

Identifying BNs & FPMs for Minnesota...

Dan Murray
**American Transportation
Research Institute**

Board of Directors

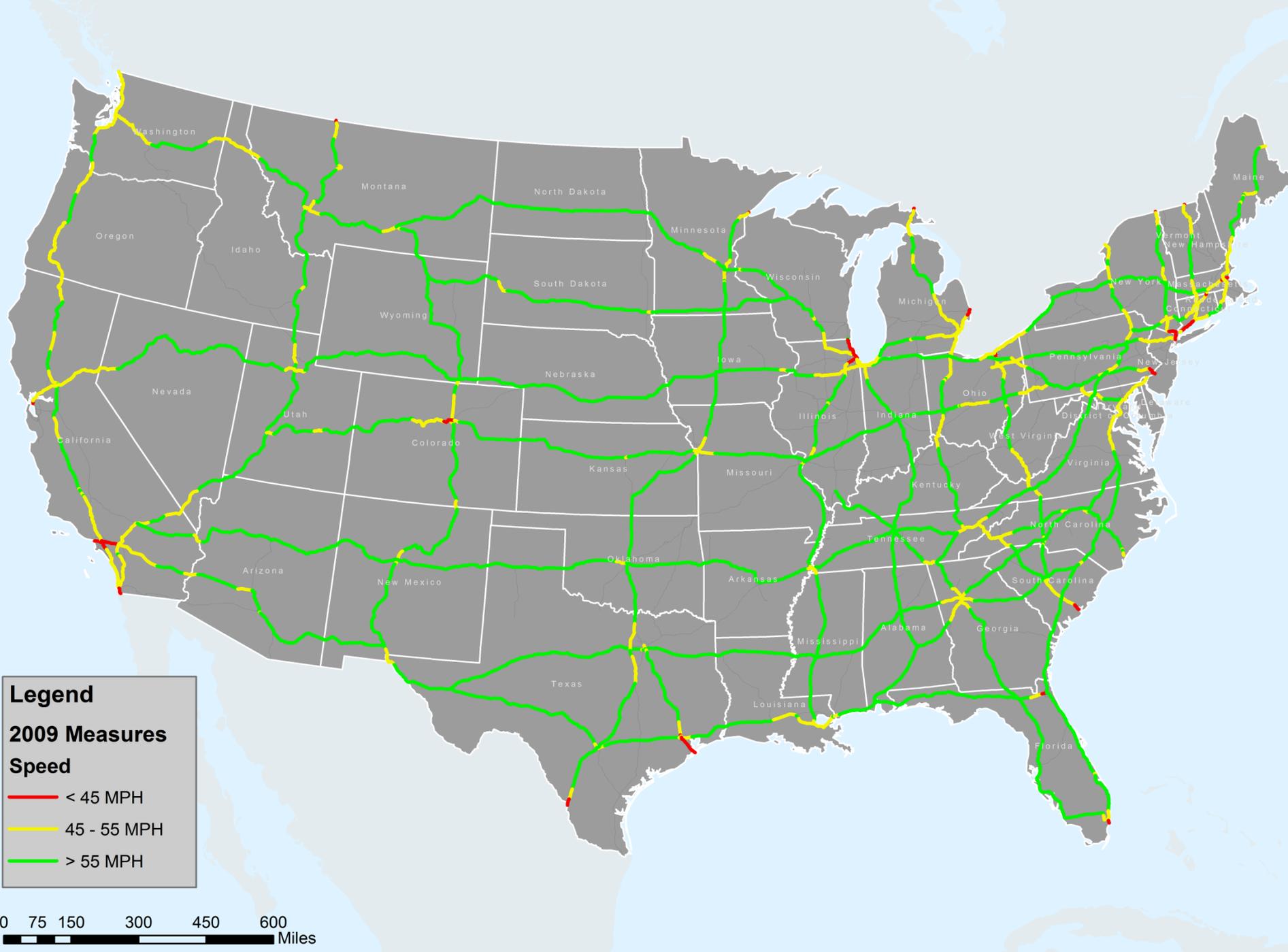


Research Advisory Committee



Primary Measures

- Average Travel Speeds:
 - ◆ Spot Mean Speed and Space Mean Speed
- Reliability Measures
- Delay at U.S./Canada border crossings
- O&D / Freight Flows
- Truck Parking S&D
- Incidents/Weather/Events
- NPMRDS

