

Developing Data Driven Equity Standards: Stakeholder Perspectives

Report

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**MOBILIZING
JUSTICE** _____

Towards Evidence-Based
Transportation Equity Policy

About Mobilizing Justice

The Mobilizing Justice Partnership is funded by the Social Sciences and Humanities Research Council (SSHRC). Based at the University of Toronto Scarborough, the national intersectoral research partnership aims to understand and address transportation poverty in Canada and to improve the well-being of Canadians at risk of transport poverty. Learn more at www.mobilizingjustice.ca.

Our Partners

Amalgamated Transit Union Canada	Infrastructure Canada	Transit App
Autorité régionale de transport métropolitain (ARTM)	McGill University	TransLink
Canadian Institute of Planners	McMaster University	United Way Greater Toronto
Canada Mortgage and Housing Corporation (CMHC)	Memorial University	University of British Columbia
Canadian Urban Institute	Metrolinx	University of Manitoba
Canadian Urban Transit Association	Ministry of Transportation Ontario	University of Oregon
The Centre for Active Transportation (TCAT), a project of Clean Air Partnership	Pantonium	University of Texas Austin
CIRODD (École de technologie supérieure)	Pembina Institute	University of Toronto
CIRRELT (Université de Montréal)	Region of Waterloo	University of Waterloo
City of Calgary	RideShark	Urban Strategies
City of Edmonton	Simon Fraser University	Via Transportation Inc.
City of Toronto	Spare Labs	Ville de Montréal
City of Vancouver	SPIN	York Region
Esri Canada	Statistics Canada	
Federation of Canadian Municipalities	Toronto Transit Commission (TTC)	

Author Contributions

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Table of Contents

About Mobilizing Justice	2
Our Partners	2
Author Contributions	3
Suggested Citation	3
Summary	4
Findings	5
Recommendations for the national survey	5
Introduction	6
Methods	10
Findings	12
Outcomes used in participants' own work	12
Essential outcomes	14
Specific outcomes for equity deserving groups	16
Identifying low priority outcomes	18
Outcomes missing in MJ's database	19
Straw poll on priorities	21
Recommendations and Conclusions	24



Summary

The [Data Driven Standards](#) working group of Mobilizing Justice convened a workshop to organize the next phase of its research agenda. The goal of this research is to calibrate transportation equity standards using existing survey data on individual transportation behaviour and life outcomes (employment, health, wellbeing, etc.). The workshop took place over zoom on April 28, 2023 and included 57 participants from five provinces. Half of the participants came from government, a majority of whom worked in local government. Another 30% of respondents came from academia, with the remaining 20% coming evenly from industry or advocacy. The sectoral breakdown of attendance is provided in Figure 1.

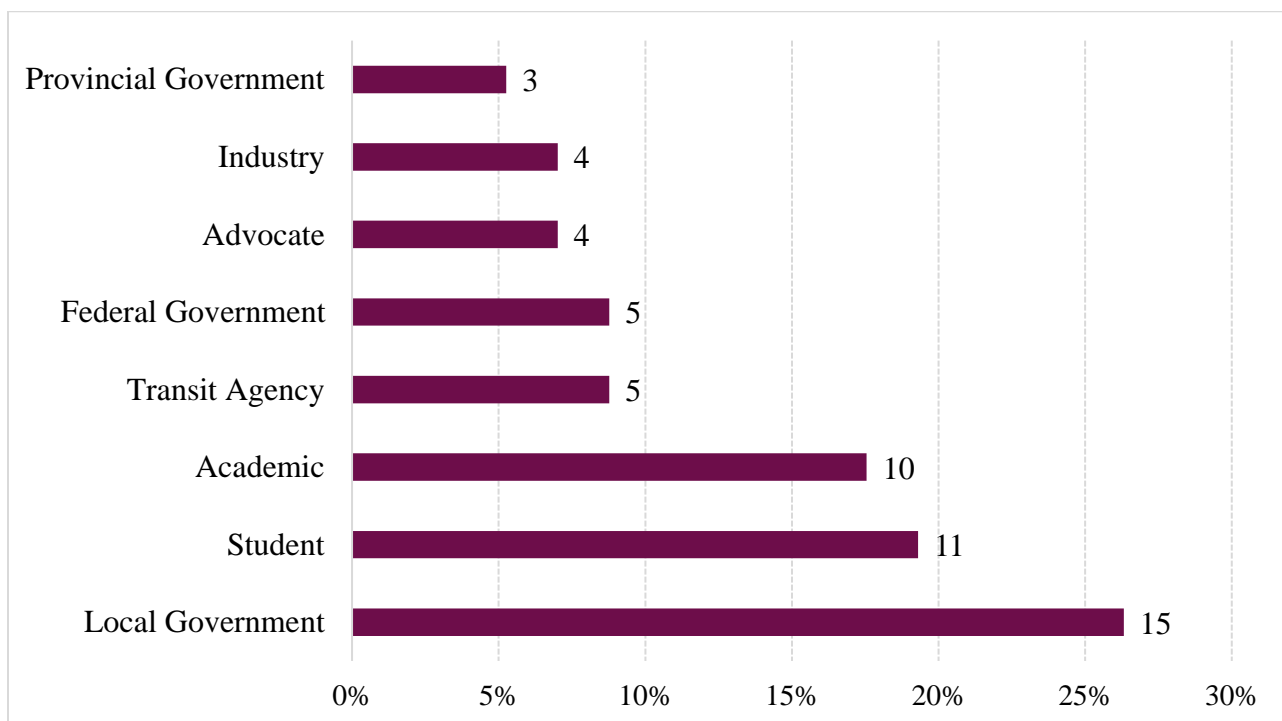


Figure 1: Workshop participation by sector

Participants were asked to review a brief summarizing the major categories of [individual outcomes](#) identified by Mobilizing Justice in Statistics Canada [surveys](#) for their relevance as the outcomes against which we should calibrate data driven equity standards. These are outcomes that range from transportation outcomes (i.e., how often someone uses active travel) to life outcomes (employment status, self-rated health).

