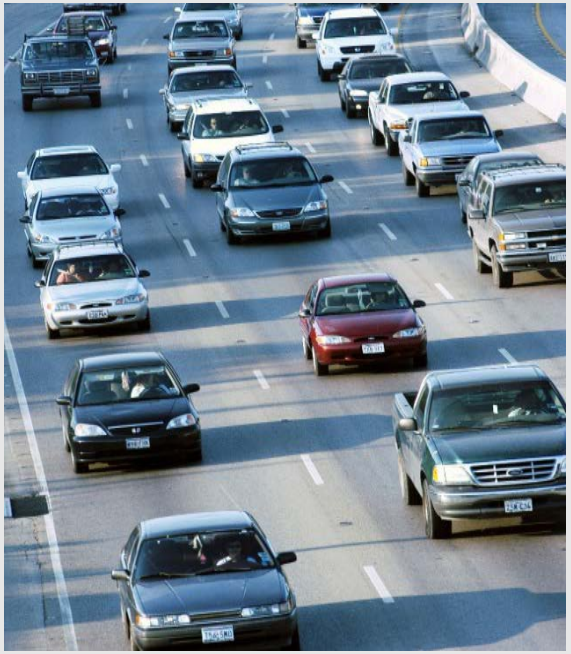


TEXAS: ADVANCING LAST-MILE FREIGHT DELIVERY IN URBAN AREAS

FHWA Talking Freight Seminar

February 20, 2019

How are We Advancing Last-Mile Urban Freight Delivery in Texas?

1. Texas Freight Mobility Plan
2. Texas Triangle Urban Areas Truck Congestion Analysis
3. Texas Freight Fluidity Analysis
4. Texas Clear Lanes Program

1. Texas Freight Mobility Plan

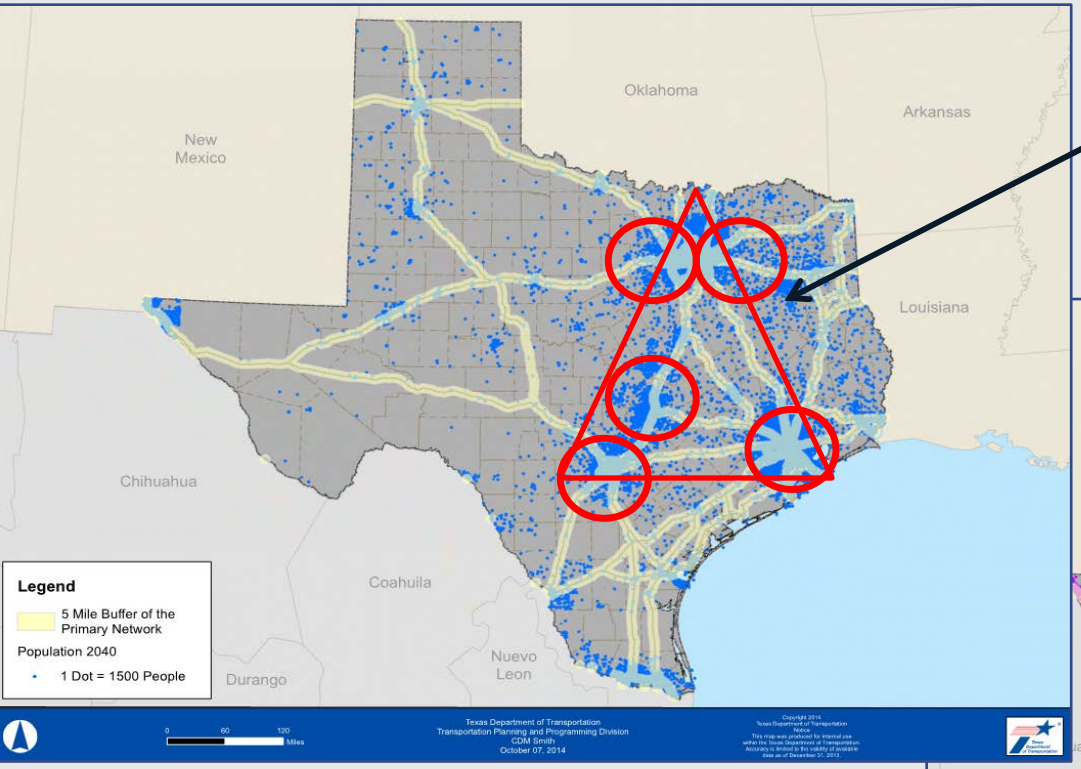
Addressing Urban Freight Challenges Starts with the Texas Freight Mobility Plan

- Identifies freight transportation challenges and outlines investment strategies needed to address them
- Provides a vision for a safe, reliable, and efficient freight transportation system
- Identifies freight transportation investments critical to Texas' economic growth and competitiveness
- Serves as an investment guide for freight transportation improvements

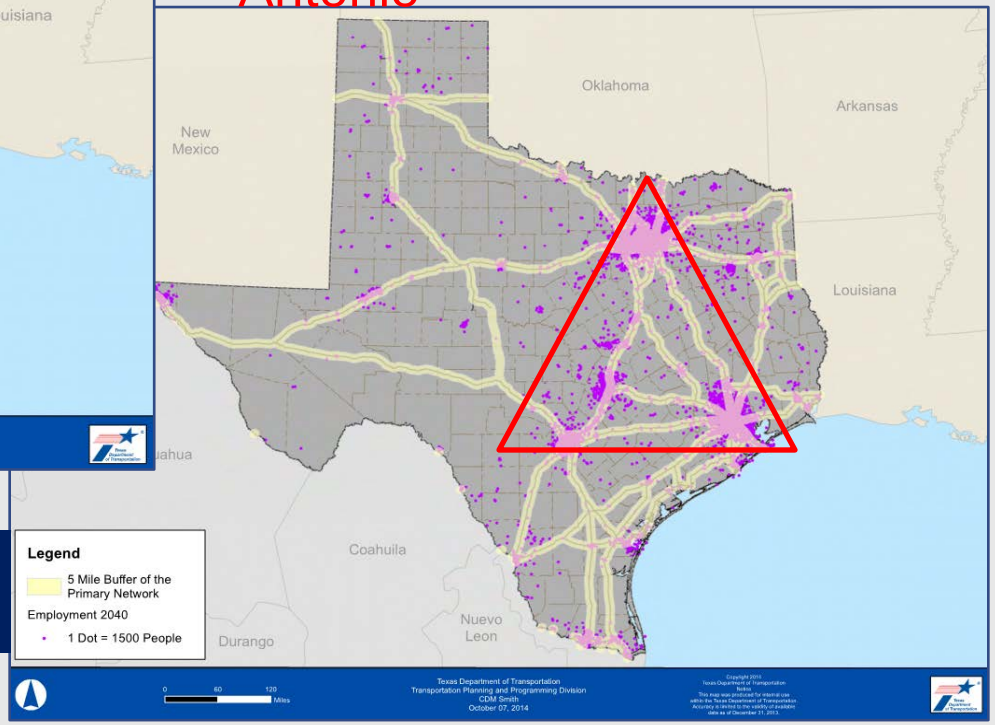
1. Texas Population and Employment Density

Population Density in Texas Urban Areas, 2040

2018: Texas had over 28 million people and over 65% live in the 5 metropolitan areas: Fort Worth, Dallas, Houston, Austin, and San Antonio

