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ENHANCING EQUITY IN TRANSPORTATION INFRASTRUCTURE PLANNING: AN ANALYSIS OF DISPARITIES IN SPATIAL ACCESS TO SELECTED DESTINATIONS IN CANADA

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ABSTRACT

This research highlights the pressing need to address the infrastructure deficit to foster equitable mobility and to build complete, connected, and sustainable communities. We evaluated transportation inequities in access to selected destinations across Canada, leveraging Statistics Canada’s Spatial Access Measures (SAM), census data, and novel measures of transportation equity. We evaluated access to schools, grocery stores, employment, health care, sport and recreation facilities, cultural venues, and post-secondary institutions using sustainable transportation modes (walking, cycling, and public transit). We focused on five populations who may experience transportation burdens – extreme commuters, low-income households, housing-burdened households, and Black and Indigenous people – comparing outcomes across large urban areas to provide a comprehensive snapshot of accessibility dynamics. Additionally, we present the Mobilizing Justice Transportation Equity Dashboard, an interactive online mapping tool that combines the SAM with socio-demographic data from the census, enabling users to visualize and assess transportation inequities for over 20 different populations across Canada.

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BACKGROUND

Canadian cities are investing in sustainable transportation infrastructure for walking, cycling, and public transit to reduce car dependency and foster equitable, complete communities.¹ Yet a national deficit in this infrastructure, coupled with uncoordinated land use planning, limits sustainable and equitable mobility, reinforcing reliance on automobile use and constraining spatial access to essential services. The shortage of infrastructure for walking, cycling, and transit leads to congestion, longer travel times, and poorer population health outcomes, especially for equity-deserving communities. It also hampers the kind of climate action possible in countries with more robust investments in sustainable transportation infrastructure.²

Spatial accessibility – the proximity of destinations to residential areas and their connectivity via transportation networks – plays a critical role in determining how well transportation and land use systems serve communities. High accessibility supports sustainable transportation, while low accessibility leads to limited transportation options, longer travel times, and reduced access to essential services.³ For non-drivers, these barriers can exacerbate social and economic challenges. For example, at least one million low-income Canadians lack sufficient transit access to employment;⁴ low-income and suburban neighbourhoods are often less walkable and lack cycling infrastructure, limiting the sustainable transportation options for their non-driving residents to access essential services.⁵

Equity-deserving groups may experience compounded challenges in accessing daily needs due to their residential patterns across Canada’s urban centres. Income and housing affordability strongly influence where people live and, consequently, what their transportation options are for accessing daily needs and opportunities. Low-income and housing-burdened populations tend to live in core urban neighbourhoods, where high-density land use and access to sustainable transportation infrastructure can offset some transportation burdens.⁶ However, as the cost of living becomes increasingly unaffordable, especially for housing, economically marginalized populations are moving to sub- and exurban areas, where longer commutes and limited transit coverage reflect a trade-off between affordable housing and transportation costs.⁷

Given the affordability challenges in Canada’s urban centres and the limited access to services and amenities in suburban areas, examining access to destinations for those facing economic and structural marginalization is critical, as regional differences in urban form and transportation networks create unequal access. Disaggregated data from the census demonstrates that, in 2020, poverty rates in many

¹ Housing, Infrastructure and Communities Canada, *Canada Public Transit Fund*.

² Litman, “Evaluating Public Transportation Health Benefits.”

³ Soukhov and Páez, “Accessibility Analysis for Planning Applications.”

⁴ Allen and Farber, “Sizing up Transport Poverty.”

⁵ Fuller and Winters, “Income Inequalities in Bike Score and Bicycling to Work in Canada.”

⁶ Statistics Canada, “Disaggregated Trends in Poverty.”

⁷ Allen and Farber, “Suburbanization of Transport Poverty.”

large urban areas exceeded the national average of 8.1% of households, reaching 11.2% in Vancouver, 10.5% in Halifax, and 10.0% in Toronto, while smaller cities like Quebec City and Oshawa had rates about half that.⁸ In urban cores, where marginalized populations are more concentrated, poverty rates climbed as high as 18.6% – more than double the average for large cities (9.2%). Disparities affecting racialized communities were also stark: 12.4% of Black people and 11.8% of Indigenous people living off-reserve experienced poverty.⁹ A look at regional differences reveals a poverty rate of 14.4% for Black people in Alberta, and the fact that in Winnipeg, the city with the largest Indigenous population in Canada, 23.2% of First Nations people, 10.5% of Métis, and 14.4% of Inuit lived in poverty, compared to 8.8% for Indigenous residents in Ottawa–Gatineau.¹⁰ These patterns highlight the need for geographically informed, equitable planning to address differential barriers to mobility and access.

