Appendix 2

MOVING YOUR WAY

2023 Saskatoon Household Travel Survey

Final Report

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City of Saskatoon

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MALATEST

DAVID KRIGER

TRANSPORTATION POLICY AND RESEARCH

ACKNOWLEDGEMENTS

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This project would not be possible without the contributions of over 8,000 participating households that responded to this survey, via phone interview or online, and told us about their daily travel. We thank you for your participation in the city's household travel survey; you have contributed to transportation planning data that will be useful for years to come.

SURVEY HIGHLIGHTS

This report presents the findings from the *2023 Saskatoon Household Travel Survey*.

In Fall 2023, the City of Saskatoon conducted a comprehensive trip diary origin-destination (or O-D) survey. The survey asked about the travel made by all household members aged five years or older over a recent 24-hour weekday.

The survey profile will aid the City of Saskatoon in its community plans, transportation plans and other ongoing sustainable planning initiatives. The 2023 survey provides an update to the previous survey conducted in 2013.

The 2023 survey study area coincides with Saskatoon's municipal boundary. The survey was conducted with a random sample of 6,627 households in the study area. A total of 41,400 households were invited to participate by survey invitation letter and/or phone call, for a response rate of 16.0% prior to data validation.

A supplemental survey of students at the University of Saskatchewan captured data representative of 1,227 households. Almost one-quarter (24%) of these students lived off-campus with others but chose only to report on their own demographics and travel. The student survey captured some students attending the Saskatoon campus who live outside the city, so their data were not used in the analysis at the city level.

Another supplemental survey recruited transit riders on board Saskatoon Transit buses and at bus exchanges. The supplemental survey yielded data from 421 households.

The data from the three survey samples were combined into one data file. The data were weighted to compensate for non-response bias and expanded to the population. Care was taken to ensure that the oversamples of transit-user households and University of Saskatchewan students were integrated without over-representing such households.

The final survey dataset used for analysis comprises 7,879 households, after the removal of surveys with failing validation tests and the creation of composite households from surveys with students in multi-person households who only answered about themselves. The survey data were weighted and expanded to represent approximately 281,700 residents in 116,800 households in Saskatoon. As detailed in the report, these survey estimates differ somewhat from the City's official 2023 population estimate.

The survey achieved a sampling rate of 6.7% of households or 6.3% of the population living in private residences and University of Saskatchewan student residences. Overall, the household-level survey results are subject to a margin of sampling error of ±1.5% for household-level results and ±0.9% for person- and trip-level results, at a 95% confidence level, taking into account the effects of data weighting.

Demographics

Population and the numbers of households, workers and vehicles are all important determinants of travel. Since 2013, Saskatoon has experienced a 28.7% increase in population.

Household formation has kept with the growth in population, with the average household size of 2.41 persons per household remaining unchanged since 2013. The working population has grown slightly faster, by 32.1% since 2013.

Mobility access

Mode choice is linked to vehicle access. On average, there are 1.59 vehicles per household and 1.33 vehicles per worker. Access to a vehicle is pervasive, with 90% of all households having at least one vehicle, although this varies by sector. Overall, 81% of households have access to at least one vehicle per worker, while 13% 'car-light' households have fewer vehicles than workers.

A significant proportion of people are dependent on someone else to drive them, or on other non-auto modes for their trips. Ten percent of all households do not have access to a vehicle. One in five (21%) people are under 16 years old, and 7% of Saskatoon's eligible driving-age population do not have a licence.

Just over half (52%) of all Saskatoon households have access to at least one adult bicycle or e-bike. By comparison, 90% of Saskatoon households have access to at least one vehicle. Bicycle ownership does not seem to be a substitute for vehicle ownership.

Employment and commuting

Just over half the population is employed in full-time or part-time work. This is a slight drop from 2013, offset by a slight increase in the unemployment rate and in the proportion of retired people.

Most workers are in occupations that typically (though not exclusively) have a fixed workplace – that is, in jobs that typically entail a regular commute to the same workplace. A smaller proportion of jobs typically, though not exclusively, do not have a fixed workplace, like transport or construction.

Prior to the pandemic, most (83%) full-time workers had a usual workplace outside the home, 12% had no fixed workplace and 5% worked exclusively from home. However, as elsewhere, the proportions changed significantly during the pandemic, which shifted large numbers of workers from their usual workplace to working at home. In Saskatoon, the work-from-home proportions rose to 17%, more than triple that pre-pandemic rate. There was a corresponding drop in workers with a usual workplace, to 70%.

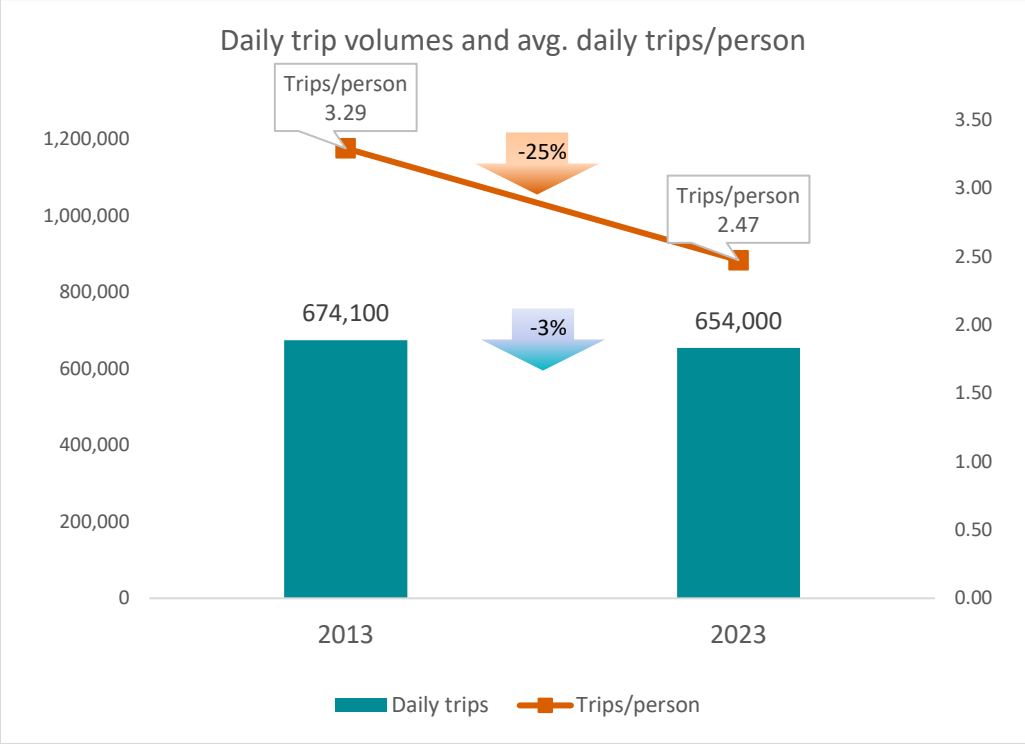
By 2023, the proportion of full-time workers with a usual workplace had almost fully recovered, to 81%. The proportion of workers with no fixed workplace dropped slightly to 10%, with 8% of workers working from home (compared with 5% prior to the pandemic).

In the meantime, a hybrid work environment is emerging. Of those full-time workers who have a usual workplace outside the home, 21% telecommute (work from home) at least once each week.

Total trips and trip rates

Since the 2013 survey, the total number of daily trips made by Saskatoon residents 5+ dropped slightly, by 3%, to 654,000 trips, even with the significant population growth. As shown in the figure, this corresponds to a 25% reduction in the average daily trip rate per person 5+, to 2.47 trips per person in 2023 from 3.29 trips per person in 2013. It corresponds to an identical reduction in daily trips per household, to 5.60 trips per household in 2023 from 7.42 trips per household in 2013. These reductions are consistent with those experienced in other Canadian cities. Trip rates vary by sector.

Daily trips and trip rates, 2013 and 2023



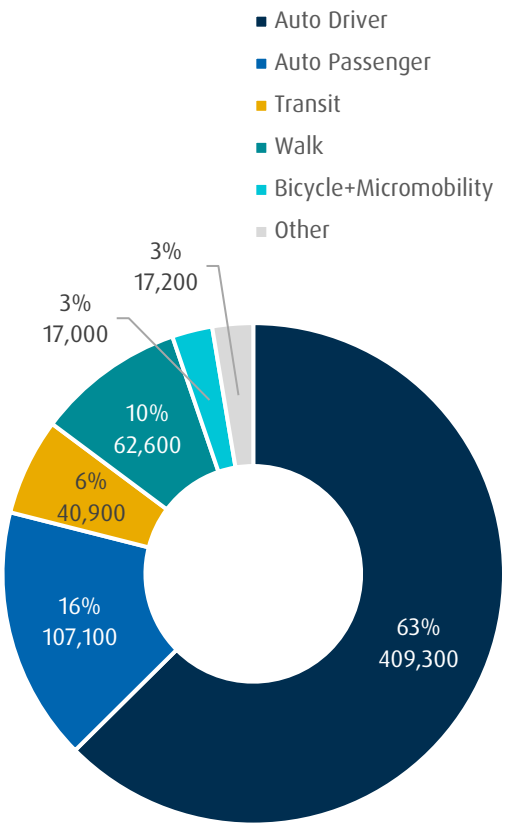
Travel in the two commuter peak periods grew compared with 2013, even as trip volumes decreased at other times of day. This is driven by work and school commutes. The AM peak period is sharper than the PM peak period, which begins early in the afternoon and has a lengthy tail.

Daily mode shares

The figure below shows the mode shares of weekday trips made in Saskatoon by persons 5+, based on the primary mode of the trip. Almost four fifths (79%) of daily trips are made by auto. Of these, 80% are made as the driver, of which 83% are made by the driver travelling alone (52% of all trips by all modes). Another 16% are made with one or more passengers (10% of all trips by all modes).

Six percent of all trips by all modes are made by transit. Active transportation has a 12.2% share of all trips by all modes, of which 9.6% are walk trips, 2.5% are made by bicycle and 0.1% are made by e-bike or micromobility modes.

Daily mode shares, persons 5+, 2023



Auto Driver Trips	Mode share	% of driver trips
Single Occupant (SOV)	52.2%	83.4%
2-Occupant (HOV-2)	7.6%	12.1%
3-Occupant (HOV-3+)	2.8%	4.4%

Transit Access	Mode share	% of transit trips
Walk Access	5.4%	86.3%
Park & Ride (drive access)	0.1%	1.9%
Kiss & Ride (passenger access)	0.1%	1.7%
Bicycle/Micromobility Access	0.0%	0.2%
Other-Mode-Access	0.1%	2.0%
Not applicable - paratransit*	0.5%	7.9%

Bicycle/Micromobility	Mode share	% of bike/ micro-mobility trips
Bicycle	2.5%	95.6%
E-bike/e-micromobility	0.1%	4.4%

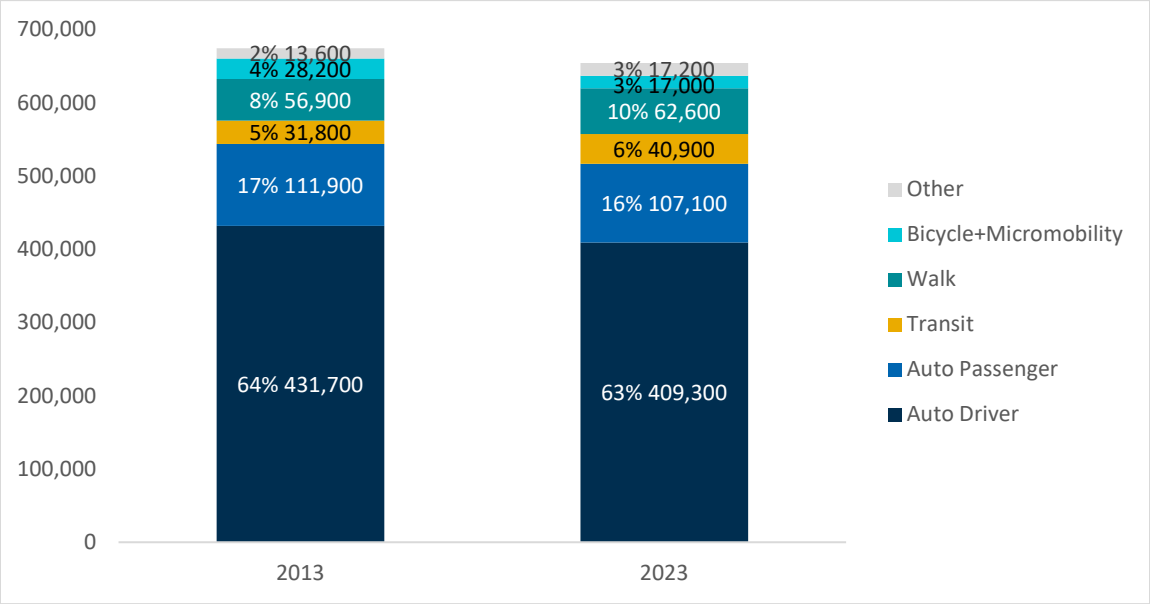
Individual percentages may add to greater than 100% due to rounding.
* Paratransit (Access Transit) is included in the transit total, although it is not an access mode to transit.

The figure below illustrates the change in mode shares for persons 5+ years of age since 2013. While the proportions are generally in the same order, the overall magnitude of trips by all modes has dropped slightly, except for walk (increasing to 62,600 trips and a 10% share in 2023 from 56,900 trips and an 8% share in 2013), transit (40,900 trips and a 6% share in 2023 versus 31,800 trips and 5% share in 2013) and other modes (17,200 trips and a 3% share in 2023 versus 13,600 trips and a 2% share in 2013).

The overall sustainable mode share (transit, walk and bicycle + micromobility) has increased slightly to 120,500 trips and an 18% share in 2023, from 116,900 trips and a 17% share in 2013.

The overall active mode share (walk and bicycle + micromobility) has decreased slightly to 79,600 trips and a 12% share in 2023, from 85,100 trips and a 13% share in 2013.

Daily mode shares, persons 5+, 2023



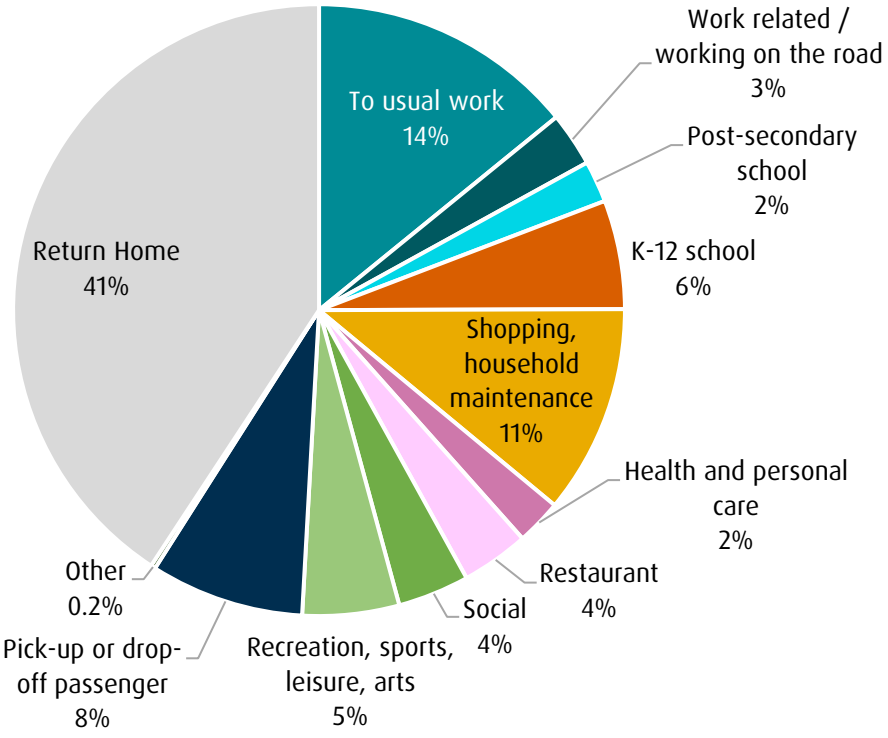
Individual percentages may add to greater than 100% due to rounding.

Trip purpose

Trip purposes based on activity at the trip destination are broken out in the figure below for the 5+ population. For context, 59% of all trips are to destinations outside the home, and 41% are return home trips.

- Trips to work (and for work purposes) and school comprise 25% of daily trips. Stated another way, these trips represent 42% of all trips to destinations outside the home. When trips to pick up or drop off passengers (which are mostly associated with commuting to and from work or school) are included, the combined commuting, commuting-related, and work-related trips sum to just over half the total (56%) of trips that are not return-home trips.
- Trips for shopping / household maintenance and those for health / personal care together comprise 13% of all trips, which represents 23% of all trips other than return home.
- Trips for dining (restaurant), social and recreational, and other activities together make up another 13% of all trips, or 21% of all trips other than return home.

Daily trip purpose, population 5+, 2023



Compared with the 2013 survey, many trip purposes recorded reductions in volume. These include work, work-related, post-secondary school, shopping, health and personal care, pick-up

or drop-off passenger, and other trip purposes. This is consistent with the ongoing pandemic-induced shifts in people's activities, although this may reflect other social and economic factors. The work, post-secondary and serve passenger trips may reflect hybrid work and school arrangements, as observed in recent post-pandemic surveys in other jurisdictions. The drop in shopping, personal business and other household trips is consistent with an increased use of online purchases and appointments.

What this means: a baseline for the future

The 2023 Saskatoon Household Travel Survey provides an important baseline of travel in the post-pandemic period. Compared with 2013, the 2023 survey recorded a significant reduction in both total trips and the average trip rates per person and per household. These reductions also extended to shifts in trip purpose, reflecting in part the emergence of a hybrid working arrangement among other factors.

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ACRONYMS

The table below explains the acronyms that are used in this report or in its appendices.

Acronym	Explanation
AM peak period	Morning commuter peak period, covering the hours from 6:00 a.m. to 8:59 a.m.
CAGR	Compound annual growth rate (annualized compounded average rate of growth)
CATI/CAWI	Computer Assisted Telephone/Web Interview survey systems
CMA	Census Metropolitan Area
CSD	Census Subdivision
F/T	Full-time employment or full-time student
HB trip	Home-based trip: a between home and another place, whether from home to that place or from that place returning home
HBES	Home-based escort passenger trip
HBGS	Home-based grade school trip
HBO	Home-based other trip: trip between home and a place other than work, school, or picking up or dropping off a passenger (i.e., a home-based trip other than HBS, HBW, or HBES)
HBPS	Home-based post-secondary trip
HBS	Home-based school trip (includes HBGS and HBPS trips)
HBW	Home-based work trip
HOV	High-occupancy vehicle (2 or more persons including the driver)
IPF	Iterative Proportional Fitting, a method of balancing multi-variate weighting controls
K12	Kindergarten to grade 12 (grade school)
O-D	Origin-destination
OCP	The City of Saskatoon's Official Community Plan
Men+	Men (and/or boys) plus some non-binary persons, persons with other gender (prefer to self-define), and persons who refused to provide their gender on the survey
NHB	Non-home-based trip: trip that does not have home as either origin or destination
Sectors	Sector Plan Areas
PM peak period	Afternoon commuter peak period, covering the hours from 3:00 p.m. to 5:59 p.m.
P/T	Part-time employment or part-time student
SOV	Single-occupancy vehicle (only the driver)
TMP	The City of Saskatoon's Transportation Master Plan
USask	University of Saskatchewan
WFH	Work from home
Women+	Women (and/or girls) plus some non-binary persons, persons with other gender (prefer to self-define), and persons who refused to provide their gender on the survey

1 INTRODUCTION

1.1 Overview

This report presents the findings from the *2023 Saskatoon Household Travel Survey*.
In Fall 2023, the City of Saskatoon conducted a comprehensive trip diary origin-destination (or O-D) survey. The survey asked about the travel made by all household members aged 5 years or older, over a recent 24-hour weekday. The survey collected information at three levels:

- **Household**, including number of members, number of vehicles and bicycles, type of dwelling and more.
- **Person,** including age, occupational status, type of occupation if employed, whether the person has a driver's licence and more.
- **Trip,** covering the trips made by each household member. For each trip made on the designated survey day, information was gathered about where the trip began (origin), the time the trip began, where it ended (destination), the mode(s) used for the trip (e.g., auto, public transit, bicycle or walk), the purpose of the trip (e.g., commuting to work) and more.

An address-based sample of households was randomly selected and invited to participate by letter. Additionally, some households whose telephone numbers were available were contacted by telephone to target selected areas with low online response rates. Additional supplementary surveys were also done to oversample students of the University of Saskatchewan and Saskatoon Transit users.

The survey profile will aid the City of Saskatoon in its community plans, transportation plans and other ongoing sustainable planning initiatives. The 2023 survey updates the previous survey, which was conducted in 2013.

The 2023 survey study area coincides with Saskatoon's municipal boundary. The survey was conducted with a random sample of 6,627 households in the study area. A total of 41,400 households were invited to participate by survey invitation letter and/or phone call, for a response rate of 16.0% prior to data validation.

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The survey achieved a sampling rate of 6.7% of households or 6.3% of the population living in private residences and University of Saskatchewan student residences. Overall, the household-level survey results are subject to a margin of sampling error of ±1.5% for household-level results and ±0.9% for person- and trip-level results, at a 95% confidence level, taking into account the effects of data weighting.[2]

1.2 Report organization

The report has four chapters in addition to this introductory chapter:

- Chapter 2 explains how the survey was conducted, including an overview of the sampling, expansion and analysis.
- Chapters 3 and 4 present the survey results, with Chapter 3 profiling the household and demographics characteristics gathered from the survey and Chapter 4 profiling the travel characteristics. Both chapters include comparisons with the 2013 HTS where appropriate.
- Chapter 5 concludes the report with a summary of broad recommendations for future household travel surveys in Saskatoon.

The report is accompanied by four appendices:

- Appendix 1 presents the survey invitations (mailed invitation, the transit postcard and the student email).

[1] The expansion of the survey data was based on 2021 Census counts of households (private dwellings occupied by usual residents), projected forward to 2023 using growth rates from health registration data. The expanded survey data only represent population in private dwellings occupied by usual residents, plus a portion of seasonal University of Saskatchewan residents. The expanded survey data do not include the unhoused population or the 2% of population living in collective dwellings, other than University of Saskatchewan students living in residence, who were surveyed. While the expanded number of households represented by the survey data after data weighting matches the forecast of households used, the resulting expanded population may fall short of forecast population in private households in neighbourhoods with small samples of larger households, due to limits placed on extreme weights. The expanded population represented by the survey data is thus somewhat less than official forecasts of total population from other sources.

[2] 19 times out of 20, for a given survey question, the survey response percentage should be somewhere within the margin of error of the survey results. The margin of error has been corrected to take into account the increase in error associated with data weighting to correct for over-/under-sampling and/or non-response bias.

- Appendix 2 presents the survey instrument (scripts).
- Appendix 3 provides a brief overview of how the 2013 survey data were re-queried.
- Appendix 4 lists the neighbourhood, expansion zone and sector geographies.

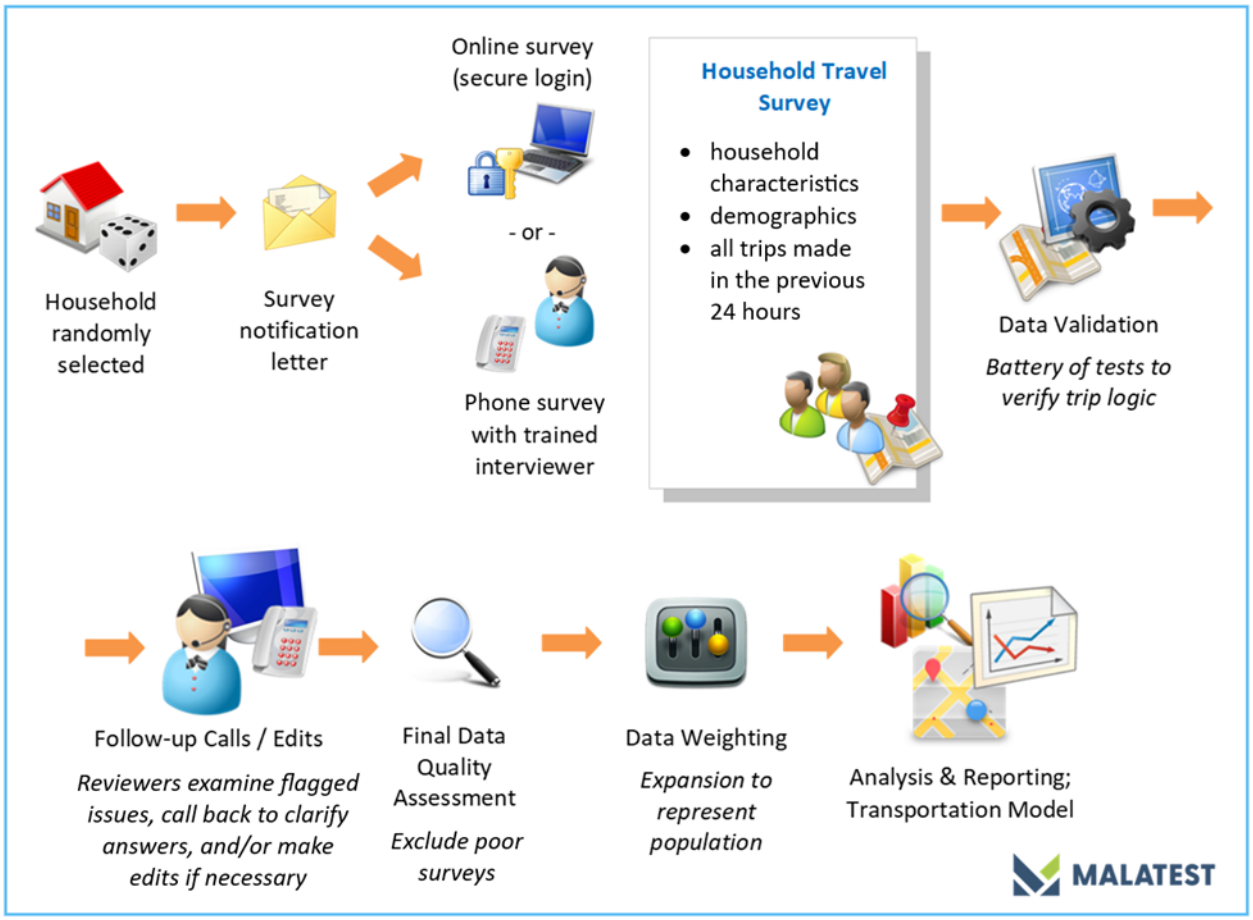
2 SURVEY CONDUCT

2.1 Overview

The 2023 Saskatoon Household Travel Survey is designed to obtain information on mode shares and travel patterns in the study area. The survey captured information on key household characteristics (number of household members, number of vehicles, dwelling type, income); household residents' demographics, socio-economic characteristics and places of work and school; and trips taken over the past 24 hours (from 4:00 a.m. to 3:59 a.m. the next day).

The study method allowed for the completion of surveys both by telephone and online via a 24-hour recall survey. Triptelligence™, Malatest's CATI/CAWI (Computer Assisted Telephone/Web Interview) system, accommodated both survey modes on a single integrated platform. Figure 1 illustrates the general process for the household travel survey. The survey process described in the figure is explained in the sections that follow.

Figure 1. Household travel survey overview

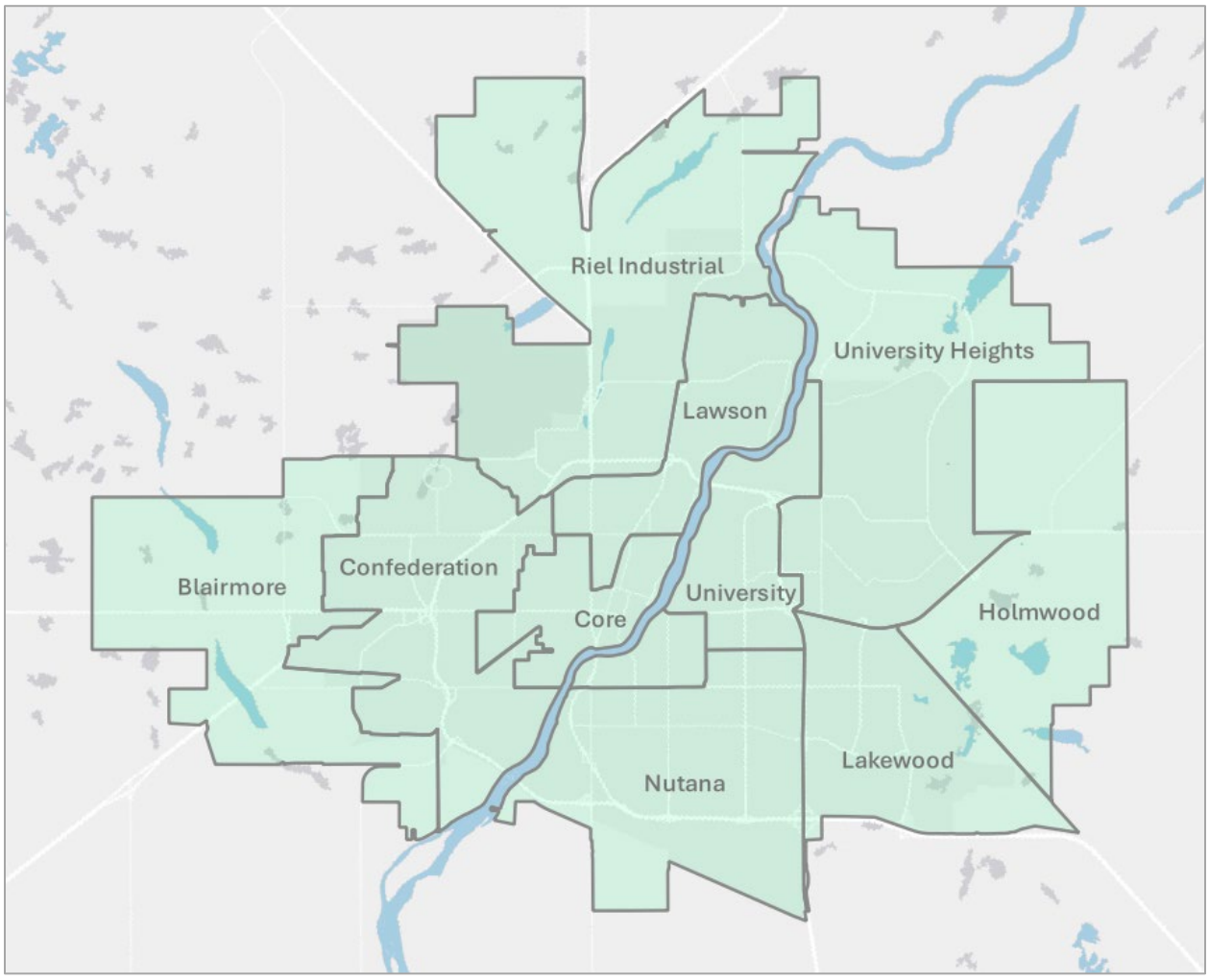


2.2 Survey geography

The 2023 study area coincides with Saskatoon's municipal boundaries. The study area is organized into a set of 10 sectors, that are comprised of 96 neighbourhoods, illustrated in Figure 2. Saskatoon's 67 residential neighbourhoods were used as the basis of developing the initial sampling plan and survey targets.[3]

The 2013 survey geography included the other communities in the Saskatoon Census Metropolitan Area (CMA), which were not included in 2023. For comparisons with the 2013 and 2023 data, the 2013 results have been altered to only include the results for residents of Saskatoon.

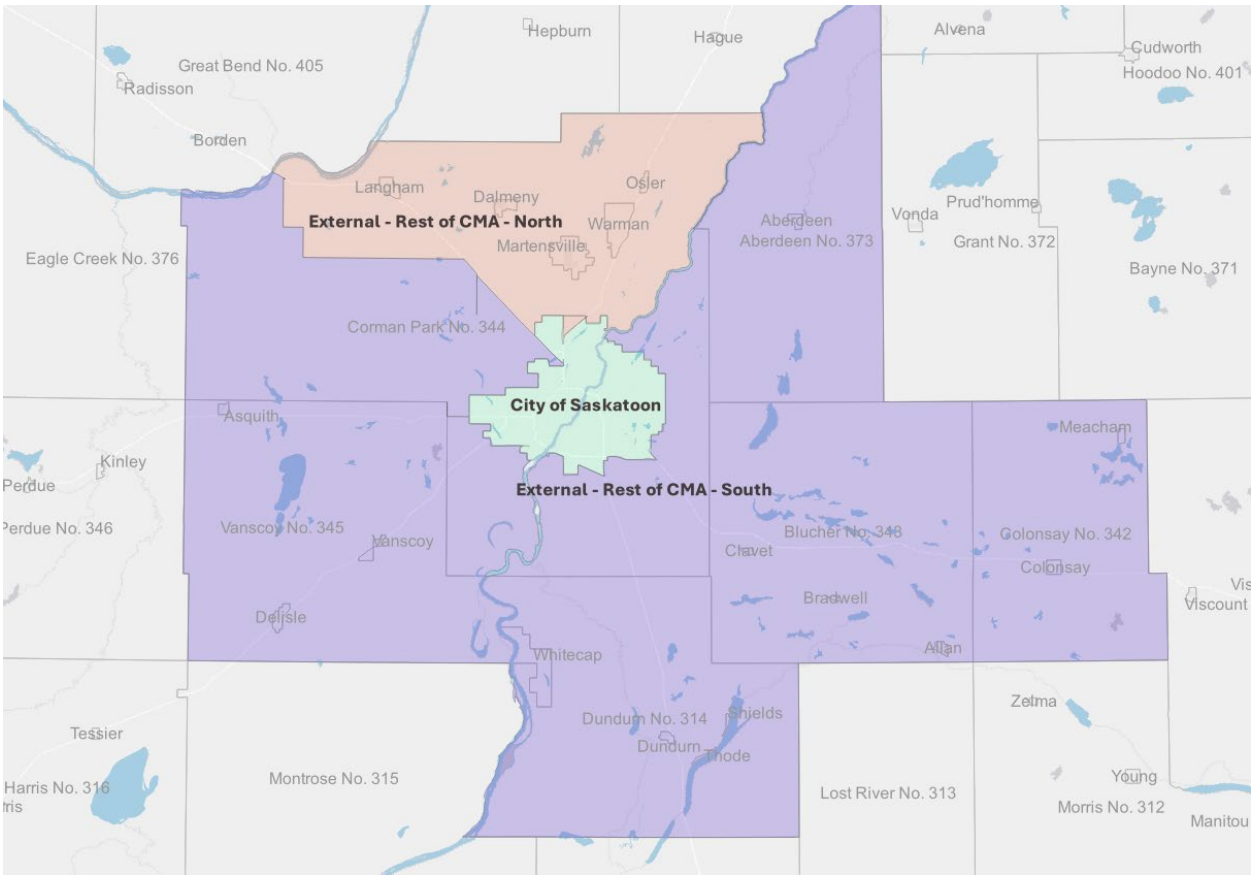
Figure 2. Map of the study area



External trip destinations within the Saskatoon CMA were assigned to North and South zones, as illustrated in Figure 3, or to Rest of Saskatchewan, Rest of Canada West/North, Rest of Canada East, and Other (USA or international). The external zones within the CMA correspond to the two survey areas in the 2013 survey that are external to Saskatoon.

[3] Table 37 in Appendix 4 lists the neighbourhoods associated with each sector.

Figure 3. Map of external zones in the Saskatoon CMA



2.3 Survey design

The primary goal of the 2023 Saskatoon Household Travel Survey is to understand where people are going and how they get there by collecting information on the trips made by each member of the household. The data collected from this study helps shape Saskatoon's future transportation planning.

The City of Saskatoon conducted the Household Travel Survey in the Fall of 2023. The last household travel survey was completed in 2013.

The survey data will benefit the residents of the Saskatoon and provide insight to help:

- Shape Saskatoon's transportation policies,
- Guide Saskatoon Transit operations,
- Identify travel trends,
- Develop analytical tools to forecast travel needs, and,
- Inform future decisions about transportation systems and services.

The 2023 survey design was a household-based survey that collected demographic information on all household members and trip information for household members 5 years of age and older. The survey employed a 24-hour recall method that asked survey respondents to report on

their trips on the previous weekday, from 4:00 a.m. on the previous day to 3:59 a.m. the next day.

What is a trip?

For this survey, a trip was defined as a journey from one place (origin) to another (destination) with a single purpose that may involve more than one mode of travel. For example, travel to work with a stop at a coffee shop is two separate trips: one with a purpose of restaurant/dining and another with a purpose of work.

The survey collected the following data points at the household, person and trip levels for all household members +5 years of age:

Household level

- Confirm have reached appropriate person to complete the survey (online: also confirm at least 16 years of age)
- Confirm phone number
- Travel day surveyed (date and day of week)
- If post-secondary student survey invitation, confirm if living in on-campus
- Confirm household address (Geocode home XY coordinates)
- Dwelling type
- Number of household members
- Number of vehicles available to members of the household (includes company vehicles, lease or own, motorcycles, light trucks, but not recreational vehicles like RVs, UTVs, or snowmobiles)
- Number of motor vehicles of each fuel type (if vehicles are available to the household)
- Number of working bicycles, electric bicycles or other e-mobility devices available to members of the household
- Household income

Person level

- Identifier (respondent's preference – first name, initial, relationship, or other identifier) for reference in survey questions
- Gender
- Age
- Driver's license (yes/no)
- Transit use over the past seven days
- Student status (f/t, p/t)
- School level (Elementary, High School, College, etc.)
- School program type (if post-secondary)
- School program year (if post-secondary)
- School name / location (Geocode school XY coordinates)
- Permanent Residence when not in school, whether in Saskatoon in May (if post-secondary)
- Employed (yes, no, don't know)

- Employment status (f/t, p/t, self-employed, unemployed, retired)
- Occupation Type
- Workplace location (employed) (note if home) (Geocode workplace XY coordinates)
- Weekdays commuted or telecommuted last week
- Made any trips between 4:00 a.m. yesterday and 3:59 a.m. today

Trip level

- Origin (Geocode origin XY coordinates)
- Destination (Geocode destination XY coordinates)
- Trip departure time
- Trip purpose (or activity at destination location)
- Mode of travel (up to five modes)
- Clarify access and egress modes if transit was chosen without a preceding or subsequent mode entry in the trip chain
- Number of buses taken on trip (if transit taken)
- Bus routes boarded (if bus public transit used)
- Number of vehicle occupants (if auto driver or auto passenger)
- Additional information about trip (open-ended response)

2.3.1 Changes to the survey design since the 2013 survey

Survey questionnaire

Several questions were added to the survey instrument in the 2023 survey.

At the household level, the following questions were added:

- Vehicle fuel type: hybrid, electric-only, diesel, biodiesel and other alternative fuel type.
- Number of working bicycles available to household members (adult bicycle, adult e-bike, child bicycle)
- Number of e-micromobility devices
- If post-secondary student survey invitation, confirm if living on-campus (including residence name/building)

At the person level, the following questions were added:

- Occupation type
- Weekdays commuted or telecommuted last week
- Permanent Residence when not in school, whether in Saskatoon in May (if post-secondary)

Other changes were made to response categories:

- Gender (added categories for non-binary, prefer to self-describe, prefer not to say)
- Income (2 additional categories; clarified income ranges and specified before tax amount)
- Mode (2 additional categories: Paid rideshare / non-traditional taxi; E-scooter or other electric mobility device)
- Trip purpose (additional categories and changes, including:

- ‘Working on the road / itinerant workplace / no fixed work address’ added (in addition to existing categories of ‘Going to work (usual place of work)’ and Business-meeting or work-related)
- ‘K-12 school’ and ‘Post-secondary school’ replace ‘To school’
- ‘Drop someone off’ and ‘Pick someone up’ replace the single 2013 category of ‘Escort passenger’
- ‘Social (visiting friends, family, religious gathering)’ and ‘Recreation, sports, leisure, arts, or other recreational activities’ replace ‘Recreational / social / entertainment’
- ‘Picking up a package or online purchase’, ‘Shopping or household maintenance (groceries, gas station, bank, mechanic, vet, etc.)’, and ‘Health and personal care (doctor, massage, etc.)’ replace the two categories of ‘Shopping’ and ‘Personal (e.g., bank, doctor)[4]
- ‘Other trip purpose, specify’ added)

Other changes

Changes were made to the survey method. In 2023, a 24-hour recall method was employed where participants were asked to provide information on the previous 24 hours of household travel (i.e., the 24-hour period between 4:00 a.m. on the day prior to the survey and 3:59 a.m. on the day of the survey). The survey was available for participants to complete online or by telephone. In 2013, the Household Travel Survey used a travel diary method where participants were assigned a travel day and asked to fill out travel behaviour for all household members (between 12:00 a.m. and 11:59 p.m.). The survey was available for participants to complete either online or on paper (submitted by mail).

In 2023, travel data were collected for Monday through Friday. This is consistent with common household travel survey practice, which aims to capture travel across all five working weekdays. In 2013, travel data were only collected for Monday through Thursday, and it is not known why Friday was excluded.

In 2023, the Saskatoon Household Travel Survey included an oversample of transit users. Field workers invited Saskatoon Transit users to complete the household travel survey online or by phone. In 2013, the Saskatoon Household Travel Survey conducted a paper-based supplemental survey with transit users while onboard the bus, which only focussed on the specific transit trip that they were on.

In 2023, the survey area included the city of Saskatoon, and reports on the results for sub-municipal sectors for key survey results. In 2013, the survey area included the entire Saskatoon CMA, and only reported on total results for the entire survey area. In this report, for comparisons, the 2013 results have been re-queried filtering to just the city of Saskatoon.

[4] This the only instance where the 2023 categories do not aggregate neatly to the 2013 categories. For comparisons, all threes 2023 categories need to be aggregated to compare to an aggregation of the two 2013 categories. The design was a balance between the City’s desire to separate out health and personal care and to avoid having too many overly-specific categories.

2.4 Survey conduct

Prior to full administration, a rolling field test (n=400) was conducted with a sample of households across Saskatoon from September 15 to 24, 2023. The pilot test assessed response rates by sample type (Address-and-Phone & Address-Only) and by survey mode (online, telephone), gauged the effectiveness of survey questions and confirmed that the survey programming functioned as intended.

Full survey administration began on September 25, 2023 and ended in early December. The first travel date recorded in the field test was September 15, 2023, and the last travel date recorded was December 1, 2023, by which time the survey completion targets had been met or exceeded for all neighbourhoods.

Households were sent survey invitation letters signed by the City of Saskatoon's Director of Transportation with a branded brochure explaining the purpose of the study, along with a secure access code and instructions for completing the survey online or over the telephone. The mixed-mode telephone/online method maximized opportunities for households to complete the survey. A total of 41,400 households were sent a survey invitation letter, with the largest flights of invitations mailed out in late September and early October, with a few smaller flights in early November.

For addresses with listed landlines, households were contacted by professional interviewers to complete the survey over the phone. Respondents who expressed a preference to do the survey online were provided the option to do so and were e-mailed instructions with a link to the online survey. Telephone surveying began on October 3, 2023 and continued throughout the survey period. Telephone follow-ups for partially completed surveys also occurred in late November/early December to help respondents finish their surveys and to obtain extra survey completions. This activity allowed for a better accounting from underrepresented demographics (such as larger households, younger respondents). The over-achievement of the target number of survey response also provided room to replace any surveys which might later be found to contain unusable data.

As the 2023 Saskatoon Household Travel Survey considers only weekday travel, telephone surveying was limited to Tuesday through Saturday, to collect data on Monday through Friday travel. Online respondents were permitted to complete the survey between Sunday and Monday, with the requirement that they answer the survey with respect to either the previous Thursday or Friday (in such cases, internal programming was set to alternate Thursday/Friday travel day assignment to avoid having an overage of survey completions on Fridays). No calls were made regarding trips made on Thanksgiving (October 9) or Remembrance Day (November 11), as travel recorded on these dates would be atypical of normal travel patterns for many households. Online surveys were also restricted from providing travel for these dates. Data were collected for September 29 and October 2, the weekdays before and after National Truth & Reconciliation Day (Sept 30), which is not a statutory holiday in Saskatchewan but which some employers may have granted paid time off on either the Friday or the Monday.

A prize draw was offered to incentivize participation. The prizes included a grand prize of $500 cash, and eighty $50 gift cards. The prize draw took place in early 2024.

The main survey was conducted with a random sample of 6,627 households in the study area, for a response rate of 16.0% prior to data validation.

2.5 University of Saskatchewan oversample

University of Saskatchewan students were oversampled to ensure a good representation of post-secondary students in Saskatoon. Specialized email invitations were developed to appeal to the student population. The email invitation included a specialized URL for students and a specific call-to-action that requested the representation of students in the research being conducted for the City of Saskatoon. Representatives from the City also attended *Welcome Week* on campus to spread the word about the upcoming household travel survey to the student body.

The University of Saskatchewan sent out invitations to 12,500 students beginning on October 13, 2023. Students were sent the initial email invitation and up to two reminder emails to prompt their interest in the study. A total of 1,227 University of Saskatchewan student survey completions were received (before data cleaning). This equates to a student survey response rate of 9.8%.

A separate prize draw was offered to incentivize participation. The prizes included a grand prize of $500 cash, and twenty $50 gift cards. The prize draw took place in early 2024.

2.6 Transit oversample

Saskatoon Transit users were oversampled to ensure a good representation of transit-related trips. Specialized postcard invitations with a QR code to the survey were circulated by the Consultant's field workers. Just over 6,000 postcards were handed out along randomly sampled bus routes and major transit hubs in Saskatoon. Transit users could scan the QR code, input their secure access code listed on the postcard and access the survey on their personal device, or call a toll-free telephone number to complete the survey over the phone with one of our interviewers. A total of 427 surveys were completed from the transit sample, for a 7% response rate.

As it would not be practical to conduct recruitment on all routes of Saskatoon Transit, a sample of 22 routes was selected out of 53 eligible routes, with the busiest routes automatically selected, least busiest routes randomly sampled, and the very smallest routes (in terms of ridership volume) excluded from sampling. Random selections were fine-tuned to provide a reasonable representation of ridership by route type and area. Once routes were selected, recruitment hours were allocated to each route based on the proportion of total ridership represented by each route. As it was not possible to sample all routes (particularly smaller neighbourhood specials, custom routes, etc.), we ensured that users of these routes were obtained via the following strategies: allocation of more hours to major corridors beyond what would have been allocated if allocation had been done strictly by proportional distribution across the entire system and allocation of hours to transit hubs (as noted earlier).

Field workers were identified by Malatest jackets and nametags. Saskatoon Transit provided a letter verifying the legitimacy of the survey and provided contact information should anyone

wished to inquire further about the survey. Saskatoon Transit buses posted onboard ads about the survey. In addition, Saskatoon Transit drivers and staff were made aware that the survey was being conducted. All field workers were provided with a transit pass during the survey period.

A direct incentive was offered to motivate participation. The incentive was a $10 gift card that was awarded within one to two weeks after survey completion.

2.7 Data processing

After data collection, the survey data were subjected to a battery of validation tests to confirm that the survey questions were completed as intended and to flag possible errors in the data or issues with trip logic. Each night, Malatest's Triptelligence™ data validation system automatically ran a battery of tests on survey completions from the previous day. The system assigned flags for different issues with different levels of priority (critical issue, possible error, warning, etc.) for review by data validation staff. The data validation staff reviewed each flagged survey and either made logical corrections, re-geocoded locations, called back respondents to clarify information, or rejected the survey as unsalvageable. Surveys that passed all data validation tests were randomly selected for manual review to verify that such surveys appeared to be correct and that validation tests were working as expected. Through the data validation process, 2% of surveys were rejected.

The data were also systematically reviewed and tested by data analysts to provide quality control of the dataset and rule out the possibility of any systemic data issues. Any relevant re-codes to the data were undertaken (such as combining captured information on work status, school status or other status into a single occupation variable).

A modest number of missing data points was imputed in preparation for the data weighting by age and gender. Person records with unknown age were imputed (383 who provided a five-year age range and 115 who answered only a broader range, out of 17,853 person records in the dataset used for analysis). Those who reported non-binary gender or who refused to provide their gender (343 persons) were randomly assigned to categories of "men plus a portion of non-binary/refused" or "women plus a portion of non-binary/refused" for data weighting and analysis, as such respondents were too few to analyse separately, following the approach used by Statistics Canada in reporting Census results. They are referred to in this report as "men+" and "women+". The original responses are preserved in the final dataset.

Respondents to the University of Saskatchewan student oversample survey who lived in multi-person households located off campus (i.e., were not in student residences) were given the option to report on their entire household or just themselves. About 24% of all students surveyed in the supplemental student survey opted to respond for just themselves and not report on the demographics or movements of their housemates. Such individuals were grouped into 'composite households' within the same neighbourhood with similar characteristics where possible (similar household size and similar access to vehicles). The household characteristics for the composite household were taken from one of the individuals in the composite household. A total of 110 composite households were created using 283 surveys of students who reported only on their own information.

The student survey captured some students attending Saskatoon's University of Saskatchewan campus who live outside Saskatoon. While their data were considered in the data weighting to the total in-scope enrolment, their data is not used in the analysis, as results were generated only for residents of Saskatoon.

After finalization of the dataset, all latitude/longitude coordinates for locations captured by the survey (home, work, school, trip origin, trip destination) were geocoded using GIS tools to relevant study geographies and to Universal Transverse Mercator (UTM) Zone 13 x-y coordinates.

After data validation and rejection of surveys with unresolvable trip logic issues, 8,111 surveys were retained. After creation of the 110 composite households for university students, the final dataset included 7,938 households including student households outside Saskatoon, while the final dataset used for analysis of just Saskatoon residents (excluding student households outside the city limits) comprises 7,879 households.

2.8 Data expansion and weighting

The data for the surveyed households were expanded to represent the total population living in residential households in the study area and a portion of post-secondary students living in on-campus residences. The survey data were also weighted to more accurately represent the distributions of households by household characteristics and demographics. This is necessary to address non-response bias and uneven sampling rates in the final survey sample.

Households that would normally be counted in the Census were weighted against data controls from the Census, while seasonal students who would not normally be counted in the Census were only included in adjustments for total student enrolment. The transit oversample was integrated into the data weighting in such a way as not to unbalance the natural incidence of transit use.

The study area geography was organized into expansion zones as the base geographical unit for data weighting. The expansion zones were developed based on 35 aggregations of Saskatoon's 96 neighbourhoods, with detailed census profile data available for the 67 residential neighbourhoods. The 35 expansion zones fit within the 10 sectors used for analysis. The expansion zones are detailed in Appendix 4 of this report.

An iterative proportional fitting (IPF) method was employed to balance household weights and person weights for the multiple weighting controls. In this method, incremental adjustments to the household weights are made in succession for each of the household controls, as well as a composite adjustment to each household weight to account for the disproportionate distribution by age/gender amongst the members of each household. Each successive adjustment to balance a given control may slightly or significantly unbalance the correction previously introduced for a different control. However, iteratively cycling through each control results in convergence to a solution where all household and population controls have expected distributions (to within reasonable tolerance; some deviations may be expected, particularly for expansion zones with smaller sample sizes). In this manner, all persons within each household carry the same weight as the household. Limits were set on extreme weights, although they were allowed to range from 0.2 to 5.5 times the base expansion weight for the household's

expansion zone. Only 2% of households received weights above 4.0 times the base expansion weight. The weights received final calibrations to ensure that the total number of households in each expansion zone matched the control totals.

The core weighting controls were developed from 2021 Census data. The controls were selected for having significant influence on trip-making behaviour and for completeness of the information in the survey data. Estimates for 2023 were projected forward from 2021 Census counts based on annualized growth rates by neighbourhood drawn from the City's health population data estimates. It may be noted that the resulting estimates fall somewhat short of the City's most recent population estimates and may differ from the City's own counts of habitable units by neighbourhood. There are differences in methodology between how population and private dwellings are counted in the Census and how they are counted in the City's health registration data and enumeration of habitable units.

Adjustments to the resulting counts were also made to remove the portion of the population outside the survey sampling frame (approximately 1.9% of the population) that lives in collective dwellings or without a fixed address. The adjustments to the distributions of population by age group considered that seniors make up a greater portion of the population living in collective dwellings. In some smaller expansion zones, certain age and/or gender categories may have been collapsed further due to small sample sizes or strata with no sample.

Throughout the IPF iterations, Census-level weighting controls were applied to households in both the main address-based sample and the portion of the University of Saskatchewan student oversample that answered questions on the survey that indicated that the Saskatoon was their permanent home. Student households, and students within Census households, that indicated that their permanent home was outside Saskatoon and that they would not have been counted in the Saskatoon Census Subdivision in a census if it were conducted in May only received adjustments pertaining to student enrolments.

For each expansion zone, the weighting controls applied to 'Census households' included:

- total households (private dwellings occupied by usual residents),
- household counts by dwelling type (house, apartment, other ground-oriented[5]),
- household counts by household size (1-person, 2-person, 3-person, 4-person, 5+ person),
- population counts by age and gender (12 age ranges, 2 genders[6]),

Of note, census profile data were not available for the Riel Industrial sector, which has only a few private households (and most of its population is in collective dwellings, i.e. the provincial correctional facility). The three surveys obtained for this sector did not receive any weights, although they are included in the survey dataset.

[5] 'Other ground-oriented' includes dwellings such as town houses, row houses and semi-detached dwellings but excludes single-family dwellings and apartments.

[6] Men+ (men, boys, and some non-binary persons) and Women+ (women, girls, and some non-binary persons).

Overall weighting controls applied to the entire sample of University of Saskatchewan students (whether in Census or non-Census households) across all geographies included:

- counts of undergraduate, graduate, and non-degree students,
- counts of part-time and full-time students, and
- total in-scope student enrolment broken down into three broad categories: students living in residence, students living in Saskatoon, and students living outside of Saskatoon. [7]

Person-level weighting adjustments for students were averaged and applied at the household level.

In addition, the weights were seeded by an initial adjustment of household counts by neighbourhood, to better balance the sample geographically within each expansion zone. After this, the expansion zone level adjustments took over. It should be noted that the sample may not necessarily be fully balanced by neighbourhood or transportation analysis zone.[8]

To integrate the transit oversample without unbalancing the natural incidence of transit users and transit trips required two complete runs through the data weighting. In the first run, only households in the main address-based sample and student oversample were included in the data weighting. After this, statistics were generated for the weighted number of persons with and without transit passes, the weighted frequency of transit use (number of days using transit in the last seven days), and the weighted volume of transit trips in the survey data (for validation only). In the second run through the data weighting, the transit oversample was introduced. Two new controls were introduced for each full iteration through the weighting adjustments and applied across all geographies:

- the expanded count of persons with or without a transit pass in the results without the oversample (three categories: yes, no, unknown); and
- the expanded count of persons who used transit different numbers of times in the last seven days (nine categories: zero through seven days, and unknown).

After this second run through the data weighting, the survey data were reviewed to verify that the University of Saskatchewan student enrolments, household/demographic Census controls were still satisfied, as well as to confirm that the incidence of transit users and incidence of transit use in the last seven days were also the same as before the introduction of the transit

[7] In-scope student enrolment includes students registered in the Fall 2023 term in one or more in-person or online class offered on main campus (i.e., excluding Prince Albert and Regina campuses) including headcounts of both full-time and part-time students. Excluded were students whose only classes at main campus are online and who have an address on file outside Saskatoon. The enrolment figures include all levels of study (undergraduate, graduate, non-degree). Total University of Saskatchewan headcount enrolment for Fall 2023 was 23,380, while total in-scope enrolment was 19,407 students, broken out as 17,645 full-time and 1,762 part-time; and 16,294 undergraduates, 3,034 graduate, and 79 non-degree students. The estimate of students living in residence was based on the number of residence beds and the estimate of the number of students living outside Saskatoon was based on the incidence of such students in the student oversample (6%) applied to total in-scope enrolment, while the estimate of the number living in Saskatoon was the remainder.

[8] Transportation analysis zones are small geographies that are used in travel demand forecasting models for the estimation of trips (trip generation). See also section 5.3.

oversample. Further review of the data also revealed that the transit trip volumes were almost the same before and after the introduction of the transit oversample (even though the number of transit trips was not used as a control). However, it may be noted that it may be possible for the introduction of the transit oversample to introduce some bias that the various weighting controls could not correct for. In particular, the total number of trips in the expanded survey data were about 1% less after the introduction of the transit oversample, with most of this difference attributed to an equivalent reduction in auto driver trips. It is also possible that this slight change in the overall results could be due to an improvement in the representation of lower-income households due to the inclusion of the transit oversample (as lower income households often have less access to automobiles and fewer daily trips on average).

To contain the variance of the data weights, no attempt was made to adjust the weighting to balance the survey sample by day of week, as such weighting could create more extreme high or low data weights. It may be noted that travel on Mondays is under-represented (13% of all surveys, in part due to postal delivery dates for the mailouts, in part due to statutory holidays usually being Mondays) while Fridays are over-represented (31% of all surveys, due to a higher likelihood of the survey being completed as the previous weekday for any response submitted between Saturday through Monday). As Fridays and Mondays both have lower average daily trip rates than Tuesday through Thursday, which are almost identical, the over- and under-representation of these days should balance out, although there may be some bias towards any trip purposes that may be more common on Fridays.

2.9 Validation of the weighted survey data

The weighted survey data were validated against Census statistics (various household and demographic characteristics, other available reference data (enrolments). The results compared favourably for most Census characteristics, including geographic distributions, most household size categories, dwelling type, age/gender, and household income. This suggests that the survey results can be taken to be generally representative of the total population. However, it may be noted that in some expansion zones, the survey under-represents households with five or more persons and thus may slightly under-represent population even when the number of dwellings matches Census counts. It also may be noted that the weighted survey results are less than total population given that persons living in collective dwellings are not in scope, other than the University of Saskatchewan students living in residence, who were surveyed.

The weighted number of University of Saskatchewan students matches very closely with enrolment figures provided by the University.

Comparison against Saskatoon Transit ridership figures suggests that the survey data may over-represent transit use. The weighted survey results suggest just over 38,000 daily transit bus trips[9] with over 49,000 boardings, whereas average e-ridership figures for September through November 2023 suggest in the area of 30,200 fares registered. However, it may be noted that there may be some under-counting of transit fares in the e-ridership figures, particularly during peak periods and/or for boardings at the University of Saskatchewan where almost all students

[9] This differs from the expanded number of Transit trips reported in the analysis. The Transit aggregate category used for analysis combines Saskatoon Transit bus trips with Access Transit trips.

have transit passes (and enforcement of swiping passes on boarding may sometimes be less enforced particularly during busy periods). For context, the difference between the estimated survey estimate for daily transit trips and the e-ridership fare count represents approximately 1% of total expanded trips reported for all modes of travel.

2.10 Statistical reliability

Even with a thorough data sampling, quality control, processing and weighting built into the survey, it is inherent in any survey to have some residual and unavoidable errors, such as sampling errors. To inform applications of the survey data, this section discusses data reliability and explains any sampling errors in the data. The section concludes with a summary of any caveats that analysts should note when using the data.

2.10.1 Data reliability

As with any survey, the data collected can be subject to sources of error or bias that can affect the reliability of the survey results. Potential sources of error can include the following:

- **Undercoverage.** Coverage error is associated with the failure to include some populations in the same frame used for sample selection, which may occur with samples of convenience such as telephone directories. The sample frame used was a Canada Post database of mailable residential addresses which provides excellent coverage of private dwellings in the study area, reducing the concern of under-coverage. However, the Canada Post database may sometimes miss some housing types, such as basement / secondary suites, mobile home parks and other non-conventional dwelling types.
- **Non-response bias.** Non-response bias occurs when individuals who do not participate in a survey differ in relevant ways from individuals who do participate. For example, younger people are often less inclined to participate in surveys. This bias has also been addressed, in part, through the data expansion process, including the weighting by household size, dwelling type, age, gender and post-secondary enrolments. However, it should be noted that there can be other, hidden biases in the data that could not be corrected by the data weighting.
- **Measurement error.** This type of error is associated with the failure of survey instruments to capture correct information (e.g., through misunderstanding survey questions). To control for this, the questionnaire and associated materials were based on previously well-tested survey questions, thoroughly reviewed for content and meaning and field-tested with a sample of respondents prior to the full survey administration. Telephone interviewers were trained on the objectives of the survey, definitions of key terms, the intent of survey questions and how to address different trip circumstances described by respondents. During survey administration, interviews were regularly monitored by a supervisor to ensure consistent application of questions. The online survey also included several built-in tests to prompt respondents to confirm key data and clarify illogical responses (e.g., checking for someone who reported their travel mode as ‘auto driver’ even though they were not reported as having a driver’s licence).

