



U.S. Department of Transportation  
**Federal Highway Administration**

**Office of Freight Management  
and Operations**

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# FHWA's Freight Fluidity Program

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# Importance of Analyzing Freight Fluidity

- Provides understanding of multimodal, end to end flow of goods.
- Identifies where bottlenecks are occurring and interrelationship with other modes/total supply chains.
- Connects transportation and economic development discussions.
- Illustrates the global, national and regional nature of freight infrastructure; encourage partnerships
- Engages the private sector
- Supports MAP-21, FAST focus on freight
- Supports Commerce, USACE, Agriculture, Energy and USDOT initiatives



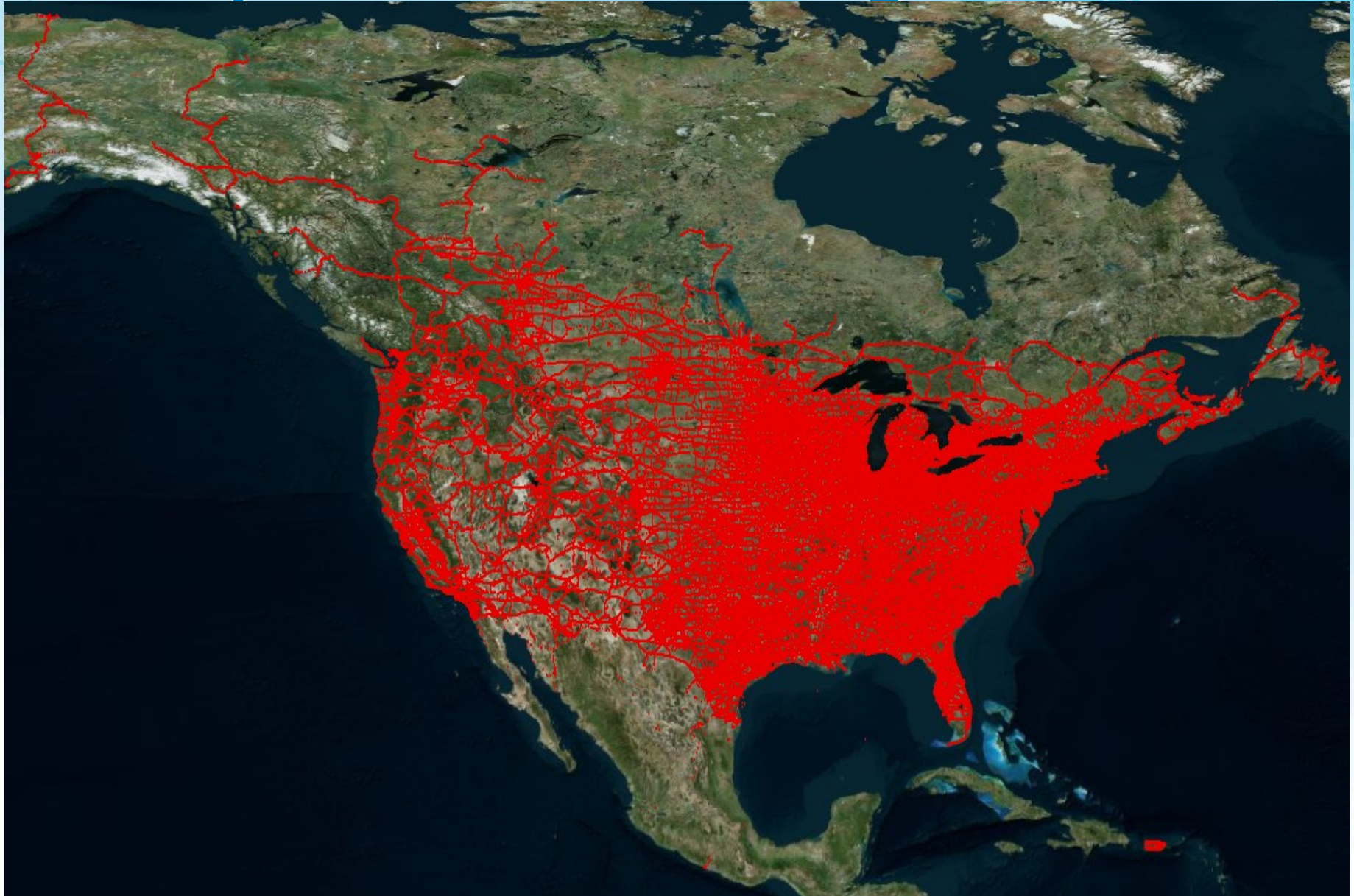
# Public Sector Freight Performance Measurement

- Highway
  - Truck Probe data
  - Highway Performance Monitoring System
- Railroad
  - Waybill sample
- Air Cargo
  - Landing weights at cargo bearing airports
- Marine
  - Tonnage and Value
  - Army Corps data on vessels
- Freight Analysis Framework
  - Commodity Flow Survey
  - Truck Counts





