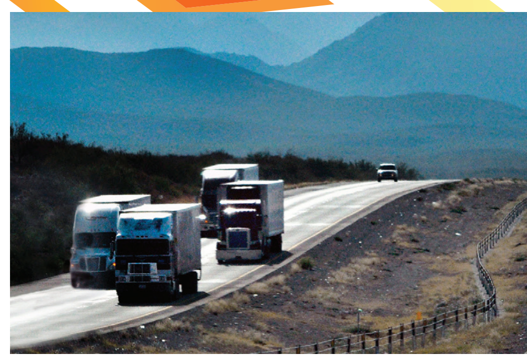
FHWA-HOP-20-073

2019 FREIGHT MOBILITY TRENDS REPORT





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Federal Highway Administration

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The Freight Mobility Trends Report 2019 reflects the results of the Freight Mobility Trends (FMT) dashboard measuring freight performance trends between 2017 and 2019. The results use the National Performance Management Research Data Set (NPMRDS) in a suite of measures applied to a range of geographic locations to show trends in freight performance. This report provides information on national bottlenecks, performance of freight corridors, and performance of roadways around key freight facilities.</td></tr>
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LIST OF CONVERSIONS

Approximate Conversions to SI Units				
Symbol	**When You Know**	**Multiply By**	**To Find**	**Symbol**
Length				
in	inches	25.4	millimeters	mm
ft	feet	0.305	meters	m
yd	yards	0.914	meters	m
mi	miles	1.61	kilometers	km
Area				
in^2	square inches	645.2	square millimeters	mm^2
ft^2	square feet	0.093	square meters	m^2
yd^2	square yard	0.836	square meters	m^2
ac	acres	0.405	hectares	ha
mi^2	square miles	2.59	square kilometers	km^2
Volume				
fl oz	fluid ounces	29.57	milliliters	mL
gal	gallons	3.785	liters	L
ft^3	cubic feet	0.028	cubic meters	m^3
yd^3	cubic yards	0.765	cubic meters	m^3
NOTE: volumes greater than 1000 L shall be shown in m^3				
Mass				
oz	ounces	28.35	grams	g
lb	pounds	0.454	kilograms	kg
T	short tons (2000 lb)	0.907	megagrams (or "metric ton")	Mg (or "t")
Temperature (exact degrees)				
°F	Fahrenheit	5 (F-32)/9 or (F-32)/1.8	Celsius	°C
Illumination				
fc	foot-candles	10.76	lux	lx
fl	foot-Lamberts	3.426	candela/m^2	cd/m^2
Force and Pressure or Stress				
lbf	poundforce	4.45	newtons	N
lbf/in^2	poundforce per square inch	6.89	kilopascals	kPa

LIST OF CONVERSIONS

Approximate Conversions from SI Units				
Symbol	**When You Know**	**Multiply By**	**To Find**	**Symbol**
Length				
mm	millimeters	0.039	inches	in
m	meters	3.28	feet	ft
m	meters	1.09	yards	yd
km	kilometers	0.621	miles	mi
Area				
mm^2	square millimeters	0.0016	square inches	in^2
m^2	square meters	10.764	square feet	ft^2
m^2	square meters	1.195	square yards	yd^2
ha	hectares	2.47	acres	ac
km^2	square kilometers	0.386	square miles	mi^3
Volume				
mL	milliliters	0.034	fluid ounces	fl oz
L	liters	0.264	gallons	gal
m^3	cubic meters	35.314	cubic feet	ft^3
m^3	cubic meters	1.307	cubic yards	yd^3
Mass				
g	grams	0.035	ounces	oz
kg	kilograms	2.202	pounds	lb
Mg (or “t”)	megagrams (or “metric ton”)	1.103	short tons (2000 lb)	T
Temperature (exact degrees)				
°C	Celsius	1.8C+32	Fahrenheit	°F
Illumination				
lx	lux	0.0929	foot-candles	fc
cd/m^2	candela/m^2	0.2919	foot-Lamberts	fl
Force and Pressure or Stress				
N	newtons	0.225	poundforce	lbf
kPa	kilopascals	0.145	poundforce per square inch	lbf/in^2

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LIST OF ACRONYMS

ACRONYM	DEFINITION
AADT	average annual daily traffic
AADTT	average annual daily truck traffic
BI	buffer index
BTS	Bureau of Transportation Statistics
DOT	department of transportation
DPM	delay per mile
FAF	Freight Analysis Framework
FHWA	Federal Highway Administration
FMT	Freight Mobility Trends
HPMS	Highway Performance Monitoring System
MAP-21	Moving Ahead for Progress in the 21st Century Act
MPO	metropolitan planning organization
NHFN	National Highway Freight Network
NHS	National Highway System
NPMRDS	National Performance Management Research Data Set
PHFS	Primary Highway Freight System
PTI	planning time index
STRAHNET	Strategic Highway Network
TEUs	twenty-foot equivalent units
TMC	Traffic Message Channel
TRI	truck reliability index
TSI	transportation services index
TTI	travel time index
TTTR	truck travel time reliability
TVMT	truck vehicle miles of travel
UP	Union Pacific
USDOT	U.S. Department of Transportation

EXECUTIVE SUMMARY

The *Freight Mobility Trends Report 2019* reflects the results of the Freight Mobility Trends (FMT) dashboard, measuring freight performance trends between 2017 and 2019.

The Nation's highways serve a vital role in moving both people and goods. According to the Bureau of Transportation Statistics (BTS), traffic volume increased 17.9 percent between 2000 and 2018, from 2,747 billion to 3,240 billion vehicle miles traveled.[1]

Highways are an integral element of the national, multimodal freight transportation system. Goods movement by truck represents 67 percent of the total domestic tonnage. The Freight Analysis Framework estimates freight tonnage will increase about 37 percent between 2018 and 2045.[2]

Long-haul freight truck traffic is concentrated on major routes connecting population centers, ports, border crossings, and other major hubs of activity. BTS projects that truck travel may increase from 311 million miles per day in 2015 to 488 million miles per day by 2045, a 60 percent increase. With projected growth in travel, the Nation's highways will continue to experience even greater demand.[3]

To address this increase in transportation, decision makers should ensure transportation funding is allocated toward projects that provide maximum benefit. To do this, decision makers need information on performance of the transportation system so that they can optimize investments and operational strategies to address congestion and reliability. Decision makers also need to understand the results of improvements to identify whether or not the investment or operational strategy is working as expected. To be able to effectively plan for, improve, and operate the transportation system, there needs to be ways to comprehensively monitor and assess transportation performance and mobility trends.

The Freight Mobility Trends dashboard measures mobility using the following indicators:

- **Truck hours of delay per mile** captures the degree of congestion weighted by the magnitude of truck volume.
- **Travel time index (TTI)** compares peak-period travel time to free-flow travel time.
- **Planning time index (PTI)** compares 95th percentile travel time to free-flow travel time.
- **Truck reliability index (TRI)** compares 95th percentile travel time to 50th percentile travel time for specific times of the day.
- **Buffer index (BI)** provides the extra time as a percentage that drivers must add to an average trip to be on time 95 percent of the time.
- **Congestion cost** quantifies cost of wasted fuel and delay.

The Federal Highway Administration's FMT dashboard provides high-level, national trends in freight mobility and assesses freight movement over a range of locations based on truck travel data:

- Measures of freight mobility at the national, State, regional, or corridor level.
- Freight mobility around major ports, intermodal facilities, and border crossings.
- Identification of freight bottlenecks.

Freight Performance Trends

In general, freight performance between 2017 and 2019 showed the following results:

- Freight performance experienced minimal change over the past few years because overall results are stable.
- Performance worsened slightly between 2017 and 2018 but then improved for 2019.
- Most regions and facilities showed improvement for freight performance in 2019. This is likely being driven by urban area performance.
- Interstates worsened from 2017 to 2019 based on delay per mile (DPM), but urban Interstates improved in 2019.
- NHS arterials improved from 2017 to 2019 based on delay per mile.
- Urban areas exhibited worse freight performance than rural areas. While rural performance showed a worsening trend between 2017 and 2019, urban roadways saw improvement in 2019.
- Roadway types also differed in freight performance in that:
    - Interstates had greater delay but tended to be more reliable, with many major urban areas being "reliably congested" during peak periods.
    - Arterials and freeways off the Interstate tended to have less delay but were less reliable than the Interstate.
    - NHS arterials had more challenges with reliability than other roadways.

The following sections provide results for the different geographic ranges and locations.

National Trends

- At the national level, freight mobility trends had the following results:
- There were slight changes from 2017 to 2019, with some seasonal fluctuations (table 1).
- Freight performance worsened for many locations in 2018 but improved in 2019 (table 1).

Table 1. National Highway System performance by year.

Year	DPM (Truck Hours/Mile)	Total Delay (Annual Truck -Hours)	TTI	PTI	TRI	BI Percent
2019	1,528	656,454,567	1.17	1.61	1.19	30
2018	1,597	716,282,120	1.17	1.62	1.20	31
2017	1,570	696,394,350	1.17	1.61	1.19	30

Key: delay per mile (DPM), travel time index (TTI), planning time index (PTI), truck reliability index (TRI), buffer index (BI)

For specific indicators, the following results show that:

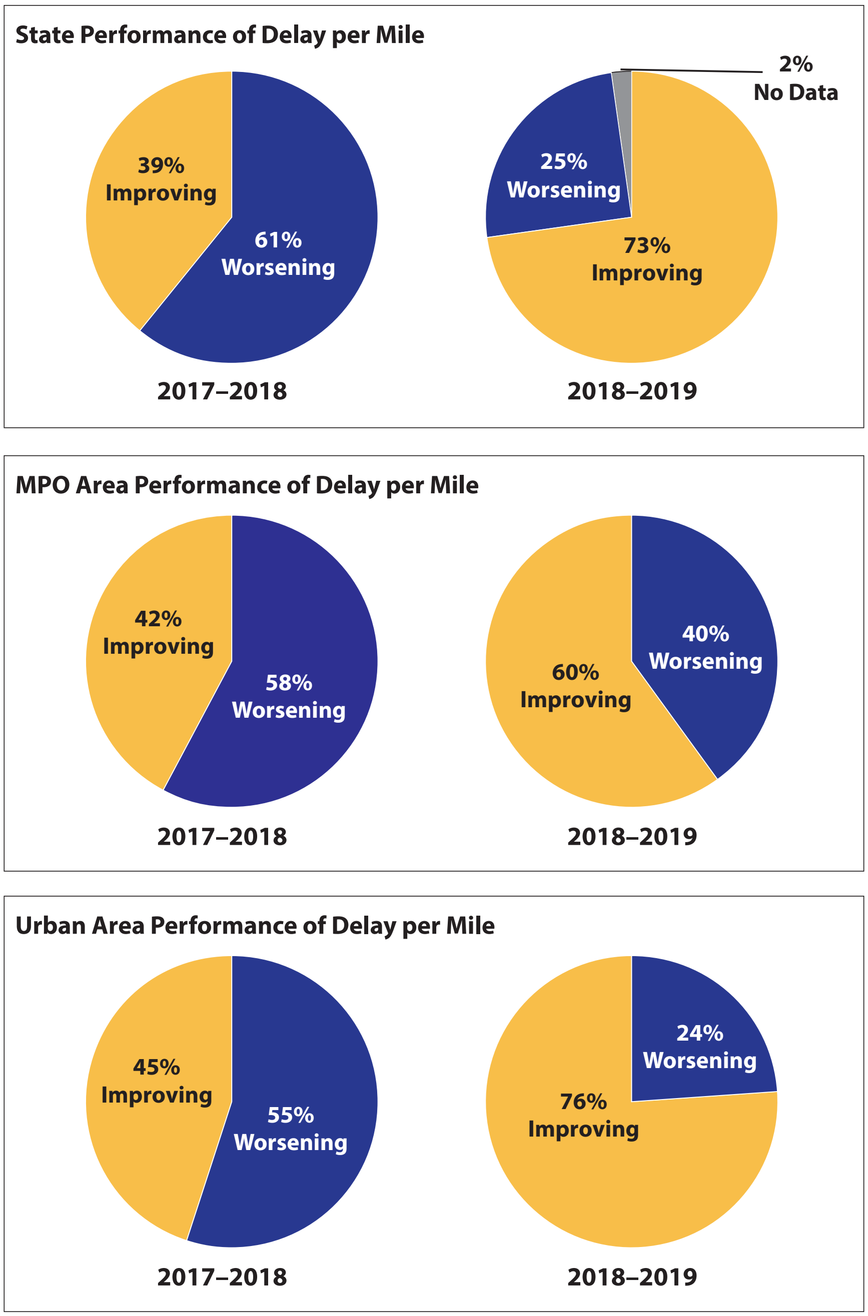
- Freight mobility at the national level worsened slightly from 2017 to 2018 in terms of total delay and truck hours of delay per mile but improved between 2018 and 2019 (figure 1).
- TTI, PTI, and TRI also worsened slightly between 2017 and 2018 but improved slightly between 2018 and 2019 (figure 1).

Source: FHWA

Figure 1. Chart. National freight performance from 2018 to 2019.

Figure 2 shows performance for States and regions based on delay per mile:

- States, urban areas, metropolitan planning organizations (MPOs), and freight facility areas (airports, ports, rail intermodal facilities, and border areas) all worsened from 2017 to 2018.
- All improved from 2018 to 2019.



Source: FHWA

Figure 2. Pie charts. Location performance of delay per mile from 2017 to 2018 and 2018 to 2019.

National-Level Urban and Rural Roadways

The performance of urban and rural roadways between 2017 and 2019 shows that (table 2):

- Freight performance worsened more for urban roadways than rural roadways.
- Urban roadways experienced higher levels of congestion or delay and unreliability than rural roadways.
- While most delay was observed on urban roadways, there was slight worsening for both urban and rural roadways from 2017 to 2018.
- Urban roadways showed slight improvements for delay per mile, total delay, PTI, TTI, and BI in 2019.
- Though performing better than urban roadways, rural roadway performance declined from 2017 to 2019.

Table 2. Performance by urban and rural roadways.

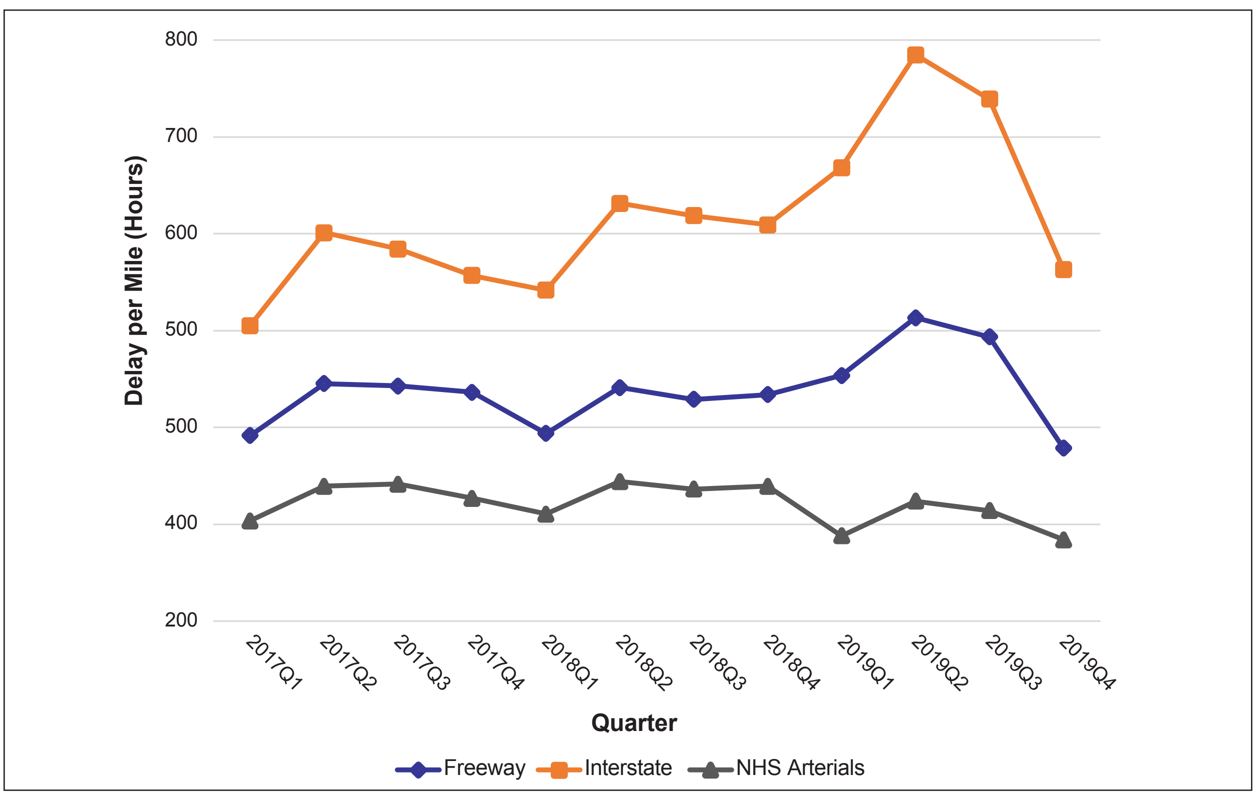
Year	Geography	DPM (Truck Hours/Mile)	Total Delay (Annual Truck Hours)	TTI	PTI	TRI	BI
2019	Urban	2,947	529,573,837	1.25	1.91	1.28	44
	Rural	508	126,880,730	1.09	1.28	1.10	15
2018	Urban	3,109	589,799,212	1.25	1.93	1.29	45
	Rural	489	126,482,908	1.08	1.26	1.09	14
2017	Urban	3,065	571,631,761	1.25	1.93	1.29	45
	Rural	485	124,762,589	1.08	1.25	1.09	14

Key: delay per mile (DPM), travel time index (TTI), planning time index (PTI), truck reliability index (TRI), buffer index (BI)

Trends by Functional Classification

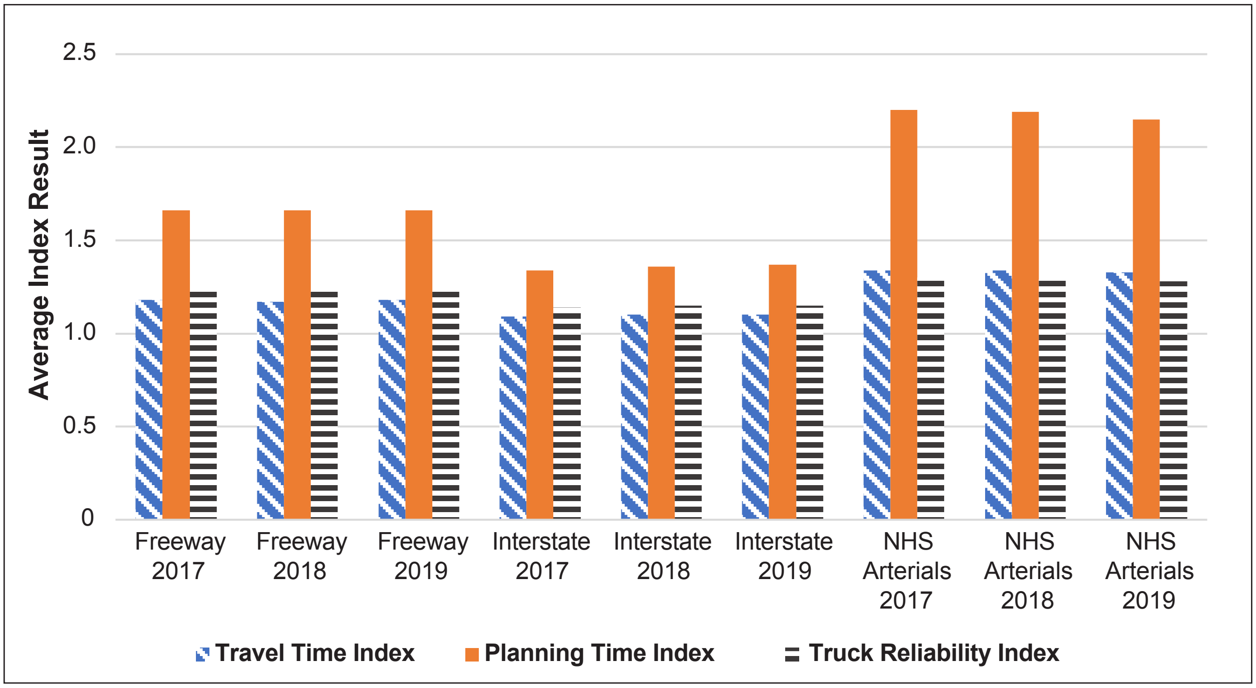
Different types of performance issues occur for the various roadway types on the National Highway System (NHS) at the national level (figure 3, figure 4, and table 3):

- The Interstate system had greater truck hours of delay, likely due to higher volumes and increased peak-period congestion, but tended to have more reliable travel times.
- Non-Interstate freeways and NHS arterials had lower delay but were less reliable.
- NHS arterials were less reliable than freeways.
- There was minor fluctuation in mobility and reliability indicators for NHS roadways from 2017 to 2019.
    - The PTI decreased for NHS arterials and worsened slightly for Interstates.
    - The TRI improved slightly for NHS arterials and just slightly increased for Interstates.
    - The TTI improved for NHS arterials and slightly increased for Interstates.
    - These fluctuations were minimal but showed a small decline in reliability for the Interstate and a slight improvement in reliability for NHS arterials.
    - These fluctuations were minimal but show a small decline in reliability for the Interstate and a slight improvement in reliability for other NHS arterials.



Source: FHWA

Figure 3. Graph. National performance for delay per mile by National Highway System roadway



Source: FHWA

Figure 4. Chart. National performance for the travel time index, planning time index, and truck reliability index by National Highway System roadway type.