- **Processing error.** Processing errors include data entry, coding, editing and imputation errors. These potential sources of error were addressed through comprehensive training of survey staff and survey validation staff, continuous quality management practices and data validation.
- **Sampling error.** Sampling error refers to the variability that occurs by chance because a sample was surveyed, rather than the complete population. As best as possible, sampling error was controlled by obtaining a robust survey sample and targeting of areas with lower-than-expected response rates.
- **Error due to extreme weights when analysing small samples.** Notwithstanding the limiting of very extreme weights in the data weighting, small sample sizes for some strata and non-response bias may contribute to the assignment of high weights for some cases relative to others within the same geographic zone or population stratum. Users of the data should take note that the sample sizes for some zones are relatively modest. The survey results for such zones should be interpreted with caution. Caution should also be exercised when analysing any small subgroups of the total population.

2.10.2 Estimates of sampling error

Sampling error can be estimated based on the size of the sample universe (number of households in the study area) and the number of household survey completions. The estimated margin of error for the survey results at the household level is at ±1.5% at a 95% confidence level (theoretically, for a given survey question, the true response proportion for the population would be somewhere within the margin of error of the survey results 19 times out of 20), taking into account the effects of data weighting on sampling error. For person- and trip-level survey results for the entire study area, the sampling error is estimated to be ±0.9%. Sampling errors increase when the study area is disaggregated into sectors or other sub-municipal districts, or when analysing population sub-samples.

Table 1 on the following page provides the household sampling rate, the household and person sample sizes and the household and person sampling errors for the geographies in the study area. All sectors had robust sampling rates (ranging from 6.4% to 11.6% of the estimated number of households), nevertheless, the Blairmore, University, and Holmwood sectors have higher levels of sampling error than other sectors and should be interpreted with more caution. Even with these higher sampling rates, the sampling errors in these sectors are somewhat higher than for other sectors due to the numerically small samples.

Table 1. Survey samples and sampling errors for different levels of reporting

Geography	Households *	Population *	Surveys	Sampling Rate (% of Households)	Sampling Error, Household Level (±%)	Persons in Surveyed Households	% of Population in Private Dwellings	Sampling Error for Persons, Trips Info (±%)
Saskatoon	116,800	281,700	7,879	6.7%	1.1%	17,853	6.3%	0.7%
Sector								
Core Neighbourhood	17,200	32,700	1,224	7.1%	2.7%	2,277	7.0%	2.0%
Confederation	21,400	57,900	1,361	6.4%	2.6%	3,334	5.8%	1.6%
Blairmore	2,800	8,000	189	6.7%	6.9%	515	6.5%	4.2%
Lawson	11,300	26,700	751	6.7%	3.5%	1,659	6.2%	2.3%
University†	1,600 †	2,400	147	9.0%	7.7%	225	9.3%	6.2%
Holmwood	1,500	4,200	176	11.6%	6.9%	474	11.4%	4.2%
University Heights	18,600	49,300	1,280	6.9%	2.6%	3,184	6.5%	1.7%
Lakewood	18,000	44,200	1,180	6.6%	2.8%	2,714	6.1%	1.8%
Nutana	24,300	56,300	1,568	6.5%	2.4%	3,467	6.2%	1.6%
Riel Industrial‡	10	11 ‡	3	n/a	n/a	4	n/a	n/a

* In this table, Households and Population are the expanded survey estimates and include both Census households and student households not counted in the Census. Figures may differ from the Census and reflect some under-representation of total population due to the under-representation of households with five or more persons and/or because persons living in collective dwellings and unhoused persons are not included in the sampling frame.

† The number of 'households' in the University sector is based on the surveys collected from students living in residence. In reality, only some students in residence live in traditional households in conventional apartments, while others live in collective dwellings such as dormitories.

‡ While the Census counts a population of over 700 in Riel Industrial, the majority is housed in a provincial correctional facility and is outside the scope of this study.

Reporting of survey results related to trips originating in or destined to given sub-regions or municipal sectors includes trips made by residents of the given geography as well as other residents of the study area from outside the given geography. Therefore, the sampling error associated with information on trips to, from or within the area would be much better than that for just the trips made by residents of the area. The sampling errors for person-level information can be considered to carry over to the trips those people make (i.e., the sampling error is associated with the entire trip chain). Therefore, the calculation of sampling error can be undertaken using the number of persons as the sample size rather than number of trips.

2.10.3 Caveats

Sampling error is not the only possible source of error. While efforts have been made to control for possible error and to weight the data to be more representative of the population, there may still remain some non-response bias or other sources of error not accounted for in the data weighting and data processing.

The inclusion of the student and transit oversamples contributes to the robustness of the survey data and allows for more detailed and reliable analysis of these subpopulations. Nevertheless, the possibility exists that these oversamples may have introduced biases that are not easily detectable. In addition, the segmentation of the sample into Census households and non-Census households (those composed entirely of University of Saskatchewan students who are seasonal residents who would not usually be counted in the Census) is based on survey responses; if students who are seasonal residents were less likely to respond than those who live in Saskatoon, it may be possible for seasonal residents to be under-represented, Census households with University of Saskatchewan students to be over-represented, and for local households without University of Saskatchewan residents to thus be slightly under-represented.

Comparisons to 2013 survey results were undertaken by re-analysing the main 2013 survey data set with equivalent parameters to 2023 and may not match previously published results. The 2013 survey data were limited to Saskatoon residents to match the 2023 survey geography (i.e., excluding the 2013 survey respondents who lived in the Census Metropolitan Area outside Saskatoon). There may be differences in methodology (sampling approach, non-response bias, treatment of data, and/or data weighting approach) that may affect comparisons. Of note, the 2023 survey data include students living in student residences, whereas the 2013 survey data do not appear to do so.

The weighted survey data are based on a sample of population expanded to represent the total population of persons living in private dwellings (excluding population living in collective dwellings). As such, expanded counts from the survey data should be understood to be estimates, not exact counts.

3 HOUSEHOLDS, DEMOGRAPHICS, VEHICLES AND BICYCLES

3.1 Overview

This chapter describes the household and demographic factors that influence people's travel choices and patterns. The chapter discusses how these relate to each other. It also notes how they have changed over time, especially considering the profound pandemic-induced shifts in social, economic and travel activity that transpired between the 2013 and 2023 surveys.

Note that the factors and proportions presented in this chapter reflected the survey results, which were expanded and validated to Census and other reference statistics described in the previous chapter. As a result, in most cases the results are consistent with these references. However, the population and households in the survey may not necessarily align with the 2021 Census given that the figures below include growth factors from 2021 and 2023, and also include seasonal students who would not normally be counted in the Census. As well, references to the working population may differ from the Census, given that the 2021 Census was taken at the height of a Covid wave whereas the household travel survey was conducted 18 months later. These differences refer specifically to total employment, mode of travel to work and the number of people working at home.

3.2 Summary of key indicators

This section traces the growth in population, the working population (workers) and households across the study area since 2013. It also profiles vehicle availability, for which data are available only for 2023. These parameters are all important determinants of travel behaviour hence they are the starting point for this chapter.

Table 2 traces the growth in population, workers and households across the study area for each survey since 2013. **Saskatoon has experienced significant growth in the 10-year period.** The **total population and households have grown at virtually the same rate** (28.7% and 28.6%, respectively): In other words, household formation has kept pace with the population growth. **The number of employed workers (the working population) has grown faster than the overall population**, at 32.1%: The significance lies in the importance of the work commute to daily travel patterns, which is discussed later. The surveyed 5+ population has grown slightly faster than the total population, at 29.7%.

Table 2. Scope of the study area – total population, workers, households and vehicles

Survey Year	Geography	Population	Population 5+	Employment (Workers)	Households	Vehicles *
2023	Saskatoon	281,700	264,400	139,100	116,800	185,300
2013	Saskatoon	218,800	204,800	105,300	90,800	n/a
2013 to 2023 % increase		28.7%	29.1%	32.1%	28.6%	n/a

* Vehicle data are not available for 2013 (question was not asked). Source: Expanded survey data.

Table 3 examines how the key indicators relate to each other. These relationships help explain how and why travel behaviour, described in the next chapter, has changed over time. Overall, these relationships have been stable or have experienced only gradual changes:

- **Average household size has not changed.** The average household size remained at 2.41 persons per household measured against total population, and 2.26 persons per household when counting only those 5+ years old.
- **Average household composition has changed modestly**, with the average number of workers per household increasing by 2.69% to 1.19 workers.
- Vehicle availability data are not available for 2013. However, on average **each household had 1.59 vehicles available to it in 2023**. As discussed in section 3.4.1, vehicle availability is a key factor in travellers' choice of mode.
- On average, **there were 1.33 vehicles per worker in 2023**. This rate is 12% greater than the average number of workers in the household – meaning that there are more than enough vehicles on average for each worker.[10] This matters because employed household members often have priority for the household's vehicles. Their trips to and from work make up significant proportions of peak period travel volumes. On the other hand, their habitual commutes make them more conducive to using transit and other alternatives to driving.

Table 3. Key demographic indicators and their relationship to each other

Survey Year	Geography	Population / hhld	Population 5+ / hhld	Workers / hhld	Vehicles / hhld *	Vehicles / worker *
2023	Saskatoon	2.41	2.26	1.19	1.59	1.33
2013	Saskatoon	2.41	2.26	1.16	n/a	n/a
2013 to 2023 % increase		0.09%	0.36%	2.69%	n/a	n/a

* Vehicle availability data are not available for 2013 (question on number of household vehicles was not asked).
'Hhld' = household.
Source: Expanded survey data.

Finally, as a means of grounding the survey findings it is useful to compare the key indicators with those from recent travel surveys in other Canadian cities. Table 4 compares the 2013 and 2023 Saskatoon findings with surveys from the Capital Regional District (Victoria region), which enables pre- and post-COVID comparisons, and the cities of Edmonton and Winnipeg, which are other Prairie cities. Although the demographic and economic structures of the three regions varies, the comparison confirms that **the key Saskatoon indicators are reasonable and within**

[10] Calculated as 1.33 vehicles per workers / 1.19 workers per household. Note that workers' priority for the household vehicle reflects experience observed in surveys across Canada. It does not necessarily reflect the needs of other household members; rather, how the household members collectively might or might not decide to make their trips. The focus here on workers' mode choices also corresponds to their primacy as a target market for transit because the regularity of their trip to and from home makes them most conducive to switch to that mode. The fact that, on average, there are more than enough vehicles for each worker means that, on average, households have enough vehicles to support the habitual commute to and from work by auto while also enabling, on average, the uses of the household vehicle for other non-work-related travel.

expectations, and that their relative stability over time is also within expectations.[11]

Table 4. Comparison of key indicators

Survey Year	Saskatoon *		Capital Regional District **		Edmonton ***		Winnipeg †
	2013	2023	2017	2022	2005	2015	2007
Population	218,800	281,700	363,000	394,000	712,400	894,400	632,970
Persons / household	2.41	2.41	2.20	2.19	2.38	2.43	2.39
Vehicles / household	n/a	1.59	1.55	1.55	n/a	1.63	1.41
Vehicles / person	n/a	0.66	0.70	0.71	n/a	0.67	0.59

* Source: Expanded survey data. Vehicle availability data not available for 2013.

** R.A. Malatest with David Kriger Consultants Inc., *2022 CRD Origin-Destination Survey*, Final Report, prepared for the Capital Regional District of British Columbia, September 2023. Refers to residents and households in the Regional Planning Area.

*** R.A. Malatest with David Kriger Consultants Inc., *2015 Edmonton and Region Household Travel Survey, Summary Report*, prepared for the City of Edmonton, April 2018.

† R.A. Malatest with iTRANS Consulting, *2007 Winnipeg Area Travel Survey Results – Final Report*, July 2009.

Table 5 summarizes 2023 population and households by sector, and Table 6 shows how these indicators have changed since 2013. Most sectors have grown since 2013, although Core Neighbourhood's population has dropped slightly. Blairmore has experienced a more than 9-fold increase in population and a 6-fold increase in households, reflecting the sector's recent residential development. University Heights' population and households have also grown faster than the overall city-wide growth rates, reflecting growth in the Evergreen and Aspen Ridge neighbourhoods. Nutana's higher than average growth in population and households reflects growth in Stonebridge.

[11] While this finding is valid, it should be noted that the Saskatoon data include an oversample of University of Saskatchewan students (weighted to total student enrolment), which may include students living on campus and other seasonal students, which may affect comparability with other cities.

Table 5. Total population and households by sector, 2023

Sector	Population	% population	Households	% households
Core Neighbourhood	32,700	11.6%	17,200	14.7%
Confederation	57,900	20.6%	21,400	18.4%
Blairmore	8,000	2.8%	2,800	2.4%
Lawson	26,700	9.5%	11,300	9.7%
University*	2,400	0.9%	1,600	1.4%
Holmwood	4,200	1.5%	1,500	1.3%
University Heights	49,300	17.5%	18,600	15.9%
Lakewood	44,200	15.7%	18,000	15.4%
Nutana	56,300	20.0%	24,300	20.8%
Riel Industrial**	0	0.0%	0	0.0%
Saskatoon	281,700	100.0%	116,800	100.0%

Source: Expanded survey data.

* The number of 'households' in the University sector is based on the surveys collected from students living in residence. In reality, only some students in residence live in traditional households in conventional apartments, while others live in collective dwellings such as dormitories.

** While the 2021 Census counted a population of over 700 in Riel Industrial, the majority is housed in a provincial correctional facility and is outside the scope of this study, and there are fewer than 50 private households.

Table 6. Changes in population and households by sector – 2013 to 2023

	Population increase	Household increase	% population increase	% household increase
Core Neighbourhood	-800	200	-2.3%	1.3%
Confederation	7,900	3,400	15.9%	18.8%
Blairmore	7,200	2,400	938.8%	603.0%
Lawson	100	200	0.4%	2.1%
University*	2,400	1,600	n/a	n/a
Holmwood	4,200	1,500	n/a	n/a
University Heights	16,900	6,800	52.3%	57.2%
Lakewood	9,300	3,800	26.7%	26.4%
Nutana	15,600	6,000	38.2%	33.0%
Riel Industrial **	n/a	n/a	n/a	n/a
Saskatoon	62,900	25,900	28.7%	28.6%

Source: Expanded survey data.

* Comparisons cannot be made as the 2013 survey did not survey any households in this sector, whereas the 2023 survey surveyed students living in residence.

** Riel Industrial's sample size was very small (four households). Accordingly, it is not meaningful to report changes.

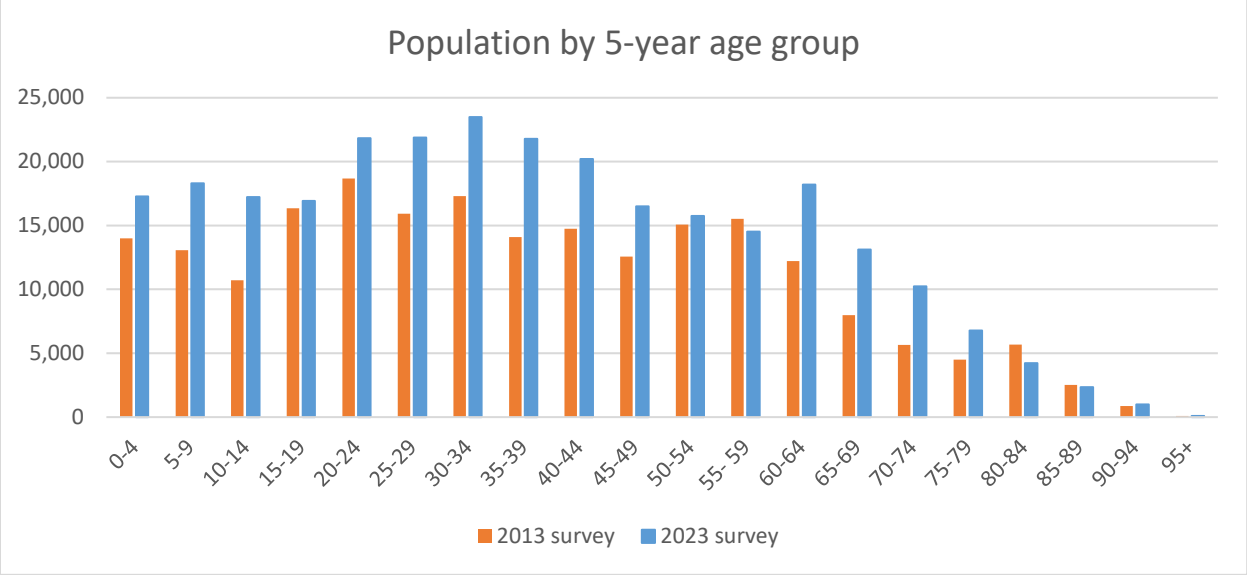
3.3 Households and demographics

This section provides information on several other factors that influence travel behaviour.

3.3.1 Age distribution of population in private dwellings

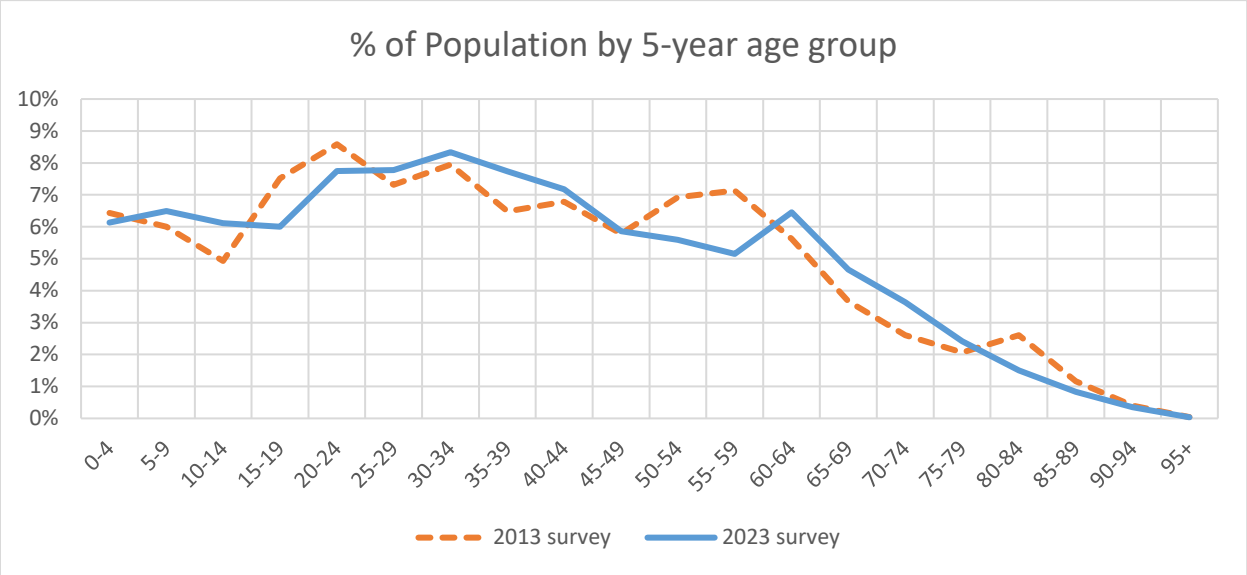
Age is an important indicator of travel behaviour, reflecting in part an individual's occupational status as well as their responsibilities in the household and the modes that are available to them. Figure 4 shows the 2013 and 2023 populations by 5-year age groups from the weighted survey data. Figure 5 shows how the percentage distribution of these age groups has evolved over time. The survey data suggest that the population of all age groups has grown substantively, except for the following age groups which have similar numbers compared to 2013 (only slight growth or decline): 15 to 19, 50 to 54, 55 to 69 and age groups for those 80 and above. Overall, the 2023 population has aged, with the young adult and older adult population 'bubbles' shifting forward as one might expect. It should be noted that this analysis illustrates the trend in the survey data (which used aggregate age groups in the data weighting and expansion) and may differ somewhat from a Census comparison.

Figure 4. Population by 5-year age range, 2013-2023 survey data



Source: 2013 and 2023 expanded survey data. Note that the 2013 survey data aggregated ages to 6 age groups for data weighting and the 2023 survey data aggregated ages into 12 age groups for data weighting. If there were different levels of non-response bias within the ranges used for data weighting, there may be variance in the 5-year age ranges that deviates from the actual population distribution, although the 2023 profile was tested to quite close to Census for most 5-year ranges.

Figure 5. Population distribution by 5-year age range, 2013-2023 survey data



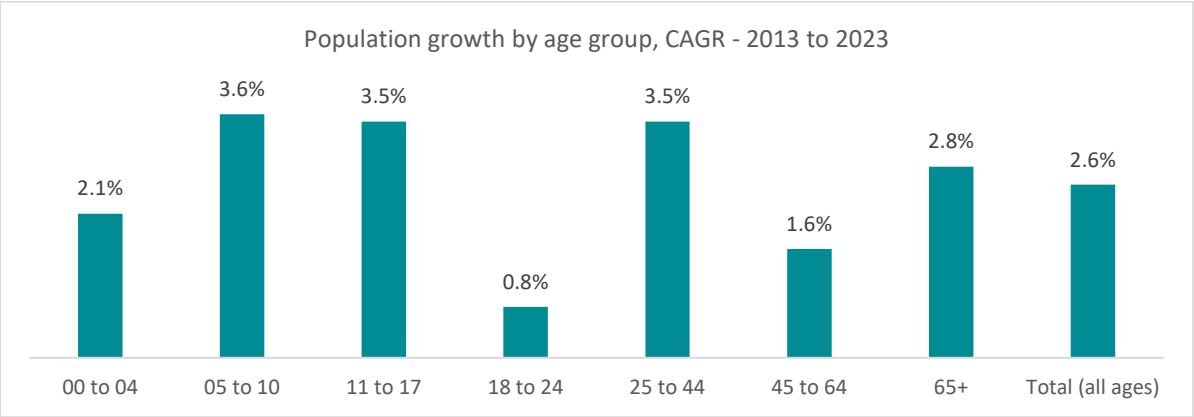
Source: 2013 and 2023 expanded survey data. Note that the 2013 survey data aggregated ages to 6 age groups for data weighting and the 2023 survey data aggregated ages into 12 age groups for data weighting. If there were different levels of non-response bias within the ranges used for data weighting, there may be variance in the 5-year age ranges that deviates from the actual population distribution, although the 2023 profile was tested to quite close to Census for most 5-year ranges.

Aggregating by 'life phase', Table 7 provides another way to summarize how the distribution of population by age group has changed, and Figure 6 shows the comparative growth rates in each group. As can be seen, the population of very young, pre-school children (0 to 4 years), the post-secondary age cohort (18 to 24 years) and older working-age adults (45 to 64 years) grew more slowly than the overall city-wide compound annual growth rate (CAGR) of 2.6%. The populations of elementary and secondary students (5 to 17 years), and younger working adults (25 to 44 years) had CAGRs upwards of 3.5%. The 65+ population grew moderately faster than the average, at a 2.8% CAGR.

Table 7. Distribution of population by common 'life phase' group, 2013 to 2023

Age Group	Common life phase	2013	2023	2013 %	2023 %
0 to 4	Pre-school age	14,009	17,300	6.4%	6.1%
5 to 10	Elementary school age	15,300	21,800	7.0%	7.7%
11 to 17	Elementary / secondary school age	16,600	23,400	7.6%	8.3%
18 to 24	Post-secondary age	26,900	29,000	12.3%	10.3%
25 to 44	Young workers	62,000	87,400	28.3%	31.0%
45 to 64	Older workers	55,400	65,000	25.3%	23.1%
65+	Seniors	28,600	37,800	13.1%	13.4%
Total (all ages)		218,800	281,700	100.0%	100.0%

Figure 6. Population growth by age group, CAGR – 2013-2023



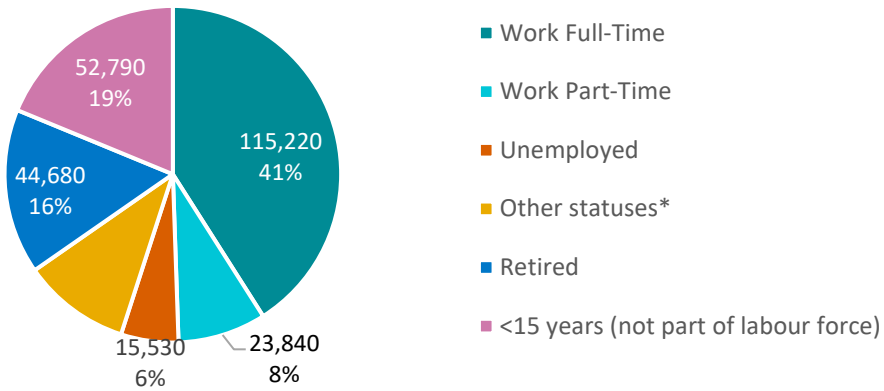
CAGR = compound annual growth rate (i.e., the annualized average rate of growth rate).
Source: Expanded survey data.

3.3.2 Occupational status

Occupational status (employed, student, retired and so on) influences travel behaviour: where people go and for what purpose, how often they travel and so on. Note that this definition incorporates and extends the *RFQ Particulars*' focus on labour force status only (i.e., employment status). This allows, for example, a greater understanding of non-employed people's trip behaviour such as retired people who commute to volunteer 'jobs.'

Statistics Canada defines the population aged 15 years and older as eligible for participation in the labour force. Figure 7 breaks down the occupational status among Saskatoon residents, using this definition. One fifth of the population (19%) is under 15 years old and is not included in the labour force. Just under half (49%) the total population is in full-time (41%) or part-time (8%) work (stated another way, 60% of the 15+ population is employed and 6% of the total population is unemployed). One in six persons (16% of the total population) are retired, and the remaining 10% of the total population have other statuses, such as a stay-at-home parent.

Figure 7. Occupational status for total population, 2023



Source: Expanded survey data.

* Other statuses: stay-at-home, student aged 15+ years who is not working, not employed and not looking for work (disability, parental leave)

Table 8 and Figure 8 shows how occupational status has changed between 2013 and 2023. There have been some shifts, with the unemployed population growing by 2.9% and the retired population growing by 3.4%. Full- and part-time workers fell slightly (1.3% and 1.0%, respectively), as did other statuses (2.0%).

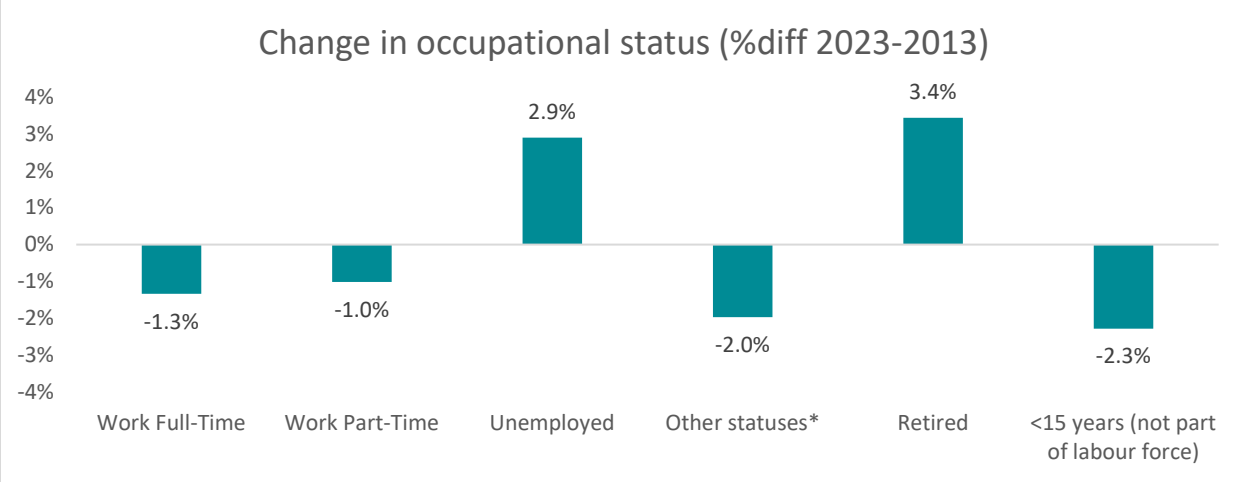
Table 8. Population occupational status, 2013 to 2023

Occupational status	2013	2023	% 2013	% 2023
Work Full-Time	92,400	115,200	42.2%	40.9%
Work Part-Time	20,700	23,800	9.5%	8.4%
Unemployed	5,700	15,500	2.6%	5.5%
Other statuses*	26,900	29,100	12.3%	10.3%
Retired	27,200	44,700	12.4%	15.9%
<15 years (not part of labour force)	46,000	52,800	21.0%	18.7%
Total persons	218,800	281,700	100.0%	100.0%

Source: Expanded survey data.

* Other statuses: stay-at-home, student aged 15+ years who is not working, not employed and not looking for work (disability, parental leave)

Figure 8. Change in occupational status, 2013 to 2023



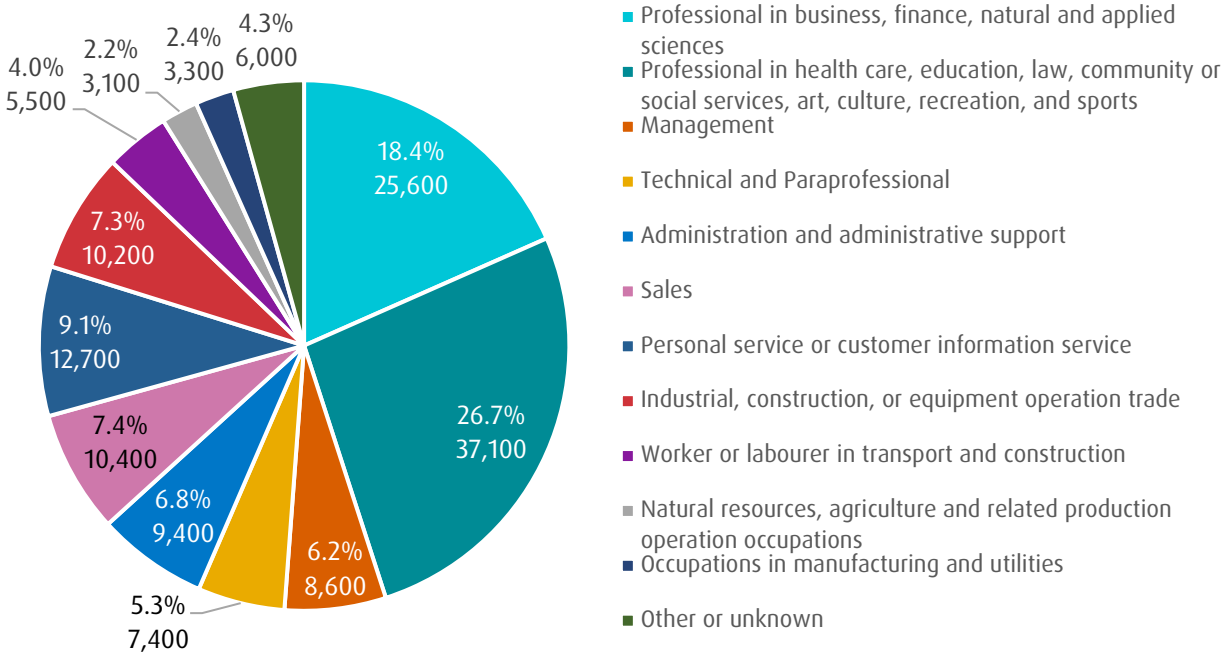
Source: Expanded survey data.

* Other statuses: stay-at-home, student aged 15+ years who is not working, not employed and not looking for work (disability, parental leave)

3.3.3 Worker occupation type

For full- and part-time workers, Figure 9 breaks down occupation by type of employment – office employment, industrial services, health care and so on. Most workers are in occupations that typically (though not exclusively) have a fixed workplace – that is, in jobs that typically entail a regular commute to the same workplace. Among these, 45.1% are in professional occupations like health care, education, law and more (26.7%) or business, finance, natural sciences and applied sciences (18.4%). A smaller proportion of jobs in various occupation types are somewhat less likely to have a fixed workplace – construction is one common example. Workplace location is examined in detail in the next section of this report (Section 0).

Figure 9. Occupation type, 2023

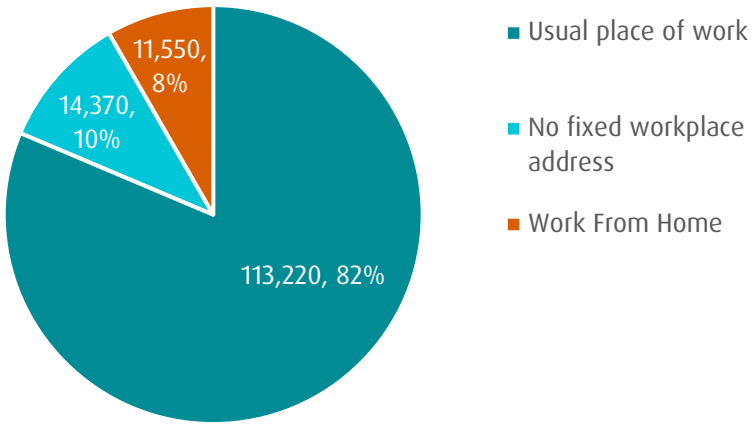


Source: Expanded survey data.

3.3.4 Workplace and work from home

The work commute is a key contributor to peak period travel. Commuters to and from work make up an important component of transit ridership, especially those who are commuting to and from the same work location. Figure 10 shows that most (82%) of workers had a usual workplace (outside the home), 10% had no fixed workplace (the location varied, like construction) and 8% worked exclusively from home. These proportions are consistent with those observed in other recent household surveys.

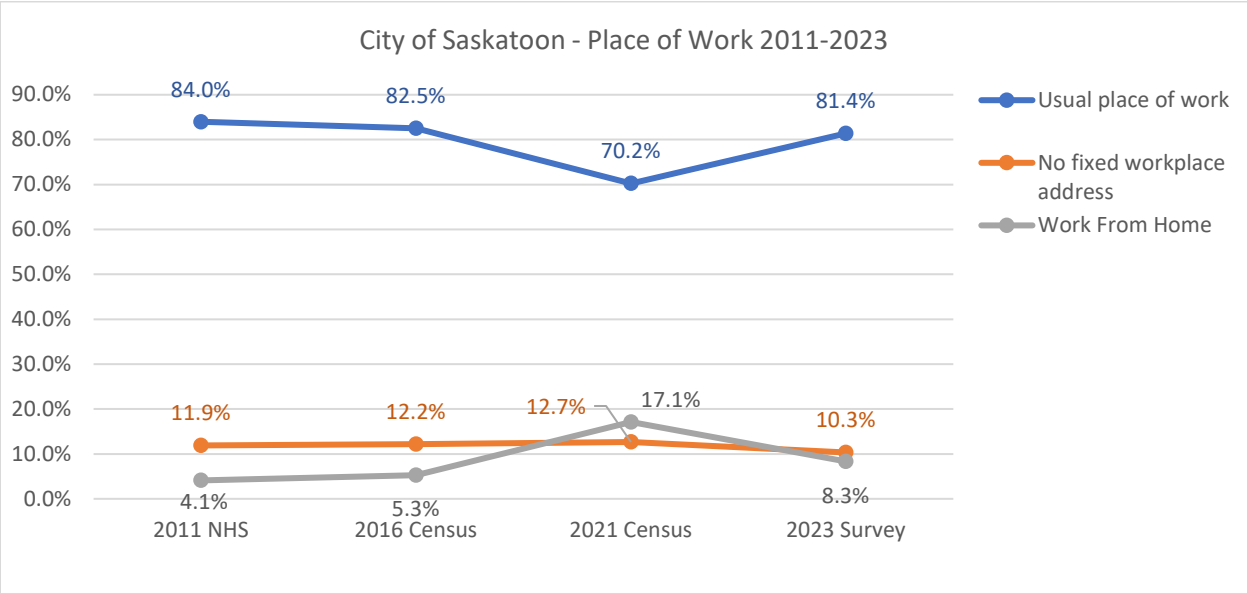
Figure 10. Workplace location, 2023



Source: Expanded survey data.

However, as elsewhere, the proportions changed significantly during the pandemic, which shifted large numbers of workers from their usual workplace to working at home. Although the proportions have started to return to pre-pandemic levels in many Canadian cities, travel surveys elsewhere have found that some effects may be continuing, with potential ongoing impacts on commuting behaviour. Figure 11 shows how the workplace location evolved in Saskatoon from 2011 through 2023. The figure includes workplace locations for full-time workers from the 2011, 2016 and 2021 Censuses, in addition to the 2023 survey.

Figure 11. Workplace location, 2011 to 2023



Source: Expanded survey data and Census Journey to Work data.

It can be seen that:

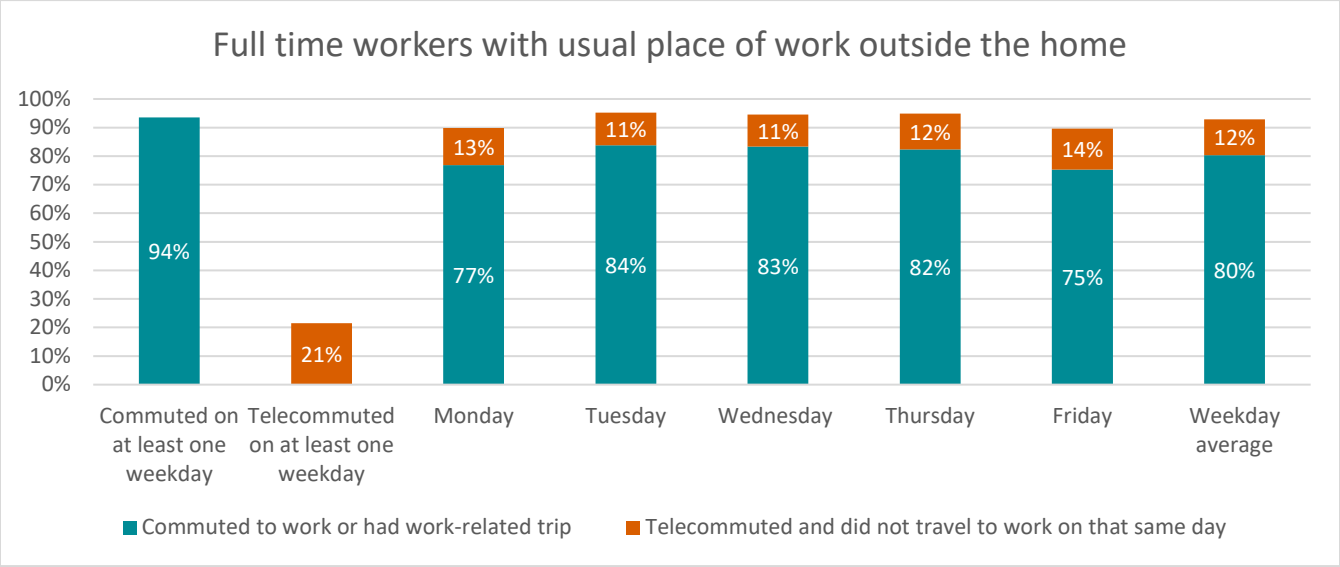
- Prior to the pandemic, the distributions of workplace locations were stable. Around 83% of Saskatoon's full-time workers had a usual workplace. Around 12% of workers had no fixed workplace. The proportion of workers working from home rose slightly to 5%. These proportions and their pre-pandemic stability are consistent with those observed in other Canadian cities.
- During the pandemic, as evidenced by the 2021 Census, the work-from-home (WFH) proportion increased sharply, with the proportion of workers working from home rising to 17.1% (more than triple the pre-pandemic rate). There was a corresponding drop in workers with a usual workplace, to 70.2%. These shifts occurred elsewhere, although other cities experienced stronger changes: for example, Calgary had a four-fold increase in the WFH proportion, to 28% from 7%. The proportion of workers with no fixed workplace address remained stable, similar to what happened in other cities.
- By 2023, the proportion of workers with a usual workplace had almost fully recovered, to 81.3%. The proportion of workers with no fixed workplace address dropped slightly, to 10.3%. The proportion of workers working from home increased to 8.3%, about 1.6 times greater than the pre-pandemic 5.3% proportion. While other cities have experienced a similar rebound, those elsewhere typically have not been as strong as Saskatoon's. The almost-full recovery likely reflects Saskatoon's economic composition and provincial mandates. Still, there remains a larger WFH share, which is also the case elsewhere.

Many full-time workers with a usual workplace outside the home have entered a hybrid working arrangement, which can influence peak period commuting volumes and mode choices. Figure

12 profiles hybrid work patterns observed in the 2023 survey among full-time workers with a usual workplace:

- Just over one in five (21%) of these workers telecommuted on at least one day per work week (Monday to Friday).
- Around 12% of these workers telecommuted on any given day of the work week, with the proportions rising slightly on Mondays and Friday – consistent with flex day practices and with those days typically being more common days for people to take as vacation time.
- The large majority of workers (94%) commuted to work at least one workday each week.

Figure 12. Hybrid work patterns – full-time workers with usual workplace outside the home, 2023



Source: Expanded survey data.

Figure 13 below provides insight into how work arrangements vary by occupation type. This chart presents information on workplace location for both full and part-time workers, and splits out workers with a usual workplace into those who reported hybrid work arrangements.

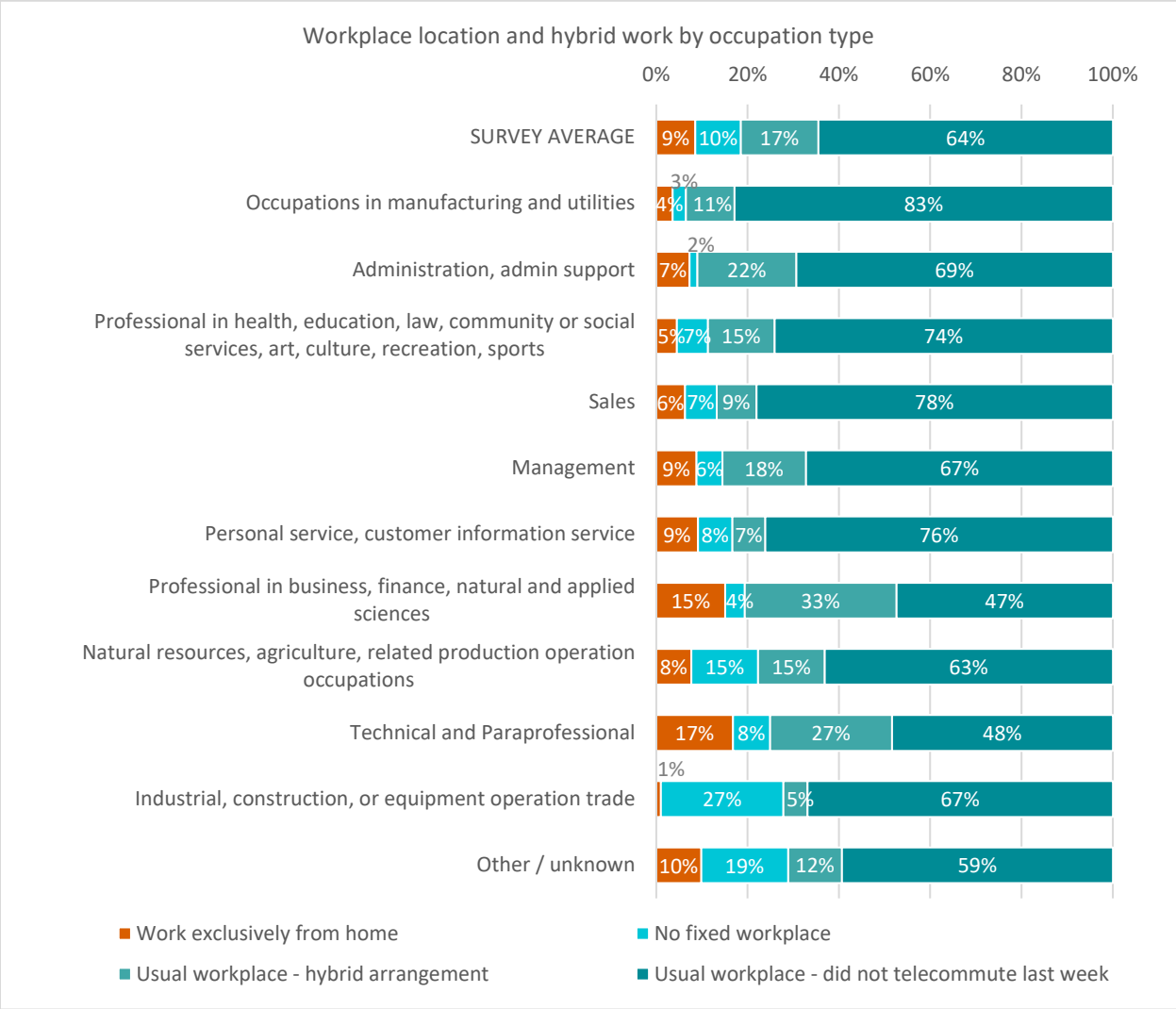
The following types of occupations are most likely to have a fixed workplace outside the home (ranging from 85% to 94% having a usual workplace): occupations in manufacturing and utilities; administration and administrative support occupations; professionals in health, education, law, community or social services, art, culture, recreation, sports; sales; and management. For these occupations, the proportion of total workers who have hybrid work schedules varies considerably, with higher proportions amongst management (18%) and administration and administrative support (22%).

The following occupational groups appear to have the most variety in work arrangements: technical and paraprofessional occupations; and professions in business, finance, and natural and applied sciences. These two groups have the highest proportions who work exclusively from

home (17% and 15%, respectively), and the highest proportions to have a usual workplace but hybrid work arrangements (27% and 33%, respectively).

Workers in industrial, construction, or equipment operation trades are least likely to have fixed workplaces, with fully 27% indicating that they have no fixed workplace or work on the road.

Figure 13. Workplace location and hybrid work by occupation type – total workers, 2023



Source: Expanded survey data. Data are for all workers, including both full-time and part-time workers.
Usual workplace - hybrid arrangement' = telecommuted rather than going into work on at least one weekday in the last week.
Occupations are sorted by the total proportion with a usual workplace (whether a hybrid or conventional work arrangement).

Table 9 breaks downs workers' workplace location by sector of residence. Core Neighbourhood and Blairmore had the highest WFH rates at 10% and 9% respectively. University and Confederation had the highest proportions of workers with no fixed workplace, at 16% and 10% respectively. The remaining sectors had usual workplace proportions of 81% and more.

Table 9. Workplace location by workers' sector of residence

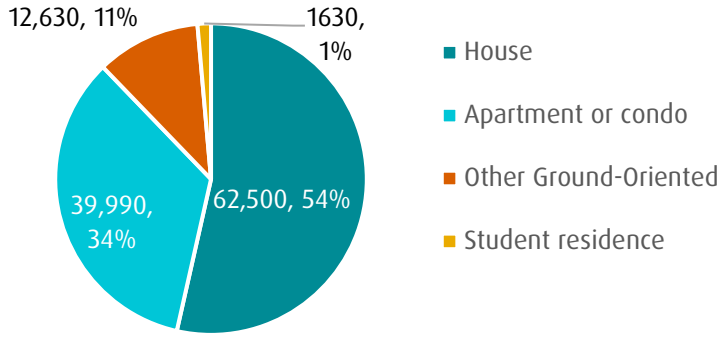
	Total workers	Usual workplace	No fixed workplace	Work exclusively from home
Saskatoon	139,100	82%	8%	7%
Core Neighbourhood	17,400	78%	8%	10%
Confederation	27,400	81%	10%	5%
Blairmore	4,600	81%	8%	9%
Lawson	13,200	83%	9%	5%
University	500	76%	16%	6%
Holmwood	2,400	86%	5%	7%
University Heights	25,000	84%	7%	8%
Lakewood	21,100	82%	8%	8%
Nutana	27,600	84%	6%	7%
Riel Industrial*	n/a	n/a	n/a	n/a

Source: Expanded survey data.
*Figures are rounded to the nearest 100. Riel Industrial is almost all non-residential and has very few private households.

3.3.5 Dwelling type

Dwelling type can be an indicator of development density and sprawl, with higher densities generally reflecting a more efficient use of land and being more conducive to enticing residents to take transit, cycle or walk instead of driving. Figure 14 shows the breakdown of private dwelling types. Across Saskatoon, houses (54%) and ground-oriented dwellings[12] (11%) make up two-thirds of Saskatoon's housing stock. Apartments or condos make up almost all the remaining one third (34%) of dwellings, with student residences comprising 1%.

Figure 14. Dwelling type



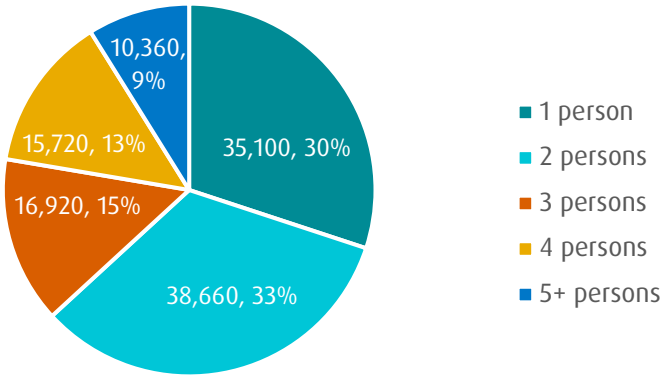
Source: Expanded survey data.

[12] 'Other ground-oriented' includes dwellings such as townhouses, row houses and semi-detached dwellings but excludes single-family dwellings and apartments.

3.3.6 Household size

The number of people in a household can be an indicator of trip rates and other measures of travel behaviour. As noted above, on average there were 2.41 people per dwelling. Figure 15 shows that almost two-thirds of the population lived in one-person dwellings (30%) or two-person dwellings (33%). Another 15% lived in three-person dwellings, with another one-fifth (22%) living in four- or five-or-more-person homes.

Figure 15. Household size, 2023



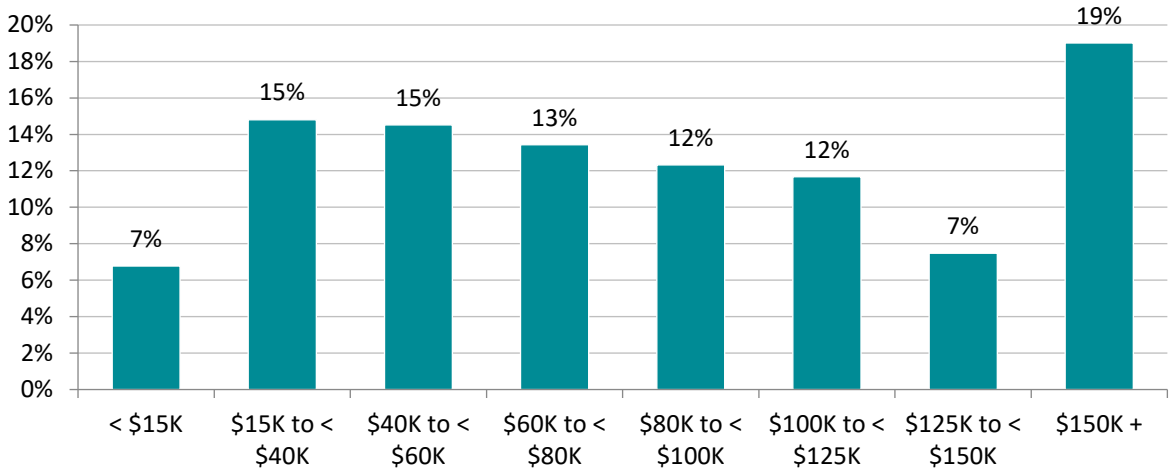
Source: Expanded survey data.

3.3.7 Household income

Household income is a factor that can influence travel choices – notably, whether or not a household has a vehicle. Note that not all households responded to this question, so it is useful to compare the 2023 HTS results with the most recent (2021) Census. Figure 16 summarizes the proportions of surveyed households by income, according to eight income brackets. Figure 17 shows the income distributions for the 2023 survey and the 2021 Census. The brackets match fairly closely through most levels, although the 2023 survey over-represents the lowest bracket (less than $15,000) and slightly under-represents the two highest brackets ($125,000 and higher).

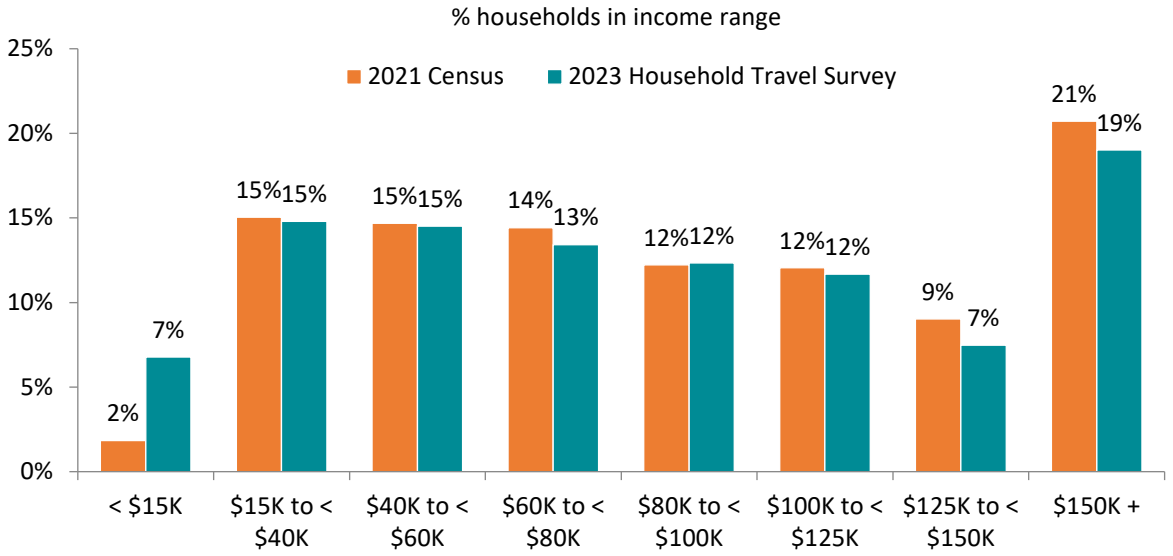
Note that 85% of the surveyed households responded to this question, and that the survey results include responses from seasonal students. Though these are higher proportions than those recorded in surveys elsewhere, these figures represent only a subsample of the responding households. Accordingly, the 2023 survey distributions shown in the figures are meant to be used for information only and are not necessarily representative of the population as a whole. Going forward, for analyzing the linkage between household income and travel behaviour, the City may wish to use the data from only the *responding* households, as depicted here.

Figure 16. Household income, 2023



Source: Expanded survey data.

Figure 17. Household income, 2023 HTS v 2021 Census



Source: Expanded survey data and 2021 Census. 2023 survey figures include University of Saskatchewan student households that may not be counted as living in Saskatoon in the Census. Seasonal students living away from their permanent home may have misreported their 'household income' as just their own income on the survey.

3.4 Households' access to vehicles

3.4.1 Vehicles and vehicle access

There is a strong relationship between mode choice and access to (availability of) a vehicle. In other words, if a household has a vehicle, it is likely to be used. This is especially true of

workers, who tend to have priority over the use of the household vehicle for their commute to work. Table 10 reports the characteristics of Saskatoon households' access to a vehicle by sector.[13] Note that comparable data are not available from the 2013 survey.

It can be seen that **access to a vehicle is pervasive, although this varies by sector**:

- On average, there are 1.59 vehicles per household. University has the lowest average, at 0.65 vehicles per household, and Holmwood and University Heights have the highest averages, at 1.78 and 1.82 vehicles per household respectively. By comparison, Core Neighbourhood has an average of 1.14 vehicles per household.
- Overall, 90% of all households have at least one vehicle. University has the lowest share, at 49%, while 97% of Blairmore and University Heights households, 99% of Holmwood households and 80% of Core Neighbourhood households have at least one vehicle. Stated another way, 10% of all households do not have access to a vehicle and must be dependent on other modes or others for their travel. The proportions vary from almost nil households in newer suburban areas to half (51%) of University households (primarily students) and 20% in the Core Neighbourhood sector.
- Among driving age residents (16+), 93% have access to a vehicle, with the ranges echoing those above. University residents have the lowest accessibility, at 57% of all 16+ residents, and Blairmore (98%), University Heights (99%) and Holmwood (100%) have the highest accessibility. In the Core Neighbourhood sector, 86% of driving-age residents can access a vehicle. Stated another way, 7% of the driving age population must depend on other modes or on other people for their travel. Again, the rates vary from virtually nil in suburban sectors to 43% in University (primarily students) and 14% in the Core Neighbourhood sector. Moreover, one in five (21%) of Saskatoon's population is under 16 years old,[14] and is dependent on other modes or on other people for their travel (noting also that young children do not travel independently).

[13] The Riel Industrial sector is not reported separately, given its very small sample size. The sector is included in the city-wide totals.

[14] Calculated as the difference between the total population (281,700 people) and the 16+ population (223,320 people), divided by the total population.

Table 10. Access to household vehicles by sector, 2023

	Saskatoon	Core Neigh-bour-hood	Confed-eration	Blair-more	Lawson	Uni-versity	Holm-wood	Uni-versity Heights	Lake-wood	Nutana
Total households	116,770	17,220	21,430	2,830	11,290	1,640	1,520	18,570	17,970	24,300
Private vehicles	185,270	19,680	36,600	4,680	18,530	1,060	2,710	33,870	29,950	38,170
Persons 16+ years of age	223,320	27,690	44,380	5,930	21,670	2,310	3,050	37,850	35,190	45,260
avg per household	1.59	1.14	1.71	1.65	1.64	0.65	1.78	1.82	1.67	1.57
avg. per person 16+ years of age	0.83	0.71	0.82	0.79	0.86	0.46	0.89	0.89	0.85	0.84
% of households with at least one vehicle	90%	80%	89%	97%	92%	49%	99%	97%	94%	89%
% of population 16+ years of age with access to a household vehicle	93%	86%	92%	98%	95%	57%	100%	99%	95%	93%

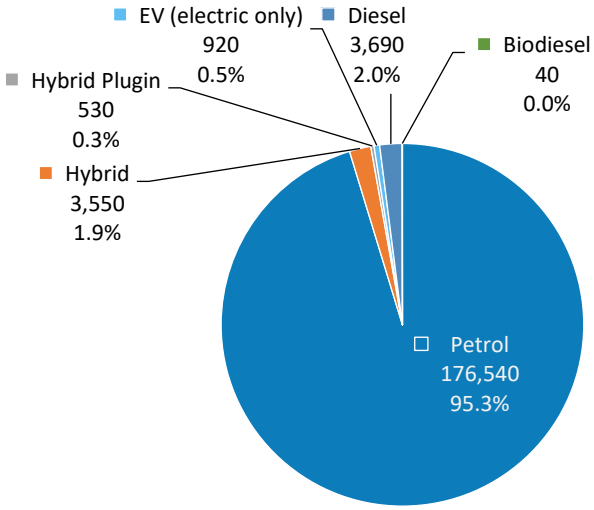
Source: Expanded survey data.

Note that the Riel Industrial sector is not reported separately, given its very small sample size. The sector is included in the city-wide totals.

3.4.2 Vehicle fuel types

Figure 18 breaks down the vehicle population by fuel type. It can be seen that 95.3% of the vehicles that are available to households are powered by gasoline, with another 2% powered by diesel. The remaining 2.7% are 'green' vehicles, comprising hybrids (1.9%), plug-in hybrids (0.3%), electric-only (0.5%) and biodiesel (0.0%).

Figure 18. Vehicle population by fuel type, 2023



Source: Expanded survey data.

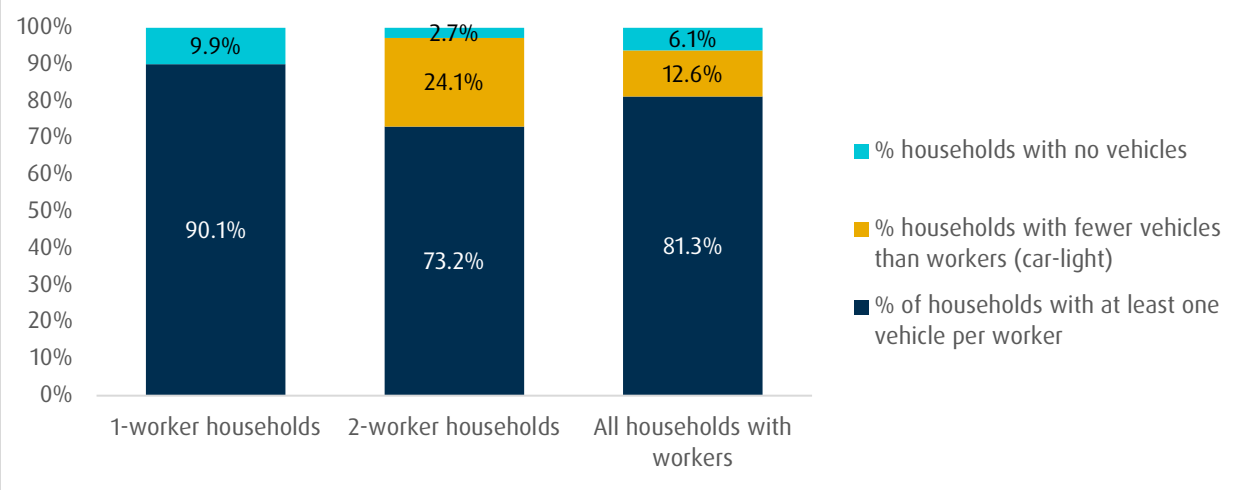
Green vehicles comprise hybrids, plug-in hybrids, electric-only, biodiesel and other alternative fuel types.

