

# **Health and Equity**

## **GGR424 - Transportation Geography & Planning**

March 4, 2022

## Announcements

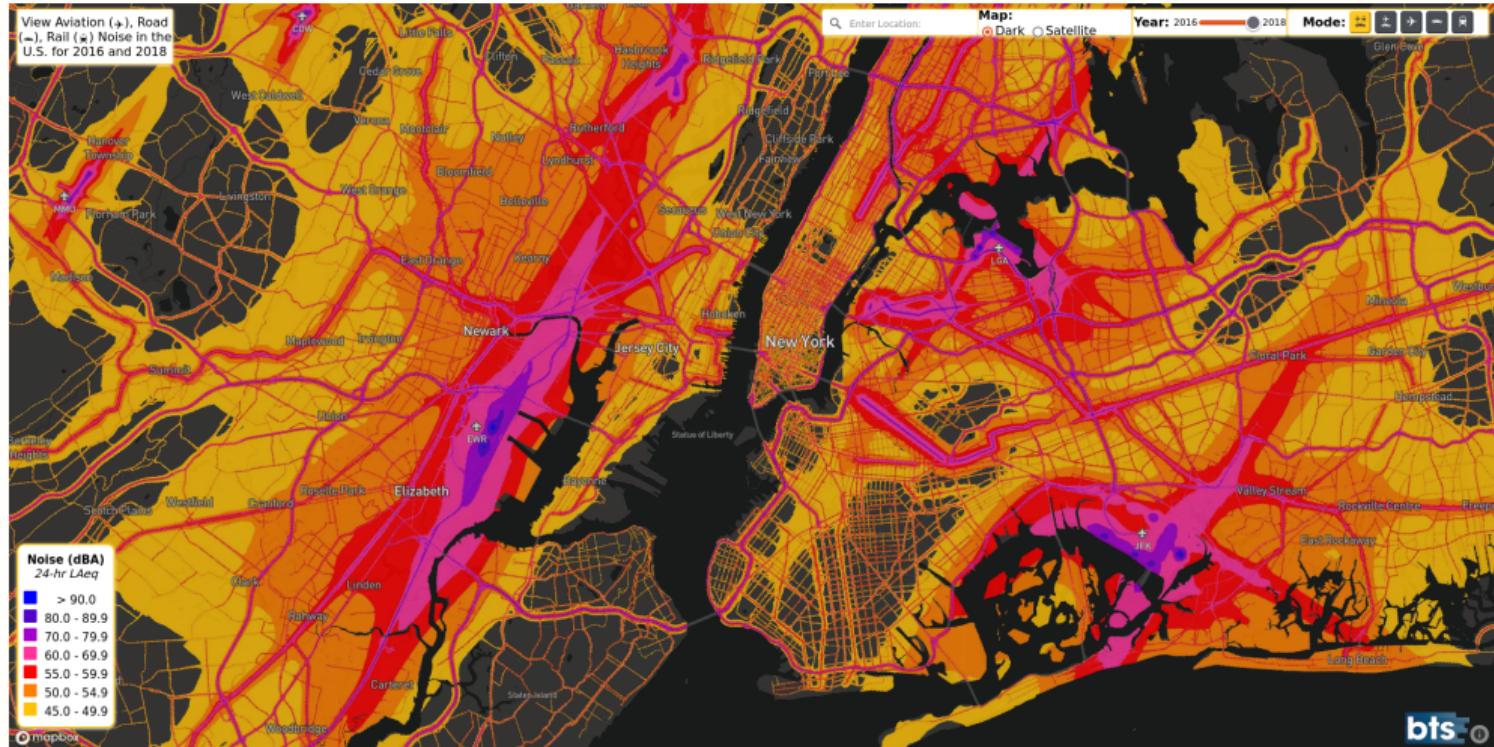
- ▶ Project Proposal due March 10

## Today

- ▶ Health impacts of transportation (e.g. pollution, noise, physical activity)
- ▶ How the costs and benefits of transportation are (in)equitably distributed

How can urban transportation affect health and well-being?

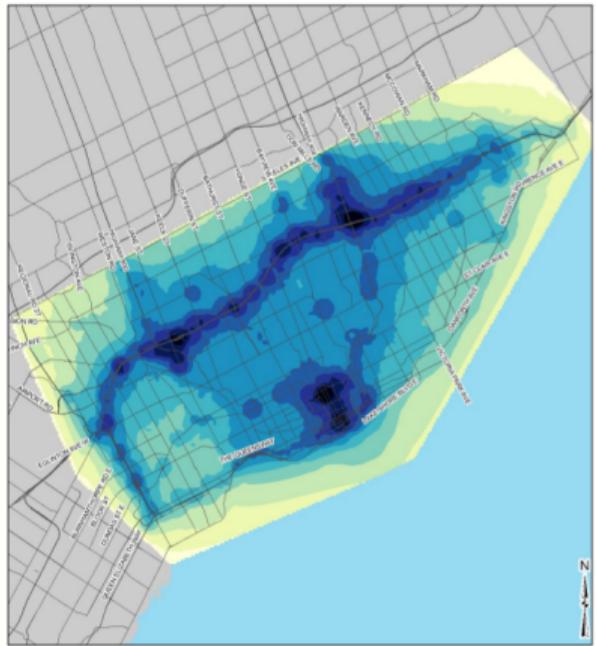
# Noise



Source: <https://maps.dot.gov/BTS/NationalTransportationNoiseMap/>

City report on health impacts of noise <https://www.toronto.ca/wp-content/uploads/2017/11/8f98-tph-How-Loud-is-Too-Loud-Health-Impacts-Environmental-Noise.pdf>

# Air Pollution



LEGEND

benzene-a	ANNUAL AAQC ( $\mu\text{g}/\text{m}^3$ ) = 0.45	0.9163 - 1.0923
	0.5641 - 0.6522	1.0924 - 1.1803
	0.6523 - 0.7402	1.1804 - 1.2683
	0.7403 - 0.8282	1.2684 - 1.3563
	0.8283 - 0.9162	1.3564 - 1.4443

