Mobility & Accessibility in Transit and Transportation

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Accessibility Observatory

I-35W Alliance

Richfield, MN

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CENTER FOR TRANSPORTATION STUDIES

University of Minnesota

About Center for Transportation Studies

CTS cultivates improvements and innovation in transportation through research, engagement, and education

- University-wide center
- ~30 staff
- Education (K-12 to Professional)
- Outreach & events
- Research & research coordination

How should we measure transportation?

network performance

- speed, delay, volume
- vehicle movement
- fastest is best

people performance

- can people reach destinations?
- slower is safer, closer is better
- easiest is best

Mobility

Accessibility

Why Accessibility?

Mobility

- Only costs
- Can people move quickly?
- Reflects only transportation

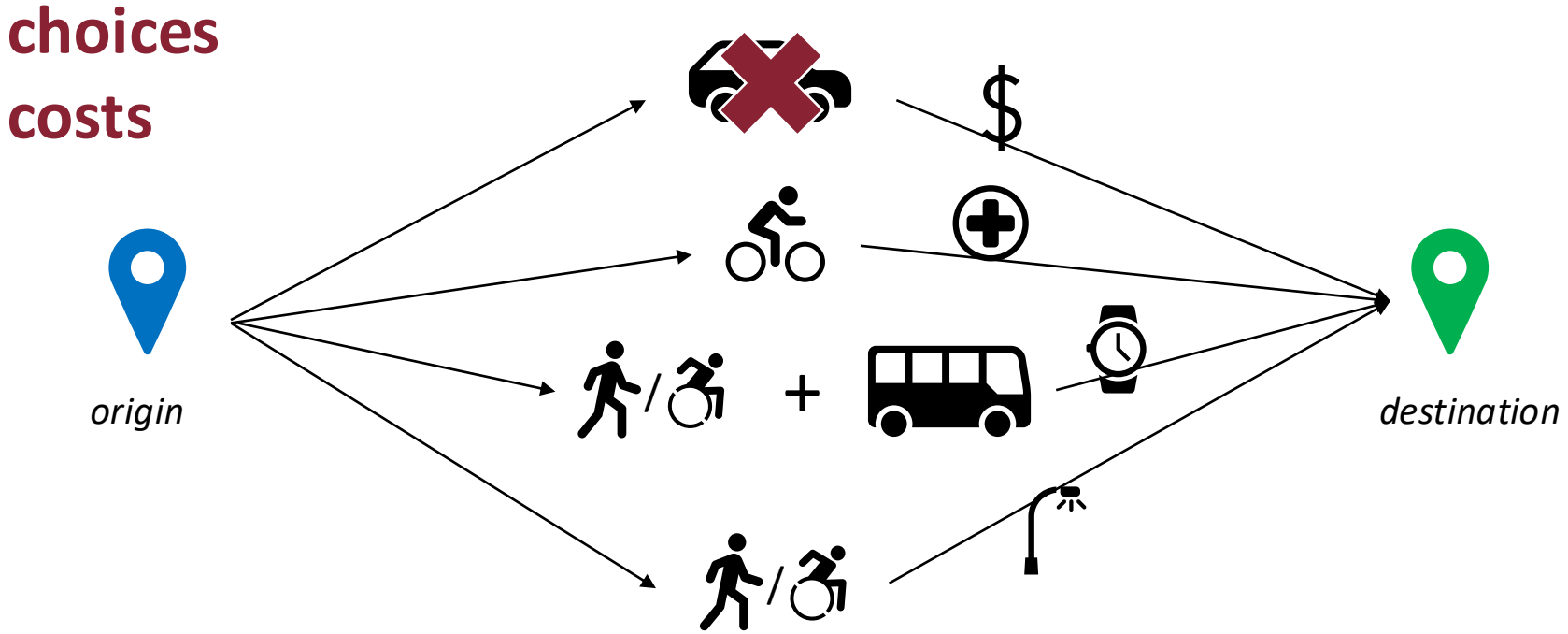
Accessibility

- Costs & benefits
- Can people reach what they need?
- Reflects transportation & land use

What is Accessibility?

The *ease* with which a traveler *could* reach valued destinations

How is Accessibility Measured?



