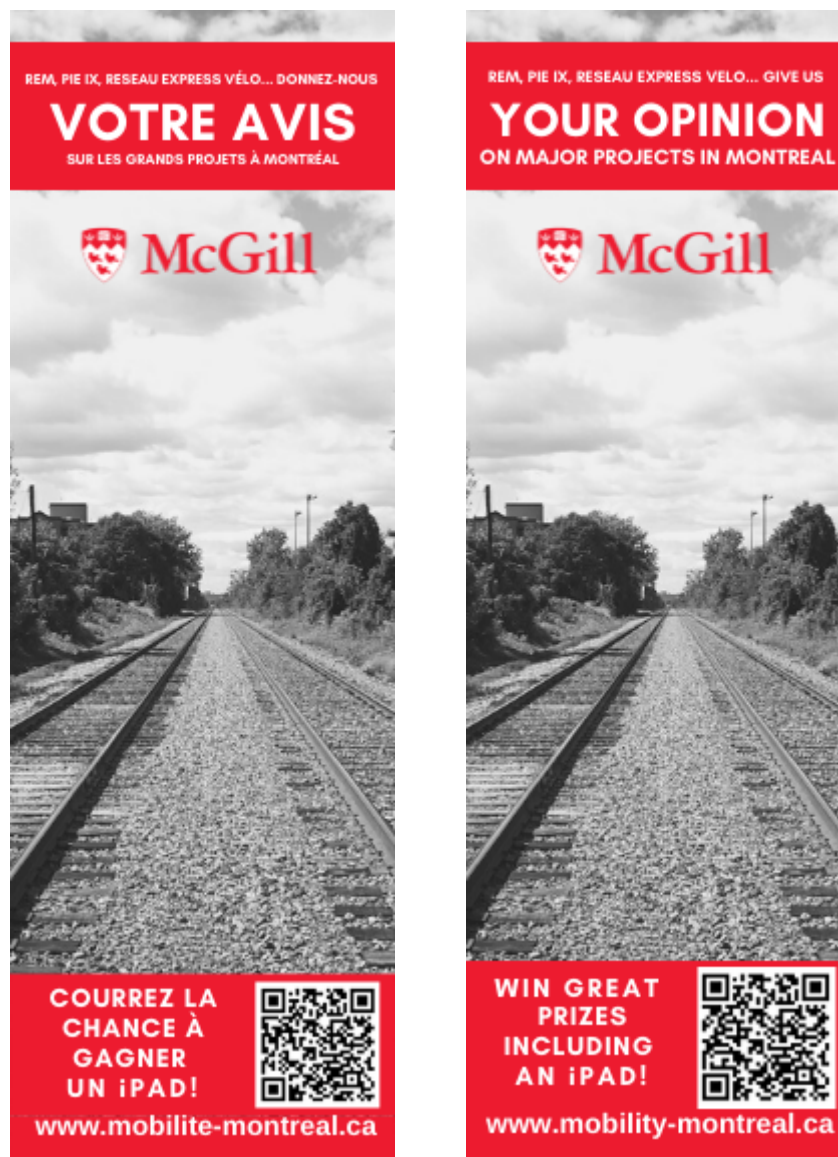
Section IV – Data Cleaning

This section describes the data-cleaning methodology used for this pilot report. For purposes of this preliminary analysis, we employed a mostly response-time-based data-cleaning approach. All responses remain in the base data set and are available for researchers. The total number of observations, including incomplete survey responses, was 5,942.

Preliminary Pilot Data Cleaning

To only analyze relevant responses, we proceeded to identify valid observations based on response times. In this vein, all responses without a submit date or with response times equal to 0 were deemed to be left incomplete and, as such, removed from the survey. This step removed 1,794 observations, leaving 4,148 of the responses.

Surveys with incentives in place can receive careless answers in hopes of receiving a prize. To remove responses that might belong to this group, different types of responses were identified based on travel behavior, as it defined the questions a respondent would be prompted to answer. The groups were comprised of respondents who, in the last week:

        A. travelled to work - 2,117

        B. travelled to school - 390

        C. travelled to both school and work - 302

        D. did not travel at all - 1,339

For each group, the fastest 10% was identified and their response times were used to remove observations deemed "too fast" and therefore assumed to be giving "careless responses", as recommended by literature on survey-cleaning methods (Meade & Craig, 2012). The following are the cut-off values used for each group, as well as the number of responses left after removing entries with the lowest response times:

        A. 15.4 minutes, 212 of observations removed, 1,905 observations left

        B. 13.5 minutes, 39 of observations removed, 351 observations left

        C. 15.5 minutes, and 30 of observations removed, 272 observations left

        D. 13 minutes, 134 of observations removed, 1,205 of observations left

TRAM

This step left us with 3,733 complete survey responses, other careless responses were found using questions regarding bicycling and walking times, as well as the year in which respondents were born. In this way, respondents born before 1920, and therefore over 99 years old at the time of the survey, were flagged. In this case, one respondent reporting to have been born in the 1900 was found and removed. Also, 47 respondents having answered they cycled or walked as part of their commute for more than 200 minutes a day were removed. The final data set used throughout this report consisted of 3,683 complete surveys deemed to have been completed in adequate time and therefore corresponding to valid responses.

Other Potential Data Cleaning Approaches

Data cleaning methods chosen for this report were a choice based on patterns we observed within the data. However, researchers will have access to the base database and will be free to use data cleaning methods of their choice. We understand there are different approaches that can be found in literature on the topic. We chose an aggressive approach in order to avoid as many careless responses as possible. This is why, for instance, whole entries with a significant careless response in one question were removed, instead of just removing the answer to that specific question – i.e. people answering 1920 as their year of birth.

Researchers may adopt other potential approaches to data cleaning. For example, researchers may consider looking to see if there are data concerns for individual participants by identifying excessive "non-answer" responses, such as "prefer not to answer" or '"don't know." Another approach may be to retain participants whose responses contain illogical or otherwise suspect answers and to impute reasonable maximum or minimum values.

TRAM

Section V – Wave 1 Analysis

Table 1 shows the summary statistics of the sample. Upon review, the "Main mode to work" section reveals that the sample has an over representation of public transport users, compared to observations from the Canadian Census. This can be explained in part by the excitement for this major public transport project or the concerns associated with the closure of the Mount Royal tunnel, which is expected to have major impact on the travel time of public transport users. With respect to "Age," the sample is a reasonable balanced representation, aside from 75 and over respondents were underrepresented in the sample, with 4% of respondents belonging to this age group.

TABLE 1: SUMMARY STATISTICS

Age		Main mode to work	
18 to 24	717	Car, truck, van - driver	963
25 to 34	1169	Car, truck, van - passenger	56
35 to 44	1148	Bicycle	119
45 to 54	910	Public transit	1179
55 to 64	881	Walked	244
65 to 74	504	Not answered	162
75 and over	136		
Gender		**Income**	
Female	2236	Less than $30,000	546
Male	1879	$30,000 to $59,999	922
Other	35	$60,000 to $89,999	805
Prefer not to answer	31	$90,000 to $119,99	662
		$120,000 to $149,999	381
		$150,000 to more	451
		I don't know	414

The following analysis shows a brief overview of information, gathered from the REM survey, outlining initial findings pertaining to travel behavior, physical activity, satisfaction of well-being, social equity, and general perceptions of the REM project. This is by no means an exhaustive analysis, and is better interpreted as a preview outlining the potential and value of this data.

TRAM

Sample Characteristics

In order to gauge how representative the population of survey respondents was, we compared the sociodemographic characteristics and travel behaviour of the surveyed population to the general Montreal population and the population of people residing in areas affected by the REM and its construction. The data for the comparison populations was retrieved from the 2016 census. The general Montreal population is defined as the entire census metropolitan area (Montreal CMA) and the affected area is defined as any census dissemination areas that are within a 1km radius around the future REM stations and Mascouche line stations. The total Montreal population is 4,098,927 residents and the total affected area population is 464,246 residents. We limited our survey to respondents who are 18 years old and older for ethics reasons, so the sample was compared to the Montreal population 18 years and older, 3,275,830 people, and the affected area population 18 years and older, 368,340 people. Only REM survey respondents who answered that they identified as a "woman" or "man" were compared in Figures 3-5 as the Canadian census only provides those categories, and thus 29 (0.78%) respondents who identified as "other" or "non-binary" and 26 (0.70%) respondents who preferred not to provide information about their gender were left out from this analysis.

Table 2 outlines both Age and Gender samples, as the analysis stresses their importance throughout. The "other" category was showcased on few figures, as result of its low sample size. Women represented 53.5% of the sample while men represented 45% of the sample, indicating a higher representation of women in the sample which will need to be controlled for in future analysis using this sample.

TABLE 2: AGE/GENDER STATISTICS

Age	Men	Women	Other
18 to 24	174	275	10
25 to 34	288	434	20
35 to 44	363	404	14
45 to 54	288	312	6
55 to 64	290	338	2
65 to 74	194	176	3
75 and over	63	29	0

TRAM

Figure 3 compares the age and gender of Montreal, the affected area, and the survey respondents. The age groupings were selected based on how the census data is organized. The number of survey respondents who identified their gender as a woman or man and identified their age was 3,628. Aside from a slight overrepresentation of women ages 25-34, and an underrepresentation of people 75 and over, the sample is well balanced.
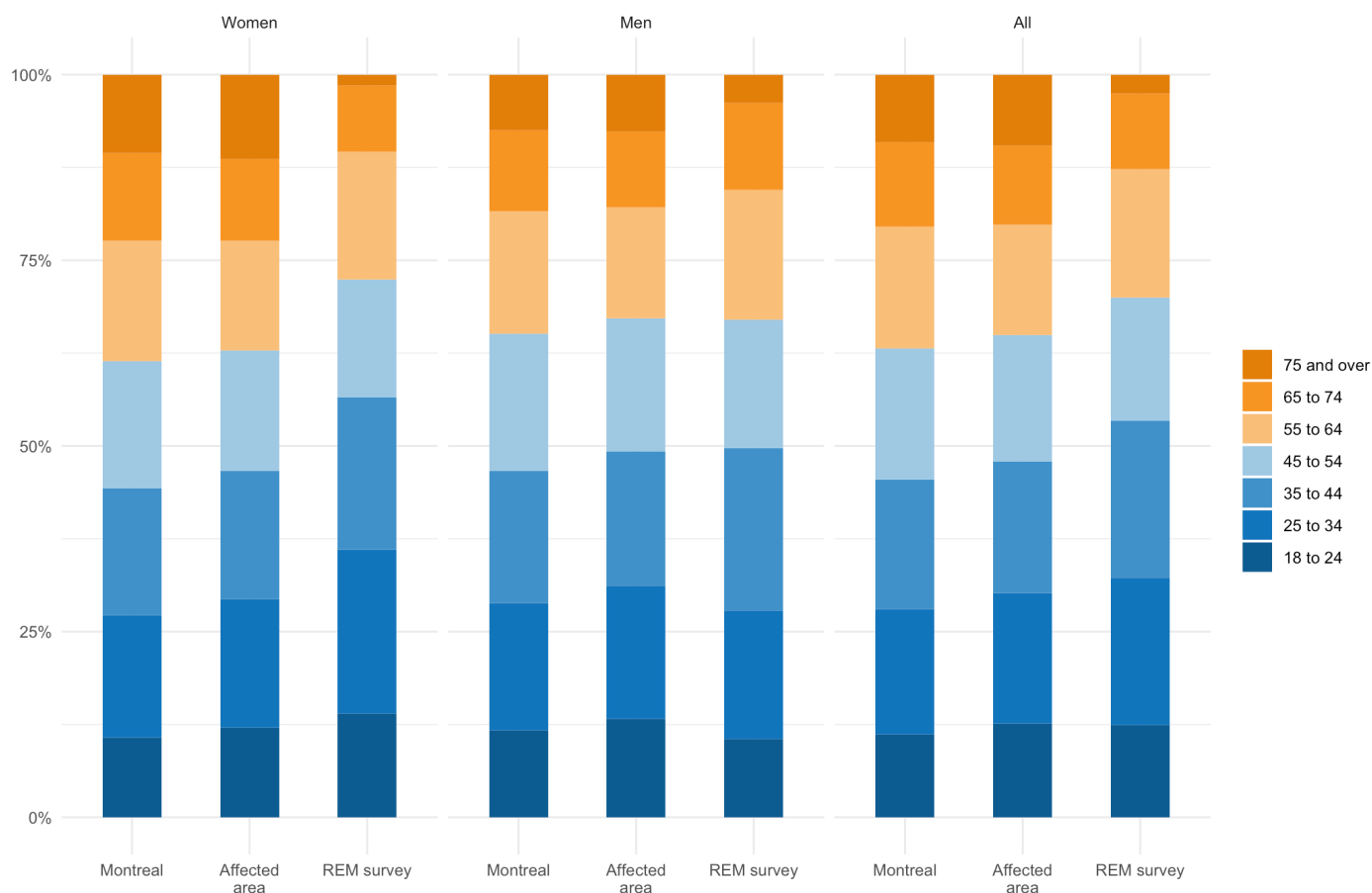
FIGURE 3: REM SURVEY RESPONDENTS BY AGE COMPARED TO POPULATION IN MONTREAL AND THE AFFECTED AREA

Figure 4 compares the household income of the survey respondents with that of the Montreal population and affected area. The REM survey included more/smaller income brackets than the Census income household groups. In order to compare to the general population, the survey information was summarized to reflect the same income categories that the Canadian Census uses. Namely, the income groups in the REM survey: $90,000 to $119,999 and $120,000 to $149,999 were combined to be comparable to the Census income group: $90,000 to $149,999. We also assumed that REM survey respondents reported their household income before tax, and thus compared it to the total household income for private households before tax that was reported in the 2016 Census. The figure suggests that the survey overrepresented higher income households and underrepresented lower income households compared to the broader Montreal population and the population in the affected area.
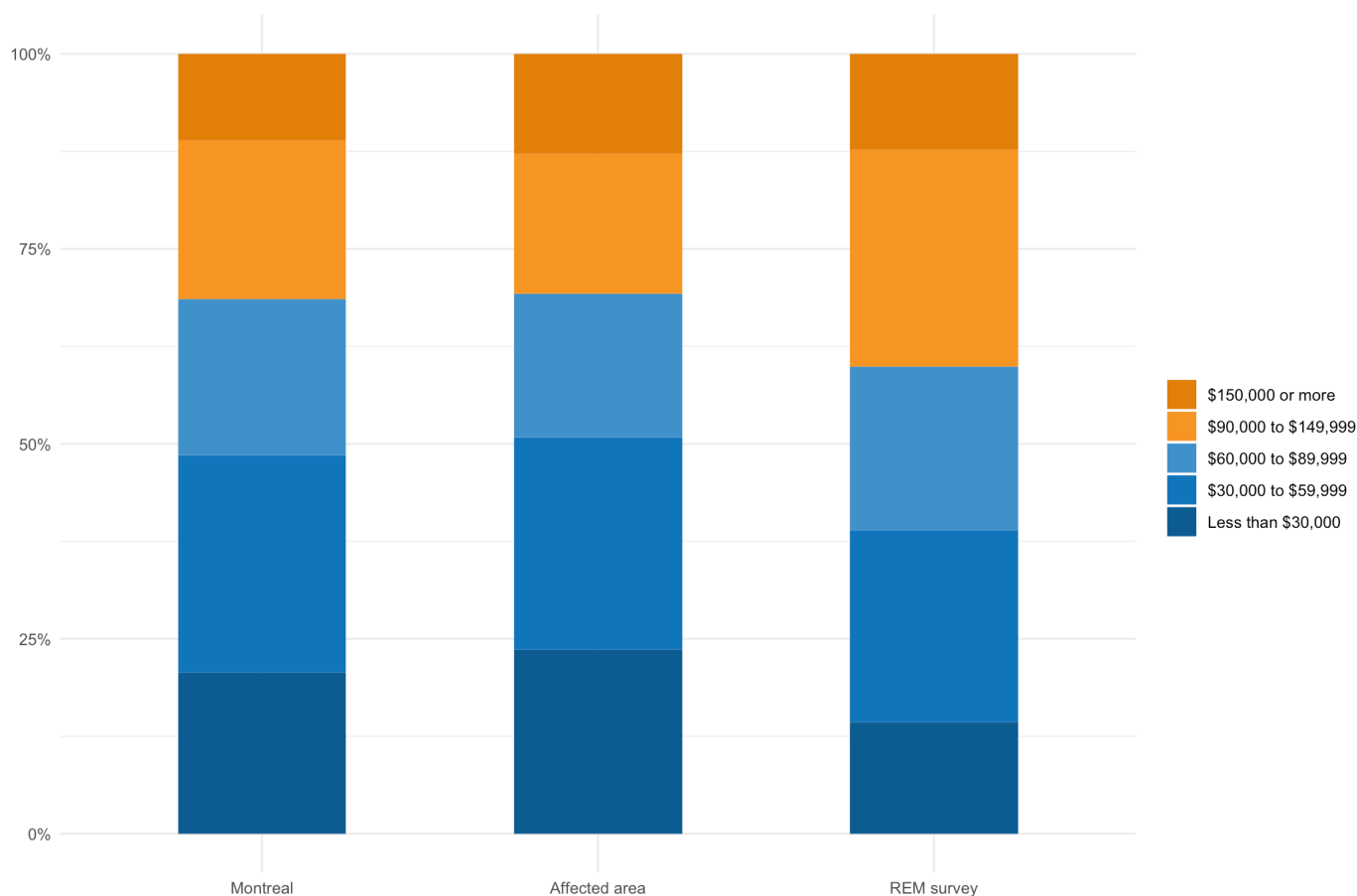
FIGURE 4: REM SURVEY RESPONDENTS BY INCOME COMPARED TO THE POPULATION IN MONTREAL AND THE AFFECTED AREA

TRAM

Figure 5 compares the main mode that people used to work across Montreal, the affected area, and among survey respondents. The survey had more specific response options than the census with regards to travel mode to work, so the REM responses were grouped according to the census categories in order to be comparable. For example the survey provides Drive – Carshare (e.g. Communauto, car2go) and "Drive – Personal Vehicle" as options, and both are grouped under the census category, "Car, truck, van – drive." Figure 5 shows that a higher proportion of people who filled out the REM survey commute by public transport (47%), walking, and bicycle than the Montreal (28% of those in the affected area commute by public transport and 22% of those in Montreal do). A lower proportion of people who filled out the REM survey commute to work by driving (36%) than the comparison populations (58.7% of those in the affected area and 67% of the Montreal population). As explained earlier this can be related to the excitement or concerns related to the REM construction.
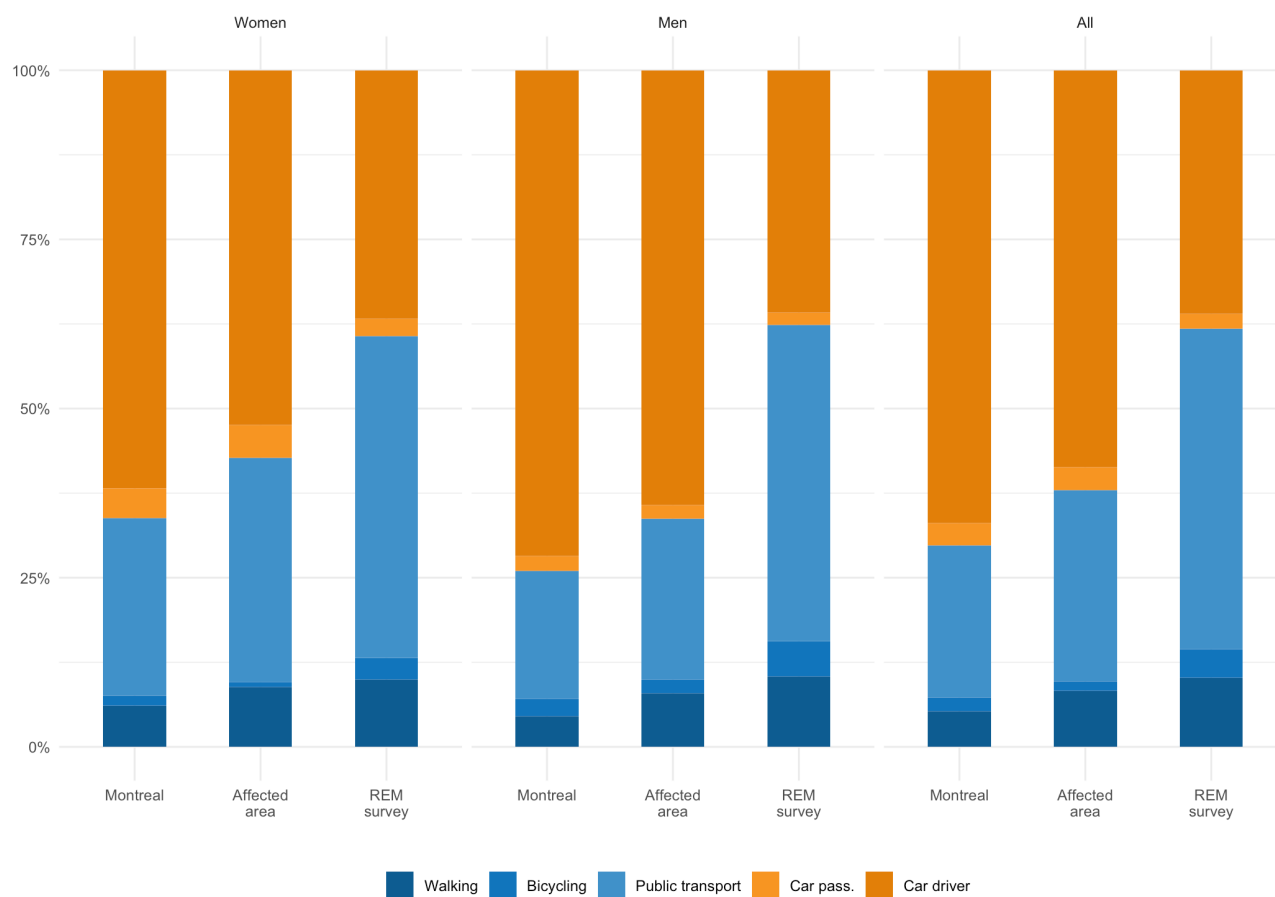
FIGURE 5: REM SURVEY RESPONDENTS' TRAVEL MODE TO WORK COMPARED TO THE POPULATION IN MONTREAL AND THE AFFECTED AREA

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General Travel Patterns

Figure 6 depicts the home, work and school locations of the survey respondents. Survey respondents' homes are distributed Montreal, and are especially concentrated around the future REM station locations and the existing Mascouche line stations. Their work locations are also dispersed around the city, and are highly concentrated in and around downtown / the central business district. Similarly, their school locations are also highly concentrated near downtown.
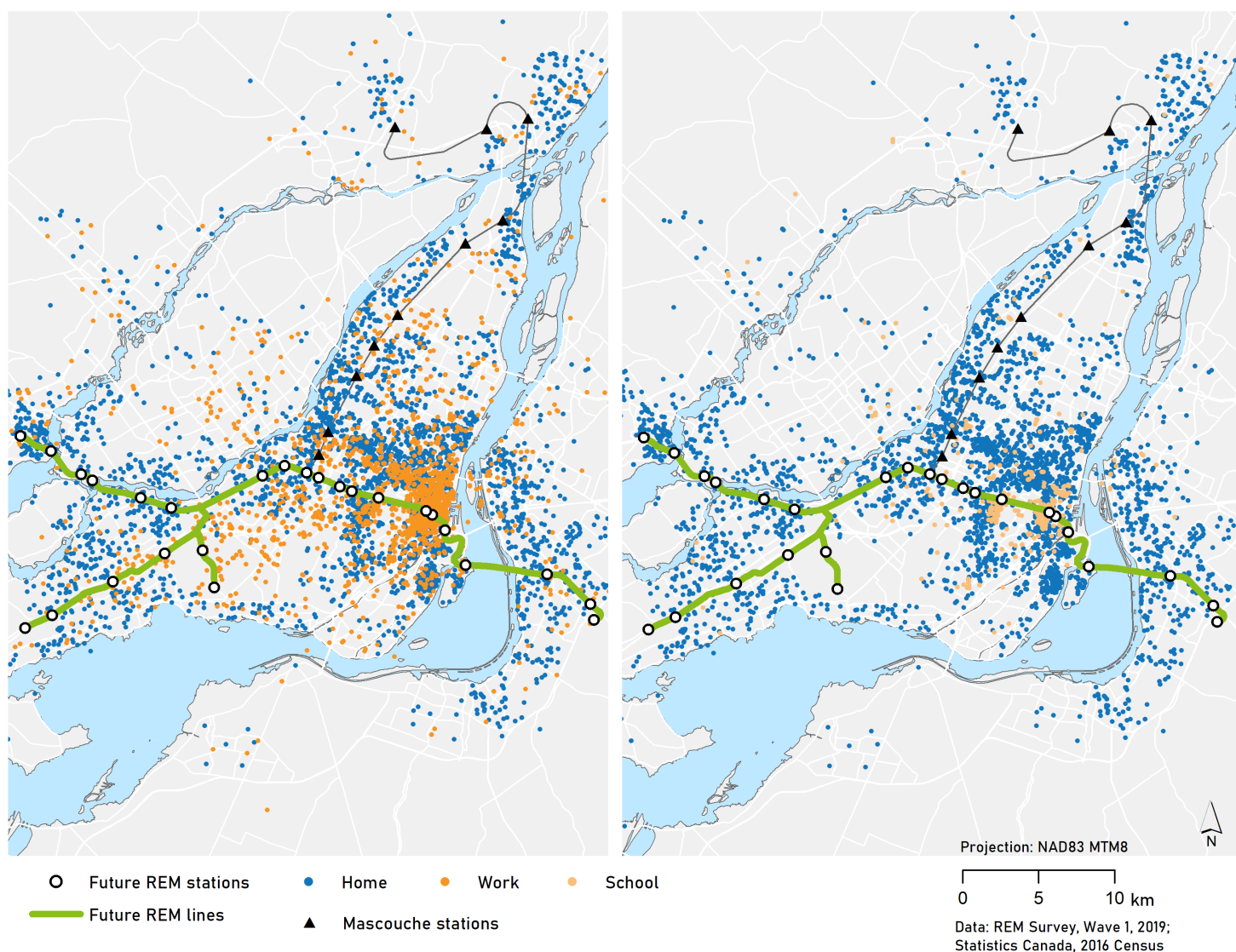
FIGURE 6: SCHOOL, HOME AND WORK LOCATIONS FOR REM SURVEY RESPONDENTS

Figures 7 and 8 depict average walking and bicycling time for respondents. These averages correspond only to people who had answered they walk or bicycle on a typical day. Figure 7 shows daily averages in minutes, while Figure 8 illustrate the frequency, the days in a week in which each type of travel occurs. The first visible trend is that, except for respondents aged 35 to 44 years, minutes of walking and bicycling are higher for men than for women. Results corresponding to respondents self-identifying as 'other' for gender were not depicted due to the small amount of observations available. Interestingly, men 75 and above have the highest average in bicycling times[1]. In terms of gender differences, they seemed to be greater for bicycling than for walking. For the age bracket comprised with respondents 25 to 34 years old, women walked for an average of 38 minutes, while men walked for 39 minutes. For bicycling, values were of 42 minutes for women and 47.4 for men. The biggest gender difference in terms of daily averages can be seen for women and men 75 years and older. While women in this age category averaged 38 minutes of walking while men averaged 54 minutes. When considering all ages, men walk for 45.6 minutes and bicycle for 57.8 minutes, women, on the other hand, walk on average 40 minutes and bicycle 48 minutes.

