



TO WIDEN OR NOT TO WIDEN

**Using A Travel Demand Model as a Conflict
Resolution Tool.**

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Disclaimer

Introduction

Model

Analysis

Takeaway



Disclaimer

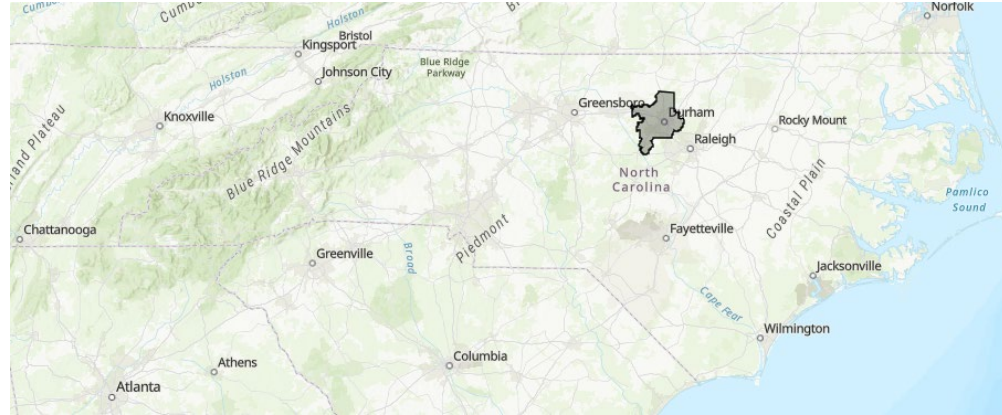
Not a Travel Demand Modeler

- Transportation Planner
- Roadway / Transit / Bike Ped Planning
- Travel Demand Model Applications
- End-User of the Models You Develop
- This Exercise is not a Representation of NCDOT or TWTPO

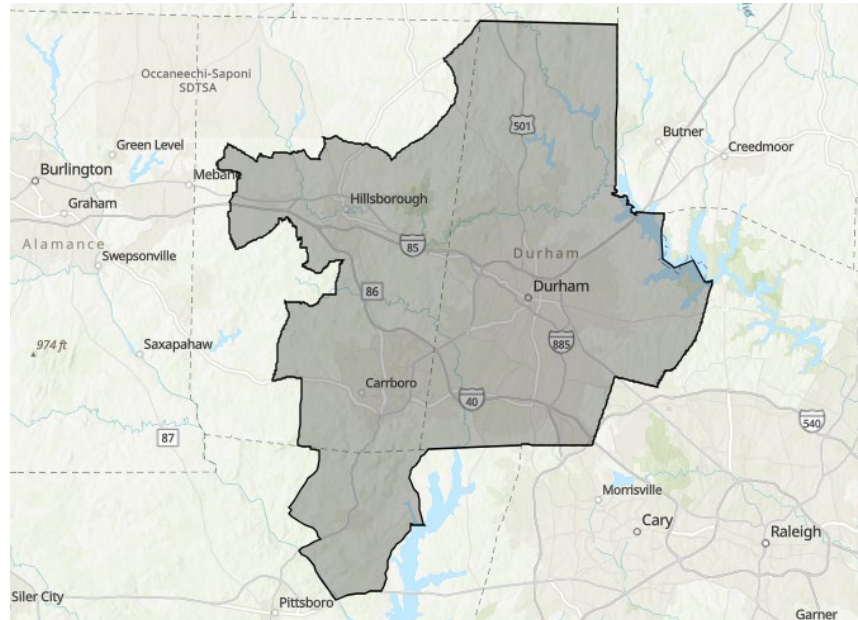
To Widen or Not To Widen?