Calculating Accessibility: Network Inputs

	purchase observed speeds by segment, time of day
	GTFS schedule feeds (1000+ nationwide)
	Open Street Maps, algorithm to score safety + comfort
	Open Street Maps

Calculating Accessibility: Destinations

Jobs

- Enumerated job sectors

Education

- Childcare centers
- Public and Private K-12
- Post-secondary schools
- Libraries & Museums

Healthcare & Services

- Primary care clinics
- Urgent Care
- Trauma Centers
- Social Security Offices

Food

- Grocery Stores (SNAP retailers)

Entertainment

- Convention Centers
- Major Sports Venue
- Fairgrounds

Intermodal Freight

- Airports with Cargo Facility
- Pipeline terminals
- Rail terminals
- Ports

Calculating Accessibility

for each origin,

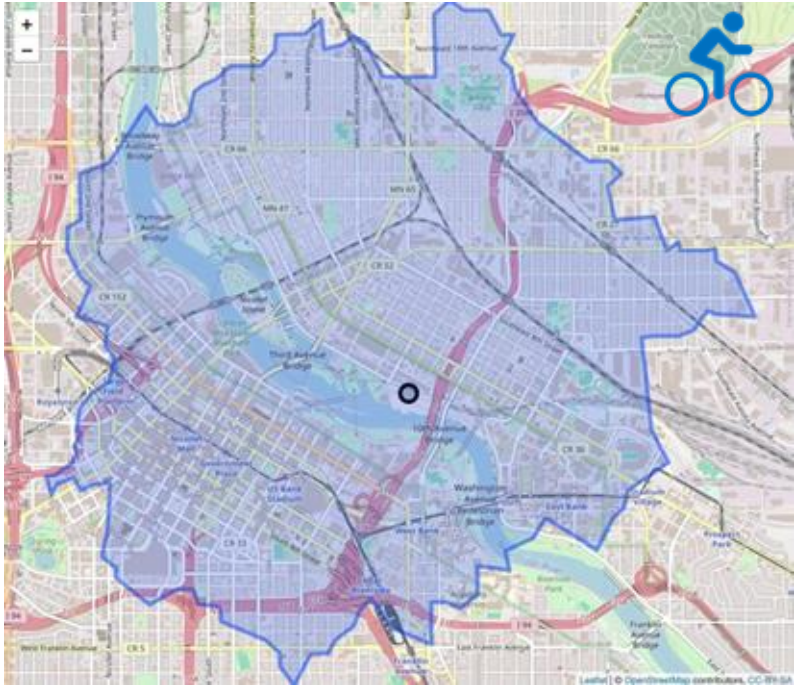
for each mode,

for each time of day,

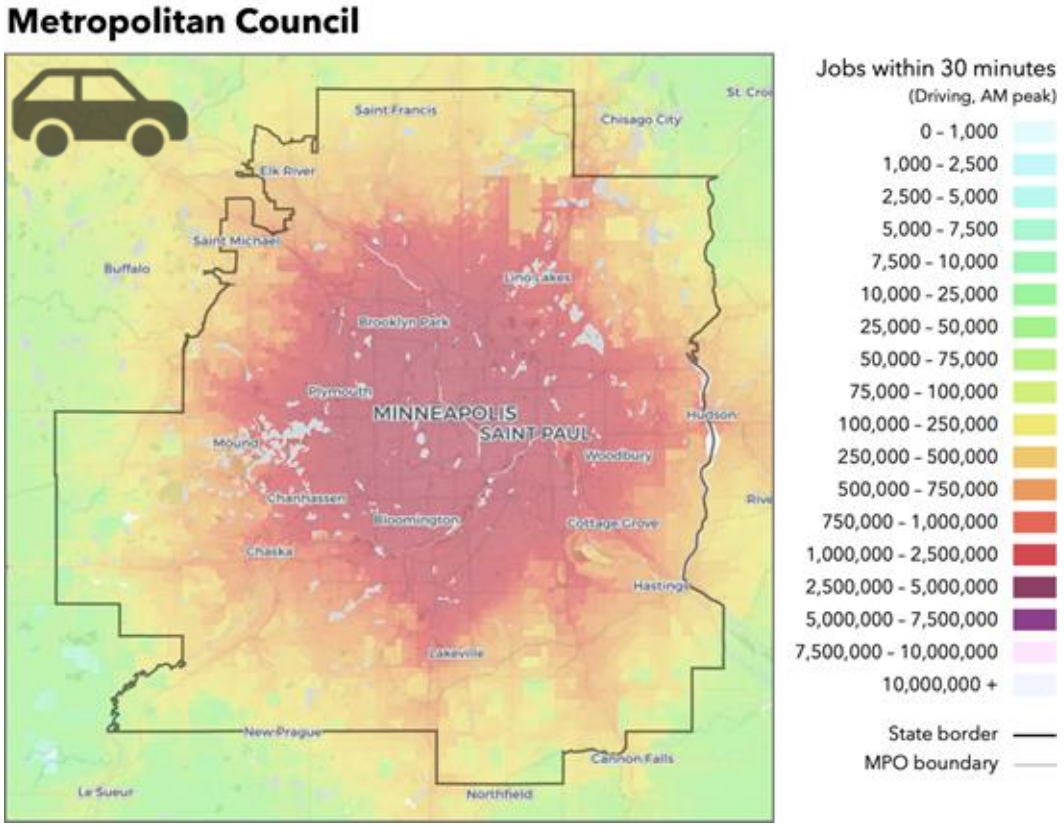
measure *travel times* to destinations

for each travel time,

what can be reached?

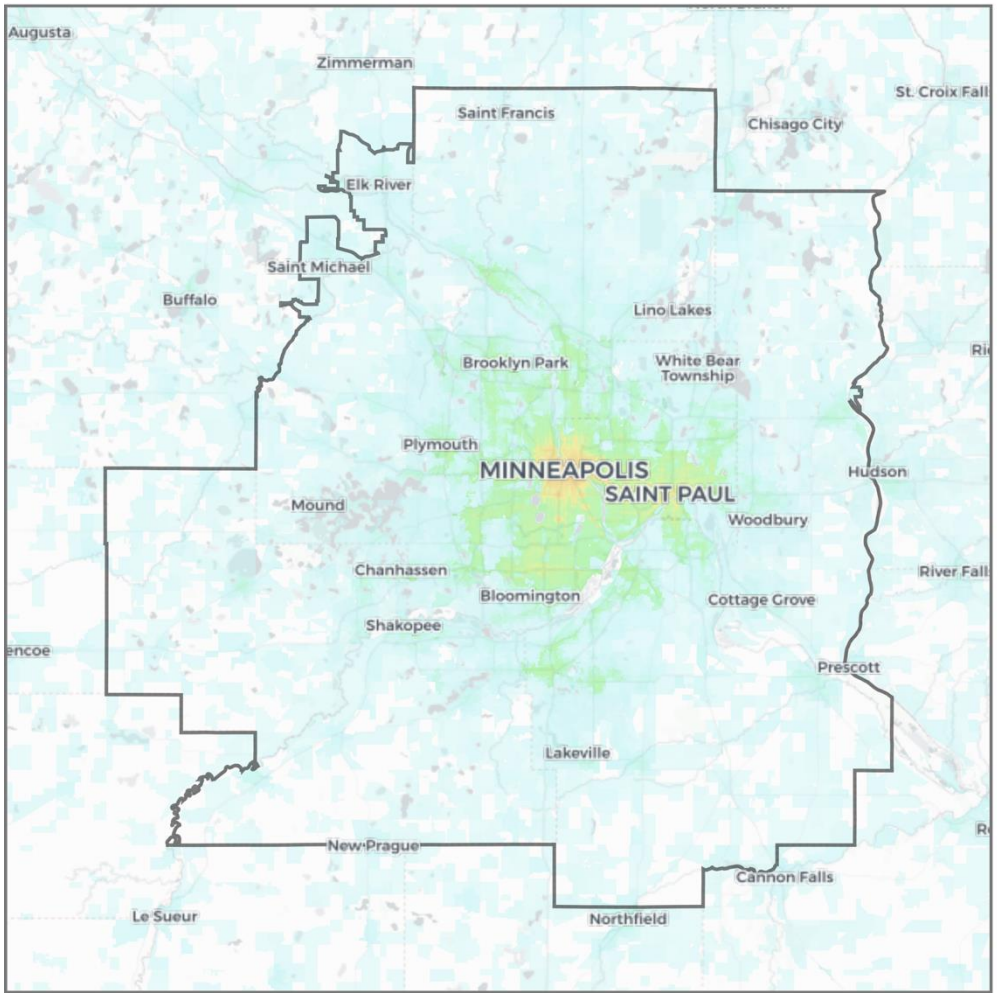


Access to Job Opportunities



- summary of connection to opportunity
- what can be reached from each origin?
- depends:
  - time of day
  - mode
  - travel time