Mobilizing Justice will test these outcomes against transportation supply metrics to achieve two goals:

1. To develop better tools for project evaluation and business case analysis
2. To identify the transportation supply thresholds needed to alleviate transport poverty for different population groups

At the workshop, respondents discussed five overarching questions regarding the relevance of these outcome measures to transportation equity:

- When considering the equity implications of transportation in your own work, what outcomes are you currently using, and why?
- Which outcomes are essential for us to include when setting equity standards? And why?
- Are there any outcomes that are important for specific equity deserving groups? Which outcomes, for which groups?
- Are any of the outcomes in our database lower priority? Which ones?
- What's missing from our database that is important?

FINDINGS

Participants offered 174 comments through online Mentimeter polls along with robust discussion spread across four breakout rooms. From these comments, workshop discussions, and an end-of-workshop poll, MJ staff identified the top five outcomes to test against transportation supply metrics to develop tools and standards. These are the first focus areas for our research program on data driven equity standards, and we will seek to devise equity standards that can ensure transportation is not a barrier to positive outcomes in these domains:

1. **Transportation costs**, including the monetary and time costs of travel as well as the impacts of car ownership on financial health.
2. **Daily activity participation**, including trips taken and time spent traveling, but also as composite measures of time not spent on mandatory activities and travel, i.e. leisure time or discretionary activity participation.
3. **Health**, including healthcare access and utilization, as well as transportation as a barrier to healthcare use.
4. **Labour force participation**, including especially direct questions on transportation as a barrier to finding or maintaining employment.
5. **Education**, including children's education-related travel, and transportation as a barrier to education.

RECOMMENDATIONS FOR THE NATIONAL SURVEY

Workshop participants also highlighted gaps in the topics covered by existing Statistics Canada datasets. These are gaps that Mobilizing Justice can help close through its national survey. Based on workshop discussions, we recommend the following topics be included in the national survey:

- **Affordability** of housing and the link to transportation.
- **Suppressed travel**, or the trips people cannot make due to a lack of transportation. This is sometimes referred to as latent demand or unmet travel needs.
- **Language and digital barriers** to use of transit and new transportation modes like bikeshare and ride hailing.
- **Perceived safety** as this is a significant barrier to travel for many equity deserving groups.

Introduction

Mobilizing Justice is funded by the Social Sciences and Humanities Research Council of Canada (SSHRC) to develop data-driven transportation equity standards. The project's program of work calls for research to identify the levels of infrastructure provision needed to **alleviate transportation poverty**. Transportation poverty refers to situations where socio-economic marginalization combines with transportation barriers to mutually reinforce problems in people's lives, preventing them from participating in daily life activities. The [data driven standards research program](#) is inspired by earlier work suggesting that among people at risk of transport poverty, those living in neighborhoods with higher levels of transportation supply engage in more activities. At the highest levels of neighborhood transportation supply, this work found that daily trip making among people at risk of transport poverty is nearly equal to daily trip making among the general population.¹ However, the existing research is not geographically or demographically comprehensive, nor does it consider how participation in specific essential activities is impacted (i.e. healthcare, education, etc.) A major task of the data driven standards research program is thus to answer the following questions:

- What are the relationships between transportation supply and individuals' outcomes, including both daily activity participation (i.e., number of trips taken on foot) and longer term outcomes (i.e., labour force participation and self-reported health)?
- How do the relationships between transportation supply and individual outcomes vary among different groups, and in different places?
- How can models of these relationships improve the evaluation of proposed transportation investments?
- How can models of these relationships inform guidelines and standards for transportation supply?

This research requires a **definition of transportation supply that is transparent, comprehensive, and replicable** across different jurisdictions and time periods. The Mobilizing Justice partnership has embraced **accessibility, or access to destinations**, as the primary metric of transportation supply to be used in research supporting data-driven standards. In this context, accessibility refers to the ease of reaching destinations. Accessibility can be measured by different modes. For example, several MJ affiliated researchers have used a measure of the number of jobs reachable by transit in 45 minutes as a measure of transit accessibility.² An illustration of how this measure varies at the neighbourhood level in Toronto is provided in Figure 2 below. For the initial phases of this project, Mobilizing Justice researchers will make use of national-scale indicators of access to destinations created by Statistics Canada in partnership with Infrastructure Canada and members of the Mobilizing Justice partnership.

¹ See Allen and Farber 2020: <https://doi.org/10.1016/j.trd.2019.102212>

² See for examples El Geneidy and Levinson 2006: <https://conservancy.umn.edu/handle/11299/638>; Xi et al. 2018: <https://doi.org/10.1177/036119811878311>; Allen and Farber 2019: <https://doi.org/10.1016/j.tranpol.2018.11.018>.

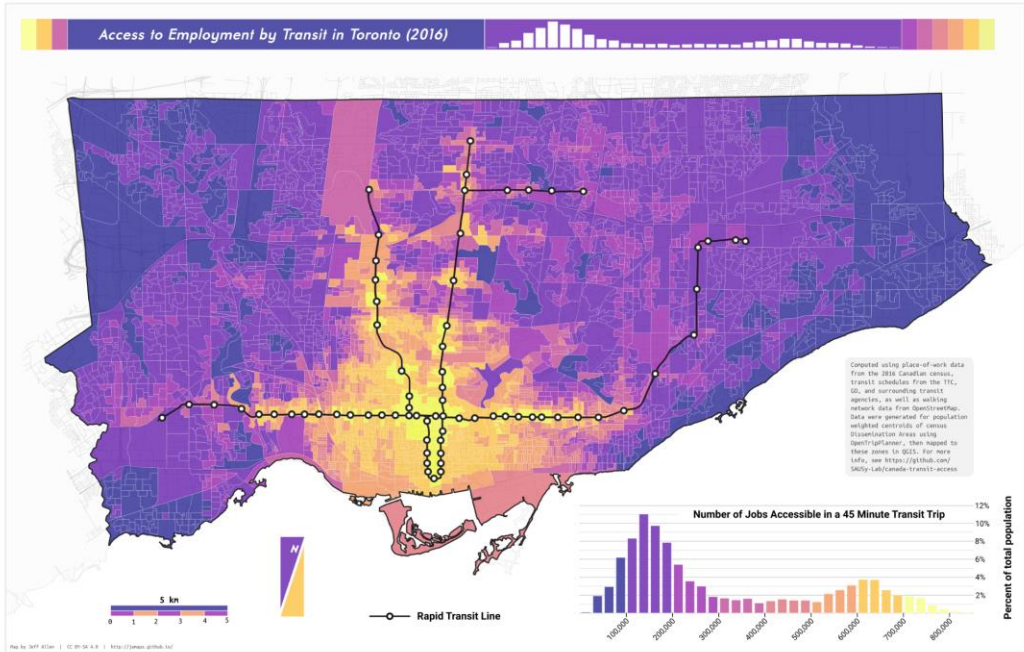


Figure 2: Jobs accessible by transit in 45 minutes in Toronto, 2016

In answering the above questions, the Data Driven Standards working group intends to identify key breakpoints in the relationship between accessibility and individuals’ outcomes that could serve as accessibility standards or goals for equitable transportation planning. Figure 3 provides a hypothetical example of how the relationships between accessibility and various individual outcomes (e.g. missed doctors’ visits, job interviews completed, daily activities completed), could be used to identify an access standard.