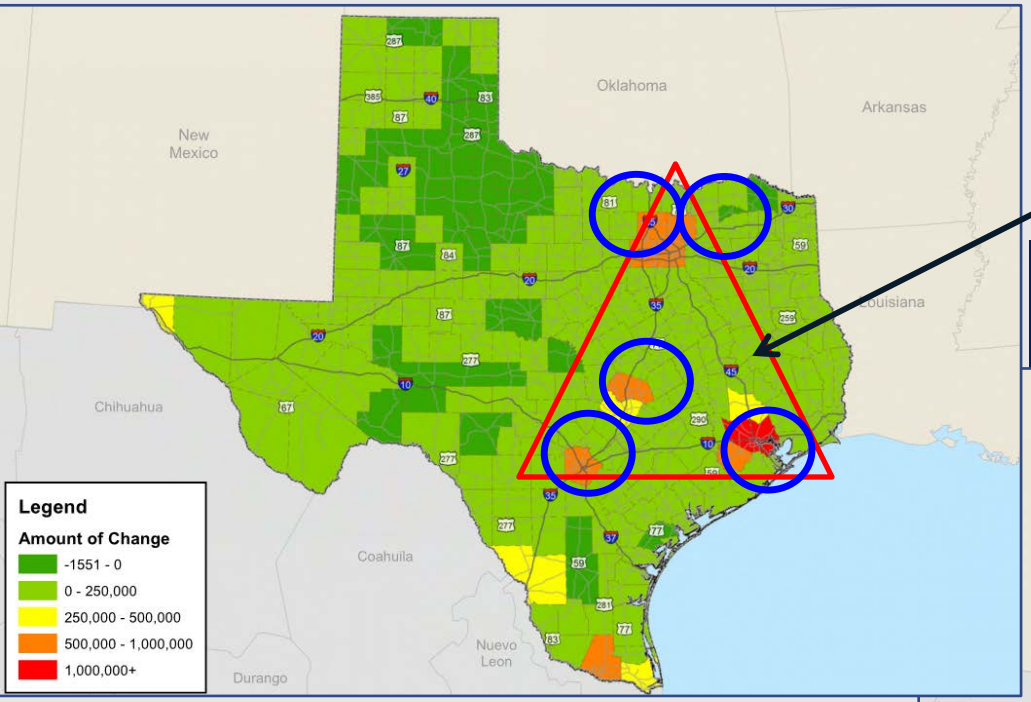


Employment Density Texas Urban Areas, 2040



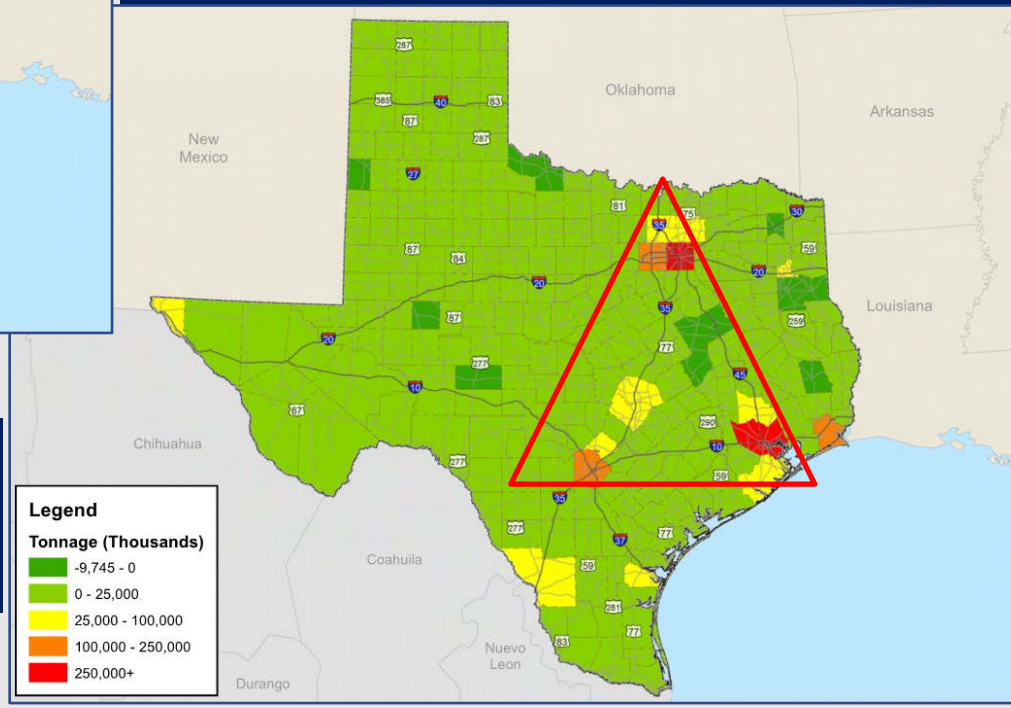
1. Texas Population and Freight Tonnage

Change in Population Growth 2014 to 2050



By 2050, these 5 metropolitan areas may comprise nearly 74% of Texas' population

Freight Tonnage Growth by County 2014 to 2050



The change in freight tonnage is consistent with the changes in population and employment

1. Top 100 Truck Bottlenecks in Texas Triangle

	Top 100 Truck Bottlenecks	Annual Hours Delay per Commuter	2018 Freight Tonnage (Million)	2050 Freight Tonnage (Million)	% Growth in Freight Tonnage
Austin	8	53	104	151	45%
Dallas-Fort Worth	34	55	374	797	113%
Houston	33	66	967	1,861	93%
San Antonio	10	46	136	271	99%

Source: Texas A&M Transportation Institute

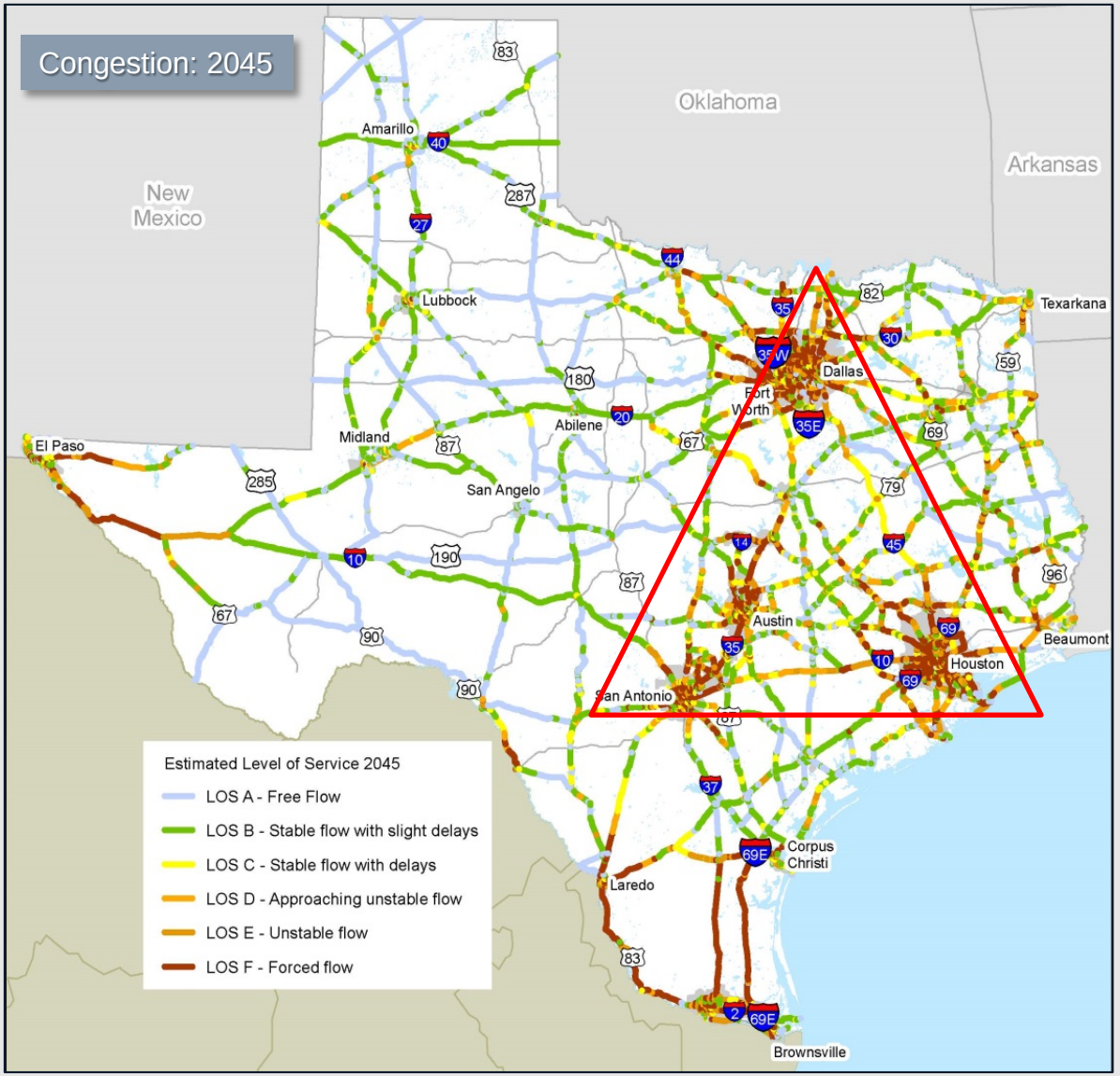
1. Texas Triangle Urban Areas Truck Congestion - 2045