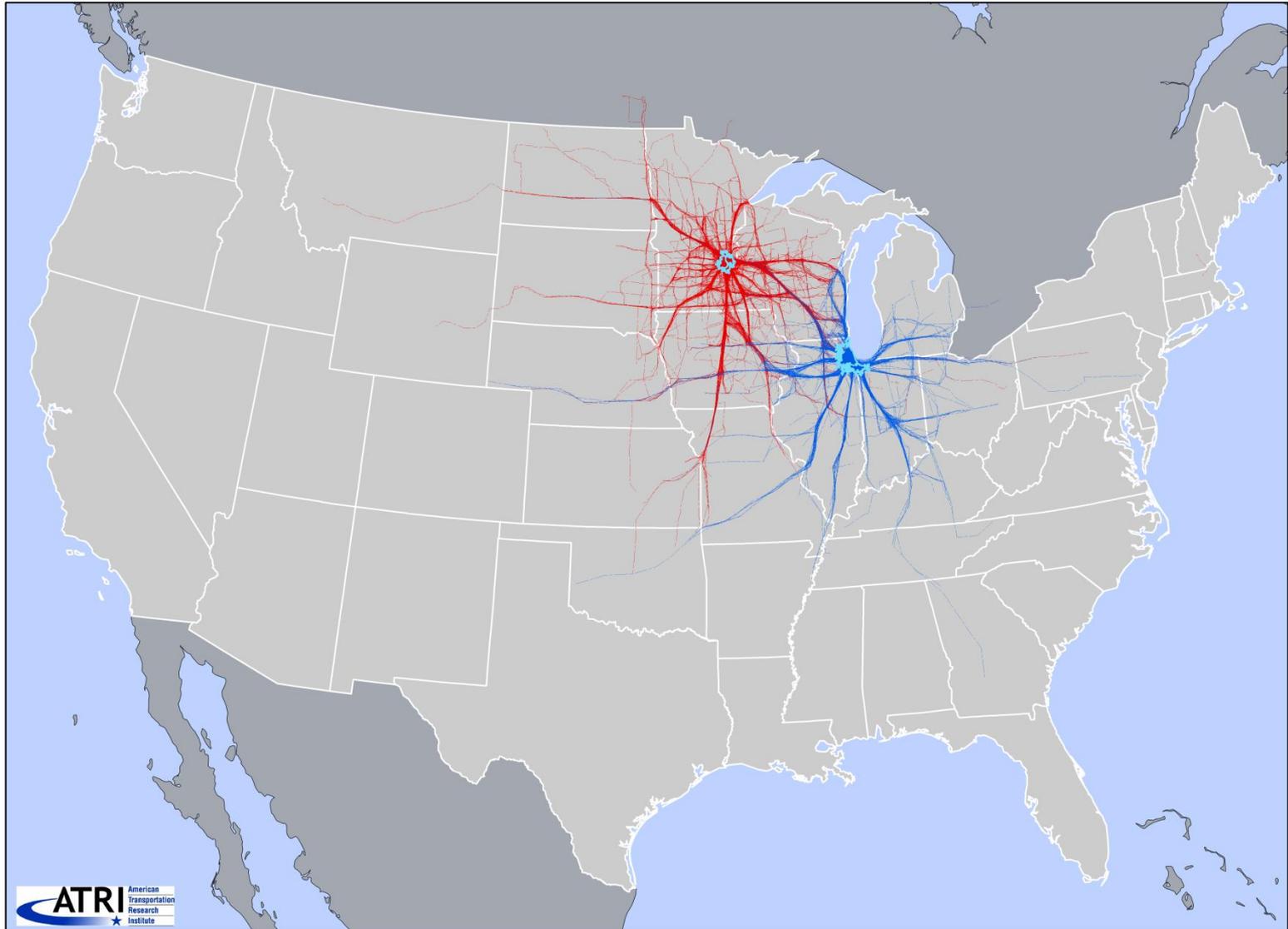


Legend
2009 Measures
Speed

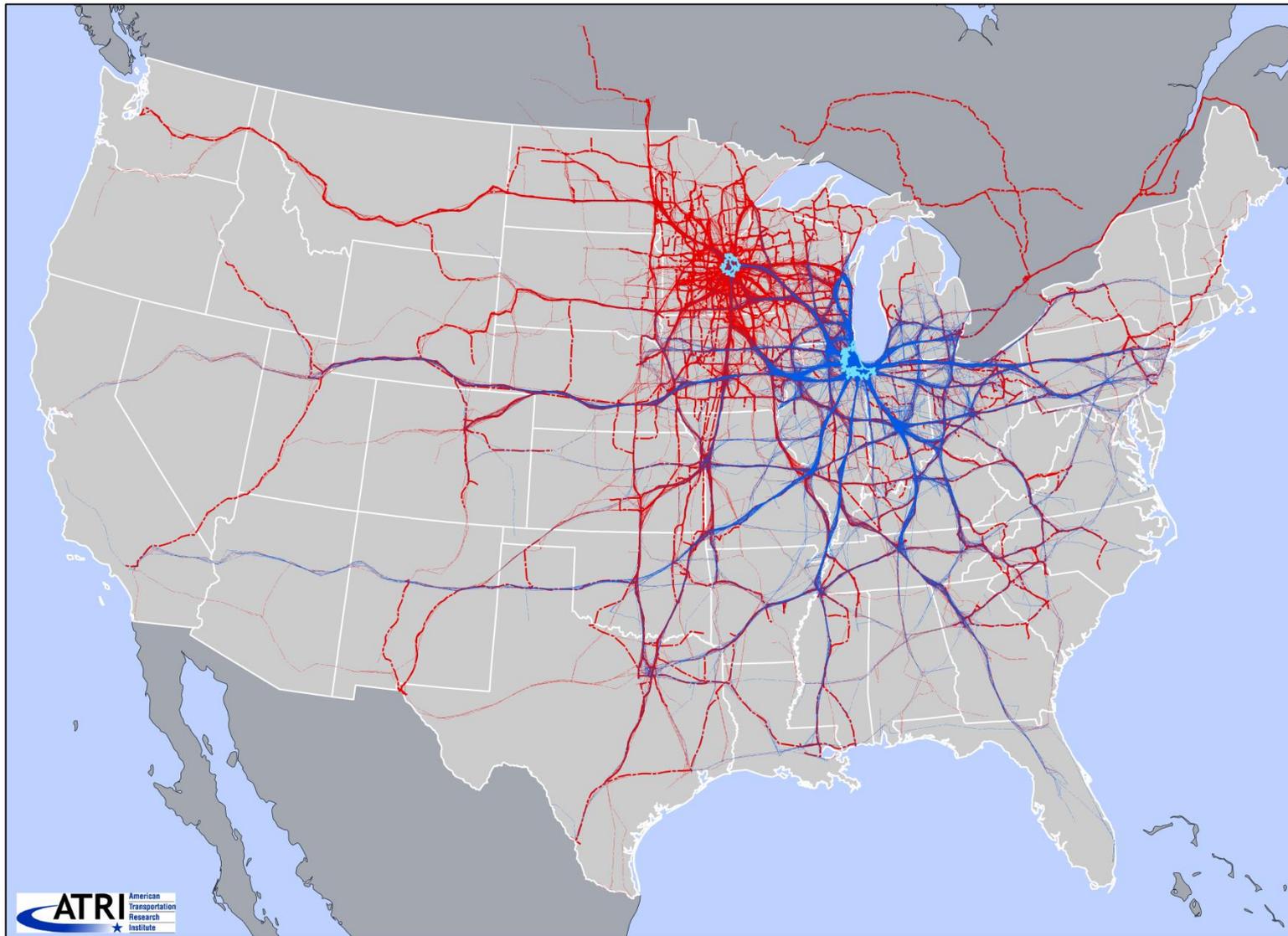
- < 45 MPH
- 45 - 55 MPH
- > 55 MPH

0 75 150 300 450 600 Miles

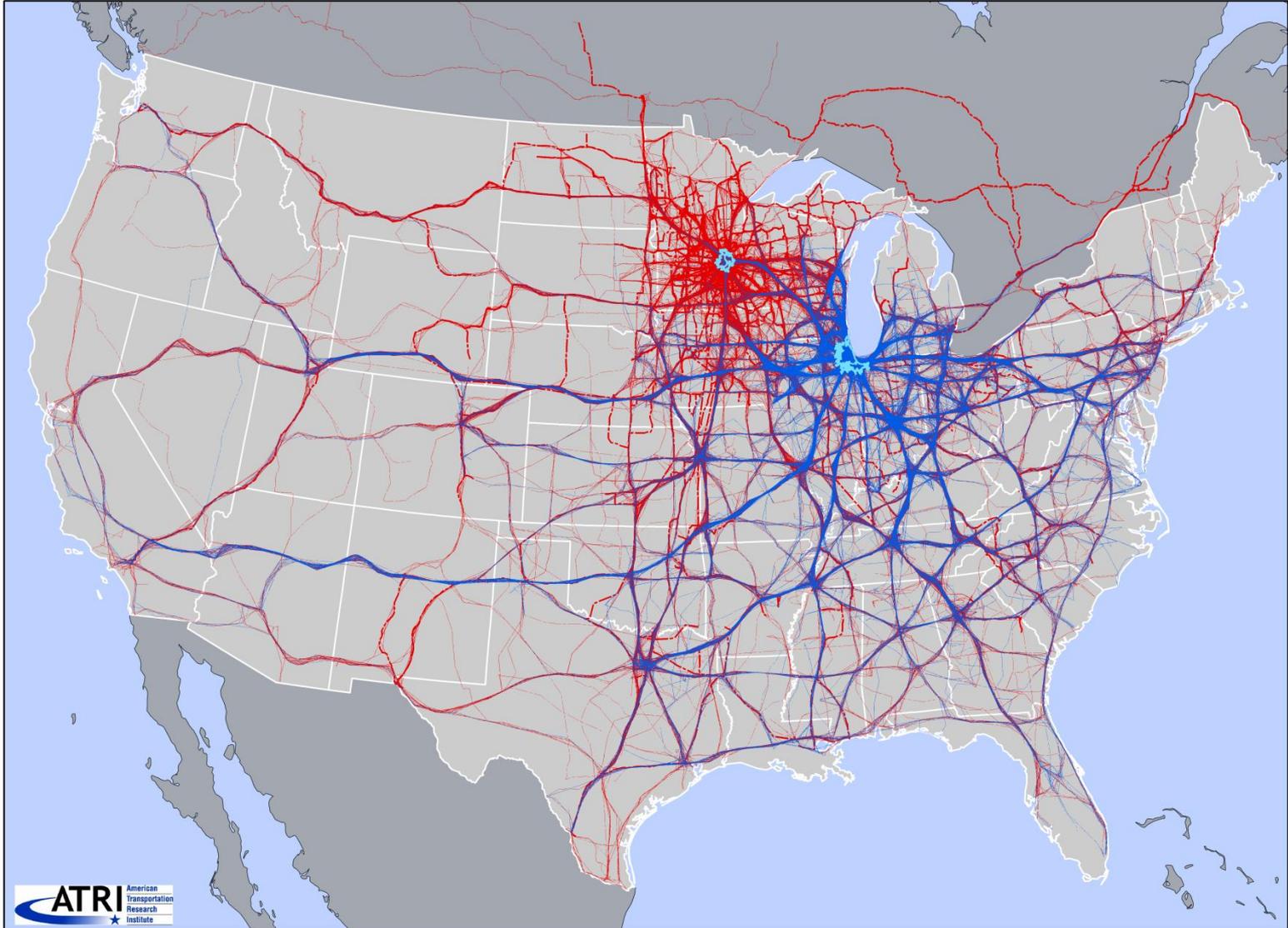
Chicago over Minneapolis-St. Paul 24 hours



Chicago over Minneapolis-St. Paul 72 hours



Chicago day 7 over Minneapolis-St. Paul Day 7



Minnesota Congestion

KEY FACTS

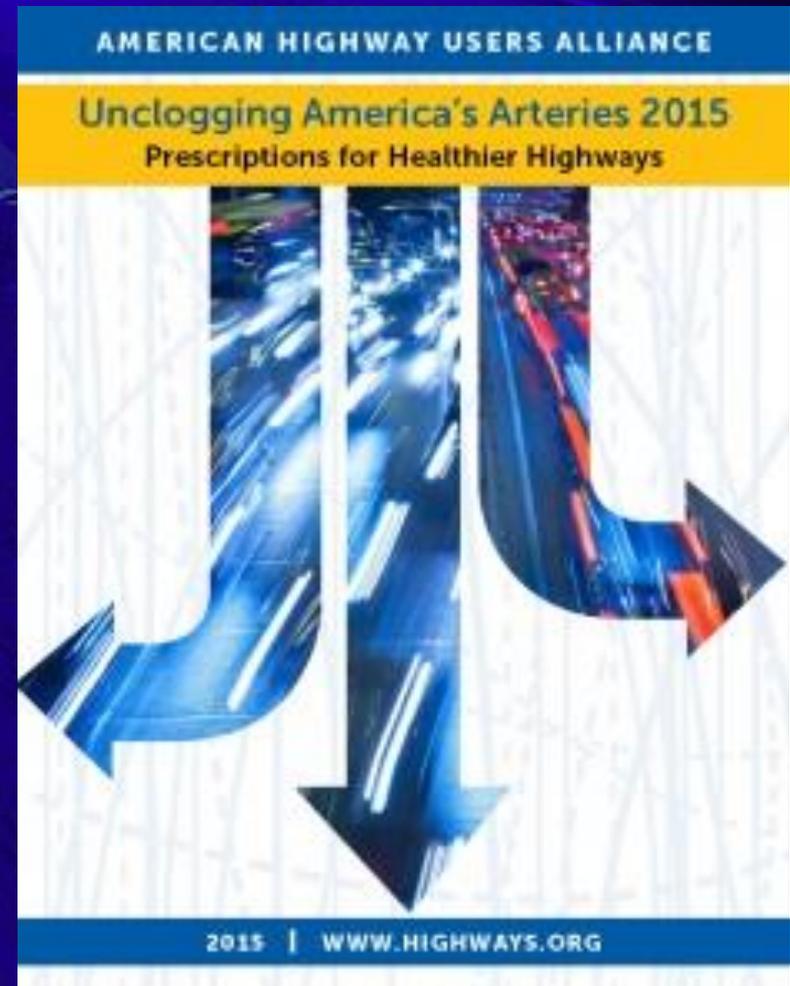
- 7.6 million hours of delay
- \$521.6 million in increased operational costs
 - \$262.5 million in Minneapolis/St. Paul metro area
- Average of over \$43,000 per NHS mile

Minnesota Congestion

Metro	Total Delay Hours	Cost of Delay	Miles of NHS	Cost per NHS Mile
Albert Lea, MN	37,318.2	\$2,540,975.97	162.5	\$15,638.91
Alexandria, MN	72,751.3	\$4,953,594.19	121.8	\$40,657.57
Austin, MN	32,011.8	\$2,179,665.73	98.5	\$22,138.58
Bemidji, MN	28,413.2	\$1,934,637.89	155.1	\$12,473.90
Brainerd, MN	353,602.7	\$24,076,601.49	515.7	\$46,691.36
Duluth, MN-WI	380,556.6	\$25,911,874.88	808.7	\$32,040.76
