



# University of Manitoba

Campus Commute Survey

June 2023

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# Table of Contents

EXECUTIVE SUMMARY	
1. PROJECT OVERVIEW .....	1
2. CONTEXT .....	2
3. SURVEY RESPONSES .....	3
A. RESPONSE RATE .....	3
B. GEOGRAPHIC DISTRIBUTION OF RESPONDENTS.....	4
4. MODE SHARE .....	8
A. BY CAMPUS .....	9
B. BY CAMPUS AND AFFILIATION.....	10
C. COMPARISON BY SURVEY YEAR .....	12
D. COMPARISON BY SURVEY YEAR AND AFFILIATION.....	13
5. GHG EMISSIONS .....	16
A. MODE SHARE VS GHG EMISSIONS SHARE .....	16
B. AVERAGE EMISSIONS PER RESPONDENT AND EXTRAPOLATED TO ENTIRE CAMPUS.....	17
C. COMPARISON BY YEAR: AVG KGS GHG EMISSIONS, # KMS AND # TRIPS PER RESPONDENT .....	18
6. ANTICIPATED SUMMER MODE CHANGE .....	19
7. FLEXIBLE WORK FROM HOME OPTION .....	20
8. CARPOOLING INTEREST AND BARRIERS .....	21
A. NUMBER PEOPLE IN CARPOOL .....	21
B. WHO RESPONDENTS CARPOOL WITH BY AFFILIATION .....	22
C. OPENNESS AND BARRIERS TO CARPOOLING .....	23
9. STUDENT TRANSIT U-PASS USAGE.....	24
10. INTER-CAMPUS COMMUTING .....	25
11. EFFECTIVENESS OF MEASURES TO REDUCE GREENHOUSE GAS EMISSIONS .....	28
12. INTEREST IN ELECTRIC VEHICLES .....	30

13. INTEREST IN STAFF AND FACULTY DISCOUNTED TRANSIT PASS .....	32
14. BUSINESS AND RESEARCH TRAVEL .....	33
15. AWARENESS OF EXISTING RESOURCES .....	37
16. ADDITIONAL COMMENTS.....	42
17. HOW RESPONDENTS HEARD ABOUT SURVEY .....	45
18. SELF-IDENTIFY AS INDIGENOUS, RACIALIZED OR PERSON WITH A DISABILITY.....	46
19. KEY RECOMMENDATIONS.....	47
A. ENHANCE TRANSIT AND SHUTTLE SERVICES .....	48
B. REDUCE PARKING DEMAND.....	53
C. ENHANCE WALKING AND CYCLING EXPERIENCE .....	56
D. MAKE WAYFINDING AND TRIP PLANNING EASY .....	61
E. INCREASE PROMOTION AND COMMUNICATION .....	63

## Figures

Figure 1: Response Rate by Affiliation – All Respondents.....	3
Figure 2: Response Rate by Affiliation and Campus – Fort Garry .....	3
Figure 3: Response Rate by Affiliation and Campus – Bannatyne .....	3
Figure 4: Mode Share – All Respondents.....	8
Figure 5: Mode Share by Campus.....	9
Figure 6: Mode Share by Affiliation – Fort Garry.....	10
Figure 7: Mode Share by Affiliation – Bannatyne .....	11
Figure 8: Mode Share Comparison by Survey Year.....	12
Figure 9: Mode Share Comparison 2020 vs 2023 – Staff and Faculty .....	13
Figure 10: Mode Share Comparison 2020 vs 2023 – Undergraduate and Graduate Students – Fort Garry .....	14
Figure 11: Mode Share Comparison 2020 vs 2023 – Undergraduate and Graduate Students – Bannatyne.....	15
Figure 12: CO2 Emissions by Mode - All Respondents .....	16
Figure 13: CO2, KM and Trips Comparison: 2020 vs 2023 .....	18
Figure 14: Anticipated Mode Change in Warmer Months .....	19
Figure 15: Interest in Work From Home Option – All Faculty and Staff .....	20

Figure 16: Interest in Work From Home Option – Faculty by Campus .....	20
Figure 17: Interest in Work From Home Option – Staff by Campus.....	20
Figure 18: Number Persons in Carpool.....	21
Figure 19: Who Respondents Carpool With by Affiliation.....	22
Figure 20: Primary Reason for No Interest in Carpooling .....	23
Figure 21: Primary Reason for Not Yet Using GoManitoba to Find Carpool Partner.....	23
Figure 22: Plans to Buy an Electric Vehicle in the Future .....	30
Figure 23: What Interests You Most in Electric Vehicles?.....	31
Figure 24: What do You Want to Learn More About Regarding Electric Vehicles? .....	31
Figure 25: Interest in Staff and Faculty Discounted Transit Pass .....	32
Figure 26: Faculty - Business and Research Travel – Perceived Effectiveness of GHG Reduction Measures .....	34
Figure 27: Faculty - Business and Research Travel - Interest in Online or In Person Conferences.....	34
Figure 28: Staff - Business and Research Travel – Perceived Effectiveness of GHG Reduction Measures .....	36
Figure 29: Staff - Business and Research Travel - Interest in Online or In Person Conferences.....	36
Figure 30: Awareness of Existing Resources – Faculty.....	38
Figure 31: Awareness of Existing Resources – Staff .....	39
Figure 32: Awareness of Existing Resources – Graduate Students .....	40
Figure 33: Awareness of Existing Resources – Undergraduate Students .....	41
Figure 34: Self-identify as Indigenous, Racialized or a Person with a Disability.....	46

## Tables

Table 1: GHG Emissions by Mode .....	17
Table 2: Average Tonnes GHG Emissions Extrapolated to Entire Campus Year-round .....	17
Table 3: Anticipated Mode Change by Affiliation.....	19
Table 4: Frequency of Use of Student U-Pass.....	24
Table 5: Intercampus Commuting – Fort Garry to Bannatyne Campus .....	25
Table 6: Intercampus Commuting – Bannatyne to Fort Garry Campus .....	26
Table 7: Intercampus Commuting – Number of Round Trips.....	27
Table 8: Perceived Effectiveness of GHG Reduction Measures.....	28
Table 9: Business and Research Travel – Perceived Effectiveness of GHG Reduction Measures - Faculty .....	33
Table 10: Business and Research Travel – Perceived Effectiveness of GHG Reduction Measures - Staff.....	35

Table 11: Awareness of Existing Resources – All Respondents .....	37
Table 12: How Respondents Heard about Survey .....	45

## Maps

Map 1: Geographic Distribution of Respondents – Winnipeg.....	4
Map 2: Geographic Distribution of Respondents – Outside Winnipeg: .....	5
Map 3: Fort Garry Respondents – Winnipeg .....	6
Map 4: Bannatyne Respondents – Winnipeg .....	7

## Appendices

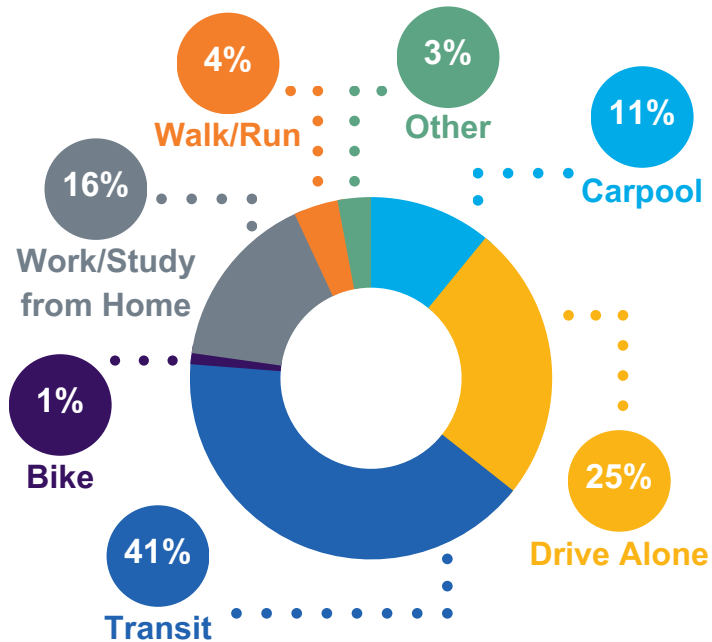
Appendix A: Geographic Distribution of Respondents .....	64
Appendix B: GHG Emissions Factors & Assumptions .....	67

# Executive Summary

## Fort Garry Campus Highlights

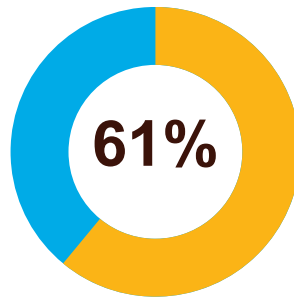
### Current Travel

This is how students, faculty and staff travel to and from Fort Garry Campus.

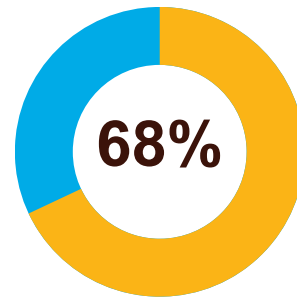


### Frequency of UPass Use

Percentage of students who use their UPass from 1-6 times per weekday.



Undergraduate Students

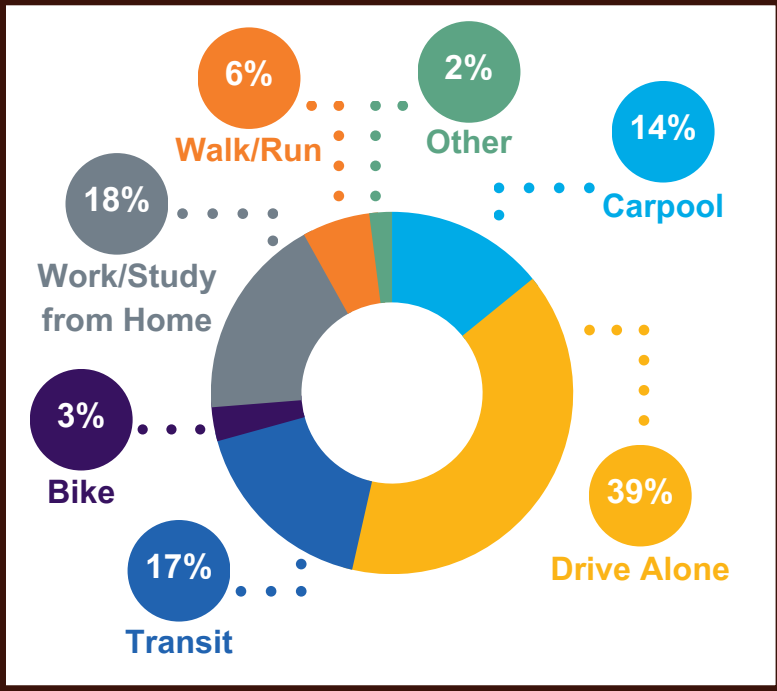


Graduate Students

# Bannatyne Campus Highlights

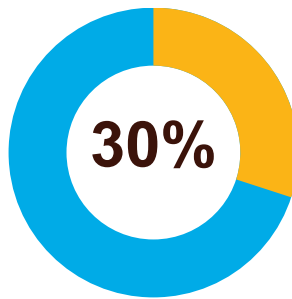
## Current Travel

This is how students, faculty and staff travel to and from Bannatyne Campus.

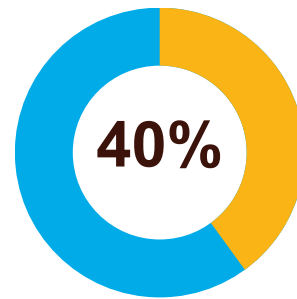


## Frequency of UPass Use

Percentage of students who use their UPass from 1-6 times per weekday.



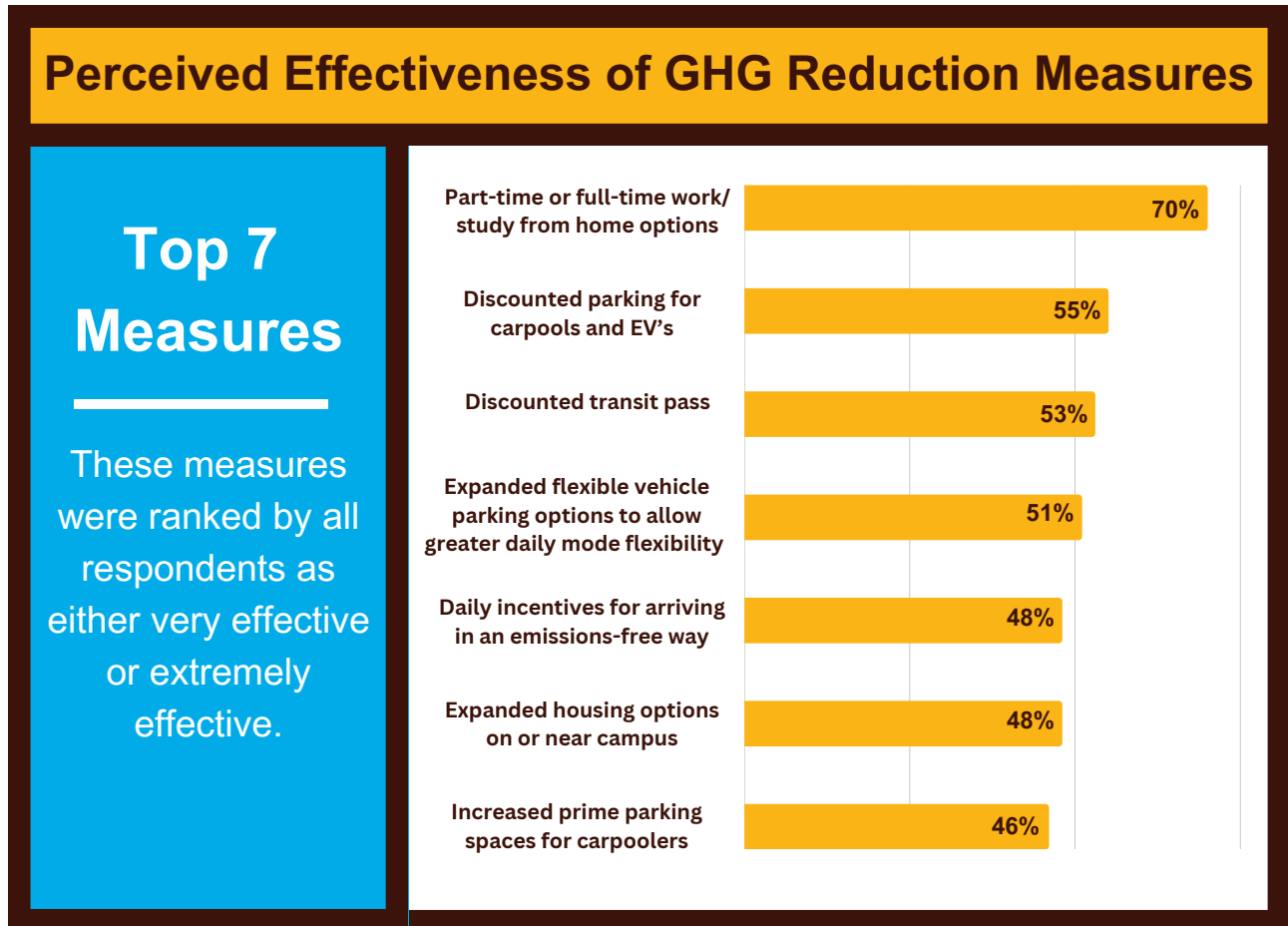
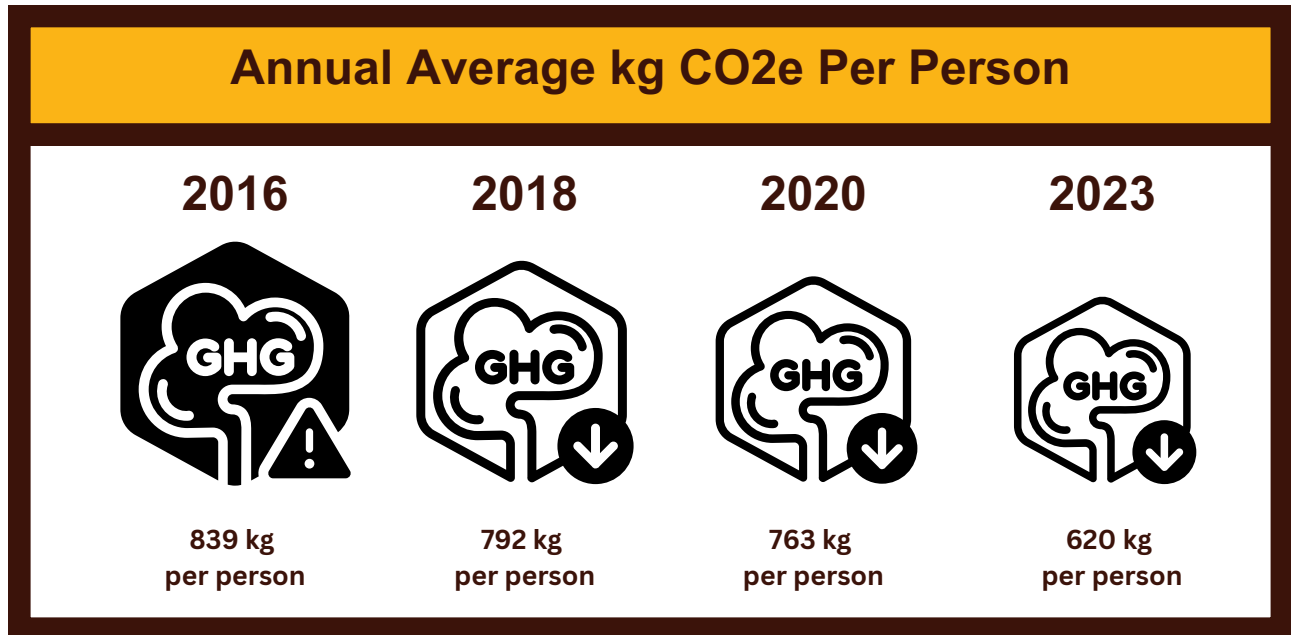
Undergraduate Students



Graduate Students



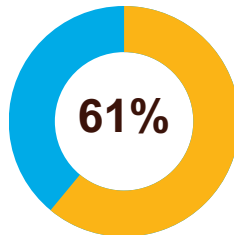
# GHG Emissions Summary (All Respondents)



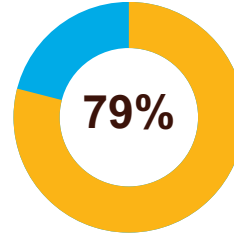
# Faculty & Staff Highlights



## Interest in Flexible Work from Home Option

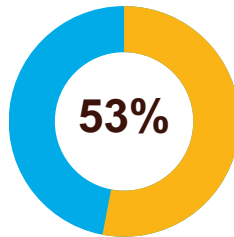


Faculty

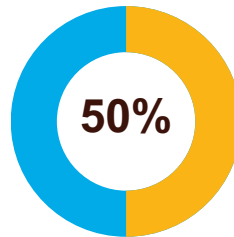


Staff

## Interest in Discounted Transit Pass



Faculty

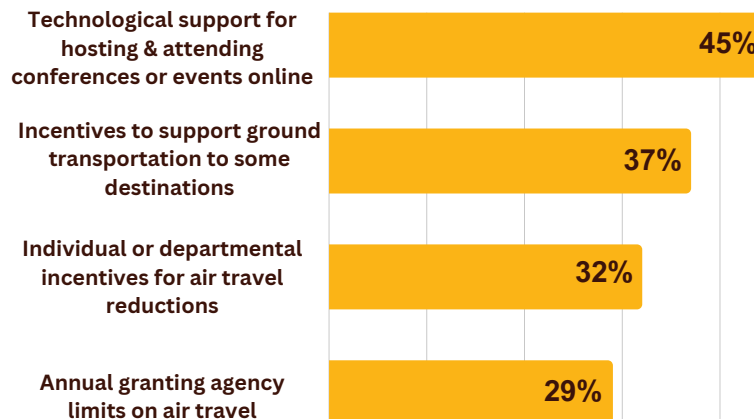


Staff

## Perceived Effectiveness of GHG Reduction Measures Related to Business and Research Travel

### Top 4 Measures

These measures were ranked by faculty & staff as either very effective or extremely effective.



## 1. Project Overview

The Campus Commute Survey serves to establish current commuting patterns of University of Manitoba students, staff and faculty, and the associated greenhouse gas (GHG) emissions. This report outlines those results and provides a comparison with results from the 2016, 2018 and 2020 surveys. The recommendations section looks at measures that could be the most effective in supporting campus members to bike, bus, walk or carpool rather than drive alone, thereby reducing emissions and potentially providing health benefits through active and sustainable travel.

These results and recommendations can be used by the University of Manitoba to set targets and design an action plan to reach those targets, help pinpoint where to spend time, energies and available funds to achieve the biggest impact, and contribute toward sustainability, carbon-neutrality and well-being goals at the University of Manitoba. The results also serve as a growing collection of data to help evaluate trends and changes in travel behaviour and associated GHG emissions.

The online survey was conducted between **January 16-31, 2023**.

To encourage participation in the survey, a communications and outreach plan was conducted jointly through the Office of Sustainability, Marketing and Communications Office, and Green Action Centre. Students, employees, and faculty members were notified and reminded of the transportation survey through a variety of methods, including:

- Emails to University students, employees and faculty
- Stories in *UM Today*, *Student Weeklies*, and *Week at a Glance*
- Social media (Facebook and Twitter)
- Printed posters
- Outdoor coroplast signage
- UMFM PSAs
- Distribution of 2,000 business cards with survey information and URL
- Two survey lounges on Bannatyne and Fort Garry campuses, with refreshments and opportunities to complete the survey on-site
- Office of Sustainability's green office reps and staff champions



## 2. Context

The University of Manitoba offers a number of commuting-related strategies, programs and supportive infrastructure.

Existing commuting-related resources, strategies and infrastructure include:

- GoManitoba.ca subscription - free, online ride-matching service for carpooling partners, bike and transit mentor matches.
- Premium parking spots for carpoolers – approximately 40 stalls for students/staff with permits for Lots U, B, Q and E (Bannatyne).
- Parking permits that allow multiple vehicles on one permit.
- Flexible parking passes for students that accommodate class schedules (MWF versus TTh) and alternative transportation.
- Electric vehicle charging stations - available in H, ALC, and B lots for staff or student permit holders or paid casual parkers.
- Moped and motorized scooter designated spots.
- Secure bike parking:
  - Fort Garry Bike Station - covered and enclosed for 100 bikes with card-lock system; 18 secure, weather-protected bike lockers available for rent through the Office of Parking and Transportation; 24/7 public bike repair station located outside of the UMCycle Bike Kiosk.
  - Bannatyne Bike Cage – enclosed parking for 70 bikes; bicycle repair tools and pumps available for sign-out at the Neil John Maclean Health Sciences Library during regular library hours.
- Student U-Pass that provides unlimited access to Winnipeg Transit services for full-time students during the Fall and Winter semesters.
- Shower-only access at Max Bell Centre on Fort Garry campus and Joe Doupe Centre on Bannatyne campus for faculty and staff; students receive a membership to the recreational facilities as part of their tuition.
- Additional showers exist in Physical Plant, ARTlab, and Education with varied access.
- Fort Garry Shuttle Bus provides transit service around the campus on weekdays from September to April.
- New Transit Station on Dafoe opened December 2017.
- Safewalk Program and Security Service's Bike Unit provide a safe environment for all campus users including students, staff, faculty and visitors.
- Accessible shuttle van operated by Physical Plant and booked through Student Accessibility Services.
- Bike fleet program for University staff on Fort Garry campus.
- Online UM transportation information (<http://umanitoba.ca/visit-university-manitoba>).
- Sustainable Transportation Strategy (2017-2022)
- Pedestrian and Cycling Master Plan (2018-2033)
- Eastern Transportation Corridor multi-use pathway and recreation corridor.

Pending initiatives include:

- Development of the Southwood Lands adjacent to the Fort Garry campus.
- Additional bike cage developments in ALC parking lot and Bannatyne campus.
- Electric vehicle charging stations to be installed in E lot of Bannatyne campus.

Initiatives by the City of Winnipeg that have a significant impact on travel to the campuses include the Southwest Rapid Transit line, with associated multi-use paths for pedestrians and cyclists, leading to the Fort Garry campus and the protected bike lane installed on McDermot Avenue connecting to the Bannatyne Campus.