# Example of Probe Coverage

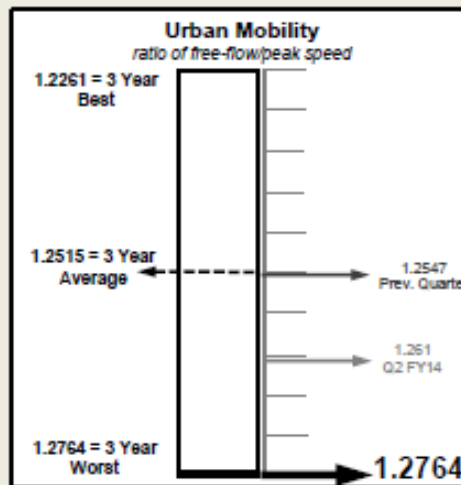
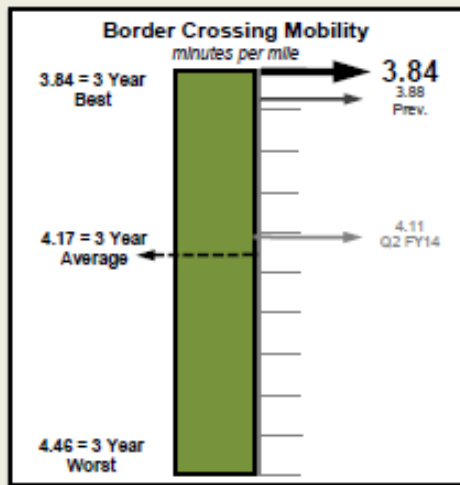
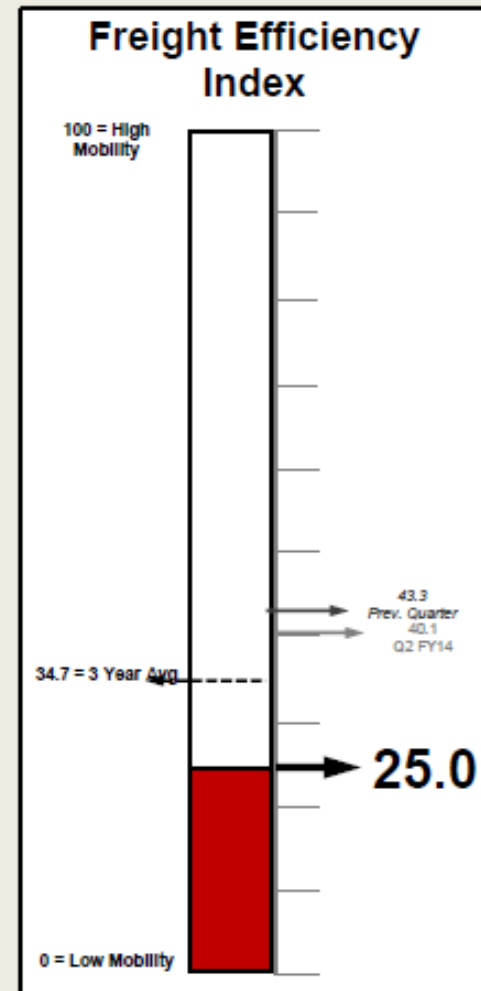
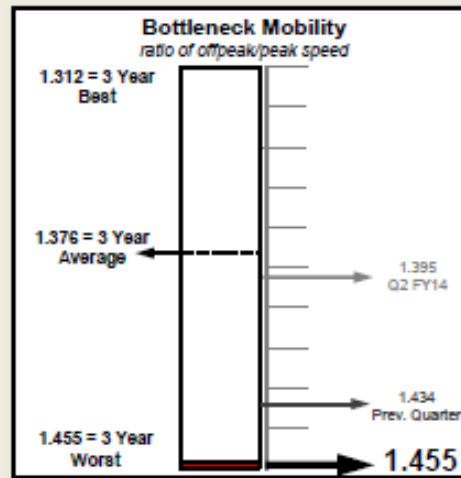
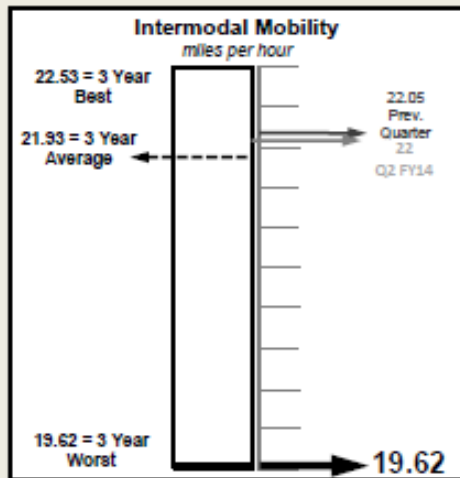