10.00 1 2  
SCALE IN KILOMETERS

ANALYSIS MAP -  
ANNUAL AVERAGE CONCENTRATION  
BENZENE ANNUAL AVERAGE  
CONCENTRATIONS FROM ALL EMISSION SOURCES

Environment & Energy Division FIGURE: C-03



LEGEND

pm10-a-a	ANNUAL AAQC ( $\mu\text{g}/\text{m}^3$ ) = N/A	19.01 - 21.69
	11.26 - 13.36	21.7 - 23.77
	13.37 - 15.44	23.78 - 25.85
	15.45 - 17.52	25.86 - 27.93
	17.53 - 19.6	27.94 - 30.01
		30.02 - 32.09

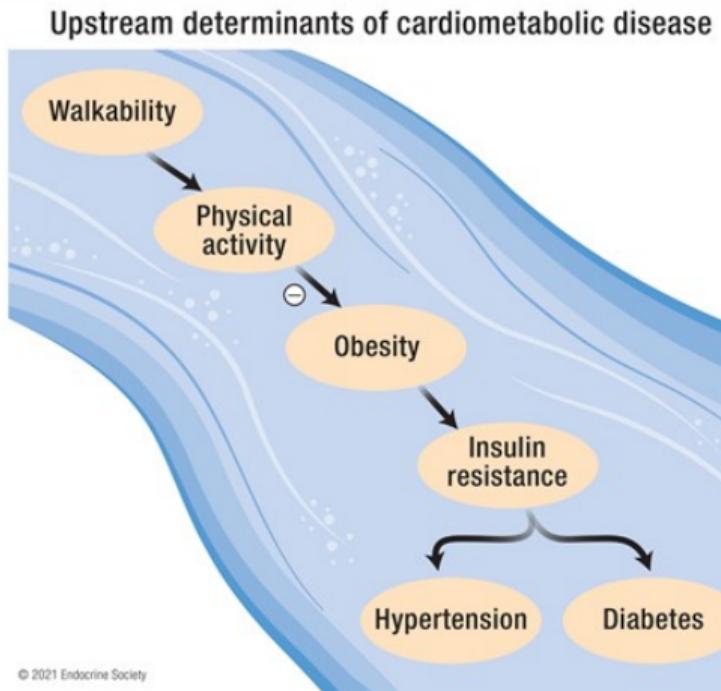
10.00 1 2  
SCALE IN KILOMETERS

ANALYSIS MAP -  
ANNUAL AVERAGE CONCENTRATION  
PARTICULATE MATTER  $<10\mu\text{m}$  ANNUAL AVERAGE  
CONCENTRATIONS FROM ALL EMISSION SOURCES

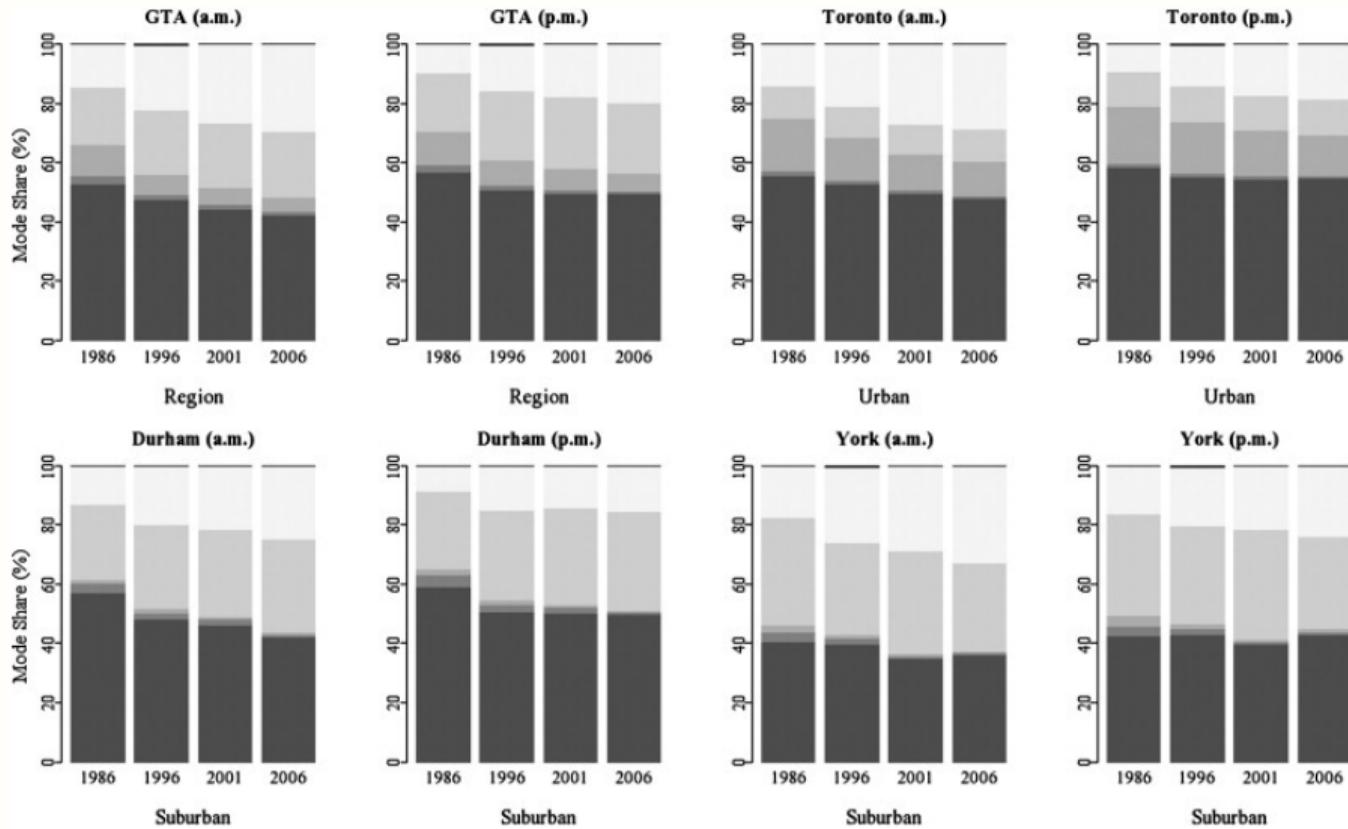
Environment & Energy Division FIGURE: C-22