Texas has 13 of the **NATION's** Top 100 Freight Bottlenecks*

9 - Houston
2 - Dallas
1 - Fort Worth
1 - Austin

Cost of Congestion

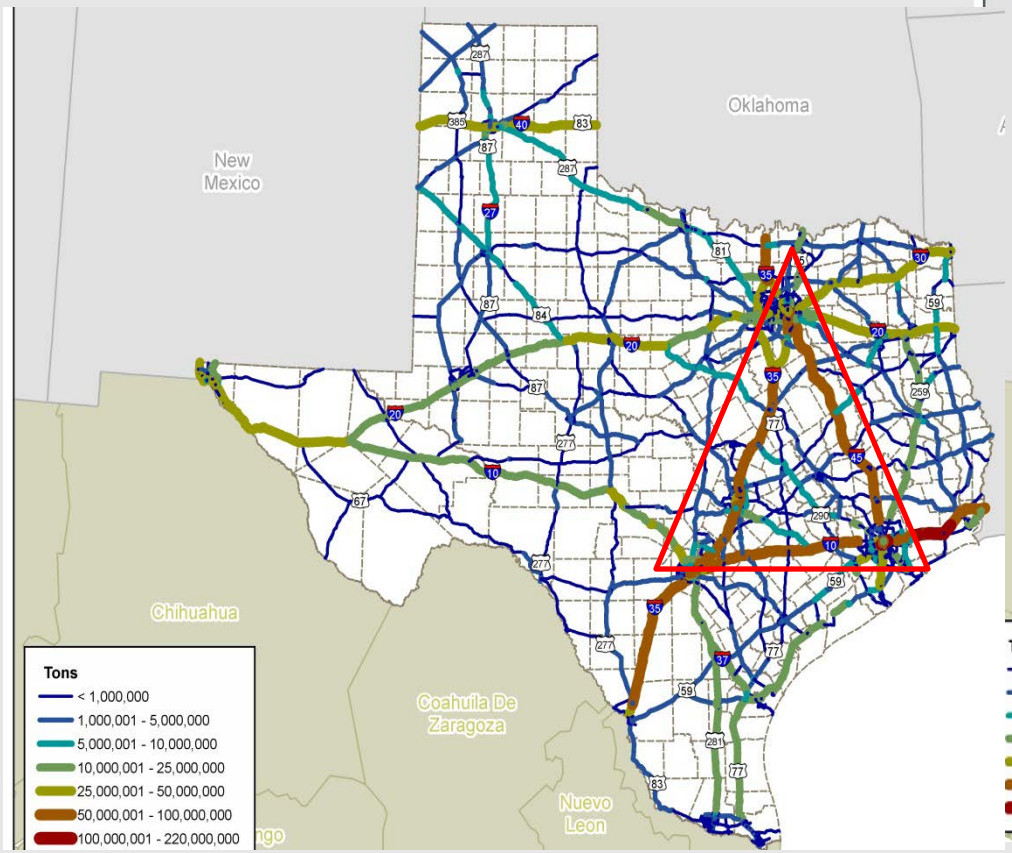
$6.3 Billion 2018*



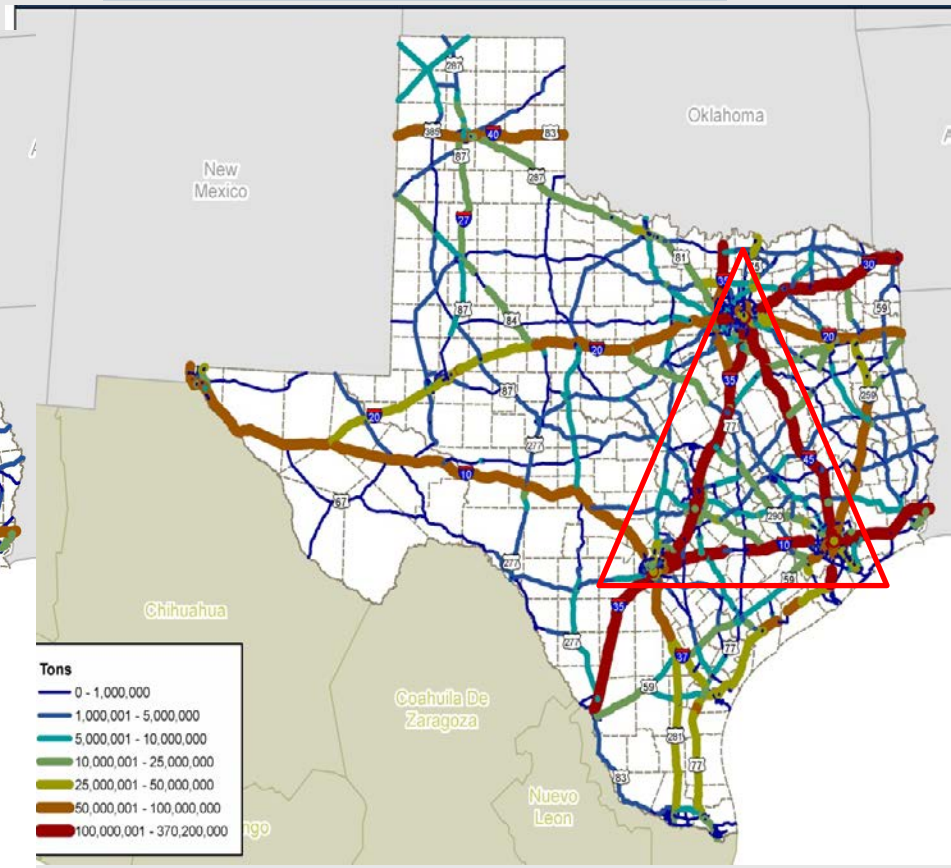
*American Transportation Research Institute