# Freight Movement Efficiency Index

## Freight Mobility Trends

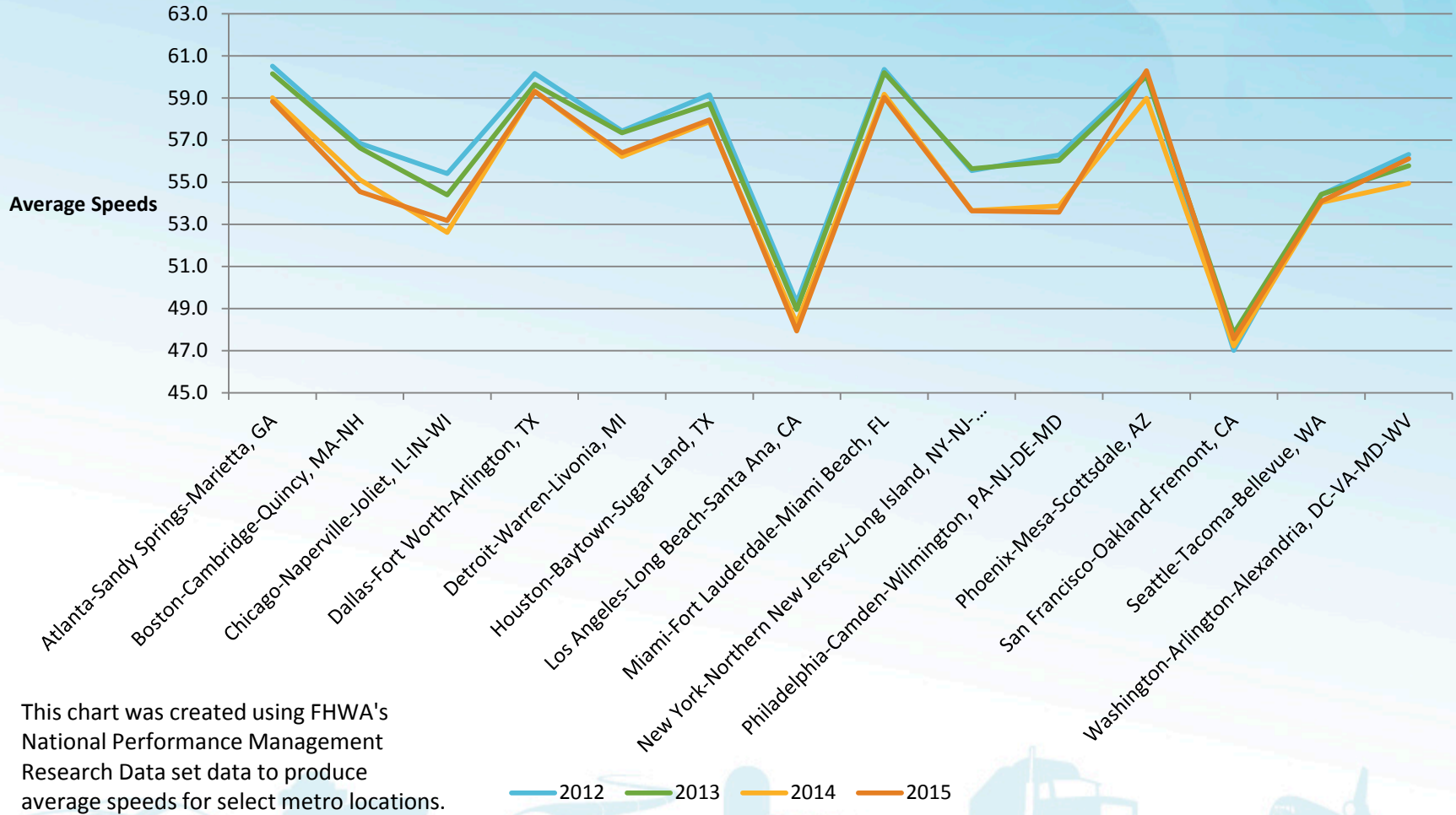
FY 2015

Second Quarter



# FPM Monitoring

## Select Metro Area Average Speeds, 2012-2015

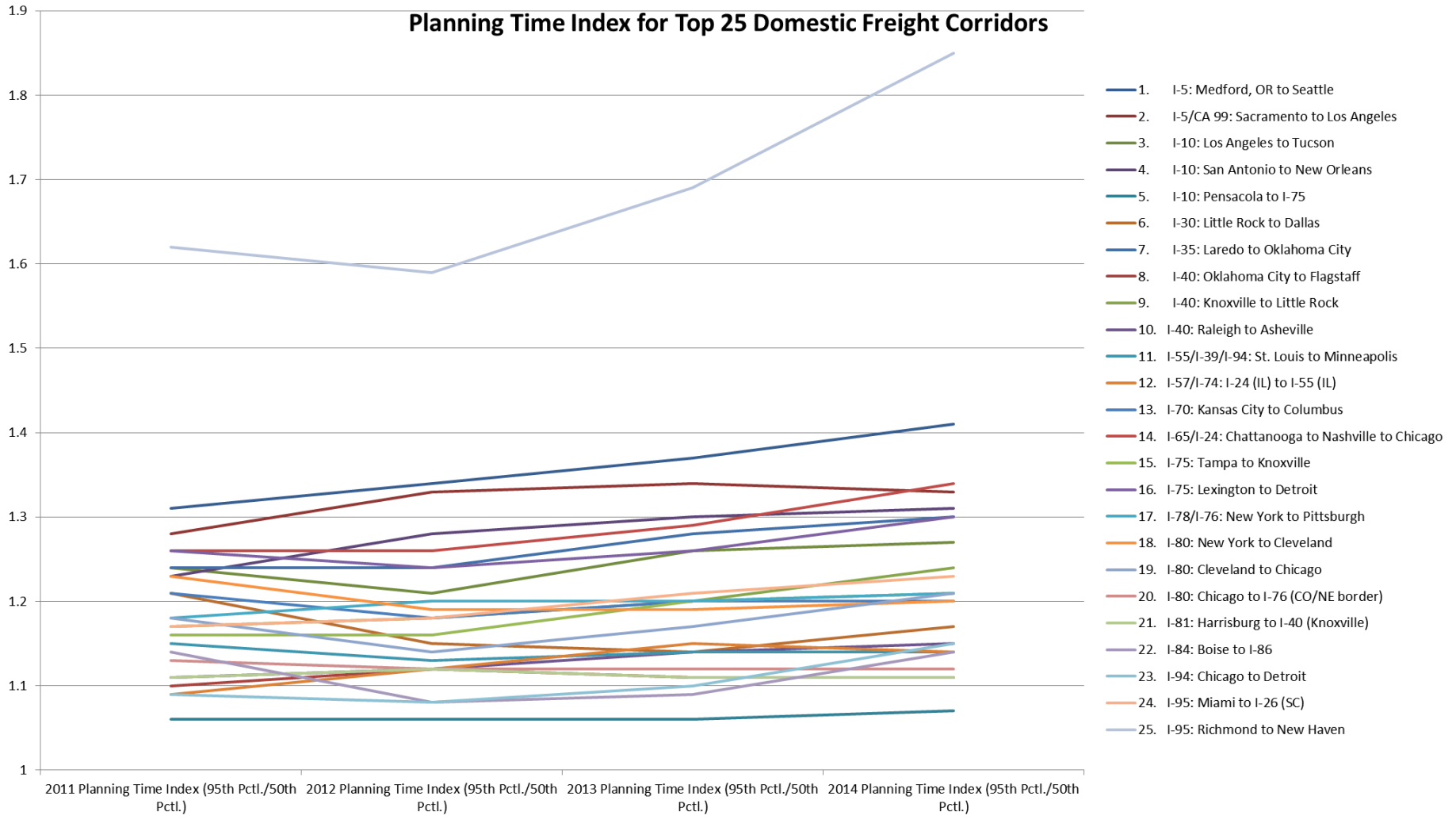


This chart was created using FHWA's National Performance Management Research Data set data to produce average speeds for select metro locations.

