Evaluation of Traffic Forecast Accuracy and Reasonableness

METROPOLITAN COUNCIL

June 11, 2026; Charles Gorugantula

Forecast Accuracy and Reasonableness

Project to review accuracy of travel forecasts made in the region

- Continuation of similar work done by MnDOT (and University of Minnesota) in the past
  - 1981 – projects from 1960 to 1980
  - 2010 – projects from 1980 to 2010
  - **2025 – projects from 2010 to 2020**

- First among peers to have accuracy assessments spanning 60 years
  - Current study is 3rd in the region → Allows for longitudinal comparison

- The project kicked off in late spring 2025
  - Insight Transportation Consulting and WSP

- Methodology based on National Cooperative Highway Research Program (NCHRP) Report 934 from 2020

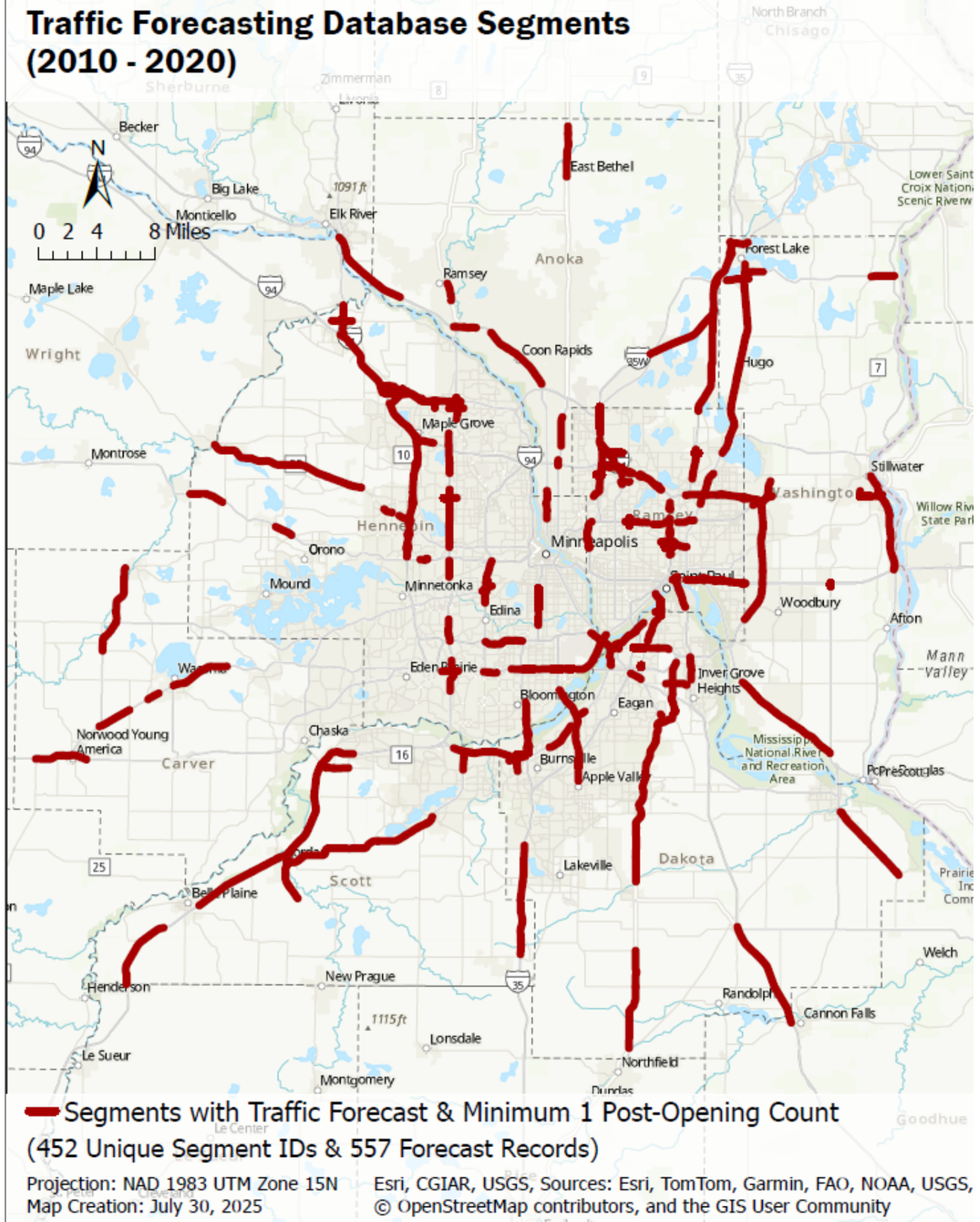
Key Objectives

1. Assessment of recent forecast accuracy and compare them historically

2. Develop recommendations to communicate forecast accuracy

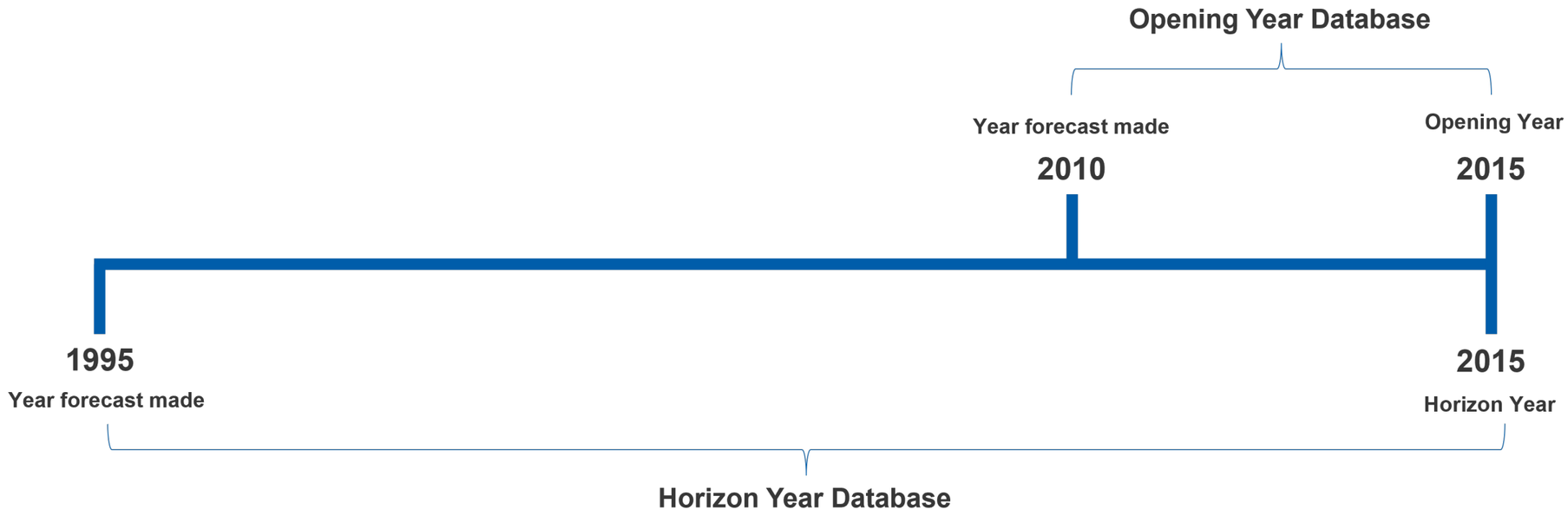
3. Develop recommendations for improving accuracy

- Compiled and reviewed data from ~ 450 Traffic Forecast Reports (from MnDOT)
- Roadway projects built and implemented within **2010 – 2020** timeframe
    - Compared forecasts with actual traffic counts