Fargo, ND-MN	80,521.0	\$5,482,626.57	156.9	\$34,953.04
Faribault-Northfield, MN	92,297.1	\$6,284,454.41	125.3	\$50,162.48
Fergus Falls, MN	108,639.4	\$7,397,194.16	347.7	\$21,272.97
Grand Forks, ND-MN	53,157.8	\$3,619,482.64	241.5	\$14,987.30
Hutchinson, MN	81,173.7	\$5,527,072.00	138.7	\$39,834.96
La Crosse-Onalaska, WI-MN	24,094.2	\$1,640,560.97	19.5	\$84,292.70
Mankato-North Mankato, MN	92,082.6	\$6,269,849.73	256.5	\$24,443.65
Marshall, MN	105,705.7	\$7,197,438.30	235.0	\$30,622.19
Minneapolis-St. Paul-Bloomington, MN-WI	3,855,936.5	\$262,548,460.94	2,297.0	\$114,298.74
New Ulm, MN	57,470.4	\$3,913,130.18	110.3	\$35,472.00
Owatonna, MN	30,028.3	\$2,044,607.00	130.7	\$15,647.95
Red Wing, MN	137,462.5	\$9,359,741.06	121.5	\$77,051.34
Rochester, MN	294,919.4	\$20,080,893.52	561.4	\$35,768.87
St. Cloud, MN	404,816.2	\$27,563,701.44	497.4	\$55,417.11
Wahpeton, ND-MN	6,306.7	\$429,418.45	100.7	\$4,266.36
Willmar, MN	86,638.6	\$5,899,171.63	229.6	\$25,692.71
Winona, MN	83,830.3	\$5,707,959.36	206.7	\$27,618.76
Worthington, MN	20,530.7	\$1,397,926.18	171.1	\$8,169.67