- Philosophical Question!
- Funding Sources
- Different Perspectives, Values, Opinions between DOTs and MPOs
- State DOTs' Mandate = “Efficient Traffic Flow”
- Regions Looking for Alternative Solutions

Introduction



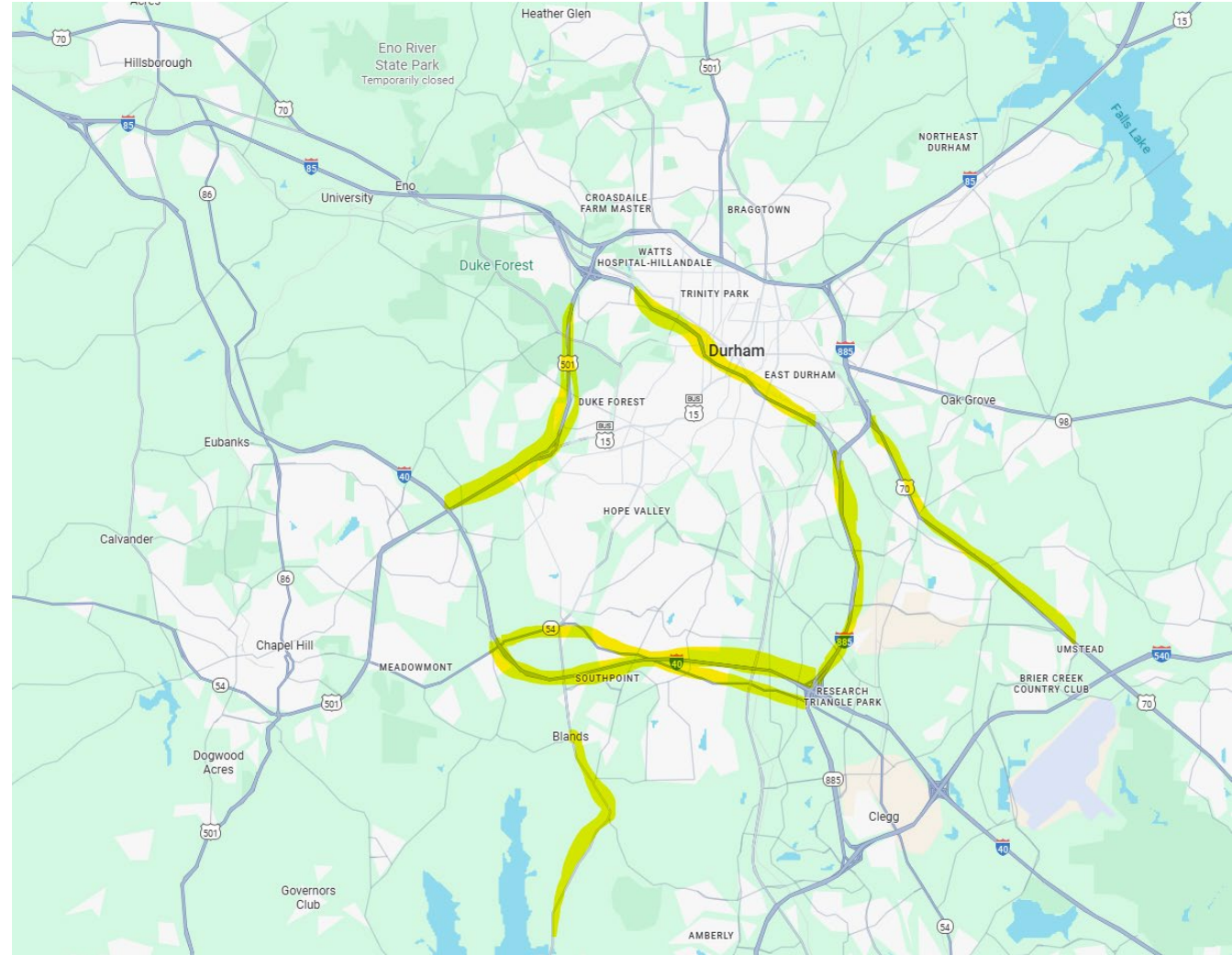
**“The
Good
Roads
State”**



**“Can't build
our way out of
congestion”**

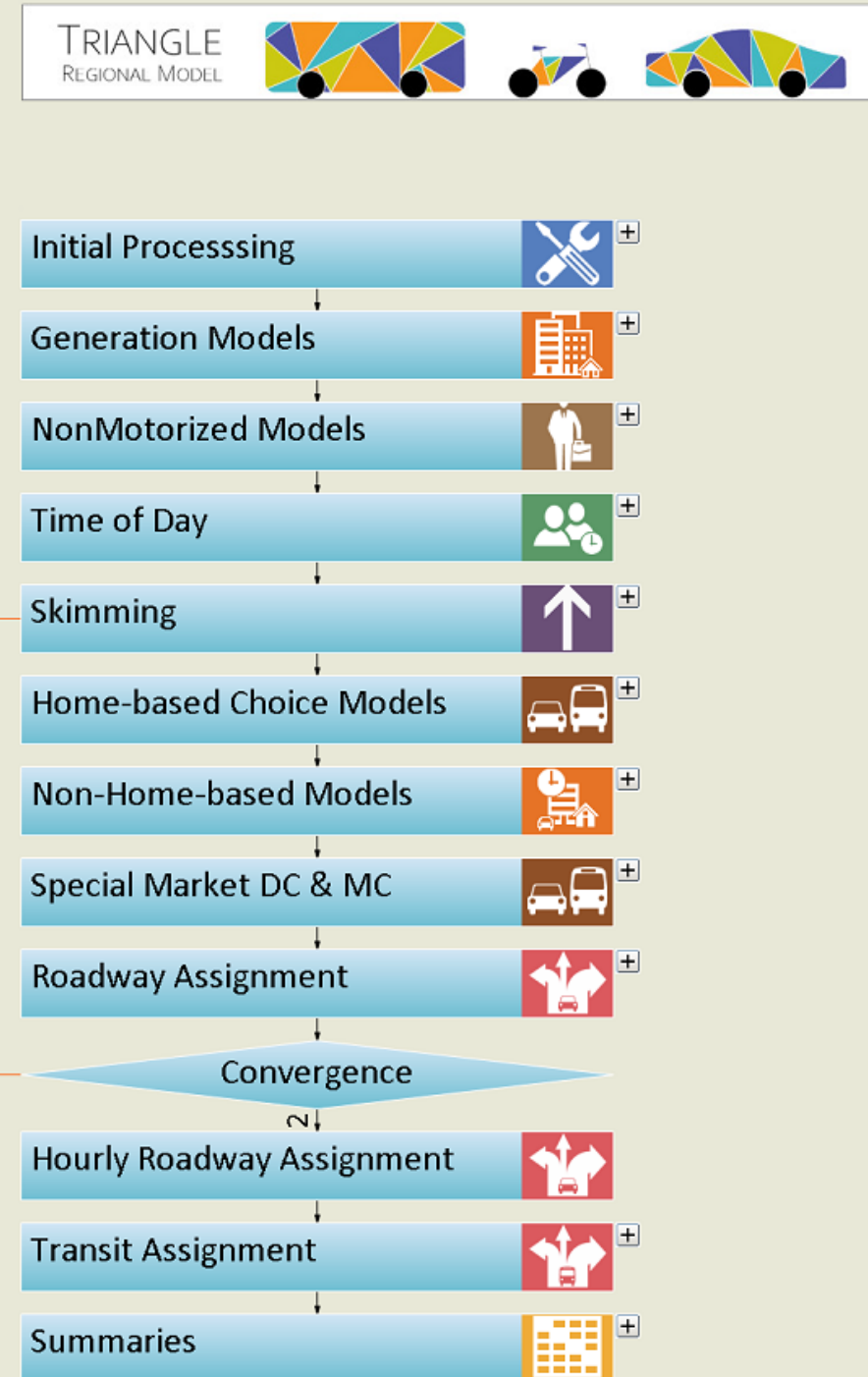
Introduction

- 2045 MTP – Widen All Roads
- 2050 MTP – Do Not Widen
- 2055 MTP ???



