

Sensitivity Analysis for Twin Cities Highway Mobility Studies

June 2020



Goals



To identify National Highway System (NHS) locations with the greatest highway mobility/reliability issues

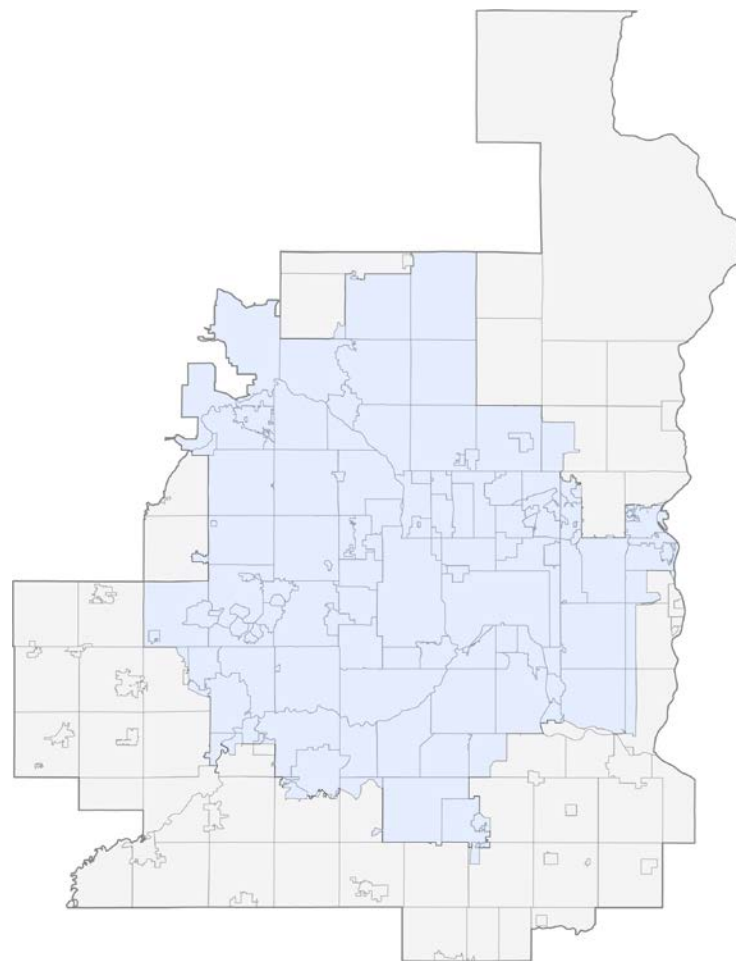


To compare results with other metropolitan studies

Study Areas

Twin Cities Metropolitan Planning Organization (MPO) area plus Chisago County

- Urbanized and non-urbanized combined
- Non-urbanized area only



Data Sources



**National Performance Measurement
Research Data Set (NPMRDS)**

Travel speed data



STREETLIGHT DATA
Big Data for Mobility

Data gaps in NPMRDS
travel speed data, average
trip length



GIS, speed limits, crash data,
AADT, HCAADT, train volumes



Transit data

Evaluation Criteria



Highway Mobility & Reliability

Prioritize locations with high variability in travel times and consistent mobility issues

- Level of Travel Time Reliability (LOTTR)
- Speed Index
- Mobility Bonus



Safety

Prioritize locations that have a high frequency of crashes (crashes can correlate to potential highway mobility and reliability issues)