— 2012 — 2013 — 2014 — 2015

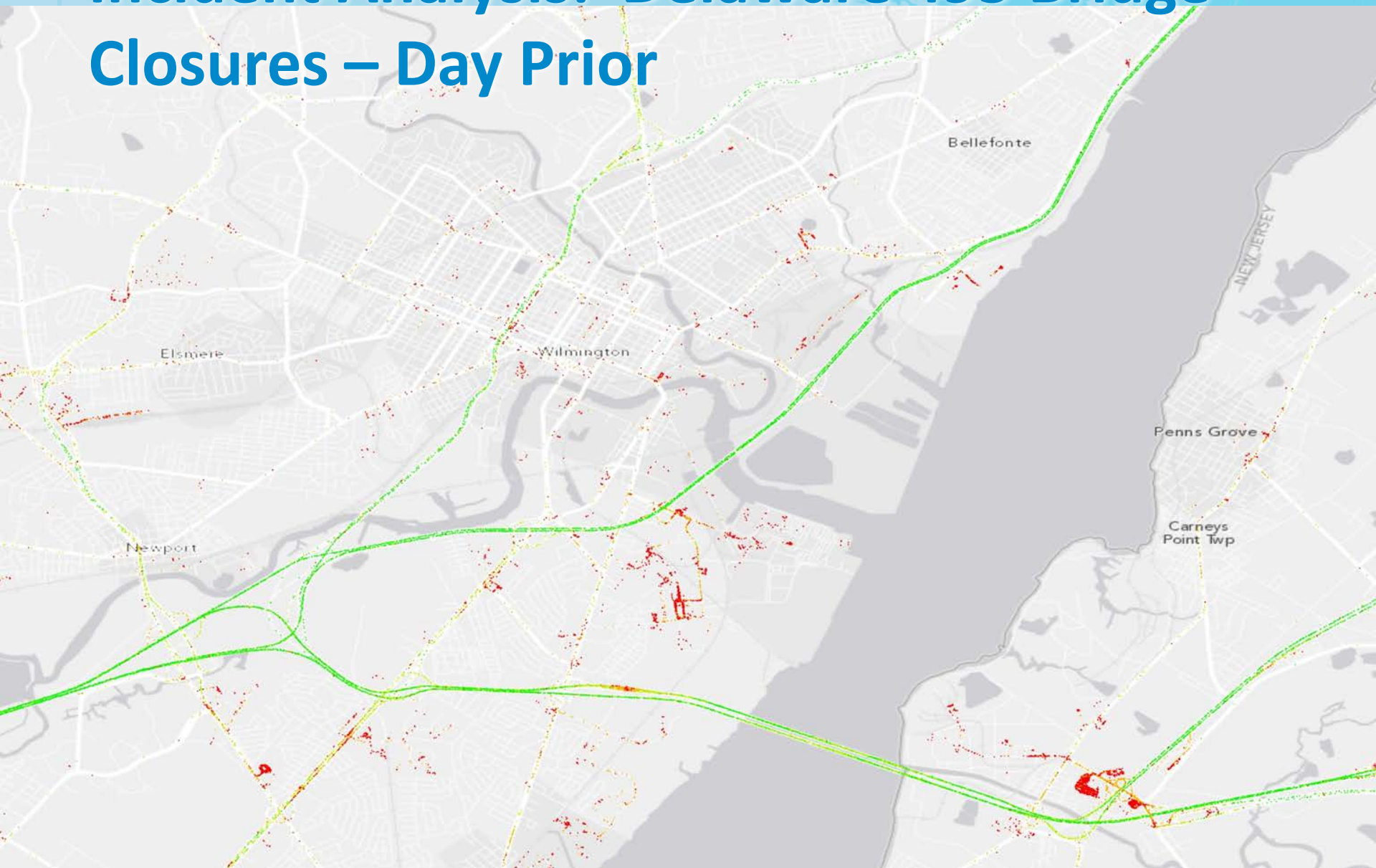


## Planning Time Index for Top 25 Domestic Freight Corridors



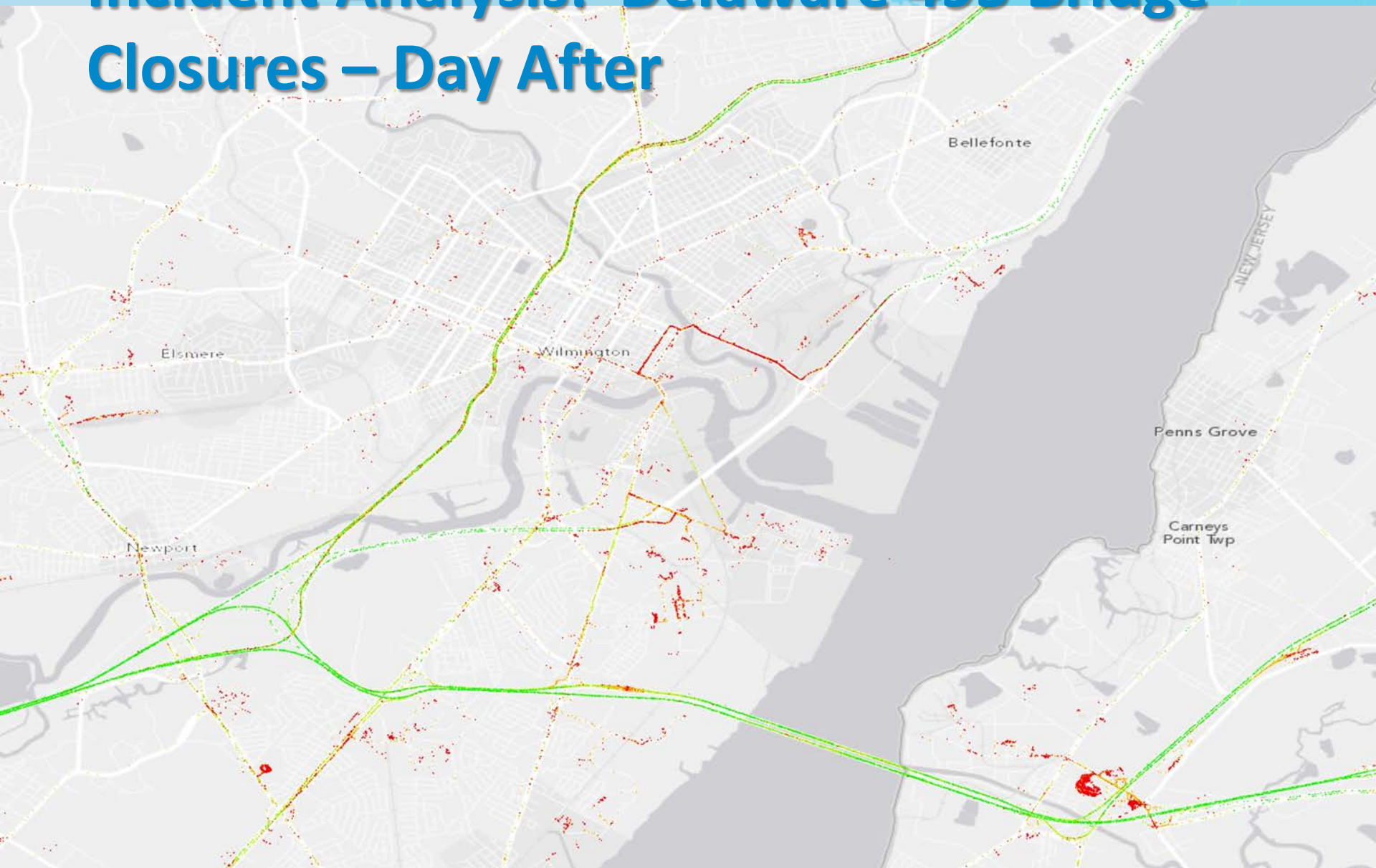


# Incident Analysis: Delaware 495 Bridge Closures – Day Prior

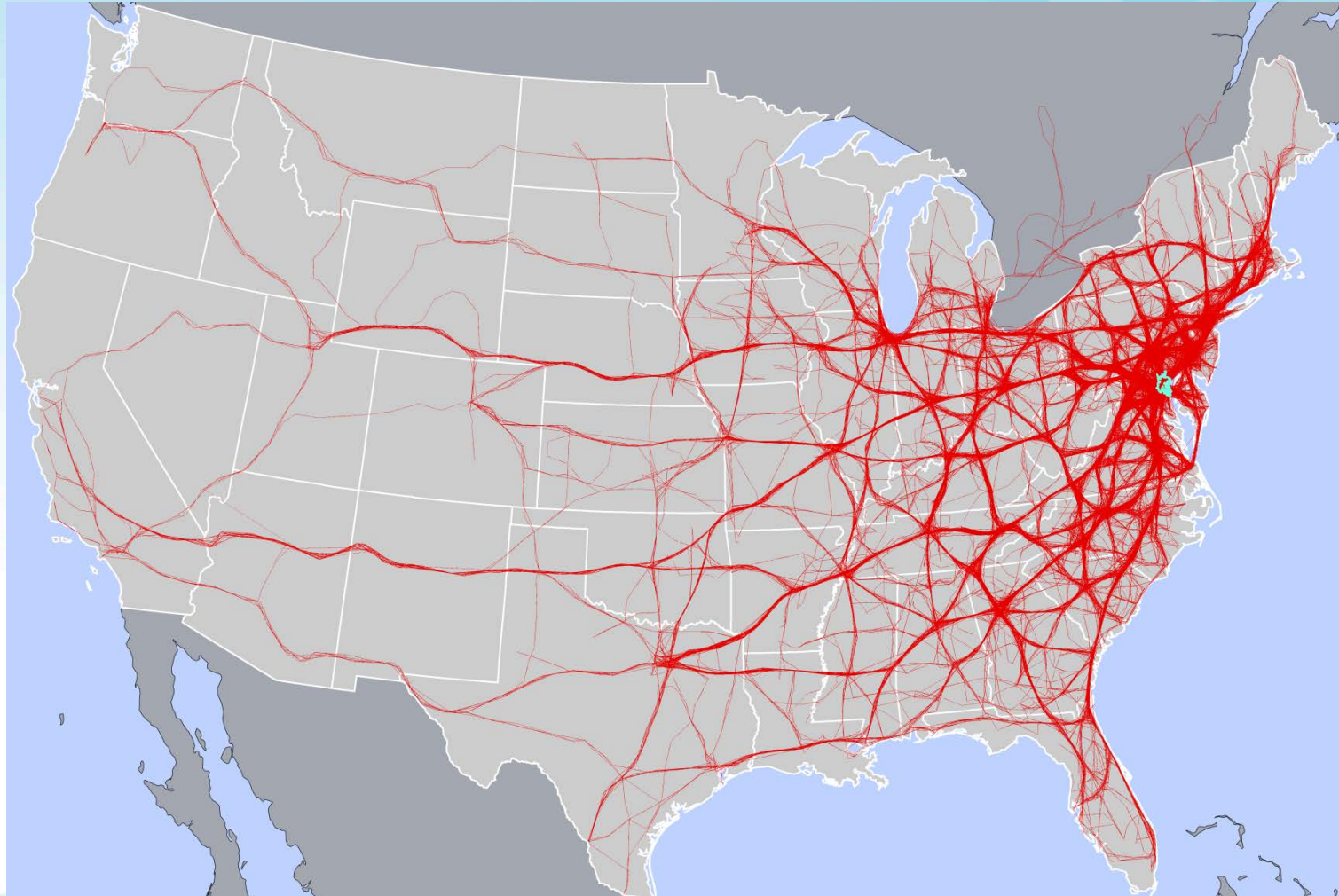




# Incident Analysis: Delaware 495 Bridge Closures – Day After

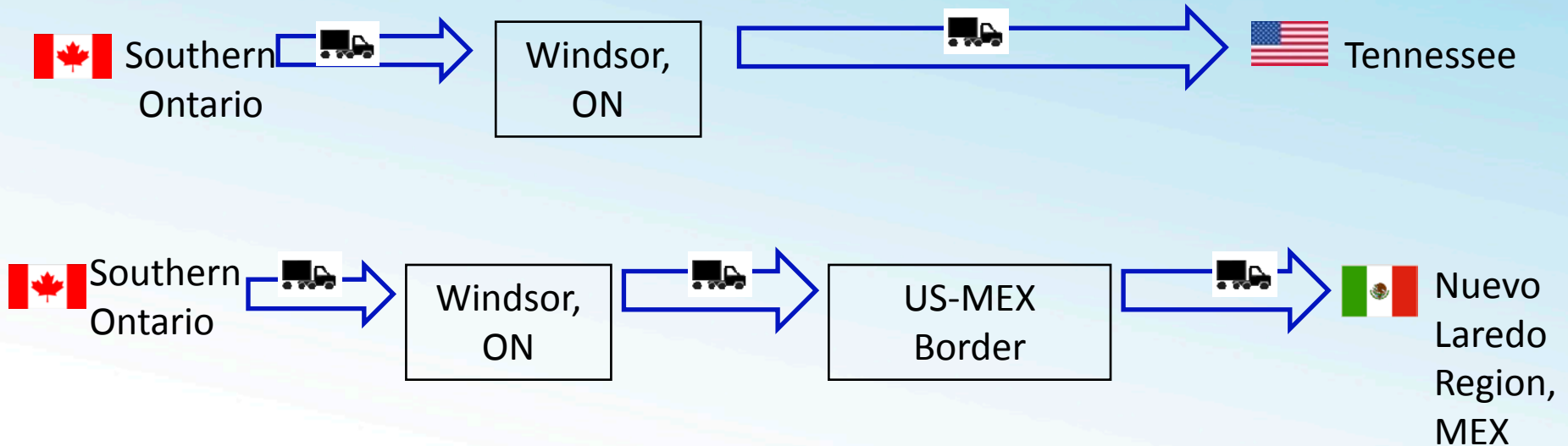


# 1,000 Trucks After 7 Days



# North American Case Study: Automotive