There is a pressing need for a national evaluation of access to daily needs and opportunities for those living in Canada – one that considers multiple destinations and sustainable transportation modes, since many evaluations focus on the impacts of transportation projects on drivers. To address this gap, we analyzed Statistics Canada’s Spatial Access Measures (SAM) dataset to assess inequities in access to seven destination types via walking, biking, and public transit across Canada’s large urban centres, identifying trends and disparities for equity-deserving populations. We applied adaptable measures of transport equity in our analysis and, to further support equitable planning and decision-making, we developed a web-based mapping tool that presents these data and measures in an interactive, visual format. This tool leverages the national dataset alongside demographic insights, enabling users to visualize and analyze transportation equity at different geographic scales in any Canadian city.

⁸ Statistics Canada, “Disaggregated Trends in Poverty.”

⁹ Statistics Canada, “Disaggregated Trends in Poverty.”

¹⁰ Cook and Yembilah, “Poverty and Anti-Black Racism”; Statistics Canada, “Disaggregated Trends in Poverty.”

DATA AND METHODS

Spatial access measures

We used the SAM, a national dataset which covers all dissemination blocks (DBs) in Canada, to evaluate access across the country's 41 Census Metropolitan Areas (CMAs).¹¹ The dataset provides network-based accessibility scores that estimate the possibility of reaching seven destination types from home: K–12 schools, employment, health care, sport and recreation, culture and arts, post-secondary institutions, and grocery stores, by walking, cycling, or taking public transit from home. We estimated access for each mode using a gravity model, with adjustments to account for preferred characteristics of walking, biking, and public transit routes. Specifically:

- **Walking and cycling measures** represent the possibility of reaching destinations by walking or cycling for up to 30 minutes along the transportation network. The model used to estimate access favours routes with sidewalks and cycling infrastructure, flatter terrain, local roads, and roads with fewer traffic lanes, with penalties for routes that do not meet these criteria.
- **Public transit measures** represent the possibility of reaching destinations by taking public transit during peak (7:00–9:00 a.m.) or off-peak (2:00–4:00 p.m.) hours on weekdays. These measures estimate access for trips up to 90 minutes, including time spent walking to and from transit stops.

The SAM provide a snapshot of the relationship between land use and sustainable transportation infrastructure, helping identify priority areas for enhancing transportation networks and expanding access to key destinations. A detailed methodological description is available on the SAM website.¹² Briefly, the destinations were sourced from OpenStreetMap, the Linkable Open Data Environment, Microsoft, and the Business Registry. Travel times by public transit were computed using the R5R routing engine, using data from the General Transit Feed Specification. Cycling and walking times were calculated using Valhalla, a routing engine that draws on tags in OpenStreetMap to adjust travel time calculations by factoring topography, number of traffic lanes, posted speed limit, impedances on the route, and the presence of active transportation infrastructure. The SAM database was released in July 2023 and is based on data from 2020 to 2022.

SAM scores range from 0 to 1, where higher scores indicate closer proximity and better connectivity to destinations by sustainable transportation. Areas with low scores are farther from destinations and may need improved infrastructure. SAM scores were calculated at the DB level (i.e., the home area), and we aggregated them to DAs using population weighting, allowing linkages to 2021 census data.

¹¹ Dissemination blocks are the smallest geographic area (approximately one block on each side) for which Statistics Canada disseminates population and dwelling counts. They cover all the territory of Canada. Census metropolitan areas (CMAs) are large, densely populated centres made up of adjacent municipalities that are economically and socially integrated and situated around a population centre (urban core). A CMA must have a total population of at least 100,000 with 50,000 or more living in the core.

¹² Statistics Canada, "Spatial Access Measures."

Equity-deserving populations

In Canada’s urban areas, equity-deserving groups may encounter overlapping transportation and housing barriers that, in turn, affect their access to many kinds of destinations. We focused on five such population groups living in CMAs:

- extreme commuters, defined as those with a one-way commute to work of 60 minutes or more (9.2% of commuters¹³)
- housing-burdened households, defined as those that spend 30% or more of their income on shelter (22.0%¹⁴)
- low-income individuals or families, defined as those earning below the low-income cut-offs after tax (LICO-AT) (9.9%¹⁵)
- Black people, as self-identified in the census (1.5 million people¹⁶)
- Indigenous people (First Nations, Métis, and/or Inuk), as self-identified in the census (1.8 million people¹⁷)

These groups were selected because long commutes and high housing costs frequently intersect – disproportionately affecting racialized and low-income populations.¹⁸ Other groups, such as women and gender-diverse people, children, seniors, people with disabilities, and newcomers, also experience economic marginalization, accessibility challenges, and structural marginalization, which future studies could explore.

Summarizing national trends in access

We used the linked SAM dataset to evaluate transportation access for these five populations across Canada’s CMAs. To understand trends in access more broadly, we first calculated national-level descriptive statistics to highlight key trends in accessibility for the general population.

Defining low access to destinations

Next, we used novel measures of transportation equity to determine whether each of the five populations was overrepresented in low-access areas. We defined low access DAs as those in the bottom 25% of SAM scores. To reflect the unique transportation conditions in each CMA, we rescaled the SAM scores locally, setting the highest score in each CMA to 1 (highest access) and the lowest score to 0 (lowest access), rather than using national scores. The 25% threshold for determining low-access areas was then derived from these rescaled local scores.