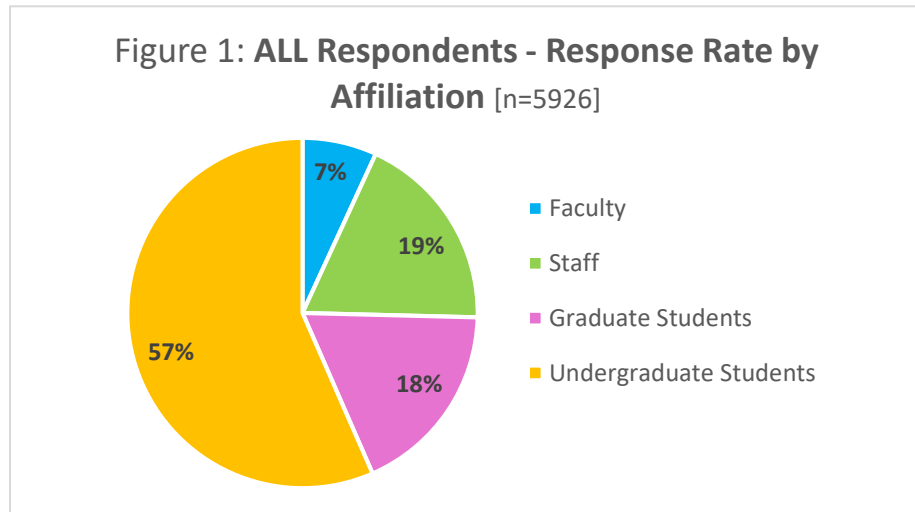
### 3. Survey Responses

#### A. Response Rate

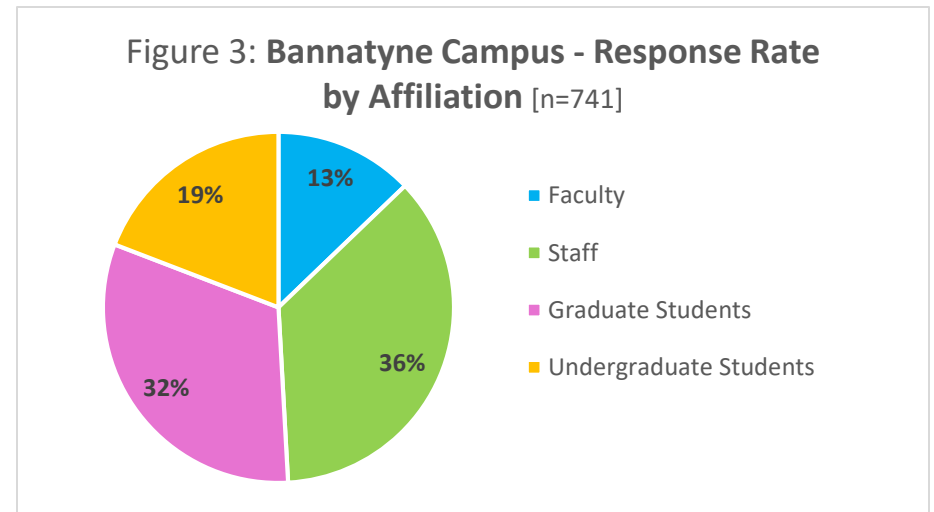
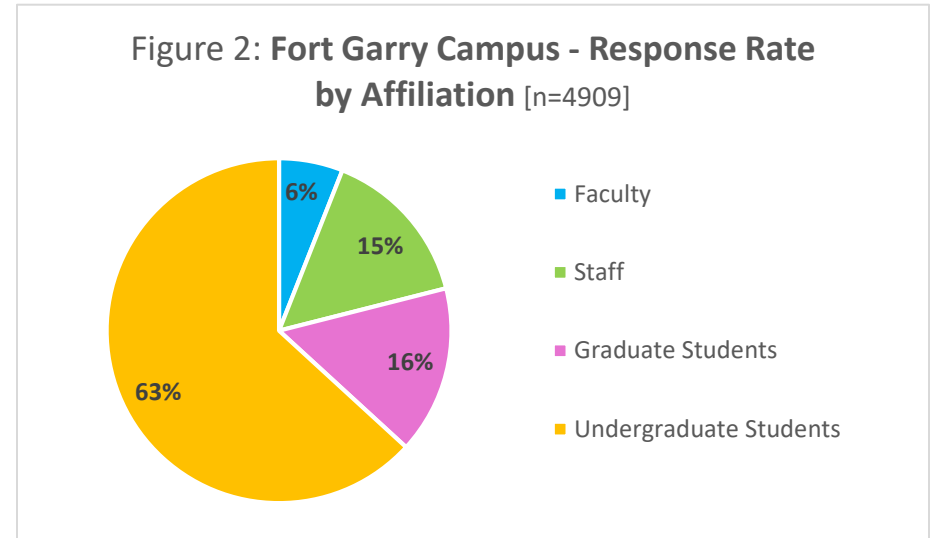
The campus population at the time of the survey was estimated at 38,716, which represents 1,929 faculty members, 7,483 staff and 29,304 students.

A total of 5,926 valid surveys were completed online, representing a 15.3% response rate. This compares with a 9.4% response rate in 2020, 17% response rate in 2018, and 10% in 2016 (after excluding non-university employees).

Figure 1 shows the breakdown by affiliation for all respondents [n=5926] and includes those who identified Smartpark, William Norrie Centre or 'Other' as their primary location. (Other locations primarily included St. Boniface Research Centre, Ian N. Morris Research Farm, Seven Oaks General Hospital, the National Microbiology Lab, and Work from Home Full Time). Over half (57%) of the 2023 survey respondents represent Undergraduate Students, compared with 49% in 2020 and 68% in 2018 results.

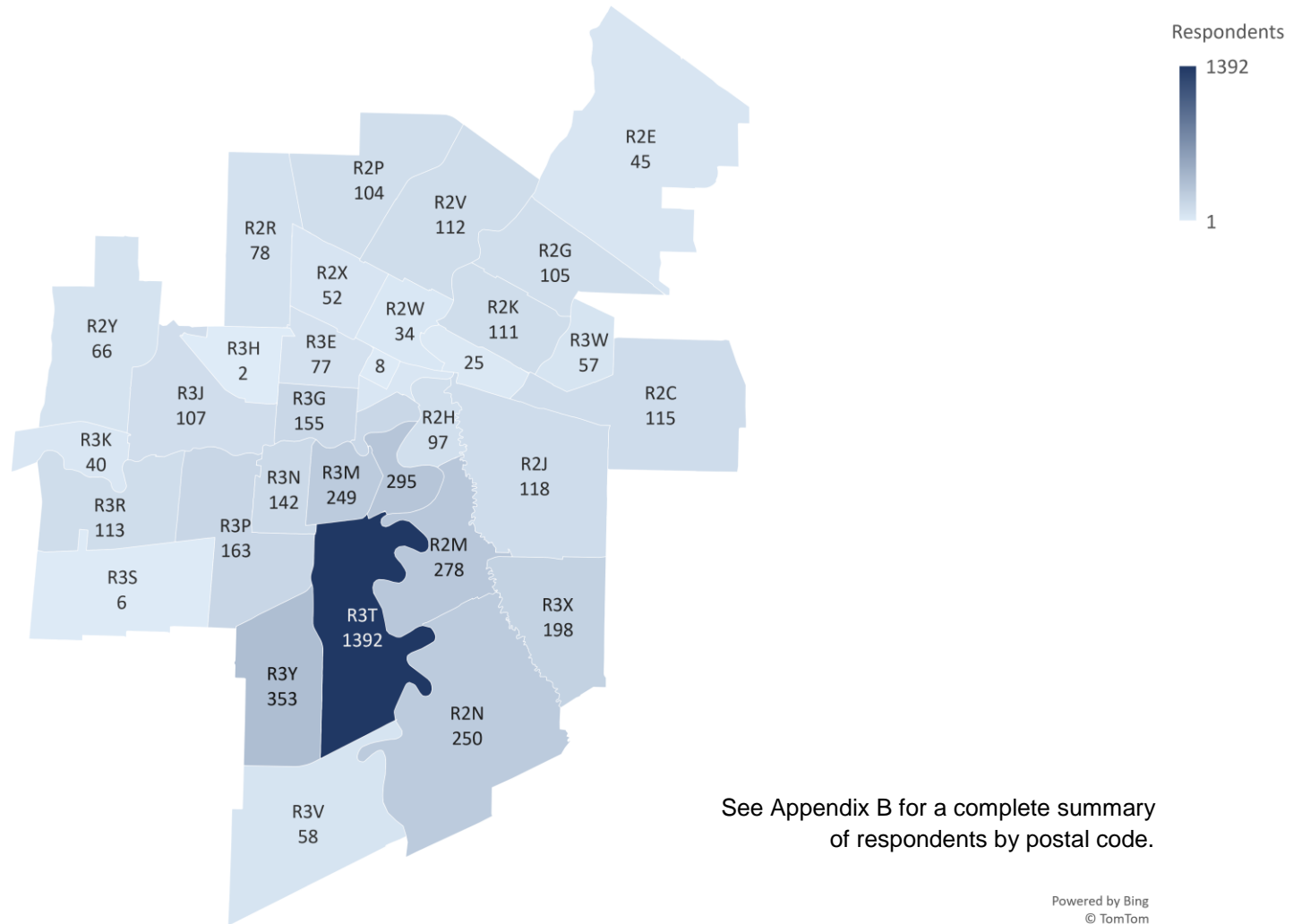


Figures 2 and 3 show the breakdown of response rate by affiliation for the Fort Garry and Bannatyne campuses.

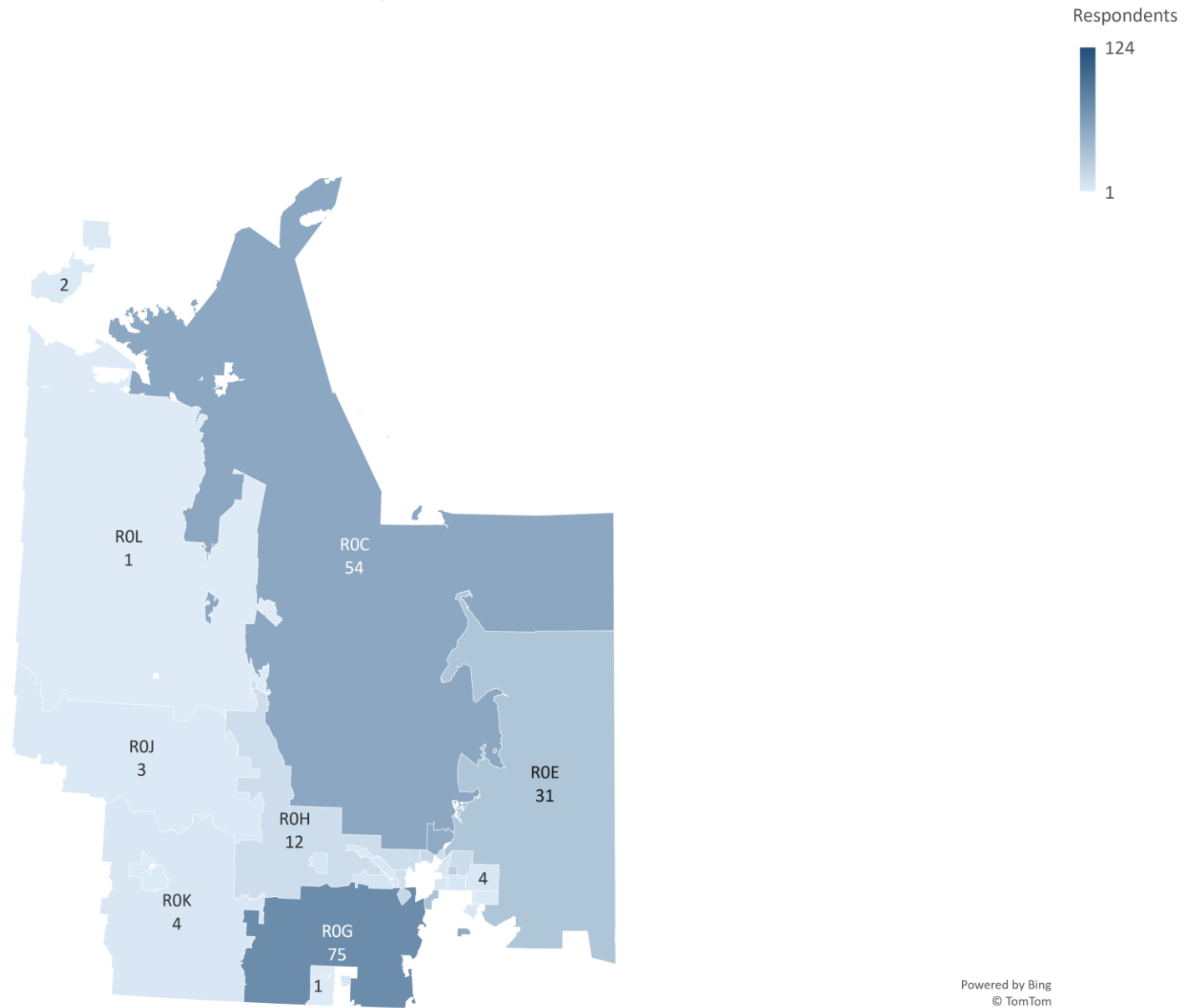


## B. Geographic Distribution of Respondents

Map 1: **Geographic Distribution of Respondents in Winnipeg** [n=5197]

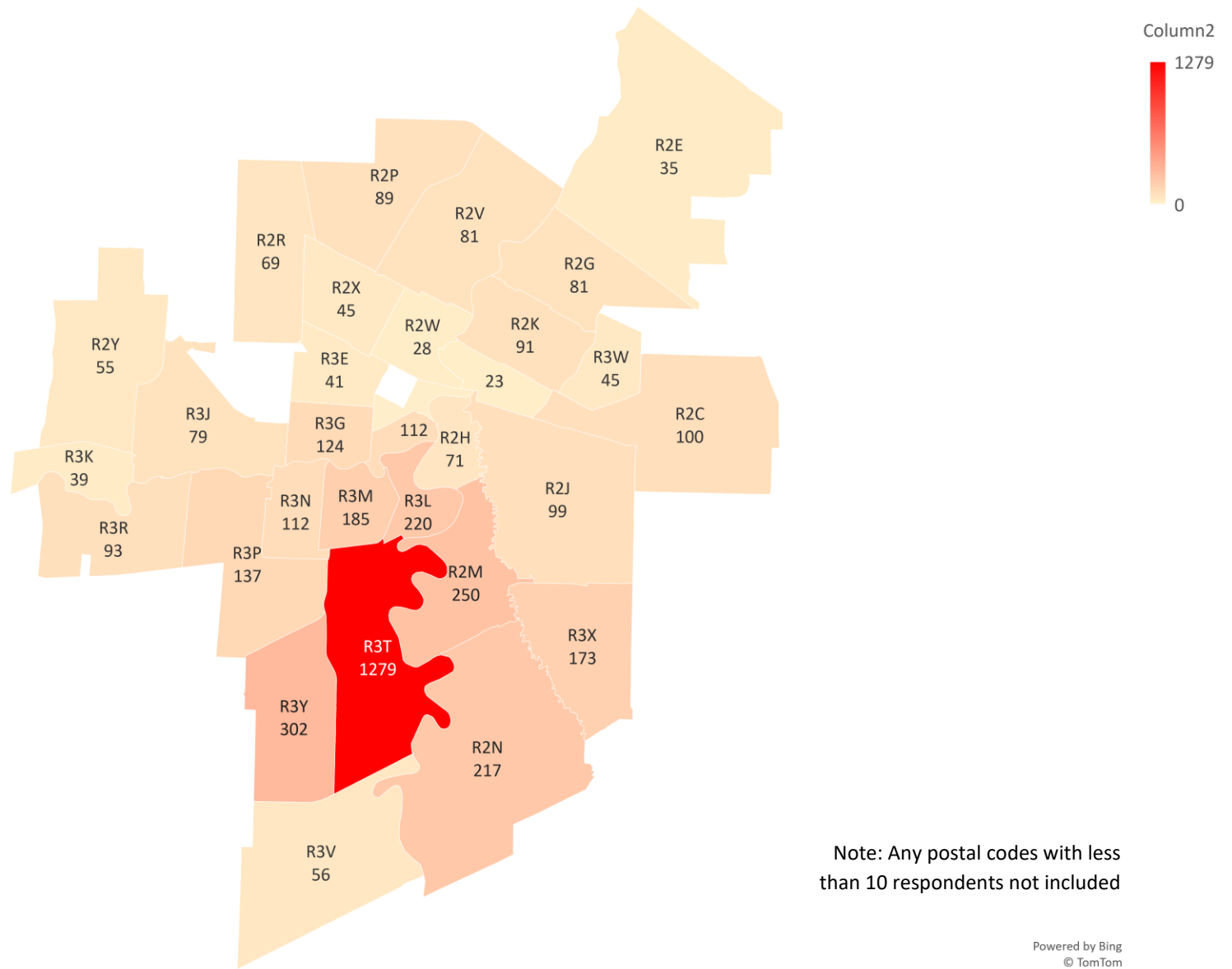


Map 2a: Geographic Distribution of Respondents Outside Winnipeg [n=616]



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Map 3: Fort Garry Respondents - Winnipeg [n=4352]

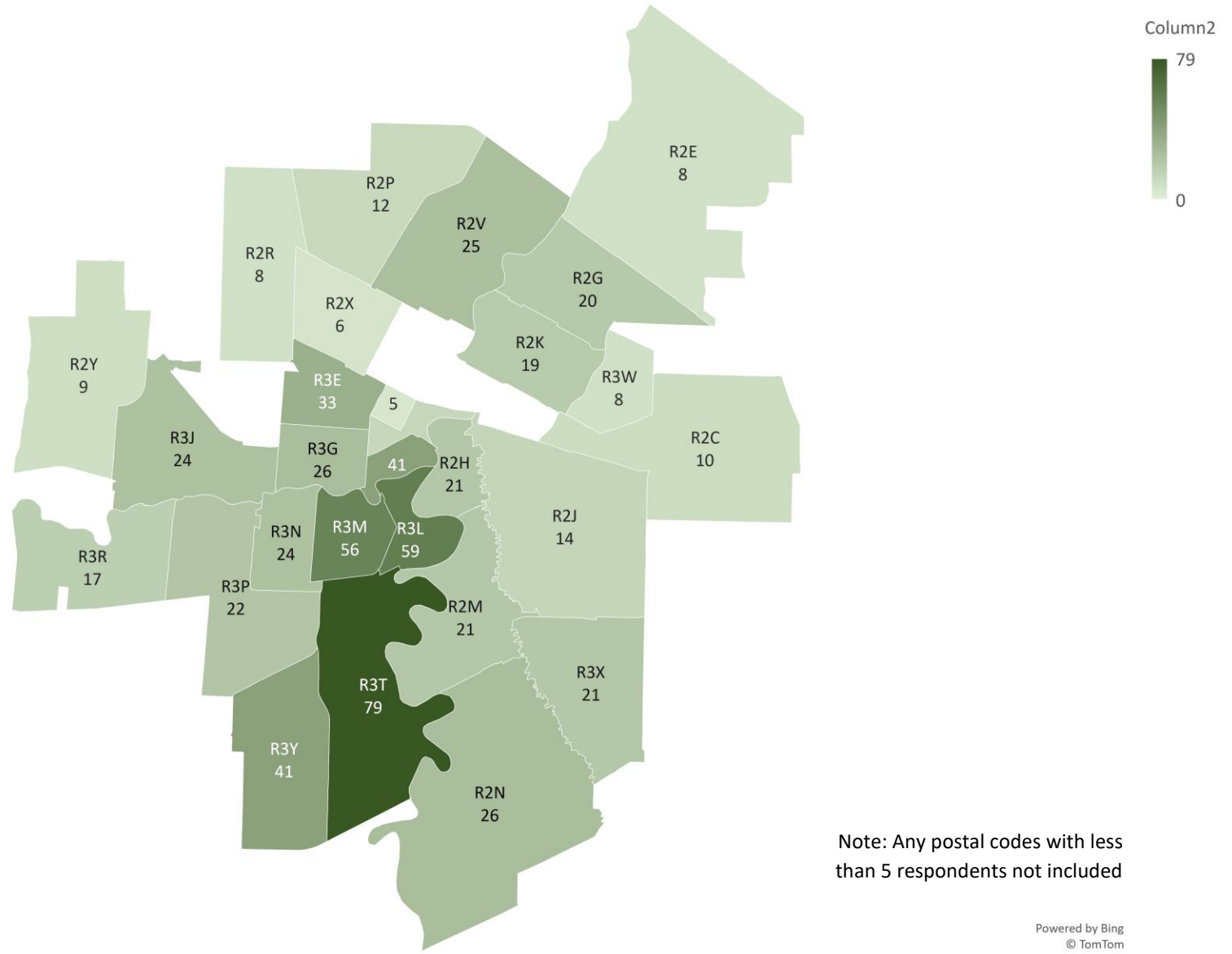


Note: Any postal codes with less than 10 respondents not included

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Map 4: Bannatyne Respondents - Winnipeg [n=668]



## 4. Mode Share

One of the main purposes of the survey is to establish how members of the University of Manitoba community—students, staff and faculty members—travel to and from their primary campus. In this section, we present aggregate data for all respondents, as well as by affiliation and by campus.

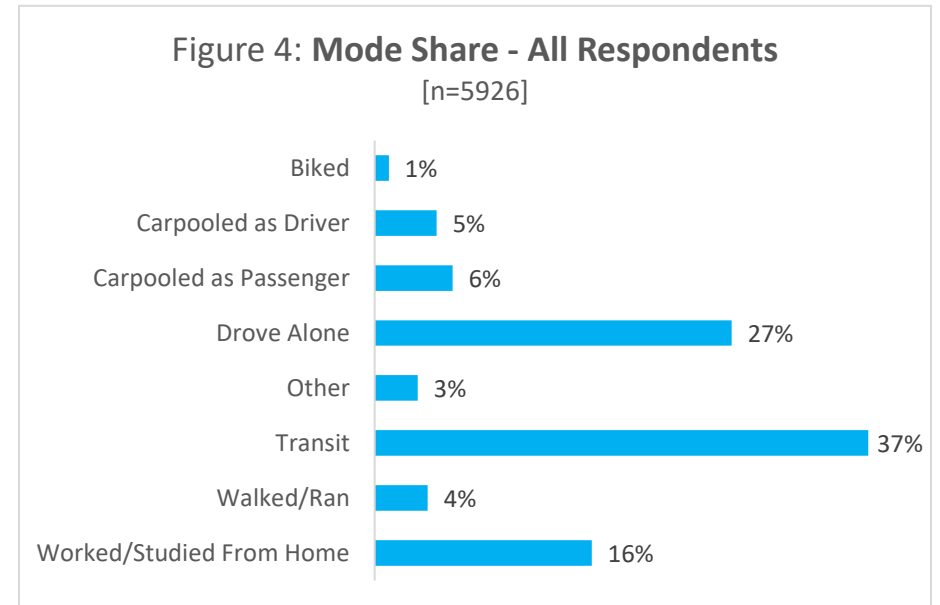
**Change in methodology:** In the 2023 survey, respondents identified how they travelled to campus on each day of the week prior to completing the survey between January 16-31. This represents a change in methodology from previous years in which respondents assigned an estimated percentage of trips made using a given mode and number of days the respondent travels to their primary campus. To capture multiple modes, respondents in previous surveys could specify within the given time frame (either September to April or May to August) what percentage of trips they typically make by each mode, e.g. 60% by Transit and 40% by Carpool, and how many days per week they travel to their primary campus.

The change in methodology in 2023 was intended to capture a more accurate picture of how campus members commute. However, it affected the ability to compare year-over-year results. Consequently, when comparing the 2023 results with earlier surveys, the comparisons have been made using the September-April results from previous surveys.

**Worked/studied from home:** The 2023 survey was the first to capture the option of working or studying from home, due to the impacts of Covid-19.

**‘Other’ modes:** In figures 4-7, the ‘Other’ modes include Park & Ride, E-bike/E-scooter, Motorcycle/Scooter/Moped, Taxi/Ridehailing service (e.g. Uber), and Transit Plus. These modes are not included individually, as they each represented less than 1% of responses.