On average, among respondents who reported some level of physical activity, participants walk more days in a week than they bicycle. In this case, the gender differences are not the same as with average daily values. Instead, in many age brackets, averages for women where higher than for men. Women aged 25 to 64 bicycled on average more days in a typical week than their male counterparts. In fact, the average amount of days all women bicycled for was 4.1, while the same indicator for men was of 3.9 days. This difference was reversed for walking values, with men averaging 4.9 days in which walking for at least 10 minutes took place, while women averaged 4.6 days. It would be interesting to understand why respondents were more likely to walk than bicycle on any given day. Another interesting take away from these figures is that differences do exist between different age groups and gender, in terms of their behavior regarding walking or bicycling. Policy and design decisions should consider these differences when promoting healthy mobility options.

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[1] No women belonging to the 75 and above age bracket responded they bicycle daily. The high average for men can beexplained by the fact that only 8 men over 75 answered this question, and all of them except one reported bicycling times over 60 minutes.

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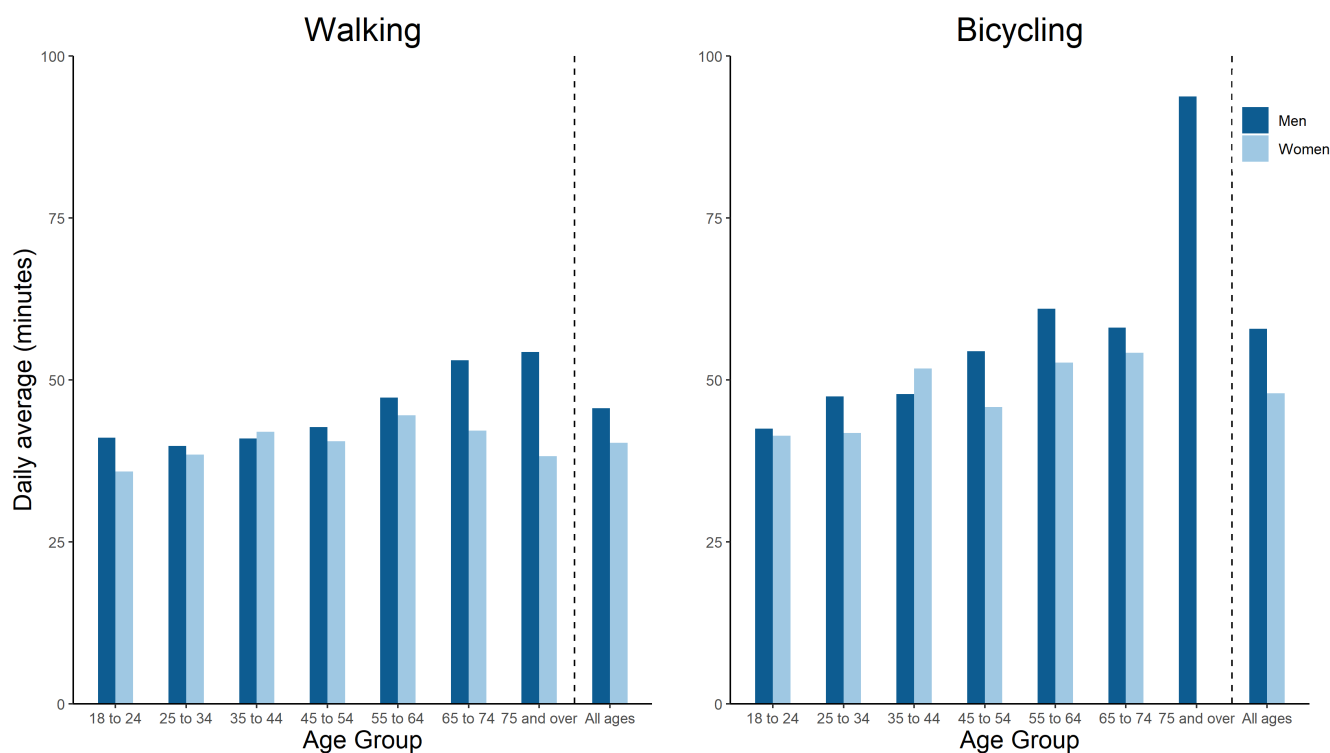
FIGURE 7: AVERAGE DAILY WALKING AND CYCLING TIMES AMONG PARTICIPANTS WHO REPORTED ANY WALKING OR BIKING
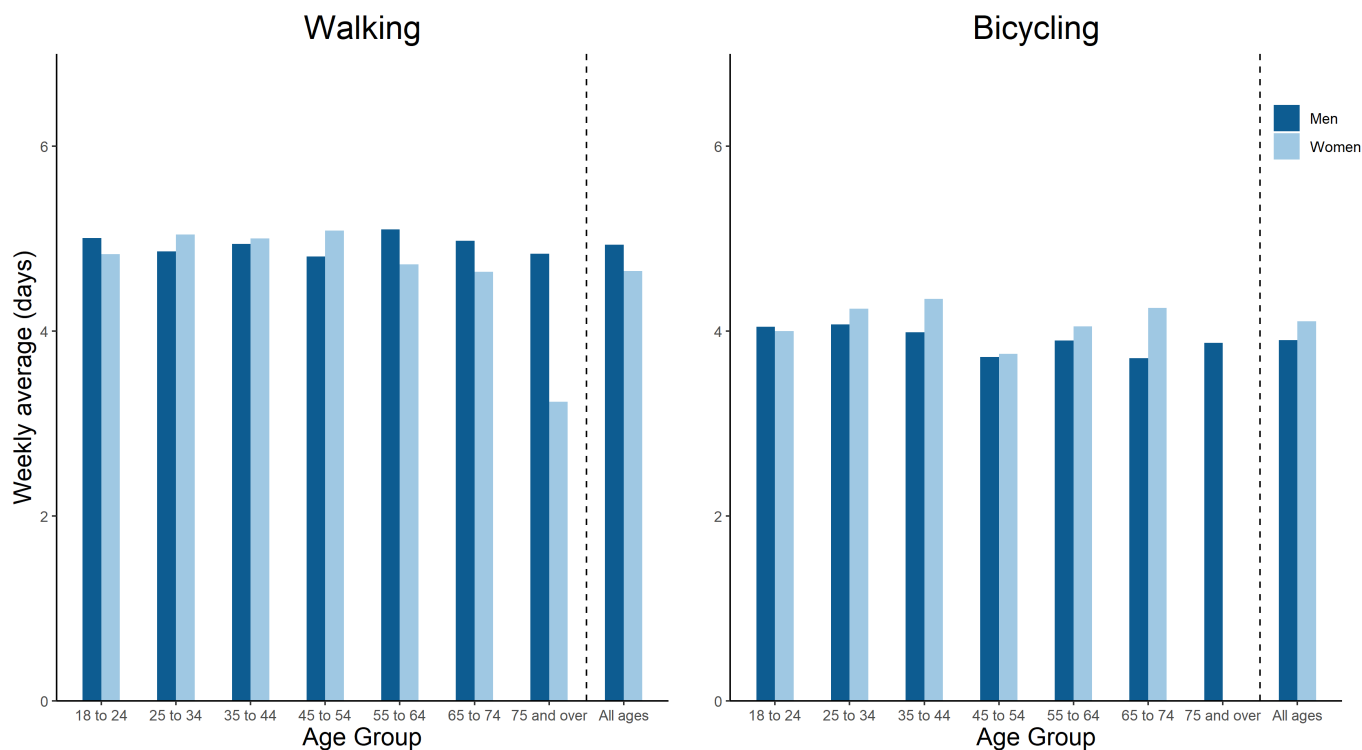
FIGURE 8: WEEKLY WALKING AND CYCLING FREQUENCIES AMONG PARTICIPANTS WHO REPORTED ANY WALKING OR BIKING

Figures 9 and 10 depict the frequency of travel time per mode for commuting to work for women and men respectively. The histograms were generated based on the respondents main mode to work, and the time reported leaving home and arriving to work. Histograms were not generated for survey respondents who identified their gender as other because there were so few responses. The bin widths of the histograms are ten minutes. The figures suggest that women spent more time commuting by car and public transport than men. While men commuted longer by bicycle and walking than women.

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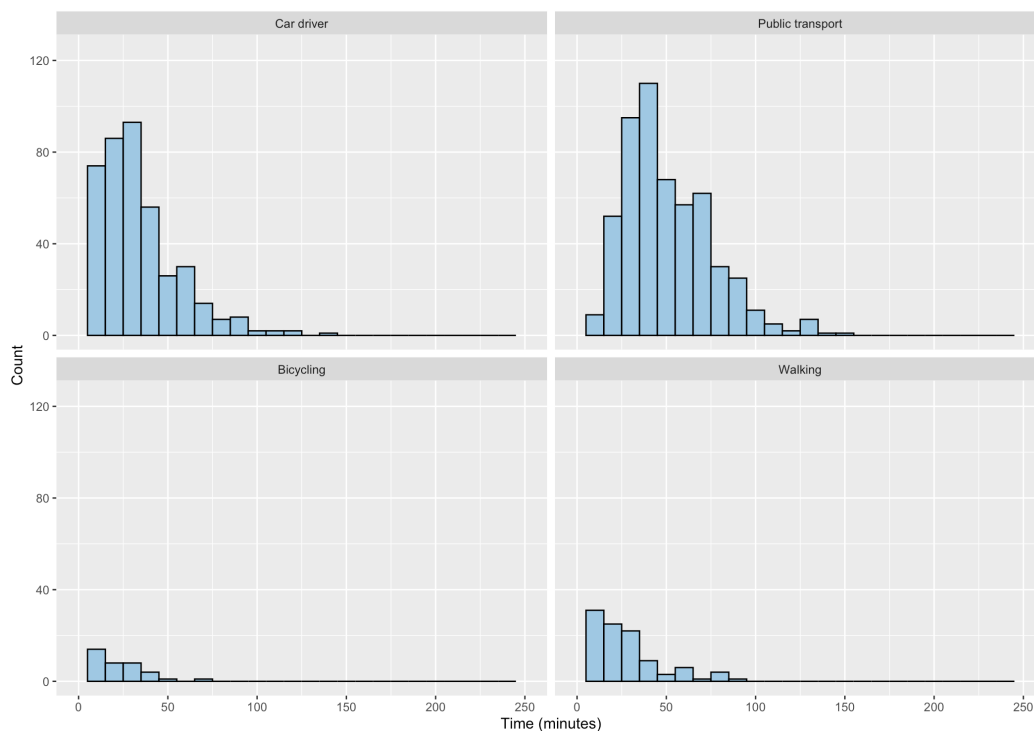
FIGURE 9: FREQUENCY OF TRAVEL TIMES PER MODE FOR WOMEN
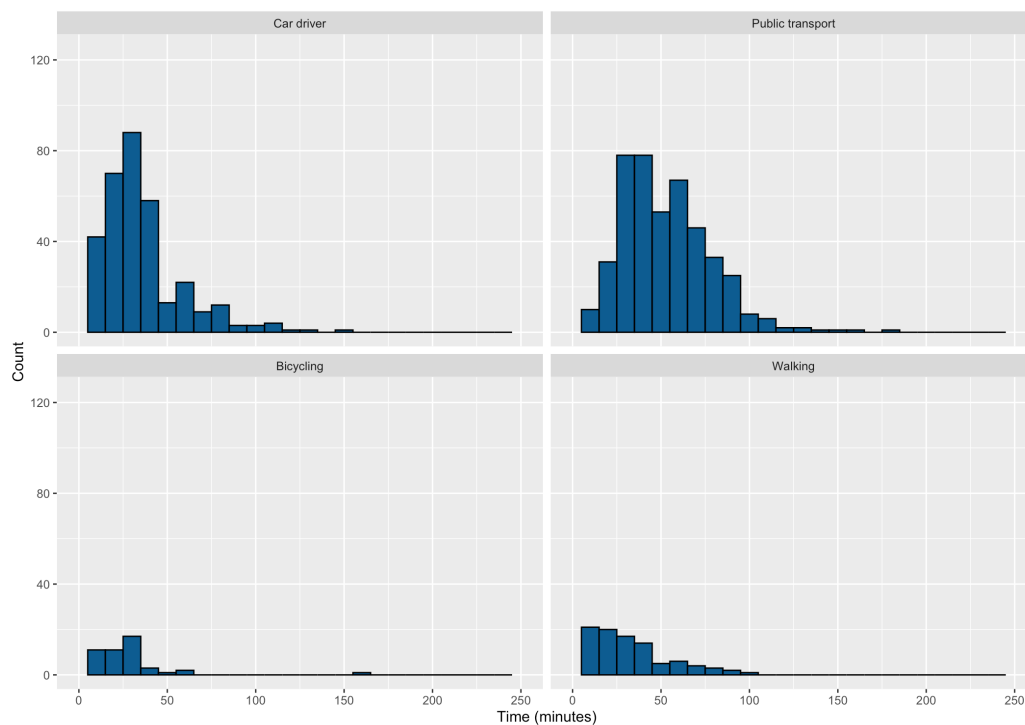
FIGURE 10: FREQUENCY OF TRAVEL TIMES PER MODE FOR MEN

General Health Perceptions and Life Satisfaction

The survey also gathered information regarding respondents' general health perceptions and life satisfaction. Measured on a scale of one to five, five being good health and one being poor health, participants described their general health. Overall, respondents in the retained sample considered themselves to be healthy with little variability. Women's perception of their general health remained between 3.2 to 3.3, while men experienced some levels of fluctuation within the young age categories. For example, men ages 25-34 saw the highest average of 3.6, which climbed higher than men ages 18-24 who averaged 3.4.   Very few respondents identified as "other" with regard to their gender. Of the respondents that did identify as "other," general health perceptions remained high at ages 18-24 and 25-34, with a drop at ages 35-44. Perceptions of general health remained low for respondents who identified as "other" in both ages 55-64 and 65-74. No respondents 75 years and older identified as other.

Figure 11 shows the findings from three questions pertaining to respondents' perception towards their own lives and personal characteristics regarding their overall satisfaction with life, standard of living, and health on a scale of one to ten, ten being very satisfied. Upon review, age 75 and older men ranked the most satisfied across all categories: 8.1(Life), 8.1 (Standard of Living), and 7.7 (Health). Men from ages 18 to 44 appear to be more satisfied within the three categories than women. This, however, changes between ages 45-54, as women appear more satisfied than men.

TRAM

FIGURE 11: SATISFACTION LEVELS IN LIFE, STANDARD OF LIVING, AND HEALTH

Women ages 45-54 note a satisfaction level of 7.3 (Life) and 7.3 (Standard of Living), whereas men average 7.1 (Life) and 7.1 (Standard of Living). Satisfaction between older age groups of men and women remain relatively similar until age 75 and older. As mentioned before, the sample size for "other" is small, which caused difficulties for interpretation. No respondents identified as "other" under the age 75 and over.

Perceptions towards the REM's construction and completion

Figure 12 shows the percentage of respondents who answered yes to having to take a different mode of transport for their commute because REM construction is underway at or near their home. Currently, the majority of people do not have to change their mode, as construction occurring at the time of the surveys release was minimal. A total of 618 women and 701 men responded to this question, with 407 women and 448 men claiming that they did not have to change modes because of REM construction. Perhaps most interesting is with respect to the

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following figure, which illustrates how survey respondents expect construction to impact their future mode choice.
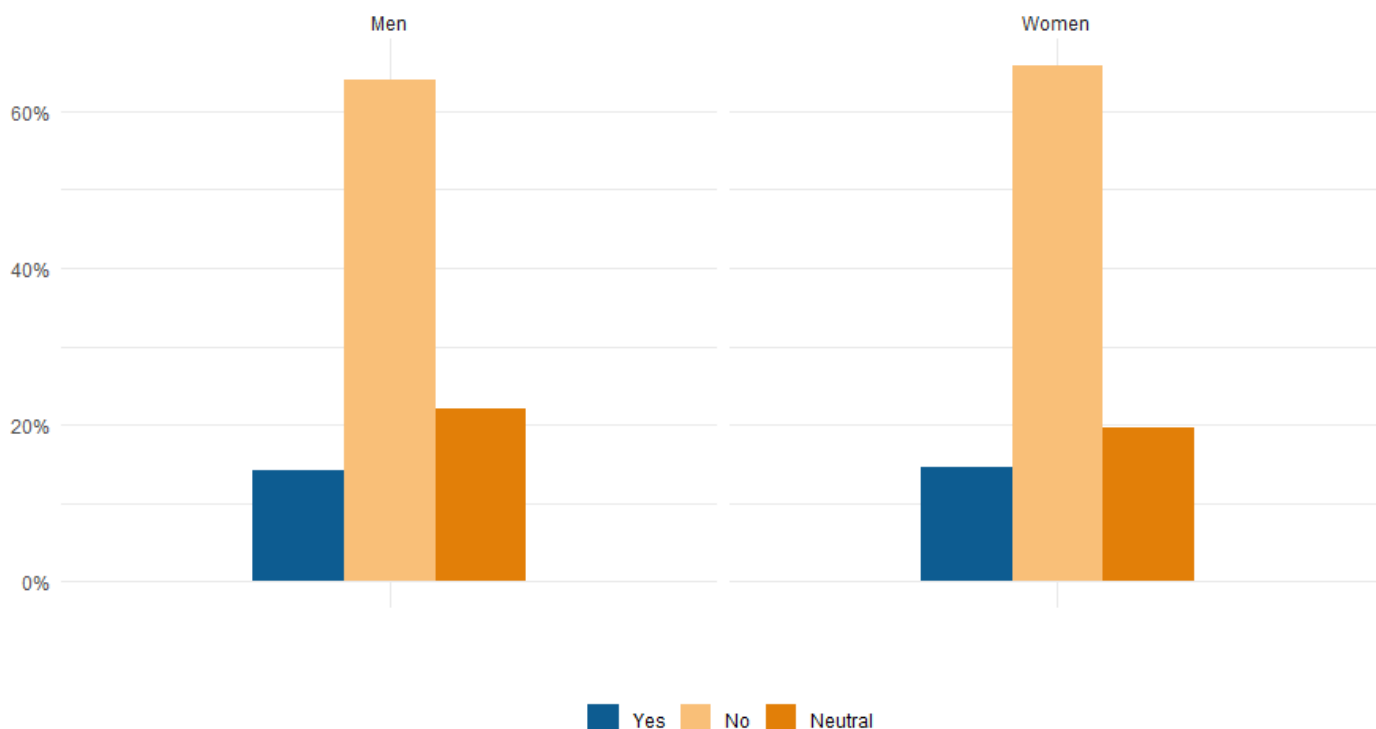
FIGURE 12: MODE CHANGE DUE TO REM CONSTRUCTION IN PROXIMITY TO RESIDENCE

Figure 13 builds off the previous figure by illustrating the percentage of people that expect to change their mode choice as a result of the REM construction within proximity to their homes. For this particular question, only those who expected to experience construction in the future near their residence were included. More than 40% of respondents, both men and women, indicated that they would be forced to change their mode of transport because of REM construction within proximity to their homes. This disruption to mode choice is significant and could be of greater interest following the additional waves of surveys. It will be worthwhile to identify which modes these respondents turned to as replacements.

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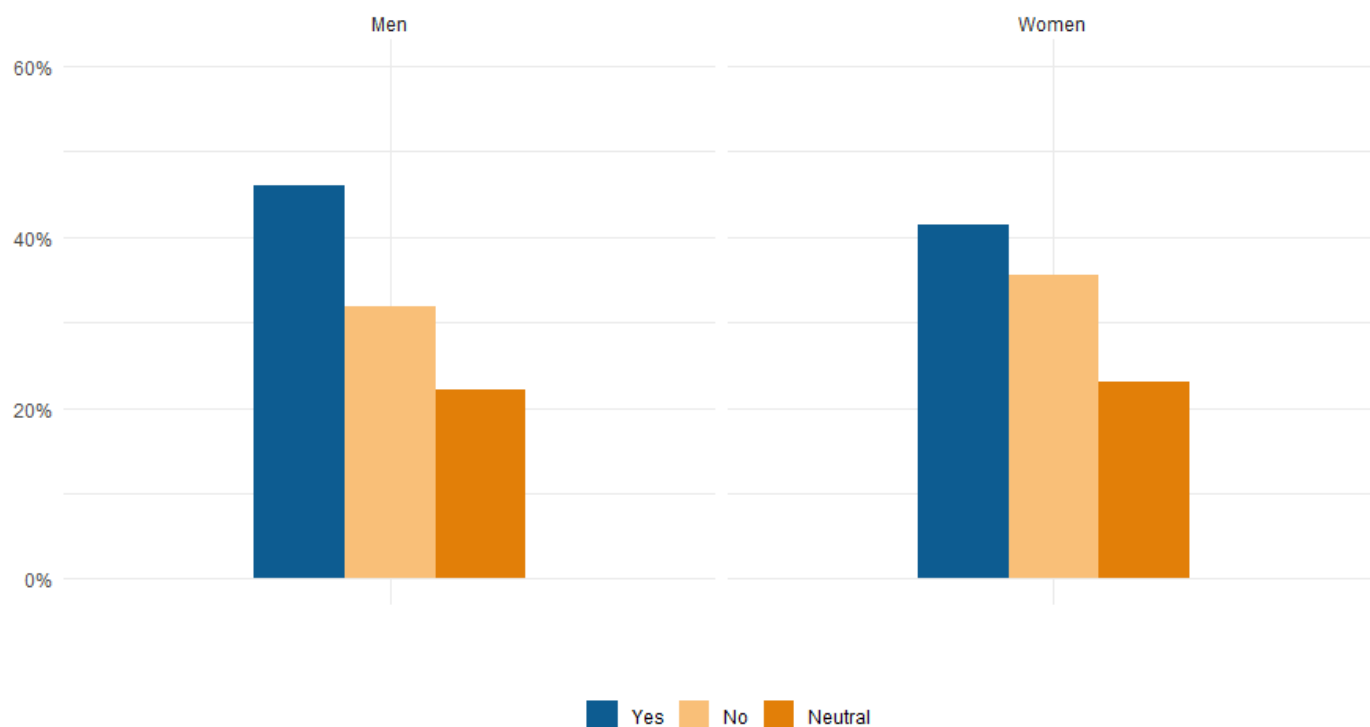
FIGURE 13: MODE CHANGE PERCEPTION RELATED TO FUTURE REM CONSTRUCTION IN PROXIMITY TO RESIDENCE

Table 3 and 4 show how survey respondents will adapt to the construction and closure of the Mount Royal tunnel which will impact both the Deux-Montagnes and Mascouche. Based on the results, many survey respondents plan to keep using public transport with respect to the Deux-Montagnes' line suspension, while numbers remain relatively even regarding the Mascouche. A large number remain unsure, responding "Don't Know" (178 (Deux-Montagnes) and 69 (Mascouche)).

TABLE 3 & 4: MODE CHANGE AS A RESULT OF REM CONSTRUCTION IMPACTING DEUX-MONTAGNES & MASCOUCHE

Deux-Montagnes Users

Behavior	Counts	Percentage
Transit	418	45%
Don't Know	260	28%
Flexible About Alternatives	116	13%
Only Cars	132	14%
	926	

Mascouche Users

Behavior	Counts	Percentage
Transit	74	23%
Don't Know	103	31%
Flexible About Alternatives	88	27%
Only Cars	63	19%
	328	

Figure 15 shows the impact of current REM construction on respondents' travel behavior and experience. At the time of the survey the REM construction was not particularly disruptiveMost respondents did not change their commute in terms of routes (52%), Around 14.5% of respondents answering this question feared of accidents happening more often, with a very small fraction (3%) strongly agreeing to this. Almost 37% of respondents agreed or strongly agreed to having enough information about travel alternatives,. A version of this figure with a breakdown by income levels is available in the Appendix (Fig 16b).