1. Freight Movement in Texas and Texas Triangle Urban Areas

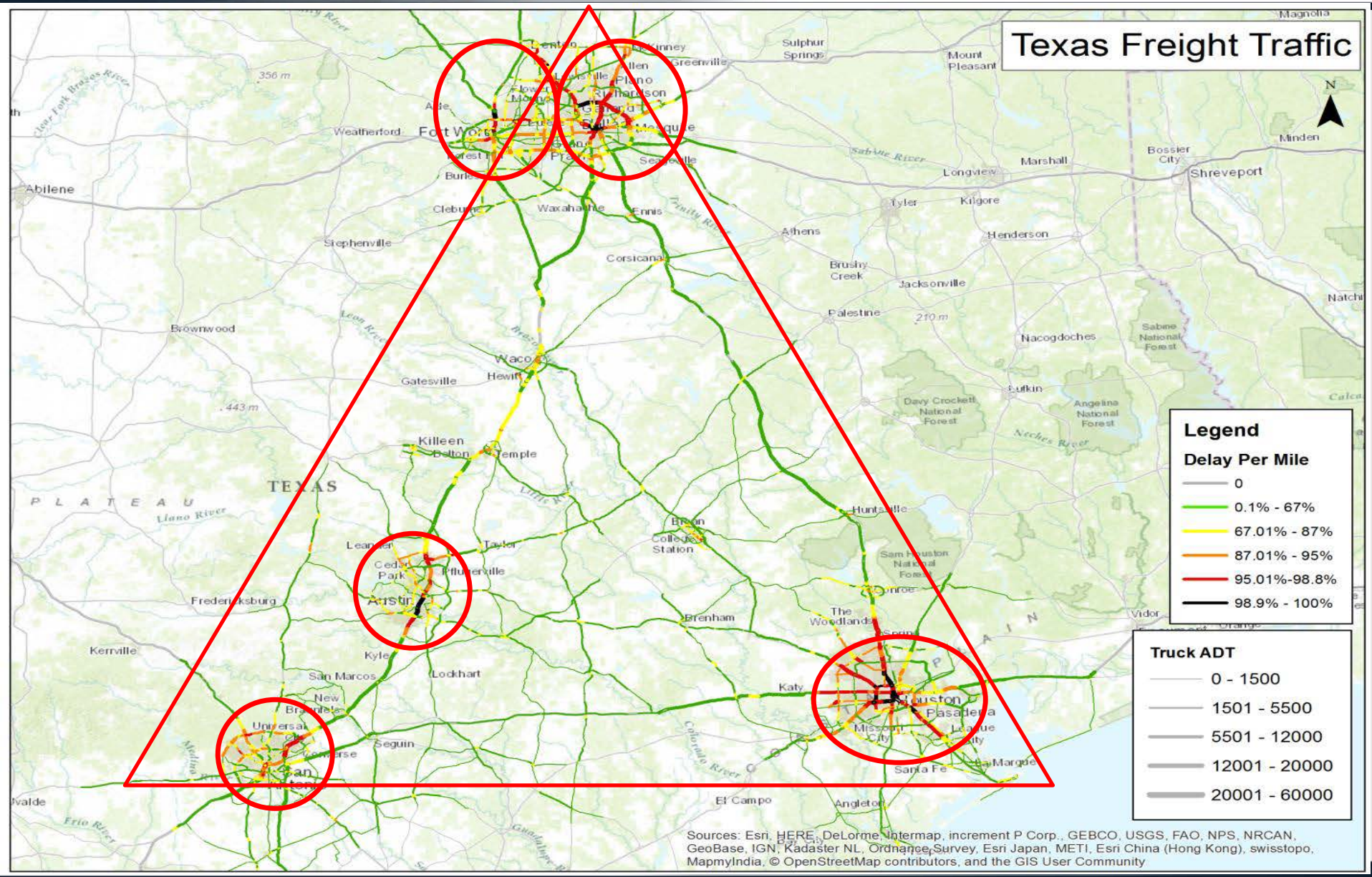
Freight Tonnage 2016



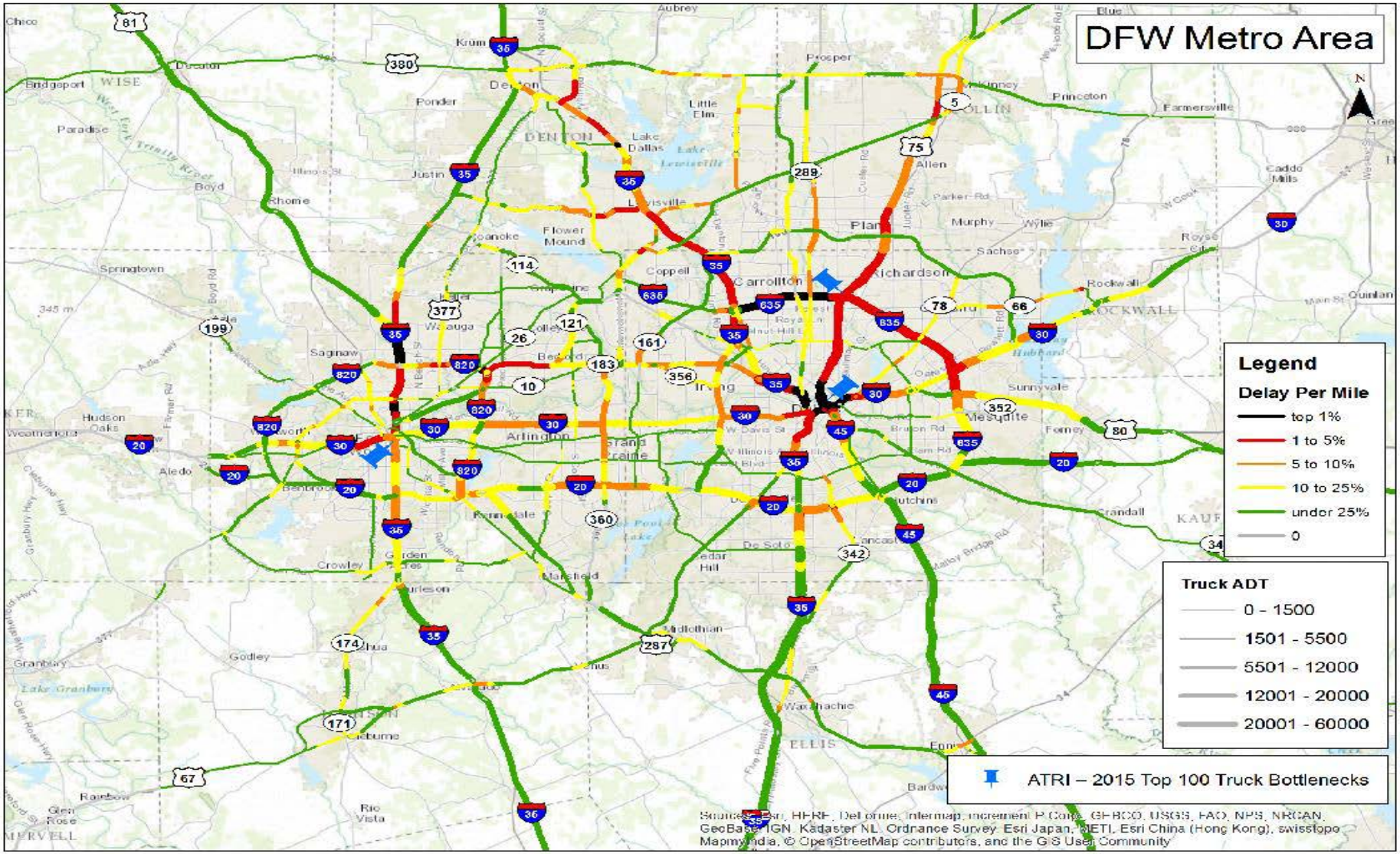
Freight Tonnage 2045



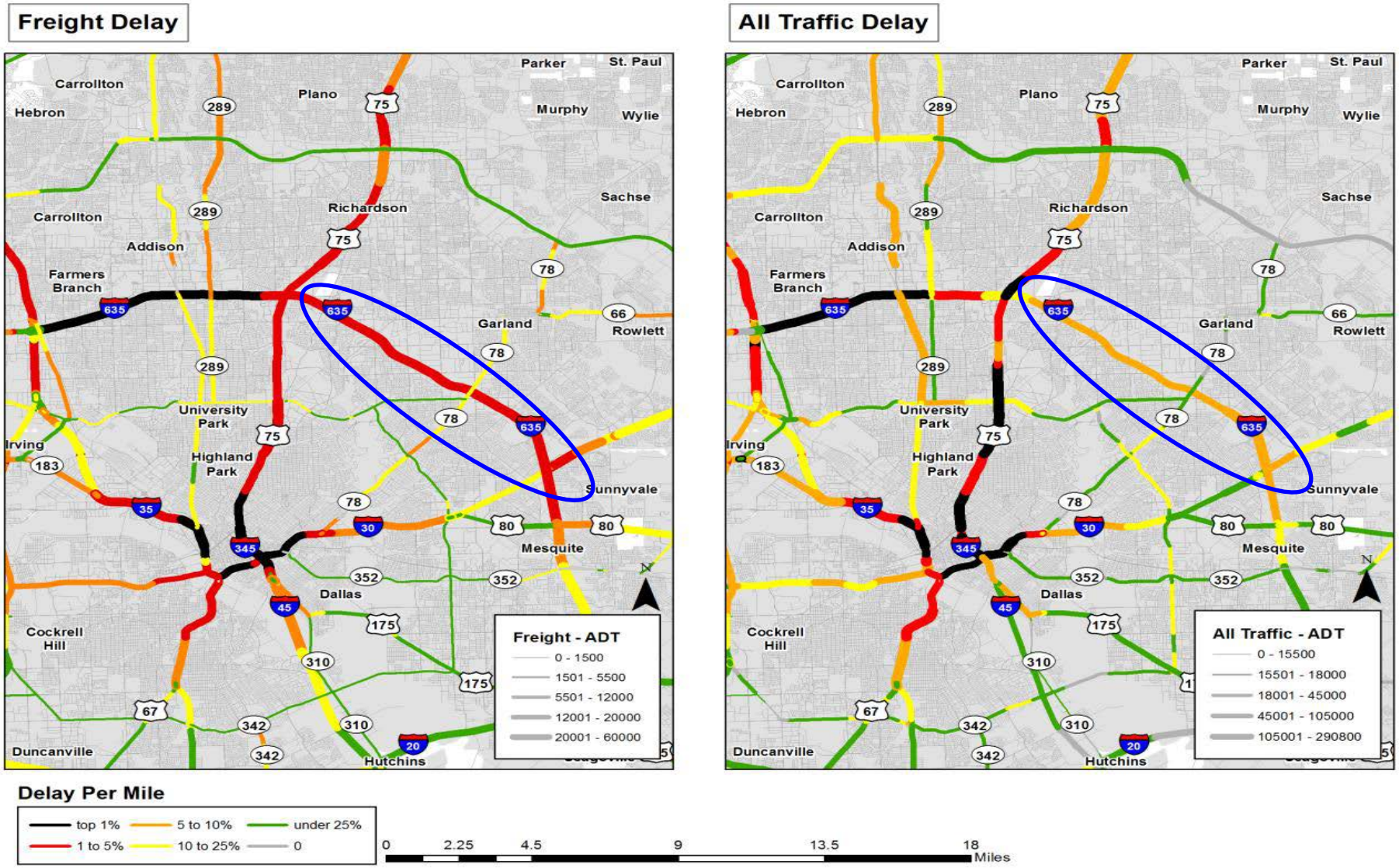
2. Truck Congestion In Texas Triangle Urban Areas 2015