Metropolitan Council



Jobs within 30 minutes
(Transit, AM peak)

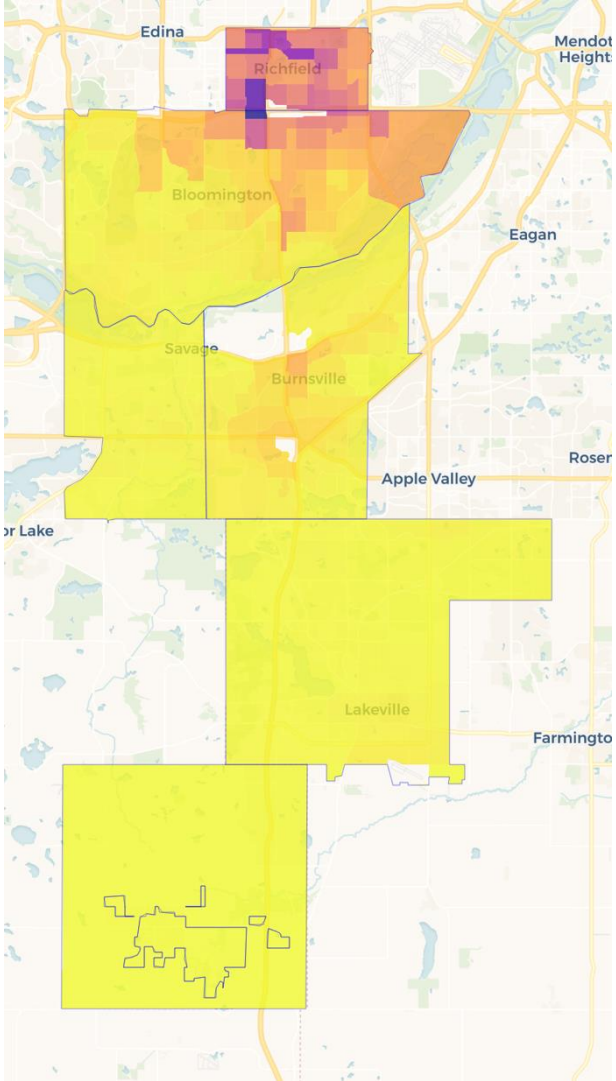
- 0 – 1,000
- 1,000 – 2,500
- 2,500 – 5,000
- 5,000 – 7,500
- 7,500 – 10,000
- 10,000 – 25,000
- 25,000 – 50,000
- 50,000 – 75,000
- 75,000 – 100,000
- 100,000 – 250,000
- 250,000 – 500,000
- 500,000 – 750,000
- 750,000 – 1,000,000
- 1,000,000 – 2,500,000
- 2,500,000 – 5,000,000
- 5,000,000 – 7,500,000
- 7,500,000 – 10,000,000
- 10,000,000 +

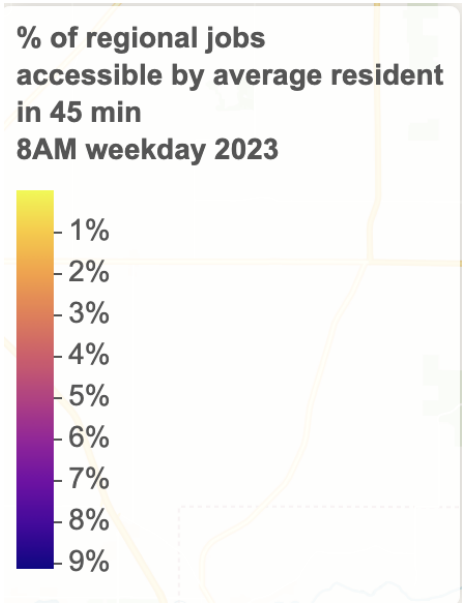
State border
MPO boundary

How many jobs can be reached *from* each place *in* 30 minutes *departing* at 8am?