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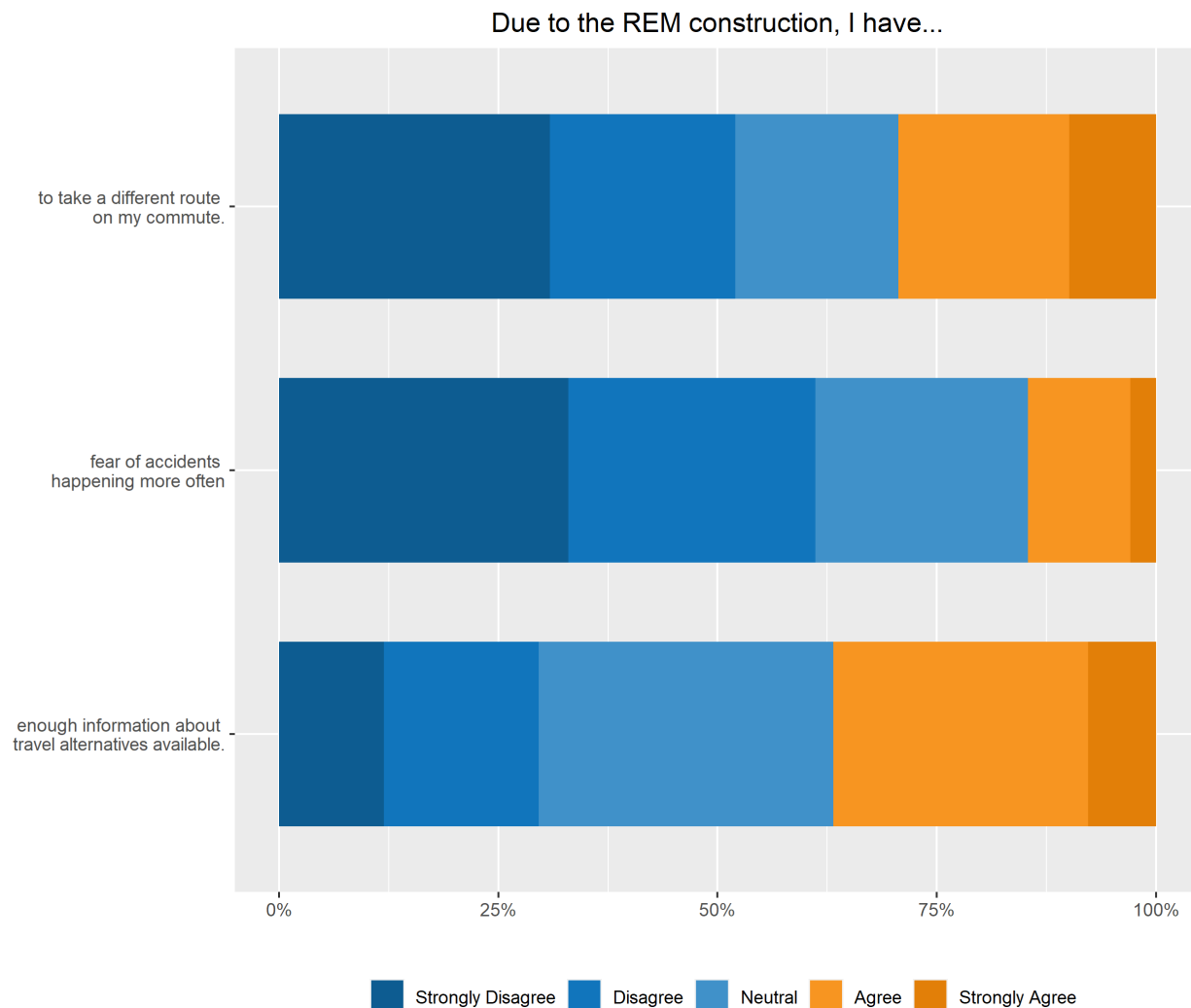
FIGURE 15: PERCEIVED IMPACT OF CURRENT REM CONSTRUCTION ON TRAVEL BEHAVIOR

Figure 16 depicts how people anticipate the impact of the REM construction to be on their future travel. It shows the answers to the same questions asked in Figure 16a, but for people who will have construction near their homes in the future. In this question, 56% of respondents said they will have to change their route, compared to 52% in the previous. This difference can easily be explained by changes in the type of construction carried out or pessimism related to future constructions. The next wave of the survey will reveal if there is a disconnect between these expectations and actual behavior and experience.
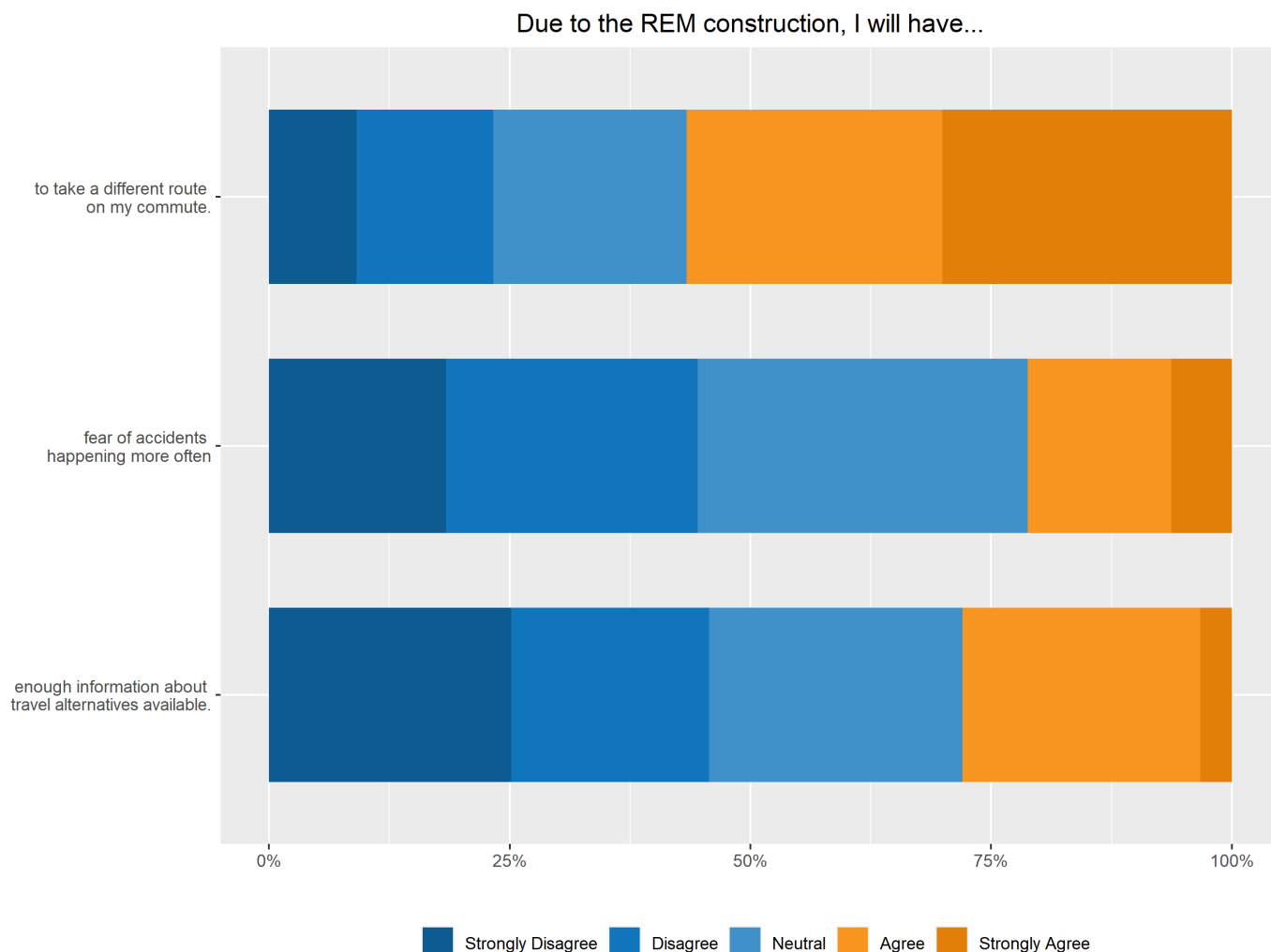
FIGURE 16: PERCEIVED IMPACT OF FUTURE REM CONSTRUCTION ON TRAVEL BEHAVIOR

Figure 17 depicts the REM construction's impact on the populations' general wellbeing. The results are mostly positive, with most respondents not finding REM construction anxiety-inducing. In terms of impact on mood, the number of respondents finding the construction to have a negative impact on mood is larger than in the previous question, with 25% of respondents agreeing to some degree to the premise. The figure also shows 41% do not find the construction has increased air or noise pollution, while 20% did. Generally speaking, and in line with the results depicted in the previous figure, the construction's impact on wellbeing has not been strong, either in terms of general anxiety of stress related to forced changes in travel behavior. A version of this figure with a breakdown by income levels is available in the Appendix (Fig 18b).

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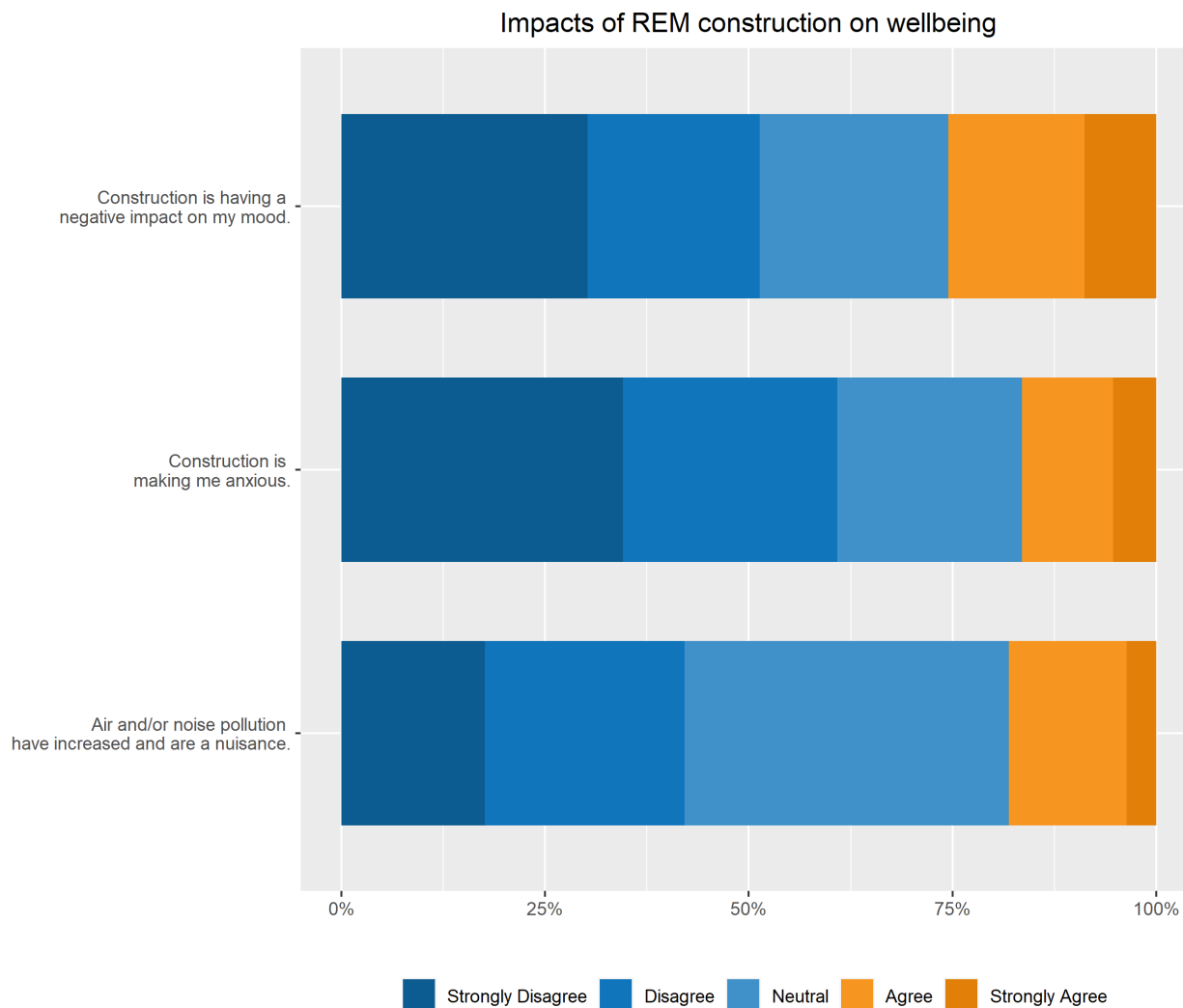
FIGURE 17: PERCEIVED IMPACT OF REM CONSTRUCTION ON WELLBEING

In a similar way it was done before, this figure intends to understand how people anticipate the construction will affect them. More notably that in the case of travel behavior, there is a clear difference in how people anticipate the construction to affect mood, anxiety and pollution levels when compared to how it affects people now living near construction sites. In such a way, 40% of respondents fear that noise and air pollution levels will increase with construction. Also, 38% agree or strongly agree that it will make them anxious. While currently 25% find the construction to impact their mood now, 52% of people living near sites where future construction will occur anticipate it will have a negative impact on their mood. A version of this figure with a breakdown by income levels is available in the Appendix (Fig 19b).

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Impacts of REM construction on wellbeing
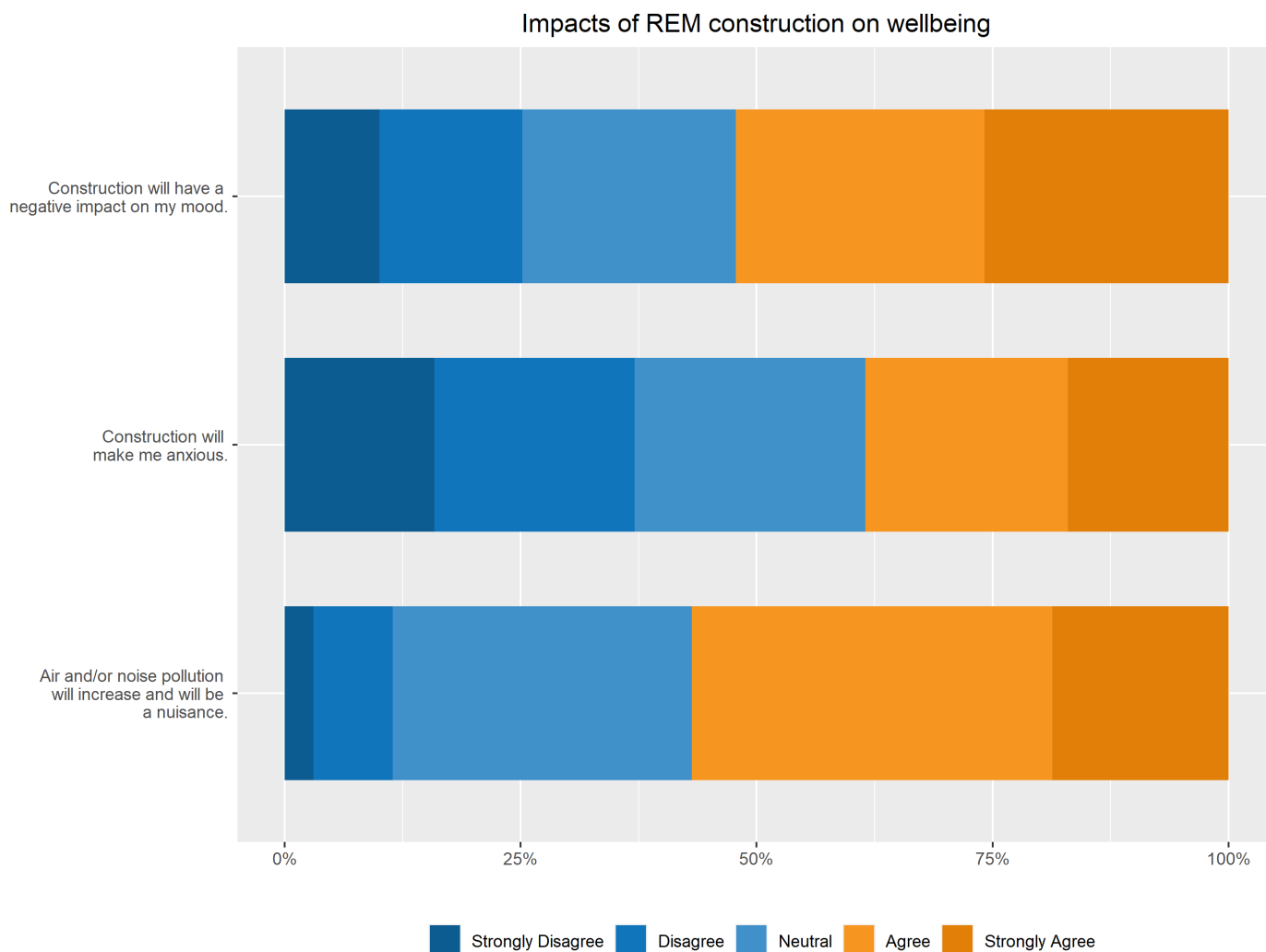
FIGURE 18: PERCEIVED IMPACT OF FUTURE REM CONSTRUCTION ON WELLBEING

Figure 19 shows the perception survey respondents have of the effect the REM will have on the greater Montreal area, the environment, and their own neighborhood once its construction is completed. The results to this question were overwhelmingly positive, with 81% of the respondents identifying the REM as having a positive impact on the Montreal region. The results were also positive when asked about the environment, 79% either agreed or strongly agreed with this premise. Regarding the anticipated impact on their own neighborhood, 40% identified it as having a positive impact. Most answers were neutral (42%), with more people identifying it as having a negative impact on their neighborhood (18%) than on the greater Montreal area (6%) or on the environment (6%). It would be interesting to further research what can explain this difference, perhaps related to the widespread "not in my back yard" approach to new urban

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policies or infrastructure. This question was asked to people who had previously answered they knew what the REM was. A version of this figure for people who did not know about the REM before taking the survey, as well as versions of it with a breakdown by income levels are available in the Appendix (Fig 20b, c, d).
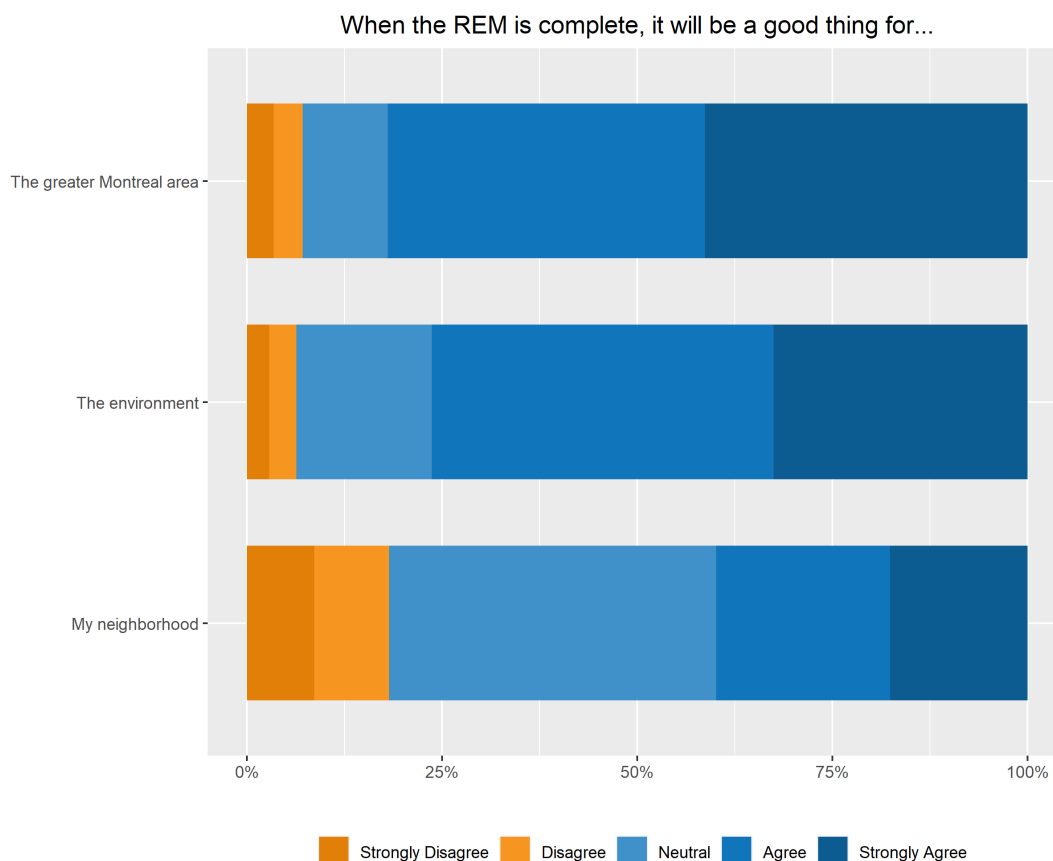
FIGURE 19: PERCEIVED IMPACT OF REM ONCE COMPLETED

Figure 20 showcases how likely respondents are to use the REM once it is completed. The figure separates answers by the current mode used to travel to work, as well as by gender. In this figure, gender differences do not appear to be significant. Around 44% of car drivers indicated they would use the REM once it becomes operational (likely and very likely). Many cyclists and Metro users indicated they would use the REM in the future. Throughout all modes, 972 people said they were likely or very likely to replace their current commute mode with the REM. This accounts for 53% of the respondents in this question.
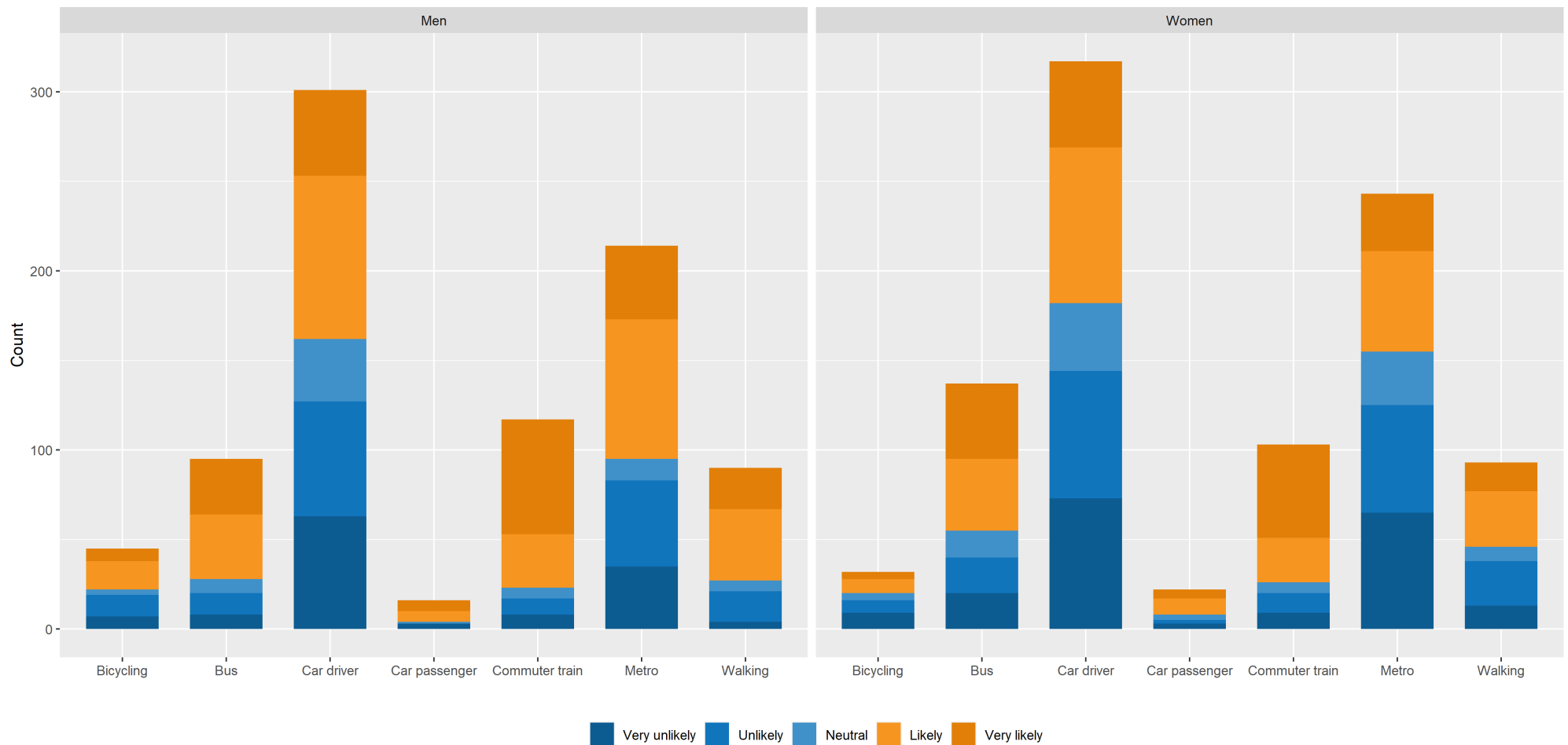
FIGURE 20: LIKELIHOOD OF REPLACING CURRENT COMMUTE MODE WITH THE REM

Section VI – Ethica App Data

Data collection

At the end of the online survey, participants were asked whether they wished to use an app to record their movement and location for 20 days. The research team contacted interested participants with instructions. Of the 5,942 survey respondents, 700 were invited to join the Ethica App. In total, 313 participants signed up on the Ethica App, and 299 provided survey data.

Ethica Data is a research app which records smartphone data on human behavior, location, and movement. As part of the REM study, participants using the Ethica app contributed passive data on their movement (accelerometer, activity recognition, and pedometer data), location (GPS and WiFi), and the state of their phone (battery). They also received short daily surveys for 20 consecutive days. Respondents had two hours to respond to each survey before it expired. Ethica data was collected between December 5th, 2019 and January 6th, 2020. At the end of their data collection period, participants were instructed to delete the app from their phones.

The research team programmed daily survey prompts for the 20 days of participation. These questions related to transport mode, mood, mental health, social contact, and feedback on the study. Ecological Momentary Assessments (EMA) allow researchers to capture self-reported data 'in the moment', thus reducing recall bias. The possibility for repeated assessments within a day allows to capture potential daily variations in affective states that could be linked to environmental conditions or actual behaviors (Shiffman et al., 2008). Because EMA responses are tagged with GPS coordinates, it is possible to locate momentary affect responses and link those with environmental conditions (see maps below).

Specifically, participants received 46 survey notifications during their participation on Ethica:

- 21 were Ecological Momentary Assessment (EMA) surveys consisting of 6-item Short mood scale, and 1 question about with whom the participant was at the moment of answering the survey. This 7 question survey was asked 3 times a day for 7 consecutive days.

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- 14 were individual items from the Mental Health Continuum Short Form Scale (1 item per survey), measuring subjective well-being (Keyes, 2002).

- 3 were questions asking for feedback about the study, the app, and the participant's motivation for joining the study.

- 2 were questions about the first mode of transportation used in the morning, to be used as part of the procedures to confirm mode detection results

- 6 were general messages presenting information, encouragement and gratitude to participants.