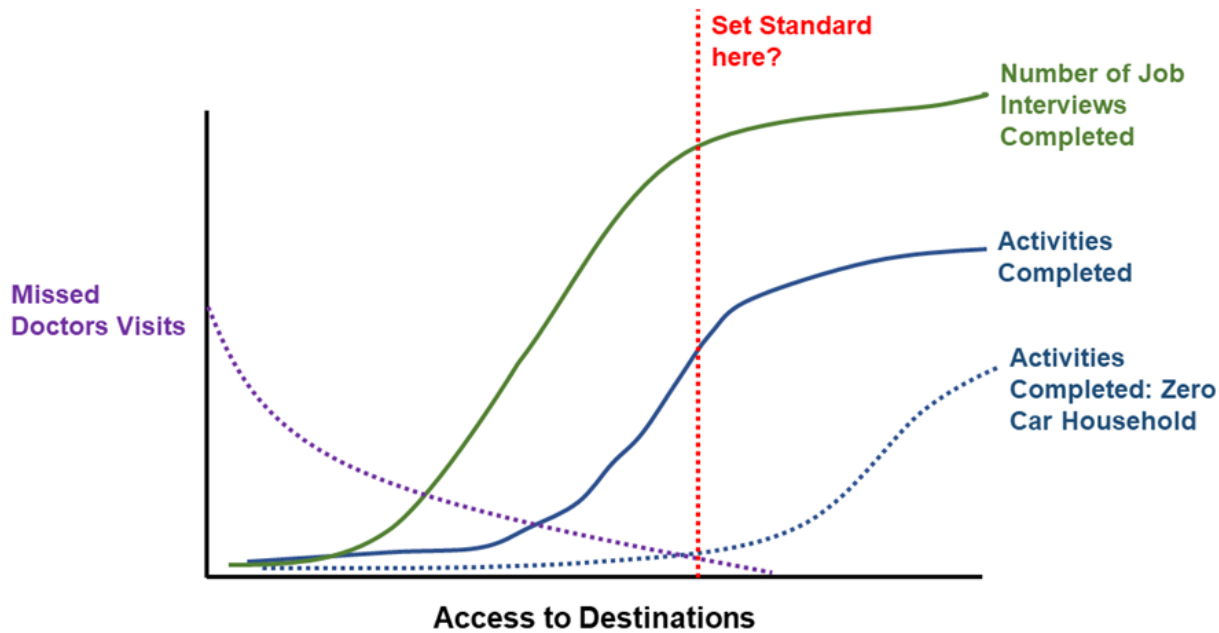


Figure 3: Setting data-driven equity standards

The empirical relationships quantified in this process are also meant to inform business case analysis by providing rigorous evidence on the likely social and economic benefits of new infrastructure investments. For example, if our research identifies that each additional 100,000 destinations reachable by transit corresponds with an average of 3 fewer missed appointments per year, then we can model the impact of a new rail line on medical appointments (Figure 4). The estimates in Figure 3 are hypothetical.

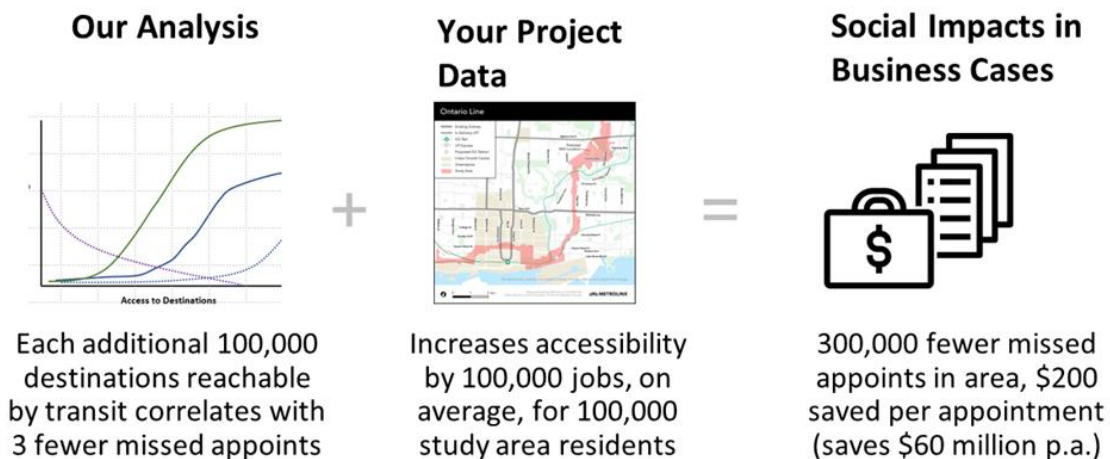



Figure 4: How research can inform project evaluation (hypothetical example)

The Data Driven Standards research program draws on two data sources for life outcomes to test against transportation supply: existing surveys run by Statistics Canada and Mobilizing Justice’s own national survey. The goal of the April 28th workshop was to kick off analysis of existing datasets through a partner-



driven discussion of research priorities. To that end, the workshop had one primary objective: **to identify which outcome measures (in employment, health, etc.) should be prioritized in the analysis.**

Methods

To achieve the workshop objective, we provided all participants with a [background report](#) listing all the possible outcome measures our team identified in Statistics Canada’s existing surveys.³ A database of these questions can be found [here](#). Participants were asked to review these outcomes in advance of the workshop and fill out a short poll on which outcomes they felt were most important to use when setting data driven equity standards. The workshop included 57 participants from five provinces. Half of the participants came from government, a majority of whom worked in local government. Another 30% of respondents came from academia, with the remaining 20% coming evenly from industry or advocacy. The sectoral breakdown of attendance is provided in Figure 5.