regional average: 16,053

1.8 million jobs in region





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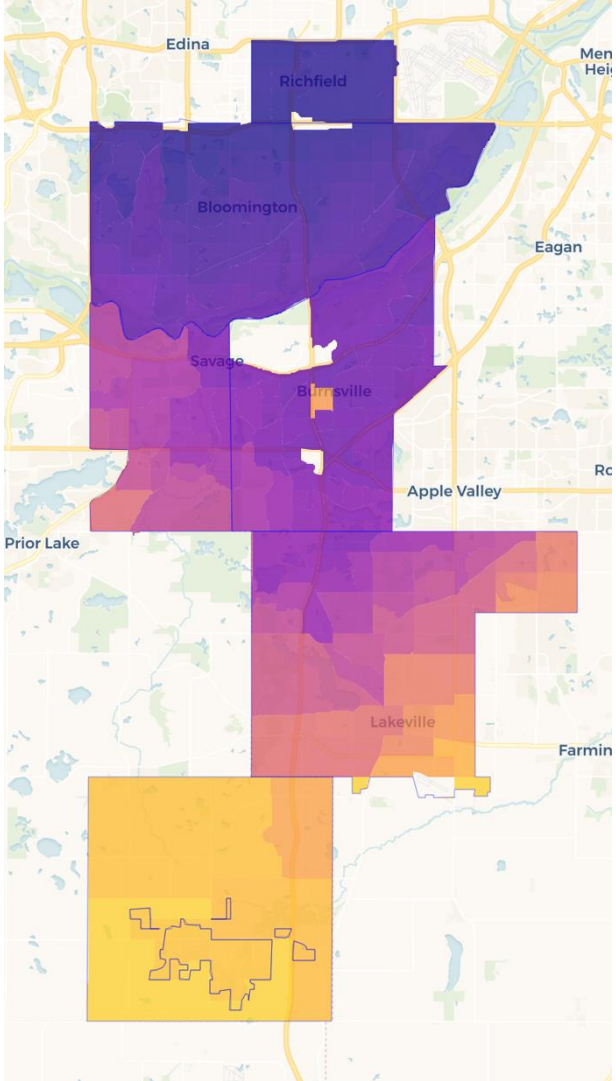
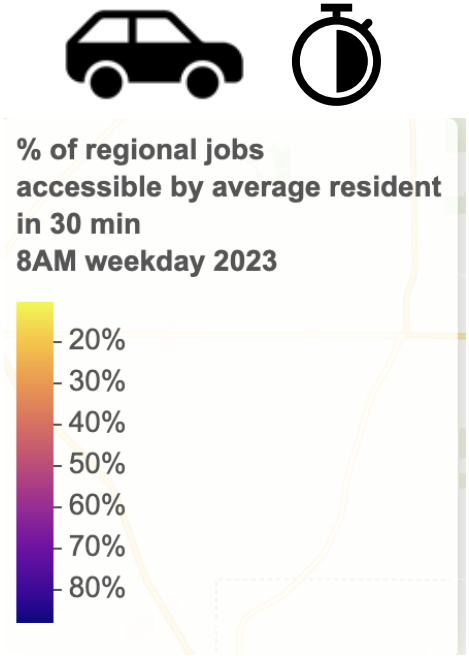
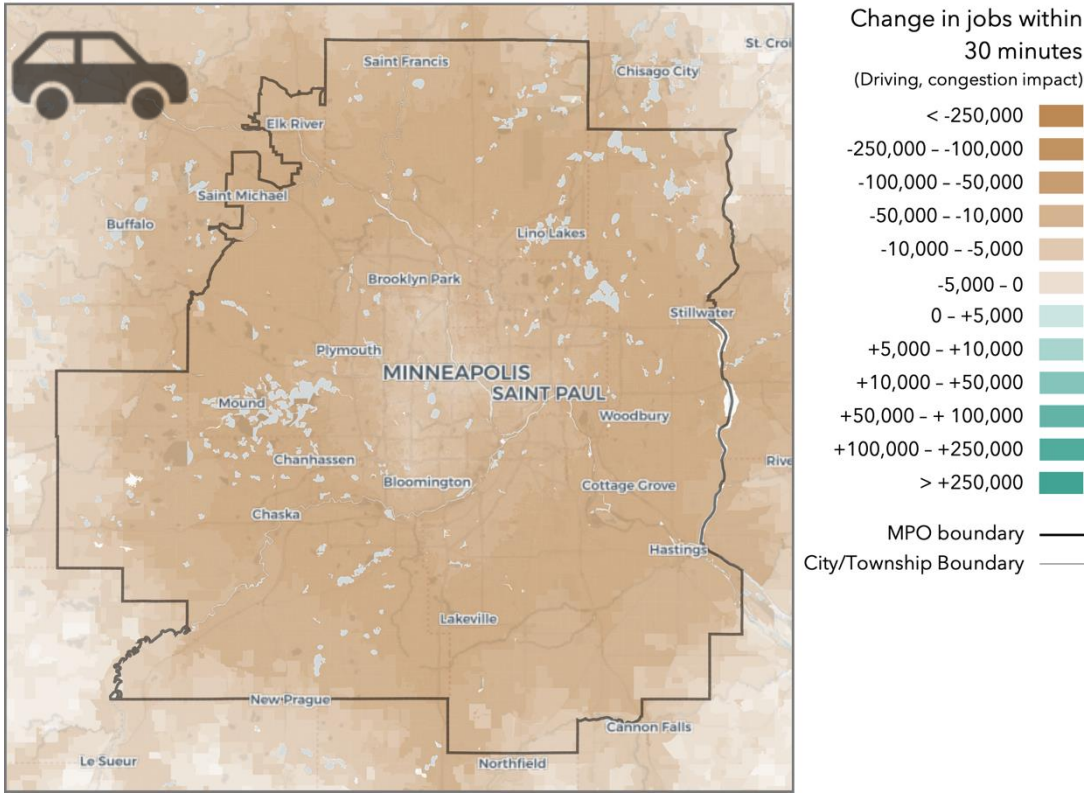