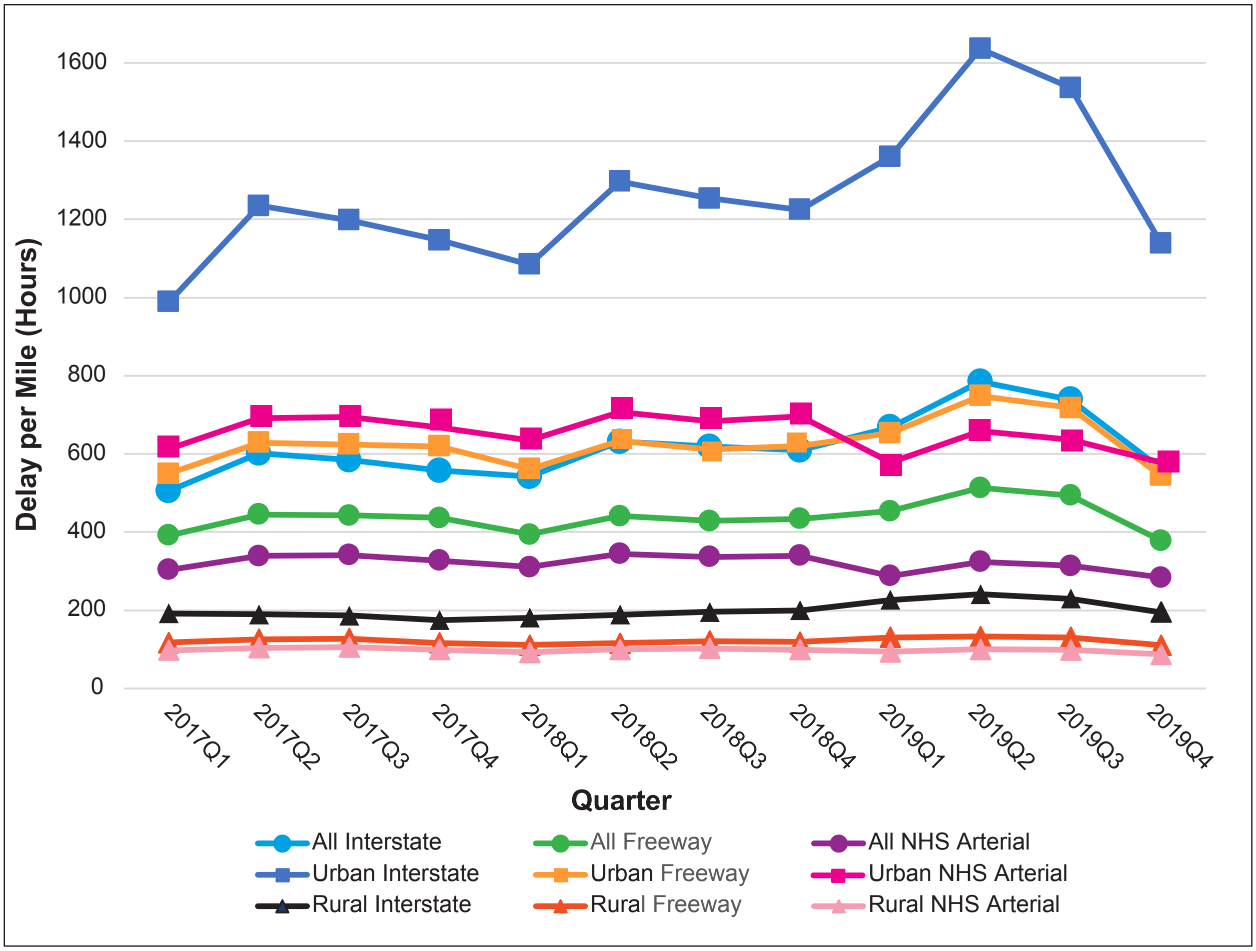
Table 3. Yearly performance by National Highway System road type.

Year	NHS Road Type	DPM (Truck Hours/Mile)	Total Delay (Annual Truck Hours)	TTI	PTI	TRI	BI Percent
2019	Interstate	2,438	2345,38,841	1.1	1.37	1.15	20
	Freeway	1,633	64,444,025	1.18	1.66	1.23	34
	NHS Arterial	1,216	357,471,701	1.33	2.15	1.28	53
2018	Interstate	2,398	240,104,851	1.1	1.36	1.15	20
	Freeway	1,687	70,483,132	1.17	1.66	1.23	34
	NHS Arterial	1,323	405,694,137	1.34	2.19	1.29	54
2017	Interstate	2,249	220,337,091	1.09	1.34	1.14	19
	Freeway	1,738	71,683,844	1.18	1.66	1.23	34
	NHS Arterial	1,329	404,373,415	1.34	2.20	1.30	54

Key: delay per mile (DPM), travel time index (TTI), planning time index (PTI), truck reliability index (TRI), buffer index (BI)

The following results show national-level performance trends by quarter for roadway type by functional class and area (urban or rural) (figure 5):

- Urban interstates showed much greater delay per mile and seasonal fluctuation.
- National-level and urban NHS arterials improved in delay per mile in 2019, while national-level and urban Interstates and freeways worsened for delay per mile.
- All roadway types except rural showed increases in delay per mile in the second quarter each year.



Source: FHWA

Figure 5. Graph. Combined delay per mile quarterly analysis by different roadways and areas.

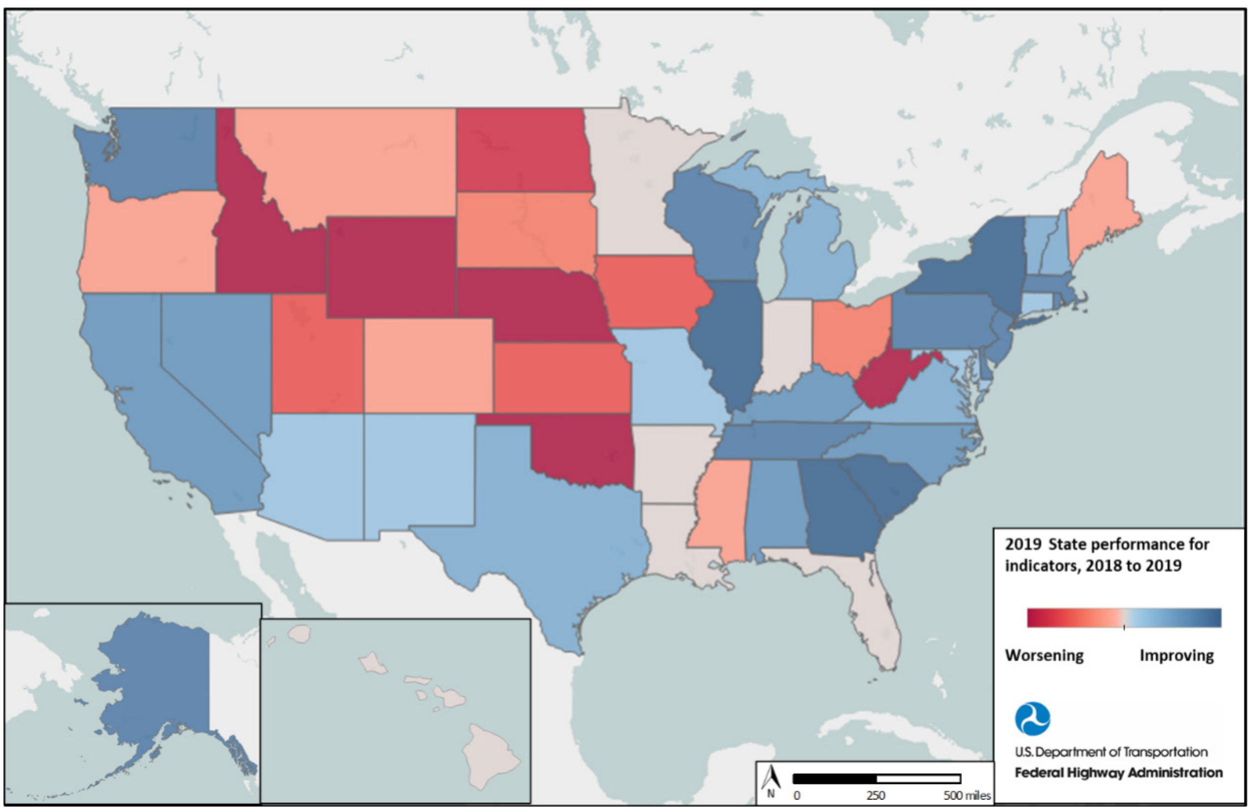
Freight Performance by State and Region

The *Freight Mobility Trends Report 2019* summarizes freight performance by State, urban area, and MPO region.

State-Level Results

Most States had improved or mixed results for freight performance between 2018 and 2019. Figure 6 shows a map of States that represents whether the States worsened or improved by aggregating performance for the indicators of delay per mile, total delay, TTI, PTI, and TRI. Freight performance in the States is scored for the number of measures that improved or worsened. Based on this analysis:

- A few States showed consistent improvements or worsening across all measures.
- States that improved for most indicators include Georgia, Illinois, New York, and South Carolina.
- States that worsened for most indicators include those in the Midwest with Idaho, Nebraska, Oklahoma, and Wyoming worsening more than others. West Virginia was also among States with the worst freight performance from 2018 to 2019.



Source: FHWA

Figure 6. Map. State performance for indicators from 2018 to 2019.

As shown in figure 6, States that had consistent improvements in most indicators between 2018 and 2019 include:

- Alabama.
- Alaska.
- Arizona.
- California.
- Connecticut.
- Delaware.
- District of Columbia.
- Georgia.
- Illinois.
- Kentucky.
- Maryland.
- Massachusetts.
- Michigan.
- Missouri.
- Nevada.
- New Hampshire.
- New Jersey.
- New Mexico.
- New York.
- North Carolina.
- Pennsylvania.
- Rhode Island.
- South Carolina.
- Tennessee.
- Texas.
- Vermont.
- Virginia.
- Washington.
- Wisconsin.

The following States had worsening performance in most indicators between 2018 and 2019:

- Colorado.
- Idaho.
- Iowa.
- Kansas.
- Maine.
- Mississippi.
- Montana.
- Nebraska.
- North Dakota.
- Ohio.
- Oklahoma.
- Oregon.
- South Dakota.
- Utah.
- West Virginia.
- Wyoming.

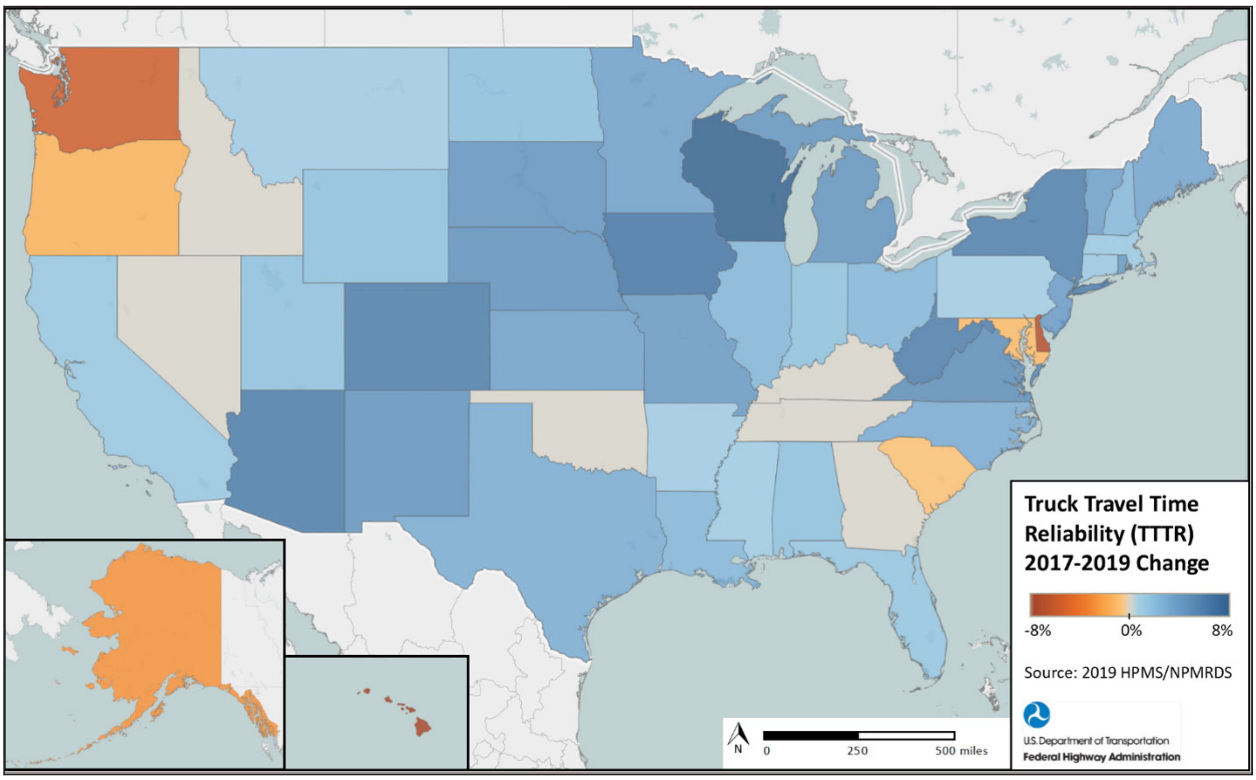
The following States were neutral for performance meaning that there was improvement for two indicators, worsening for two indicators, and no change for one indicator.

- Arkansas.
- Florida.
- Indiana.
- Louisiana.
- Minnesota.

Note that data for Hawaii are not available for 2019.

National Performance Measure for Truck Travel Time Reliability

The national performance measure to assess freight movement on the Interstate is the truck travel time reliability (TTTR) index under 23 CFR 490.607. The TTTR index measures the reliability or consistency of truck travel times on the Interstate over the course of a year. The national TTTR index measured over the entire Interstate system increased from 1.36 in 2017 to 1.39 in 2019. Figure 7 shows the percent change in TTTR by State between 2017 and 2019 and the results for each State are in table 4.



Source: FHWA

Figure 7. Map. Truck travel time reliability change from 2017 to 2019.

Table 4. Truck travel time reliability index reported by States from 2017 to 2019.

State	Baseline Year TTTR Index (2017 Data)	Year 1 TTTR Index (2018 Data)	Year 2 TTTR Index (2019 Data)	2017–2019 TTTR Index Year Change
Alaska	1.84	1.72	1.79	−3%
Alabama	1.19	1.21	1.22	3%
Arkansas	1.20	1.21	1.21	1%
Arizona	1.18	1.18	1.24	5%
California	1.69	1.72	1.71	1%
Colorado	1.37	1.38	1.45	6%
Connecticut	1.79	1.78	1.81	1%
District of Columbia	3.37	3.33	3.54	5%
Delaware	2.05	1.95	1.91	−7%
Florida	1.43	1.42	1.45	1%
Georgia	1.44	1.43	1.44	0%
Hawaii	2.75	2.92	2.46	−11%
Iowa	1.12	1.14	1.19	6%
Idaho	1.20	1.18	1.20	0%
Illinois	1.30	1.33	1.33	2%
Indiana	1.23	1.21	1.25	2%
Kansas	1.14	1.15	1.18	4%
Kentucky	1.24	1.33	1.24	0%
Louisiana	1.32	1.36	1.35	2%
Massachusetts	1.84	1.89	1.84	0%
Maryland	1.88	1.90	1.86	−1%
Maine	1.23	1.23	1.27	3%
Michigan	1.38	1.40	1.44	4%
Minnesota	1.43	1.45	1.48	3%
Missouri	1.25	1.28	1.30	4%
Mississippi	1.13	1.13	1.14	1%

Key: truck travel time reliability (TTTR)

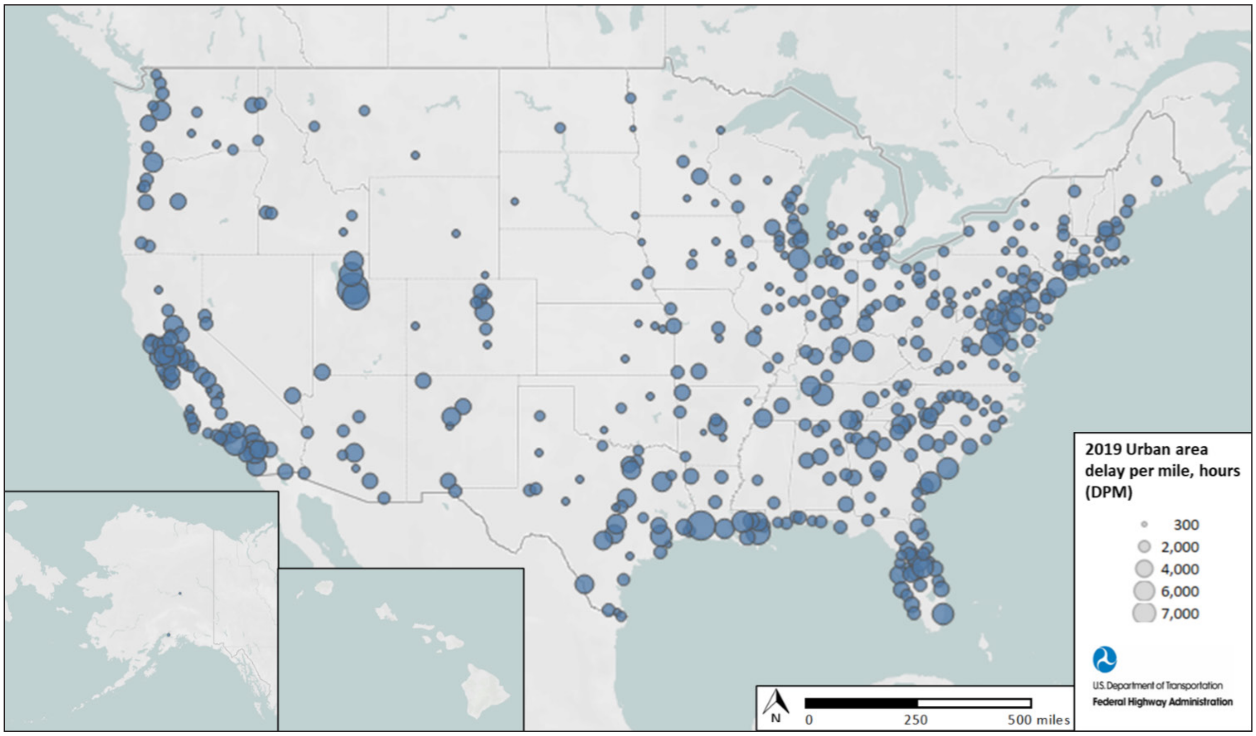
Table 4. Truck travel time reliability index reported by States from 2017 to 2019. (Continued)

State	Baseline Year TTTR Index (2017 Data)	Year 1 TTTR Index (2018 Data)	Year 2 TTTR Index (2019 Data)	2017–2019 TTTR Index Year Change
Montana	1.22	1.22	1.23	1%
North Carolina	1.39	1.41	1.43	3%
North Dakota	1.15	1.15	1.17	2%
Nebraska	1.10	1.12	1.15	5%
New Hampshire	1.35	1.38	1.38	2%
New Jersey	1.82	1.89	1.89	4%
New Mexico	1.13	1.13	1.18	4%
Nevada	1.28	1.27	1.28	0%
New York	1.39	1.43	1.47	6%
Ohio	1.33	1.37	1.36	2%
Oklahoma	1.22	1.21	1.22	0%
Oregon	1.39	1.34	1.37	−1%
Pennsylvania	1.35	1.39	1.36	1%
Rhode Island	1.72	1.79	1.79	4%
South Carolina	1.34	1.36	1.33	−1%
South Dakota	1.14	1.16	1.19	4%
Tennessee	1.35	1.37	1.35	0%
Texas	1.40	1.43	1.44	3%
Utah	1.21	1.20	1.25	3%
Virginia	1.48	1.58	1.55	5%
Vermont	1.69	1.68	1.75	4%
Washington	1.63	1.61	1.54	−6%
Wisconsin	1.16	1.26	1.24	7%
West Virginia	1.21	1.27	1.29	7%
Wyoming	1.19	1.18	1.21	2%

Key: truck travel time reliability (TTTR)

Urban Areas

Figure 8 shows the delay per mile for the urban areas throughout the United States. Delay per mile appears highest in areas such as the Northeast, California, and coastal Louisiana.

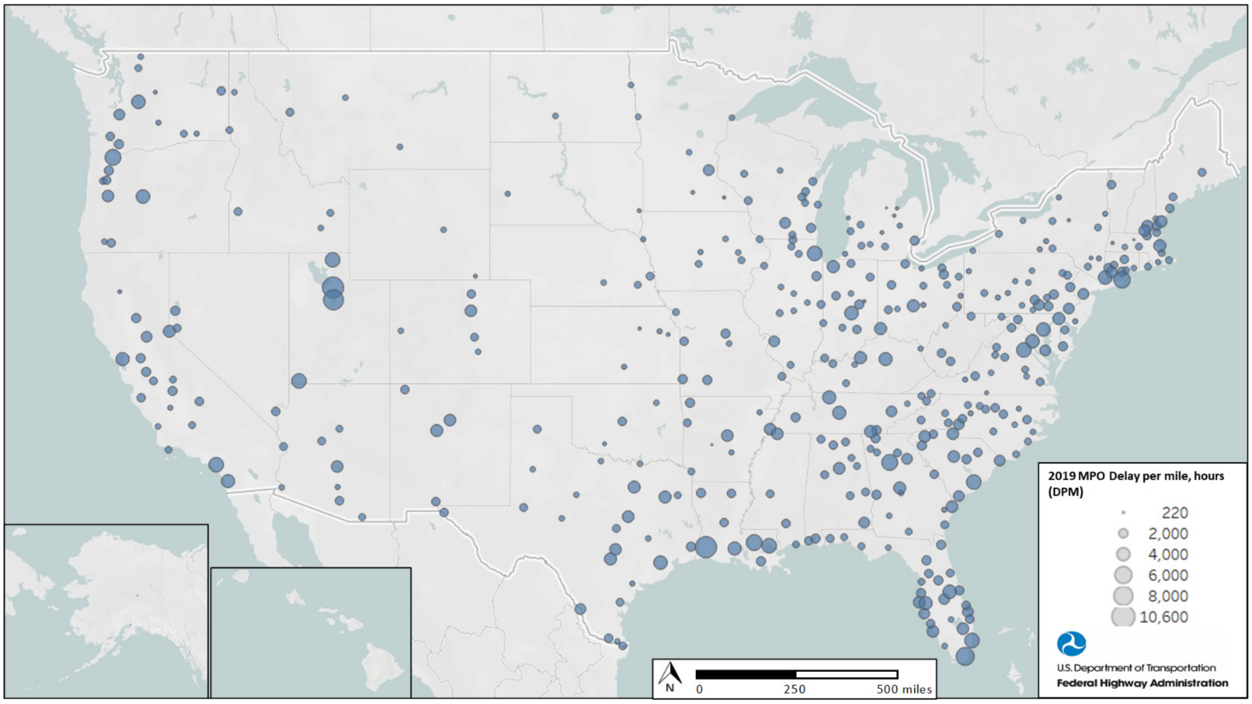


Source: FHWA

Figure 8. Map. Urban area delay per mile in hours in 2019.

