



Applying Bottleneck Data: Statewide Multimodal Freight Plan Update & 2022 Statewide Freight Bottleneck Study

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Topics

- Background: Freight Plan Update
- 2022 Statewide Freight Bottleneck Study (SFBS)
 - Purpose
 - Data & Methodology
 - Bottleneck Locations
 - Other Findings
- Other takeaways from Statewide Multimodal Freight Plan (SMFP)
- Ongoing Freight & Logistics efforts



Background: Freight Plan Update

- Timeline of efforts
- Status



Statewide Freight Bottleneck Study: Purpose & Need

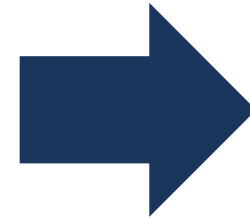
- States are required to identify a list of **freight bottlenecks** on the **Interstate System**
- Part of transportation performance measure reporting, required **every four years**
- Bottleneck analysis originally called for in **MAP-21**, maintained in **FAST Act** and **IIJA**
- Specific requirements set out in CFR

Code of Federal Regulations: Title 23 - Highways, Part 490, Subpart F - National Performance Management Measures To Assess Freight Movement on the Interstate System

§ 490.611 Calculation of Truck Travel Time Reliability metrics.

- (a) The State DOT shall calculate the TTTR Index metric (referred to as the TTTR metric) for each Interstate System reporting segment in accordance with the following:
 - (1) A truck travel time data set shall be created from the travel time data set to be used to calculate the TTTR metric. This data set shall include, for each reporting segment, a ranked list of average truck travel times, to the nearest second, for 15 minute periods of a 24-hour period for an entire calendar year that:
 - (i) Includes "AM Peak" travel times occurring between the hours of 6 a.m. and 10 a.m. for every weekday (Monday –Friday) from January 1st through December 31st of the same year;
 - (ii) Includes "Mid Day" travel times occurring between the hours of 10 a.m. and 4 p.m. for every weekday (Monday-Friday) from January 1st through December 31st of the same year;
 - (iii) Includes "PM Peak" travel times occurring between the hours of 4 p.m. and 8 p.m. for every weekday (Monday-Friday) from January 1st through December 31st of the same year;
 - (iv) Includes "Overnight" travel times occurring between the hours of 8 p.m. and 6 a.m. for every day (Sunday-Saturday) from January 1st through December 31st of the same year; and
 - (v) Includes "Weekend" travel times occurring between the hours of 6 a.m. and 8 p.m.

SFBS findings inform the Freight Plan



Defining a Bottleneck

1. Recurring Congestion

- Vehicle-Hours of Delay per Mile (VHD/mi)
- **Average** travel time vs **Free Flow** travel time
- Aggregate measure, weighted by # of trucks

$$VHD = \sum_{\forall h} (\bar{\tau}_h - \tau_{h,10\%}) \times T_h$$

2. Segment Reliability

- Truck Travel Time Reliability Index (TTTR)
- **Worst Case** travel time vs **Average** travel time
- Independent of volume, period with highest TTTR is reported

$$TTTR = \max_{\forall h} \frac{\tau_{h,95\%}}{\bar{\tau}_h}$$

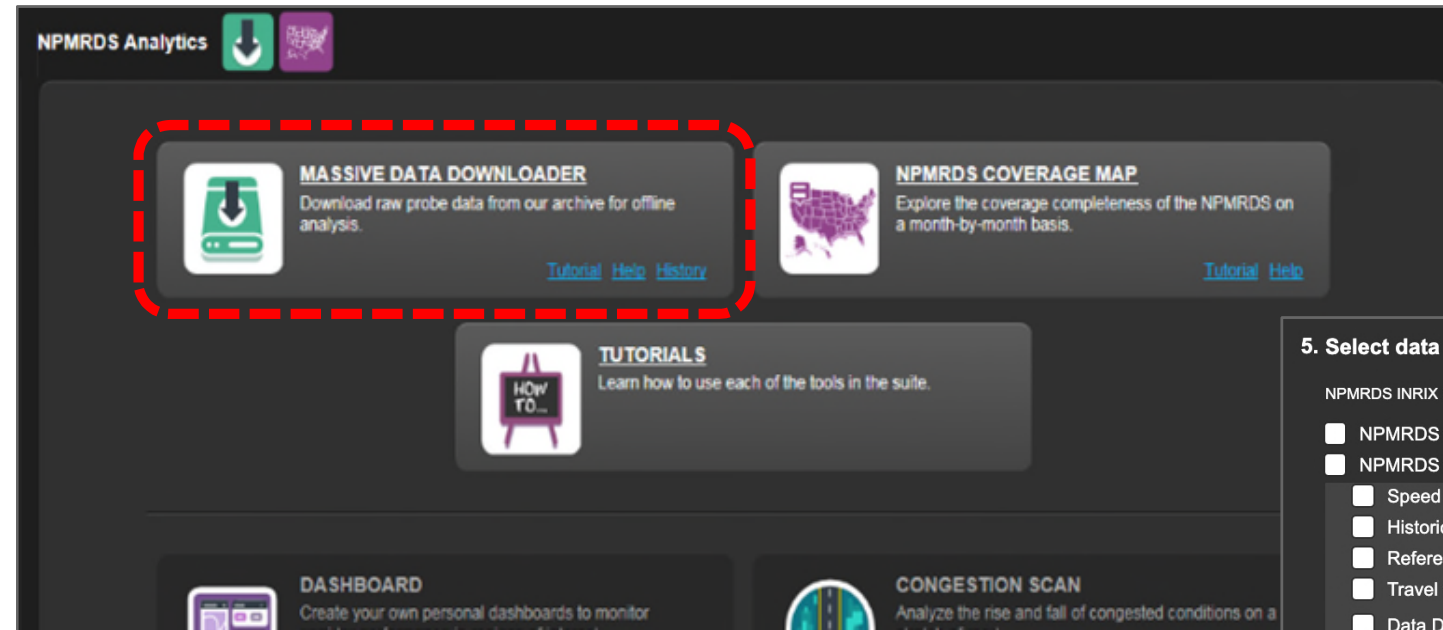
Alternative Metric:

$$VHU = \sum_{\forall h} (\tau_{h,95\%} - \bar{\tau}_h) \times T_h$$

(not used)

Source Data: National Performance Management Research Data Set

- RITIS → NPMRDS
- MDD: “Massive Data Downloader”
- Various query options to support research and **performance measure reporting**
- Designed for **bulk data analysis**



aadt	aadt_combi	aadt_singl	county	direction	intersection	miles	road	thru lanes	tmc	year	TTTRAMP	TTTAMP50PC	TTTAMP95PC	TTTRMIDD	TTTMIDD
101450	12174	2029	DAVIDSON	WESTBOUND	DAVIDSON/WILSON COUNTY LINE	0.043	I-40	8	121N04204	2021	1.1	2	2	1.04	
101450	12174	2029	DAVIDSON	WESTBOUND	TN-45/OLD HICKORY BLVD/EXIT 221	1.574	I-40	8	121-04203	2021	1.14	82	93	1.05	
118397	12981	4208	DAVIDSON	WESTBOUND	TN-45/OLD HICKORY BLVD/EXIT 221	0.424	I-40	8	121N04203	2021	1.17	22	26	1.06	
140190	14019	7010	DAVIDSON	WESTBOUND	TN-45/EXIT 221	0.067	I-40	8	121-04202	2021	2.44	4	9	1.3	
140190	14019	7010	DAVIDSON	WESTBOUND	STEWARTS FERRY PIKE/EXIT 219	1.012	I-40	8	121-04201	2021	1.66	54	89	1.06	
140190	14019	7010	DAVIDSON	WESTBOUND	TN-45/EXIT 221	0.345	I-40	8	121N04202	2021	2.01	19	37	1.12	
140207	14021	7011	DAVIDSON	WESTBOUND	STEWARTS FERRY PIKE/EXIT 219	0.603	I-40	8	121N04201	2021	1.37	32	44	1.05	
140220	14022	7011	DAVIDSON	WESTBOUND	TN-255/DONELSON PIKE/EXIT 216	1.834	I-40	8	121-04200	2021	1.33	98	131	1.05	
143765	13679	7188	DAVIDSON	WESTBOUND	TN-255/DONELSON PIKE/EXIT 216	0.445	I-40	8	121N04200	2021	1.52	24	37	1.06	
159703	13395	7006	DAVIDSON	WESTBOUND	TERMINAL DR/EXIT 216	0.428	I-40	8	121-04199	2021	1.9	24	45	1.09	
168320	13466	6733	DAVIDSON	WESTBOUND	TERMINAL DR/EXIT 216	0.144	I-40	8	121N04199	2021	2.1	8	17	1.14	
168320	13466	6733	DAVIDSON	WESTBOUND	TN-155/BRILEY PKWY/EXIT 215	0.458	I-40	8	121-04198	2021	1.82	27	48	1.19	
162720	13700	6509	DAVIDSON	WESTBOUND	TN-155/BRILEY PKWY/EXIT 215	0.903	I-40	8	121N04198	2021	2.21	52	114	1.21	
155540	13999	6222	DAVIDSON	WESTBOUND	SPENCE LN/EXIT 213	0.747	I-40	10	121-04197	2021	3.07	47	145	1.79	
155540	13999	6222	DAVIDSON	WESTBOUND	SPENCE LN/EXIT 213	0.250	I-40	10	121N04197	2021	3.4	19	65	2.51	
155540	13999	6222	DAVIDSON	WESTBOUND	I-24/EXIT 213	0.077	I-40	10	121-04196	2021	3.46	6	22	2.81	
155540	13999	6222	DAVIDSON	WESTBOUND	I-24/EXIT 213	0.448	I-40	4	121N04196	2021	3.45	36	123	3.14	
163890	13012	7326	DAVIDSON	WESTBOUND	I-24/EXIT 211	0.225	I-40	4	121N04208	2021	2.23	22	50	1.99	
146070	13146	7304	DAVIDSON	WESTBOUND	2ND AVE/EXIT 210	0.150	I-40	4	121-04207	2021	1.76	14	25	1.63	
146070	13146	7304	DAVIDSON	WESTBOUND	2ND AVE/EXIT 210	0.133	I-40	6	121N04207	2021	1.62	12	19	1.45	
146070	13146	7304	DAVIDSON	WESTBOUND	US-41/US-31 ALT/4TH AVE/EXIT 210	0.126	I-40	6	121-04206	2021	1.58	11	17	1.32	
146070	13146	7304	DAVIDSON	WESTBOUND	US-41/US-31 ALT/4TH AVE/EXIT 210	0.144	I-40	6	121N04206	2021	1.58	12	18	1.25	
146070	13146	7304	DAVIDSON	WESTBOUND	I-65/EXIT 210	0.064	I-40	6	121-04205	2021	1.6	5	8	1.21	
146070	13146	7304	DAVIDSON	WESTBOUND	I-65/EXIT 210	0.196	I-40	6	121N04205	2021	1.98	15	29	1.19	
126680	13935	6334	DAVIDSON	WESTBOUND	I-65/EXIT 208	0.547	I-40	6	121-04186	2021	1.09	34	38	2.27	35
108730	15222	3262	DAVIDSON	WESTBOUND	I-65/EXIT 208	0.410	I-40	4	121N04186	2021	1.09	27	30	1.27	27
108557	15218	3277	DAVIDSON	WESTBOUND	JEFFERSON ST/EXIT 207	0.664	I-40	6	121-04185	2021	1.08	42	45	1.09	42
100130	15020	4005	DAVIDSON	WESTBOUND	JEFFERSON ST/EXIT 207	0.255	I-40	6	121N04185	2021	1.08	16	17	1.09	16