- Crash Rate
- Fatal and Serious Crash Rate

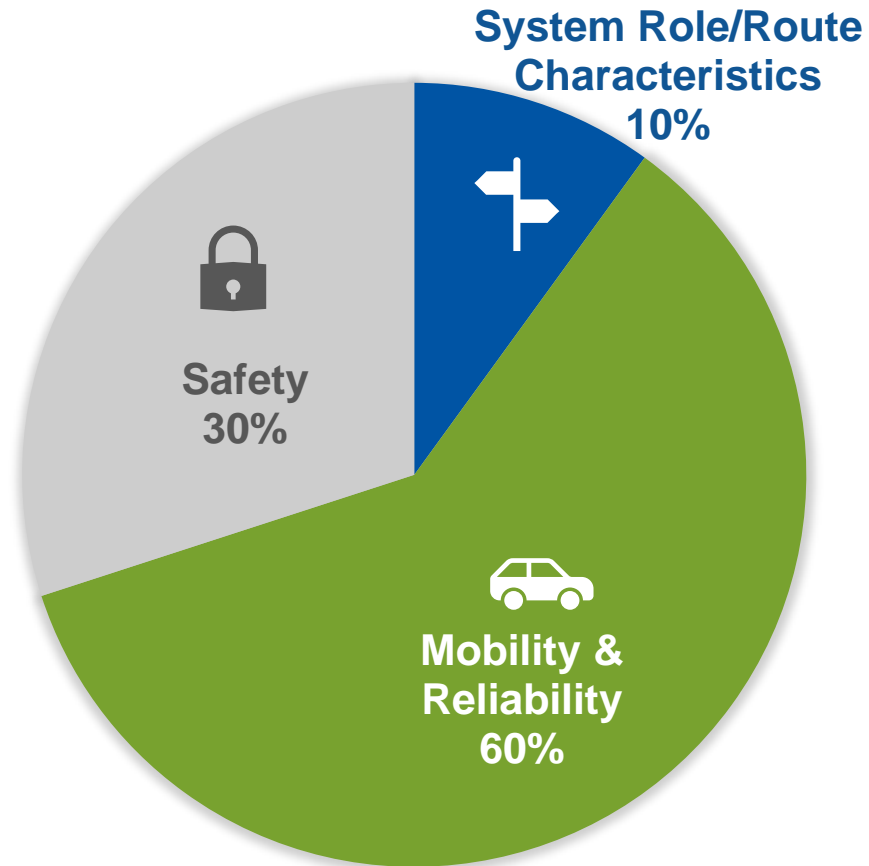


System Role & Route Characteristics

Prioritize locations that serve the greatest amount of regional trips, freight traffic, and transit.

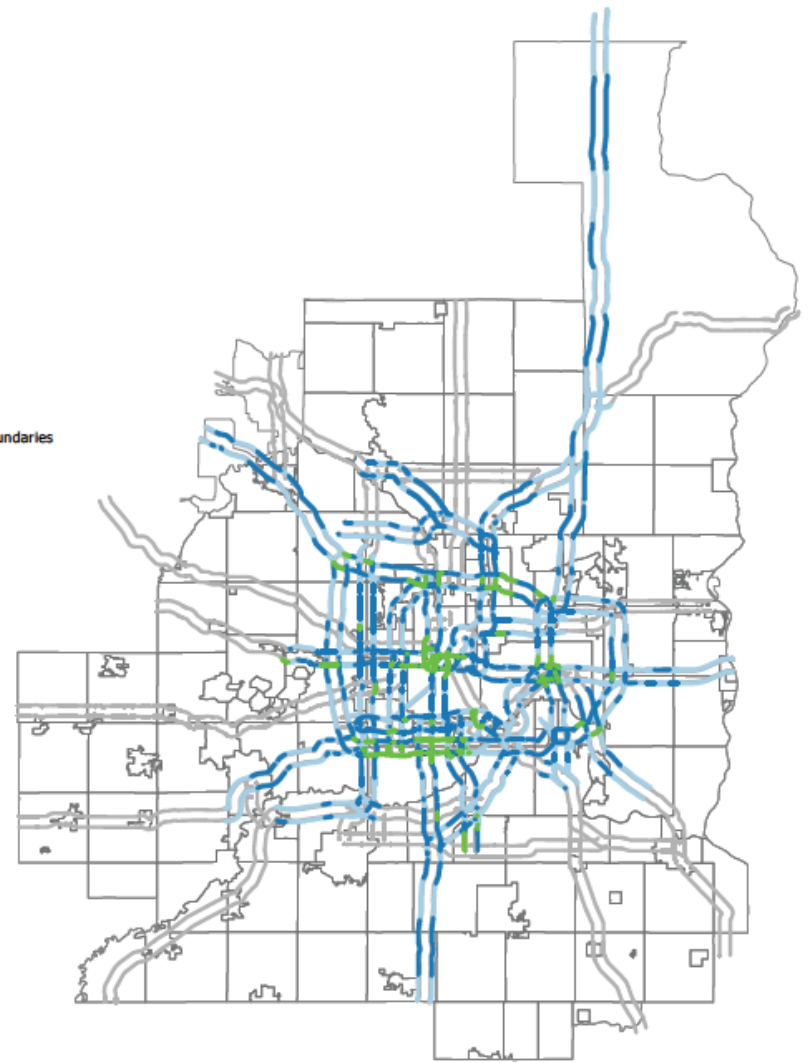
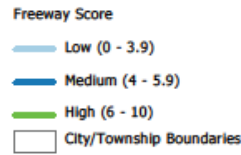
- HCAADT
- Trip Length
- Rail
- Transit