Metropolitan Planning Organization Areas

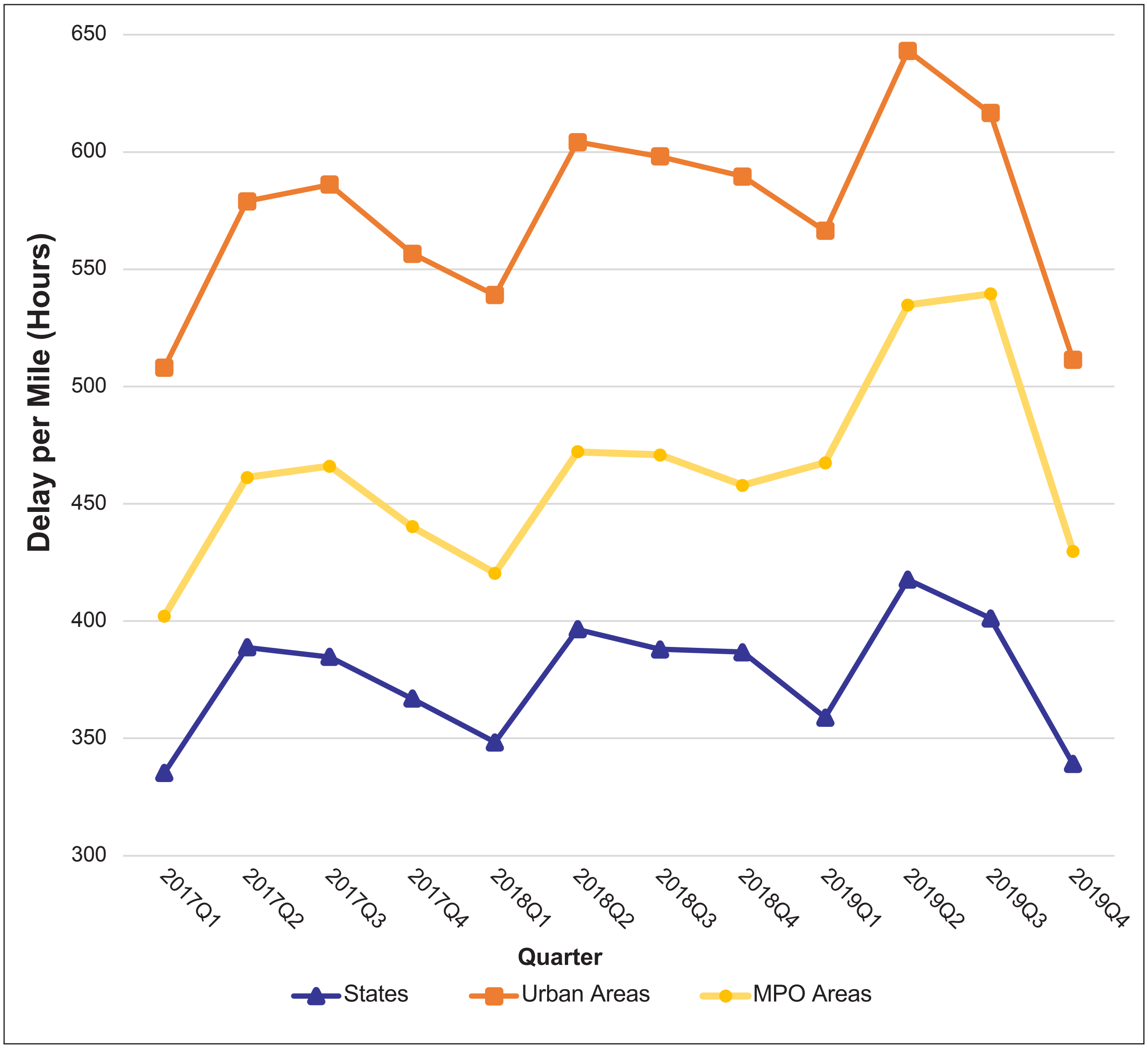
Figure 9 shows the performance of MPO areas for delay per mile in 2019. Similar to urban areas, MPO areas reflect higher delay per mile in areas such as the Northeast, California, and coastal Louisiana. Because MPO regions include some rural counties, the delay per mile results may appear lower.



Source: FHWA

Figure 9. Map. Metropolitan planning organization area delay per mile in hours in 2019.

Figure 10 shows the comparison of delay per mile for States, urban areas, and MPO areas by quarter. Urban areas exhibit higher delay per mile than MPO areas, but the trend is the same for all three. All three show increases in the second quarter of each year. Urban performance appears to drive overall performance.



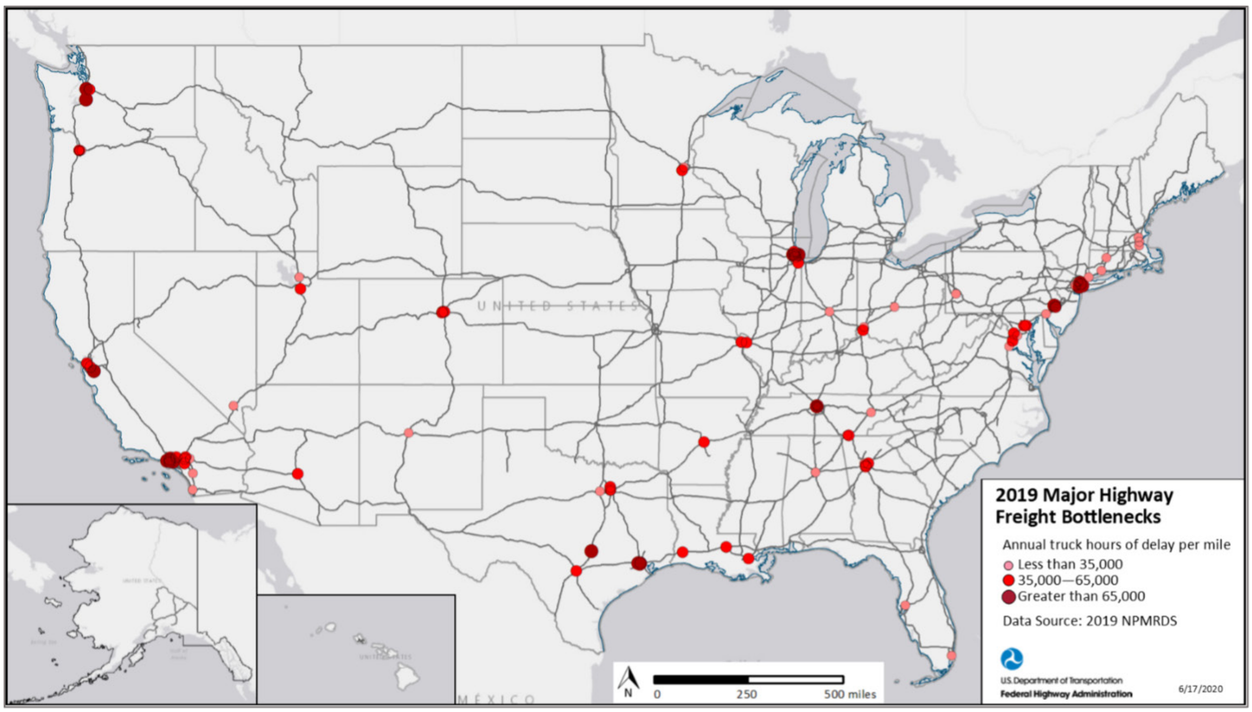
Source: FHWA

Figure 10. Graph. Quarterly comparison of delay per mile for States, urban areas, and metropolitan planning organization areas.

National Freight Highway Bottlenecks

The FMT was used to identify major freight highway bottlenecks and congested corridors based on annual truck hours of delay per mile.

Figure 11 shows the top 100 Interstate bottlenecks and congested corridors in the United States in 2019. Of the 100 bottlenecks mapped, table 5 lists the top 25 with the greatest truck hours of delay per mile. These NHS locations have high truck volumes and congestion that present a significant cost to Interstate freight flows.



Source: FHWA

Figure 11. Map. Top 100 major freight highway bottlenecks based on truck hours of delay per mile in the 2019 National Performance Management Research Data Set.

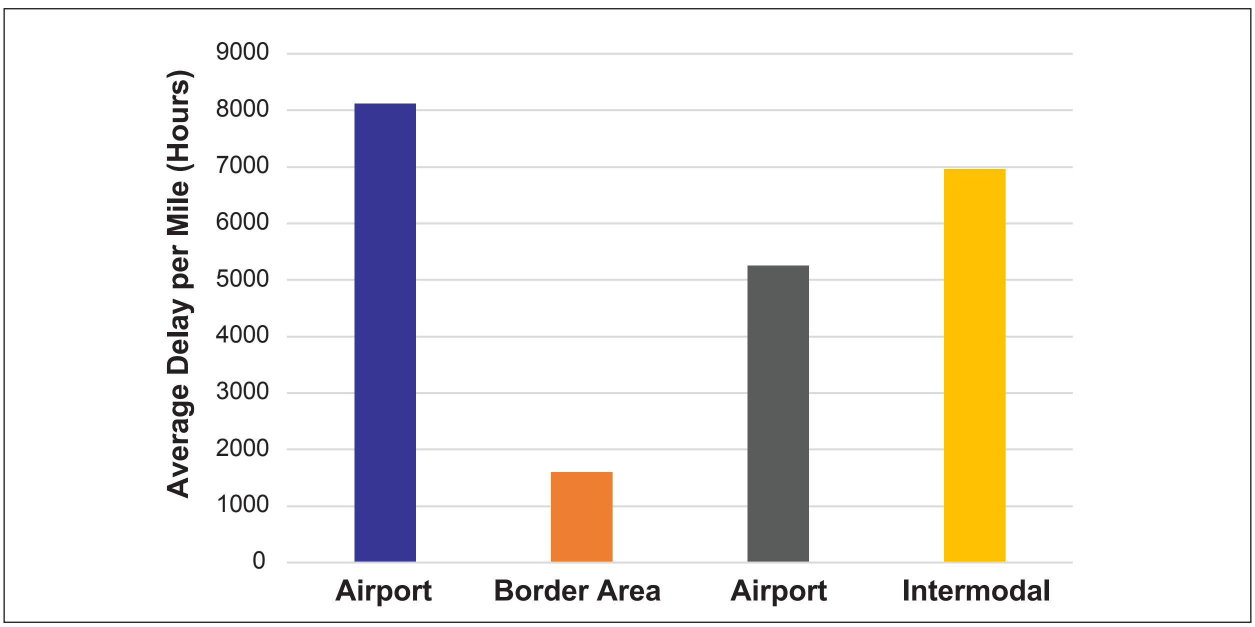
Table 5. Top 25 generalized bottleneck corridors with the greatest truck hours of delay per mile.
Note: The full list of the top 100 can be found in Appendix B.

Rank	Road	Urban Area	State
1	I-95/I-295	New York–Newark	New York/New Jersey
2	I-90/I-94	Chicago	Illinois
3	I-605	Los Angeles–Long Beach	California
4	I-35	Austin	Texas
5	I-610	Houston	Texas
6	I-678	New York–Newark	New York
7	I-405	Los Angeles–Long Beach	California
8	I-290	Chicago	Illinois
9	I-69	Houston	Texas
10	I-278	New York–Newark	New York/New Jersey
11	I-24	Nashville-Davidson	Tennessee
12	I-10	Los Angeles–Long Beach	California
13	I-710	Los Angeles–Long Beach	California
14	I-45	Houston	Texas
15	I-680	San Francisco–Oakland	California
16	I-495	New York–Newark	New York/New Jersey
17	I-5	Seattle-Takoma	Washington
18	I-5	Los Angeles–Long Beach	California
19	I-76	Philadelphia	Pennsylvania
20	I-87	New York–Newark	New York/New Jersey
21	I-105	Los Angeles–Long Beach	California
22	I-75/I-85	Atlanta	Georgia
23	I-10	New Orleans	Louisiana
24	I-10	Lake Charles	Louisiana
25	I-210	Los Angeles–Long Beach	California

Freight Facilities

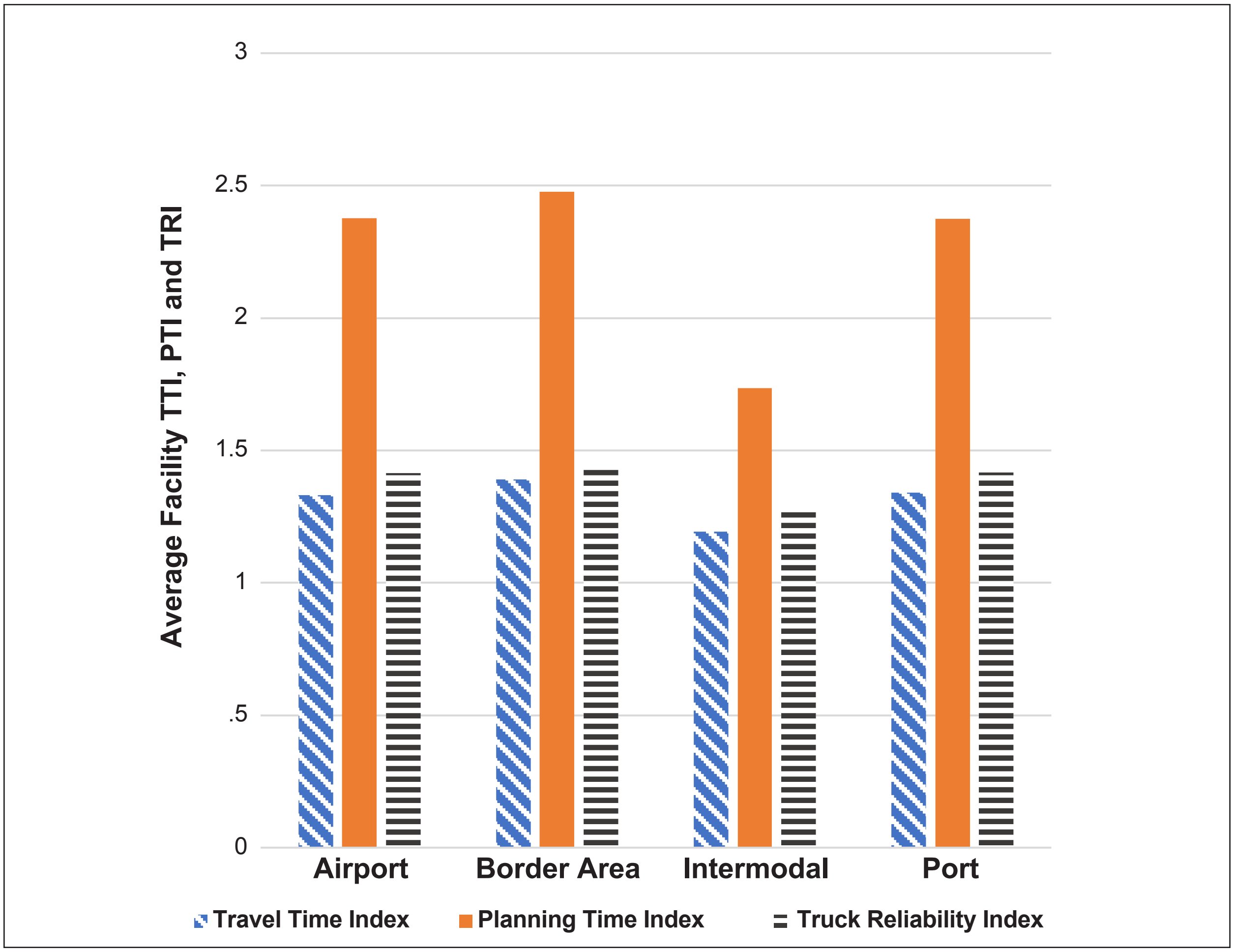
The FMT was also used to assess mobility on the NHS accessing intermodal locations like airports, ports, intermodal rail facilities, and borders. As shown in figure 12 and figure 13, highways accessing these freight facilities had the following results:

- NHS routes surrounding airports and port areas had the highest mobility challenges. This is likely because these locations tend to be within large urban areas.
- NHS routes surrounding rail intermodal facilities and border areas had lower delay. Rail intermodal facilities are usually sited in less populated areas outside urban boundaries for improved truck access. Most border crossing areas tend to be located in smaller urban areas, and mobility challenges are localized at the crossing.
- In terms of travel time and reliability indicators, highways accessing ports and airports had the highest PTI, closely followed by border areas.
- Airports, ports, and border areas were higher on the three indicators than rail intermodal facilities. This may be due in part to some rail intermodal facilities being located outside major urban areas, whereas major ports and large airports are typically in urban areas.
- Border areas may reflect the delays as a result of border crossing traffic at those locations.



Source: FHWA

Figure 12. Chart. Delay per mile for access to freight facilities in 2019.

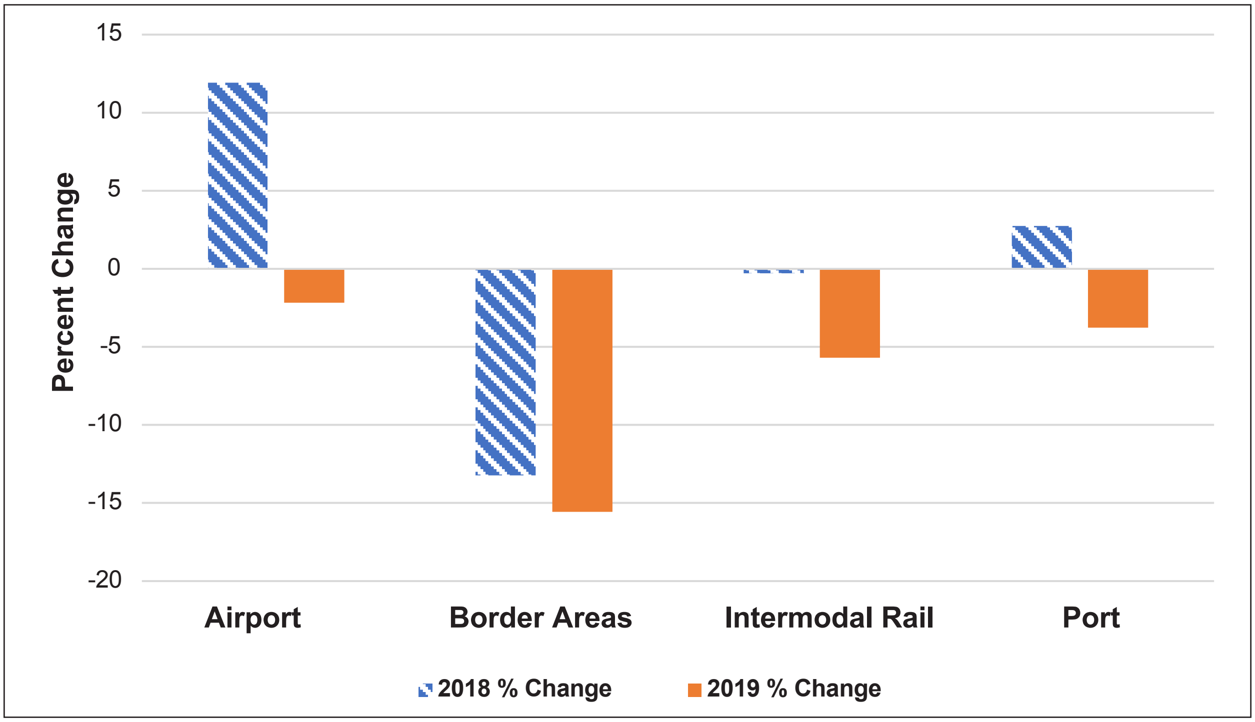


Source: FHWA

Figure 13. Chart. Average travel time index, planning time index, and truck reliability index for access to freight facilities in 2019.

Figure 14 shows the percent change for delay per mile for NHS routes accessing facilities from 2017 to 2018 and 2018 to 2019, with the following results:

- Conditions worsened in 2018 for access to airports and ports.
- All locations improved in 2019.

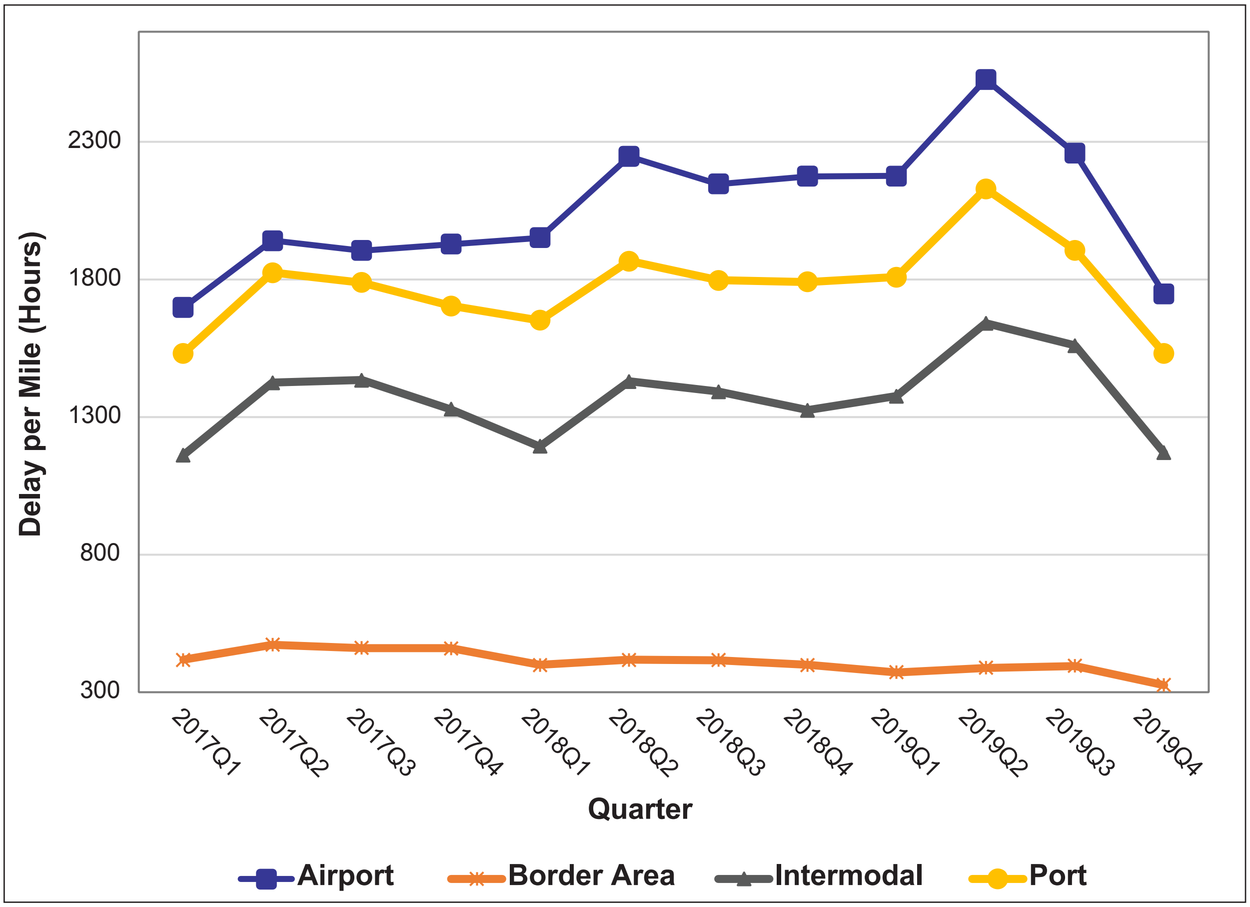


Source: FHWA

Figure 14. Graph. Percent change of delay per mile for access to facilities from 2017 to 2018 and 2018 to 2019.