TABLE 5: ETHICA SURVEY COMPLETION RATES

Survey Completion		
Completed surveys	5932	57%
Expired	4419	43%
Cancelled by the participant	24	0.2%

On average, participants answered 20 of the 40 survey prompts containing questions (six survey prompts provided information or encouragement, and did not include a question). Most users (n=187) answered half or more of all surveys.

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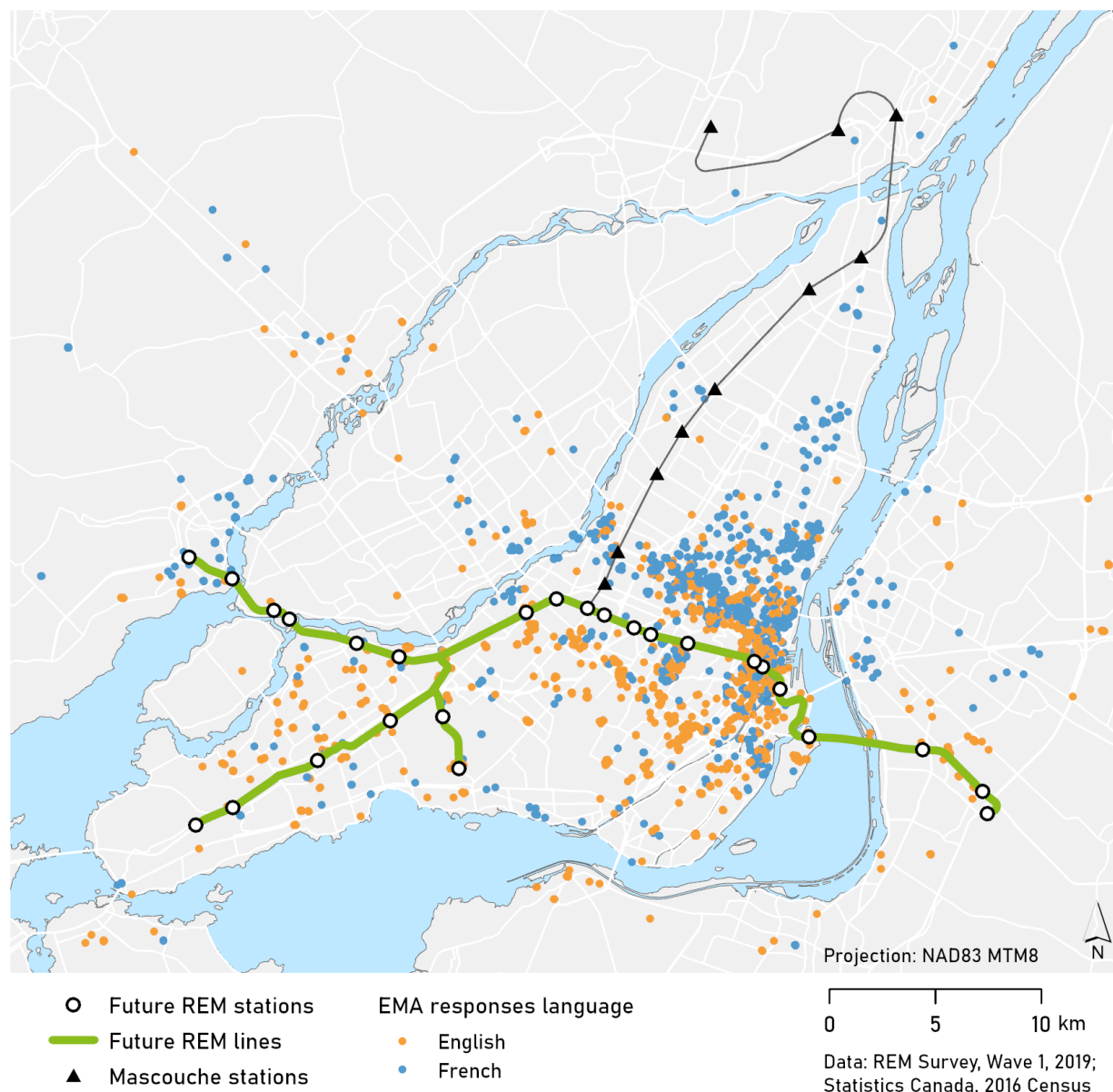
FIGURE 21: LOCATION OF EMA SURVEY RESPONSES MAPPED BY LANGUAGE OF PARTICIPANTS

Mood Analysis

The study cohort reported generally positive moods, a component of subjective well-being. Variations were observed between morning and evening measures: participants tended to be more stressed in the morning and during the day, than in the evening, though they reported being tired and having less energy in the evening.

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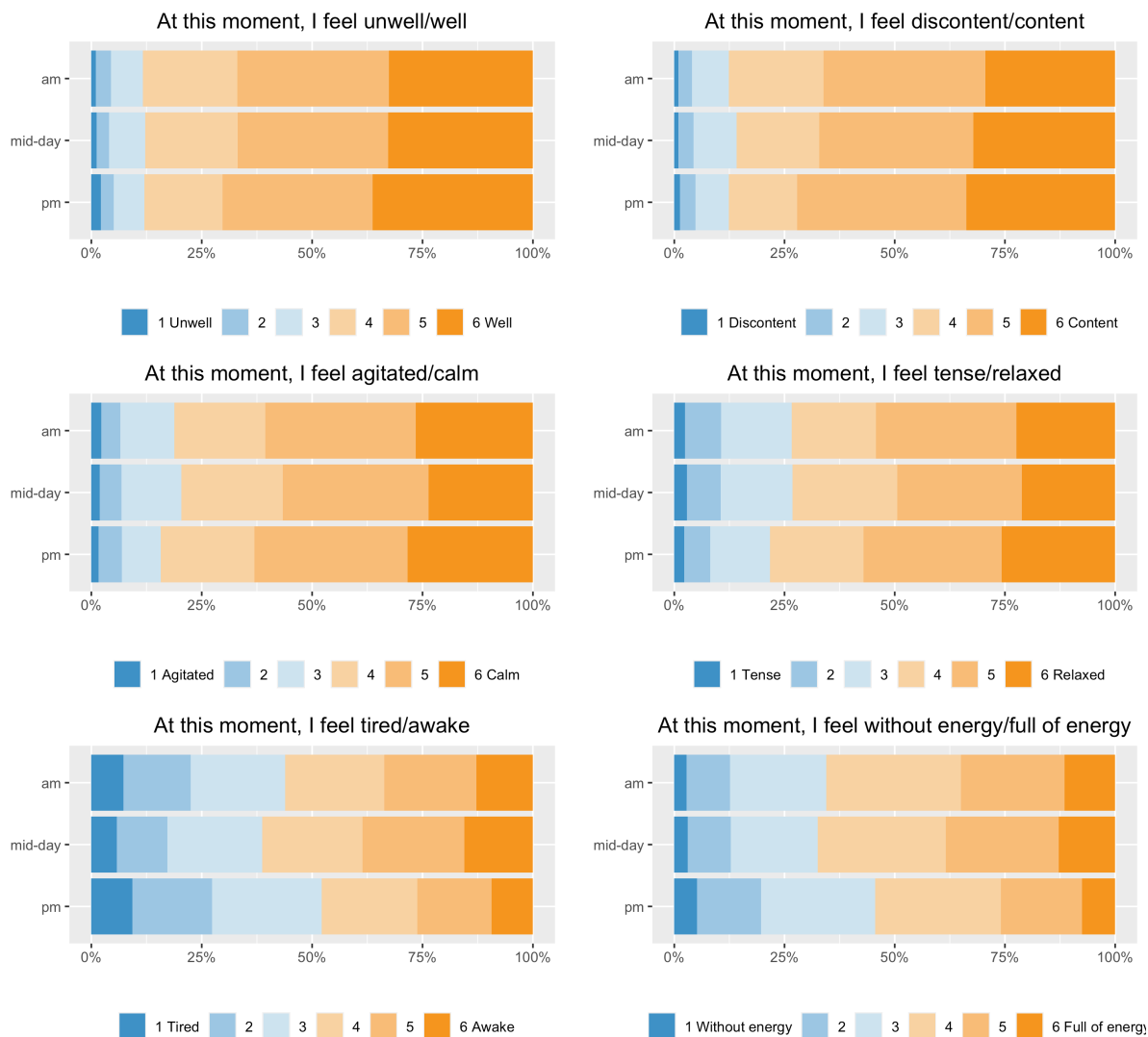
FIGURE 22: REPORTED MOODS BY TIME OF DAY

When looking at responses based on whom the participants were with, we find that participants reported highly positive moods when with friends, though reported being tired within similar levels to respondents who were among friends and colleagues. Minor differences in mood were reported between respondents who were alone, and those who were alone with people around them. Finally, being around family and friends were related to lower stress levels.
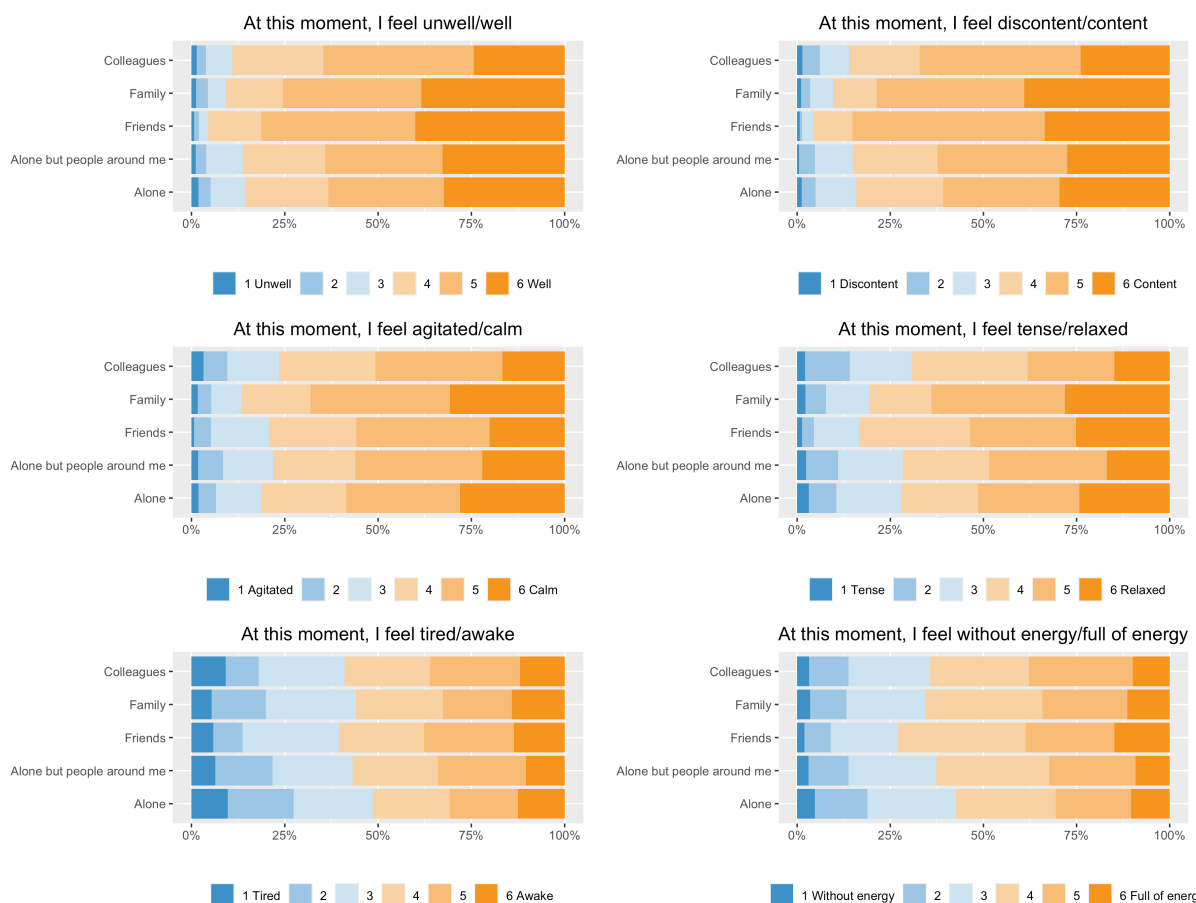
FIGURE 23: REPORTED MOODS BY WHOM RESPONDENTS WERE WITH

Each survey response was tagged with the location of the participant at the time of their response. The following maps show responses based on location within the Montreal area.
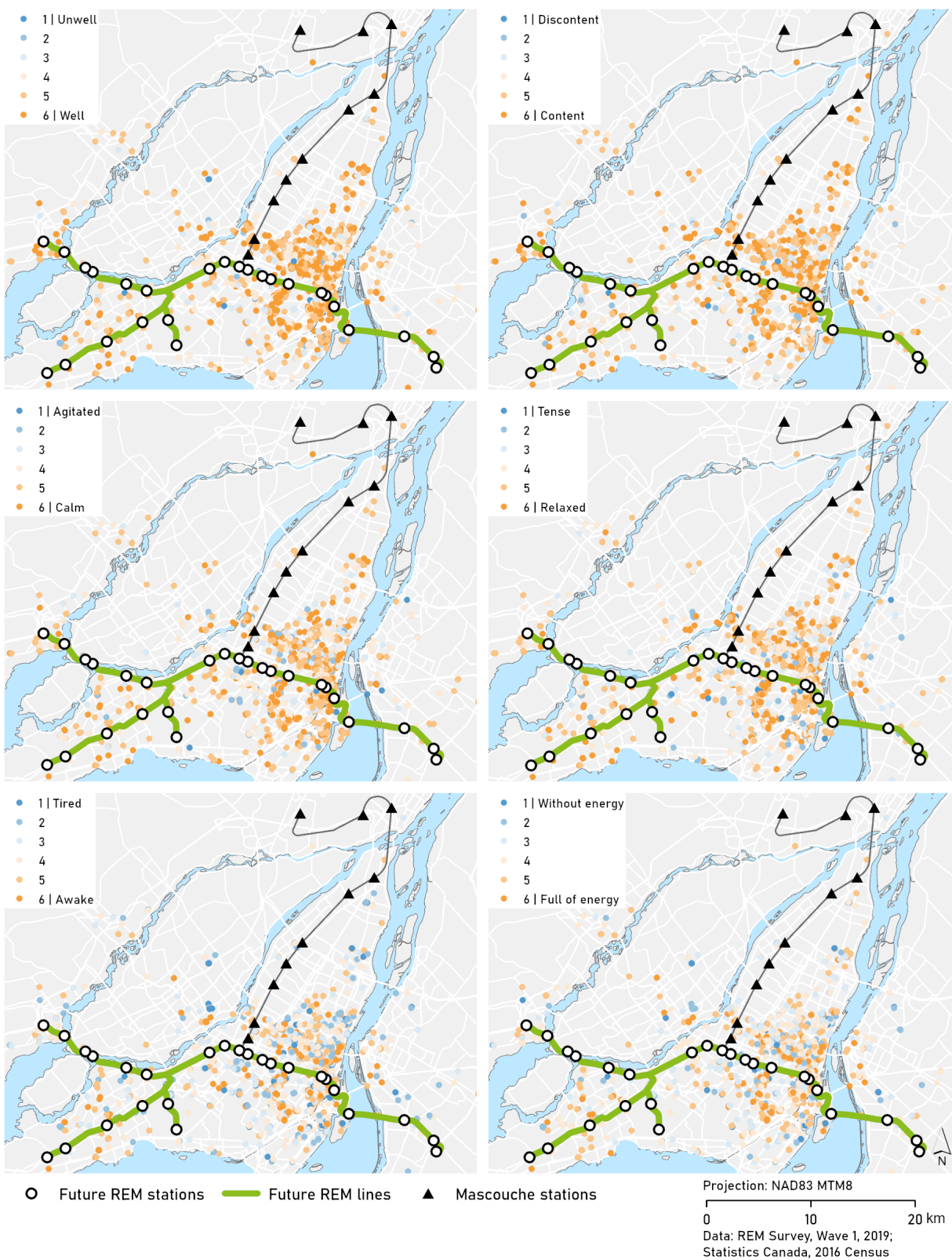
FIGURE 24: REPORTED MOODS BY GEOGRAPHIC LOCATION

The Ethica app survey data shows participants reported positive moods overall ahead of the major transportation changes. Following the next wave of data collection as part of this study, differences in mood between participants, and between participant's wave 1 and wave 2 data will be calculated. This will allow to assess the impact of construction and transportation changes on the well-being of Montrealers.

GPS and Accelerometry Data

The Ethica smartphone app passively records users' movement (accelerometer, activity recognition, and pedometer data), location (GPS and WiFi), and the state of their phone (battery). These data sources will provide the following variables: time, latitude, longitude, altitude, speed and course at the second resolution as well as triaxial counts and activity levels at the 1-minute epoch. In the next stages of analysis, accelerometry and GPS data will be analyzed to 1) draw a baseline portrait of mobility in Montreal; 2) examine how travel patterns relate to health outcomes (physical activity, mental health); 3) measure exposure to construction and its effects (i.e. service disruptions.)

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Section VII – Conclusion

The REM Survey Pilot - Wave 1 report provides insight into the ongoing major infrastructure endeavor, foreshadowing the valuable data that will be collected throughout the upcoming survey waves. With detailed and completed data collected from 3,683 respondents, the first wave's range of research potential is substantial. Overall, the sample is quite representative of the targeted population, with only a slight underrepresentation of people driving to work, lower income households and population aged over 75. For future waves, the research team will continue to recruit panel participants through various means.

Some interesting findings relate to the respondents' health and wellbeing, including travel behavior and self-perception in terms of quality of life, and health. Men have generally higher averages and are therefore more satisfied in all three categories considered. Perhaps surprisingly, men aged 75 and over ranked the most satisfied across all categories: 8.05 (Life), 8.13 (Standard of Living), and 7.65 (Health).

In terms of travel behavior, women drove for longer commutes than men. More women took public transit for longer commutes than men. In addition, except for women age 35-44, men had higher averages for walking and cycling in terms of minutes per day. However, the frequencies with which respondents walked or cycled in a week had no clear distinctions between genders. In fact, the average amount of days all women bicycled for was 4.1, while the same indicator for men was of 3.9 days. This difference was reversed for walking values, with men averaging 4.9 days of walking for at least 10 minutes, while women averaged 4.6 days.

Regarding the impact of the REM construction, interesting findings were found both in terms of travel behavior and of health and wellbeing. While 37% of men had to adjust their mode of travel due to the REM construction, compared to 35% of women, results related to the impact of the construction were quite positive. Specifically, Deux Montagnes users were more likely to continue using public transit as an alternative during construction, while the Mascouche line users' responses were less decisive. Further, most people did not change their commute in terms of routes (52%). A considerable 14.5% of people feared accidents happening more often, with a very small fraction (3%) strongly agreeing with this statement. Perhaps more ambiguous was the response regarding information availability on travel alternatives, as 28% of respondents

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considered it insufficient. In terms of the impact of the construction on wellbeing, most found it not to be anxiety-inducing. However, a significant 25% of the respondents found the construction to be impacting their mood and 20% considered that it had increased airborne and noise pollution. Interestingly enough, people who live near sites where construction will occur in the future stated higher averages for mood and anxiety. The same trend could be seen when asked about how future REM construction would impact their travel mode choice, with many more people saying construction will impact their commute in the future than currently. While this might show a difference in how people interpret current events and anticipated ones, it can also be related to the fact that the REM construction will have a greater impact as it continues, particularly when it leads to closing the tunnel in the Mont Royal.

In terms of the expected impact of the REM once running, the results were overwhelmingly positive, with 81% of the respondents identifying the REM as having a positive impact on the Montreal region. Interestingly, this value halved when asking respondents about the impact on their own neighborhood, only 40% identified it as having a positive impact. When asked about the environment, 79% either agreed or strongly agreed on the REM's positive effect. A very encouraging find was that 53% respondents said they were likely or very likely to replace their current mode of transportation with the REM once it becomes operational.

Interestingly, by analyzing the data through a gendered lens, differences between men and women's perceptions and behaviors were discovered. This was made particularly evident when looking at cycling and public transportation choices, as well as levels of satisfaction for health, standard of living, and life in general. Finally, different age groups had distinct answers, but results did not show a consistent trend throughout all questions. While, these results are of great value, the upcoming waves will broaden the collected data, further solidifying its potential.

Ethica survey responses on well-being indicate the cohort generally enjoys positive moods, with minor variations throughout the day, and with whom they are with at the time of answering their surveys. Further analysis may tell us more about how different groups' well-being varies, and which personal characteristics or environments relate to negative moods. Forthcoming analysis with GPS and accelerometry data will provide a richer portrait Montrealers' baseline travel patterns, and how these relate to mental health and subjective well-being.

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As our team prepares for the second survey wave, we believe that our updated and revised survey questions will add even more to the already collected data, to which patterns and trends will begin to emerge. New data will also illustrate changes related to the more disruptive coming stages of construction. Provided the unprecedented event of COVID-19, we are hopeful that our additional new questions, pertaining to the pandemic, will also provide significant value.

It is our hope that this report will inspire further research and provide a deeper understanding of how transportation infrastructure relates to individual's health and wellbeing, both during the construction and once completed. In this sense, the REM survey and its iterations provide a powerful tool to understand the population's perception on the relationship between the built environment, mobility, and the standard of living.

A copy of this report will be distributed to all knowledge users, who are invited to offer suggestions for survey questions and recruitment techniques. The research team welcomes recommendations that may be used to enhance the usefulness of the survey and other associated tools for all knowledge users.

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New Suggested COVID-19 Questions

During confinement (March 15th-June 30th) for COVID-19, did you regularly commute to work or school?
- Yes
- No

What was your main mode of transport during confinement for COVID-19 when commuting to school or work? (Only for those who answered Yes for the first question)
- Walk
- Bicycle
- Carpool (car passenger)
- Drive (car driver)
- Bus
- Metro
- Commuter train (RTM)
- McGill intercampus shuttle
- Motorcycle or scooter
- Taxi
- Open Response

What was your main mode of transport before confinement for COVID-19 when commuting to work or school? (Only for those answering the survey for the first time)
- Walk
- Bicycle
- Carpool (car passenger)
- Drive (car driver)
- Bus
- Metro
- Commuter train (RTM)
- McGill intercampus shuttle
- Motorcycle or scooter
- Taxi
- Open Response

Are you currently working from home?
- Yes
- No
- Sometimes (note how many days a week)

Has COVID-19 impacted your decision to purchase an OPUS card or transit passes?
A. Yes
B. No

Why has purchasing of an OPUS card or transit passes changed for you since the confinement for COVID-19? (Select all that apply) (Only for those who answered Yes for the question above)
1. Fear of contracting COVID-19
2. Service cuts
3. Affordability
4. Switched to walking or cycling
5. Switched to driving
6. No need to commute anymore
7. Open Response

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Do you have a condition that might make you more susceptible to COVID-19?
- Yes
- No
- Prefer not to answer

If your main mode of transport changed during confinement for COVID-19 compared to before, do you think you will continue to use this new mode for commuting to work or school?
- Yes
- No
- My main mode of transport did not change

[BUS] Thinking of your most recent trip, please rate your satisfaction with the following bus-related factors:
(in addition to existing satisfaction question in Wave 1)
a.   **Comfort of proximity to others on the bus**
- Very unsatisfied
- Somewhat unsatisfied
- Neutral
- Somewhat satisfied
- Very satisfied
- I did not encounter this

b.   **Cleanliness of the bus**
- Very unsatisfied
- Somewhat unsatisfied
- Neutral
- Somewhat satisfied
- Very satisfied
- I did not encounter this

[METRO] Thinking of your most recent trip, please rate your satisfaction with the following metro-related factors:
(in addition to existing satisfaction question in Wave 1)

c.   **Comfort of proximity to others on the metro**
- Very unsatisfied
- Somewhat unsatisfied
- Neutral
- Somewhat satisfied
- Very satisfied
- Not applicable, or I did not encounter this

d.   **Cleanliness of the metro**
- Very unsatisfied
- Somewhat unsatisfied
- Neutral
- Somewhat satisfied
- Very satisfied
- I did not encounter this

[TRAIN] Thinking of your most recent trip, please rate your satisfaction with the following train-related factors:
(in addition to existing satisfaction question in Wave 1)

TRAM

e.   Comfort of proximity to others on the commuter train
- Very unsatisfied
- Somewhat unsatisfied
- Neutral
- Somewhat satisfied
- Very satisfied
- I did not encounter this

f.   Cleanliness of the commuter train
- Very unsatisfied
- Somewhat unsatisfied
- Neutral
- Somewhat satisfied
- Very satisfied
- I did not encounter this

Do you believe that transit agencies have communicated safety measures well during confinement for COVID-19?
- Yes
- No

Do you believe that transit agencies have communicated schedule changes well during confinement for COVID-19?
- Yes
- No

On average, how many times per week did you work from home before confinement for COVID-19 (i.e. February, 2020)?
- I never worked from home
- 7 times per week
- 6 times per week
- 5 times per week
- 4 times per week
- 3 times per week
- 2 times per week
- 1 time per week
- 3 times per month
- 2 times per month
- 1 time per month
- Less than one time per month

How does your productivity compare while working from home versus working from the office or school?
- I am more productive while working from home
- I am as productive working from home as working on campus
- I am more productive while working on campus

During confinement for COVID-19, how much did you miss the time you spent commuting? (5 meaning you missed it a lot)
- 1
- 2
- 3
- 4

TRAM

- 5

During confinement for COVID-19, what have you missed about your commute? (Tick all that apply)
- Yes, I used to perform professional tasks while travelling (emailing, reading, working on a computer, etc.)
- Yes, I used to take care of personal tasks while travelling (making phone calls, texting, etc.)
- Yes, I used to relax and take time for myself while travelling (listen to music, read a book, watch videos, etc.)
- Yes, I used to exercise while travelling
- Yes, I used to enjoy watching people
- Yes, travel times were a pause in my daily routine
- No, everything I used to do while travelling I can do elsewhere
- No, it was a loss of time
- Open response

New Cycling COVID-19 Questions

During the COVID confinement period, temporary bicycling facilities were put in place to help bicycle users keep a social distance.

