

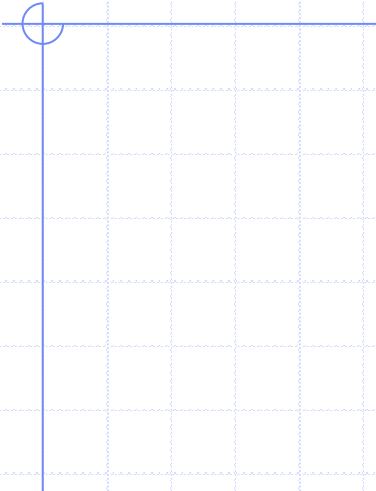
Using NPMRDS to Analyze and Report Traffic Performance at the Dallas-Fort Worth Metropolitan Area

Day		TIME OF THE DAY																							
		Early Morning Off-Peak				Morning Peak				Midday Off-Peak				Afternoon Peak				Night Off-Peak							
D	O	0:00	0:15	0:30	0:45	1:00	1:15	1:30	1:45	2:00	2:15	2:30	2:45	3:00	3:15	3:30	3:45	4:00	4:15	4:30	4:45	5:00	5:15	5:30	5:45
May 1, 2015	Fri	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96
May 4, 2015	Mon	53	53	53	56	56	56	56	53	50	53	53	47	47	47	47	47	47	47	47	47	47	47	47	47
May 5, 2015	Tue	53	53	53	56	56	56	56	53	50	53	53	47	47	47	47	47	47	47	47	47	47	47	47	47
May 6, 2015	Wed	56	53	50	50	56	56	56	56	53	53	53	50	50	50	50	50	50	50	50	50	50	50	50	50
May 7, 2015	Thu	56	53	50	53	51	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
May 8, 2015	Fri	45	53	47	47	47	47	47	47	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	
May 11, 2015	Mon	37	56	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63
May 12, 2015	Tue	37	56	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63
May 13, 2015	Wed	37	56	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63
May 14, 2015	Thu	37	56	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63
May 15, 2015	Fri	37	56	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63
May 18, 2015	Mon	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71
May 19, 2015	Tue	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
May 20, 2015	Wed	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
May 21, 2015	Thu	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
May 22, 2015	Fri	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
May 25, 2015	Mon	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
May 26, 2015	Tue	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
May 27, 2015	Wed	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
May 28, 2015	Thu	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
May 29, 2015	Fri	47	42	53	42	42	47	38	45	42	47	50	34	50	47	45	45	49	56	50	50	50	50	50	50

North Central Texas Council of Governments

May 2, 2016





BASICS

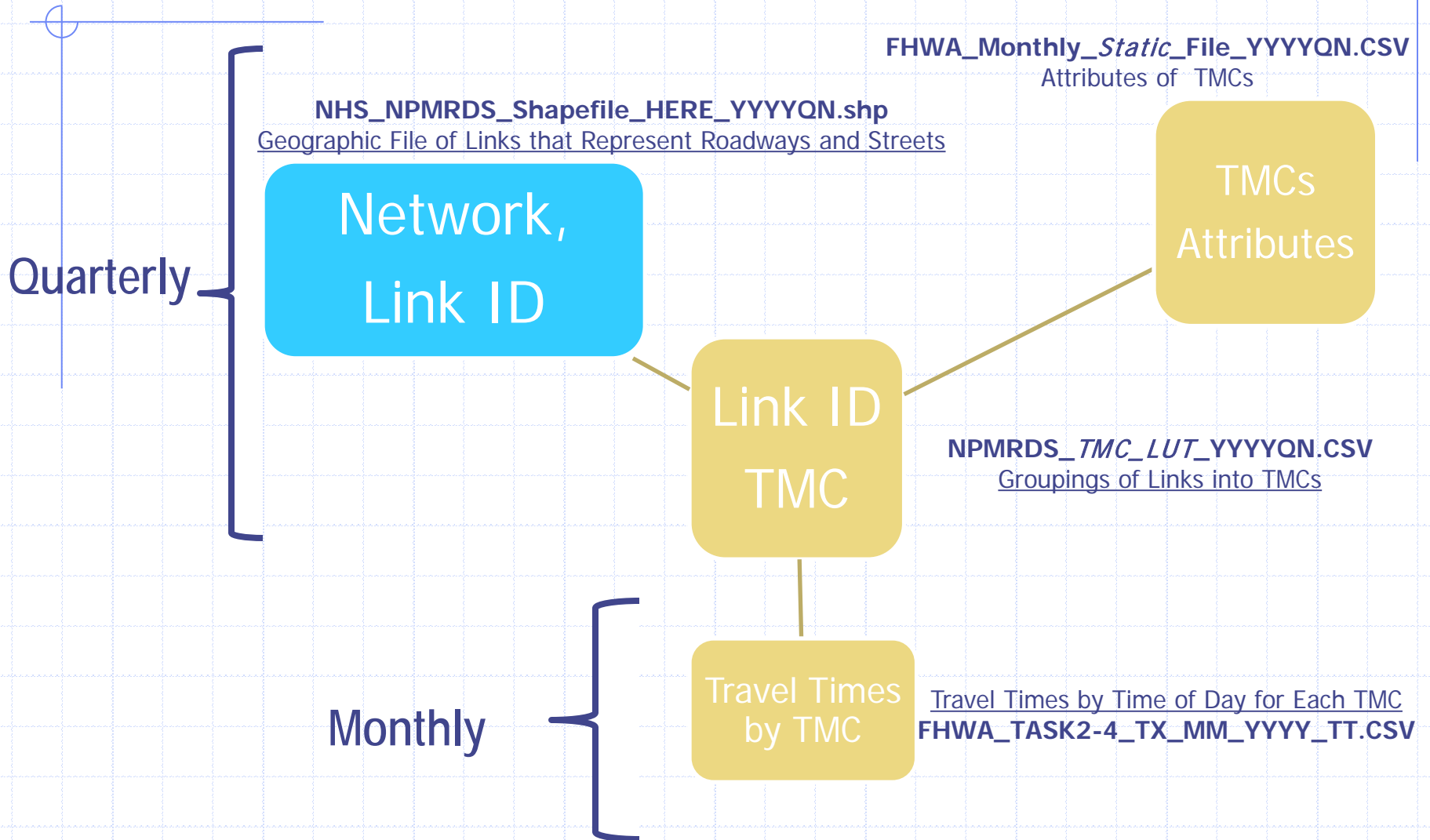
NPMRDS

- ◆ NPMRDS stands for National Performance Management Research Data Set
- ◆ It refers to a Vehicle probe-based travel time data set acquired by the Federal Highway Administration (FHWA)
- ◆ Data is collected by HERE traffic (formerly Nokia/Navteq)

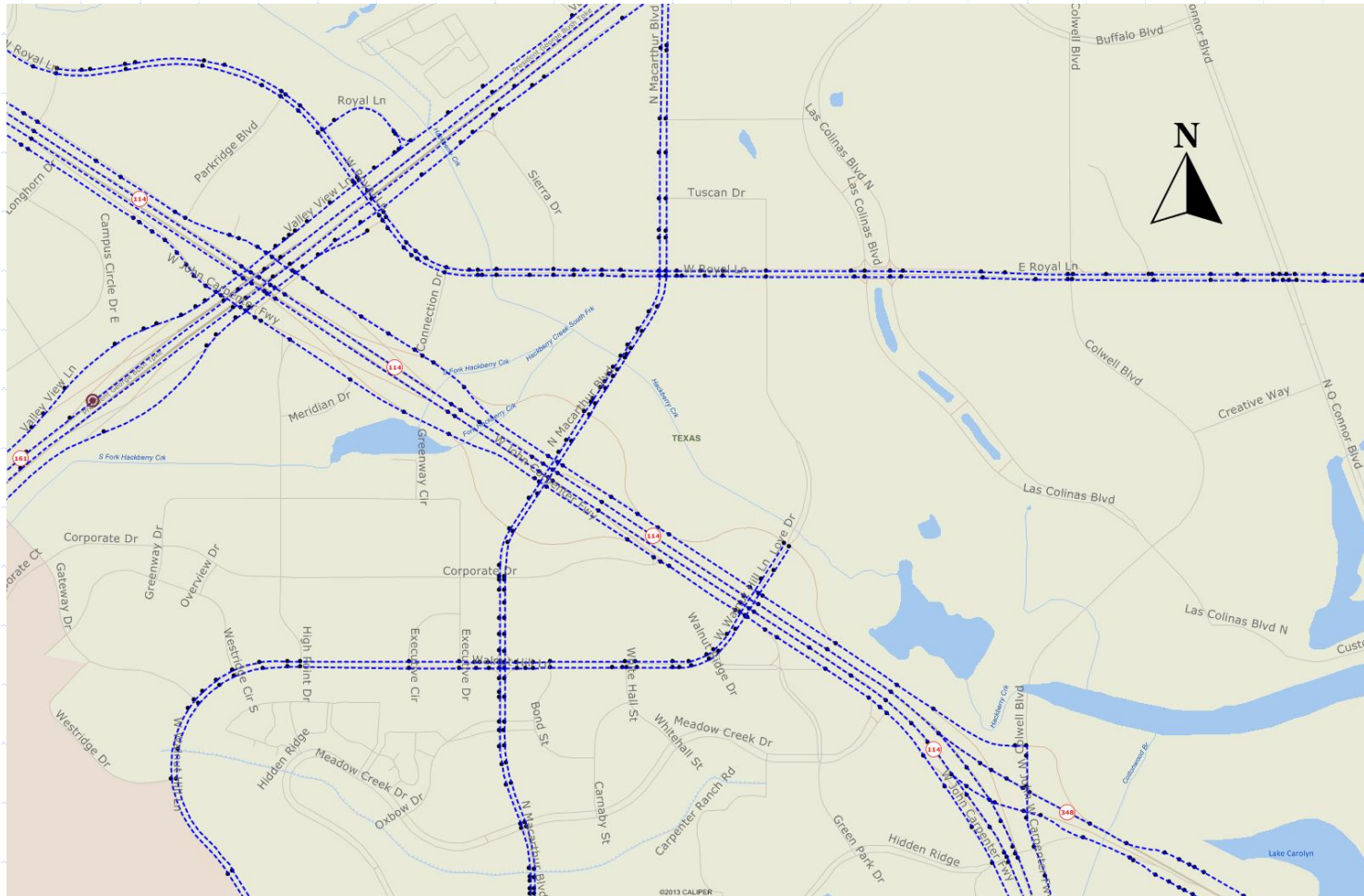
Vehicular Data Available

- ◆ Travel times, in seconds
- ◆ At 5 minutes intervals
- ◆ Every single day of each month
- ◆ By vehicle type: passenger cars, freight trucks, and all
- ◆ Associated to geographic segments referred as TMCs (Traffic Message Channels)
- ◆ Includes all freeways and main roads
- ◆ Available since July 2013