1.8 million jobs in region

Limits to Accessibility

Metropolitan Council



- speed varies by time of day (congestion)
- difference from free-flow shows impact on accessibility
- region-wide: 16% loss for 30 min peak trip

Accessibility and travel behavior

- **VMT follows Auto Accessibility**

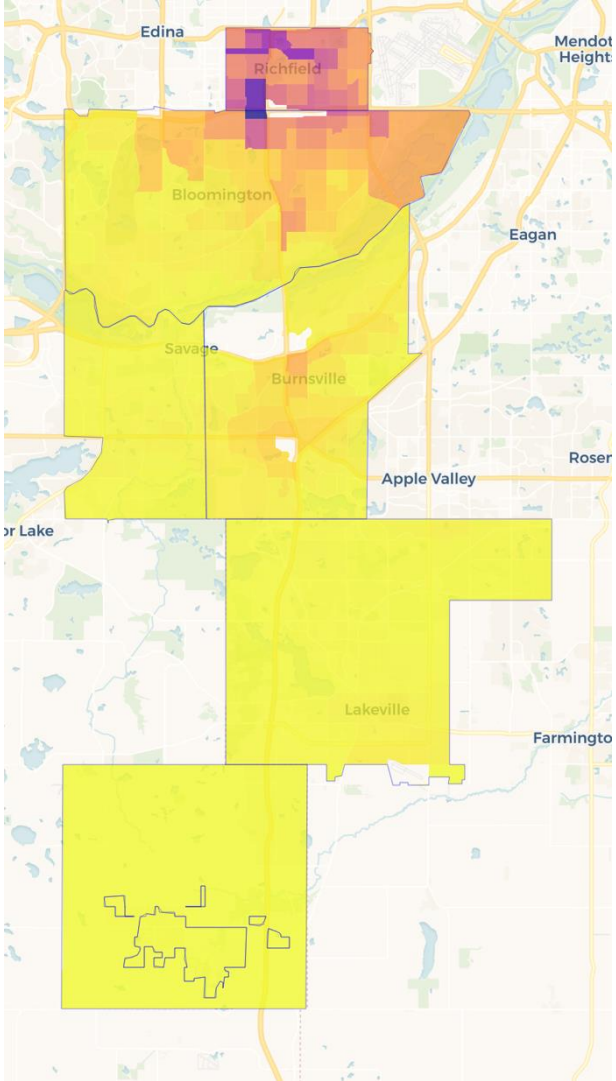
- more destinations 20+ min drive away, the higher the household VMT

Accessibility and travel behavior

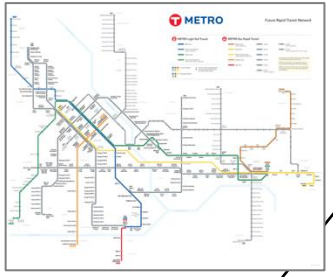
- **Ridership follows Transit Accessibility**
- neighborhood level: increase in access leads to increase in boardings
- effect reduced after 2020

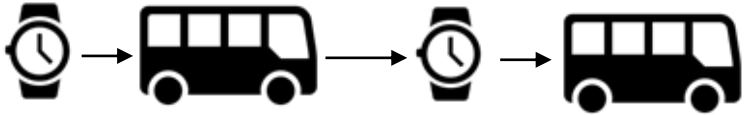
Access focus: Alliance area

what accounts for differences in local access?