Parts Manufacturing

## Transit Option 1: trucking

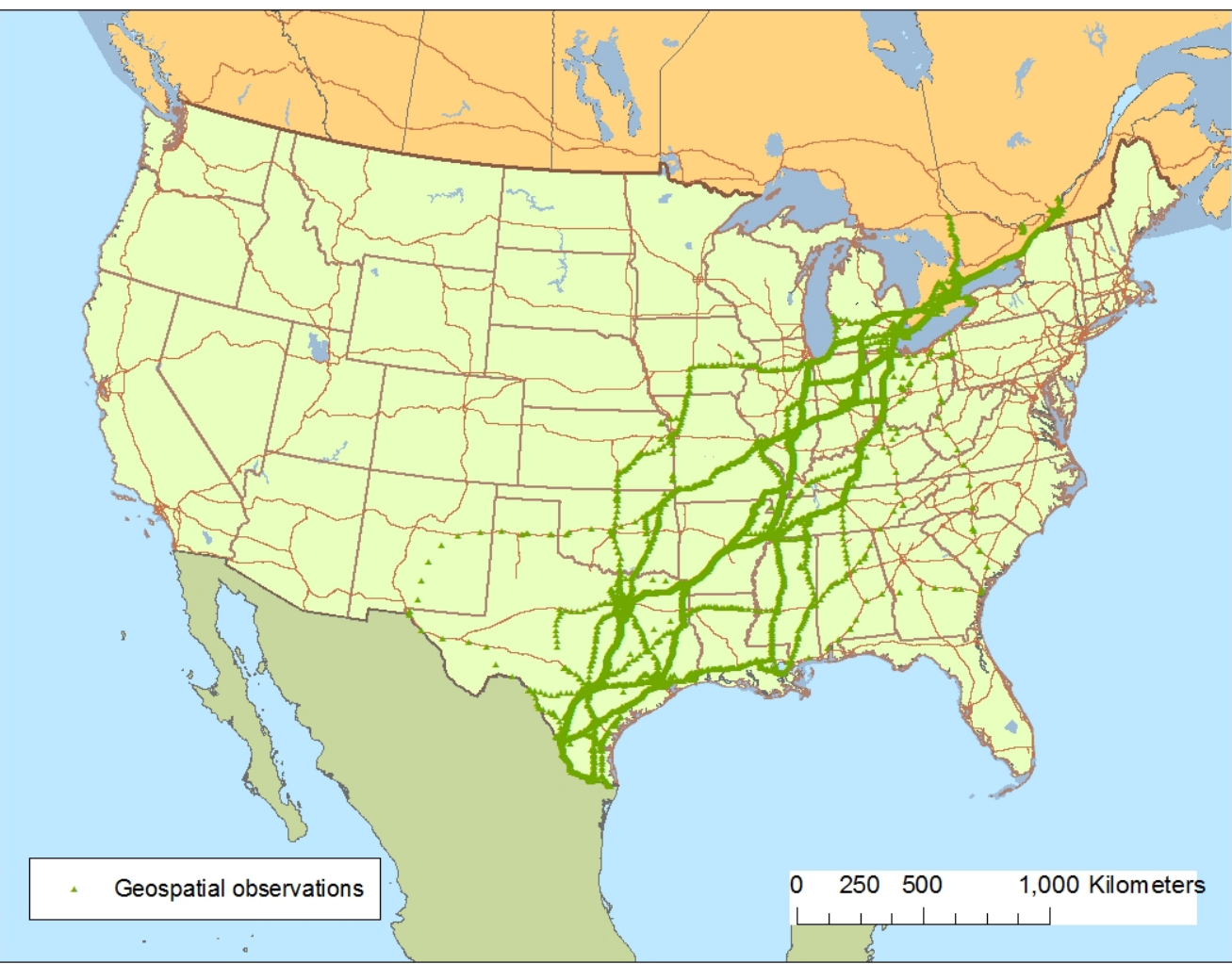


Source: Transport Canada





# Truck Trips: Southern Ontario to US-Mexican Border, September 2014

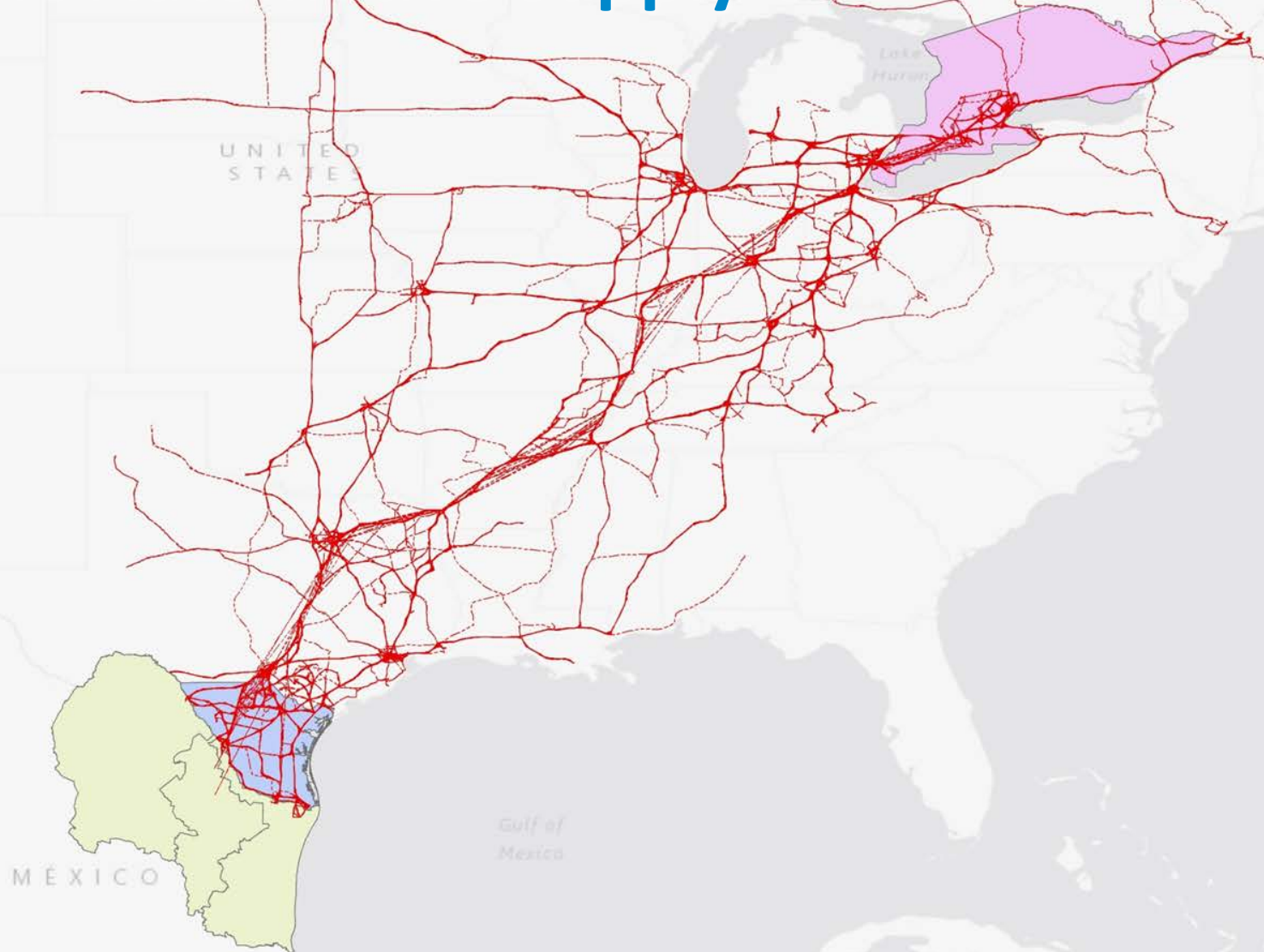