Accuracy Assessment Databases

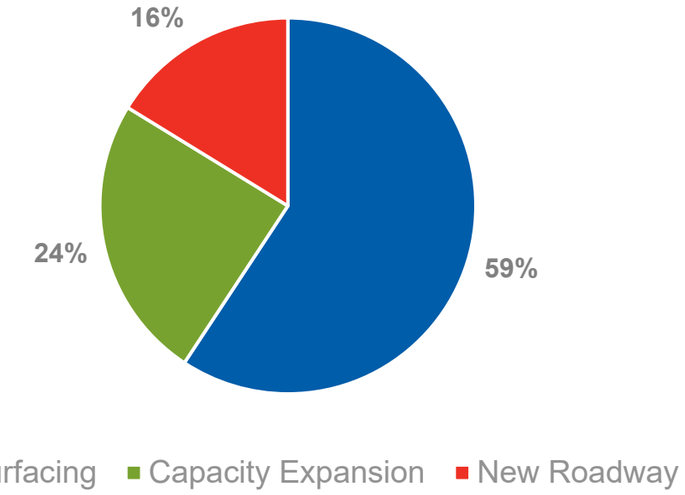
- Developed two sets of accuracy assessments
  - Opening Year Database - Projects that opened between 2010 and 2020
  - Horizon Year Database – Projects that had a forecast horizon year between 2010 and 2020



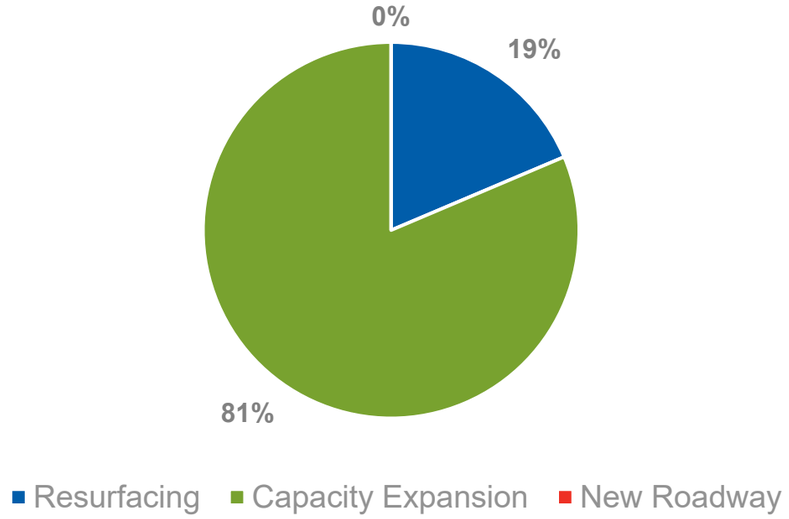
We wanted to evaluate impact of lead time on accuracy of forecasts

Project Type Distribution

‘Opening Year’ Database (n=97)