City of Toronto. Avoiding the TRAP: Traffic-Related Air Pollution in Toronto and Options for Reducing Exposure. Technical Report. October 2017.: <https://www.toronto.ca/legdocs/mmis/2017/h1/bgrd/backgroundfile-108070.pdf>

# Active Travel and Physical Health



The weight of place: Built environment correlates of obesity and diabetes <https://doi.org/10.1210/endrev/bnac005>



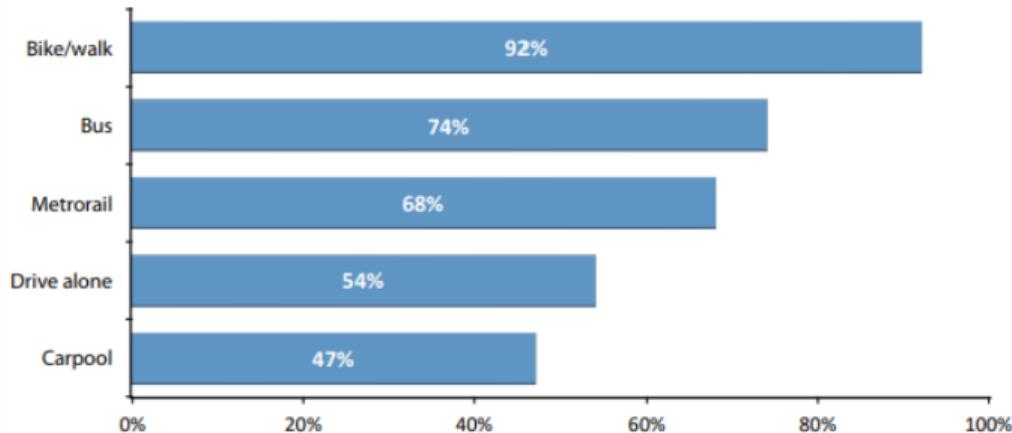
School travel mode share (% of trips) by jurisdiction and year (children and youth, 11–13 years of age) in the Greater Toronto Area, Canada (1986–2006).

<https://doi.org/10.1016/j.ypmed.2009.03.001>

## Satisfaction of travel

**Satisfaction with Commute by Primary Commute Mode – Lived in Arlington**  
**Percent Rating Commute a 4 or 5**

(Bike/walk n = 73, Bus n = 63, Metrorail n = 253 Drive alone n = 331, Carpool n = 21)



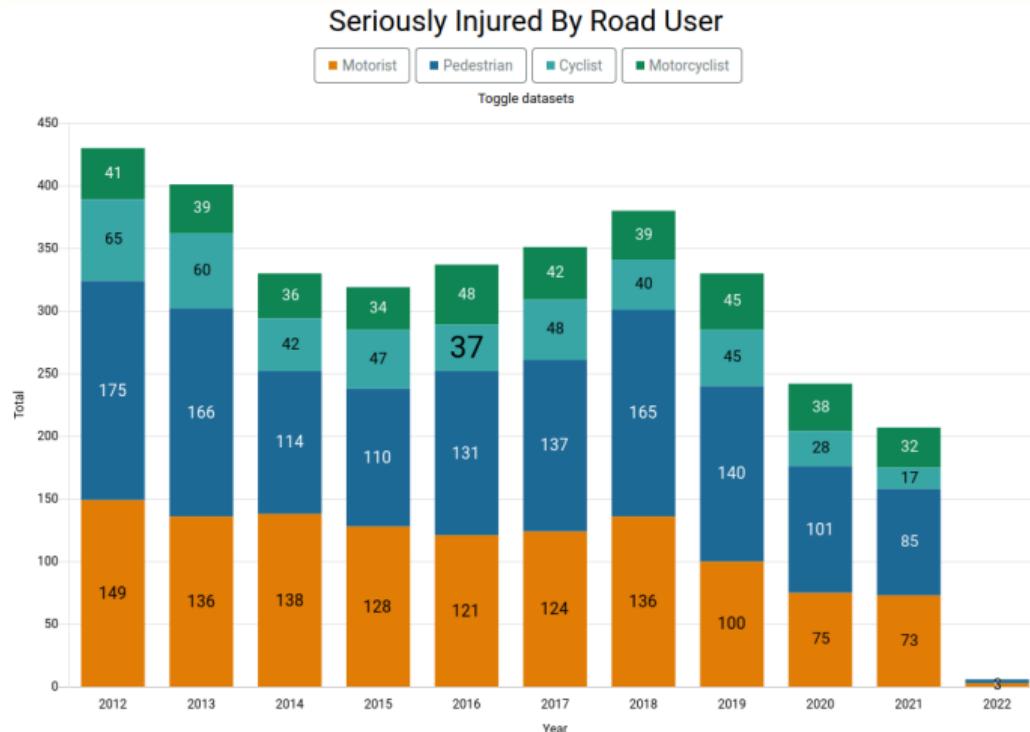
<https://mobilitylab.org/2020/09/29/the-pursuit-of-happiness-how-commute-mode-affects-commute-mood/>

## **Long commutes**

From the 2016 Canadian census:

- ▶ 9.7% have a commute greater than 60 minutes
- ▶ 3.5% have a commute greater than 75 minutes
- ▶ 2.5% have a commute greater than 90 minutes