3.4.3 Car-light and zero-car households

An object of many sustainable land use and transportation plans is to make alternatives to driving sufficiently convenient that households can avoid the need for a vehicle, or for a second vehicle. Figure 19 and Table 11 profile 'car-light' (households with fewer vehicles than workers) and zero-vehicle households. The profile focuses on vehicle availability by number of workers per household who, as discussed in Section 3.2, are typically the priority users of a vehicle.

It can be seen that 10% of 1-worker households and 2.7% of 2+ worker households do not have access to a vehicle. Just under three-quarters (73.2%) of 2+ worker households have at least one vehicle per worker, while another quarter (24.1%) have fewer vehicles than workers. Overall, four in five households (81.3%) have access to at least one vehicle per worker, while 12.6% 'car-light' households have fewer vehicles than workers.

Figure 19. 'Car-light' households, 2023



Source: Expanded survey data.

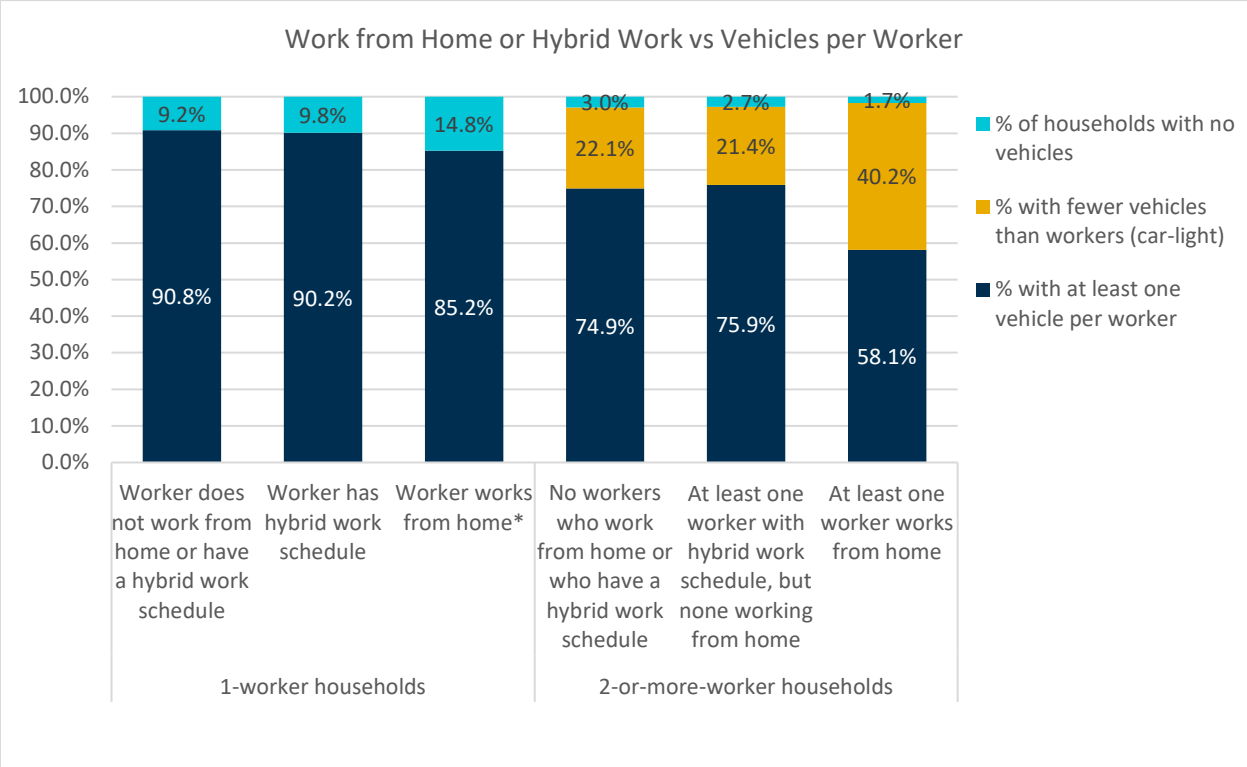
Table 11. 'Car-light' households, details, 2023

	2023
1-worker households	40,700
Worker does not have vehicle	9.9%
Worker has vehicle	90.1%
Households with 2 or more workers	44,500
Workers but no vehicles	2.7%
Fewer vehicles than workers	24.1%
At least one vehicle per worker	73.2%
All households with workers	85,200
Workers but no vehicles	6.1%
Fewer vehicles than workers (car-light household)	12.6%
At least one vehicle per worker	81.3%

Source: Expanded survey data.

Figure 20 explores the relationship between work arrangements and car-light households. For 1-worker households, there appears to be a modest correlation between working from home and not having a vehicle.[15] However, for 2-or-more worker households, there appears to be a strong correlation between having at least one worker working from home and car-light status. The presence of hybrid workers in the household seems to make only a very slight difference in zero-car or car-light status.

Figure 20. Relationship between work arrangements and 'car-light' households, 2023



Source: Expanded survey data.

* Very small sample size (n=23) for 1-worker households with worker working from home; Interpret with caution. All other groups have robust sample sizes (n=367 to 1,761).

3.4.4 Household size, composition and dwelling type

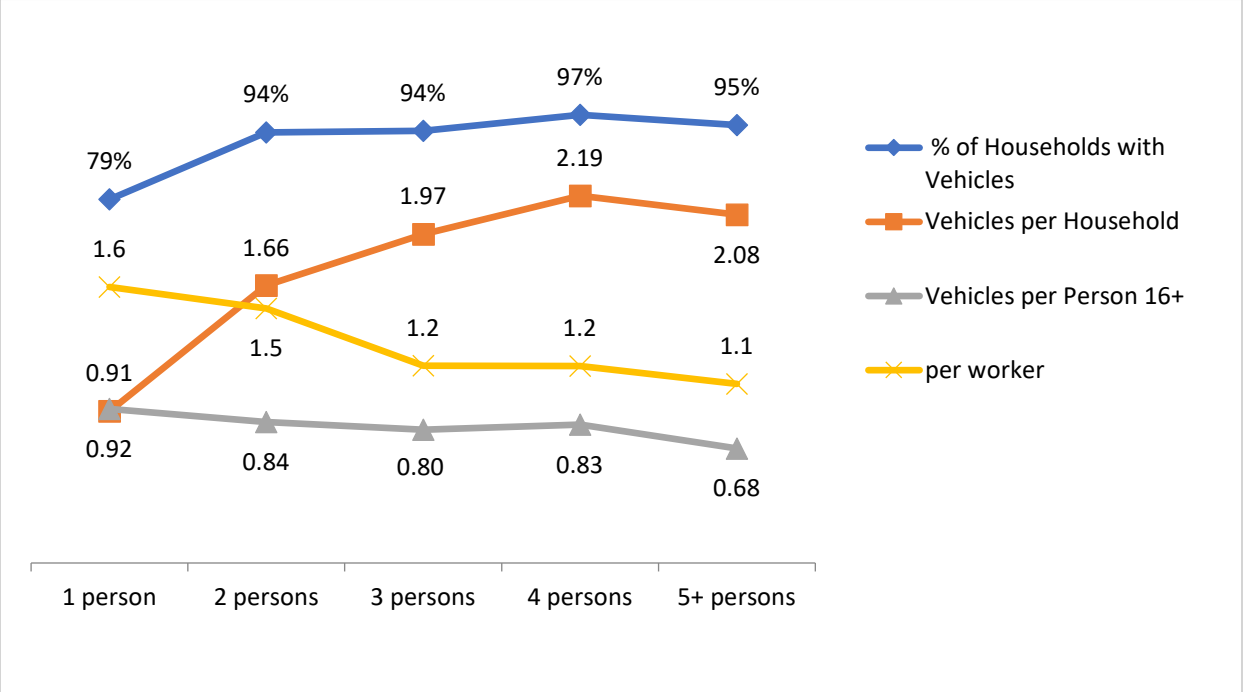
The next two figures show the relationship between access to a vehicle and household characteristics. Figure 21 shows the relationship with household size and composition. It can be seen that:

- **Vehicle access is virtually universal in the largest households.** Four fifths (79%) of one-person households have access to a vehicle. However, this proportion rises quickly as household size increases. Virtually all households with 3 or more members have access to a vehicle.

[15] Interpret with caution, due to the very small sample size of 1-worker, work from home households.

- **The average number of vehicles per household rises quickly with household size.** The average peaks with 4-person households, at 2.19 vehicles per household, then drops slightly to 2.08 vehicles for 5+ person households. Four-person households have almost 2.5 times the number of vehicles as 1-person households, on average.
- **Working household members, on average, always have access to a vehicle.** There is at least 1 vehicle per worker, with 1.6 vehicles available on average in 1-person households (the occupant is a worker) and 1.5 vehicles available for 2-person households (at least one member is working).
- **Driving-age (16+) persons, on average, have relatively good access to a vehicle.** Even households that do not have a working member (e.g., households whose members are retired or do not work) are likely to have access to a vehicle. The availability of vehicles per driving-age person drops gradually as household size increases (with a slight increase in 4-person households), ranging from 0.92 vehicles per person 16+ in 1-person households (almost one vehicle per person 16+ on average) to 0.68 vehicles per person 16+ in 5+ person households. In other words, if a household member is working, then the household is almost certain to have at least one vehicle. If no one in the household is working, then it is still likely that the household has a vehicle.

Figure 21. Relationship between vehicle access, household size and composition, 2023



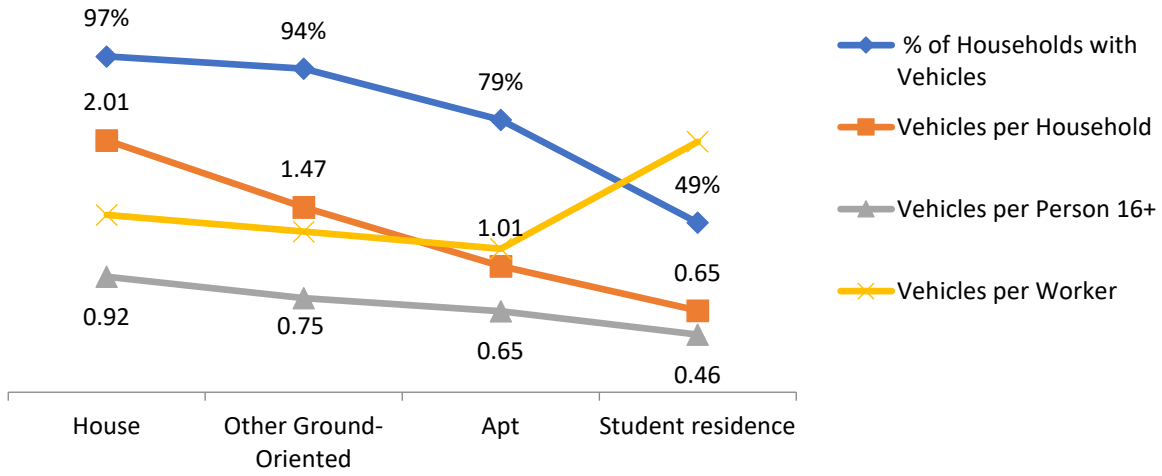
Source: Expanded survey data.

Note: Reflects vehicles accessible to households in private dwellings (i.e., excludes collective dwellings).

Dwelling type is also an indicator of access to a vehicle. Figure 22 shows that:

- **Almost all houses and ground-oriented dwellings have access to a vehicle**, with virtually all houses (97%) having access to a vehicle.
- **Households in higher-density structures still have good access to a vehicle**, with 79% of apartments having access to a vehicle. Nearly half (49%) of households in student residences have access to a vehicle.
- **Vehicle access may be linked to density.** In other words, the more dwellings per unit area, the less likely a household will have a vehicle, although vehicle accessibility is pervasive. Vehicle availability per driving-age person (16+) also drops with higher density.

Figure 22. Relationship between vehicle access and dwelling type, 2023



Source: Expanded survey data.

Note: Reflects vehicles accessible to households in private dwellings (i.e., excludes collective dwellings).

It is important to note that the findings described here reflect observed conditions. However, further research is needed to understand the relationship of density with other factors, notably where the dwelling is located (e.g., dense core or low-density suburb), proximity to destinations like work or school, household composition and size, the number of workers in the household, household income and more. Also as noted, the relatively low availability of vehicles to students in university residences also must be taken into account.

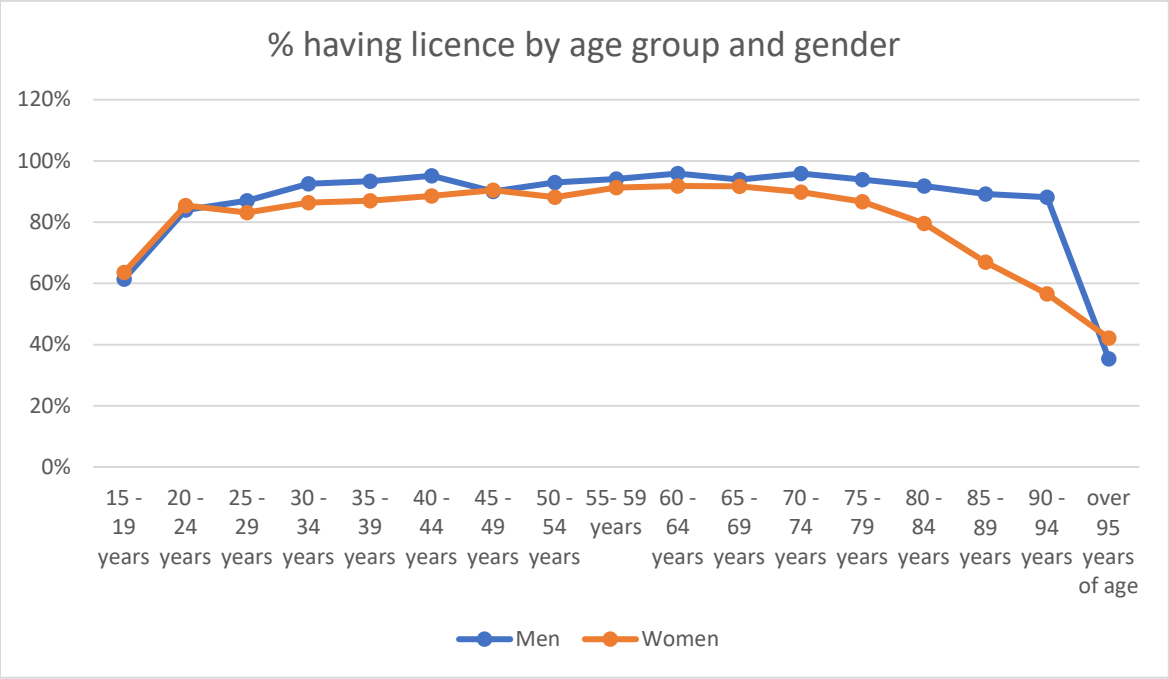
3.4.5 Licensed drivers

Access to vehicles can be described in terms of driver licensing in the driving-age (16+) population. Overall, 90% of men and 86% of women are licensed: In other words, licensing is pervasive across the eligible population.

Figure 23 shows how licensing varies by age and gender. It can be seen that:

- Licensing rates increase rapidly among teenagers (16-19 years old) for both genders, then the licensing rates hold steady through the 65-69 age group for both genders.
- Older drivers are retaining their licenses (that is, the ability to drive). The licensing rate among women starts to drop slightly in the 70-79 age groups, after which it drops steadily to 42% in the 95+ age group. Men retain their licenses longer, at 88% through the 90-94 age group, but then drops precipitously to 35% in the 95+ age group.

Figure 23. Driver's licencing rates by age and gender, 2023



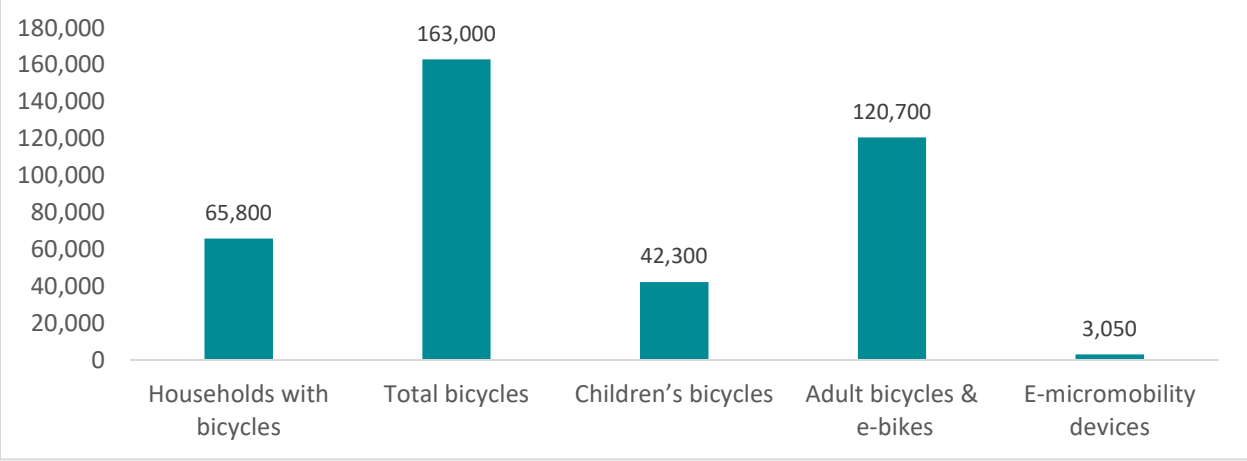
Source: Expanded survey data.

3.5 Households' access to bicycles and e-micromobility devices

This discussion looks at households' access to bicycles and e--micromobility devices, which can serve to complement to using, or as an alternative to owning, a household vehicle. Bicycles include adult and children's bicycles, as well as adult e--bikes (which have an electric motor to assist the cyclist when they are pedalling). E-micromobility devices include e-scooters, e-skateboards, hoverboards, e-unicycle/mono-wheel, 'throttle e-bikes' and other lightweight low-speed electric-powered devices. Figure 24 and Figure 25 profile the characteristics and take-up of bicycles and e-micromobility devices. Table 12 provides details by sector. It can be seen that:

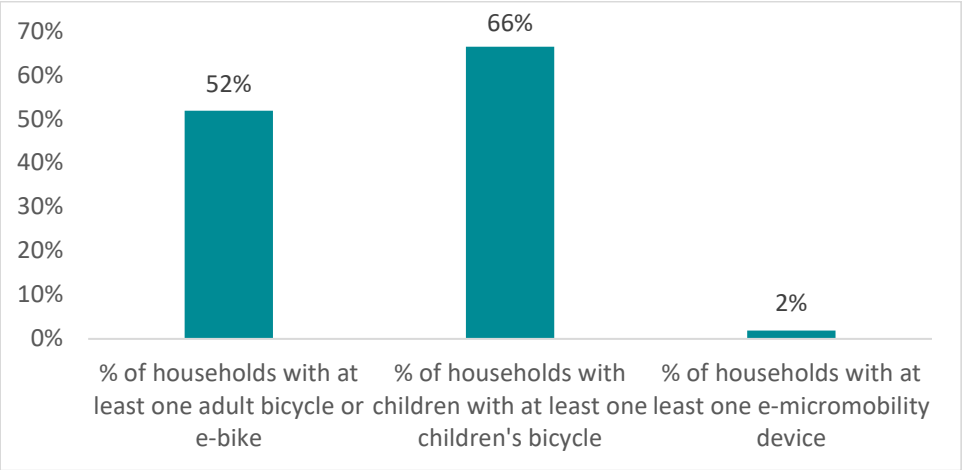
- Bicycles are pervasive among Saskatoon households, though not as pervasive as vehicles:
    - Just over half (52%) of all Saskatoon households have at least one adult bicycle or e-bike, ranging from 23% in the University sector to 61% in Lawson and University Heights. By comparison, 90% of Saskatoon households have access to at least one vehicle.
    - On average, Saskatoon households have 1.40 bicycles of all types. University has the lowest average, at 0.41 bicycles per household. University Heights has the highest average, at 1.73 bicycles per household.
    - E-bikes make up 4% of the stock of all bicycles (including children's bicycles) and 5% of adult bikes (when regular non-motorized adult bicycles and adult e-bikes are combined).
    - A small proportion of households has access to e-micromobility devices, at 2% of all households.

Figure 24. Household bicycles and e-micromobility devices, 2023



Source: Expanded survey data.

Figure 25. Percent of households with access to bicycles and e-micromobility, 2023



Source: Expanded survey data.

Table 12. Bicycles and e-micromobility device statistics by sector, 2023

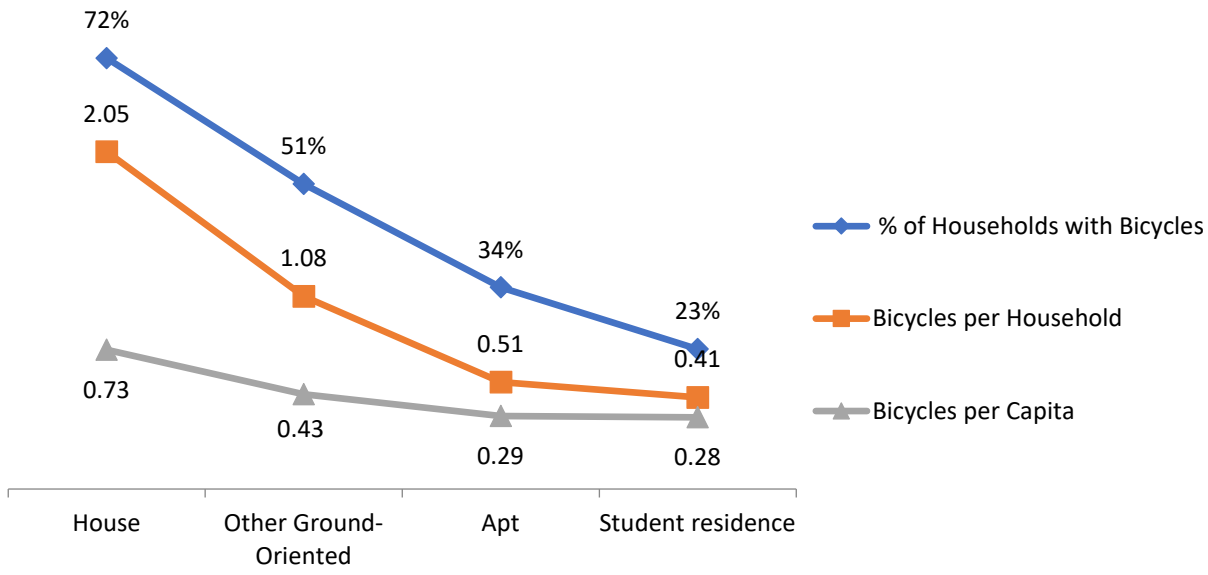
	Saska-toon	Core Neigh-bour-hood	Con-feder-ation	Blair-more	Law-son	Uni-ver-sity	Holm-wood	Uni-ver-sity Hts.	Lake-wood	Nu-tana
Total Households	116,770	17,220	21,430	2,830	11,290	1,640	1,520	18,570	17,970	24,300
Population in households	281,700	32,660	57,900	7,960	26,720	2,410	4,160	49,350	44,210	56,320
Households with Children <18 Yrs	33,350	2,980	7,760	1,190	2,940	100	640	6,330	5,030	6,380
Total Bicycles	162,990	18,270	29,140	2,870	18,930	670	2,270	32,110	24,200	34,510
Adult Bicycles	114,630	14,230	19,180	1,650	14,030	580	1,480	22,240	16,950	24,290
Adult E-Bikes	6,050	550	1,520	70	740	30	70	820	890	1,350
Child Bicycles	42,310	3,490	8,440	1,150	4,160	60	720	9,050	6,360	8,870
Avg. bicycles per household	1.40	1.06	1.36	1.01	1.68	0.41	1.49	1.73	1.35	1.42
Avg. bicycles per capita	0.58	0.56	0.50	0.36	0.71	0.28	0.55	0.65	0.55	0.61
% of households with at least one bicycle	56%	48%	55%	45%	64%	25%	59%	65%	57%	57%
% of households with at least one adult bicycle or e-bike	52%	44%	49%	36%	61%	23%	51%	61%	52%	52%
% of households with children with at least one children's bicycle	66%	62%	59%	54%	66%	40%	63%	73%	68%	73%
E-micromobility devices (e-scooter, e-skateboard, etc.)	3,050	430	710	60	350	70	20	350	500	570
% of households with at least one e-micromobility device	1.9%	1.9%	2.3%	2.1%	2.4%	1.8%	1.3%	1.5%	2.0%	1.6%

Source: Expanded survey data.

Note that the Riel Industrial sector is not reported separately, given its very small sample size. The sector is included in the city-wide totals.

Figure 26 shows bicycle access by dwelling type. The figure accounts for adults' and children's bicycles together. The highest proportions of households that have bicycles are among houses (72%). Just over half (51%) of other ground-oriented dwellings, one-third (34%) of apartments and one-quarter (23%) of households in student residences have bicycles. Similarly, the availability rates per household are highest among houses, which is almost double the rate for other ground-oriented dwellings and five times the rate for households in student residences. Per capita, the differences are less pronounced, although the rate for houses is almost three times that for households in student residences.

Figure 26. Relationship between bicycle access and dwelling type, 2023



Source: Expanded survey data.

It is informative to compare bicycle access by dwelling type with vehicle access by dwelling type (Figure 22):

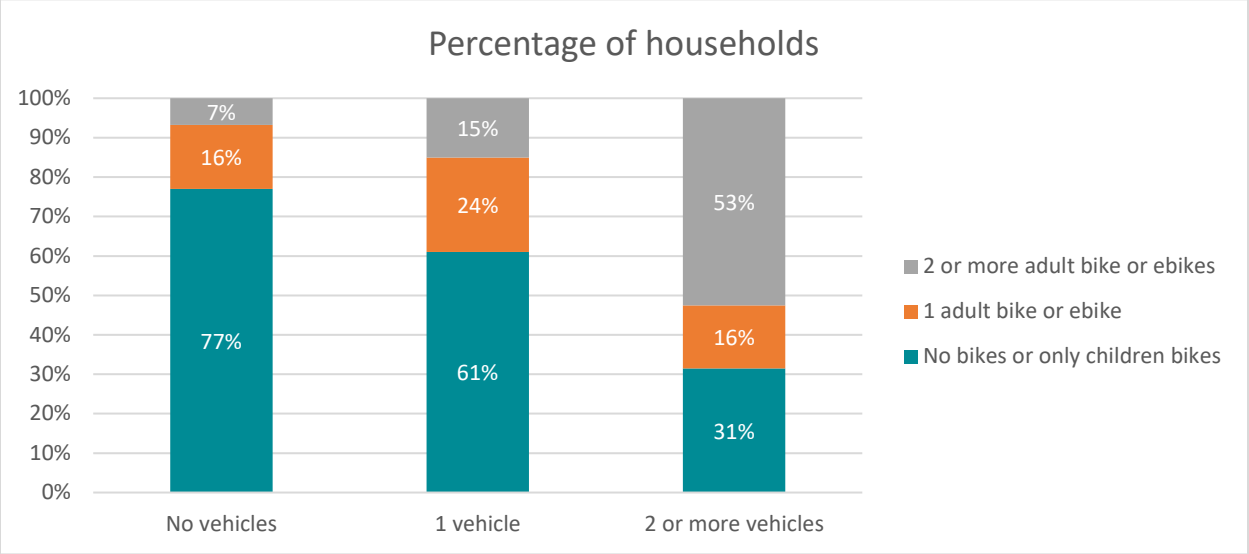
- Generally, the trend lines (the *shape* of the curves) are similar for both bicycles and vehicles.
- Virtually all houses and ground-oriented dwellings have access to a vehicle, whereas only 72% of houses and 51% of other ground-oriented dwellings have access to a bicycle. Four-fifths of apartments have access to a vehicle, while just only one-third of apartments have access to a bicycle. Half of the households in student residences have access to a vehicle, while only one-quarter have access to a bicycle.
- Per households in houses, the average take-up rates for bicycles are slightly higher than those for vehicles, though the reverse is true for the other dwelling types (and with greater differences). For example, in houses there are 2.05 bicycles per household

compared with 2.01 vehicles per household, while for apartments there are 0.51 bicycles per household and 1.01 vehicles per household.

- Per capita bicycle availability rates are lower than those for vehicles among all dwelling types, noting that the bicycle take-up is measured against the entire 5+ population (i.e., the entire eligible bike-riding population) while the vehicle take-up is measured against the 16+ population (the eligible driving-age population).

Figure 27 compares the share of households that have access to an adult bicycle to those that have access to a vehicle. The figure shows that bicycle access and vehicle access, according to the average numbers of each per household, are complementary. In other words, there is no apparent indication that households are purchasing a bicycle to substitute for a vehicle, or vice versa. For example, only 23% of households with no vehicles have adult bicycles or e-bikes. Other factors may be more indicative of the take-up of either mode – e.g., household size and composition, location and so on. Further research is needed to understand the determinants.

Figure 27. Household access to bicycle versus access to vehicle, 2023



Source: Expanded survey data.

3.6 Summary: key takeaways

This section summarizes the main findings to conclude the chapter on the household and demographic factors that determine the need to travel and travel characteristics. Seven key takeaways are summarized below:

1. Saskatoon has experienced significant growth since 2013. Household formation has kept pace with population growth (both at almost 29%), although the number of workers (potential commuters) has grown slightly faster. These are important determinants of travel.
2. Occupational status changed slightly since 2013, with slight drops in the proportions of full- and part- time work (still almost half the population) and slight increases in unemployed and retired persons.
3. The home-work commute makes up a significant component of peak period travel. Upwards of 82% of full-time workers had a usual place of work outside the home, up to the pandemic, with 5% working from home and 12% having no fixed workplace. During the pandemic, the work from home proportion increased to 17% and the proportion of workers with a usual workplace dropped to 70%. However, since then, the proportion of workers with a usual workplace has almost fully recovered, at 81%, although the proportion of workers working from home has increased slightly from pre-pandemic levels to 8% while that of workers with no fixed workplace has dropped slightly to 10%.
4. The eligible driving age population (16+) retains a high rate of licensing from early adulthood through advanced age groups, although women's licensing rates drop off more rapidly than men's rates from age 70.
5. Household access to a vehicle is pervasive. On average, there are 1.59 vehicles per household, 1.19 workers per household and 1.33 vehicles per worker. This is more than enough to serve workers, who tend to have priority for the vehicle, as well as other household members. Even so, 13% of households are 'car-light,' meaning that they have fewer vehicles than they do workers.
6. A significant proportion of people are dependent on someone else to drive them, or on other non-auto modes for their trips. Ten percent of all households do not have access to a vehicle. One in five (21%) of Saskatoon's population is under 16 years old, and 7% of the eligible driving-age population does not have a licence.
7. Household access to an adult bicycle is pervasive, though less so than access to vehicles. Bicycle and vehicle take-up tends to be complementary, meaning that neither mode substitutes for the other mode completely.

4 DAILY TRAVEL CHARACTERISTICS

This chapter presents the characteristics of the trips captured in the survey. The details of these trips were collected from household members who were 5 years of age and older. The ensuing discussion describes daily trips and trip rates, mode shares (daily and during the commuter peaks), trip purposes, characteristics of vehicle, transit, bicycle and walk trips, weekday commuting and telecommuting patterns and inter-sector flows.

4.1 Total trips and trip rates

4.1.1 Daily trips

This section presents the key travel characteristics from the 2023 HTS and compares them with the 2013 survey. Both surveys captured trips made by persons 5 and older (5+). Figure 28 summarizes how total daily trips and daily trips per person 5+ have changed since 2013, with details provided in Figure 29 and Table 13.

Over the 10-year period, the **total number of daily trips made by Saskatoon residents 5+ dropped slightly**, by 3%, to 654,000 trips, even with the significant population growth. This corresponds to a **24.6% reduction in the average daily trip rate per person 5+, to 2.47 trips per person in 2023** from 3.29 trips per person in 2013. It also corresponds to an **identical reduction in daily trips per household, to 5.60 trips per household in 2023** from 7.42 trips per household in 2013, also a 24.6% reduction, which is to be expected given that the average household size is almost identical in both survey years. As discussed in Section 4.1.2, **these reductions in trip rates are consistent with those experienced in other Canadian cities**.

Figure 28. Daily trips and person trip rates, 2013 and 2023

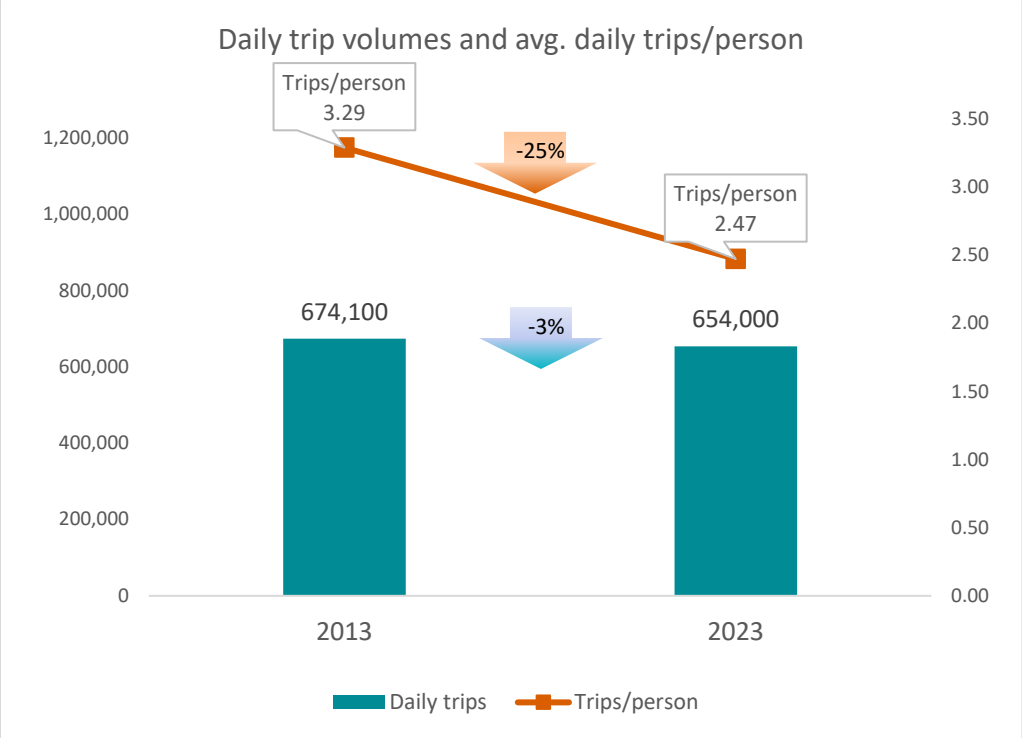


Figure 29. Daily trips for persons and households, 2013 and 2023

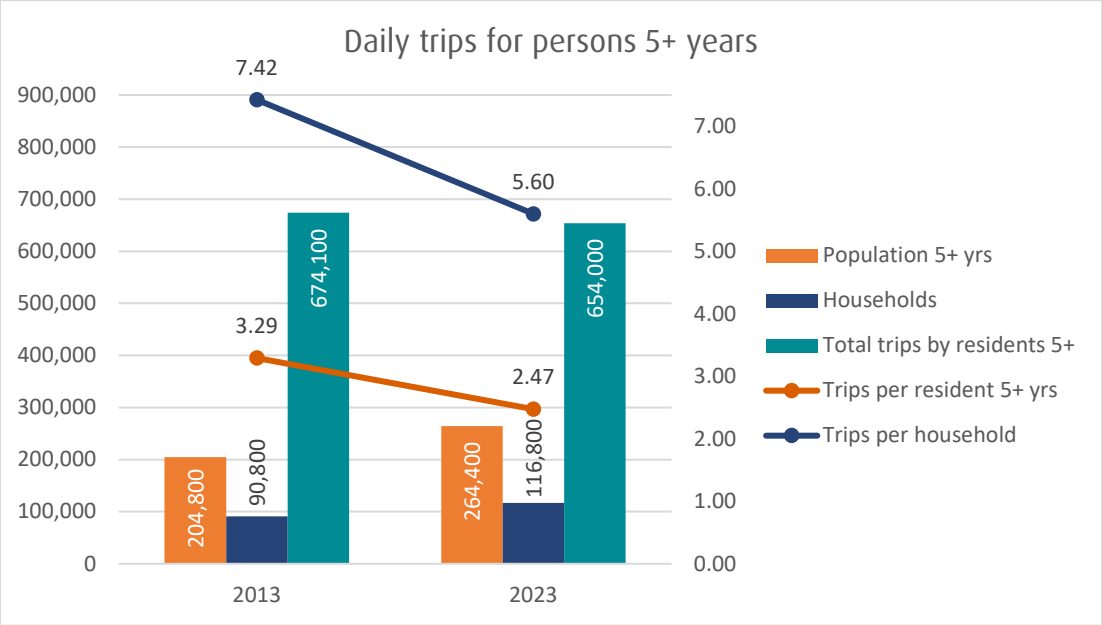


Table 13. Details of trips and trip rates, 2013-2023

			% difference – 10 years
	2013	2023	2013-2023
Population	218,800	281,700	28.7%
Population 5+ years	204,800	264,430	29.1%
Households	90,800	116,770	28.6%
Total trips by residents 5+ years	674,075	654,030	-3.0%
Trips per resident	3.08	2.32	-24.6%
Trips per resident 5+ years	3.29	2.47	-24.9%
Trips per household	7.42	5.60	-24.6%

Figure 30 and Table 14 break down total daily trips, daily trips per household and daily trips per person 5+ by sector, for 2023. **Trip rates vary by sector.** The highest trip rates are in Holmwood, at 2.75 daily trips per person 5+ and 6.63 trips per household, followed by Nutana (2.68 and 5.84 daily trips, respectively) and Lakewood (2.58 and 5.80 daily trips, respectively). For comparison, the trip rates in Core Neighbourhood are 2.44 and 4.42 daily trips, respectively. University has the lowest trip rates, at 2.06 and 2.97 daily trips respectively: Blairmore's daily person-trip rate is also low, at 2.10 daily trips; however, the sector's household-trip rate is 5.34 daily trips. The proportions of people who travelled on the survey date also vary, from 72% in University and 73% in Blairmore (below the city-wide average of 77%), to 78% in Lawson, Holmwood and Nutana, 79% in Lakewood and 80% in University Heights.

Figure 30. Daily trips and trip rates by sector of residence, 2023

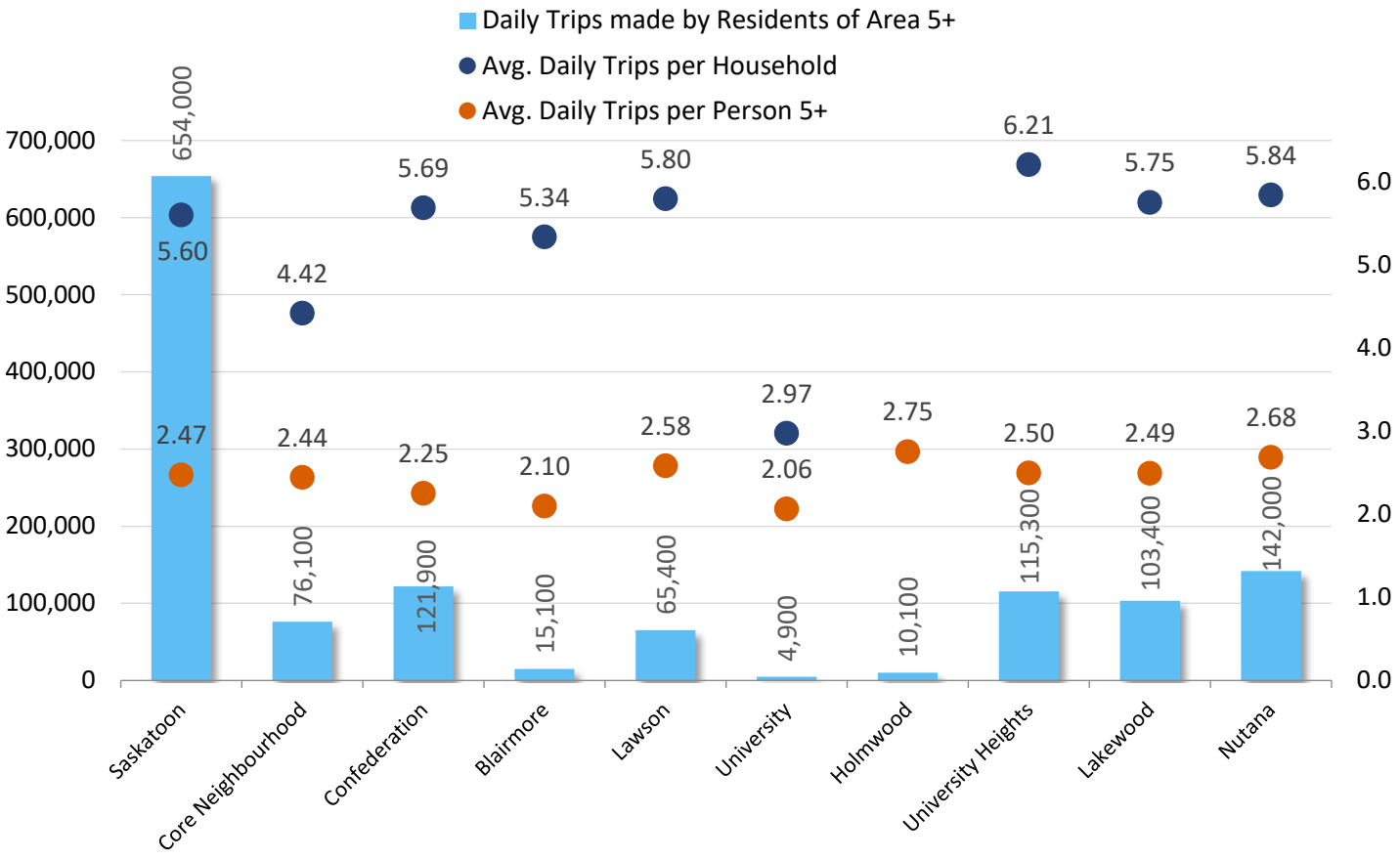


Table 14. Details of trips and trip rates by sector of residence, 2023

	Saska -toon	Core Neigh -bour- hood	Con- feder- ation	Blair- more	Law- son	Uni- ver- sity	Holm- wood	Uni- ver- sity Hts.	Lake- wood	Nu- tana
Households	116,770	17,220	21,430	2,830	11,290	1,640	1,520	18,570	17,970	24,300
Total persons 5+ years of age	264,430	31,140	54,190	7,210	25,320	2,360	3,650	46,180	41,480	52,900
% who travelled	77%	77%	75%	73%	78%	72%	78%	80%	79%	78%
Total trips	654,000	76,100	121,900	15,100	65,400	4,900	10,100	115,300	103,400	142,000
Household trip rate	5.60	4.42	5.69	5.34	5.80	2.97	6.63	6.21	5.75	5.84
Persons 5+ trip rate	2.47	2.44	2.25	2.10	2.58	2.06	2.75	2.50	2.49	2.68

Note that the Riel Industrial sector is not reported separately, given its very small sample size. The sector is included in the city-wide totals.
Blue shading highlights higher values. The intensity of the shade increases as the value approaches the highest value.
Pink shading highlights lower values. The intensity of the shade increases as the value approaches the lowest value.

4.1.2 Comparison with other jurisdictions

Table 15 compares daily person and household trip rates from the 2013 and 2023 Saskatoon household travel surveys with selected rates from recent surveys in several other Western Canadian urban regions. The comparison serves to validate these key travel characteristics, both current and as they have evolved before and through the pandemic. All sources are publicly available or used with permission, although not all information was available.

Table 15. Comparison of trip rates

City	Year of Survey	Daily Person Trip Rate	Daily Household Trip Rate	Population
City of Saskatoon *	**2023** **2013**	**2.74** **3.29**	**5.60** **7.42**	**281,700** **218,800**
Regina CMA **	2009	3.37	--	203,404
City of Edmonton	2015 2005	3.51 3.63	8.54 8.57	894,400 712,400
City of Calgary	2022 2020 2019	3.4 2.8 3.5	8.2 7.3 9.3	-- -- --
City of Winnipeg	2007	2.83	5.92	632,970
Capital Regional District (Victoria region)	2022 2017 2011	2.63 3.20 3.30	5.23 6.35 6.58	394,000 363,300 338,000
City of Vancouver †	2022 2021 2020 2019 2018	2.90 2.85 2.71 3.73 3.76	-- -- -- -- --	-- -- -- -- --
Central Okanagan (Kelowna region)	2018 2013 2007	3.02 3.22 3.37	6.67 7.14 7.63	237,250 220,470 198,870

* 2013 Saskatoon data are for residents in the Saskatoon municipal boundary only and may not match previously published reports.

** Consultants' tabulation of expanded data from the *Regina EMME Model Upgrade and Calibration Report*, December 2011. The survey documents describe only the number of responses and their contents (*2009 City Of Regina Travel Study*, 2010).

† Small sample (panel survey) of adults 18+ years of age. Source: *2022 Vancouver Transportation Fall Survey, Final Report*, City of Vancouver, July 2023.

Other sources:

- The City of Calgary, unpublished data from panel surveys. Used with permission. Rates shown were provided only to the single decimal place.
- RA Malatest with David Kriger Consultants Inc., *Capital Region District (CRD) Origin Destination Household Travel Survey 2022, Final Report*, September 2023.
- RA Malatest, *2018 Okanagan Travel Survey, Report 3: Analysis of Survey Results & Trends*, City of Kelowna et al., 2020.
- RA Malatest with David Kriger Consultants Inc., *2015 Edmonton and Region Household Travel Survey, Summary Report*, City of Edmonton, 2018.
- RA Malatest with iTRANS Consulting, *2007 Winnipeg Area Travel Survey Results – Final Report*, City of Winnipeg, 2009.

The comparison shows that **Saskatoon's person and household trip rates are comparable with those of the other cities**, although the rates vary.

The comparative data also show that **person and household trip rates have been dropping from before the pandemic** in several urban regions. The City of Edmonton, the Capital Regional District, the City of Vancouver and the Central Okanagan all show evidence of reductions in person-trip and/or household-trip rates prior to the pandemic.

Reductions in rates have continued through the pandemic, although they may be recovering in some urban regions. The Capital Regional District and the City of Vancouver show continued reductions in post-pandemic person-trip rates compared with pre-pandemic rates. On the other hand, the City of Calgary data show an almost complete recovery in the post-pandemic person-trip rate, although the household rate remains lower.

The clearest trend is provided by the City of Vancouver. These annual small-sample (panel) surveys reflect steady daily-person trip rates prior to the pandemic (3.73 daily person-trips in 2019). The precipitous 2020 drop to 2.71 daily person-trips has been recovering slowly, although the 2022 rate of 2.90 daily person-trips is still well below the 2019 rate.[16]

4.1.3 Daily trips by household and demographic characteristics

This section discusses how trip and trip rates vary by key household characteristics. Table 16 summarizes person and household trip rates by **household characteristics**, including household size, dwelling type, household income, household type (composition), vehicle ownership and worker versus non-worker households. Trip rates generally increase with household size, dwelling type (a proxy for the size of the structure), income, vehicle access and the numbers of workers. However, progressions in trip rates per household may vary when measured at the person level. The highest average person trip rates are for people living with roommates or couples with children, people with household incomes greater than $150,000 (at 3.02 trips, the highest overall rate), households with 2 or more workers and people living in 4-person households. The lowest average person trip rates are for people living in extended family households, households with no workers, for those with household incomes below $15,000 and households with no vehicles (at 1.58 trips, the lowest overall rate). The ranges can be large – for example, household trip rates are 2.3 times greater for households that have access to one or more vehicles than for zero-vehicle households.

[16] *2022 Vancouver Transportation Fall Survey, Final Report*, City of Vancouver, July 2023. Though unique in providing annual travel profiles, it should be noted that the survey sample sizes are small compared with the other, region-wide surveys cited in this discussion.

Table 16. Total daily trips and trip rates by household characteristics, persons 5+, 2023

Household Characteristic	Trips made by Residents	Household Trip Rate	Person Trip Rate
Survey Total	654,000	5.60	2.47
By Household Size			
1 person	89,500	2.59	2.59
2 people	184,800	4.75	2.39
3 people	113,300	6.68	2.42
4 people	148,400	9.33	2.63
5+ people	118,100	11.33	2.41
By Dwelling Type			
House	430,000	6.88	2.62
Other Ground-Oriented	64,400	5.10	2.17
Apartment	154,800	3.87	2.26
Student Residence	4,900	2.97	2.06
By Household Income			
Less than $15K	22,900	3.46	1.82
$15K to <$40K	57,400	3.96	2.20
$40K to <$60K	60,300	4.23	2.29
$60K to <$80K	61,900	4.71	2.45
$80K to <$100K	67,300	5.57	2.49
$100K to <$125K	75,600	6.61	2.63
$125K to <$150K	57,700	7.89	2.89
$150K or more	163,500	8.77	3.02
Decline / Don't Know	87,500	4.66	1.98
By Household Type			
single parent with children	33,083	5.83	2.28
couple without children	157,048	4.95	2.40
couple with children	314,379	8.89	2.62
extended family household (grandparents or other relatives live in household)	32,974	6.58	1.90
roommates	26,460	4.91	2.66
student living in on-campus residence	1,505	3.78	2.28
By Vehicle Ownership			
No household vehicles	30,400	2.58	1.58
At least one vehicle	623,700	5.94	2.54
Worker vs. Non-Worker Households			
No workers	103,400	3.28	2.00
1 worker	192,800	4.73	2.52
2 or more workers	357,800	8.04	2.67

Blue shading highlights higher values. The intensity of the shade increases as the value approaches the column's maximum.

Table 17 summarizes person trip rates by **demographic characteristics** - namely, age, gender, employment status (i.e., labour force status) and student status. The table shows that person trip rates are highest for people in the 35-54 age groups (i.e., people who are generally in the midst of their work careers and have established households, with the 35-44 age group having the highest overall rate at 2.91 daily trips) and for full-time workers. Among students, part-time post-secondary students and K-12 students have the highest trip rates. The lowest trip rates are associated with people 85+ (at 1.15 daily trips, the lowest overall), people who are studying online and people who are unemployed.

Table 17. Total daily trips and trip rates by demographic characteristics, persons 5+, 2023

	Daily Trips	Person Trip Rate
Survey Total	654,000	2.47
By Employment Status		
Work Full-Time	331,000	2.87
Work Part-Time	61,800	2.59
Unemployed	22,200	1.43
Other (includes students 15+ who do not work)	64,900	2.23
Retired	91,000	2.04
Not applicable (5-14 yrs)	82,300	2.32
By Student Status		
Not a student	491,300	2.51
K-12 student	105,700	2.34
PSE Full-time	47,600	2.44
PSE Part-time	5,000	2.75
Other / online	4,400	1.89
Gender		
Men+	319,500	2.48
Women+	334,600	2.46
Age Group		
5 to 14	82,300	2.32
15 to 24	85,200	2.20
25 to 34	115,100	2.54
35 to 44	122,100	2.91
45 to 54	90,900	2.82
55 to 64	79,400	2.43
65 to 74	54,300	2.33
75 to 84	20,600	1.87
85+	4,000	1.15

PSE refers to "post-secondary student."
Men+ refers to men, boys, and some non-binary persons. Women+ refers to women, girls, and some non-binary persons.
Blue shading highlights higher values. The intensity of the shade increases as the value approaches the maximum.

4.1.4 Daily trips by age group and gender

Figure 31 shows how the daily trip rate varies by age. Following a slight decline in trip- making as children enter their late teens and young adulthood, peak trip-making activity occurs in the 40-49 age groups, which are consistent with a stage in life in which people are active in their work careers and may be raising children – all of which contribute to increased travel activity. From a high of 3.07 trips per person in the 44-49 age group, the average trip rate per person drops gradually with age, reaching below the daily average of 2.47 trips per person in the 60-64 age group and starting to drop in the 65-69 age group.

Figure 31. Trip rate by age (5-year age groups), 2023

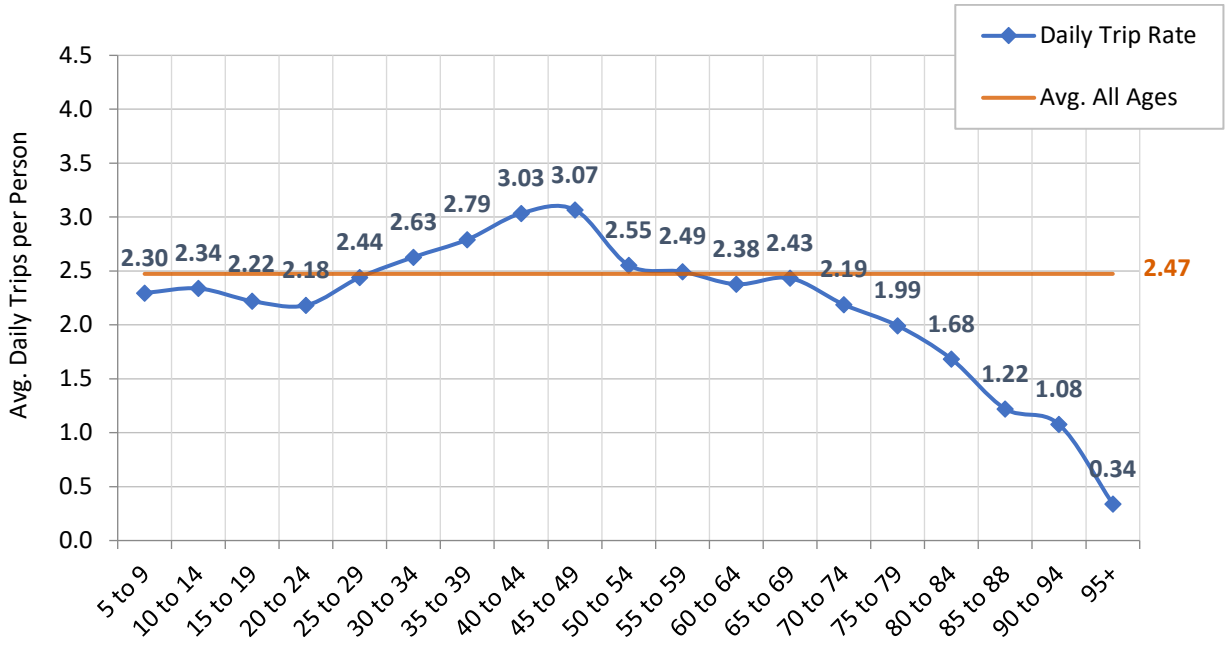
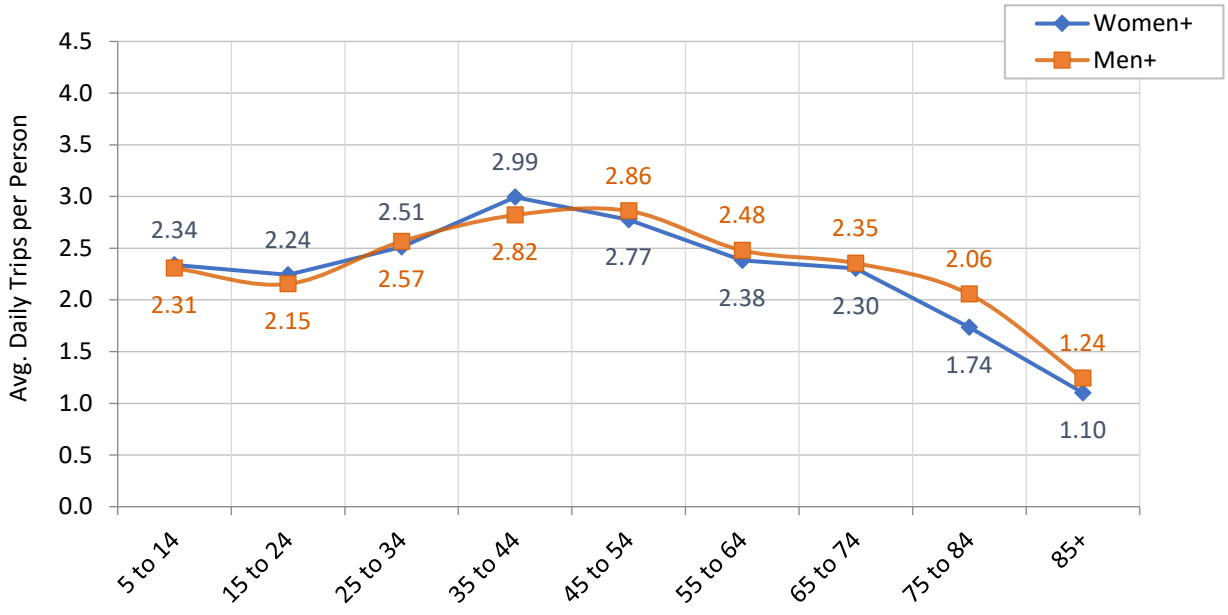


Figure 32 expands on these trends by breaking down the trip rate by gender. The highest trip rate overall is for women in the 35-44 cohort at 2.99 daily trips, while women 85+ have the lowest trip rate, at 1.10 trips per person. Women generally have higher trip rates up to 44(though slightly lower in the 25 to 34 age group), after which men have higher trip rates (peaking at 2.86 daily trips in the 45-54 age group), and women's travel activity drops faster than men's activity.

Figure 32. Trip rate by gender by age (10-year age groups), 2023



Men+ refers to men, boys, and some non-binary persons. Women+ refers to women, girls, and some non-binary persons.

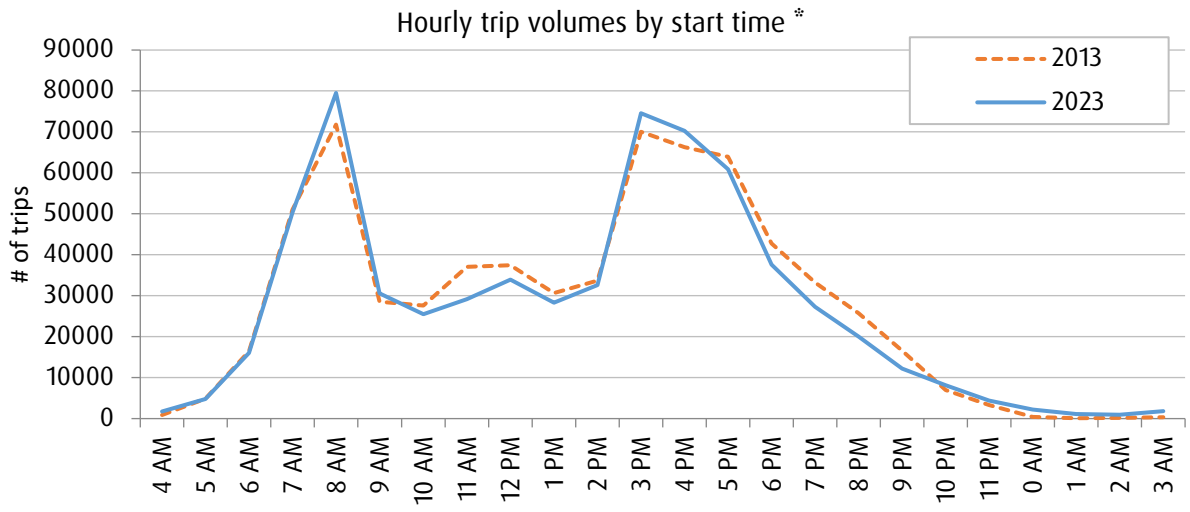
4.1.5 Trips by hour of the day

Figure 33 plots person trips by hour of the day for 2013 and 2023. The volumes are plotted by start time. The general profile of the trips remains the same, with the morning and afternoon commuter peaks registering the greatest volumes of the day and increasing relative to 2013. The 2 pm start of afternoon peak volumes continues, with long evening taper ending slightly later in 2023.

Outside the two commuter peak periods, the number of trips has dropped at all other times in 2023. The most notable reductions occur in the mid-day (between 10 am and 2 pm) and, to a lesser extent, in the early evening (6 pm to 9 pm).

The increased commuter peak travel is unusual compared with other post-pandemic surveys, in which travel dropped across all times of the day. However, the peak increases may be consistent with Saskatoon's stronger post-pandemic return to the usual workplace outside the home compared with other cities (see section 0).