AHUA National Bottleneck Report

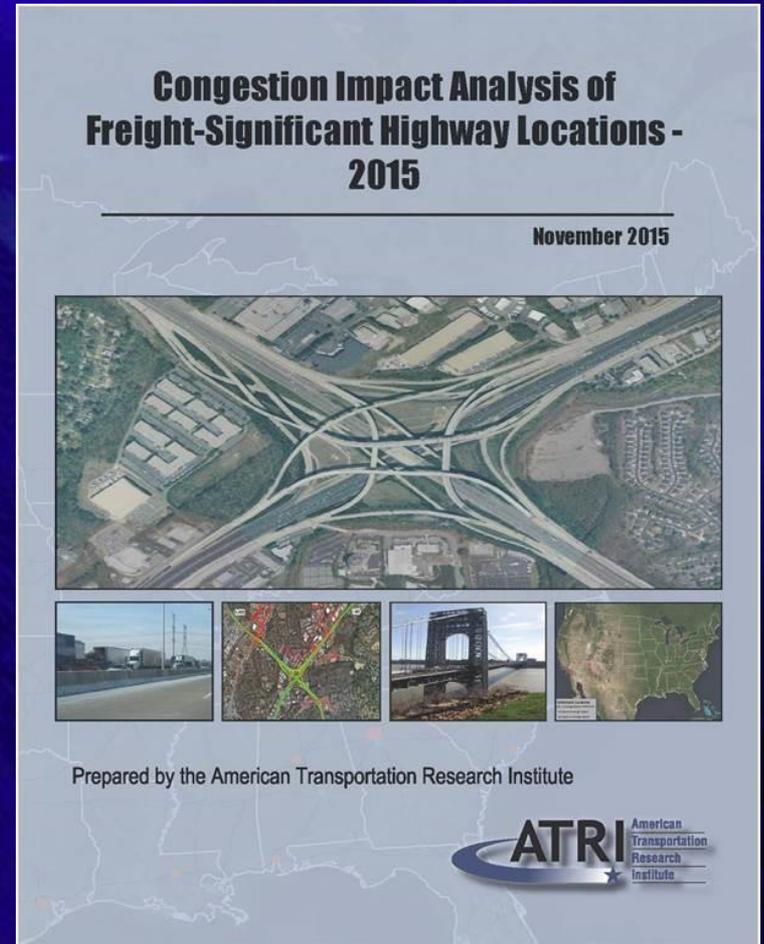
- Annual Report focused on All Vehicle Congestion
- ATRI on report design committee
- Provided truck data and truck BN chapter
- Distributed to all members of Congress

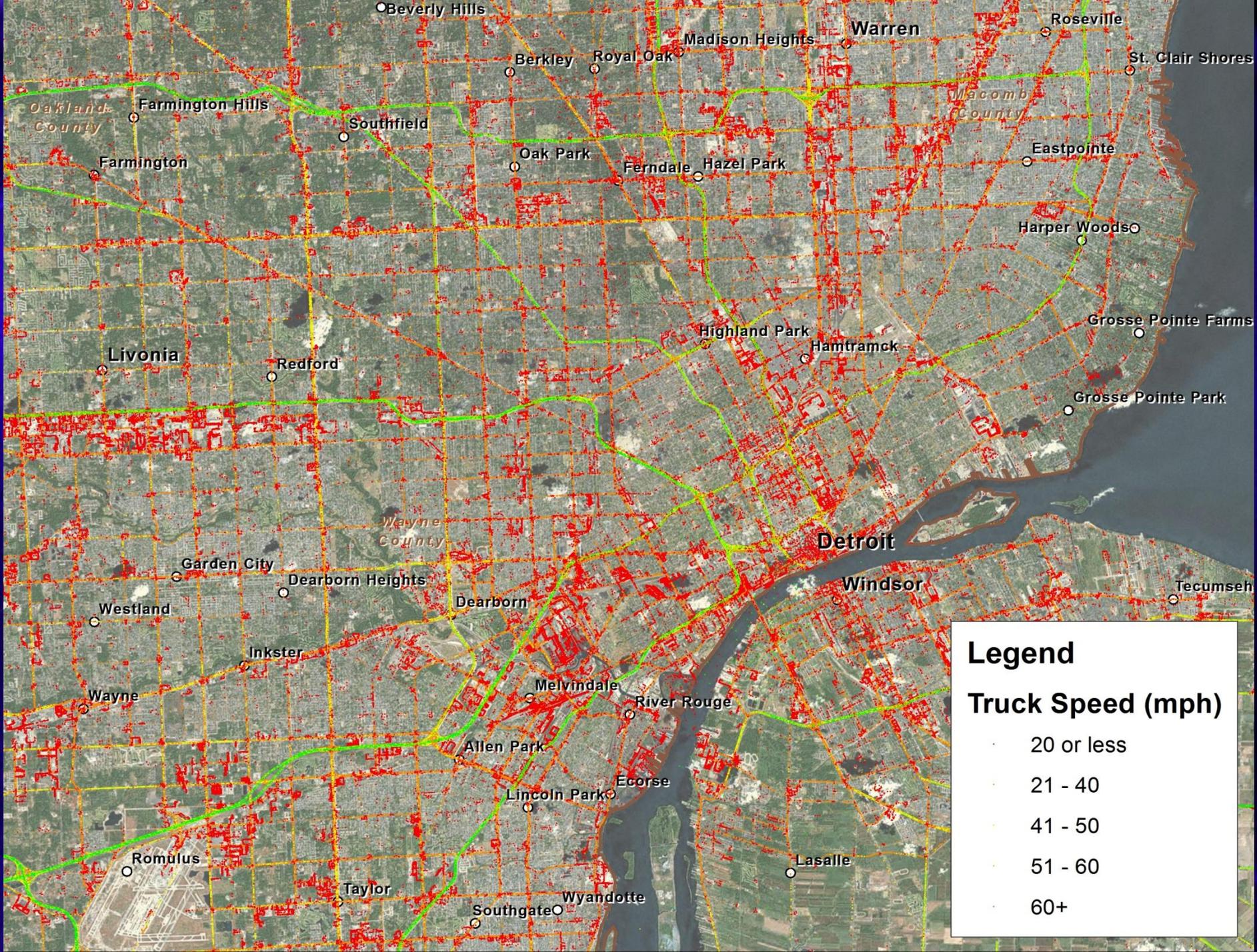


Freight Bottleneck Analysis

- Ongoing monitoring of 250 truck freight-significant locations
- Avoiding/scheduling around truck freight congestion chokepoints

www.atri-online.org





Legend

Truck Speed (mph)