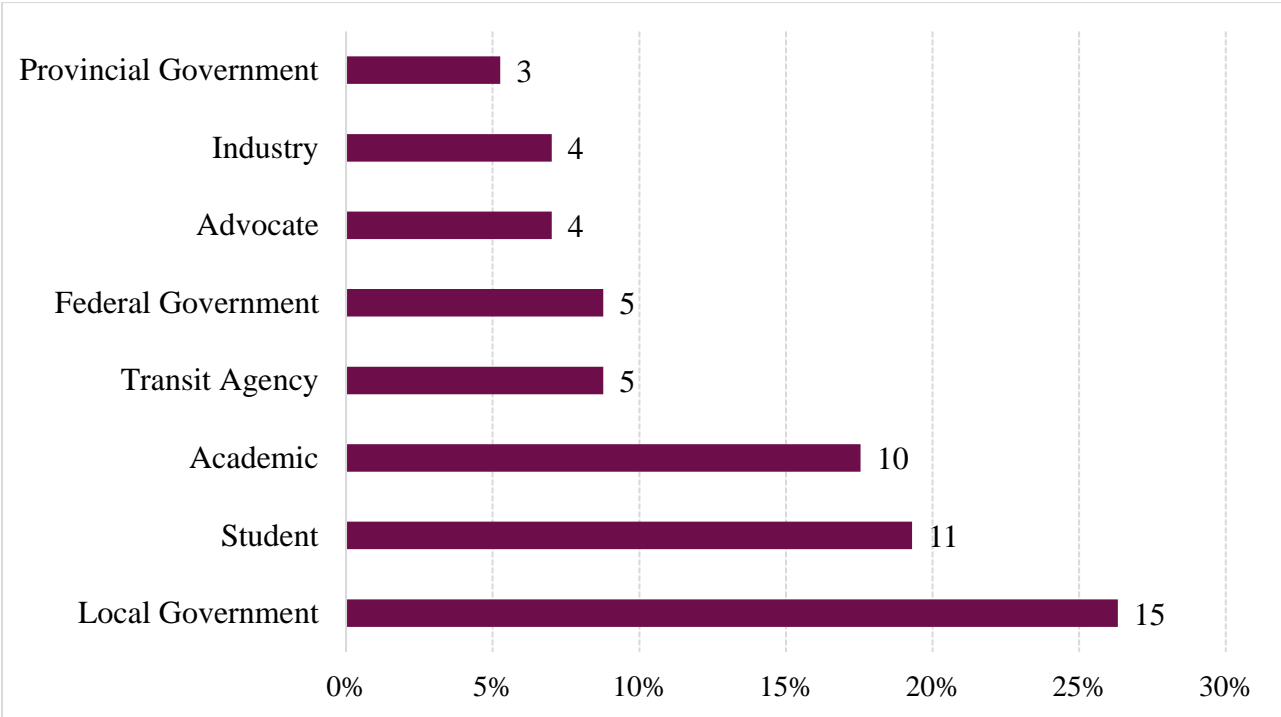



Figure 5: Workshop participation by sector

At the workshop, respondents were split into four breakout rooms led by MJ students, staff, and faculty. In these rooms, participants used Mentimeter to answer a set of questions regarding the outcome measures identified by MJ in Statistics Canada surveys. After participants answered the questions in Mentimeter, they were invited to elaborate on and discuss their responses. The five discussion questions were:

- When considering the equity implications of transportation in your own work, what outcomes are you currently using, and why?
- Which outcomes are essential for us to include when setting equity standards? And why?

³ Palm et al. 2023, available online at: https://drive.google.com/file/d/1RT5KFMleaYUvB2tiRBo7bTWzORHOd_vl/view?usp=sharing.

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- Are there any outcomes that are important for specific equity deserving groups? Which outcomes, for which groups?
 - Are any of the outcomes in our database lower priority? Which ones?
 - What's missing from our database that is important?

The remainder of this report summarizes these discussions using both Mentimeter answers and recordings of breakout conversations. Figures that graphically represent Mentimeter comments are exhaustive, but duplicate answers have been removed while long answers were shortened for clarity.



Findings


OUTCOMES USED IN PARTICIPANTS' OWN WORK

In the first breakout, we asked participants: **When considering the equity implications of transportation in your own work, what outcomes are you currently using, and why?** Participants provided 43 comments that we coded into 8 themes. These comments and themes are presented in Figure 6 below, with duplicates removed for ease of reading.



Figure 6: Outcomes partners already use in their equity work

Accessibility was the theme most mentioned--with respondents using measures of access to various kinds of destinations by different modes to measure the impacts of their plans and policies. These findings reflect **the benefit of using accessibility measures in research informing data driven standards, as accessibility is becoming more common in practice**. Respondents also discussed measuring impacts on specific populations and modes, including using accessibility to measure how investments impacted groups differently.



Health outcomes also inform existing practice, particularly measures of self-declared health status and measures of access to healthcare facilities. Transit performance measures were mentioned less often, but included performance indicators like crowding, reliability, and service coverage. Finally, several participants highlighted road safety and affordability as measures that inform their equity work. Traffic safety measures included traffic collisions, fatalities and bikeability, while affordability metrics used included income and household housing and transportation costs.

Several participants commented that their agencies are still working to identify metrics and measures to use in their own equity work. These comments highlight the importance of Mobilizing Justice's work on developing measures and standards for advancing equity in transportation.

ESSENTIAL OUTCOMES

In the second breakout, we asked participants: Which outcomes are essential for us to include when setting equity standards? And why? Participants provided 38 comments that we coded into 9 themes. These comments and themes are presented in Figure 7 below.