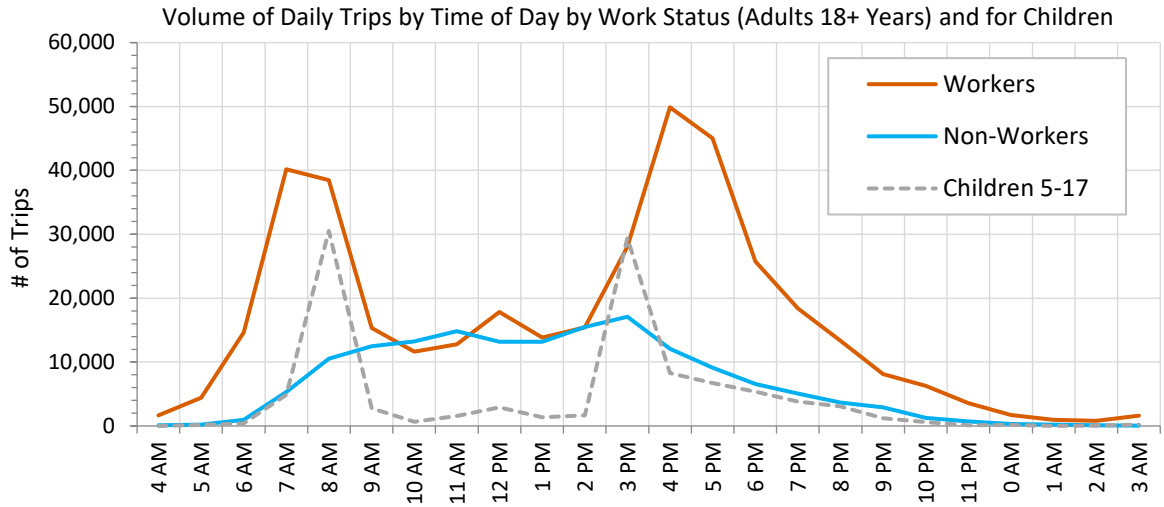
Figure 33. Trip volumes by hour of day, 2013 and 2023



* Volumes refer to person-trips made by Saskatoon residents by all modes for all purposes.

Figure 34 shows how travel patterns vary among working and non-working adults and children aged 5-17. As expected, the peak travel times for workers and children occur during the commuter peaks, which is consistent with their commutes to and from work and school respectively. While there is still some activity by workers between the two commuter peaks (including work-related trips), children's travel drops to near-zero volumes during this time, consistent with their attendance at school.

Figure 34. Trips by start hour for workers, non-workers and children, 2023



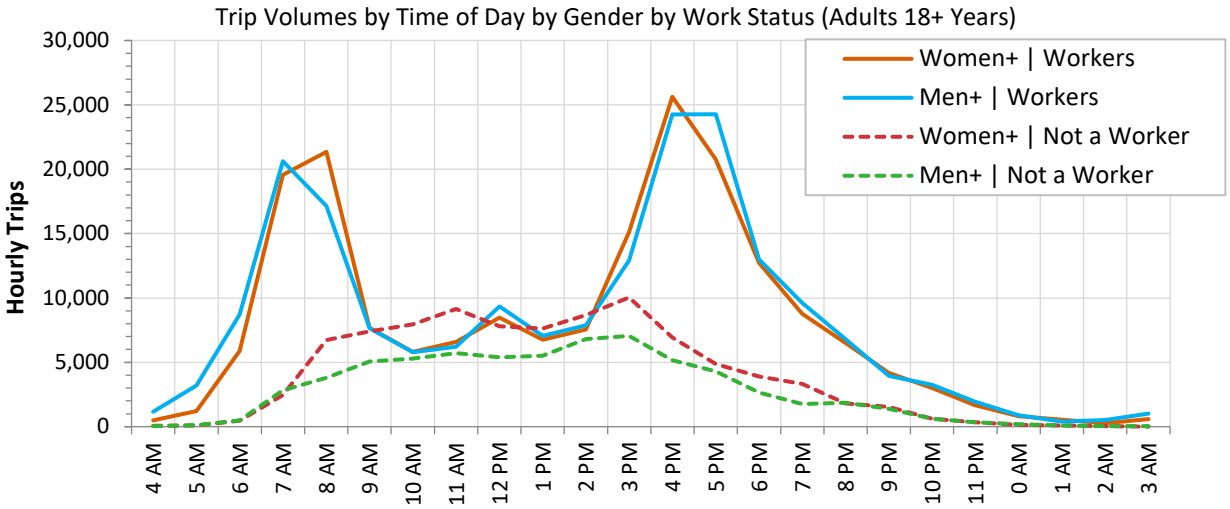
The morning peak hour occurs at 7 am for workers and at 8 am for children (students), although the afternoon peak hour for students occurs at 3 pm and an hour later for workers. The students' peaks are sharper than those of workers, consistent with generally fixed school start and end times and the greater diversity and flexibility associated with work start and end times.

Trips made by non-working adults grow through the mid-day to a 3 pm peak, which is consistent with shopping, personal appointments and other discretionary trips.

Figure 35 shows hourly trip volumes by work status and gender, all among adults 18+. As expected, workers' trips are concentrated in the two commuter peak periods. However, female workers contribute more to commuting volumes than male workers, although male activity in the morning begins earlier than that of females. The proportion of female workers' activity during the two peaks is sharper than that for male workers.

For non-workers, the distributions are also similar by gender, although female non-workers have more of a trough in their mid-day activity than males, coupled with sharper mid- morning and mid-afternoon peaks.

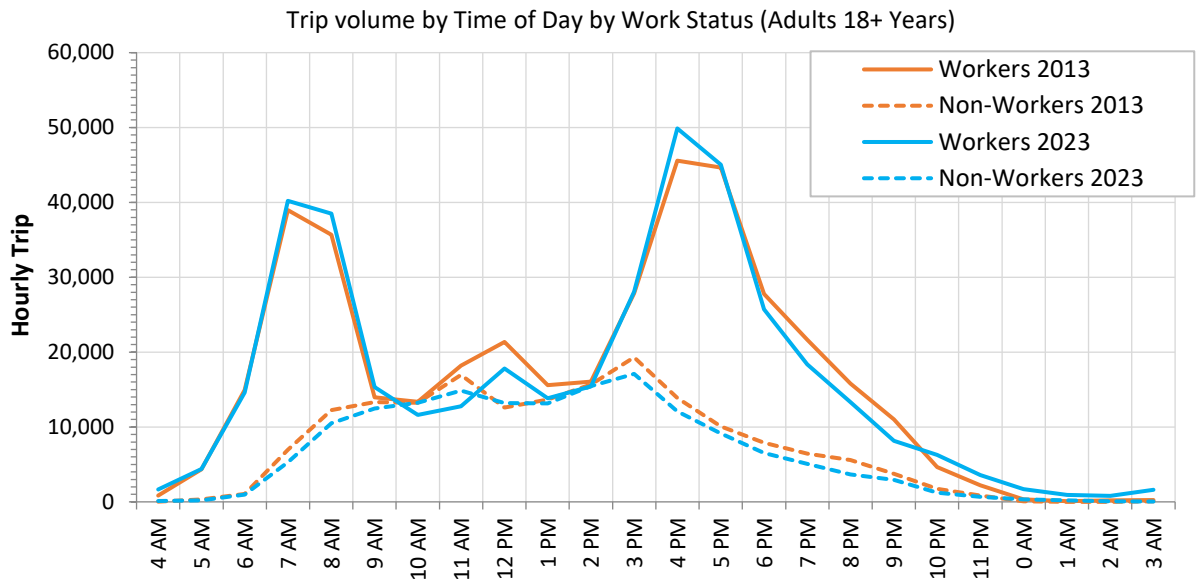
Figure 35. Trips by start hour by work status by gender, adults (18+), 2023



Men+ refers to men, boys, and some non-binary persons. Women+ refers to women, girls, and some non-binary persons.

Finally, Figure 36 compares the hourly volumes for working and non-working adults 18+ for 2013 and 2023. This is a breakdown of the total trips shown in Figure 33. As expected, the peak period increases are driven by increases in working adults' trips, while the slight reductions at other times of day are driven by non-working adults' trips.

Figure 36. Trips by start hour by work status, adults (18+), 2013-2023



4.2 Primary mode shares – daily

4.2.1 Daily mode shares

Figure 37 shows the mode shares of weekday trips made in Saskatoon by persons 5+, based on the primary mode of the trip.[17] Table 18 adds details. It can be seen that:

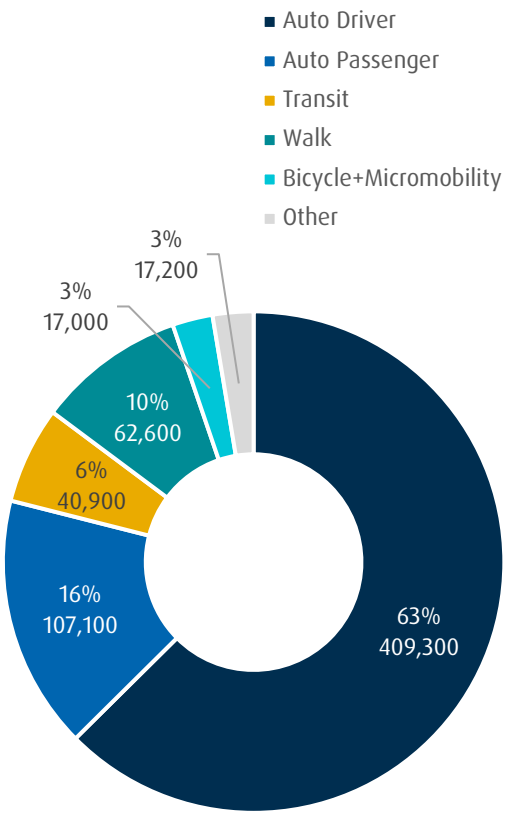
- Almost four fifths (79%) of daily trips are made by auto. Of these, 80% are made as the driver, of which 83% are made by the driver travelling alone (52% of all trips by all modes). Another 16% are made with one or more passengers (10% of all trips by all modes). Stated another way, drivers travelling alone make 52% of all trips by all modes, and auto passengers make 10% of all trips by all modes.
- 6.3% of all trips by all modes are made by transit. Of these, 86% are accessed on foot, 4% of transit trips are accessed as park-and-ride and kiss-and-ride and 0.2% are accessed by bicycle or micromobility modes. Paratransit (Access Transit) trips are included here in the transit total, representing 8% of transit trips. Stated another way, walk access transit trips make up 5.4% of all trips by all modes, park-and-ride and kiss-and-ride trips make up 0.2% of all trips by all modes, and paratransit (Access Transit) trips comprise 0.5% of all trips by all modes. Transit trips accessed by bicycle or micromobility modes make up a negligible share of all trips by all modes.
- Active transportation has a 12.2% share of all trips. Of these, 79% are walk trips, 20% are made by bicycle and 1% are by e-bike or micromobility modes. Stated another way, 9.6%

[17] A trip may entail more than one mode of travel, such as park & ride trips. In these instances, the primary mode was assigned based on the following hierarchy (with transit, at the top of the hierarchy, always being assigned if a trip involved transit and another mode): transit, school bus, auto driver, auto passenger, other, bicycle, walked. Generally, the primary mode assigned to a multi-mode trip is usually the mode by which the greatest distance would be travelled.

of all trips by all modes are walk trips, 2.5% are made by bicycle and 0.1% are made by e-bike or micromobility modes.

- Just under 5% of bicycle trips are made by e-bikes, which is consistent with their 5% portion of the stock of adult bicycles (see section 3.5).

Figure 37. Daily mode shares, persons 5+, 2023



Auto Driver Trips	Mode share	% of driver trips
Single Occupant (SOV)	52.2%	83.4%
2-Occupant (HOV-2)	7.6%	12.1%
3-Occupant (HOV-3+)	2.8%	4.4%

Transit Access	Mode share	% of transit trips
Walk Access	5.4%	86.3%
Park & Ride (drive access)	0.1%	1.9%
Kiss & Ride (passenger access)	0.1%	1.7%
Bicycle/Micromobility Access	0.0%	0.2%
Other-Mode-Access	0.1%	2.0%
Not applicable - paratransit*	0.5%	7.9%

Bicycle/Micromobility	Mode share	% of bike/ micro-mobility trips
Bicycle	2.5%	95.6%
E-bike/e-micromobility	0.1%	4.4%

* Paratransit (Access Transit) is included in the transit total, although it is not an access mode to transit. Individual percentages may add to greater than 100% due to rounding.

Table 18. Details of daily mode shares, persons 5+, 2023

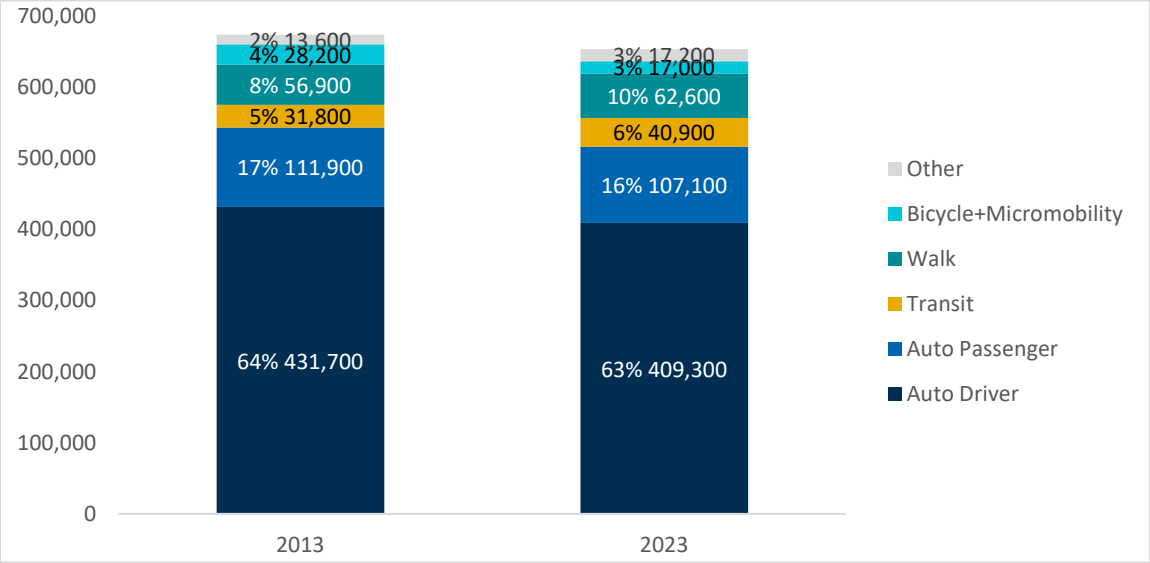
Travel Mode	Daily Trips	Mode Share
Auto driver	409,300	62.6%
Passenger	105,400	16.4%
Transit	40,900	6.3%
Walk	62,600	9.6%
Bicycle and micromobility	17,000	2.6%
Other	17,200	2.6%
Total	654,100	100.00%

Figure 38 compares the 2013 and 2023 daily mode shares for persons 5+. The proportions are generally in the same order. However, the overall magnitude of trips by all modes has dropped slightly, except for walk (increasing to 62,610 trips and a 10% share in 2023 from 56,900 trips and an 8% share in 2013), transit (40,900 trips and a 6% share in 2023 versus 31,800 trips and 5% share in 2013) and other modes (17,200 trips and a 3% share in 2023 versus 13,600 trips and a 2% share in 2013).

The overall sustainable mode share (transit, walk and bicycle + micromobility combined) has increased slightly to 120,500 trips and an 18% share from 116,900 trips and a 17% share in 2013.[18]

The overall active mode share (walk and bicycle + micromobility combined) has decreased slightly to 79,600 trips and a 12% share in 2023 from 85,100 trips and a 13% share in 2013. The reduction is due mainly to the drop in reported bicycle trips.

Figure 38. Daily mode shares, persons 5+, 2013 and 2023



4.2.2 Mode shares by sector

Figure 39 and Table 19 show how daily mode shares vary by sector:

- **Auto trips dominate across Saskatoon**, except in the University sector where one-quarter (26%) of daily trips are made by auto (16% as the driver and 10% as a passenger). Elsewhere, the auto share varies from 67% among Core Neighbourhood residents to 91% by Holmwood residents.
- **The transit share is highest among University residents**, at 11% of their trips, and among **Core Neighbourhood residents**, with a 9% share, and **Confederation residents**, with an 8% share. Elsewhere, the shares range between 1% (Holmwood) and 7% (Lakewood).

[18] Note: For the purpose of this report, sustainable mode share includes the sum of transit, walk, and bicycle + micromobility, and does not include school bus (which is aggregated with the 'other' mode grouping).

- **Active transportation dominates trips by University residents**, at 62% of their daily trips (59% walking and 3% bicycle and micromobility) – consistent with the student populations' proximity to the university and related venues and services and with the relatively low rate of vehicle availability. Almost one-quarter (23%) of **Core Neighbourhood** residents' trips are by active transportation – 18% on foot and 5% by bicycle or micromobility. Elsewhere, active transportation shares vary between 4% (Holmwood) and 13% (Lawson and Nutana).

Figure 39. Daily mode shares by sector residents, 2023

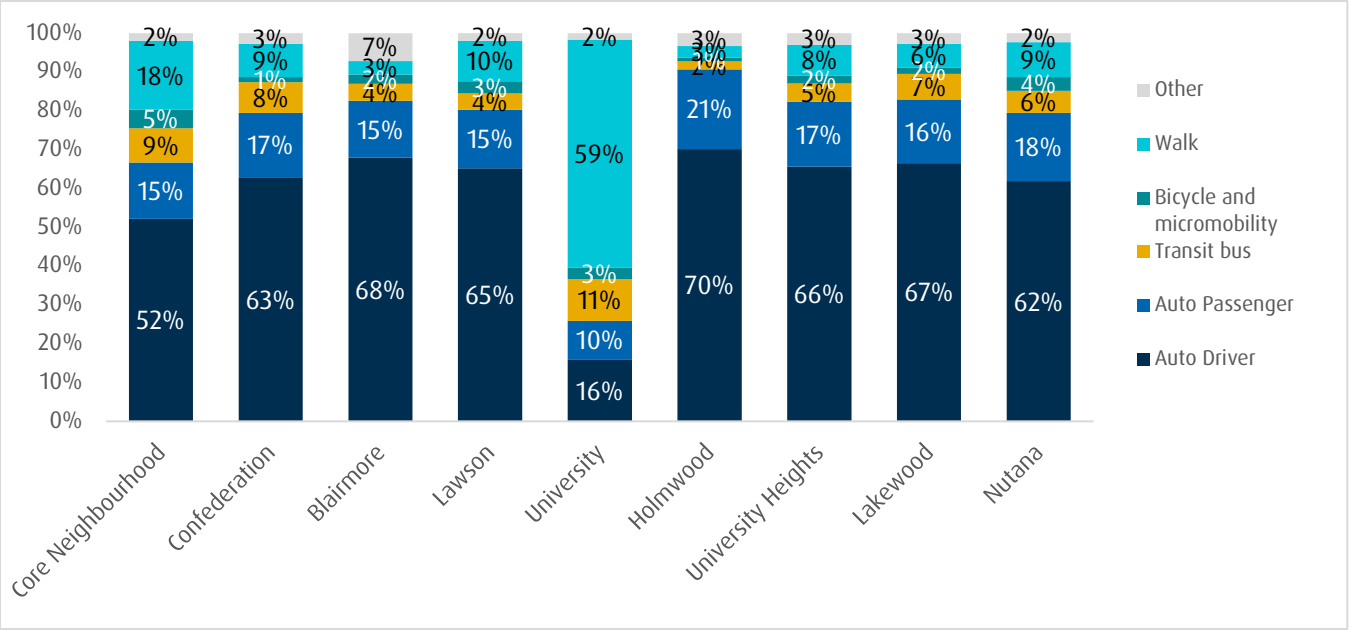


Table 19. Details of daily mode shares by sector, 2023

	Saska-toon	Core Nbhd.	Con-feder-ation	Blair-more	Law-son	Uni-ver-sity	Holm-wood	Uni-versity Hts.	Lake-wood	Nu-tana
Trips	654,000	76,100	121,900	15,100	65,400	4,900	10,100	115,300	103,400	142,000
Auto driver - private vehicle	63%	52%	63%	68%	65%	16%	70%	66%	67%	62%
Auto passenger - private vehicle	16%	15%	17%	15%	15%	10%	21%	17%	16%	18%
Transit bus	6%	8%	7%	4%	4%	10%	2%	4%	6%	5%
Bicycle	2%	5%	1%	2%	3%	3%	1%	2%	2%	4%
E-scooter or other electric-assist mobility device	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Walking	10%	18%	9%	3%	10%	59%	3%	8%	6%	9%
Motorcycle, moped, motor-scooter	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
School bus	2%	1%	2%	7%	0%	0%	3%	3%	2%	2%
Taxi or limousine	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Paid rideshare / non-traditional taxi	0%	0%	0%	0%	1%	1%	0%	0%	0%	0%
Access transit	0%	1%	1%	0%	0%	1%	0%	0%	0%	0%
Work/campus shuttle	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%
Intercity bus	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Hotel shuttle	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Riel Industrial sector is not reported separately, given its very small sample size. The sector is included in the city-wide totals.

4.2.3 Mode shares by age group

Mode shares vary by age, as people's mobility needs and abilities change. Figure 40 depicts the shares for each mode by age range, with details provided in Table 20:

- **Auto driver shares dominate all age cohorts from 20 years on**, commensurate with people joining the workforce and, for many, starting families. The dominance peaks in the 45-54 cohort, at 81% of all trips, then steadily drops – although driving is still the dominant mode for the 85+ population, at 58% of all trips.
- **Auto passenger shares are highest among those who lack a licence or otherwise do not drive.** The auto passenger shares are highest among children below the driving age (and who may not be old enough to travel independently). The auto passenger share drops quickly for teens, bottoming out among the 35-44 and 45-54 age groups at 7.7% before rising steadily to 27.1% for the 85+ population.
- **The transit share is correspondingly highest among students and young adults** – those who either are too young to drive or who do not have access to a vehicle. The 15-19 population has the highest share, at 22.2%, followed by the 20-24 population at 18.3%. These shares are consistent with cohorts that can travel independently though lack access to a vehicle.
- **Bicycle and micromobility trips peak in the 10-14 age group**, with a 6.7% share. The shares drop steadily before they start to rise again in the young adult cohort. After the 10-14 peak, the shares then start to decline gradually, with the 75-84 and 85+ age groups at a 1.0% share.
- **Walk trips are pervasive among all age groups**, though their shares vary by age. The highest shares are among children and teens (26.6% for the 5-9 age group, 29.5% for the 10-14 age group and 15.8% for the 15-19 age group). The lowest shares are in the 45-54 and 55-64 age groups at 4.8% and 4.9% respectively. These two age groups also have the highest auto driver shares.

Figure 40. Mode shares by age range, 2023

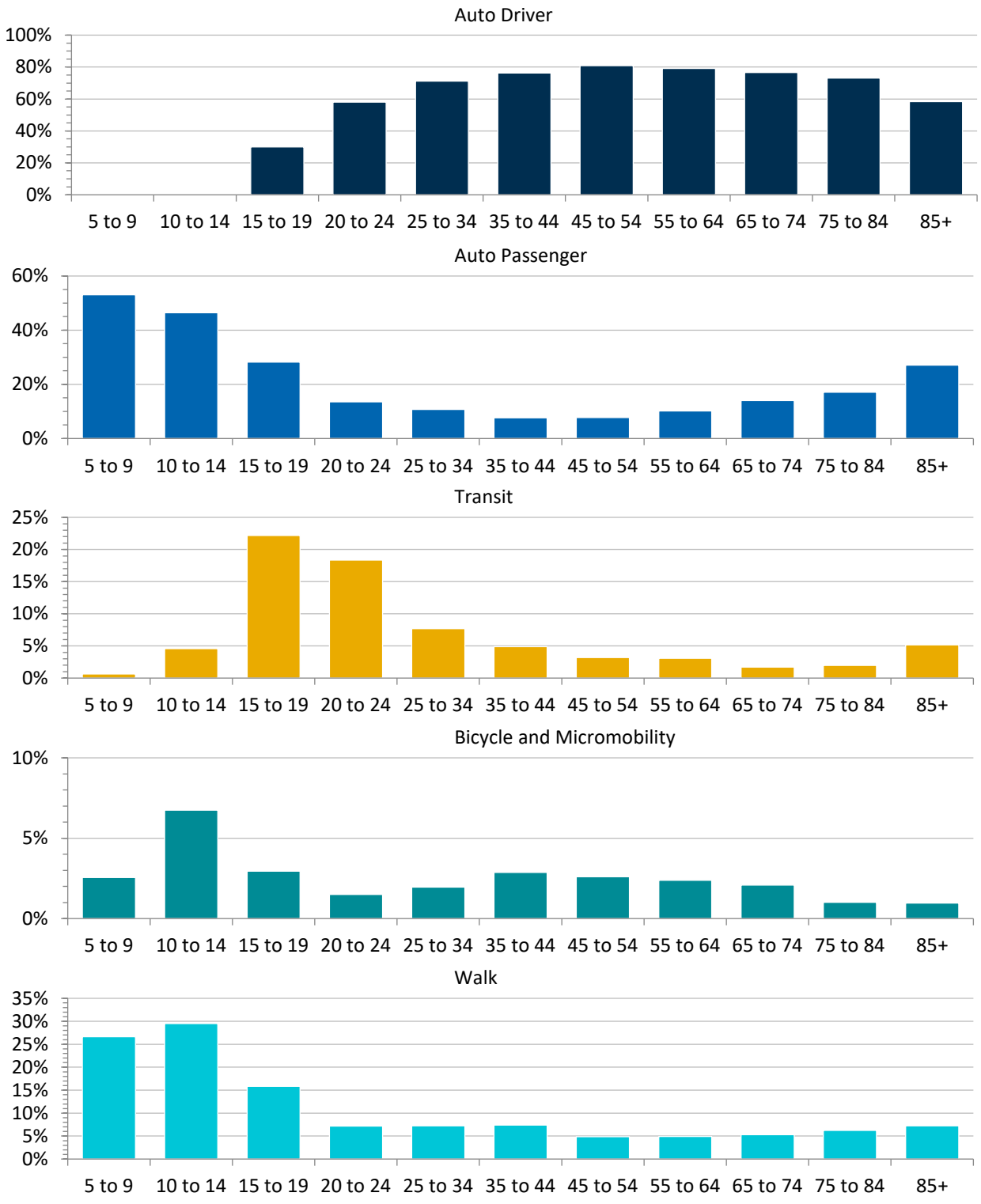


Table 20. Details of mode shares by age range, 2023

	Total Trips	Auto Driver	Auto Passenger	Transit bus	Walk	Bicycle and micromobility	Other
Survey Total	654,000	409,300	107,100	40,900	62,600	17,000	17,200
5 to 9	42,000	n/a	22,300	300	11,200	1,100	7,200
10 to 14	40,300	n/a	18,700	1,800	11,900	2,700	5,100
15 to 19	37,600	11,200	10,600	8,300	5,900	1,100	400
20 to 24	47,600	27,600	6,400	8,700	3,400	700	700
25 to 34	115,100	82,000	12,400	8,900	8,300	2,300	1,300
35 to 44	122,100	93,100	9,400	6,000	9,000	3,500	1,100
45 to 54	90,900	73,500	7,000	2,900	4,400	2,400	700
55 to 64	79,400	62,800	8,100	2,400	3,900	1,900	200
65 to 74	54,300	41,600	7,600	900	2,900	1,100	200
75 to 84	20,600	15,100	3,500	400	1,300	200	100
85+	4,000	2,300	1,100	200	300	0	0

Blue shading highlights higher values. The intensity of the shade increases as the value approaches the maximum in the chart. Note that younger age ranges are separated out into five-year age ranges, as there is more variation between these five-year groups, while those between 25 and 84 are in ten-year age ranges.

	Total Trips	Auto Driver	Auto Passenger	Transit	Walk	Bicycle and micromobility	Other
Survey Total	654,000	409,300	107,100	40,900	62,600	17,000	17,200
5 to 9	42,000	n/a	53.1%	0.6%	26.6%	2.6%	17.1%
10 to 14	40,300	n/a	46.4%	4.6%	29.5%	6.7%	12.7%
15 to 19	37,600	29.7%	28.2%	22.2%	15.8%	2.9%	1.1%
20 to 24	47,600	58.0%	13.5%	18.3%	7.2%	1.5%	1.5%
25 to 34	115,100	71.2%	10.8%	7.7%	7.2%	2.0%	1.1%
35 to 44	122,100	76.2%	7.7%	4.9%	7.4%	2.9%	0.9%
45 to 54	90,900	80.9%	7.7%	3.2%	4.8%	2.6%	0.7%
55 to 64	79,400	79.1%	10.2%	3.1%	4.9%	2.4%	0.3%
65 to 74	54,300	76.6%	14.0%	1.7%	5.3%	2.1%	0.3%
75 to 84	20,600	73.0%	17.1%	2.0%	6.2%	1.0%	0.7%
85+	4,000	58.3%	27.1%	5.2%	7.2%	1.0%	1.2%

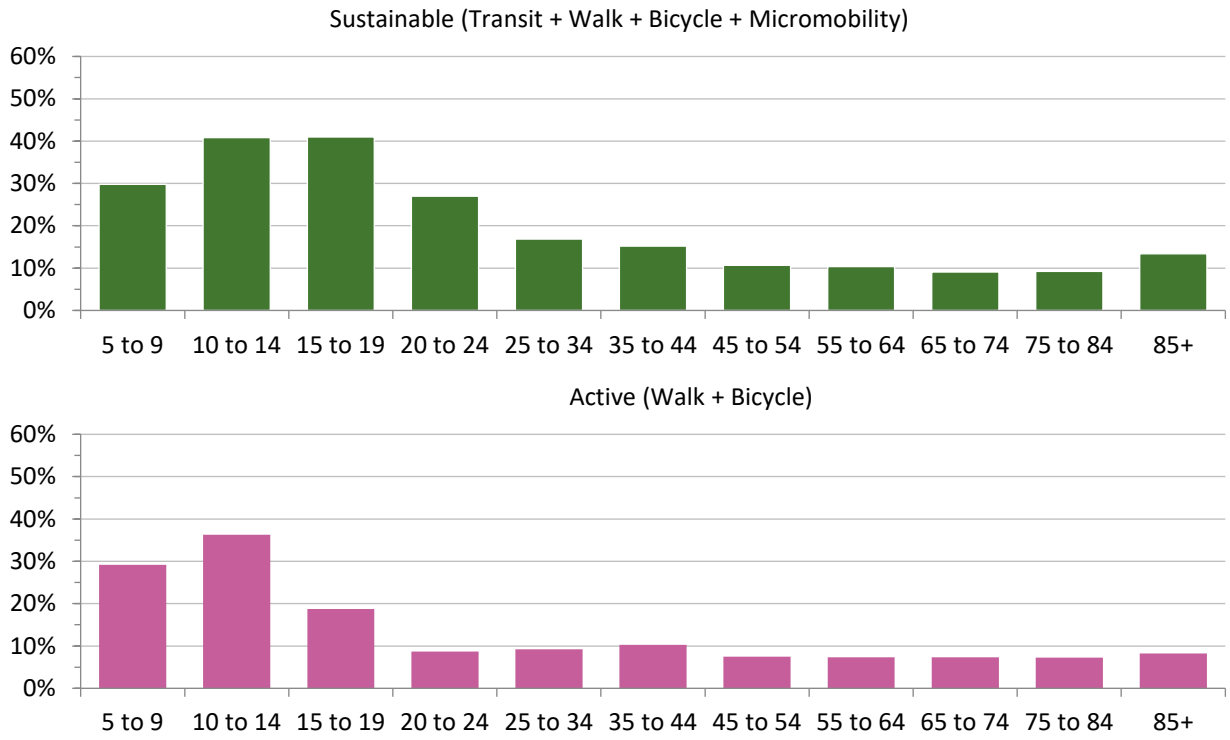
Blue shading highlights higher values. The intensity of the shade increases as the value approaches the maximum in the chart. Note that younger age ranges are separated out into five-year age ranges, as there is more variation between these five-year groups, while those between 25 and 84 are in ten-year age ranges.

Figure 41 summarizes the shares for sustainable modes (transit, walk and bicycle + micromobility combined) and for active modes (walk and bicycle + micromobility):

- **Almost one-fifth of all trips (18.4%) are made by sustainable modes.**
- **The share of sustainable modes is highest among children, teens and young adults** – those who either are too young to have a licence or do not have access to a vehicle. The share peaks at 41.0% in the 15-19 population. The share drops steadily among adults, corresponding to people joining the workforce and, in some cases, starting families. The sustainable share bottoms out with the 65-74 age group at 9.1%, before rising slightly.

- **Almost one-eighth of all trips (12.2%) are walk or bicycle / micromobility trips.**
- **Active transportation shares are highest in 10-14 age group**, at 36.3%. The active transportation shares then steadily drop, bottoming out at 7.3% in the 55-64 age group before rising to 8.2% in the 85+ age group.

Figure 41. Sustainable and active mode shares by age range, 2023



4.2.4 Mode shares by gender

For the purpose of analysis by gender, survey responses to the gender question have been grouped into two categories: 'men+' consisting of men and boys and a random selection of people with non-binary gender or who refused to provide a gender, and 'women+', consisting of women and boys and a random selection of people with non-binary gender or who refused to provide a gender. In the following discussion, 'men' and 'women' should be understood to refer to these composite groups. Given the small sample of those with non-binary gender, analysis is not broken out by detailed survey responses to the gender question.

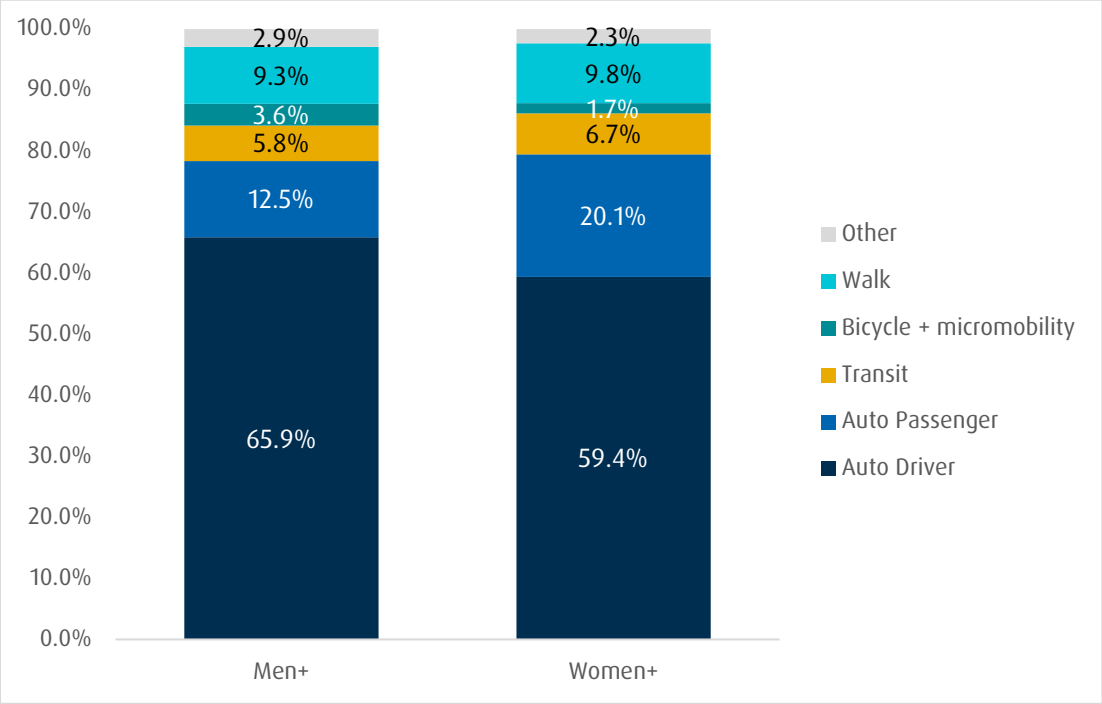
The survey results reveal some differences in mode use by gender, as depicted in Figure 42:

- Women drive moderately less than men (59.4% compared with 65.9%) and are more likely to be passengers (20.1% compared with 12.5%). This is the most significant difference in mode share between the genders. Combined, however, **women have a slightly larger share of auto trips**, at 79.5% compared with 78.4% for men.
- **Women have a slightly higher share of walk trips than men** (9.8% compared with 9.3%), **although women have less than half the share of bicycle / micromobility trips as men**

(1.7% compared with 3.6%). Overall, 12.9% of men's trips are via active modes, compared with 11.5% of women's trips.

- **Women have a moderately higher share of transit use** than men (6.7% compared with 5.8%).

Figure 42. Mode shares by gender, 2023



Men+ refers to men, boys, and some non-binary persons. Women+ refers to women, girls, and some non-binary persons.

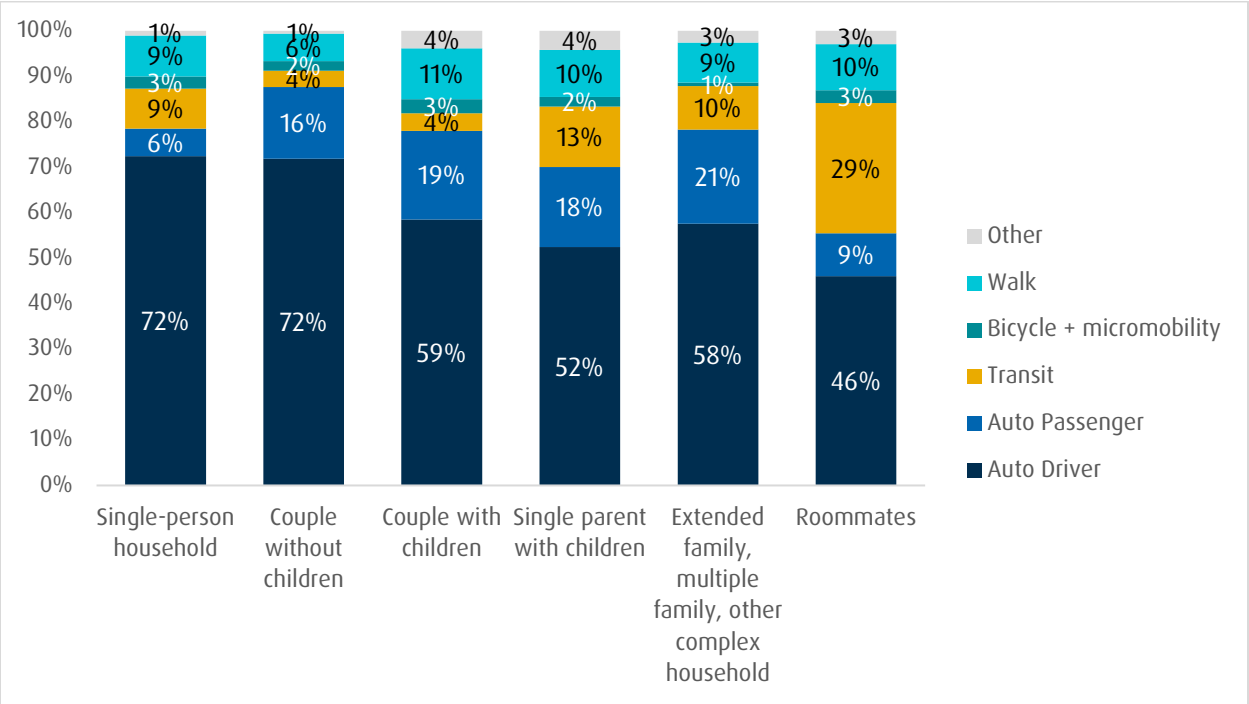
4.2.5 Mode shares by household characteristics

This section presents mode shares according to three household characteristics: household structure (Figure 43), household income (Figure 44) and dwelling type (Figure 45). While these characteristics may be related (e.g., dwelling type and household income), it is useful to summarize the findings for each one separately:

By household structure:

- **Auto shares are highest for couples without children**, at 88% of all trips. Couples with children and single-person households have the highest auto driver shares, both at 72% of all trips. Couples with children and extended family households have the highest auto passenger shares, at 19% and 21%, respectively.
- **Sustainable mode shares are highest among roommates** at 42%, of which more than two-thirds are transit trips (29%). Couples with children have the highest walk share, at 11%. They, along with roommates, also have the highest bicycle and micromobility share, at 3%.

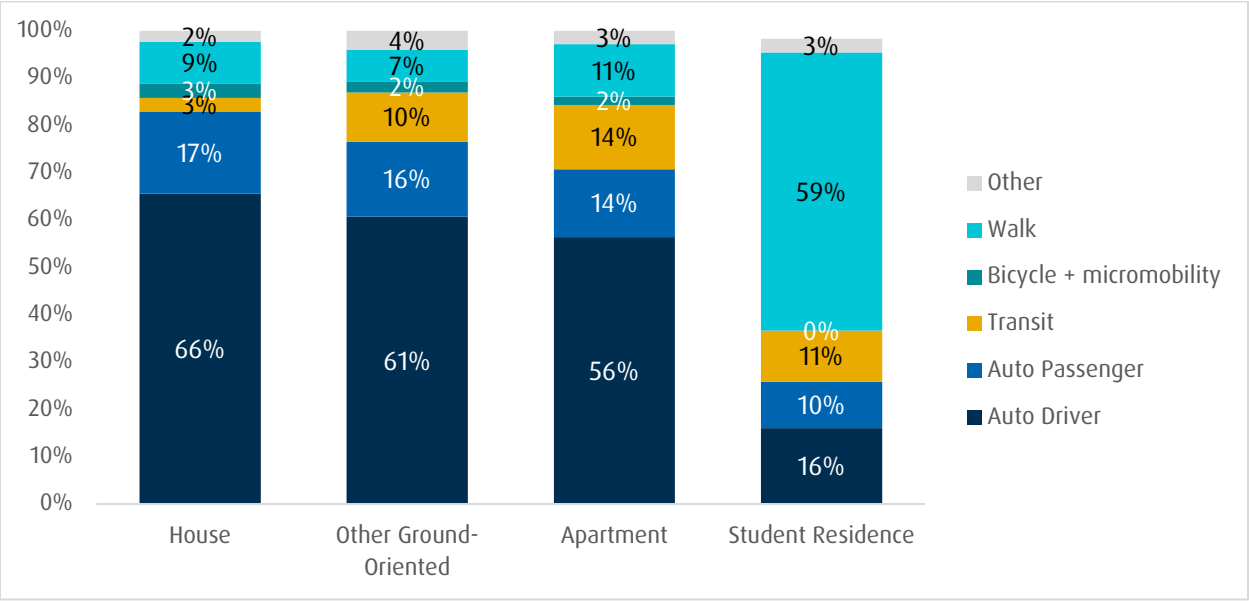
Figure 43. Mode shares by household structure, 2023



By dwelling type:

- Auto trips make up 83% of all travel for people living in houses (66% as auto driver), 77% for people living in other ground-oriented dwellings and 70% for people living in apartments. The auto share is 26% for people in student residences.
- Trips by sustainable modes make up almost three-quarters (70%) of trips by people living in student residences. Walk trips dominate, at 59% of this group's trips. Apartment dwellers have the highest transit share, at 14%.

Figure 44. Mode shares by dwelling type, 2023

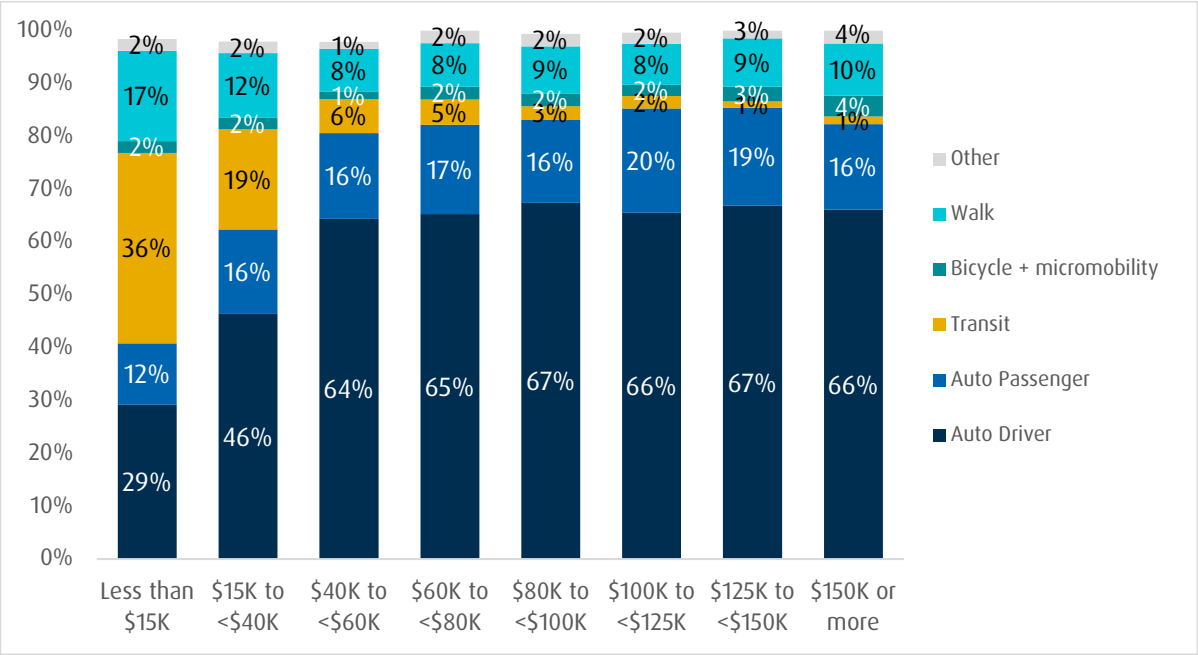


By household income:

- Households with incomes less than $15,000 have the lowest auto share, at 41%. Sustainable modes have a 55% share, of which 36% is transit. For households with incomes $15,000 or more, the auto shares rise from 62% in the $15,000 - $40,000 income group to between 81% and 86% in the remaining income brackets. The walk, transit and bicycle and micromobility shares in these income brackets steadily diminish followed by a slight increase in the $150,000+ income bracket.[19]

[19] The mode shares by household income reported here reflect only data from those households that responded to the income question.

Figure 45. Mode shares by income, 2023



4.2.6 Mode shares by employment and student status

Figure 46 and Figure 47 illustrate how mode shares vary by employment status and student status, respectively:

- Auto shares are highest among retirees (91% share) and full-time workers (88%), with retirees having the highest auto passenger shares (16%) and the lowest active transportation shares (7%).
- The transit shares are lowest among retirees (2%) and full-time workers (3%). Transit shares are highest among full-time post-secondary students (27%).
- Walk shares are highest among the unemployed and looking (14%) and among primary and secondary students (25%). The walk share is also high among those whose employment and student statuses are 'other' (15% and 14%, respectively). Part-time post-secondary students have the lowest share (1%).
- Part-time workers and part-time post-secondary students have the lowest bicycle and micromobility shares (1%). The bicycle and micromobility shares are highest among primary and secondary students (4%). The 'other' mode share is high amongst primary and secondary students as this category includes school bus (amongst other modes such as taxi and shuttle bus).

Figure 46. Mode shares by employment status, 2023

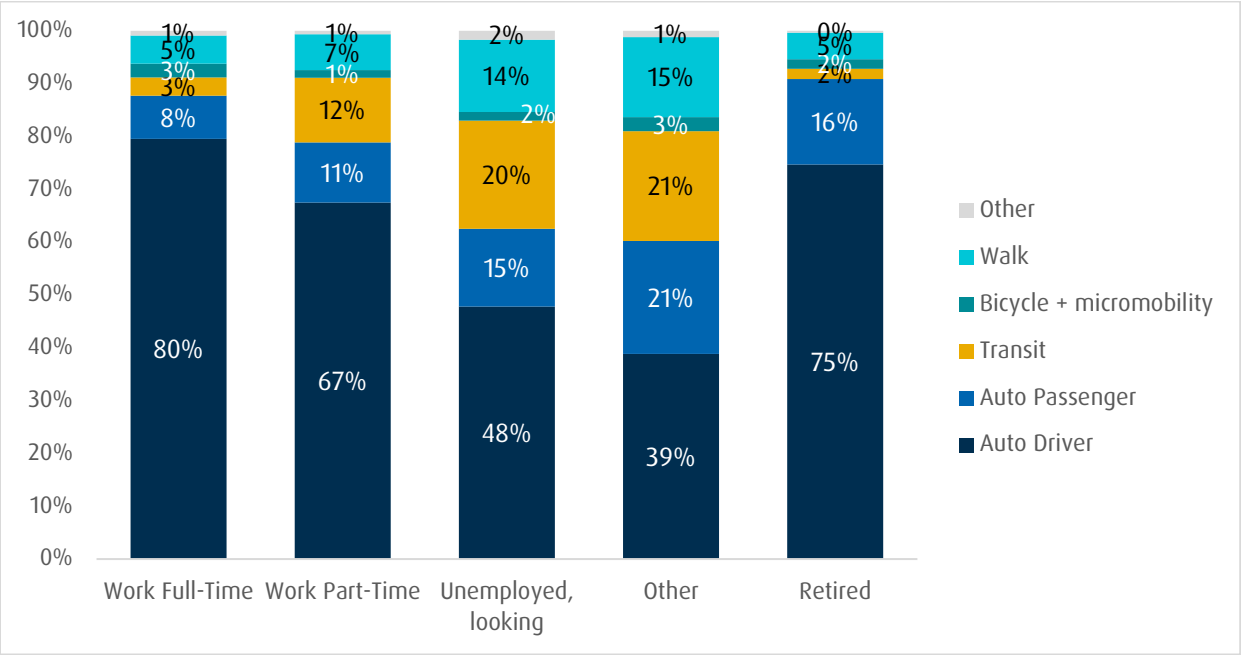
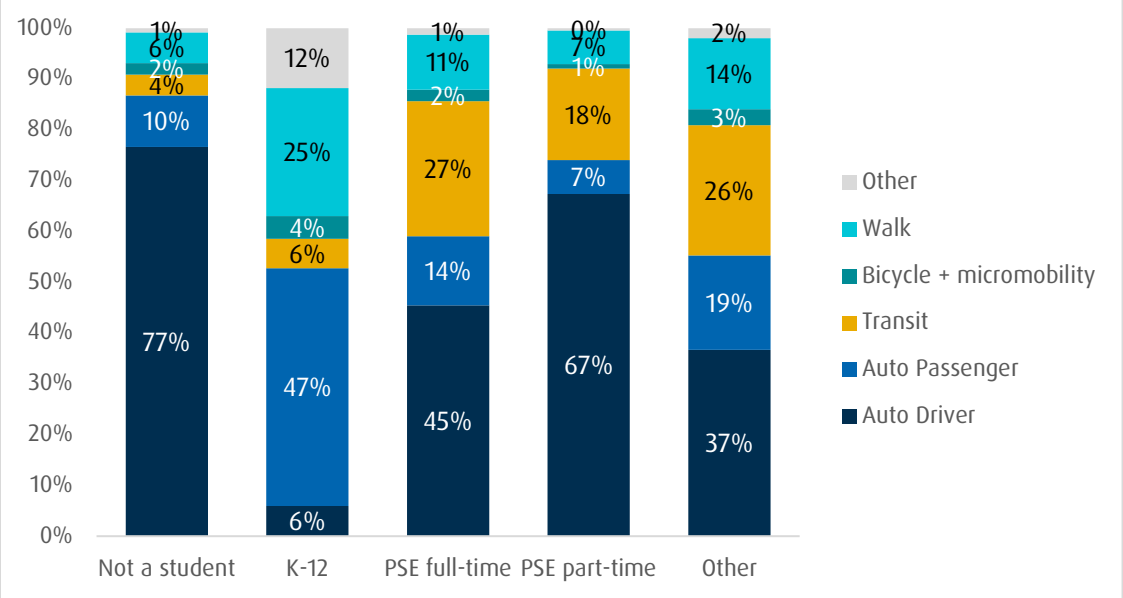


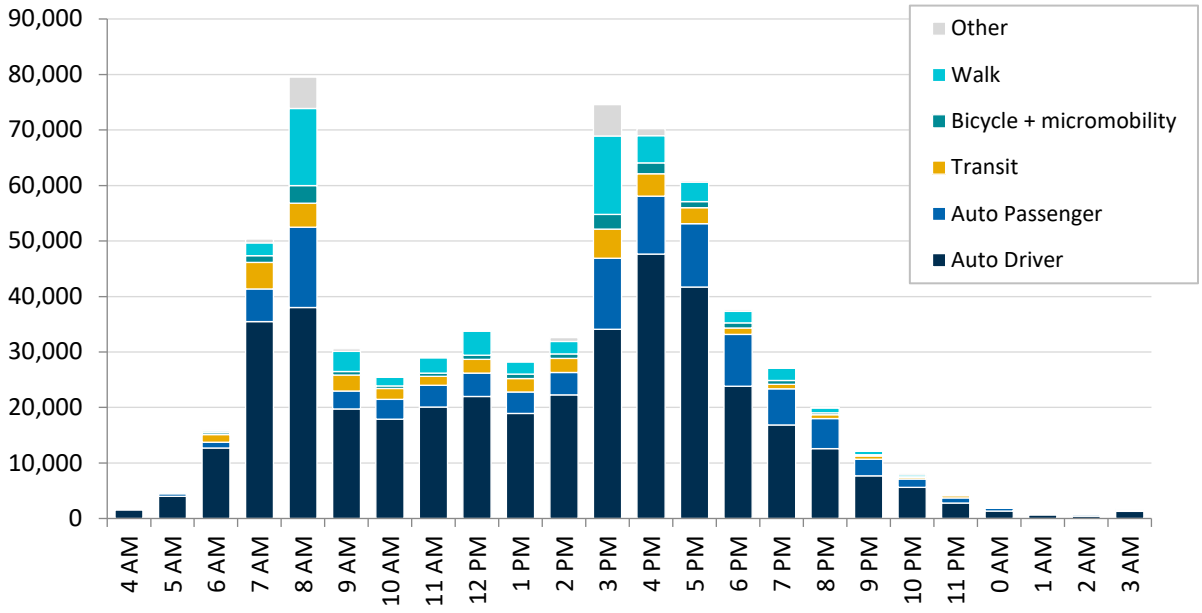
Figure 47. Mode shares by student status, 2023



4.2.7 Mode shares by trip start hour

Figure 48 shows the hourly variation of mode shares.

Figure 48. Mode shares by trip start hour, 2023



The auto driver share is highest at all times of day, with auto drivers comprising at least half of all trips throughout most of the day. A notable exception is the hour beginning at 8 am at 48% (the lowest share for driving), when overall trip volumes are their peak, at 79,520 trips by all modes.

The highest absolute auto driver volumes correspond to the morning and afternoon peak periods (7–9 am and 3–6 pm), which are also the times of day when auto passenger volumes are greatest and are likely associated with commutes to and from work and school. As a proportion, however, auto passenger trips are greatest during the evening hours, reaching a maximum of 27% during the hour beginning at 8 pm. These shares are consistent with evening recreational, social and other after-hours activities.

Transit volumes are highest during the two commuter peaks, with volumes reaching 4,300-4,800 riders between 7 and 9 am and reaching 4,000-5,250 riders between 3 and 5 pm. Transit's highest volume occurs in the hour beginning at 3 pm, at 5,250 riders. The highest share occurs in the hour beginning at 7 am, at 10%.

Walk and bicycle / micromobility trips achieve their greatest numbers during the morning peak hour, at 17,100 trips in the hour beginning at 8 am. Volumes are also high during the afternoon peaks, rising to 16,750 trips in the hour beginning at 3 pm. Walk trips peak at 14,150 trips in the hour beginning at 3 pm and at 13,900 trips in the hour beginning at 8 am. Bicycle and micromobility trips peak at 3,150 trips in the hour beginning at 8 am and at 2,600 trips in the hour beginning at 3 pm. The walk and bicycle peaks likely reflect the start and end of the elementary and secondary school day.

4.2.8 Mode shares by time period

This sub-section profiles mode shares by time of day. The survey data have been grouped into five time periods, to provide a different view of travel patterns including the aggregation of trips in the AM and PM commuter peak periods:

- Night 0000 to 0559 trip depart times from 12 AM to just before 6 AM
- AM Peak 0600 to 0859 6 AM to just before 9 AM
- Midday 0900 to 1459 9 AM to just before 3 PM
- PM Peak 1500 to 1759 3 PM to just before 6 PM
- Evening 1800 to 2359 6 PM to just before midnight

Table 21 provides an overview of the total number of trips for each period in both 2013 and 2023. As has been discussed earlier, the estimated total daily volume of trips in Saskatoon has dropped 3% overall. However, the reductions have not occurred uniformly across the day. Reductions in the midday and evening exceed increased volumes during the AM and PM peak periods and overnight, for an overall reduction of 20,100 trips across the day.[20]

The overall reduction in daily travel is consistent with the lower daily trip rates observed in Saskatoon and elsewhere. However, post-pandemic surveys in other cities have recorded losses in the two commuter peak periods, which suggests shifts in activity patterns that go beyond simple changes to commuting. In contrast, Saskatoon's workers have largely returned to their usual place of work after the pandemic-induced shifts to working from home. This suggests that shifts in travel behaviour have focused on discretionary trips like shopping and recreation. On the other hand, the gains in peak period travel may reflect an ongoing suppression of commuter trips, continuing after the pandemic (i.e., commuter trips have not grown as much as otherwise would be expected). More research would be needed to understand the underlying factors.

Table 21. Trip volumes by time period (including AM Peak, PM Peak), 2013-2023

Measure	Year	Night 0000 - 0559 (6 hours)	AM Peak 0600 - 0859 (3 hrs)	Midday 0900 - 1459 (6 hrs)	PM Peak 1500 - 1759 (3 hrs)	Evening 1800 - 2359 (6 hrs)	24-Hour
Total Trips	2013	6,700	139,300	195,000	200,300	128,600	674,100
	2023	12,700	145,900	180,100	205,700	109,700	654,000
	difference	6,000	6,600	-14,900	5,400	-18,900	-20,100
	% difference	90%	5%	-8%	3%	-15%	-3%
% of Daily Trips	2013	1.0%	20.7%	28.9%	29.7%	19.1%	100.0%
	2023	1.9%	22.3%	27.5%	31.4%	16.8%	100.0%
	%-pt difference	0.9%	1.6%	-1.4%	1.7%	-2.3%	

[20] Summing the difference of the five time periods yields a net daily loss of 15,800 person trips. This does not include 4,300 person trips in the 2013 survey data whose exact times are not known, but which have been included in the daily totals for consistency, thereby yielding a net loss of 20,100 person trips.

Table 22 examines how mode shares have changed in the same period. Compared to 2013, there are moderate drops in auto driver mode shares throughout the day, notably in the AM peak period and the evening and overnight (-1.9% for both periods).[21] Auto passenger shares have also dropped, though the drops are not as pronounced as the reductions in auto driver shares, and the midday recorded a slight increase. Bicycle and micromobility shares have also dropped across the day, most noticeably in the two peak periods (-2.1%). In contrast, the transit, walk and other shares have all increased across the day. Transit's gains are most pronounced in the midday, evening and overnight periods. Increases in the shares of walk trips are greatest in the two peak periods.

It is important to note that several factors may have influenced the shifts in trip volumes and mode shares observed in these surveys. These factors include the impact of increased work-/study-from-home and reduced commuting, possible shifts in where workers work and live, the impact of the pandemic on daily commerce (retail shopping and services), the social impacts of the pandemic and/or other factors not considered here.

Table 22. Mode shares by time period (including AM Peak, PM Peak), 2013-2023

		Night 0000 - 0559 (6 hours)	AM Peak 0600 - 0859 (3 hrs)	Midday 0900 - 1459 (6 hrs)	PM Peak 1500 - 1759 (3 hrs)	Evening 1800 - 2359 (6 hrs)	24-Hour
2013	Total Trips	6,700	139,300	195,000	200,300	128,600	674,100
	Auto Driver	76.1%	60.9%	67.9%	61.2%	65.2%	64.0%
	Auto Passenger	13.4%	14.7%	12.3%	17.0%	24.8%	16.6%
	Transit	1.5%	6.4%	5.9%	4.6%	1.3%	4.7%
	Bicycle	3.0%	5.3%	3.8%	4.8%	2.6%	4.2%
	Walk	3.0%	8.5%	9.3%	9.5%	5.7%	8.5%
	Other	1.5%	4.2%	0.8%	2.8%	0.3%	2.0%
2023	Total Trips	12,700	145,900	180,100	205,700	109,700	654,000
	Driver	74.4%	59.0%	67.1%	60.0%	63.2%	62.6%
	Passenger	11.9%	14.7%	12.7%	16.8%	24.3%	16.4%
	Transit	3.3%	7.2%	7.8%	5.9%	3.6%	6.3%
	Bicycle and micromobility	2.5%	3.3%	2.2%	2.8%	2.1%	2.6%
	Walk	3.4%	11.3%	9.3%	10.9%	5.8%	9.6%
	Other	4.5%	4.5%	0.9%	3.5%	1.0%	2.6%
%-pt difference	Driver	-1.7%	-1.9%	-0.8%	-1.2%	-1.9%	-1.4%
	Passenger	-1.6%	0.0%	0.4%	-0.1%	-0.5%	-0.2%
	Transit	1.8%	0.8%	1.8%	1.3%	2.2%	1.5%
	Bicycle and micromobility	-0.5%	-2.1%	-1.6%	-2.1%	-0.5%	-1.6%
	Walk	0.5%	2.8%	0.1%	1.4%	0.1%	1.1%
	Other	3.0%	0.4%	0.1%	0.7%	0.7%	0.6%

Note: As with other tables and figures, backwards comparability depends on which data were collected in 2013 and on the usability of these data.
Blue shading highlights higher values. The intensity of the shade increases as the value approaches the highest value.
Pink shading highlights lower values. The intensity of the shade increases as the value approaches the lowest value.