5. Select data sources and measures ?

NPMRDS INRIX is available from January 1, 2016 to March 31, 2022 in one year intervals. [i](#)

- NPMRDS from INRIX (Passenger vehicles)
- NPMRDS from INRIX (Trucks and passenger vehicles)
 - Speed
 - Historic average speed
 - Reference speed
 - Travel time
 - Data Density [i](#)
- NPMRDS from INRIX (Trucks)
 - Speed
 - Historic average speed
 - Reference speed
 - Travel time
 - Data Density [i](#)

6. Select units for travel time

- Seconds
- Minutes

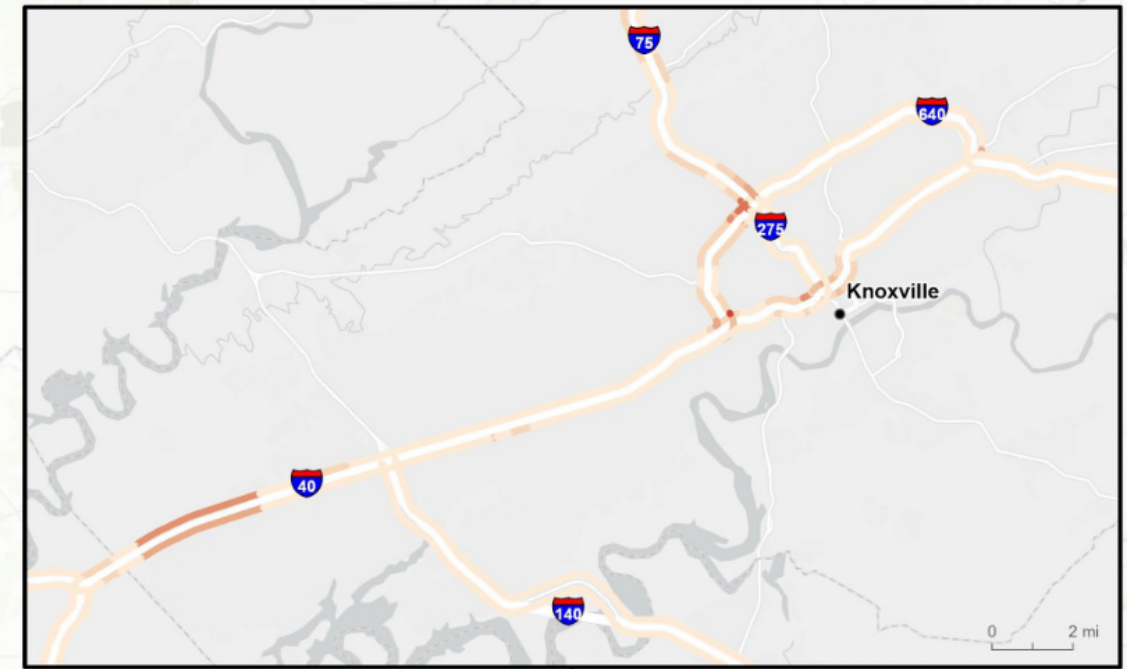
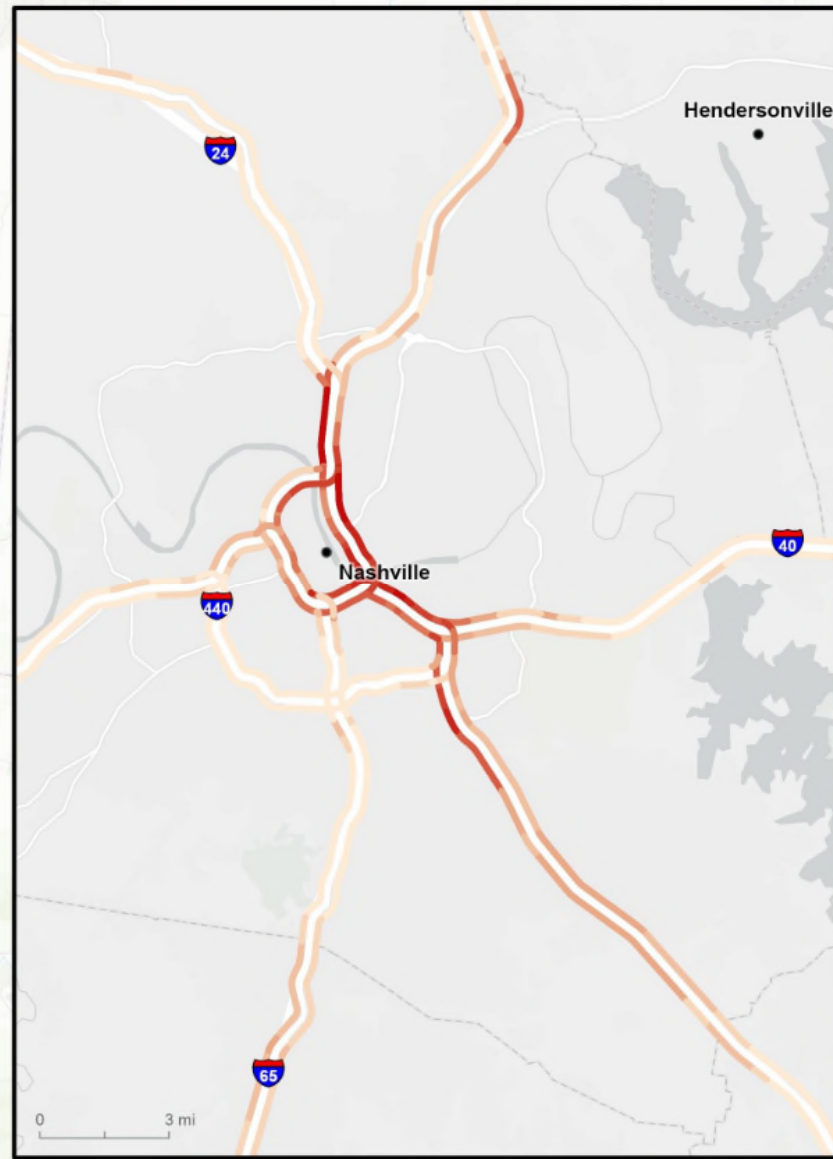
7. Null record handling

- Include records with null values

8. Select averaging

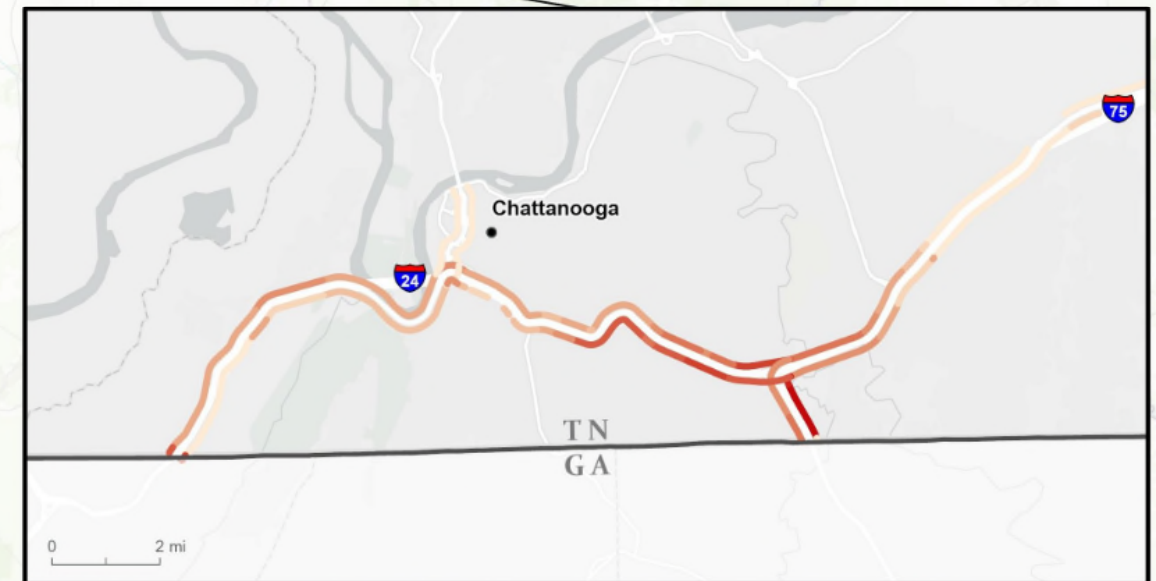
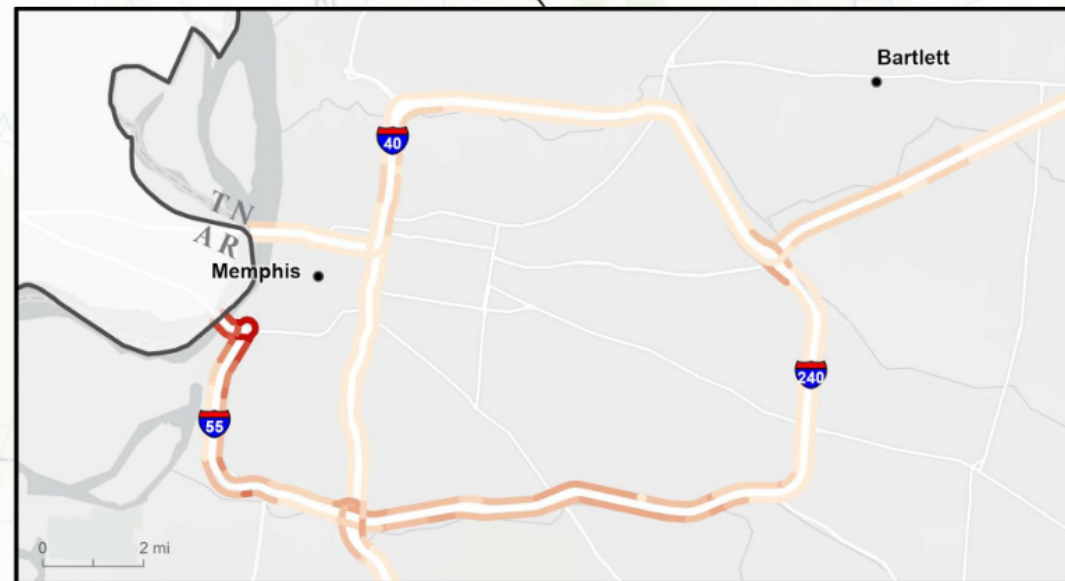
- Don't Average
- 10 minutes
- 15 minutes
- 1 hour