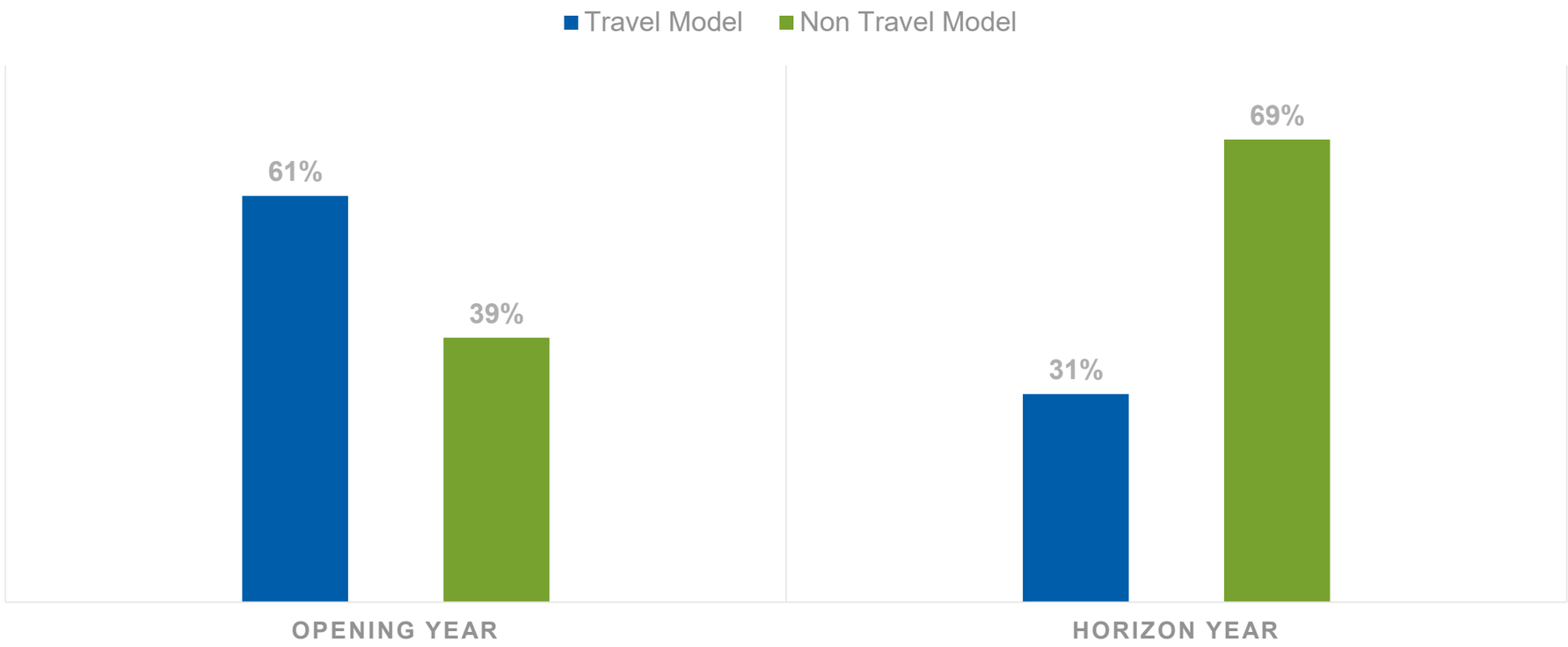


‘Horizon Year’ Database (n=47)



Most Opening Year projects are **resurfacing**, while most Horizon Year projects **added capacity**