Evaluation Criteria



Results

Entire MPO Area *Freeways*



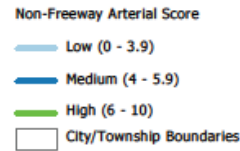
I-494/694 Beltway Area



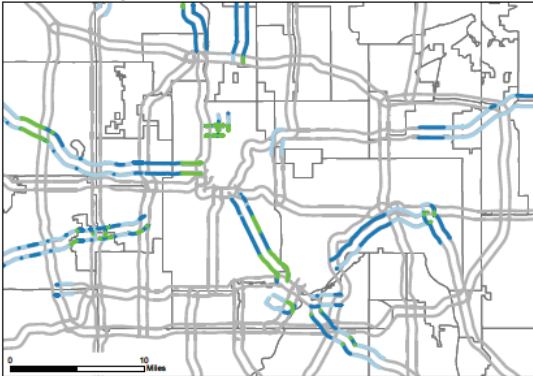
Results

Entire MPO Area

Non-freeway arterials



I-494/694 Beltway Area

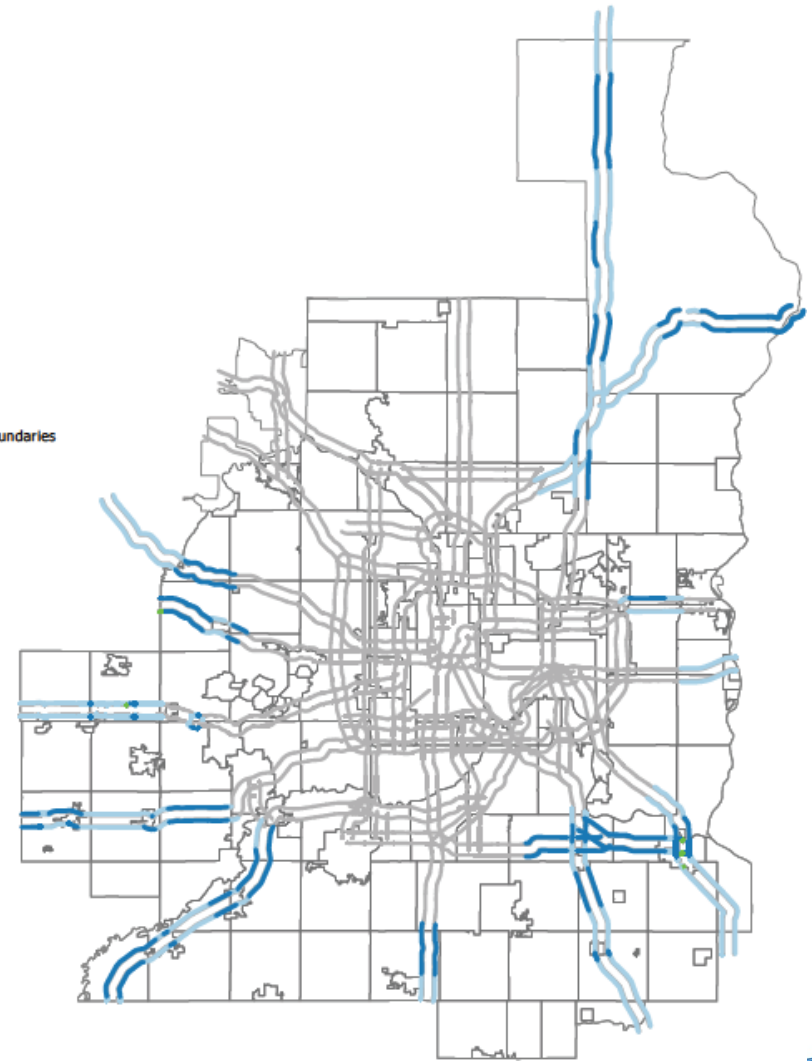