Figure 3.
Truck Vehicle-Hours of Delay
per Mile per Day, Statewide



Truck Vehicle Hours of Delay
per Mile, per Day

- ≤ 18.2940
- 18.2941 - 26.9260
- 26.9261 - 33.3420
- 33.3421 - 44.0240
- 44.0241 - 56.5360
- 56.5361 - 72.2170
- 72.2171 - 94.8410
- 94.8411 - 136.5060
- 136.5061 - 181.1720
- > 181.1720

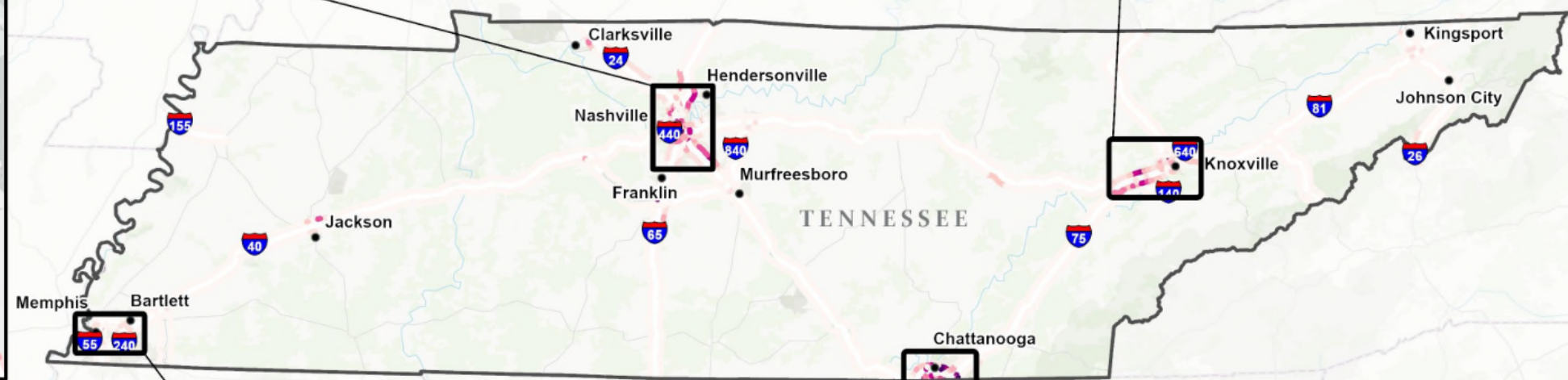
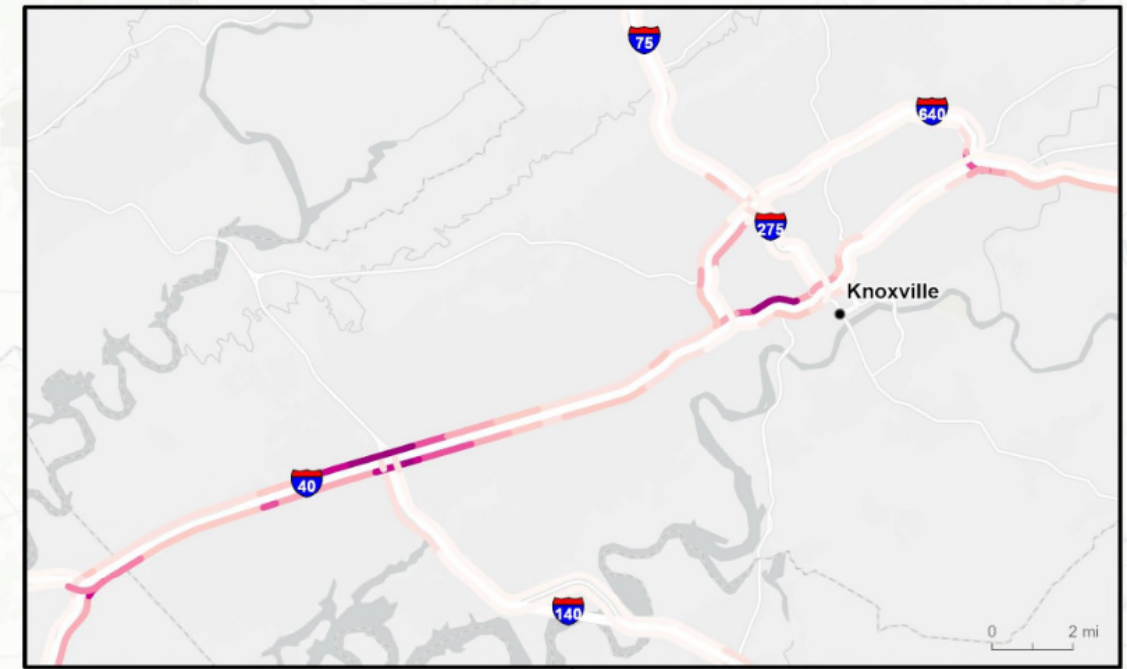
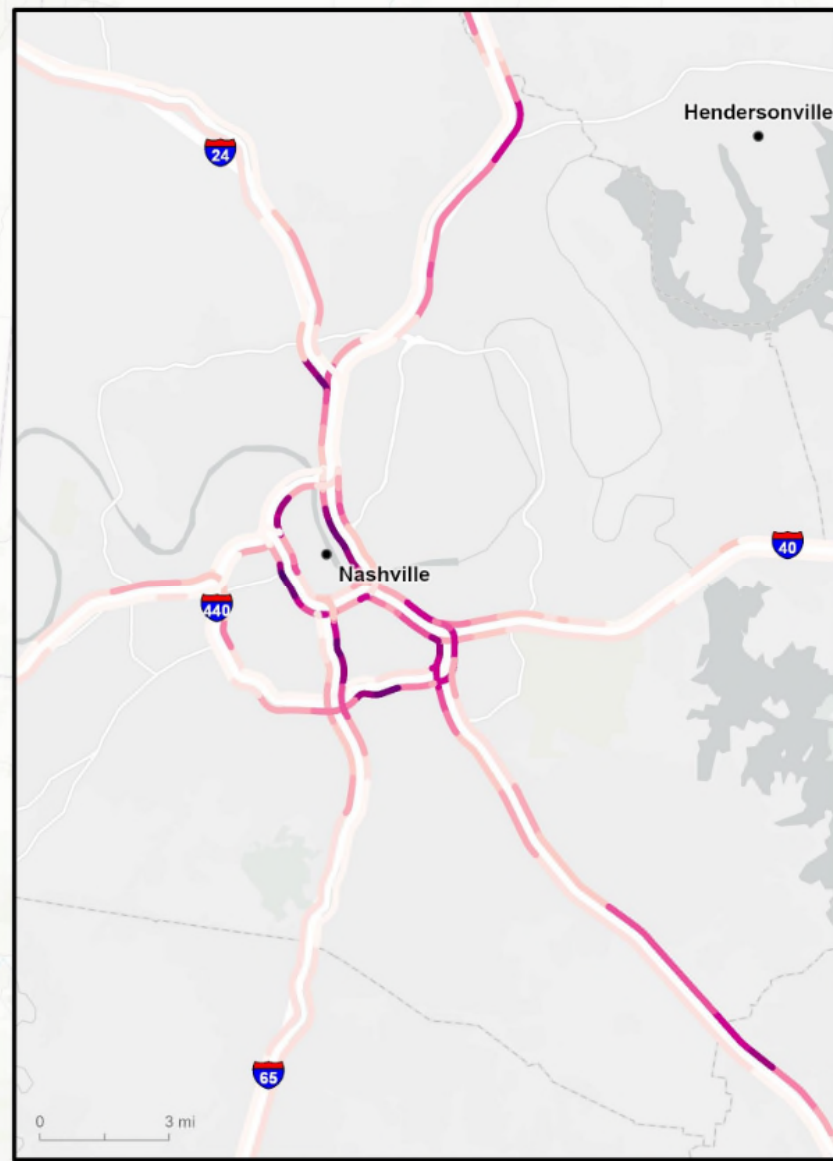