[21] Note that the changes reflect absolute differences in the 2013 and 2023 shares, not proportional differences.

4.2.9 Mode shares by employment and student status for AM and PM peak period

Table 23 summarizes mode shares at different time periods of the day for three commuter groups: students between five and 17 years of age (most of whom would be in the K-12 education system), adult students (most of whom would be in post-secondary school) and workers. Figure 49, Figure 50 and Figure 51 illustrate the volumes of their trips by different modes in the five time periods. For example, children's commutes to and from school appear to account for much of their daily travel, with most of their trips during the AM and PM peak periods made as auto passenger or walk trips. Auto passenger trips also dominate children's travel at other times of the day.

Examining the results for students 18 years and older:

- Students 18 years and older reported fewer trips in the AM peak than they make after 9 AM in the midday period or during the PM peak period.
- Auto driver trips dominate at all times of the day, exceeding more than half their evening and overnight trips.
- Transit represents one-third of their AM peak period trips (32.0% or 3,600 trips) and one-third of their midday trips (32.8% or 6,200 trips), though under one-quarter of their trips in the PM peak period (23.2% or 3,500 trips).

Examining the results for workers:

- The auto is the primary mode for workers at all times of day. Just over three-quarters of their trips are made as auto driver (305,000 daily trips, a 77.6% share), although the share varies slightly across the day. Auto passenger trips total 34,100 daily trips, an 8.7% share. The auto passenger share increases to 14.0% or 10,600 trips during the evening, consistent with non-work evening activities.
- Transit volumes are highest in the PM peak at 5,800 trips (a 4.7% share), followed by the AM peak period at 5,300 trips (a 5.6% share) and the midday, at 5,000 trips (a 5.8% share).
- Travel by bicycle and micromobility modes is also highest during the PM peak period, at just over 2,800 trips (a 2.3% share), followed by the AM peak period, at just under 2,800 trips (a 2.9% share).
- Walk trips are greatest during the PM peak period, at 7,000 trips (a 5.6% share), followed by the midday at 6,300 trips (a 7.2% share) and the evening and AM peak period, each at 4,100 trips and shares of 5.4% and 4.4% respectively.

Table 23. Mode shares for students and workers by time period, 2023

Population Group	Mode	Night 0000 - 0559 (6 hours)	AM Peak 0600 - 0859 (3 hrs)	Midday 0900 - 1459 (6 hrs)	PM Peak 1500 - 1759 (3 hrs)	Evening 1800 - 2359 (6 hrs)	24-Hour
Students 0-17 yrs	Total Trips	600	35,800	10,900	44,400	14,100	105,800
	Driver	14.9%	4.5%	12.0%	4.7%	8.5%	5.9%
	Passenger	56.2%	38.7%	43.7%	44.0%	78.5%	46.9%
	Transit	13.5%	6.8%	6.6%	6.2%	1.6%	5.9%
	Bicycle and micromobility	11.1%	4.8%	2.0%	4.4%	4.2%	4.3%
	Walk	4.0%	28.9%	30.9%	27.0%	6.5%	25.2%
	Other	0.3%	16.3%	4.9%	13.7%	0.6%	11.8%
Students 18+ yrs	Total Trips	900	11,400	18,900	15,000	10,700	56,800
	Driver	51.9%	42.3%	41.0%	49.7%	57.2%	46.8%
	Passenger	21.0%	12.7%	9.2%	13.5%	19.8%	13.2%
	Transit	10.2%	32.0%	32.8%	23.2%	11.1%	25.7%
	Bicycle and micromobility	2.5%	2.9%	2.7%	2.7%	1.8%	2.6%
	Walk	0.9%	9.6%	13.1%	10.4%	8.7%	10.7%
	Other	13.5%	0.5%	1.2%	0.5%	1.4%	1.1%
Workers	Total Trips	11,200	94,200	87,300	124,200	76,000	392,900
	Driver	78.7%	80.0%	76.1%	78.9%	74.3%	77.6%
	Passenger	9.4%	6.4%	7.6%	7.8%	14.0%	8.7%
	Transit	2.5%	5.6%	5.8%	4.7%	3.4%	4.8%
	Bicycle and micromobility	2.1%	2.9%	2.6%	2.3%	1.9%	2.4%
	Walk	3.6%	4.4%	7.2%	5.6%	5.4%	5.6%
	Other	3.6%	0.7%	0.7%	0.7%	1.0%	0.9%

Figure 49. Students 5-17 years of age, trips by mode by time period, 2023

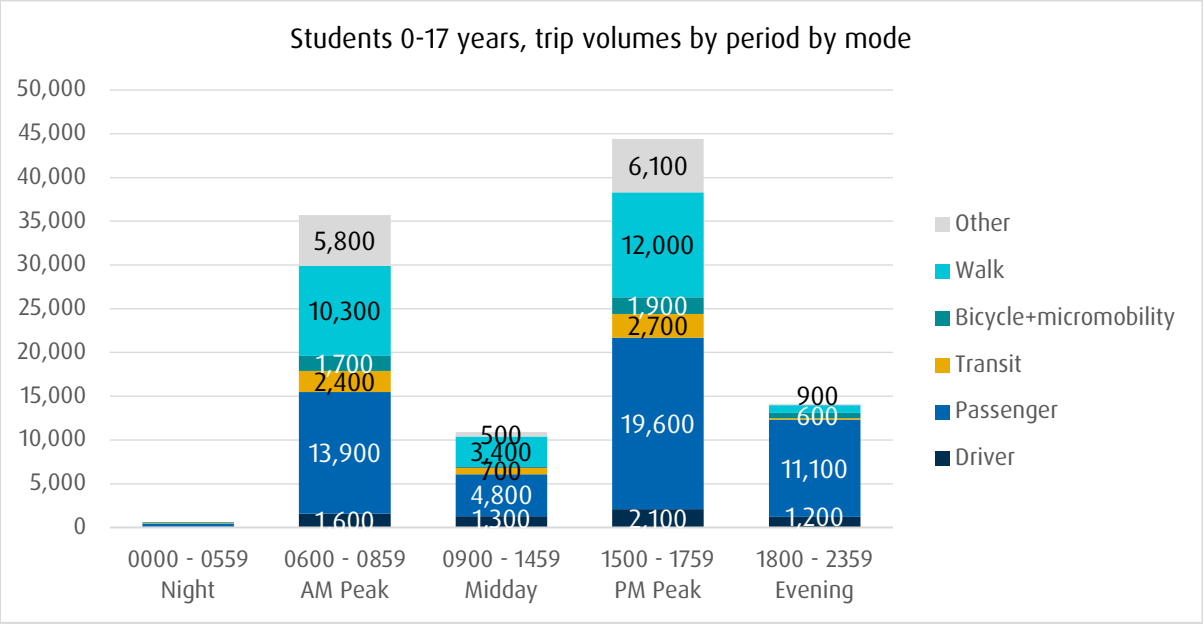


Figure 50. Students 18+ years of age, trips by mode by time period, 2023

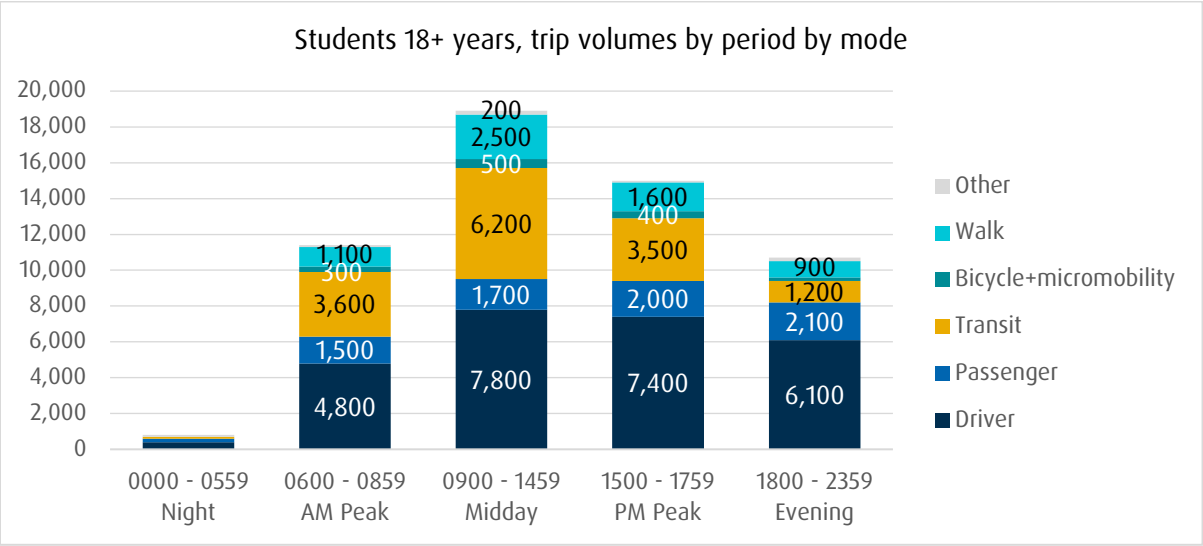
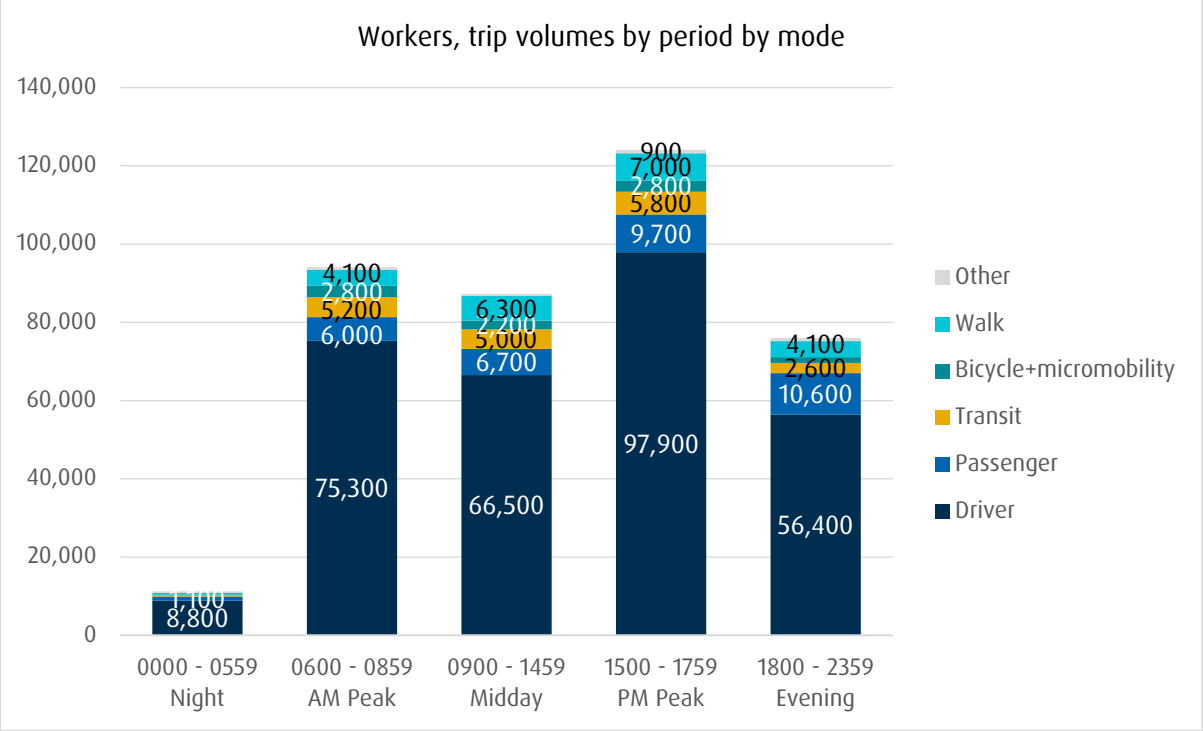


Figure 51. Workers, trips by mode by time period, 2023



4.3 Trip purpose

Trip purpose, or the reason for making a trip, is another important indicator of travel patterns and choices. The following discussions explore trip purpose in more detail, including by time of day, start hour and travel mode.

The 2013 survey results were aggregated into home-based work, school or escort (pick-up or drop-off a passenger), home-based other (e.g., shopping), and non-home-based. For example, a home-based work trip could be a trip that begins at home and is destined to work. It could also be the reverse trip to home from work. These groupings corresponded to commonly used depictions in trip-based travel demand models at that time.

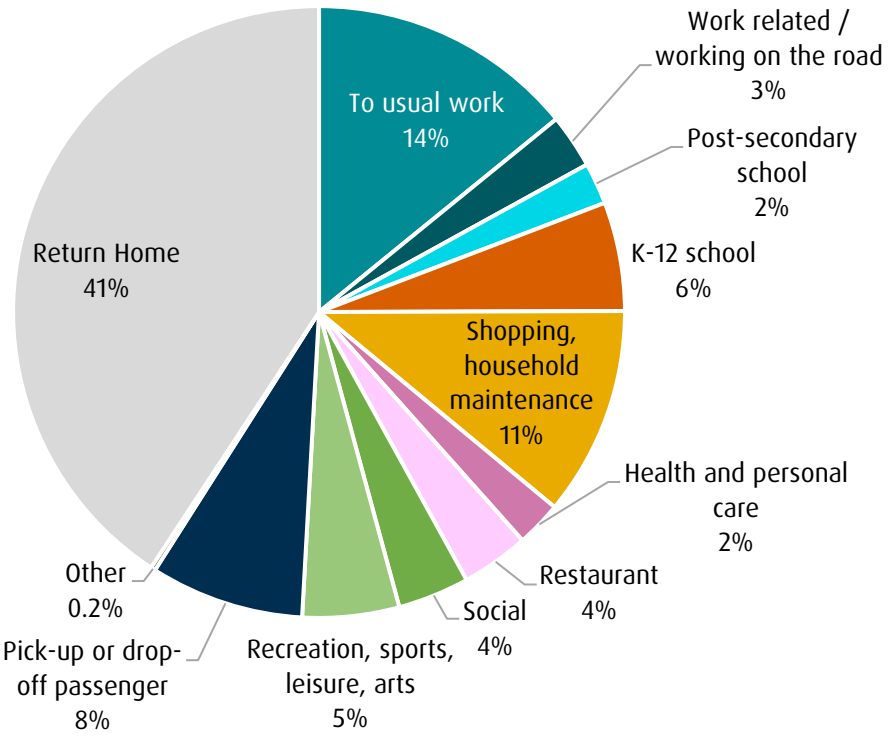
In the consultants' recent survey reports, we have found it more informative to define each trip purpose individually according to the activity at the destination. For example, the trip from home to work is characterized as *to* work, while the reverse trip is characterized as *return home*. This approach has become more prevalent in practice. It supports a more precise understanding of travel patterns. The approach also provides greater flexibility for modelling practice, by allowing modellers to group purposes according to specific needs. The ensuing discussion is presented this way.

4.3.1 Trip purpose breakdown

Trip purposes based on activity at the trip destination are broken out in Figure 52 for the 5+ population. For context, 59% of all trips are to destinations outside the home, and 41% are return home trips.

- Trips to work (and for work purposes) and school comprise 25% of daily trips. Stated another way, these commuting trips represent 42% of all trip destinations outside the home. When trips to pick up or drop off passengers (which are mostly associated with commuting to and from work or school) are included, the combined commuting, commuting-related, and work-related trips sum to just over half the total (55%) of trips that are not return-home trips.
- Trips for shopping / household maintenance and health / personal care together comprise 13% of all trips, which represents 23% of all trips other than return home.
- Trips for dining (restaurant), social, and recreational, and other activities together make up another 13% of all trips, or 21% of all trips other than return home.

Figure 52. Detailed daily trip purpose, population 5+, 2023



It may be noted that the shopping / household maintenance category includes within it a subcategory of picking up a package or online purchase (from a store or pick-up locker), which constitutes 0.5% of all trips or 1% of non-return-home purposes.

Detailed purposes are provided in Figure 52 above. In the analysis by time period and mode later in this section, work and work-related purposes have been aggregated, social and recreational have been aggregated, and shopping / household maintenance and health / personal care have been aggregated to simplify the charts. For comparisons with 2013, the purposes have been further aggregated to provide a common basis for comparison, as the 2013 survey had fewer/different categories.

Table 24 provides a comparison with the 2013 survey. Work, work-related, post-secondary, serve passenger and shopping, personal business and other trip purposes recorded reductions in volume. This is consistent with the lingering pandemic-induced shifts in people's activities, although as noted above this may reflect other factors. The work, post-secondary and serve passenger trips may reflect hybrid work and school arrangements, as observed in other recent post-pandemic surveys. The drop in shopping, personal business and other household trips is consistent with an increased use of online purchases and appointments.

Table 24. Aggregated trip purposes, population 5+, 2013-2023

Trip Purpose	2013	2023	change	difference
Work, work-related	123,900	111,100	-12,800	-10%
PSE School	18,500	14,400	-4,100	-22%
K-12 School	32,500	37,700	5,200	16%
Serve Passenger	54,800	53,100	-1,700	-3%
Shopping / personal business / other	113,900	89,700	-24,200	-21%
Restaurant	23,200	23,400	200	1%
Social/recreation	51,200	58,200	7,000	14%
Return home	256,200	266,500	10,300	4%

Trips to elementary and secondary schools (K-12) increased by 16%, which may be lower than would be suggested by the 41% increase in the 5-17 population since 2013 (see Table 7). This may be due to several factors: higher absenteeism rates, possibly more students being home-schooled (although the survey results suggest that only 2.5% of elementary students and less than 2% of secondary students are home schooled or attend virtual programs), and the inclusion of a few survey days on which school was not in session (professional development days, parent-teacher days, or schools that closed on either the Friday or the Monday to honour National Day of Truth and Reconciliation, a non-statutory holiday on a Saturday September 30, 2023).[22]

4.3.2 Trip purpose by time period

The following charts and table provide a very disaggregated view of trip purposes by time of day. Work trips have been broken out into travel to usual workplace separately from work-related travel / work on the road, to better understand these two aspects of work travel by time of day, including any changes from 2013. Serve-passenger trips have been broken out into pick-up and drop-off trips as time of day is relevant to these types of trips.

Figure 53 shows the percentage distribution of trip purposes in each time period. The distributions show generally expected patterns, with high proportions of trips to work, trips to K-12 school and drop-off trips in the AM peak period, shopping / household maintenance trips representing the plurality of non-home destinations in the midday and PM peak periods, and social / recreation, restaurant and shopping trips in the evening. Note that one-third of the overnight trips are for commutes to work (e.g., nighttime shifts at hospitals or manufacturing facilities).

[22] A review of 2013 survey responses revealed that when built-in validation questions were posed about why students did not make school trips, survey respondents generally provided valid reasons for not travelling to their school (being ill, classes being cancelled, study from home, being on a field trip, etc.). For the few cases where respondents indicated that their child did travel to school, but they did not record their trips, trips to and from school were imputed. It may also be noted that examination of the 2013 survey revealed a number of trips reported with a trip purpose of school when in fact they were likely escort trips made by a parent taking a child to school or picking them up after school.

Figure 53. Distribution of trips by trip purpose by time period, 2023

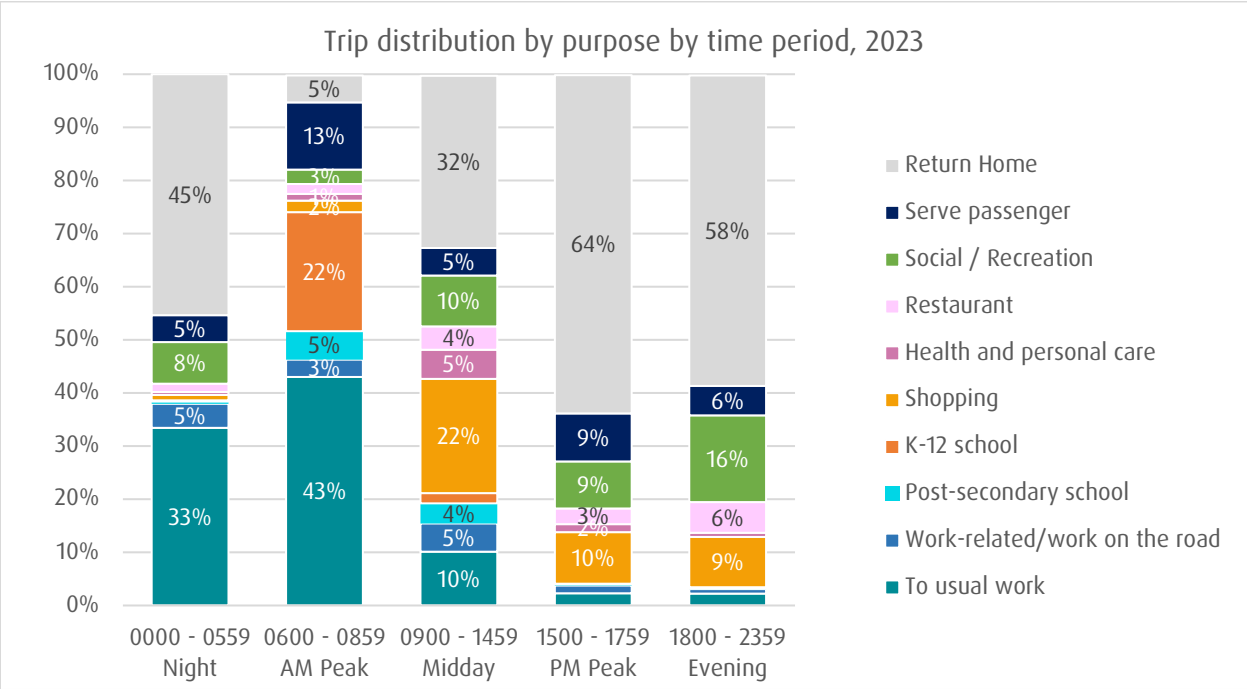


Figure 54 and Table 25 provide a different view, looking at the volumes of trip purposes by period, with comparison to 2013. Again, the comparison to 2013 uses aggregates some of the 2023 categories. Notable observations include:

- K-12 school trips show an 18% increase in the AM peak period (an increase of 4,900 trips), consistent with the start of the elementary and secondary school day.
- Work or work-related commutes show reductions across the day (except overnight), ranging from a 3% decrease in the AM peak period (a drop of 1,900 trips) to a 24% drop in the midday period (a drop of 8,600 trips). The reductions could be explained in part by a transition to hybrid work and fewer meetings or possible changes to work travel for workers who do not have a usual workplace.
- Travel to post-secondary schools shows a drop in the AM peak period (a drop of 17%, or 1,600 trips) and a smaller drop in the midday period (a drop of 9% or 700 trips).
- Examining the evening period, which had the greatest drop in total trips, the types of trips with the greatest drops in magnitude are shopping / personal business trips (a drop of 6,400 trips), serve passenger trips (a drop of 2,100 trips) and social / recreation trips (a drop of 1,500 trips). Return home trips also dropped by 8,200 trips – the only time of day in which these trips did not increase, and in contrast to the 11,900-trip increase recorded in the PM peak period. This suggests that people curtailed post-work or post-school activities and went directly home after work, school or other daytime activities.
- Interestingly, the AM peak, midday, PM peak and overnight periods saw an increase in recreational trips, even as recreational trips in the evening declined.

Figure 54. Trip volumes by aggregated trip purpose by time period, 2013-2023

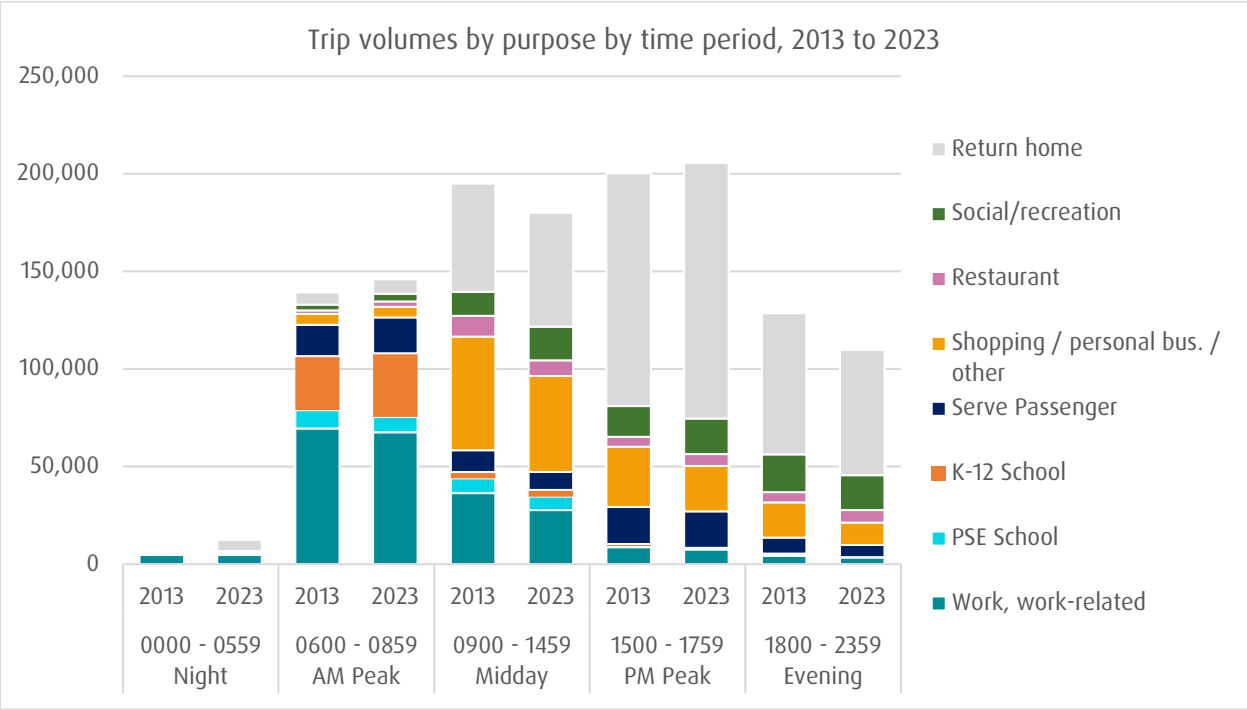


Table 25. Trip volumes by aggregated trip purpose by time period, 2023, with change from 2013

	Night 0000 - 0559 (6 hours)	AM Peak 0600 - 0859 (3 hrs)	Midday 0900 - 1459 (6 hrs)	PM Peak 1500 - 1759 (3 hrs)	Evening 1800 - 2359 (6 hrs)	24-Hour Total
Total Trips in 2023	12,700	145,900	180,100	205,700	109,700	654,000
Work, work-related	4,800	67,500	27,800	7,600	3,400	111,100
PSE school	0	7,900	6,800	500	100	15,300
K-12 school	0	32,600	3,400	300	200	36,700
Serve passenger	600	18,500	9,300	18,600	6,100	53,100
Shopping / personal bus.	200	5,400	49,200	23,400	11,500	89,700
Restaurant	200	2,700	8,000	6,100	6,400	23,400
Social/recreation	1,000	4,000	17,200	18,200	17,900	58,200
Return home	5,700	7,400	58,300	131,000	64,100	266,500
Total Trips in 2013	6,700	139,300	195,000	200,300	128,600	674,100
Work, work-related	4,800	69,500	36,400	8,700	4,300	123,900
PSE school	0	9,400	7,500	700	800	18,500
K-12 school	100	27,700	3,300	900	400	32,500
Serve passenger	200	16,000	11,200	19,000	8,200	54,800
Shopping / personal bus.	300	5,700	58,200	30,900	17,900	113,900
Restaurant	200	1,700	10,700	5,100	5,400	23,200
Social/recreation	500	3,000	12,300	15,800	19,300	51,200
Return home	600	6,200	55,300	119,100	72,300	256,200
Difference from 2013						
Total Trips	5,900	6,600	-14,900	5,400	-18,900	-20,000
Work, work-related	0	-1,900	-8,600	-1,100	-900	-12,800
PSE school	0	-1,600	-700	-200	-600	-3,100
K-12 school	-100	4,900	100	-600	-100	4,200
Serve passenger	400	2,500	-1,900	-500	-2,100	-1,600
Shopping / personal bus.	-100	-300	-9,000	-7,500	-6,400	-24,200
Restaurant	0	1,000	-2,700	1,000	1,000	200
Social/recreation	500	900	4,900	2,300	-1,500	7,000
Return home	5,100	1,200	3,000	11,900	-8,200	10,300
% difference						
Total Trips	88%	5%	-8%	3%	-15%	-3%
Work, work-related	0%	-3%	-24%	-12%	-22%	-10%
PSE school	*	-17%	-9%	*	*	-17%
K-12 school	*	18%	4%	*	*	13%
Serve passenger	*	16%	-17%	-3%	-26%	-3%
Shopping / personal bus.	*	-5%	-15%	-24%	-36%	-21%
Restaurant	*	56%	-26%	20%	18%	1%
Social/recreation	87%	30%	40%	15%	-8%	14%
Return home	859%	19%	5%	10%	-11%	4%

* Comparison suppressed due to very small sample size in cell in at least one survey year.

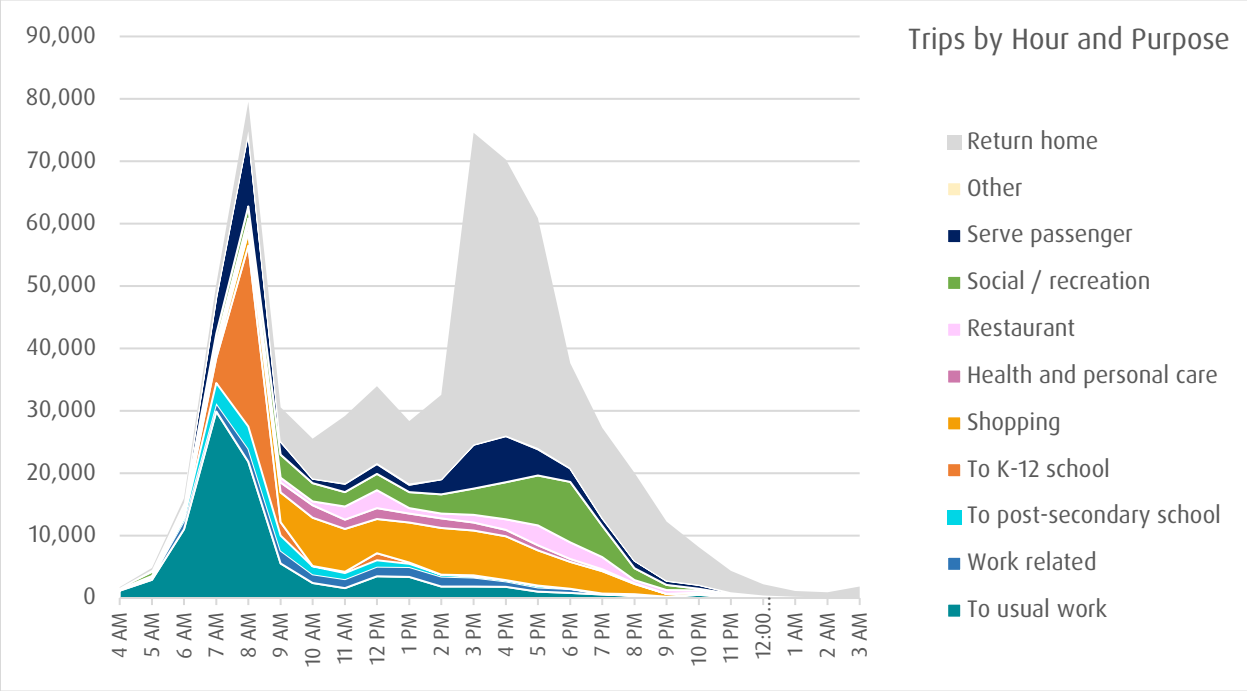
Expanded trips are rounded to the closest 100. The difference from 2013 is the actual difference rounded to the closest 100. The differences between the rounded figures may differ slightly from the actual differences rounded to the closest 100.
Blue shading highlights higher values. The intensity of the shade increases as the value approaches the highest value.
Pink shading highlights lower values. The intensity of the shade increases as the value approaches the lowest value.

4.3.3 Trip purpose by start hour

Figure 55 looks at the distribution of trip purposes by time of day (by hour according to the time the trip started). Some of the trip purposes have been grouped together in the chart for clarity.

The results show a concentration of work, school and serve passenger trips that dominates the AM peak period. After the AM peak period, shopping and health and personal care trips begin to increase, peaking in the hour beginning at 12 noon. Restaurant trips also increase, peaking in the hour beginning at 5 pm. Social / recreation trips increase as well, peaking in the hour beginning at 6 pm with a long taper into the evening. After a steep drop-off following the AM peak period, serve passenger trips increase in the lead-up to the PM peak, peaking in the hour beginning at 3 pm (commensurate with elementary and secondary school end times). In the meantime, the return home trip builds after the AM peak period and dominates and peaks during the PM peak period.

Figure 55. Trip purpose by start hour, 2023



4.3.4 Trip purpose by travel mode

Figure 56 and Table 26 break down trip purpose by travel mode and modal share:

- Auto driver dominates all trip purposes except those for going to K-12 (secondary school) or post-secondary schools. The greatest auto driver volumes occur for commutes to the usual workplace (71,800 of 92,400 daily trips to work; this volume rises to 87,700 of 111,100 trips if combined with work-related trips) and for shopping (51,400 of 72,300 shopping trips).

- The very low proportions of auto passengers for work and work-related trips indicate that most trips for these purposes are made as single-occupant auto commutes. Auto passengers feature more prominently in other purposes, notably a 34% share for K-12 commutes. Auto passengers also are important for discretionary activities that are commonly done with others – for example, 25% for social / recreation trips and 24% for restaurant trips.
- The transit share is highest for post-secondary students, at 40% of their commutes. For K-12 school commutes, the transit share is 7%. For work commutes, the share is 7% and for work-related travel, the share is 3%.
- The shares of walk trips are highest for K-12 school commutes (32%), post-secondary school commutes (14%) and restaurant (13%). For the work commute, the share is 5%.
- The shares of trips by bicycle and micromobility modes are highest for K-12 school commutes, at 5%. Three percent of usual work and post-secondary school commutes are also by these modes.

Figure 56. Trip purpose by travel mode, 2023

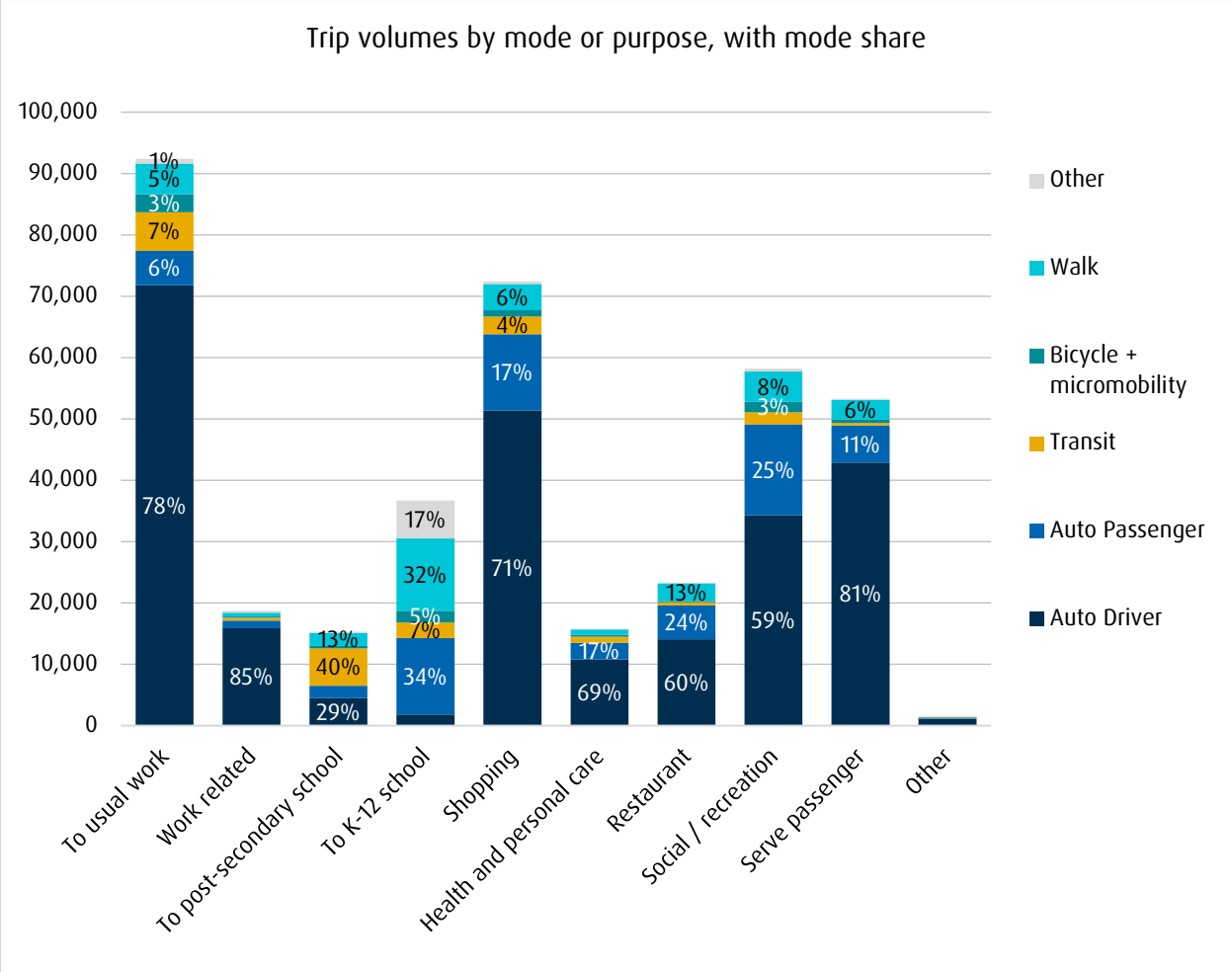


Table 26. Details of trip purpose by travel mode, 2023

	Trips	Auto Driver	Auto Passenger	Transit	Bicycle and micromobility	Walk	Other
To usual work	92,400	78%	6%	7%	3%	5%	1%
Work related	18,700	85%	6%	3%	1%	3%	2%
To post-secondary school	14,400	29%	13%	40%	3%	14%	1%
To K-12 school	37,700	5%	34%	7%	5%	32%	17%
Shopping	72,300	71%	17%	4%	1%	6%	1%
Health and personal care	15,800	69%	17%	6%	2%	6%	0%
Restaurant	23,400	60%	24%	2%	1%	13%	1%
Social / recreation	58,200	59%	25%	3%	3%	8%	1%
Serve passenger	53,100	81%	11%	1%	1%	6%	0%
Other	1,600	71%	9%	5%	8%	2%	4%
Return home	266,500	60%	17%	7%	3%	10%	3%

Blue shading highlights higher values. The intensity of the shade increases as the value approaches the highest value.

4.3.5 Home-based trip purposes

It is common for travel demand forecasting models to group trip purposes into home-based or non-home-based trips.[23] For the first category, either the trip origin or the trip destination is the home – thus, the trip from home to work and the trip from work to home would be grouped as a home-based work (HBW) trip. The 2013 survey results were presented according to six such categories:

- Home-based work (HBW), as noted. This group trips to and from the usual workplace and 'on the road' (no fixed address) work locations.
- Home-based grade school (HBGS), representing K-12 school trips to and from home.
- Home-based post-secondary school (HBPS), representing post-secondary school trips to and from home.
- Home-based escort passenger (HBES), representing pick-up and drop-off trips to and from the home.
- Home-based other (HBO), representing all other trips to and from the home – i.e., shopping, personal business, dining, social / recreational and work-related.
- Non-home based (NHB), representing trips that have neither an origin nor a destination at the home – for example, a shopping trip from work to a store.

Figure 57 and Figure 58 present home-based trip purposes. In 2023, HBO represents just over one-third of all trips (34%) and HBW trips represent almost one-quarter of trips (23%). Overall, however, the six groups are approximately in the same proportions as in 2013. The shares of

[23] See Section 5.4 for a further discussion of how the 2013 survey results were used to develop a travel demand forecasting model for Saskatoon and how the 2023 survey results could be used for a new or updated model.

HBW, HBGS, HBES and HBO trip purposes have all grown slightly. The HBPS share has dropped slightly, while the NHB share has dropped moderately, to 18% from 23% of all trips.

In absolute terms compared with 2013, the 2023 results show a moderate increase in HBGS trips, slight increases in HBW and HBES trips, slight drops in HBPS and HBO trips and a moderate drop in NHB trips.

Figure 57. Trips by home-based purpose, 2013 and 2023

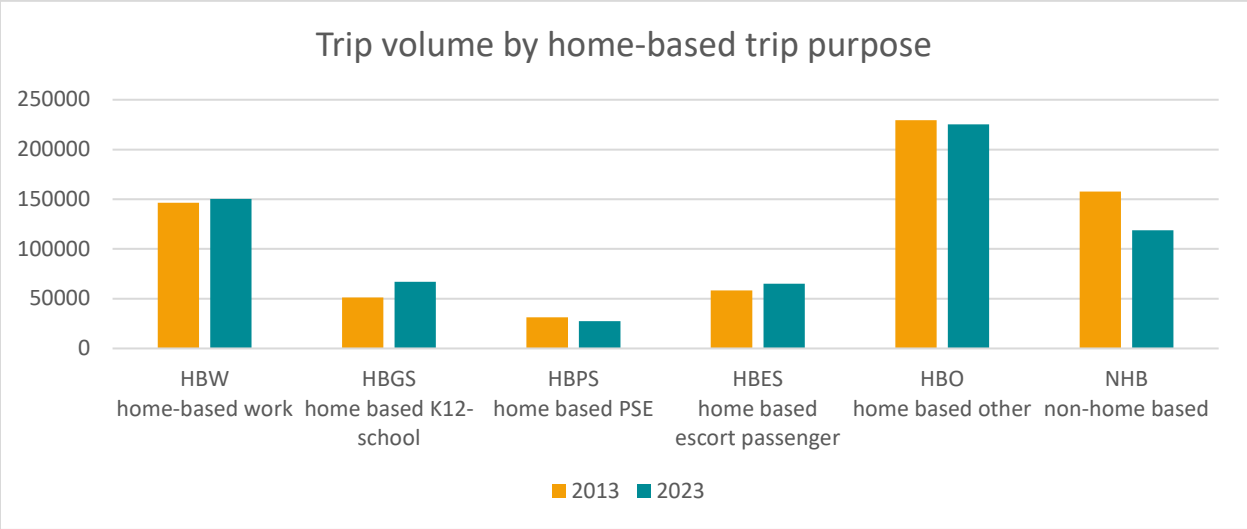


Figure 58. Proportion of trips by home-based purpose, 2013 and 2023

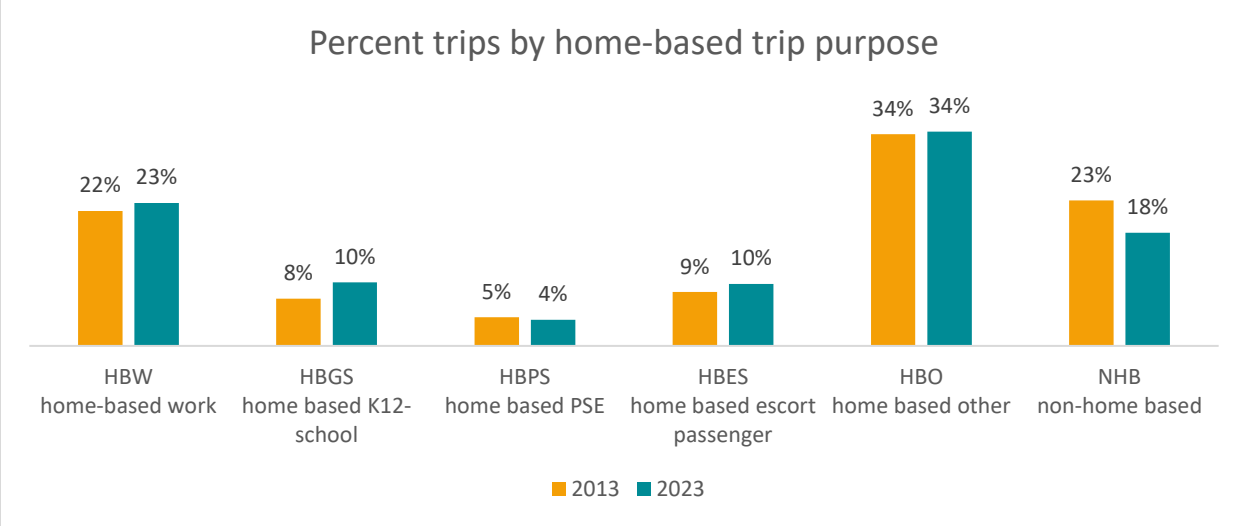


Table 27 provides the percentage of trip purposes by sector of residence. Overall, for most trip purposes the shares are mostly within a close range. There are some exceptions in Blairmore, Holmwood and, especially, in University. HBW makes up 21%-24% of all trips except for 34% among Blairmore households and 8% in University. The HBGS shares range between 6% and

13% except in University, whose households have a 1% share. Almost half (45%) of University's trips are HGPS, consistent with expectations: elsewhere, they range between 3% and 5%. The HBES shares range between 7% and 10%, except for Holmwood's 14% share and University's 1% share. The HBO shares range between 32% and 39% among all sectors, except for Blairmore (23%) and Holmwood (28%). University's 10% NHB share is the lowest among all sectors and at 23% Holmwood's share is the highest, which range between 16% and 20% for the other sectors.

Table 27. Details of daily trip purposes by sector of residence, 2023

	Saska-toon	Core Neigh-bour-hood	Confeder-ation	Blair-more	Lawson	Uni-versity	Holm-wood	Univer-sity Hts.	Lake-wood	Nutana
Total Trips	654,000	76,100	121,900	15,100	65,400	4,900	10,100	115,300	103,400	142,000
HBW	23%	23%	24%	34%	23%	8%	21%	24%	22%	21%
HBGS	10%	6%	12%	13%	10%	1%	9%	13%	11%	9%
HBPS	4%	5%	3%	4%	2%	45%	5%	5%	4%	4%
HBES	10%	7%	11%	10%	10%	1%	14%	10%	10%	10%
HBO	34%	39%	32%	23%	35%	35%	28%	32%	36%	36%
NHB	18%	19%	18%	16%	20%	10%	23%	16%	18%	19%

4.4 Vehicle use

Vehicle occupancy is an indicator of the efficiency of vehicle use – that is, whether vehicles are occupied by the driver alone or carrying passengers as well. Figure 59 and Table 28 report the number of occupants in personal vehicles. The single-occupant (drive alone) trip dominates. The large majority of vehicle trips (83.5%) are occupied by the driver alone. Another 12.1% have two occupants, with the remaining 4.4% carrying three or more occupants. Combined, these multi-person trips represent 16.5% of all vehicle trips; measured in other terms, they represent almost one-third (31.7%) of the person-trips made by personal vehicle.

The average vehicle occupancy is 1.22 persons per vehicle. It should be noted that these rates are derived from the survey responses. These occupancies may include very young children in the respondent's household, whose trips were not surveyed. They may also include carpools made with people from other households, whose trips were surveyed only if that household was also sampled.

Figure 59. Weekday daily average report vehicle occupancy, 2023

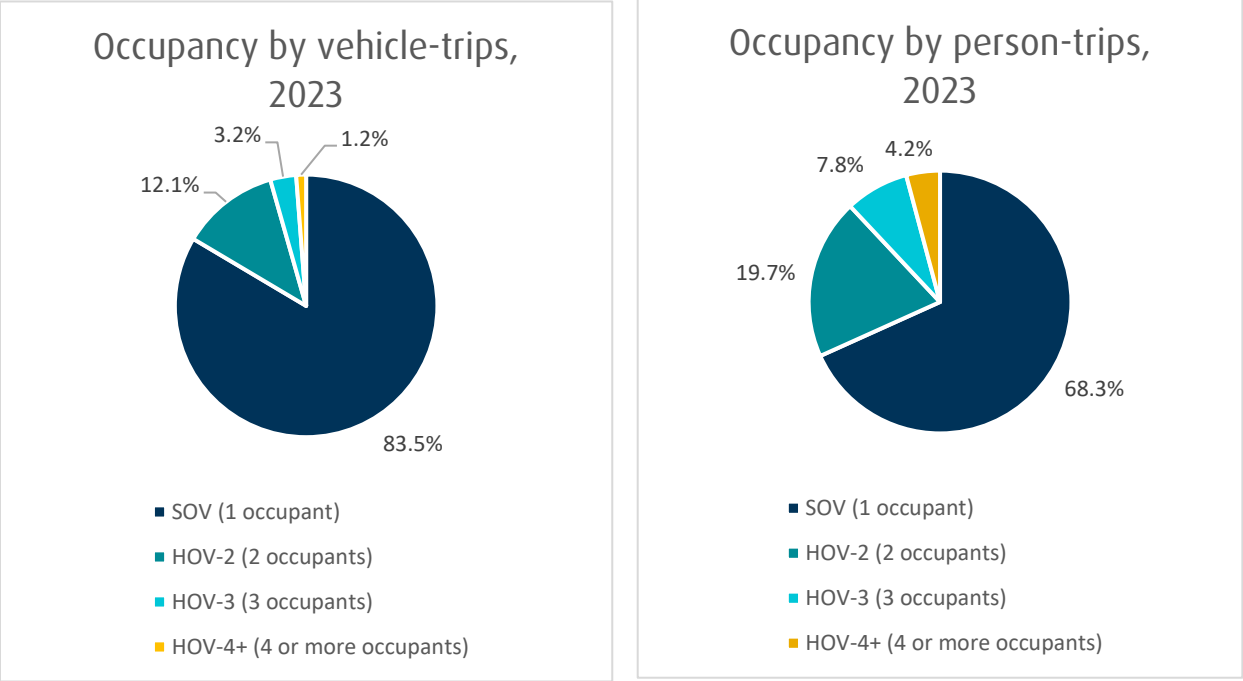


Table 28. Details of weekday daily average reported vehicle occupancy, 2023

Vehicle Occupancy	Vehicle-Trips	% in 2023	Person-Trips	% in 2023
SOV (1 occupant)	343,300	83.5%	343,300	68.3%
HOV-2 (2 occupants)	49,600	12.1%	99,300	19.7%
HOV-3 (3 occupants)	13,100	3.2%	39,400	7.8%
HOV-4+ (4 or more occupants)	5,000	1.2%	20,900	4.2%
Total	411,000	100.0%	502,900	100%
Average occupancy reported		1.22		

4.5 Travel between sectors

Table 29 summarizes the total 24-hour flows from and to the 10 sectors within Saskatoon. Figure 60 and Table 30 present the prominent 'desire lines' (origin-destination flows) among the sectors.

Nutana is the top generator and receiver of trips to and from other sectors, at 254,700 person-trips (daily two-way total) or 20.5% of all inter- sector trips. Core Neighbourhood, Confederation, University Heights and Lakewood are also prominent, at 14.7%, 13.5%, 13.2% and 12.0% of all trips. Combined, these five sectors generate almost three-quarters (73.9%) of daily inter- sector trips.

These five sectors also generate the highest numbers of internalized trips, ranging from Lakewood's 30,400 daily person-trips to Nutana's 63,500 person-trips. Internalized trips are discussed further below.

Nutana also generates the top two-way inter-sector flows, at 32,800 person trips with Lakewood and 31,600 person-trips with Core Neighbourhood.

Table 29. Overview of 24-hour inter-sector trips (trips generated or received by sectors)

Sector	Internalized (Trips Entirely Within Sector)	Inter-Sector Flows			
		From Sector to Other Sectors	To Sector From Other Sectors	Two-Way Total	% of Total Two-Way Inter-Sector Trips
Core Neighbourhood	30,300	91,500	91,500	183,000	14.7%
Confederation	38,400	83,700	84,000	167,800	13.5%
Blairmore	2,500	15,700	15,700	31,400	2.5%
Lawson	22,600	55,100	55,200	110,400	8.9%
University	6,300	43,300	43,200	86,500	7.0%
Holmwood	1,100	7,400	7,300	14,700	1.2%
University Heights	39,600	81,900	82,100	164,000	13.2%
Lakewood	30,400	74,400	74,400	148,900	12.0%
Nutana	63,500	127,500	127,200	254,700	20.5%
Riel Industrial	6,500	40,700	40,600	81,200	6.5%
Total Trips *	241,100	621,300	621,300	1,242,500	100.0%

* Includes only trips entirely within Saskatoon, i.e., both origin and destination within the city. Excludes approximately 32,700 trips made by Saskatoon residents with origin and/or destination outside the city.

Figure 60. Prominent desire lines – top 10 two-way inter-sector flows, 2023

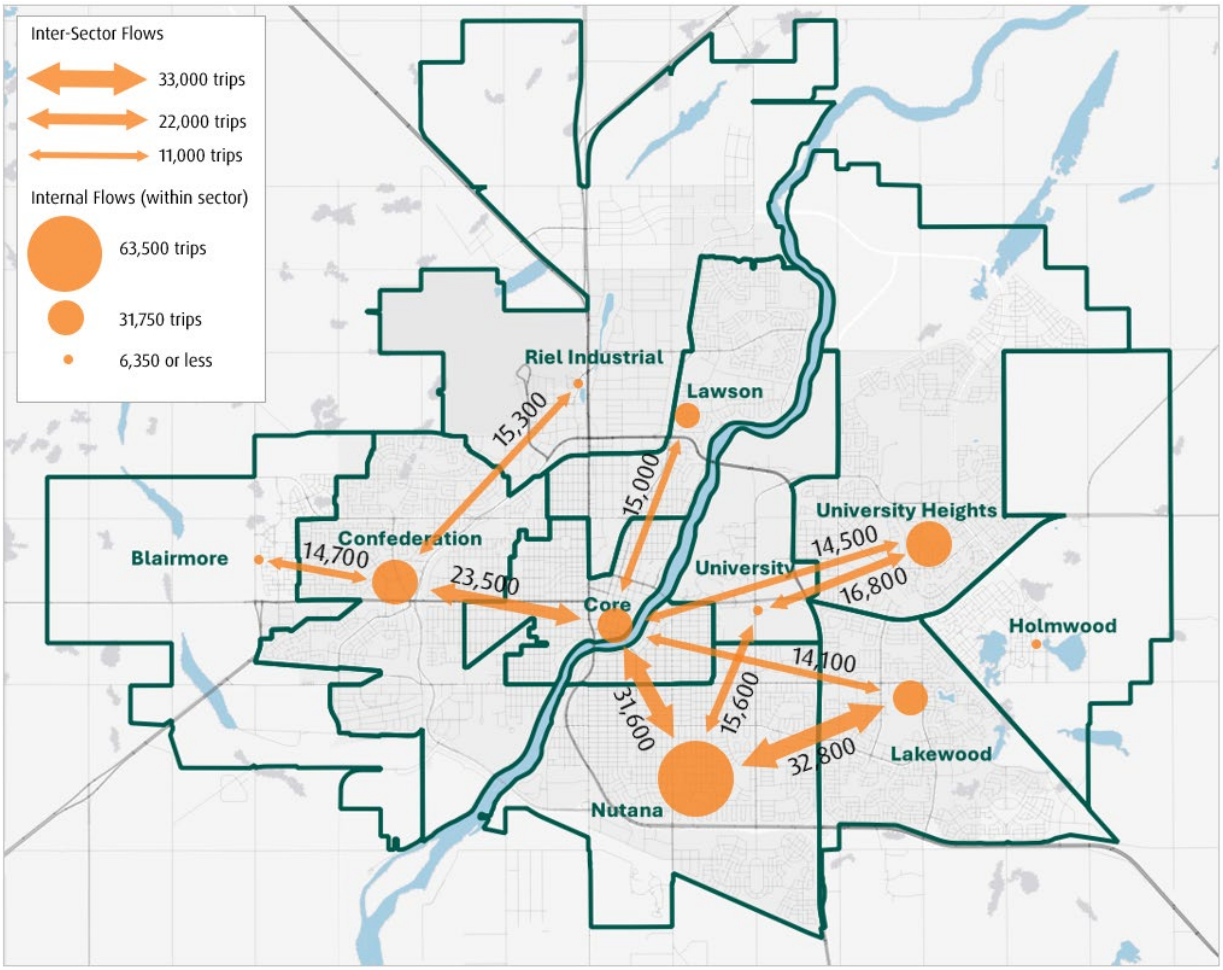
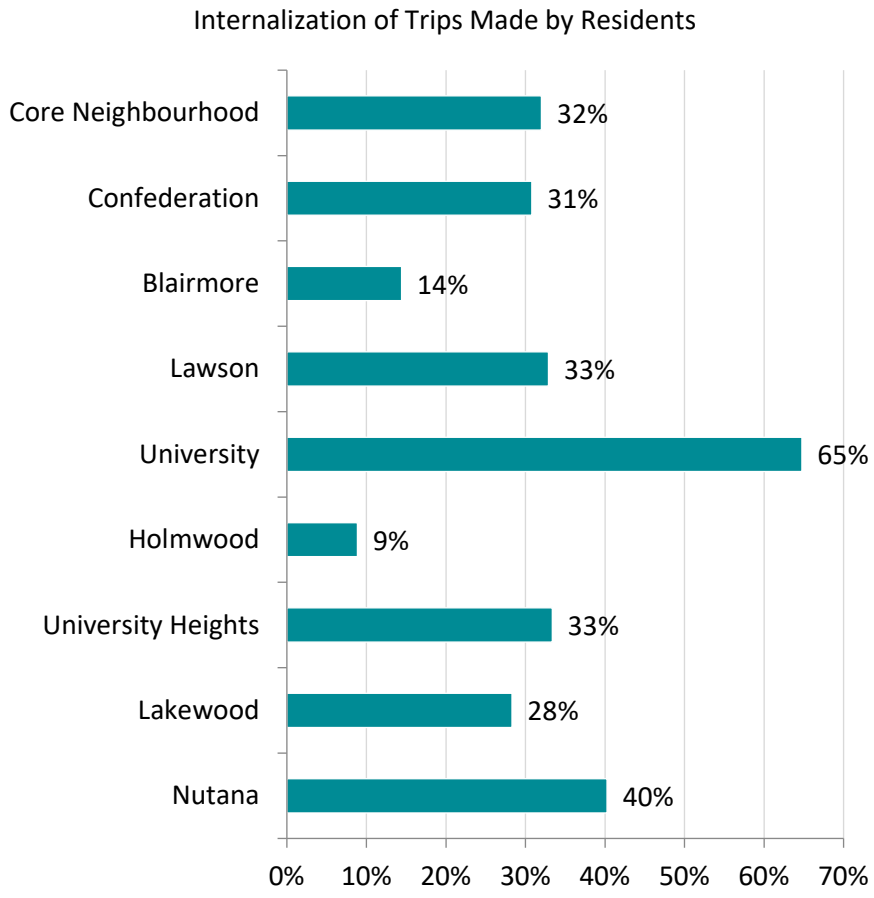


Table 30. Details - top 10 inter-sector flows

Sectors – Two-Way Flows	24-hour two-way flows
Lakewood <-> Nutana	32,800
Core Neighbourhood <-> Nutana	31,600
Core Neighbourhood <-> Confederation	23,500
University <-> University Heights	16,800
University <-> Nutana	15,600
Confederation <-> Riel Industrial	15,300
Core Neighbourhood <-> Lawson	15,000
Confederation <-> Blairmore	14,700
Core Neighbourhood <-> University Heights	14,500
Core Neighbourhood <-> Lakewood	14,100

Figure 61 and Table 31 examine internalized travel – that is, trips made within the same sector as a traveller's residence. This is a measure of the accessibility of activities, such as work, school and shopping, relative to a travellers' place of residence. A closer proximity of these activities to one's home can be more conducive to sustainable transportation alternatives to driving alone, especially walk and bicycle. Apart from the two-thirds (65%) of trips generated by University residents that remain in the same sector, Nutana (40%), University Heights (33%), Lawson (33%) and Core Neighbourhood (32%) also have high internalization rates. Holmwood and Blairmore have the lowest internalization rates, at 9% and 14% respectively.