The Model

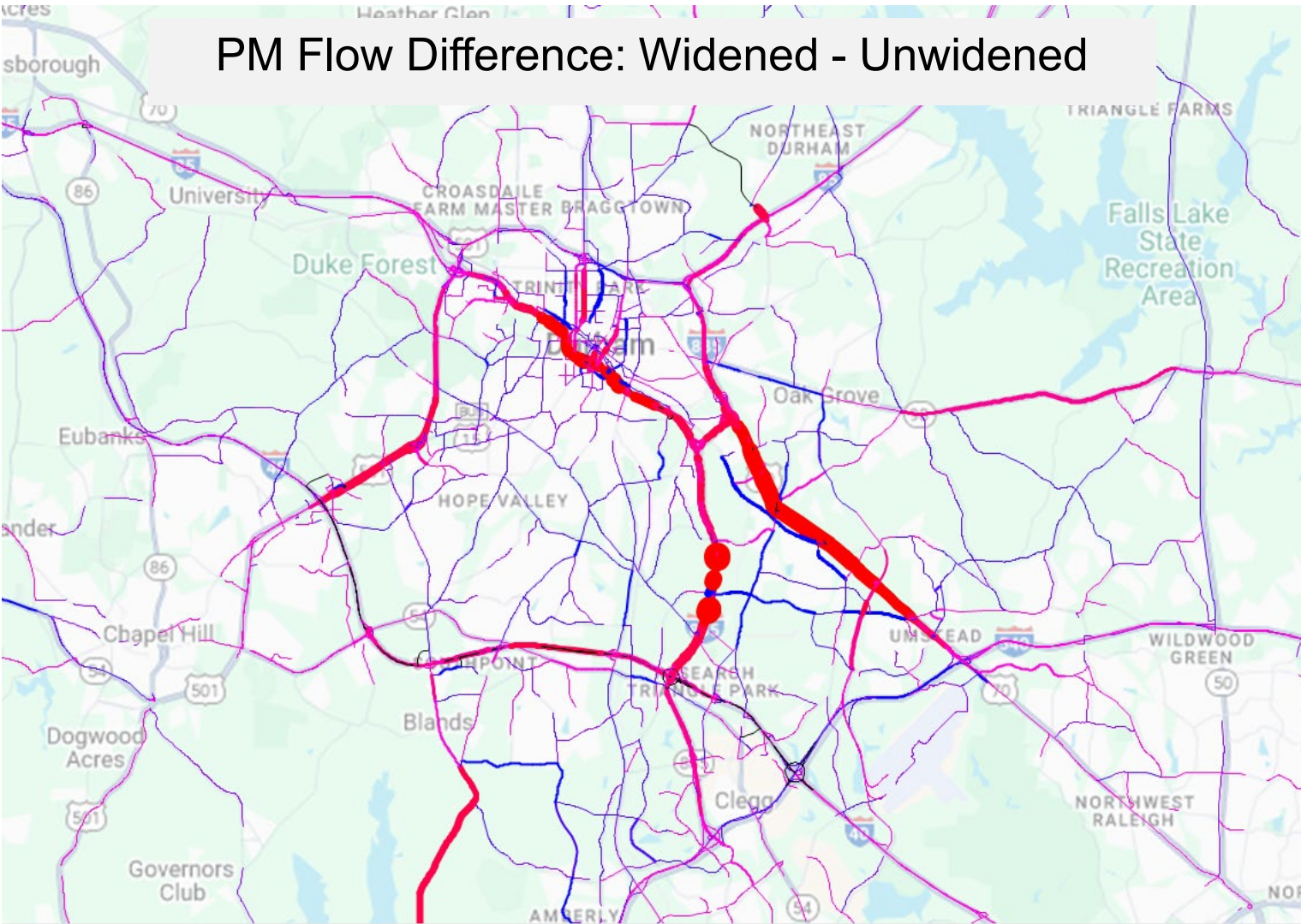
- Triangle Regional Model Generation 2 (TRMG2)
- Hybrid Model – Deep Accessibilities
- Goes beyond standard congestion metrics
 - Accessibility of Population / Employment
 - Change in Production / Attraction
 - Cost of Delay



Analysis

Part 1: All Roads Widened

PM Metric	% Difference
Congested VMT	-11%
VMT by Facility	7%
Cost of Congestion	-11%
Delay by Facility	-11%
Transit Boardings (Regional - <u>Daily</u>)	3%