0 100 mi

0 2 mi

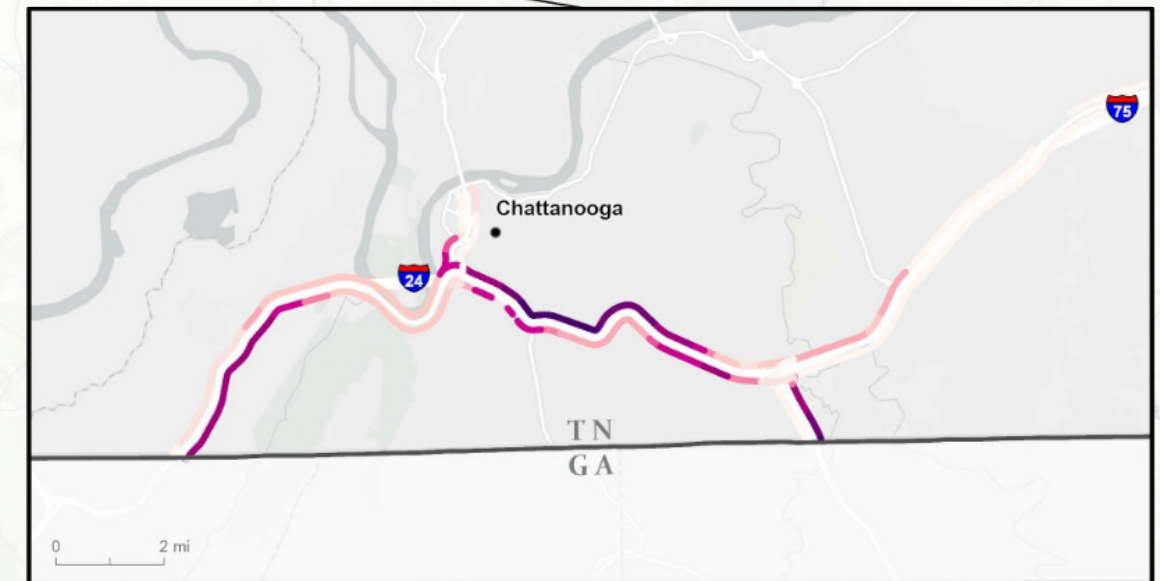
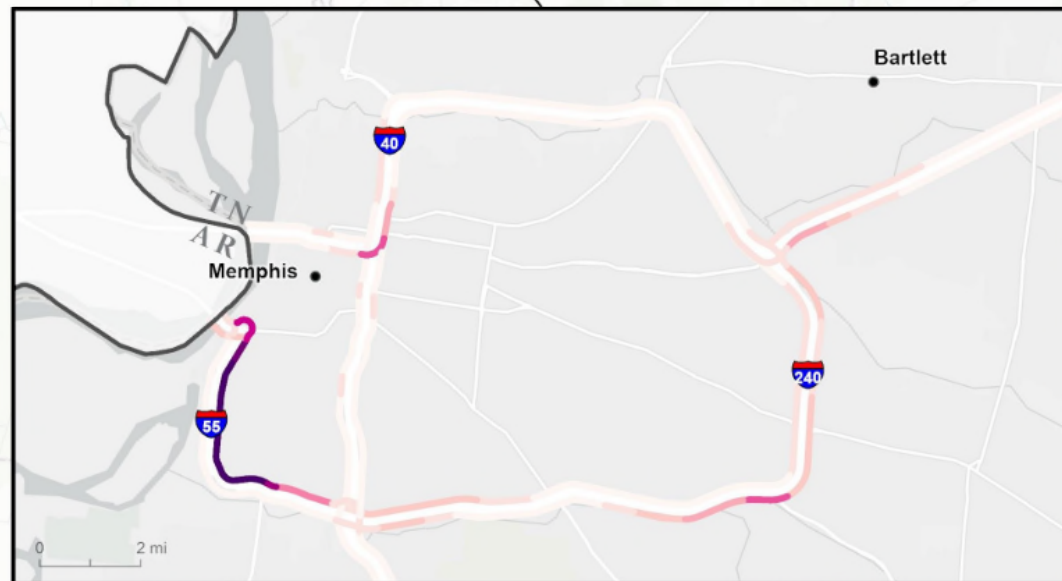
0 2 mi

Figure 4.
Truck Travel Time
Reliability Index, Statewide



Truck Travel Time
Reliability Index

- ≤ 1.390
- 1.391 - 1.920
- 1.921 - 2.355
- 2.356 - 3.160
- 3.161 - 3.506
- 3.507 - 3.916
- 3.917 - 4.548
- 4.549 - 5.743
- 5.744 - 6.601
- > 6.601



Screening & Grouping

- Screening
 - Identify breaks (natural cutoffs) in data
- Ranking
 - Normalized Z score of VHD/mi plus TTTR
- Grouping
 - Develop clusters based on Top 150 segments
 - System interchanges used as breakpoints ▶
 - 26 clusters containing 163 segments, including 149 of Top 150
- Prioritization
 - Same Z score approach as above
- Validation
 - Input from Statewide Freight Advisory Committee ▶



NPMRDS data limitations at system interchanges

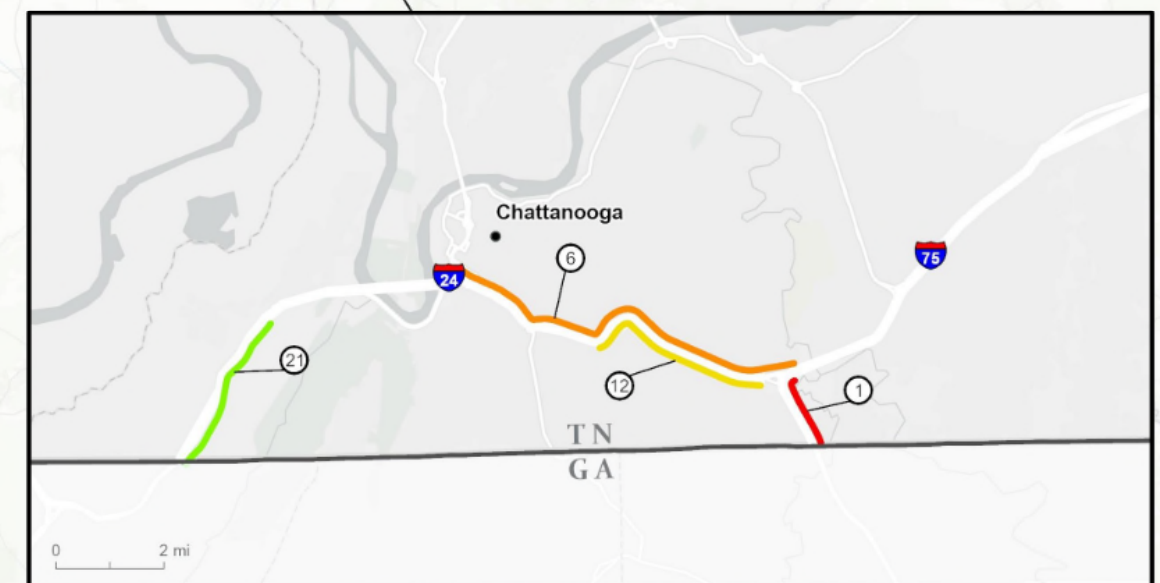
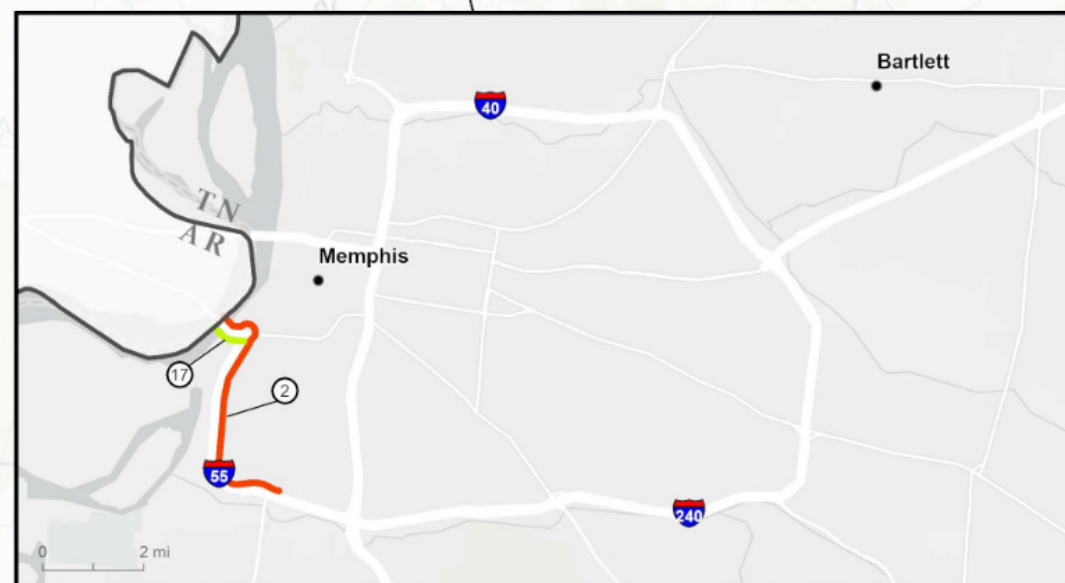
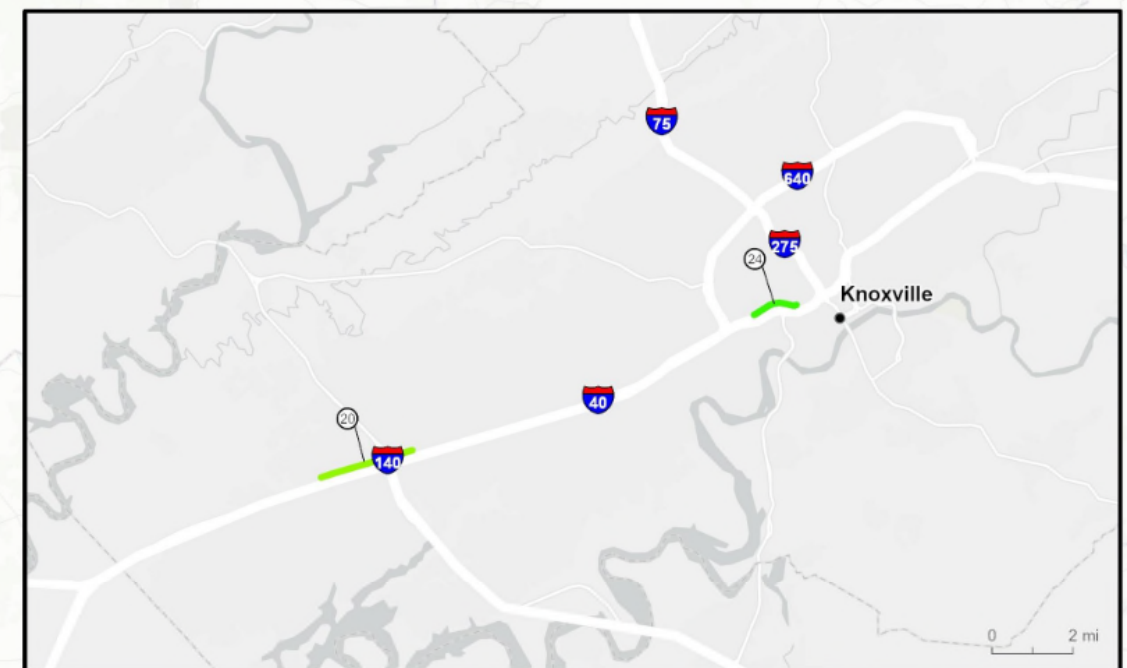
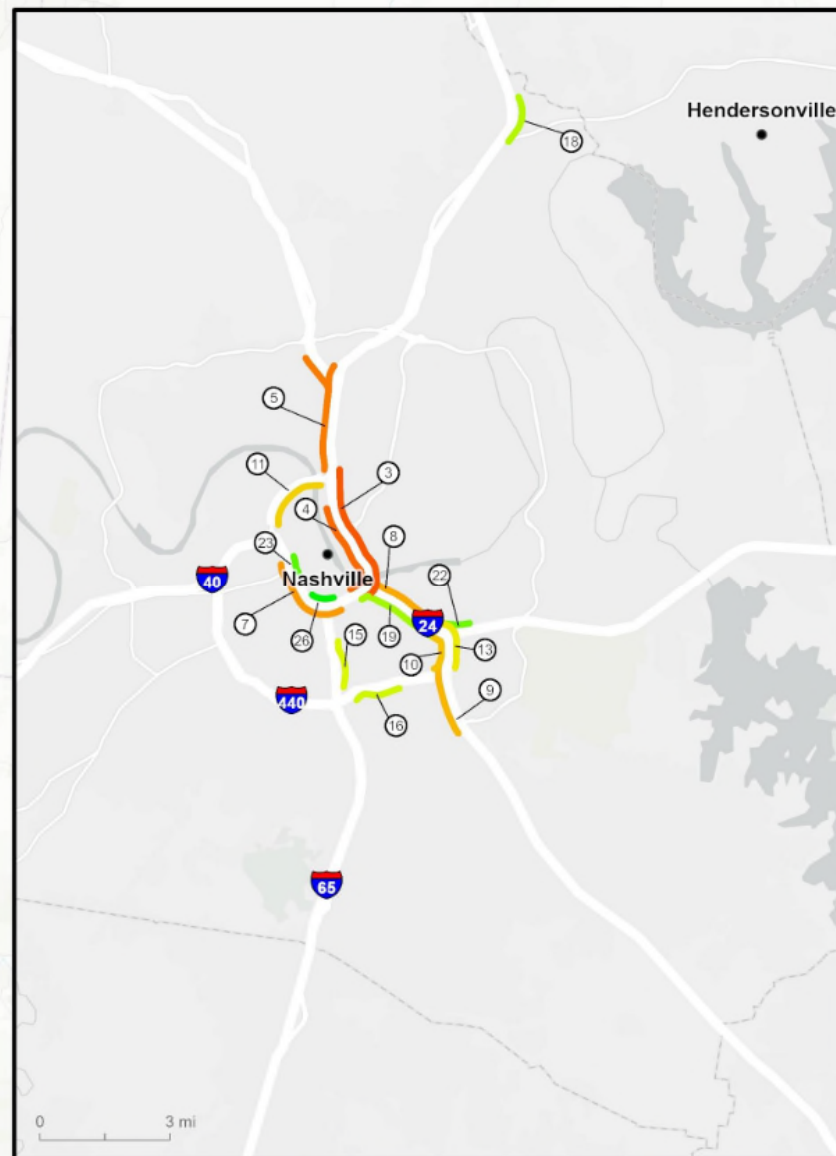
Participants at Sep 2022 FAC