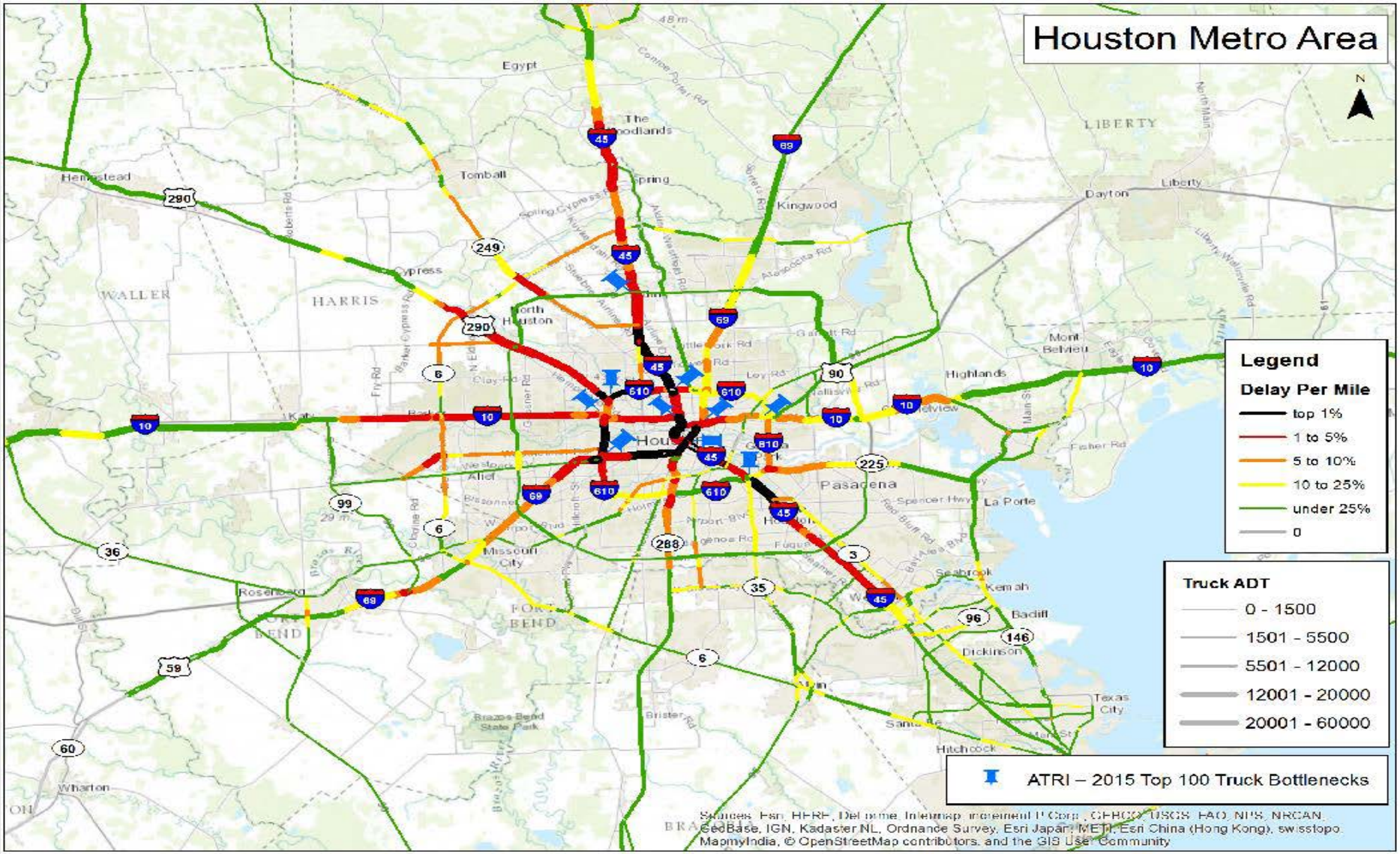
2. Dallas-Fort Worth: Truck Delay 2015



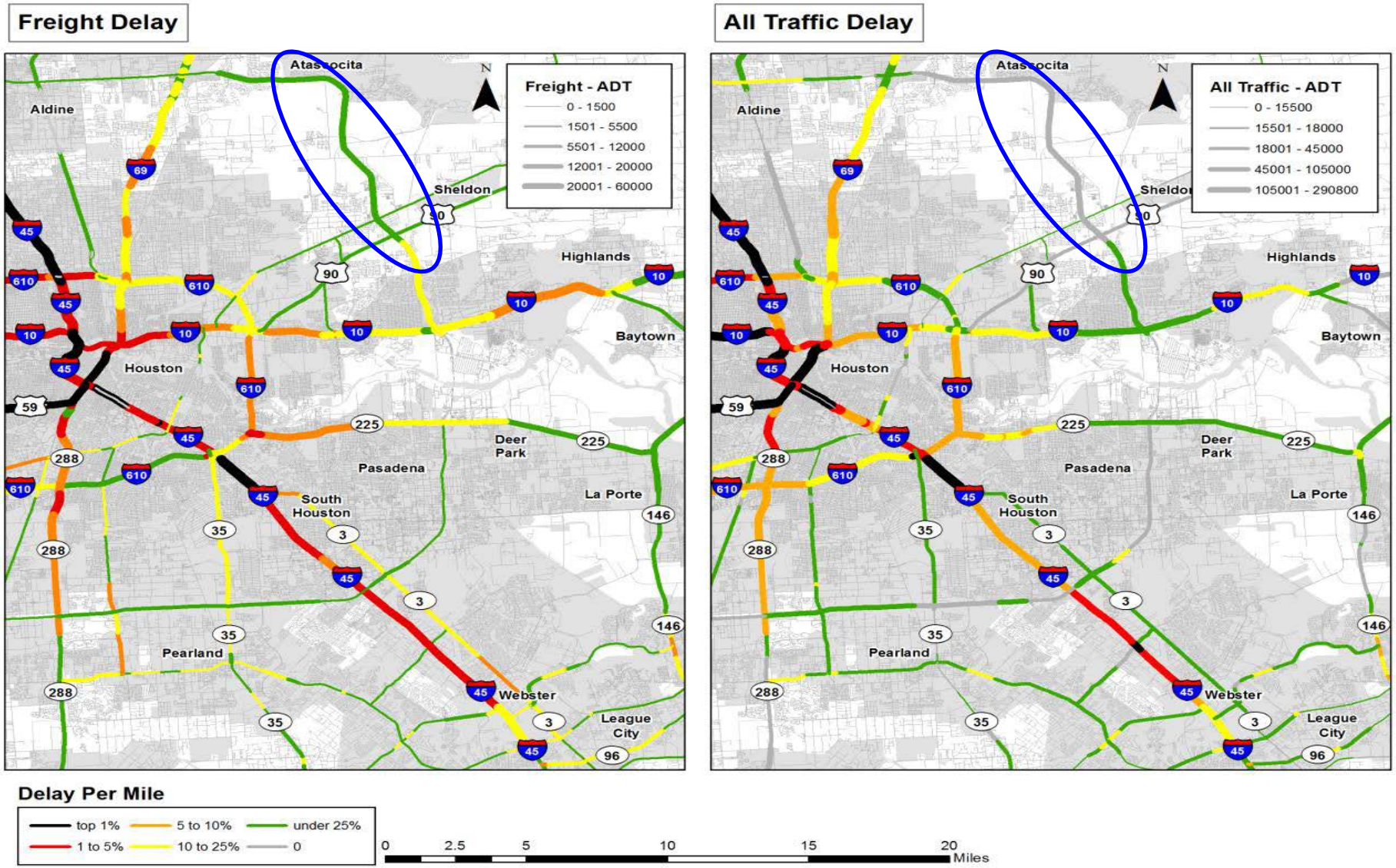
2. Dallas-Fort Worth: Truck Delay Vs All Traffic Delay 2015