¹³ Statistics Canada, “More Canadians Commuting in 2024.”

¹⁴ Statistics Canada, “Housing Affordability in Canada, 2022.”

¹⁵ Statistics Canada, “Table 11-10-0135-01.”

¹⁶ Statistics Canada, “Racialized Groups.”

¹⁷ Statistics Canada, *Canada’s Indigenous Population*.

¹⁸ Allen et al., “Inequalities of Extreme Commuting across Canada.”

Measuring transportation inequities in areas with low access to destinations

Using local SAM scores, we derived population-weighted measures of transport disadvantage for each destination type, mode, and population. We used the Foster-Greer-Thorbecke (FGT) measures to evaluate transportation inequities in low-access areas by calculating both the rate of transport disadvantage (FGT-0) and the severity of access gaps (FGT-1):

- **Rate of transport disadvantage (FGT-0):** This measure indicates the proportion of people living in the lowest-access areas. FGT-0 values closer to 1 mean a larger percentage of the population lived in low-access areas, while values near 0 reflect a smaller proportion.
- **Severity of transport disadvantage (FGT-1):** FGT-1 measures how far below the 25% low-access threshold a population's access scores fall. Higher FGT-1 values indicate a larger gap in access, while lower values indicate a smaller gap, reflecting less severe disadvantage.

We assume if spatial access to destinations were distributed equally, 25% of the population would live in low-access areas. When more than 25% of a population is living in these low-access areas (i.e., $FGT-0 \geq 0.25$), there is a disproportionate number of transport-disadvantaged people in that population. This disadvantage can increase barriers in accessing essential services like employment, health care, and education for non-drivers, potentially reinforcing or worsening social, economic, and health inequities.

Ranking transportation inequities across Canada's CMAs: Peak-hour transit access to employment

We used FGT-0 and FGT-1 scores to rank transportation inequities in CMAs for each population group. A higher FGT-0 rank indicates that a larger share of the population in that CMA lived in areas with low access, and a higher FGT-1 rank indicates more severe access gaps. In regions with higher ranks, transportation inequities could be more pronounced, especially for people with limited or no access to a motor vehicle.