Top Truck Bottleneck Locations

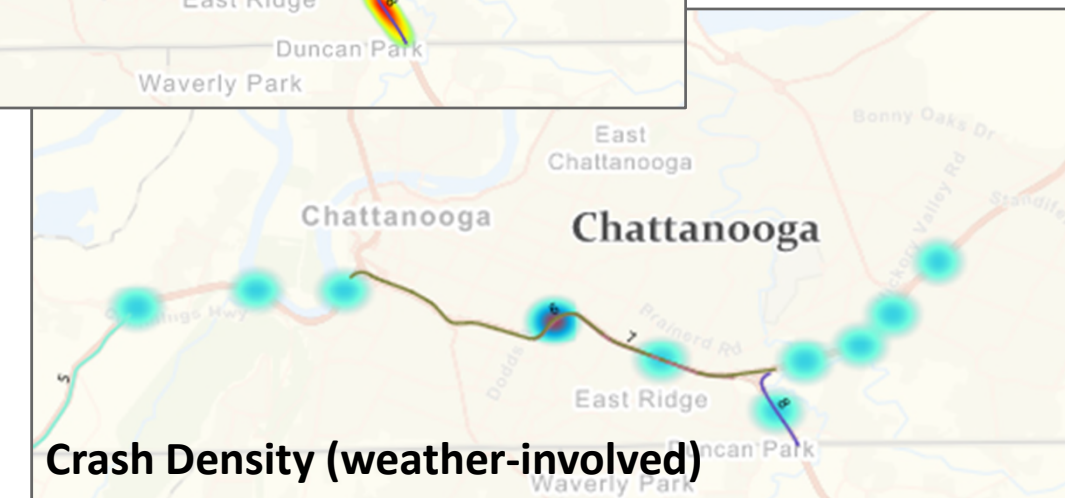
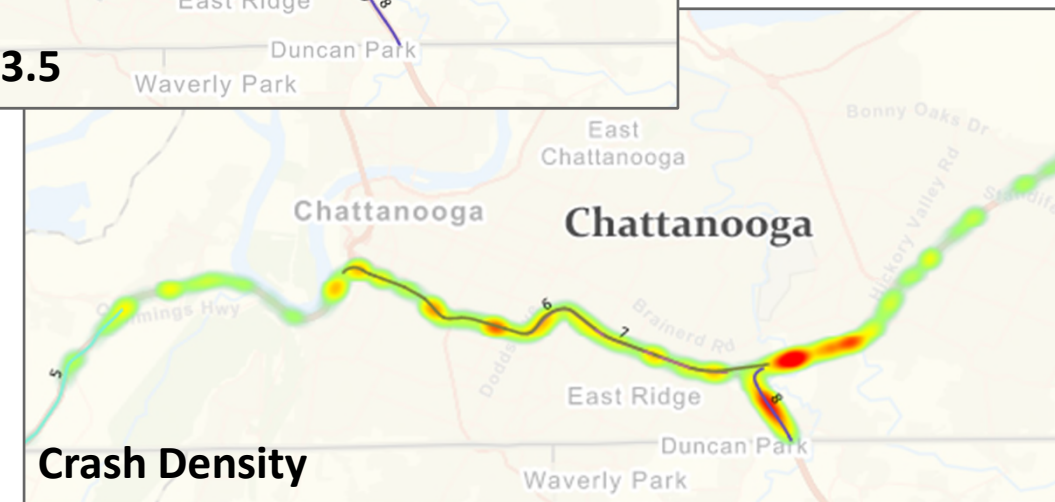
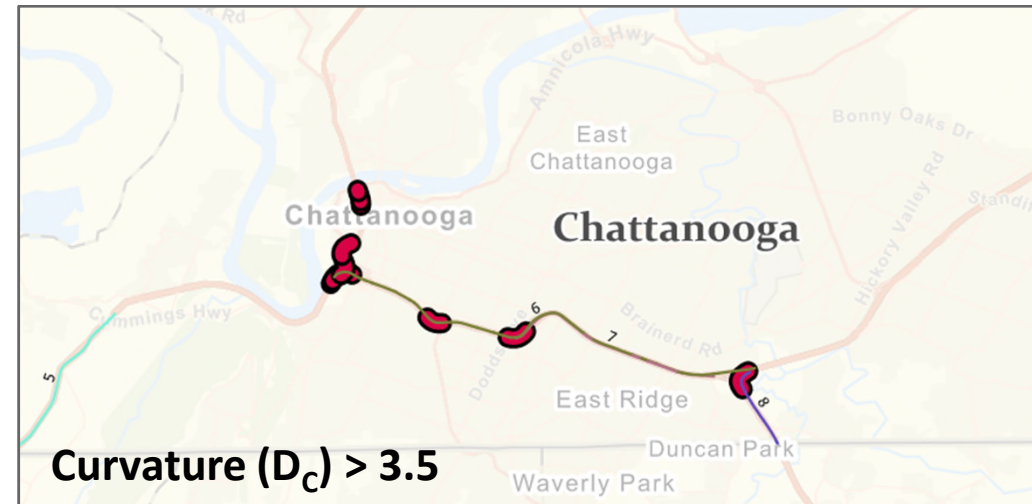
Location Details					Performance Metrics	
Rank	Route	County	Bottleneck Extent	Length	Reliability (Highest TTR)	Truck Delay (VHD/mi per day)
1.	I-75 NB	Hamilton	Georgia State Line to I-75/I-24 Interchange	1.51 mi	6.97	248.38
2.	I-55 NB	Shelby	S 3rd Street (Exit 7) to Arkansas State Line	5.19 mi	9.08	64.81
3.	I-24 WB	Davidson	I-24/I-40 Interchange (western) to I-24/I-65 Interchange (southern)	3.24 mi	4.28	203.01
4.	I-24 EB	Davidson	Spring St (Exit 47) to I-24/I-40 Interchange (southern)	2.44 mi	6.49	131.64
5.	I-24/I-65 EB/SB	Davidson	I-24/I-65 Interchange (northern) to I-24/I-65 Interchange (southern)	3.40 mi	5.97	139.15
6.	I-24 WB	Hamilton	I-75/I-24 Interchange to I-24/US 27 (SR 29) Interchange	7.39 mi	7.60	53.58
7.	I-40/I-65 EB/SB	Davidson	Charlotte Ave (Exit 209) to I-40/I-65 Interchange (southern)	1.77 mi	7.06	61.84
8.	I-24/I-40 WB	Davidson	I-24/I-40 Interchange (eastern) to I-24/I-40 Interchange (western)	2.10 mi	4.21	143.56
9.	I-24 EB	Davidson	I-24/I-440 Interchange to SR 155 (Briley Pkwy)	1.66 mi	4.42	122.23
10.	I-24 EB	Davidson	I-24/I-40 Interchange (eastern) to I-24/I-440 Interchange	1.24 mi	5.74	75.39
11.	I-65 NB	Davidson	I-40/I-65 Interchange (northern) to I-24/I-65 Interchange (southern)	1.78 mi	4.73	92.75
12.	I-24 EB	Hamilton	E 23rd Street (Exit 181) to I-75/I-24 Interchange	3.55 mi	4.71	83.22
13.	I-24 WB	Davidson	I-24/I-440 Interchange to I-24/I-40 Interchange (eastern)	1.02 mi	4.98	71.39
14.	I-65 SB	Williamson	I-65/I-840 Interchange to SR 106/Lewisburg Pike	1.90 mi	6.47	12.57
15.	I-65 NB	Davidson	I-65/I-440 Interchange to Wedgewood Ave (Exit 81)	1.07 mi	6.22	16.13
16.	I-440 EB	Davidson	I-65/I-440 Interchange to SR 11/Nolensville Rd (Exit 6)	1.17 mi	6.19	15.64
17.	I-55 SB	Shelby	Arkansas State Line to Crump Blvd/Riverside Dr (Exit 12)	0.75 mi	2.05	147.32
18.	I-65 NB	Davidson	Rivergate Pkwy (Exit 96) to SR 174/Long Hollow Pk (Exit 97)	0.98 mi	4.24	76.13
19.	I-24/I-40 EB	Davidson	I-24/I-40 Interchange (western) to I-24/I-40 Interchange (eastern)	2.11 mi	4.02	69.23
20.	I-40/I-75 WB/SB	Knox	I-40/I-140 Interchange to SR 131/Lovell Rd (Exit 374)	2.35 mi	5.62	11.70
21.	I-24 EB	Hamilton	Georgia State Line to US 41/Cummings Hwy (Exit 174)	3.11 mi	5.18	18.26
22.	I-40 WB	Davidson	Spence Ln (Exit 213) to I-24/I-40 Interchange (eastern)	0.78 mi	3.46	70.04
23.	I-40/I-65 WB/NB	Davidson	Church Street to Clinton Street	0.44 mi	3.76	58.57
24.	I-40 WB	Knox	SR 115/Alcoa Hwy (Exit 386B) to SR 169/Middlebrook Pike	1.13 mi	4.91	20.30
25.	I-40 WB	Madison	Christmasville Rd (Exit 85) to Old Medina Rd/Campbell St (Exit 83)	0.91 mi	3.81	49.92
26.	I-40/I-65 WB/NB	Davidson	I-40/I-65 Interchange (southern) to Division Street	0.68 mi	2.24	86.11

