Sensitivity Analysis for Twin Cities Highway Mobility Studies

August 2020

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METROPOLITAN COUNCIL

Goals

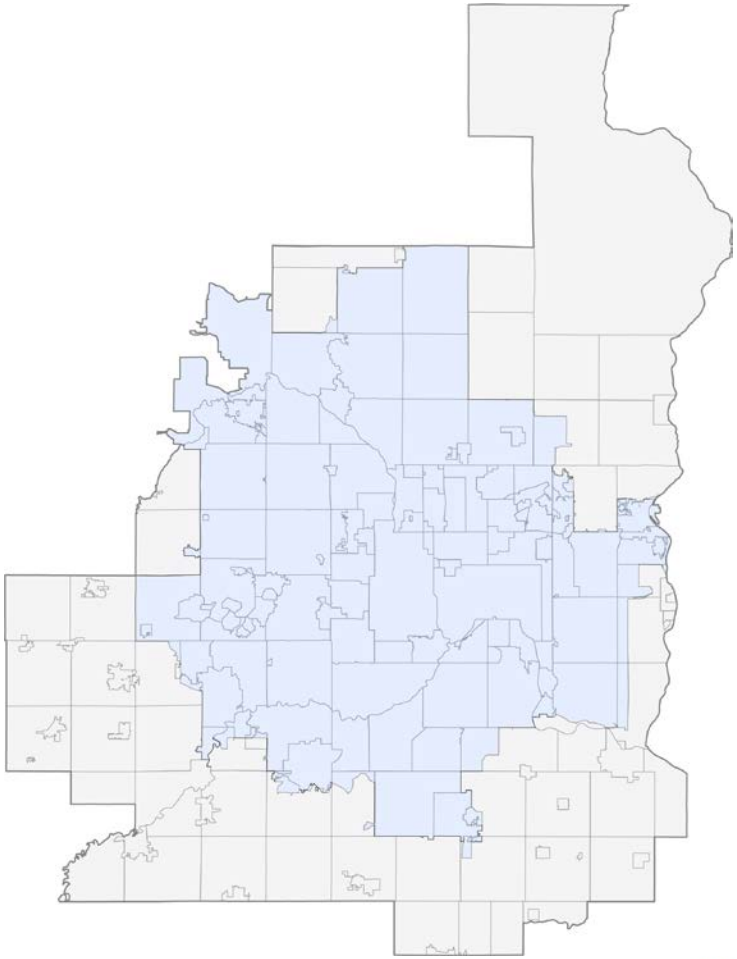
To identify National Highway System (NHS) locations with the greatest highway mobility/reliability issues

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

U.S. Department of Transportation Federal Highway Administration

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

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

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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)

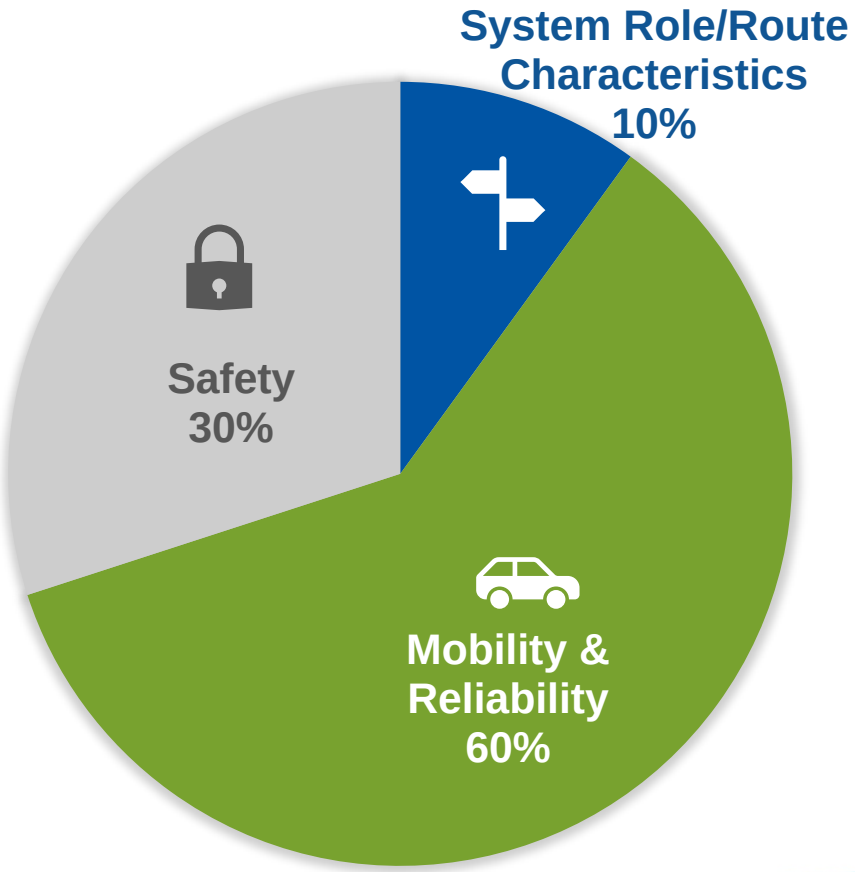
- Crash Rate
- Fatal and Serious Crash Rate