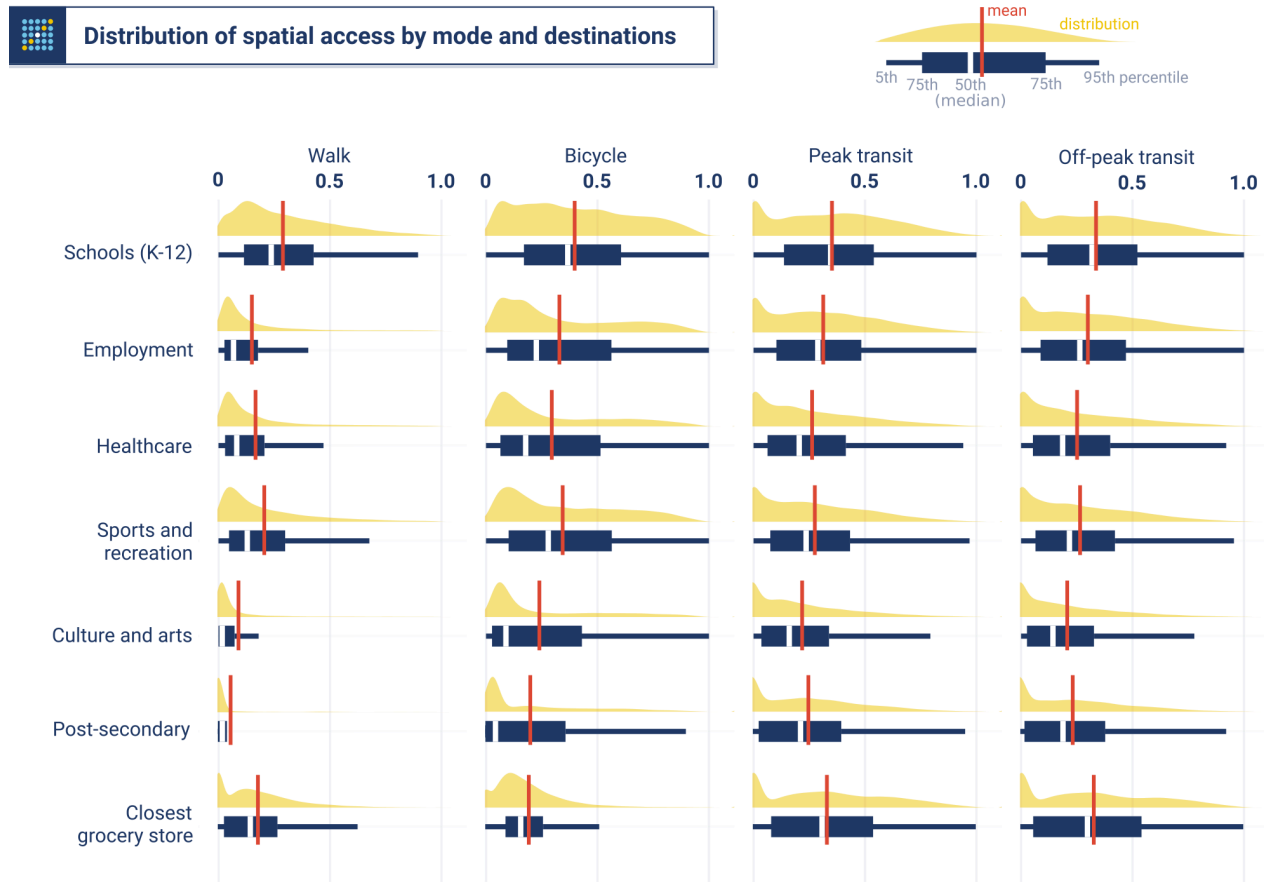
RESULTS

National trends in access

We calculated descriptive statistics for the general population to summarize national trends in access to walking, cycling, and public transit across CMAs. Here are some key insights that emerged:

- **Overall low access:** Access to destinations via sustainable transportation (any mode) was generally low, with right-skewed distributions indicating limited access to destinations in many areas (see Figure 1). This result reflects a national pattern of land use and transportation systems that favour driving to meet one's daily needs. The lowest access was observed for post-secondary institutions and cultural and arts facilities, while the highest access was for K–12 schools.
- **Walking access:** Walking access was the lowest of all modes, with median SAM scores below 0.25 across all destinations, indicating that more than half of DAs in Canada's large urban centres had very limited walking access to the destinations in the study. Access to grocery stores was especially poor, with 25th-percentile scores close to zero (meaning that in at least 25% of DAs, there was virtually no walking access to these facilities).
- **Cycling access:** Cycling provided better access than walking and, in some cases, offered comparable or even higher access than public transit. For instance, cycling offered the greatest access to schools (K–12) and to sport and recreational facilities; the scores for access to health care and employment by bike were comparable to those for public transit.
- **Public transit access:** Public transit (both peak and off-peak hours) provided improved overall access to most destinations, particularly for employment, grocery stores, and post-secondary institutions. However, Figure 1 reveals that access scores for this mode are clustered at the lower end of values (closer to zero) in many areas. This suggests that while some regions have robust transit provision, many others face inadequate coverage.

Figure 1. Distribution of access scores by mode and destinations



Data Sources: Statistics Canada 2023 Spatial Access Measures

Boxplots and density plots show the distribution of population-weighted SAM scores by walking, cycling, and public transit to seven different destination types in Canada’s census metropolitan areas. The x-axis represents the SAM scores, ranging from 0 (low access) to 1 (high access). A score closer to 0 means that areas have limited access to that destination type, while a score closer to 1 indicates better access. The boxplots display the median, interquartile range, and overall distribution of access scores, while the density plots show the frequency of access levels across the population, helping to visualize how access varies within the CMAs.

Transportation inequities in areas with low access to destinations

We calculated the rates (FGT-0) and severity (FGT-1) of transportation disadvantage for equity-deserving populations, focusing on areas within the bottom 25% of SAM scores. Here are some key insights:

- **Extreme commuters** had the highest rates of transportation disadvantage (Figure 2) and the most severe gaps in access (Figure 3). This finding reflects the systemic accessibility barriers found in car-oriented sub- and exurban areas, where long commutes to work in the urban core coincide with limited access to services and amenities in the residential neighbourhoods where these commuters live. People with low income and those who are racialized, including both Black and

Indigenous people, are significantly more likely to be extreme commuters than are white residents.¹⁹ This trend, paired with our findings of overall low access to daily needs close to home, underscores structural inequities in mobility and access that disproportionately affect marginalized communities.

- **Housing-burdened populations** had lower rates of transportation disadvantage than extreme commuters, with under 25% living in areas with the lowest access for most destinations. This group also demonstrated less severe disadvantage (Figure 3) than extreme commuters, but had more severe access gaps than the low-income group. This finding suggests that housing-burdened populations are more likely to reside in central urban areas within many CMAs, giving them higher access to destinations than those in sub- and exurban neighbourhoods.
- **Low-income populations** had relatively equitable transportation disadvantage rates compared with other groups: fewer than 25% of low-income residents lived in areas with the lowest access to destinations, which is below the expected proportion (Figure 2). Among those who lived in transport-disadvantaged areas, the severity of the gap in access was also lower, reflecting that, in many Canadian cities, people with lower incomes lived in core urban areas. This finding suggests an overlap between the low-income and housing-burdened populations, as both groups tend to reside closer to urban centres with better access to sustainable transportation infrastructure and essential destinations.
- **Indigenous populations** had outcomes similar to those of extreme commuters, nearly matching their high rates of transportation disadvantage and severity of access gaps – and even faring worse in terms of access to some destinations (e.g., schools, employment, and health care) (see Figures 2 and 3). Given that 44% of Indigenous people in Canada reside in CMAs,²⁰ these findings point to systemic inequities in urban transportation and access that align with broader infrastructure deficits disproportionately burdening Indigenous people in Canada. These inequities stem from long-standing colonial policies and exclusionary urban planning practices that continue to affect Indigenous communities. Although national evaluations of transportation disadvantage for Indigenous people are lacking, particularly in urban areas, these results indicate an urgent need for planners and policy-makers to address this infrastructure deficit.