Did you use a bicycle during the confinement period?
- Yes
- No

If yes, when bicycling, did you use any of the temporary facilities?
- Yes
- No

How satisfied were you with your bicycling experience during the confinement period?
- I am satisfied with the length of time I spent cycling.
- I was comfortable when I was cycling.
- I felt safe from traffic when I was cycling.
- I felt safe from crime and unwanted attention when I was cycling.
- I felt safe from contracting COVID while cycling.
- The quality of the bicycle paths I used were good.
- Overall, I was satisfied with my cycling experience during this trip.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

Moving forward towards a COVID free future, would you want to see any of the added cycling facilities stay permanently?
- Yes
- No

If yes, which facilities/added cycling infrastructure would you like to see stay?

Since the REV's inauguration, have you used any part of it?
- Yes
- No

With regard to the new REV infrastructure, please rate your satisfaction with the following. Please choose the appropriate response for each item:
- I am satisfied with the length of time I spent cycling.

TRAM

- I was comfortable when I was cycling.
- I felt safe from traffic when I was cycling.
- I felt safe from crime and unwanted attention when I was cycling.
- The quality of the bicycle paths I used were good.
- Overall, I was satisfied with my cycling experience during this trip.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

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REM Survey Wave 1 Questions

Getting Started

What year were you born?
Please choose **only one** of the following:
- 2001
  …
- 1900

Would you be willing to answer a similar survey six months from now? Doing so would increase your chances of winning one of our great prizes!
Please write your answer here:_____

What is your current employment status?
Please choose **all** that apply:
- Retired and not working
- Employed full-time
- Employed part-time
- Not employed and looking for work
- Not employed and not looking for work
- Homemaker
- Student
- Other

Do you have a primary work location?
Please choose **only one** of the following:
- Yes
- No

Is your primary work location at home?
Please choose **only one** of the following:
- Yes
- No

What is your current student status?
Please choose **only one** of the following:
- Full-time student
- Part-time student

Local Transportation Projects

In this section, we would like to ask you questions that will help us understand how you feel about transportation projects in the Montreal area.

Have you heard of any of the following current or future transportation projects in Montreal?
Please choose **all** that apply:
- Pie IX Bus Rapid Transit (BRT)
- Réseau Express Métropolitain (REM)
- Réseau Express Vélo/Express Bike Network
- None of the above

What is the status of the Pie-IX Bus Rapid Transit project near your home, work, or school?

TRAM

	Construction will start in the future	Construction is underway currently	Construction is complete	I don't know/Not applicable
Near my home				
Near my work				
Near my school				

What is the status of the Réseau Express Métropolitain (REM) project near your home, work, or school?

	Construction will start in the future	Construction is underway currently	Construction is complete	I don't know/Not applicable
Near my home				
Near my work				
Near my school				

What is the status of the Réseau Express Vélo/Express Bike Network project near your home, work, or school?

	Construction will start in the future	Construction is underway currently	Construction is complete	I don't know/Not applicable
Near my home				
Near my work				
Near my school				

REM - Future Travel

How likely are you to use the REM when it is complete and operational?
Please choose **only one** of the following:
- Very unlikely
- Unlikely
- Neutral
- Likely
- Very likely

Why don't you expect to use the REM?
Please choose **all** that apply:
- There won't be enough parking at the station
- It won't go where I want to go
- It is out of my way or too far to get to

TRAM

- It will cost too much
- I have errands to run that I can't complete using the REM
- People like me don't take public transit
- Other

If you plan to use the REM when it is complete, what types of activities will you use it for?
Please choose **all** that apply:
- Work
- School
- Grocery shopping and other errands
- Recreation and leisure
- Go to the airport
- Other

How do you plan to get to the REM?
Please choose **all** that apply:
- Walk
- Bike
- Drive
- Taxi or ride-hailing such as Uber or Lyft
- Someone will drop me off
- Public transportation
- Other

Why do you think you will use the REM?
Please choose **all** that apply:
- It will be better for the environment.
- It will be cheaper for me than other modes.
- I will have a shorter travel time.
- I will be more comfortable while traveling than on other modes.
- I will be able to be productive on my journey.
- Other

We'd like to know how you expect your travel costs to change once the REM is complete and operational compared to the time before the system was built.
(Remember, your costs might change even if you don't ride the REM.)
- Compared to before the REM, the amount of money I spend to travel to work or school will...
- Compared to before the REM, the amount of money I spend on travel for grocery shopping will...
- Compared to before the REM, the amount of money I spend to travel for healthcare, including pharmacy visits will...
- Compared to before the REM, the time it takes me to travel to and from work or school will...
- Compared to before the REM, the comfort of my travel to and from work or school will...
- The directness of my route to and from work or school will...

Decline a lot	Decline a little	Stay the same	Will rise a little	Will rise a lot	I don't know / Not applicable

We'd like to know more about how you think you'll get around in the future. Please complete the following statements about how you expect your travel to change once the REM is complete and operational compared to the period from before the system's construction.
- I will walk _____.
- I will bike _____.
- I will drive _____.

TRAM

- I will take public transit _____.

Far less often	Less often	The same amount	More often	A lot more often

We'd like to know more about how you got around generally while the REM was under construction. Please complete the following statements about how your travel changed from the time before construction started.
- I walked _____.
- I biked _____.
- I drove _____.
- I took public transit _____.
- I had enough advance warning about travel alternatives available during construction to plan accordingly.

Far less often	Less often	The same amount	More often	A lot more often

Regarding the Réseau Express Métropolitain (REM), please rate your agreement with the following statements?
- When complete, the REM will be a good thing for the greater Montreal area.
- When complete, the REM will be a good thing for my neighborhood.
- When complete, the REM will be good for the environment.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

REM Construction Impacts - Construction is in the Future

In this section, we'd like to ask you about how the REM's construction will affect you while it is being built.

You've indicated that the REM construction will start in the future at or <u>near your home</u>, now we would like to ask you to rate the following statements regarding the anticipated impacts of construction at this location:
Please choose the appropriate response for each item:
- I have enough advance warning about travel alternatives available during construction to plan accordingly.
- Airborne and/or noise pollution will increase with this construction project and were a nuisance
- Construction will make me anxious.
- Construction will have a negative impact on my mood when I am traveling.
- I will fear accidents because of construction.
- I will have to take a different mode of transport for my commute.
- I will have to take a different route on my commute.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

You've indicated that the REM construction will start in the future at or <u>near your work</u>, now we would like to ask you to rate the following statements regarding the anticipated impacts of construction at this location:
Please choose the appropriate response for each item:
- I have enough advance warning about travel alternatives available during construction to plan accordingly.
- Airborne and/or noise pollution will increase with this construction project and were a nuisance
- Construction will make me anxious.
- Construction will have a negative impact on my mood when I am traveling.
- I will fear accidents because of construction.
- I will have to take a different mode of transport for my commute.
- I will have to take a different route on my commute.

TRAM

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

You've indicated that the REM construction will start in the future at or <u>near your school</u>, now we would like to ask you to rate the following statements regarding the anticipated impacts of construction at this location:
Please choose the appropriate response for each item:

- I have enough advance warning about travel alternatives available during construction to plan accordingly.
- Airborne and/or noise pollution will increase with this construction project and were a nuisance
- Construction will make me anxious.
- Construction will have a negative impact on my mood when I am traveling.
- I will fear accidents because of construction.
- I will have to take a different mode of transport for my commute.
- I will have to take a different route on my commute.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

REM Construction Impacts - Currently Under Construction

In this section, we'd like to ask you about how the REM's construction is affecting you while it is being built.

You've indicated that the REM construction is underway at or <u>near your home</u>, now we would like to ask you to rate the following statements regarding the current impacts of construction at this location:
Please choose the appropriate response for each item:

- I have enough advance warning about travel alternatives available during construction to plan accordingly.
- Airborne and/or noise pollution will increase with this construction project and were a nuisance
- Construction will make me anxious.
- Construction will have a negative impact on my mood when I am traveling.
- I will fear accidents because of construction.
- I will have to take a different mode of transport for my commute.
- I will have to take a different route on my commute.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

You've indicated that the REM construction is underway at or <u>near your work</u>, now we would like to ask you to rate the following statements regarding the current impacts of construction at this location:
Please choose the appropriate response for each item:

- I have enough advance warning about travel alternatives available during construction to plan accordingly.
- Airborne and/or noise pollution will increase with this construction project and were a nuisance
- Construction will make me anxious.
- Construction will have a negative impact on my mood when I am traveling.
- I will fear accidents because of construction.
- I will have to take a different mode of transport for my commute.
- I will have to take a different route on my commute.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

You've indicated that the REM construction is underway at or <u>near your school</u>, now we would like to ask you to rate the following statements regarding the current impacts of construction at this location:
Please choose the appropriate response for each item:

- I have enough advance warning about travel alternatives available during construction to plan accordingly.

TRAM

- Airborne and/or noise pollution will increase with this construction project and were a nuisance
- Construction will make me anxious.
- Construction will have a negative impact on my mood when I am traveling.
- I will fear accidents because of construction.
- I will have to take a different mode of transport for my commute.
- I will have to take a different route on my commute.

| Strongly disagree | Disagree | Neutral | Agree | Strongly agree |

REM Construction Impacts - Construction Complete

In this section, we'd like to ask you about how the REM's construction affected you while it was being built.

You've indicated that the REM construction is complete at or <u>near your home</u>, now we would like to ask you to rate the following statements regarding the past impacts of construction at this location:
Please choose the appropriate response for each item:
- I had enough advance warning about travel alternatives available during construction to plan accordingly.
- Airborne and/or noise pollution increased with this construction project and were a nuisance
- Construction made me anxious.
- Construction had a negative impact on my mood when I was traveling.
- I feared accidents because of construction.
- I had to take a different mode of transport for my commute.
- I had to take a different route on my commute.

| Strongly disagree | Disagree | Neutral | Agree | Strongly agree |

You've indicated that the REM construction is complete at or <u>near your work</u>, now we would like to ask you to rate the following statements regarding the past impacts of construction at this location:
Please choose the appropriate response for each item:
- I had enough advance warning about travel alternatives available during construction to plan accordingly.
- Airborne and/or noise pollution increased with this construction project and were a nuisance
- Construction made me anxious.
- Construction had a negative impact on my mood when I was traveling.
- I feared accidents because of construction.
- I had to take a different mode of transport for my commute.
- I had to take a different route on my commute.

| Strongly disagree | Disagree | Neutral | Agree | Strongly agree |

You've indicated that the REM construction is complete at or <u>near your school</u>, now we would like to ask you to rate the following statements regarding the past impacts of construction at this location:
Please choose the appropriate response for each item:
- I had enough advance warning about travel alternatives available during construction to plan accordingly.
- Airborne and/or noise pollution increased with this construction project and were a nuisance
- Construction made me anxious.
- Construction had a negative impact on my mood when I was traveling.
- I feared accidents because of construction.
- I had to take a different mode of transport for my commute.
- I had to take a different route on my commute.

TRAM

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

Local Transport Projects - REM - What's the REM?

Below is a map of the new REM. It is expected to be completed in phases through 2023.

The REM is a new light rail system that will have 26 stations and extend 67 kilometers through the greater Montreal region. When fully operational, it will be open 20 hours a day and offer high-frequency service to the city center.

Based on what you now know, please rate the following statements regarding the REM:
- When the REM is complete, the project will be a good thing for the greater Montreal area.
- When the REM is complete, it will be a good thing for my neighborhood.
- When the REM is complete, it will be a good thing for the environment.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

Did you know that the Mount Royal Tunnel will be closed for approximately two years starting in January 2020 and the Deux-Montagnes commuter line will be suspended before it is eventually replaced by the REM by 2023?
Please choose **only one** of the following:
- Yes
- No

Knowing now that the Mount Royal Tunnel will be shut down for a period of time and the Deux-Montagnes commuter line will be suspended while alternatives will be provided, please indicate your agreement with the following statements.
Please choose the appropriate response for each item:
- My trip will be longer than usual.
- My trip will be more direct than usual.
- My trip will be less comfortable than usual.
- My trips will cost more.
- I expect to be satisfied with the alternatives.
- I feel anxious knowing I will have to use the alternatives.
- I will feel anxious during my trips using the alternatives.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

Have you ever regularly ridden the Deux-Montagnes commuter train line?
Please choose **only one** of the following:
- Yes
- No

For which of the following purposes have you regularly used the Deux-Montagnes commuter line?
Please choose **all** that apply:
- Work
- School
- Leisure
- Other

Did you know that the Deux-Montagnes commuter line will be suspended before it is eventually replaced by the REM?

TRAM

Please choose **only one** of the following:
- Yes
- No

Have you been informed about travel alternatives available after the Deux-Montagnes commuter line will be suspended?
Please choose **only one** of the following:
- Yes
- No

Has the Deux-Montagnes commuter line been suspended yet?
Please choose **only one** of the following:
- Yes
- No

Once the Deux-Montagnes commuter line is suspended, will you continue to use public transit to reach the same destinations for which you previously used the Deux-Montagnes line?
Please choose **only one** of the following:
- Yes
- No
- Don't know

If you don't plan to continue using public transit, what alternatives are you considering:
Please choose **all** that apply:
- Driving a car
- Carpooling
- Switching jobs or school locations
- Moving home to another location
- Telecommuting/studying remotely
- Other

Following the suspension of the Deux-Montagnes line, have you continued to use public transit to reach the same destinations for which you previously used the Deux-Montagnes Line?
Please choose **only one** of the following:
- Yes
- No

If you didn't continue using public transit, what alternatives did you use?
Please choose **all** that apply:
- Driving a car
- Carpooling
- Switching jobs or school locations
- Moving to another location
- Telecommuting/studying remotely
- Other

Please rate the following statements regarding your experience when using the travel alternatives for the Deux-Montagnes commuter line.
- Officials did a good job of informing the public about the alternatives available during the suspension.
- I knew about the suspension well enough in advance to plan accordingly.
- My trip is less direct than usual.
- My trip is less comfortable than usual.

T R A M

- My trips cost more.
- I am generally satisfied with the alternatives.
- I felt anxious knowing I would have to use the alternatives.
- I feel anxious during my trips using the alternatives.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

Has the suspension of the Deux-Montagnes commuter line added time to the work or school trips you previously took on the Deux-Montagnes commuter train line?
Please choose **only one** of the following:
- Yes
- No

How much time did the suspension of the Deux-Montagnes line add to your usual trip to work or school? (Increments of 5)
Please choose **only one** of the following:
- Unsure
- 5
- 10
  …
- 180
- >180

Commuter-Line Questions: Mascouche

Have you regularly ridden the Mascouche commuter train line?
Please choose **only one** of the following:
- Yes, in the past
- Yes, currently
- No

For which of the following purposes have you regularly used the Mascouche commuter line?
Please choose **all** that apply:
- Work
- School
- Leisure
- Other

Did you know that the Mont Royal tunnel will be closed for the duration of the REM construction and that service on the Mascouche line will be disrupted as a result?
Please choose **only one** of the following:
- Yes
- No

Have you been informed about travel alternatives available during the Mont Royal tunnel closure?
Please choose **only one** of the following:
- Yes
- No

During the Mount Royal Tunnel's closure, will you continue to use the Mascouche line commuter train?
Please choose **only one** of the following:
- Yes
- No

TRAM

- Don't know

If you don't plan to continue using the Mascouche line, what alternatives are you considering?
Please choose **all** that apply:
- Driving a car
- Carpooling
- Switching jobs or school locations
- Moving to another location
- Telecommuting/studying remotely
- Other

Has the Mount-Royal Tunnel closed yet?
Please choose **only one** of the following:
- Yes
- No
- Don't know

During the Mount Royal Tunnel closure, have you continued to use the Mascouche line?
Please choose **only one** of the following:
- Yes
- No

If you didn't continue using the Mascouche line, which alternatives did you use?
Please choose **all** that apply:
- Driving a car
- Carpooling
- Switching jobs or school locations
- Moving to another location
- Telecommuting/ studying remotely
- Other

Please rate the following statements regarding your experience when using the travel alternatives for the Mascouche commuter line during the Mount Royal Tunnel closure.
- Officials did a good job of informing the public about the alternatives available during the closure.
- I knew about the closure well enough in advance to plan accordingly.
- My trip is less direct than usual.
- My trip is less comfortable than usual.
- My trips cost more.
- I am generally satisfied with the alternatives.
- I felt anxious knowing I would have to use the alternatives.
- I feel anxious during my trips using the alternatives.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

Has the closure of the Mount Royal Tunnel added time to the trips you took on the Mascouche commuter train line change?
Please choose **only one** of the following:
- Yes
- No

How much time did the Mount Royal Tunnel closure add to your travel time for trips you take using the Mascouche line?

TRAM

 (Increments of 5)
Please choose **only one** of the following:
- Unsure
- 5
- 10
  …
- 180
- >180

Other Local Transport Projects - Pie-IX Bus Rapid Transit

In this section, we'd like to ask you about how the Pie-IX BRT's construction will affect, is affecting or has affected you (depending on the status of the project that you've selected previously) at various locations.

You've indicated that the Pie-IX BRT construction will start in the future at or <u>near your home,</u> now we would like to ask you to rate the following statements regarding the anticipated impacts of construction at this location:
Please choose the appropriate response for each item:
- I have enough advance warning about travel alternatives available during construction to plan accordingly.
- Airborne and/or noise pollution will increase with this construction project and were a nuisance
- Construction will make me anxious.
- Construction will have a negative impact on my mood when I am traveling.
- I will fear accidents because of construction.
- I will have to take a different mode of transport for my commute.
- I will have to take a different route on my commute.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

You've indicated that the Pie-IX BRT construction will start in the future at or <u>near your work</u>, now we would like to ask you to rate the following statements regarding the anticipated impacts of construction at this location:
Please choose the appropriate response for each item:
- I have enough advance warning about travel alternatives available during construction to plan accordingly.
- Airborne and/or noise pollution will increase with this construction project and were a nuisance
- Construction will make me anxious.
- Construction will have a negative impact on my mood when I am traveling.
- I will fear accidents because of construction.
- I will have to take a different mode of transport for my commute.
- I will have to take a different route on my commute.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

You've indicated that the Pie-IX BRT construction will start in the future at or <u>near your school</u>, now we would like to ask you to rate the following statements regarding the anticipated impacts of construction at this location:
Please choose the appropriate response for each item:
- I have enough advance warning about travel alternatives available during construction to plan accordingly.
- Airborne and/or noise pollution will increase with this construction project and were a nuisance
- Construction will make me anxious.
- Construction will have a negative impact on my mood when I am traveling.

TRAM

- I will fear accidents because of construction.
- I will have to take a different mode of transport for my commute.
- I will have to take a different route on my commute.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

You've indicated that the Pie-IX BRT construction is underway at or <u>near your home</u>, now we would like to ask you to rate the following statements regarding the current impacts of construction at this location:
Please choose the appropriate response for each item:
- I have enough advance warning about travel alternatives available during construction to plan accordingly.
- Airborne and/or noise pollution will increase with this construction project and were a nuisance
- Construction will make me anxious.
- Construction will have a negative impact on my mood when I am traveling.
- I will fear accidents because of construction.
- I will have to take a different mode of transport for my commute.
- I will have to take a different route on my commute.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

You've indicated that the Pie-IX BRT construction is underway at or <u>near your work</u>, now we would like to ask you to rate the following statements regarding the current impacts of construction at this location:
Please choose the appropriate response for each item:
- I have enough advance warning about travel alternatives available during construction to plan accordingly.
- Airborne and/or noise pollution will increase with this construction project and were a nuisance
- Construction will make me anxious.
- Construction will have a negative impact on my mood when I am traveling.
- I will fear accidents because of construction.
- I will have to take a different mode of transport for my commute.
- I will have to take a different route on my commute.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

You've indicated that the Pie-IX BRT construction is underway at or <u>near your school</u>, now we would like to ask you to rate the following statements regarding the current impacts of construction at this location:
Please choose the appropriate response for each item:
- I have enough advance warning about travel alternatives available during construction to plan accordingly.
- Airborne and/or noise pollution will increase with this construction project and were a nuisance
- Construction will make me anxious.
- Construction will have a negative impact on my mood when I am traveling.
- I will fear accidents because of construction.
- I will have to take a different mode of transport for my commute.
- I will have to take a different route on my commute.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

You've indicated that the Pie-IX BRT construction is complete at or <u>near your home</u>, now we would like to ask you to rate the following statements regarding the past impacts of construction at this location:
Please choose the appropriate response for each item:
- I had enough advance warning about travel alternatives available during construction to plan accordingly.
- Airborne and/or noise pollution increased with this construction project and were a nuisance

TRAM

- Construction made me anxious.
- Construction had a negative impact on my mood when I was traveling.
- I feared accidents because of construction.
- I had to take a different mode of transport for my commute.
- I had to take a different route on my commute.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

You've indicated that the Pie-IX BRT construction is complete at or <u>near your work</u>, now we would like to ask you to rate the following statements regarding the past impacts of construction at this location:
Please choose the appropriate response for each item:
- I had enough advance warning about travel alternatives available during construction to plan accordingly.
- Airborne and/or noise pollution increased with this construction project and were a nuisance
- Construction made me anxious.
- Construction had a negative impact on my mood when I was traveling.
- I feared accidents because of construction.
- I had to take a different mode of transport for my commute.
- I had to take a different route on my commute.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

You've indicated that the Pie-IX BRT construction is complete at or <u>near your school</u>, now we would like to ask you to rate the following statements regarding the past impacts of construction at this location:
Please choose the appropriate response for each item:
- I had enough advance warning about travel alternatives available during construction to plan accordingly.
- Airborne and/or noise pollution increased with this construction project and were a nuisance
- Construction made me anxious.
- Construction had a negative impact on my mood when I was traveling.
- I feared accidents because of construction.
- I had to take a different mode of transport for my commute.
- I had to take a different route on my commute.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

Other Local Transport Projects - Réseau Express Vélo/Express Bike Network

In this section, we'd like to ask you about how the Réseau Express Vélo/Express Bike Network's construction will affect, is affecting or has affected you (depending on the status of the project that you've selected previously) at various locations.

You've indicated that the Réseau Express Vélo/ Express Bike Network construction will start in the future at or <u>near your home</u>, now we would like to ask you to rate the following statements regarding the anticipated impacts of construction at this location:
Please choose the appropriate response for each item:
- I have enough advance warning about travel alternatives available during construction to plan accordingly.
- Airborne and/or noise pollution will increase with this construction project and were a nuisance
- Construction will make me anxious.
- Construction will have a negative impact on my mood when I am traveling.
- I will fear accidents because of construction.
- I will have to take a different mode of transport for my commute.

TRAM

- I will have to take a different route on my commute.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

You've indicated that the Réseau Express Vélo/ Express Bike Network construction will start in the future at or <u>near your work</u>, now we would like to ask you to rate the following statements regarding the anticipated impacts of construction at this location:
Please choose the appropriate response for each item:
- I have enough advance warning about travel alternatives available during construction to plan accordingly.
- Airborne and/or noise pollution will increase with this construction project and were a nuisance
- Construction will make me anxious.
- Construction will have a negative impact on my mood when I am traveling.
- I will fear accidents because of construction.
- I will have to take a different mode of transport for my commute.
- I will have to take a different route on my commute.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

You've indicated that the Réseau Express Vélo/ Express Bike Network construction will start in the future at or <u>near your school</u>, now we would like to ask you to rate the following statements regarding the anticipated impacts of construction at this location:
Please choose the appropriate response for each item:
- I have enough advance warning about travel alternatives available during construction to plan accordingly.
- Airborne and/or noise pollution will increase with this construction project and were a nuisance
- Construction will make me anxious.
- Construction will have a negative impact on my mood when I am traveling.
- I will fear accidents because of construction.
- I will have to take a different mode of transport for my commute.
- I will have to take a different route on my commute.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

You've indicated that the Réseau Express Vélo/ Express Bike Network construction is underway at or <u>near your home</u>, now we would like to ask you to rate the following statements regarding the current impacts of construction at this location:
Please choose the appropriate response for each item:
- I have enough advance warning about travel alternatives available during construction to plan accordingly.
- Airborne and/or noise pollution will increase with this construction project and were a nuisance
- Construction will make me anxious.
- Construction will have a negative impact on my mood when I am traveling.
- I will fear accidents because of construction.
- I will have to take a different mode of transport for my commute.
- I will have to take a different route on my commute.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

You've indicated that the Réseau Express Vélo/ Express Bike Network construction is underway at or <u>near your work</u>, now we would like to ask you to rate the following statements regarding the current impacts of construction at this location:
Please choose the appropriate response for each item:

TRAM

- I have enough advance warning about travel alternatives available during construction to plan accordingly.
- Airborne and/or noise pollution will increase with this construction project and were a nuisance
- Construction will make me anxious.
- Construction will have a negative impact on my mood when I am traveling.
- I will fear accidents because of construction.
- I will have to take a different mode of transport for my commute.
- I will have to take a different route on my commute.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

You've indicated that the Réseau Express Vélo/ Express Bike Network construction is underway at or <u>near your school</u>, now we would like to ask you to rate the following statements regarding the current impacts of construction at this location:
Please choose the appropriate response for each item:

- I have enough advance warning about travel alternatives available during construction to plan accordingly.
- Airborne and/or noise pollution will increase with this construction project and were a nuisance
- Construction will make me anxious.
- Construction will have a negative impact on my mood when I am traveling.
- I will fear accidents because of construction.
- I will have to take a different mode of transport for my commute.
- I will have to take a different route on my commute.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

You've indicated that the Réseau Express Vélo/ Express Bike Network construction is complete at or <u>near your home</u>, now we would like to ask you to rate the following statements regarding the past impacts of construction at this location:
Please choose the appropriate response for each item:

- I had enough advance warning about travel alternatives available during construction to plan accordingly.
- Airborne and/or noise pollution increased with this construction project and were a nuisance
- Construction made me anxious.
- Construction had a negative impact on my mood when I was traveling.
- I feared accidents because of construction.
- I had to take a different mode of transport for my commute.
- I had to take a different route on my commute.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

You've indicated that the Réseau Express Vélo/Express Bike Network construction is complete at or <u>near your work</u>, now we would like to ask you to rate the following statements regarding the past impacts of construction at this location:
Please choose the appropriate response for each item:

- I had enough advance warning about travel alternatives available during construction to plan accordingly.
- Airborne and/or noise pollution increased with this construction project and were a nuisance
- Construction made me anxious.
- Construction had a negative impact on my mood when I was traveling.
- I feared accidents because of construction.
- I had to take a different mode of transport for my commute.
- I had to take a different route on my commute.