Figure 15 shows the quarterly comparison of access to freight facilities, with the following results:

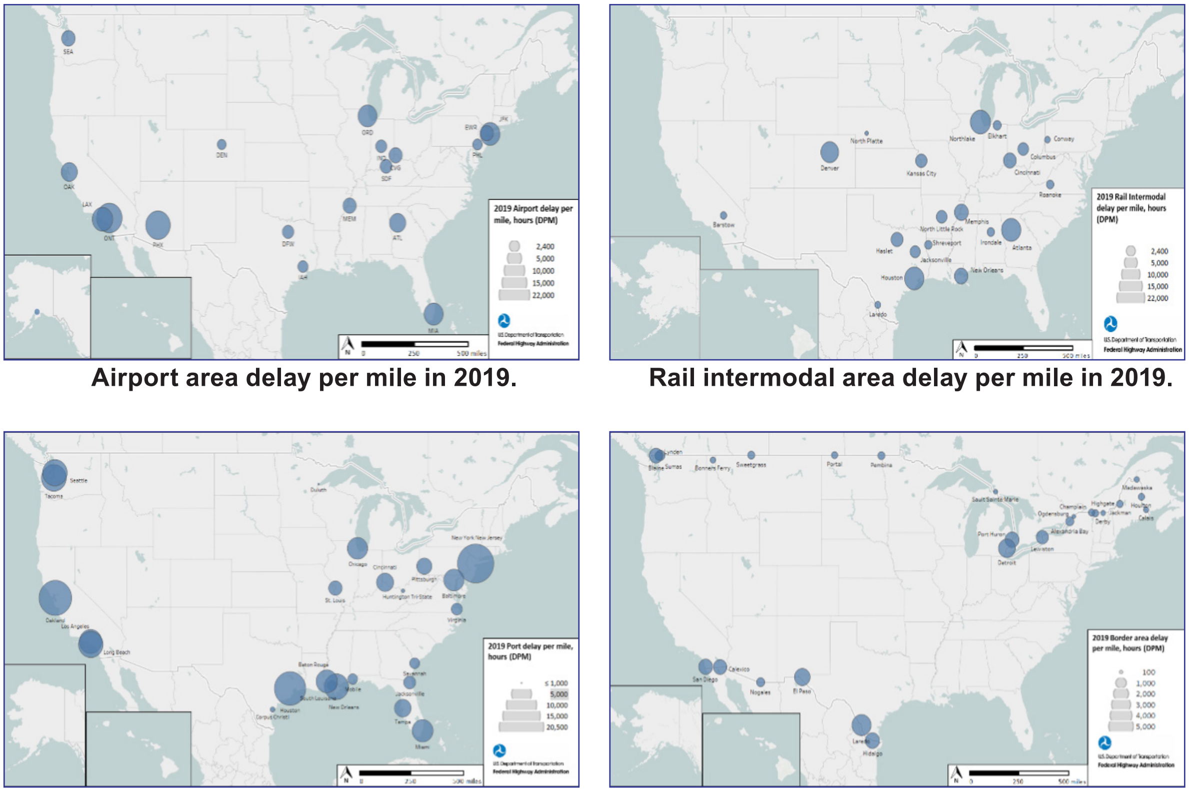
- Airports, ports, and rail intermodal areas showed similar trends of increasing delay per mile and second quarter increases in each year.
- Border areas showed a decrease in delay per mile over the years.



Source: FHWA

Figure 15. Graph. Combined delay per mile quarterly analysis by different freight facilities.

Figure 16 shows delay per mile for NHS routes surrounding airports, intermodal rail facilities, ports, and borders. The larger circle sizes reflect greater delay per mile.



Airport area delay per mile in 2019.

Rail intermodal area delay per mile in 2019.

Port area delay per mile in 2019.

Border area delay per mile in 2019.

Source: FHWA

Figure 16. Map. Delay per mile for airports, rail intermodal areas, port areas, and border areas in 2019.

Findings for NHS routes surrounding freight facilities include:

- Access to airports in Anchorage, AK, Houston, TX, Chicago, IL, and Los Angeles, CA, improved in 2019. Access to other airports such as Denver, CO, and Ontario, CA, worsened.
- Access to rail intermodal facilities in Shreveport, LA, Elkhart, IN, Jacksonville, FL, and Atlanta, GA, showed improvements in 2019.
- Ports that showed access improvements for 2019 are Duluth, MN, Huntington, (WV) Tri-State, New Orleans, LA, Saint Louis, MO, and Pittsburgh, PA. Those with noticeable worsening access are Baltimore, MD, Chicago, IL, and southern Louisiana.
- Most border areas improved from 2017 to 2019.

Conclusion

The Freight Mobility Trends analysis yields helpful information to aid understanding of dynamics in freight demand on the national transportation system. Increasing demand on the freight transportation system highlights the importance of investments in system capacity and operational strategies to address congestion, reliability, and intermodal connectivity. This report highlights challenges and opportunities where improvements can be achieved through a range of suggested strategies.

Demands on the Interstate System from the higher truck and passenger vehicle volumes is evident in the significant amount of delay seen by the data in major urban areas. These freight bottlenecks not only impact mobility, but also have adverse environmental and congestion impacts on local communities. Major freight bottlenecks and congested corridors on the Interstate System tend to be concentrated in megaregions, with Los Angeles, New York, Chicago, Atlanta, San Francisco, and the "Texas-Triangle" (Dallas/ Fort Worth, Houston, and San Antonio) and having the greatest number of major bottlenecks. While the top 100 freight bottlenecks and congested corridors only make up a little more than 1 percent of the Interstate System, these locations account for 21 percent of total Interstate System truck delay. This underscores the need for targeted, data-driven transportation investments to address congestion and increase the efficiency of freight movements around major centers of industry and trade.

While the Interstate System tends to be more reliable than other parts of the NHS, the TTTR index shows a decline in reliability on the Interstate System from year to year, indicating this reliability is gradually worsening as congestion continues to grow. Transportation System Management and Operations (TSMO) initiatives, such as integrated corridor management, managed lanes, work zone management, traffic incident management, and travel demand management, can leverage operational strategies and technologies to optimize existing capacity under the growing demand placed on the Interstate System.

The data show that arterials tend to have more challenges with reliability than other roadways. Upon leaving the Interstate System, freight must travel through congested arterials mixed with traffic interacting with the local street system, further impacting first and last-mile travel to major destinations. This highlights the need for comprehensive management of the system through coordinated planning by State, regional, and local transportation agencies as well as arterial management tools such as traffic signal optimization and access management.

Urban areas tend to have worse freight performance than rural areas in terms of congestion, delay, and unreliability. However, the data also show that rural roadway performance declined from 2017 to 2019. This shows that the impact of growth in travel demand is not just limited to urban areas, but also affects the performance in rural areas. Seasonal fluctuations can be seen in the performance indicators for many States. TSMO initiatives, such as road weather management and incident response, are key to managing these impacts on the rural freight transportation system.

Intermodal connections from highways to ports, rail, and airports are key to an efficient intermodal freight transportation system. The data show that NHS routes surrounding airports and port areas also show mobility challenges. An emphasis on improving intermodal connections to freight facilities is critical to improving access to these major trade gateways and the multimodal freight transportation system's performance.

Freight truck traffic is concentrated on major routes connecting population centers, ports, border crossings, and other major activity hubs. Corridor coalitions and similar coordination between States will continue to address common needs for safe and efficient freight mobility along key corridors supporting economic development. Coordination between States and MPOs around megaregions can also help support integration of transportation planning with economic development.

This increased demand on the transportation system calls for decision makers to ensure limited public funding is allocated toward projects that provide the maximum benefit. For the U.S. Department of Transportation (USDOT), State DOTs, and MPOs to plan for, improve, and operate the transportation system more effectively, there need to be ways to comprehensively monitor and assess transportation performance and mobility trends. This report provides information that can support national, state, and regional freight transportation planning, programing, and investments. States and MPOs are taking a variety of approaches to address freight mobility based upon local factors. USDOT can support these efforts through the National Freight Strategic Plan, promoting multimodal and operational solutions through programs such as the National Highway Freight Program, and considering freight mobility needs in Federal grant funding through programs such as the Infrastructure for Rebuilding America (INFRA) and other discretionary grant programs.

Highways are an integral element of the national, multimodal freight transportation system. The Nation's highways serve a vital role in moving both people and goods. Continuous freight mobility measurement will provide important information that can be used in conjunction with other economic and infrastructure condition indicators to understand how to keep freight moving throughout the Nation. This report provides information on the performance of the freight system and insights into needs for planning and coordinating investments to support freight efficiencies.

SECTION 1: INTRODUCTION

The Nation's highways serve a vital role in moving both people and goods. Highways are an integral element of the national, multimodal freight transportation system. With projected growth in passenger and freight travel, the Nation's highways will continue to experience even greater demand.

This increase in demand calls for transportation decision makers at all levels of government to ensure that increasingly limited public funding is being allocated toward projects that provide the maximum benefit. To do this, decision makers need information on the performance of the transportation system so that they can optimize investments and operational strategies. Decision makers also need to understand the outcome of improvements to identify whether the investment or operational strategy is working as expected. For decision makers to be able to plan for, improve, and operate the transportation system, there need to be ways to comprehensively monitor and assess transportation performance and mobility trends.

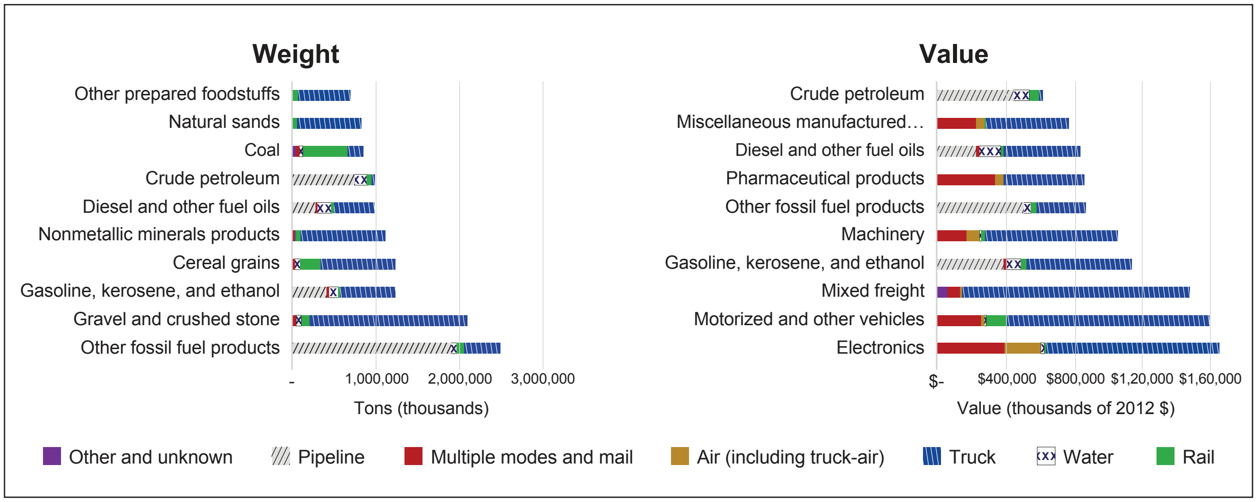
The Federal Highway Administration's (FHWA's) Freight Mobility Trends (FMT) program provides high-level, national trends in freight mobility. This program uses a newly developed FMT dashboard tool that processes a suite of indicators to assess freight movement over a range of locations based on truck travel data. Specifically, it uses the National Performance Management Research Data Set (NPMRDS) truck probe data, as well as the Highway Performance Monitoring System (HPMS), to visualize performance at the national level and provide indicators that help tell the freight story with the functionality to focus on different geographies and locations in order to gain insight into observations.

This report presents the results of national freight mobility trends from 2017 to 2019. The goal of the FMT is to provide a sense of freight performance for a range of locations significant for national freight movement.

Freight in the United States

Freight moves over a multimodal network of highways, railroads, waterways, pipelines, and airways. This network supports a daily average of approximately 51 million tons of freight valued at more than $51.8 billion in 2018. Most goods movement occurs by truck at nearly 12 billion tons in 2018, followed by pipeline at 3 billion tons and rail at nearly 2 billion tons. Goods movement by truck represents 67 percent of the total domestic tonnage and 69 percent of value in 2018.[4]

According to the U.S. Department of Transportation (USDOT) Bureau of Transportation Statistics (BTS), trucks are involved in the supply chain of all top 10 commodities by tonnage and value, as shown in figure 17.[5]



Source: USDOT BTS. Freight Facts and Figures. 2019. https://data.bts.gov/stories/s/Moving-Goods-in-the-United-States/bcyt-rqmu#commodities. Note: Other fossil fuel products include coal and petroleum products not elsewhere classified, such as liquefied natural gas, coke, asphalt, and other products of coal and petroleum refining, excluding gasoline, aviation fuel and fuel oil. Other prepared foodstuffs include dairy products, processed vegetables, processed fruit, coffee and tea, restaurants, with the remainder being hardware, office supplies, and other miscellaneous items.

Figure 17. Graph. Top commodities moved by mode.

As figure 17 shows, trucks carry a large proportion of goods, ranging from high-value commodities, such as electronics, motorized vehicles, machinery, and mixed freight (groceries, office supplies, and hardware), to bulk commodities, such as gravel, grains, and gasoline. Trucks moved more high-value, time-sensitive commodities than any other mode in 2018.[6]

Freight movement is expected to continue to increase in the future. The Freight Analysis Framework (FAF) estimates freight tonnage will increase about 37 percent between 2018 and 2045. This increase will place additional truck traffic on a highway system that currently experiences congestion in many areas.[7]

The freight network is critical to the U.S. economy. Freight travels over an extensive network of highways, railroads, waterways, pipelines, and airways. In terms of highway infrastructure, traffic volume increased 17.9 percent between 2000 and 2018, from 2,747 billion to 3,240 billion vehicle miles traveled.[8] Long-haul freight truck traffic in the United States is concentrated on major routes connecting population centers, ports, border crossings, and other major hubs of activity. Long-haul freight truck traffic on the National Highway System (NHS) is projected to increase dramatically. BTS projects that truck travel may increase from 311 million miles per day in 2015 to 488 million miles per day by 2045.[9]

BTS provides a freight transportation services index (TSI) that measures the month-to-month volume of goods for the for-hire transportation industry. The TSI increased by 37.1 percent from 2000 to 2018. The growth rates in the volume of goods by mode from 2009 to 2019 are as follows:

- Truck: 54.6 percent.
- Pipeline: 51.5 percent.
- Intermodal rail: 49.3 percent.
- Air freight: 44.5 percent.
- Water: 14.8 percent.
- Rail carloads: –1.4 percent.

The growth in freight and its expected increase over the next 25 years mean that higher volumes of vehicles will be on the Nation's freight network. Specifically, long-haul freight truck traffic on the NHS is projected to increase significantly from 311 million miles per day in 2015 to 488 million miles per day by 2045, a 60 percent increase. The number of NHS miles carrying large volumes and high percentages of trucks is projected to increase. Miles of segments with more than 8,500 trucks per day, and where at least every fourth vehicle is a truck, are estimated to double from 6,229 miles in 2015 to 12,729 in 2045.[10]

FHWA's Efforts to Improve Freight Mobility

Based on this increase in freight movement, USDOT carefully assesses freight performance in the United States and works with States and metropolitan regions to develop plans and programs that will improve the mobility and reliability of freight. This requires information on not only the volume of traffic and the amount of freight being moved, but also freight mobility—how well or efficiently freight moves.

Resources such as the NPMRDS, freight data analysis, research, training, and technical assistance to State departments of transportation (DOTs) and metropolitan planning organizations (MPOs) help to advance the state of the practice. FHWA's work with other modal administrations at USDOT demonstrates its leadership in developing freight probe data and other freight data sources such as the FAF, commodity data, and other resources.

Additionally, FHWA is leading efforts to develop freight fluidity measures with a goal of illuminating the multimodal performance of supply chains. This work can help advance multimodal data that can be used to assess freight trips in detail and identify where bottlenecks are occurring beyond the highway experience.

Further, FHWA invests significant resources and effort into helping State DOTs and MPOs implement freight data and performance measurement techniques they can use to identify freight bottlenecks, assess freight project needs and benefits, and understand the relationship of freight to the economy and environment.

The new FMT tool represents an advancement in FHWA's progress toward understanding the mobility dynamics of freight by helping to visualize performance for a range of geographies using a suite of measures. This report reflects the results of the FMT tool. The report begins with information on the methodology used in the FMT tool and provides results for the range of locations—from specific freight locations and facilities to national-level statistics (aggregated from many freight segments).

Methodology

The FMT dashboard relies on a suite of mobility indicators applied over a range of locations that allow FHWA to measure freight in new and comprehensive ways through the following:

- Indicators that measure freight mobility at the national, State, regional, or corridor level.
- Freight mobility measures around major ports, intermodal facilities, and border crossings.
- A methodology to identify freight bottlenecks and compare them.
- Data analysis and visualization tools to develop different pictures of freight mobility indicators using the NPMRDS.

This provides high-level coverage and detail for FHWA to assess freight mobility and target policies, programs, and resources to develop programs and work with stakeholders such as DOTs and MPOs.

Mobility Indicators

The mobility indicators used in the FMT include the following (as detailed in appendix A):

- Mobility:
    - Total truck hours of delay—the amount of extra time spent traveling due to congestion.
    - Truck hours of delay per mile—the total vehicle hours of delay for a section of roadway divided by the section length.
    - Travel time index (TTI)—the ratio of the peak-period travel time to the reference travel time (free-flow travel time).
- Reliability:
    - Planning time index (PTI)—the ratio of the 95th percentile travel time to the reference travel time (free-flow travel time).
    - Buffer index (BI)—the extra time (or time cushion), expressed as a percentage, that travelers must add to their average travel time when planning trips to ensure on-time arrival.
    - Truck reliability index (TRI)—similar to the Moving Ahead for Progress in the 21st Century Act (MAP-21) truck travel time reliability (TTTR) performance measure, which calculates the ratio of the 95th percentile travel time to the 50th percentile travel time during five time periods of the day.
- Cost:
    - Congestion cost—the estimated cost of wasted fuel and delay (dollars).
- Environment:
    - Wasted fuel—a function of wasted time and fuel used while trucks are delayed in congestion.
- Economic:
    - Commodity value—the assigned value of HPMS truck counts based on the value per ton by roadway functional classification (using the FAF in dollars).

Data

FHWA's FMT relies on the NPMRDS and HPMS data sets. The NPMRDS travel time data for freight trucks, passenger vehicles, and all vehicles on the NHS is a central data set for the FMT. The FHWA HPMS is a source of data for average annual daily traffic (AADT) volumes, average annual daily truck traffic (AADTT) volumes, and other roadway inventory attributes.

The NPMRDS segmentation has been aggregated into approximately 3- to 4-mile sections in urban areas and 5- to 10 mile sections in rural areas. This provides a better way to visualize performance on a national scale.

All mobility indicators (with the exception of the TRI) are weighted by truck vehicle miles of travel (TVMT) to allow for aggregating up to section, area, State, and national values. Reference speed for the mobility indicators was determined by using the NPMRDS travel times during off-peak or uncongested conditions as an estimate of free-flow speed.

Indicator Differences

Together, these indicators provide different lenses to tell the complete freight story on the U.S. transportation network. The mobility elements of the freight story are told with travel time indices and measures of delay. The TTI provides a mobility measure during the peak periods by considering the average peak conditions relative to the reference speed (e.g., free flow). Indicators of the PTI and BI provide insight into the reliability of the road relative to free-flow conditions and average travel times, and the TRI provides insight into day-to-day truck reliability.

Bottleneck Identification Criteria

Bottlenecks are identified through a ranking of roadway sections from the truck hours of delay, normalized by segment length to get delay per mile (DPM). Though it is also possible to identify bottlenecks by any number of indicators and break them out by rural and urban, FHWA uses DPM as the primary measure because it includes weighting by truck volume, captures the full extent of the congestion problem, and allows for nationwide comparison of locations.

Locations

The FMT tool provides a suite of indicators across the entire NHS at a variety of location categories. The location categories include road types nationally, at the State level, within MPO boundaries, in urban areas, and in rural areas. There are nationally significant Interstate freight corridors, the National Highway Freight Network (NHFN), and the Strategic Highway Network (STRAHNET). The analysis locations also include border crossings, ports, cargo-bearing airports, and rail intermodal locations.

Appendix A details definitions and methodologies for mobility indicators, data, and analysis locations.

SECTION 2: FREIGHT PERFORMANCE RESULTS

This section provides the 2017 through 2019 trends for the freight mobility indicators at the national level, followed by information at the State level and specific tracked locations.

National Trends

At the national level, all of the measures can be rolled up (aggregated) into single indicators, providing a high-level indication of freight performance throughout the United States. Table 6 provides the national roll-up (aggregated) indicator results.

In addition to the measures of delay, the indices for travel time index (TTI), planning time index (PTI), truck reliability index (TRI), and buffer index (BI) provide indicators of the variability or unreliability of the system. If these indicators were provided at a segment level, the actual number would reflect a real experience for that segment. For example, at the segment level, a PTI of 1.50 means that to ensure on-time delivery for a trip that typically takes 30 minutes in light traffic, one needs to plan 45 minutes (30 minutes × 1.50) during congested conditions for important trips. Segments with worse reliability have higher PTIs.

There is little change at the national level over the three-year period. Data show slight increases for 2018 for all indicators except TTI. Table 7 shows an increase in truck vehicle miles traveled (TVMT) between 2017 and 2018, which may contribute to the worsening of reliability and congestion seen in 2018. At the time of this report, the 2019 TVMT data were unavailable.

Table 6. National performance trends.

Year	DPM (Truck Hours/Mile)	Total Delay (Annual Truck Hours)	TTI	PTI	TRI	BI Percent
2019	1,528	656,454,567	1.17	1.61	1.19	30
2018	1,597	716,282,120	1.17	1.62	1.20	31
2017	1,570	696,394,350	1.17	1.61	1.19	30

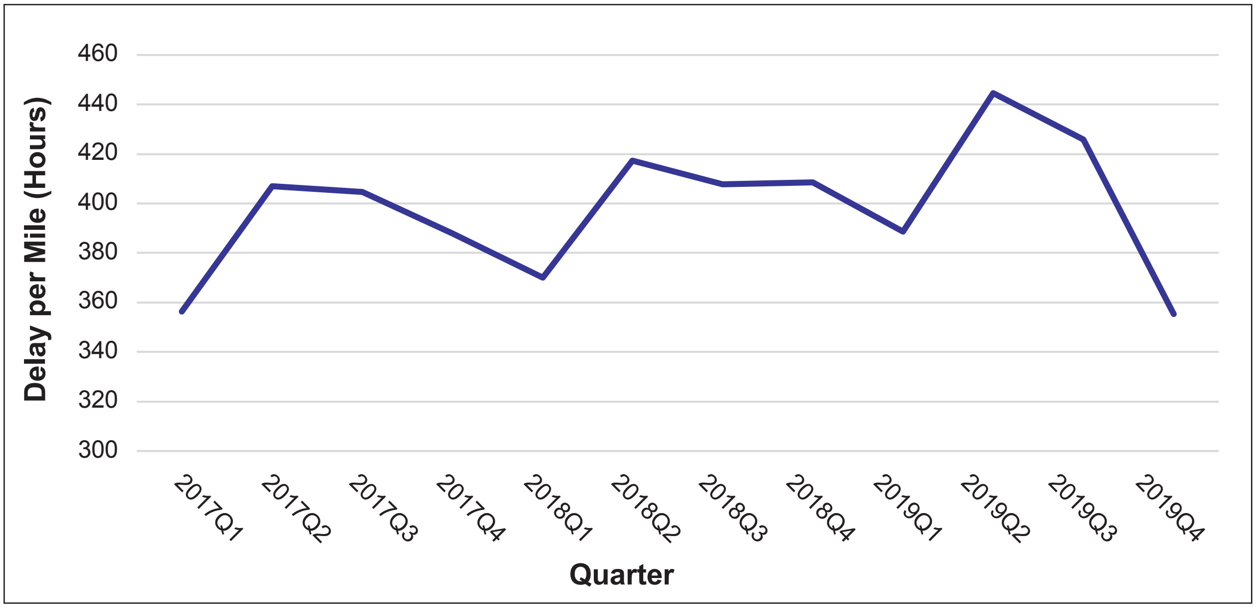
Key: delay per mile (DPM), travel time index (TTI), planning time index (PTI), truck reliability index (TRI), buffer index (BI)

Table 7. Truck vehicle miles of travel by year.