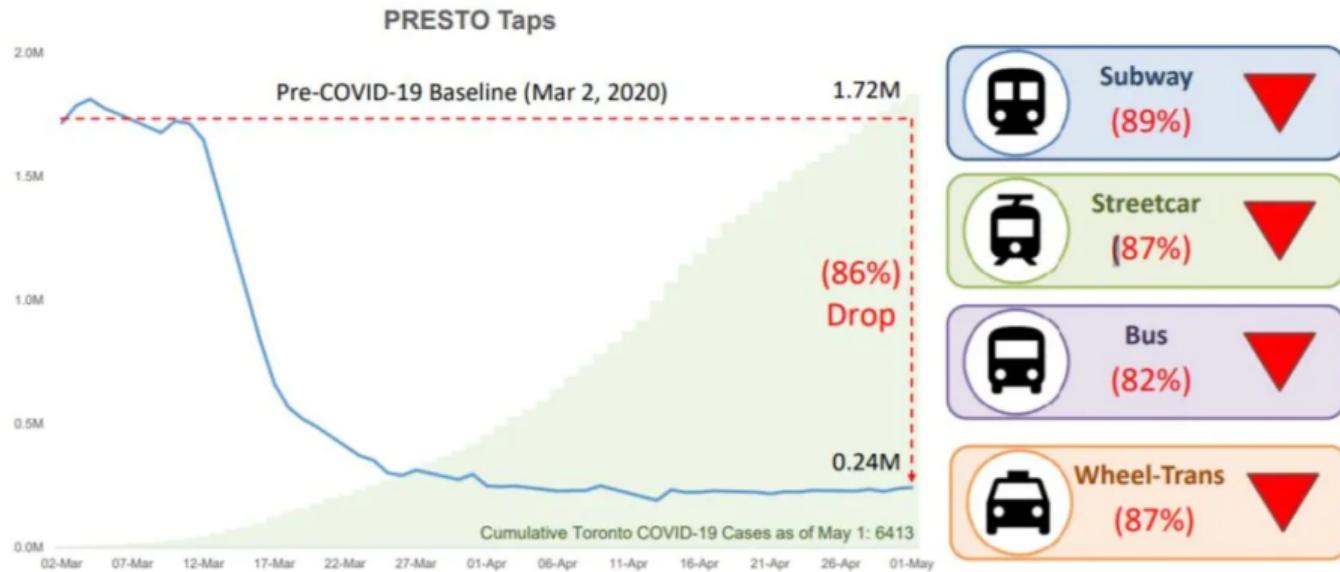
# Safety, e.g. Collisions



<https://www.toronto.ca/services-payments/streets-parking-transportation/road-safety/vision-zero/vision-zero-dashboard/seriously-injured-vision-zero/>