¹⁹ Allen et al., “Inequalities of Extreme Commuting across Canada.”

²⁰ Statistics Canada, *Canada's Indigenous Population*.

- **Black populations** had transportation disadvantage rates similar to those of low-income populations, with rates lower than expected for most destinations (Figure 2); the severity of their transportation disadvantage was also comparable (Figure 3). The transportation disadvantage rates faced by Black populations were higher for cycling than for walking and public transit, and gaps in transportation access were most severe for grocery stores (for all modes), cultural and arts facilities (for walking and cycling), and post-secondary institutions (for public transit during peak hours).
- **Access to grocery stores** was notably poor across all equity-deserving populations, with similarly high rates of transportation disadvantage and severe access gaps observed for this essential service.
- **Post-secondary institutions** were also an outlier in these data, with over 80% of the population living in areas with no/low access by walking. While the disparities were less for cycling and public transit, the overall high rates of disadvantage and severe gaps in access reflect the restrictive land use zoning around many college and university campuses that limits nearby housing and amenities, thereby constraining options for sustainable transportation to these facilities.²¹

²¹ Revington and Wray, “Land-Use Planning Approaches.”

Figure 2. Transportation disadvantage rates (FGT-0) across equity-deserving populations, by population group and destination



Data Sources: Statistics Canada 2021 Census of Population; 2023 Spatial Access Measures

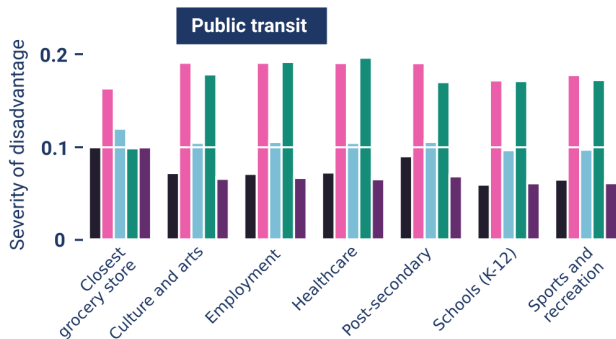
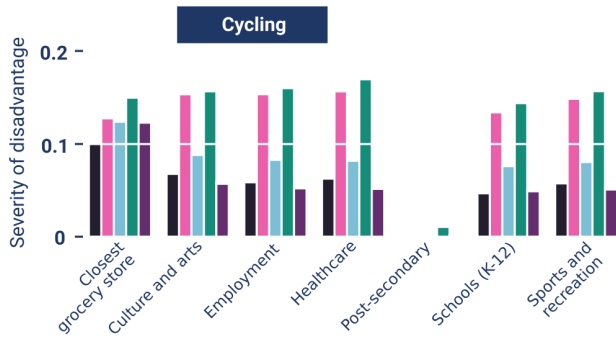
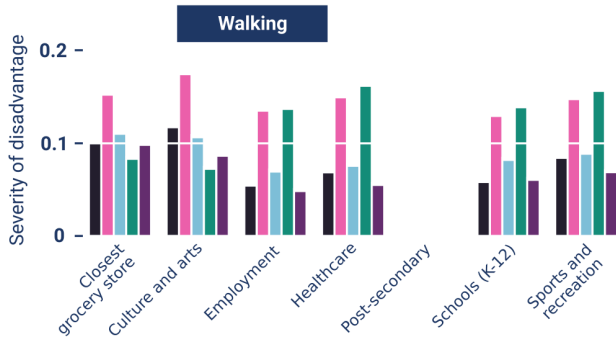
This plot shows the proportion of each population living in areas with the lowest access to the selected destinations (bottom 25% of SAM scores, shown by the dashed black line in all three plots). FGT-0 values higher than 0.25 indicate that the population is overrepresented in low-access areas.

- **Extreme commuters** and **Indigenous people** had the highest rates of transportation disadvantage across all modes and destinations.
- **Housing-burdened** and **low-income** populations had lower rates of transportation disadvantage than extreme commuters, reflecting better access to services and amenities in core urban areas.
- **Black people** had FGT-0 rates lower than expected for most destinations. Within this group, transportation disadvantage rates were higher for cycling than for walking and public transit.
- Access was low overall for **grocery stores**, and **post-secondary institutions** were an outlier, with over 80% of the population living in areas with no/low access by walking.

Figure 3. Severity of transportation disadvantage across equity-deserving populations

Severity of transportation disadvantage

■ Black ■ Extreme commuters ■ Housing burdened
■ Indigenous ■ Low income



This plot shows the severity of transportation disadvantage for populations in the lowest-access areas. Higher FGT-1 values indicate a larger gap between a group’s access scores and the low-access threshold.