Year	TVMT (Millions of Vehicle Miles)
2018	304,864
2017	297,593

Key: truck vehicle miles traveled (TVMT)

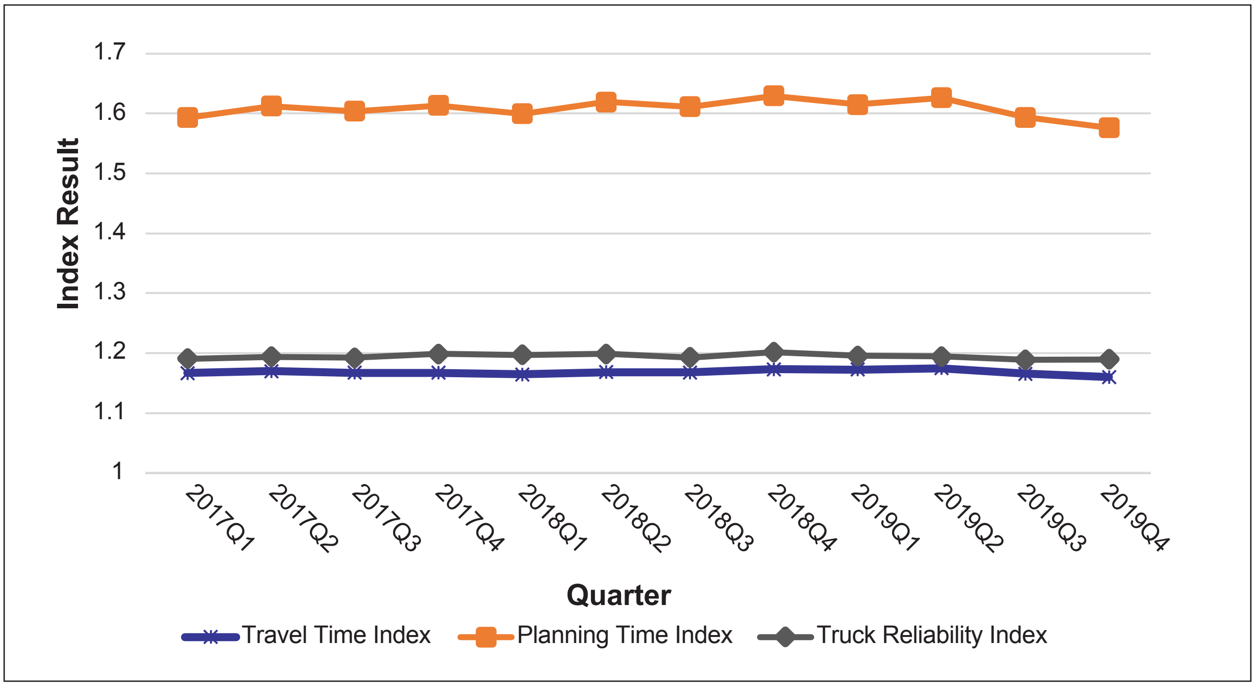
Figure 18 illustrates delay per mile for the three-year period and shows a pattern of increases in the second quarter for each year, as well as an improvement in the fourth quarter of 2019. These second-quarter spikes may reflect supply chain cycles and an increase in production and related congestion following winter and global production patterns (e.g., Chinese New Year) that occur in quarter one.



Source: FHWA

Figure 18. Graph. Quarterly national performance for delay per mile.

Figure 19 shows the quarterly performance for the national mobility and reliability indicators. The TTI gives an indication of the travel time needed during the peak period compared to free flow. The PTI compares the time that is needed to ensure 95 percent on-time arrival to the typical free-flow travel time. The TRI shows day-to-day variation travel time by comparing the 95th percentile travel time to typical travel during the same time of day. At the national level, all three indicators are stable over the three-year period, but the PTI does show slightly more fluctuation each quarter due to being at the tail of distribution rather than in the middle like a TTI measure. The indicators also show an improvement in reliability in the fourth quarter of 2019 similar to the reduced delay per mile results.



Source: FHWA

Figure 19. Graph. Quarterly national performance for the travel time index, planning time index, and truck reliability index.

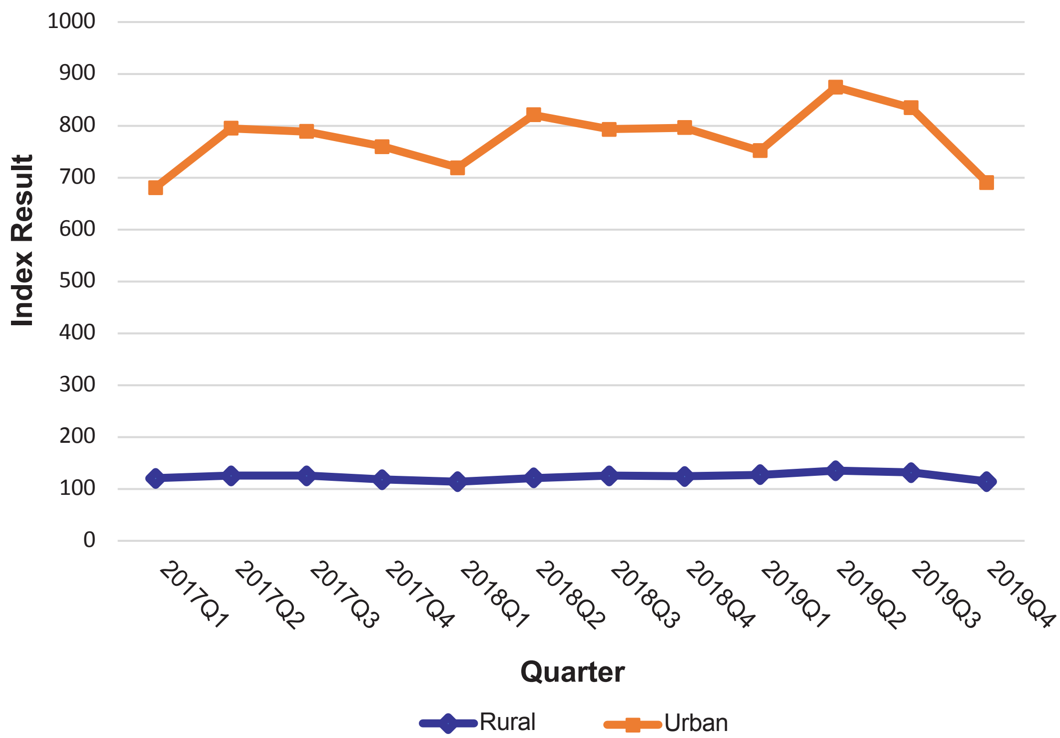
Table 8 shows that urban roadways experience higher levels of congestion or delay and unreliability than rural roadways. While most delay is observed on urban roadways, there is slight worsening for both urban and rural roadways from 2017 to 2018. Urban roadways show slight improvements for delay per mile in 2019. Rural roadway delay per mile worsened each year. Rural areas show slight increases in total delay over the three years. Urban areas show an increase in total delay in 2018 and a decrease in total delay in 2019.

Table 8. Performance by urban and rural roadways.

Year	Geography	DPM (Truck Hours/Mile)	Total Delay (Annual Truck Hours)	TTI	PTI	TRI	BI Percent
2019	Urban	2,947	529,573,837	1.25	1.91	1.28	44
	Rural	508	126,880,730	1.09	1.28	1.10	15
2018	Urban	3,109	589,799,212	1.25	1.93	1.29	45
	Rural	489	126,482,908	1.08	1.26	1.09	14
2017	Urban	3,065	571,631,761	1.25	1.93	1.29	45
	Rural	485	124,762,589	1.08	1.25	1.09	14

Key: delay per mile (DPM), travel time index (TTI), planning time index (PTI), truck reliability index (TRI), buffer index (BI)

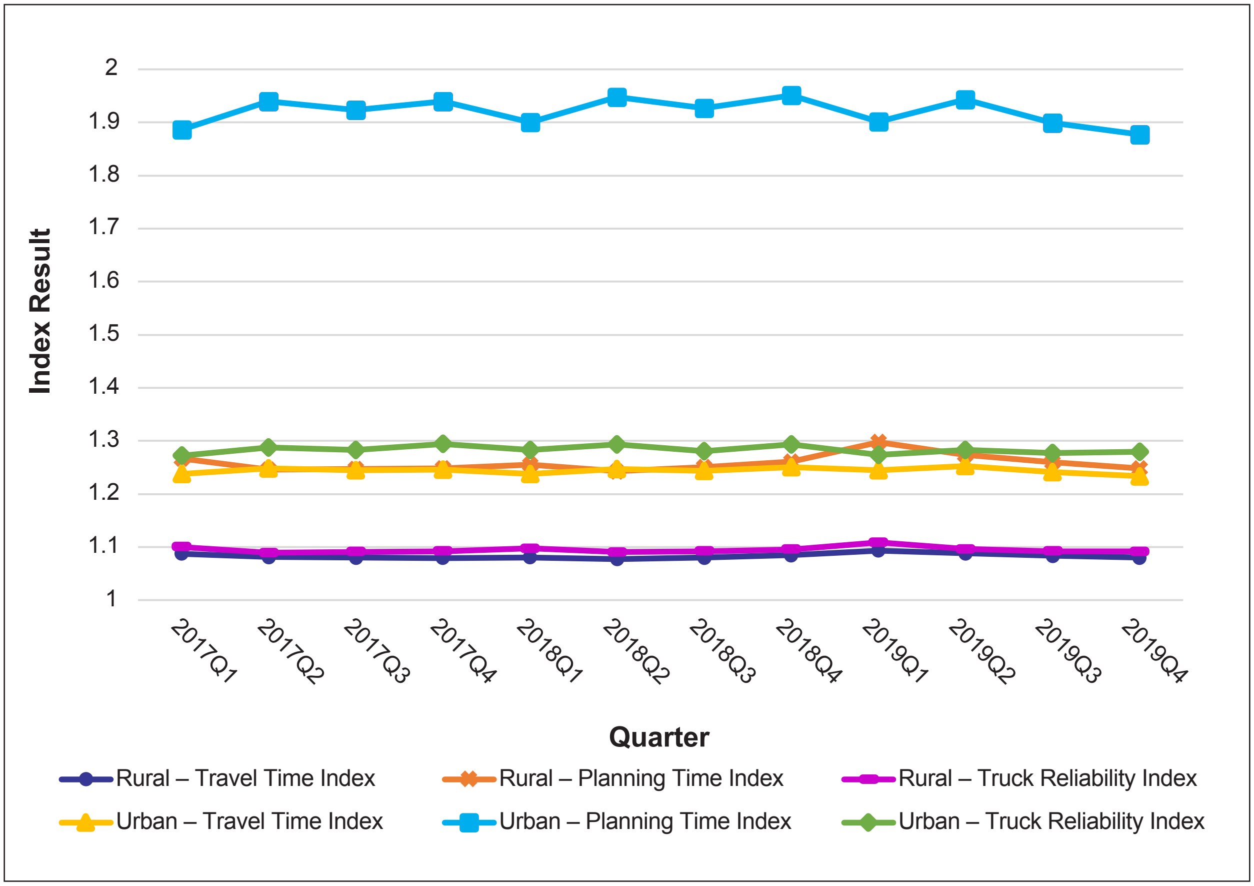
Figure 20 shows the quarterly delay per mile trends by urban and rural roadways. Urban roads have the highest levels of congestion, and these levels increase in the second quarter of each year. Rural roadways have lower congestion and variability. The rural roadways are stable, and a second-quarter increase is slight. Rural roadways will not show much change because a large extent of the mileage is close to free flow and reliable, which serves to obscure any delay or variability in smaller areas of the rural network.



Source: FHWA

Figure 20. Graph. Quarterly delay per mile by urban and rural roadways.

Figure 21 shows the quarterly results for the TTI, PTI, and TRI by urban and rural roadways. The urban PTI shows the most fluctuation, similar to the national result discussed previously. The other indicators are mostly stable over the three-year period.



Source: FHWA

Figure 21. Graph. Quarterly travel time index, planning time index, and truck reliability index.

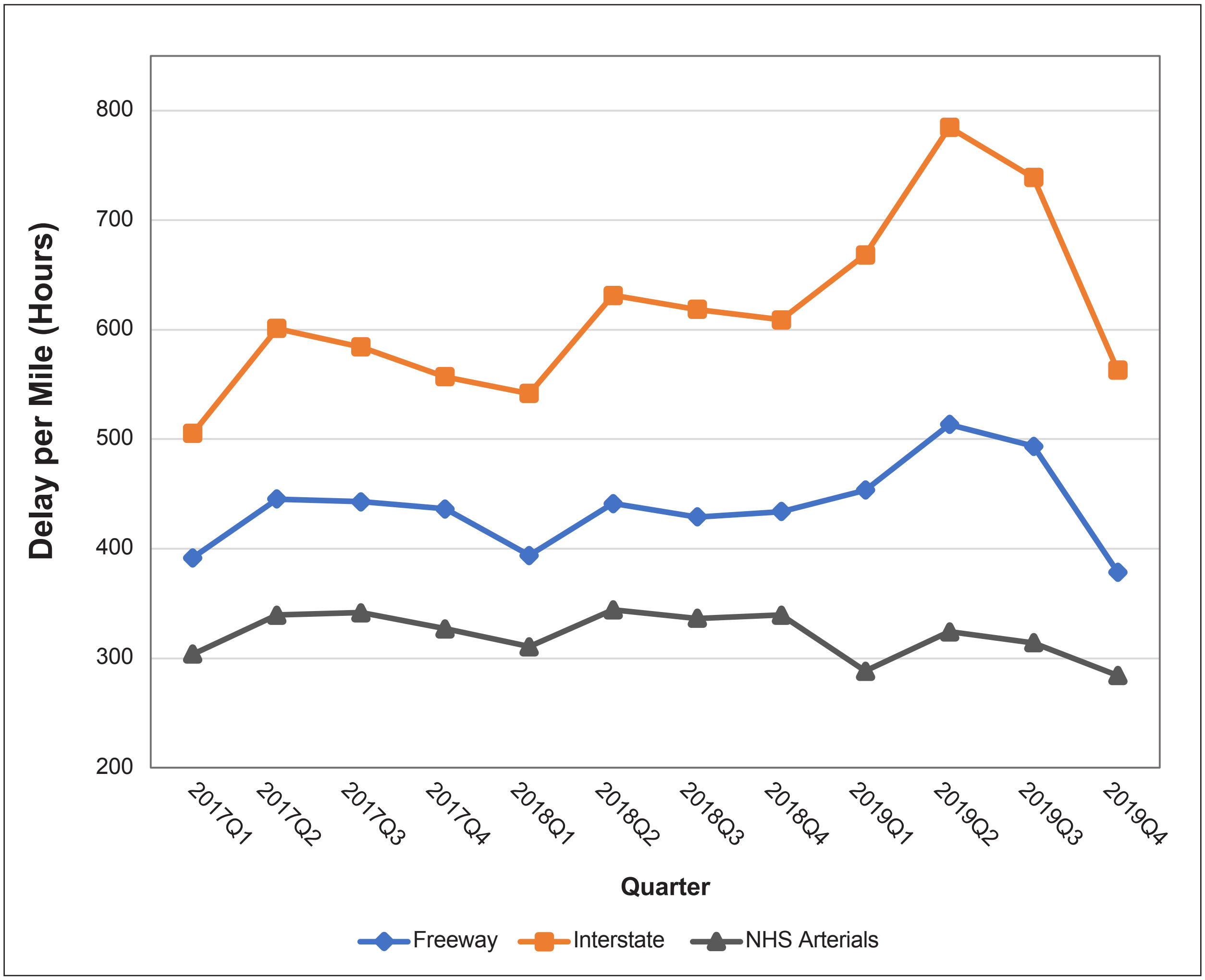
Table 9 provides the indicators and delay for roadway type on the National Highway System (NHS). For the NHS, functional classes are Interstates, freeways (off the Interstate), and NHS arterials. NHS arterials tend to have higher mobility and reliability challenges. This is likely due to the signalized nature of arterial roadways that introduce variability into the traffic along with increased access points on the surface streets. Interstates show higher levels of delay per mile, which is likely due to the higher volumes and increased peak-period congestion.

Table 9. Yearly performance by National Highway System road type.

Year	NHS Road Type	DPM (Truck Hours/Mile)	Total Delay (Annual Truck Hours)	TTI	PTI	TRI	BI Percent
2019	Interstate	2,438	2345,38,841	1.10	1.37	1.15	20
	Freeway	1,633	64,444,025	1.18	1.66	1.23	34
	NHS Arterial	1,216	357,471,701	1.33	2.15	1.28	53
2018	Interstate	2,398	240,104,851	1.1	1.36	1.15	20
	Freeway	1,687	70,483,132	1.17	1.66	1.23	34
	NHS Arterial	1,323	405,694,137	1.34	2.19	1.29	54
2017	Interstate	2,249	220,337,091	1.09	1.34	1.14	19
	Freeway	1,738	71,683,844	1.18	1.66	1.23	34
	NHS Arterial	1,329	404,373,415	1.34	2.2	1.3	54

Key: delay per mile (DPM), travel time index (TTI), planning time index (PTI), truck reliability index (TRI), buffer index (BI)

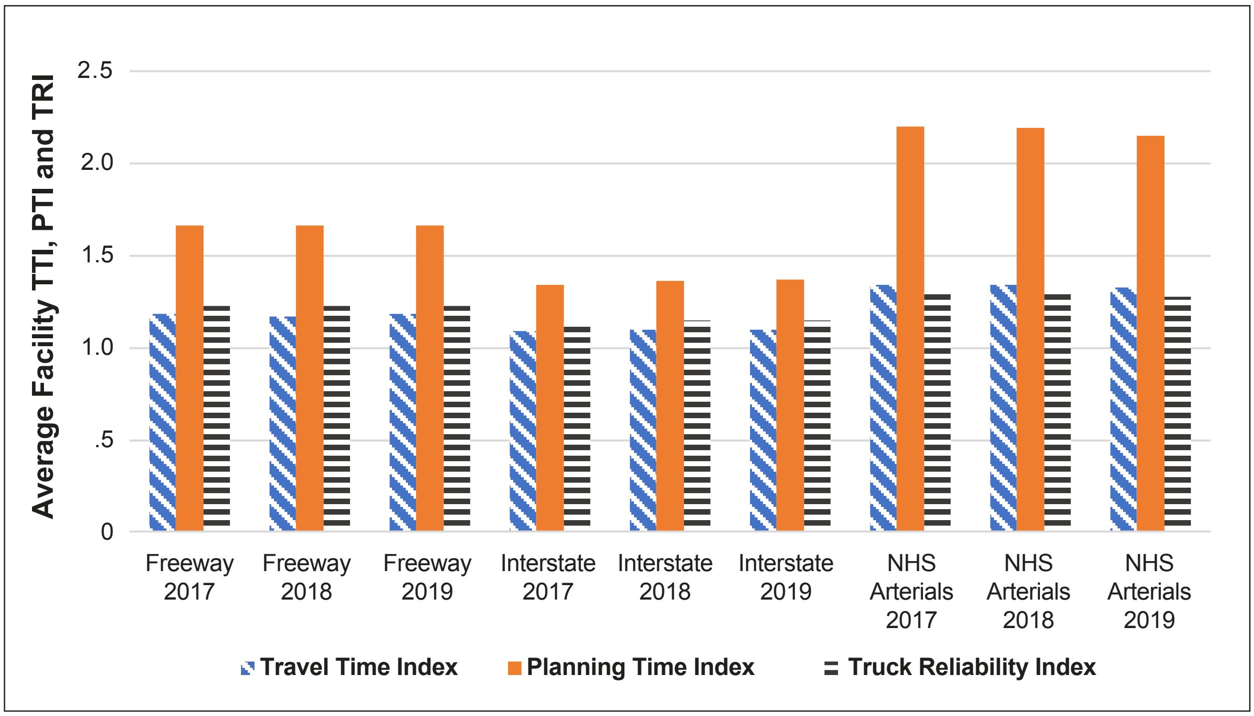
Figure 22 depicts the national performance for delay per mile by NHS roadway over the three-year period. Delay per mile shows variability, especially for Interstates. That Interstates' have higher delay per mile but improved reliability reflects that they can be reliably congested, while other roadways like NHS arterials experience more unreliability due to elements like surface street operations.



Source: FHWA

Figure 22. Graph. National performance for delay per mile by National Highway System roadway type.

Figure 23 represents the data for the 2019 mobility and reliability indicators for NHS roadways. There is only minor fluctuation in performance. The PTI decreases over the three-year period for NHS arterials, stays the same for freeways, and worsens slightly for Interstates. The TRI improves slightly for NHS arterials, stays the same for freeways, and just slightly increases for Interstates. The TTI improves for NHS arterials, has a slight dip in 2018 for freeways, increases in 2019, and slightly increases for Interstates. These fluctuations are minimal but show a small decline in reliability for the Interstate and a slight improvement in reliability for NHS arterials.