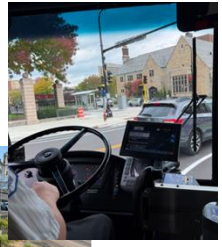


Levers to Increase Access





origin



destination

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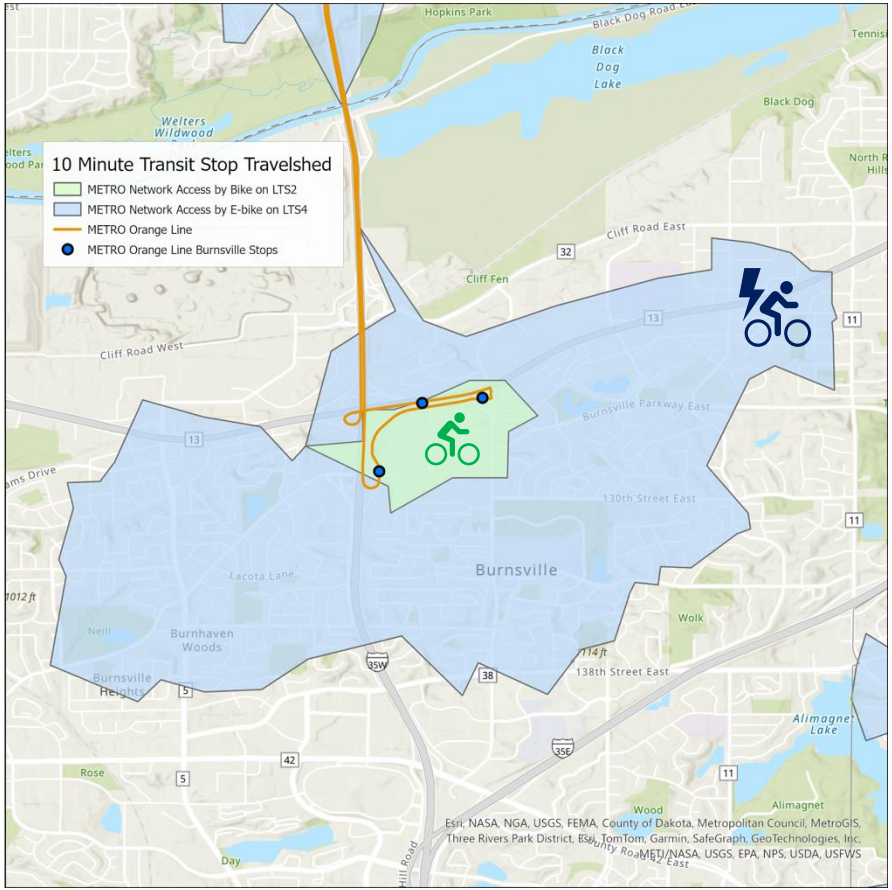
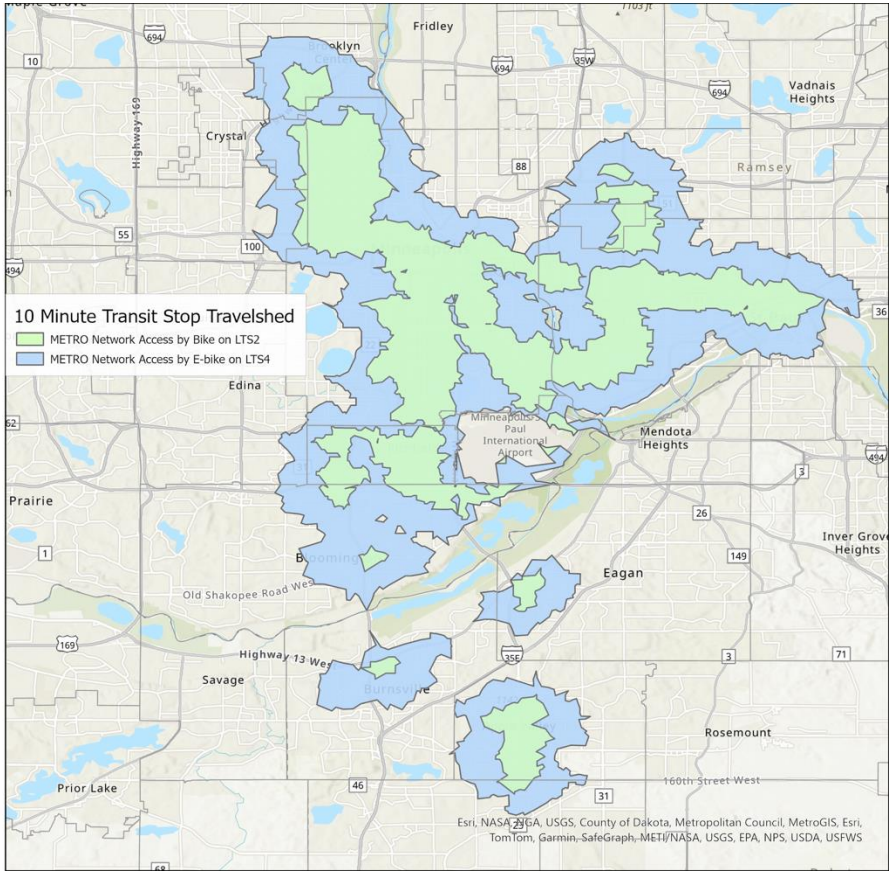
exploring micromobility + transit