Files Delivered



Shape File sample



Sample of Travel Times Table

TMC	DATE	EPOCH	Travel_TIME_ALL_VEHICLES	Travel_TIME_PASSENGER_VEHICLES	Travel_TIME_FREIGHT_TRUCKS
111P04449	10262013	250	6	6	0
111P04449	10262013	154	6	6	0
111P04449	10262013	90	5	5	0
111P04449	10262013	26	5	5	0
111P04449	10082013	2	5	5	0
111P04449	10082013	194	9	9	0
111P04449	10082013	226	10	10	0
111P04449	10092013	99	19	19	0
111P04449	10102013	57	5	0	5
111P04449	10102013	153	6	6	0
111P04449	10112013	26	5	5	0
111P04449	10112013	90	9	9	0
111P04449	10112013	122	5	5	0
111P04449	10112013	218	6	6	0
111P04449	10122013	91	5	5	0
111P04449	10122013	187	7	7	0
111P04449	10122013	219	6	6	0
111P04449	10132013	252	5	5	0
111P04449	10142013	221	7	7	0
111P04449	10152013	126	5	5	0
111P04449	10152013	222	12	12	0
111P04449	10162013	159	6	6	0
111P04449	10172013	128	5	5	0



NCTCOG DATASETS

Tools Used

◆ Storage and Analysis:

- MS SQL SERVER

◆ Geographic Display and Analysis:

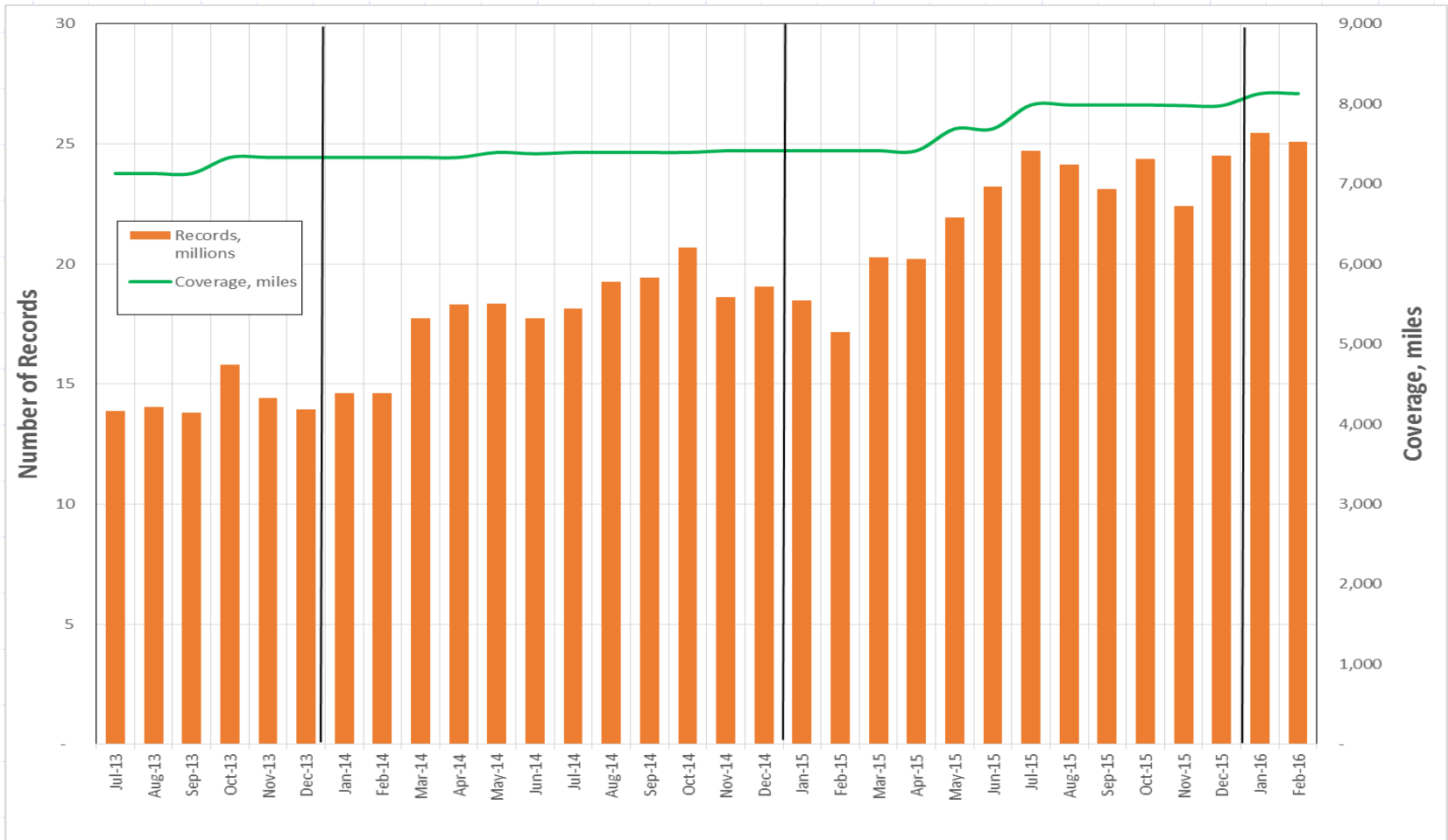
- TransCAD

◆ Graphics:

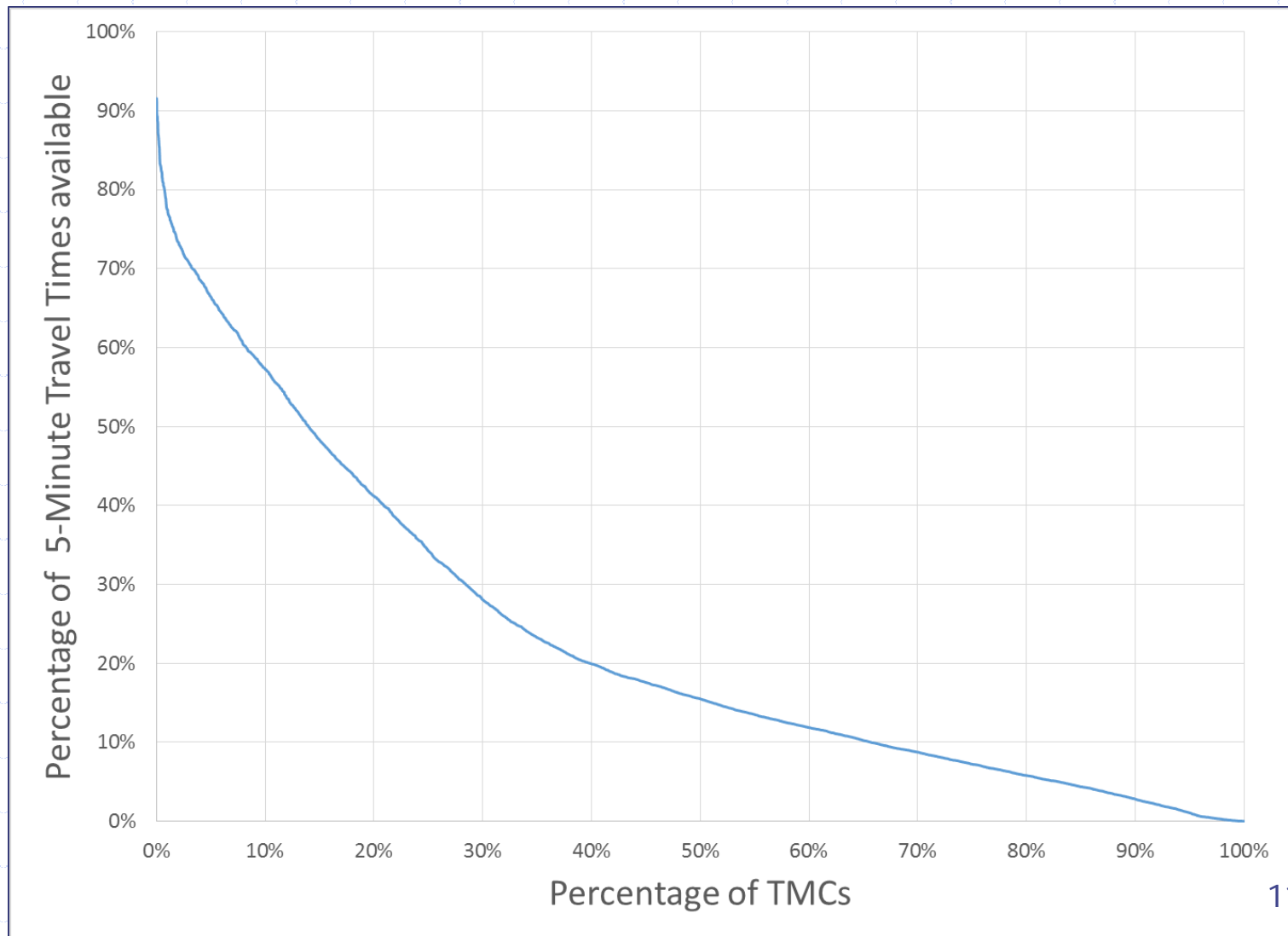
- MS Excel

618 Millions of Records

8,129 Miles

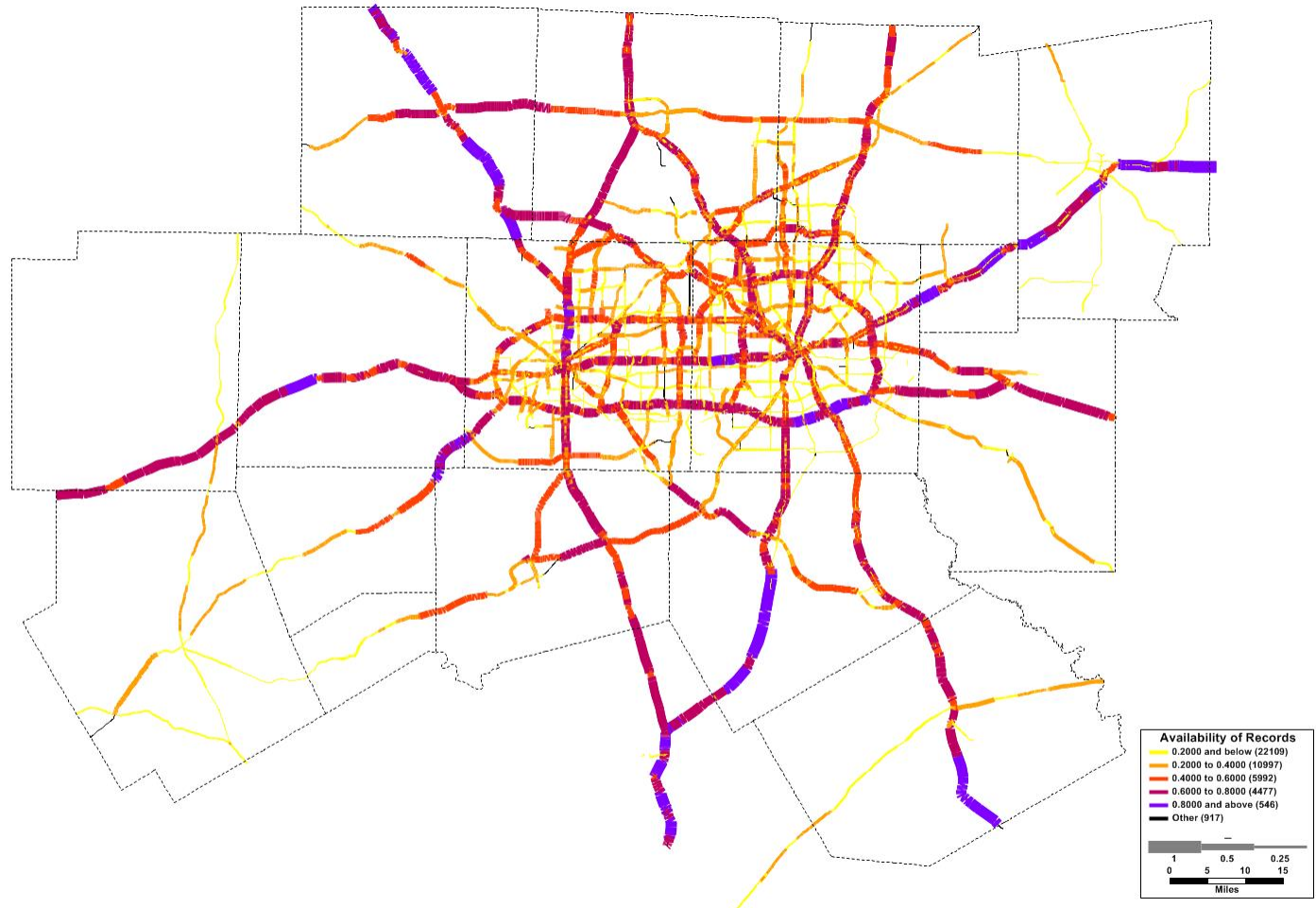


Travel times available at 5-minute intervals by TMC



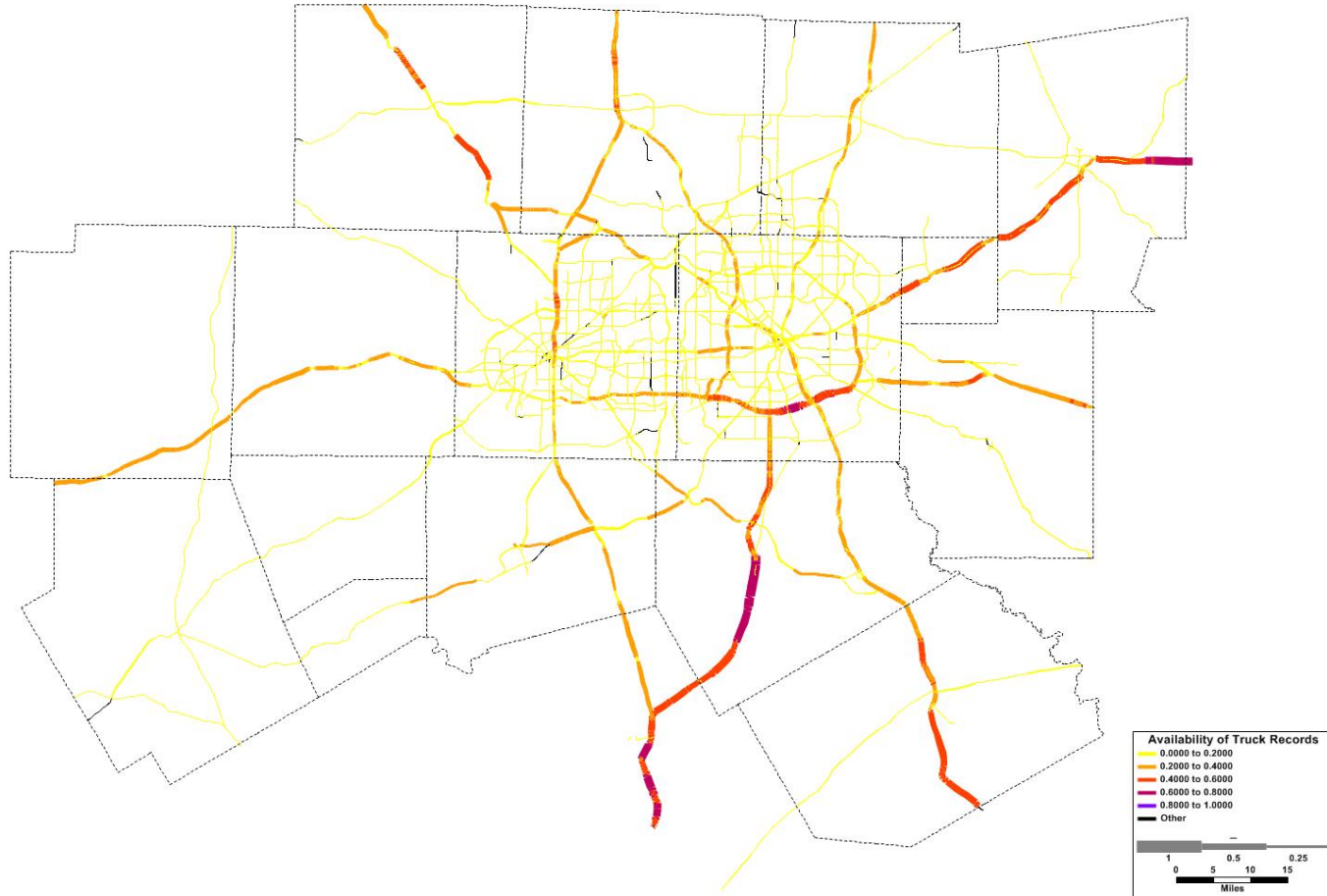
Coverage.