Figure 2.
Top Truck Bottleneck Locations



Potential Causal Factors

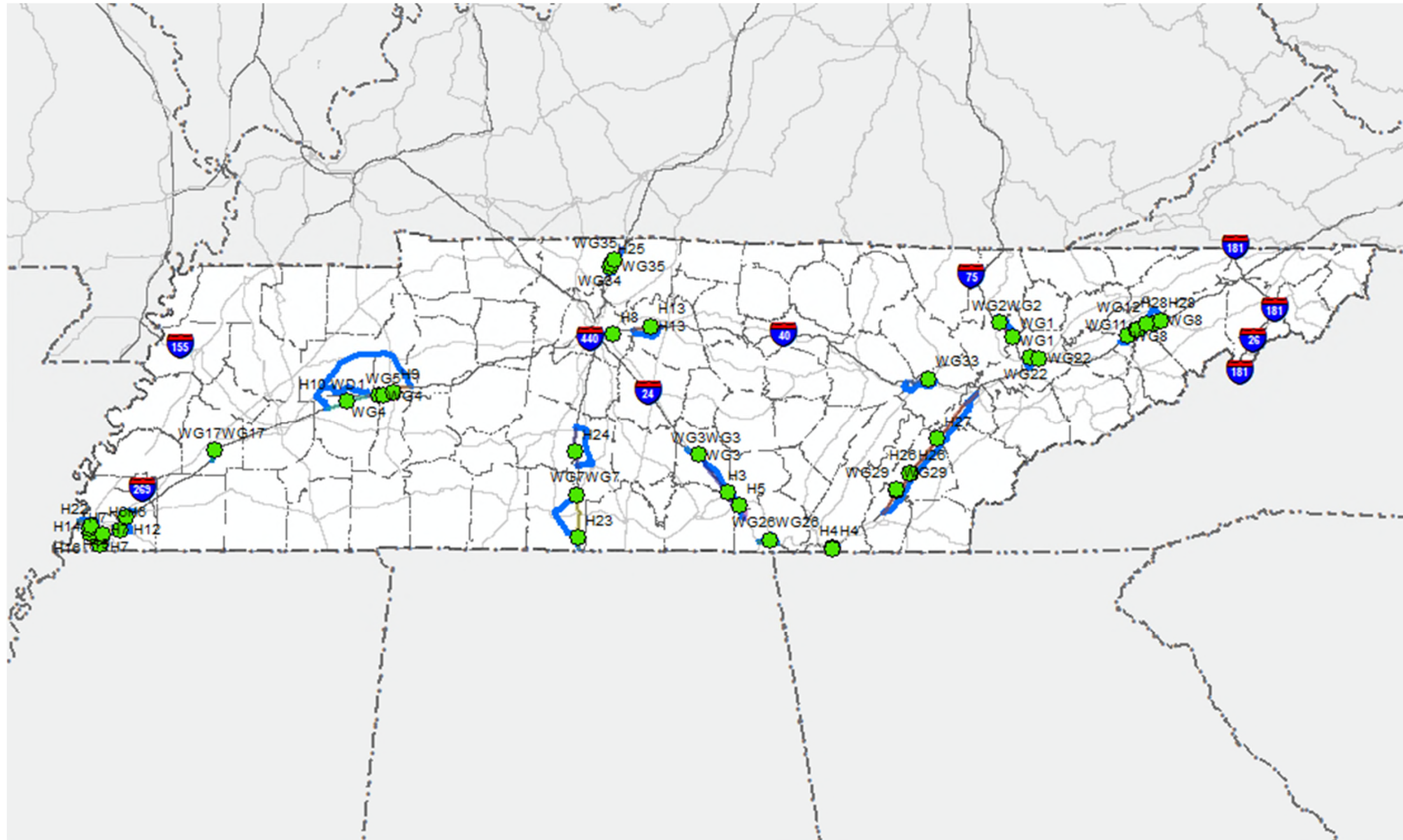
- Indicator Analysis
 - Volume-to-Capacity Ratio
 - Crashes and Incident Response
 - Steep Grades
 - Roadway Curvature
 - Severe Weather Events
- Construction & Transient Incidents
- Related: Truck Restrictions
 - Weight, Height, Width