- 20 or less
- 21 - 40
- 41 - 50
- 51 - 60
- 60+

2015 Top 10 Freight Bottlenecks

Rank	Location	Average Speed	2014 Rank	Change
1	Atlanta, GA: I-285 at I-85 (North)	40	3	+2
2	Chicago, IL: I-290 at I-90/I-94	27	2	0
3	Fort Lee, NJ: I-95 at SR 4	36	1	-2
4	Louisville, KY: I-65 at I-64/I-71	44	9	+5
5	Houston, TX: I-610 at US 290	38	6	+1
6	Houston, TX: I-10 at I-45	42	13	+7
7	Cincinnati, OH: I-71 at I-75	47	4	-3
8	Houston, TX: I-45 at US 59	39	5	-3
9	Los Angeles, CA: SR 60 at SR 57	45	8	-1
10	Houston, TX: I-10 at US 59	43	16	+6

Chicago, IL: I-290 at I-90/I-94



Summary

National Ranking by
Congestion Index

1

Average Speed

30

Peak Average Speed

23

Nonpeak Average
Speed

33

Nonpeak/Peak Ratio

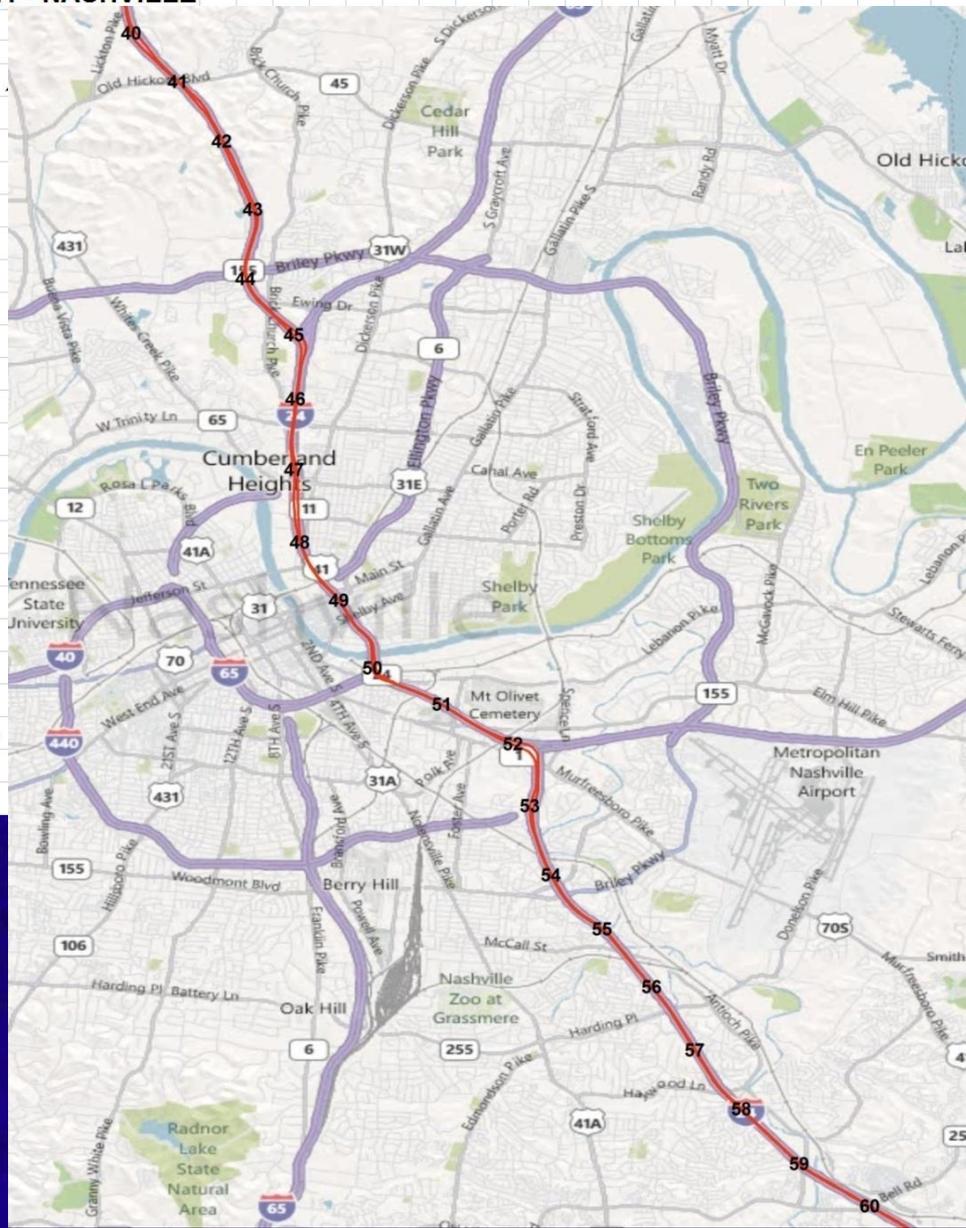
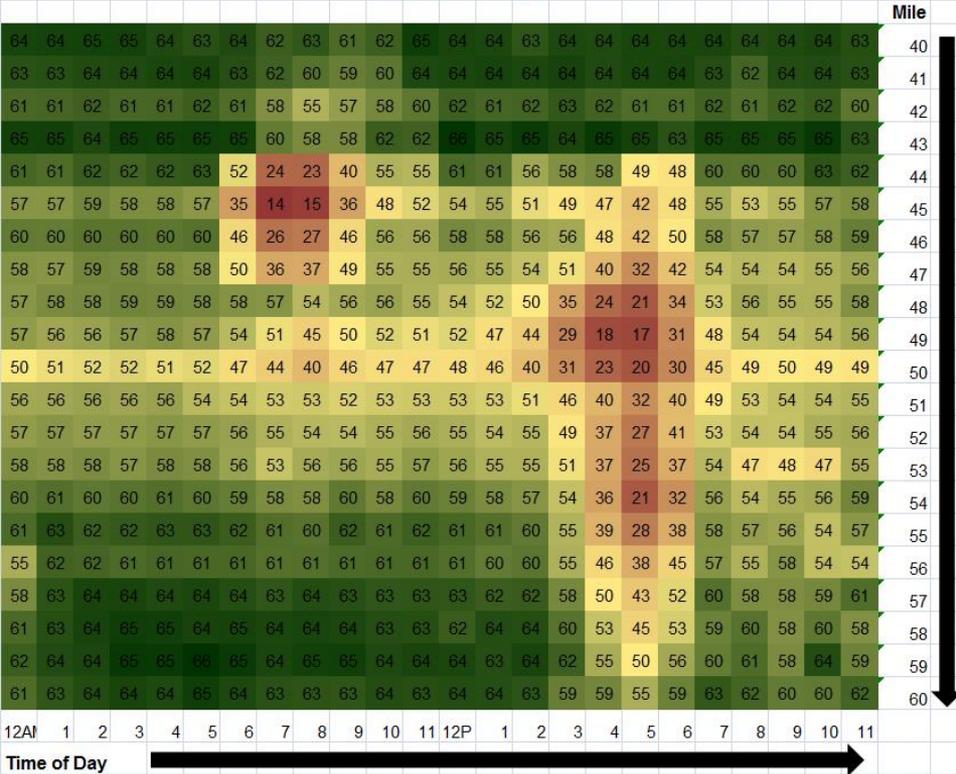
1.44