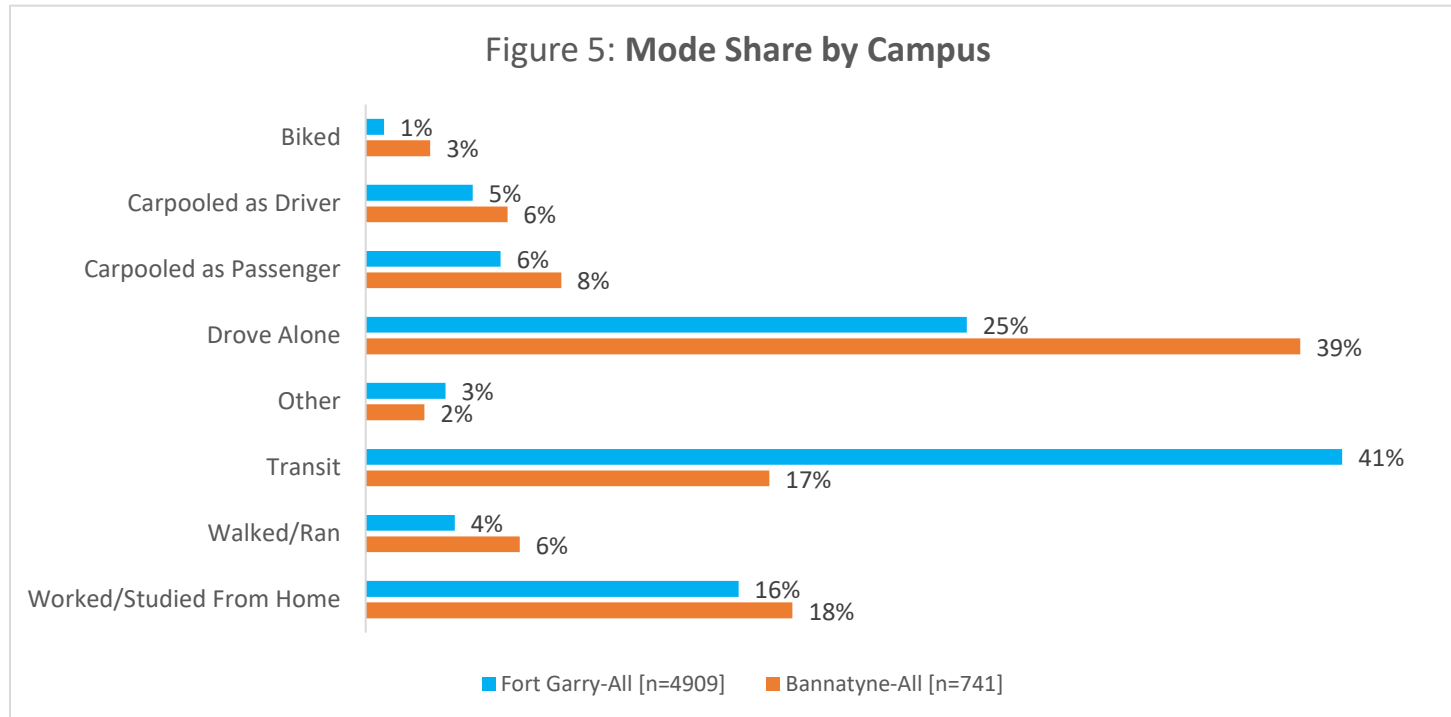
Figure 4 shows the mode share for all respondents in the 2023 survey.



## A. Mode Share by Campus

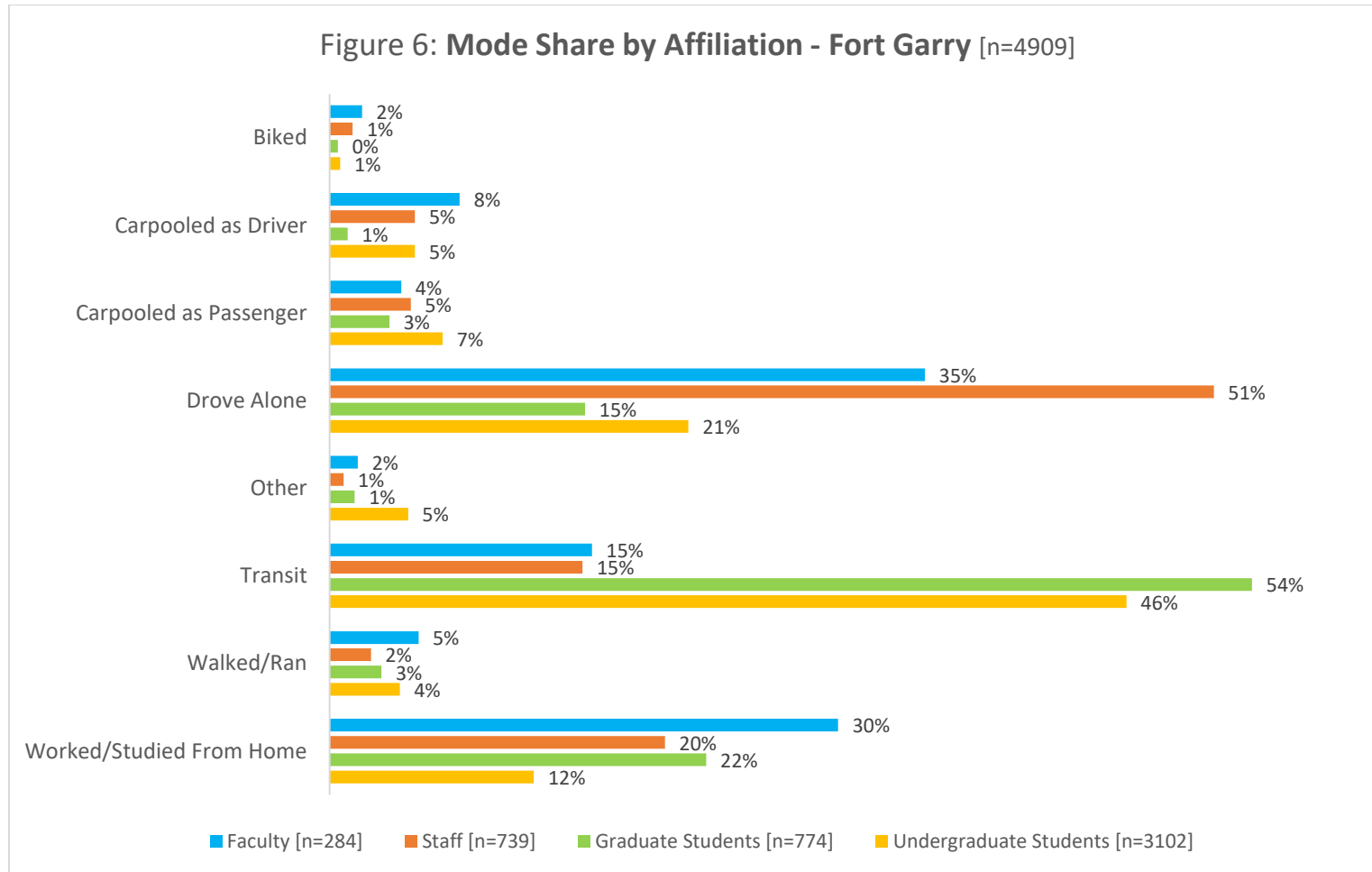
As shown in Figure 5, there is a marked difference between mode splits for the two campuses, with Fort Garry respondents reporting a much higher use of Transit, with 41% mode share versus Bannatyne at 17%, similar to the 2020 results. The converse is reflected in the Drove Alone mode share, with 25% for Fort Garry respondents versus 39% for Bannatyne.

The mode share differences between campuses are similar overall to 2020 results except for the dampening effect of the Worked/Studied From Home option which primarily affected the Drove Alone mode share.

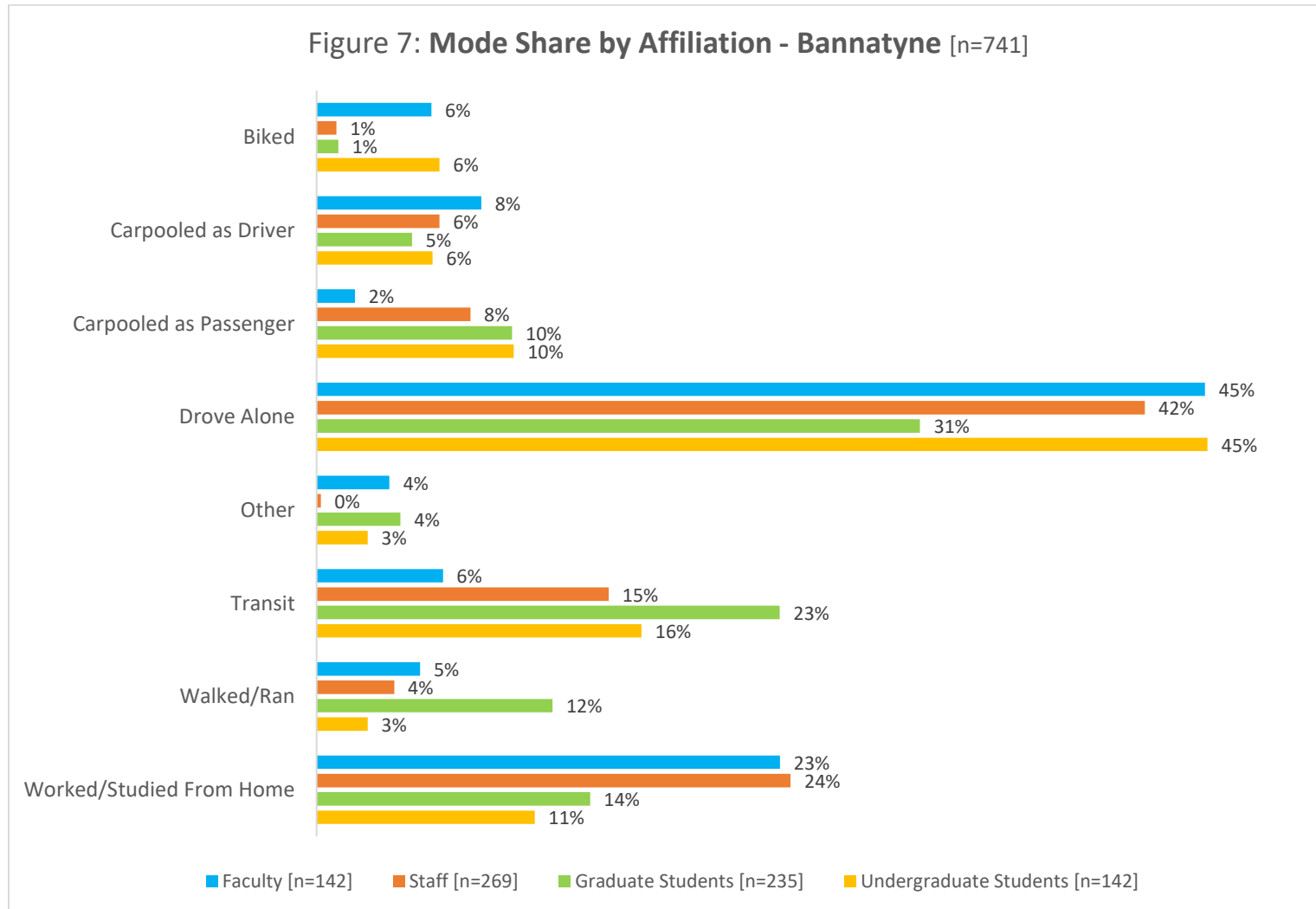


## B. Mode Share by Campus and Affiliation

The mode shares by affiliation and campus are shown in Figures 6 and 7. Undergraduate and Graduate Students at Fort Garry campus primarily use Transit (46% and 54% respectively) while Faculty and Staff primarily Drive Alone (35% and 51%). The 'Other' category includes Park & Ride, E-bike/E-scooter, Motorcycle/Moped/Scooter, Taxi/Ridehailing, and Transit Plus.



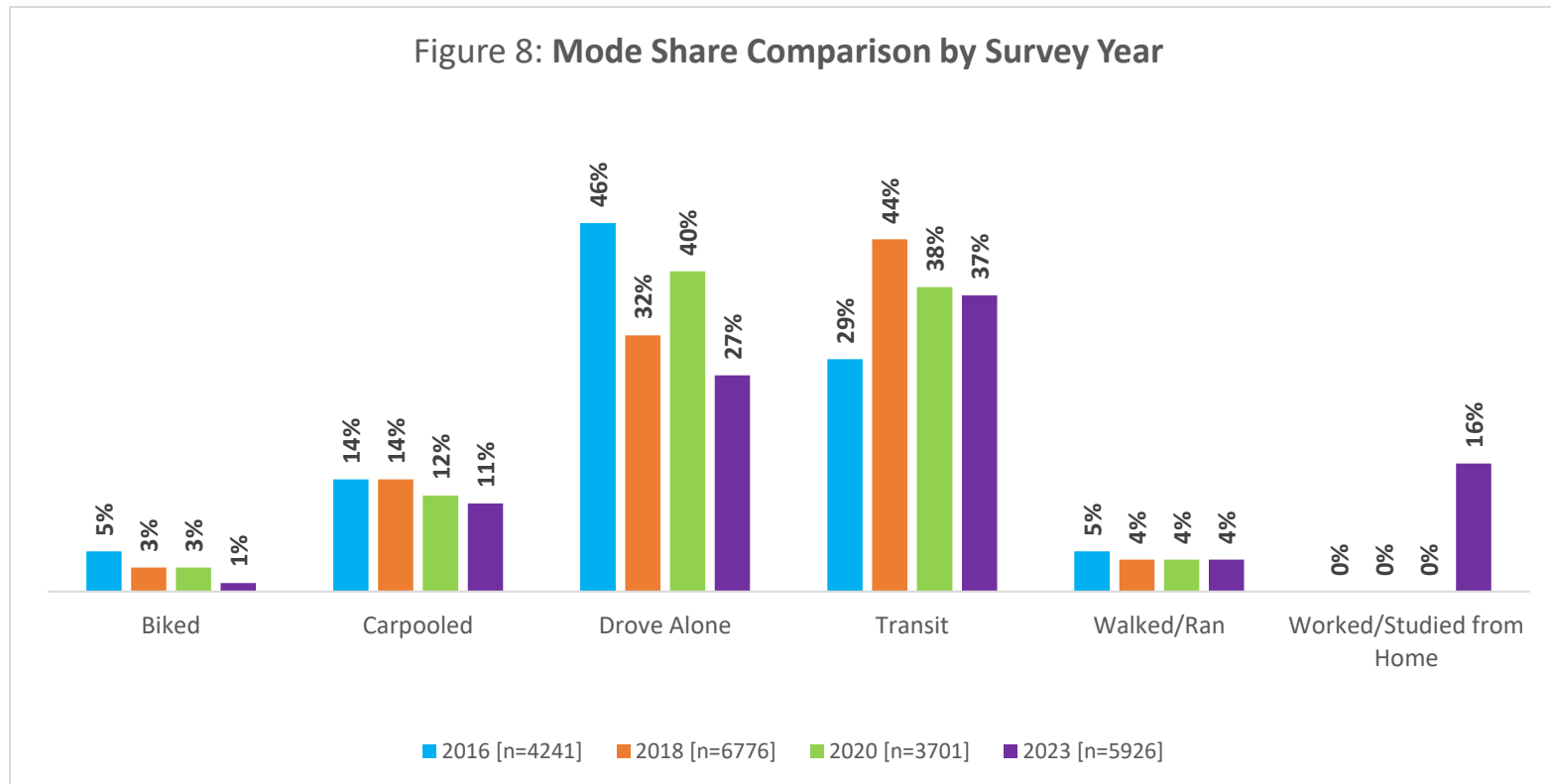
At Bannatyne campus, the primary mode for Faculty, Staff and Undergraduate Students is Drive Alone (45%, 42% and 45% respectively) while Graduate Students are split among Drive Alone (31%), Transit (23%) and Carpool (15%). The 'Other' category includes Park & Ride, E-bike/E-scooter, Motorcycle/ Moped/Scooter, Taxi/Ridehailing, and Transit Plus.



### C. Mode Share Comparison by Survey Year

The results for each survey year represent a different pool of respondents, particularly for students. However, the mode share can, in conjunction with narrative responses, aid understanding of trends and issues over time.

The 2023 mode shares for all respondents in Figure 8 show similar results compared with the September-April period for previous survey years except for Drive Alone, which was dampened by the Work/Study From Home option. The Bike mode share was also down due to the change in survey methodology with respondents identifying the exact mode used in the week prior to taking the survey between January 16-31, 2023.



*Note: Totals may not add to 100% as the results do not include 'Other' responses*

### D. Mode Share Comparison by Year and Affiliation

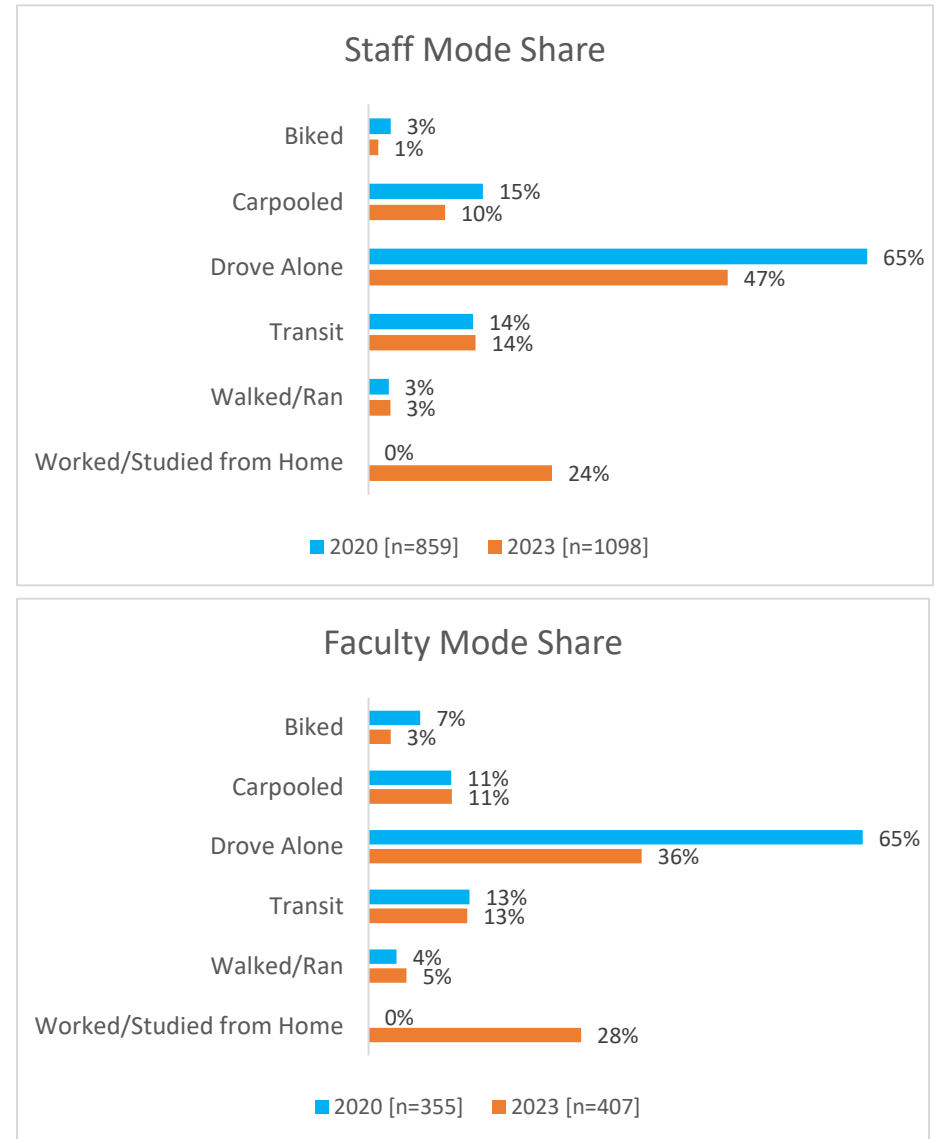
Figure 9 compares mode share by faculty members and staff respondents for the 2020 (September-April period) and 2023 surveys. Note that the totals may not add to 100% as the results do not include 'Other' responses.

Mode share for staff showed a drop in Drive Alone (from 65% to 47%) and Carpool (from 15% to 10%) with the new option of Work From Home (24%) in 2023. Bike mode share also declined, from 3% to 1%, which may reflect the change in survey methodology for 2023 where respondents identified the exact mode used in the week prior to filling out the survey in January 2023 instead of estimating the percentage mode used for each option in 2020 during the September-April period.

Results for faculty members showed a similar decline, with the Drive Alone mode share decreasing even further, from 65% in 2020 to 36% in 2023, with the introduction of the Work From Home option (28%). Bike mode share is lower in 2023 (3%) versus 2020 (7%) which again may be caused by the change in survey methodology noted above.



Figure 9: Mode Share Comparison 2020 vs 2023



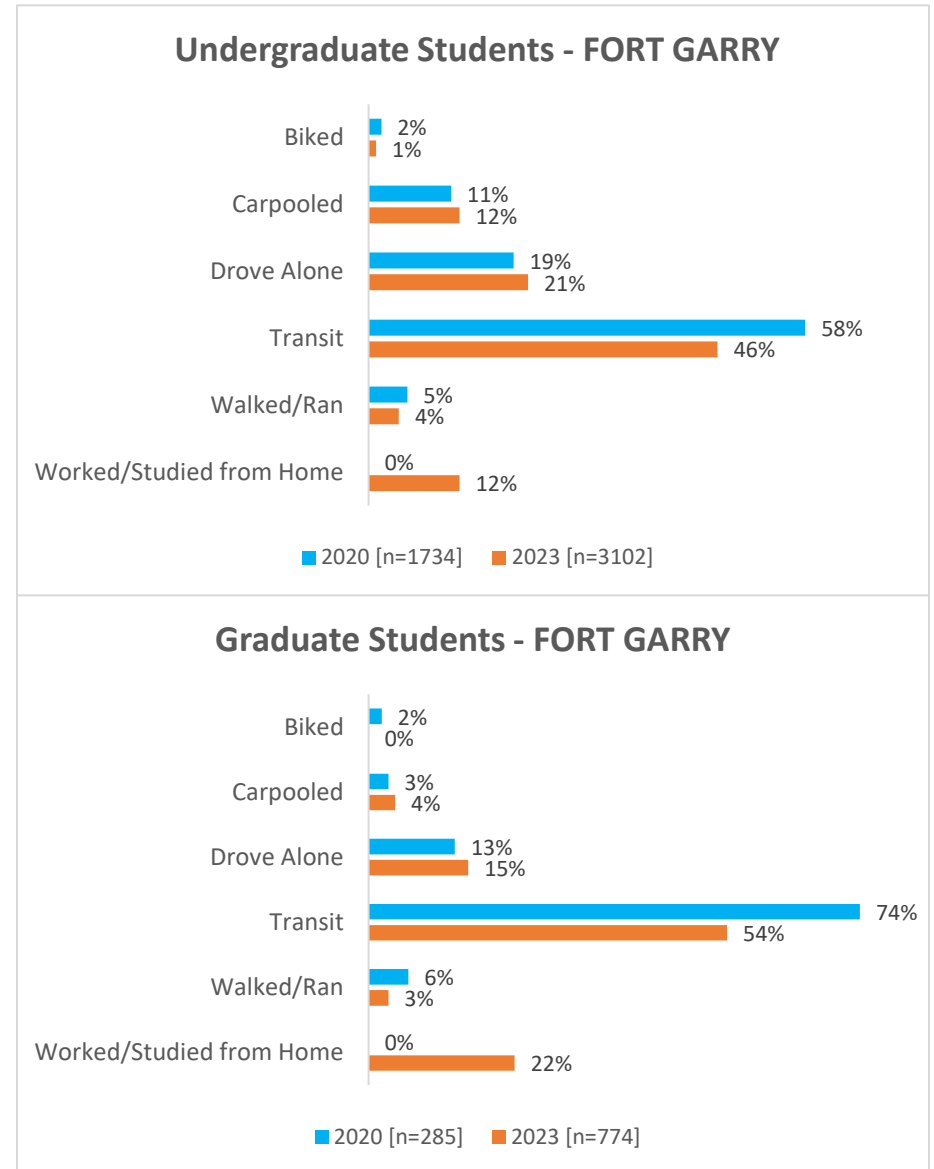
Figures 10 and 11 compare mode share by campus for Undergraduate and Graduate Students for the 2020 and 2023 survey results.

In Figure 10, Undergraduate Students at Fort Garry campus showed a decline in Transit mode share between 2020 (58%) and 2023 (46%) with the introduction of the Work/Study From Home option in 2023 (12%). Other mode shares showed a slight increase in Carpool (11% to 12%) and Drive Alone (19% to 21%).

Results were similar for Graduate Students at Fort Garry, with Transit mode share declining from 74% in 2020 to 54% in 2023, with the introduction of the Work/Study From Home option in 2023 (22%). Carpool and Drive Alone showed a slight increase from 3% to 4% and 13% to 15% respectively. Bike and Walk/Run mode share both declined in 2023 compared with 2020, from 2% to 0% and 6% to 3% respectively. This may have been influenced by the change in survey methodology in 2023 where respondents identified the exact mode used in the week prior to filling out the survey in January 2023 instead of estimating the percentage mode used for each option in 2020 during the September-April period.