- **Extreme commuters** and **Indigenous people** had the most severe gaps in access across all modes and destinations.
- **Low-income** and **Black people** had lesser gaps across all modes and destinations than did other groups.
- **Housing-burdened populations** had more severe gaps in access than those with low income.
- **Access to grocery stores** was notably poor across all populations, with similarly high rates of transportation disadvantage and more severe gaps observed for this essential service.

Data Sources: Statistics Canada 2021 Census of Population; 2023 Spatial Access Measures

Regional inequities in peak-hour transit access to employment

We ranked transportation inequities in public transit access to employment in CMAs by relative transportation disadvantage (FGT-0) and severity (FGT-1). (Detailed results are presented in Appendix Table A-1.) A higher FGT-0 rank (closer to 41) indicates greater rates of transportation disadvantage, while a higher FGT-1 rank (closer to 41) signifies more severe gaps in access, meaning that people in low-access areas are further below the 25% low-access threshold in that CMA. Regional disparities drive the national trends illustrated in Figures 2 and 3, and variations in transit access to employment across Canada's CMAs illustrate that inequities affect certain equity-deserving groups more acutely in different regions of the country. Key insights from each region reveal how these patterns were distributed:

- **Atlantic provinces (New Brunswick, Newfoundland, Nova Scotia):** Extreme commuters in Atlantic Canada faced the greatest transportation inequities in the region, with CMAs in this region ranking among the highest nationally for both rate (FGT-0) and severity (FGT-1) of disadvantage. These inequities likely stem from lower-density urban form and dispersed employment centres, compounded by limited transit networks. This situation especially disadvantages low-income and Indigenous populations in areas like Fredericton, Moncton, and Halifax.
- **Central Canada (Ontario, Quebec):** Transportation disadvantage for Indigenous people in Central Canada, and especially Quebec, was high, with 36% of CMAs in the region and 83% in Quebec ranking among the most disadvantaged nationwide in terms of both FGT-0 and FGT-1. Access was also inequitable for Black populations in Ontario, particularly in Brantford and Toronto. Notably, Belleville–Quinte in Ontario and Drummondville in Quebec had no access to employment by public transit. While this region stands out, the systemic overrepresentation of Indigenous and Black people with low access to destinations occurred in all regions. This underscores the need to recognize historical marginalization as a critical component of equity-centred urban planning, alongside ongoing discrimination in domains like housing and employment that intersect with transportation barriers to exacerbate inequities in access to opportunities.²²
- **Prairie provinces (Alberta, Saskatchewan, Manitoba):** Black and housing-burdened populations in the Prairies had the greatest disadvantages in this region. Alberta's CMAs showed especially high transportation disadvantage rates for housing-burdened groups, with all CMAs in the province ranking above 30. Population growth, rising housing costs in Alberta's urban centres, and economic marginalization – particularly for Black populations – are likely contributing to these challenges. Inequities are further reflected in moderate to severe access gaps, especially in the Alberta cities of Calgary, Edmonton, and Lethbridge, and in Saskatoon.

²² Allen et al., "Inequalities of Extreme Commuting across Canada."

- **West Coast (British Columbia):** Low-income populations in B.C. faced inequitable access to destinations, with 86% of CMAs ranking among the highest nationally for transport disadvantage rates. Like elsewhere in Canada, high housing costs in major urban centres such as Vancouver are pushing low-income residents to smaller, more affordable, but transit-poor cities like Abbotsford, Chilliwack, and Nanaimo, where limited transit coverage compounds access issues (as reflected in higher FGT-1 ranks indicating more severe gaps). Additionally, Indigenous populations in Vancouver and Victoria, and Black populations in Nanaimo and Vancouver, also experienced high rates of disadvantage, with more severe gaps for Black populations.

SUMMARY OF KEY INSIGHTS

- **Overall low access to destinations by sustainable transportation modes:** Across Canada's CMAs, access to select destinations by walking, cycling, and public transit was consistently low.
- **Walking access as a national issue:** Nationwide, the destinations studied were less accessible by walking than by any other mode. Access to grocery stores was particularly poor, with limited pedestrian connectivity to these essential services in the majority of areas in CMAs. Cycling offered better access to most destinations than walking, and in some cases, was comparable to or higher than public transit. Public transit (both peak and off-peak hours) provided improved access to most destinations, particularly for employment and grocery stores, but regional disparities were notable.
- **Housing affordability trade-off:** Extreme commuters, who often live farther from core urban areas, had the lowest access to destinations close to home. In Canada, living farther from urban centres corresponds with lower housing costs – at the expense of poor access to destinations near home. In contrast, low-income and housing-burdened populations tended to have better access to destinations. This pattern suggests that these populations may prioritize living in urban core areas where proximity to services and amenities offsets the higher transportation burdens of living in outlying areas.
- **Regional differences driving national trends:** Low income is often used as an equity indicator in evaluating access to transportation infrastructure. However, examining transportation inequities across different populations, modes, and destinations reveals that the extent and severity of inequities vary significantly within and across regions and population groups in Canada. These variations underscore distinct challenges that call for a strong focus on local contexts in policy development and infrastructure interventions.