TRAM

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

You've indicated that the Réseau Express Vélo/Express Bike Network construction is complete at or <u>near your school</u>, now we would like to ask you to rate the following statements regarding the past impacts of construction at this location
Please choose the appropriate response for each item:
- I had enough advance warning about travel alternatives available during construction to plan accordingly.
- Airborne and/or noise pollution increased with this construction project and were a nuisance
- Construction made me anxious.
- Construction had a negative impact on my mood when I was traveling.
- I feared accidents because of construction.
- I had to take a different mode of transport for my commute.
- I had to take a different route on my commute.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

Your Neighbourhood

These questions will help us understand how you feel about your neighbourhood.

To provide us with the approximate location of your primary home location, which of the following would you prefer to do? This will help us to better understand the travel behavior of Montreal residents.
Please choose only one of the following:
- Type my home postal code
- Place a pin on a map

Please enter your primary home postal code. Please use the format XXX XXX (for example: H3A 0C2).
_____

On the following map, please adjust the zoom and drag the pin to your primary home location.

What year did you move into your current home? if you are unsure, estimate the closest year. If you do not know at all, select "Don't know."
Please choose **only one** of the following:
- Don't know
- 2019
  …
- 1900

Is your current primary residence owned by you or someone in your household?
Please choose only one of the following:
- Yes
- No, I/we pay rent to the owner of the residence

What type of home is your current primary home? Please select only one of the following options.
Please choose **only one** of the following:
- Apartment or condo
- Row-house or town-house
- Semi-detached house
- Detached, self-standing house
- Duplex, Triplex, etc.
- Other

TRAM

When you moved into your current home, how important were the following factors in your decision?
Please choose the appropriate response for each item:
- Being in a neighbourhood where it is pleasant to walk
- Being in a neighbourhood where it is practical to move around and park by car (traffic is light, there is good access by car, payment, and availability of parking)
- Previous familiarity with the neighbourhood
- Affordability of housing
- Having a large home
- Social safety/low crime
- Being near my primary work location/school
- Being near the primary work location/school of a member of my household
- Being near family and/or friends
- Being near shops and services
- Being near doctors, a pharmacy or other health services
- Being near public transportation
- Being near bicycle infrastructure
- Presence of good schools for my children
- Presence of parks and green spaces

Very unimportant	Unimportant	Neither unimportant nor important	Important	Very important	Not sure

Here are some questions about your satisfaction with your current neighbourhood. Please indicate your satisfaction with each item.
- How satisfied or dissatisfied are you with the number of people you know in your neighbourhood? Are you?
- How satisfied or dissatisfied are you with your neighbourhood as a good place to raise children? Are you?

Strong dissatisfied	Dissatisfied	Neither dissatisfied nor satisfied	Satisfied	Strongly satisfied	Not applicable

In recent years, my neighbourhood has:
Please choose **only one** of the following:
- Gotten much worse
- Gotten a bit worse
- Stayed the same
- Gotten a bit better
- Gotten much better

What do you expect to happen to the value of your house over the next five years?
Please choose **only one** of the following:
- I expect the value of my house to decrease a lot
- I expect the value of my house to decrease
- I expect the value of my house to stay more or less the same
- I expect the value of my house to increase
- I expect the value of my house to increase a lot

To what extent do you agree or disagree with the following statements?
- The government is investing in my neighbourhood.
- The changes in my neighbourhood are improving my quality of life.
- I am concerned about whether I will be able to remain in my neighborhood because of rising costs.

TRAM

Strongly disagree	Disagree	Neutral	Agree	Strongly agree	I don't know

How You Get Around

The following questions are about your work or school commuting trips as well as your general travel preferences.

Work Travel

Where is your primary work location? On the following map, please adjust the zoom and drag the pin to one location.
Please write your answer here:_____

What was the date of your most recent trip to your primary work location from home?
Answer must be less or equal to 03.03.2020
Please enter a date:_____

What time did you leave home to go to work on your most recent trip?
Please choose **only one** of the following:
- 5:00 AM
  …
- 4:55 AM

What time did you arrive at your primary work location?
Please choose **only one** of the following:
- 5:00 AM
  …
- 4:55 AM

Of the following transportation modes, which ones did you use for your most recent work trip?
Please choose **all** that apply.
- Walk to final destination
- Walk to public transit or other mode
- Bicycle
- Bikeshare (e.g. BIXI, Jump)
- E-scooter (e.g. Lime, Bird)
- Private Carpool/Passenger
- Ridehailing (e.g. Uber, Lyft)
- Drive - Personal Vehicle
- Drive - Carshare (e.g. Communauto, car2go)
- Bus
- Metro
- Light rail (REM)
- Commuter train
- Motorcycle
- Scooter
- Taxi
- Other

Which of the following, would you consider as your main mode of transportation for your most recent work trip? (The mode that you travelled the farthest using.)
Please choose **only one** of the following:

TRAM

- Walk to final destination
- Walk to public transit or other mode
- Bicycle
- Bikeshare (e.g. BIXI, Jump)
- E-scooter (e.g. Lime, Bird)
- Private Carpool/Passenger
- Ridehailing (e.g. Uber, Lyft)
- Drive - Personal Vehicle
- Drive - Carshare (e.g. Communauto, car2go)
- Bus
- Metro
- Light rail (REM)
- Commuter train
- Motorcycle
- Scooter
- Taxi
- Other

Did you use your preferred main mode on the trip you just described?   (Your preferred mode is the mode you are happiest using.)
Please choose **only one** of the following:
- Yes
- No

What factors were important to you in deciding to use your main mode?
Please choose **all** that apply:
- It is better for the environment than other modes.
- It is cheaper for me than other modes.
- I have a shorter travel time than with other modes
- I am more comfortable using this mode to travel than when using other modes.
- I am able to be productive on my journey.
- Other modes aren't available when I need to travel.
- Other modes don't go where I need to go.
- Other

Which mode would you have preferred to use as your main mode?
Please choose **only one** of the following:
- Walk to final destination
- Walk to public transit or other mode
- Bicycle
- Bikeshare (e.g. BIXI, Jump)
- E-scooter (e.g. Lime, Bird)
- Private Carpool/Passenger
- Ridehailing (e.g. Uber, Lyft)
- Drive - Personal Vehicle
- Drive - Carshare (e.g. Communauto, car2go)
- Bus
- Metro
- Light rail (REM)
- Commuter train
- Motorcycle
- Scooter

TRAM

- Taxi
- Other

Why were you NOT able to walk to work?
Please choose **all** that apply:
- I live too far
- My commute would be too long
- Time constraints
- Poor weather
- Lack of sidewalks on my route
- No direct route
- I need to drop my children off
- I have other errands to run
- My disability or condition limits this mode
- It is unsafe
- Other

Why were you NOT able to bike to work?
Please choose **all** that apply:
- I live too far
- My commute would be too long
- Time constraints
- I donít have access to this mode
- Poor weather
- Lack of bicycle paths on my route
- Not enough bicycle parking at my destination
- It takes too much effort
- I need to drop my children off
- I have other errands to run
- My disability or condition limits this mode
- Itís unsafe
- Other

Why were you NOT able to take public transit, such as bus, Metro, light rail or commuter trains to work?
Please choose **all** that apply:
- My commute would be too long
- Time constraints
- Stops/stations are too far
- Service was not available
- Too many transfers
- Too crowded
- Too expensive
- Service is not reliable
- I need to drop my children off
- I have other errands to run
- My disability or condition limits this mode
- Itís unsafe
- It was not available
- Other

Why were you NOT able to drive to work?
Please choose **all** that apply:

TRAM

- I don't have access to this mode
- Too much traffic
- Difficult to park
- Too expensive
- Pollutes too much
- It doesn't allow me to get enough exercise
- My disability or condition limits this mode
- Itís unsafe
- Other

Why were you NOT able to use a ride-hailing service to get to work?
Please choose **all** that apply:
- I don't have access to this mode
- Too much traffic
- Too expensive
- Pollutes too much
- It doesnít allow me to get enough exercise
- My disability or condition limits this mode
- Itís unsafe
- Other

Did you make any stops during your most recent work trip?
Please choose **only one** of the following:
- Yes
- No

What was the purpose of the stop(s)?
Please choose **all** that apply:
- Drop children off at school / daycare / etc.
- Shopping
- Buy coffee / meal
- Stop at the gym
- Stop at the bank / post office / etc.
- Other

How many minutes did the stop(s) take? Do not include the travel time required to make these stops.
Please choose **only one** of the following:
- 5
  …
- >180

For the walking portion(s) of your most recent work trip, please rate your satisfaction with the following:
- I am satisfied with the length of time I spent walking.
- I felt comfortable when I was walking.
- I felt safe from traffic when I was walking.
- I felt safe from crime and unwanted attention when I was walking.
- Overall, I was satisfied with my walking experience during this trip.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

For the cycling portion(s) of your most recent work trip, please rate your satisfaction with the following:
- I am satisfied with the length of time I spent cycling.

TRAM

- I was comfortable when I was cycling.
- I felt safe from traffic when I was cycling.
- I felt safe from crime and unwanted attention when I was cycling.
- The quality of the bicycle paths I used was good.
- Overall, I was satisfied with my cycling experience during this trip.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

For the driving portion(s) of your most recent work trip, please rate your satisfaction with the following:
- I am satisfied with the length of time I spent driving.
- I was comfortable when I was driving.
- I felt safe from traffic when I drove.
- I felt safe from crime and unwanted attention when I drove.
- The cost of driving and parking is reasonable.
- I could easily find a parking spot.
- Overall, I was satisfied with my driving experience during this trip.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

For the ride-hailing portion(s) of your most recent work trip, please rate your satisfaction with the following:
- I am satisfied with the length of time I spent in my ride-hailing trip.
- I was comfortable when I was on my ride-hailing trip.
- I felt safe from traffic when I was on my ride-hailing trip.
- I felt safe from crime and unwanted attention when I was on my ride-hailing trip.
- The cost of the ride-hail was reasonable.
- Overall, I was satisfied with my ride-hailing experience during this trip.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

For the bus portion(s) of your most recent work trip, please rate your satisfaction with the following:
- I am satisfied with the length of time I spent on the bus.
- I felt comfortable when I was on the bus.
- I felt safe from crime and unwanted attention when I was on the bus.
- The cost of taking the bus was reasonable.
- I am satisfied with how long it took me to reach my bus stop.
- The waiting time for the bus was reasonable.
- Information about the bus (schedules, on-board announcements, website, etc.) is easy to understand.
- Overall, I was satisfied with my bus experience during this trip.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

For the metro portion(s) of your most recent work trip, please rate your satisfaction with the following:
- I am satisfied with the length of time I spent on the metro.
- I felt comfortable when I was on the metro.
- I felt safe from crime and unwanted attention when I was on the metro.
- The cost of taking the metro was reasonable.
- I am satisfied with how long it took me to get to the metro.
- The waiting time for the metro was reasonable.
- Information about the metro (schedules, on-board announcements, website, etc.) is easy to understand.

TRAM

- Overall, I was satisfied with my metro experience during this trip.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

For the light rail (REM) portion(s) of your most recent work trip, please rate your satisfaction with the following:

- I am satisfied with the length of time I spent on the REM.
- I felt comfortable when I was on the REM.
- I felt safe from crime and unwanted attention when I was on the REM.
- The cost of taking the REM was reasonable.
- I am satisfied with how long it took me to get to the REM.
- The waiting time for the REM was reasonable.
- Information about the REM (schedules, on-board announcements, website, etc.) was easy to understand.
- Overall, I was satisfied with my REM experience during this trip.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

For the commuter train portion(s) of your most recent work trip, please rate your satisfaction with the following:

- I am satisfied with the length of time I spent on the commuter train.
- I felt comfortable when I was on the commuter train.
- I felt safe from crime and unwanted attention when I was on the commuter train.
- The cost of taking the commuter train was reasonable.
- I am satisfied with how long it took me to get to the commuter train.
- The waiting time for the commuter train was reasonable.
- Information about the commuter train (schedules, on-board announcements, website, etc.) is easy to understand.
- Overall, I was satisfied with my commuter train experience during this trip.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

How many different bus routes did you use during your most recent trip?
Please choose **only one** of the following:

- 1
- 2
- 3
- 4
- 5

How many different metro lines did you use during your most recent trip?
Please choose **only one** of the following:

- 1
- 2
- 3
- 4
- 5

How many different light rail (REM) lines did you use during your most recent trip?
Please choose **only one** of the following:

- 1

TRAM

- 2
- 3
- 4
- 5

How many different train lines did you use during your most recent trip?
Please choose **only one** of the following:
- 1
- 2
- 3
- 4
- 5

Please state your agreement with the following statements regarding how realistic you consider various travel options as the main mode for your commute to work. By realistic, we mean that you either already commute using this mode or could feasibly replace your current mode with this mode.
Please choose the appropriate response for each item:
- Generally speaking, walking is a realistic option as the main mode for my work commute
- Generally speaking, cycling is a realistic option as the main mode for my work commute
- Generally speaking, public transit is a realistic option as the main mode for my work commute
- Generally speaking, driving is a realistic option as the main mode for my work commute

Disagree	Agree

Thinking of your most recent trip to work, how much do you agree with the following statements?
- My commute left me in a good mood.
- I felt anxious during my commute.
- I enjoyed my commute.
- I felt angry/aggressive during my commute.
- I was able to relax during my commute.
- I felt I had to rush during my commute.
- I was irritated by other road users (pedestrians, cyclists, motorists, etc.)
- I feared getting into an accident during my commute.
- I was worried about getting to my destination on time.
- I risked my safety and/or the safety of others to save time.

How often do you telecommute? (Telecommuting means working from a remote location such as home or a café instead of commuting to your primary work location.)
Please choose **only one** of the following:
- Never
- 7 times per week
- 6 times per week
- 5 times per week
- 4 times per week
- 3 times per week
- 2 times per week
- 1 time per week
- 3 times per month
- 2 times per month
- 1 time per month
- Less than 1 time per month

TRAM

What is your primary reason for telecommuting?
Please choose only one of the following:
- I am more productive while telecommuting
- I want to reduce my commute time
- To avoid traffic/construction
- Telecommuting is more environmentally friendly
- I want to save money by reducing commute trips
- It gives me more flexibility in my schedule
- It's less stressful
- I have a condition that makes it more difficult for me to physically be at work
- I do not live close to my place of work
- Other

Would you want to telecommute or telecommute more often?

What is preventing you from telecommuting (more)?
- Other

Where is your primary (most frequent) school location? On the following map, please adjust the zoom and drag the pin to one location.

What was the date of your most recent trip to your primary school location from home?

What time did you leave home go to school on your most recent trip?

What time did you arrive at school?

Of the following transportation modes, which did you use for your most recent school trip?
- Walk to final destination
- Walk to public transit or another mode
- Bicycle
- Bikeshare (e.g. BIXI, Jump)
- E-scooter (e.g. Lime, Bird)
- Private Carpool/Passenger
- Ride-hailing (e.g. Uber, Lyft)
- Drive a Personal Vehicle
- Drive a Carshare (e.g. Communauto, car2go)
- Bus
- Metro
- Light rail (REM)
- Commuter train
- Motorcycle
- Scooter
- Taxi
- Other

Which of the following, would you consider as your main mode of transportation for your most recent school trip? (The mode that you travelled the farthest using.)

Did you use your preferred main mode on the trip you just described? (Your preferred mode is the mode you are happiest using.)

TRAM

What factors were important to you in deciding to use your main mode?
- It is better for the environment than other modes.
- It is cheaper for me than other modes.
- I have a shorter travel time than with other modes
- I am more comfortable using this mode to travel than when using other modes.
- I am able to be productive on my journey.
- Other modes aren't available when I need to travel.
- Other modes don't go where I need to go.
- Other

Which mode would you have preferred to use as your main mode?
- Other

Why were you NOT able to walk to school?
- I live too far
- My commute would be too long
- Time constraints
- Poor weather
- Lack of sidewalks on my route
- No direct route
- I need to drop my children off
- I have other errands to run
- My disability or condition limits this mode
- Itís unsafe
- Other

Why were you NOT able to bike to school?
- I live too far
- My commute would be too long
- Time constraints
- I donít have access to this mode
- Poor weather
- Lack of bicycle paths on my route
- Not enough bicycle parking at my destination
- It takes too much effort
- I need to drop my children off
- I have other errands to run
- My disability or condition limits this mode
- Itís unsafe
- Other

Why were you NOT able to take public transit to school?
- My commute would be too long
- Time constraints
- Stops/stations are too far
- Service was not available
- Too many transfers
- Too crowded
- Too expensive
- Service is not reliable
- I need to drop my children off

T RAM

- I have other errands to run
- My disability or condition limits this mode
- Itís unsafe
- It was not available
- Other

Why were you NOT able to drive to school?
- I donít have access to this mode
- Too much traffic
- Difficult to park
- Too expensive
- Pollutes too much
- It doesnít allow me to get enough exercise
- My disability or condition limits this mode
- Itís unsafe
- Other

Why were you NOT able to use a ride-hailing service to get to school?
- I donít have access to this mode
- Too much traffic
- Too expensive
- Pollutes too much
- It doesnít allow me to get enough exercise
- My disability or condition limits this mode
- Itís unsafe
- Other

Did you make any stops during your most recent school trip?

What was the purpose of the stop(s)? Please select all that apply.
- Drop children off at school / daycare / etc.
- Shopping
- Buy coffee / meal
- Stop at the gym
- Stop at the bank / post office / etc.
- Other

How many minutes did the stop(s) take? Do not include the travel time required to make these stops.

For the walking portion(s) of your most recent school trip, please rate your satisfaction with the following. Please choose the appropriate response for each item:
- I am satisfied with the length of time I spent walking.
- I felt comfortable when I was walking.
- I felt safe from traffic when I was walking.
- I felt safe from crime and unwanted attention when I was walking.
- Overall, I was satisfied with my walking experience during this trip.

For the cycling portion(s) of your most recent school trip, please rate your satisfaction with the following. Please choose the appropriate response for each item:
- I am satisfied with the length of time I spent cycling.
- I was comfortable when I was cycling.
- I felt safe from traffic when I was cycling.

TRAM

- I felt safe from crime and unwanted attention when I was cycling.
- The quality of the bicycle paths I used were good.
- Overall, I was satisfied with my cycling experience during this trip.

For the driving portion(s) of your most recent school trip, please rate your satisfaction with the following. Please choose the appropriate response for each item:
- I am satisfied with the length of time I spent driving.
- I was comfortable when I was driving.
- I felt safe from traffic when I drove.
- I felt safe from crime and unwanted attention when I drove.
- The cost of driving and parking is reasonable.
- I could easily find a parking spot.
- Overall, I was satisfied with my driving experience during this trip.

For the ride-hailing portion(s) of your most recent school trip, please rate your satisfaction with the following:
- I am satisfied with the length of time I spent in my ride-hailing trip.
- I was comfortable when I was on my ride-hailing trip.
- I felt safe from traffic when I was on my ride-hailing trip.
- I felt safe from crime and unwanted attention when I was on my ride-hailing trip.
- The cost of the ride-hail was reasonable.
- Overall, I was satisfied with my ride-hailing experience during this trip.

For the bus portion(s) of your most recent school trip, please rate your satisfaction with the following. Please choose the appropriate response for each item:
- I am satisfied with the length of time I spent on the bus.
- I felt comfortable when I was on the bus.
- I felt safe from crime and unwanted attention when I was on the bus.
- The cost of taking the bus was reasonable.
- I am satisfied with how long it took me to reach my bus stop.
- The waiting time for the bus was reasonable.
- Information about the bus (schedules, on-board announcements, website, etc.) is easy to understand.
- Overall, I was satisfied with my bus experience during this trip.

For the metro portion(s) of your most recent school trip, please rate your satisfaction with the following.Please choose the appropriate response for each item:
- I am satisfied with the length of time I spent on the metro.
- I felt comfortable when I was on the metro.
- I felt safe from crime and unwanted attention when I was on the metro.
- The cost of taking the metro was reasonable.
- I am satisfied with how long it took me to get to the metro.
- The waiting time for the metro was reasonable.
- Information about the metro (schedules, on-board announcements, website, etc.) is easy to understand.
- Overall, I was satisfied with my metro experience during this trip.

For the light rail (REM) portion(s) of your most recent school trip, please rate your satisfaction with the following. Please choose the appropriate response for each item:
- I am satisfied with the length of time I spent on the REM.
- I felt comfortable when I was on the REM.
- I felt safe from crime and unwanted attention when I was on the REM.
- The cost of taking the REM was reasonable.
- I am satisfied with how long it took me to get to the REM.

TRAM

- The waiting time for the REM was reasonable.
- Information about the REM (schedules, on-board announcements, website, etc.) is easy to understand.
- Overall, I was satisfied with my REM experience during this trip.

For the commuter train portion(s) of your most recent school trip, please rate your satisfaction with the following. Please choose the appropriate response for each item:
- I am satisfied with the length of time I spent on the commuter train.
- I felt comfortable when I was on the commuter train.
- I felt safe from crime and unwanted attention when I was on the commuter train.
- The cost of taking the commuter train was reasonable.
- I am satisfied with how long it took me to get to the commuter train.
- The waiting time for the commuter train was reasonable.
- Information about the commuter train (schedules, on-board announcements, website, etc.) is easy to understand.
- Overall, I was satisfied with my commuter train experience during this trip.

How many different bus routes did you use during your most recent trip?

How many different metro lines did you use during your most recent trip?

How many different light rail lines did you use during your most recent trip?

How many different train lines did you use during your most recent trip?

Please state your agreement with the following statements regarding how realistic you consider various travel options as the main mode for your commute to school. By realistic, we mean that you either already commute using this mode or could feasibly replace your current mode with this mode.
- Generally speaking, walking is a realistic* option as the main mode for my commute to school
- Generally speaking, cycling is a realistic* option as the main mode for my commute to school
- Generally speaking, public transit is a realistic* option as the main mode for my commute to school
- Generally speaking, driving is a realistic* option as the main mode for my commute to school

Thinking of your most recent trip to school, how much do you agree with the following statements?
- My commute left me in a good mood.
- I felt anxious during my commute.
- I enjoyed my commute.
- I felt angry/aggressive during my commute.
- I was able to relax during my commute.
- I felt I had to rush during my commute.
- I was irritated by other road users (pedestrians, cyclists, motorists, etc.)
- I feared getting into an accident during my commute.
- I was worried about getting to my destination on time.
- I risked my safety and/or the safety of others to save time.

How often do you study/watch lectures from a remote location such as home or a café instead of commuting to school?

What is your primary reason for studying/learning remotely?
- Other

This question asks you about the number of times you visited certain types of destinations over the last seven days.

TRAM

- How many total times did you travel to...Your primary work location over the last seven days?
- How many total times did you travel to...Your primary school over the last seven days?
- How many total times did you travel to...The grocery store over the last seven days?
- How many total times did you travel to...The pharmacy or other healthcare facility over the last seven days?
- How many times did you drive as your main mode to...Your primary work location over the last seven days?
- How many times did you drive as your main mode to...Your primary school over the last seven days?
- How many times did you drive as your main mode to...The grocery store over the last seven days?
- How many times did you drive as your main mode to...The pharmacy or other healthcare facility over the last seven days?
- How many times did you walk or bike as your main mode to...Your primary work location over the last seven days?
- How many times did you walk or bike as your main mode to...Your primary school over the last seven days?
- How many times did you walk or bike as your main mode to...The grocery store over the last seven days?
- How many times did you walk or bike as your main mode to...The pharmacy or other healthcare facility over the last seven days?
- How many times did you take public transit as your main mode to..Your primary work location over the last seven days?
- How many times did you take public transit as your main mode to..Your primary school over the last seven days?
- How many times did you take public transit as your main mode to..The grocery store over the last seven days?
- How many times did you take public transit as your main mode to..The pharmacy or other healthcare facility over the last seven days?

How much do you agree with the following statements?
- I like travelling alone.
- My family members and I have similar travel habits.
- My friends and I have similar travel habits.

How much do you agree with the following statements? Please choose the appropriate response for each item:
- I would like to walk more than I currently do.
- I would like to cycle more than I currently do.
- I would like to use transit more than I currently do.
- I would like to drive more than I currently do.
- I prefer to organize my errands so that I make as few trips as possible.
- The only good thing about travelling is arriving at my destination.
- I use my commute time productively.
- I need a car to do many of the things I like to do.
- Parking price and availability influence which mode I take for my commute.
- My commute has a strong impact on my quality of life.
- As a child, I was regularly driven around.
- As a child, I regularly biked.
- As a child, I regularly took public transit.

Do you have a monthly transit pass?

What type of monthly transit pass do you have? If you have a pass that covers more than one mode, select all modes that are covered.
- Bus pass

TRAM

- Commuter rail pass
- Metro pass
- Other

Do you receive a reduced fare?

In the past year, how many monthly transit passes did you purchase (from anywhere)?
Select all the following that apply to you:
- I have a driverís license
- I own a bicycle
- I have a Communauto membership
- I have a BIXI membership/subscription
- I have used the Allego carpooling service in the past year
- I have used Uber in the past year
- I have used a Jump bike in the past year
- I have used a Lime/Bird e-scooter in the past year
- None of the above

How many licensed drivers are in your household, including yourself?

How many private automobiles do you have regular access to? Include only those owned, leased or borrowed on a long-term basis by you or someone else in your household and which you are permitted to drive. Do not include car-share, such as Communauto.

Please enter the make and model of your primary automobile (the one you use most frequently).

What is the year of your primary car?

Please enter the make and model of your secondary automobile (the one you use next most frequently).

What year is your secondary car?

When you selected your primary automobile, what was the importance of each of the following factors?
- Safety
- Fuel efficiency
- Quality of manufacture
- Good warranty
- Customer service
- Comfort
- Spaciousness
- Usefulness for everyday driving
- Price

When do you expect to replace your primary automobile?

General Physical Activity

In the following questions, we are going to ask you about the time you spend doing different types of physical activity in a typical week. Please answer these questions even if you do not consider yourself to be a physically active person.

When you replace your primary vehicle, what will your most important considerations be? Safety
- Fuel efficiency

TRAM

- Quality of manufacture
- Good warranty
- Customer service
- Comfort
- Spaciousness
- Usefulness for everyday driving
- Price

Work Physical Activity

In the following questions, we are going to ask you about the time you spend doing different types of physical activity in a typical week. Please answer these questions even if you do not consider yourself to be a physically active person.