Average Speed by Time of Day
I-290 at I-90/I-94



INTERSTATE 24 - NASHVILLE

EASTBOUND



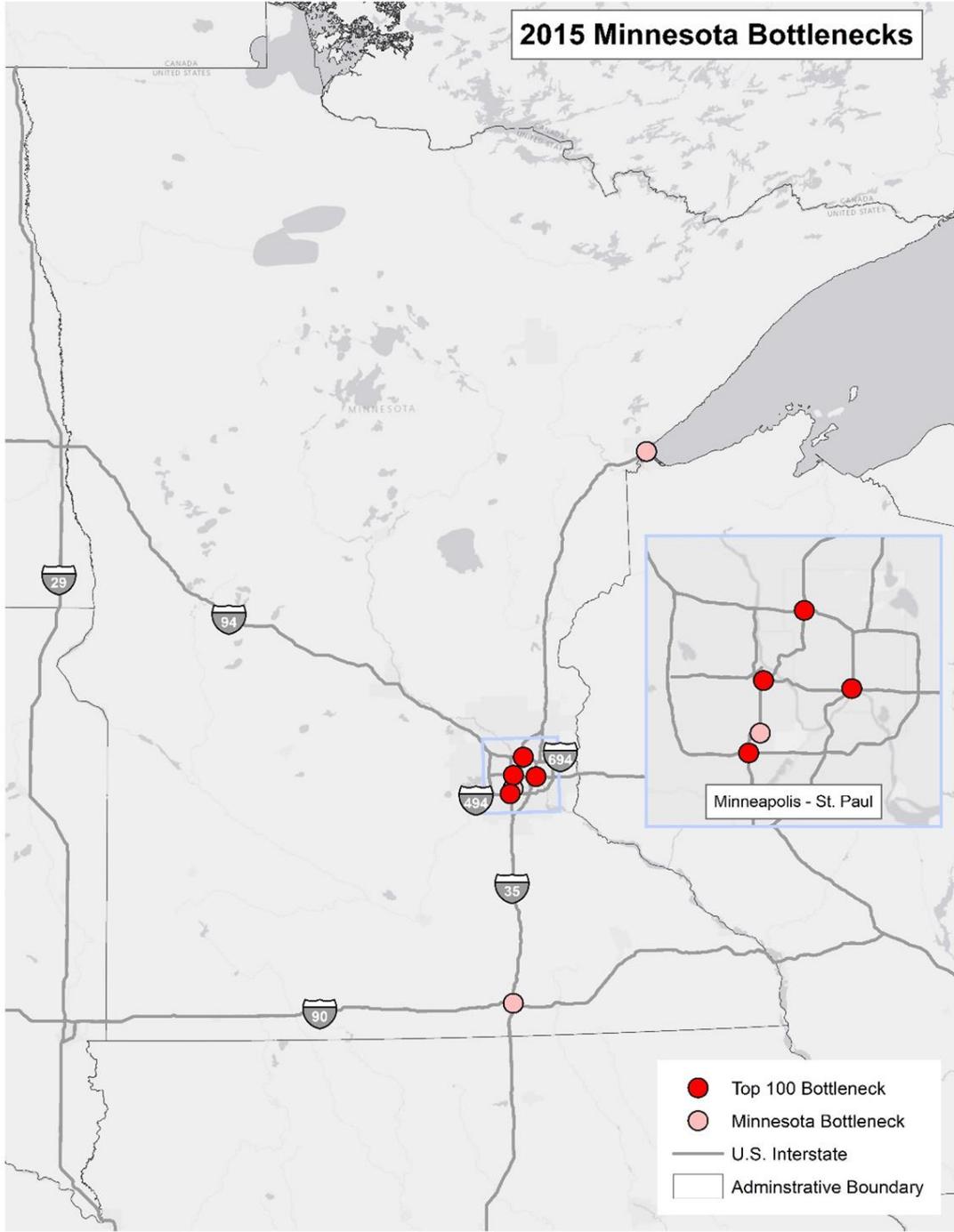
Metro Analysis

Metro Area	3-mile Segments in MSA	Average Speed (24/7)	Weekday Average Speed	Peak Weekday Average Speed	Nonpeak Weekday Average Speed	Peak Minus Nonpeak	Average of Average Speeds	Average of Weekday Average Speeds	Average of Peak Weekday Average Speeds	Average of Nonpeak Weekday Average Speeds
Atlanta-Sandy Springs-Marietta, GA	212	52.7	52.3	49.6	53.4	-3.80	49.48	49.34	46.18	50.69
Boston-Cambridge-Quincy, MA-NH	82	47.1	47.0	43.1	48.7	-5.60				
Chicago-Naperville-Joliet, IL-IN-WI	246	50.6	50.6	49.7	51.0	-1.30				
Dallas-Fort Worth-Arlington, TX	174	54.4	54.1	52.4	54.9	-2.50				
Detroit-Warren-Livonia, MI	112	45.3	46.2	43.9	47.5	-3.60				
Houston-Baytown-Sugar Land, TX	150	51.3	50.9	47.1	52.7	-5.60				
Los Angeles-Long Beach-Santa Ana, CA	122	41.4	41.2	39.1	42.5	-3.40				
Miami-Fort Lauderdale-Miami Beach, FL	94	54.6	54.0	51.6	56.2	-4.60				
New York-Northern New Jersey-Long Island, NY-NJ	98	48.6	48.5	45.5	49.8	-4.30				
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	59	44.2	44.1	41.5	45.2	-3.70				
Phoenix-Mesa-Scottsdale, AZ	110	56.4	55.9	54.5	56.5	-2.00				
San Francisco-Oakland-Fremont, CA	14	45.2	45.5	34.5	48.6	-14.10				
Seattle-Tacoma-Bellevue, WA	104	48.5	48.3	46.4	48.9	-2.50				
Washington-Arlington-Alexandria, DC-VA-MD-WV	88	52.4	52.1	47.6	53.7	-6.10				

Twin Cities Bottlenecks

Bottleneck	Total Delay Hours	Cost of Delay	Miles of NHS	Cost per NHS Mile
Minneapolis - St. Paul, MN: I-35W @ I-94	260,422.1	\$17,731,991.04	24.0	\$738,236.22
Minneapolis - St. Paul, MN: I-35W @ I-494	109,385.8	\$7,448,014.42	21.4	\$348,123.95
Minneapolis - St. Paul, MN: I-35W @ I-694	64,094.5	\$4,364,160.18	21.0	\$207,824.47
Minneapolis - St. Paul, MN: I-35E @ I-94	74,862.3	\$5,097,327.93	15.6	\$325,732.41