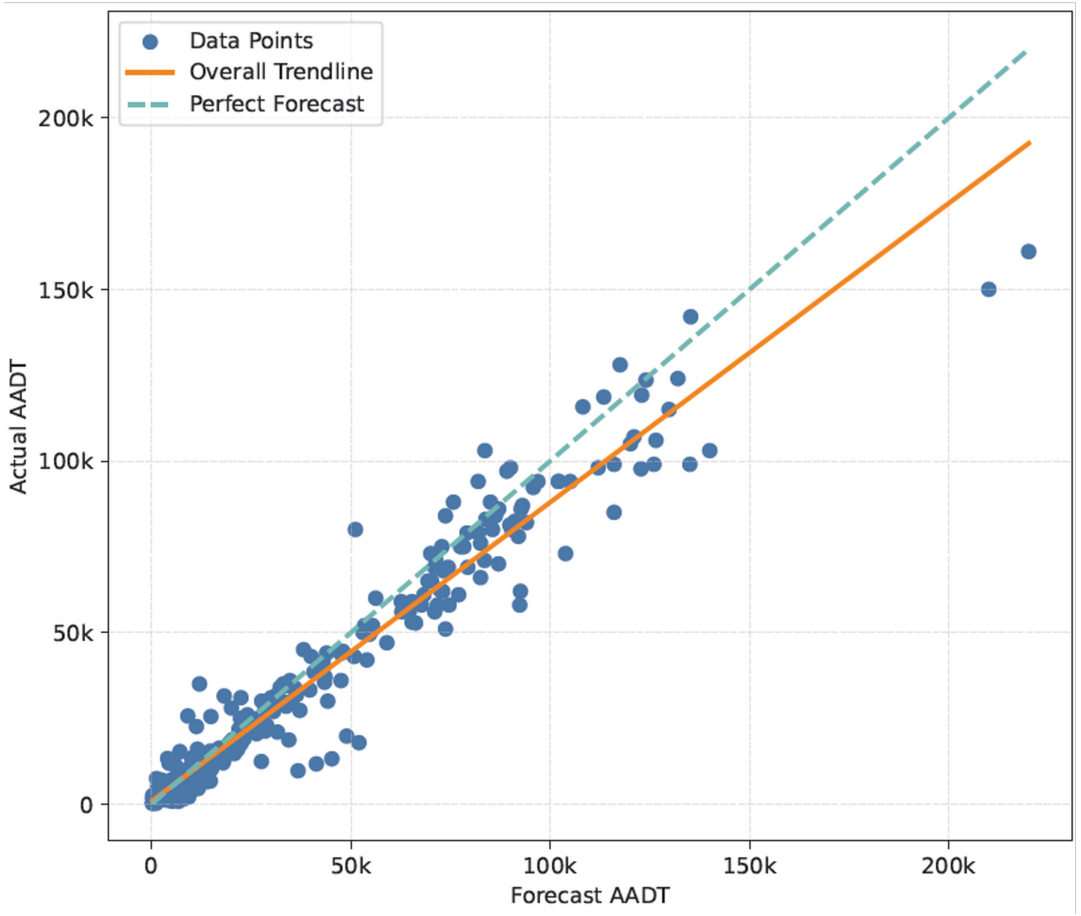
Project Forecasting Methods



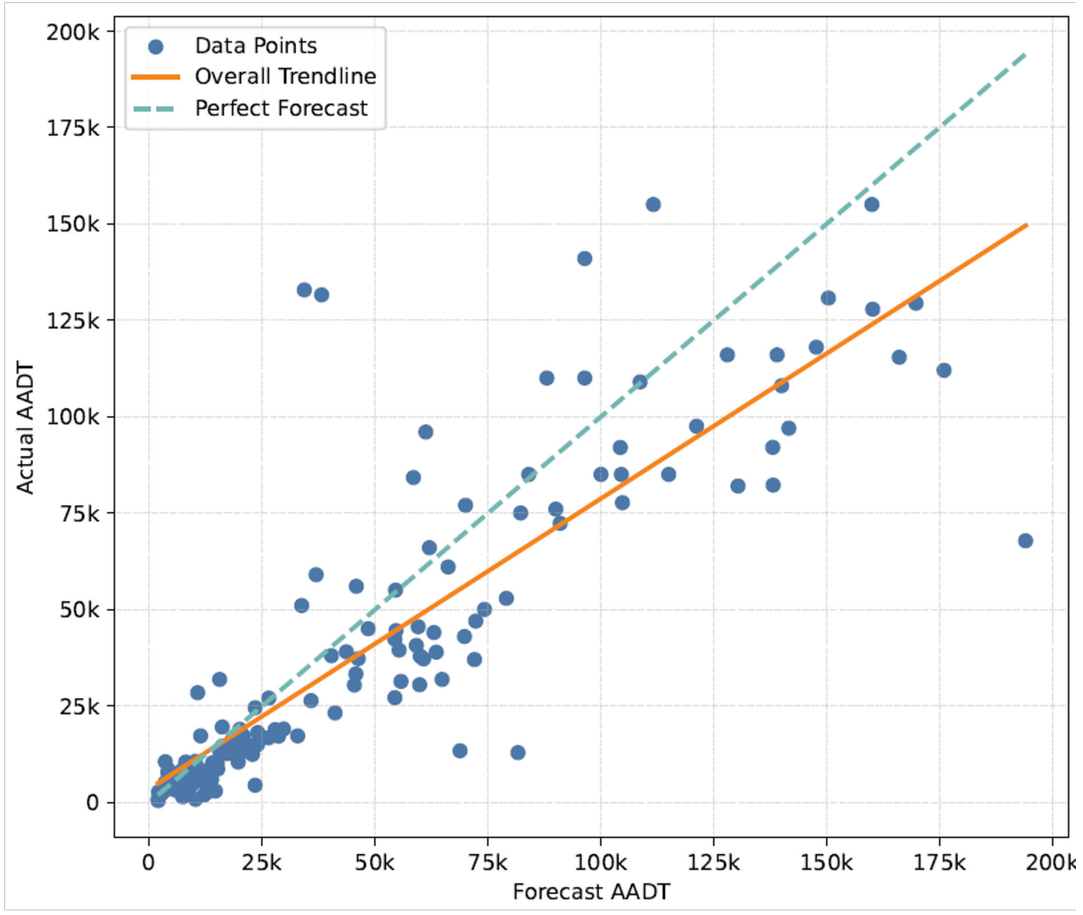
Recent projects are more likely to rely on the travel demand model for forecasts