Travel Times for All Vehicles

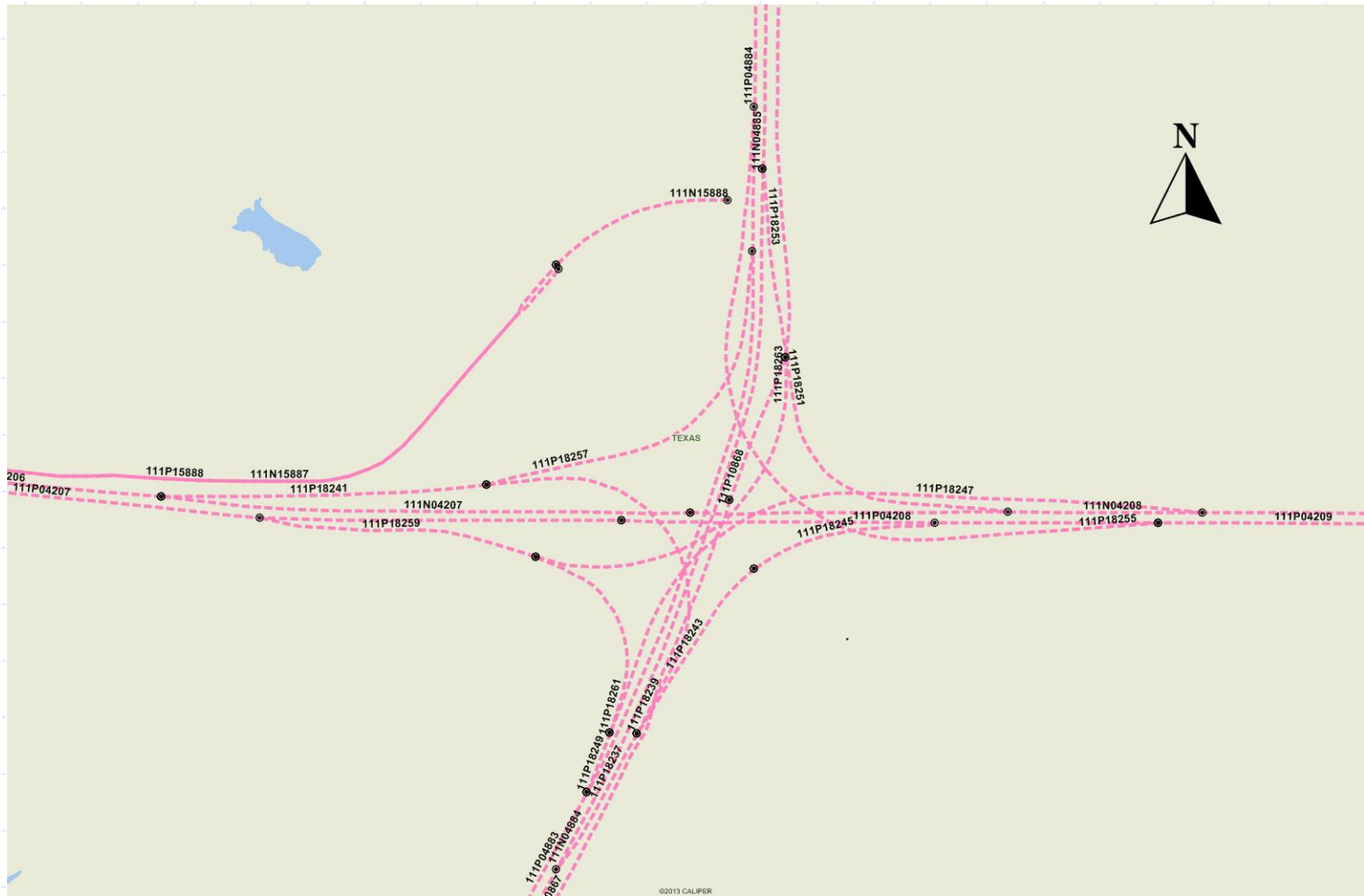


Coverage.