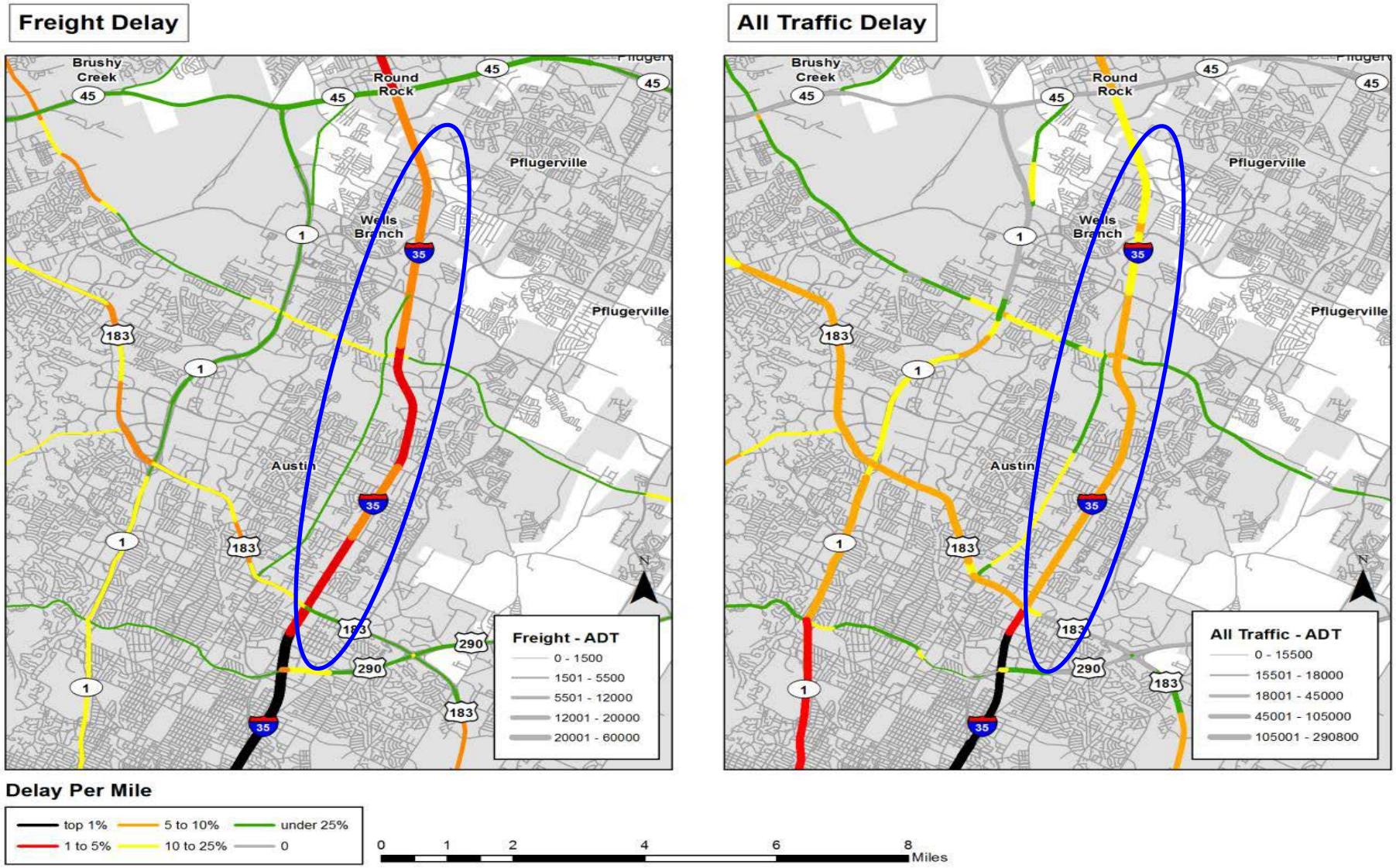
2. Houston: Truck Congestion 2015



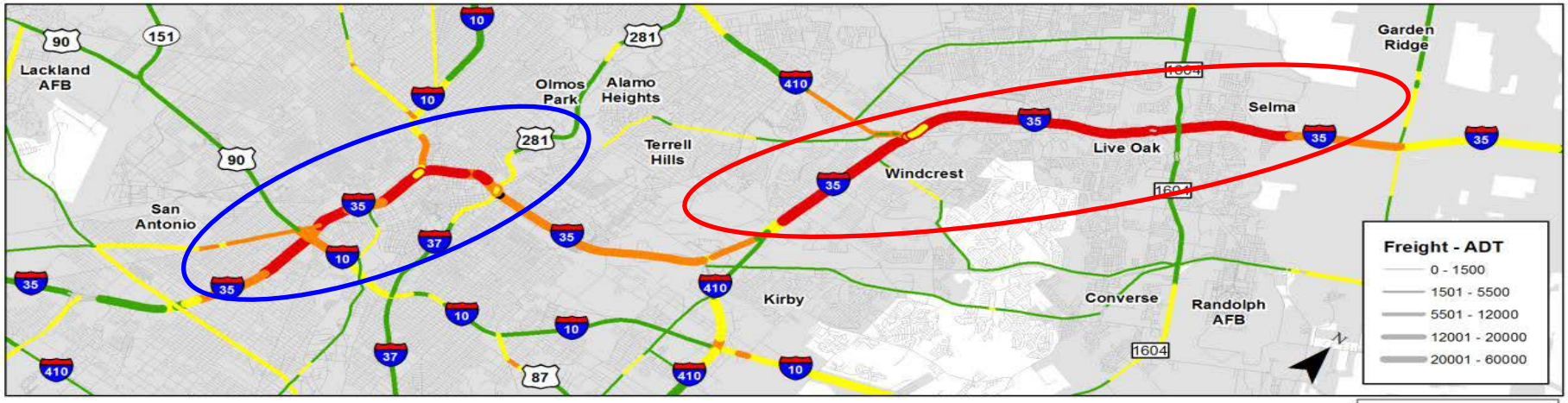
2. Houston: Truck Delay Vs All Traffic Delay 2015



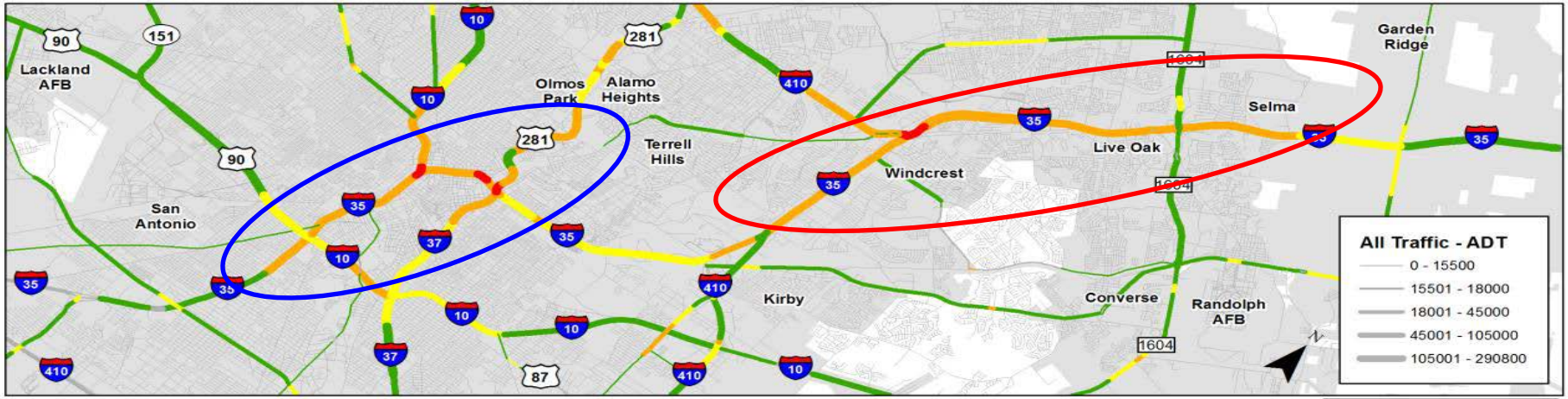
2. Austin: Truck Delay Vs All Traffic Delay 2015



2. San Antonio: Truck Delay Vs All Traffic Delay



Freight Delay



All Traffic Delay

Delay Per Mile

top 1% | 5 to 10% | under 25%
1 to 5% | 10 to 25% | 0

0 1.5 3 6 9 12 Miles

2. Strategies for Addressing Last-Mile Delivery in Urban Areas

Idea	Truck Congestion Impact	Time to Apply	Score
Truck Incentives and Use Restrictions, including off-peak use	H	Short	10
Truck Lane Restrictions or Truck Route Designations	H	Short	10
Freight Traveler Information Systems	H	Short	10
Dynamic Truck Restrictions	M	Short	8
Freight Bottleneck Removal	H	Moderate	8
Commercial Vehicle Accommodations	M	Short	8
Freight Traffic Management and Incident Management Centers	H	Moderate	8
Truck-Shipper Matching Systems	M	Short	8
Dedicated Truck Roadways	H	Moderate to long	7
Smart Truck Parking	M	Short to moderate	7
Port-related rail improvements	M	Short to moderate	7
Ramp configurations	M	Moderate	6
Truck Lanes in Surge Freight Flows	M	Moderate	6
Truck Platooning	M	Moderate	6

Idea	Truck Congestion Impact	Time to Apply	Score
Traffic Signal Coordination Systems	M	Moderate	6
Package consolidation boxes/lockers	L	Short	6
Multimodal Transportation Corridors	M	Moderate	6
Freight Village/Freight oriented land use and facility development	M	Moderate	6
Port ITS Systems, Truck-terminal coordination	M	Moderate to long	5
Border inspection technology	M	Long	4
Grade Separation	L	Moderate	4
Fixed Guideway Automated Freight Systems	L	Moderate	4
Transit or Passenger Rail Cargo Delivery	L	Moderate	4
Short-Haul Rail Movements within Urban Areas	L	Moderate	4
Border Institutional arrangements	L	Moderate to long	3
Freight Rail Improvements and Public-Private Partnerships	L	Long	2
Railroad Infrastructure Relocation	L	Long	2
Unmanned Aircraft Systems (UAS)	L	Long	2

Identify the most problematic segments in the area.