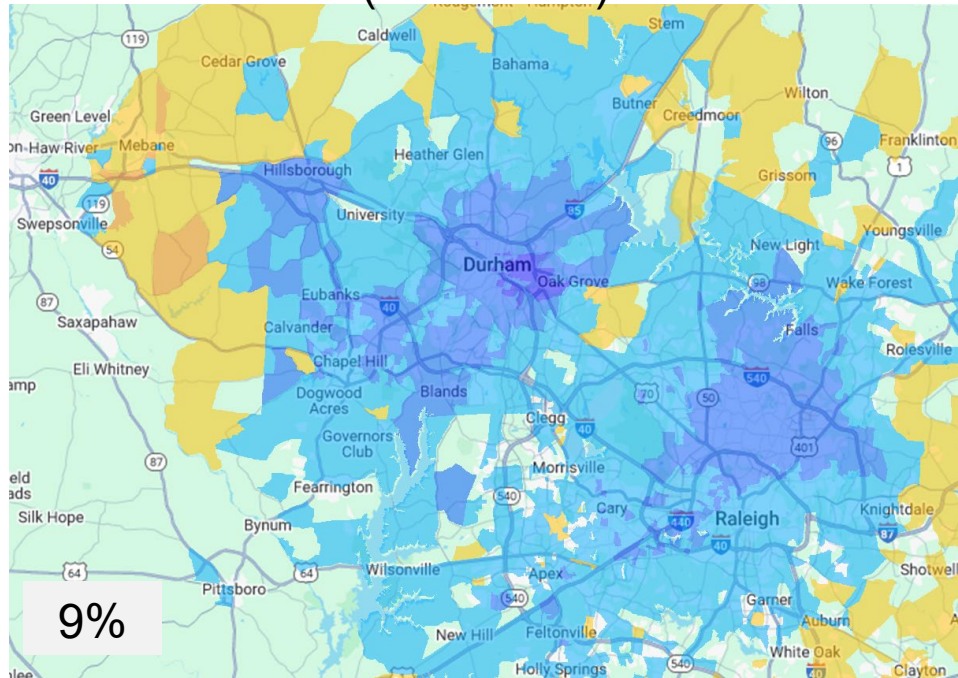


Analysis

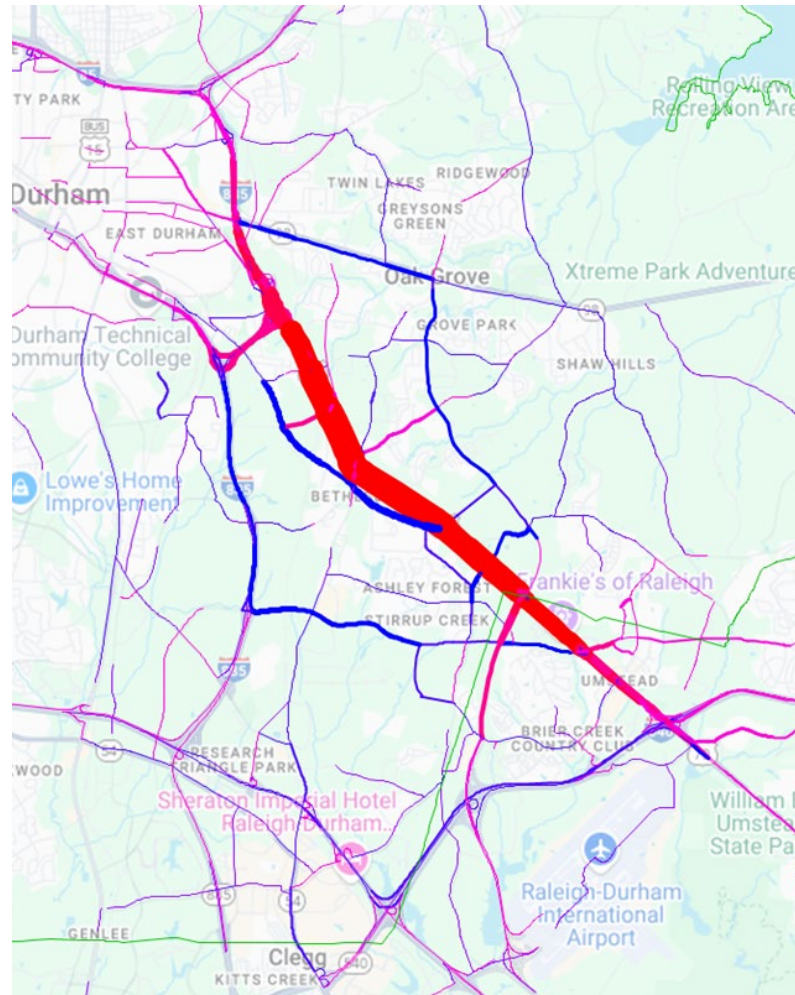
Part 2: Individual Assessments

US 70: 4-lane road to 6-lane freeway

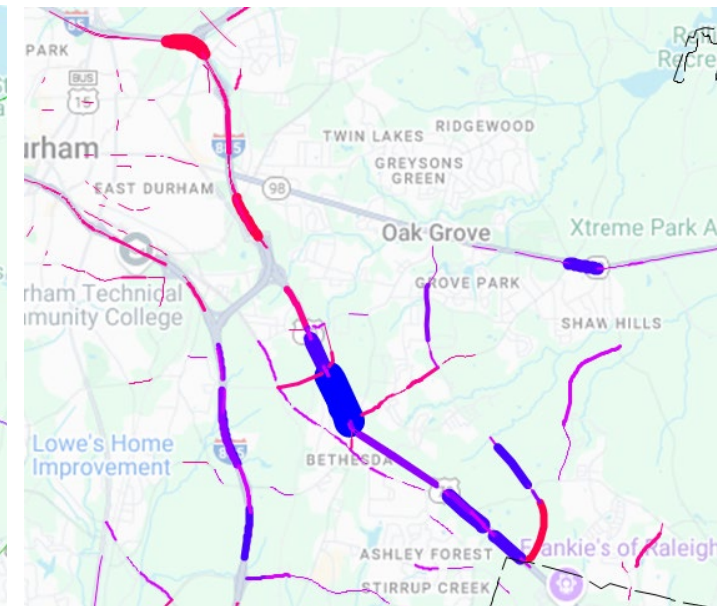