Does your work involve vigorous-intensity activity that causes large increases in breathing or heart rate like carrying or lifting heavy loads, digging or construction work for at least 10 minutes continuously?
Please choose **only one** of the following:
- Yes
- No

In a typical week, on how many days do you do vigorous intensity activities as part of your work?
Please choose **only one** of the following:
- 1
- 2
- 3
- 4
- 5
- 6
- 7

Approximately how much time do you spend doing vigorous-intensity activities at work on a typical day?
Please choose **only one** of the following:
- 0 hrs 10 mins
  …
- 12 hrs 0 mins

Does your work involve moderate-intensity activity that causes small increases in breathing or heart rate such as brisk walking or carrying light loads for at least 10 minutes continuously?
Please choose **only one** of the following:
- Yes
- No

In a typical week, on how many days do you do moderate intensity activities as part of your work?
Please choose **only one** of the following:
- 1
- 2
- 3
- 4
- 5
- 6
- 7

Approximately how much time do you spend doing moderate-intensity activities at work on a typical day?

TRAM

Please choose **only one** of the following:
- 0 hrs 10 mins
  …
- 12 hrs 0 mins

Active Travel

The next questions exclude the physical activities at work that you have already mentioned. Now we would like to ask you about the usual way you travel to and from places. For example, to work, for shopping, to market, to place of worship.

In a typical week, do you <u>walk or use a bicycle (pedal cycle)</u> for at least 10 minutes continuously to <u>get to and from places?</u>
Please choose **only one** of the following:
- Yes, walk
- Yes, bike
- Yes, both
- No

In a typical week, on how many <u>days</u> do you <u>walk</u> for at least 10 minutes continuously to <u>get to and from places?</u>
Please choose **only one** of the following:
- 1
- 2
- 3
- 4
- 5
- 6
- 7

Approximately how much <u>time</u> do you spend <u>walking for travel</u> on a typical day?
Please choose **only one** of the following:
- 0 hrs 10 mins
  …
- 12 hrs 0 mins

In a typical week, on how many <u>days</u> do you <u>bike</u> for at least 10 minutes continuously to <u>get to and from places?</u>
Please choose **only one** of the following:
- 1
- 2
- 3
- 4
- 5
- 6
- 7

Approximately how much <u>time</u> do you spend <u>biking for travel</u> on a typical day?
Please choose **only one** of the following:
- 0 hrs 10 mins
  …
- 12 hrs 0 mins

TRAM

<u>Recreation Activities</u>

The next questions exclude the work and transport activities that you have already mentioned. Now we would like to ask you about sports, fitness, and recreational activities (leisure).

In a typical week, do you do any <u>vigorous-intensity sports, fitness or recreational (leisure) activities</u> that cause large increases in breathing or heart rate like running or football for at least 10 minutes continuously?
Please choose **only one** of the following:

- Yes
- No

In a typical week, on how many <u>days</u> do you do vigorous-intensity sports, fitness or recreational (leisure) activities?
Please choose **only one** of the following:

- 1
- 2
- 3
- 4
- 5
- 6
- 7

Approximately how much <u>time</u> do you spend doing vigorous-intensity sports, fitness or recreational activities on a <u>typical day?</u>
Please choose **only one** of the following:

- 0 hrs 10 mins
- …
- 12 hrs 0 mins

In a typical week, do you do any <u>moderate-intensity sports, fitness or recreational (leisure) activities</u> that cause a small increase in breathing or heart rate such as brisk walking, cycling, swimming, volleyball for at least 10 minutes continuously?
Please choose **only one** of the following:

- Yes
- No

In a typical week, on how many <u>days</u> do you do moderate intensity sports, fitness or recreational (leisure) activities?
Please choose **only one** of the following:

- 1
- 2
- 3
- 4
- 5
- 6
- 7

Approximately how much <u>time</u> do you spend doing moderate-intensity sports, fitness or recreational (leisure) activities on a <u>typical day?</u>
Please choose **only one** of the following:

- 0 hrs 10 mins
- …
- 12 hrs 0 mins

TRAM

Personal Characteristics

The following section will help us to better understand the social and demographic characteristics of Montreal residents. This information will be used to understand the change in the level in health before and after the implementation of major transportation projects in Montreal.

How did you hear about the <u>Montreal Mobility Survey?</u>
Please choose **only one** of the following:
- Email list
- From employer
- Flyer distributed at home
- Flyer distributed at work
- Flyer distributed at a transit station
- Referral from family or friends
- Facebook
- Twitter
- Website
- Newspaper
- Other

Thinking about your own life and personal circumstances, how satisfied are you?

	0 - Completely dissatisfied	1	2	3	4	5	6	7	8	9	10 - Completely satisfied
With your life as a whole?											
With your standard of living?											
With your health?											

How tall are you?
Please choose **only one** of the following:
- 100 cm - 3'3"
  …
- 220 cm - 7'3"

How much do you weigh?
Please choose **only one** of the following:
- 30 kilos - 66 pounds
  …
- 196 kilos - 432 pounds

In general, would you say your health is:
Please choose **only one** of the following:
- Excellent
- Very Good
- Good
- Fair
- Poor
- Prefer not to answer

Do you have a <u>disability or condition</u>, whether <u>temporary or permanent</u>, that limits your mobility?
Please choose **only one** of the following:
- Yes

TRAM

- No
- Prefer not to answer

Which type of disability or condition do you have?
Please choose **only one** of the following:
- Permanent
- Recurring
- Temporary
- Prefer not to answer

Are your daily transportation needs affected by your condition(s)?
Please choose **only one** of the following:
- Yes
- No

If you wish, please let us know <u>how </u>your daily transportation needs are affected by your condition(s).
Please write your answer here:_____

How do you identify yourself?
Please choose **only one** of the following:
- Male
- Female
- Non-binary
- Prefer not to answer
- Other

What is your marital status?
Please choose **only one** of the following:
- Single (never married)
- Married (or common law)
- Separated or divorced
- Widowed
- Prefer not to answer

How many <u>people</u> are in your household, <u>including yourself?</u>
Please choose **only one** of the following:
- 0
  …
- 30

How many <u>adults aged 18 or older</u> live in your household, <u>including yourself?</u>
Please choose **only one** of the following:
- 0
  …
- 30

Are there any <u>children under the age of 18</u> in your household?
Please choose **only one** of the following:
- Yes
- No

How many <u>children between the age of 6 and 13 (inclusive)</u> live in your household?

T RAM

Please choose **only one** of the following:
- 0
  …
- 30

How many <u>children under the age of 6 (not including 6 years old)</u> live in your household?
Please choose **only one** of the following:
- 0
  …
- 30

Were you born in Canada?
- Yes
- No
- Prefer not to answer

When did you move to Canada?
- 2019
  ...
- 1910
- I don't know

To which ethnic or cultural group(s) did your ancestors belong?
Please choose **all** that apply:
- Aboriginal
- Asian
- Black
- Caucasian
- Latin American
- Middle Eastern
- Prefer not to answer
- I don't know
- Other

In which country did you spend the most time growing up until you turned 18?
Please write your answer here: _____

How would you characterize the environment where you grew up?
- Urban
- Suburban
- Rural

Which category best describes your annual household income, taking into account all sources of income?
Please choose **only one** of the following:
- Less than $30,000
- $30 000 to $59 999
- $60 000 to $89 999
- $90 000 to $119 999
- $120 000 to $149 999
- $150 000 or more
- I don't know

TRAM

To what extent does this annual household income allow you to satisfy your household needs?
Please choose **only one** of the following:
- Very well
- Well
- Not so well
- Not at all
- Prefer not to answer

What is your highest level of education obtained?
- Management
- Business, finance, and administration
- Natural and applied sciences
- Health
- Education, law, social, community and government services
- Art, culture, recreation, and sport
- Sales and service
- Trades, transport, and equipment operations
- Natural resources, agriculture and production-related
- Manufacturing and utilities
- Other

Ethica Survey Questions – W1

Mental Health Continuum – Short Form (Keyes, 2002)

During the past two weeks, have you felt
1. happy?
2. that you had something important to contribute to society?
3. that you liked most parts of your personality?
4. Interested in life?
5. that you belonged to a community (like a social group, or your neighbourhood)?
6. good at managing the responsibilities of your daily life?
7. satisfied with your life?
8. that our society is becoming a better place for all people?
9. that you had warm and trusting relationships with others?
10. that people are basically good?
11. that you had experiences that challenged you to grow and become a better person?
12. that the way our society works makes sense to you?
13. confident to think or express your own ideas and opinions?
14. that your life has a sense of direction or meaning to it?

Never	Rarely	Sometimes	Often	Most of the time	All the time

Short Mood Scale (Wilhelm & Schoebi, 2007)

At this moment, I feel:
1 | Unwell

TRAM

2 | 2
3 | 3
4 | 4
5 | 5
6 | Well
-7 | Expired EMA"

At this moment, I feel:
1 | Content
2 | 2
3 | 3
4 | 4
5 | 5
6 | 6 Discontent
-7 | Expired EMA"

At this moment, I feel:
1 | Agitated
2 | 2
3 | 3
4 | 4
5 | 5
6 | 6 Calm
-7 | Expired EMA"

At this moment, I feel:
1 | Relaxed
2 | 2
3 | 3
4 | 4
5 | 5
6 | 6 Tense
-7 | Expired EMA"

At this moment, I feel:
1 | Tired
2 | 2
3 | 3
4 | 4
5 | 5
6 | 6 Awake
-7 | Expired EMA"

At this moment, I feel:
1 | Full of energy
2 | 2
3 | 3
4 | 4
5 | 5
6 | 6 Without energy

TRAM

-7 | Expired EMA"

At this moment, I am interacting with:
1 | No one, I am alone
2 | No one, but there are people around me
3 | Friend(s)
4 | Family member(s)/spouse/partner
5 | Colleague(s)
-7 | Expired EMA

Feedback

For the last 7 days, we asked you how you were doing. What did you think of the questions? (You may select more than one answer)
1 | I would have liked to answer these questions more often
2 | The questions were easy
3 | There were too many questions at a time
4 | The questions were too frequent
5 | The frequency of the questions was good
6 | I liked these questions
7 | I didn't know how to answer
8 | The questions were too personal
9 | I would have liked to answer more questions.
-7 | Expired EMA"

You've been collecting data for almost 30 days now! Thank you for contributing to the research. How are you finding this experience? (You may choose more than one answer)
1 | I'm liking these questions
2 | I'm looking forward to the end of the study!
3 | I don't like answering these questions
4 | There are too many questions
5 | There are too many messages
6 | The questions are interesting
7 | I'm looking forward to seeing the results!
-7 | Expired EMA

What inspired you to join our study?
(open)

Data checks

Immediately before reading this notification, where was your phone?
1 | In my hand, I was already using my phone
2 | In a pocket, below the waist
3 | In a pocket, above the waist
4 | On a surface (e.g., table, desk, couch) next to me
5 | In my bag, purse or backpack

TRAM

6 | In another room
-7 | Expired EMA

What was the mode of transportation for your first trip from home today?
1 | Walk
2 | Bike
3 | Car/Truck
4 | Metro
5 | Train
6 | Bus
7 | Other
-7 | Expired EMA

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AUXILIARY VARIABLES EXPLAINED

Note on total number of observations
N = 3,683

A total of 2,259 of the original survey responses for wave 1 of the REM survey have been removed from this dataset. Issues with response time, year born, and other variables have already been removed due to errors in the data.

The following filters have already been applied using RStudio 4.0.2:

```
survey <- survey %>%
  filter(survey_complete == 1 & remove_for_time != 1 & YRBORN > 1920)
survey$GPAQWBMIN <- as.numeric(survey$GPAQWBMIN )
survey$GPBIKEMINS <- as.numeric(survey$GPBIKEMINS)
survey$remove_for_activity <- ifelse(survey$GPBIKEMINS > 200 | survey$GPAQWBMIN > 200, 1, 0)
survey$remove_for_activity <- ifelse(is.na(survey$remove_for_activity), 0,(survey$remove_for_activity))
survey <- survey %>% filter(remove_for_activity != 1)
```

TRAM

Variable name	Description	Units	Method of collection
Neighbourhood characteristics (Statistics Canada, 2016 Census)			
CT_UID	Statistics Canada home location census tract (CT) unique identifier (2016)	Text	This is 2016 data from Statistics Canada, joined to survey data using RStudio 4.0.2 and the 'cancensus' package.

dataset = CA16
CMA = 24462
level = DA

von Bergmann J, Shkolnik D, Jacobs A (2020). *cancensus: R package to access, retrieve, and work with Canadian Census data and geography.* R package version 4.0.2, https://mountainmath.github.io/cancensus/ . |
DA_UID	Statistics Canada home location dissemination area (DA) unique identifier (2016)	Text	
region_name	Name of region that home location is situated within	Text	
medincome	Median household income of home location DA in 2015 ($)	Text	
prop_bachabove	Proportion of population in home location DA with university certificate, diploma or degree at bachelor level or above'	Number (proportion of pop.)	
prop_employed	Proportion of labour force in home location DA that is employed	Number (proportion of pop.)	
prop_renting	Proportion of population in home location DA that are renting (vs. owning / band housing)	Number (proportion of pop.)	
popdens	Population density per square kilometre for home location DA	Pop. dens. / sq. km.	
Built environment (Walkscore, 2019)			
walksc_home	Walkability of home location area.	Numeric score from 0-100	The 2019 walkscores were collected on the postal code level, and they are for the centroid of each postal code. The walk scores were collected using the Walkscore API. 2019 walkscore data (collected by postal code) was spatially joined to REM survey home locations using ArcMap 10.7.1.
walksc_school	Walkability of school location area.	Numeric score from 0-100	
walksc_work	Walkability of work location area.	Numeric score from 0-100	
Nearest station (not accounting for road network) and tax area			

T RAM

NEAR_NAME	Nearest station to home location (name) not accounting for road network (i.e. direct distances)	Text	The Network Analyst tool in ArcMap 10.7.1 was used to locate the nearest station to home locations.
NEAR_DIST	Distance from nearest station to home location not accounting for road network (i.e. direct distances). This field allows us to filter for respondents living within a certain distance of a REM station.	Kilometers (km)	The Network Analyst tool in ArcMap 10.7.1 was used to calculate the distance to the nearest station to home locations.
TAX_AREA	Whether or not respondent lives within the official tax area *"For the benefit of BOMA Quebec members in Greater Montreal, here is a summary of the terms and conditions of the regulation regarding the transport tax for the Réseau express métropolitain (REM - electric train network) as outlined in the Loi concernant le Réseau électrique métropolitain."* https://www.boma-quebec.org/news-details/2018-04-23/rem-redevance-de-transport-en	Binary (1 or 0)	**1** for those living within the following areas: • *Zones subject to such a tax, i.e. the locations of each REM station or terminus (see sketch of stations in Appendix);* • *The transportation tax will apply to buildings located entirely or partially within a zone linked to mass transit services within a radius of 1 kilometer of each station or terminus;* • *For zones near the Édouard Montpetit, Gare Centrale and McGill stations, the radius is within 500 metres of each station or terminus.*

Distances and travel time assuming <u>driving</u> to nearest station The following variables were collected using a road network which includes all roads, including highways. The following data therefore assumes driving when locating the nearest REM station.			
CAR_ST_OR_NAME	Station closest to home (name)	Text	In ArcMap 10.7.1, the road network dataset from Statistics Canada (released November 13, 2019) was projected to NAD83 MTM8 and converted into a network dataset (.nd). All roads were kept in the dataset, since we are assuming a driveable road network. The Network Analyst tool was used to calculate the distance between the home location and destination location. Station names and locations were also recorded. *Network Analyst > New Closest Facility > Load Locations > Solve*
CAR_ST_OR_X CAR_ST_OR_Y	Station closest to home (coordinates)	NAD83 MTM8	
CAR_ST_SC_NAME	Station closest to school (name)	Text	
CAR_ST_SC_X CAR_ST_SC_Y	Station closest to school (coordinates)	NAD83 MTM8	
CAR_ST_WK_NAME	Station closest to work (name)	Text	
CAR_ST_WK_X CAR_ST_WK_Y	Station closest to work (coordinates)	NAD83 MTM8	

TRAM

CAR_NETDIST_OR_ST	Network distance from home to nearest station (driving)	Kilometers (km)	
CAR_NETDIST_SC_ST	Network distance from school to nearest station (driving)	Kilometers (km)	
CAR_NETDIST_WK_ST	Network distance from work to nearest station (driving)	Kilometers (km)	
CAR_DIST_ST_ST_SC	Distance from station closest to home to station closest to school	Kilometers (km)	The Network Analyst tool in ArcMap 10.7.1 was used to calculate the distance travelled between stations while on the REM. The home station is the station closest to the home location, and the destination station is the station closest to school / work. Technically, when riding the future REM network, riders will get off at station Bois-Franc to transfer between certain lines, which will add distance and time travelled, but we are assuming a direct path from entry station to exit station.
CAR_DIST_ST_ST_WK	Distance from station closest to home to station closest to work	Kilometers (km)	Network analyst methodology: • First, the REM network lines were converted into a network dataset (.nd) • In a CSV, each uniqueID was duplicated in order to have one column with home locations as Sequence 1 and destination locations as Sequence 2 • Network Analyst > New Route > Name and RouteName = uniqueID to match rows for Sequence 1 (home) and 2 (destination) by uniqueID • Route was solved to calculate the distance between stations
CAR_TIME_ST_ST_SC	Travel time from station closest to home to station closest to school	Hours	Assuming the REM will operate at an average speed of 45 km/hr to calculate travel time based on distance travelled.
CAR_TIME_ST_ST_WK	Travel time from station closest to home to station closest to work	Hours	
Congested travel times The following variables were collected using GTFS data for driving and taking transit.			

T R A M

TIME_CONG_CAR_SC	Congested travel time from home to school by car	Hours	The travel time estimates were collected using the google maps distance matrix API (for the driving estimate) and directions API (for the transit estimate). Travel time estimates were collected on Tuesday March 3rd for the day of the week and departure time for the trips that was specified in the survey but for the upcoming week. For example if the reported departure time was Monday at 6:30AM, the travel time estimated was collected for Monday March 9, 2020 at 6:30AM. For the driving estimate, the traffic model variable specifies the assumption that Google used when calculating time in traffic. This setting affects the value returned in the intraffic_min field in the data, which contains the predicted time in traffic based on historical averages. We set the traffic model variable to "best guess" which indicates that the intraffic_min should be the best estimate of travel time given what is known about both historical traffic conditions and live traffic. Live traffic becomes more important the closer the departure_time is to now (time of collection).
TIME_CONG_CAR_WK	Congested travel time from home to work by car	Hours	
TIME_CONG_TRANSIT_SC	Congested travel time from home to school by taking transit and walking	Hours	
TIME_CONG_TRANSIT_WK	Congested travel time from home to school by taking transit and walking	Hours	
Distances and travel time assuming <u>walking</u> to nearest station The following variables were collected using a road network which excludes highways in the Montreal CMA. The following data therefore assumes walking when locating the nearest REM station.			
ST_OR_NAME	Station closest to home (name)	Text	In ArcMap 10.7.1, the road network dataset from Statistics Canada (released November 13, 2019) was projected to NAD83 MTM8. Highways, freeways and access ramps were removed from this dataset as they were considered to be unwalkable. Future walking paths to the REM stations were also added to the dataset for Du Quartier and Brossard Stations. The dataset was then converted into a network dataset (.nd). The Network Analyst tool was used to calculate the distance between the home location and destination location. Station names and locations were also recorded. *Network Analyst > New Closest Facility > Load Locations > Solve*
ST_OR_X ST_OR_Y	Station closest to home (coordinates)	NAD83 MTM8	
ST_SC_NAME	Station closest to school (name)	Text	
ST_SC_X ST_SC_Y	Station closest to school (coordinates)	NAD83 MTM8	
ST_WK_NAME	Station closest to work (name)	Text	
ST_WK_X ST_WK_Y	Station closest to work (coordinates)	NAD83 MTM8	

TRAM

NETDIST_OR_ST	Network distance from home to nearest station (walking)	Kilometers (km)	
NETDIST_SC_ST	Network distance from school to nearest station (walking)	Kilometers (km)	
NETDIST_WK_ST	Network distance from work to nearest station (walking)	Kilometers (km)	
DIRDIST_OR_ST	Direct / airline distance from home to nearest station	Kilometers (km)	$Direct\ distance = \sqrt{(x2 - x1)^2 + (y2 - y1)^2}$
CIRCUITY_OR_ST	Circuity ratio home to nearest station	Ratio	$Circuity\ ratio = \dfrac{Network\ distance}{Direct\ distance}$
DIST_ST_ST_SC	Distance station to station (school)	Kilometers (km)	The Network Analyst tool in ArcMap 10.7.1 was used to calculate the distance travelled between stations while on the REM. The home station is the station closest to the home location, and the destination station is the station closest to school / work. Technically, when riding the future REM network, riders will get off at station Bois-Franc to transfer between certain lines, which will add distance and time travelled, but we are assuming a direct path from entry station to exit station.
DIST_ST_ST_WK	Distance station to station (work)	Kilometers (km)	Network analyst methodology: • First, the REM network lines were converted into a network dataset (.nd) • In a CSV, each uniqueID was duplicated in order to have one column with home locations as Sequence 1 and destination locations as Sequence 2 • Network Analyst > New Route > Name and RouteName = uniqueID to match rows for Sequence 1 (home) and 2 (destination) by uniqueID • Route was solved to calculate the distance between stations

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TIME_ST_ST_SC	Travel time from station closest to home to station closest to school	Hours	Assuming the REM will operate at an average speed of 45 km/hr to calculate travel time based on distance travelled.
TIME_ST_ST_WK	Travel time from station closest to home to station closest to work	Hours	
TIME_OR_ST	Travel time from home to nearest station (walking)	Hours	These variables assume an average walking speed of 5.4 km/h (3.4 miles/h or 90.6m/h) as this is the mid-range average speed for individuals 14-64 years old, as noted by Wasfi, Ross and El-Geneidy (2013) and originally observed by Knoblauch et al. (1996).
TIME_SC_ST	Travel time from school to nearest station (walking)	Hours	
TIME_WK_ST	Travel time from work to nearest station (walking)	Hours	• Wasfi, R. A., Ross, N. A., & El-Geneidy, A. M. (2013). Achieving recommended daily physical activity levels through commuting by public transportation: unpacking individual and contextual influences. Health & place, 23, 18–25. https://doi.org/10.1016/j.healthplace.2013.04.006 • Knoblauch, R., Pietrucha, M., Nitzberg, M. (1996). Field studies of pedestrian walking speed and start-up time. Transportation Research Record 1538, 27–38.
Accessibility to jobs by census tract (CT)			
Jobs_5_car Jobs_10_car Jobs_15_car Jobs_20_car Jobs_25_car Jobs_30_car Jobs_35_car Jobs_40_car Jobs_45_car Jobs_50_car Jobs_55_car Jobs_60_car	These variables represent the number of jobs accessible within a certain number of minutes by car within the given census tract (CT) of the home location. The variables increase by increments of 5, starting at Jobs_5_car, which represents the number of jobs accessible by car within 5 minutes, up to Jobs_60_car, which represents the number of jobs accessible by car within 60 minutes.	Number (total count)	This is the 8 a.m. weekday accessibility by car that was calculated for the 'Access Across Canada' project.
Jobs_5_transit Jobs_10_transit	These variables represent the number of jobs accessible within a certain number of	Number (total count)	This is the 8 a.m. weekday accessibility by transit that was calculated for the 'Access Across Canada' project.

T RAM

Jobs_15_transit Jobs_20_transit Jobs_25_transit Jobs_30_transit Jobs_35_transit Jobs_40_transit Jobs_45_transit Jobs_50_transit Jobs_55_transit Jobs_60_transit	minutes by car within the given census tract (CT) of the home location. The variables increase by increments of 5, starting at Jobs_5_transit, which represents the number of jobs accessible by transit within 5 minutes, up to Jobs_60_transit, which represents the number of jobs accessible by transit within 60 minutes.		
Filters			
TRIP_TYPE	Type of trip taken: • School only • Work only • School and work	Text	Whether noted trips were to school, work or school and work.
home_location	**Is there a home location?** • There is a home location (1) • There is no home location (0)	Binary (1 or 0)	This filter can be applied if, for research purposes, someone is looking to only include responses that have a home location (h_NAD83_lat and h_NAD83_long). This will remove a total of 170 responses.
bad_location	**Are there errors in location fields (home and work)?** • Locations with errors (1) • Good locations (0)	Binary (1 or 0)	This filter can be applied to eliminate home and work locations that have errors. If there was a home location but no CT_UID was joined to the data, this indicated that there was an error with the home location, for instance the location was in a body of water or outside of the Montreal CMA. If there was a work location but no nearest REM station to the work location was found, this was due to errors in the work location, such as being outside of the CMA. This will remove a total of 17 responses. NOTE: There were no errors found in school locations.