2015 Minnesota Bottlenecks

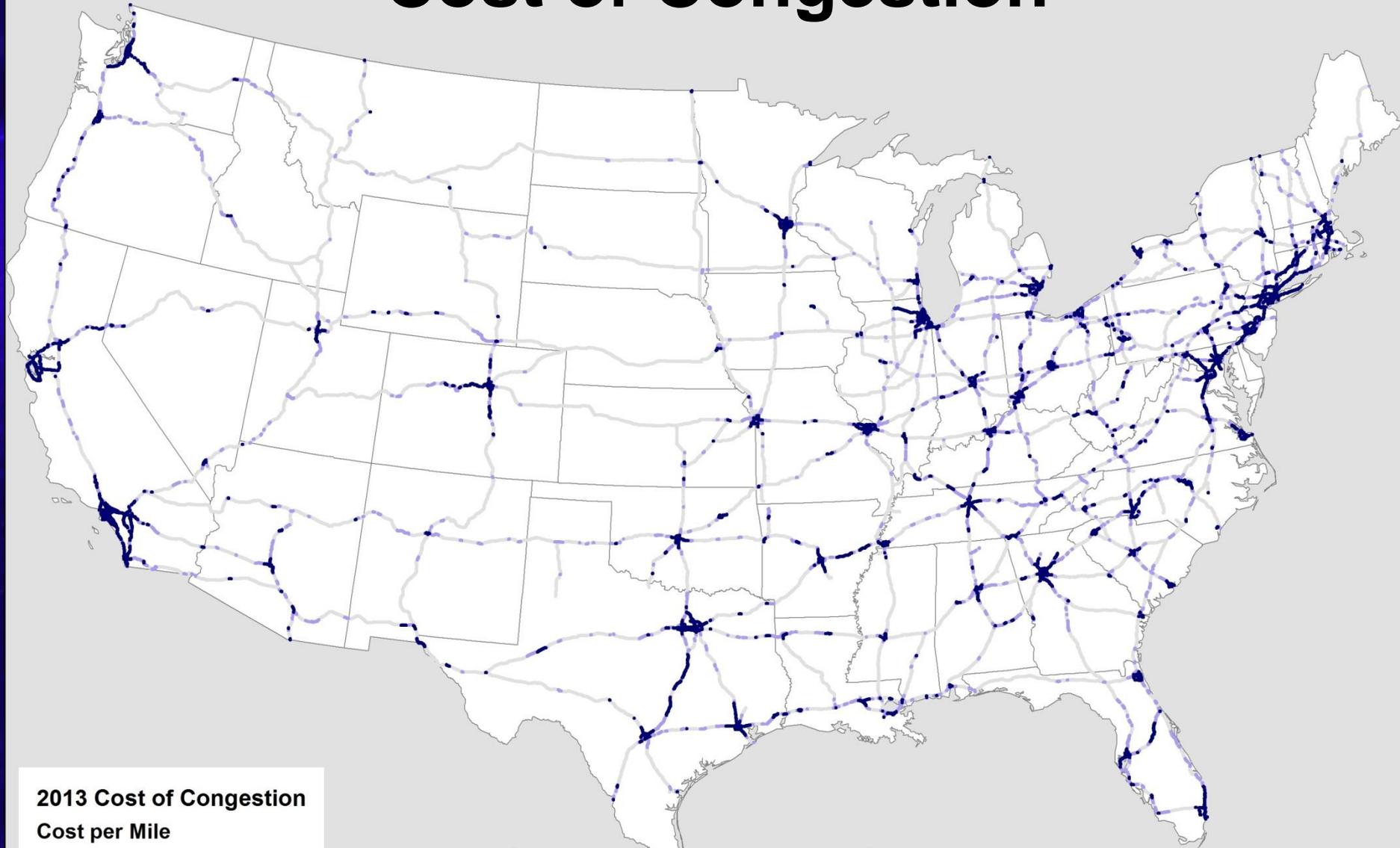


Rank	Bottleneck Location
41	Minneapolis - St. Paul, MN: I-35W at I-94
44	Minneapolis - St. Paul, MN: I-35W at I-494
76	Minneapolis-St. Paul, MN: I-35W at I-694
85	Minneapolis - St. Paul, MN: I-35E at I-94
115	Duluth, MN: I-35 at I-535
129	Minneapolis - St. Paul, MN: I-35W at 62E-W
218	Near Albert Lea, MN: I-35 at I-90

Cost of Congestion

- **Cost of congestion to trucking industry in 2014 = \$49.6 billion**
 - ◆ 222,000+ miles of NHS
- **Over 728 million hours of lost productivity**
- **Equivalent of over 264,000 commercial drivers sitting idle for entire working year**
- **Full report will include stratification of congestion impacts at state, metro and county levels**