Figure 61. Internalization of trips by home sector, 2023



Excludes the Riel Industrial sector, which has almost no population.

Table 31 breaks down the internalization of trips by purpose: home-based work (HBW), home-based school (HBS)[24] and home-based other (HBO, e.g., including shopping trips). Because these trips start or end at home, they do not capture all activity. For example, a trip to or from school that has been interrupted by a stop along the way (non-home-based) is not included in this analysis. Nonetheless, the table provides a good indicator of the extent of internalization:

[24] For this analysis, HBS includes home-based trips to and from elementary, secondary and post-secondary schools.

- Proximity to the workplace is greatest for University and Core Neighbourhood residents, at 36% and 35% of all HBW trips, respectively. However, in absolute terms, Nutana, Confederation and University Heights have the greatest numbers of internalized HBW trips, at 32,100, 31,500 and 29,500 HBW trips each.[25]
- Most sectors have a high proximity rate to elementary and secondary schools, which is consistent with students attending schools close to where they live.[26] Holmwood is an exception, with its internalized HBS at or approaching 0%. Apart from University, whose HBS are virtually all internalized (97%), University Heights (63%), Nutana (60%) and Confederation (52%) generate the greatest numbers of internalized HBS trips.
- Most sectors have good proximity rates to HBO activities, which similarly reflects the availability of shopping, restaurants, recreational activities and other activities close to where people live. Nutana, Confederation, University Heights and Lakewood have the highest numbers of internalized HBO trips, at about 64,000, 50,200, 46,400 and 44,800 internal HBO trips respectively.

Table 31. Details of top 10 internalized (within) sector flows by purpose, 2023

Sector	Total Trips Made by Residents of Sector		HBW Trips Made by Residents of Sector		HBS Trips Made by Residents of Sector		HBO Trips Made by Residents of Sector	
	Trips Made by Residents	% Internal to Home Sector	HBW Trips	% Internal to Home Sector	HBS Trips	% Internal to Home Sector	HBO Trips	% Internal to Home Sector
Core Neighbourhood	75,040	32%	19,060	35%	8,630	28%	34,050	35%
Confederation	120,930	31%	31,480	12%	17,890	52%	50,200	42%
Blairmore	15,090	14%	5,260	7%	2,630	16%	4,820	27%
Lawson	64,760	33%	16,350	10%	8,390	75%	27,580	43%
University	4,860	65%	400	36%	2,260	97%	1,720	43%
Holmwood	9,940	9%	2,130	3%	1,500	0%	4,090	20%
University Heights	114,310	33%	29,520	12%	21,220	63%	46,370	41%
Lakewood	102,440	28%	24,400	8%	15,740	50%	44,820	39%
Nutana	140,840	40%	32,100	23%	18,680	60%	64,040	51%
Riel Industrial	10	0%	0	0%	0	0%	0	0%

Interpret with caution due to low n; University HBW, Riel Industrial trips.

For this analysis, the home-based groupings are more aggregated than those presented in detail in Section 4.3.5 of this report. HBS = home-based school (both post-secondary and K-12 school), HBW = home-based work, HBO = home-based other (including escort passenger trips as well as non-school/non-work purposes). Readers are reminded that HBS, HBW and HBO trips include trips from home or returning to home. NHB (non-home-based) trips are included in the total trips but not broken out separately. 'Internal' = both origin and destination are in the same sector at the traveller's home.

Blue shading highlights higher values. The intensity of the shade increases as the value approaches the highest value.

[25] Multiple of the total number of HBW person-trips generated in a sector and the rate of internalization. Numbers are rounded to the nearest 100 trips.

[26] Secondary school students are allowed to attend any secondary school in Saskatoon. There are no defined boundaries for the attendance of secondary schools in Saskatoon. Overall, K-12 students' trips have the overall smallest distances among all trip purposes, at 3.1 km, as discussed in section 4.6.

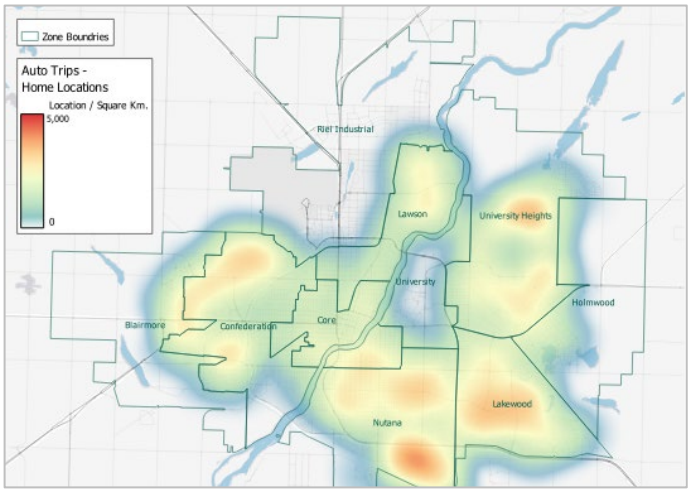
Figure 62 presents a series of heat maps that show the home and non-home locations (i.e., trip ends, whether origins or destinations) for auto, transit and bicycle trips.[27] The maps are based on the density of trip origins/destinations ('trip ends') per square kilometre. The heat scales are different for each mode, although they are the same for the home and non-home versions of each mode:

- **For auto trips, the home-end concentration of trip origins and destinations is relatively diffused**, compared with transit and bicycle trips, and compared also with non-home trip ends. The latter are concentrated in the Core Neighbourhood, Nutana and University – that is, in Saskatoon's commercial core and at or near the University of Saskatchewan.
- **Transit riders' non-home trip ends are concentrated in the commercial core (Core Neighbourhood) and at the University**, again reflecting the importance of transit access to these major activity generators and the level of service offered by transit to these areas. Home-end trip ends are somewhat diffused across Confederation, Core Neighbourhood, Nutana, Lakewood and University Heights.
- **Cyclists' non-home trips ends are similarly concentrated in the Core Neighbourhood and, especially, at the University**, again consistent with these sectors' importance as activity generators. Lesser concentrations can be seen in Nutana, close to the Core Neighbourhood. Home-end trip ends are more diffused, with a concentration of trip ends in Nutana and Core Neighbourhood – that is, relatively close to the primary non-home locations.

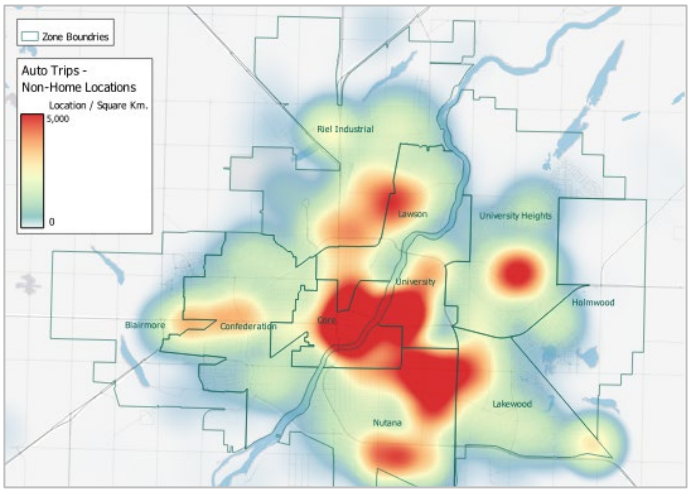
[27] Note that the 2013 survey included heat maps by destination purpose: This information is tabulated in the preceding discussions on internalized and inter-sector. Additionally, we have found it informative to show the dispersion of trips by mode, to help visualize access to activities (where people go) according to access.

Figure 62. Heat maps of trip ends by mode, 2023

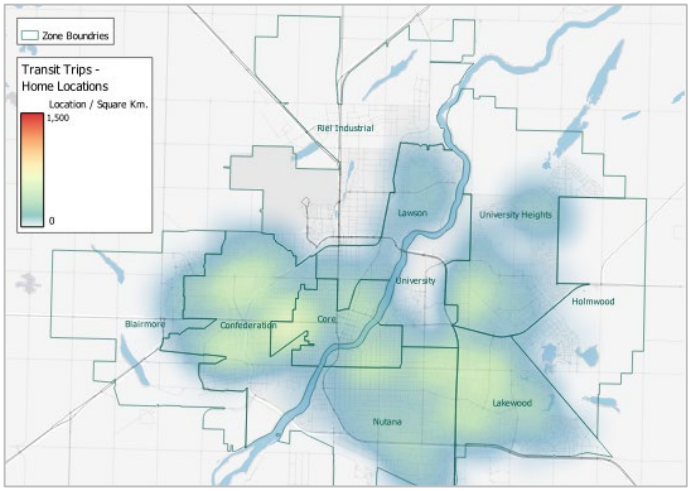
Auto trips – home trip ends



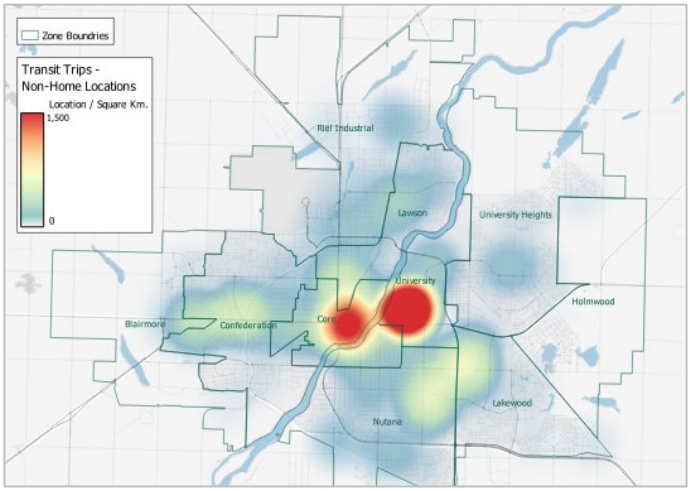
Auto trips – non-home trip ends



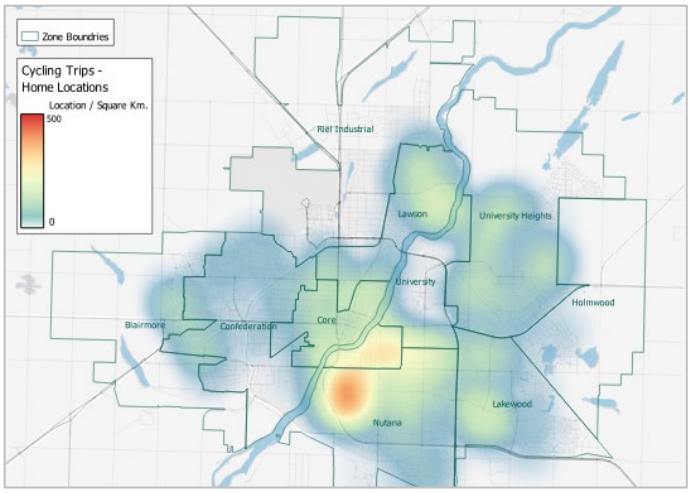
Transit trips – home trip ends



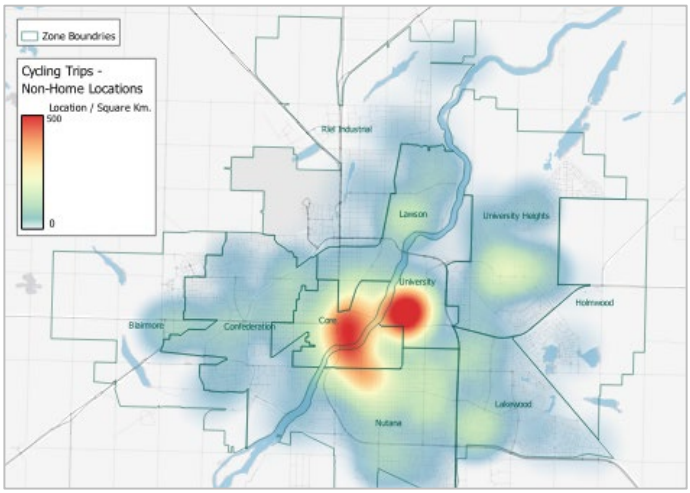
Transit trips – non-home trip ends



Bicycle trips – home trip ends



Bicycle trips – non-home trip ends



4.6 Trip distance

Table 32 compares the average and median trip distances by mode between the 2013 and 2023 surveys. Table 33 provides a similar comparison by trip purpose. Figure 63 and Figure 64 plot the distributions of trip distance by mode and purpose respectively. For 2023, distances are calculated using Google maps. However, for comparability with 2013, "Manhattan distances" (the distance one would travel if moving on a grid of streets as in Manhattan) are also calculated.[28] Key points:

- Average Google distances are greatest for auto drivers, at 8.8 km, and for auto passengers, at 8.4 km. The average transit trip distance is 7.2 km. For all modes, the median distances are lower.
- Compared with 2013, both average and median distances are greater for auto driver, auto passenger, and bicycle and micromobility modes, for an overall average increase. However, transit, walk and other modes' distances are shorter.
- Social / recreation trips have the longest average distances, at 10.9 km, followed by work and work-related trips, at 10.3 km. K-12 trips have the shortest average distances, at 3.1 km. For all trip purposes, the median distances are shorter.
- Compared with 2013, both average and median distances are greater for all purposes except post-secondary education and K-12 trips.

Table 32. Details of trip distance by mode, 2013 – 2023

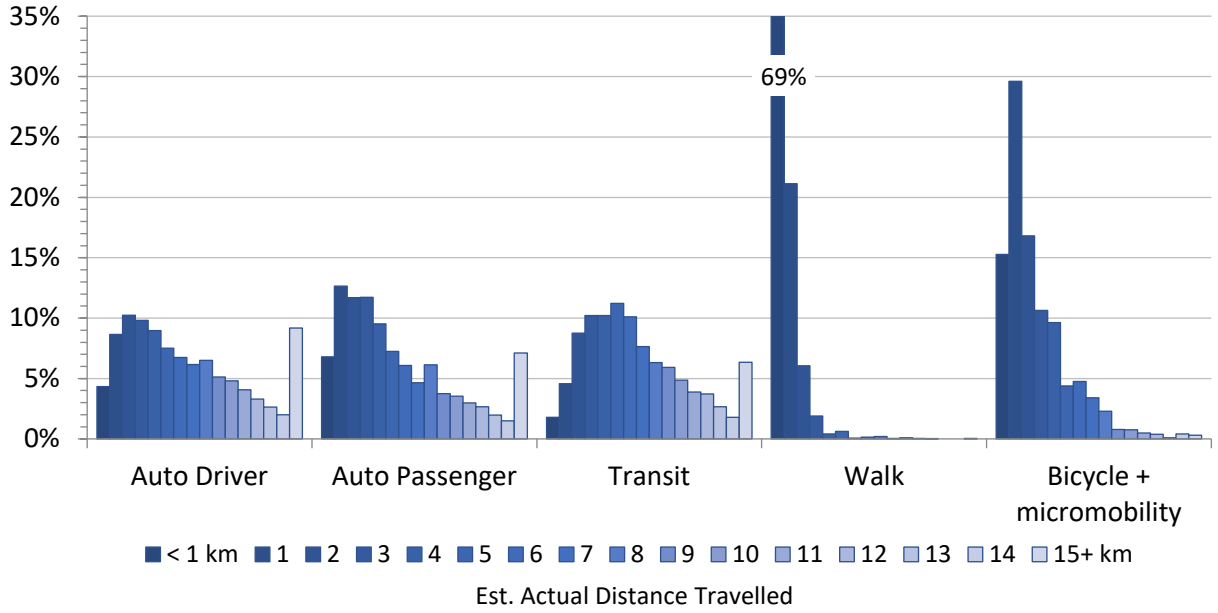
Distance in Km		Auto Driver	Auto Passenger	Transit	Walk	Bicycle and micromobility	Other	All modes
2023 Google Distance	Average	8.8	8.4	7.2	1.1	3.5	8.2	7.8
	Median	6.0	5.0	6.4	0.8	2.7	5.7	5.2
2023 Manhattan Distance	Average	7.8	7.5	5.1	1.0	3.1	5.6	6.8
	Median	5.2	4.4	4.6	0.7	2.4	2.6	4.3
2013 Manhattan Distance	Average	6.4	6.3	5.5	1.2	3.0	8.4	5.8
	Median	4.7	4.1	4.8	0.7	2.4	3.2	4.1
% difference (Manhattan)	Average	23%	20%	-8%	-11%	3%	-33%	17%
	Median	10%	9%	-4%	-1%	2%	-17%	6%

[28] "Manhattan distance" is a commonly used term to measure rectilinear distances. It is also referred to as "taxi cab metric" or "city block distance." See P. Black, *Manhattan distance*, U.S. National Institute of Standards and Technology, February 2019.

Table 33. Details of trip distance by trip purpose, 2013 - 2023

Distance in Km		Work, work-related	PSE School	K-12 School	Serve Passenger	Shopping / personal business / other	Restau-rant	Social/ recreation	Return home
2023 Google Distance	Average	10.3	6.4	3.1	6.2	6.1	5.3	10.9	7.7
	Median	7.3	6.1	1.9	4.6	4.3	3.2	5.9	5.2
2023 Manhattan Distance	Average	9.4	4.9	2.5	5.2	5.4	4.7	10.0	6.7
	Median	6.3	4.7	1.6	3.9	3.7	2.8	4.9	4.3
2013 Manhattan Distance	Average	8.2	5.7	2.8	5.0	4.8	4.0	7.2	5.6
	Median	5.6	5.1	2.0	3.9	3.3	2.9	4.4	4.1
% difference (Manhattan)	Average	15%	-14%	-9%	5%	11%	20%	39%	20%
	Median	12%	-8%	-21%	-1%	13%	-3%	12%	5%

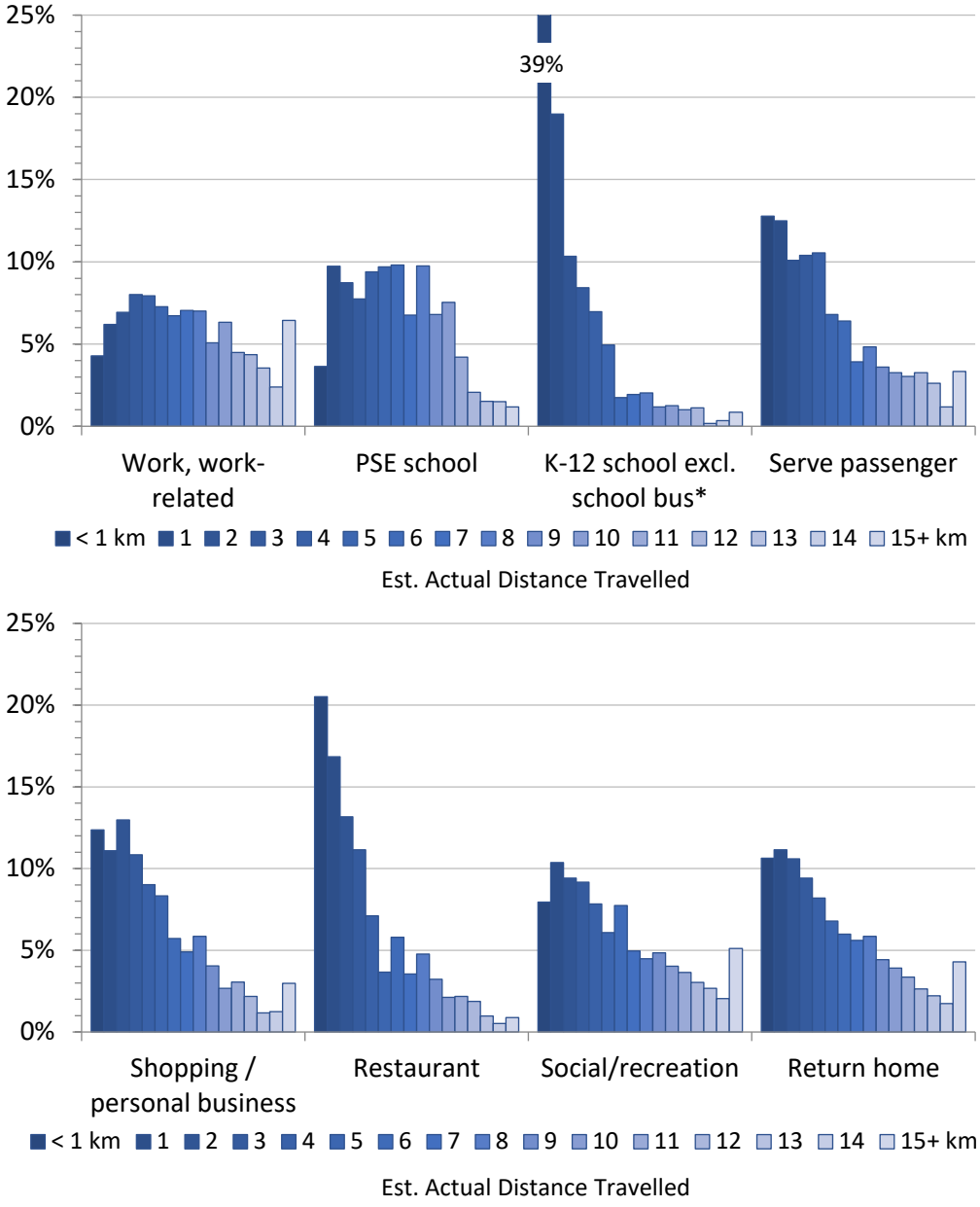
Figure 63. Google distance distribution by mode



1 = between 1.000 km and 1.999 km, 2 = between 2.000 and 2.999 km, etc.

The Other mode grouping is excluded as Google distances were not available for school bus trips, and the remaining sample of other modes in the 'Other' mode category is modest

Figure 64. Google distance distribution by purpose



1 = between 1.000 km and 1.999 km, 2 = between 2.000 and 2.999 km, etc.

* Note: K-12 distances exclude School Bus trips for which Google distances were not available.

4.7 Trip duration

Table 34 provides the averages trip duration by mode. Table 35 provides average trip duration by trip purpose. Figure 65 and Figure 66 provide the distributions for each mode and trip purpose. For 2023, times are calculated using Google Map Directions for the first/optimal route recommended by the API for the given mode of travel, time of day, origin and destination of each trip, thereby providing a reasonably reliable estimate of actual travel. Given the difference

in how trip duration was captured in 2013 (in particular, the inherent difficulty in using times reported by survey respondents), no comparison has been made. Key points:

- Average Google trip durations are just under a quarter hour, at 13.8 minutes. Average auto driver and auto passenger trips are shortest, at 11.8 and 11.5 minutes respectively, while average transit trips are longest, at 34.3 minutes. For all modes, the median travel times are lower.
- Work and work-related trips have the longest average trip durations, at 16.1 minutes, followed by social / recreation trips, at 15.6 minutes, and return home, at 14.1 minutes. Serve passenger and restaurant trips have the shortest duration, at an average of 9.8 minutes each. For all trip purposes, the median durations are shorter.

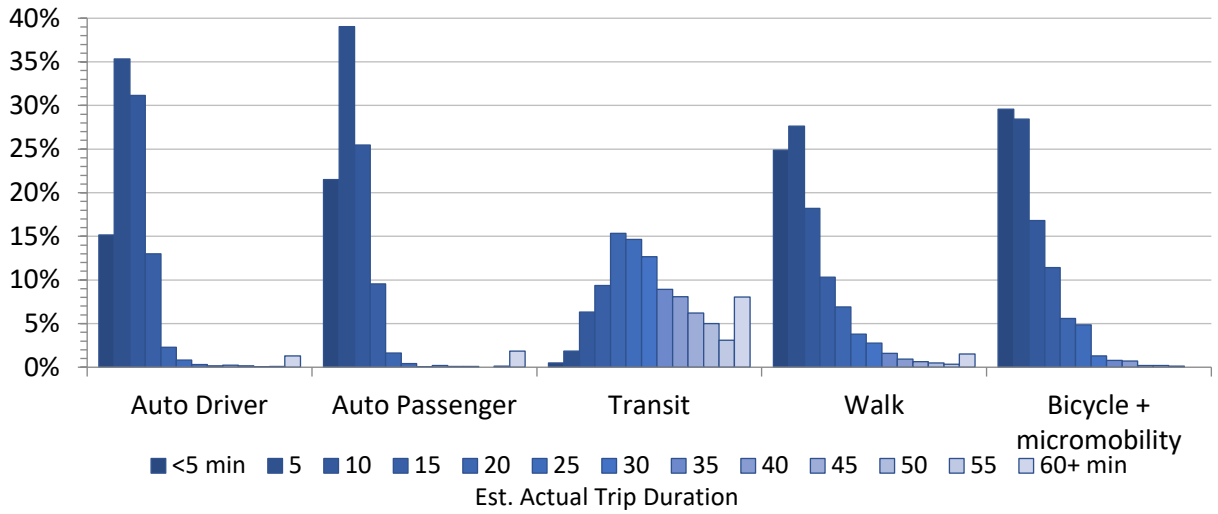
Table 34. Details of trip duration by mode

Google duration (minutes)	Auto Driver	Auto Passenger	Transit	Walk	Bicycle and micromobility	Other	All modes
Average	11.8	11.5	34.3	15.4	12.2	14.4	13.8
Median	9.9	8.9	31.3	11.0	9.4	10.6	10.4

Table 35. Details of trip duration by trip purpose

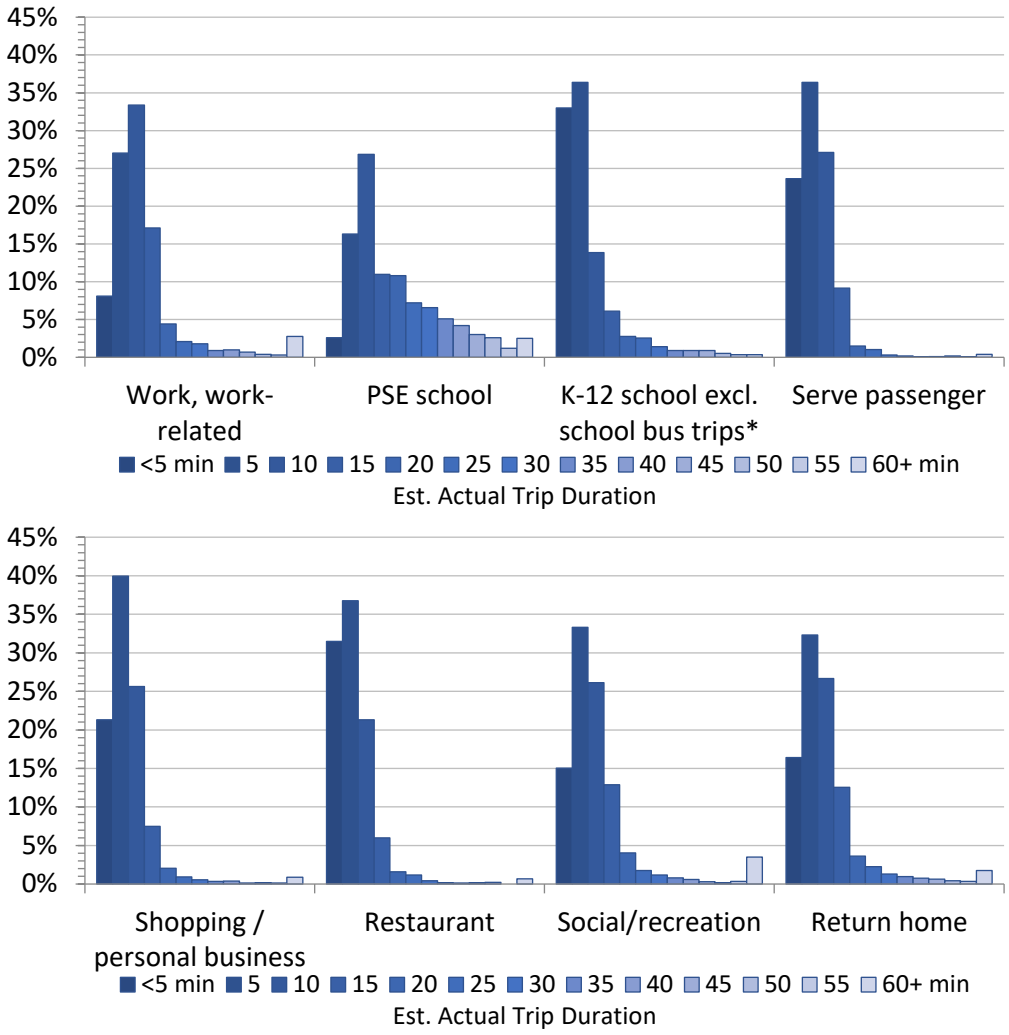
Google duration (minutes)	Work, work-related	PSE school	K-12 school	Serve passenger	Shopping / personal business / other	Restau-rant	Social/ recreation	Return home	All Purposes
Average	16.1	23.0	11.3	9.8	10.5	9.8	15.6	14.1	13.8
Median	12.4	18.4	7.8	8.9	8.7	7.7	10.6	10.6	10.4

Figure 65. Google duration distribution by mode



5 = between 5 minutes and 9.99 minutes, 10 = between 10 minutes and 14.99 minutes, etc.
The Other mode grouping is excluded as Google distances were not available for school bus trips, and the remaining sample of other modes in the 'Other' mode category is modest

Figure 66. Google duration distribution by trip purpose



5 = between 5 minutes and 9.99 minutes, 10 = between 10 minutes and 14.99 minutes, etc.

* Note: K-12 distances exclude school bus trips for which Google distances were not available.

4.8 Walkable and bikeable trips

This section examines the extent to which trips made by auto or transit could feasibly have been made on foot or by bicycle instead. The analysis uses distance to assess 'walkability' and 'bikeability.' The distance was based on the trip length for each mode. Bikeable trips were determined as those within a 4.6 km range, based on the finding that 90% of reported bicycle trips had an estimated bicycle trip length within this range. The distance threshold for walkable trips was set 1.6 km range, based on the same 90% criterion. For trips made via auto or transit the trip origin, destination and time of day were processed via the Google API to determine the auto trips whose lengths fell within the eligible bicycle and walk thresholds.

Figure 67 presents the findings and Table 36 details the potential shifts in auto driver trips. In the table and the discussion below, 'mode shift potential' refers to the potential percentage-points of the current mode share (the percentage of all trips by all modes) that could be shifted to walking or biking based on distance alone. Note that walkable trips are also bikeable by definition, while some bikeable trips may be too long to be walkable.

The analysis suggests that two-fifths (39%) of auto driver trips could be made by bicycle. In terms of mode share, there is a 24% auto mode share that could be bikeable and a 7% auto mode share that could be walkable. These potential proportions are highest in Core Neighbourhood and Lawson. The University sector also has potentially high proportions, although that sector has very low auto driver modes.

Just under half (49%) of auto passenger trips are bikeable, while 4% are walkable. These proportions correspond to a potential mode shift of 8% to bicycle and a potential mode shift of 3% to walk trips.

Slightly more than two-fifths of transit trips are bikeable (41%), while 4% of transit trips are walkable. These proportions correspond a potential mode shift of 2.6% to bicycle and a potential mode shift of 0.2% to walk trips, the latter reflecting that very few transit trips are made for very short distances.

Results should be caveated in that this examines only distance. Many of the auto or transit trips that are of walkable or bikeable distance may be impractical. For example, these trips may be part of a trip chain that requires a vehicle, an auto is needed to carry heavy items not easily carried while walking or biking, the traveller might have disability or health condition that limits ability to walk or bike, some cyclists will use only separated pathways rather than travelling on the road and so on. There may also be a need to ensure that the 'supply' of bicycle and pedestrian facilities is available to meet traveller needs and itineraries.

Figure 67. Auto driver, auto passenger and transit trips that are walkable or bikeable, 2023

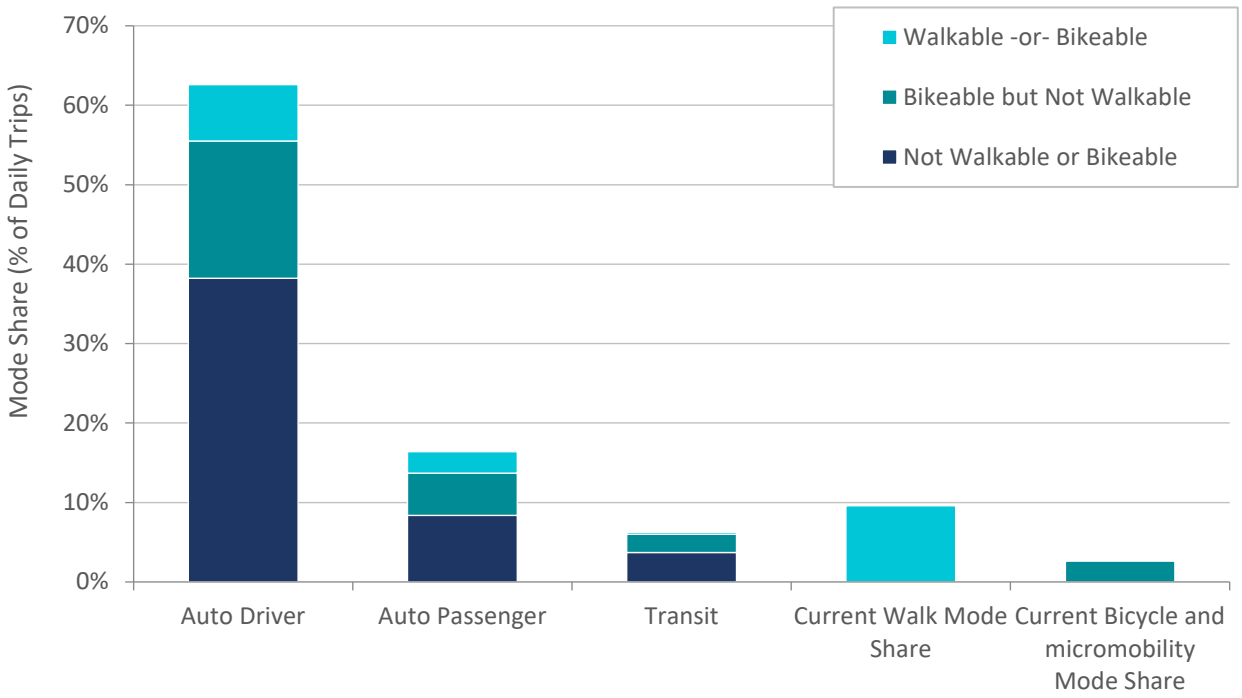


Table 36. Auto driver trips that are walkable or bikeable by sector of residence, 2023

	Saska-toon	Core Neigh-bour-hood	Con-feder-ation	Blair-more	Law-son	Uni-ver-sity	Holm-wood	Uni-ver-sity Hts.	Lake-wood	Nu-tana
Auto Driver Trips	409,300	39,700	76,700	10,300	42,600	800	7,100	75,600	68,800	87,900
Auto Driver Mode Share	63%	52%	63%	68%	65%	16%	70%	66%	67%	62%
Bikeable Trips	159,300	19,500	28,000	3,300	19,200	400	2,100	24,500	24,600	37,700
% of Auto Driver Trips	39%	49%	37%	32%	45%	54%	30%	32%	36%	43%
Mode shift potential	24%	26%	23%	22%	29%	9%	21%	21%	24%	27%
Walkable Trips	46,200	5,100	8,300	1,400	6,000	200	900	5,600	6,700	11,900
% of Auto Driver Trips	11%	13%	11%	14%	14%	24%	13%	7%	10%	14%
Mode shift potential	7%	7%	7%	9%	9%	4%	9%	5%	7%	8%

'Mode shift potential' refers to the potential mode share (% of total trips) that could shift from auto driver to walking or biking based on the trip distance being short enough to be walkable or bikeable. This does not take into account age, ability, or other factors that could influence mode choice.

4.9 Summary: key takeaways

This chapter reviews the travel characteristics from the 2023 survey and, where appropriate, compares the findings with the 2013 survey. Six key takeaways are presented below:

1. 2023 marked a significant drop in both total trips and the average trip rates per person and per household. These reductions are consistent with the experience of other Canadian cities but may also reflect the continued effects of the pandemic-induced changes in people's daily activities. Average daily trip rates in Saskatoon fell to 2.47 trips per person and 5.60 trips per household, though trip rates vary by sector.
2. Trip rates are highest for people in the 35-54 age cohort. These people are generally in the midst of their work careers and have established households. The lowest trip rates are among people 85+. Trip rates also vary by gender, occupation status, household structure, household size, dwelling type and household income.
3. Travel in the two commuter peak periods grew, even as trip volumes decreased at other times of day. This is driven by the work and school commutes. The AM peak period is sharper than the PM peak period, which begins early in the afternoon and has a lengthy tail.
4. Almost four-fifths (79%) of daily trips are made by auto, while 6% of daily trips are made by transit. About 12% of trips are made by active transportation modes, with 9.6% made on foot, 2.5% by bicycle or e-bike and 0.1% by micromobility modes.
5. Commuting trips to work and school comprise 25% of daily trips. Most trip purposes recorded a drop in numbers after 2013, especially in commuting and commuting-related trips to work and post-secondary school as well as shopping / personal business and other and serve passenger trips. Trips to elementary and secondary schools increased, as did social / recreation, restaurant and return home trips.
6. The average vehicle occupancy is 1.22 persons per vehicle. Five of every six vehicle trips are occupied by the driver alone.

5 SUMMARY

5.1 Overview

This chapter concludes the 2023 Household Travel Survey reporting. Rather than recap the survey results, which the Survey Highlights section does at the outset of the *Household Travel Survey* report, this chapter describes briefly what the survey has achieved and, in broad terms, how it can be applied to City plans and policy development.

This leads to a discussion of broad recommendations for future household travel surveys in Saskatoon, corresponding to requirement 14.6 in the *RFQ Particulars*. This discussion is drawn from the consultants' experiences and lessons learned from other recent household travel surveys.

The discussion considers where surveys in other cities are headed. For example, GPS data sources offer potential for leveraging and extending household travel survey data. Some Canadian cities are considering the use of annual small-sample panel surveys, which allow ongoing changes (like hybrid working) to be recorded more quickly while also reducing the need for a single, periodic large-scale sample.

The discussion closes with the consultants' recommendations on how the data can be used to formulate trip generation and attraction rates, trip distribution and mode choice formulations for the City's travel demand forecasting model, as per the *RFQ Particulars*. The intent is not to provide actual rates and parameter values, which is beyond the scope of the survey, but to provide general guidance.

5.2 What the survey has achieved

The 2023 Household Travel Survey provides a robust database on travel and demographic trends, patterns and relationships in Saskatoon. It can be used for a wide range of applications:

- Support the **implementation** of the transportation policies and plans identified in the 2020 *Official Community Plan* (by-law 9700, updated August 2023) and the 2021 *Transportation Master Plan*. Support can be provided in several ways: defining the target markets for proposed planning initiatives, verifying assumed travel behaviour, informing the planning of new subdivisions and more.
- Advance and inform other **transportation plans and policies** such as the *Active Transportation Plan*, the *Climate Mitigation* and *Climate Adaptation* plans, the planned bus rapid transit network, corridor planning studies and traffic impact studies. Inform **complementary initiatives** like economic development strategies and public health initiatives.
- Provide an **evidence-based foundation** for informing community, political and business discussions and inputs on City initiatives.
- Inform the development of policies for **emerging needs**– for example, equity considerations in transportation planning, the market for micromobility, the impact of online purchasing on trip-making, the potential uptake of electric vehicles and more.

- Inform **financial decisions and priorities** for planned transportation and policies.
- Serve as the platform for **drill-down research** on topics that may be of interest to the City – for example, improving the understanding between travel behaviour and sustainable development.
- Cross-validate **other data source**s on demographic and economic trends.
- Envision **future transportation and urban form scenario**s to inform future versions of the City's Official Community Plan (OCP) and Transportation Master Plan (TMP).
- **Monitor progress** towards the achievement of OCP, TMP and other strategic goals, providing inputs to *Moving Around* indicators identified in the City's *Strategic Plan* and enabling the development of other indicators.
- Respond to **queries** from the public, private developers, the business community, academics, non-governmental organizations and others on the mobility of Saskatoon residents.
- Provide a basis to better **coordinate multi-jurisdictional planning** initiatives with the Rural Municipality of Corman Park and its constituent municipalities, other rural municipalities, the Province, Federally owned facilities like the airport, and the railways.
- Develop **analytical tools and models**, notably an updated version of the City's travel demand forecasting model. In turn, the travel demand model can serve as the **platform** for additional tools like network microsimulation models and for linkages with Provincial tools and GIS databases.
- Finally, given the profound changes induced by the pandemic in travel, many cities have found a need to **rebase** their travel forecasts and their understanding of the underlying factors. The 2023 Survey provides a **baseline** for this process, as well as for monitoring future behavioural changes and identifying future data collection and analytical needs.

5.3 Future directions for travel surveys

5.3.1 Lessons learned from the Saskatoon Household Travel Survey

Student oversample

The inclusion of a supplemental student survey was an important element of the Saskatoon Household Travel Survey. By conducting a supplementary survey with postsecondary students attending the University of Saskatchewan, we increased the representativeness of a sometimes difficult-to-survey sub-population. The insights provided from this supplementary survey were particularly relevant to understanding travel patterns as students often have higher use of public transit and other active modes.

Although students are often a difficult sub-population to reach, having the University's support to select a random sample of students and facilitate sending survey invitations via email was a crucial step that allowed us to effectively reach students who lived both on and off campus. As a result, we were able to provide a detailed picture of all students, highlighting the importance of surveying students who live in residence (as they would not be sampled as part of the main

address-based sample).

The student oversample was combined with the main address-based sample, with appropriate adjustments to the weighting. Although this was not performed for the 2013 Saskatoon Household Travel Survey, integrating the student survey into the main address-based sample is worthwhile for the City to consider for future surveys.

The student survey contained a set of questions meant to determine whether students lived in Saskatoon and would normally be counted in the Census, allowing us to determine what proportion of the student oversample was seasonal residents. This question was not asked of students captured in the address-based sample or the transit oversample. In retrospect, it would have been better if they had been asked of all students even regardless of sample type. This could have provided us with a more accurate representation of the seasonal students who wouldn't normally be counted in the Census, and is recommended for the next survey.

Transit oversample

The inclusion of the transit oversample led to a richer dataset with more data points for transit users and transit trips. There is the chance that the transit oversample may have introduced a very modest bias in terms of trip-making behaviour, even if the demographics and total transit trips were generally equivalent before and after integration of the sample.

Moreover, there is a chance that the transit oversample efforts may also have driven increased completion of the main survey via the address-based letter invitations. If it did, it could have potentially biased the incidence of transit users in the main address-based sample. If, for example, a resident exposed to the on-board transit recruitment who later received the letter invitation was thus more encouraged to respond to the letter, it could result in an over-representation of transit users in the main survey sample. The consultants suggest that if conducted again, the transit oversampling be undertaken after conclusion of the great majority of data collection via the address-based sample.

Although household travel surveys usually under-represent transit users, the current survey results demonstrated an apparent over-representation of transit usage. Due to uncertainty around the City's e-ridership counts, there were some unresolved questions around the equivalence of the City's e-ridership counts to the survey data that could not be fully addressed (such as whether there might be under-counting of boardings at the university or at busy exchanges in the AM Peak). For future cycles, if possible, it is recommended to refine the ridership counts with validation of e-ridership to determine whether e-ridership figures are a good approximation of total boardings or whether they are underestimated.

Survey targets

Survey targets were set at the neighbourhood level, given that the City initially had not yet decided on what geographical groupings other than neighbourhood would be desirable for analysis. It may be noted that Saskatoon has many neighbourhoods (67 residential neighbourhoods). Even with a robust sampling rate, most neighbourhoods cannot be analysed on a stand-alone basis, and must be aggregated with other neighbourhoods. Survey response rates varied by neighbourhood for different mail out waves during the data collection period. Usually response rates in sampling geographies observed in early waves of letters allow us to

predict response to later mailout waves and better target responses rates. However, when there are so many sampling geographies, the sample sizes are too small to provide reliable predictions of response rates by neighbourhood, resulting in over-targeting of certain neighbourhoods in subsequent waves. While all targets were exceeded by neighbourhood, it meant that the excess of survey data was somewhat beyond the original planned scope and took more time to validate and process. For future surveys, the consultants suggest setting survey targets for aggregations of neighbourhoods, such as the expansion zone aggregations (of between one and six neighbourhoods each), thus making survey targeting more manageable and precise.

Lower response rates for certain sub-groups and by certain modes

Typical of other household travel surveys, the 2023 Saskatoon Household Travel Survey had lower response rates from younger people (who typically have higher levels of non-response) and those in larger households (for whom the survey is a greater burden to complete) than older people and smaller households. Future surveys could offer targeted incentives to larger households to complete the survey. For example, once they are identified as a larger household, they could be advised that a gratuity will be provided for completing the survey for all household members.

In recent years, the Consultant has observed a decline in overall response rates in a number of Canadian jurisdictions that have conducted household travel surveys, with a greater decline in telephone response than online. For the 2023 Saskatoon survey, only about one in ten surveys was completed by phone. The proportion of households with a landline has been declining steadily for years, and is less than half of all households in many jurisdictions. Furthermore, considerably fewer people answer telephone calls they do not recognize, and landline providers have given subscribers more options for screening calls. Those households that do have landlines tend to be larger households or older households.

For the 2023 Saskatoon Household Travel Survey, the telephone surveying component was not very efficient, although it did allow us to target certain geographies that had lower levels of response. Also, a few hundred participants did call the toll-free line to complete the survey, and a number of others called with questions about the survey or for support in completing the survey online. Telephone support and follow-up on surveys with issues is still important, so the inclusion of a telephone survey mode and support of telephone survey staff is still recommended for these surveys.

The consultants have also observed a decline in online response rates in many jurisdictions. However, the 2023 Saskatoon online response rates were higher than experienced in other jurisdictions in household travel surveys conducted in 2022. It may be that household travel surveys conducted in 2022 were still affected by lower levels of engagement related to the immense disruption of the pandemic, even as work and travel patterns began to return to normal, and levels of engagement may have risen again in 2023. Or the higher response rates in Saskatoon may speak to the importance of transportation and/or higher levels of engagement for Saskatoon residents.

5.3.2 Applicability of survey methods in other cities

This section discusses different approaches to household travel survey in other cities which may be considered when planning the next survey cycle.

- Survey frequency: Different jurisdictions in Canada undertake household travel surveys with varying frequency.
    - Some conduct household travel surveys on regular five-year cycles, like the Census, (Kingston, BC's Capital Regional District, Ontario's Transportation Tomorrow Survey) or somewhere between every five and ten years (Edmonton, Okanagan, Montreal, TransLink's regional survey of the Metro Vancouver area). This allows for regular tracking of transportation trends with robust sample sizes. Others are on more regular cycles.
    - The City of Vancouver conducts an annual individual travel survey while the BC North Shore municipalities (City of North Vancouver, District of North Vancouver and District of West Vancouver) had conducted an individual travel survey every two years. As they are conducted with only a single individual in each household, these surveys can include more questions, and provide regular input to planning processes with the inclusion of different topical questions in different years. They are typically not used for modelling purposes (as the regional TransLink survey usually provides inputs for the model). These surveys take a panel approach in which a portion of participants in previous years participate again in subsequent years. These surveys have modest sampling rates, so there is a limit to the extent the survey data can be drilled down into for certain questions, and there may be variance from year to year related to refreshing the panel with new participants each year. These surveys provided great insight into the impact of the COVID pandemic on travel patterns and its recovery.
    - The City of Calgary is conducting a continuous household travel survey with annual reporting. Some other municipalities in Canada are considering moving to continuous or annual surveys. While sampling rates in each year may relatively modest, they can be combined across multiple years for more robust reporting and modelling purposes. A steady program budget can be allocated to the survey each year, rather than having to raise a large budget for large household travel survey every five to ten years.

  The 2023 Saskatoon Household Travel Survey was undertaken 10 years after the previous survey. The frequency of future survey cycles should consider how frequently the transportation model and transportation master plans will be updated, the extent to which aggressive growth Saskatoon may impact the transportation system, the need for data to track and respond to changes in travel patterns, the need to measure the impact of policy initiatives and infrastructure development, and how the next survey will be funded.
- Geographic coverage: While the 2013 Saskatoon Household Travel Survey had included the broader area in the rest of the Census Metropolitan Area (CMA), the 2023 survey narrowed its focus to only the city of Saskatoon.

- Some other jurisdictions in Canada have taken a similar approach. For example, in 2019 the City of Kingston redefined their household travel survey area to just the city after previously including the CMA, and in 2017, the BC's Capital Regional District refocussed their household travel survey area to the CRD, whereas in 2011 it had included a portion of the Cowichan Valley Regional District.
- Other jurisdictions have survey areas that include broader commutersheds. For example, TRANS' 2022 Ottawa-Gatineau household travel survey included the City of Ottawa and all municipalities in the Gatineau portion of the CMA, the 2015 Edmonton Household Travel Survey included nearby communities in the Edmonton CMA, the 2007 Winnipeg and Area Travel Survey included communities within a 100 km radius, and several regular survey programs in large metropolitan areas with extensive urban sprawl include coverage of multiple cities. This kind of approach can provide participating municipalities useful information on the portion of the travel to, from and within their own municipality that is made by residents outside of their own municipality. However, it may be noted that many surveys of external residents will not include any trips to the principal municipality, and such surveys may require significant inter-agency cooperation and funding arrangements. An alternative to this approach is to conduct a household travel survey within the principal target municipality and an external travel survey with roadside intercepts to collect information about travel made by external residents to, from, within, and through the principal municipality.

Whether the future cycles of the Saskatoon Household Travel Survey should consider the growth in the external population, the extent to which the external population may travel regularly to Saskatoon, the level of interest from external municipalities and/or regional authorities, and the ease of inter-agency cooperation.

- Sampling rates: A 5% sampling rate has been the target for household travel surveys completed in many Canadian jurisdictions (Edmonton, Regional Municipality of Wood Buffalo, Capital Regional District, North Cowichan, Kingston, Ottawa-Gatineau, and the Transportation Tomorrow Survey). A 5% sampling rate provides robust sample sizes and the flexibility to drill down into the data with relative confidence. Other household travel surveys have had more modest sampling rate targets of between 2% to 4% of households (Red Deer, St. Albert, Burnaby, Coquitlam, Nanaimo, and Moncton). These surveys provide reasonable datasets that may be able to fulfill the basic needs of modelling, however, caution may need to be exercised when disaggregating the data, and there is the potential for greater variance from the true travel patterns of the population. Cities in the United States often have lower sampling rates. In the U.S., household travel surveys are often costlier and have lower response rates than in Canada. Also, very large cities with high population density may not necessarily require as high of a sampling rate to provide a high level of confidence in the survey results: a low sampling rate may still provide a numerically large sample size for the geographies to be analysed. The relationship between sampling rate and margin of sampling error is not linear and depends on the absolute number of surveys obtained as well as the size

of the population. Beyond a certain sample size, further increases in sample size may only result in marginal reduction in the margin of sampling error.

The 2023 Saskatoon Household Travel Survey targeted a 4.7% sampling rate. With all neighbourhoods exceeding survey targets, and with the inclusion of the student oversample and transit oversample into the survey dataset, the final survey dataset represents 6.7% of the target population.

The consultants recommend maintaining a robust sampling rate for the next cycle of the Saskatoon Household Travel Survey for a number of reasons.

- Surveying about one out of every twenty households (5% sampling rate) typically provides a robust dataset with a large number of unique data points for a large number of unique households that allows for deeper analysis of subpopulations. For example, it one may be able to examine more closely the travel patterns of cyclists or transit users, or conduct transportation equity analysis of under-represented populations, such as low-income households.
- A robust sampling rate provides more data points for modelling activities such as micro-simulations that may focus in on a specific area of the City.
- A robust sampling rate allows for the correction for non-response bias (the bias inherent in certain population groups being less likely to respond to the survey) with data weighting without overly diminishing the margin of sampling error.
- The City has a tradition of conducting analysis at the neighbourhood level where possible, such as its detailed neighbourhood profiles. While the sample sizes for the household travel survey are too small in some neighbourhoods to provide confidence in the generalizability of the household travel survey results, larger neighbourhoods and clusters of a few similar neighbourhoods can be reported on with reasonable confidence. Smaller sample sizes would diminish the ability to report at levels smaller than the sectors.

- Sampling approach: There are a number of options for sampling methods.
  - Address-based sampling is currently recommended. Address-based samples can provide a generally representative sample of all households in the study area and allow for geographic targeting to ensure that survey targets are met in neighbourhoods that prove to have low response rates. In jurisdictions where the target population has good levels of civic engagement, and with a well-crafted cover letter and communications support, address-based samples can yield good response rates in a cost-effective manner. Saskatoon had a high overall response rate (16%) for the address-based sample in the 2023 survey. However, it may be noted that the general trend in recent years has been an overall decline in response rates, which may still continue, so expectations may need to be adjusted for future survey cycles.
  - Telephone directory sampling is not recommended and is currently rarely used for surveys of the general public. In many cities in Canada, fewer than half of all households have a landline telephone, and surveys conducted from telephone

samples will be biased. However, telephone landlines can supplement address-based samples to allow for targeting of certain geographies, as long as the balance of address-only and address-and-phone samples is balanced so as not to skew the dataset. Cell phone sampling is also not recommended due to the very low response rates.

  - Samples of convenience (commercial panels of survey takers; engagement panels; social media recruitment, etc.) may have inherent biases and may not always be representative of all subpopulations. However, they may have a place in supplementing an address-based sample (e.g., targeting younger people who tend to engage less in surveys).
  - Other recruitment methods may include obtaining extra samples of targeted populations of interest, such as the University of Saskatchewan oversample and the transit oversamples obtained in the 2023 survey. Integrating such samples into the main survey dataset must be undertaken carefully to mitigate the risk of skewing the natural distributions of key demographic and behavioural characteristics in the survey sample compared to the population.

- Survey content: The survey questionnaire used in 2023 is the product of careful consideration of the City's modelling and data needs and lessons learned from conducting surveys in other jurisdictions. The consultants recommend maintaining the core of the survey questionnaire to maintain comparability across survey cycles. However, there may be opportunity to refine questions in the future or add questions that will help monitor evolving and emerging trends. Topics could include further exploration of work from home and hybrid work patterns, online shopping, waiting at home for deliveries, and/or remote activities like virtual schooling and personal appointments. Such questions could help contextualize future changes in travel behaviour (shifts in trip purposes, trip start times, destinations, and modes of travel). However, if additional questions are to be added, the consultants recommend removing other questions that may have proved less useful for modelling purposes. If certain topics need to be explored in depth, this could be done via satellite surveys, in which a separate survey is conducted with participants in the main survey. To this end, a question could be included in future surveys asking participants if they would be willing to participate in future research.
- Survey method: The three most common methods for conducting household travel surveys include: 24-hour recall surveys, trip diaries, and smart phone app surveys. Most surveys are single-day surveys, although multi-day surveys are undertaken in some jurisdictions.
  - 24-hour recall surveys: These surveys ask participants to report on travel on the most recent weekday. Such surveys may have some under-reporting of discretionary trips, particularly for household members reported on by the primary respondent (e.g., not being aware that the household member left work to grab a coffee) but tend to capture non-discretionary (e.g., commuting) trips for all household members. The survey can be designed to minimize under-reporting of trips with appropriate probes and instructions, and/or by asking the primary

respondent to have other household members fill out their own trips. There is often a single touchpoint, with the participant completing the survey online after receiving the letter or by telephone after receiving a phone call or calling into a toll-free line. There may be subsequent touchpoints for follow-up if survey responses or trip logic are flagged in post-survey data validations, however this is the minority of all surveys completed. Given the simplicity of this approach and the single touchpoint for most respondents, response rates are higher and the method is generally cost-effective, which can allow for more survey completions for the budget.

- Trip diary surveys: These surveys are conducted in stages. The first stage is to recruit participants and administer a short questionnaire collecting demographic and contact information, after which a travel day is assigned. The second stage is for the participant to record basic trip information in a provided trip diary on their travel day. The third stage is for the participant to report on their travel day in detail. This method is logistically complex and requires several touchpoints with participants including reminders and follow-up. As most respondents will fill out their trip diary on their travel day, and thus do not rely on memory, the risk of under-reporting of discretionary trips is lower. Depending on the survey design, there is the possibility of some over-reporting of trip segments as if they were trips, e.g., reporting the walk to the transit exchange separately from travel on a bus.
- Smart phone app surveys: Smart phone apps can collect GPS positional data as people travel during the course of their travel day. The app system will parse this data into trips which the respondent can then confirm either as they travel or at the end of their travel day. This reduces certain aspects of the response burden and can increase the accuracy of the data gathered. Smart phone apps collect precise origin and destination locations, routes travelled, and precise departure and arrival times. The recruitment and completion methods are very similar to the trip diary survey method described above, and this approach has the added logistical complexity of requiring the respondent to download and use the app and fill out additional information about their trips (and provide corrections where the app has made mistakes in parsing out their trips or suggesting a travel mode), which may add to the response burden. Such surveys are usually also accompanied by an alternative online/phone trip diary survey for participants who are unable or unwilling to report their travel via an app. Such surveys often provide a direct incentive to participating households and/or extra incentives to each household member who uses the app to complete their survey. These surveys will provide very detailed data, but as they tend to be costlier, that detailed data is often for fewer households than other methods within the same budget.
- Multi-day surveys: Some surveys gather information on multiple travel days. This is sometimes undertaken in jurisdictions with methods that elicit low response rates and/or that facilitate multi-day surveying (e.g., smart phone apps) and/or

that pay direct incentives to all participants. Such surveys will provide richer data for the households surveyed. They may also enable analysis of travel patterns on weekends as well as weekdays. However it may be noted that such surveys also increase the response burden for survey participants and may reduce response rates (which may enhance non-response bias). A smaller sampling rate for a multi-day survey might provide an equivalent number of data points but for fewer unique households than a higher sampling rate for a single-day survey, and the multi-day survey would likely have some repetition of many households' commuting-related data points across multiple days.

The 2023 Saskatoon Household Travel Survey used a 24-hour recall survey to obtain a robust sample of households with a high response rate and a high sampling rate. Survey administration methods will evolve between now and the next survey. Choice of the method to use for the next survey should take into consideration the goals of the next survey in terms of the size of the survey sample, the available budget, and data needs.

- Complementary data collection: The City may consider whether supplementary data collection can complement the household travel survey data.
    - Establishing a screenline count system that is done regularly may provide data that can be used to develop the transportation model and/or validate the household travel survey data.
    - Supplementary surveys with groups of interest (e.g., bicyclists) or for certain types of trips (e.g., intercepts with travellers entering or exiting city limits) can provide satellite datasets for the transportation model that have more detailed information on aspects of travel that have minimal coverage in the main household travel survey dataset.
    - 'Big data' (such as cell phone GPS traces) may provide anonymized data that can provide comprehensive information on origin-destination travel flows but without the demographic, household characteristic, or trip purpose information that can be useful for certain aspects of modelling and insight into the 'who' and 'why' aspects of travel patterns. Some jurisdictions in the United States are conducting household travel surveys with a mid-size sample and leveraging it against GPS data in the transportation model.

5.3.3 Options for future Saskatoon surveys

Given the lessons learned from the 2023 Saskatoon Household Travel Survey and the future direction of household travel surveys more broadly in other jurisdictions, the consultants have provided a few options for the City of Saskatoon to consider for future iterations of their household travel survey.

1. The City should consider whether to maintain the survey geography as the city of Saskatoon or whether to expand again to the CMA, considering the growth in the CMA population, the CMA population's use of Saskatoon's transportation infrastructure, and the ease of interagency cooperation. For sub-municipal analysis, it is suggested that the City determine aggregations of neighbourhoods that are meaningful to them, such as

the expansion zone aggregations, to ensure neighborhoods are appropriately grouped and will lead to results that will be generally applicable across similar neighborhoods.

2. The next household travel survey should try, as much as possible to replicate core aspects of the methodology and the survey content. An equivalent approach would employ address-based sampling (or a method with equivalent coverage), a single-day 24-hour recall survey approach, collecting information on trips for all household members 5+ years of age, and an additional student oversample for University of Saskatchewan students. However, consideration should be given to the achievable response rates for address-based sampling in the future, whether the sample may need to be supplemented (depending on trends in non-response for harder-to-reach population groups), and the data needs of the City. If other data collection approaches are considered to meet new data needs, such as use of a smart phone app, they should be evaluated in consideration of possible improvements in data quality, the size of the achievable sample, whether there may be differences in non-response bias or other biases, and the impact on the comparability of the data for trend tracking. An additional transit oversample would be optional if more information on transit users is desired but may not be necessary.
3. Future household travel surveys should continue efforts to reach difficult-to-survey populations. This would include conducting oversamples with sub-populations such as students and transit users, to ensure they are represented in the data as usual sampling approaches may not capture them effectively. Other groups such as youth and larger households are also typically underrepresented, and additional strategies such as targeted communications and incentives may help increase response rates. However, while efforts to maximize the responses from these groups are valuable, they often come at increased costs and/or require approaches other than random, representative sampling. This may include samples of convenience (e.g. on-site intercept surveying, asking service providers to promote the survey to their clients), panels, and social media to recruit these groups; while these methods work and are cost-effective, they do not have the rigour of random, representative sampling.