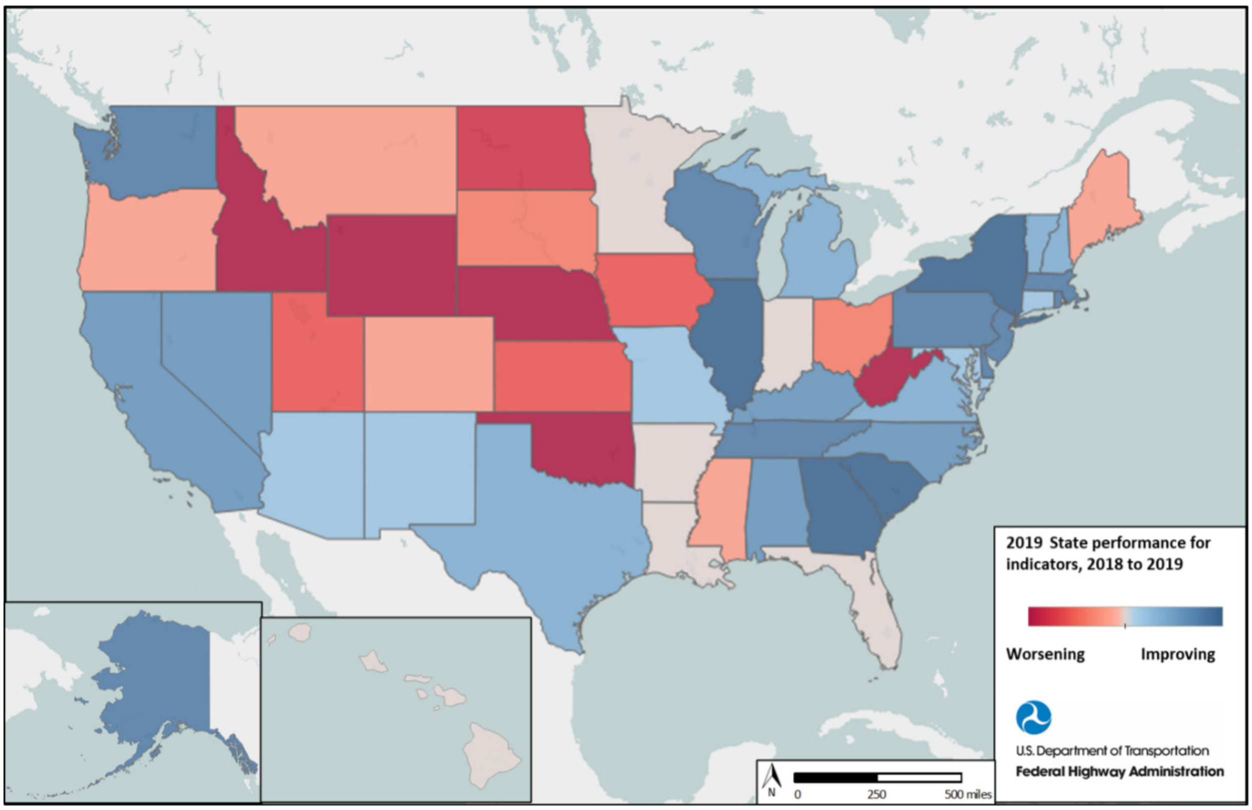
Source: FHWA

Figure 23. Chart. National performance for the travel time index, planning time index, and truck reliability index by National Highway System roadway type.

States

Most States had improved or mixed results for freight performance between 2018 and 2019. A few States showed consistent improvements or worsening across all measures. Figure 24 shows a map of States that represents whether the States worsened or improved by aggregating performance for the indicators of delay per mile, total delay, TTI, PTI, and TRI. Freight performance in the States is scored for the number of measures that improved or worsened.

A description detailing figure 24 follows.



Source: FHWA

Figure 24. Map. State performance for indicators from 2018 to 2019.

Most States improved or had mixed results on the indicators. A few States showed consistent improvements or worsening across all indicators, but many showed improvements in the indicators. The following States had consistent improvements in most indicators between 2018 and 2019:

- Alabama.
- Alaska.
- Arizona.
- California.
- Connecticut.
- Delaware.
- District of Columbia.
- Georgia.
- Illinois.
- Kentucky.
- Maryland.
- Massachusetts.
- Michigan.
- Missouri.
- Nevada.
- New Hampshire.
- New Jersey.
- New Mexico.
- New York.
- North Carolina.
- Pennsylvania.
- Rhode Island.
- South Carolina.
- Tennessee.
- Texas.
- Vermont.
- Virginia.
- Washington.
- Wisconsin.

The following States had worsening performance in most indicators between 2018 and 2019:

- Colorado.
- Idaho.
- Iowa.
- Kansas.
- Maine.
- Mississippi.
- Montana.
- Nebraska.
- North Dakota.
- Ohio.
- Oklahoma.
- Oregon.
- South Dakota.
- Utah.
- West Virginia.
- Wyoming.

The following States were neutral for performance meaning that there was improvement for two indicators, worsening for two indicators, and no change for one indicator.

- Arkansas.
- Florida.
- Indiana.
- Louisiana.
- Minnesota.

Note that data for Hawaii are not available for 2019.

Table 10 shows the 10 States with the highest 2019 indicators for all roadways (urban and rural combined). California is the only State to appear in the 10 highest results for each indicator. Washington, D.C., Maryland, California, New York, and New Jersey are highest for five of the indicators. These are shown in orange and bold font. There are no data for Hawaii for 2019.

Table 10. The 10 highest State results for the Freight Mobility Trends indicators.

Note: States highest for all or most of the indicators are colored orange and bold font.

State	DPM (Hours/ Mile	State	Total Delay (Annual Truck Hours)	State	TTI	State	PTI	State	TRI	State	BI Percent
DC	5,064	**CA**	96,454,919	**DC**	1.69	**DC**	3.63	**DC**	**DC**	**DC**	110
MD	3,912	TX	62,024,730	MA	1.30	MA	2.16	MA	1.36	MA	57
CA	3,505	FL	40,424,749	RI	1.28	**CA**	2.09	**MD**	1.32	**CA**	52
UT	3,474	**NY**	34,524,209	**CA**	1.28	RI	2.03	**CA**	1.32	RI	50
DE	2,794	IL	31,530,659	**NJ**	1.27	**NY**	1.96	AK	1.30	**MD**	48
LA	2,520	GA	25,915,822	**NY**	1.26	**NJ**	1.93	CT	1.30	CT	45
FL	2,475	PA	22,319,995	DE	1.26	WA	1.92	RI	1.29	WA	44
NJ	2,283	TN	20,091,704	WA	1.24	**MD**	1.91	WA	1.28	**NJ**	44
NY	2,208	OH	19,672,512	**MD**	1.24	CT	1.88	DE	1.27	**NY**	44
IL	2,029	UT	17,628,037	CO	1.24	DE	1.88	**NJ**	1.27	CO	43

Key: delay per mile (DPM), travel time index (TTI), planning time index (PTI), truck reliability index (TRI), buffer index (BI)

Table 11 shows the States with the highest 2019 results for all indicators for urban roadways. California is the only State in the 10 highest for all indicators. Washington, D.C., New York, and Washington are in the 10 highest for five of the six indicators. These are highlighted in orange and bold font.

Table 11. The 10 highest State results for the Freight Mobility Trends indicators for urban roadways.

Note: States highest for all or most indicators are colored orange and have bold font.

State	DPM (Hours/ Mile	State	Total Delay (Annual Truck Hours)	State	TTI	State	PTI	State	TRI	State	BI Percent
UT	8,514	**CA**	87,174,168	**DC**	1.69	**DC**	3.63	**DC**	1.60	**DC**	110
DC	5,064	TX	50,783,801	**CA**	1.35	**CA**	2.42	**CA**	1.40	**CA**	66
CA	4,810	FL	36,397,900	**NY**	1.35	**NY**	2.31	**WA**	1.39	**WA**	62
MD	4,789	**NY**	31,847,177	**WA**	1.33	**WA**	2.29	MA	1.37	MA	60
LA	4,652	IL	28,009,024	AK	1.32	MA	2.23	MD	1.37	CO	59
DE	3,848	GA	22,254,511	CO	1.32	CO	2.20	CO	1.35	**NY**	57
WA	3,635	PA	17,248,004	SC	1.32	AK	2.14	OR	1.34	RI	56
FL	3,609	TN	16,780,768	MA	1.31	RI	2.13	TX	1.33	MD	54
NY	3,423	OH	16,496,374	RI	1.31	SC	2.10	AZ	1.33	AK	54
GA	3,410	UT	15,236,180	DE	1.29	FL	2.07	RI	1.32	SC	52

Key: delay per mile (DPM), travel time index (TTI), planning time index (PTI), truck reliability index (TRI), buffer index (BI)

Table 12 shows the States with the highest 2019 result for all indicators for rural roadways. No State appears in the 10 highest for all indicators, but Delaware is the only State in five of the six indicators. Alaska, New Hampshire, Colorado, Vermont, and South Dakota are highest for four of the six indicators. These States are highlighted in orange and bold font.

Table 12. The 10 highest State results for the Freight Mobility Trends indicators for rural roadways.

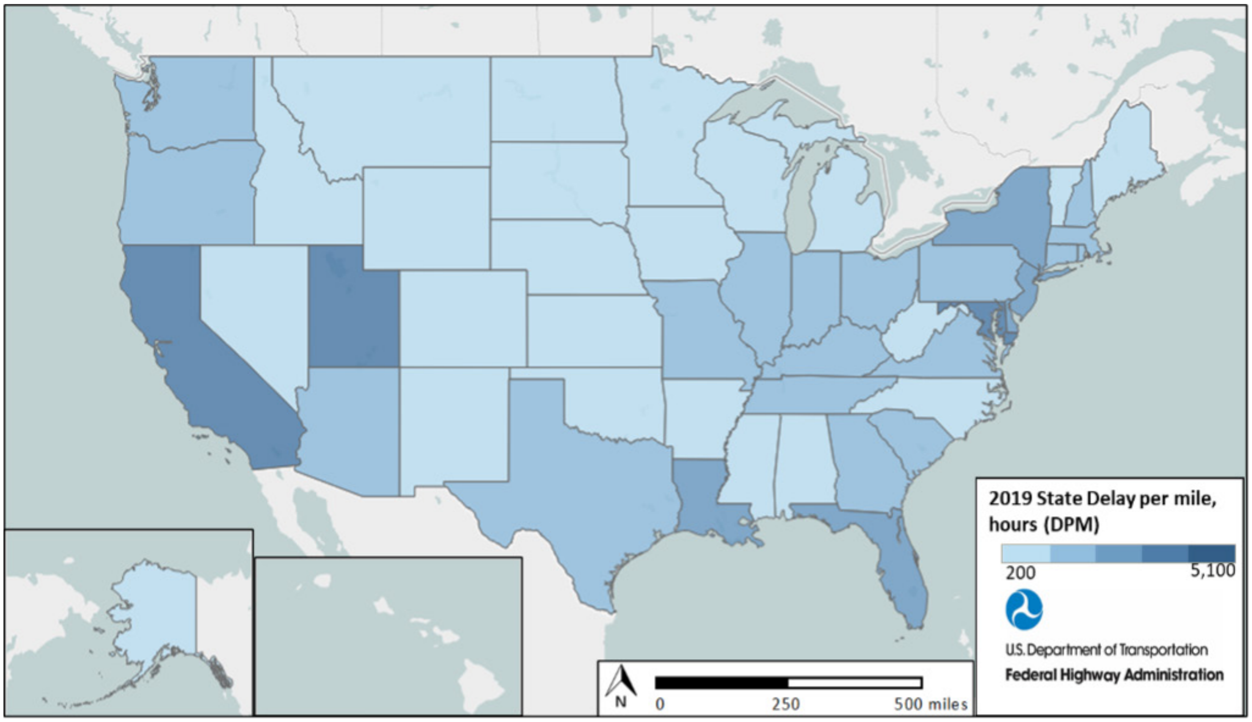
Note: States highest for most indicators are colored orange and have bold font.

State	DPM (Hours/ Mile	State	Total Delay (Annual Truck Hours)	State	TTI	State	PTI	State	TRI	State	BI Percent
MD	1,304	TX	11,240,929	**AK**	1.18	**AK**	1.69	**AK**	1.30	**AK**	37
DE	1,182	CA	9,280,751	**DE**	1.17	**DE**	1.54	**VT**	1.24	**NH**	20
CA	988	PA	5,071,991	**NH**	1.17	**NH**	1.54	**NH**	1.19	**DE**	29
NJ	912	FL	4,026,849	MT	1.15	RI	1.49	**DE**	1.19	**CO**	26
LA	843	IN	3,871,460	**CO**	1.15	MT	1.49	MT	1.18	MT	25
PA	841	MO	3,869,758	RI	1.15	**CO**	1.49	**CO**	1.17	**VT**	25
IN	826	OR	3,760,733	ID	1.14	ID	1.44	ME	1.16	**SD**	24
UT	728	GA	3,661,311	**VT**	1.14	**SD**	1.44	**SD**	1.15	ND	23
OH	713	IL	3,521,635	**SD**	1.14	**VT**	1.43	NJ	1.15	MD	22
SC	679	WI	3,508,593	MD	1.13	ND	1.43	RI	1.15	OR	22

Key: delay per mile (DPM), travel time index (TTI), planning time index (PTI), truck reliability index (TRI), buffer index (BI)

Figure 25 is a map of the delay per mile for 2019. Darker blue represents higher delay per mile. This reflects the results of the rankings for delay per mile described previously, with the greater delay per mile for locations including Washington, D.C., Maryland, and California.

Table 13 provides the DPM for 2019 that corresponds to figure 25.



Source: FHWA

Figure 25. Map. State delay per mile in 2019.

Note: No data for Hawaii are available for 2019.

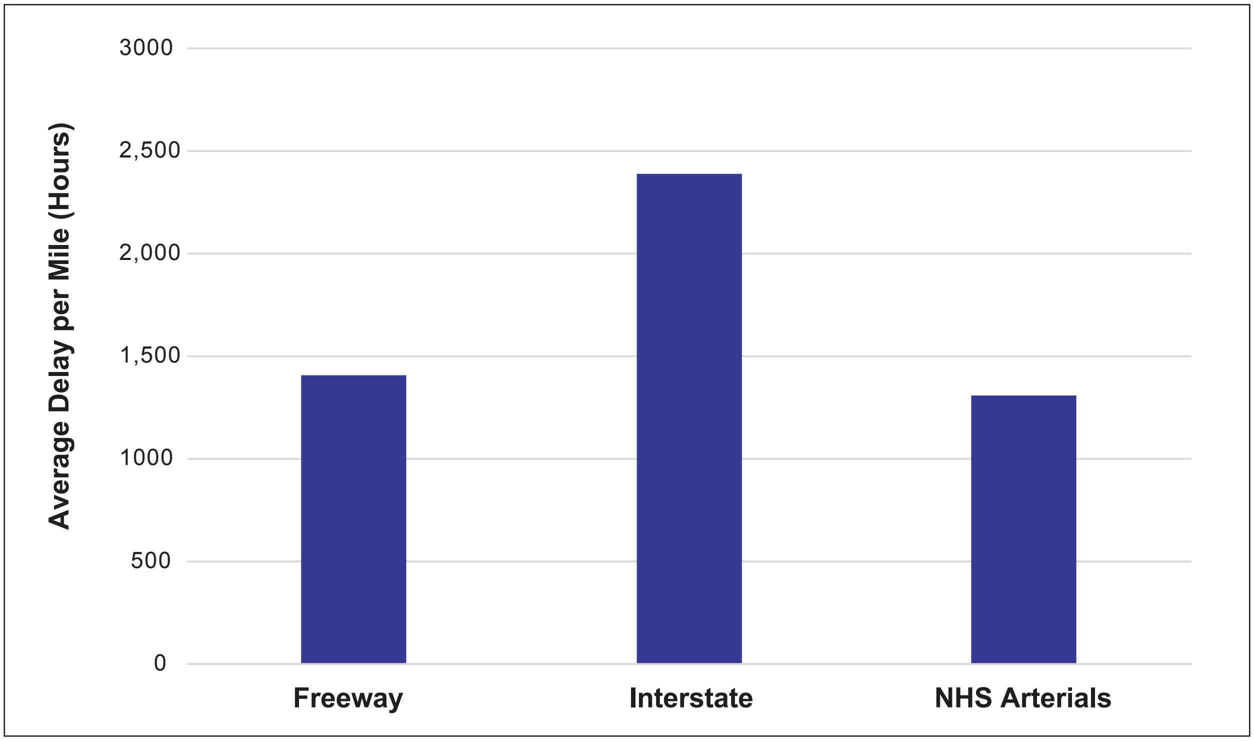
Table 13. State delay per mile, hours (DPM).

Note: No data for Hawaii are available for 2019.

Location	2019 State Delay per mile, hours (DPM)
District of Columbia	5,064
Maryland	3,912
California	3,505
Utah	3,474
Delaware	2,794
Louisiana	2,520
Florida	2,475
New Jersey	2,283
New York	2,208
Illinois	2,029
Connecticut	1,974
Tennessee	1,948
Washington	1,920
Georgia	1,872
Massachusetts	1,846
Texas	1,804
South Carolina	1,706
Pennsylvania	1,582
Indiana	1,502
Ohio	1,475
Arizona	1,424
Virginia	1,393
Kentucky	1,330
Rhode Island	1,286
New Hampshire	1,248
Oregon	1,241
Missouri	1,209
Alabama	1,122
North Carolina	1,118
Colorado	1,105
New Mexico	1,083
West Virginia	1,018
Wisconsin	958
Michigan	949
Arkansas	877
Maine	852
Mississippi	777

Location	2019 State Delay per mile, hours (DPM)
Nevada	755
Oklahoma	698
Minnesota	627
Vermont	611
Idaho	530
Kansas	501
Iowa	470
Nebraska	444
Wyoming	324
Alaska	316
North Dakota	273
Montana	263
South Dakota	230

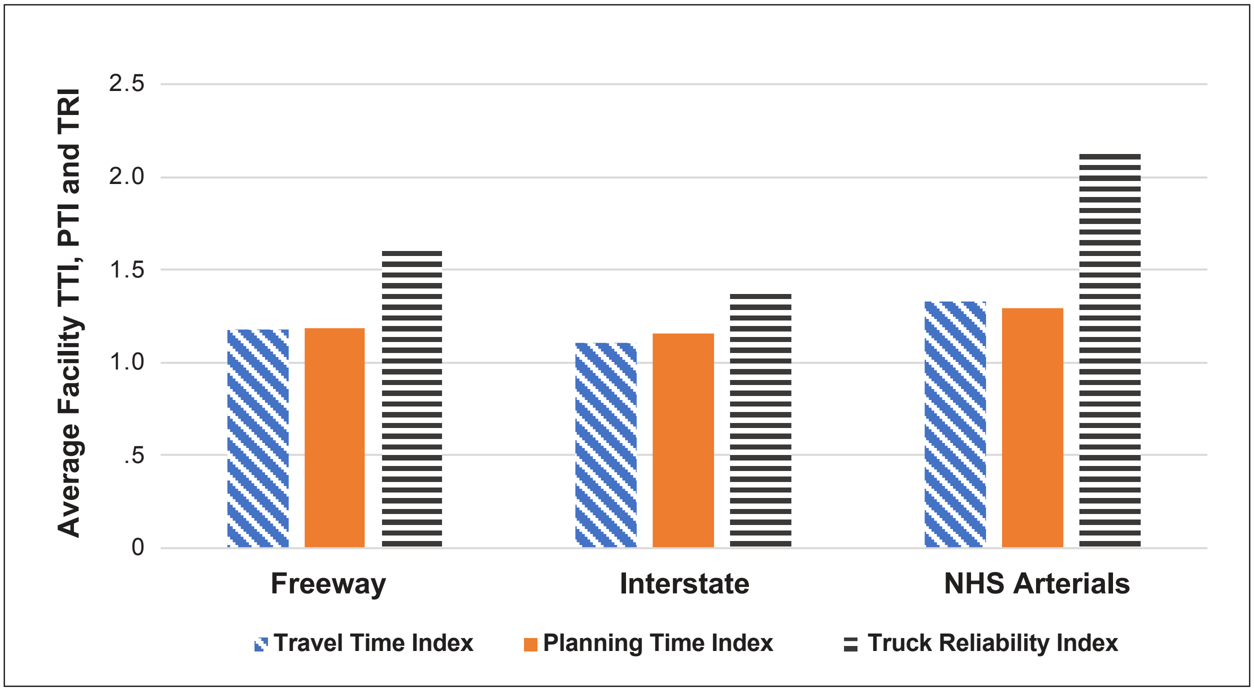
Among States, Interstates have the highest delay per mile, followed by freeways (figure 26).



Source: FHWA

Figure 26. Chart. States' delay per mile by road type in 2019.

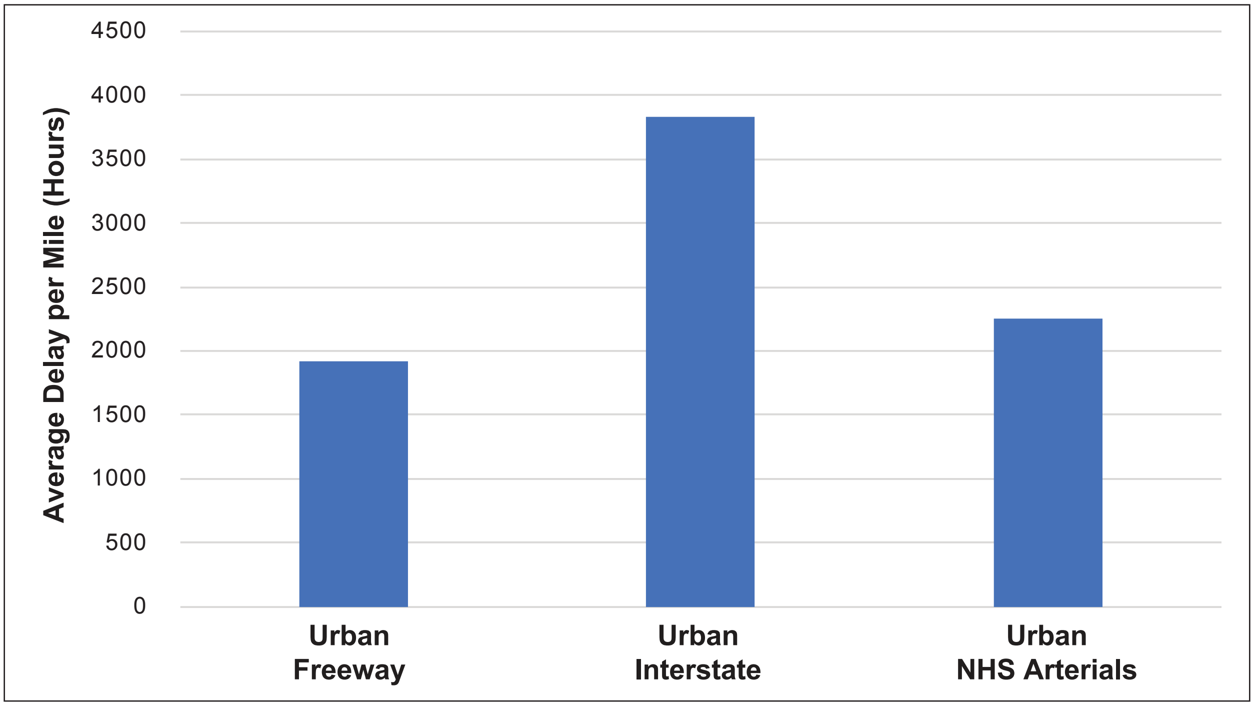
NHS arterials have higher unreliability (figure 27), while Interstates are more reliable. Though Interstates are more reliable, they have higher delay per mile (as seen previously), likely due to heavier volumes and more consistent operations that make them reliably congested. However, NHS arterials have higher unreliability, likely due to characteristics such as signalization, intersection spacing, and design.



Source: FHWA

Figure 27. Chart. State roadway performance in 2019: travel time index, truck reliability index, and planning time index.