System Role & Route Characteristics

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

- HCAADT
- Trip Length
- Rail
- Transit

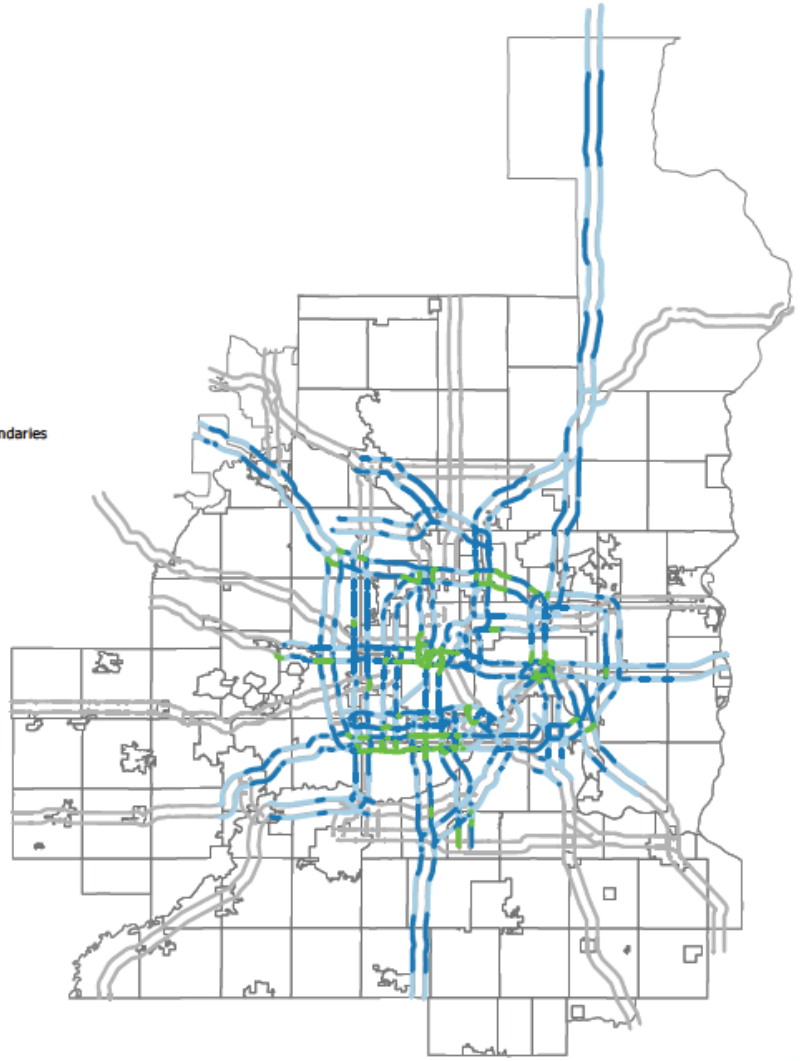
Evaluation Criteria



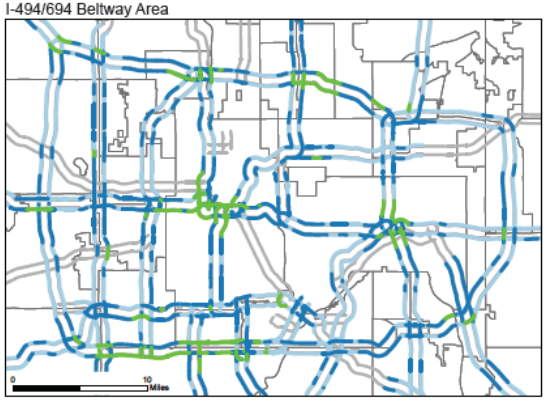
Results

Entire MPO Area

Freeways



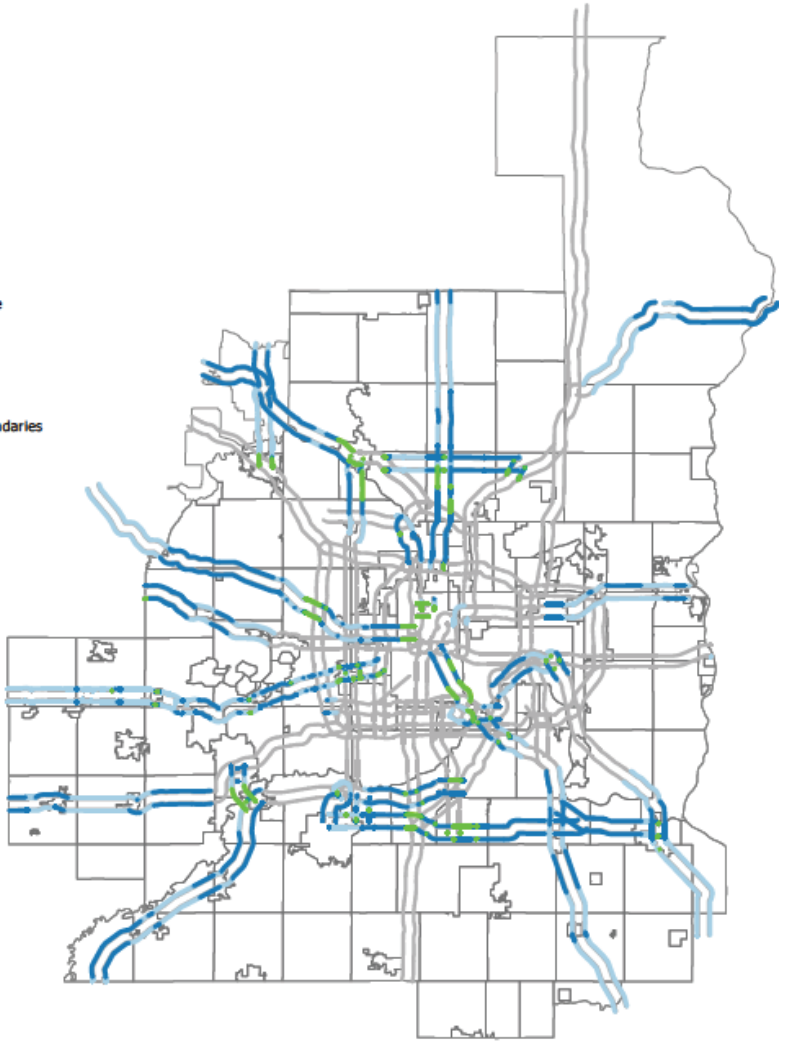