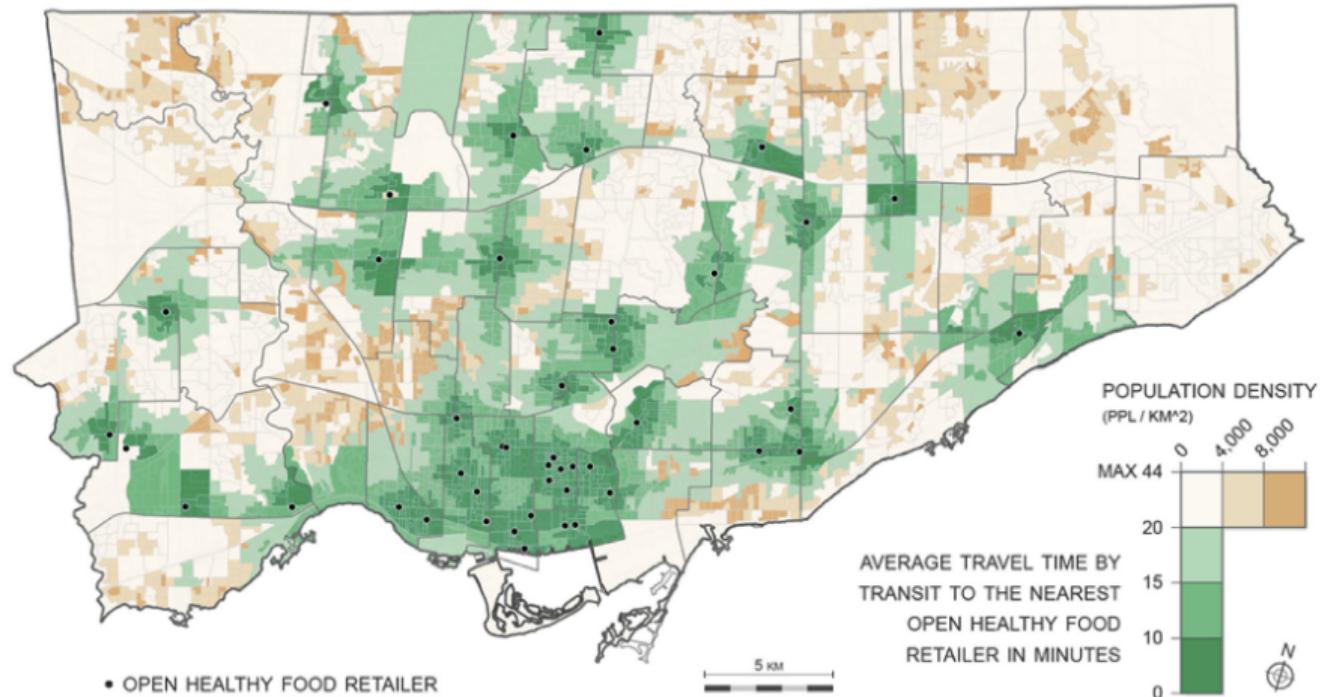
## Safety, e.g. COVID-19

### PRESTO Taps Impact: 86% drop from Pre-Covid-19



# Accessibility, e.g. to healthy food

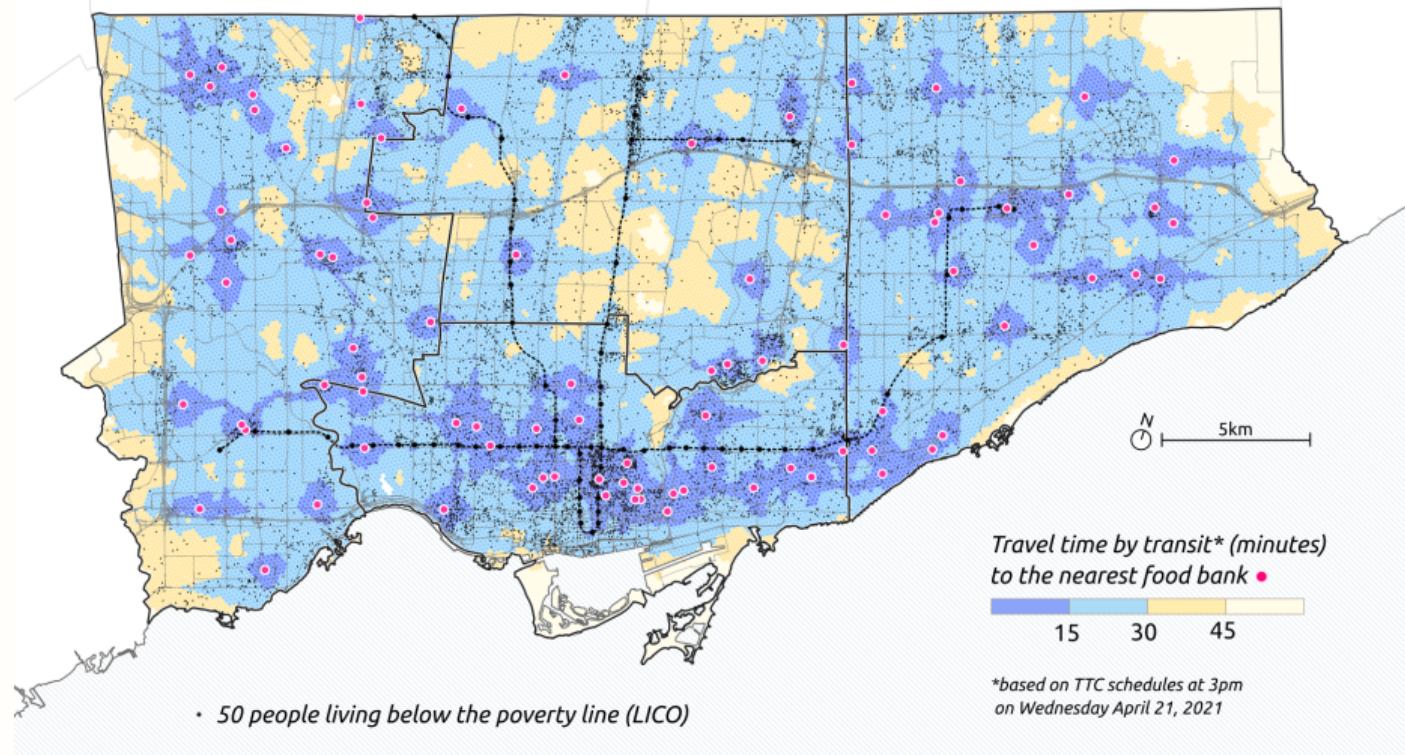
TRANSIT ACCESS TO HEALTHY FOOD / MONDAY / 12:00AM TO 1:00AM



Source: Widener et al (2017) How do changes in the daily food and transportation environments affect grocery store accessibility?  
<https://doi.org/10.1016/j.apgeog.2017.03.018>

# Accessibility, e.g. to food banks

Transit Accessibility to Food Banks in May, 2021



## Transport Equity

*Equity* generally refers to the fairness with which impacts (i.e. benefits and costs) are distributed

Transportation planning decisions can have large and diverse equity impacts.

- ▶ **Horizontal Equity** - about the distribution of a resource (e.g. public transit) equally among the overall population
- ▶ **Vertical Equity** - about the distribution of a resource with focus towards specific groups, often those who are more vulnerable to social or economic exclusion

## Transport Equity

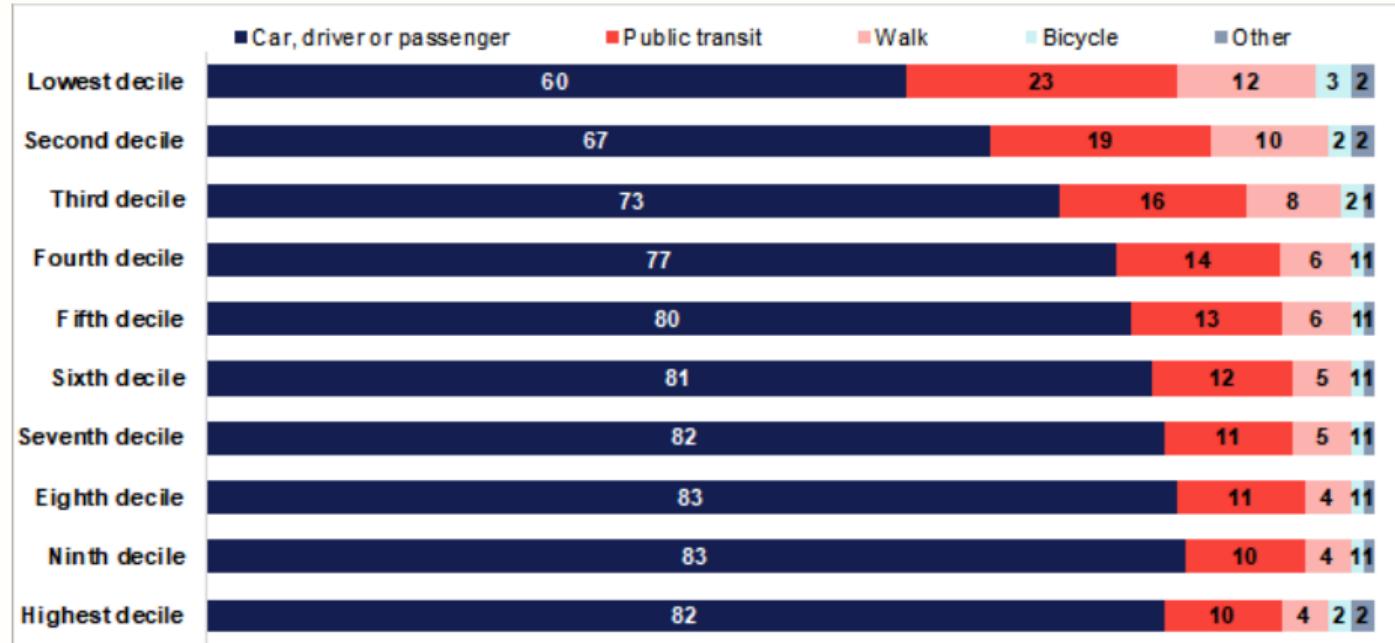
Dimensions of measuring transport equity