*“In Canada, living farther from urban centres corresponds with lower housing costs – **at the expense of poor access to destinations near home.**”*

RECOMMENDATIONS

Based on our results, we make the following recommendations:

- **Prioritize investments in local amenities and sustainable transportation infrastructure to foster complete communities** in underserved areas, including sub- and exurban neighbourhoods and low-access areas around college and university campuses. This includes expanding public transit routes, investing in safer cycling infrastructure, and improving walkability. Incentivizing local economic development in residential areas can bring essential services and job opportunities closer to where people live, while land use adjustments around fixed locations like post-secondary institutions and major employment centres can enable the creation of complete communities around these hubs. Together, these strategies will promote equitable outcomes for the populations most affected by transportation inequities, reducing the burden of long commutes and ensuring that all residents benefit from greater accessibility to daily needs and opportunities.
- **Increase access to grocery stores in local neighbourhoods** through strategic land use planning and transportation network design. Food insecurity among Canadian families is a growing and pressing concern that requires immediate attention.²³ Planners should prioritize these essential destinations – just as schools are integrated into zoning regulations – by incentivizing grocery-store developments in residential neighbourhoods and ensuring connectivity via sustainable transportation options. Improved access will likely enhance food security and increase the use of sustainable transportation in accessing these destinations.
- **Tap into cycling** as a sustainable transportation mode by expanding high-comfort cycling networks and access to bicycles. Shorter travel distances and compact urban environments in many Canadian cities make cycling for transportation a strong alternative to driving, but unsafe conditions are a deterrent. To realize cycling’s potential, cities need to ensure that there are safe, well-connected routes to key destinations by investing in protected cycling infrastructure. Expanding or introducing bike-share programs and e-bike incentives can further reduce barriers, especially for those who do not own bikes or need assistance with longer or more difficult routes.
- **Protect accessibility for low-income and housing-burdened residents in downtown areas** by addressing the risks of displacement due to gentrification. Planners should prioritize strategies that maintain affordable housing options and develop transportation networks that allow these populations to continue benefiting from proximity to essential services and transit. Inclusionary zoning and equitable transportation planning can help ensure that access is both maintained and enhanced as urban development expands.

²³ Uppal, “Food Insecurity among Canadian Families.”

- **Address inequities in transportation and access for Indigenous populations** by tackling the persistent infrastructure gaps faced by these communities. Collaboration with Indigenous peoples is essential to co-create solutions that are community-driven and informed by local contexts. Transportation and land use policies must reflect Indigenous sovereignty and respond to their specific needs. Improving access to essential services such as healthcare, employment, and grocery stores is crucial for redressing historical and systemic inequities in the social determinants of health caused by colonial and exclusionary urban planning and policies.
- **Evaluate local variations in access and tailor strategies to meet local needs** rather than looking for a one-size-fits-all approach. While our analysis reveals transportation inequities at the CMA level, this broader scale may obscure localized disparities within municipalities. For instance, although transportation disadvantage (both FGT-0 and FGT-1) for Black populations in Toronto was moderate in this study, a recent evaluation in the City of Toronto indicates these disparities are more pronounced when analyzed at the municipal level.²⁴ To support such localized assessments, the authors have created the Mobilizing Justice Transportation Equity Dashboard, a mapping tool that leverages the SAM database and enables users to apply the FGT measures across more than 20 population groups (see Box 1). We recommend that practitioners and policy-makers use this tool to evaluate transportation disadvantage at finer geographic scales and for additional equity-deserving groups not considered in this analysis.

²⁴ Klumpenhouwer and Farber, “Transport Poverty in Toronto.”

Box 1. A tool for evaluating transportation inequities in your local community

MOBILIZING JUSTICE Transportation Equity Dashboard About

Explore Transportation Equity!
By toggling the different modes and destinations on this map, you can explore how easy it is to get to services like schools, grocery stores, and recreation centres by walking, cycling, or public transit.

Step 1: Select a Transportation Mode
Public Transit Peak

Step 2: Pick a Destination
Healthcare Facilities

Step 3: Adjust the Access Indices
National

Step 4: Choose a Population Group
Population 0-14

Priority Neighbourhoods
 Do Not Show
 Number of People
 Proportion of People

Access Score
 * 1.00 (highest)
 * 0.00 (lowest)
 No access to selected mode or destination.

Dissemination Area Profile
 This dissemination area has an access score of 0.37 for getting to healthcare facilities by public transit at peak times.
 This access score is 0.03 above the population median for the CD.
 155 of the people in this DA fall into the demographic category Population 0-14, which is 23.0% of this DA's population.