I-494/694 Beltway Area



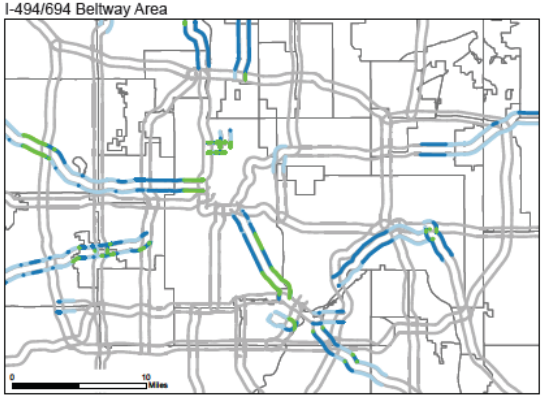
Results

Entire MPO Area

Non-freeway arterials



I-494/694 Beltway Area



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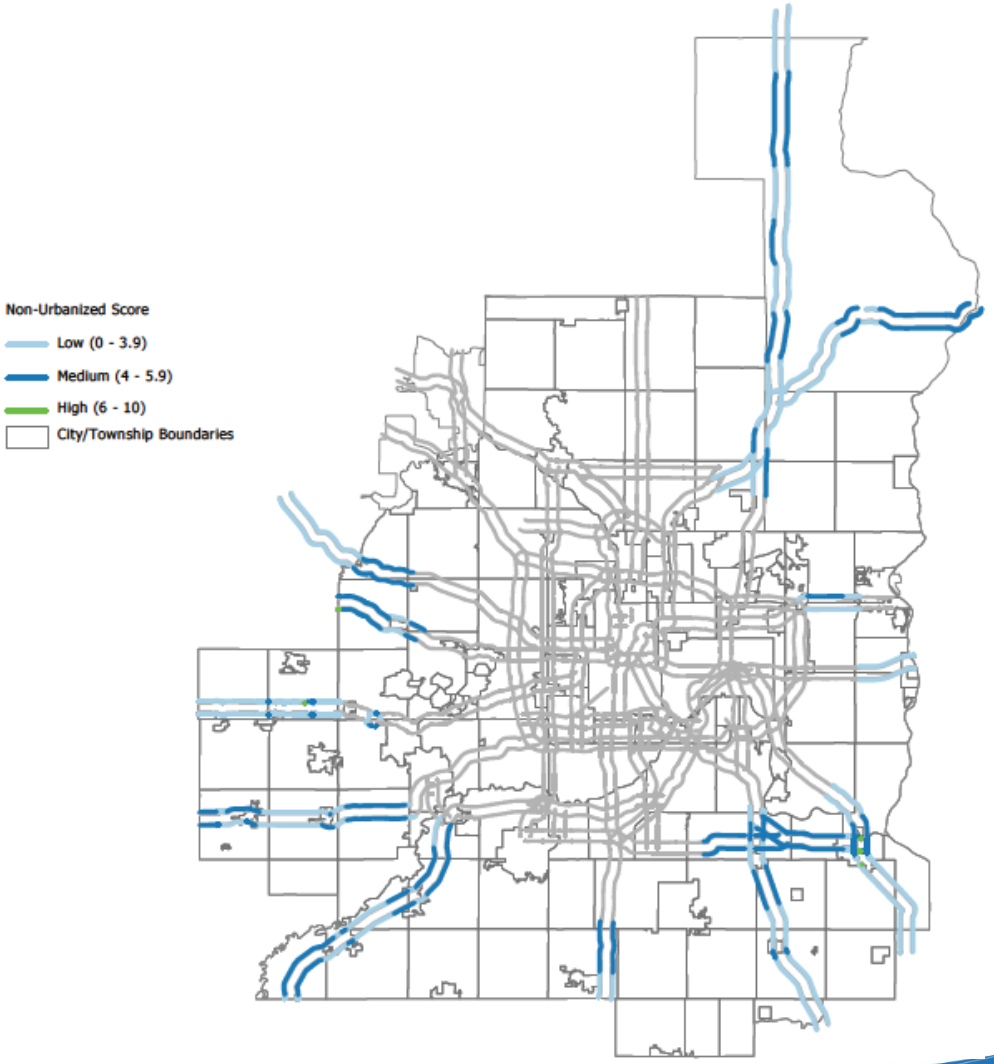
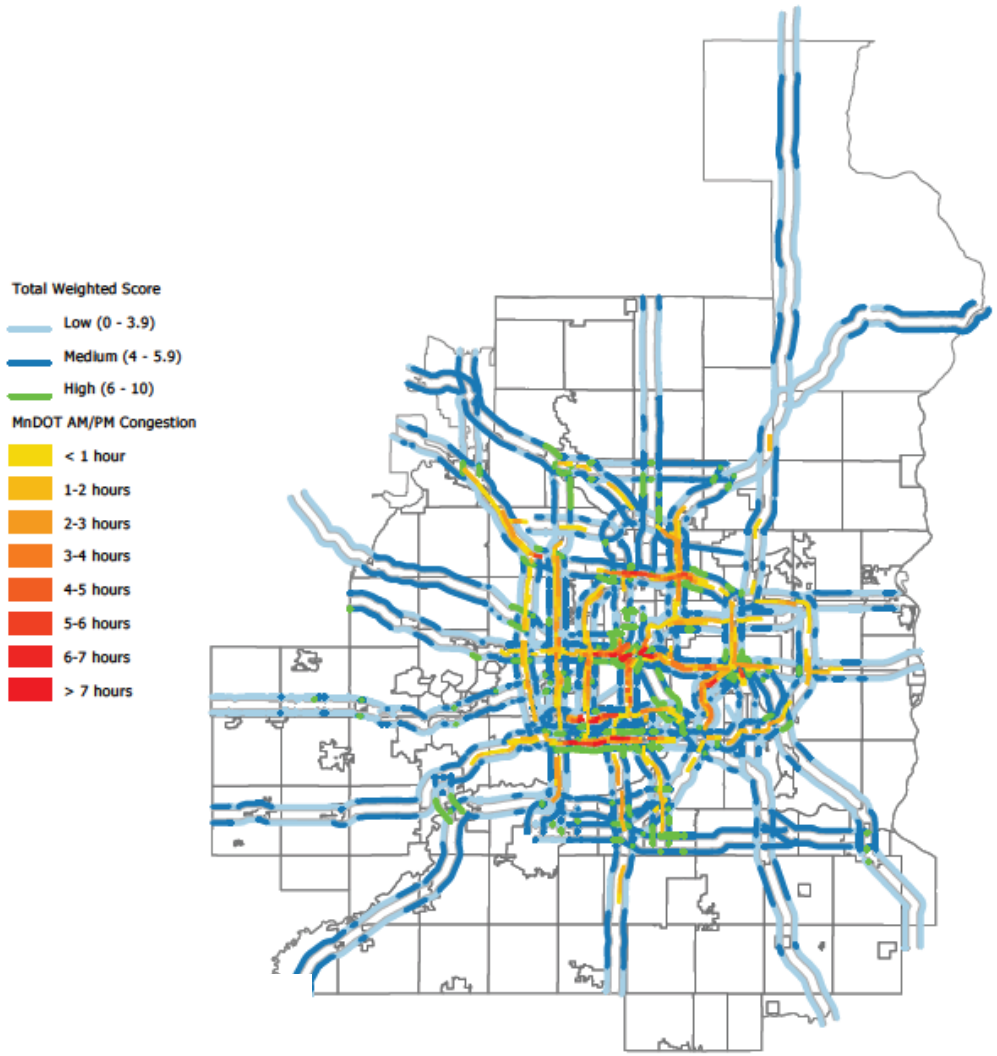
Results