AM 30m Access to Jobs by Auto (Difference)



PM Flow Difference



Delay per Veh - Diff

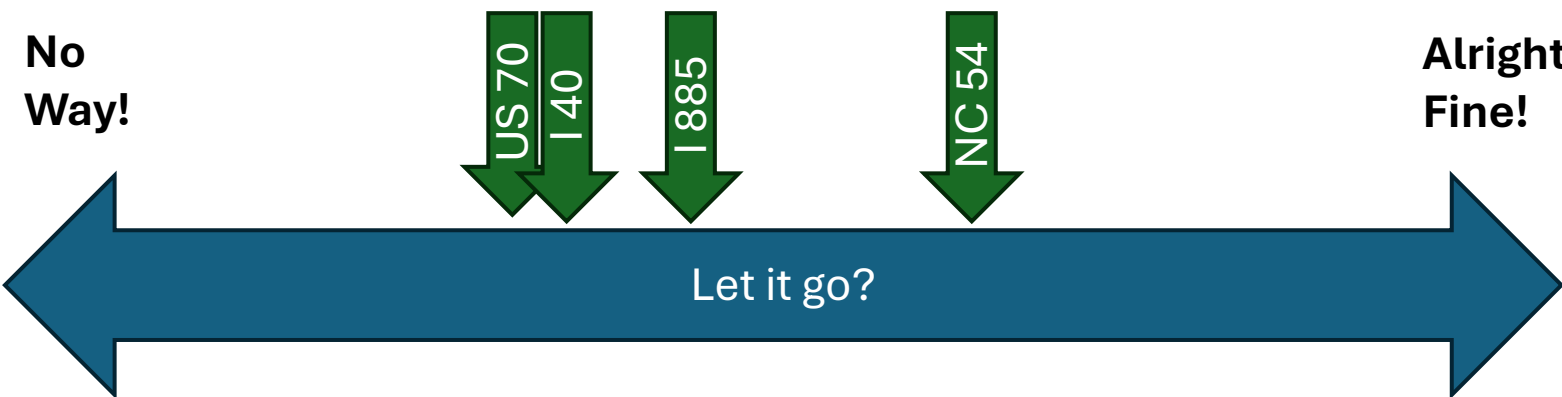
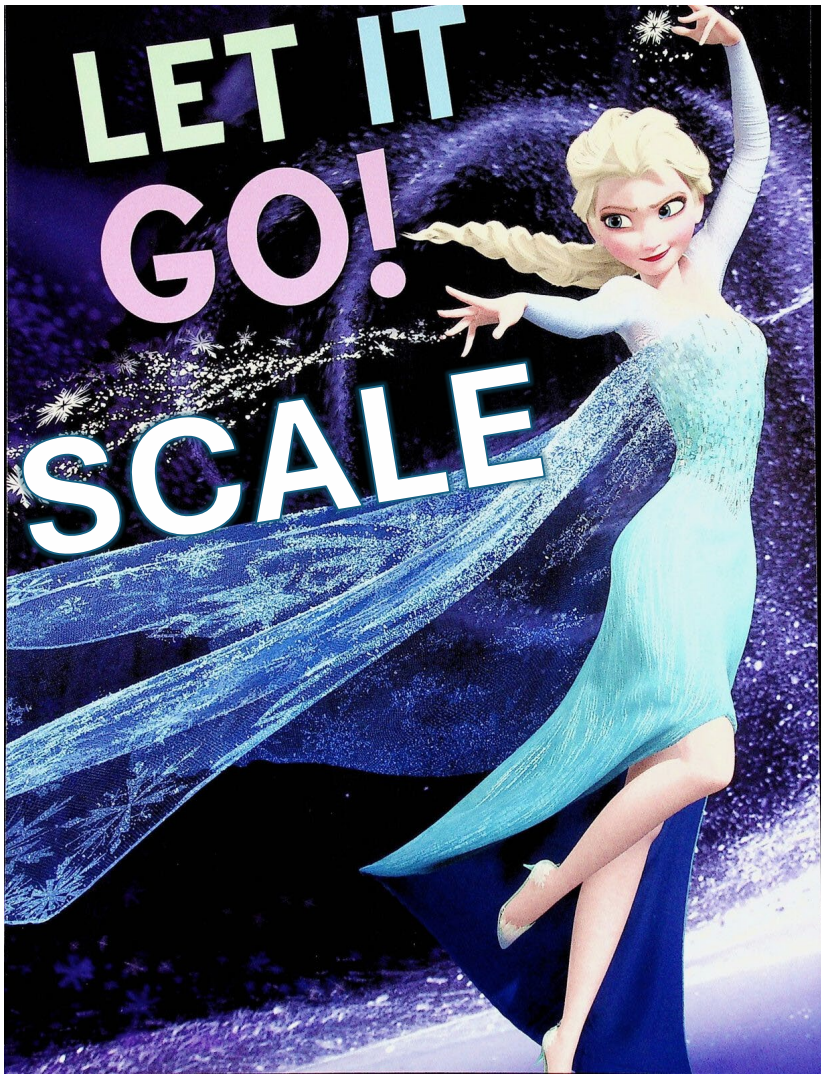