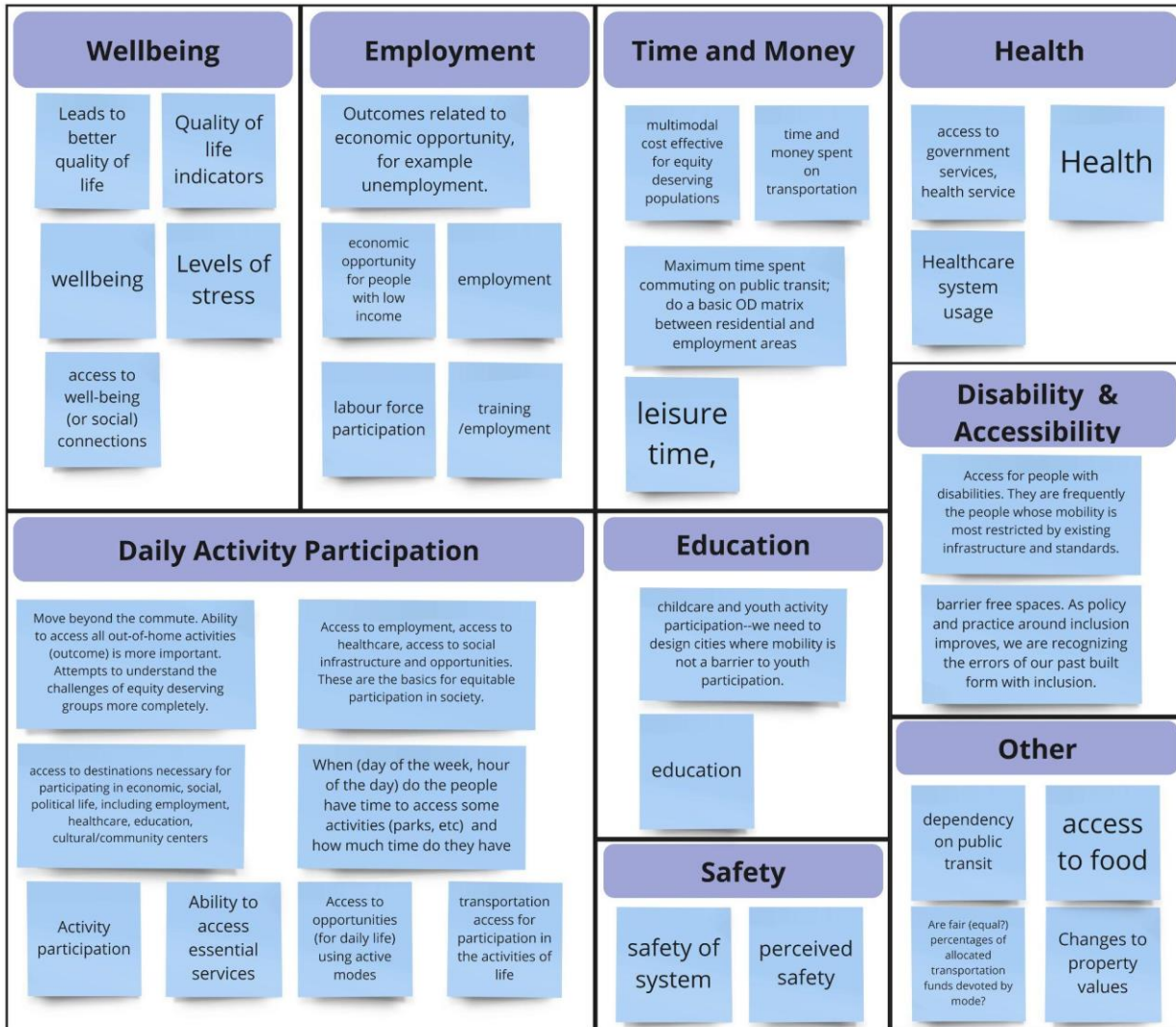



Figure 7: Mentimeter comments on essential outcomes to include

Participants mentioned participation in daily activities most often. This theme included how much daily travel residents’ actually conduct, as well as how many activities they have the potential to do or access. Some commenters felt that access to these destinations by active modes was a critical metric, while others highlighted specific destinations like healthcare, parks, and education.

Wellbeing and employment tied for second most mentioned themes. Wellbeing included measures like quality of life indicators and self-reported stress levels. Employment measures referenced included labour force participation and economic opportunity for people with low incomes.

The fourth most common type of measures are organized under the theme of the cost of travel in terms of both time and money, as well as time remaining for other activities. Respondents also highlighted health measures, such as healthcare utilization, and educational measures, such as youth activity participation. Barrier free spaces and measures of access that account for the needs of people with disabilities were also



mentioned as essential measures to include. Less frequently discussed measures included transportation system safety, transit dependency, and property value impacts.

SPECIFIC OUTCOMES FOR EQUITY DESERVING GROUPS

In the third discussion, we asked participants: Are there any outcomes that are important for specific equity deserving groups? Which outcomes, for which groups? Participants provided 44 comments that we coded into 8 themes. These comments and themes are presented in Figure 8 below.