Cost of Congestion

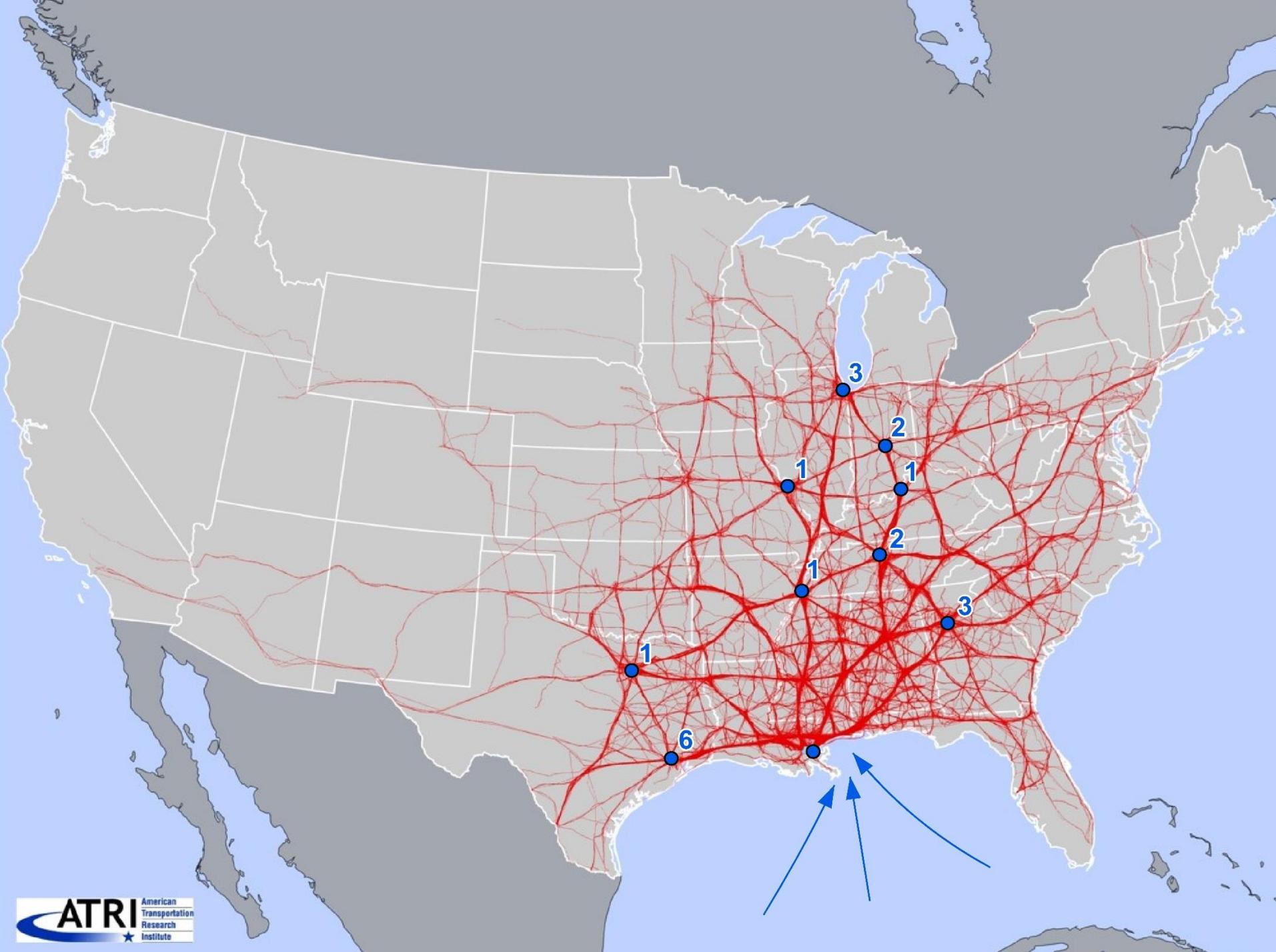


2013 Cost of Congestion

Cost per Mile

- \$25,000 or Less
- \$25,001 - \$100,000
- \$100,001 or Greater

**89% of cost concentrated on
12% of Interstate miles**



FREIGHT PERFORMANCE MEASURES



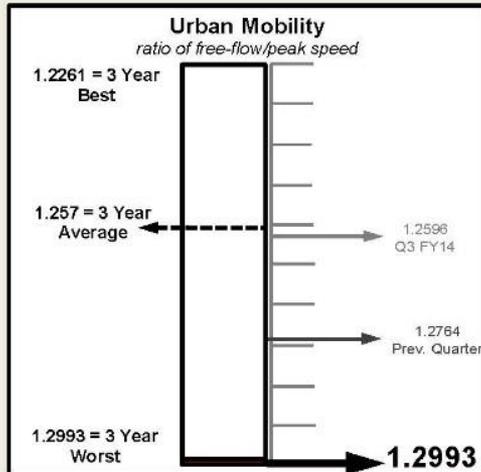
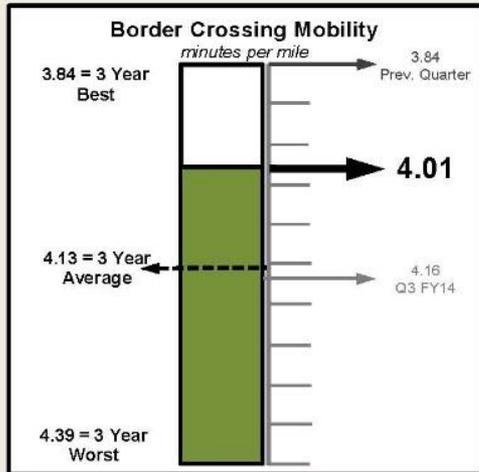
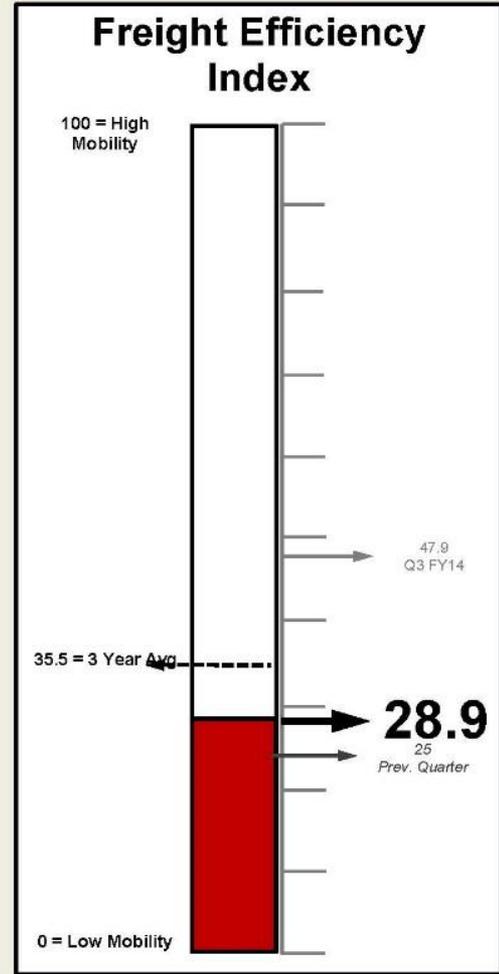
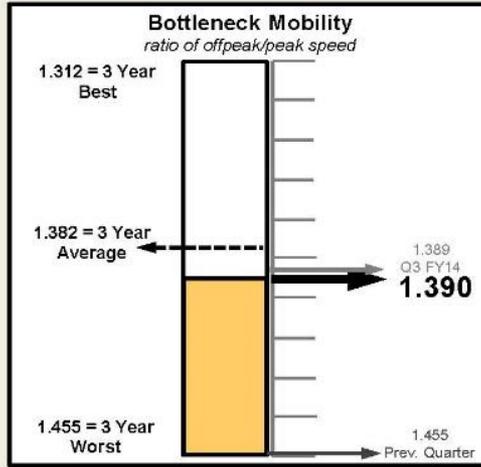
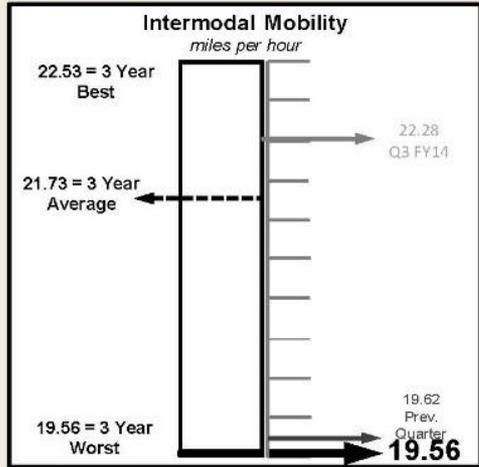
- Partially sponsored by Federal Highway Administration (2002-Present)
- Customized Processing System/Methods for Producing Freight Performance Measures
 - Multiple Industry Data Sources
 - 10+ Years of Continuous Data
 - Terabytes of Unique Truck Positions Received & Processed Annually
 - More than half a million Individual “Freight” Trucks in the Population



Freight Mobility Trends

FY 2015

Third Quarter



Primary Measures

- Average Travel Speeds:
 - ◆ Spot Mean Speed and Space Mean Speed
- Reliability Measures
- Delay at U.S./Canada border crossings
- O&D / Freight Flows
- Truck Parking S&D
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Questions?

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