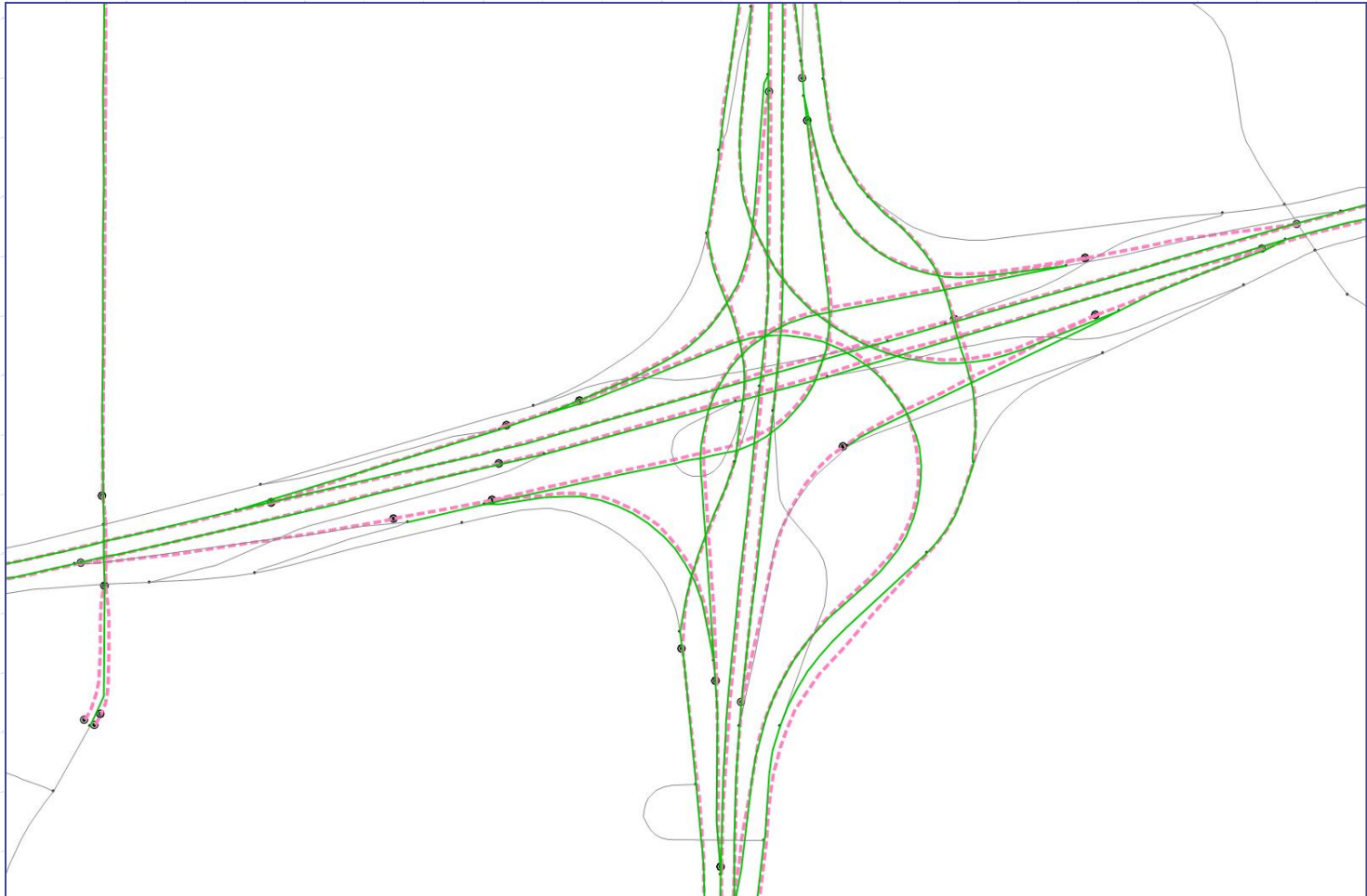
Travel Times for Trucks



Create Line Layer of TMCs



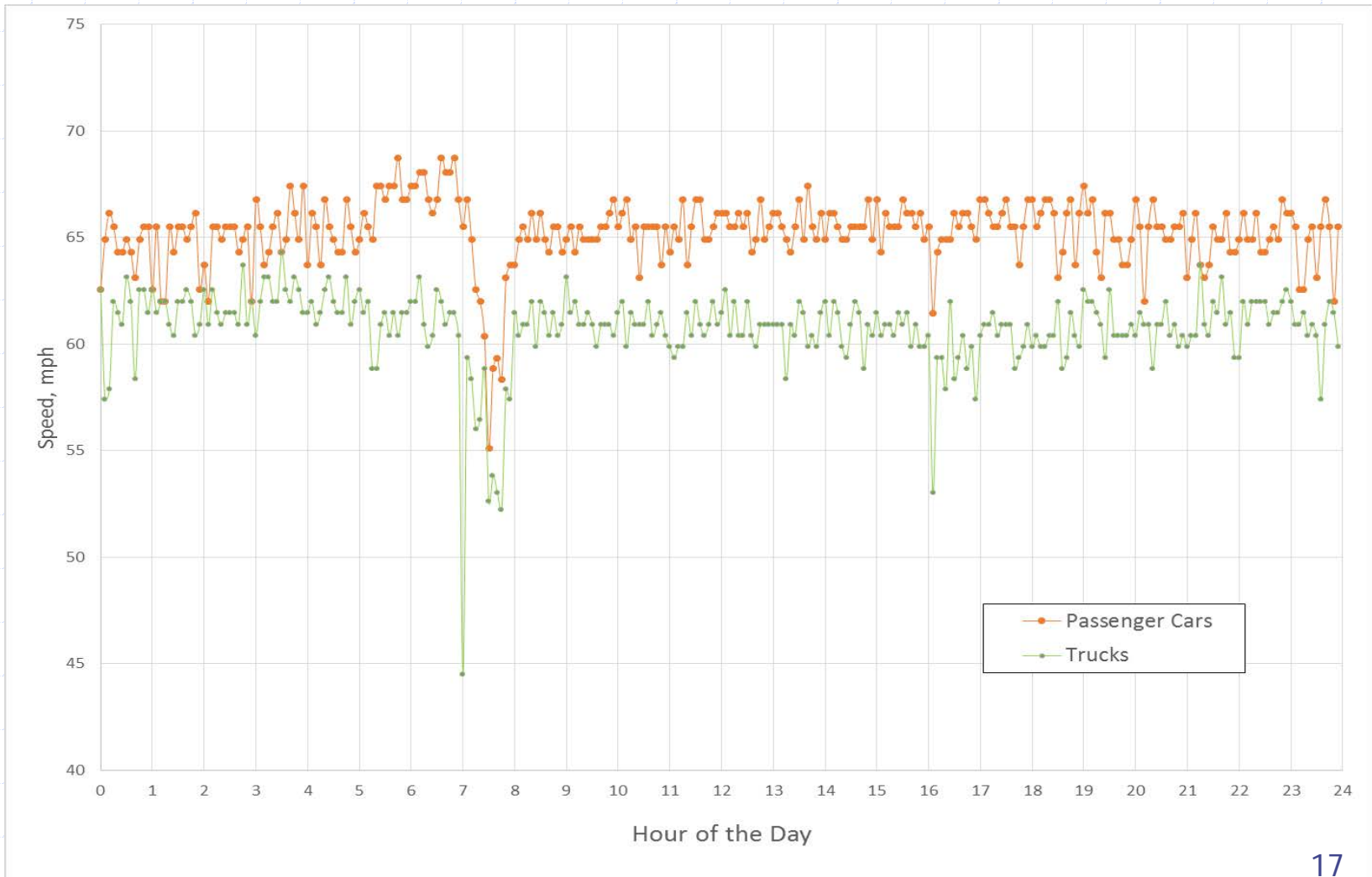
Conflate TMCs to Travel Model Network



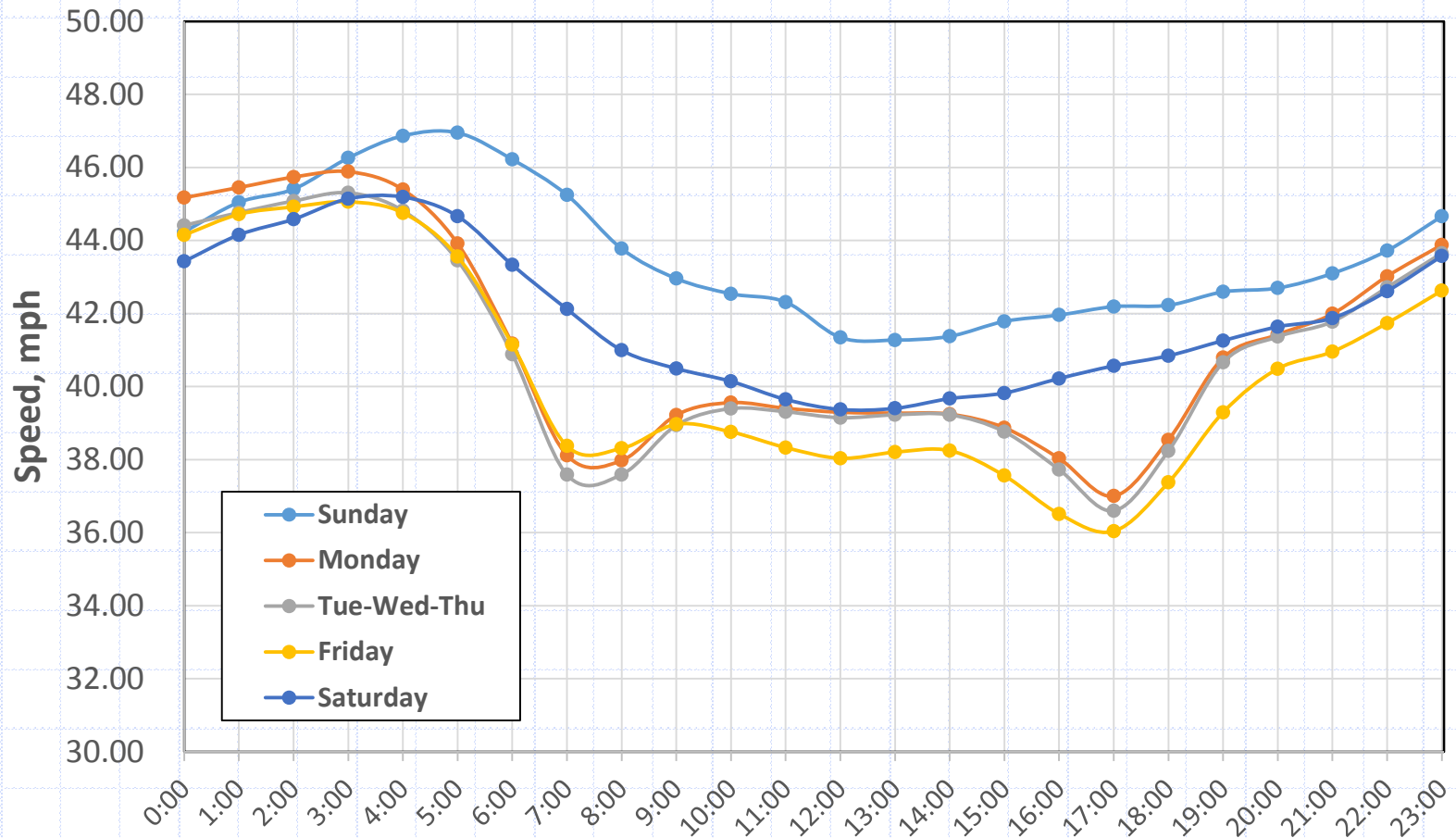


USING NPMRDS

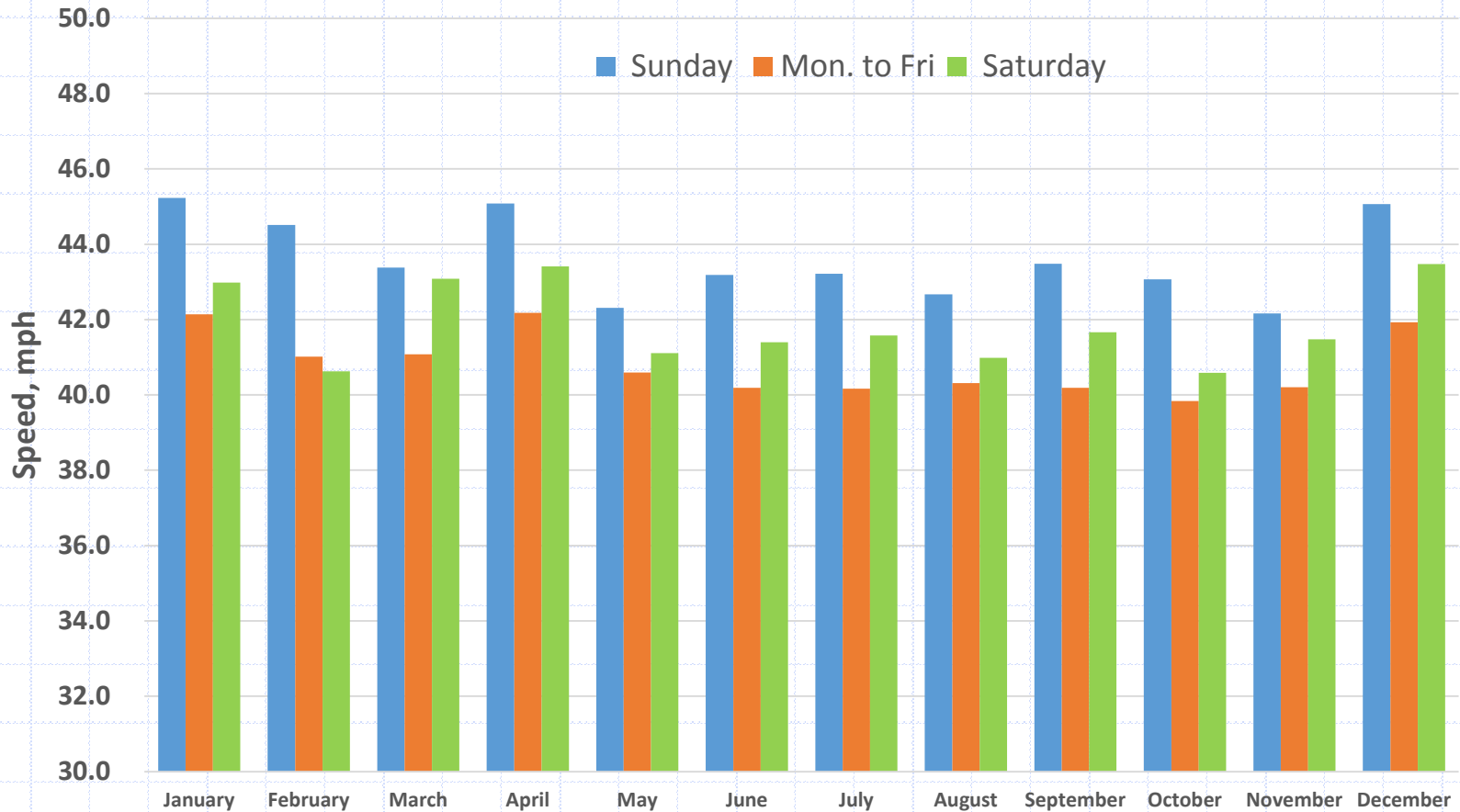
Variation of speeds on a typical weekday, IH-20, Dallas south