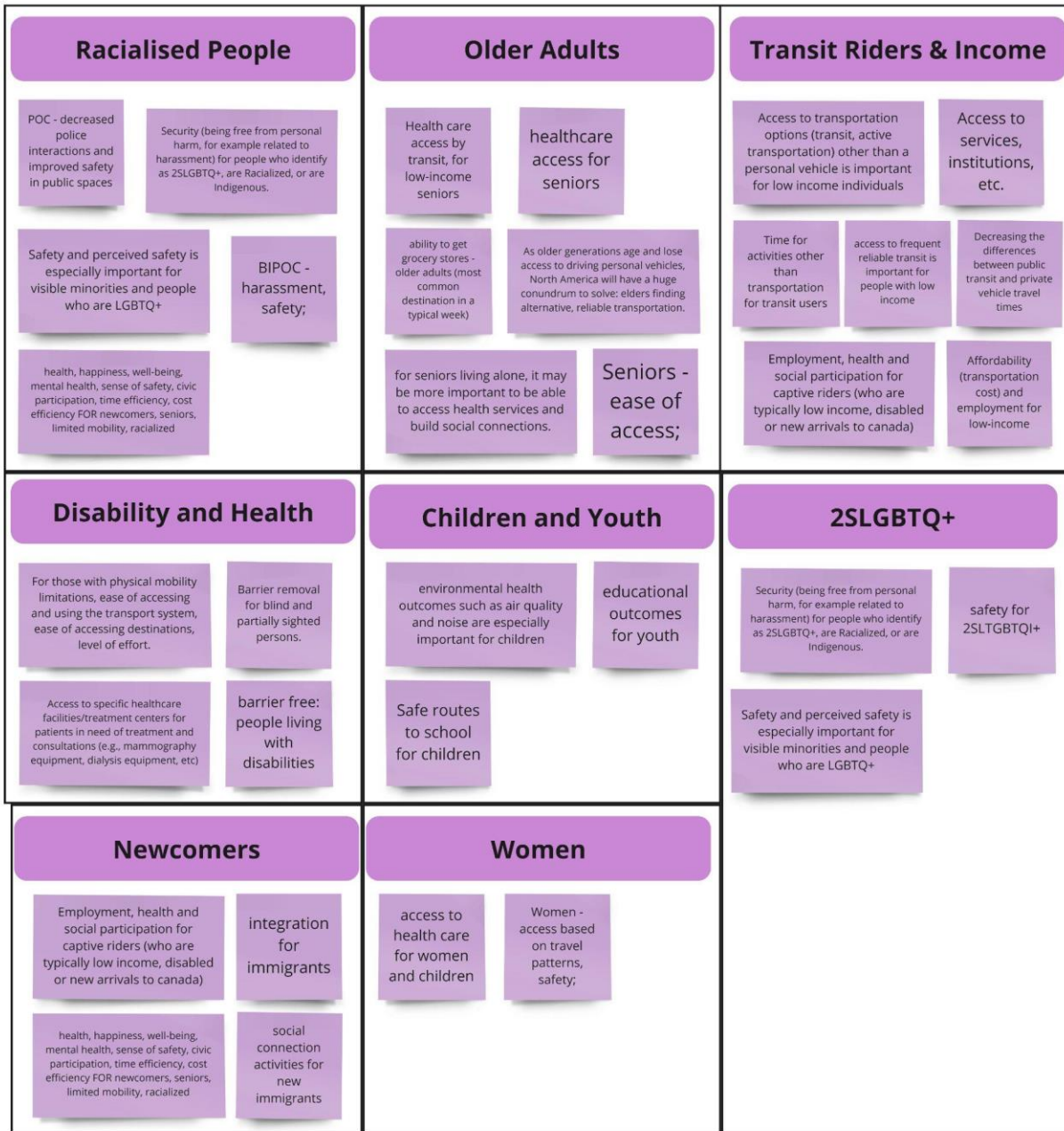


Figure 8: Mentimeter comments on priority outcomes for equity deserving groups

Participants highlighted that safety, including safety during police interactions, was an important measure when considering equity for racialized people. For older adults, participants mentioned access to healthcare and groceries, including access by transit. For transit riders and people with low incomes, respondents highlighted access to activities, as well as time spent doing out of home activities. Safety was also identified as an important measure for the 2SLGBTQ+ community and women, for whom participants also mentioned the importance of healthcare access and the need to consider gendered differences in travel patterns. For

newcomers, participants emphasized access to destinations, social connections, and social integration, as well as transit affordability. Comments highlighted educational participation and safe routes to schools for children and youth, while also highlighting barrier-free spaces and access to healthcare for people with disabilities.

IDENTIFYING LOW PRIORITY OUTCOMES

Our fourth discussion focused on outcomes that respondents did not want prioritized. Specifically, we asked participants: Are any of the outcomes in our database lower priority? Which ones? Participants provided 31 comments that we coded into 7 themes. These comments and themes are presented in Figure 9 below.