- Demand/Capacity Ratios
- Regional Significance
- Analysis using Replica
- Transit Boarding

Analysis and Output Measures

Parameter	<u>Change</u> due to widening	US 70	I-885	I-40	NC 54
Traffic Flow (PM)	VMT	58,400	72,100	75,900	75,900
	Congested VMT	76,500	-43,200	11,400	-14,200
Delay (PM)	Hours of Delay	-360	-128	-221	-300
	Cost of Congestion	-\$13,100	-\$4,500	-\$8,000	-\$11,000
V/C Ratio (PM)	Avg V/C Ratio	-0.1 to +0.05	-0.2	-0.05	-0.05
Accessibility (AM)	Jobs	2.7%	2.9%	4.1%	0.5%
	Key Travel Time	-2 mins	-1 min	-1 min	-0.5 min
Absolute Values based on Replica					
Regional Significance	All Trips (AT)	104,000	140,000	222,000	150,000
	<i>Project</i> Trips (PT)	35,000	79,000	60,000	-
	Median PT dist. / AT dist.	28 / 15 miles	29 / 23 miles	75 / 22 miles	- / 11 miles
	%PT going beyond Wake/Orange	28%	22%	67%	-

Analysis



Parameter	US 70	I-40	I-885	NC 54
Traffic Flow	1.00	0.82	0.54	0.70
Delay	1.00	0.61	0.36	0.83
V/C Ratio	0.13	0.25	1.00	0.25
Accessibility	1.00	0.90	0.73	0.22
Regional Significance	0.50	1.00	0.62	0.18
Normalized Score	1	0.99	0.89	0.60

Takeaways

- TRMG2 provided readily usable outputs for planners
- Trip choices influenced by network capacity
- Metrics went beyond 'congestion'

Planners' Wishlist

- Limited funding – models could be helpful to determine where to invest
- Inter-agency differences in outlook towards improving mobility
- Ways to quantify or model induced demand
- Accuracy >>>> Precision



**THANK
YOU**