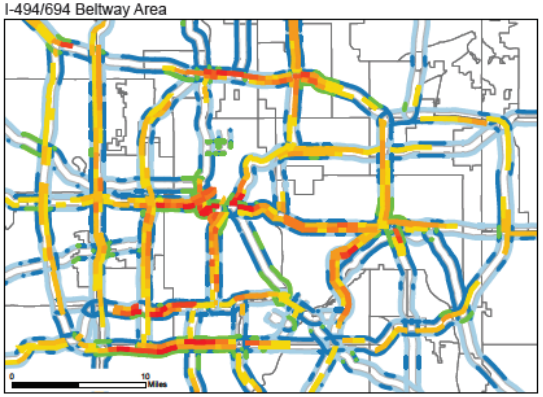
Non-Urbanized Area Only



2018 MnDOT Congestion Report Overlap

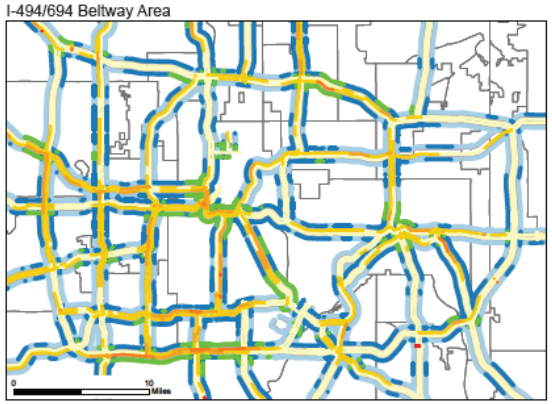


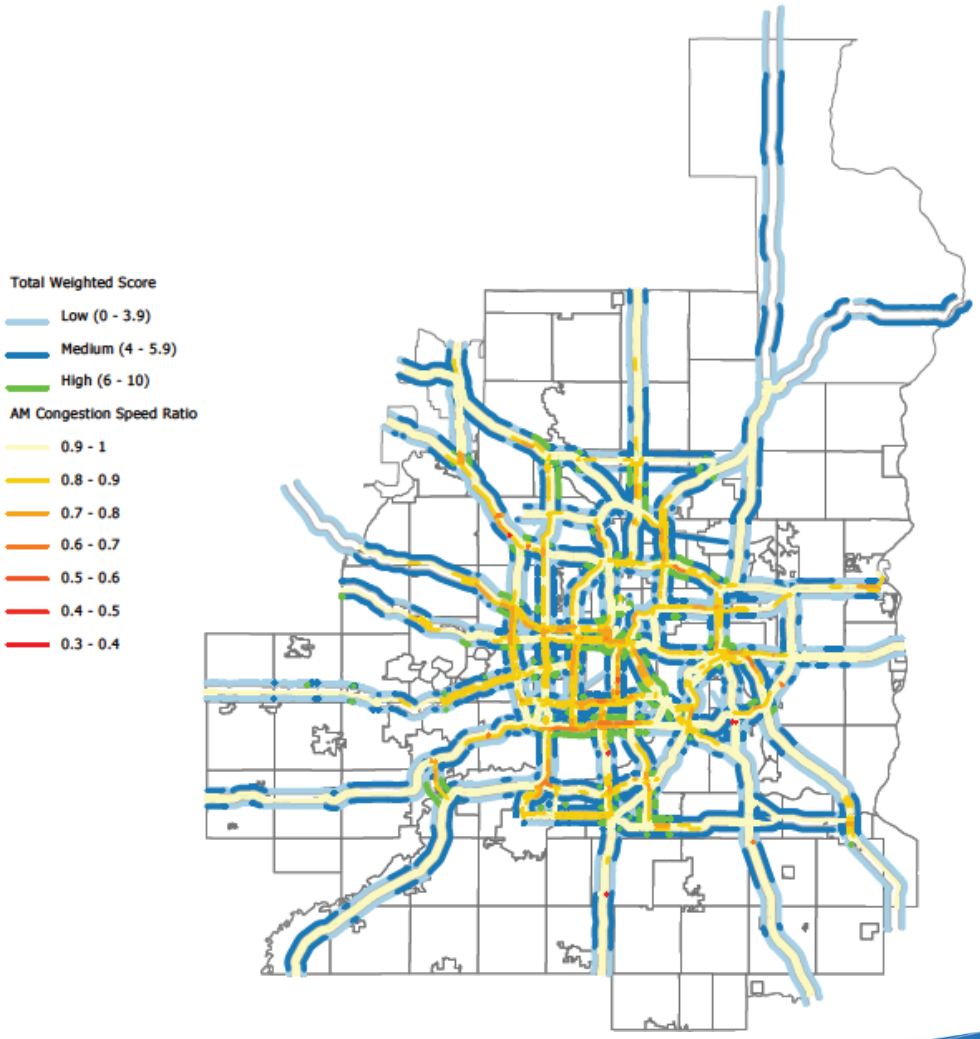
I-494/694 Beltway Area



Met Council Congestion Speed Data Overlap

AM Peak Period