Counts Versus Forecasts

Opening Year



Horizon Year



Metropolitan Council

Accuracy Assessment Summary

Comparison of Opening Year and Horizon Year Assessments

Summary of Traffic Forecasting Accuracy Assessments (2010-2020)

Category	Sub-Category	Traffic Forecasting Accuracy Assessment	
		Met Council 2026 (Opening Year Only)	Met Council 2026 (Horizon Year Only)
Year Range	----	Opening Years 2010-2020	Horizon Years of 2010-2020
Number of Project Segments Analyzed	All projects	388	145
	Larger projects with count AADT greater than 60,000	69	37
	% projects that are larger projects with count AADT greater than 60,000	18%	26%
Average Forecast Accuracy	All projects	1% over-forecast	13% over-forecast
	Larger projects with count AADT greater than 60,000	6% over-forecast	5% under-forecast
Minnesota auto VMT per capita (annual growth during year range)	----	-1.6% per year (+0.1% per year 2010-2019)	

Accuracy Assessment Summary – Historical Comparison

Longitudinal comparison of accuracy assessments

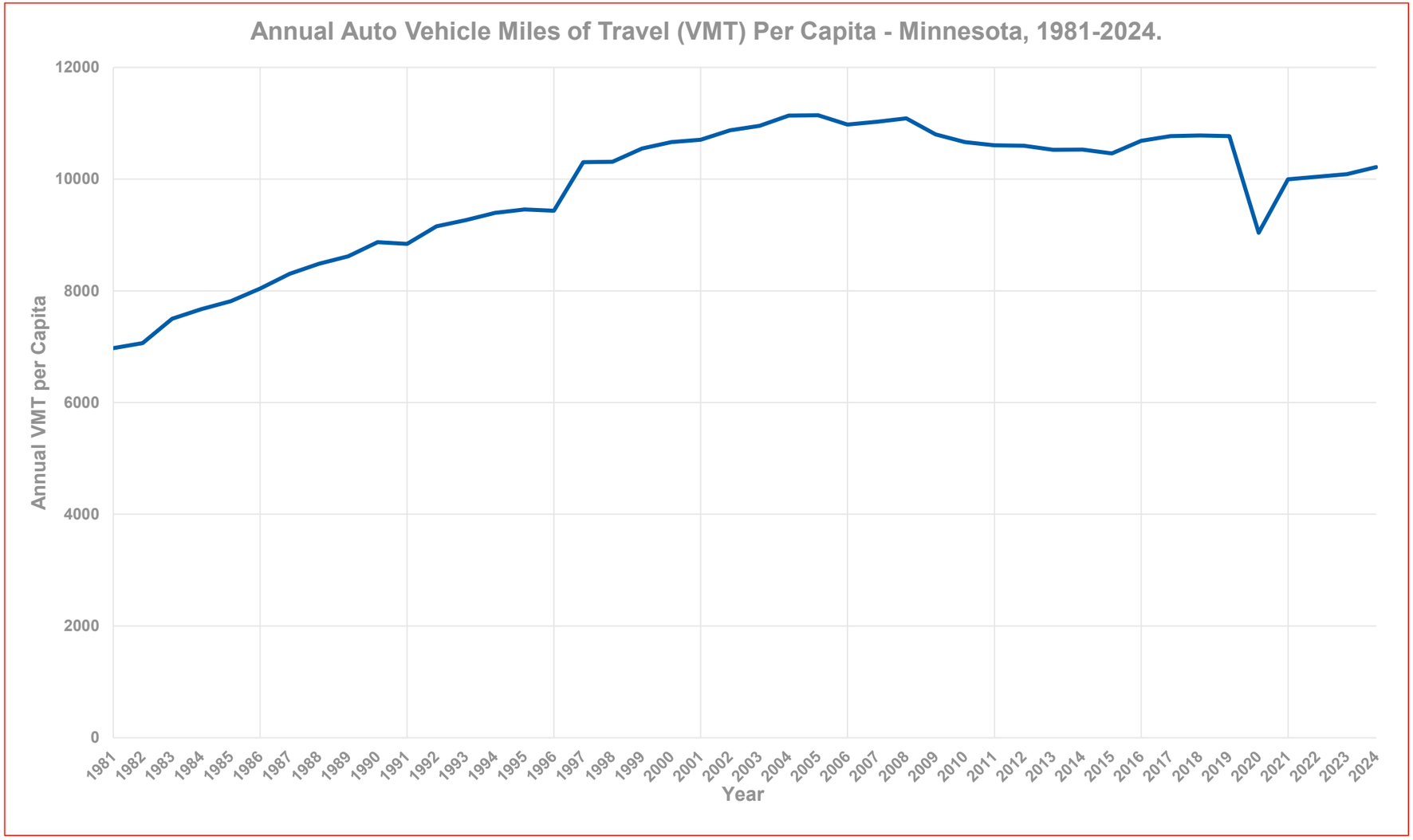
Summary of Traffic Forecasting Accuracy Assessments in the Twin Cities (Horizon Year 1960-2020)