- 424 trucks trips were identified
- The average travel time was 70 hours

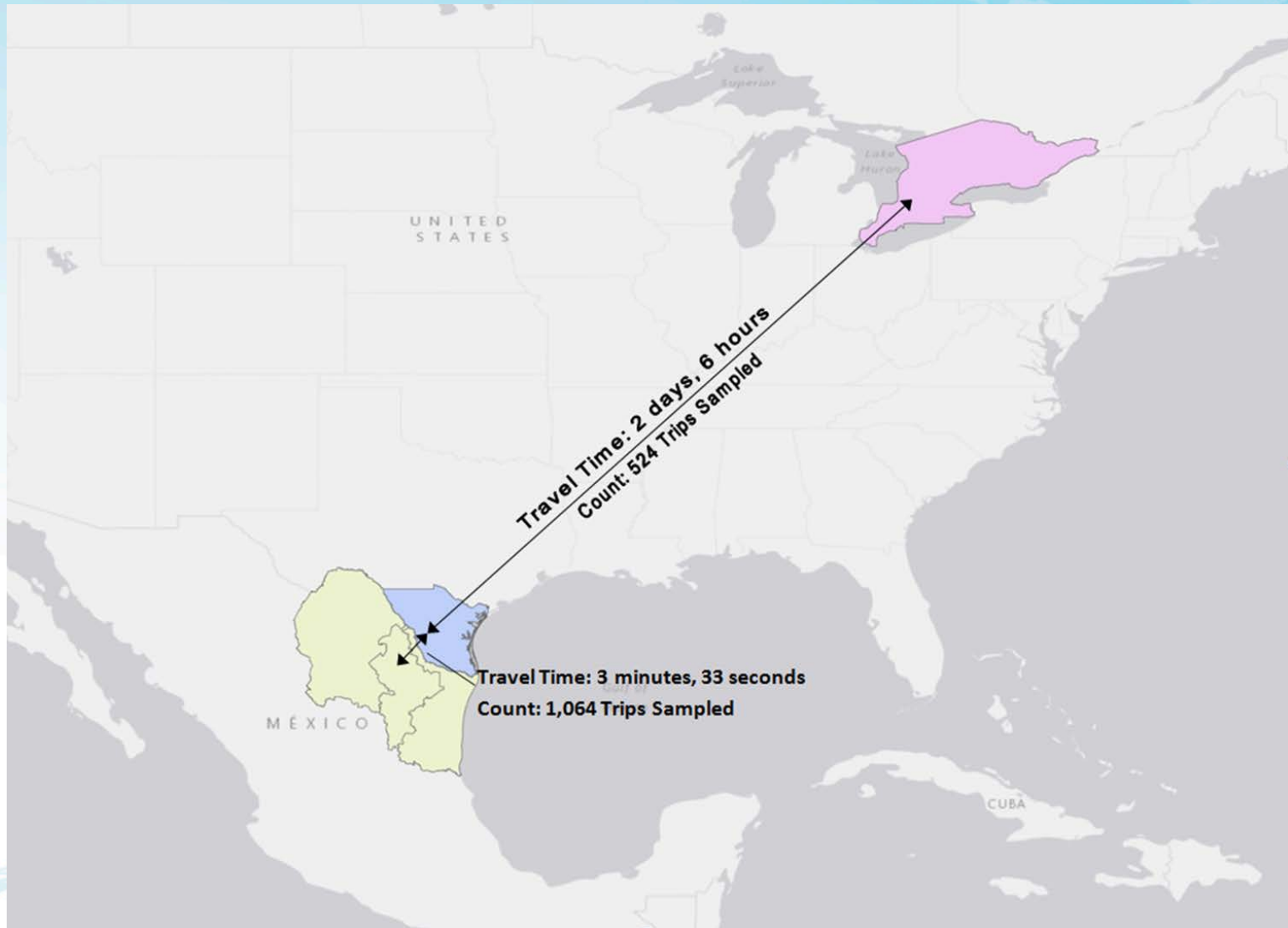
Source: Transport Canada, adapted from third-party satellite tracking data provider (Shaw), October 2014.