CD of Toronto
 Access Score for Healthcare Facilities vs. Population 0-14 - Proportion of DA
 R2: 0.06

CD of Toronto
 Percentage of Community Population vs. Access Score for Healthcare Facilities
 Demographic Median
 Population Median
 Selected DA
 Population 0-14
 Population

City of Toronto, Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, FAO, ME. Powered by Esri

Add Data Draw Print

Mobilizing Justice partnered with Esri Canada to create the [Transportation Equity Dashboard](#), an innovative platform that brings the SAM database to life. Designed for practical, local-level evaluations, the dashboard leverages the same enriched SAM database used in this analysis alongside an interactive map interface and statistical charts that allow users to assess transportation inequities at the national, regional, and municipal scales. Users can evaluate accessibility for walking, cycling, and public transit across more than 20 population groups, enabling detailed analysis of transportation inequities in communities across Canada. Our [Equity of Transport Futures Handbook](#) complements the dashboard, providing instructions for applying the FGT measures to evaluate transport disadvantage and build a business case for equitable infrastructure investments. The guide includes scenario-based analyses, helping users model different investment strategies and assess their potential impact on reducing transport inequities. Additionally, it offers practical steps for translating data into actionable policy solutions. Visit the [Mobilizing Justice website](#) for more information and to access these and other resources, tools, and insights for advancing action on transportation equity in Canada.

APPENDIX

Table A-1. Public transit access to employment in Canadian CMAs, ranked by relative transportation disadvantage

		Transport disadvantage rate					Severity of transport disadvantage				
		Low income	Housing burdened	Black	Indig.	Extreme commuter	Low income	Housing burdened	Black	Indig.	Extreme commuter
Atlantic	Fredericton	34	37	1	10	20	34	26	36	11	17
	Moncton	21	26	4	9	22	30	20	27	5	3
	Saint John	37	38	2	7	16	25	27	29	17	21
	St. John's	23	24	25	37	13	26	17	25	7	11
	Halifax	28	32	5	19	6	20	37	39	16	22
Ontario	Barrie	20	17	39	34	34	31	6	9	25	25
	Belleville - Quinte West	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5
	Brantford	9	4	23	5	24	13	2	2	31	27
	Greater Sudbury	36	33	15	22	11	21	28	28	2	2
	Guelph	17	5	29	6	33	8	8	8	21	12
	Hamilton	3	9	20	23	18	15	1	6	22	26
	Kingston	29	34	6	27	2	19	12	23	1	1
	Kitch. - Cam. - Wat.	5	3	12	8	12	4	13	7	24	20
	London	2	21	17	36	10	28	10	22	18	23
	Oshawa	4	15	26	28	27	27	23	19	27	35
	Ottawa - Gatineau	27	31	19	35	8	16	36	38	14	14
	Peterborough	32	28	7	15	4	10	29	31	12	18
	St. Catharines - Niagara	6	12	32	30	26	29	22	21	19	32
	Thunder Bay	35	36	3	12	1	3	7	14	4	5
	Toronto	8	13	28	21	21	14	35	32	30	30
Windsor	1	1	11	3	17	5	25	11	20	15	
Quebec	Drummondville	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5
	Montreal	13	19	16	20	5	7	39	37	23	28
	Quebec City	18	20	8	16	3	2	33	30	10	7
	Saguenay	38	39	10	26	7	17	31	34	6	13
	Sherbrooke	24	30	34	39	14	33	32	33	8	16
	Trois-Rivières	22	10	9	4	9	9	24	17	9	6
Prairies	Calgary	10	14	38	33	25	22	21	18	38	36
	Edmonton	15	27	31	38	15	24	30	35	15	19
	Lethbridge	26	18	36	25	39	39	4	5	36	8
	Red Deer	25	8	37	14	29	12	5	3	39	39
	Winnipeg	11	16	13	11	19	6	11	10	29	24
	Regina	30	23	14	1	23	1	3	1	37	10
Pacific	Saskatoon	31	29	22	31	30	32	9	15	26	29
	Abbotsford - Mission	14	11	33	24	37	37	19	12	35	37
	Chilliwack	19	6	30	17	38	36	16	16	33	33
	Kamloops	33	25	35	32	36	35	14	13	13	9
	Kelowna	16	2	18	2	32	11	15	4	3	4
	Nanaimo	7	22	24	29	35	38	18	20	34	38
	Vancouver	12	7	27	13	31	18	38	24	32	34
Victoria	39	35	21	18	28	23	34	26	28	31	
		Interpretation: A lower rank (closer to 1) means that fewer people from the population lived in areas with the lowest access to employment by public transit (peak hours). A higher rank (closer to 41) means that more of the population lived in areas with the lowest access.					Interpretation: A lower rank (closer to 1) means that, for people who lived in the lowest access areas, the severity of transportation disadvantage in access to employment by public transit (peak hours) was lower. A higher rank (closer to 41) means that the transportation disadvantage was more severe for those living in low-access areas, meaning potentially greater challenges in reaching employment by public transit.				

Data Sources: Statistics Canada 2021 Census of Population. Statistics Canada 2023 Spatial Access Measures

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