Results

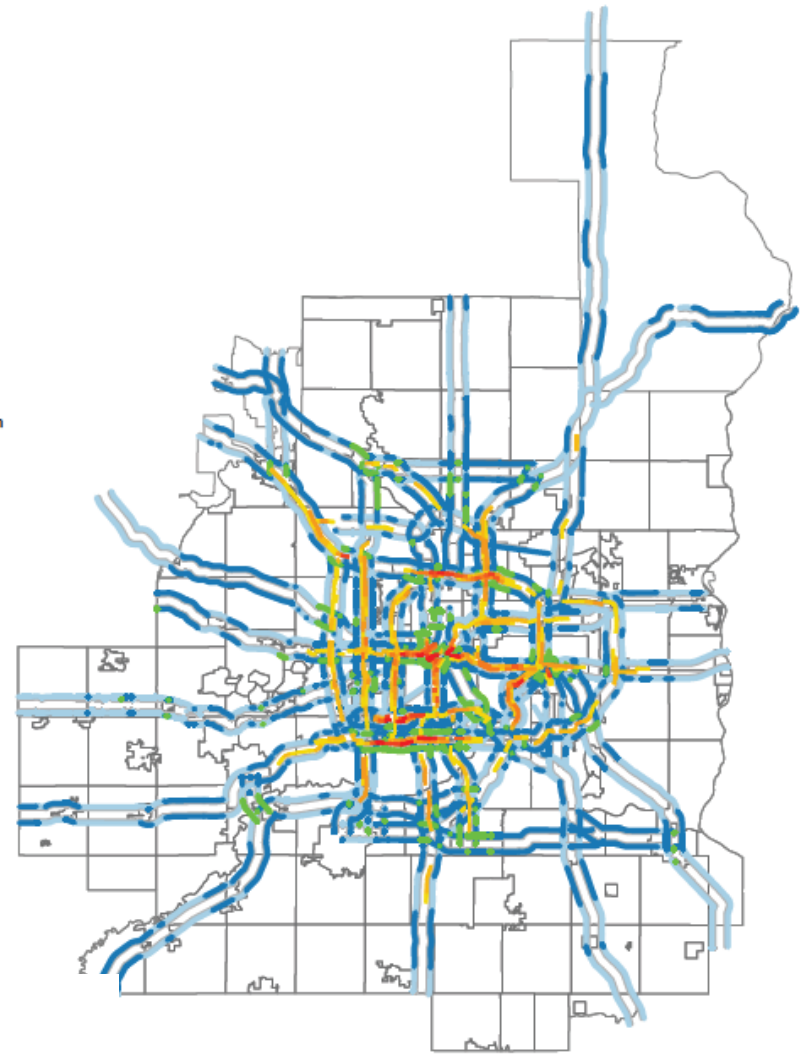
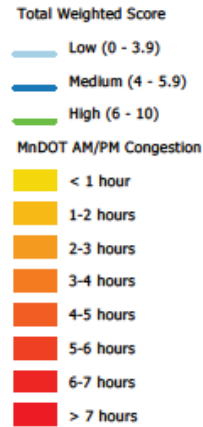
Non-Urbanized Area Only

Non-Urbanized Score

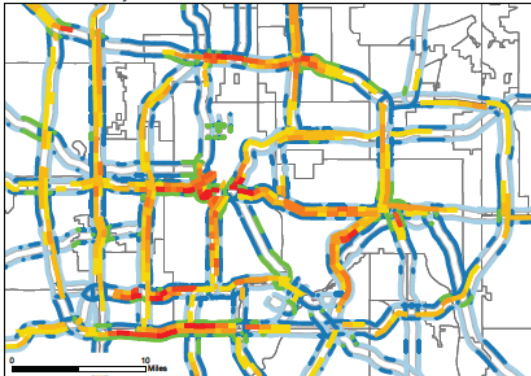
- Low (0 - 3.9)
- Medium (4 - 5.9)
- High (6 - 10)
- City/Township Boundaries