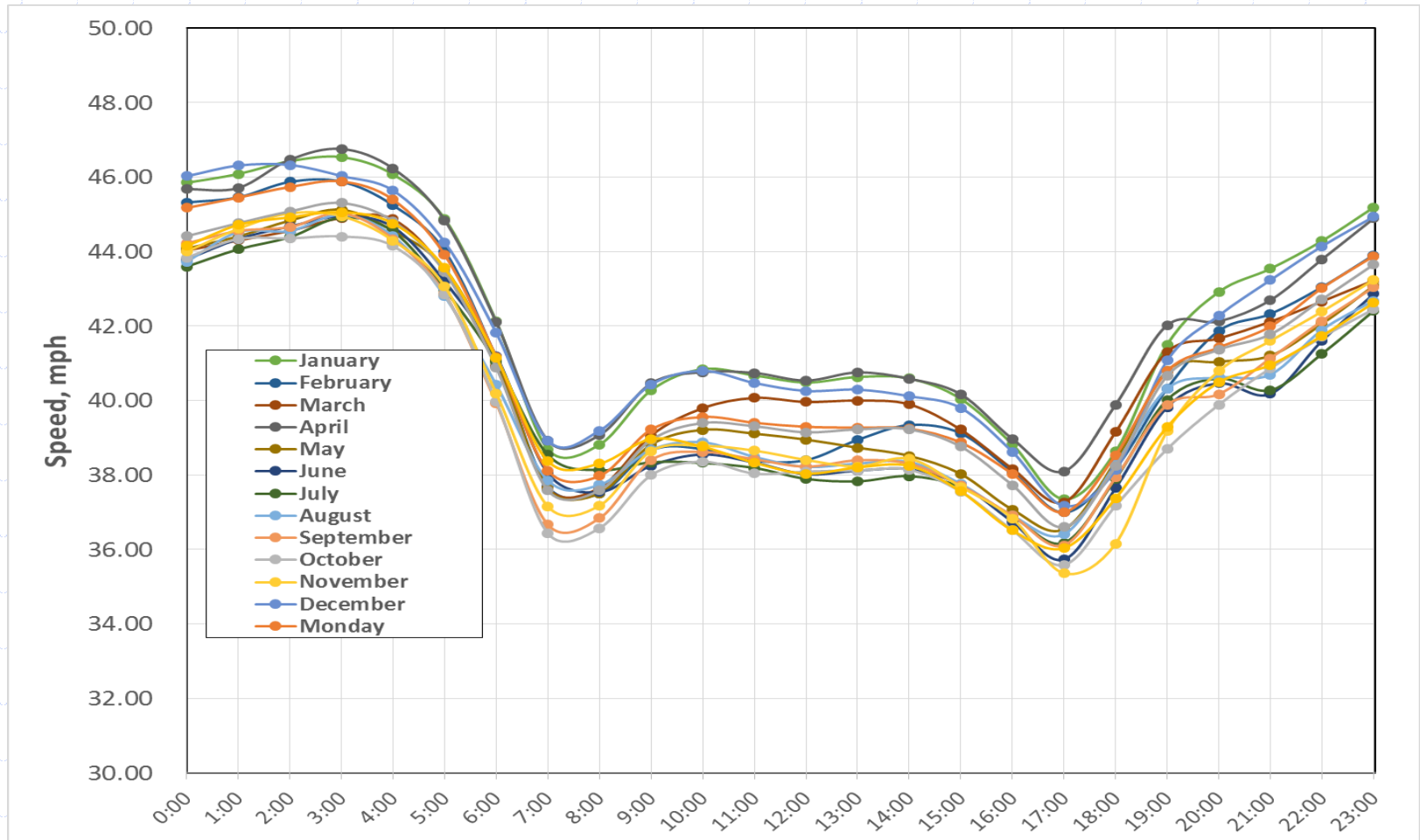
Variation of speed by day and hour



Variation of speed by month and day of the week

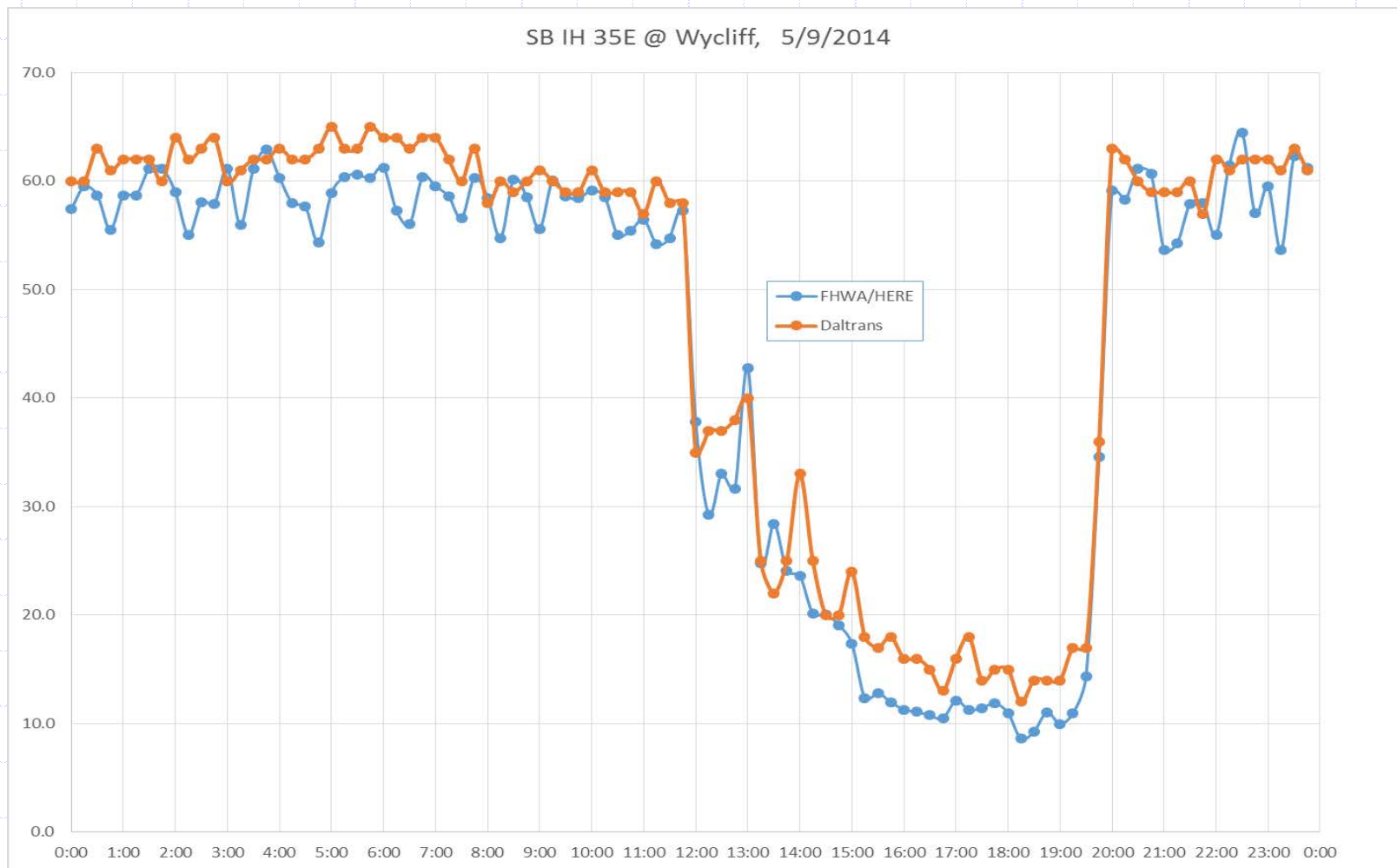


Variation of speeds by month and hour



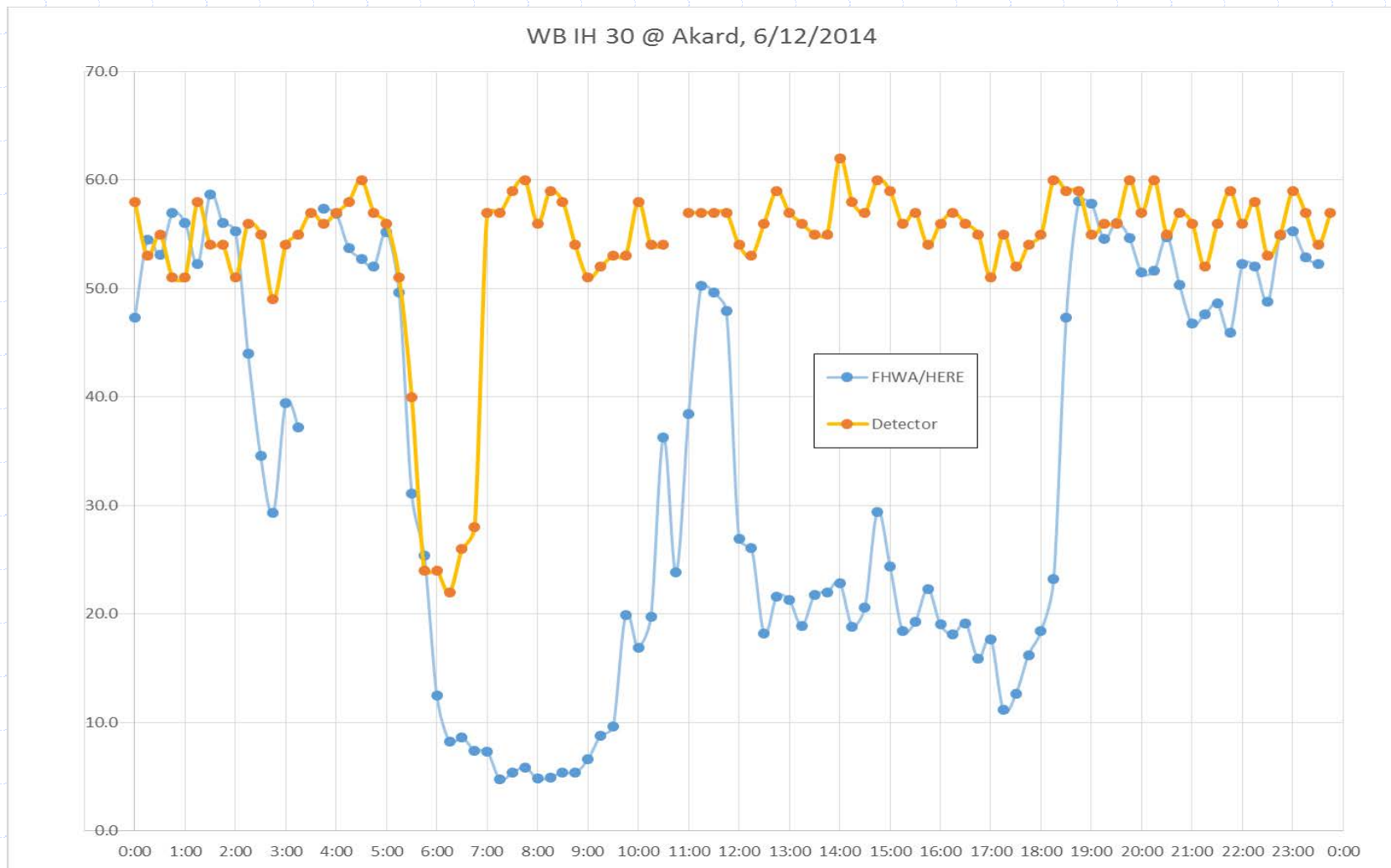
Validation of Side-Fire Devices

Good Match



Validation of Side-Fire Devices

Poor Match



Heat Map of a Corridor



Circulation on shoulder lanes at SH 161, on peak hours



NOTE: Highlighted areas are not drawn to scale.