Burnsville Case Study: 10 Minute Bicycle and E-Bike Access



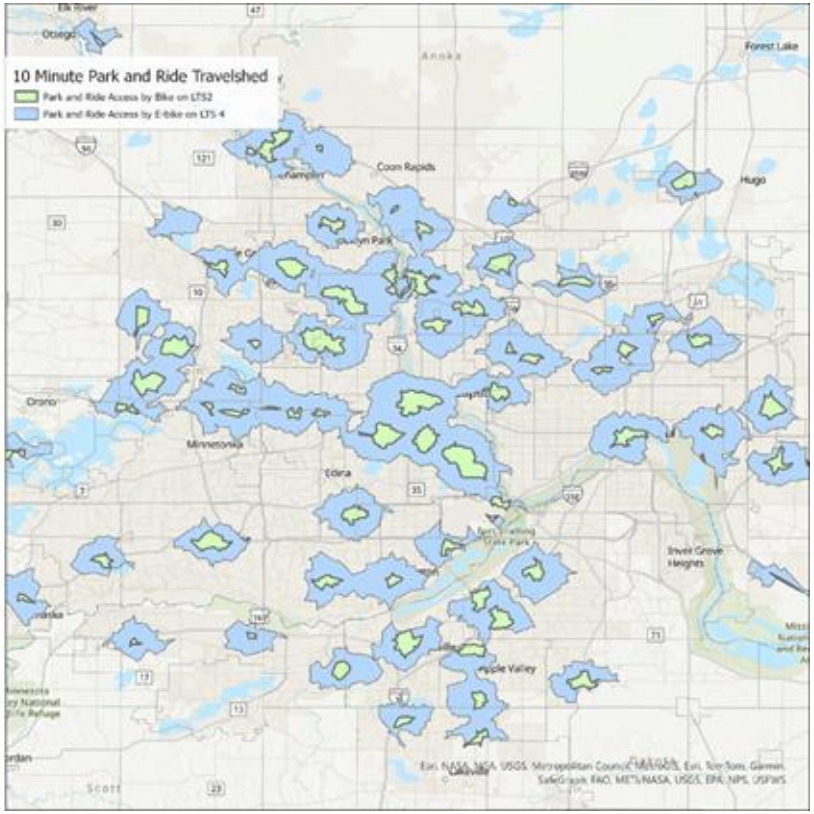
exploring micromobility + transit

METRO Transit Network: 10 Minute Bicycle and E-Bike Access



exploring micromobility + transit

Park and Ride Network: 10 Minute Bicycle and E-bike Access



- infrastructure and service changes

exploring micromobility + transit

Resident workers 10 minute bike rides from transit:

System	Mode	LTS	Workers	Percent of Workforce
METRO	Bike	2	194,217	12%
	Bike	4	254,810	16%
	E-bike	2	267,237	17%
	E-bike	4	369,295	24%
Park and Ride	Bike	2	121,815	8%
	Bike	4	247,571	16%
	E-bike	2	245,899	16%
	E-bike	4	571,809	37%

How can transit Accessibility be improved?

- frequency (reduce wait times)
- vehicle speed
- pedestrian networks (access / egress)
- replace walk/roll with micromobility
- **add destinations in accessible places**
- **add people in accessible origins**

Thank you!

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