Figure 10: Mode Share 2020 vs 2023 Fort Garry



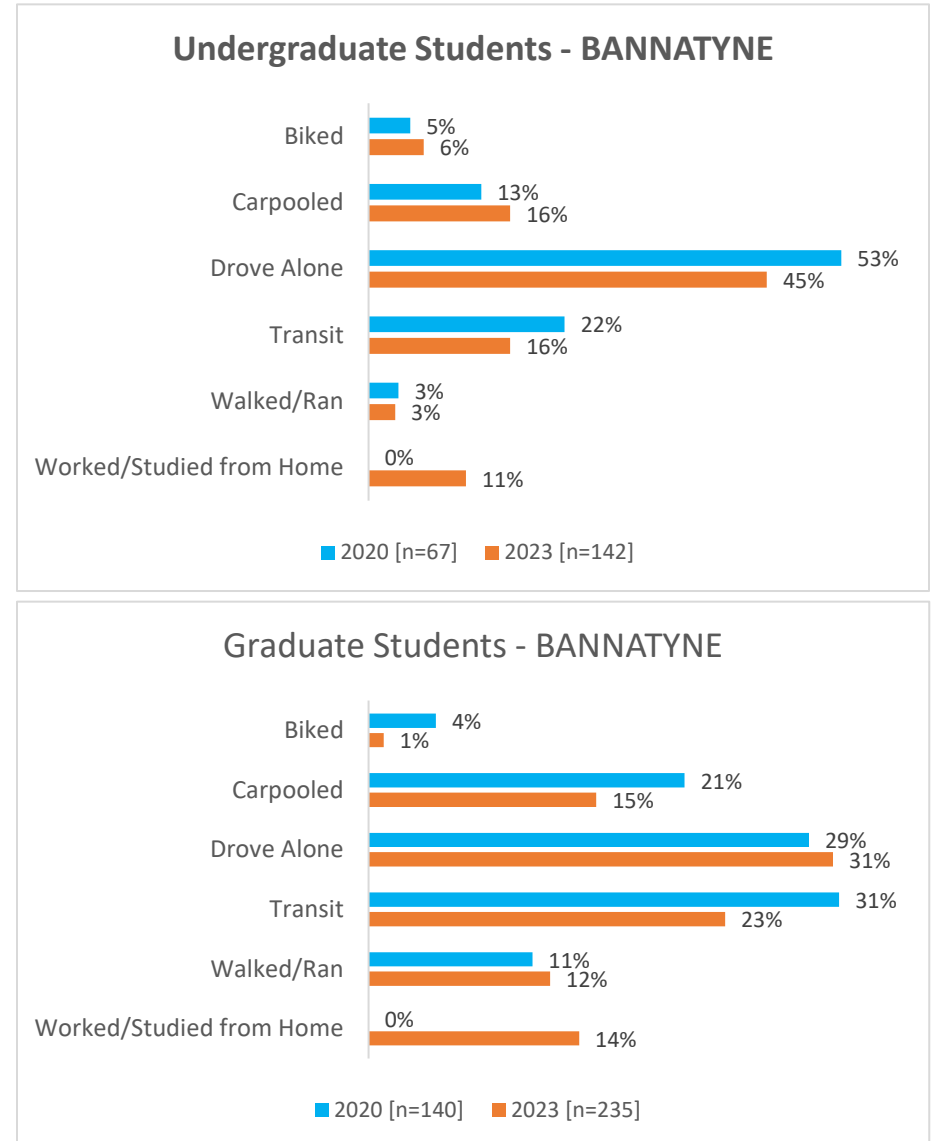


At Bannatyne campus, shown in Figure 11, the Drive Alone mode share for Undergraduate Students declined from 53% in 2020 to 45% in 2023 and Transit dropped from 22% to 16%, with the introduction of the Work/Study From Home option in 2023 (11%). Bike and Carpool both increased slightly in 2023, from 5% to 6% and 13% to 16% respectively.

For Graduate Students at Bannatyne, the Drive Alone mode share increased from 29% to 31% while Transit declined from 33% to 23%, with the introduction of Work/Study From Home in 2023 (14%). Bike mode share declined from 4% in 2020 to 1% in 2023 while Walk/Run increased from 11% to 12%.



Figure 11: Mode Share 2020 vs 2023 Bannatyne



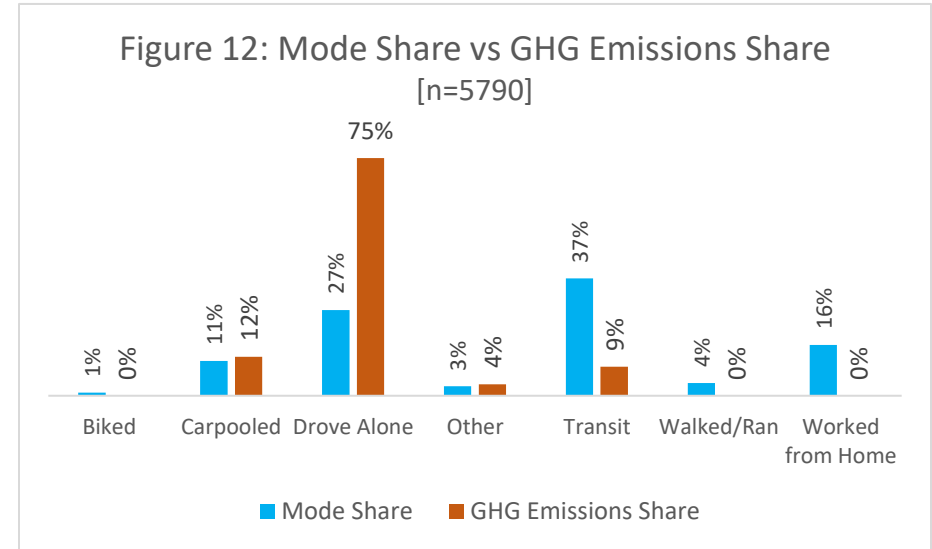
## 5. GHG Emissions

### A. Mode Share vs GHG Emissions Share

The number of responses [n=5790] for the calculation of commuting emissions is less than the number of overall survey responses [n=5926] due to incorrect or incomplete postal codes, which meant the distance of their commute could not be identified. While these survey responses could not be included in the calculation of emissions, the remainder of their data has been included in the reporting of survey results.

As shown in Figure 12, Drive Alone accounts for 27% of mode share for all respondents but accounts for the bulk of emissions (75%). Carpooling, with more than one adult travelling together by car, represents 11% of mode share and 12% of emissions. Transit represents 37% of mode share but only 9% of overall GHG emissions. Biking, walking and working from home result in zero emissions and represent 21% combined mode share.

'Other' includes Park & Ride, E-bike/E-scooter, Motorcycle/ Moped/Scooter, Taxi/Ridehailing, and Transit Plus, with Park & Ride (i.e. driving to a bus stop and riding a bus for the remainder of the trip) accounting for 3% of the emissions associated with this category.



## B. Average Emissions Per Respondent and Extrapolated to Entire Campus

Table 1: Average Tonnes GHG Emissions Per Respondent Year-round

All Respondents [n=5790]	Drove Alone	Carpooled	Transit	Park & Ride	Other	Total	Per Respondent
CO2 Year-round (tonnes)	2686.16	442.08	320.54	125.2	5.28	3579.3	0.62
CH4 Year-round (tonnes)	0.163	0.0268	0.008	0.0072	0.0008	0.2	
N2O Year-round (tonnes)	0.0256	0.0042	0.0264	0.0022	0	0.06	
<b>GHG Emissions Year-round<sup>1</sup> (tonnes)</b>	<b>2697.88</b>	<b>444.02</b>	<b>328.6</b>	<b>126</b>	<b>5.3</b>	<b>3601.8</b>	<b>0.62</b>

<sup>1</sup>Note: GHG = CO2 + (CH4\*25) + (N2O\*298)

Table 2: Average Tonnes GHG Emissions Extrapolated to Entire Campus Year-round

Entire Campus [n=38716]	Drove Alone	Carpooled	Transit	Park & Ride	Other	Total	Per Person
<b>GHG emissions Year-round (tonnes)</b>	<b>18039.92</b>	<b>2969.02</b>	<b>2197.26</b>	<b>854.48</b>	<b>35.94</b>	<b>24096.62</b>	<b>0.62</b>

The GHG emissions for all survey respondents totalled 3601.8 tonnes for an average emissions per respondent of 0.62 tonnes. Extrapolated to the entire campus community, the year-round GHG emissions totalled 24096.62 tonnes.

### Distance Limits

To help reduce potential skewing of distance data provided by respondents, an upper limit was placed on one-way distances for the following modes:

Transit - 30 km | Driving - 150 km | Walking - 10 km

Responses exceeding these limits were removed from the calculation of GHG emissions, total number of kilometres travelled, and number of trips made to and from campus.

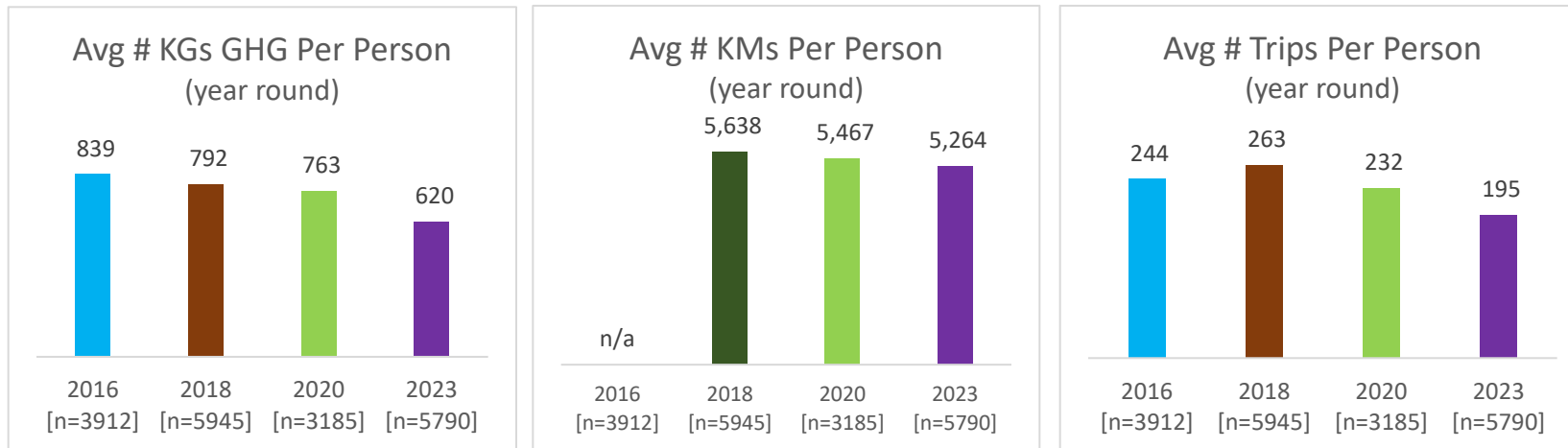
### C. Comparison by Year: KGs GHG, # KMs and # Trips Per Respondent

Figure 13 compares, per respondent, the year-round average number kilograms CO<sub>2</sub>, average number kilometres travelled, and average number trips to and from campus from survey results in 2016, 2018, 2020 and 2023.

Compared to previous survey results, there was a significant decline across all three categories in 2023. This is not unexpected, given the increased number of faculty and staff working part or full time from home, and incurring fewer trips to and from campus and the associated emissions.

These results should be interpreted with caution, as the pool of respondents, especially students, changes from survey to survey. In addition, the 2016 survey included non-University employees on campus while the 2018 and 2020 surveys included students, faculty and staff only, and the 2023 survey methodology changed. In the 2023 survey, respondents identified how they travelled to campus on each day of the week prior to completing the survey between January 16-31. In previous surveys, respondents assigned an estimated percentage of trips made using a given mode and number of days the respondent travels to their primary campus. To capture multiple modes, respondents in previous surveys could specify within the given time frame (either September to April or May to August) what percentage of trips they typically make by each mode, e.g. 60% by Transit and 40% by Carpool, and how many days per week they travel to their primary campus.

Figure 13: Comparison by Year – KG GHG Emissions, # KM and # Trips Per Respondent



## 6. Anticipated Summer Mode Change

Respondents were asked if they anticipate changing to a different mode during the warmer months and provide up to 2 modes. A total of 1,635 respondents (27.5%) indicated they do anticipate a change.

Figure 14 shows the total for all 1640 respondents who indicated they anticipate a mode change and Table 1 shows the breakdown by affiliation. Given respondents were able to choose up to 2 modes in the warmer months, the percentages will not add up to 100%.

Other (where identified by respondent) includes: kayak; in line skate; drive then bus, bike or walk part way; bus one way and walk the other; or bike part way then bus.

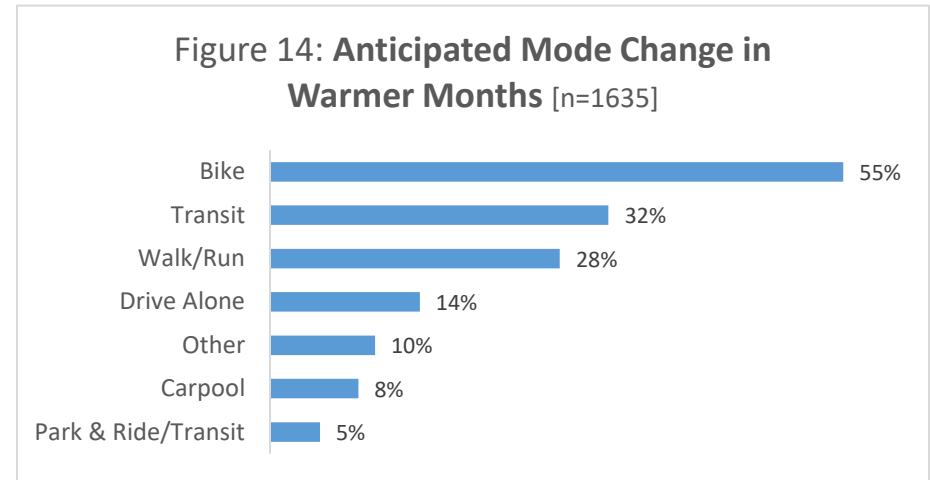


Table 3: Anticipated Mode Change by Affiliation [n=1635]

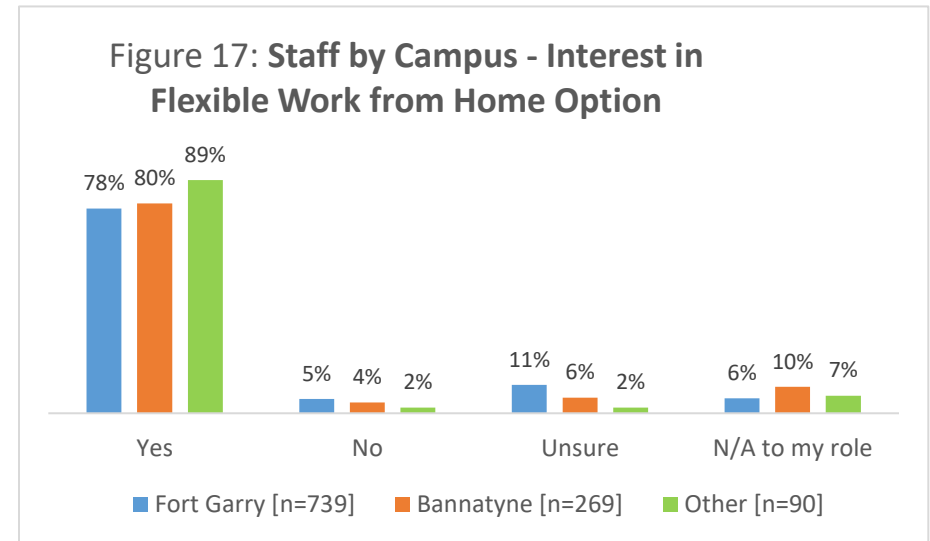
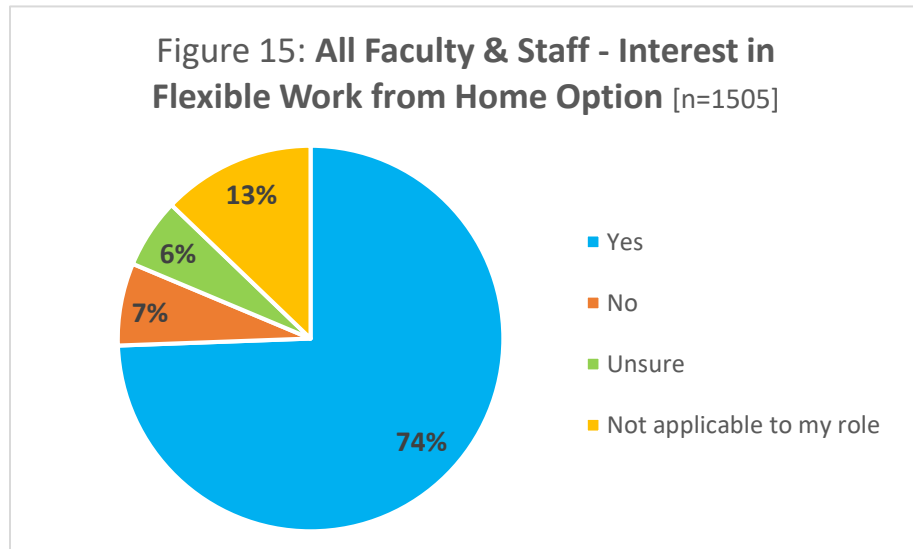
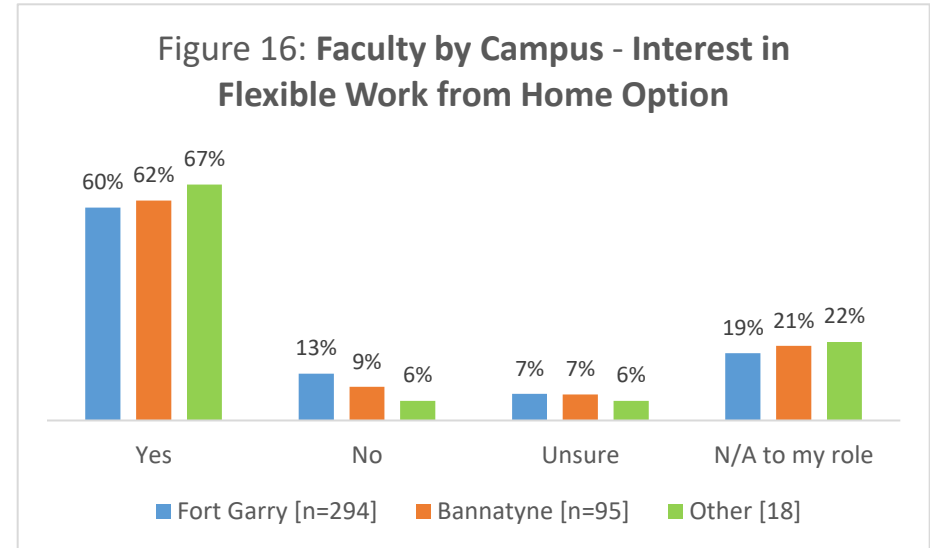
	Faculty		Staff		Graduate Students		Undergraduate Students	
	%	#	%	#	%	#	%	#
Bike	7%	116	12%	201	14%	233	21%	346
Transit	3%	41	4%	63	7%	110	19%	314
Walk / Run	1%	24	3%	48	8%	137	15%	244
Drive alone	2%	27	2%	36	3%	41	8%	129
Carpool	1%	10	1%	13	2%	26	5%	88
Park & Ride / Transit	0%	2	0%	7	0%	7	4%	62
E-bike / E-scooter	1%	9	1%	16	1%	17	1%	22
Motorcycle	0%	3	0%	4	0%	3	1%	19
Scooter / Moped	0%	0	0%	2	0%	1	0%	6
Plug-in Hybrid / Electric Vehicle	0%	0	0%	6	0%	2	0%	2
Transit Plus (Handi-Transit)	0%	0	0%	1	0%	0	0%	2
Taxi / Ridehailing service (eg: Uber)	0%	2	0%	1	0%	5	1%	16
Other	0%	1	0%	2	0%	6	1%	9

## 7. Flexible Work from Home Option

One of the impacts of Covid-19 resulted in some faculty and staff members working from home. This led to potential interest in continuing to work from home part-time, if possible, after the full return of students to campus.

Figures 15, 16 and 17 identify the interest in this option broken down by affiliation (faculty and staff) and by campus. Other includes: Smart Park, William Norrie Centre, those already working from home full time, St. Boniface Hospital and Research Centre, Misericordia Health Centre, etc.

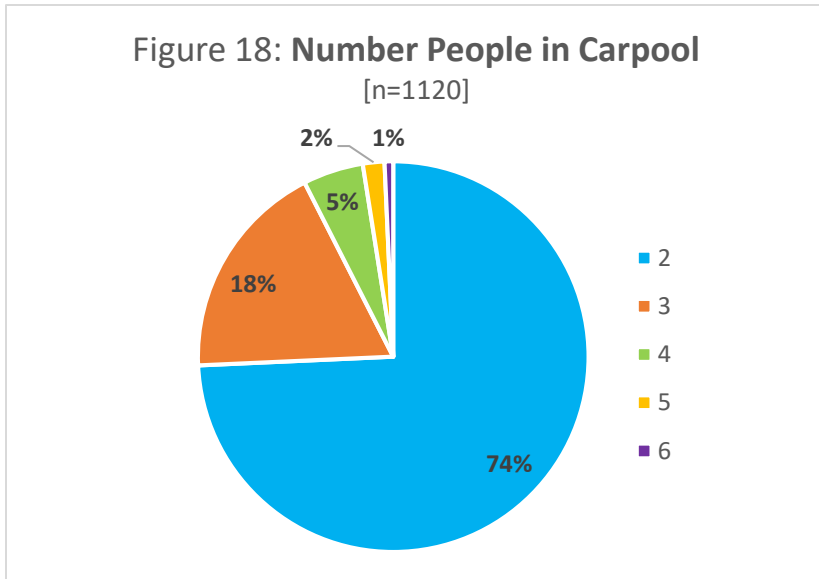
Responses were similar across the board with the majority, with both faculty and staff members expressing interest in a flexible work from home option.



## 8. Carpooling Interest and Barriers

### A. Number People in Carpool

Figure 18 shows that the vast majority (92%) of carpools travelling to University of Manitoba campuses comprise 2 or 3 adults.



## B. Who Respondents Carpool With

Respondents were also asked who they carpool with and could choose as many as apply. As a result, the percentages will not add to 100%.

Undergraduate and Graduate Students at both campuses primarily carpool with other students (72%) or family members not at U of M (25%). Faculty members indicated they carpool with other faculty members (42%) or students (32%). Staff mostly carpool with a family member not at U of M (41%) or another staff member (34%).

The Other category includes 56 respondents who identified their carpool partner(s) as family (29%), another U of M connection, including family (34%), and a non-U of M connection (38%).