2018 MnDOT Congestion Report Overlap



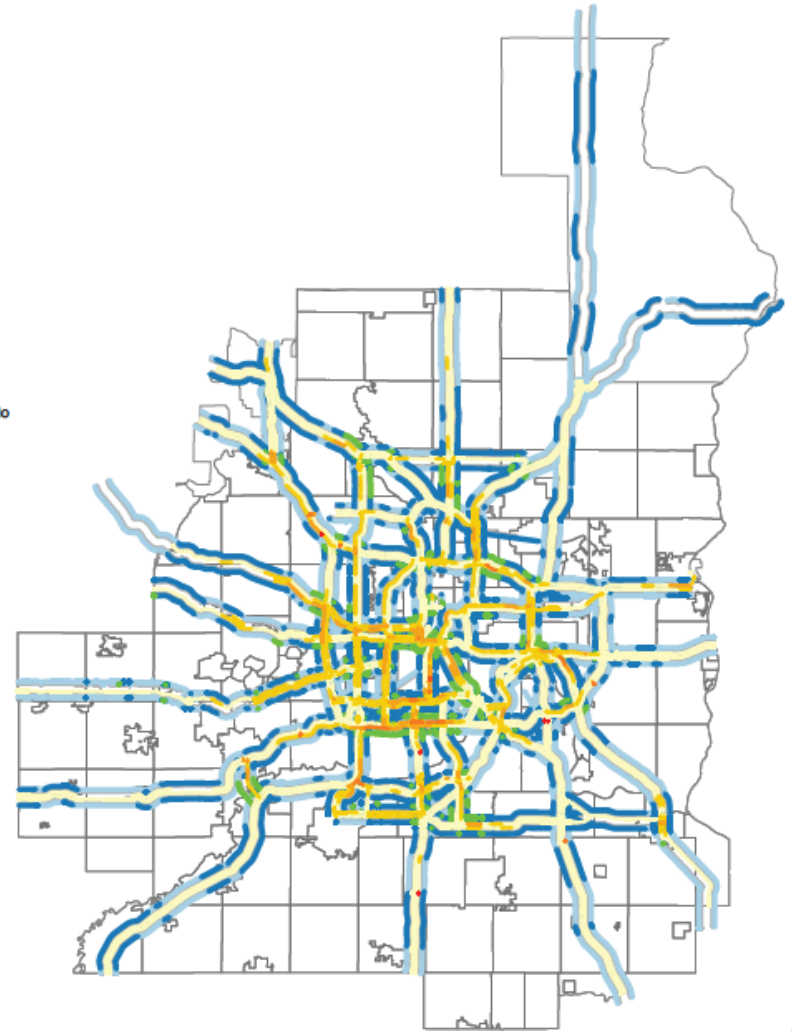
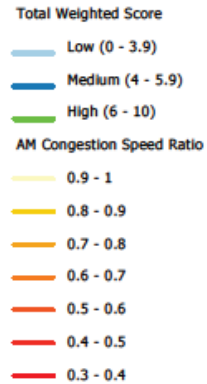
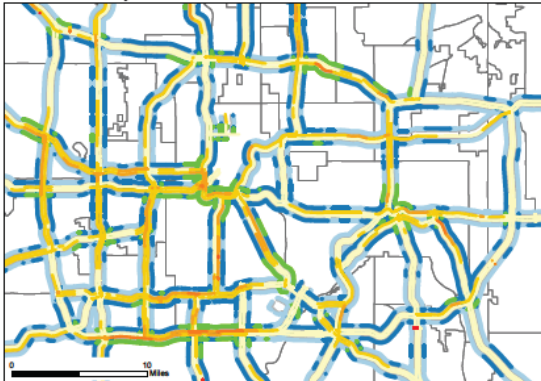
I-494/694 Beltway Area