5.4 Application of the survey data to model development

The *RFQ Particulars* ask for recommendations on:

- Trip generation (production) rates, by trip purpose.
- Trip attraction rates, by trip purpose.
- Trip distribution, utility functions and parameters, by trip purpose.
- Mode choice, utility functions and parameters, by trip purpose.

As clarified by City staff, the recommendations concern the approach to using the 2023 survey data to develop new rates, functions and parameters for the next version of the City's travel demand forecasting model. The development of the rates, functions and parameters would take place as part of the model estimation work.

5.4.1 How the 2013 survey was used to calibrate the current model

It is important first to understand how the 2013 survey data were used to calibrate the *Saskatoon Regional Travel Demand Model* (SRTDM) in 2015. The model has the following characteristics: [29]

- The model uses the VISUM travel demand modelling software.
- The geographic coverage comprises Saskatoon and the surrounding rural municipalities.
- The calibration base year is 2013.
- The AM and PM two-hour peak periods and the respective peak hours are modelled. Trip generation is calculated at the 24-hour level for robustness, from which the peak period demand is then developed. However, the framework is in place to also model other time periods, like the midday.
- Auto drivers, transit passenger, pedestrians, cyclists and commercial vehicles are the modelled modes. Auto passengers are modelled as a percentage of auto drivers. Only auto drivers and commercial vehicles are included in the vehicle assignment. Note that the calibrated model does not include a transit assignment.
- External (long-distance) auto driver and commercial vehicle trips that start or end beyond the modelled rural municipalities are modelled separately.

The model is a four-step, trip-based model: [30]

- **Trip generation** rates are derived from the survey for both productions and attractions. Production rates vary between urban households (within Saskatoon), by low and medium/high density dwellings, and rural households (outside Saskatoon). Attractions use land use data - mainly employment by type, dwellings by type and school enrollments. Daily production and attraction rates are used because they provide more robust results.

  The daily trip rates are categorized into five trip purposes:

  - Home-based work - the commute to and from work.
  - Home-based primary/secondary school - the commute to and from primary and secondary schools, along with trips made by people accompanying younger children.
  - Home-based post-secondary school - the commute to and from the University of Saskatchewan and community colleges.
  - Home-based other, which includes discretionary trips like shopping and recreation.

[29] HDR, *Model Development Report, Saskatoon Regional Travel Demand Model* and the *Saskatoon Regional Travel Demand Model User Guide*, prepared for the Saskatchewan Ministry of Transportation and Infrastructure, May 2015.

[30] The discussion focuses on how the survey results are used, so other details may be left out. The discussion assumes an understanding of basic modelling principles. Details can be found in the source materials that were used for this discussion (see footnote 29).

    - Non-home based, such as a trip from the workplace to shopping.
- In addition, five mines outside Saskatoon were treated as special generators, with trips tied to employment. External (long-distance) trips were generated as trips entering or exiting a gateway to/from the study area. The survey had few observations for either type of trip, and so other sources were used. This is within expectations, and the same would be true of the 2023 survey.
- **Trip distribution** is done at the AM and PM peak period levels. For this, AM and PM factors derived from the survey are applied to the generated daily trips. For each purpose, impedances based on modelled interzonal distance and congested (period-specific) assigned travel times are used. Trip length distributions are calibrated according to those observed in the survey. The gravity formulation is used for each purpose, with distribution coefficients derived from the calibration process.
- **Mode share** factors are derived from the survey for auto, transit or active transportation (pedestrians and cyclists combined). Factors vary by trip purpose and distance. The process focuses on estimating the auto driver (auto vehicle) shares to enable a calibration of the assignment: For this purpose, auto occupancy factors are derived from the survey to convert auto person trips (driver + passengers) to auto driver (auto vehicle) trips.
- **Trip assignment** is done at the AM and PM peak hour levels. Factors derived from the survey convert the peak period auto vehicle trips to peak hour volumes. The factors vary by purpose and by urban / rural trip origins (destinations in the PM). Commercial vehicle trips and external auto vehicle trips, all derived separately, are included in a multi-class vehicle assignment for each peak hour.

5.4.2 Use of the 2023 survey for model development - recommendations

Relevant to the use of the 2023 survey as the basis for model calibration, several observations and recommended next steps are offered. The discussion ranges from an update (refit) of the current SRTDM formulation to the potential development of more advanced model formulations. However, it is important to note that the City's take-up of any of these recommendations is dependent on its goals for a model update, its choice of model structure, timing, available staff resources, available budget and so on:

- **The SRTDM can be replicated.** As described in the previous section, the 2013 survey had an important and full role in the development of the SRTDM. The 2023 survey provides the same survey data on which the SRTDM is based. Accordingly, the SRTDM could be refitted with the 2023 to provide an updated version of the model, all else being equal - i.e., assuming the same model formulations and time periods are retained and that complementary data like counts and external trip data are available. **Recommendation:** As a first step, consider refitting the 2023 survey data into the existing SRTDM formulation for Saskatoon's urban trips. This provides an up-to-date base year for the model, assuming that current classification counts are available. For simplicity, the current rural and external formulations could be retained, as long as up-to-date zonal input data are available: However, depending on the goodness of fit, it may be

appropriate also to adjust the rural trip rates and external trip tables in proportion to the changes detailed in the urban trips. The update also will serve as the basis for other recommended enhancements, described below.

- **Other time periods could be modelled, if desired.** The SRTDM's basis in 24-hour trip generation rates means that models for other time periods – midday, evening or overnight – could also be developed, using the same factoring process deployed to develop AM and PM peak period and peak hour models from the survey data. The SRTDM report recommends this as a future enhancement. **Recommendation:** Consider the development of additional time periods for the SRTDM, using the existing AM and PM peak period formulations and – given its daytime positioning between the two peaks - beginning with the midday before proceeding to the evening and overnight.
- **Trip purpose definitions could be reviewed.** It may be appropriate to regroup the five trip purpose categories, depending on how the trip purposes present across the day. For example, whereas work and school commutes dominate the AM peak period, the 2023 survey shows that shopping is an important part of midday travel and social / recreation is a key part of evening travel. With many current peak period models focusing on the work and school commutes (i.e., on non-discretionary travel), it may be appropriate to regroup the HBO and NHB trip purposes – for example, Ottawa's model groups health and personal care, serve passenger and shopping into a (personal) "maintenance" category, and social / recreation and restaurant trips into a "discretionary" category.[31] **Recommendation:** Consider regrouping discretionary trip purposes for trip generation, retaining the 24-hour basis for these rates.
- The SRDTM's gravity **trip distribution formulation** follows an approach that is appropriate for a city of Saskatoon's size and structure. The approach is adaptable to the aforementioned regrouping of the discretionary trip purposes. The approach could be extended to the midday, evening and overnight time periods, although – depending on the level of transit use at these times, especially overnight, a simpler growth factor (Fratar) formulation could be considered. **Recommendation:** Retain the SRTDM's gravity trip distribution formulation.
- It is not evident why a **mode choice model** was not developed, or why the **transit assignment** was not calibrated. With the focus on the vehicle assignment, these components might not have been needed. Going forward, the 2023 survey has yielded a robust sample of the current and potential transit markets, thereby providing the necessary basis to calibrate a mode choice model. However, the relatively small observed shares of transit and active transportation may dictate the most appropriate

[31] This is a simplified description of a complex topic – for one thing, the categorization is for the generation of tours in a hybrid activity-based model. Nonetheless, the point is that it may be appropriate to review the trip purpose categorizations in light of current planning needs. See MMM Group Limited, *TRANS Model, Evolution of the TRANS Regional Travel Demand Forecasting Model, Technical Report*, City of Ottawa et al., June 2014. Note also that any such regrouping does not obviate the need to gather the detailed specifics of each type of trip in future surveys, for the purposes of providing clearly understood trip purpose response options for survey participants.

type of model formulation (and may explain why factors were used in the SRTDM).[32] The appropriate formulation will require further exploration of the data when/as the SRTDM is updated. Up-to-date boarding and alighting counts will also be required, as will fare and cost data (including parking), and the model would benefit from commercially available GPS-based travel time data. The future inclusion of active transportation modes in the mode choice formulation was recommended in the SRTDM development work. **Recommendation:** Investigate the feasibility of using alternative mode choice model formulations to get away from factor-based mode shares and incorporate active transportation as a mode choice. Assuming it is meaningful to use alternative formulations (given the relatively small observed shares of these modes), implement a mode choice model and develop a transit assignment component.

- **The University of Saskatchewan could be modelled as a special generator.** The 2023 survey results show that the University sector's characteristics are largely unique compared with the other sectors. Recognizing this uniqueness, it may be appropriate to model the university as a special generator, with its own generation and distribution models: For example, Ottawa developed a special generator model for post-secondary and other trips, based on a 2013 travel survey conducted for this purpose by Malatest. **Recommendation:** Consider implementing a special generator model for University-related travel.
- **The 2023 survey could support other enhancements recommended in the SRTDM development work.** These enhancements include the potential use of income, household size and workers per household in the demand modelling. These data were collected in the 2023 survey. However, their use requires that these variables can be forecasted at the level of the transportation analysis zone. There are also some important limitations - notably, that the 2023 survey did not include households outside Saskatoon. Because the SRTDM framework differentiates between urban (Saskatoon) and "rural" (RM) households, it is possible to use the 2023 survey to update only the urban component. However, that would require a synthetic approach for the rural households – e.g., perhaps by applying factors that depict the differences between the 2013 and 2023 urban characteristics to the rural characteristics. Another limitation is the need for additional classified counts on highways, arterials and key locations (such as river crossings). Further investigation is required. **Recommendation:** Consider the feasibility of bringing in income, household size and workers per household into the development of trip generation relationships, taking into account the ability to develop usable zone-level forecasts of these variables.
- **The 2023 survey could be used to implementing other functions into the model development** - for example, the impact of hybrid working arrangements on peak period trip generation, distribution, mode share and assignment; leveraging commercial GPS

[32] For an all-bus system, some authorities use econometric formulations to estimate transit ridership, for which elasticities of demand factors (with respect to fare, travel time, service level, etc.) are available from the practical literature. These are relatively simple but do not account for the impact of a major investment like a bus rapid transit network. Various mode choice structures are used, depending on the need, with the multinomial logit formulation (which can differentiate by transit access) being widely used.

origin-destination data (e.g., Streetlight or Geotab) to fill in gaps in rural and long-distance travel; or introducing a peak spreading / time-of-day shifting formulation. **Recommendation:** Consider incorporating other functions into the model formulation. Priority could be given to modelling the impact of hybrid working arrangements on peak period travel, given its potential impact on future travel demand.

- **The 2023 survey also could be used to develop advanced model formulations** – that is, activity-based model formulations. However, that approach, while gaining in popularity in North America and Europe, may also require complementary data. **Recommendation:** Develop a road plan for a future advanced formulation SRTDM, and plan for the necessary data collection (notably including a more complete system of classification counts.

5.5 Summary / conclusion

The 2023 Household Travel Survey provides a robust database on travel and demographic trends, patterns and relationships in Saskatoon. This chapter describes how the survey can be applied to policy and plan development and to a new version of the City's travel demand forecasting model. The chapter also provides insights into future versions of the travel survey.

APPENDICES

Appendix 1: Survey invitations

Letter Invitation (for address-based sample)

City of Saskatoon

Transportation
222 Third Avenue N
Saskatoon, SK S7K 0J5

saskatoon.ca
tel (306) 975-2476
customercare@saskatoon.ca

[Mailing Date]

[Name]

[Full Unit Address]

[City] [Province] [Postal Code]

Log in at:
saskatoontravelsurvey.ca
Your secure access code is
[access_code]

Dear Resident,

Your household was randomly selected to participate in the City of Saskatoon's 2023 Household Travel Survey.

Your participation is vital to improving transportation in your community. By understanding how, where, and why residents travel within Saskatoon, we can better plan our future transportation system and services.

R.A. Malatest & Associates Ltd., a Canadian research firm, is surveying on behalf of the City of Saskatoon. All information your household provides for the survey is strictly confidential and is not shared with any other individual or organization, per the *Freedom of Information and Protection of Privacy Act*.

Please complete the survey in one of two ways:

- Visit **saskatoontravelsurvey.ca** and enter the secure access code at the top of this letter; or,
- Phone the toll-free survey hotline at **1-866-229-0208**.

In appreciation of your time, you will be entered for a chance to win a $500 cash prize or a $50 e-gift certificate. Please see the enclosed brochure for further details on participating.

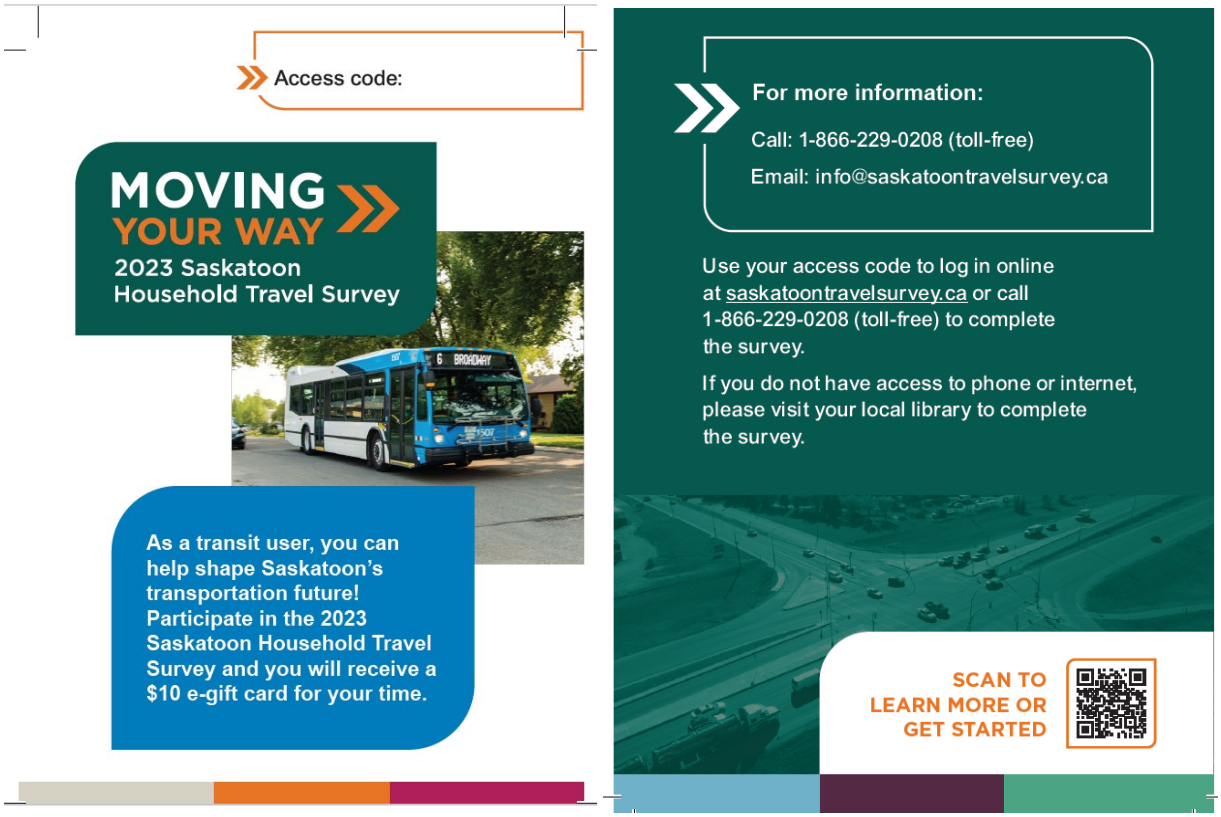
If you have any questions about the survey, call us toll-free at **1-866-229-0208** or email us at **info@saskatoontravelsurvey.ca**. For further information visit **saskatoontravelsurvey.ca**. If you wish to verify the survey, please go to **saskatoon.ca/travel-survey** or call our Customer Care Centre at 306-975-2476.

Thank you for your participation!

Sincerely,

Jay Magus, P.Eng.
Director of Transportation

Transit postcard (for on-board transit oversample)



Email invitation to University of Saskatchewan students (for student oversample)

The survey is being conducted by independent research firm R.A. Malatest & Associates Ltd. on behalf of the City of Saskatoon. This email is being sent to you by the University of Saskatchewan on behalf of the City of Saskatoon.

Dear Student,

We are pleased to inform you that you have been randomly selected to participate in a survey of University of Saskatchewan students as part of the 2023 Saskatoon Household Travel Survey. **To thank you for completing the survey, you will have the chance to win one of two $500 cash prizes or one of twenty $50 gift certificates.**

The survey asks questions about the trips you took on a particular weekday, including where you went, for what purpose, and how you got there. Your participation will ensure that the transportation choices of students are reflected in city-wide transportation planning. The survey results will be used to update the City's transportation model and will be used for transportation planning purposes.

The survey is entirely voluntary and should take no longer than 10-12 minutes to complete. This invitation is sent to a limited number of students, so your participation is extremely important.

Your answers will be kept entirely confidential and your privacy will be respected.

Take the survey now.

If you have been invited to complete the survey by mail or while onboard Saskatoon Transit, **please note that you are only asked to participate once**. For assistance with the survey, please contact 1-866-229-0208 (toll-free) or visit saskatoontravelsurvey.ca.

Thank you for your participation!

The University of Saskatchewan supports this survey as we believe that transportation and transit planning are issues of importance to our student body. None of your personal information, including your email address, is being shared with the City. If you are not currently a student at the University of Saskatchewan or have received this email in error, please disregard this email.

Appendix 2: Survey instrument (scripts)

Saskatoon Household Travel Survey 2023
Survey Questionnaire
Online / Phone Interview Scripts

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Questionnaire numbering is non-sequential and refers to numbering within the original template.

Grey shading indicates scripts for the telephone interview version that differ from the online version.

Orange text indicates a key variable name in the final data file that is associated with a given question. Names are from a template but may differ in the final data deliverable.

How survey is identified (name, where it is, who is it for)

These should be generally consistent whenever mentioned in the survey and in communications materials.

Survey name:	2023 Saskatoon Household Travel Survey
Agency survey:	City of Saskatoon
Scope of the survey:	Residents of the city of Saskatoon. Trips to/from/within the city of Saskatoon and the surrounding area.

Survey Contact Information

Survey Portal URL:	http://saskatoontravelsurvey.ca/
Survey toll-free help line:	1-866-229-0208
Survey email:	info@saskatoontravelsurvey.ca
City contact(s) for respondents:	City of Saskatoon: 306-975-2476

2023 Saskatoon Household Travel Survey
Online Survey / Telephone Interview Script

INTRODUCTION – ONLINE HOUSEHOLD TRAVEL SURVEY

[City of Saskatoon Logo]

Secure Access Code:_____ Begin Survey

Welcome to the 2023 Saskatoon Household Travel Survey.

The City of Saskatoon is undertaking a Household Travel Survey to learn more about the travel patterns of residents. The goal of the survey is to understand where people are going and how they get there by collecting information on the trips made by each member of your household. Post-secondary students living in residence or in a roommate situation only answer for themselves, not the household.

Survey invitation letters have been sent to randomly selected households. Postcards have been handed out on board buses to randomly selected transit users. Emails have also been sent to University of Saskatchewan students who have been randomly selected to participate in the survey. **Please note that if you have been randomly selected through one of these three methods, you are only asked to participate once.**

The information you provide will be used to make informed decisions on future planning for roads, public transit, cycling and pedestrian infrastructure, and other transportation facilities.

In appreciation of your time, you'll be entered for a chance to win **one of two cash prizes of $500 or one of eighty $50 e-gift certificates** upon the completion of this survey.

[if TRANSIT_INVITE=1] In appreciation of your time, you will receive a **$10 gift e-gift card** upon the completion of this survey.

[If STUDENT_INVITE=1] In appreciation of your time, you'll be entered for a chance to win one of two **cash prizes of $500 or one of twenty $50 e-gift certificates** upon the completion of this survey.

How long does it take to complete the survey? Approximately 10-20 minutes ([IF STUDENT INVITE=1] 10-12 minutes) depending on the size of your household and number of trips. It is extremely important all your data is entered completely and accurately. You can also complete the survey by telephone with one of our professional interviewers by calling us toll-free at **1-866-229-0208**.

What kinds of questions are asked? The first two sections of the survey contains questions about your household and the people living in your household. The final section asks questions about the

trips taken by each member of your household that is 5 years of age or older on a particular weekday (your Travel Day). Post-secondary students living in residence or in a roommate situation only answer for themselves, not the household.

Will my privacy be protected? Yes. Your survey responses will be combined with others' responses before they are analyzed. Your contact information will be permanently deleted once the survey is concluded. Click here to view our **Privacy Statement**.

How was I selected for the survey? Your household was selected at random from households across the city. Only a limited number of invitations are sent out, so the few minutes you take to participate will have a big impact. Transit users and students from the University of Saskatchewan have also been randomly selected to participate in the survey, to ensure adequate representation of their travel patterns. The survey is voluntary, but to truly represent the travel behaviour of all types of residents in your neighbourhood, we hope that you will choose to participate. Please note that if you have been randomly selected through one of these three methods, you are only asked to participate once.

Who is being surveyed? We will be surveying randomly selected households across the city of Saskatoon. We will also be inviting a random sample of transit users to complete the survey. University of Saskatchewan students living in residence and off-campus will also be randomly selected to participate in this survey. Only a limited number of invitations are sent out, so your participation is very important.

Who is conducting the survey? The City of Saskatoon has contracted independent research firm R.A. Malatest & Associates Ltd. to conduct the survey.

What day of the week should I report on? We are interested in your travel on the most recent previous weekday. It is important that you provide a snapshot of what you actually did on that day, even if it was not a typical day, and even if you did not make any trips.

Who do I contact for more information or for help?

- If you would prefer to complete the survey by telephone, please call 1-866-229-0208 (toll free).
- You may also call the number above for assistance with the online survey, or email us at info@saskatoontravelsurvey.ca.
- If you wish to validate the authenticity of this survey you may contact the City of Saskatoon at 306-975-2476 or visit the City's Page.
- For more information about this survey, please visit saskatoontravelsurvey.ca.

Please note that your answers to the survey are saved each time you click on the Previous or Continue Buttons.

[IF STUDENT_INVITE=1] Then do not display A1

A1. **The survey should be completed by a person in your household 16 years of age or older who is familiar with your household's weekday travel. Are you that person?**
1. Yes
2. No

A1X. [if A1=No]
This survey must be completed by someone 16 years of age or older who is familiar with your household's weekday travel.
The survey may only be completed by someone under the age of 16 if consent is provided by their parent or legal guardian.
Please have a parent or legal guardian review and answer the following question before proceeding:

The goal of the Saskatoon Household Travel Survey is to understand where people are going and how they get there by collecting information on the trips made by each member of your household. The information you provide will be used to make informed decisions on future planning for roads, public transit, cycling and pedestrian infrastructure, and other transportation facilities. All the information you provide is strictly confidential.

1. I am a parent or legal guardian of a person in this household who is under the age of 16 and I consent to this young person filling out the Saskatoon Household Travel Survey on behalf of the household
2. No, I do not consent to having a younger household member fill out the survey

[If consent is not given, please click 'Previous' to go back to the introduction, and ask an older member of the household to complete the survey.]

[If answer is No, do not allow respondent to proceed. Provide the following error message]

Please either obtain consent or ask an older member of the household to complete the survey.

If you are 16 years of age or older, click the Previous button to change your answer.

If you are under the age of 16, please have an older person in your household fill out the survey.

A1Z. [Ask ALL] **Notice and Consent to Participate**
The 2023 Saskatoon Household Travel Survey is being conducted by the City of Saskatoon. This survey will provide critical information for making future decisions about the city's transportation system.

An independent, Canadian research firm, R.A. Malatest & Associates Ltd., has been contracted to administer the survey. The City of Saskatoon and R.A. Malatest & Associates Ltd. are dedicated to protecting the privacy of participants.

This survey is voluntary and the personal information you provide will be kept confidential and will only be used for the purpose of conducting this survey. Click here to view our Privacy Statement.

Select "I Agree" to confirm that you have read the above statement and agree to participate in the survey.

1. I agree
2. I do not agree [end survey]

Questions about this survey and use of your personal information may be directed to:
Mariniel Flores-Vongkhamchanh, Transportation Engineer, City of Saskatoon
email: Mariniel.Flores-Vongkhamchanh@Saskatoon.ca

INTRODUCTION – TELEPHONE INTERVIEW

[This introduction is for phone interviews. The Persuaders section includes script interviewers can read to answer common questions from respondents]

Hello, my name is _____ , and I am calling on behalf of the City of Saskatoon to follow up on an invitation we recently sent you to participate in the Saskatoon Household Travel Survey.

The data collected in this study will help inform decisions to improve transportation infrastructure and services across the city. In this survey, we will ask you some questions about the trips made by members of your household yesterday.

(INTERVIEWER: If respondent sounds young, verify over the age of 16. If no, ask to talk to appropriate person and restart intro or ensure that the parent provides consent for the younger person to complete the survey on behalf of the household, or schedule a call back)

USE FOLLOWING SCRIPTS AS NECESSARY:

- This survey is about the transportation choices people make. The survey results will be used to help plan improvements to roads, transit infrastructure, and pedestrian and cycling facilities across the city.
- Your household has been randomly selected to participate in this study. The last time this important transportation study was undertaken was 10 years ago, in 2013, and it is time to update our understanding of residents' transportation habits. The survey is voluntary, but to truly represent the travel behaviour of residents in your area, it is important that you participate in the study. Transit users and students from the University of Saskatchewan

have also been randomly selected to participate in the survey, to ensure adequate representation of their travel patterns.

- IF STUDENT ON CAMPUS, OR STUDENT HOUSEHOLD: Each year, over 25,000 students attend the University of Saskatchewan. It is important that students' travel patterns and needs are taken into account in planning for transportation infrastructure. **Students living in residence or in a roommate situation only need to answer for themselves.**
- The survey takes about 10-20 minutes depending on the size of your household and your answers.
- The survey contains questions about your household and the people in your household. It also asks about the trips people in your household make.
- Even if you did not make any trips yesterday, it is important that we record that information as well. The survey will be shorter for you.
- I work for R.A. Malatest & Associates Ltd, a professional research firm. The City of Saskatoon has contracted our firm to conduct this survey on their behalf.
- If you wish to validate the authenticity of this survey you may contact the City of Saskatoon at **306-975-2476** or visit the City's Page.
- I can send you an email with information about the study, and a link to the website for this study.
- In appreciation of your time, you'll be entered for a chance to win one of two cash prizes of $500 or one of eighty $50 e-gift certificates upon the completion of this survey. The prize draw is administered by R.A. Malatest & Associates Ltd. and will be drawn once the survey administration period is completed.
- [if TRANSIT_INVITE=1] In appreciation of your time, you will receive a $10 gift e-gift card upon the completion of this survey.
- [If STUDENT_INVITE=1] In appreciation of your time, you'll be entered for a chance to win one of two cash prizes of $500 or one of twenty $50 e-gift certificates upon the completion of this survey. The prize draw is administered by R.A. Malatest & Associates Ltd. and will be drawn once the survey administration period is completed.

A1. **Please note that this call may be recorded for quality control purposes. I need to talk to a person, 16 or older, who is most familiar with your household's trips made yesterday. Are you that person?**

1. Yes (confirmed correct person)
2. No

A1X. [if A1=No]
This survey must be completed by someone 16 years of age or older who is familiar with your household's weekday travel. May I speak to someone in your household who is over the age of sixteen and who is familiar with your household's travel?
INTERVIEWER: Click Previous to change the answer on previous page and proceed.

A2. [ONLY ASKED OF TELEPEHONE INTERVIEW RESPONDENTS. ASSUME ONLINE RESPONDENTS HAVE RECEIVED THE LETTER IN THE MAIL IN ORDER TO GET ACCESS CODE TO LOG ON]
Have you received the letter in the mail describing this study?

1. Yes
2. No
3. Don't know

INTERVIEWER: IF RESPONDENT DID NOT RECEIVE LETTER AND WISHES FOR MORE INFORMATION BEFORE PROCEEDING:
I can send you an email with information about the study, and a link to the website for this study.

A3. The 2023 Saskatoon Household Travel Survey is being conducted by the City of Saskatoon. As part of the survey, you will be asked questions about the trips made by each member of your household and information about your household (such as the type of building you live in, number of vehicles you have access to, and age of each household member). The information will be used for transportation planning purposes only.

If you have questions about this survey and use of your personal information, I can provide you with contact information for the project contact at the City of Saskatoon.

IF ASKED:
Mariniel Flores-Vongkhamchanh, Transportation Engineer, City of Saskatoon
email: Mariniel.Flores-Vongkhamchanh@Saskatoon.ca

A1Z. This survey is voluntary, and I can assure you all personal information will be kept confidential and will only be used for the purpose of this survey. (Interviewer: click here for the Privacy Statement if more info is required).

Do you agree to take part in the study?
1: Agree
2: Call later / appointment
3: Refuse

SURVEY PRIVACY STATEMENT

[available anywhere there is a link to the Privacy Statement]

The Saskatoon Household Travel Survey team is dedicated to protecting the privacy of its participants.

Collection of information for the survey is being undertaken in accordance with Saskatchewan's *Freedom of Information and Protection of Privacy Act (FOIP)*. The confidentiality of any information collected is protected under the provisions of the Act.

Any information obtained from each household is processed, stored, and used in a form that does not permit any particular household to be identified. Names, addresses, and phone numbers are deleted from the data file at the conclusion of the survey's data collection phase.

Canadian-based research firm R.A. Malatest & Associates Ltd. is conducting the survey data collection under the direction of the City of Saskatoon with the highest standards of the protection of privacy and confidentiality. Click here for a link to the firm's Privacy Policy [URL: http://www.malatest.com/Privacy.htm [LAUNCH IN SEPARATE WINDOW].

For more information, please contact 1-866-229-0208 (toll free) or email **info@saskatoontravelsurvey.ca.**

To contact the City of Saskatoon regarding privacy questions or concerns, please call 306-975-2476.

For more information about this research study please visit **saskatoontravelsurvey.ca.**

HOUSEHOLD INFORMATION

[B1A Web] Please provide a phone number and email that we can reach you at if we need to clarify your responses.

PHONE: Can you please provide a phone number and email address in case one of our staff need to reach you?

Name: [NAME] [optional]
Phone Number: [PHONE NUMBER] [optional] Extension: _____ [optional]
Email: _____[optional]

Your contact information will be kept confidential and will not be shared with anyone. We will contact you only in the event we need to verify your responses. After 12 months, we will delete any contact information you provide on this page.

All fields on this page are optional; you may select Continue to proceed if you do not wish to provide your contact information.

StudentOnCampus

B2A. [IF STUDENT_INVITE=1]
Do you live in a student residence on campus?
1. Yes, I live in an on-campus residence (Voyageur Place, College Quarter, Graduate House, McEown Park)
3. No, I live off campus

[PROGRAMMING: If B2A=1 and HHNUM/B4 >1 OR B3= 5 On campus residence and HHNUM/B4 >1 then display B4B]

StudentResidence

B2B. [IF B3 DWELLING TYPE= ON CAMPUS STUDENT RESIDENCE OR B2A= 1] **Which residence do you live in?**

---Voyageur Place---
Saskatchewan Hall, 91 Campus Drive
Athabasca Hall, 91 Campus Drive
Qu'Appelle Hall, 91 Campus Drive
Qu'Appelle Hall Addition, 91 Campus Drive

--- College Quarter ---
Pine Hall – 1602 Osler Street
Birch Hall – 1612 Osler Street
Spruce Hall – 1611 Aird Street
Aspen Hall – 1601 Aird Street

---Graduate House ---
Graduate House, 1593 Aird Street

---McEown Park---
Seager Wheeler – 103 Cumberland Avenue South
Assiniboine Hall – 101 Cumberland Avenue South
Wollaston Hall – 107 Cumberland Avenue South
Souris Hall – 105 Cumberland Avenue South

77. Other residence not listed
80. I do not live in a student residence [PROGRAMMER: direct back to B2A]

B2. [If address exists in sample file AND street address flag=1 (i.e., address is not a mailing address like a rural route or PO Box]), and (B2A=No or B2A=blank or B2B=77)]
The home address we have for you is listed below. Please verify the address and edit the fields below if necessary. This information is required to identify the location of your trips.

We are interested in the physical address of your home, not your mailing address or unit number. Please review the following address and correct it if necessary.

STREET ADDRESS
CITY / TOWN
POSTAL CODE

Please confirm the address is correct, or edit the fields displayed and select confirm to proceed.

1. Yes, I confirm this address is correct
9. Decline to answer / don't know

B2X. [IF DECLINE TO ANSWER IN B2]
Unfortunately, the survey cannot proceed without an answer to this question. Your participation is very important, and all personal information you provide will be kept strictly confidential. Click here to view our Privacy Statement.

If you are uncomfortable providing us your exact street address and you live in an urban area, you may provide your postal code. If you live in a rural area, please provide your street address, or at least the closest cross-streets.

PHONE: **Rather than terminating the survey, would you reconsider answering this question?**

1. Yes, I will provide my street address [if agree, go back to previous question]
3. I would prefer to report a nearby location by finding my postal code or the closest cross-streets with Google Map [if selected, go back to map address capture page]
2. I will not give my address or a nearby location [If still refuse:] Unfortunately, we cannot continue the survey without this information. Thank you for your time. Have a pleasant day / evening.

HomeLat, HomeLong, etc.
HOME_LOCATION
B2Y. Where do you live?

Please use the buttons below the map to either confirm that the location is correct or to search for the correct location. [Map the address provided using Google Maps]

[If no address in sample or if address flag indicates a mailing address such as PO Box and address page was skipped]: **Please provide the address of your place of residence. This information is required to identify the location of your trips. Please do not provide a rural route or a PO Box.**

[If confirmed address on previous page:] [display confirmed address above Google Map]
WEB: **Does the map correctly show where your home address is located? If not, click "Search again" to search for your correct address? If not, please move the marker to where it is located, or use the Search box to search for your correct address.**

PHONE: CONFIRM WITH RESPONDENT WHAT THE MAP SHOWS: E.g., I am looking at the location on Google Maps. It looks like your home is near the intersection of [STREET] and [STREET]. Is that correct?

OUTSIDE_STUDY_AREA_TERM

[If address location mapped appears to be out of bounds of the study area. For STUDENT_INVITE=1, bounds are Province of Saskatchewan. For all others in TRANSIT_INVITE and main HH sample, bounds of the study area are the city of Saskatoon]

Your household address appears to be outside of the study area.

Please check the location of the marker on the map. If the marker is not precisely where your home is physically located, move the marker, or search again. If the location of the marker is correct, then you live outside of the survey area and we cannot proceed any further in the survey, but we thank you for your participation!

Please contact us at 1-866-229-0208 or info@saskatoontravelsurvey.ca if there has been an error or to confirm if your household should participate in this study, or select previous if you have mapped your household address incorrectly.

PHONE: I will stop the interview here and thank you for your time. Have a good day / evening.

HOUSEHOLD INFORMATION (CONT'D)

DwellingType

B3. ONLINE: **What type of dwelling do you live in?**
PHONE: **What type of dwelling do you live in?**

1. single-detached house
2. apartment or condo

[Mouseover: Any unit with a common outside entrance. Usually has a unit/suite # in the address. Includes condo apartments, duplexes, rooming houses and other multiple units. If condo townhouse, please select 'Townhouse'.]

3. townhouse / row house

[Mouseover: A dwelling unit with a separate outside entrance but as part of a multi-unit building or complex. Often has a street and unit # in the address. Includes row-house, free-hold, and condo townhouse. If condo apartment, please select 'Apartment'.]

4. semi-detached house or a duplex
5. on-campus student residence
8. mobile home
77. other, please specify:_____
99. Decline / don't know

NumberVehicles

B6. **How many licensed motor vehicles (including cars, light trucks, vans and motorcycles) are available to the members of your household, including yourself?**

Include:

- all personal and business vehicles.
- all vehicles provided by employers and which household members use to go to work or for personal use.

Exclude:

- vehicles that are seasonally-licensed.
- vehicles that are not registered.
- vehicles that are registered to an owner in the household but not insured to be on the road.
- vehicles that are inoperable.
- car share vehicles.

___**[1-12]**
77. none
99. decline / don't know

NumVehHybrid, NumVehElectric, NumVehDiesel, NumVehBiodiesel, NumVehUnk

B7A. [if B6 # vehicles=1] *Skip to B7B*
[if B6 # vehicles>1] **Are any of these vehicles hybrid, electric, diesel, or powered by another alternative fuel?** (i.e., an alternative fuel source than gasoline)

1. Yes

2. No [skip to B8]
9. decline / don't know

B7B. [if yes; # vehicles=1] **What type of fuel source does your vehicle use?**
1. Regular gasoline (not a hybrid)
2. A hybrid
4. Plug-in hybrid
5. Electric-only
6. Diesel
7. Biodiesel
8. Other alternative fuel type, please specify: _____
9. Decline / don't know

B7C. [if yes; # vehicles > 1] **How many of the [B6 #] vehicles are…**
(Note: remainder of vehicles are assumed to be gasoline powered)
1. Hybrid? ____
2. Plug-in hybrid____
3. Electric-only? ____
4. Diesel? ____
5. Biodiesel? ____
6. Other alternative fuel type*: ____
9. Decline / don't know

* Other type, please specify: _____
[PROGRAMMER: USE THE SAME "OTHER SPECIFY" FIELD IN BOTH THE SINGLE VEHICLE AND MULTIPLE VEHICLE VARIATIONS OF THE QUESTION]

HaveBikes, NumBikesChild, NumBikesAdult, NumEBikesAdult, NumEmobility

B8. **How many working bicycles, electric bicycles or other e-mobility devices are available to members of your household, including yourself? (Please only record devices that have been used in the last year).**
[INTERVIEWER: prompt for each of the options below]
Children's bicycles: ____
Adult bicycles: ____
Adult e-bicycles – (electric-assist): ____
E-scooter or other electric mobility device (e-skateboard, hoverboard, e-unicycle/mono-wheel, "throttle e-bike" that does not require pedalling): ____
5. None
99. decline / don't know

NumHouseholders

B4. **How many people are currently living in your household, including yourself?**

Include:

- all persons who normally live in the household unit, including babies, children, grandparents.
- children in joint custody if living in your household on your **Travel Day Month XX, 2023.**
- roommates, live-in housekeepers and lodgers who share communal facilities.

Exclude:

- anyone living in a separate apartment within the building.
- persons living elsewhere for more than 1 month (e.g., son or daughter living away at school) and temporary guests living here for less than 1 month.

[If B2A=1 on campus student residence or B3= On campus student residence] If living in a dormitory-style student residence, please enter a 1 below. If you are living in an apartment-style student residence, please count all persons living in this apartment when reporting the number of people in your household.

___ Total # persons in household
(confirm with respondent)
99. decline / don't know [go to B5]

B5. [IF DECLINE TO ANSWER IN B4]
Unfortunately, the survey cannot proceed without an answer to this question. Your participation is very important, and all personal information you provide will be kept strictly confidential. Click here to view our Privacy Statement.
PHONE: **Rather than terminating the survey, would you reconsider providing this information?**
WEB: **Click the Previous button to go back and provide a response, or click End Survey to quit**
[if agree, go back to previous question]
[If still refuse, record as refusal:] Thank you for your time. Have a pleasant day / evening

HouseholdType

B4A. [IF HOUSEHOLD SIZE>1]
Which of the following best describes the relationship among the people in your household?
1. single parent with children
2. couple without children
3. couple with children
4. extended family household (grandparents or other relatives live in household)
5. roommates
6. student living in on-campus residence
8. multiple families
77. other (please specify): _____

Roommates

B4B. [IF B2A= 1 On-campus residence & HHNUM/B4>1 OR B3= 5 On-campus student residence & HHNUM/B4>1]

Will you be able to provide information on the rest of the people in your household (including roommate(s)) and the trips they made on a recent weekday?

1.Yes, I can provide information about the other members of my household (including roommate(s), such as their age, gender, place of work / school, and where they travelled yesterday (or the most recent weekday).
11. Yes, they will fill out their own information in the appropriate sections of this survey.
2. No, I will only be able to provide information about myself and my own travel

The type of information that will be asked will be their age, gender, work and school situation, and where they travelled yesterday (or the most recent weekday). You can fill in the information for them with their consent, or you can have them fill in their sections of the survey themselves. Or, you can complete the survey only about your own travel.

DEMOGRAPHICS INTRO

The next section is about your household's demographics. You will be asked to provide some information about yourself and the other members of your household.

Your responses are entirely confidential. Your personal information will be protected and will not be shared with anyone for any other purpose outside of this survey. Click here to view our Privacy Statement.

If anyone is missing, click the + sign to add another person to the list.

Please fill in the following table with a way of identifying each person. This will make it easier to refer to them in questions later in the survey. You could use a name, nickname, initials, or family relationship ('spouse', 'son #2', 'child 12 years old', etc.). These names or nicknames will be removed from the final data file to preserve your household's anonymity.

Household Member #1 ID: You
[Add fields for other HH members according to # in B4)

[Option for respondent to add more HH members]

+ Add new person

Upon selecting 'Continue,' the information provided thus far will be saved and processed.

[IF ONE PERSON HOUSEHOLD OR B4B=2 NO]
The next section is about your household's demographics.

Please click on the 'begin demographics' link to answer your demographic questions.

If the number of people in the household is not correct, use the Previous button to go back to the question about the number of people in the household.

Upon selecting 'Continue,' the information provided thus far will be saved and processed.

Person #1 ID	Begin Demographics

[once all demographics complete:] To edit your demographic information, please click on the Edit Demographics link in the above table. Once your demographic questions are complete, you can enter your trips.

[IF MORE THAN ONE PERSON]
Please click on the links beside each household member to answer the demographic questions.

If the number of people in the household is not correct, use the Previous button to go back to the question about the number of people in the household.

Upon selecting 'Continue,' the information provided thus far will be saved and processed.

Household Member	Age	Gender	Status	
You	-	-	Complete	Edit
[recall Person #2 ID]	-	-	Begin Demographics	
[recall Person #3 ID]	-	-	Begin Demographics	
Etc.				

1 record complete out of 3

Click 'Begin Demographics' to start entering demographics for each person.

[Once completed for all household members, display the following instructions:]

The demographics section of the survey is now complete. You can use the Edit links to update/edit your previously entered responses, or click Continue to start entering information about your trips.

Before proceeding, please ensure that all information provided is accurate.

Upon selecting 'Continue,' the information provided up to this point will be saved and processed.

DEMOGRAPHICS – GENDER, AGE, LICENCE, ETC.

Age

C2. **What is [your/PERSON's] age?**

___[0-98]

99. 99 and over

9. decline / don't know

[If PERSON # >=2:] If younger than 1 year of age, please enter 0.

Gender

C1. **What is [your/PERSON's] gender?**

Refers to current gender which may be different from sex assigned at birth and may be different from what is indicated on legal documents.

[INTERVIEWER: do not ask unless necessary – record only]

1. male
2. female
3. non-binary
4. prefer to self-describe: _____
9. prefer not to say

AgeGroupOriginal

C2A. [If decline to answer:] **What age group do [you/PERSON] belong to?**
(INTERVIEWER: Read the age ranges, starting at a relevant one)

1: 0-4 years
2: 5-9
3: 10-15
4: 16-19
5: 20-24
6: 25-29
7: 30-34
8: 35-39
9: 40-44
10: 45-49
11: 50-54
12: 55-59
13: 60-64
14: 65-69
15: 70-74
16: 75-79
17: 80-84
18: 85-89
19: 90-94
20: over 95 years of age
99: Decline to answer

[NOTE: Age categories to coordinate with general stages of schooling and life, and with survey trip capture cut-off age of 5+. Including this follow up question if C2 was refused allows us to at least capture an age range. Within that range, the age will be randomly assigned within certain limits (e.g., if 16-19, random assignment of age will also be guided by whether enrolled in school and type of school enrolled in).]

AgeGroupCollapsed

C2B. [if 99 to C2A]

Unfortunately, the survey cannot proceed without an answer to this question. Demographic information such as age is crucial to transportation research.

Your participation is very important, and all personal information you provide will be kept strictly confidential. Click here to view our Privacy Statement.

PHONE: **Rather than terminating the survey, would you reconsider answering this question?**

If you are uncomfortable providing us [your / PERSON's] exact age, please select from the ranges below to continue the survey.

INTERVIEWER: Go back to previous question if precise range given or select from broad ranges below

1. 0 – 4 years (infant or toddler, trips will not be captured)
2. 5 – 15 years (child or youth not eligible for driver's license)
3. 16-19 years (youth eligible for driver's licence)
4. 20-29 years
5. 30-49 years
6. 50-64 years
7. 65+ years of age

[If still refuse:] Unfortunately, the survey cannot proceed without this information. Thank you for your time. Have a pleasant day / evening.
[WEB: Closer your browser window to end the survey]

C2C. [if (PERSON #1<16 IN C2 or PERSON#1=C2A age range<3 or PERSON#1=C2B age range <3)
[Cul-de-sac page with only Previous and End Survey buttons]

[if # of people in household=1]: **You indicated that only one person lives in your household, and that you are [AGE years or AGE RANGE] old.**

[All]: **This survey must be completed by someone 16 years of age or older who is familiar with your household's weekday travel.**

[if # of people in household=1]: **If you are 16 years of age or older, click the Previous button to change your answer.**

[if # of people in household>1]: **If you are 16 years of age or older, click the Previous button to change your answer. Please fill in the information for Person #1 identified as "You" with your own information.**

If you are under the age of 16, please have a member of your household who is 16 years of age or older fill out the survey.

DriversLicense

C3. [if age >= 16, or C2A>=4 or C2B >=3]
[Do you/Does PERSON] have a valid driver's licence?
[mouseover for valid driver's licence: This includes any category of motor vehicle license, including a temporary learner's permit. Answer 'No' if the licence has expired and has not been renewed or if it has been suspended.]
1. Yes
2. No
99. decline / don't know

C3B. if 5+ years of age (C2>=5 or C2A>=2 or C2B>=2)]
[Do you/does PERSON] have a monthly or annual transit pass (GoPass)?
A transit pass is a product that allows unlimited travel for a month or a year. Do not take tickets, cash fares, or weekly passes into account.
1. Yes
2. No
99. Decline / don't know

TransitPast7Days

E7AA. if 5+ years of age (C2>=5 or C2A>=2 or C2B>=2)]
Out of the past 7 days, how many days did [you/PERSON] use public transit?
___ day(s) [0-7]
2. [I have/PERSON has] not used public transit within the past 7 days
9. decline / don't know

AttendSchool, OccEmployed, Etc.

C4. [If age 5+]
Which of the following apply to [you/PERSON]? Select all that apply.
PHONE:
[If 15+years:] INTERVIEWER: ASK ABOUT BOTH EMPLOYMENT STATUS AND STUDENT STATUS
[Are you/Is PERSON] currently working (i.e., an employee or self-employed)? Is that full-time or part-time?
[Do you/does PERSON] currently attend school or another educational institution? (K-12 or post-secondary) Is that full-time or part-time?
1. Work full-time (30 or more hours per week) [only display if age 12+]
2. Work part-time (less than 30 hours per week) [only display if age 12+]
3. Student full-time
4. Student part-time
5. Unemployed [display only if age 15+]
6. Retired [only display if age 40 +]
7. Stay-at-home parent or caregiver [only display if age 16+]
8. Self-employed [only display if age 12+]
9. Volunteer only (not for pay)
77. Other, specify: _____

[PROGRAMMING NOTE: cannot select 'unemployed' if work full-time or part-time]

DEMOGRAPHICS – SCHOOL DETAILS

FTWorkFTSchool

C4X. [if respondent indicated both f/t student and f/t worker, provide confirmation message:]
From your answers, it appears that [you attend/PERSON attends] school full-time and also [work/works] full-time (more than 30 hours per week at [your/PERSON's] main job).

Is this correct?

1. Yes, attend **school full-time** and **work full-time** (more than 30 hours/week)
2. No, attend **school part-time** and **work full-time** (more than 30 hours/week)
3. No, attend **school full-time** and **work part-time** (less than 30 hours/week)
4. Unsure

SchoolType

C4A. [if student and STUDENT_INVITE is empty]

What kind of school [do you/does PERSON] attend?

1. Pre-school [display if age ≤ 4]
2. Elementary school (Kindergarten to Grade 8) [display if age >= 5 & age<=13]
3. High school (Grade 9 to 12) [display if age ≥ 14]
5. College or university [display if age ≥ 18]
6. Alternate, adult basic education, or other [display if age ≥ 18]
7. Online / distance learning only, please specify level (high school, college, university, adult basic education: [if selected- show dropdown menu: _____) [display if age ≥ 14]
8. Decline / don't know

SchoolName

C4B. [if student and STUDENT_INVITE is empty]

What is the name of [your/PERSON'S] school?

(you can choose from suggestions that appear as you type, or, if none of the suggestions applies, you can type the name exactly as you know it)

[display if C4A=5, 6] For all University of Saskatchewan students, please use the single University of Saskatchewan option below. If [you/PERSON] attend[s] more than one campus of a university or college, please enter the campus you attend most often.

2. University of Saskatchewan [display if C4A>2]
1. School Name: _____ [Auto-suggest as you type]
8. Home schooled

[List of K-12 schools in study area provided by client, supplemented with public post-secondary, and larger private post-secondary]

[Include street address and municipality in description of school location]

QSCHOOL_TYPE

C4BB. [if C4B ≠ not home schooled]

Do [you/PERSON] travel to school to attend classes, are [your/PERSON] classes online only, or a mixture of both?

1. Travel to school to attend classes in person
2. Attend school online only / home-based or virtual learning **only**
3. Mix of in-person and online classes

SaskatchewanCampus

C4B1. [If Student_invite=1 & C4BB=1 or 3]

Which campus do [you/ does PERSON] attend?

1. Saskatoon Campus (Main Campus)
2. Prince Albert Campus
3. Regina Campus
3. Other, please specify: _____

[Note: while those attending Prince Albert and Regina campus are not expected to be included in the student invitations, this question is still included as a failsafe. Those indicating Prince Albert or Regina campus may be removed from the final dataset if they report a home address outside the city of Saskatoon.]

SchoolLevel

C4C. [If C4A= 5 or C4B= 1 or Auto-complete name is for University of Saskatchewan or STUDENT_INVITE=1]

What type of program area [are you/is PERSON] in?

1. University undergraduate (bachelor's degree)
2. Graduate degree (master's, doctoral, graduate diploma)
3. College diploma
4. Trades apprenticeship
5. Certificate program
6. Continuing education
7. Adult Basic Education
8. Other, specify: _____
9. Decline / don't know

C4C2. [If C4C=1 or 3 or 4 or 5, undergrad, college diploma or certificate, or apprenticeship]

What year of [your/PERSON's] program area [you/PERSON] currently enrolled in?

1. First
2. Second
3. Third
4. Fourth
5. Fifth
6. Other, specify: _____
9. Decline / don't know

SchoolAddress, SchoolLat, SchoolLong, etc.

C4D. [skip location capture if C4A SchoolType = 7 online/distance education]

[If not in list] **What is the location of the school?**

[If in list in C4B, map location:] **Does this location appear to be correct?** (If it is not correct, please drag the marker on the map, double-click, or use the search bar to find the correct location)

LOCATION CAPTURE [SCHOOL CO-ORDINATES]

QSCHOOL_TELECOMMUTE

C4E. [if attend a school (i.e., not home schooled) AND (C4BB school type = 2 (online only) OR 3 (mix in-person/online))]

In the last week, on which weekdays did [you/PERSON] attend classes online rather than travelling to school? Select all that apply.

1. Monday
2. Tuesday
3. Wednesday
4. Thursday
5. Friday
77. Did not attend any classes online in the last week [PROGRAMMER: mutually exclusive to 1 through 5]
88. Don't know

QSCHOOL_COMMUTE

C4EE. [if attend a school (i.e., not home schooled) AND (did not indicate that they attend school online only i.e., C4BB school type = 1 (travel to attend in person) OR =3 (mix in-person/online))]

In the last week, on which weekdays did [you/PERSON] travel to school? Select all that apply

1. Monday
2. Tuesday
3. Wednesday
4. Thursday
5. Friday
77. Did not travel to school in the last week [PROGRAMMER: mutually exclusive to 1 through 5]
88. Don't know

PermanentResidence

C4F. [If C4B=2 or Auto-complete name is for the University of Saskatchewan or STUDENT_INVITE=1]

[if B2A= 1 Yes, live on campus student residence or B3 dwelling type=5 on-campus student residence:]

Do [you/PERSON] have a permanent residence when you are not living in student residence?

[If B2A=No, I do not live in student residence And B3 dwelling type<>5]

When not enrolled in school, do [you/PERSON] have a permanent residence other than your current residence?

1. Yes
2. No

Permanent City

C4G. [If C4F=1]

Where is [your/PERSON's] permanent residence located?

1. City of Saskatoon
2. A community located outside the city of Saskatoon

April2023, April2024

C4H. [If STUDENT_INVITE=1]

[Were you/Was PERSON] living in the city of Saskatoon in May of 2023?

1. Yes
2. No

[Do you/Does PERSON] expect to be living in the city of Saskatoon in May of 2024?

1. Yes
2. No

[Note: questions C4F to C4H used to establish whether or not students would be counted as residents of Saskatoon in a Census year.]

DEMOGRAPHICS – WORK DETAILS

WorkAddress, WorkLat, WorkLong, etc.

C6A. [if employed, C4 = 1(f/t) or 2(p/t) or 9(self-employed)]

What is the nature of [your/PERSON's] main occupation?

PHONE: If necessary, read category headings but do not read further detail unless needed

We are interested in the type of occupation, not the industry. For example, if you are an Accountant you would choose "Professionals in business, finance, and natural and applied science", regardless of whether you work in education, health, or another industry sector.

1. Professional in business, finance, natural and applied sciences
2. Professional in health care, education, law, community or social services, art, culture, recreation, and sports occupations
3. Management
4. Technical and Paraprofessional
5. Administration and administrative support
6. Sales
7. Personal service or customer information service
8. Industrial, construction, or equipment operation trade
9. Worker or labourer in transport and construction
10. Natural resources, agriculture and related production operation occupations
11. Occupations in manufacturing and utilities
80. Other, please specify: _____
99. Don't know

Mouseovers:

1. Professional in business, finance, natural and applied sciences

Jobs that usually require a specialized education (for example a university degree or certification in a particular field), such as engineers, biologists, meteorologists, architects, urban planners, computer and information system professionals, web designers, software programmers, auditors, accountants, actuaries, HR professionals, investment brokers, marketing consultants, public relations officers, business management consultants, and other professional business occupations

2. Professional in health care, education, law, community or social services, art, culture, recreation, and sports occupations

Jobs that usually require a specialized education (for example a university degree or certification in a particular field) in the sector noted, such as doctors, dentists, therapists, judges, lawyers, K-12 teachers, university professors, college and vocational instructors, religious professionals, librarians, social workers, police investigators and probation officers, education and employment counsellors, economic development officers; and policy and program researchers, consultants and officers

3. Management

Jobs that involve a substantial level of management responsibility. If being a supervisor is the main function, but not involved in setting policy or key management decisions, then consider whether another category might better apply.

4. Technical and Paraprofessional

Technologists and technicians, computer network technicians, user support technicians, laboratory assistants, dental hygenists, product inspectors and testers, construction estimators and inspectors, land surveyors, air traffic controllers, flight engineers, railway traffic controllers, horticultural technicians, paralegals, social and community service workers, early childhood educators and assistants, athletes, coaches, photographers, graphics arts technicians, etc.

5. Administration and administrative support

Clerical and office support occupations, logistics coordinators, schedulers, receptionists, data entry clerks, library clerks, personnel clerks, court clerks, etc. Usually work in an office environment but not professional, management, or technical/paraprofessional

6. Sales

People involved in selling goods and services, whether retail or wholesale, including sales supervisors, sales representatives, cashiers, customer service representatives, service station attendants, store shelf stockers, telemarketers

7. Personal service or customer information service

Workers who provide personal service, customer service, or other services, in restaurants, banks, insurance companies, repair centres, gyms, fitness centres, and entertainment facilities. Also includes health assistance occupations, cleaners, janitors, and caretakers, food counter attendants, kitchen helpers. If employed in a purely administrative capacity, choose administration and administrative support.

8. Industrial, construction, or equipment operation trade

Carpenters, electricians, plumbers, gas fitters, tilesetters, drywall installers and finishers, concrete finishers, roofers, insulators, painters, flooring installers, machinists, welders, equipment mechanics, auto service technicians, trades contractors and supervisors, heavy equipment operators, crane operators, public works maintenance equipment operator, etc.

9. Worker or labourer in transport and construction

Transport truck drivers, bus drivers, taxi drivers, couriers, delivery persons, construction workers other than trades workers, warehouse workers, trades helper, window installer, swamper, road maintenance worker, etc. If the job does not include some degree of physical labour, consider whether another category fits. Transportation logistics coordinators belong in administration and administrative support

10. Natural resources, agriculture and related production operation occupations

Farm workers, landscaping and grounds maintenance labourers, aquaculture workers, forestry workers, mine workers, quarry workers, oil & gas drilling/servicing workers, related labourers and their supervisors

11. Occupations in manufacturing and utilities

Factory workers, machining tool operators, machine operators, fabricators, assemblers, manufacturing testers and graders, workers in food and beverage processing, packagers

C6B. [if employed]

Do [you/PERSON] have a usual place of work outside the home?

This is the worksite that [you/PERSON] normally commute[s] to, even if [you/PERSON] sometimes work from home.

Please only select 'work exclusively from home' as your response if you do not work at any other locations. If there is an office, business or other work location outside the home that is available for you to work at, please select 'workplace away from home' and use Google maps on the next page to map your work location.

6. Workplace away from home that [you/PERSON] travels to regularly or occasionally as part of a hybrid scheme (use Google Map on the next page to map your usual workplace)
3. No fixed workplace address / no usual place of work / work on the road / work site changes daily
1. Work exclusively from home (and do not have a workplace [you/PERSON] would usually travel to)
99. decline / don't know

Mouseover on "workplace away from home": A permanent workplace location outside the home that you travel to for work, whether you go there frequently or only occasionally.

Mouseover on "No fixed workplace address": If you regularly work outside the home but do not travel to the same worksite every day, please select "No fixed workplace address". Do not use this option if you work from home all of the time. Do not use this option if you have a fixed workplace address, terminal, or base outside the home that you start or end your day at.

What is the address or location of your usual place of work (main job)?
(This is the address of the worksite that you normally commute to, whether regularly or occasionally)

To search for an address, start typing in the searchbox, or double-click on the map.

MOUSEOVER ON "regularly or occasionally": Even if you are currently working from home some weekdays, identify the worksite you would normally commute to.

If [you/PERSON] traveled to work and worked from home/telecommuted on the same day, you can select the same day of the week for both questions.

C6C. [if work at a usual workplace outside the home (i.e., exclude those who work exclusively from home and those with no fixed workplace address)]

In the last week, on which weekdays did [you/PERSON] work from home/telecommute rather than travel to [your/PERSON's] usual workplace? Select all that apply

1. Monday
2. Tuesday
3. Wednesday
4. Thursday
5. Friday

77. Did not work from home at all in the last week [PROGRAMMER: mutually exclusive to 1 through 5]
88. Don't know

C6D. [if work at a usual workplace outside the home or if have no fixed workplace address (i.e., exclude those who work exclusively from home)]
In the last week, on which weekdays did [you/PERSON] travel to work or travel for work-related purposes? Select all that apply

1. Monday
2. Tuesday
3. Wednesday
4. Thursday
5. Friday

77. Did not travel to work or for work purposes in the last week [PROGRAMMER: mutually exclusive to 1 through 5]
88. Don't know

[Cycle through above questions for as many people in household as were indicated. Some questions may not be applicable for children under the age of 5 for whom we will not ask about trips]

TRIPS INTRODUCTION

D1. [Begin with primary respondent, section is tailored as appropriately for subsequent respondents]
This section consists of questions about the trips taken by the members of your household **during a single <u>weekday</u>** (your Travel Day).

In order to ensure the most accurate recollection of your travel, please use [yesterday/TRAVELDAY] as your Travel Day.