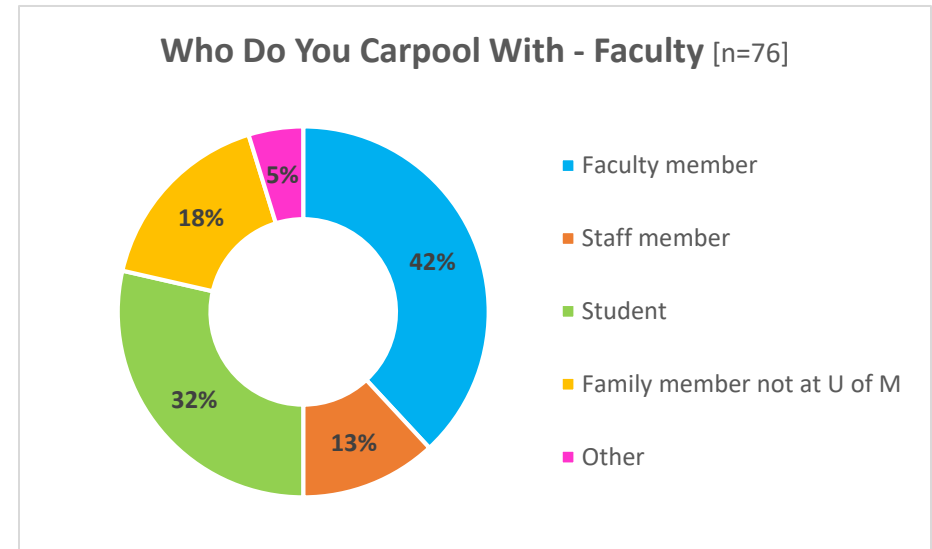
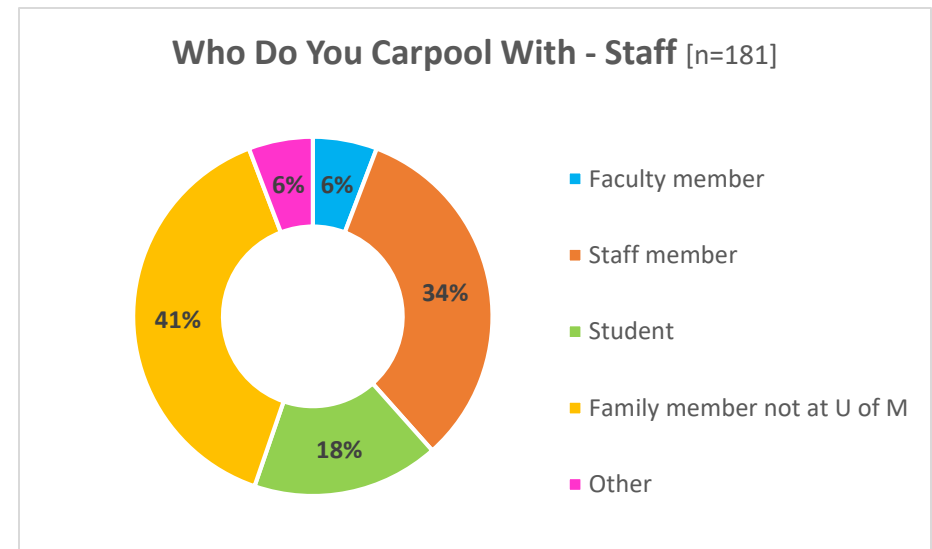
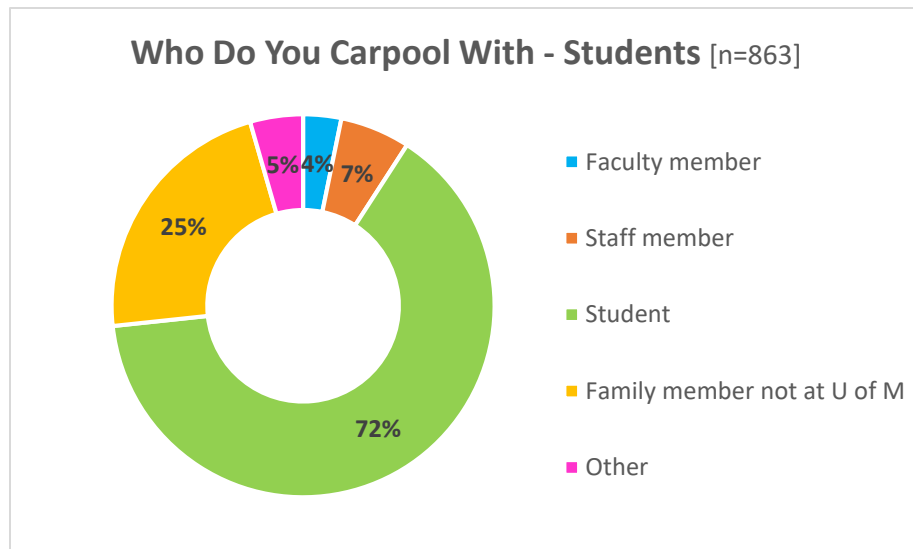


Figure 19: Who Respondents Carpool with by Affiliation





### C. Openness and Barriers to Carpooling

Respondents who Drive Alone (at least some of the time) were asked if they would consider using GoManitoba to find someone to share the ride. A total of 37% of respondents who answered this question indicated they would be willing to do so. A further 1% already use GoManitoba and 62% said they would be unwilling to share a ride.

Those who were willing to consider using GoManitoba to find someone to share the ride but had not yet done so were asked what held them back. Lack of awareness of GoManitoba is the primary reason (67%) for those respondents who are willing to use the tool to find a carpool partner.

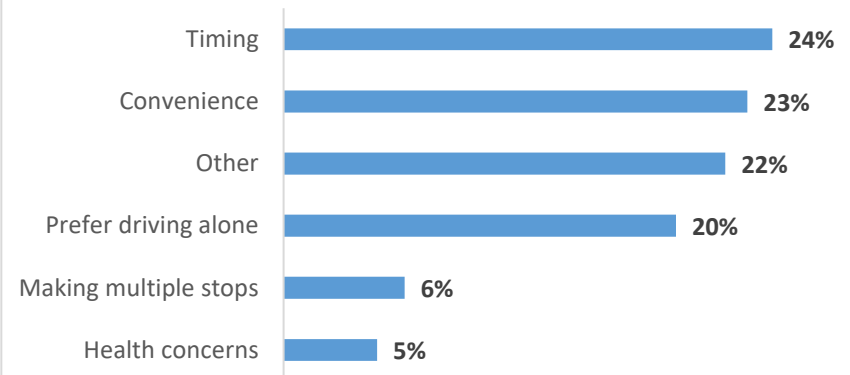
Those who were not willing to consider using GoManitoba to find someone to share the ride were asked for the primary reason why not. Responses were fairly evenly split among timing, convenience, prefer driving alone, and other.

Respondents who chose 'Other' and provided a reason [n=127] indicated their primary reason for not yet sharing a ride was convenience and an erratic schedule (37%) or the fact that they did not own a car or drive (34%). Health & safety or personal choice was the third cited reason (14%).

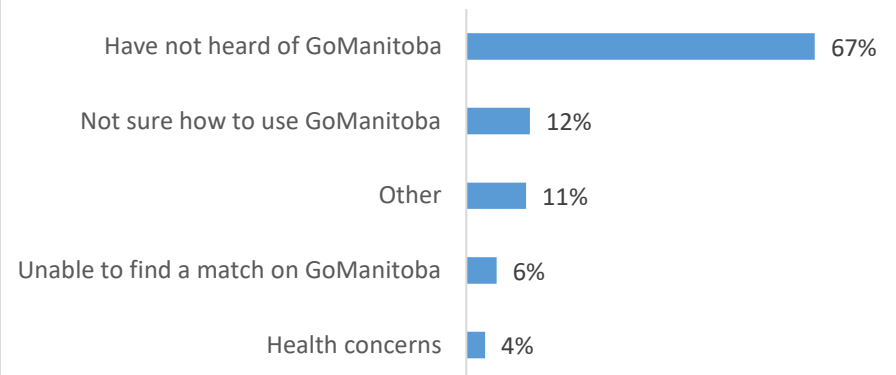
Note that not all respondents answered the second part of the question, i.e. 2,278 indicated they would not be willing to use GoManitoba at this time but only 2,265 provided their primary reason. A total of 1,374 respondents indicated they would be willing to use GoManitoba but had not yet done so while only 1,362 indicated why not.

Respondents who chose 'Other' and provided a reason [n=464] were not interested due to safety/health concerns, safety and personal preference (45%) or their varying schedule, timing and flexibility (20%). Childcare was the third cited reason (18%). The remainder concerned convenience, distance, no car/driver's license, or all of the reasons provided.

**Figure 20: Primary Reason for No Interest in Carpooling** [n=2278]



**Figure 21: Primary Reason for Not Yet Using GoManitoba to find Carpool Partner** [n=1362]



## 9. Student Transit U-Pass Usage

Students were asked how many trips per day they used their Transit U-Pass, on weekdays and on weekends.

Table 4: Frequency of Use of Student Transit U-Pass

Trips per day	UNDERGRADUATE STUDENTS						Trips per day	GRADUATE STUDENTS					
	Fort Garry [n=3102]		Bannatyne [n=142]		All [n=3244]*			Fort Garry [n=774]		Bannatyne [n=235]		All [n=1009]*	
	WEEKDAY	WKND	WEEKDAY	WKND	WEEKDAY	WKND		WEEKDAY	WKND	WEEKDAY	WKND	WEEKDAY	WKND
0	1022	2139	94	118	1116	2257	0	213	396	130	163	343	550
1-2	1236	665	31	19	1267	684	1-2	370	255	57	48	427	303
3-4	499	217	8	0	507	217	3-4	113	87	26	17	139	104
5-6	161	59	4	3	165	62	5-6	42	28	10	5	52	33
7-8	49	12	1	1	50	13	7-8	13	7	4	1	17	8
9-10	135	10	4	1	139	11	9-10	23	1	8	1	31	2

\* All includes students who indicated 'Other' as their primary location



## 10. Intercampus Commuting

Respondents were asked to identify how many campus-related round trips per week they make from their primary campus to other University of Manitoba campuses and off-campus sites. Table 4 breaks down the number of round trips made per week from the Fort Garry Campus to the Bannatyne Campus by affiliation and by mode, and Table 5 shows the same breakdown for trips made from the Bannatyne Campus to the Fort Garry Campus. Table 6 summarizes the number of round trips made per week between the primary U of M campus and off-campus sites.

Table 5: Intercampus Commuting – Fort Garry to Bannatyne Campus

		# ROUND TRIPS / WEEK										
	Total # Respondents	1 trip	2 trips	3 trips	4 trips	5 trips	6 trips	7 trips	8 trips	9 trips	10 trips	Total # Trips
Faculty	4	2	1	0	0	1	0	0	0	0	0	9
Graduate	29	10	9	3	4	0	1	1	0	0	1	76
Staff	24	20	4	0	0	0	0	0	0	0	0	28
Undergraduate	69	17	38	7	4	2	0	0	1	0	0	148
Total	<b>126</b>	49	104	30	32	15	6	7	8	0	10	<b>261</b>
		<b>19%</b>	<b>40%</b>	<b>11%</b>	<b>12%</b>	<b>6%</b>	<b>2%</b>	<b>3%</b>	<b>3%</b>	<b>0%</b>	<b>4%</b>	

		MODE (# ROUND TRIPS)					
	# Respondents	Carpool	Drive Alone	Transit	Taxi/ Ridehailing	#36 bus	Total # trips
Faculty	4	0	9	0	0	0	9
Graduate	29	12	14	25	4	21	76
Staff	24	0	20	6	0	2	28
Undergraduate	69	13	34	55	2	44	148
Total	<b>126</b>	25	77	86	6	67	<b>261</b>
		<b>10%</b>	<b>30%</b>	<b>33%</b>	<b>2%</b>	<b>26%</b>	

Table 6: Intercampus Commuting – Bannatyne to Fort Garry Campus

		# ROUND TRIPS / WEEK										
	Total # Respondents	1 trip	2 trips	3 trips	4 trips	5 trips	6 trips	7 trips	8 trips	9 trips	10 trips	Total # Trips
Faculty	12	9	2	1	0	0	0	0	0	0	0	16
Graduate	35	15	13	3	3	1	0	0	0	0	0	67
Staff	8	6	2	0	0	0	0	0	0	0	0	10
Undergraduate	12	5	3	0	2	1	1	0	0	0	0	30
Total	<b>67</b>	35	40	12	20	10	6	0	0	0	0	<b>123</b>
		<b>28%</b>	<b>33%</b>	<b>10%</b>	<b>16%</b>	<b>8%</b>	<b>5%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	

		MODE BY # ROUND TRIPS / WEEK					
	Total # Respondents	Carpool	Drive Alone	Transit	Taxi/ Ridehailing	#36 bus	Total # Trips
Faculty	12	1	12	2	1	0	16
Graduate	35	1	21	23	1	21	67
Staff	8	0	9	1	0	0	10
Undergraduate	12	12	12	2	0	4	30
Total	<b>67</b>	14	54	28	2	25	<b>123</b>
		<b>11%</b>	<b>44%</b>	<b>23%</b>	<b>2%</b>	<b>20%</b>	

Table 7: Intercampus Commuting – # Round Trips

	Bannatyne	Fort Garry	Glenlea Research Station	Ian N Morrison Research Farm	Other	Smartpark	William Norrie
Bannatyne	n/a	123	0	0	28	0	7
Fort Garry	261	n/a	9	6	57	7	12
Glenlea Research Station	0	0	n/a	0	0	0	0
Ian N Morrison Research Farm	0	0	0	n/a	0	0	0
Other	3	6	0	0	3	0	1
Smartpark	0	0	0	0	2	n/a	0
William Norrie	5	6	1	0	0	0	n/a

## 11. Perceived Effectiveness of Measures to Reduce Greenhouse Gas (GHG) Emissions

Table 8 explores perceptions of how effective different measures would be to reduce GHG emissions and help mitigate the impacts of climate change.

	Extremely effective	Very effective	Somewhat effective	Not effective	Not applicable
Access to low-cost bicycle rentals on campus	12%	14%	28%	25%	22%
Carbon toll collected to park Internal Combustion Engine vehicles	6%	13%	30%	33%	17%
Daily incentives for those arriving in an emissions-free way	<b>21%</b>	<b>27%</b>	30%	13%	9%
Discounts or incentives to purchase an e-bike or e-scooter	<b>18%</b>	<b>23%</b>	28%	19%	13%
Discounted parking for carpools and electric vehicles	<b>25%</b>	<b>30%</b>	25%	10%	10%
Discounted transit pass	<b>45%</b>	<b>8%</b>	11%	14%	21%
Establishment of a pedestrian priority zone in core campus	<b>19%</b>	<b>19%</b>	28%	23%	11%
Expanded bike parking, shower & change facilities	<b>17%</b>	<b>21%</b>	30%	18%	15%
Expanded child-care options on or close to campus	17%	20%	21%	13%	29%
Expanded housing options on or close to campus	<b>25%</b>	<b>23%</b>	19%	13%	20%
Expanded flexible vehicle parking options to allow greater daily mode flexibility	<b>24%</b>	<b>27%</b>	27%	11%	12%
Increased prime parking spaces for carpoolers	<b>19%</b>	<b>27%</b>	29%	12%	13%
Mobility hubs on campuses to support e-bike, e-scooter charging and parking	14%	21%	31%	16%	19%
Part-time or full-time work/study from home options available where applicable	<b>45%</b>	<b>25%</b>	17%	7%	6%
Shared UM-owned or externally owned vehicles available on campuses for work-day travel or off-campus needs	14%	19%	31%	18%	19%
Wider availability of electric vehicle charging stations and plugs on campuses	13%	19%	30%	16%	21%

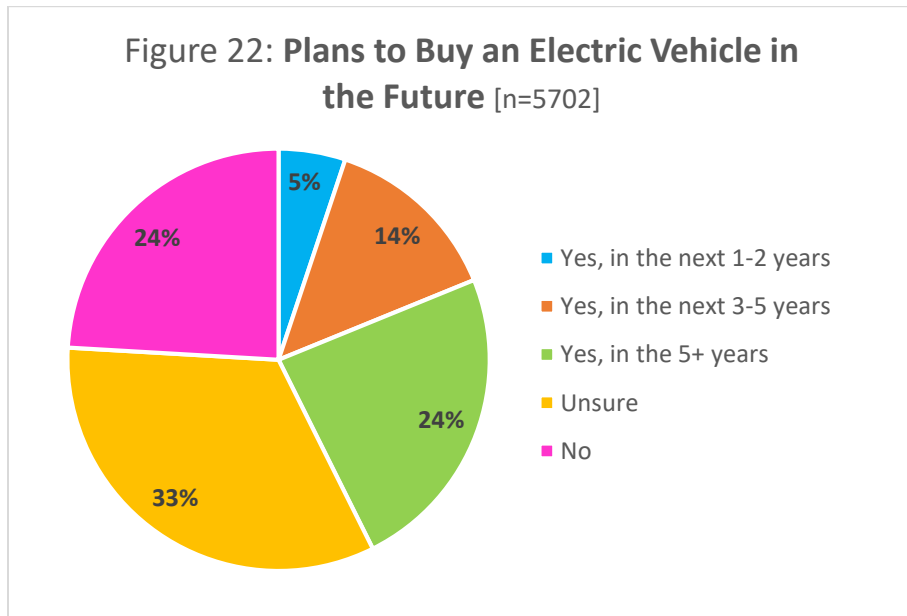
### Top 10 measures ranked as Extremely or Very Effective (combined)

1	Part-time or full-time work/study from home options available where applicable	70%
2	Discounted parking for carpools and electric vehicles	55%
3	Discounted transit pass	53%
4	Expanded flexible vehicle parking options to allow greater daily mode flexibility	51%
5	Daily incentives for those arriving in an emissions-free way	48%
6	Expanded housing options on or close to campus	48%
7	Increased prime parking spaces for carpools	46%
8	Discounts or incentives to purchase an e-bike or e-scooter	41%
9	Establishment of a pedestrian priority zone in core campus	38%
10	Expanded bike parking, shower & change facilities	38%

## 12. Interest in Electric Vehicles

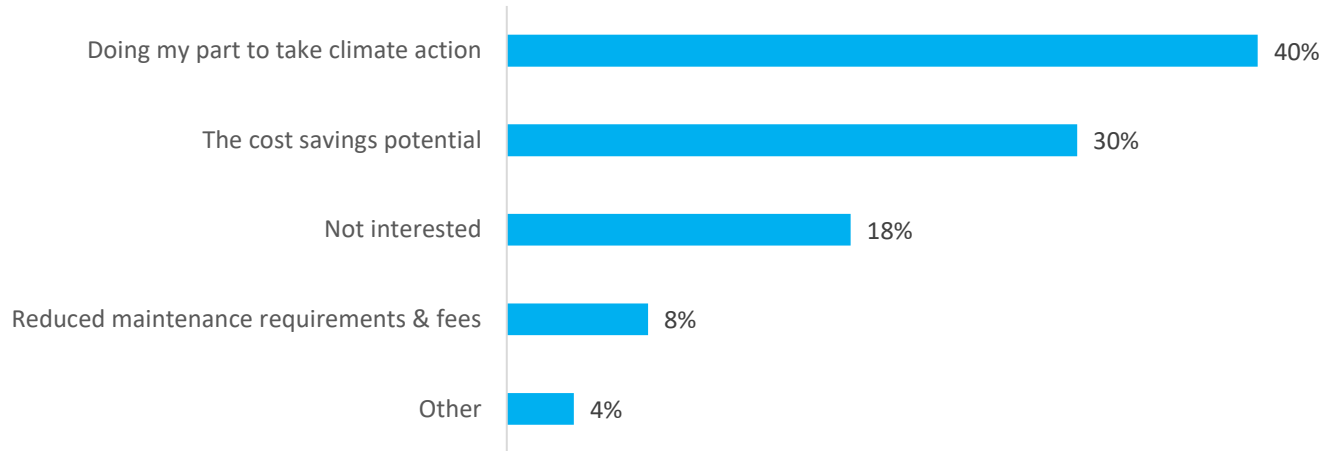
Respondents were asked if they currently own an electric vehicle (EV), whether they are planning to buy one in the future, what interests them the most about EVs, and what they would like to learn more about EVs.

At the time of the 2023 survey, 4% of respondents currently owned an EV while another 19% planned to buy one in the next 1-5 years. Figure 23 on the next page indicated doing their part to take climate action (40%) and cost savings potential (30%) interested them most about EVs. Figure 24 indicated there is interest in learning more about all aspects of EVs, especially winter performance.





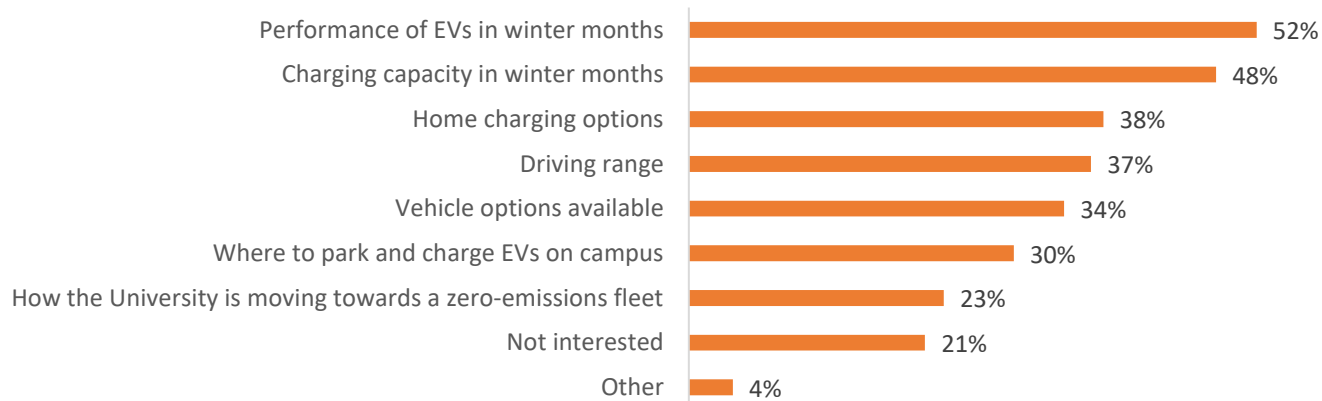
**Figure 23: What interests you most about Electric Vehicles?** [n=5888]



**What interests you most – ‘Other’**

Financial, Environmental, Battery	29
Financial costs	34
Environmental concerns	52
Battery issues/concerns	22
Technology	23
Do not drive/own car	17
Other	62

**Figure 24: What do you want to learn more about regarding Electric Vehicles?** [n=5926]



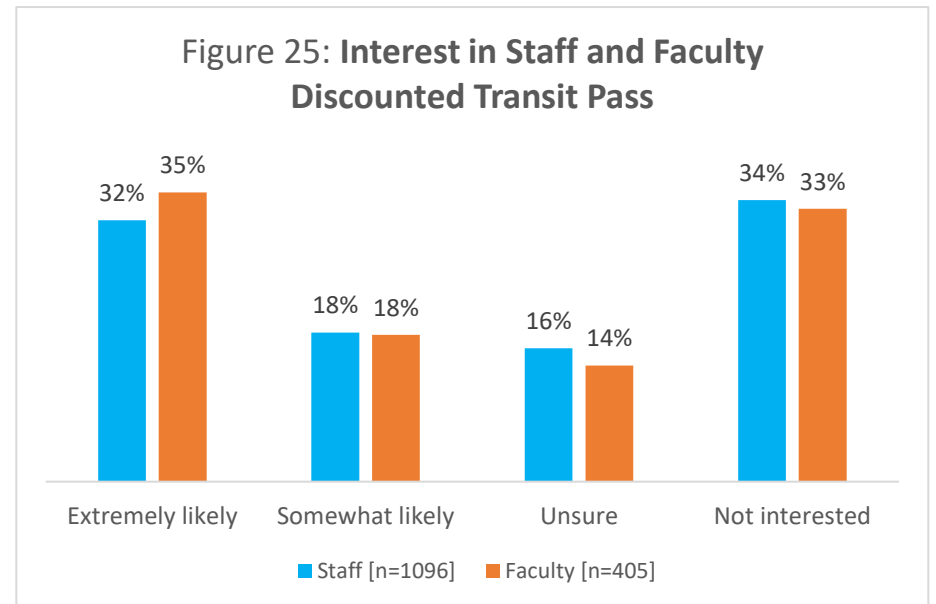
**What do you want to learn more about – ‘Other’**

Financial costs	59
Environmental concerns	75
Battery issues / concerns	38
Infrastructure and vehicle supply	28
Safety, maintenance & repairs	18
No interest/don't drive	18
Already knowledgeable	7
Other	16

### 13. Interest in Staff and Faculty Discounted Transit Pass

Staff and faculty members were asked about their interest in a discounted transit pass and the likelihood that they would participate in such a program.

The results from both sets of respondents was very similar, with one-half or slightly more of the respondents Extremely Likely or Somewhat Likely to participate, one-third not interested and 14-16% unsure.



## 14. Business and Research Travel

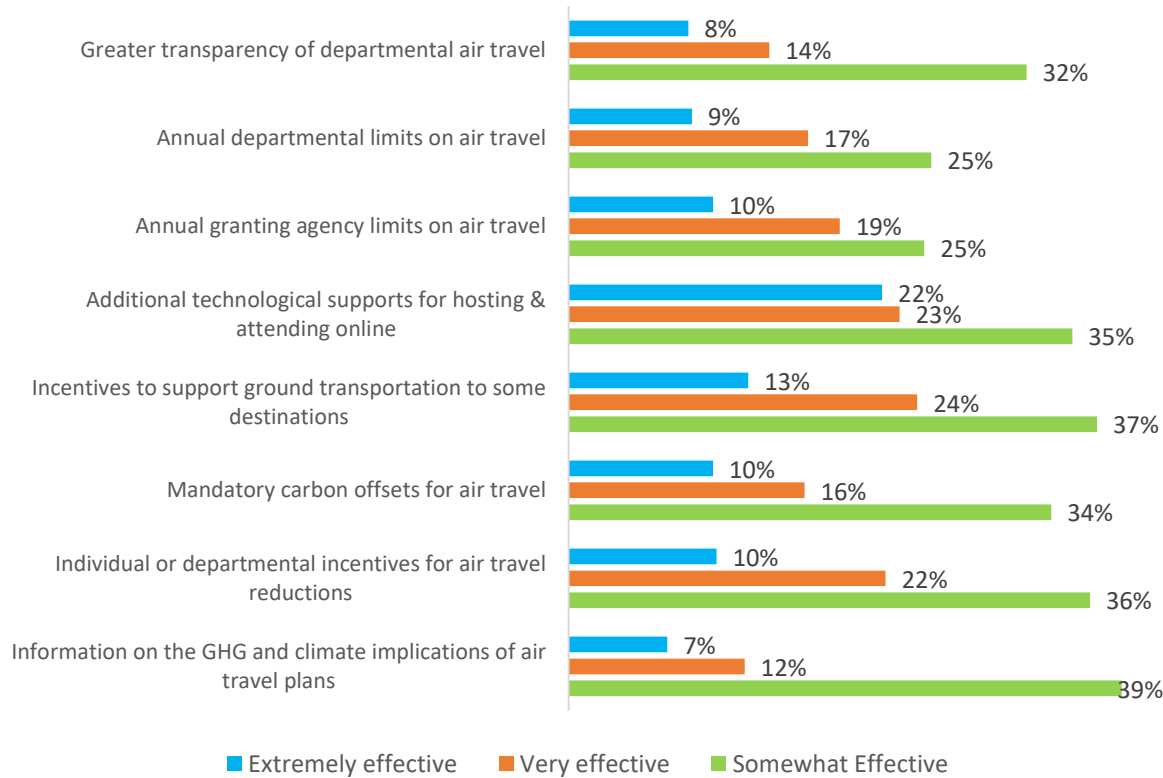
Staff and faculty members were asked which measures they think would have the biggest influence on reducing greenhouse gas emissions related to business and research travel at UM. They were also asked about their interest in continuing to attend and/or host conferences online rather than in person, as has been the case the past three years.