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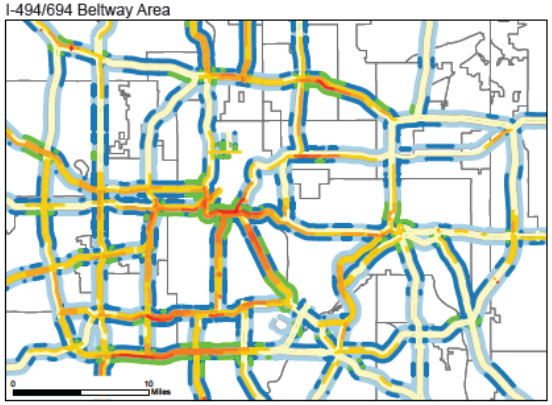

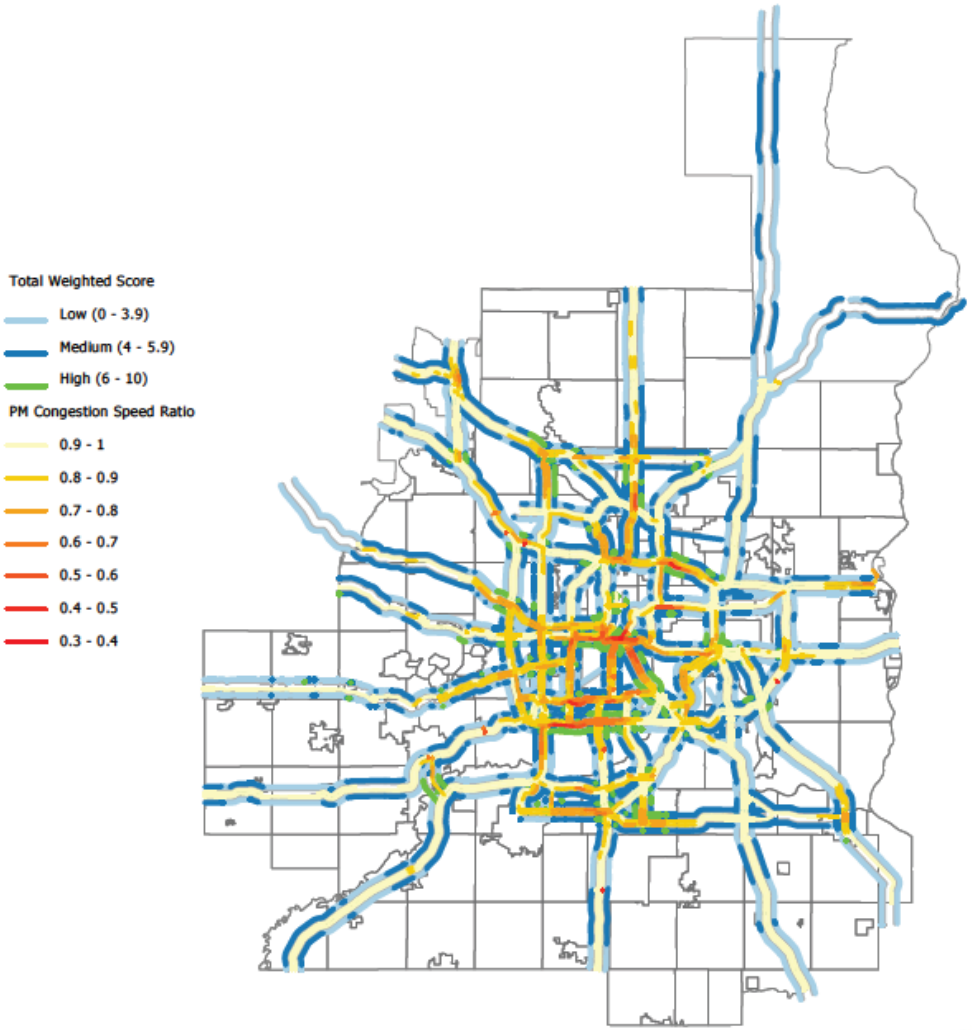

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Study Limitations

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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