- ▶ **Opportunities** - about how transportation infrastructure and accessibility are (in)equitably distributed
- ▶ **Exposure** - about inequalities in exposure to pollutants, unsafe travel, etc.
- ▶ **Outcomes** - about whether there are inequalities in travel behaviour outcomes, e.g. activity participation, commute times, etc.

**Transit in Toronto:** Let's explore the connections between socioeconomic status and transit availability within the City of Toronto

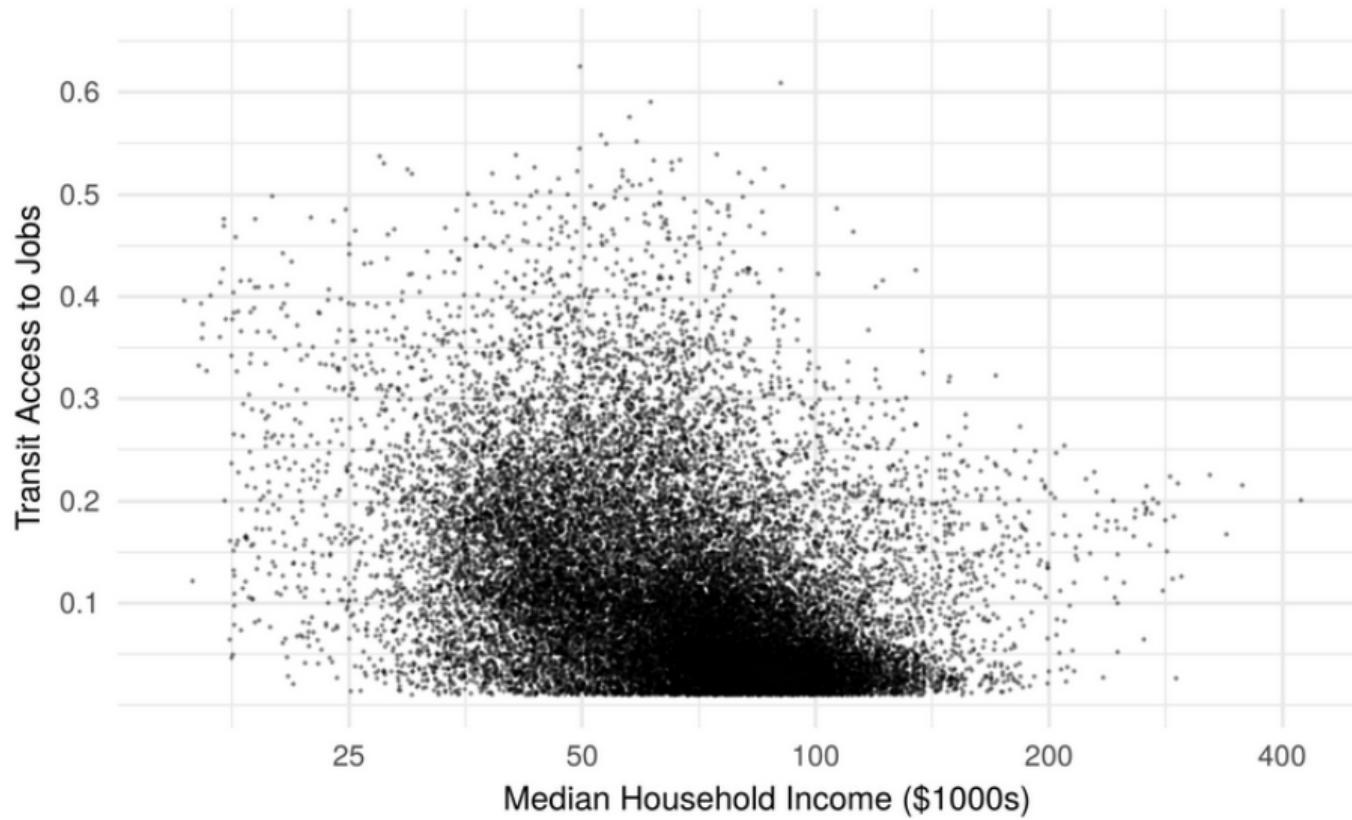
<https://edu.maps.arcgis.com/apps/Cascade/index.html?appid=58618c037f344aaaada20b0c894e011c>