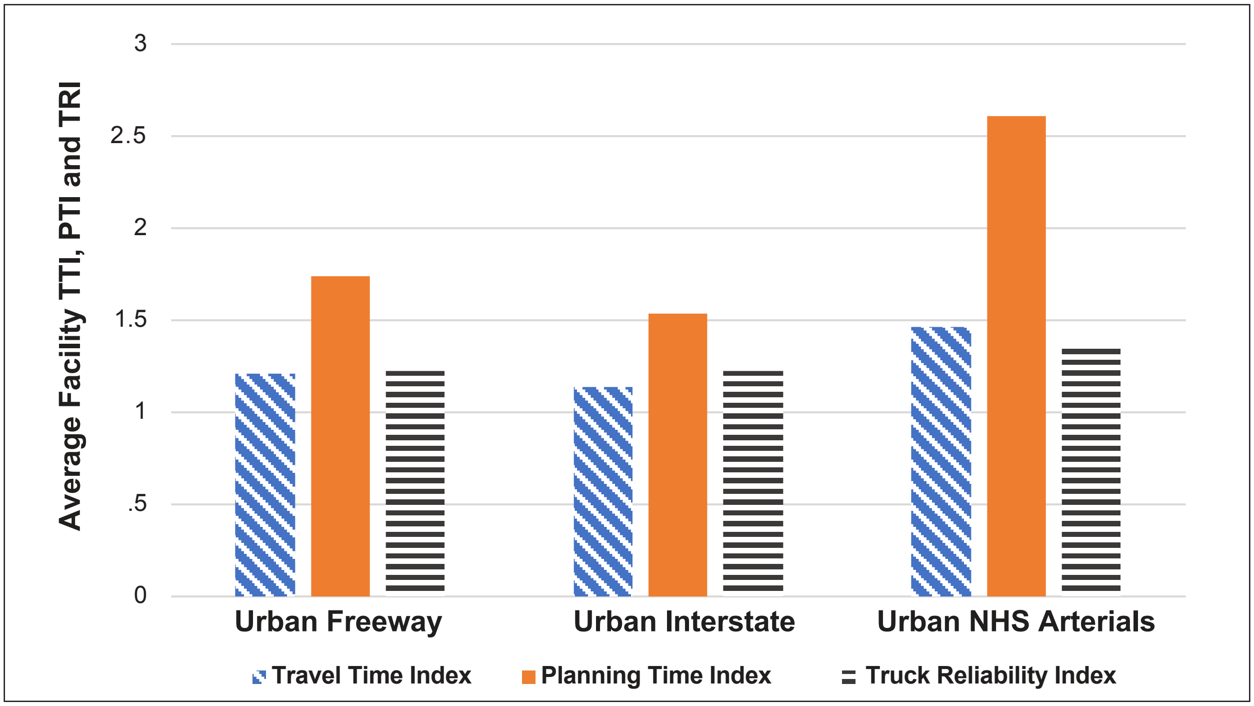
Urban Interstates show higher delay per mile than freeways and NHS arterials (figure 28).



Source: FHWA

Figure 28. Chart. State urban roadway delay per mile by road type in 2019.

Urban NHS arterials are higher for unreliability than freeways and Interstates (figure 29).

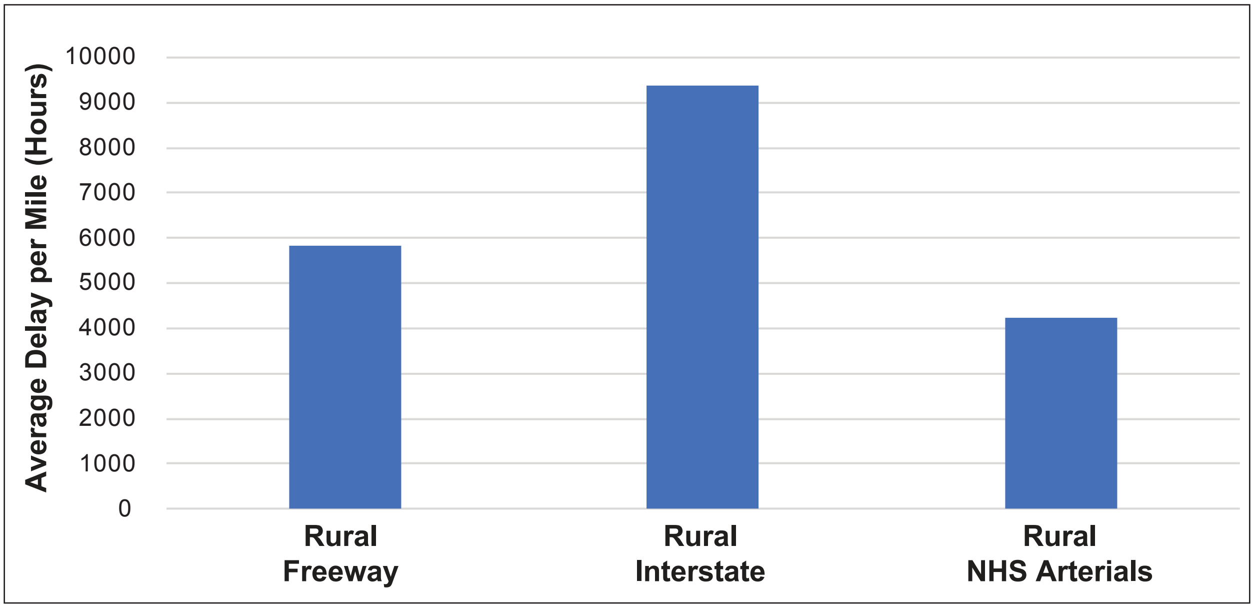


Source: FHWA

Figure 29. Chart. State urban roadway travel time index, planning time index, and truck reliability index by road type in 2019.

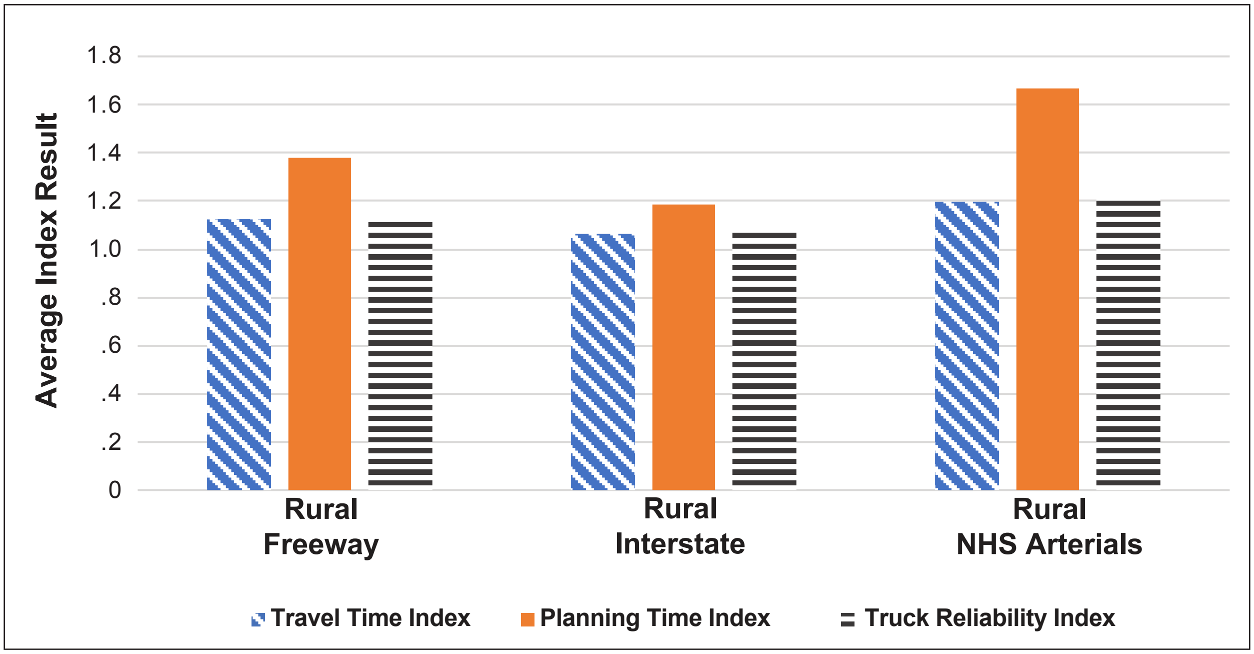
Rural Interstates exhibit higher delay per mile (figure 30). For rural roadways, NHS arterials remain the roadway type with higher unreliability although less pronounced than in urban areas (figure 31).

This analysis generally shows that urban Interstates have the highest delay per mile and tend to drive the overall result. NHS arterials tend to show lower for reliability in both urban and rural areas.



Source: FHWA

Figure 30. Chart. State rural roadway delay per mile by road type in 2019.



Source: FHWA

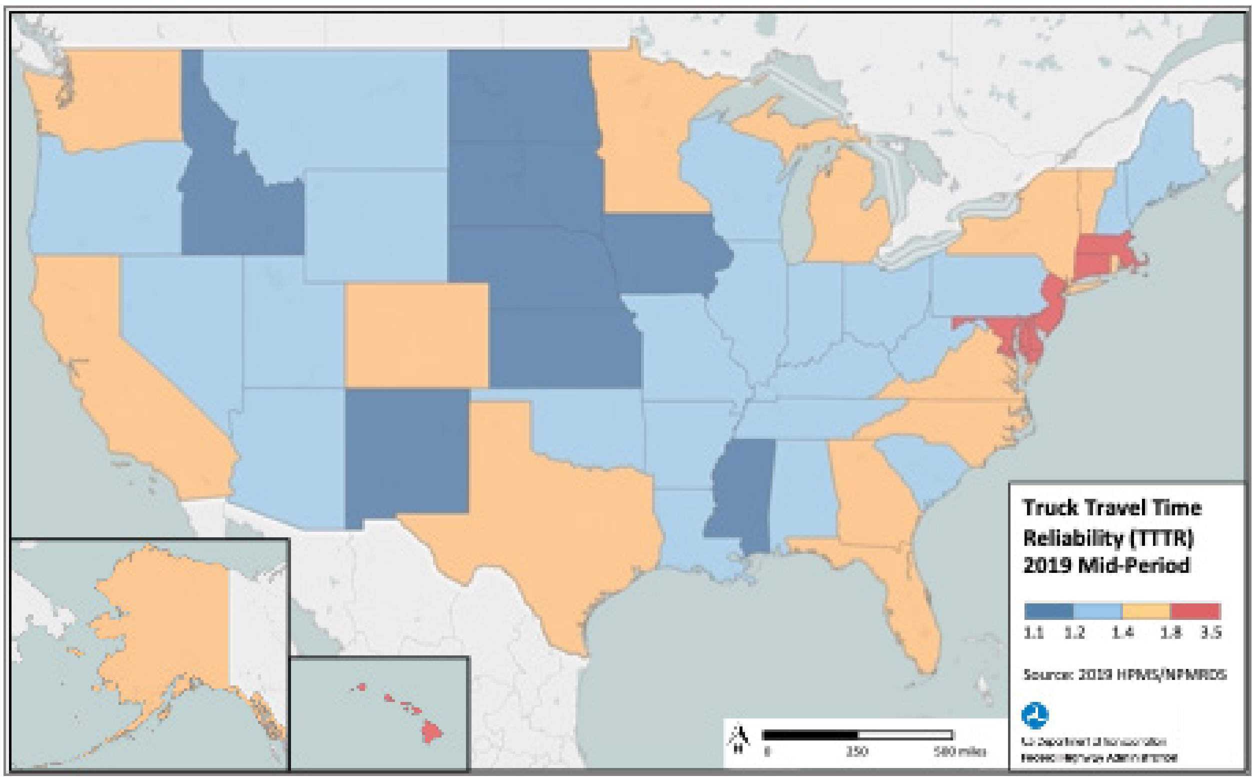
Figure 31. Chart. State rural roadway travel time index, planning time index, and truck reliability index by road type in 2019.

National Performance Measure for Truck Travel Time Reliability

The performance measure to assess freight movement on the Interstate is the Truck Travel Time Reliability (TTTR) index. The TTTR index measures the reliability or consistency of truck travel times on the Interstate over the course of a year and provides a key indicator of transportation system performance. The TTTR index is the ratio of the 95th percentile truck travel time to the 50th percentile truck travel time.

The national TTTR index measured over the entire Interstate system increased from 1.36 in 2017 to 1.39 in 2019. Figure 32 shows the results of each State's 2019 TTTR measure.

Table 14 provides the 2019 data shown in the map in figure 32.



Source: FHWA

Figure 32. Map. State travel time reliability.

Table 14 shows the 2017 and 2019 TTTR measure of each State along with the 2017–2019 TTTR index percent change. The largest increase in TTTR was in Wisconsin and West Virginia with 7 percent increases, followed by Iowa, Colorado, and New York with 6 percent increases. The State with the largest improvement was Hawaii with an 11 percent decrease, followed by Delaware with a 7 percent decrease and Washington with a 6 percent decrease.

Table 14. Truck travel time reliability index reported by States from 2017 to 2019.

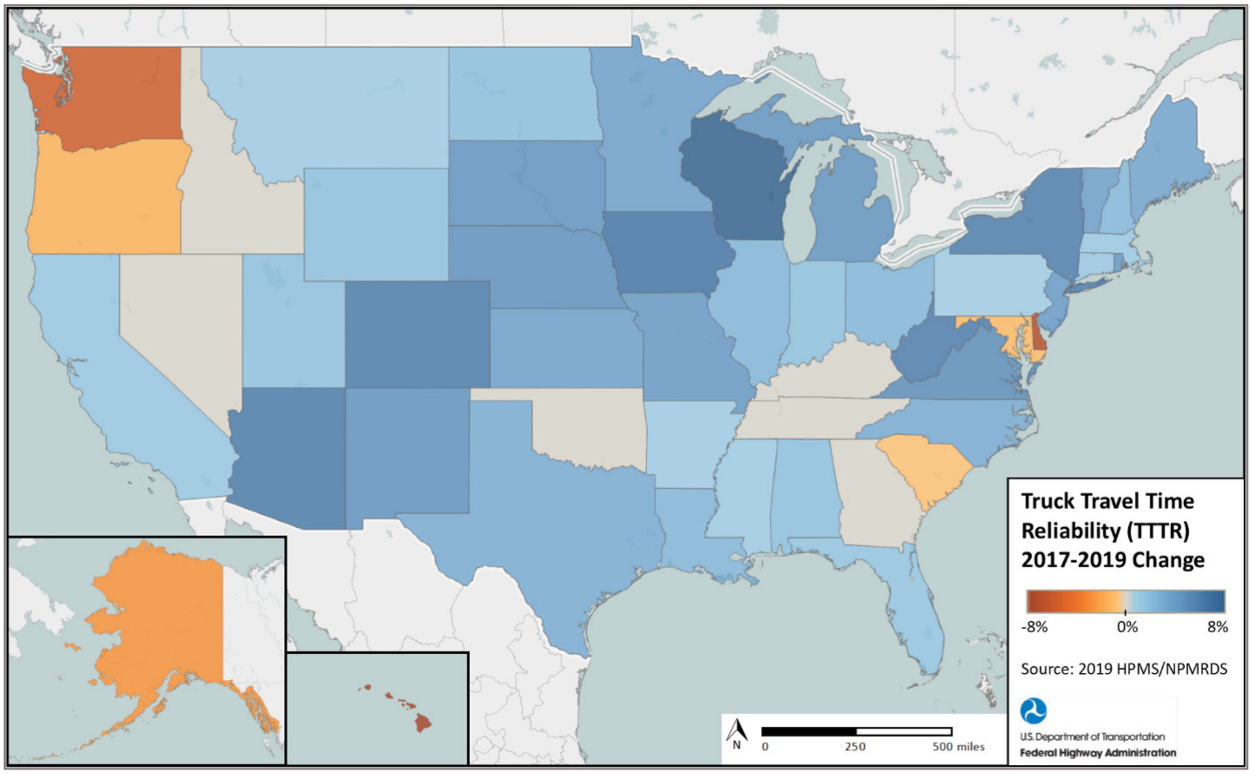
State	Baseline Year TTTR Index (2017 Data)	Year 1 TTTR Index (2018 Data)	Year 2 TTTR Index (2019 Data)	2017–2019 TTTR Index Year Change
Alaska	1.84	1.72	1.79	−3%
Alabama	1.19	1.21	1.22	3%
Arkansas	1.20	1.21	1.21	1%
Arizona	1.18	1.18	1.24	5%
California	1.69	1.72	1.71	1%
Colorado	1.37	1.38	1.45	6%
Connecticut	1.79	1.78	1.81	1%
District of Columbia	3.37	3.33	3.54	5%
Delaware	2.05	1.95	1.91	−7%
Florida	1.43	1.42	1.45	1%
Georgia	1.44	1.43	1.44	0%
Hawaii	2.75	2.92	2.46	−11%
Iowa	1.12	1.14	1.19	6%
Idaho	1.20	1.18	1.20	0%
Illinois	1.30	1.33	1.33	2%
Indiana	1.23	1.21	1.25	2%
Kansas	1.14	1.15	1.18	4%
Kentucky	1.24	1.33	1.24	0%
Louisiana	1.32	1.36	1.35	2%
Massachusetts	1.84	1.89	1.84	0%
Maryland	1.88	1.90	1.86	−1%
Maine	1.23	1.23	1.27	3%
Michigan	1.38	1.40	1.44	4%
Minnesota	1.43	1.45	1.48	3%
Missouri	1.25	1.28	1.30	4%
Mississippi	1.13	1.13	1.14	1%
Montana	1.22	1.22	1.23	1%

Table 14. Truck travel time reliability index reported by States from 2017 to 2019. (Continued)

State	Baseline Year TTTR Index (2017 Data)	Year 1 TTTR Index (2018 Data)	Year 2 TTTR Index (2019 Data)	2017–2019 TTTR Index Year Change
North Carolina	1.39	1.41	1.43	3%
North Dakota	1.15	1.15	1.17	2%
Nebraska	1.10	1.12	1.15	5%
New Hampshire	1.35	1.38	1.38	2%
New Jersey	1.82	1.89	1.89	4%
New Mexico	1.13	1.13	1.18	4%
Nevada	1.28	1.27	1.28	0%
New York	1.39	1.43	1.47	6%
Ohio	1.33	1.37	1.36	2%
Oklahoma	1.22	1.21	1.22	0%
Oregon	1.39	1.34	1.37	−1%
Pennsylvania	1.35	1.39	1.36	1%
Rhode Island	1.72	1.79	1.79	4%
South Carolina	1.34	1.36	1.33	−1%
South Dakota	1.14	1.16	1.19	4%
Tennessee	1.35	1.37	1.35	0%
Texas	1.40	1.43	1.44	3%
Utah	1.21	1.20	1.25	3%
Virginia	1.48	1.58	1.55	5%
Vermont	1.69	1.68	1.75	4%
Washington	1.63	1.61	1.54	−6%
Wisconsin	1.16	1.26	1.24	7%
West Virginia	1.21	1.27	1.29	7%
Wyoming	1.19	1.18	1.21	2%

Key: truck travel time reliability (TTTR)

Figure 33 shows the percent change in TTTR between 2017 and 2019. The data for each state shown in the map in figure 33 is in table 14.



Source: FHWA

Figure 33. Map. Percent change in truck travel time reliability from 2017 to 2019.

Urban Areas

Table 15 shows the 10 urban areas highest for the six indicators. Only Los Angeles–Long Beach–Anaheim, CA, is among the highest for each indicator. Lexington Park–California–Chesapeake Ranch Estates, MD, St. Augustine, FL, Napa, CA, and San Jose, CA, are highest for four of the five indicators. These States are highlighted in orange and bold font.

Some of these locations such as Lexington Park, MD, are near major freight generators or connections. Lexington Park, for example, is the home of the Patuxent Naval Air Station and is an urban area with mostly signalized roadways. Twin Rivers, NJ, is an area just south and west of the New York metropolitan area and is at the crossroad of I-95 and major freight roadways.

Table 15. The 10 highest urban area results for the Freight Mobility Trends performance indicators in 2019.

Note: Urban areas highest in most of the indicators are colored orange and have bold font.

Urban Area	DPM (Hours/Mile)	Urban Area (Annual Truck Hours)	Total Delay	Urban Area	TTI
Salt Lake City–West Valley City, UT	12,526	**Los Angeles–Long Beach–Anaheim, CA**	43,849,136	Twin Rivers–Hightstown, NJ	1.82
Lake Charles, LA	10,622	New York– Newark, NY– NJ–CT	35,538,813	**Lexington Park–California–Chesapeake Ranch Estates, MD**	1.64
Provo–Orem, UT	9,273	Chicago, IL–IN	25,369,134	**St. Augustine, FL**	1.62
Los Angeles–Long Beach–Anaheim, CA	7,323	Atlanta, GA	14,456,264	Boulder, CO	1.58
Riverside–San Bernardino, CA	7,146	Houston, TX	13,968,553	**Napa, CA**	1.55
New Orleans, LA	7,138	Dallas–Fort Worth–Arlington, TX	13,832,440	Lake Jackson–Angleton, TX	1.54
Ogden–Layton, UT	7,076	Miami, FL	12,474,460	**Los Angeles–Long Beach–Anaheim, CA**	1.52
Fredericksburg, VA	6,767	Washington, DC–VA–MD	11,433,729	Longmont, CO	1.51
Murrieta–Temecula–Menifee, CA	6,665	Philadelphia, PA–NJ–DE–MD	10,819,889	Watsonville, CA	1.50
Baton Rouge, LA	6,077	Seattle, WA	10,533,993	**San Jose, CA**	1.47

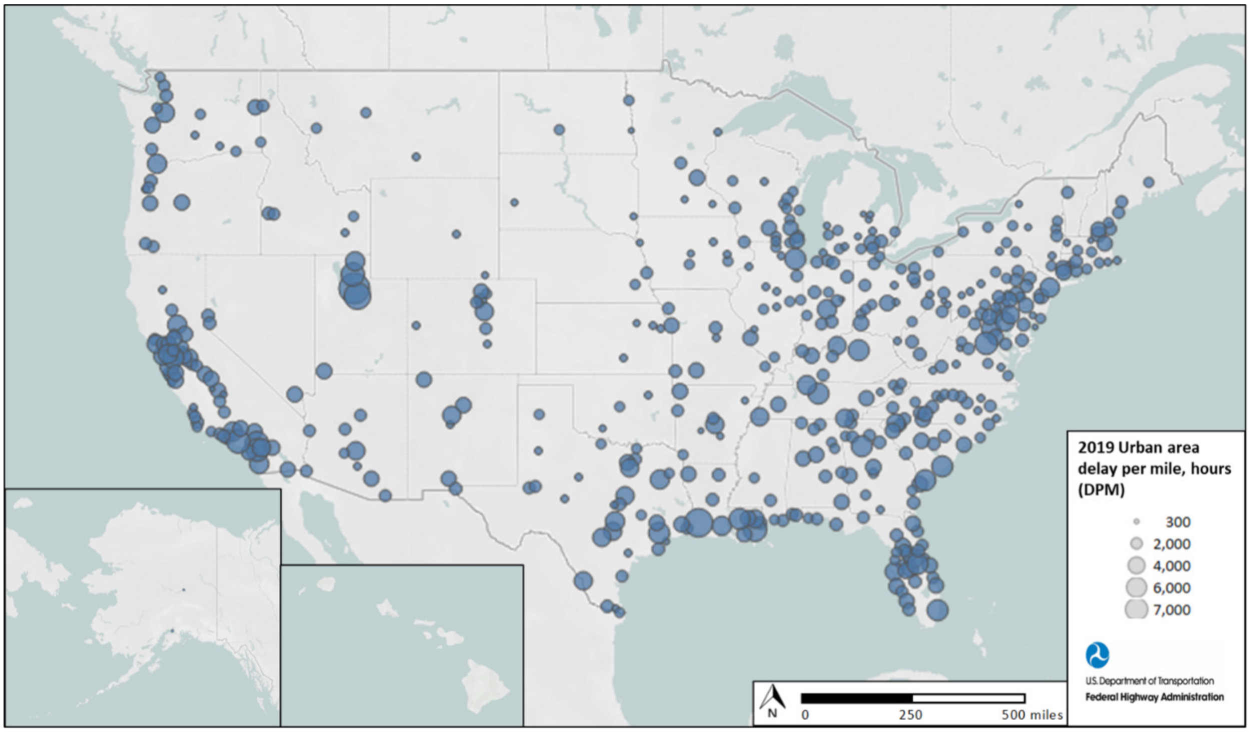
Table 15. The 10 highest urban area results for the Freight Mobility Trends performance indicators in 2019. (Continued)

Note: Urban areas highest in most of the indicators are colored orange.