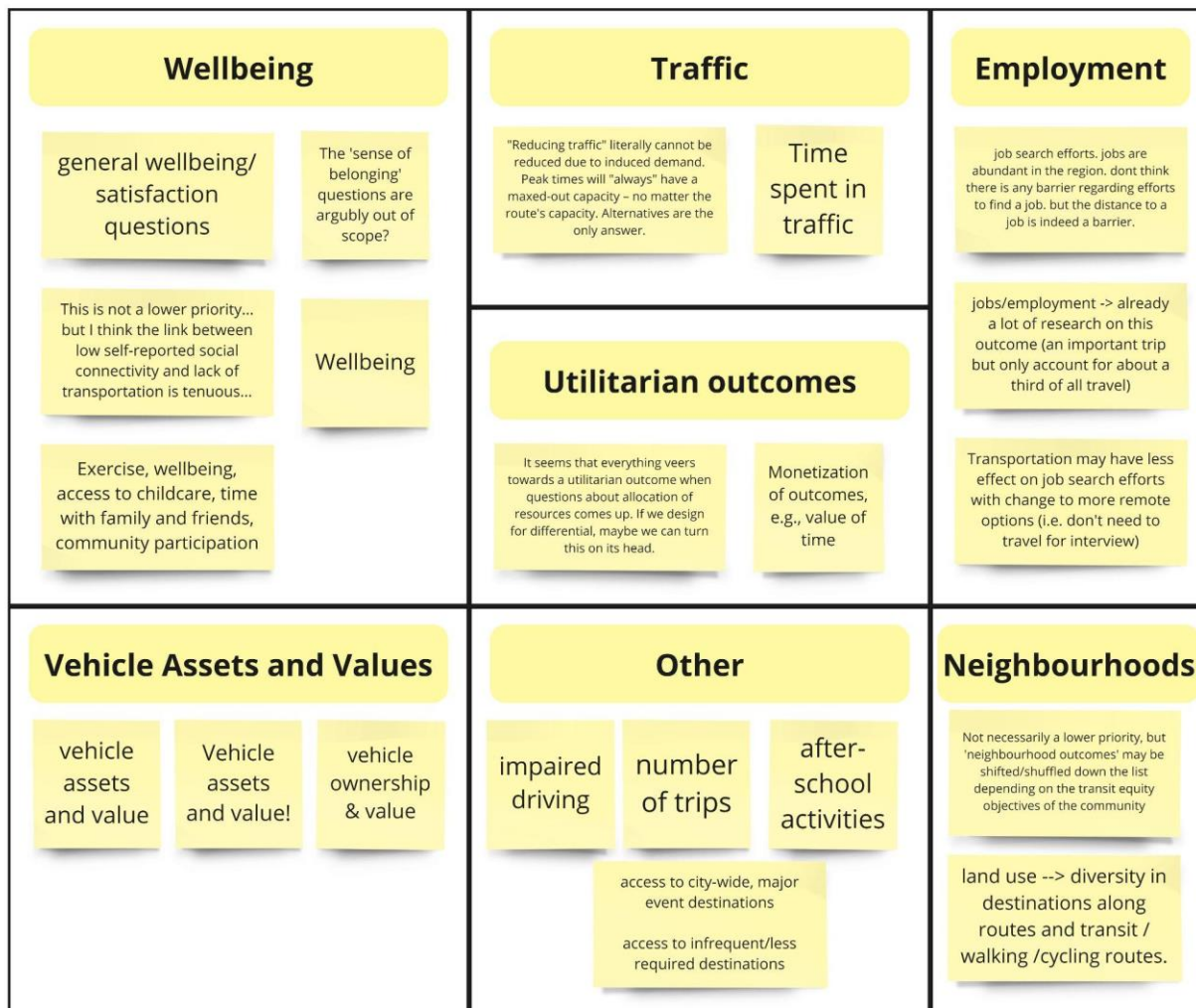



Figure 9: Mentimeter comments on low priority outcomes



Some respondents felt that wellbeing and related outcomes were less relevant to setting data driven equity standards because the link between transportation resources and wellbeing is tenuous. Others felt wellbeing outcomes were difficult to quantify, and that existing survey based measures may be inadequate or problematic for use in setting equity standards. Similarly, some participants felt that employment outcomes had a weak link to transportation and so should not be used to set equity standards. Relatedly, other comments questioned the value of traffic outcomes, vehicle assets, and the monetization of outcomes as useful. Finally, a couple of comments suggested that neighbourhood outcomes might be a lower priority when setting data-driven equity standards.

In discussions, some respondents also highlighted the impracticality of calibrating equity standards to participation in infrequent activities like volunteering. Instead, these respondents suggested that aggregating non-work and non-mandatory activities together as “free time” might create a variable that could indicate the impact of accessibility on activity participation broadly. These participants also felt that keeping measures close to transportation, i.e. the number of trips taken for activities, would also yield more rigorous standards.

OUTCOMES MISSING IN MJ'S DATABASE

In our final discussion, we asked participants: What's missing from our database that is important? These are things MJ can collect in other projects. Participants provided 18 comments that we coded into 4 themes. These comments and themes are presented in Figure 10 below.

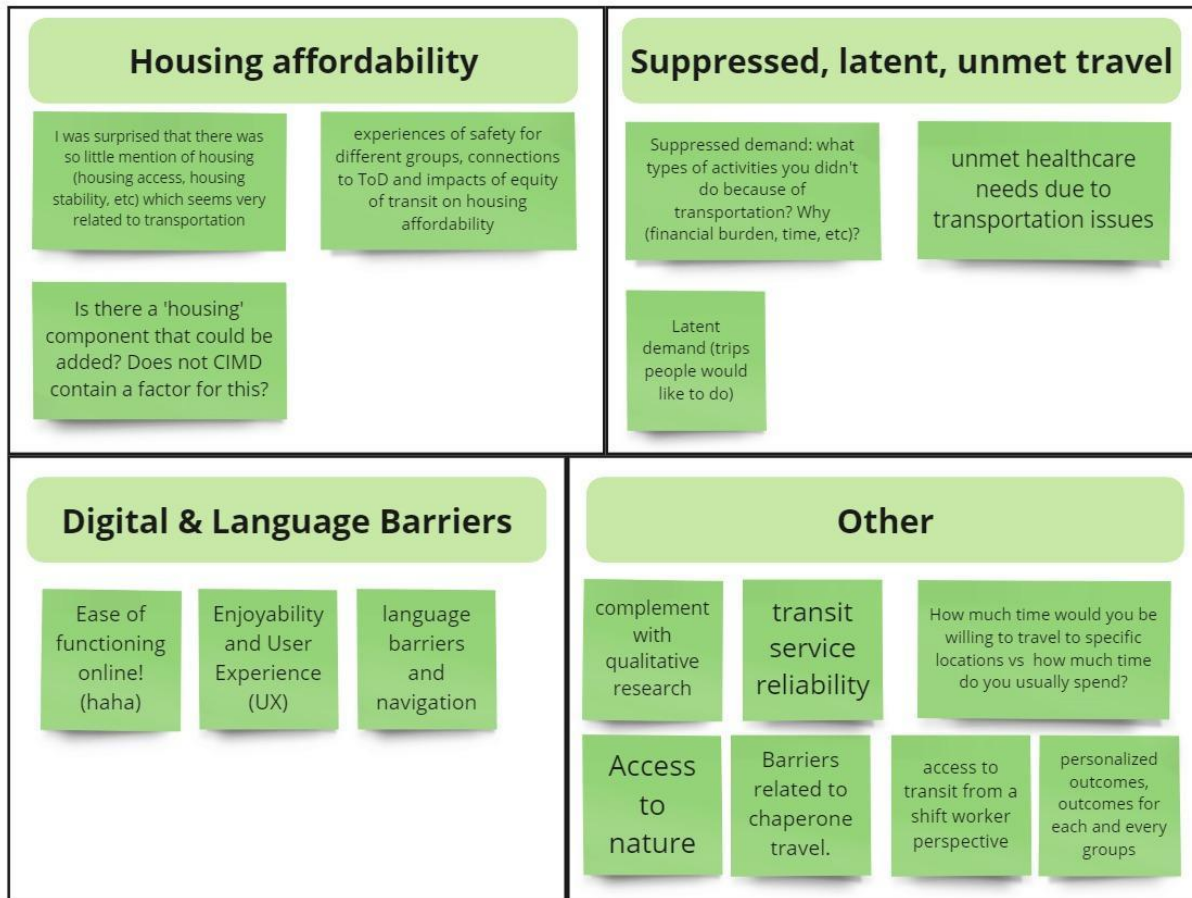


Figure 10: Mentimeter comments on missing outcomes

Most of the respondents' concerns regarding gaps in our database of measures fell into one of three categories: housing affordability, suppressed or latent travel, and digital or language barriers. Respondents felt that the impacts of TOD and transit on affordability would need to be incorporated into data driven equity standards. They also highlighted unmet travel needs, which are sometimes referred to as latent demand for travel or suppressed travel, that would be important to measure when identifying equity goals in transportation planning.