## Income and mode share - for commuters across Canada

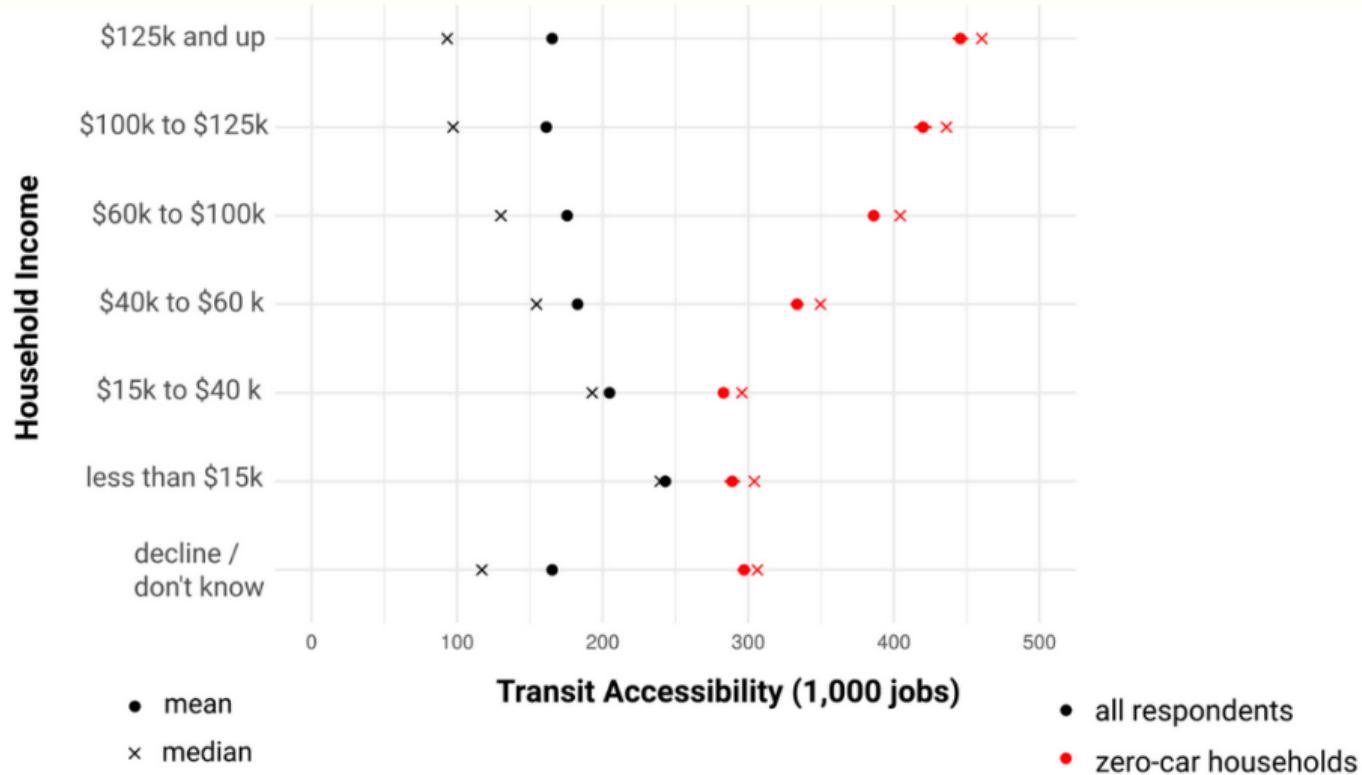


<https://mobilizingjustice.ca/how-the-canadian-population-gets-to-work/>

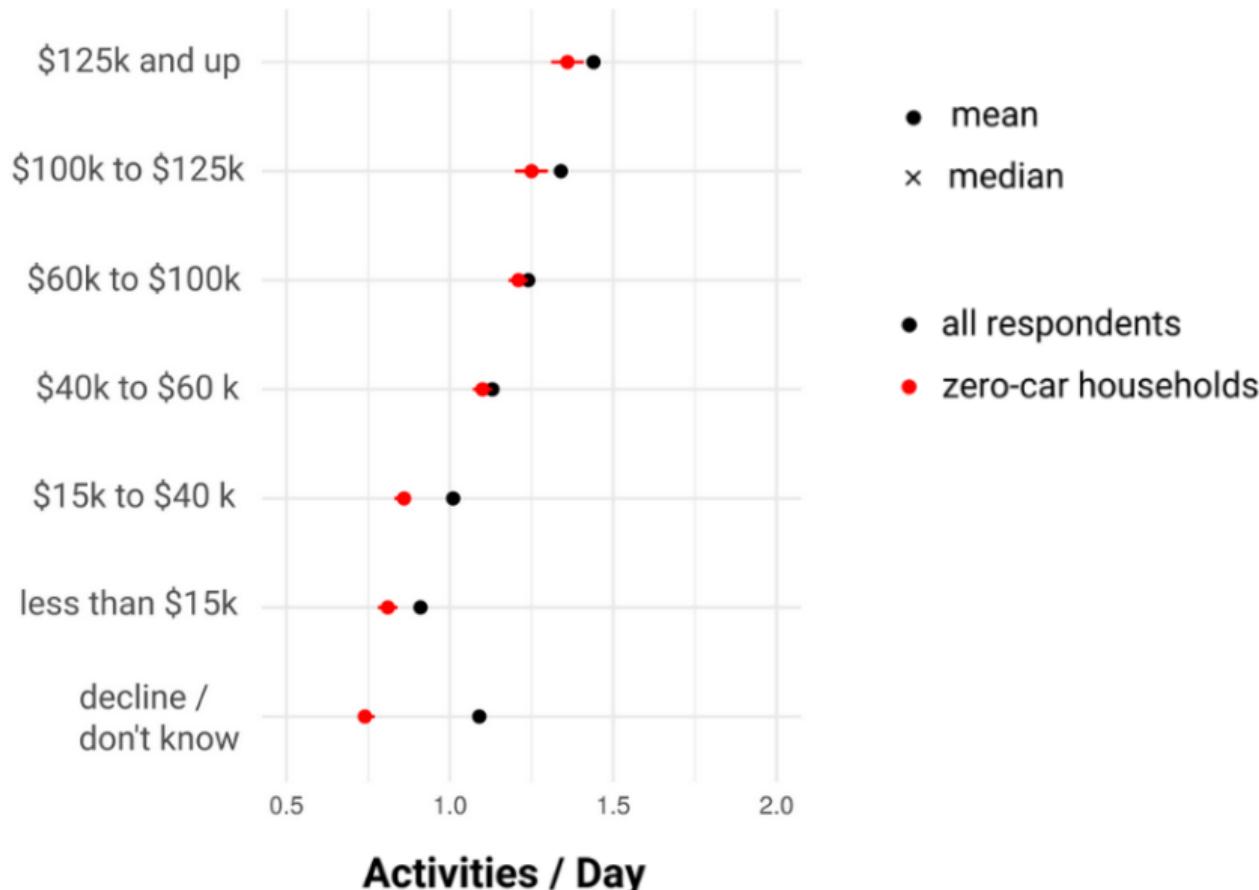
## Accessibility and income - for neighbourhoods across Canada