Please report any trips made during the 24-hour period between 4:00 AM [TRAVEL DAY] and 3:59 AM [TRAVEL DAY +1], whether for work, school, shopping or any other purpose.

This section will have a series of questions for each separate trip. [if any member of the household is under the age of 5, i.e., C2<5 or C2A=1 or C2B=1:] We will only ask for trip details for children 5 years of age or older.
[CYCLE THROUGH TRIPS SECTION FOR ALL HOUSEHOLDERS >= age 5]

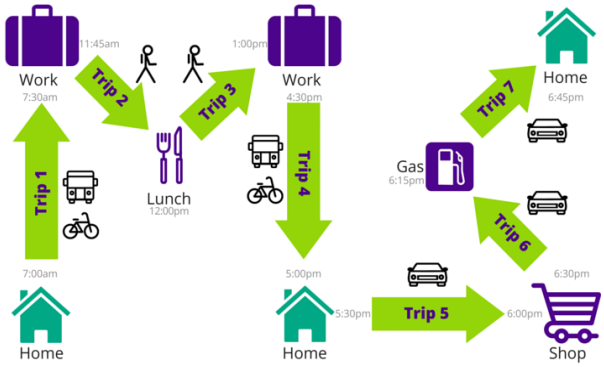
What is a trip? A trip is a one-way journey from one location to a destination for a single purpose. A trip may include more than one mode of travel, such as car and transit.

How to report trips

- It is important to report **all trips**, even for a short distance, on foot for instance.
- If you stopped off on your way to somewhere else, such as to drop off a child at school or pick up a coffee, then that journey would have two trips. The return portion of a journey is also considered a separate trip.
- Report all trips, whether made by walking, car, truck, bicycle, transit or any other mode of travel.
- If you used two modes of transportation to travel to your destination, please select the one you used to travel the longest distance. For example, if you go to work by cycling 10 minutes to the train station and then take the train for 30 minutes, list the train as your main mode of transportation.
- The return portion of a journey is considered a separate trip.
- Report any picking up or dropping off of a passenger as a separate trip. For example, if you drop someone off at their school on your way to work, report the school you dropped them off at, with a purpose of 'drop off a passenger'; The next trip you report will be from their school to your workplace, with a purpose of 'work'.
- [if person is employed:] <u>Report</u> your trips for business meetings and work-related purposes.
- For trips requiring air travel, please treat the trip to or from the airport as a separate trip from the trip on the airplane.

Do not report

- Do not report stops along the way if they are incidental to the main trip purpose, such as buying gas or getting a drive-through coffee on the way to work, unless they involve a significant detour or time delay (i.e. more than 15 minutes).
- Do not report walking the dog with no destination. (However, report the trip if you walk the dog to a specific destination at which you will spend more than 15 minutes, such as a park.)
- Do not report going for a jog in the neighbourhood with no destination. (However, if you jog to work, please report jogging to work as a trip to work).
- Do not report moving around between classes on campus or within the same building complex.



How precise do locations need to be? We will ask you where you travelled to. Please try to describe locations as precisely as possible, to the accuracy of street address. Use the Google Map provided to search for a specific business or place, or double click on the map to set a 'pushpin' marker. You can drag the marker to the exact location. If possible, try to avoid placing markers at intersections – drag them to the actual destination you travelled to.
[if person is employed:]

If [you are/PERSON is] a commercial driver (bus driver, taxi driver, courier, traveling salesperson): You do not have to tell us about the all the work trips [you/PERSON] made for commercial deliveries, or while driving a taxi or bus. But please report the following:

- Your first trip to where you started your work day (terminal, office) or your first delivery or stopping point if you started your delivery/work schedule directly from home.
- Your final work-related stopping point if it is different from the one above.
- A return trip to your home or other non-work related location at the end of your work day.
- All personal trips by any mode of travel.

(INTERVIEWER: If the person was out of town yesterday, we can capture their travel if it passed through or ended up in the Saskatoon area).

[CYCLE THROUGH TRIP SECTION FOR PRIMARY RESPONDENT]
[NEXT, CYCLE THROUGH INTRODUCTION AND TRIP FOR EACH HOUSEHOLD MEMBER]

TRIP CAPTURE – START OF TRAVEL DAY

QSTART_HOME

E1. Did [your/PERSON] first trip start from home [Travel Day]?

(If SchoolType=college or university or STUDENT_INVITE=1: **Do report trips to or from school campuses or any trips made off-campus. Do not report trips moving around between classes on the same campus or within the same building complex.**

1. Yes, my first trip started from home
7. No, my first trip started somewhere else
2. I did not take any trips [Travel Day]

WhyNoTrips

E1X. [If E1=3 (no trips):]
Why did [you/PERSON] not leave home or make any trips [yesterday/TRAVEL DAY]?
1. Out of town for entire day
2. Sick/ill or care for other sick/ill household member
3. Not scheduled for school classes or activities
4. Not scheduled for work or on extended leave from work (paternity/maternity, short-term disability)
5. Worked from home, and did not leave home for any reason
6. No need to leave home
7. Could not leave home, no transportation available
8. [if B2A= 1 or B3 dwelling type=5 on-campus:] I did not leave campus all day.
9. Attended class remotely from home, and did not leave home for any reason
77. Other (specify): _____
100. **Actually, [I/PERSON] did leave home to go to work or school or to make at least one other kind of trip** [GO BACK TO E1]

WhyNoWork1

E1X1. [if employed=P/t, F/t and self-employed AND (E1X=2, 3 or 6 or 7 or 8, 9 or 77), regardless of whether work from home or not]
You did not report [going to work / that [PERSON] went to work] [yesterday/on TRAVEL DAY].
Were [you/PERSON] working at home?
8. [if B2A= 1 or B3 dwelling type=5 on-campus student residence :] No, worked on the same campus where I live, so did not have off-campus trips.
1. Yes, I **worked from home/telecommuted**
2. Away on business / working on the road
3. Did not work
4. Actually [I/PERSON] worked and did take work-related trips
77. Other, specify: _____

E1X2. [if E1X1=1 actually did make work trips)]
Please report [your/PERSON's] trips to and from work, or for work-related purposes, whether [you/PERSON] walked or used another mode of travel.
[PROCEED TO E4]

WhyNoSchool1

E1X3. [if a student AND (E1X=4 or 5 or 6 or 7 or 8 or 77), regardless of whether home-schooled or not]
You did not report [going to school / that PERSON went to school]. Did [you/PERSON] attend school [yesterday/on TRAVELDAY]?
8. [if B2A= 1 or B3 dwelling type=5 on-campus student residence :] Yes, attended classes on the same campus where I live, so did not report trips.
5. [I/PERSON] started the travel day at school, and did not make any other trips to school
1. Attended school from home (home schooled, distance learning)
2. No, did not have any scheduled classes, stayed home sick, or did not attend school for another reason
3. No, away on a field trip or other travel
4. Yes, [I/PERSON] did travel to school
77. Other, specify: _____

E1X4. [if E1X3=4 Yes, did go to school]
Please report [your/PERSON's] trips to and from school, or for school related purposes, whether [you/PERSON] walked or used another mode of travel.
[PROCEED TO E4]

OriginLat, OriginLon, etc.

E4. **Did [your/PERSON's] first trip start from home?**
1. Yes, [my/PERSON's] first trip started from home
2. No, [my/PERSON's] first trip started somewhere else

OriginNotHomeReason

E4A. [If E4 <> home]
You mentioned that [your/person's] first trip of the day started at a location other than your home. Is it that [you were/PERSON was]…?
1. Working a night shift (past 4 am, the start of the travel day)
2. Staying overnight at another household within the Saskatoon area? (friend's, relative's, parent's, etc.)
3. Away from home on business, vacation, or other personal travel outside the Saskatoon area?
5. Another reason, please specify: _____

E4B. [if E4A=3, 4 (away on business or vacation travel)]

You mentioned that [you/PERSON] started the travel day away from home because [you were/PERSON was] away on business or vacation travel. Did you travel back to the city of Saskatoon between 3:59 a.m. [yesterday/TRAVEL DAY] and 4:00 a.m. [today/TRAVELDAY +1]?
1. Yes
2. No
[Programmer: Include pop-up modal window on click city of Saskatoon region, with map of the study area]

E4X. [If E4B=no]
You said that [you were/PERSON was] away the entire day due to business or vacation. Since [you/PERSON] did not return to the survey area, you do not have to enter trips for this day.

If [you/PERSON] did return, please click the Previous button below to change your answer to Yes, and then please report on your travel for the day.

[PROGRAMMING NOTE: if E4B=no, conclude trip capture and log person as "No trips" in (should be reflected in person table in household overview)]

E4C. [If E4=another location and (E4B=yes or E4A=1,2,or 5)]
What was the starting point of your first trip [yesterday/TRAVEL DAY]?
LOCATION CAPTURE [ORIGIN CO-ORDINATES]

[PROGRAMMER: if first trip and E1=1 Yes started from home, then automatically populate first trip origin with home location and skip this question. For subsequent trips, trip origin is by default the destination of the previous trip.]

TRIP CAPTURE – LOCATION, TIME, PURPOSE, MODES

DestLat, DestLong, etc.

E5. [if trip=1 and started from home:] **Where did [you/PERSON] go first?**
[if trip=1 and started from other than home:] **Where did [you/PERSON] go from there?**
[if trip>1:] **Where did you go next?**
(Note: For trips requiring air, train, or intercity bus travel to another region outside the city of Saskatoon: please treat the trip to the airport, train station, or bus depot as a separate trip from the trip on the airplane, train, or intercity bus.)

[If workplace is a usual fixed workplace outside the home and last trip was to usual work:]

LOCATION CAPTURE [DESTINATION CO-ORDINATES / TAZ]
[WORK LOCATIONS AND SCHOOL LOCATIONS FOR ALL HOUSEHOLD MEMBERS ARE INCLUDED IN LIST OF KNOWN LOCATIONS]

PHONE: If needed: "Could you tell me the name of the place, address or street intersection?

Depart

E2. **At what time did [you/PERSON] leave on this trip?**

Please enter a time between 3:59 a.m. the previous day [TRAVELDAY] and 4:00 a.m. [TRAVELDAY+1]

Time: [Dropdown with hours and AM/PM] Minutes: _____ [0-59]

Please provide your best guess if you cannot give the exact time.

TIME VALIDATION

E2B. [If this trip's depart time < depart time of previous trip, then display warning]

The time you entered for this trip (DEPART TIME FOR CURRENT TRIP) is prior to the time you entered in your previous trip (DEPART TIME FOR PREVIOUS TRIP). Please select "Previous" to go back and correct the time of this trip, or select "Continue" to leave this trip time out of sequence with your previous trip.

Purpose

[if destination selected above = home, assume purpose is RETURN HOME and do not ask this question]

E3. **What was the main purpose of this trip?**

10. Going to work (usual place of work)
11. Business meeting or work-related (other than usual place of work)
    mouseover: Trips to attend meetings, and for other work-related purposes. If job hunting or volunteering, please select 'Other'.]
12. Working on the road / itinerant workplace / no fixed work address
20. Attend Post-Secondary School (university, college, private post-secondary)
30. Attend School (K-12)
    [mouseover: Trips made for the purpose of attending school. If driving someone to/from school, select 'Pick up a passenger' or 'drop off a passenger'. If parent attending parent-teacher meeting, select 'Other'. If work at the school, select Work.]
40. Picking up a package or online purchase (from a store or pick-up locker)
    [mouseover: Picking up a package or groceries ordered online or over the phone from a store (but not doing other shopping there) or picking up a package from Canada Post, a UPS/Fedex outlet, an Amazon Locker, Penguin PickUp, or other pickup location away from home to which the goods were delivered.
    Do not include take out orders from restaurants. Select "Restaurant bar or coffee" if you picked up a takeout order.
    Select "Shopping" if you did other in-person shopping on the same visit when picking up the package from the store.]
41. Shopping or household maintenance (groceries, gas station, bank, mechanic, lawyer, vet, etc.)
43. Health and personal care [mouseover: Doctor, dentist, chiropractor, massage therapist, barber, hairdresser, aesthetician, etc. If the traveller's trip is to take someone else to their health and personal care appointment, choose "drop someone off"]
44. Restaurant, bar or coffee (including take-out or drive-through)

45. Social (visiting friends, family, religious gathering)
46. Recreation, sports, leisure, arts, or other recreational activities
51. Pick someone up (e.g., pick up child at school or daycare, pick up someone at work, etc)
52. Drop someone off (e.g., drop off child at school or daycare, drop off someone at work, etc)

80. RETURN HOME ([recall address]) [DO NOT DISPLAY IF (LOCATION SELECTED IS 'USUAL WORK') OR IF ((ORIGIN IS HOME AND DESTINATION IS NOT HOME)) OR IF (ORIGIN IS WORK AND USUAL WORK = HOME)]

888. Other, please specify: _____

E5B. [Include probes to clarify if trip purpose = RETURN HOME but did not select home as destination]

E5C. [Include probes to clarify if trip purpose <> RETURN HOME but select destination=home]

Mode1, Mode2, Mode3, Mode4, Mode5

E7. **How did [you/PERSON] get there? Please select up to 5 modes, in order of use.**

INTERVIEWER: If Transit bus in first mode, probe: how did you get to the bus stop?
If only one mode, prompt: did you use another mode of transportation?
If answer of "carpooling": was that as a passenger or as a driver?
What was your first mode of transportation?

1. **Auto driver**
2. **Auto passenger**
3. **Transit** (Saskatoon Transit)
4. **School bus**
11. **Access Transit**
12. **Work/campus shuttle bus**
5. **Bicycle (incl. pedal-assist e-bikes)**
6. **E-scooter or other electric mobility device** (e-skateboard, hoverboard, e-unicycle/mono-wheel, "throttle e-bike" that does not require pedalling)
7. **Walked** (include trips made by rolling via wheelchair, assisted mobility device, skateboard, kick-scooter, roller-blading, or running.)
8. **Motorcycle, moped, motor-scooter**
9. **Taxi or limousine**
10. **Paid rideshare / non-traditional taxi** (via Uber, Lyft, or other paid rideshare app)
14. **Intercity Bus**
15. **Hotel Shuttle Bus**
77. **Other, please specify:** _____

[mouseover on other, please specify: If your main mode of travel is not on this list, use this category to record the other mode of travel. If you used more than one travel mode on the list, you do not need to tell us about all of the modes, just select the main one from the list.]

99. **Decline / don't know**

[note: response numbering is not in sequence as it matches how modes are already numbered in the underlying programming template]

TRIP CAPTURE – TRANSIT

TransitAccessModeCheck

E7A. [if first mode recorded was 3. transit bus]
How did [you/PERSON] get to the bus stop?
19. Bus stop was right in front of my origin (the starting point of the trip: [previous destination])
[+ Same list of modes as above excluding public transit]

TransitEgressModeCheck

E7B. [If last of the modes recorded was 3. transit bus (last mode could be in any of Mode 2-5)]
How did [you/PERSON] get from the bus stop to your final destination ([destination of this trip])? Or did the bus drop you off right in front of your destination?
19. Bus stop was right at my destination ([recall current destination])
[+ Same list of modes as above excluding public transit]

BusRoutes

E7C. [If answer to E7 is public transit other than regular school bus]
Which transit routes did [you/PERSON] take on this trip? (from [ORIGIN] to [DESTINATION]).
Please list all routes taken. List each route in the order that [you/PERSON] took them.
Bus 1: ___
Bus 2: ___
Bus 3: ___
Bus 4: ___
Bus 5: ___

TRIP CAPTURE – AUTO DRIVER OR PASSENGER

DriverNoLicense

E19A. [if (E7 mode or E7A or E7B = auto driver OR motorcycle) AND not licensed to drive]
[if auto driver:] **You reported that [you were/PERSON was] an automobile driver for this trip; however, you previously indicated that [you do/PERSON does] not have a driver's license. Which of the following best applies…?**
[if motorcycle:] **You reported that [you were/PERSON was] traveled by motorcycle on this trip; however, you previously indicated that [you do/PERSON does] not have a driver's license. Which of the following best applies…?**
1. [YOU actually have/Person actually has] a driver's license
2. [YOU were/Person was] a [if motorcycle: motorcycle] passenger, not the driver
7. Other, please specify: _____

9. Decline / don't know

DriverNoHhVehicles

E19B. [If (E7 mode or E7A or E7B = auto driver OR motorcycle) AND no vehicles available to the household (B6=0)]
You reported that [YOU were/PERSON was] an automobile driver for this trip; however, you previously indicated that your household has no vehicles available for your use. Which of the following applies…?
1. I drove a work vehicle, rental, or borrowed vehicle
2. I drove a car share vehicle
3. My household actually has vehicles. Please specify how many: _____
6. No, [I/PERSON] was a actually a passenger, not the driver
9. Decline / don't know

VehicleOccupants

E10. [if E7 mode or E7A or E7B = automobile driver OR auto passenger (look at answers of all of main mode question and of access and egress mode questions)
How many people were in the car, including [yourself/PERSON]?
1. 1
2. 2
3. 3
4. 4
5. 5
6. 6
7. 7 or more
9. Don't know

TRIP CAPTURE – OTHER STOPS

[Note: answers in this section will be used to split original trip record reported into multiple trip records, but will not be included in the final dataset.]

OtherStop

E50. [ask this question if Age>14 and {(Origin=Home and Destination=any householder's work or school) OR (Origin= any householder's work or school and Destination=Home)}. Intent is to capture missed incidental trips during commute trips without forcing respondent to go back and correct previous info.]
In [your/PERSON's] trip from [ORIGIN] to [DESTINATION], did [you/PERSON] make any other stops along the way? (stopped for gas, went through drive-through, picked someone up, or dropped someone off)
1. Yes
2. No

OtherStopLat, OtherStopLong, etc.

E50B. [If E50=Yes]
Where did [you/PERSON] stop?
LOCATION CATPURE

OtherStopPurpose

E50C. [If E50=Yes]
Why did [you/PERSON] stop there?
[Repeat list of trip purposes]

OtherStopPickup

E50D. [If E50=Yes and E50C = picked someone up and Mode=Driver]
How many people did [you/PERSON] pick up there?
___

OtherStopDropoff

E50E. [If E50=Yes and E50C = dropped someone off and Mode=Driver]
How many people did [you/PERSON] drop off there?
___

OtherStopArrive

E50F. **What time did [you/PERSON] arrive at [location in E50B]?**
Please enter a time between 3:59 a.m. the previous day [TRAVELDAY] and 4:00 a.m. [TRAVELDAY+1]
Time: [Dropdown with hours and AM/PM] Minutes: _____ [0-59]

OtherStopDepart

E50F. **What time did [you/PERSON] leave [location in E50B] to go to [E5 DESTINATION]?**
Please enter a time between 3:59 a.m. the previous day [TRAVELDAY] and 4:00 a.m. [TRAVELDAY+1]
Time: [Dropdown with hours and AM/PM] Minutes: _____ [0-59]

TRIP CAPTURE – OTHER INFORMATION

TripNotes

E11N.

PHONE: INTERVIEWER: If there is anything unusual about a trip (e.g., round trip from home to home) or the individual trip chains, or if useful information, please make notes here, otherwise proceed to next question without delay. Use only when necessary.

WEB: Is there any additional information you would like to provide about this trip (e.g. clarification of location, purpose, etc.)?

_____

For assistance, please contact 1-866-229-0208 or email us at info@saskatoontravelsurvey.ca.

OtherTrip

E12. **Prompt: Did [you/PERSON] make another trip after that?**

1. Yes
2. No

TRIP CAPTURE – END OF TRAVEL DAY

NotReturnHome

E13. [if E12 = No AND (destination <> home OR trip purpose <> home)
From your answers, it appears [you/PERSON] did not return home.
Just to confirm, [were you/was PERSON] at this final destination, [RECALL DESTINATION], until at least past 4:00 a.m **[today/TRAVEL DAY+1] (the end of the travel day)?**

1. Did not return home, was at this final destination until past 4:00 a.m
2. Returned home (more trips to record) [RETURN TO E12 AND CORRECT ANSWER]

NotReturnHomeReason

E14. [if E13 = 1. Did not return home]
Why did [you/PERSON] not return home before the end of the day?
(We are only asking as a check to ensure that we captured [your/PERSON's] entire travel)

1. Worked a night shift past 4:00 a.m
2. Stayed overnight at another household (whether friend, relative, parent)
3. Away from home on business travel
4. Away from home for vacation travel
5. Other, please specify: _____

Note: When respondent is directed to record an additional trip record for their return home trip (after answering 'returned home' to E13 - response pattern of no to E12 any more trips, then yes to did you return home, E13):

Display customized text about recording your return home trip:

On the next page please record another trip record to note the mode and time of your return trip home when asked 'where did you go next'. When you have finished entering all of your trips for the day, please select 'no' when asked if you took another trip.

(Note: the same conditions / warning text above is displayed when student but no trip to school recorded or for worker with no work trip recorded, with slight variation of text for ' trip to work' 'trip to school' and ' return trip home')

WhyNoWork2

E16. [if employed full time, part time, and self-employed AND did not make a work or work-related trip AND no trip destination of 'usual workplace' (E5<>main work location) AND E12=777 (No more trips)]
From the trips described, it does not appear that [you/PERSON] made any work-related trips.
Did [you/PERSON] work between 4 am Thursday and 3:59 am Friday?
1. Yes, worked from home/telecommuted
2. No, away on business / working on the road / attended a meeting or worked at a location other than my normal office space
3. Did not work (not scheduled to work, or off work for some other reason)
5. [I/PERSON] started the travel day at work (i.e, worked an overnight or graveyard shift), and did not make any other trips to work
4. Actually, [I/PERSON] worked and did take work-related trips
77. Other, specify: _____

E17A. [if E16=Yes actually did work)]
Please add your trips to and from work, on the Trips Overview page whether you walked or used another mode of travel.
Please also record any other trips by modes other than walking that you may have missed. *Link to Trips Overview page.*

WhyNoSchool

E16A. [if a full time student AND did not make a school-related trip AND no trip destination of 'school' (E5<>person's own school) AND E12=777 (No more trips)]
You did not report [going to school / that PERSON went to school]. Did [you/PERSON] attend school [yesterday/on TRAVELDAY]?
1. Yes, [I/PERSON] did go to school
5. [I/PERSON] started the travel day at school, and did not make any other trips to school
6. Attended school from home (home schooled, distance learning)
2. No, did not have any scheduled classes, stayed home sick, or did not attend school for another reason
3. No, away on a field trip or other travel
77. Other, specify: _____

E17B. [if went to school E16A=Yes and usual school location other than 'home']
Please add your trips to and from school, on the Trips Overview page whether you walked or used another mode of travel. *Link to Trips Overview Page*
Please also record any other trips by modes other than walking that you may have missed.

[CYCLE THROUGH TRIPS FOR EACH PERSON]
[Error message when people try to continue from this page when they haven't finished entering trips for all HH members]:

Unfortunately, you may not proceed forward until the trip diary section has been completed. Click the "begin entering trips" or "edit" links in the table below to complete the trip entries for your household.

E20. Your household trips can be reviewed and edited on this page before exiting the trip section of the survey. You can also add additional trips here that you may have missed. Can you think of any other trips you or other members of your household made [yesterday/TRAVEL DAY] either during the day or in the evening that we may have missed? If so, click on Add Trips or use the Edit trip links to edit a trip you've already entered. If you are done entering trips, click on Go to Household Summary where you can continue through the final questions of the survey once you've finished your trip entries for your household.

FINAL QUESTIONS

Income

B9A. **Thank you for reporting your travel information. We just have a few final questions for you.**

WEB: **Which of the following ranges corresponds to your household's total income last year?**
Please consider all sources of income before income taxes.
PHONE: **May I ask which of the following ranges corresponds to your household's total income last year?** (**Consider all sources of income**, **before income taxes**)? (INTERVIEWER: read answers until confirmation)

1. $0 to $14,999
2. $15,000 to $39,999
3. $40,000 to $59,999
4. $60,000 to $79,999
5. $80,000 to $99,999
6. $100,000 to $124,999
7. $125,000 to $149,999
8. $150,000 and above
99. Decline / don't know

[Displayed online, or available to the interviewer if necessary:]
Why do we ask this question? [This question will help us understand whether we have surveyed a representative sample of the entire population. It will help us better understand the different transportation needs and travel patterns of all residents of our city, including how easy or difficult it is for households of different income levels to travel around our city. This question, like other questions on the survey, is entirely voluntary. Your answers will remain entirely confidential.

SurveyNotes

B10A. **Did you have any difficulty reporting your trip information? Or do you have any comments about the information you provided on your survey?**

_____

99. No

INTERVIEWER: Do not ask the respondent if they have any final comments to make. Do not record any information here unless it pertains to potential issues in the trip data collected (e.g., you think you made an error in capturing trips, or the system did not perform as expected).

PRIZE DRAW

PrizeDraw

F1. [DO NOT DISPLAY if TRANSIT_INVITE=1] **Participants are eligible to enter a prize draw. Would you like to enter into the draw?**

INTERVIEWER: If more information requested

Prizes include:

- One of two cash prizes of $500; or,
- One of eighty $50 gift certificates.

[If STUDENT_INVITE=1]

Prizes include:

- One of two cash prizes of $500; or,
- One of twenty $50 gift certificates.

The prize draw is administered by R.A. Malatest & Associates Ltd. and will be drawn once the survey administration period is completed.

1. Yes
2. No

PrizeDrawName, PrizeDrawPhone, PrizeDrawEmail

F2. [If yes to F1]

PHONE: **May I confirm your name and phone number, so that we can contact you to let you know if you have won?**

Your name and phone number will be kept confidential and will be used only to contact you in the event your name is selected in the prize draw.

WEB: **Please confirm your name and phone number, so that the survey administrator can contact you at this phone number in the event your name is selected in the prize draw.**

This personal information will not be used for any other purpose, nor will it be shared with anyone else.

Name: _____ [prepopulate with first name, if respondent provided their name earlier]

Phone: _____ [prepopulated with household phone number. Allow edits in case respondent wants to be contacted at another number]

Email:_____ [prepopulate with household email, allow edits]

Transit_Incentive

F3. [if TRANSIT_INVITE=1] Participants are eligible to receive a $10 e-gift card. Would you like to receive this incentive?

1. Yes
2. No

PHONE: **May I confirm your name and email so that we can send you the incentive?**

Your name and email address will be kept confidential and will be used only to send you the $10 e-gift card.

WEB: **Please confirm your name and email so that the survey administrator can send you the $10 e-gift card.**

This personal information will not be used for any other purpose, nor will it be shared with anyone else.

Name: _____ [prepopulate with first name, if respondent provided their name earlier]

Email:_____ [prepopulate with household email, allow edits]

CONCLUSION

Please click on the Submit button to submit your survey answers and conclude the survey.
After you click Submit, you will no longer be able to edit your answers.

_____

That concludes the survey.
Thank you very much for your participation!

Your survey answers have been saved. Click here to see our Privacy Statement.

If you wish to change any of your answers, or if you have any concerns about the survey, please contact **info@saskatoontravelsurvey.ca** or **1-866-229-0208**

PHONE ONLY: That concludes the survey. Thank you very much for your cooperation. Have a pleasant day/evening.

For more information about the survey, please visit: **saskatoontravelsurvey.ca**

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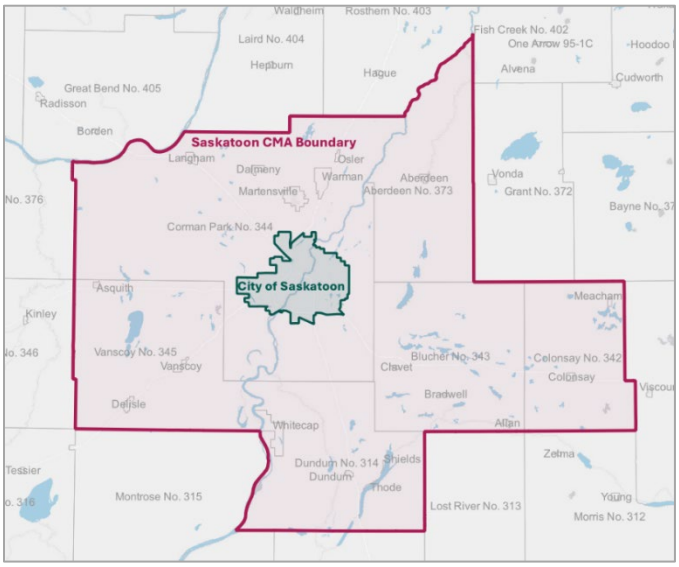
Appendix 3: Re-querying of the 2013 survey data

The 2023 Saskatoon Household Survey was conducted with residents of Saskatoon. The 2013 survey was conducted with residents of the broader Census Metropolitan Area (CMA), which includes Saskatoon and a number of small cities, towns and rural residents outside of Saskatoon's municipal boundary.[33]

In the 2011 Census, the total population count for the CMA was 260,600 while Saskatoon's was 222,200 (85% of the CMA population despite it's smaller geographic boundary). In the 2021 Census, the respective figures were 317,500 and 266,100 (84%).



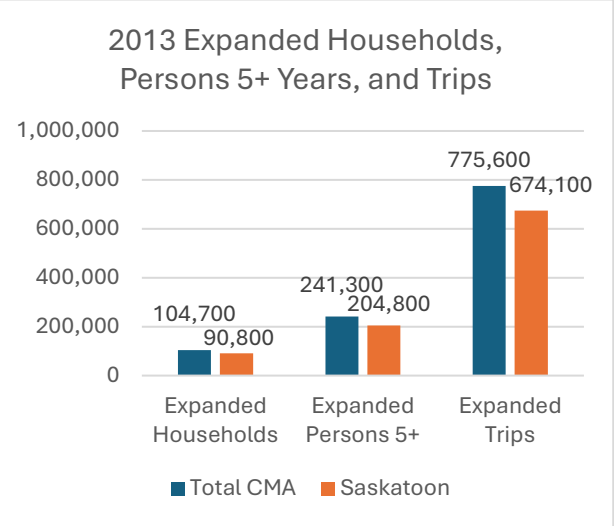
The report for the 2013 survey presents results for the entire CMA. It did not report any results for just the residents of Saskatoon.

To provide an equivalent basis for comparisons with the previous results, we reanalysed the 2013 data, filtering to just residents of Saskatoon. As a result, the historical results in the current report do not always match the figures as they were reported in 2013. However, since the residents of Saskatoon represented a large proportion of the 2013 results, in many instances the two appear to be the same or are very close.

This Appendix to the 2023 survey report provides some examples of key demographic and transportation indicators with differences (or equivalencies) between the 2013 CMA data used in the previous report and the 2013 Saskatoon data quoted in the current report.

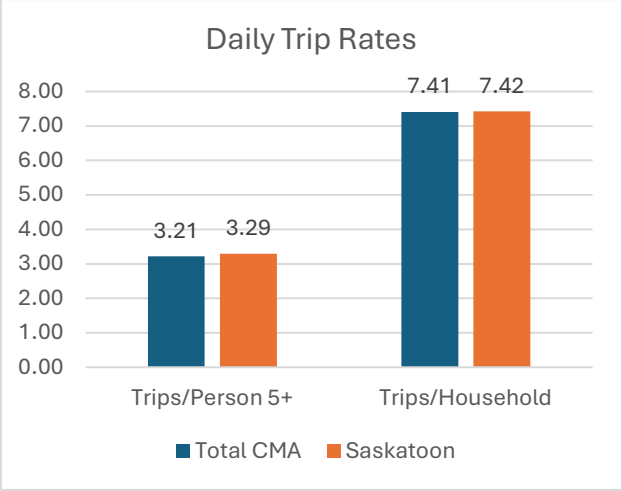
[33] The Municipalities and First Nations Census Subdivisions that comprise the Saskatoon CMA include: Allan, Asquith, Blucher No. 343, Borden, Bradwell, Clavet, Colonsay, Colonsay No. 342, Corman Park No. 344, Dalmeny, Delisle, Dundurn, Dundurn No. 313, Elstow, Langham, Martensville, Osler, Saskatoon, Sheilds, Thode, Vanscoy, Vanscoy No. 345, Warman, and Whitecap

Results. The chart to the right highlights the expanded (weighted) number of households, persons 5+ years of age (those eligible for trip capture) and expanded trips in each version of the dataset. The number of expanded trips differs by 101,500 trips.

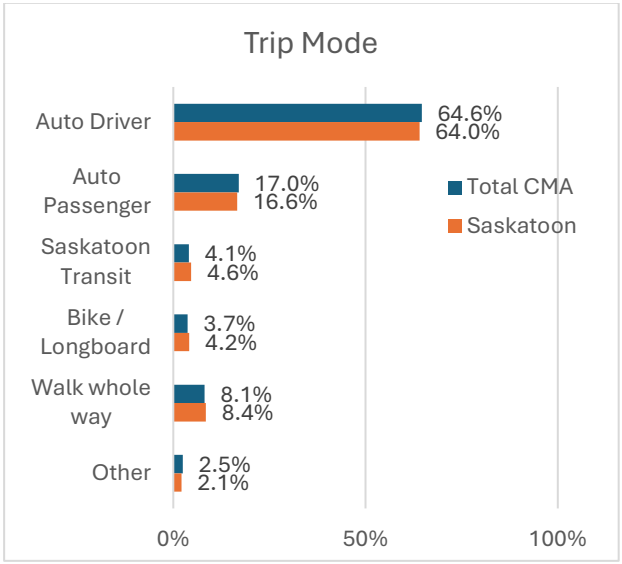


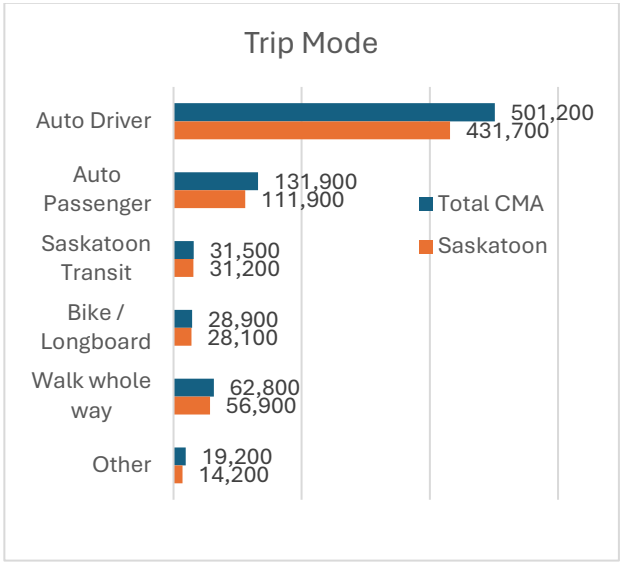
The 2013 trip rate for Saskatoon was slightly higher than that for the CMA, while the household trip rate was almost equivalent.

Examination of the demographics of both versions of the dataset revealed that the household-level and person-level characteristics were generally quite similar for both versions of the dataset, with the exception that Saskatoon had proportionately slightly more apartments and fewer single-family dwellings. Given the similarities in household characteristics and demographics, charts are not presented here but tables are included at the end of this document that provide more detail.

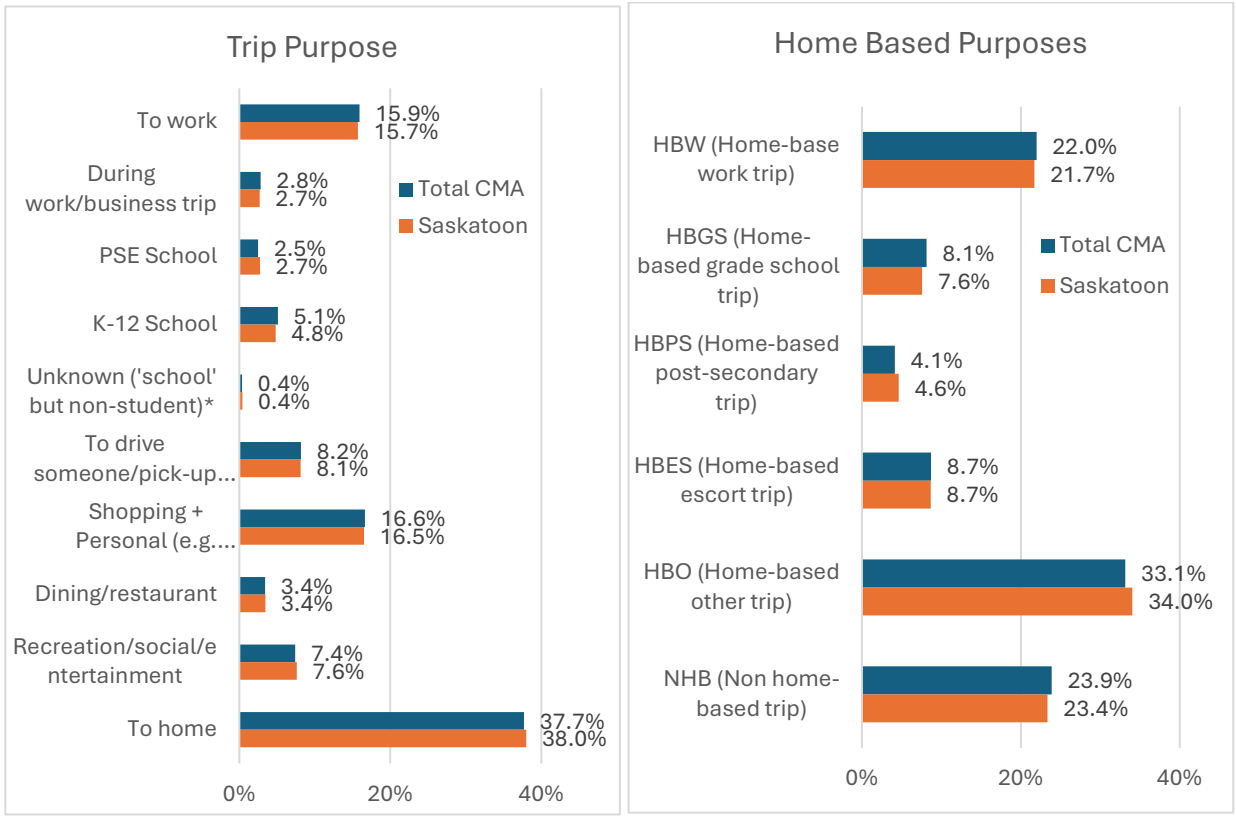


Examination of the trips by mode reveals that the mode shares for the total CMA study area were almost the same as for Saskatoon, with Saskatoon having slightly less auto driver and passenger mode shares and slightly greater transit, bike, and walk mode shares.





Examination of the trip purposes and home-based purposes (which look at both trip ends) showed slight differences in distributions between the results for the total CMA study area and for just Saskatoon.



* *Unknown ('school' but non-student)* refers to trips in the 2013 dataset that had a reported purpose of *to school* but were for household members who were not reported as students, and which could not be recoded to other trip purpose categories on the basis of other information in the demographics and trips of the household.

While the proportions are very close between the two versions of the 2013 dataset, the fact that the total expanded numbers are different warranted the re-querying of the data. This allows meaningful comparisons between the travel patterns of Saskatoon residents in 2013 and 2023, including changes in the volumes of different types of trips.

Caveats. It may be noted that certain limitations apply to both the analysis of the 2013 dataset and the comparisons between the 2013 and 2023 datasets.

- For comparability, only analysis of the main 2013 dataset (n=3,595 surveys) was undertaken. The 2013 supplemental student dataset (n=520) was a separate dataset from the main dataset. It was not used in the 2023 analysis as there was no easily developed basis to merge it with the main 2013 dataset. In any case the main 2013 dataset was reported to have an appropriate representation of total University of Saskatchewan enrolment, although it was not possible to verify this from the available data.
- The 2013 data provided for this analysis did not code locations captured in the survey (home, work, school, trip origins and destinations) to the sector, or provide definitive

linkages between the location keys in the households, persons and trips tables with the actual coordinates in the separate coordinates table. While the likely sector of the home location could be deduced from the available data, and it was possible to deduce the likely sector of work, school and trip destination locations by logical matching of sequence locations to the sequence in the list of coordinates in the separate coordinates table, these inferred coordinates are not necessarily reliable. In addition, a number of coordinates in the separate coordinates table appear to be situated in the middle of a lake (possibly to anonymize the locations).

- It appears that the 2013 main household dataset did not include any surveys with University of Saskatchewan students living in student residence. This may make a difference in the result given that students were asked not to report movements between buildings on campus as trips, and the trip rates for over 2,200 students living in residence would be lower than for students living off campus.[34]
- Before re-querying the 2013 survey data, we recoded the destination trip purposes of over 110 cases with trip purpose of 'to school' where the person making the trip was not a student. A number were recoded to work or escort passenger if it could be deduced that the person was likely reporting their own work trip or if they were likely reporting a trip to drop off or pick up another family member who attended school. However, some could not be recoded and were assigned a destination purpose of 'other'.[35]
- Some core data fields had missing values in the 2013 dataset, which could affect volume estimates and comparisons. For example, almost 200 trip records representing over 4,200 trips did not have a trip start time. In this report, we have footnoted instances where missing information affects comparisons.
- Possible differences in methodology may also affect the comparability of the data:
    - Differences in the survey approach could yield different biases in the different survey cycles. The 2013 trip diary method may slightly over-represent the number of trips if respondents reported trip segments (e.g., walking to their vehicle, driving home) separately rather than as one trip; the 2023 24-hour recall method may slightly under-represent the number of trips if the main respondent missed reporting trips for discretionary purposes for other household members (such as walking across the street to pick up a sandwich at lunch time, and walking back to the office).
    - There may be differences in sampling approach, response rates, and non-response bias that may or may not be corrected for by the data weighting. This could include

[34] It may be noted that the supplemental student dataset appeared to have four survey completions with persons living in the University sector (although this would need to be verified with a more complete version of the 2013 dataset than that provided for analysis), so it seems that including the supplementary dataset would not have resulted in better representation of such students.

[35] It may be noted that in the original 2013 dataset, trip destination purposes of 'to school' for persons who were not students did not result in a home-based purpose of home-based school being assigned; home-based school purposes were only assigned to persons in the dataset who were recorded as being students. In 2013, trips 'to school' by persons who were not students were assigned as home-based other trips. In the recent review, it appeared that a number of these might more appropriately be coded as work or escort passenger. These recodes represent only a small proportion of the total trips and should not make a substantive difference in the interpretations or conclusions that may be drawn from the analysis of the 2013 data.

differences in the representation of cell-phone only households relative to their incidence in the population.

- There were differences in the data weighting approach that could affect comparisons. 2013 had different weights at the household level than at the person level, and people in the same household had different person weights (which were also used for trip analysis). The data may not always accurately represent distributions in the population, e.g., the correct balance of young people living in apartments vs. young people living in single family dwellings (who have greater access to automobiles and bicycle storage. The 2023 data weighting used an iterative proportionate fitting method that balanced both household and demographic weights so that both were satisfied, and such that all people in the same household have the same person weight. This does make for somewhat greater dispersion of weights and a few more high and low weights, although the sample sizes overall and for most sectors are robust enough to tolerate the greater variance in weights without likelihood of skewed results (although analysis of smaller sub-samples should be approached with caution).

Tables. In the tables below, expanded survey results are rounded to the closest 100. The results are based on querying the main household travel survey dataset.

2013 dataset	Total CMA	Saskatoon	Expanded Saskatoon data as % of Expanded CMA data
Household Records	3,779	3,595	
Person Records	8,605	8,109	
Trip Records	28,388	26,947	
Expanded Households	104,700	90,800	87%
Expanded Persons 5+	241,300	204,800	85%
Expanded Trips	775,600	674,100	87%
Trips/Person 5+	3.21	3.29	
Trips/Household	7.41	7.42	

Age range, 2013	Total CMA	Saskatoon	Total CMA	Saskatoon
05 - 17	39,800	32,000	16%	16%
18 - 24	30,400	27,200	13%	13%
25 - 44	73,400	62,100	30%	30%
45 - 64	66,400	55,600	28%	27%
65 - 79	21,500	18,700	9%	9%
80 +	9,700	9,200	4%	4%

Dwelling Type, 2013	Total CMA	Saskatoon	Total CMA	Saskatoon
Apt /Condo	21,000	20,800	20%	23%
Single Detached	76,300	63,100	73%	69%
TH / Row / Duplex / MH	7,500	7,000	7%	8%

Household Size, 2013	Total CMA	Saskatoon	Total CMA	Saskatoon
1 person	28,700	26,800	27%	30%
2 persons	36,200	31,000	35%	34%
3 persons	15,600	13,200	15%	15%
4 persons	15,400	12,600	15%	14%
5+ persons	6,700	5,600	8%	8%

Employment Status, 2013	Total CMA	Saskatoon	Total CMA	Saskatoon
5-14 years	39,800	32,000	16.5%	15.6%
Employed Full-Time	104,400	87,800	43.3%	42.9%
Employed Part-Time	18,800	16,100	7.8%	7.9%
Self Employed	11,700	9,100	4.8%	4.5%
Unemployed	6,100	5,700	2.5%	2.8%
Retired	30,400	27,200	12.6%	13.3%
Other	30,000	26,900	12.5%	13.1%

Students, 2013	Total CMA	Saskatoon	Total CMA	Saskatoon
Total	62,100	52,800	25.7%	25.8%
Pre-School / Daycare	3,500	3,100	1.4%	1.5%
Elementary	22,400	17,800	9.3%	8.7%
High School	13,200	10,700	5.5%	5.2%
College/University	21,400	19,900	8.9%	9.7%
Other	1,600	1,300	0.7%	0.6%

Trip Purpose, 2013 (includes some recodes of 2013 data)	Total CMA	Saskatoon	Total CMA	Saskatoon
To work	123,400	105,800	15.9%	15.7%
During work/business trip	22,000	18,100	2.8%	2.7%
PSE School	19,400	18,500	2.5%	2.7%
K-12 School	39,600	32,500	5.1%	4.8%
Unknown ('to school' but non-student)*	2,700	2,600	0.4%	0.4%
To drive someone/pick-up (escort)	63,300	54,800	8.2%	8.1%
Shopping + Personal (e.g. bank, doctor)	129,000	111,300	16.6%	16.5%
Dining/restaurant	26,300	23,200	3.4%	3.4%
Recreation/social/entertainment	57,400	51,200	7.4%	7.6%
To home	292,400	256,200	37.7%	38.0%

* Trips recorded as 'to school' made by people not reported as students, and which could not be identified from other data as trips to take other household members to school or as a trip to work by someone who works at the school. Where it was possible to identify the trip as one made to escort a passenger or to one's own workplace, the 2013 'to school' response was recoded to escort passenger or to work.

Home-based purpose categories, 2013 (includes some recodes of 2013 data)	Total CMA	Saskatoon	Total CMA	Saskatoon
Home-based work trip	170,400	146,400	22.0%	21.7%
Home-based grade school trip	63,100	51,100	8.1%	7.6%
Home-based post-secondary trip	32,200	31,200	4.1%	4.6%
Home-based escort trip	67,500	58,300	8.7%	8.7%
Home-based other trip	257,100	229,500	33.1%	34.0%
Non-home-based trip	185,300	157,600	23.9%	23.4%

Detailed Modes, 2013	Total CMA	Saskatoon	Total CMA	Saskatoon
Auto driver	501,200	431,700	64.6%	64.0%
Auto passenger	131,900	111,900	17.0%	16.6%
Motorcycle/motorized scooter	1,400	1,400	0.2%	0.2%
Transit Bus	29,900	29,600	3.9%	4.4%
Access Transit	1,600	1,600	0.2%	0.2%
School Bus	15,400	10,500	2.0%	1.6%
Walked whole way	62,800	56,900	8.1%	8.4%
Bicycle / longboard	28,900	28,100	3.7%	4.2%
Taxi/Airport shuttle	1,300	1,200	0.2%	0.2%
Electric wheelchair	100	100	0.0%	0.0%
Shuttle bus / Intercity bus	600	600	0.1%	0.1%
Airplane	400	400	0.1%	0.1%

Grouped Modes, 2013	Total CMA	Saskatoon	Total CMA	Saskatoon
Auto Driver	501,200	431,700	64.6%	64.0%
Auto Passenger	131,900	111,900	17.0%	16.6%
Saskatoon Transit	31,500	31,200	4.1%	4.6%
Bike / Longboard	28,900	28,100	3.7%	4.2%
Walk whole way	62,800	56,900	8.1%	8.4%
Other	19,200	14,200	2.5%	2.1%

Appendix 4: Saskatoon Neighbourhoods with Expansion Zones and Sectors

The organization of neighbourhoods into expansion zones and sectors is outlined in the table that follows. Following the table is a map illustrating the expansion zones within each sector.

The expansion zone aggregations of neighbourhoods were undertaken with a view to group geographically proximate neighbourhoods with similar household characteristics (average household size and dwelling type profile).

2021 Census data is included for reference, along with a breakdown of the valid surveys by sample type (main address sample, University of Saskatchewan supplementary oversample survey, and transit supplementary oversample survey), as well as the number of households and population represented by the expanded survey sample.

It may be noted that since the data expansion was undertaken at the expansion zone level, the 2023 expanded households and population may not always align with the Census counts at the neighbourhood level. It may also be noted that the 2023 expansion took into account growth rate forecasts from 2021 to 2023 but may not always match Saskatoon's own total population estimates. The expanded survey data do not account for people living in collective dwellings other than University of Saskatchewan student residences or people who are unhoused. The expanded survey data also include a modest number of seasonal residents attending University of Saskatchewan who would not usually be counted in the Census, although such seasonal residents may be somewhat under-represented if a higher response was obtained from University of Saskatchewan students in households with permanent residents.

Non-residential neighbourhoods were not targeted in the main address-based sampling; however, a few surveys were obtained in non-residential neighbourhoods in the main address sample (in instances where the pre-geocoding was imprecise) and in the student and transit supplementary oversamples. Also, a number of surveys were obtained with students living in University of Saskatchewan residences by the student oversample recruitment. As Census profile data were not provided for non-residential neighbourhoods, surveys in these neighbourhoods received weights of 1, and did not receive expansion factors unless they contained University of Saskatchewan students who were subject to data weighting by enrolment.

Table 37. Saskatoon Neighbourhoods with Expansion Zones and Sectors

Sector ID	Sector	Exp Zone ID	Expansion Zone	Neigh. ID	Neighbourhood	Type	2021 Census		Household Travel Survey Sample				Expanded Surveys	
							2021 Census Pvt Dwell. Occ. by Usual Residents	2021 Census Population	Main Sample	USask Student Over-sample	Transit Over-sample	Total Surveys	2023 Expanded Households	2023 Expanded Population
1000	Core Neighbourhood	1001	Core1	25	Downtown	Res.	2,020	3,030	120	14	10	144	2,452	3,562
				50	City Park	Res.	2,810	4,700	166	30	21	217	2,934	4,873
		1002	Core2	26	Nutana	Res.	3,250	6,160	195	46	16	257	3,773	7,152
				33	Varsity View	Res.	1,875	3,965	107	61	7	175	1,741	3,507
		1003	Core3	13	Pleasant Hill	Res.	1,585	3,605	91	1	20	112	1,918	3,639
				14	Riversdale	Res.	1,035	2,095	73	4	7	84	1,193	2,805
				17	Caswell Hill	Res.	1,600	3,370	100	11	7	118	1,397	3,038
		1004	Core4	12	King George	Res.	785	1,825	44	5	4	53	860	2,185
				16	Westmount	Res.	970	2,490	59	3	2	64	952	1,904
2000	Confederation	2001	Confederation1	9	Massey Place	Res.	1,190	3,230	74	4	13	91	1,407	3,647
				15	Mount Royal	Res.	1,820	4,555	89	9	7	105	1,553	3,675
				18	Hudson Bay Park	Res.	845	2,065	58	5	8	71	1,003	2,228
		2002	Confederation2	1	Holiday Park	Res.	700	1,550	45	3	4	52	652	1,681
				3	Fairhaven	Res.	1,590	4,255	108	7	11	126	1,849	4,770
				11	Meadowgreen	Res.	1,540	4,060	90	2	8	100	1,472	3,693
				57	Confederation Urban Centre	Res.	665	1,560	21	0	3	24	862	2,007
		2003	Confederation3	2	Montgomery Place	Res.	1,165	2,940	77	5	3	85	1,551	4,018
				4	Parkridge	Res.	1,620	4,705	85	8	9	102	1,671	5,136
				5	Pacific Heights	Res.	1,345	3,935	74	2	4	80	1,070	3,075
				6	Confederation Park	Res.	2,235	6,275	143	7	10	160	2,365	6,343
		2004	Confederation4	7	Dundonald	Res.	1,795	4,985	101	8	7	116	1,515	4,293
				8	Westview	Res.	1,525	4,210	69	3	5	77	1,090	3,062
				10	Hampton Village	Res.	2,425	7,940	153	11	7	171	3,365	10,272
		2009	Confederation9	108	South West Industrial	Non-Res.	7	10						
				111	West Industrial	Non-Res.	19	45	0	1	0	1	1	3
				713	Gordie Howe Mgmt. Area	Non-Res.	0	0						
3000	Blairmore	3001	Blairmore1	20	Blairmore Urban Centre	Res.	875	1,985	75	2	2	79	1,213	2,849
				21	Kensington	Res.	1,280	4,085	92	4	7	103	1,529	4,820

Sector ID	Sector	Exp Zone ID	Expansion Zone	Neigh. ID	Neighbourhood	Type	2021 Census		Household Travel Survey Sample				Expanded Surveys	
							2021 Census Pvt Dwell. Occ. by Usual Residents	2021 Census Population	Main Sample	USask Student Over-sample	Transit Over-sample	Total Surveys	2023 Expanded Households	2023 Expanded Population
				22	Elk Point	Res.	75	275	6	0	0	6	78	269
		3009	Blairmore9	107	Agpro Industrial	Non-Res.	2	5						
				711	CN Yards Management Area	Non-Res.	0	0						
				712	SaskPower Management Area	Non-Res.	0	0						
				903	Blairmore Development Area	Non-Res.	5	5						
				907	South West Development Area	Non-Res.	4	10	1	0	0	1	11	22
4000	Lawson	4001	Lawson1	54	Lawson Heights Urban Centre	Res.	1,000	1,605	63	1	2	66	987	1,410
				55	Lawson Heights	Res.	1,885	4,580	104	9	8	121	2,062	5,057
		4002	Lawson2	53	River Heights	Res.	1,680	4,090	106	9	5	120	2,015	4,602
				56	Silverwood Heights	Res.	3,585	9,650	200	17	5	222	3,337	9,184
		4003	Lawson3	19	Mayfair	Res.	1,070	2,575	78	3	6	87	968	2,249
				51	North Park	Res.	985	2,065	63	3	5	71	1,076	2,486
				52	Richmond Heights	Res.	310	955	22	2	3	27	473	903
				105	Kelsey – Woodlawn	Res.	385	835	31	2	1	34	363	825
		4009	Lawson9	102	Central Industrial	Non-Res.	1	5	0	2	1	3	4	7
5000	University	5001	University1	714	U of S Lands North Mgmt. Area	Non-Res.	0	135						
				715	U of S Lands Management Area	Student	0	230	0	37	2	39	480	561
				716	U of S Lands South Mgmt. Area	Student	0	295	0	106	2	108	1,156	1,852
6000	Holmwood	6001	Holmwood1	80	Brighton	Res.	895	2,480	153	20	3	176	1,517	4,160
		6009	Holmwood9	718	U of S Lands East Mgmt. Area	Non-Res.		0						
				904	Holmwood Development Area	Non-Res.	13	43						
7000	University Heights	7001	UniversityHeights1	67	University Heights Urban Ctr.	Res.	965	1,665	77	12	3	92	1,105	1,842
		7002	UniversityHeights2	62	Willowgrove	Res.	2,800	8,300	155	34	6	195	2,384	7,436
				69	Evergreen	Res.	3,410	9,555	223	46	3	272	4,669	12,434
				70	Aspen Ridge	Res.	420	1,325	51	7	0	58	854	2,725
		7003	UniversityHeights3	59	Arbor Creek	Res.	1,625	4,785	97	19	1	117	1,631	4,399
				60	Erindale	Res.	1,420	3,760	81	20	4	105	1,468	4,169
				61	Silverspring	Res.	1,650	4,700	96	17	0	113	1,652	4,769
		7004	UniversityHeights4	48	Sutherland	Res.	2,460	5,670	132	43	7	182	2,720	6,242

Sector ID	Sector	Exp Zone ID	Expansion Zone	Neigh. ID	Neighbourhood	Type	2021 Census		Household Travel Survey Sample				Expanded Surveys	
							2021 Census Pvt Dwell. Occ. by Usual Residents	2021 Census Population	Main Sample	USask Student Over-sample	Transit Over-sample	Total Surveys	2023 Expanded Households	2023 Expanded Population
				49	Forest Grove	Res.	2,110	5,495	121	20	5	146	2,087	5,328
		7009	UniversityHeights9	109	Sutherland Industrial	Non-Res.	3	10						
				902	University Heights Dev. Area	Non-Res.	1	0						
8000	Lakewood	8001	Lakewood1	68	Lakewood Urban Centre	Res.	1,280	2,690	86	9	4	99	1,377	2,890
		8002	Lakewood2	45	Wildwood	Res.	3,830	7,785	236	26	9	271	4,046	8,191
		8003	Lakewood3	44	Lakeview	Res.	2,805	7,005	153	15	7	175	3,081	7,624
				46	College Park	Res.	2,045	5,575	109	18	12	139	2,177	5,284
				47	College Park East	Res.	1,750	4,375	99	13	6	118	1,705	4,379
		8004	Lakewood4	58	Lakeridge	Res.	1,200	3,370	64	5	0	69	888	2,583
				63	Rosewood	Res.	2,150	6,405	147	17	8	172	3,004	8,685
				64	Briarwood	Res.	1,730	4,740	114	18	5	137	1,695	4,574
		8009	Lakewood9	719	Hillcrest Management Area	Non-Res.	0	0						
				901	South East Development Area	Non-Res.	0	0						
9000	Nutana	9001	Nutana1	41	Nutana Urban Centre	Res.	1,880	3,330	103	2	4	109	1,908	2,528
		9002	Nutana2	36	Holliston	Res.	1,500	3,575	80	13	6	99	1,622	3,927
				39	Nutana Park	Res.	1,040	2,765	57	8	2	67	798	2,189
				40	Eastview	Res.	1,430	3,570	85	11	12	108	1,521	3,764
				42	Brevoort Park	Res.	1,390	3,490	80	9	5	94	1,672	4,136
				43	Greystone Heights	Res.	1,020	2,545	62	19	5	86	1,193	2,776
		9003	Nutana3	37	Stonebridge	Res.	5,575	15,230	336	30	2	368	6,193	16,308
		9004	Nutana4	29	Avalon	Res.	1,375	3,200	84	6	4	94	1,469	3,475
				30	Queen Elizabeth	Res.	1,060	2,585	62	8	4	74	1,107	2,936
				31	The Willows	Res.	315	655	31	0	0	31	357	635
				38	Adelaide/Churchill	Res.	1,400	3,365	73	11	5	89	1,354	3,083
		9005	Nutana5	27	Buena Vista	Res.	1,475	3,250	83	12	2	97	1,285	2,453
				28	Exhibition	Res.	1,305	2,730	76	10	4	90	1,637	3,391
				32	Haultain	Res.	1,415	2,930	73	17	6	96	1,263	2,758
				35	Grosvenor Park	Res.	705	1,555	49	13	4	66	924	1,961
		9009	Nutana9	103	CN Industrial	Non-Res.	1	0						

Sector ID	Sector	Exp Zone ID	Expansion Zone	Neigh. ID	Neighbourhood	Type	2021 Census		Household Travel Survey Sample				Expanded Surveys	
							2021 Census Pvt Dwell. Occ. by Usual Residents	2021 Census Population	Main Sample	USask Student Over-sample	Transit Over-sample	Total Surveys	2023 Expanded Households	2023 Expanded Population
				710	Diefenbaker Management Area	Non-Res.	0	0						
				908	South Development Area	Non-Res.	0	0						
10000	Riel Industrial	10001	Riel1	100	Agriplace	Non-Res.	0	5						
				101	Airport Business Area	Non-Res.	33	34	0	0	3	3	3	4
				106	North Industrial	Non-Res.	0	0						
				112	Hudson Bay Industrial	Non-Res.	2	5						
				113	Marquis Industrial (includes population in a correctional facility)	Non-Res.	5	660						
				717	Airport Management Area	Non-Res.	0	0						
				905	North Development Area	Non-Res.	4	10						
				906	North West Development Area	Non-Res.	5	5						
					Residential Neighbourhoods	Subtotal	106,950	264,660	6,510	829	385	7,724	115,112	279,253
					Non-Residential	Subtotal	105	987	1	3	4	8	20	36
					Non-Residential but with Student Residences	Subtotal	0	525	0	143	4	147	1,636	2,413
					Saskatoon Total	Total	107,055	266,172	6,511	975	393	7,879	116,767	281,702

Figure 68. Map of expansion zones and sectors