TxDOT graphic

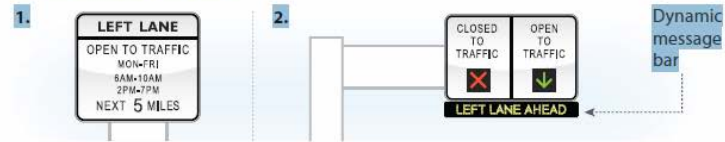
PROJECT STATUS:

December 2013: Environmental clearance received

January 2014: Contract awarded to Austin Bridge and Road L.P. (\$3.7 million)



REGULATORY SIGNS



PEAK HOUR



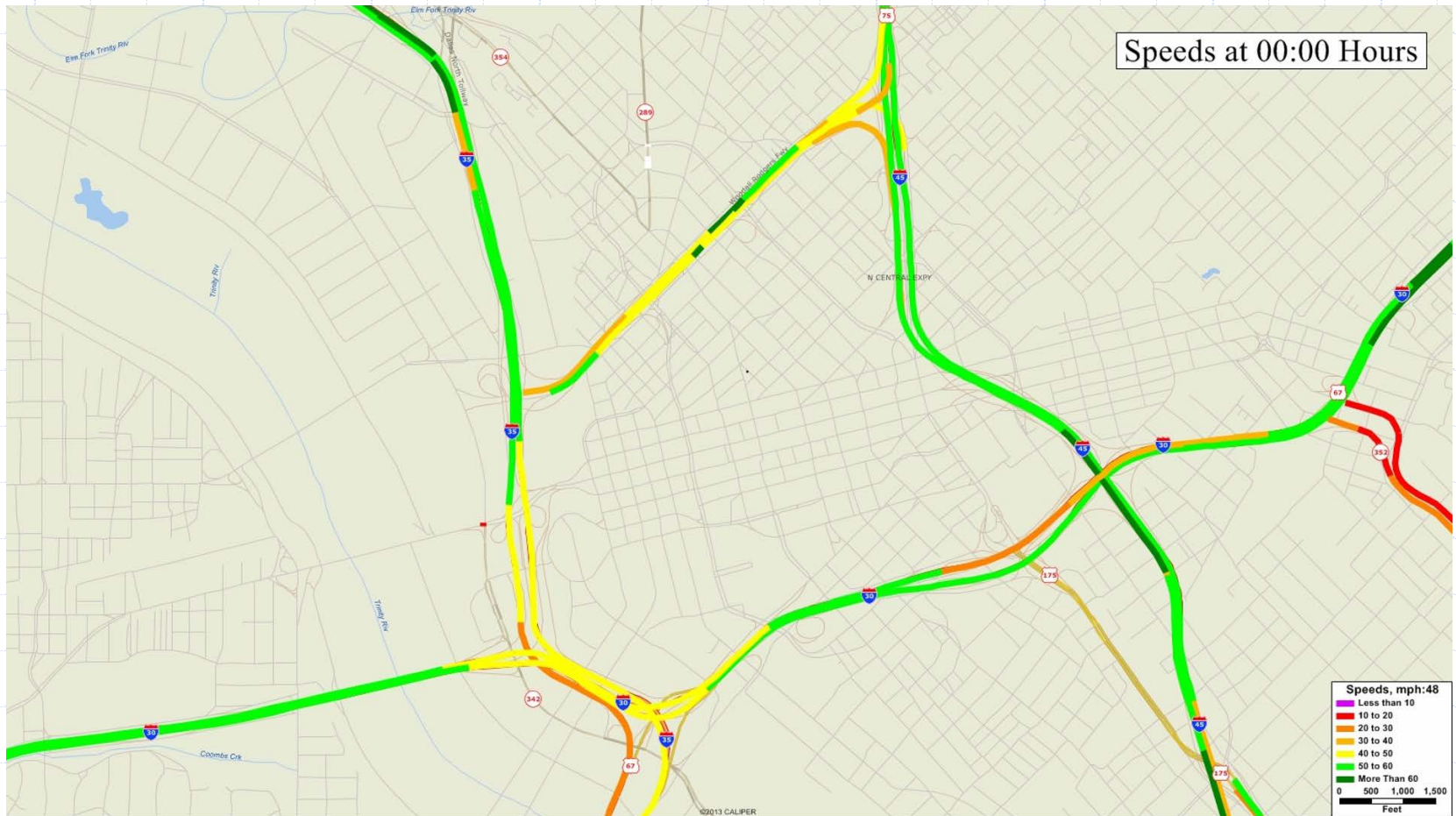
OFF-PEAK HOUR



NOTE: Illustrations are not drawn to scale.