# FHWA Probe Data Representation of the Same Automotive Supply Chain



# FHWA Probe Data Analysis of the Same Automotive Supply Chain with Border Crossing



## Transit Option 2 : trucking-rail



## Results Transit Option 2 : trucking-rail (expressed in days)

	<b>Belleville-Napanee-Kingston region to Chattanooga, TN.</b>	<b>Belleville-Napanee-Kingston region to Monterrey, MX</b>
Truck transit time to Canadian railyard	4.5 hours	4.5 hours
Rail transit time (including dwell)	3.2 days	9 days
<b>Total transit time</b>	<b>3.4 days</b>	<b>9.2 days</b>

# Multimodal Supply Chain Case Studies

- Autos – General Motors auto parts
  - From US and NAFTA suppliers to auto assembly plant in Tennessee
- Retail – Target® consumer goods
  - From Ports of Los Angeles/Long Beach and Seattle/Tacoma via Chicago to metropolitan New York
- Electronics – Panasonic electronics
  - Between manufacturing and assembly facilities in San Diego and Tijuana
- Agriculture – Soybean exports
  - From Illinois farms to Louisiana port
- Food – Perdue processed chicken
  - From Delmarva region to Mid-Atlantic markets

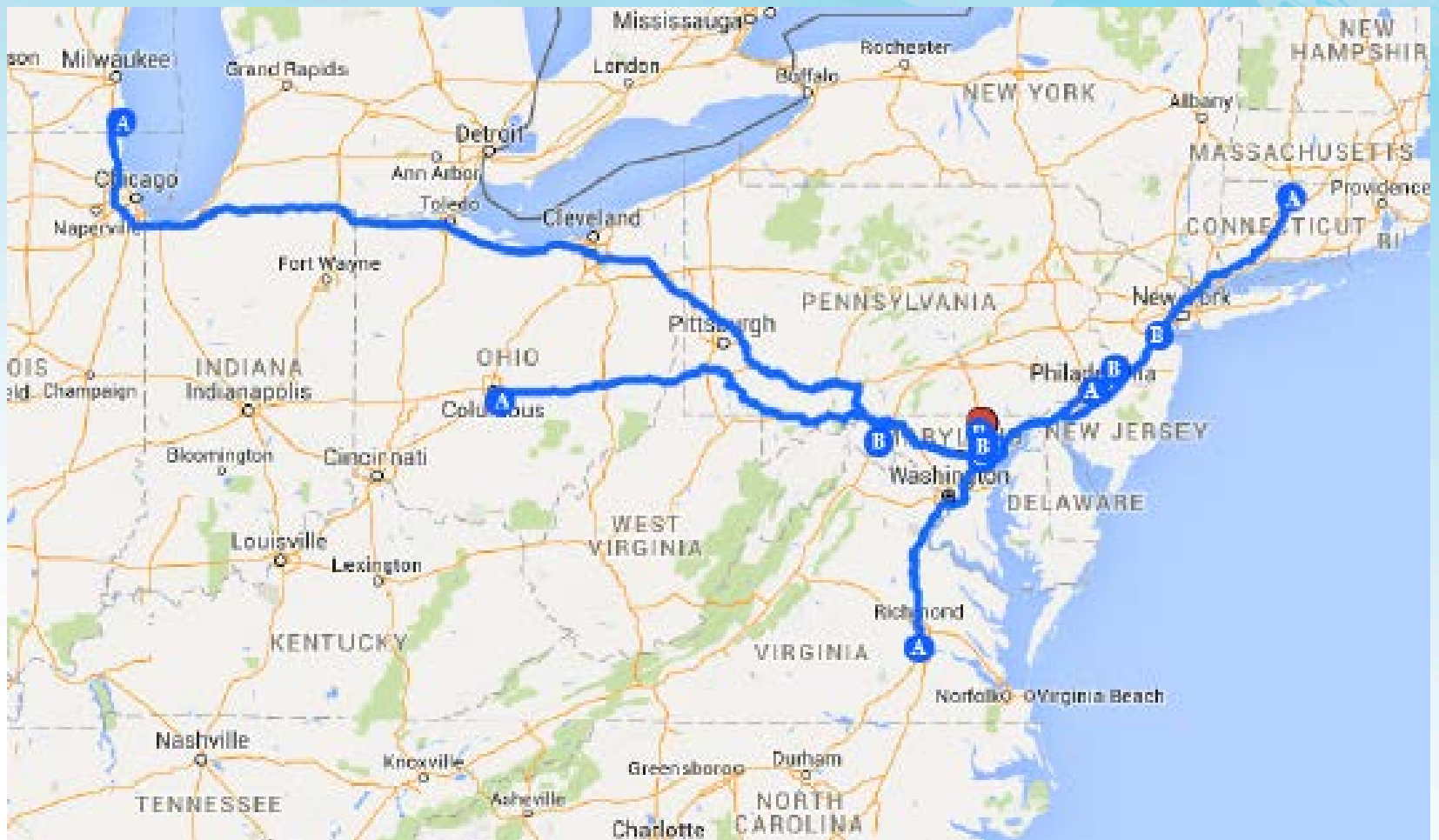




# What are the Challenges in Implementation?

- Applicability to USDOT and Others
- Scaling the Program
  - Significant freight corridors
  - Freight-sheds
  - Industry areas and supply chains
- Data
  - Probe data
  - Data combinations
  - Big Data
  - Modal data
- Implementation





# Fluidity Next Steps

- Implement U.S. and potential North America fluidity measurement program.
- Work with partners on continued supply chain analysis, state and regional analyses.
- Improve data and analytical options.
- Investigate Big Data – aggregated transactional data options.



# For More Information:

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