Top Truck Bottleneck Locations, with causal factors

Location Details					Performance Metrics		Indicator Factors					Other Related Factors		
Rank	Route	County	Bottleneck Extent	Length	Reliability (Highest TTTR)	Truck Delay (VHD/mi per day)	Capacity	Crashes	Grade 2.5%+	Grade 4.0%+	Curvature	Severe Weather	Construction or Other Incident	Weight/Height Restrictions
1.	I-75 NB	Hamilton	Georgia State Line to I-75/I-24 Interchange	1.51 mi	6.97	248.38		X					X	
2.	I-55 NB	Shelby	S 3rd Street (Exit 7) to Arkansas State Line	5.19 mi	9.08	64.81						X	X	X
3.	I-24 WB	Davidson	I-24/I-40 Interchange (western) to I-24/I-65 Interchange (southern)	3.24 mi	4.28	203.01	X	X	X	X		X		
4.	I-24 EB	Davidson	Spring St (Exit 47) to I-24/I-40 Interchange (southern)	2.44 mi	6.49	131.64	X	X						
5.	I-24/I-65 EB/SB	Davidson	I-24/I-65 Interchange (northern) to I-24/I-65 Interchange (southern)	3.40 mi	5.97	139.15		X	X	X		X		
6.	I-24 WB	Hamilton	I-75/I-24 Interchange to I-24/US 27 (SR 29) Interchange	7.39 mi	7.60	53.58		X	X		X	X		X
7.	I-40/I-65 EB/SB	Davidson	Charlotte Ave (Exit 209) to I-40/I-65 Interchange (southern)	1.77 mi	7.06	61.84	X		X					
8.	I-24/I-40 WB	Davidson	I-24/I-40 Interchange (eastern) to I-24/I-40 Interchange (western)	2.10 mi	4.21	143.56	X	X	X	X		X		
9.	I-24 EB	Davidson	I-24/I-440 Interchange to SR 155 (Briley Pkwy)	1.66 mi	4.42	122.23			X					
10.	I-24 EB	Davidson	I-24/I-40 Interchange (eastern) to I-24/I-440 Interchange	1.24 mi	5.74	75.39	X	X	X	X				
11.	I-65 NB	Davidson	I-40/I-65 Interchange (northern) to I-24/I-65 Interchange (southern)	1.78 mi	4.73	92.75	X		X					
12.	I-24 EB	Hamilton	E 23rd Street (Exit 181) to I-75/I-24 Interchange	3.55 mi	4.71	83.22		X	X		X	X		X
13.	I-24 WB	Davidson	I-24/I-440 Interchange to I-24/I-40 Interchange (eastern)	1.02 mi	4.98	71.39	X	X	X	X				
14.	I-65 SB	Williamson	I-65/I-840 Interchange to SR 106/Lewisburg Pike	1.90 mi	6.47	12.57			X					
15.	I-65 NB	Davidson	I-65/I-440 Interchange to Wedgewood Ave (Exit 81)	1.07 mi	6.22	16.13	X							
16.	I-440 EB	Davidson	I-65/I-440 Interchange to SR 11/Nolensville Rd (Exit 6)	1.17 mi	6.19	15.64								
17.	I-55 SB	Shelby	Arkansas State Line to Crump Blvd/Riverside Dr (Exit 12)	0.75 mi	2.05	147.32							X	
18.	I-65 NB	Davidson	Rivergate Pkwy (Exit 96) to SR 174/Long Hollow Pk (Exit 97)	0.98 mi	4.24	76.13	X		X					
19.	I-24/I-40 EB	Davidson	I-24/I-40 Interchange (western) to I-24/I-40 Interchange (eastern)	2.11 mi	4.02	69.23	X	X	X	X		X		
20.	I-40/I-75 WB/SB	Knox	I-40/I-140 Interchange to SR 131/Lovell Rd (Exit 374)	2.35 mi	5.62	11.70			X					
21.	I-24 EB	Hamilton	Georgia State Line to US 41/Cummings Hwy (Exit 174)	3.11 mi	5.18	18.26			X	X				
22.	I-40 WB	Davidson	Spence Ln (Exit 213) to I-24/I-40 Interchange (eastern)	0.78 mi	3.46	70.04	X	X	X					
23.	I-40/I-65 WB/NB	Davidson	Church Street to Clinton Street	0.44 mi	3.76	58.57	X		X					
24.	I-40 WB	Knox	SR 115/Alcoa Hwy (Exit 386B) to SR 169/Middlebrook Pike	1.13 mi	4.91	20.30	X	X	X					
25.	I-40 WB	Madison	Christmasville Rd (Exit 85) to Old Medina Rd/Campbell St (Exit 83)	0.91 mi	3.81	49.92			X				X	
26.	I-40/I-65 WB/NB	Davidson	I-40/I-65 Interchange (southern) to Division Street	0.68 mi	2.24	86.11	X							

Impact of Truck Restrictions



Impact of Truck Restrictions

Bottle-neck Rank	Location	County	Constraint(s) [Segment Length]	Added Distance (vehicle-miles per day)	Added Travel Time (vehicle-hours per day)	Added T. Time (VHD/mi)
2.	I-55 NB	Shelby	7x height- or weight-restricted bridges; as low as 13'6" [11.1mi]	1,482.20	24.70	2.22
6.	I-24 WB	Hamilton	Spring Creek Road Bridge (15'6" height limit) [3.5mi]	1.36	0.17	0.05
12.	I-24 EB	Hamilton	Spring Creek Road Bridge (15'6" height limit) [3.5mi]	1.36	0.17	0.05
Subtotal: Impacts within Bottleneck Locations				1,484.92	25.03	---
n/a	I-40	Decatur	Prospect Road bridge (weight restricted), US-641 bridge (height limit) [17.1mi]	7,086.19	192.09	11.23
n/a	I-24	Marion	Sequatchie River bridge (weight restricted) [3.6mi]	1,088.67	33.66	9.35
n/a	I-81	Greene/ Hamblin	12x height- or weight-restricted bridges from US 11E to Sinking Creek [16.3mi]	3,209.31	97.22	5.95
n/a	I-40	Roane	US 27 bridge (weight restricted) [9.7mi]	1,208.34	38.69	3.99
n/a	I-75	Anderson	Clinch River bridge, Wolf Valley Road bridge (weight restricted) [12.0mi]	1,460.56	46.35	3.87
n/a	I-65	Robertson	4x height- or weight-restricted bridges near SR-25 [10.5mi]	626.12	38.84	3.68
n/a	I-24	Coffee	Duck River bridge (weight restricted) [5.8mi]	373.62	18.85	3.24
n/a	I-55	Shelby	Brooks Road bridge (weight restricted) [0.8mi]	33.26	2.53	3.17
n/a	I-75	Bradley/ McMinn	5x height- or weight-restricted bridges, including Hiwassee River [35.0mi]	1,293.03	87.20	2.49
n/a	I-55	Shelby	11x height- or weight-restricted bridges, excluding northbound traffic already included in Bottleneck 2 [11.1mi]	1,482.20	24.70	2.22
n/a	I-65	Giles	Diana Road bridge (weight restricted), Baugh Road bridge (height limit) [21.8mi]	1,199.68	45.32	2.08
n/a	I-40	Haywood	Hatchie River bridge (weight restricted) [5.3mi]	8.39	6.18	1.17
n/a	I-640	Knox	N Broadway bridge, Rutledge Pike bridge (weight restricted) [7.0mi]	222.48	3.71	0.53
n/a	I-40	Shelby	Whitten Road bridge (height limit) [0.6mi]	1.90	0.09	0.15
n/a	I-240	Shelby	Poplar Avenue bridge (height limit) [2.9mi]	9.43	0.36	0.12
n/a	I-65	Maury	New Lewisburg Hwy bridge (height limit) [14.2mi]	24.85	0.72	0.05
n/a	I-40	Davidson	Elm Hill Pike bridge (height limit) [5.0mi]	4.26	0.16	0.03
n/a	I-24	Grundy	SR-50 bridge (height limit) [1.0mi]	0.00	0.02	0.02
n/a	I-24	Marion	Trussell Road bridge (height limit) [21.4mi]	9.45	0.48	0.02
n/a	I-40	Davidson	SR-109 bridge (height limit) [0.8mi]	0.21	0.02	0.02
n/a	I-40	Henderson	SR-22 bridge (height limit) [0.5mi]	0.03	0.00	0.00
Subtotal: Impacts in Other Areas				19,341.98	637.21	---
Grand Total: Statewide Impacts from Interstate Truck Restrictions				20,826.90	662.24	---

Comparison to 2019 SFBS

2022 SFBS Ranking (2021 data)					2019 SFBS Ranking (2018 data)	
Rank	Route	County	Bottleneck Extent		Rank	Change
1.	I-75 NB	Hamilton	Georgia State Line	to I-75/I-24 Interchange	12	▲ 11 spots
2.	I-55 NB	Shelby	S 3rd Street (Exit 7)	to Arkansas State Line	Unranked	New in 2022
3.	I-24 WB	Davidson	I-24/I-40 Interchange (western)	to I-24/I-65 Interchange (southern)	10, 11	▲ 7 spots
4.	I-24 EB	Davidson	Spring St (Exit 47)	to I-24/I-40 Interchange (southern)	11	▲ 7 spots
5.	I-24/I-65 EB/SB	Davidson	I-24/I-65 Interchange (northern)	to I-24/I-65 Interchange (southern)	7, 10	▲ 2 spots
6.	I-24 WB	Hamilton	I-75/I-24 Interchange	to I-24/US 27 (SR 29) Interchange	1, 12	▼ 5 spots
7.	I-40/I-65 EB/SB	Davidson	Charlotte Ave (Exit 209)	to I-40/I-65 Interchange (southern)	Unranked	New in 2022
8.	I-24/I-40 WB	Davidson	I-24/I-40 Interchange (eastern)	to I-24/I-40 Interchange (western)	11	▲ 3 spots
9.	I-24 EB	Davidson	I-24/I-440 Interchange	to SR 155 (Briley Pkwy)	2	▼ 7 spots
10.	I-24 EB	Davidson	I-24/I-40 Interchange (eastern)	to I-24/I-440 Interchange	2	▼ 8 spots
11.	I-65 NB	Davidson	I-40/I-65 Interchange (northern)	to I-24/I-65 Interchange (southern)	5, 10	▼ 6 spots
12.	I-24 EB	Hamilton	E 23rd Street (Exit 181)	to I-75/I-24 Interchange	12	Unchanged
13.	I-24 WB	Davidson	I-24/I-440 Interchange	to I-24/I-40 Interchange (eastern)	2	▼ 11 spots
14.	I-65 SB	Williamson	I-65/I-840 Interchange	to SR 106/Lewisburg Pike	Unranked	New in 2022
15.	I-65 NB	Davidson	I-65/I-440 Interchange	to Wedgewood Ave (Exit 81)	4	▼ 11 spots
16.	I-440 EB	Davidson	I-65/I-440 Interchange	to SR 11/Nolensville Rd (Exit 6)	4	▼ 12 spots
17.	I-55 SB	Shelby	Arkansas State Line	to Crump Blvd/Riverside Dr (Exit 12)	Unranked	New in 2022
18.	I-65 NB	Davidson	Rivergate Pkwy (Exit 96)	to SR 174/Long Hollow Pk (Exit 97)	6	▼ 12 spots
19.	I-24/I-40 EB	Davidson	I-24/I-40 Interchange (western)	to I-24/I-40 Interchange (eastern)	11	▼ 8 spots
20.	I-40/I-75 WB/SB	Knox	I-40/I-140 Interchange	to SR 131/Lovell Rd (Exit 374)	8	▼ 12 spots
21.	I-24 EB	Hamilton	Georgia State Line	to US 41/Cummings Hwy (Exit 174)	Unranked	New in 2022
22.	I-40 WB	Davidson	Spence Ln (Exit 213)	to I-24/I-40 Interchange (eastern)	Unranked	New in 2022
23.	I-40/I-65 WB/NB	Davidson	Church Street	to Clinton Street	Unranked	New in 2022
24.	I-40 WB	Knox	SR 115/Alcoa Hwy (Exit 386B)	to SR 169/Middlebrook Pike	Unranked	New in 2022
25.	I-40 WB	Madison	Christmasville Rd (Exit 85)	to Old Medina Rd/Campbell St (Exit 83)	Unranked	New in 2022
26.	I-40/I-65 WB/NB	Davidson	I-40/I-65 Interchange (southern)	to Division Street	Unranked	New in 2022
Bottlenecks from 2019 SFBS Unranked in 2022						
Unranked	Shelby		I-40/I-240 Interchange (eastern)		3	Unranked in 2022
Unranked	Knox		I-40/I-640 Interchange (western)		9	Unranked in 2022