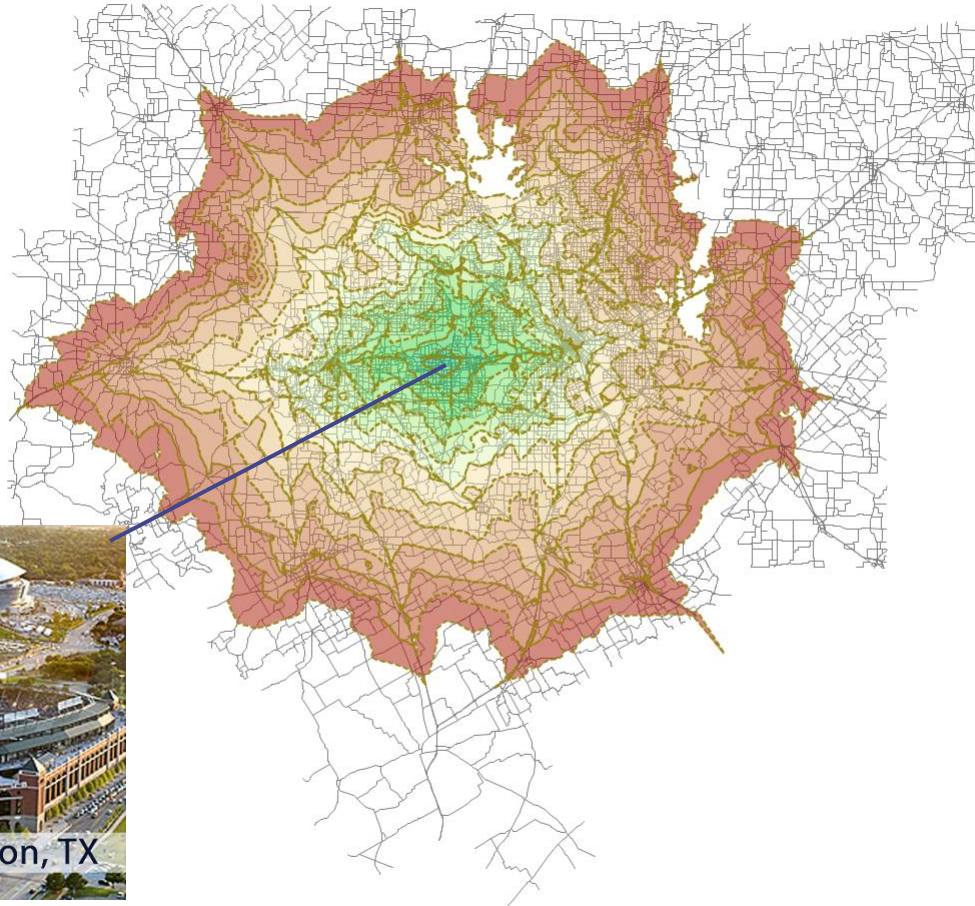
TxDOT graphic

Speeds at Downtown Dallas



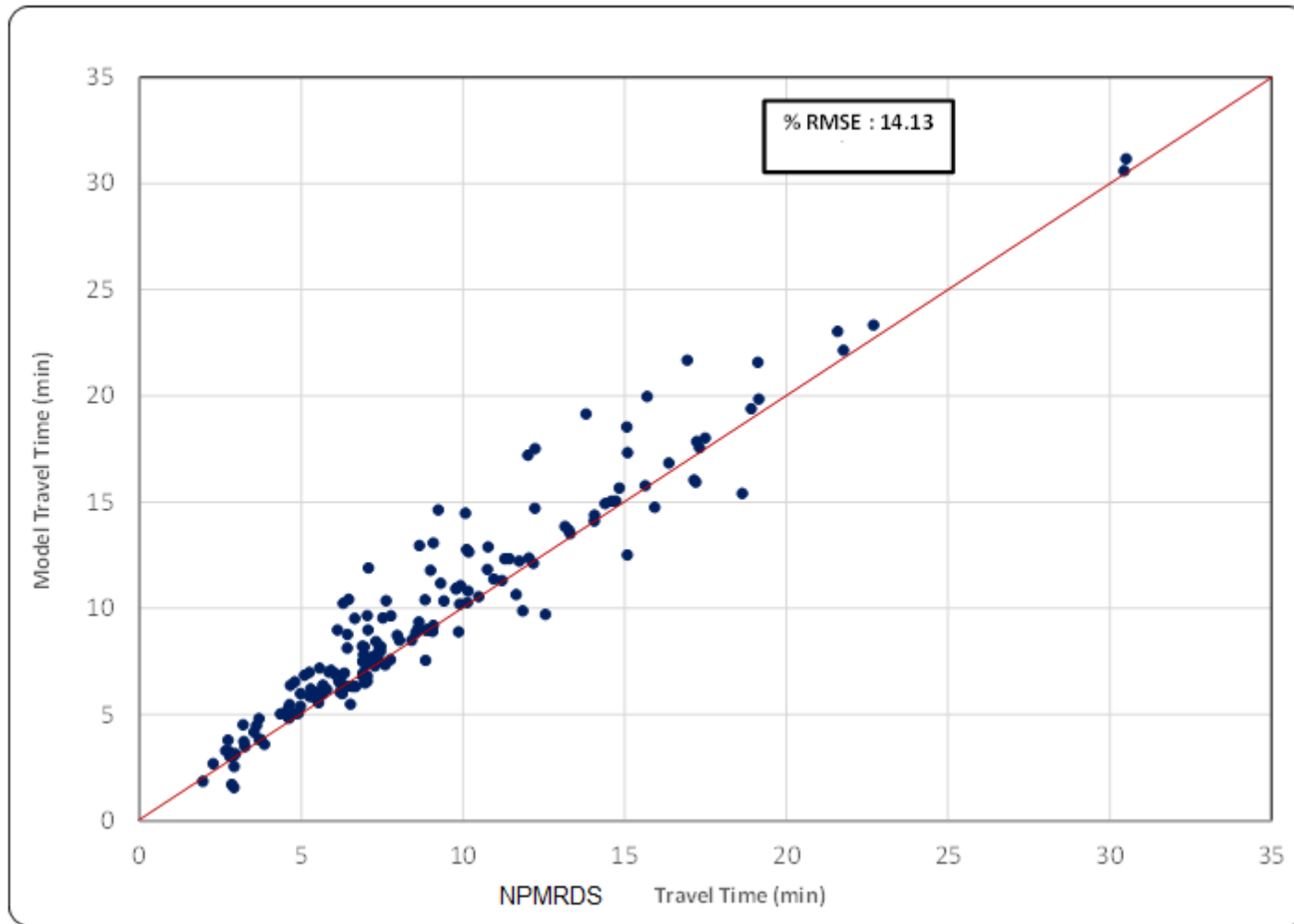
Travel Time Contours

Weekday



Arlington, TX

Validation of Travel Model



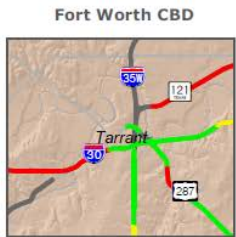
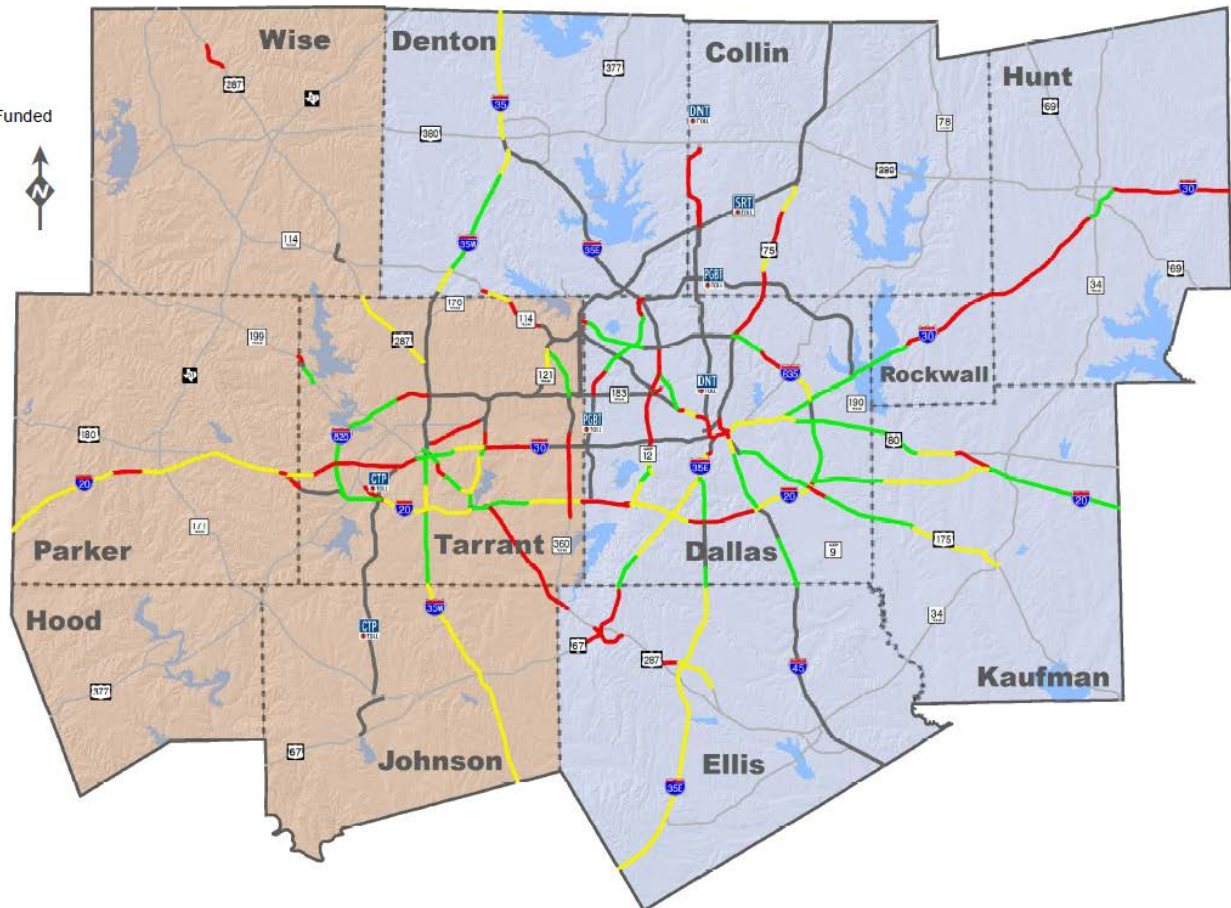
Deviation from Speed Limit

EAST REGION

- High Ranking (1 - 43)
- Medium Ranking (44 - 78)
- Low Ranking (79 - 109)
- Completed / Under Construction / Funded / No Improvement

WEST REGION

- High Ranking (1 - 28)
- Medium Ranking (29 - 52)
- Low Ranking (53 - 74)
- Completed / Under Construction / Funded / No Improvement



Coefficient of Variation

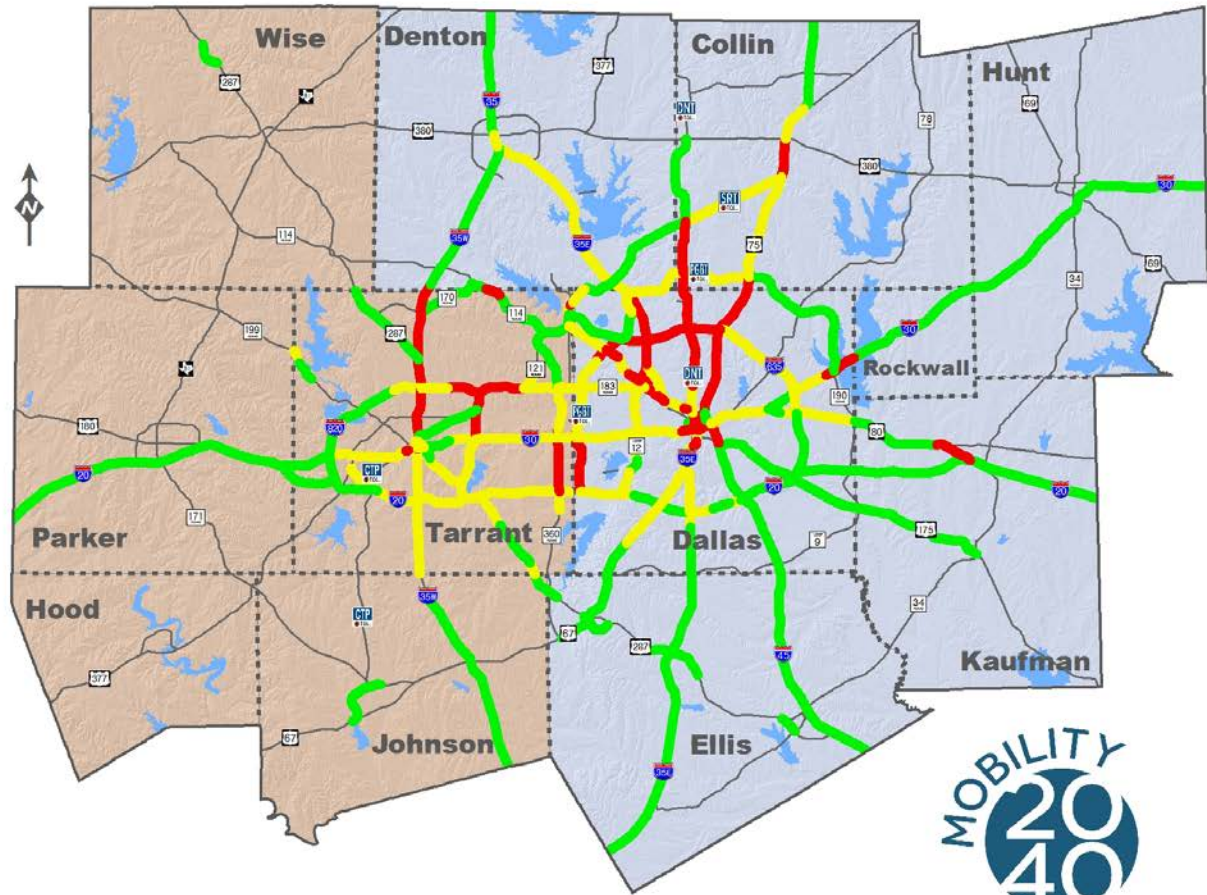
- High Ranking = 1
- Medium Ranking = 2
- Low Ranking = 3

- West Region
- East Region
- Major Roads

Dallas CBD



Fort Worth CBD



Questions?

Francisco J. Torres, P.E.

Principal Transportation Engineer

North Central Texas Council of Governments

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