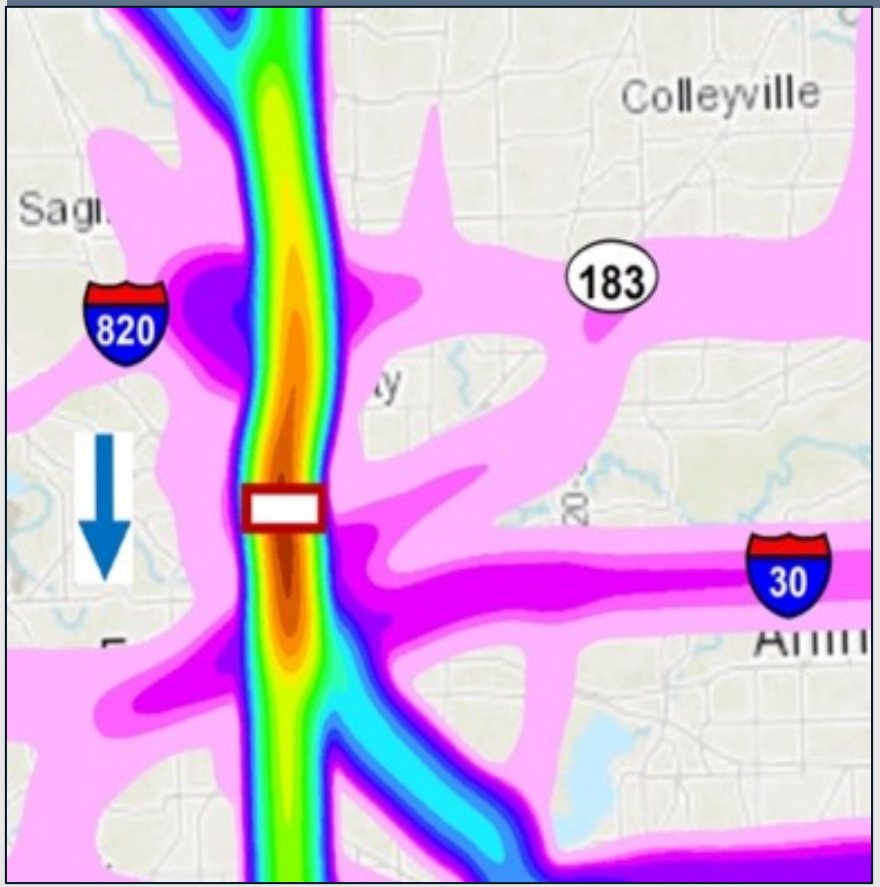
Table 1. Problematic Segments Identified in the Texas 100 Most Congested Roadways List

Top 100 Most Congested for Commuters		
#24: I-35W (SH 183 to I-30), 3.37 miles		
420K annual person-hours delay per mile	1.4M annual person-hours delay	$29.5M annual congestion cost ($8.8M/mile)
#28: I-35W (US 287 to SH 183), 6.39 miles		
404K hours delay per mile	2.6M hours delay	$52.9M cost ($8.3M/mile)
#88: I-35W (Alliance Gateway/SH 170 to US 287), 5.09 miles		
184K hours delay per mile	935K hours delay	$19.1M cost ($3.7M/mile)
Top 50 Most Congested Freight Bottlenecks		
#13: I-35W (SH 183 to I-30), 3.37 miles		
31K hours annual truck delay per mile	106K annual hours of truck delay	$5.4M annual truck congestion cost ($1.6M/mile)
#23: I-35W (US 287 to SH 183), 6.39 miles		
26K hours per mile	165K hours of delay	$8.5M cost ($1.3M/mile)
#55: I-35W (Alliance Gateway/SH 170 to US 287), 5.09 miles		
12K hours delay per mile	62K hours of delay	$3.1M cost ($0.6M/mile)

Most Congested **Under Construction**

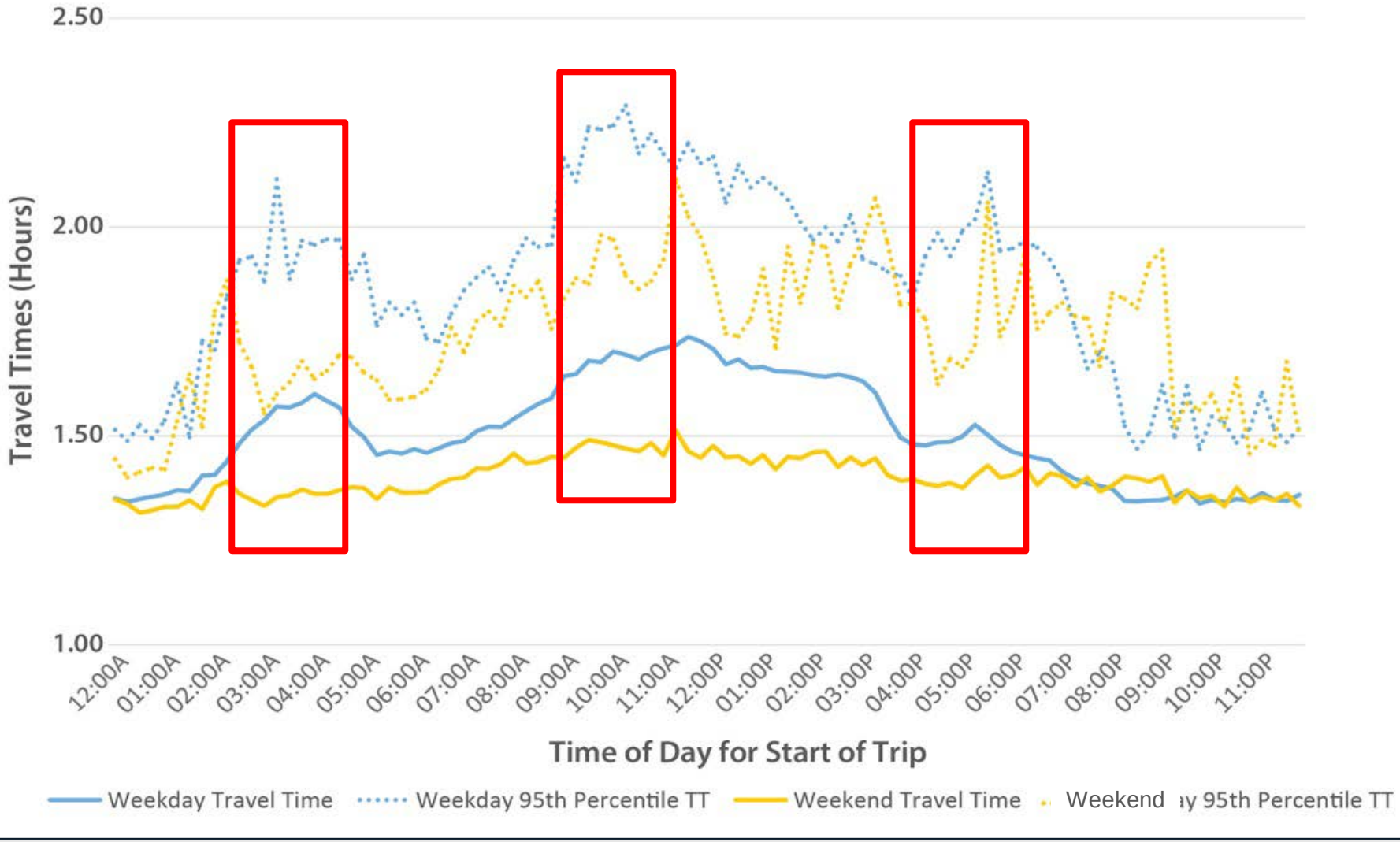
3. Texas Freight Fluidity Analysis – Heat Maps

Fort Worth: I-35W from SH 183 to I-30 (3.37 miles)



Congestion	Passenger	Truck
Annual delay per mile (hours)	420,000	31,000
Annual delay: person/truck hours	1,400,000	106,000
Annual congestion cost	$29,500,000	$5,400,000

3. Texas Freight Fluidity Analysis – Travel Time Traces



Travel-Time Traces for I-35W Southbound **(Denton to Hillsboro)**

What Investments are We Making to Address Last-Mile Freight Delivery In Urban Areas?