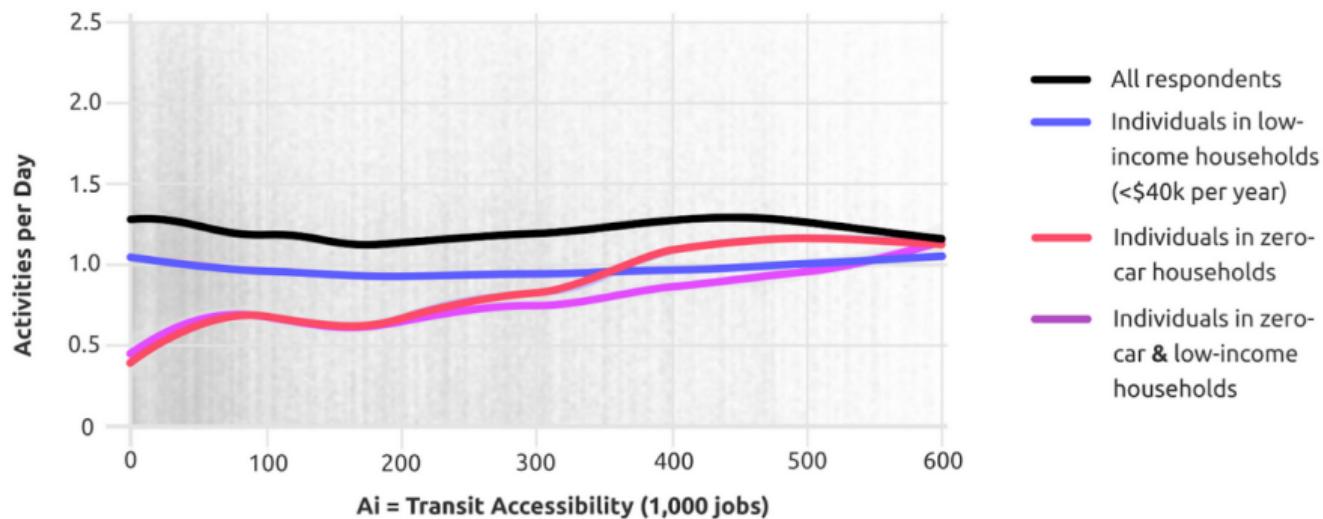
## Accessibility and income - for individuals in the GTHA



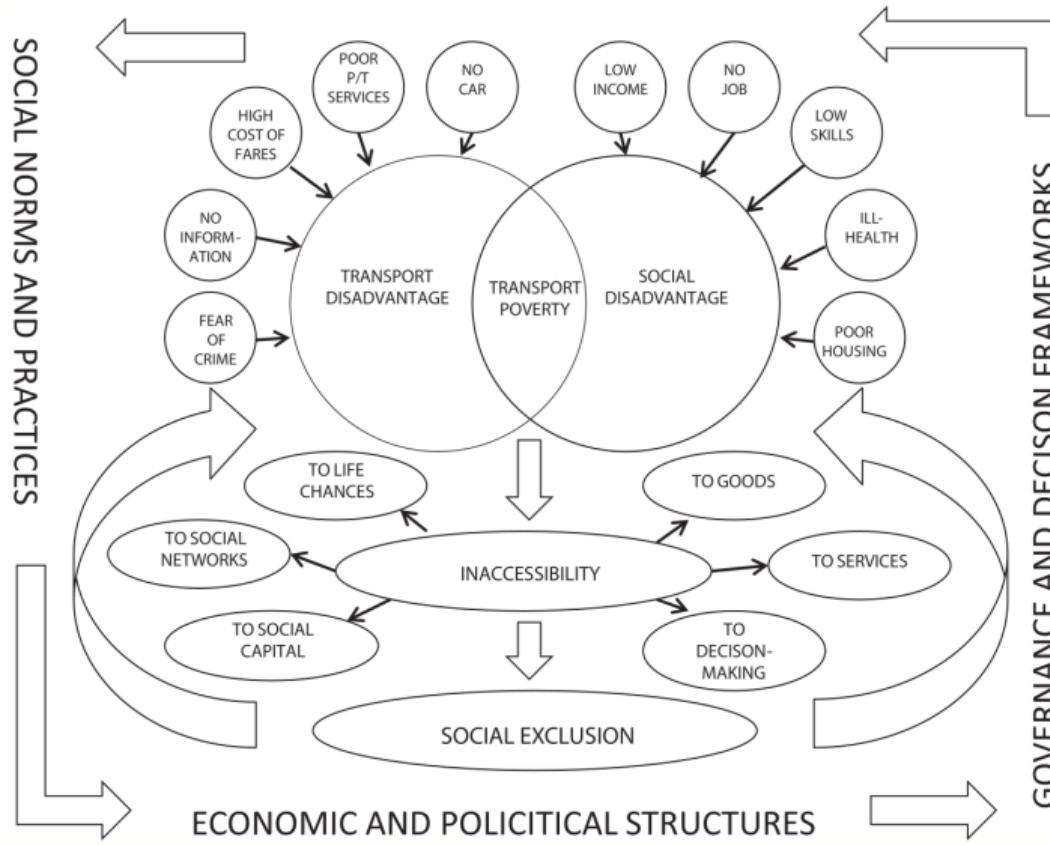
## Income and activity participation - for individuals in the GTHA



## Accessibility and activity participation - for individuals in the GTHA



# Transport Poverty & Social Exclusion



**Discussion Question:**

Should the government provide subsidies for low-income households to purchase/lease cars in the GTHA?