Category	Sub-Category	Traffic Forecasting Accuracy Assessment		
		Page 1981	**Parthasarathi 2010**	**Met Council 2026 (Horizon Year Only)**
Horizon Year Range	----	1960-1980	1982-2010	2010-2020
Number of Project Segments Analyzed	All projects	390	674	145
	Larger projects with count AADT greater than 60,000	86	79	37
	% projects that are larger projects with count AADT greater than 60,000	22%	12%	26%
Average Forecast Accuracy	All projects	28% under-forecast	12% under-forecast	13% over-forecast
	Larger projects with count AADT greater than 60,000	28% under-forecast	40% under-forecast	5% under-forecast
Minnesota auto VMT per capita (annual growth during horizon year range)	----	3.4% per year^	1.5% per year	-1.6% per year (+0.1% per year 2010-2019)

^ State-level data is not available before 1981. The USA average rate of VMT growth 1960-1980 is 3.4%.

MN Annual VMT Per Capita

Minnesota Annual Auto VMT per Capita Growth



Recommendations for Communicating Accuracy

- Succinctly report current findings while presenting forecasts
  - Forecast made with travel models are more accurate than those made without
  - Forecast accuracy has improved and the direction of bias has changed from under forecasting to slight over forecasts.
- Discuss macro trends that might affect current forecasts
  - Declining VMT per capita
  - Labor force participation peaked in 2000, declining trend in trip making
  - Broader shift of in-person activities to online activity - shopping, services, entertainment.
- Acknowledge what our forecasts do and do not capture - documenting key uncertainties
  - Sensitivity to telework
  - Induced vehicle travel
  - Future economic, demographic shifts

Recommendations for Improving Forecast Accuracy

- Update current regional traffic forecasting guidance
  - On defining study areas and refining transportation networks
  - Documenting existing conditions

- Document and enumerate key uncertainties instead of reporting forecast ranges
  - Develop and include a key uncertainties and assumptions section for each forecast report

- Expand archived forecast information
  - Enables more informative future accuracy assessments

Next Steps

- Present findings to committees and share with the professional community
- Work with communications on publishing articles
- Develop updated forecasting guidance in partnership with MnDOT and other professional groups
- Document key uncertainties and assumptions associated with our current forecasting models

Thank you

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