Faculty respondents identified the following top 4 measures as Extremely or Very Effective included: (1) Additional technological supports for hosting & attending conferences or events online; (2) Incentives to support ground transportation to some destinations; (3) Individual or departmental incentives for air travel reductions; and (4) Annual granting agency limits on air travel.

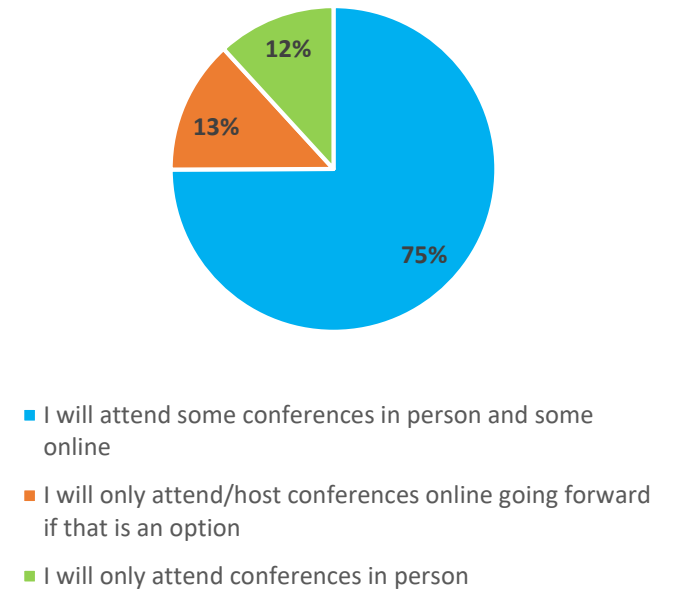
Table 9: **FACULTY - Perceived Effectiveness of Measures to Reduce GHG Emissions Related to Business and Research Travel**  
[n=407]

	Extremely effective	Very effective	Somewhat Effective	Not effective	Not applicable
Greater transparency of departmental air travel (e.g., departmental flight data and associated emissions published annually)	8%	14%	32%	41%	5%
Annual departmental limits on air travel	9%	17%	25%	43%	6%
Annual granting agency limits on air travel	10%	19%	25%	40%	6%
Additional technological supports for hosting & attending conferences or events online	22%	23%	35%	16%	3%
Incentives to support ground transportation to some destinations	13%	24%	37%	22%	4%
Mandatory carbon offsets for air travel	10%	16%	34%	36%	4%
Individual or departmental incentives for air travel reductions	10%	22%	36%	27%	4%
Information on the GHG and climate implications of air travel plans	7%	12%	39%	37%	5%

**Figure 26: FACULTY -**  
**Which of the following measures do you think would have the biggest influence on reducing greenhouse gas emissions related to business and research travel at UM? [n=407]**



**Figure 27: FACULTY -**  
**In Person vs Online Conferences**  
 [n=407]

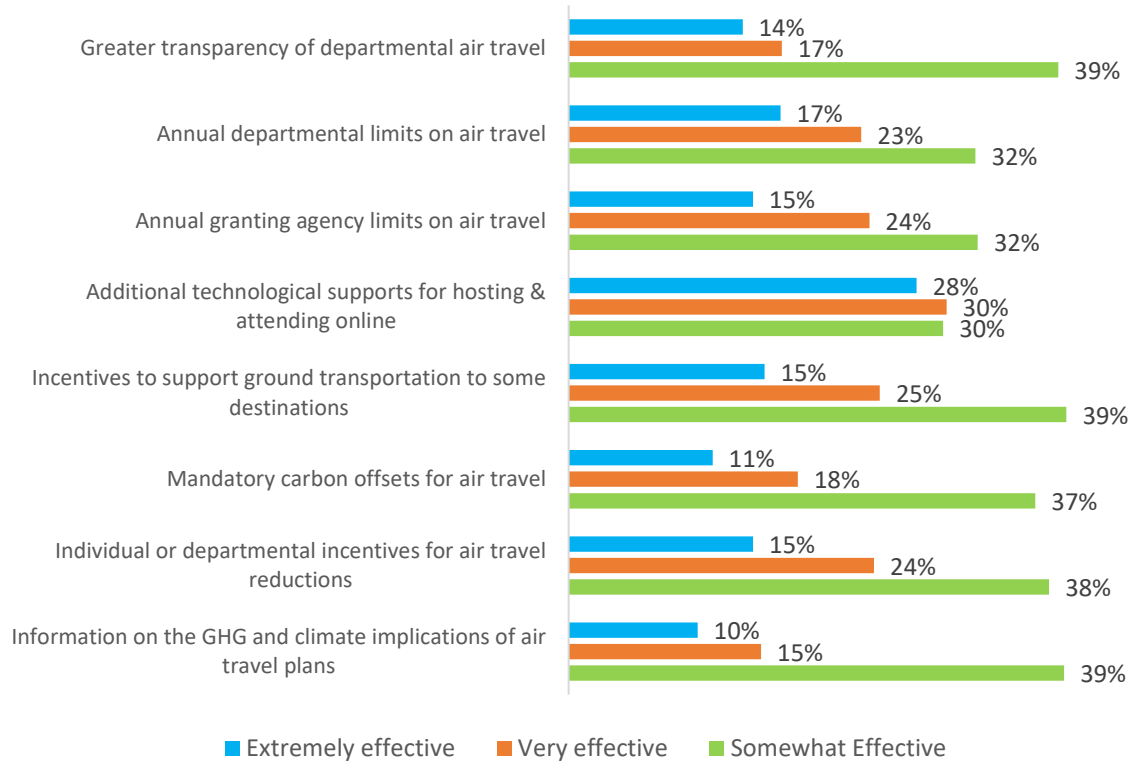


Staff respondents identified the following top 5 measures as Extremely or Very Effective included: (1) Additional technological supports for hosting & attending conferences or events online; (2) Incentives to support ground transportation to some destinations; (3) Annual departmental limits on air travel; (4) Individual or departmental incentives for air travel reductions; and (5) Annual granting agency limits on air travel.

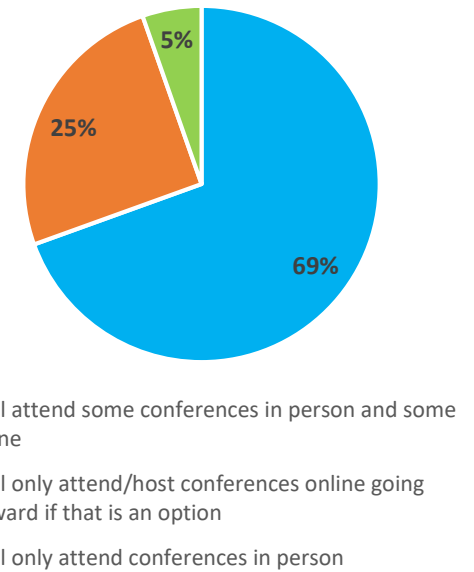
Table 10: **STAFF - Perceived Effectiveness of Measures to Reduce GHG Emissions Related to Business and Research Travel**  
[n=1098]

	Extremely effective	Very effective	Somewhat Effective	Not effective	Not applicable
Greater transparency of departmental air travel (e.g., departmental flight data and associated emissions published annually)	14%	17%	39%	22%	9%
Annual departmental limits on air travel	17%	23%	32%	19%	9%
Annual granting agency limits on air travel	15%	24%	32%	19%	10%
Additional technological supports for hosting & attending conferences or events online	28%	30%	30%	6%	7%
Incentives to support ground transportation to some destinations	15%	25%	39%	13%	8%
Mandatory carbon offsets for air travel	11%	18%	37%	23%	11%
Individual or departmental incentives for air travel reductions	15%	24%	38%	14%	9%
Information on the GHG and climate implications of air travel plans	10%	15%	39%	26%	10%

**Figure 28: STAFF - Which of the following measures do you think would have the biggest influence on reducing greenhouse gas emissions related to business and research travel at UM [n=1098]**



**Figure 29: STAFF - In Person vs Online Conferences [n=1098]**



## 15. Awareness of Existing Resources

All respondents were asked about their awareness of a variety of existing resources available to the campus community.

Table 8 shows that 77% of respondents know about the Student Transit U-Pass (down from 79% in 2020 and 85% in 2018) and about half (49%) are aware of secure bike lock-up (compared with 57% in 2020 and 51% in 2018) and the Safewalk Program (46% in 2023 vs 52% in 2020). However, there are many resources that are not as well known, presenting an opportunity to increase awareness and uptake of these resources.

Table 11: **Awareness of Existing Resources** [n=5926]

	All* [n=5926]	Fort Garry [n=4909]	Bannatyne [n=741]
Student Transit U-Pass	77%	81%	61%
Secure bike lock-up (ie. bike cages, bike lockers)	49%	49%	58%
Security Services' Safewalk Program	46%	43%	65%
Campus shuttle service	42%	45%	n/a
Ability to add several people/vehicles to one parking permit for the purpose of carpooling	29%	30%	23%
Preferred parking spots for carpools	25%	27%	17%
Transportation resources web page / maps	22%	24%	16%
Flexible parking options	21%	23%	9%
24-hour bike self-repair stations at Fort Garry and Bannatyne campuses	20%	20%	20%
EV charging stations	17%	19%	n/a
UMCycle Bike Kiosk	16%	17%	n/a
Flexible scheduling opportunities for staff (position dependent)	10%	9%	14%
Shower-only pass at Max Bell Centre and Joe Doupe Centre	7%	7%	9%
University subscription to GoManitoba.ca (free online ride-matching service for carpooling partners, bike and transit mentor matches)	5%	5%	6%
Moped / motorized scooter parking areas	4%	5%	4%
Accessible van operated by Physical Plant and booked through Student Accessibility Services	4%	4%	n/a
Inter-departmental bike share	2%	2%	n/a
Emergency Ride Home program for staff using GoManitoba	2%	2%	3%
None of the above	6%	5%	8%

\* All includes respondents who identified 'Other' as their primary location.

**Figure 30: Awareness of Existing Resources - Faculty** [n=389]

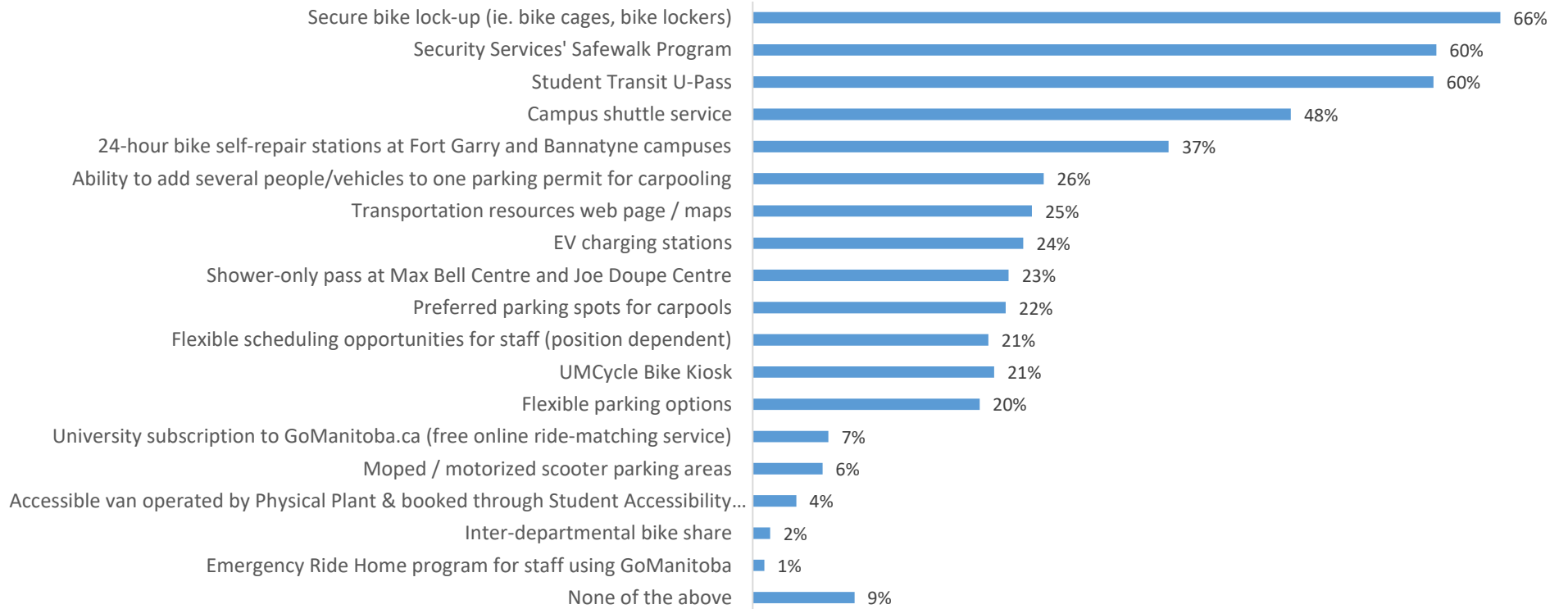




Figure 31: Awareness of Existing Resources - Staff [n=1008]

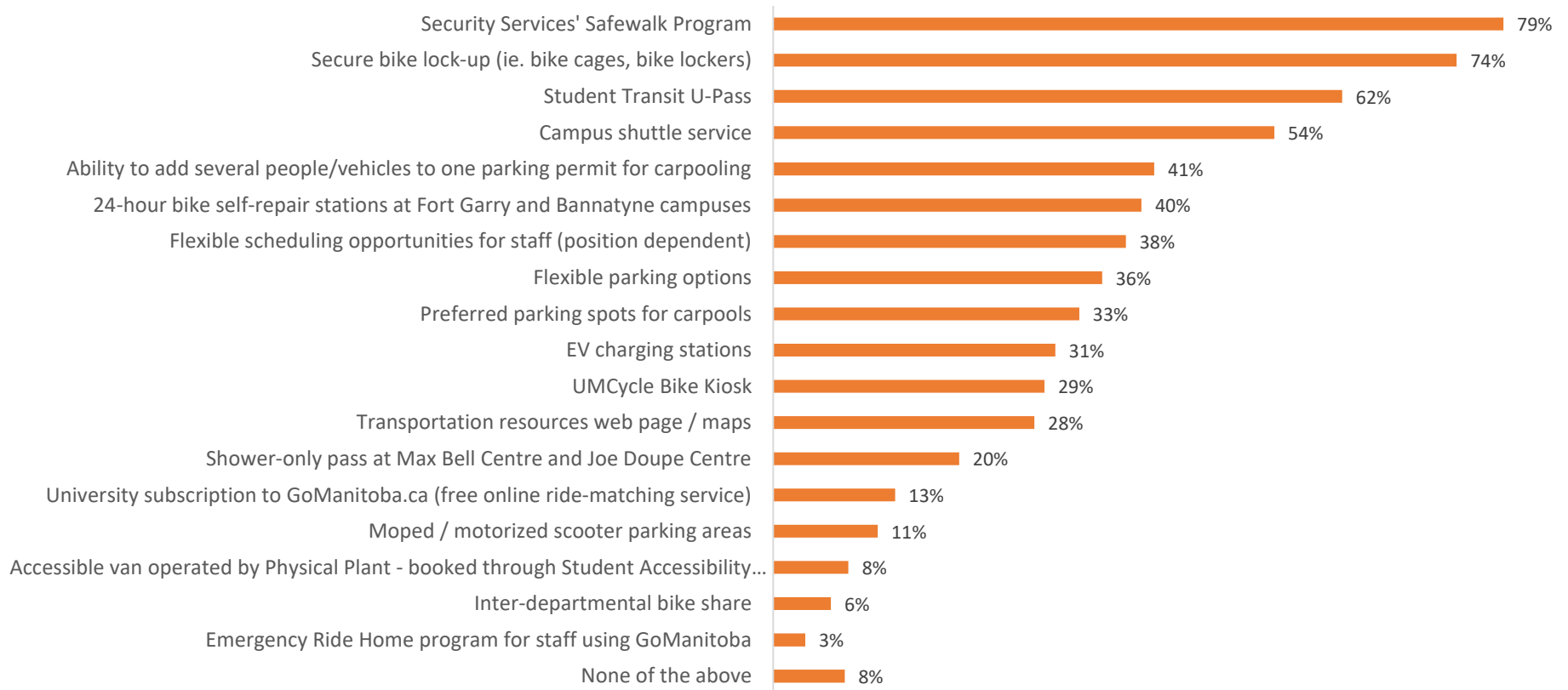


Figure 32: Awareness of Existing Resources - Graduate Students [n=1009]

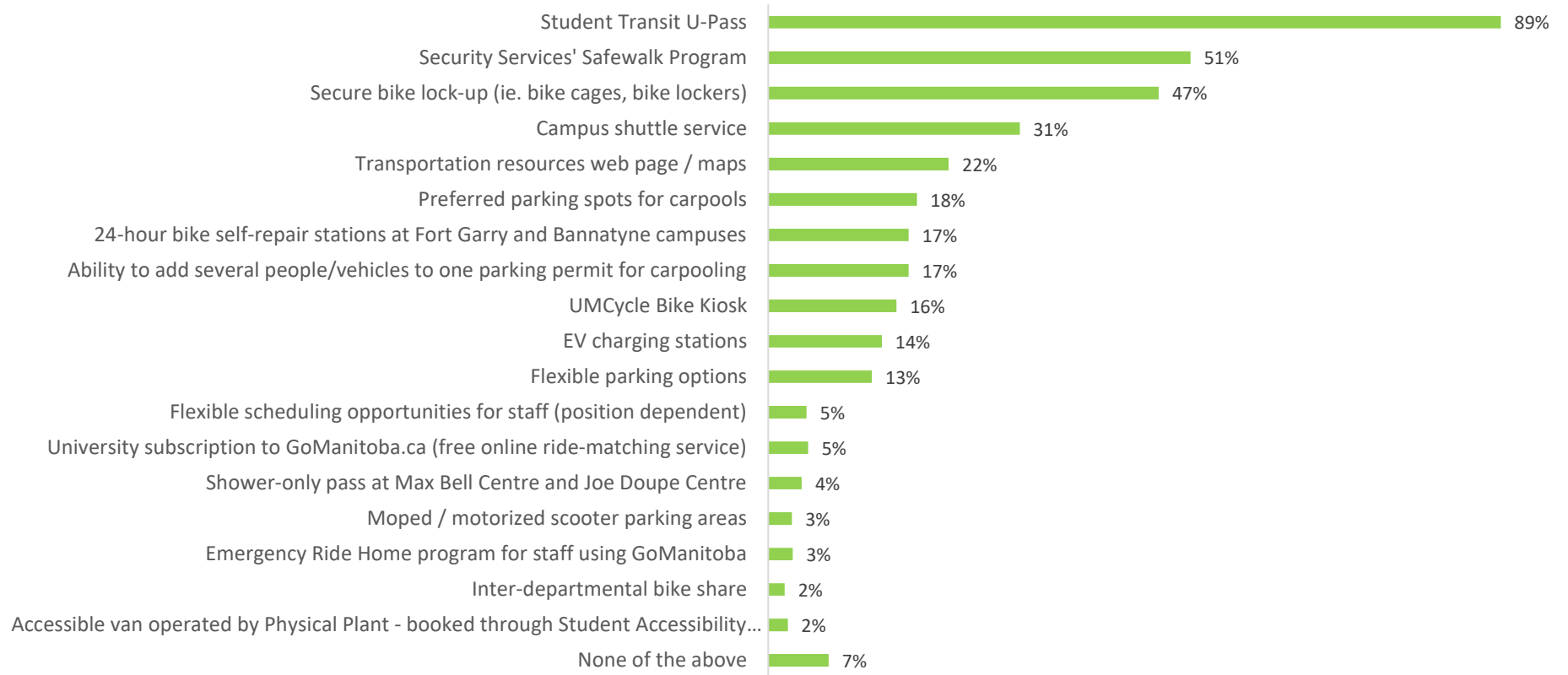
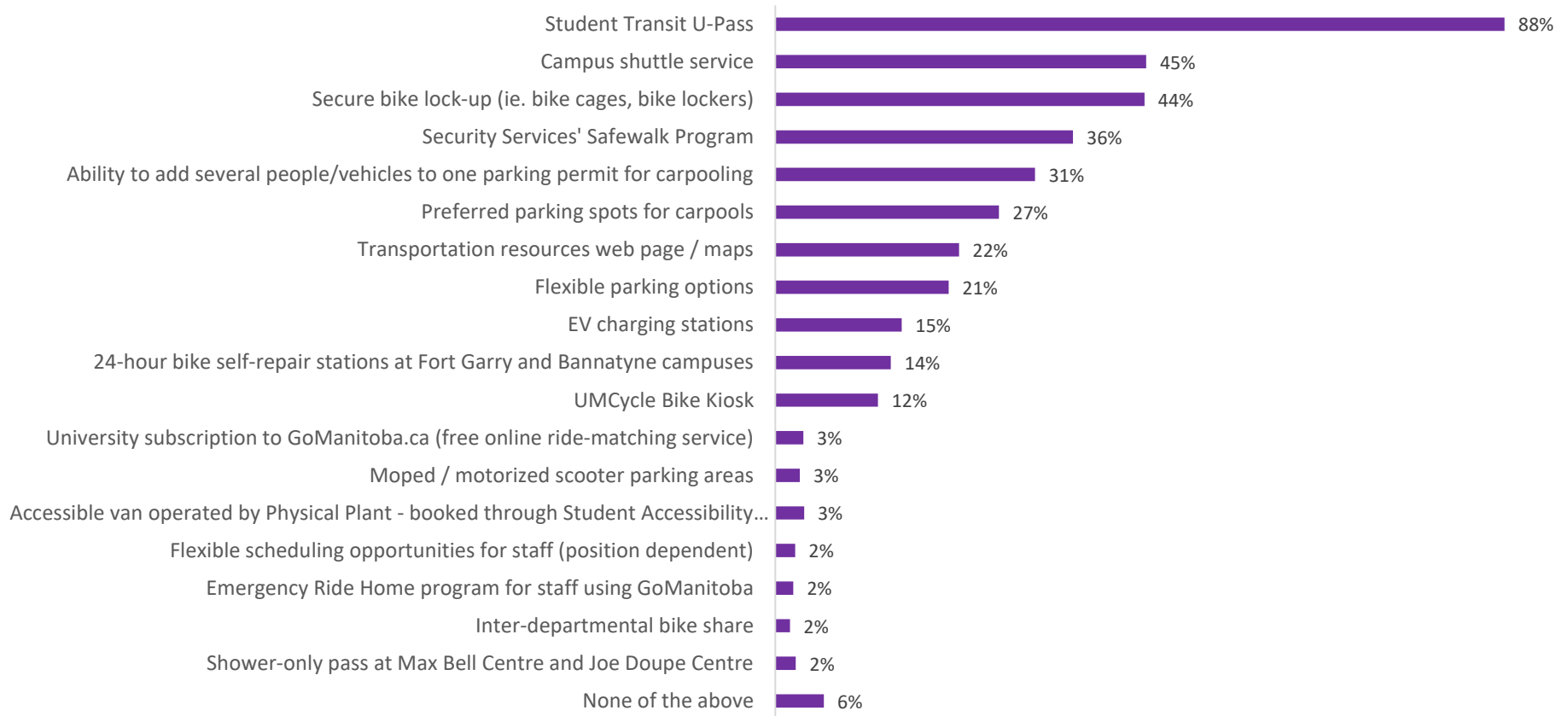


Figure 33: Awareness of Existing Resources - Undergraduate Students [n=3244]



## 16. Additional Comments

Survey respondents were given the opportunity to provide additional comments on the categories of transit, walking, cycling, driving/parking, and in general. They were also asked for feedback on the survey.