Statewide Performance: Historical & Peer State Comparison

Aggregated Metric		Value	
Sum of Length-Weighted TTTR, 2021 (1,796 segments)		3,134.89	
Tennessee Interstate Miles in NPMRDS Dataset		2,376.60	
Tennessee Statewide TTTR, 2021		1.32	
<i>Historical Tennessee Statewide TTTR Data^[1]</i>		2020	1.25
		2019	1.35
		2018	1.37
		2017	1.35
2020 Statewide TTTR Results for Peer States ^[1,2]	Mississippi	1.12	
	Arkansas	1.13	
	Alabama	1.14	
	Missouri	1.15	
	Kentucky	1.16	
	North Carolina	1.23	
	Tennessee	1.25	
	Virginia	1.32	
	Georgia	1.37	
<p><i>[Note 1] Source: FHWA "Transportation Performance Reporting: State Performance Dashboard", https://www.fhwa.dot.gov/tpm/reporting/state/</i></p> <p><i>[Note 2] Peer state data from 2020 should be compared to Tennessee's results from the same year to account for the coronavirus (COVID-19) pandemic's impact on travel patterns</i></p>			

Statewide Multimodal Freight Plan: Other Takeaways

Trends

FIGURE 2-4: Commodity Value by Mode
SOURCE: Tennessee Transearch Data, IHS Inc.

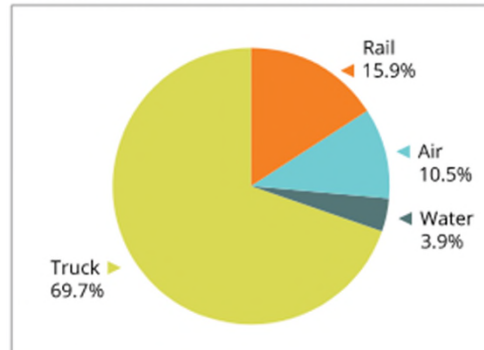
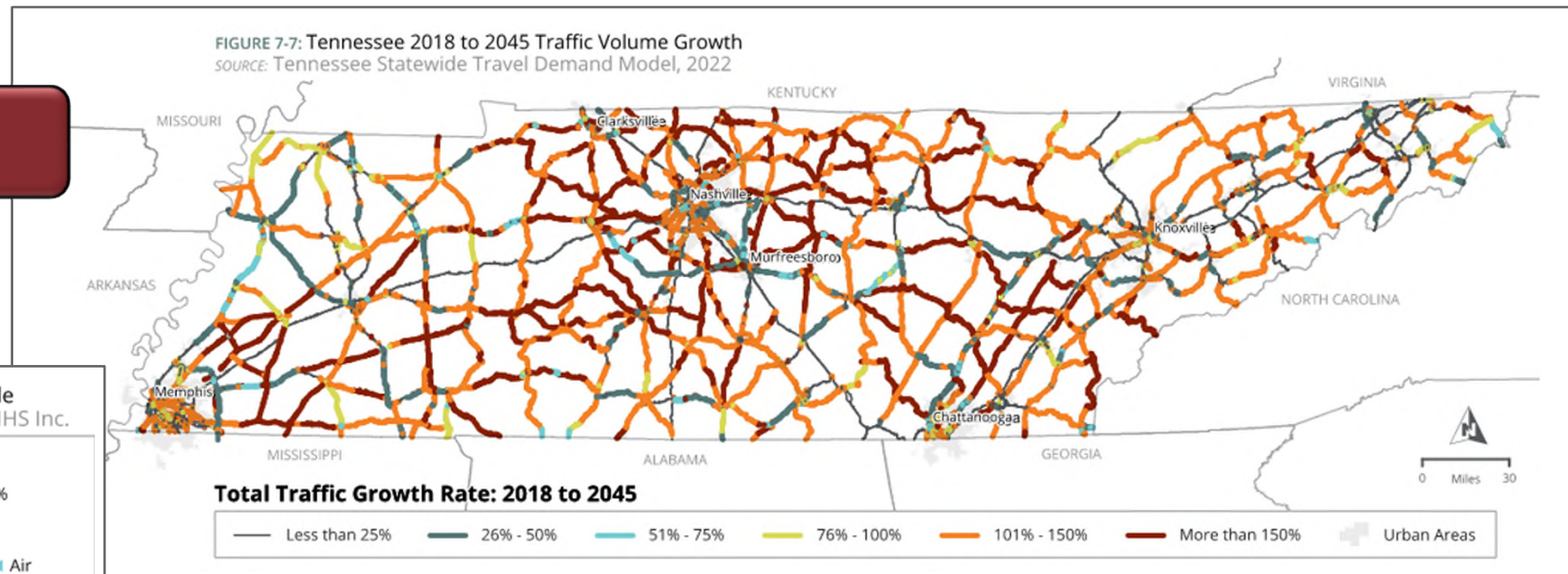
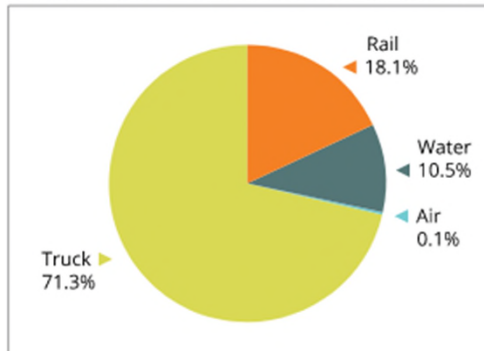


FIGURE 2-5: Commodity Tonnage by Mode
SOURCE: Tennessee Transearch Data, IHS Inc.

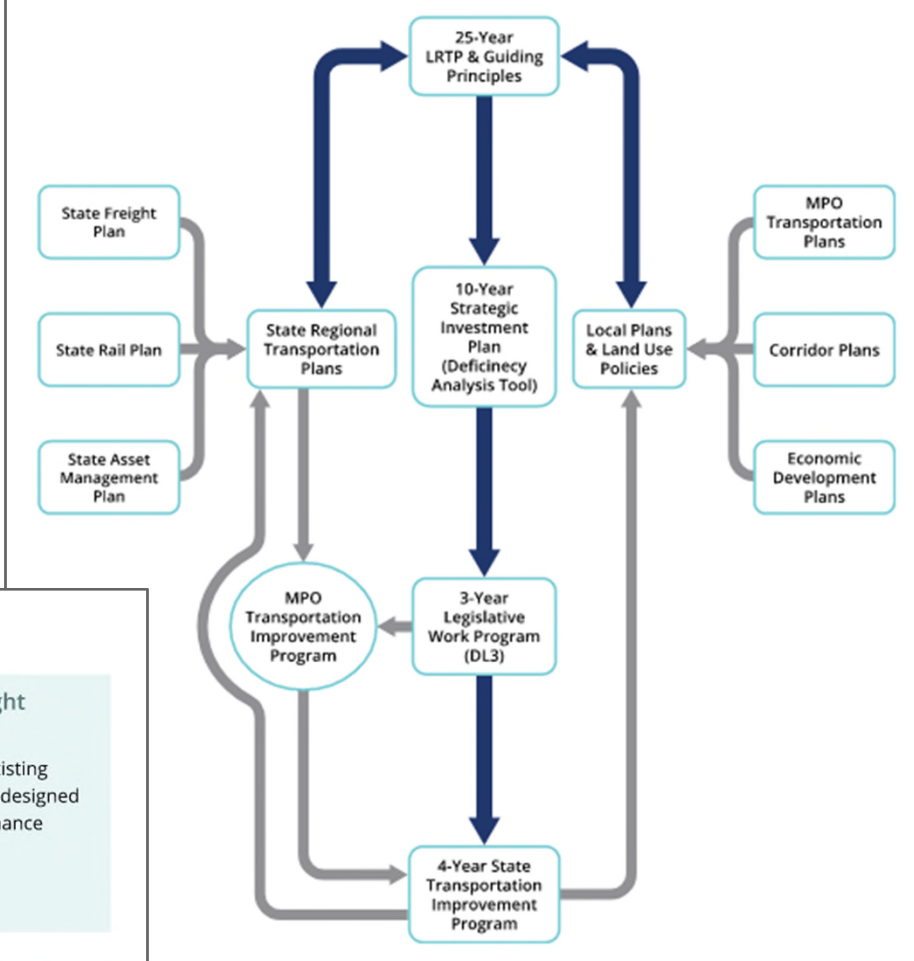


Timeline

Priority Freight Goals and Objectives

<p>Improve the safety, security, efficiency, and resiliency of the freight transportation system <i>Objectives:</i> Provide adequate, safe facilities to meet industry guidelines. Mitigate safety issues that arise from increased freight movement. Provide alternative routes in the case of an emergency, natural or manmade.</p>	<p>Reduce congestion on the freight transportation system <i>Objective:</i> Preserve and manage the existing system through strategic investments designed to reduce congestion/bottlenecks, enhance efficiency of intermodal movements.</p>
<p>Improve the state of good repair of the freight transportation system <i>Objective:</i> Maintain the freight system so that roadway bridges, rail bridges, locks for barges, and airport runways can support the industry and manage the existing system.</p>	<p>Incorporate innovation and technology to improve mobility and safety <i>Objective:</i> Increase efficiency and maximize safety on the freight system by utilizing new technology to provide alternative routing, sustainable travel, smarter data, and enhanced communication.</p>

FIGURE 10-1: Coordination of Tennessee's Planning Process



Planning

Ongoing TDOT Freight & Logistics efforts

- Truck Parking
- Waterway Study
- Freight Advisory Committee
- Passenger Rail
- Return on investment study of short lines
- Blue Oval Transit Study in West Tennessee
- Grants

Questions?

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