Texas Clear Lanes Program

Texas Clear Lanes is a statewide strategic plan to provide congestion relief through non-tolled roads and is focused on five major metro areas Austin, Dallas, Fort Worth, Houston and San Antonio:

- More than 65 percent of the Texas population is located in these five metropolitan areas, according to the Texas state demographer.
- Home to 92 of Texas' "Top 100" chokepoints based on the Nov. 1, 2017, Texas A&M Transportation Institute list:
  - Fort Worth: 7 chokepoints
  - Dallas 24 chokepoints
  - Houston 38 chokepoints
  - Austin 13 chokepoints
  - San Antonio 10 Chokepoints

Texas Clear Lanes Program

Initial funding under Texas Clear Lanes of $1.3 billion in non-tolled projects to the five metro areas

Metro Area	Formula Distribution	Funding (millions)
Austin	12.2%	$158.6
Dallas	28.0%	$364.0
Forth Worth	12.6%	$163.8
Houston	34.1%	$443.3
San Antonio	13.1%	$170.3
	100.0%	**$1.3 billion**

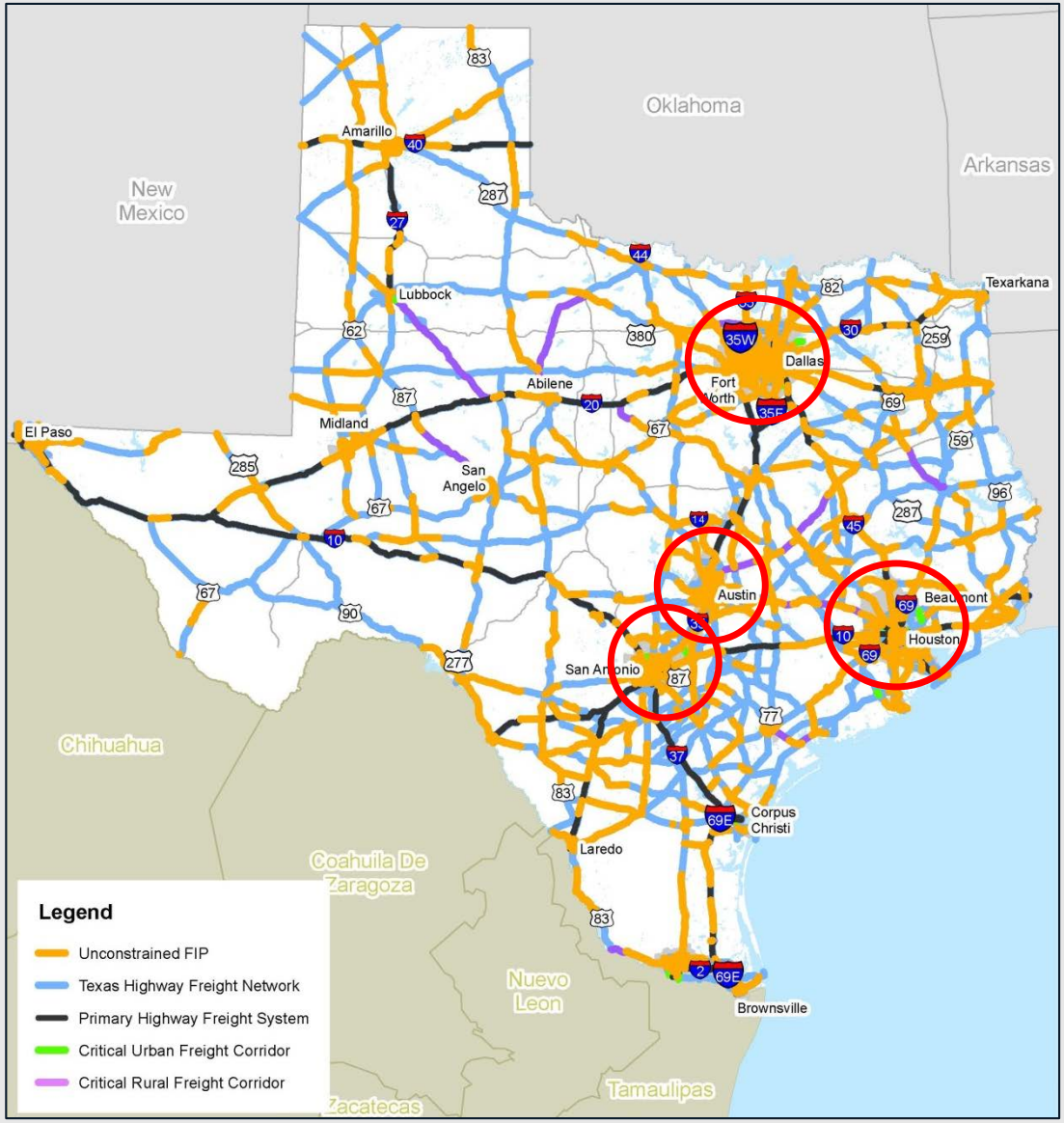
Each Texas Clear Lanes project is on the freight network

Current Texas Clear Lanes Programming

District	Awarded for Construction FY 16–18 ($M)	Programmed in 2019 UTP ($M)	Total ($M)
Austin	$144	$667	$811
Dallas	$332	$915	$1,246
Fort Worth	$518	$340	$859
Houston	$334	$1,832	$2,166
San Antonio	$281	$504	$785
Totals	$1,609	$4,258	$5,867
		Texas Clear Lanes Balance Available	**$755**
		Grand Total	**$6,622**

Note: $199M for engineering and right-of-way expenditures is not included in the above.

Texas Freight Mobility Plan Investments – Urban Areas

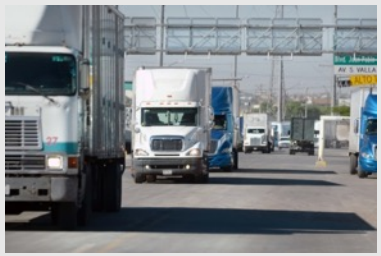


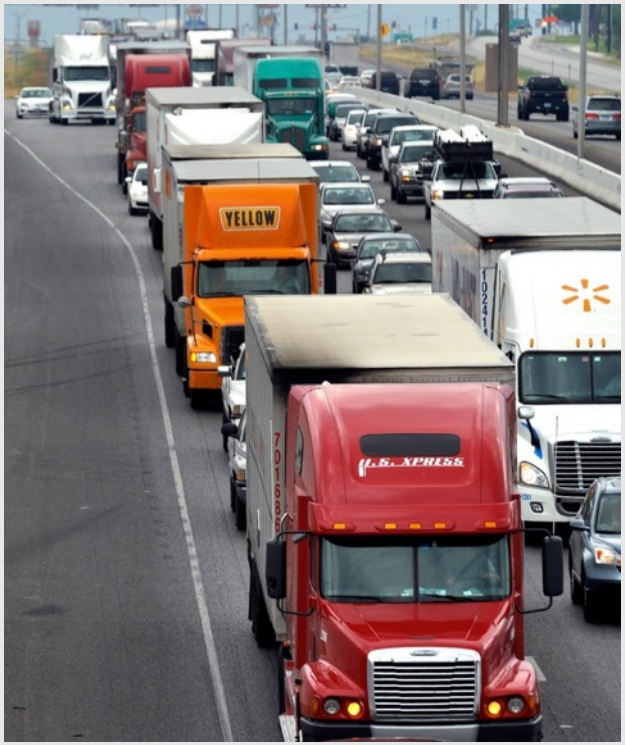
10 Year Freight Investment Plan

	Number of Projects	% of Projects	Cost ($B)	% of Total Cost
Urban	**1,486**	**63%**	**$54.9**	**85%**
Rural	884	37%	$9.8	15%
Total	2,370	100%	$64.7	100%

- 63% of planned highway projects are in urban areas
- 85% of planned highway funds are in urban areas

Texas Department of Transportation



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