TRAM

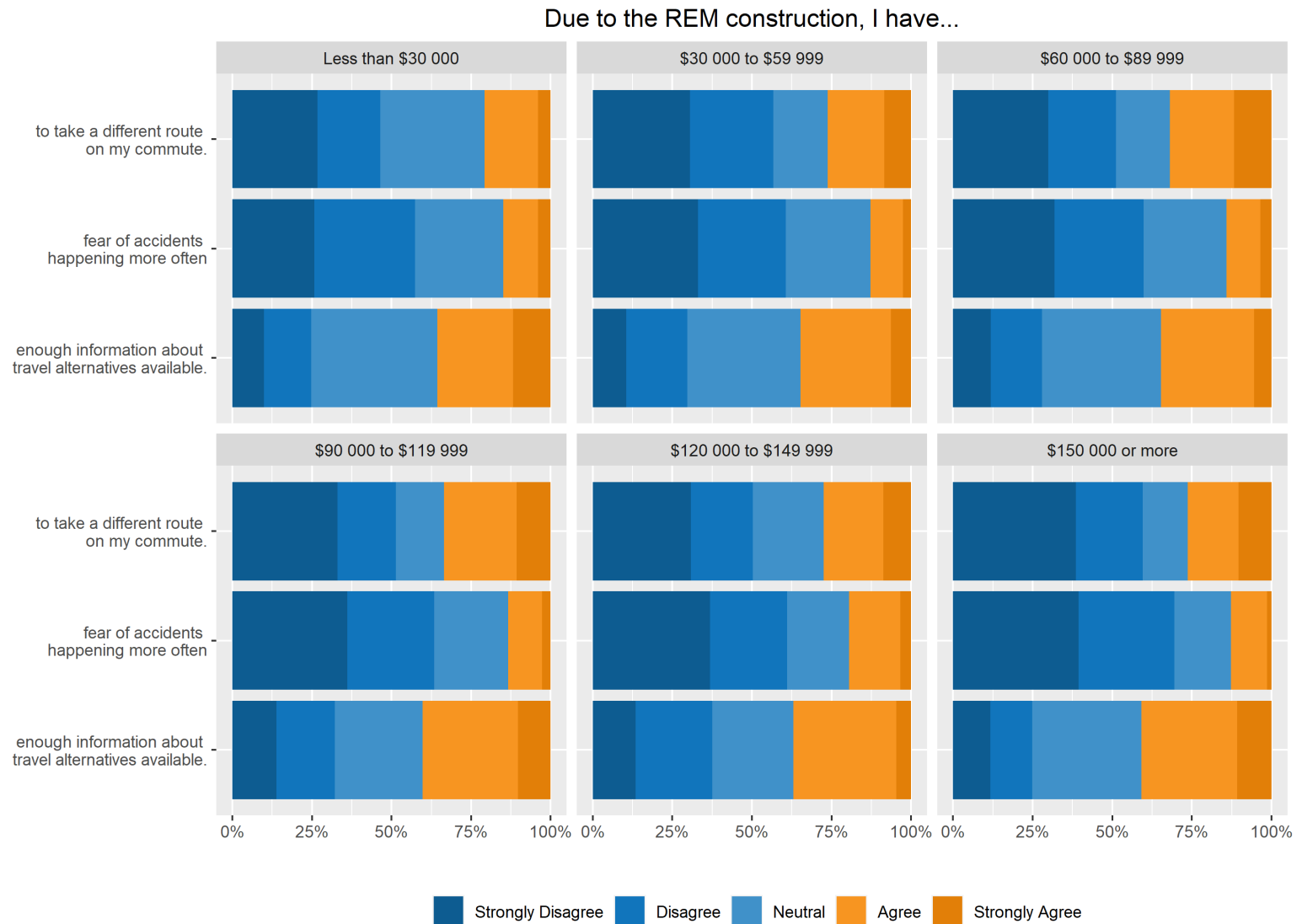# Appendix : REM Survey Wave 1 Report 2019-2020

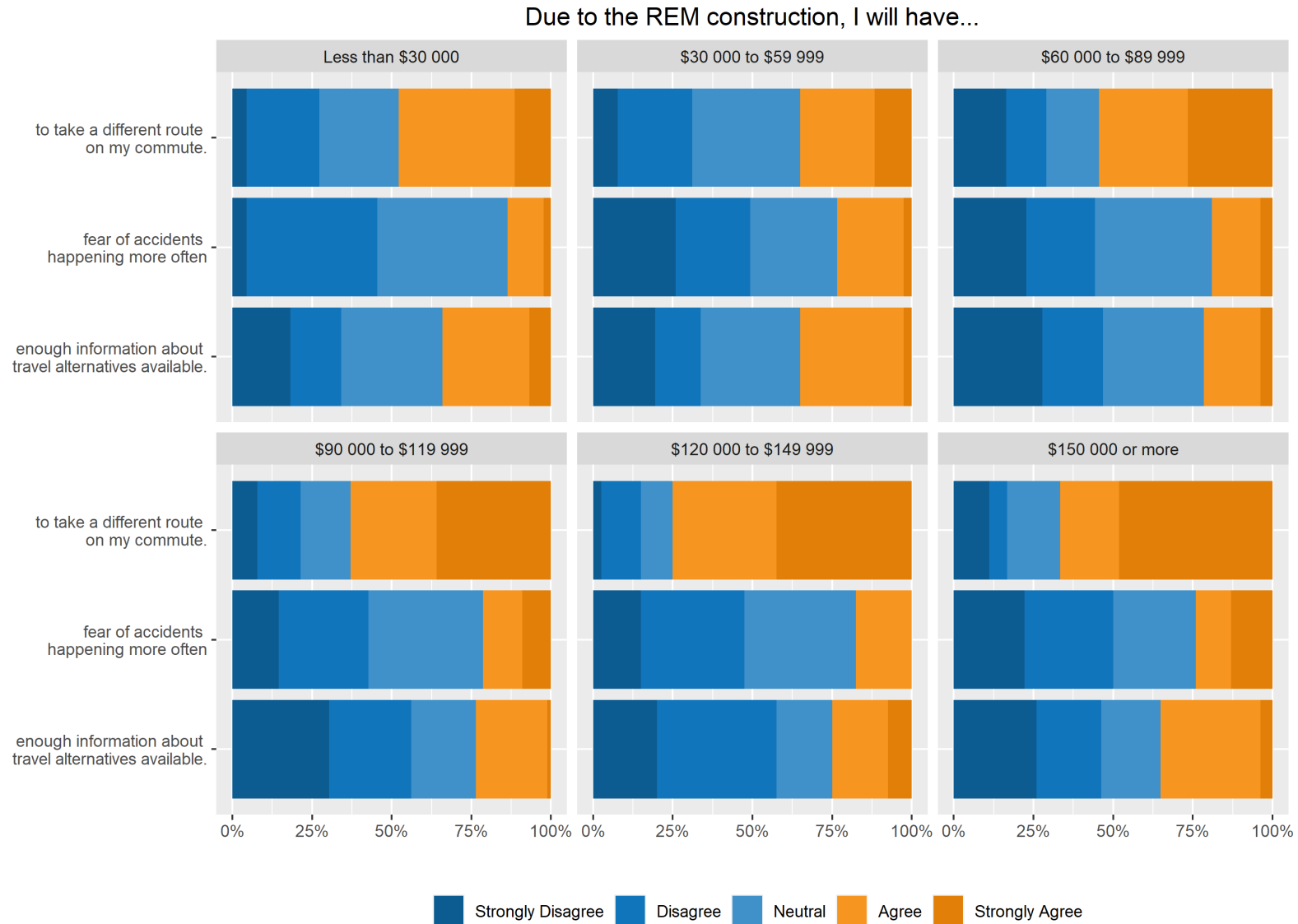**FIGURE 16B: PERCEIVED IMPACT OF CURRENT REM CONSTRUCTION ON TRAVEL BEHAVIOR (INCOME)**

FIGURE 17B: PERCEIVED IMPACT OF FUTURE REM CONSTRUCTION ON TRAVEL BEHAVIOR (INCOME)
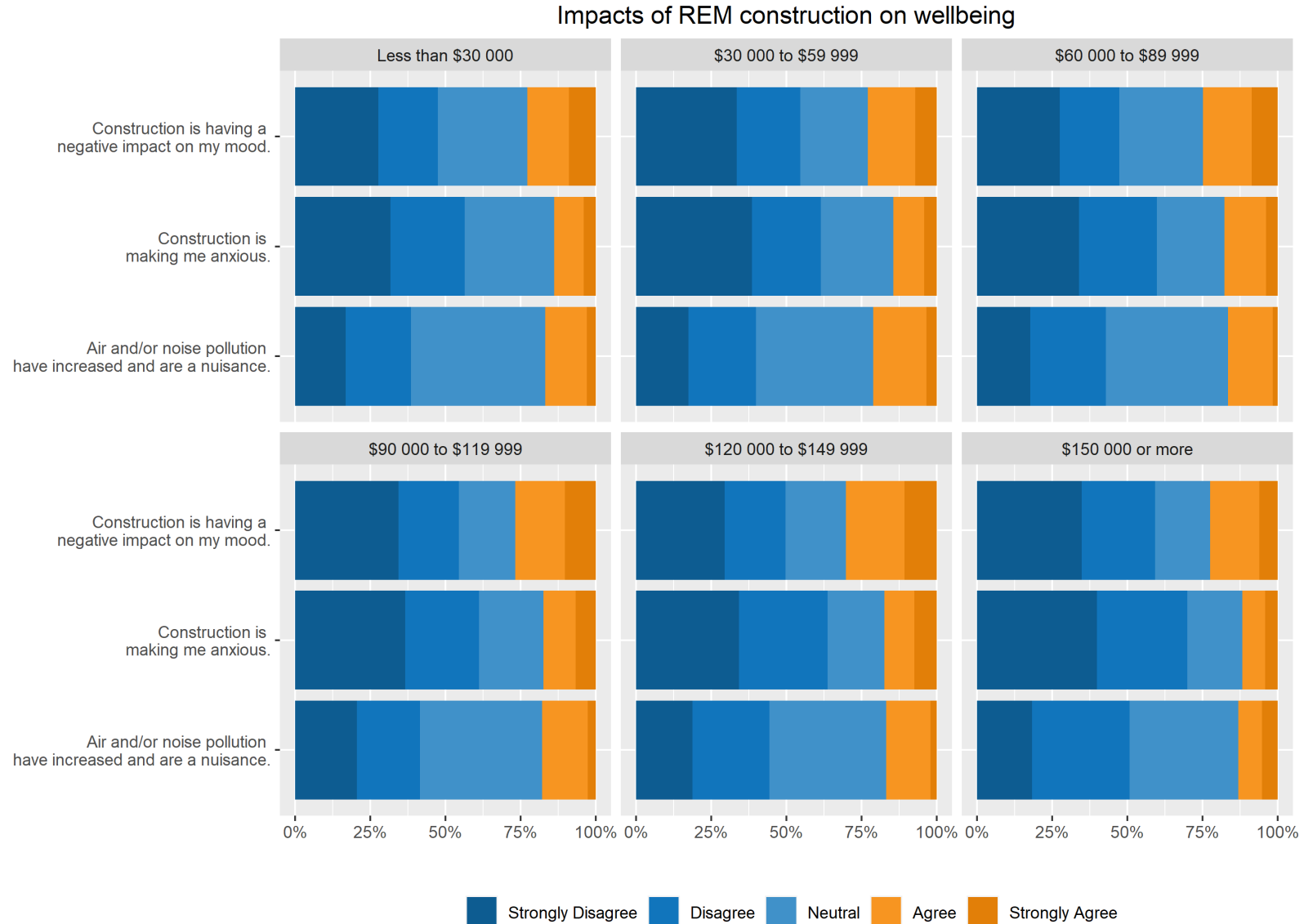
Impacts of REM construction on wellbeing

FIGURE 18B: PERCEIVED IMPACT OF REM CONSTRUCTION ON WELLBEING (INCOME)

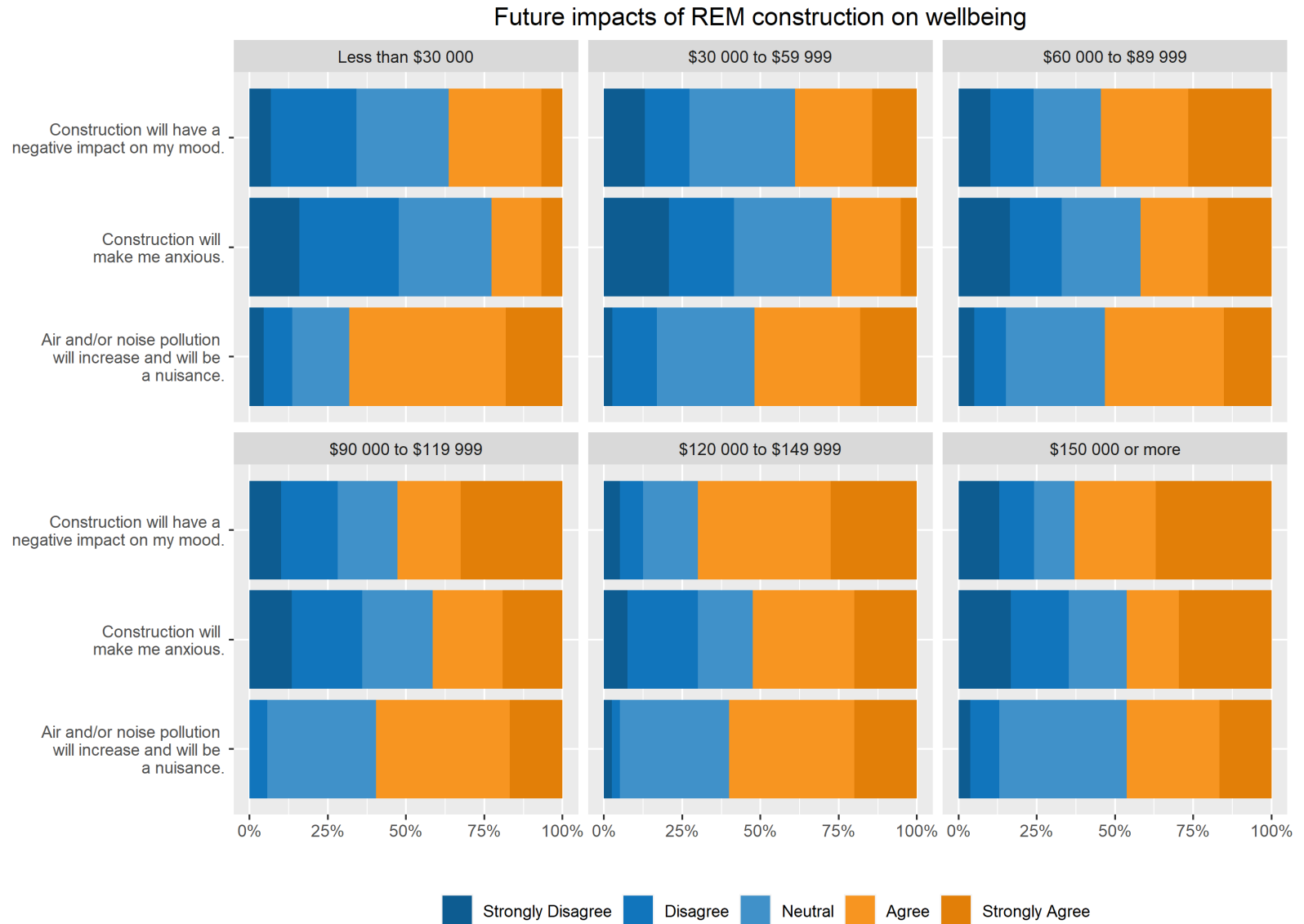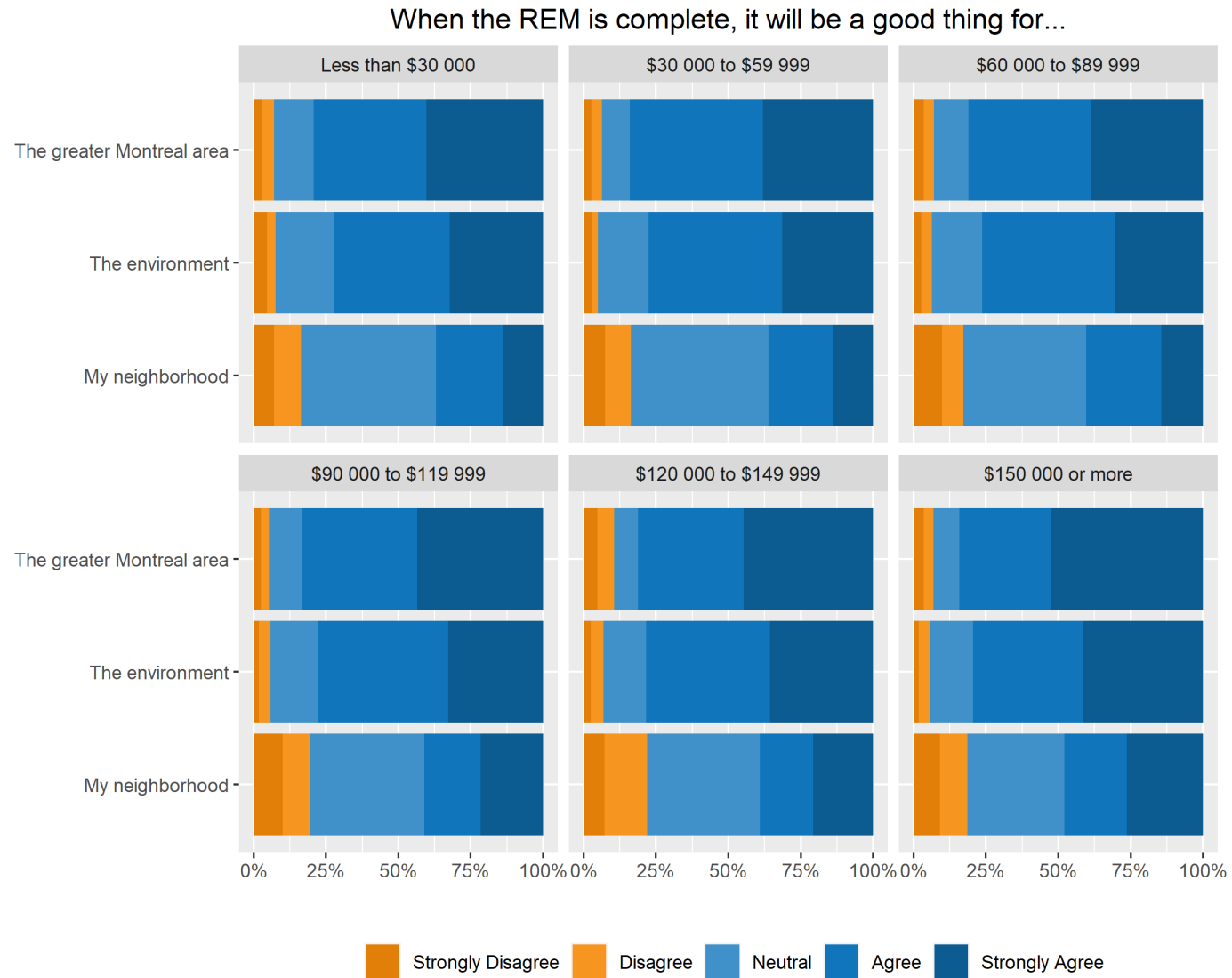**FIGURE 19B: PERCEIVED IMPACT OF FUTURE REM CONSTRUCTION ON WELLBEING (INCOME)**

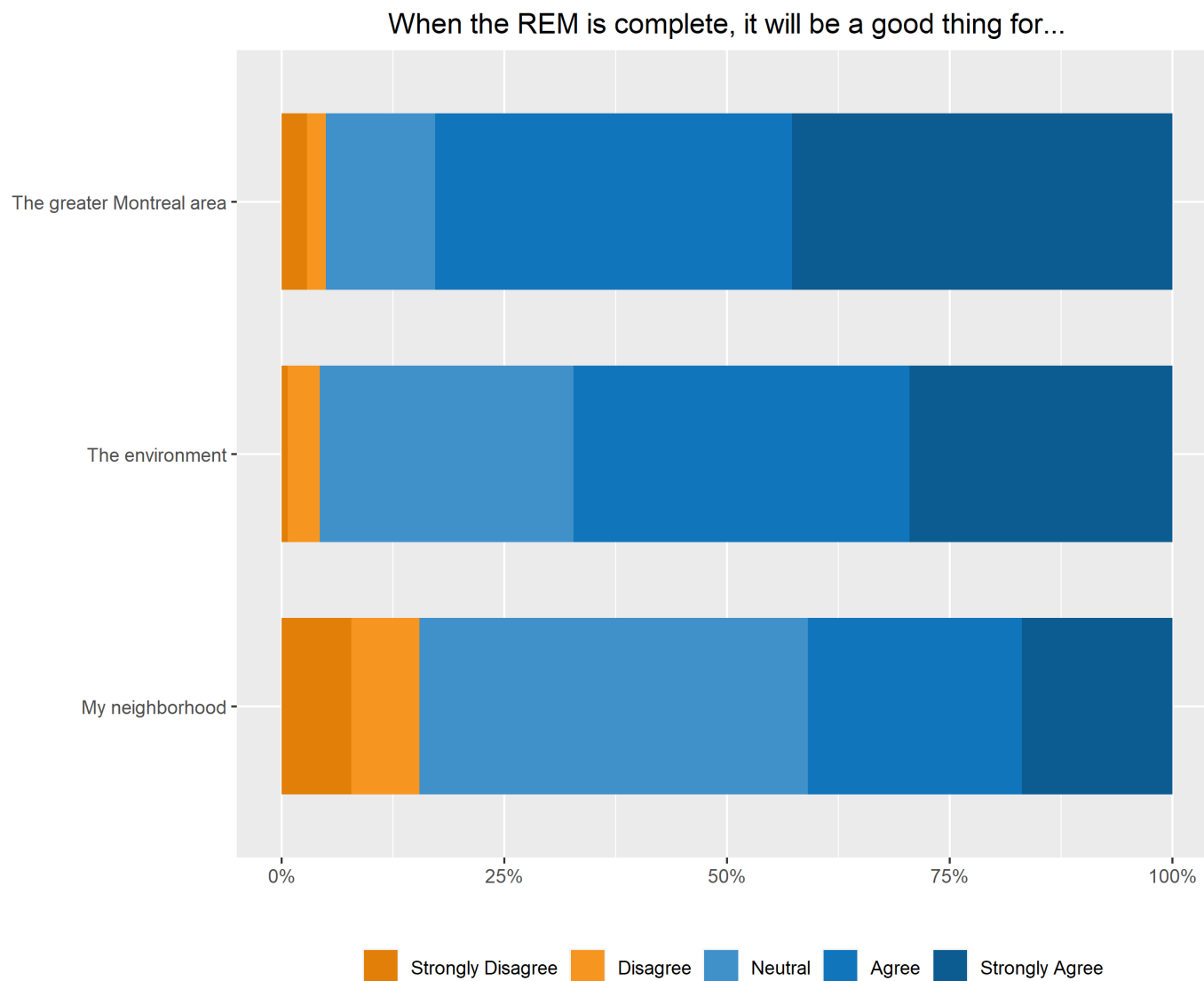**FIGURE 20B: PERCEIVED IMPACT OF REM ONCE COMPLETE (PREVIOUS KNOWLEDGE, INCOME)**

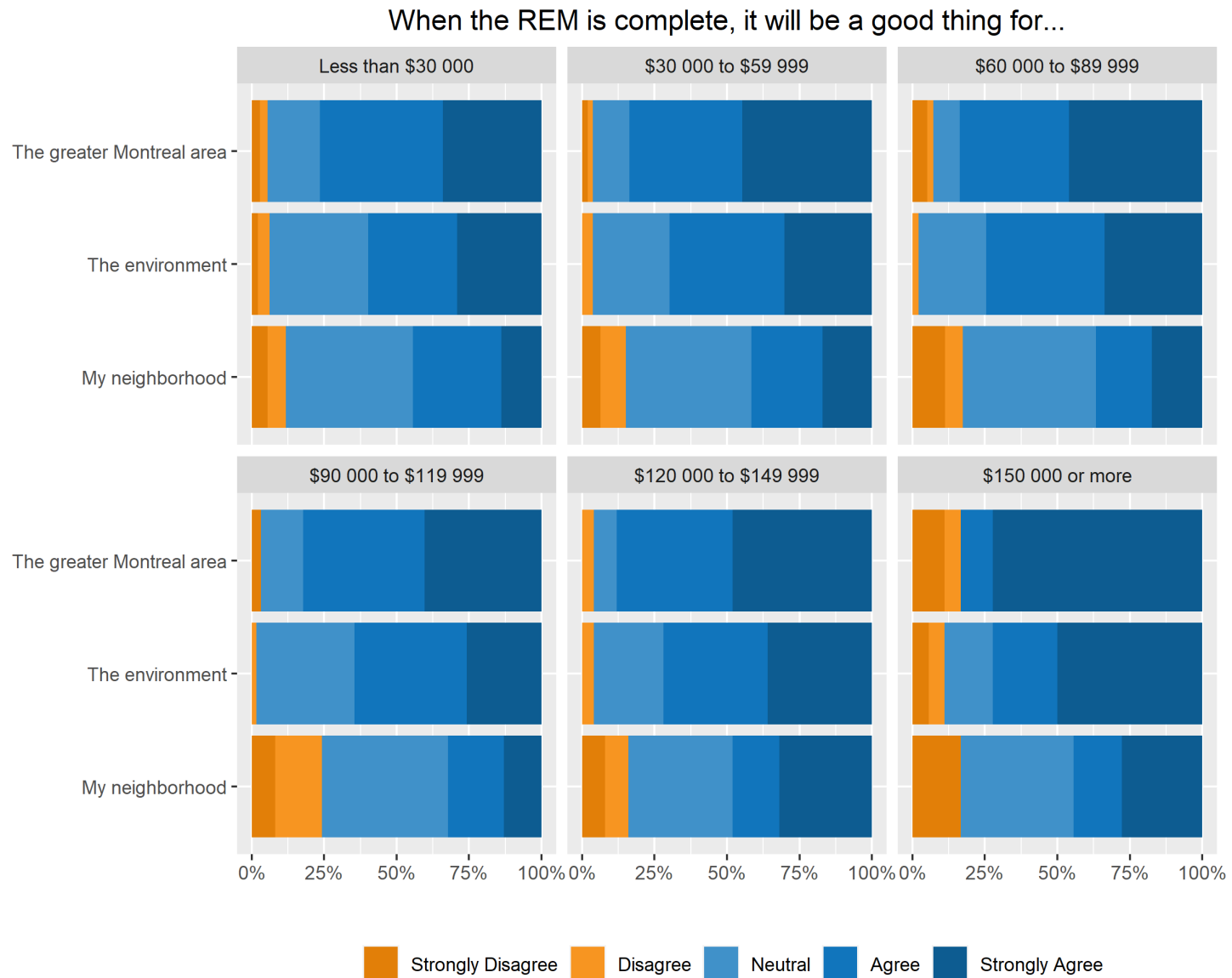**FIGURE 20C: PERCEIVED IMPACT OF REM ONCE COMPLETE (WITHOUT PREVIOUS KNOWLEDGE)**

FIGURE 20D: PERCEIVED IMPACT OF REM ONCE COMPLETE (WITHOUT PREVIOUS KNOWLEDGE, INCOME)