### A. Transit

[n=2483]	Total	%
Unreliable/Overcrowding/Pass-ups/Late	1183	48%
Schedule/Routes	754	30%
Other (including safety)	354	14%
U-Pass	243	10%
Costs	174	7%
Bus Stops/Stations	108	4%
EcoPass	89	4%
Family/Childcare	10	0%

Transit service levels are a critical concern for respondents along with transit schedules and routes. Several noted the increased cost of the U-Pass is not reflected in the level of service received, which is perceived to have worsened. Safety concerns, both on the bus and waiting at stops, are more frequently mentioned in this survey than in previous survey years, with 191 comments specifically referencing this. The amount of time required to travel by bus rather than drive outweighed the cost savings for some respondents.

### B. Cycling & Micromobility

[n=1193]	Total	%
Infrastructure/Safety	403	34%
Bike Parking/Theft	271	23%
Weather	187	16%
Distance	161	13%
Suggestions	158	13%
Positive comments	67	6%
Not an Option/Not Practical	52	4%
Family/Childcare	6	1%

Quality and/or lack of adequate and safe infrastructure, combined with safety concerns, are the predominant issues around cycling and micromobility. Respondents acknowledged that the responsibility for many of their concerns falls under the City of Winnipeg's responsibility but they want the University to lobby for improvements on their behalf. Sixty comments specifically mentioned bike theft and a further 57 mention having a bike stolen. Other issues included the closure of UMCycle, need for more snow clearing around bike parking, interest in e-bikes for longer distances but concerns around theft on campus, and an interest in more bike lockers. A few respondents noted they were not familiar with the term micromobility (i.e. scooters or e-scooters). Safety concerns were flagged at both Bannatyne and Fort Garry where drivers are not looking both ways when driving on a one-way road with a two-way bike lane (McDermot at Bannatyne and Sydney Smith/Sifton intersection at Fort Garry). There were also many positive comments on improvements to cycling infrastructure and facilities at Fort Garry campus.

### C. Walking & Rolling

[n=1028]	Total	%
Infrastructure	442	43%
Distance	282	27%
Other	144	14%
Weather	103	10%
Safety	99	10%
Family/Childcare	5	0%

Clearing snow from sidewalks, posting wayfinding signage and maps, drivers cutting off pedestrians when crossing, improving the quality sidewalks for rolling, considering the challenges presented by stairs for those with a physical disability, creating a pedestrian and bike only zone in the inner campus, and adding more safe crossings were some of the several suggestions provided by respondents.

Many praised the Fort Garry campus as very walkable though others noted it remains car-centric with a sidewalk system that is patchy and sometimes inconveniently placed. Safety concerns with walking are frequently cited for Bannatyne campus respondents.

Sample comments:

*Pedestrian-priority should always be considered at ANY road intersections. Car-centric planning is outdated.*

*Often feel unsafe doing this*

*It would be very helpful if the core of campus was a pedestrian and bikes-only zone.*

*Snow clearing/ice removal on campus could certainly be improved to facilitate more walking.*

### D. Driving & Parking

[n=1525]	Total	%
Cost	447	29%
Parking Passes	430	28%
Other	237	16%
Distance/Convenience	191	13%
Carpooling	130	9%
Electric Vehicles	73	5%
Signage/Paint	51	3%
Traffic	47	3%
Weather/Speed/Danger	38	2%

Comments focussed primarily on a desire for more and cheaper parking, as well as wider, clearly marked parking spots. Others believe there is already too much parking on campus and this presents a barrier to walking.

Sample comments:

*There are not enough parking spaces and the parking spaces provided are very expensive.*

*The immense amount of surface parking at UM (and Winnipeg in general) is ridiculous.*

*I have an EV. I carpool with others. This is my climate action.*

*Flexible parking options that are clearly explained as well as car-pooling parking would be helpful.*

*Driving is the easiest, fastest and safest option.*

### E. General Comments

[n=561]	Total	%
Other	253	45%
Drive/Carpool/Parking	110	20%
Policy (ex: work from home)	94	17%
Transit	66	12%
Bike/Micromobility/Walk	37	7%
Housing	10	2%
Family/Childcare	4	1%

Several respondents criticized the focus on electric vehicles, due to their environmental and social/human costs.

Sample comments:

*Electric cars are not the answer. I wish they were, but the cobalt industry is exploiting people in unimaginable ways and I don't want to contribute to basically a humanitarian crisis hidden in plain view by buying an electric car. There is not enough ethically source cobalt to meet the long term needs of the electric car industry and I don't feel like the seriousness of this is recognized because it's trendy for environmentalists to be into electric cars.*

*Flexible or full-time work from home options or discounted bus fares would be the only options of interest to many people.*

*How will the UM manage financially with decreased revenue from parking. If the goal is to increase alternate for of commuting, then the plan must be there to accept revenue reduction from parking fees. If no plan exists, then it's clear that the UM doesn't genuinely want to see a decrease in cars on campus.*

*Housing near campus is expensive and living on campus is also expensive and require a meal plan which I have no interest in.*

### F. Survey Feedback

[n=572]	Total	%
Positive	322	56%
Suggestions	166	29%
Further info	86	15%
Other	20	3%
Negative	19	3%

Sample comments:

*Thank you for this survey, it helped me to think about the positive and negative aspects of the community of U of M. It also helps us to think about the other ways of commuting to U of M, the problems that students may have, and what everyone can do to help to have a better climate.*

*As a student that commutes from outside of the city, survey not really applicable as the carbon saving methods mentioned would not provide adequate transportation. It is logical to discourage driving for students who live close to the university and can use other methods, but inappropriate to penalize students from rural areas and assume they do not care about the environment.*

## 17. How Respondents Heard About Survey

Respondents were asked to identify how they heard about the survey, choosing all that apply. Email was the primary source of awareness for Undergraduate and Graduate Students as well as Faculty and Staff.

Other ways that campus community members heard about the survey mostly included word of mouth, e.g. a colleague or co-worker, manager, friend or another student as well as the bookmark/business card, UMGSA, UMFM, and UMSU.

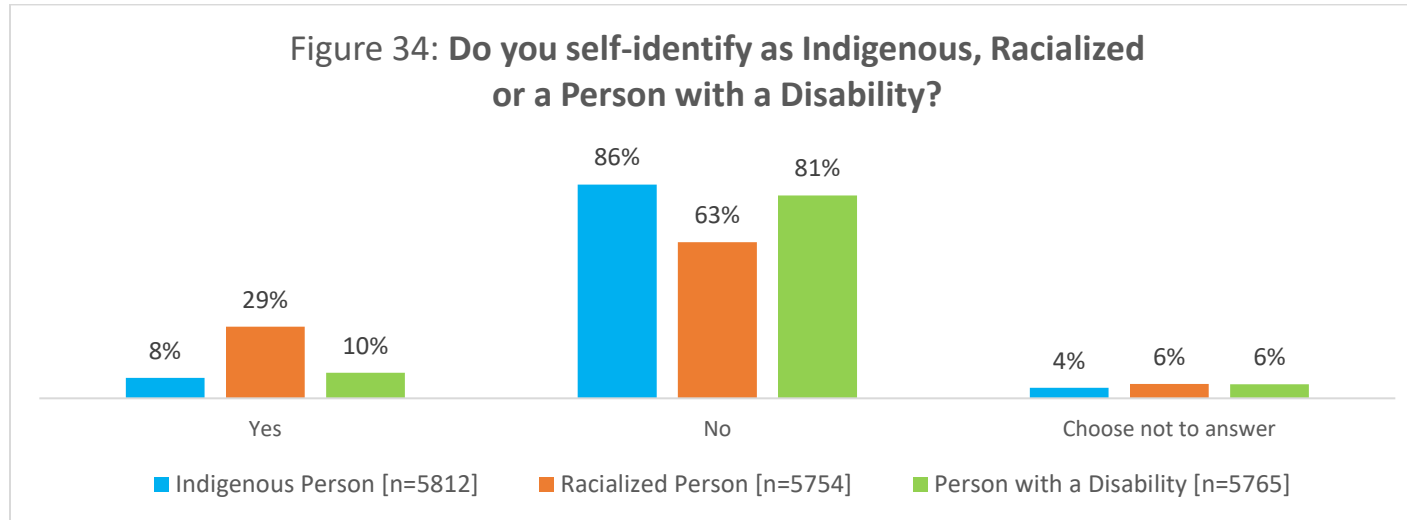


Table 12: How Respondents Heard About Survey [n=5926]

STUDENTS (combined)	Fort Garry	%	Bannatyne	%
	[n=3876]		[n=377]	
<b>Email</b>	<b>3399</b>	<b>88%</b>	<b>324</b>	<b>86%</b>
Social media	52	1%	14	4%
<b>UM Today</b>	<b>173</b>	<b>4%</b>	<b>19</b>	<b>5%</b>
Website	45	1%	35	9%
Digital screens	2	0%	2	1%
Survey lounges / tabling	85	2%	27	7%
<b>Outdoor signage</b>	<b>161</b>	<b>4%</b>	<b>6</b>	<b>2%</b>
Other	27	1%	4	1%
None of the above	8	0%	6	2%

FACULTY and STAFF	Fort Garry	%	Bannatyne	%
	[n=1033]		[n=364]	
<b>Email</b>	<b>993</b>	<b>96%</b>	<b>334</b>	<b>92%</b>
Social media	14	1%	2	1%
<b>UM Today</b>	<b>42</b>	<b>4%</b>	<b>19</b>	<b>5%</b>
Website	7	1%	1	0%
Digital screens	4	0%	1	0%
Survey lounges / tabling	2	0%	4	1%
Outdoor signage	1	0%	4	1%
Other	7	1%	13	4%
None of the above	1	0%	4	1%

## 18. Self-identify as Indigenous, Racialized or a Person with a Disability





## 19. Key Recommendations

The University of Manitoba continues to grow and refine measures that support and encourage sustainable, healthy travel by community members. This section outlines opportunities to further build on that momentum.

**These recommendations build on the University's progress over the past seven years to make healthy and sustainable commuting options the preferred choice by community members.**

The recommendations are based on data and feedback provided in the 2023 survey responses as well as the experience of successful Transportation Demand Management (TDM) programs at other universities and large institutions in North America. Success means more University community members choosing to walk, cycle, take transit or carpool to campus rather than drive alone, with the corresponding beneficial health impacts and reductions in commuting-related greenhouse gas (GHG) emissions.

Similar to results from previous campus commute surveys in 2016, 2018 and 2020, responses to the 2023 campus commute survey indicate a tremendous interest in healthy and sustainable commuting options, from cycling to transit to carpooling, across students, faculty members, and staff. Turning that interest into action will require the supportive infrastructure, policies and incentives that make those choices practical, convenient and affordable.

For the University community overall, the payoff will be fewer GHG emissions, improved mental and physical health, better air quality, less traffic congestion, and cost savings for less parking infrastructure.



## Summary of Key Recommendations

### A. ENHANCE TRANSIT AND SHUTTLE SERVICES

#### A.1 Seek to address transit service level concerns with Winnipeg Transit

**Rationale:** While Transit represents the largest mode share (37%) for all respondents, in particular graduate (54%) and undergraduate (47%) students of the Fort Garry campus, the level of frustration and dissatisfaction has grown since the previous survey based on respondents' comments. There is a sense from students of paying more in 2023 for a lower quality of service.

Transit received the most comments (2,483) of any category, representing 42% of survey respondents. Of those comments, almost half (48%) referenced issues with unreliable service, late buses, overcrowding and pass-bys due to full buses. Schedule and route issues were noted in 30% of the comments, especially Routes 75 and 36.

Sample transit-related comments:

- *I cannot emphasize enough how extremely frustrated I have been with the following: 1) the poor and often lack of service from Winnipeg Transit (i.e, buses arriving 15 to 20 minutes behind schedule or not arriving at all far more often than arriving on schedule); 2) the high fees students have been charged each term for the UPass, even during 2021 when the UPass was not available to use; and 3) the lack of support and action from the undergraduate and graduate student councils of University of Manitoba. UofM students absolutely deserve compensation for the poor service and lack of service provided by Winnipeg Transit between 2020 and 2023 and the UPass agreement between UofM and Winnipeg Transit renegotiated for a lower fee per academic term so that the service offered fairly reflects the UPass fee students are charged per term.*
- *University students are required to pay for u-passes however there are never enough buses on my route for the buses to be deemed reliable for me getting to class ontime. in just the last week I've had 4 buses pass the stop because they were full causing me to be late to my lectures a couple of times even when going to my bus stop early. Ive once waited at a stop where multiple buses passed me while waiting.*
- *From my perspective, the experience of taking public transit to and from the Fort Garry campus has drastically decreased over the past number of years. I completely support the availability of the UPass, however, when it was introduced and ridership increased substantially, there were no increased to the number of buses on key routes, meaning that getting on a bus to campus, or off campus during peak times was next to impossible, as so many buses were full already. I fully relied on transit to get to and from campus until 2019 when the situation became so terrible and was losing so much time in my day with waiting for buses that had some spots on them that I actually bought a car. There would need to be SIGNIFICANT changes to the availability of buses during key times and the availability of a discounted bus pass for staff members before I would consider going back to using transit as my primary transportation method to and from the Fort Garry campus.*

- *I only bought a car because the transportation system is always late and its so long (1 hr). Please fix.*
- *Always too crowd at rush hour. sometimes can't get on my transfer bus til 5-6 busses later*
- *Because of the unreliable transit system this city has, I'm sometimes forced to drive to the campus if I miss the bus even if I get to the stop early. We must force a change in this system if we want to reach our target emissions.*
- *I took the bus to campus for 15 years. I finally stopped because the buses were too crowded (not enough buses). I was getting passed by 2-3 buses every morning. Going home was the same. There were so many people trying to get on that I often had to wait for the next available bus.*
- *As a daily user of Winnipeg Transit, I strongly believe that it is imperative for the university to consider a reduced fare option for bus passes and tickets for UM faculty and staff. I think that this action will help reduce greenhouse emissions in the long run from single drivers. However, I would hope that the university also consults with Winnipeg Transit beforehand to allow more buses at both locations to accommodate the potential increase in public transit users if a reduced rate for staff/faculty were applied.*
- *Our students pay for a lot of transit and get the absolute minimum.*

## A.2 Introduce EcoPass for Faculty and Staff

**Rationale:** A monthly bus pass costs more per month than the cost of monthly parking for faculty and staff. This creates a financial disincentive to take transit instead of driving and financially punishes those already choosing to take transit. Transit service levels will need to be considered in this decision.

Sample EcoPass-related comments:

- *A discounted public transit pass for staff members would be a great way to encourage sustainable transportation. The UofM providing a discounted pass would prove to the public that UofM, as an organization, is taking action to reduce emissions vs. only speaking about their intentions.*
- *Please implement transit passes at a discounted rate for staff. That would be so nice.*
- *A staff parking pass currently costs less money than a bus pass.*
- *As a regular transit user, I would like to see staff/faculty given an incentive to use this. Parking is cheaper than transit now (using casual parking 3 days/week). Very few staff in my department use transit, but hopefully could be enticed if there was a value to it.*

## A.3 Explore dedicated hourly campus shuttle service between Bannatyne and Fort Garry campuses

**Rationale:** Close to half (44%) of the 123 trips made weekly between Bannatyne and Fort Garry campuses are Drive Alone while 30% of the 261 trips made weekly between Fort Garry and Bannatyne campus are Drive Alone. Combined, this represents almost 20,000 trips per year between the two campuses. A reliable service between the two campuses would support and encourage further transit use by all campus community members.

Sample related comment:

- *I also firmly believe having a dedicated hourly campus shuttle service going from Bannatyne Campus to Fort Garry Campus would allow more people to attend in-person meetings and events at both locations. Currently, Bannatyne staff without cars have to rely on Winnipeg Transit to get to Fort Garry campus for most in-person meetings, which isn't the most convenient option.*

#### A.4 Build understanding and acceptance of U-Pass

**Rationale:** Based on the comments received, there is a lack of understanding by many respondents as to why students (with some exceptions) pay for the U-Pass, as well as a general lack of awareness of the connection between the cost of parking and demand for spots. Increased understanding of the environmental impact of how campus members get to and from, as well as around campus, may help build acceptance. This will need to be tempered by an acknowledgement of the location of the Fort Garry campus at the south end of the city along with the viability of non-driving options, such as transit service issues.

Sample related comments:

- *I'm curious why people who drive to school have to pay for a U-Pass? doesn't make sense*
- *i do not use the upass and it is a large cost on my tuition. it shouldnt be mandatory to get it.*
- *I do not like so much paying for the u pass, I wish I could renounce if even if I live in the city*
- *My preference is to bike to school. I would love if there was an option to opt out of the UPass, because having the option to take transit which I've already paid for in my student fees, acts as a deterrent to cycling.*
- *I don't believe we should be paying for a UPass unless if you are actually using it. And if you're not that money should go towards having a parking pass instead*
- *I find it unfortunate and unfair that all students have to pay for the UPASS even if they do not use it. It makes no sense that I have to pay for other people to have cheaper bus fare when I also pay to run a vehicle and pay for parking.*
- *Some educative videos and visual things can increase awareness more easily among students about the bad impacts of greenhouse gas instead of a theoretical explanation.*

### A.5 Consider a transit priority lane leading into campus

**Rationale:** A diamond lane would allow buses to keep to a more reliable schedule and place priority on multi-passenger vehicles over single occupant vehicles.

Sample related comments:

- *Transit needs to be given priority on campus between 8am and 9am. It is ridiculous that buses transporting 50+ people are getting stuck behind columns of single passenger vehicles.*
- *Although this may not be possible, would be nice if Dafoe was dedicated to transit only for the whole stretch.*
- *Dafoe road should be buses only 8 - 9 am eastbound and 4 - 4 pm westbound. Cars should have to take the back route if they want to drop off passengers or even park in a lot. Maclean cres can be used to get back on to Dafoe. Students end up being late b/c the buses have to wait for so many cars turning left onto Dafoe. No left or right turns from U cres onto Dafoe. No cars thru the dafoe intersection at u cres. Let the buses through. The green house gas emissions from all those cars waiting several lights to get onto dafoe is not acceptable.*
- *Personal car traffic on Dafoe tends to really back up busses leaving campus.*
- *Personal vehicle traffic within campus should be restricted during daytime hours. The amount of vehicles driving on Dafoe throughout the day is absurd, especially in the morning and evening. Long lines of vehicles that are idling create additional pollution and create a safety hazard for cyclists and pedestrians.*

### A.6 Review options for more bus shelters and heated shelters

**Rationale:** With the unreliability of transit service, campus members note they often have to wait for several buses before they can board. If there is no heated bus shelter, or no room in the shelter, this creates another deterrent to using transit in winter. The bus stop at the Agriculture building, in particular, was identified as being frequently overcrowded and with nowhere to escape the cold while waiting.

Sample related comments:

- *I have often been left stranded by a late or canceled bus and my only choice is to wait a half an hour to and hour in the cold because bus shelters are either vandalized or are not heated*
- *Public transit in Winnipeg is terrible. In every other city I have lived I have been an avid transit user and it is my preferred way to travel, but in Winnipeg the buses run infrequently, the routes are inconvenient, the fares are expensive, and the shelters are inadequate for our climate. It is a total disincentive to take transit.*
- *More bus shelters on roads with open spaces where wind blows*

- *Safety, warm clean shelters and busing arriving in timely manners without a long wait is always important but the continuous growing price for transit is a huge concern.*

#### A.7 Discuss bike racks on buses with Winnipeg Transit

**Rationale:** The opportunity to combine cycling with transit benefits campus members commuting longer distances or travelling from or through neighbourhoods not well served by transit or bike infrastructure.

Sample related comments:

- *Would love to be able to bike and ride. Ride the bus through the busy areas and then bike on the bike lanes downtown.*
- *would love to use a mix of transit and bike. transit where bike lanes are not available, but need to make sure the buses have bikes racks*



## A. REDUCE PARKING DEMAND

### B.1 Consider increasing parking costs while providing incentives for sustainable options

**Rationale:** Increasing the cost of parking can be used to reduce parking demand assuming there are sufficient viable alternatives for campus community members. Communicating the increased price will need to consider students who live far from campus or commute from out of the city, to help reduce perceptions of a 'cash grab'.

Sample related comments:

- *I don't want my colleagues to know I'm saying this, but I don't know how behaviour can change without parking becoming even more expensive, and there being great incentives for climate-better forms of transportation*
- *The current UMFA CA includes a subsidy of about \$20/month off the staff/student rate. The problem is that this subsidizes the worst possible mode choice (but you can't get rid of it, because our faculty are absolutely militant about defending their "right" to cheap parking). In the next round, consider offering a package that sweetens the subsidy for other modes relative to parking: e.g., "Faculty can choose the current \$20/month reduced parking price, \*or\* (say) \$50 monthly toward the cost of a transit pass, \*or\* (say) a \$600 annual fund that will reimburse eligible cycling or alternative transportation equipment or costs.*
- *My parking pass should not be cheaper/comparable pricing to the bus pass. You should dramatically increase parking passes and use that money to offer reduced bus passes.*

### B.2 Raise profile of GoManitoba for carpooling and transit/cycling mentors

**Rationale:** Survey respondents recognize carpooling as an effective measure to reduce greenhouse gas emissions (GHGs). At the same time, only 5% indicated they were familiar with the University's subscription to GoManitoba, which can assist campus members with both carpooling matches and finding experienced mentors if they are new to commuting by bike or transit. The ability to carpool part-time should be promoted to staff and faculty who are working a hybrid schedule and working from home some days, as well as the Emergency Ride Home program to help ease concerns.

Sample related comments:

- *I did not know about the carpooling program for staff! Had I known, I would have looked into it further and joined a carpool earlier.*
- *As I live outside the city, it's hard for me to see any option other than driving myself to work. I haven't found anyone to carpool with.*
- *I think driving alone to the campus is not the most efficient or environmentally friendly mode of commuting to the university. However, if carpooling is an option to commute to campus, I think it would be far more efficient and environmentally friendly.*

### B.3 Provide more incentives and parking spots for carpools

**Rationale:** Providing discounted parking for carpools and electric vehicles was ranked second, with 55% of respondents identifying this among the most effective measure to reduce greenhouse gas emissions (GHGs).

Sample related comments:

- *My carpool group did not get a parking pass because they sold out so fast and we can't afford paying for parking everyday, so we have a 20 minute walk to school everyday in the cold after a 35 minute drive.*
- *more incentives and prime parking spots for carpooling are needed*
- *More should be done to disincentivize single person driving. carpooling parking should be made free or almost free while none carpool parking spots should increase in price. price should also depend on number of riders. so 2 riders might be \$40/month while 3 is \$20/month and so on. Potentially a check-in system using student ID cards could be used to verify carpooling*
- *If there were closer options for car pool parking more students would be likely to carpool*
- *Carpooling spots are awesome but people park there even though they dont have 2 people or more in their car so im not sure how to enforce that.*
- *Carpoolers should be discounted more heavily. Carpool payment should be available in the parkade. Especially in the winter months*
- *more carpool priority parking spots would be very beneficial, along with enforcement that it is carpool only*
- *Reduced cost for carpooling would be a beneficial incentive*

### B.4 Evaluate opportunities for flexible parking passes at Bannatyne campus

**Rationale:** Given the challenges faced by campus members who are willing to use sustainable transportation methods when feasible, provide assistance with planning and locating alternatives could help ease the burden. This would apply whether the University was assisting faculty and staff to attend conferences or assisting those attending a Winnipeg-based conference from outside the city or province.

Sample related comments:

- *Forced to use HSC parking due to the 5 year wait time for UofM parking at Bannatyne. Having to maintain \$120 a month parking over summer months to avoid losing my parking spot in the winter months, there is no incentive to take my bike and continue paying \$120 a month in parking fees.*
- *A flexible parking option on Bannatyne Campus would be welcome. I use a combination of active transportation (walking/running/cycling) and driving. I don't need a full time parking spot, but that is the only option right now.*
- *Allow part-time on site parking rates. Most of us are paying monthly rates and only come on site 2-3 times a week.*



### B.5 Investigate a dynamic (active) parking management system

**Rationale:** A dynamic (active) parking management system would switch some lots from monthly to daily parking. This would allow campus members to book parking only on the days they need to travel to campus. The system optimizes use of the available parking spaces and accommodates flexibility in schedules and seasons. (See the following case study, p.5: <https://www.commuteseattle.com/wp-content/uploads/2021/04/Expedia-Group-Case-Study.pdf> and the US Department of Transportation information page: <https://ops.fhwa.dot.gov/atdm/approaches/apm.htm>)

Sample related comments:

- *Allowance needs to be made for remote workers who may only be on campus less than one day/month*
- *Please offer shared parking spots for those working from home most of the time - where you could sign up a week in advance for the day you plan to come in*

### B.6 Discuss opportunities to expand Peg City Car Co-op's Network to U of M campuses

**Rationale:** Carsharing offers campus members access to a vehicle as needed, for example to travel to another campus or off-site meeting, while still allowing them to bus, bike, walk or carpool to and from their primary campus.