Finally, respondents also mentioned other less common topics, like populations to consider (shift workers, carers), new destinations to consider (nature), and methodological considerations, like incorporating qualitative work and considering personalized outcome measures. Many of these items are likely not correlated with accessibility, and may be better suited for analysis in other MJ programs of work. For example, shift workers may be a focus for a population-based case study (MJ Theme 1), as would travel barriers for caretakers.



STRAW POLL ON PRIORITIES

After the breakouts, we invited participants to reflect on the discussions before selecting what they thought were the top 7 outcomes to model data driven equity standards against. Participants could choose from among the 28 categories of outcomes described in the pre-workshop brief. Voting was anonymous and took place over Mentimeter. Respondents could only vote for each topic once. The percent of people who voted for each topic is presented in Figure 11.

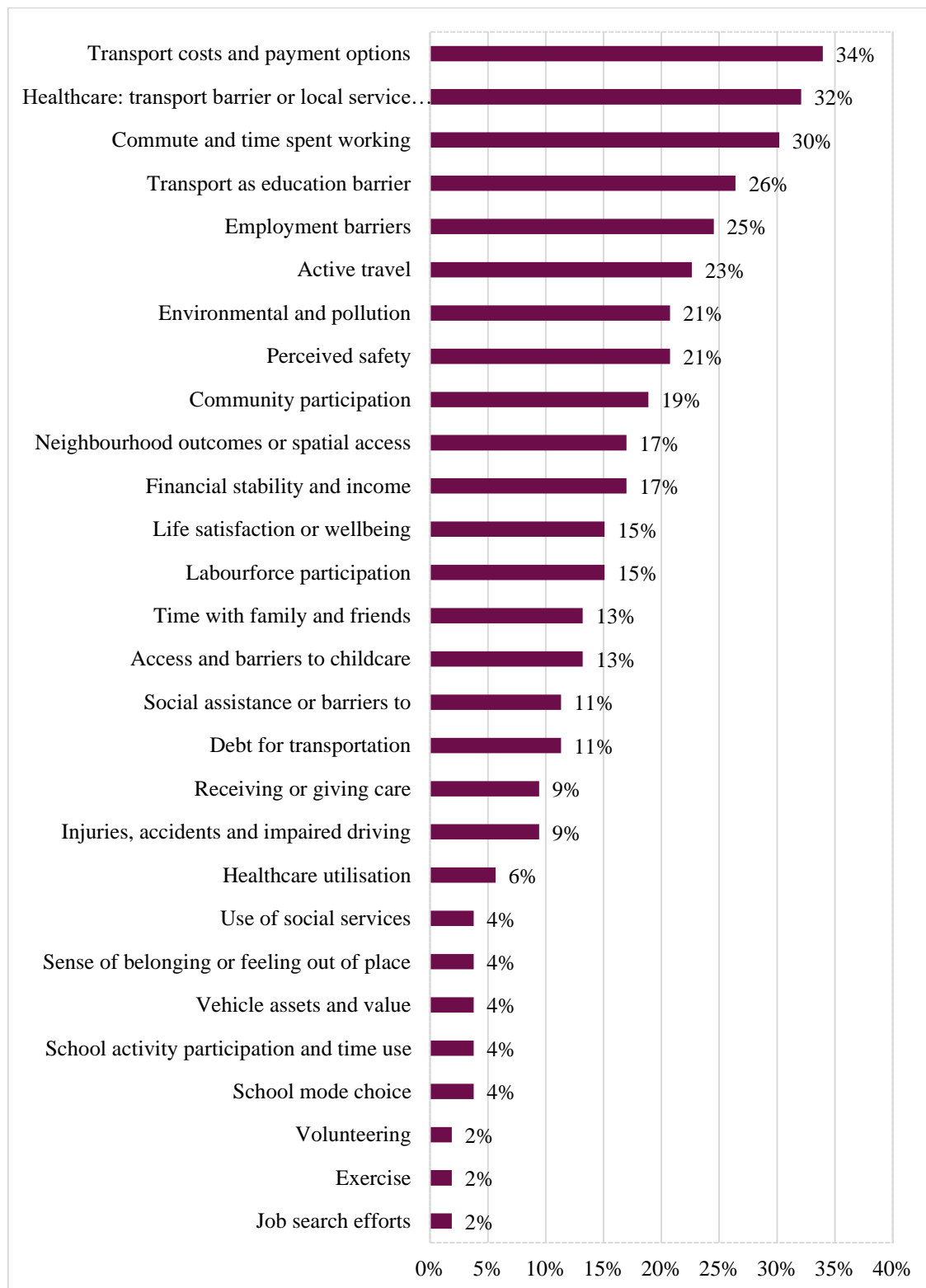



Figure 11: Results of poll asking participants to select top 7 outcome measures



The final poll reflects breakout discussion comments, with transportation costs, healthcare, and the time cost of travel all ranking high. Transportation as a barrier to education and employment also scored high, despite some participants feeling that the link between employment and transportation is tenuous. Finally, measures of active travel utilization and perceived safety also ranked in the top six.

Recommendations and Conclusions

Based on workshop findings, we offer preliminarily five priority research areas for calibrating data driven equity standards using existing Statistics Canada surveys. These priorities are:

- **Transportation costs**, including the monetary and time costs of travel as well as the impacts of car ownership on financial security.
- **Daily activity participation**, including trips taken and time spent traveling, but also as composite measures of time not spent on mandatory activities and travel, i.e. leisure time or discretionary activity participation.
- **Health**, including healthcare access and utilization, as well as transportation as a barrier to healthcare use.
- **Labour force participation**, including especially direct questions on transportation as a barrier to finding or maintaining employment.
- **Education**, including children's education-related travel, and transportation as a barrier to education.

Workshop participants also highlighted gaps in the topics covered by existing Statistics Canada datasets. Some of these gaps are not suited for quantitative accessibility analysis and can be better addressed by other aspects of the partnership's program of work. However, the three most mentioned gaps in our final discussion are topics that Mobilizing Justice can help address through its national survey. Based on workshop discussions, we recommend the following topics be included in the national survey:

- **Affordability** of housing and the link to transportation.
- **Suppressed travel**, or the trips people cannot make due to a lack of transportation. This is sometimes referred to as latent demand or unmet need.
- **Language and digital barriers** to use of transit and new transportation modes like bikeshare and ride hailing.
- **Perceived safety** as this is a significant barrier to travel for many equity deserving groups.