Met Council Congestion Speed Data Overlap

AM Peak Period

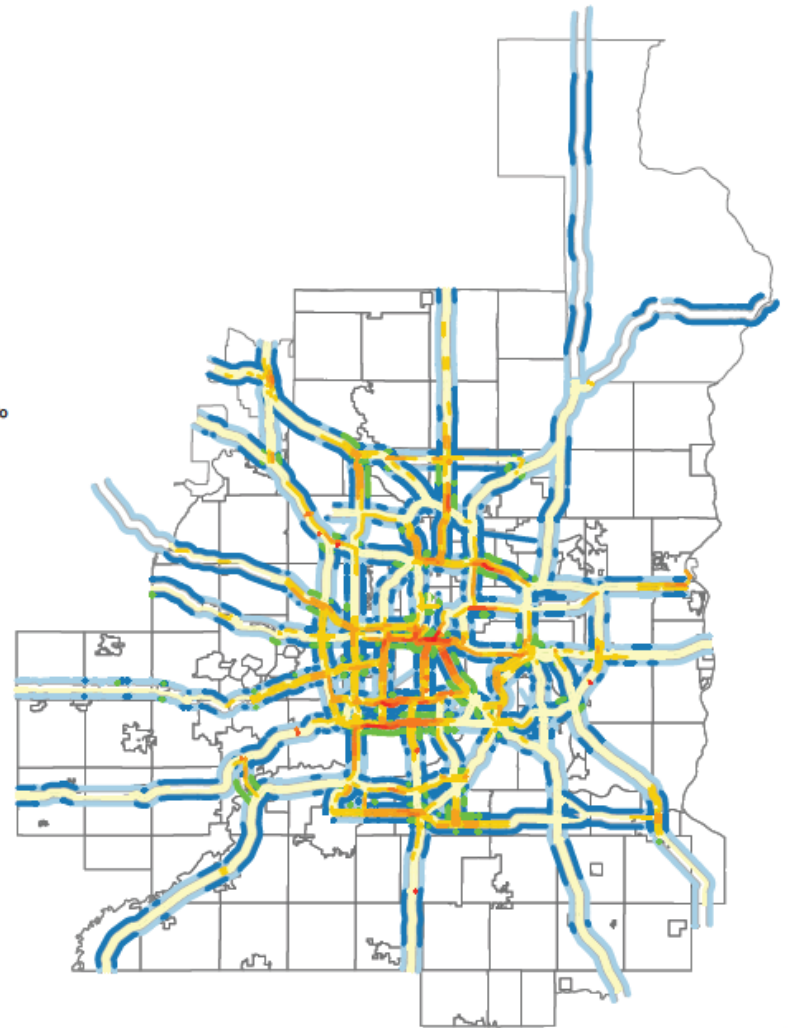
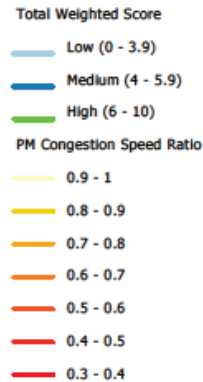
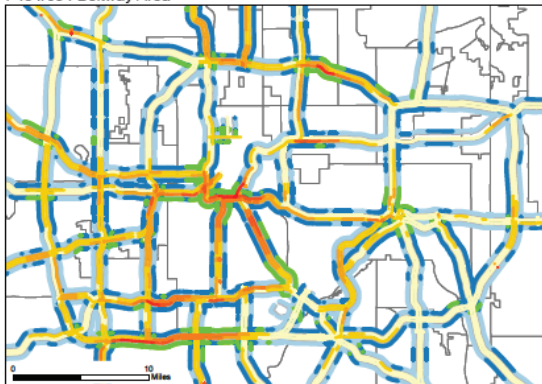
I-494/694 Beltway Area



Met Council Congestion Speed Data Overlap

PM Peak Period

I-494/694 Beltway Area



Study Limitations



Study Scale

- More detailed analysis not possible due to scale of study and availability of data



Data Sources

- Quality and sources of data for each segment not disclosed
- Segmentation of data could not be edited
- Gaps in data (required StreetLight)



Comparison to Other Studies

- Differing evaluation methodology
- Differing underlying datasets

Key Study Findings

- 1** Correlations to other Twin Cities Metro Area congestions studies
 - All studies generally highlight highway mobility concerns within urbanized areas
- 2** Similar highway mobility/reliability problem area identification
 - 60% of high scores mileage falls on or within I-494/I-694 ring
- 3** Reliably congested corridors may not achieve high scores – i.e., TH 62 Edina

Key Study Findings

- 4 Programmed investments are targeting key highway mobility/reliability issues
 - Alignment with 2020-2023 TIP and TPP current revenue scenarios

- 5 High scoring segments are not all equal
 - Unique contexts prohibit achieving improved mobility and reliability (i.e., TH 55 in Minneapolis, CSAH 42 in Burnsville, etc.)

Questions

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