Sample related comments:

- *A car sharing option - not just car pooling but car sharing - would likely be valuable for many people around campus.*
- *Car-sharing is becoming more and more popular. Universities like UBC and SFU in British Columbia provide spaces and parking zones for car-sharing companies like Evo and Moto. This ensures that urban commuters to campus \*and\* those living on/around campus have temporary access to vehicles. This is incredibly beneficial to those people who travel/commute using transit options only. Partnering with local car-sharing options like Peg City Co-op to offer vehicles and/or parking zones for their vehicles would offer students and staff on University campuses another affordable option to share/reduce their GHG impacts.*

## C. ENHANCE WALKING AND CYCLING EXPERIENCE

### C.1 Pedestrian and Cycling Plan

Continue to implement recommendations in the Pedestrian and Cycling Plan (2018), Sustainable Transportation Strategy (2017), and the Multi-Use Path Network Plan.

**Rationale:** Making it easy to bike or walk around campus contributes to lower vehicle use, reduced CO2 emissions, and a healthier campus community.

### C.2 Improve snow clearing and sidewalk/path maintenance

**Rationale:** Lack of snow clearing and/or surface maintenance on sidewalks, pathways, bike parking and at bus stops can significantly inhibit campus members ability to bike or walk, especially those with mobility challenges.

Sample related comments:

- *I would cycle year round if the bike paths were cleared. UM incentives would not be effective because the problem is off campus.*
- *I pay for a bike locker on campus and twice I've had to kick through a snowbank that was plowed in front of my locker to put my bike away. It's a real drag.*
- *Pressure the city to do a better job plowing active transit/sidewalks. Look at Edmonton as a model. Move AT/sidewalks up in the priority for clearing and do a better job. The city policy states AT/sidewalks are cleared to snowpack. They should be cleared to concrete to avoid ice/slush in spring. Ensure people can reach crosswalk buttons, clear snow ridges created by other plows, etc.*
- *Most bike racks are under snowpiles in the winter, meaning I lock up further away from my building (less ideal when it is very cold or late at night).*
- *Paths are not well maintained during winter. The path around the wetland has NO LIGHTS so it is dangerous at night. There should be more emergency call posts and light.*
- *Walking in winter can be challenging for people with (and often even without) mobility issues because of poorly cleared sidewalks on and off campus.*
- *I think the sidewalks need to be improved on campus. It makes it so much harder to board in when the surface is cracked and uneven.*

### C.3 Create a pedestrian and bikes-only zone

**Rationale:** Pedestrian and bikes-only zones allow more flexibility for those on foot or on bike to move freely without the worry of being hit by a driver.

Sample related comments:

- *It would be very helpful if the core of campus was a pedestrian and bikes-only zone.*
- *Drivers on campus make it difficult or sometimes scary for pedestrians to walk around campus. The inner part of campus is okay, but getting to buildings like Agriculture or Wallace require crossing quite busy streets, where cars are not always friendly to pedestrians, particularly at the times of class change over.*
- *More shared / pedestrian spaces are needed on campus. The space in front of admin should be made less car centric and more people friendly.*
- *There is too much space dedicated to cars in the campus. Having the cars using the same routes as the transit impedes the buses, especially with the high volume of pedestrians using cross walks. I feel that people should just park in the large lots surrounding the campus, and not in the lots like in front of the UMSU building for example. This would make it a lot easier to be a pedestrian and would not slow down the buses as much.*
- *Too many stop signs. Can we plan for roundabouts at least or pedestrian only zones?*

### C.4 Strengthen initiatives and infrastructure to deter bike theft

**Rationale:** The prevalence of bike theft is a significant deterrent for campus members to cycle and deterring those considering an e-bike for longer distance commutes.

Sample related comments:

- *Bicycle theft and vandalism is a huge issue affecting cyclists in Winnipeg. In order to facilitate better cycling access and increase the number of students cycling to campus, I think security of bicycle parking stations should be the highest priority. I think a large, indoor bike storage area guarded by security officers and cameras where students can register to have their bikes stored free of charge would be easiest for students and safest for bicycle security.*
- *Bike theft is the biggest barrier to me biking to school*
- *I cycle from April through November. My biggest concern is bike theft on campus.*
- *We need more bike lockers and surveillance cameras in bike parking areas to deter theft. Having "covered bike valet areas" near buildings could provide part-time employment to students while ensuring secure parking.*

### C.5 Increase availability of bike lockers and advertise bike parking locations

**Rationale:** Demand for secure bike parking appears to be outstripping supply at both Fort Garry and Bannatyne campuses. Diverse locations of the bike cages and lockers are needed for convenience.

Sample related comments:

- *The bike cages for Bannatyne campus are becoming increasingly full. There used to be two options, bike cage at dental building and bike cage on mcdermott/cancer care. Now there is only one bike cage. It would be nice if there were more space because it is becoming increasingly full in the bike cage.*
- *I bike to the Bannatyne campus, and the bike cage is very small and crowded in the summer. Given the rate of bike theft in Winnipeg, particularly in that area, I wouldn't leave my bike outside of a bike cage. More bike cages/safe places to keep our bikes would help a lot!*
- *It would also be great if there were more lockers. I waited a long time for mine, so I assume the wait list indicates that there is enough demand to make more worthwhile.*
- *Maybe advertising safe locations for bicycle lock up would be a good move because while I know these spots exist, I'm not sure where they are. Maybe make them free and advertise them around campus so that it's clear to everyone.*
- *i think the locker rental should be free if they are wanting us to bike to work*
- *The bike cage in the parkade is a great option to keep bikes safe. I did not know about it until a colleague pointed it out. Better advertisement of the bike cage may cause more people to bike to work.*
- *Lots of people are reluctant to leave their bikes in the regular racks for fear of theft, but they don't want to use the big bike locker because it's too far away and inconvenient, and they say it's inconvenient to sign up for the individual lockers or there is a wait list.*

### C.6 Review safety concerns with bike lanes and shared pathways

**Rationale:** Multiple mentions of safety concerns regarding a specific location at each of the Fort Garry and the Bannatyne campuses appears to warrant a review of the infrastructure.

Sample related comments:

- *Dual direction bike lanes on a one-way street are proving somewhat hazardous--drivers turn without looking in the other direction. The bike lock-ups are over-full in the summer months (Bannatyne). The bike lanes were added but pedestrians walk in the centre of them, with a sidewalk a few meters away. Delivery and construction vehicles park in them. Motorized skate boards and hybrid bikes travel at high speeds in bike lanes and pass with no notice. Turning from the bike lane on Sherbrook onto McDermot doesn't provide any leeway for turning. That's proving unsafe. It's a little bit of zoo out there. Nevertheless, it's great to see progress on the infrastructure for cycling.*

- *The bike lane in front of Brodie Centre is 2-way, but car traffic is one way, this causes drivers to only look one-way before turning onto the street, especially at McDermott & Pearl, I have almost been hit by cars there many times because of this.*
- *Safety down mcdermott could also be improved. Many times people driving and turning onto mcdermott do not look both ways. Additionally the sherbook/mcdermott intersection has also been an unsafe intersection for me in the past.*
- *The bike path/crossing at Sidney Smith and Sifton is so dangerous. Cars at the stop sign on Sidney Smith are only looking to the east (because Sifton is a one way road) but the bikes are on the west side of the cars which makes no sense.*
- *There should be more bike routes on campus and consider special bike routes for e-bikes/scooters (they are way too fast to share the path with pedestrians).*

### C.7 Re-open UMCycle and maintain 24-hr bike repair stations

**Rationale:** Convenience and affordability of bike repair on campus are key assets for those who cycle to and around campus.

Sample related comments:

- *The 24h bike self-service stations are often vandalized or otherwise not functional. I needed a pump for a flat tire and was not able to use the pump on the Fort Gary campus*
- *UMCycle is not open during winter months. Even limited hours would be helpful. It would be great if UMCycle could expand its hours or programming during warmer months - this fall, the kiosk was typically only accessible by appointment.*
- *UMCycle has been closed for a long time. It would be handy to have a bike shop on campus with technicians that can help repair a flat tire for example.*

### C.8 Explore how to offer low-cost bikes and/or bike rentals

**Rationale:** The cost of purchasing (or replacing) a bike can be a financial burden for students who would otherwise be willing to bike.

Sample related comments:

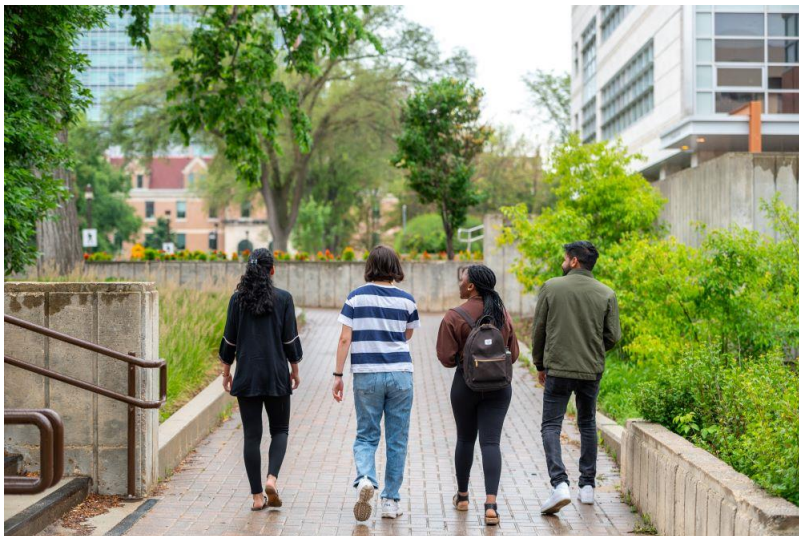
- *I would love to start biking. I don't own a bike and they are quite unaffordable. If UofM could sell used bikes in good condition I would buy one.*
- *If the UM considers providing discounts for e-bikes and other types of vehicles, I would also be extremely interested in this option during the warmer month*
- *I would like to see bicycle rental availability.*
- *Rather than having low-cost cycling options available on campus, free bike rentals would be preferred with added charge for longer rental period (ex. free rental for 2 hours upon leaving ID + \$1 per added hour)*

### C.9 Continue to advocate for cycling infrastructure leading to Fort Garry and Bannatyne campuses

**Rationale:** While several respondents applauded the University for improving bike infrastructure on campus, they noted other areas throughout the city remained difficult for anyone other than a truly confident cyclist.

Sample related comments:

- *I feel like the questions in the survey are not ones UM is able to change, a lot of it is city planning.*
- *Cycling infrastructure on campus has gotten much, much better in the past 5 years, particularly in terms of signage, connectivity, and safety (especially through the parking lot area). The limiting factor for me is that there are giant gaps in the cycle network close to my home in Osborne/River (either have to go under the Osborne underpass or take Pembina to Jubilee, which has a several block long gap with no bike lanes). Having a protected bike lane all the way to campus would change the frequency of my bike commuting. Again, not something UM has a lot of control over.*
- *I am not comfortable riding a bike on the busy streets. Yes, there are designated bike lanes, however, I still have to bike to get to the bike lane.*



## D. MAKE WAYFINDING AND TRIP PLANNING EASY

### D.1 Post more maps and signs on campus

**Rationale:** Respondents frequently cited the need for increased signage, including maps, for cycling, walking, driving and parking.

Sample related comments:

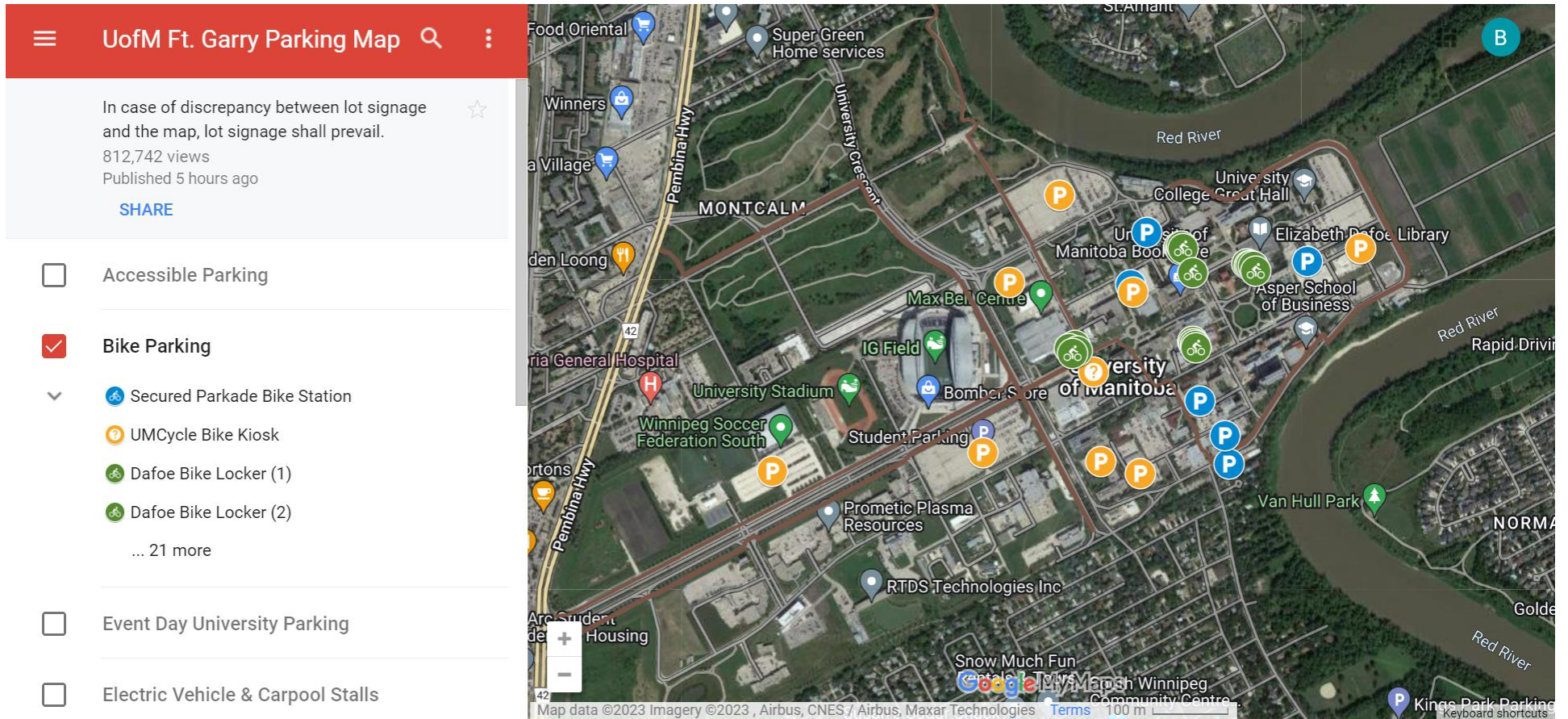
- *I wish there was a map that had better explanation of where there were paths/sidewalks.*
- *Easy to read maps showing both the fastest and safest bike routes to the U of M from each area of the city. Provide free shower access to any staff who bike to campus. (Like Fort Whyte, if you show up on a bike, there's no admission fee). Needing to pay to not be a sweaty mess at work is one reason I choose not to bike.*
- *Parking lots are a bit confusing and not clear on where is appropriate to park and where you will get ticketed in some lots.*
- *Parking signage is often quite confusing (what zone am I in, etc), and the website is hard to follow for visitors to campus.*
- *There have been many times this term when I spend 35 mins looking for a parking space in the sheltered parade. There is no app to find out when the campus shuttle is running.*
- *There should be a definite schedule for when the bus shuttles arrive at parking lots to help with trip planning*
- *there should be maps around the university showing all bus stops and buildings. for a new student, it gets overwhelming.*
- *Wayfinding signs should have been added decades ago. What is taking so long?*
- *I think for the Campus shuttle that is supposed to be helpful for those going from one part of the campus to the other, it would be useful to have a timetable. I have had classes in buildings very far apart and I have wanted to take the shuttle before, but I had no idea what the schedule was like; when the bus comes to the stop, how long it stays there, how often it goes around the campus, etc.*
- *I also think the tunnel maps could be a little clearer (they can oftentimes be confusing and sometimes people get lost in them).*
- *I know the website has info about best bike routes but many people don't know about them: maybe make maps available around campus.*

### D.2 Support sustainable transportation planning for conference travel

**Rationale:** Given the challenges faced by campus members who are willing to use sustainable transportation methods when feasible, provide assistance with planning and locating alternatives could help ease the burden. This would apply whether the University was assisting faculty and staff to attend conferences or assisting those attending a Winnipeg-based conference from outside the city or province.

Sample related comment:

- *When travelling to a conference, we had such a negative experience with travel services when we chose greener alternatives, it was quite surprising (e.g. train and car-pooling). There needs to be a more 'welcoming' environment for people who make these choices, for whatever reason...*





## **E. INCREASE PROMOTION AND COMMUNICATION**

### **E.1 Online Transportation Resources and Orientations**

Continue to promote transportation resources on the UM website to increase awareness of all commuting options and resources available at the University. Include information in orientation package for new students and onboarding of staff, and through the parking office. Explore signage at the entrance of parking lots to encourage sustainable modes.

### **E.2 GoManitoba Tools**

Promote GoManitoba subsite as the hub for U of M's transportation resources and tools. Take advantage of the contest, tracking, and mentorship tools of GoManitoba to help promote all transportation-related events and news.

### **E.3 Targeted Promotion**

Use targeted promotion by season and by affiliation to increase awareness of existing resources (see Section 15).

### **E.4 Demonstrate Action on Survey Feedback**

Heavily promote new commuting-related programs and infrastructure both at the time of introduction and after implementation. Some respondents noted frustration with completing a survey every two years but not seeing their suggestions implemented or not hearing about the implementation of any changes.

## Appendix A: Geographic Distribution of Respondents

### A. All Respondents [n=5813]

Postal Code	Respondents
ROA	124
ROC	54
ROE	31
ROG	75
ROH	12
ROJ	3
ROK	4
ROL	1
R1A	52
R1C	13
R1N	6
R2C	115
R2E	45
R2G	105
R2H	97
R2J	118
R2K	111
R2L	25
R2M	278
R2N	250
R2P	104
R2R	78
R2T	1

R2V	112
R2W	34
R2X	52
R2Y	66
R3A	8
R3B	36
R3C	155
R3E	77
R3G	155
R3H	2
R3J	107
R3K	40
R3L	295
R3M	249
R3N	142
R3P	163
R3R	113
R3S	6
R3T	1392
R3V	58
R3W	57
R3X	198
R3Y	353
R4A	16
R4G	17
R4H	10
R4J	5
R4K	6
R4L	4
R5A	33

R5G	52
R5H	4
R5J	2
R5K	23
R5L	4
R5M	13
R5N	24
R5P	4
R5R	5
R5T	4
R6M	1
R6T	1
R6W	4
R7A	2
R7B	1
R8N	4
R9A	2

## B. Fort Garry Respondents [n=4889]

Postal Code	# Respondents
ROA	112
ROC	38
ROE	26
ROG	67
ROH	11
ROJ	3
ROK	2
ROL	0
R1A	44
R1C	12
R1N	6
R2C	100
R2E	35
R2G	81
R2H	71
R2J	99
R2K	91
R2L	23
R2M	250
R2N	217
R2P	89
R2R	69
R2T	1
R2V	81
R2W	28
R2X	45
R2Y	55
R3A	3

R3B	21
R3C	112
R3E	41
R3G	124
R3H	2
R3J	79
R3K	39
R3L	220
R3M	185
R3N	112
R3P	137
R3R	93
R3S	6
R3T	1279
R3V	56
R3W	45
R3X	173
R3Y	302
R4A	12
R4G	14
R4H	8
R4J	4
R4K	5
R4L	4
R5A	29
R5G	47
R5H	4
R5J	2
R5K	18
R5L	4

R5M	12
R5N	22
R5P	4
R5R	4
R5T	3
R6M	1
R6T	1
R6W	4
R7A	1
R7B	1
R8N	0
R9A	0

### C. Bannatyne Respondents [n=688]

Postal Code	# Respondents
ROA	9
ROC	12
ROE	4
ROG	6
ROH	1
ROJ	0
ROK	0
ROL	7
R1A	0
R1C	0
R1N	0
R2C	10
R2E	8
R2G	20
R2H	21
R2J	14
R2K	19
R2L	2
R2M	21
R2N	26
R2P	12
R2R	8
R2T	0

R2V	25
R2W	3
R2X	6
R2Y	9
R3A	5
R3B	13
R3C	41
R3E	33
R3G	26
R3H	0
R3J	24
R3K	1
R3L	59
R3M	56
R3N	24
R3P	22
R3R	17
R3S	0
R3T	79
R3V	2
R3W	8
R3X	21
R3Y	41
R4A	2
R4G	2
R4H	2

R4J	0
R4K	0
R4L	0
R5A	2
R5G	6
R5H	0
R5J	0
R5K	4
R5L	0
R5M	1
R5N	1
R5P	0
R5R	1
R5T	1
R6M	0
R6T	0
R6W	0
R7A	1
R7B	0
R8N	0
R9A	0

## Appendix B: GHG Emissions Factors & Formulas

GHG emissions are calculated based on fuel emissions factors, vehicle fuel efficiency data, commute distance provided by respondent, and Winnipeg Transit fuel usage and average peak boardings from 2018 data (i.e. the most recent available pre-pandemic).

**Fuel emissions factors** used in this calculation include (based on The National Inventory Report 1990-2020 data<sup>1</sup>):

CO<sub>2</sub> - Gasoline: 2.31 kg/L  
 CO<sub>2</sub> - Diesel: 2.68 kg/L  
 CH<sub>4</sub> - Gasoline: 0.00014 kg/L  
 CH<sub>4</sub> - Diesel: 0.000068 kg/L  
 N<sub>2</sub>O - Gasoline: 0.000022 kg/L  
 N<sub>2</sub>O - Diesel: 0.00022 kg/L

**Winnipeg Transit calculations**<sup>2</sup> are as follows:

CO<sub>2</sub> emissions (kgCO<sub>2</sub>/L) = [1/2 x (distance (km)/44 + distance (km)/60) x 0.5812 (L/km) x 2.681 (kg of CO<sub>2</sub>)]  
 CH<sub>4</sub> emissions (kgCH<sub>4</sub>/L) = [1/2 x (distance (km)/44 + distance (km)/60) x 0.5812 (L/km) x 0.000068 (kg of CH<sub>4</sub>)]  
 N<sub>2</sub>O emissions (kgN<sub>2</sub>O/L) = [1/2 x (distance (km)/44 + distance (km)/60) x 0.5812 (L/km) x .00022 (kg of N<sub>2</sub>O)]

**Vehicle fuel efficiency** data (L/100 km) is based on the most recent vehicle class averages for the top 5 models with exceptions<sup>3</sup>.

Subcompact = 7.5	Full-size = 10.6
Compact = 8.4	Minivan/Crossover = 11.1
Mid-size = 6.5	Hybrid/electric = 4.0 <sup>3</sup>
Large van or SUV = 10.3	Motorcycle = 5.0 <sup>3</sup>
Transit Plus = 10.8	Scooter = 2.0 <sup>3</sup>
Truck = 13.1	

**Commute distances** are calculated automatically through Google mapping technology based on employee home postal code and primary campus as indicated by respondent.

**Carpool emissions** are based on the fuel emissions factor, vehicle fuel efficiency data, commute distance, and number of adult carpoolers (including driver) as indicated by respondent.

**Transit emissions** are calculated based on commute distance, annual fuel usage, and average peak boardings as provided by Winnipeg Transit.

**Park and Ride emissions** are based on vehicle fuel efficiency data, commute distance from home postal code to park and ride site, transit emissions formulas, and commute distance from park and ride site to primary work address.

<sup>1</sup> National Inventory Report 1990-2020: Greenhouse Gas Sources and Sinks in Canada - Canada's Submission to the United Nations Framework Convention on Climate Change (Part 2: Table A6.1-14, Emissions Factors for Energy/Mobile Combustion Sources, p.262)

<sup>2</sup> The average peak boarding figure of 44 (a.m. boardings) and 60 (p.m. boardings) are based on 2018 figures provided by Winnipeg Transit in October 2019. They represent the same key routes used in previous surveys, i.e. 11, 14, 16, 18, 19, 60, 160, 162. This is representative of key routes across the city rather than to the U of M specifically.

<sup>3</sup> Estimates based on internet research