Urban Area	PTI	Urban Area	TRI	Urban Area	BI Percent
Lexington Park–California–Chesapeake Ranch Estates, MD	3.67	**Lexington Park–California–Chesapeake Ranch Estates, MD**	3.67	**St. Augustine, FL**	104
St. Augustine, FL	3.40	**St. Augustine, FL**	3.4	**Lexington Park–California–Chesapeake Ranch Estates, MD**	103
Twin Rivers–Hightstown, NJ	3.30	Twin Rivers–Hightstown, NJ	3.3	**Los Angeles– Long Beach– Anaheim, CA**	94
Los Angeles–Long Beach–Anaheim, CA	3.11	**Los Angeles–Long Beach–Anaheim, CA**	3.11	Washington, DC–VA–MD	88
Boulder, CO	3.03	Boulder, CO	3.03	Fredericksburg, VA	88
Napa, CA	3.01	**Napa, CA**	3.01	**San Jose, CA**	87
Los Lunas, NM	2.97	Los Lunas, NM	2.97	San Francisco–Oakland, CA	87
Longmont, CO	2.92	Longmont, CO	2.92	Los Lunas, NM	85
San Jose, CA	2.90	**San Jose, CA**	2.9	**Napa, CA**	85
Lake Jackson–Angleton, TX	2.87	Lake Jackson–Angleton, TX	2.87	Seattle, WA	84

Key: planning time index (PTI), truck reliability index (TRI), buffer index (BI)

Figure 34 shows the delay per mile for the urban areas throughout the United States. Delay per mile appears highest in areas such as the Northeast, California, and coastal Louisiana. Areas in Utah also have high delay per mile. However, this may be a result of a data error from higher Annual Average Daily Truck Traffic (AADTT) being reported from the State.



Source: FHWA

Figure 34. Map. Urban area delay per mile in 2019.

Note: No data available for Hawaii in 2019

Metropolitan Planning Organization Regions

Table 16 lists the Metropolitan Planning Organization (MPO) regions that are highest for the six indicators.

No MPO region appears highest for all indicators, but some are present in five or four indicators. These include:

- The Miami-Dade Metropolitan Planning Organization (Florida).
- The New York Metropolitan Transportation Council (New York).
- The Portland Area Comprehensive Transportation System (Oregon).
- The National Capital Region Transportation Planning Board (Washington, DC).
- The South Western Metropolitan Planning Organization (Connecticut).
- The Calvert–St. Mary Metropolitan Planning Organization (Maryland).
- The Boston Region Metropolitan Planning Organization (Massachusetts).
- The Metropolitan Transportation Commission (California).

These MPOs highest for most of the indicators are highlighted in orange and bold font.

Like these urban areas, some locations like the Calvert–St. Mary Metropolitan Planning Organization (Maryland) are less populated but have major employers, such as a major military installation. Some of these smaller MPOs that are in the highest rankings of the indicators may have limited NHS miles that are driving the increases.

Table 16. The 10 highest metropolitan planning organization area results for the Freight Mobility Trends performance indicators in 2019.

Note: MPO areas highest in most of the indicators are colored orange and have bold font.

MPO Area	DPM (Hours/Mile)	MPO Area	Total Delay (Annual Truck Hours)	MPO Area	TTI
Wasatch Front Regional Council	10,506	Southern California Association of Governments	56,839,271	**Calvert–St. Mary MPO**	1.55
Lake Charles MPO	10,477	**New York Metropolitan Transportation Council**	25,185,410	**Miami-Dade MPO**	1.55
Mountainland Association of Governments	9,351	The Chicago Metropolitan Agency for Planning	23,153,764	**New York Metropolitan Transportation Council**	1.49
Miami-Dade MPO	7,698	North Central Texas Council of Governments	15,725,010	Pinellas County MPO	1.47
New York Metropolitan Transportation Council	6,409	**Metropolitan Transportation Commission**	15,418,569	Anderson Area Transportation Study	1.44
Portland Area Comprehensive Transportation System (OR)	6,031	Atlanta Regional Commission	14,326,545	**Boston Region MPO**	1.43
Atlanta Regional Commission	5,923	Houston- Galveston Area Council	13,971,012	**South Western MPO**	1.42
Baton Rouge MPO	5,711	**National Capital Region Transportation Planning Board**	11,995,132	Charleston Area Transportation Study	1.41
Charleston Area Transportation Study	5,640	Puget Sound Regional Council	11,429,160	Madison Athens–Clarke Oconee Regional Transportation Study	1.40
Southern California Association of Governments	5,456	North Jersey Transportation Planning Authority	10,276,890	Tahoe MPO	1.40

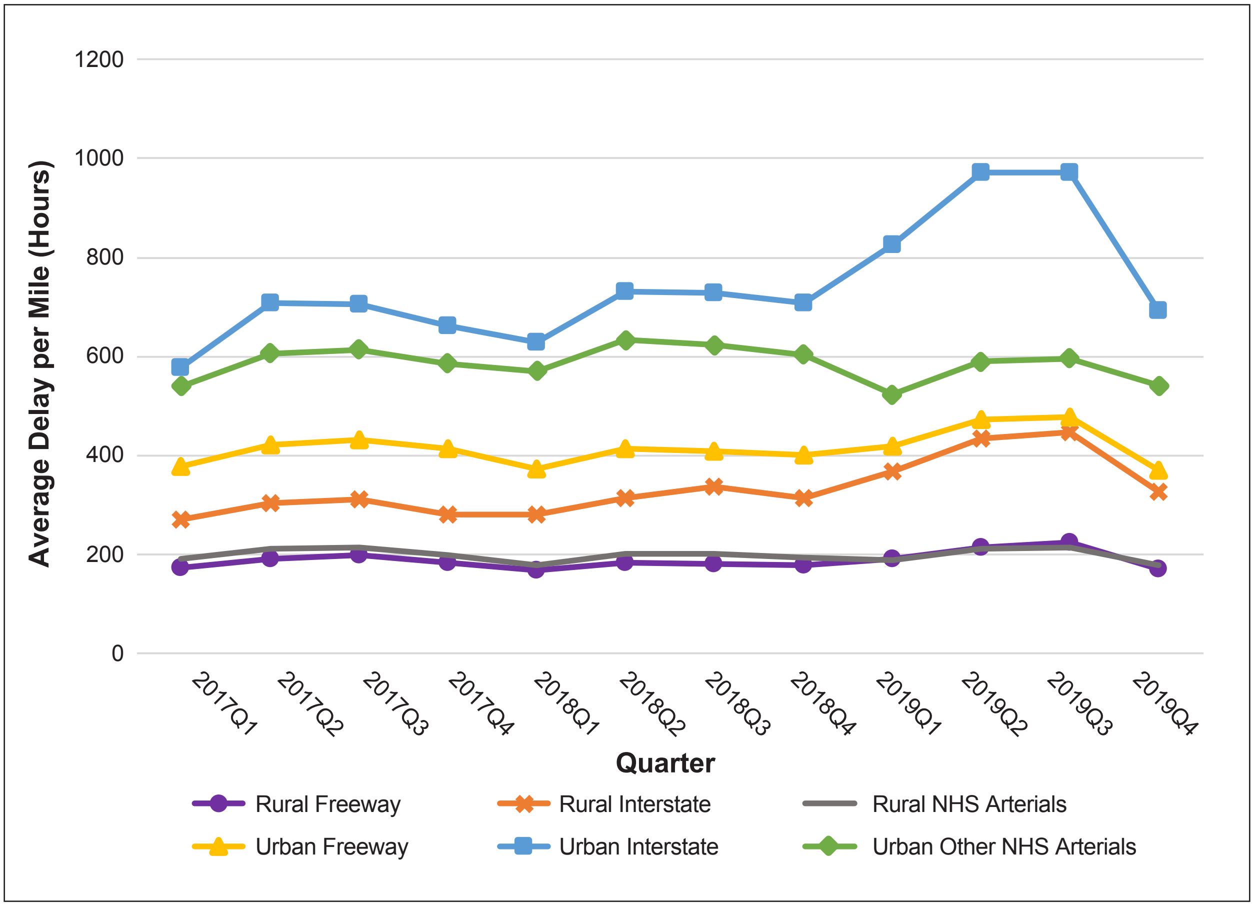
Table 16. The 10 highest metropolitan planning organization area results for the Freight Mobility Trends performance indicators in 2019. (Continued)

Note: MPO areas highest in most of the indicators are colored orange and have bold font.

MPO Area	PTI	MPO Area	TRI	MPO Area	BI Percent
Miami-Dade MPO	3.21	**South Western MPO**	1.80	**South Western MPO**	108
Calvert–St. Mary MPO	3.10	Lake Charles MPO	1.80	**Calvert–St. Mary MPO**	99
South Western MPO	3.00	**Portland Area Comprehensive Transportation System (OR)**	1.65	**Miami-Dade MPO**	96
New York Metropolitan Transportation Council	2.89	**Miami-Dade MPO**	1.63	**Boston Region MPO**	87
Boston Region MPO	2.80	**Calvert–St. Mary MPO**	1.57	**Portland Area Comprehensive Transportation System (OR)**	84
Pinellas County MPO	2.70	Fredericksburg Area MPO	1.55	**New York Metropolitan Transportation Council**	81
Portland Area Comprehensive Transportation System (OR)	2.61	**Boston Region MPO**	1.53	**National Capital Region Transportation Planning Board**	77
Puget Sound Regional Council	2.60	**National Capital Region Transportation Planning Board**	1.50	**Metropolitan Transportation Commission**	76
National Capital Region Transportation Planning Board	2.57	**Metropolitan Transportation Commission**	1.50	**Puget Sound Regional Council**	75
Metropolitan Transportation Commission	2.56	Northern Middlesex MPO	1.49	Pinellas County MPO	75

Key: planning time index (PTI), truck reliability index (TRI), buffer index (BI)

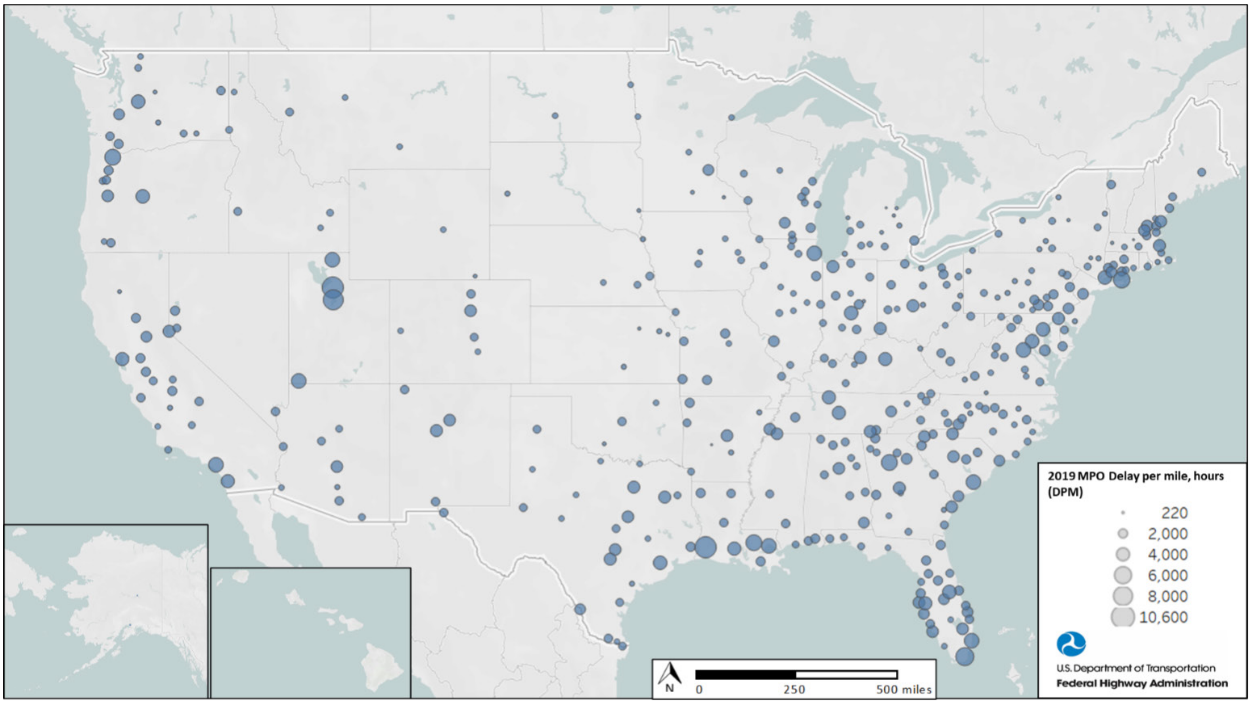
Figure 35 shows the quarterly trends for delay per mile by urban and rural roadways and type for MPO areas. MPO areas have urban Interstates with the highest delay per mile, followed by urban NHS arterials. Rural roadways in MPO regions have lower delay per mile. All roadways follow similar trends as described previously for the national level, where there is a noticeable increase in the second quarter of all years and decrease in quarter four of 2019. Rural freeways and NHS arterials in MPO areas show less fluctuation although rural Interstates exhibit changes each quarter more like urban roadways.



Source: FHWA

Figure 35. Graph. Metropolitan planning organization area delay per mile performance by quarter.

Figure 36 shows the delay per mile for MPO areas throughout the United States. The larger circles reflect those in the list in table 16. As mentioned previously, Utah's results may be lower than shown due to a possible error in the data, and no data exist for Hawaii in 2019.



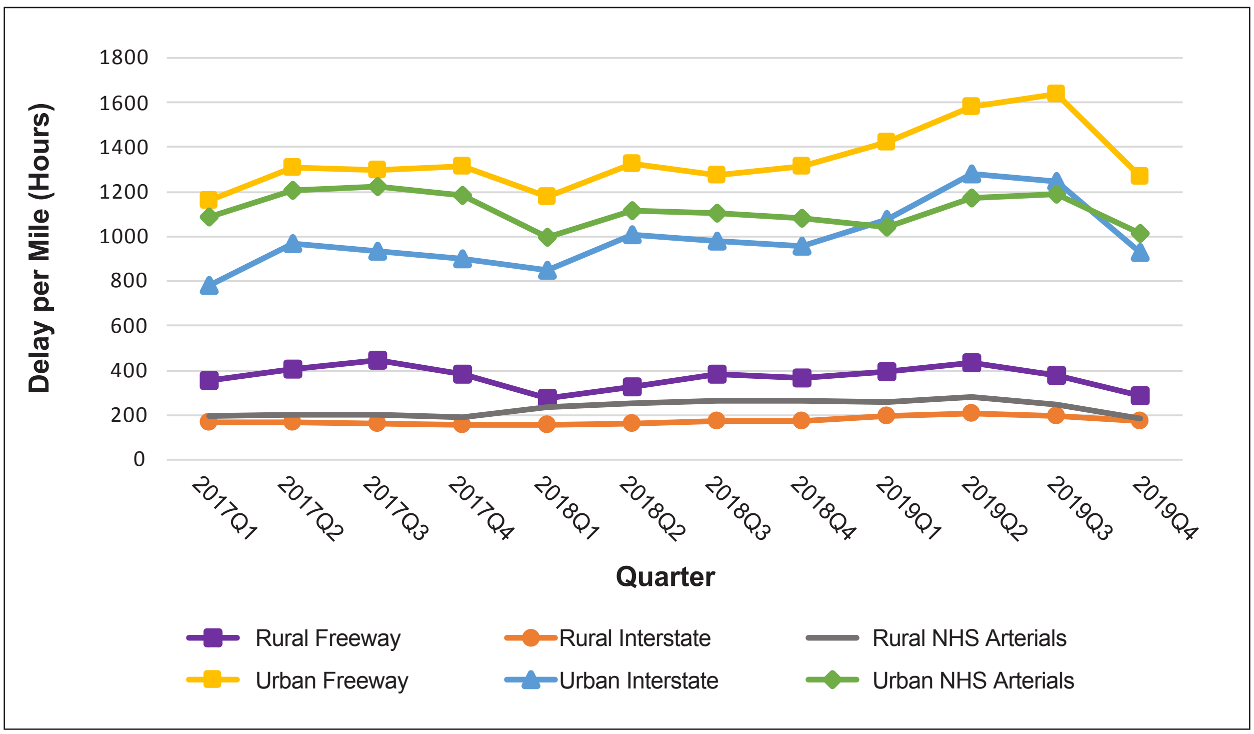
Source: FHWA

Figure 36. Map. Metropolitan planning organization area delay per mile in 2019.

Note: No data available for Hawaii in 2019

National Highway Freight Network

Figure 37 shows the National Highway Freight Network (NHFN) delay. For this analysis, the only parts of the NHFN included are the Primary Highway Freight System (PHFS) and other Interstates not on the PHFS. No critical urban corridors or critical rural corridors are included. Like other locations, urban roadways exhibit the most delay, and delay increases noticeably around the second quarter for roadways that are part of the NHFN. However, whereas Interstates have shown the highest delay for other locations and at the national level, for the NHFN, urban freeways have more delay than Interstates in the fourth quarter of 2017 and then from the fourth quarter of 2018 on. Similarly, rural freeways exhibit higher delay than rural Interstates or NHS arterials. It is expected that since the NHFN used in this analysis is primarily Interstates, it would be similar to the national analysis of delay. For example, out of the 41,518 miles of the PHFS, only an approximate 10 percent of the miles are non-Interstate roads. For these urban roadways on the PHFS, there is significantly higher delay, which may be attributable to their importance as goods movement links that warranted their inclusion in the PHFS.

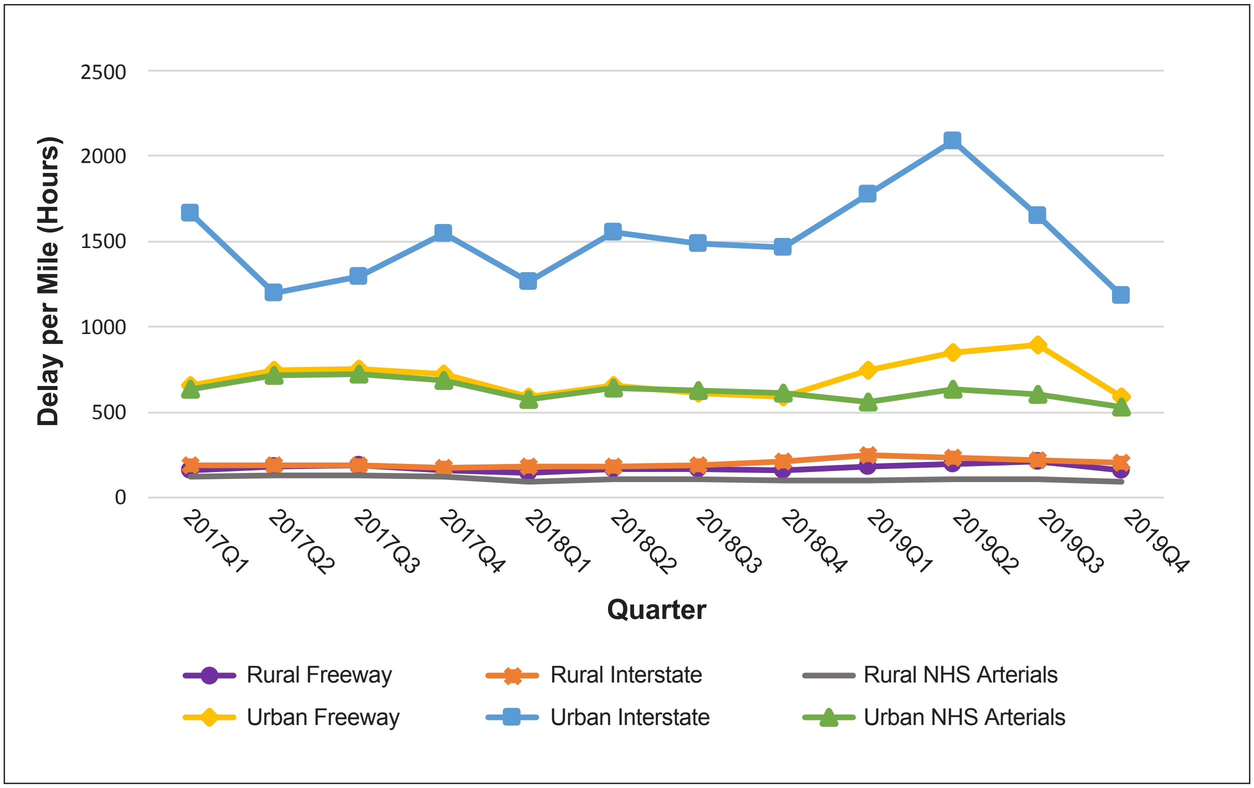


Source: FHWA

Figure 37. Graph. Quarterly delay per mile for the National Highway Freight Network by urban and rural roadway and road type.

Strategic Highway Network

For the Strategic Highway Network (STRAHNET), figure 38 shows that delay performance mirrors the national delay, with urban Interstates exhibiting the highest delay followed by urban freeways and urban NHS arterials. Rural roadways have much lower delay. While rural Interstates have the highest delay from the first quarter of 2018, rural freeways had more delay in 2017 and then decreased.



Source: FHWA

Figure 38. Graph. Quarterly delay per mile for the Strategic Highway Network by urban and rural roadway and road type.

SECTION 3: FREIGHT-SPECIFIC LOCATIONS

Though the indicators are important at the national level to understand nationwide position and trends, it is also important to consider performance at different types of locations. This section depicts performance at different geographic levels. These levels include:

- Major freight highway bottlenecks.
- Freight Significant Corridors.
- Key freight facilities:
  - Airports.
  - Rail intermodal facilities.
  - Ports.
  - Border areas.
  - Border crossings.

Major Freight Highway Bottlenecks and Congested Corridors

Table 17 lists the 2019 top Interstate bottlenecks and congested corridors in the United States based on truck hours of delay per mile for 2019. Delay per mile (DPM) was calculated for each Interstate segment using the National Performance Management Research Data Set (NPMRDS) travel time data in the Freight Mobility Trends (FMT) tool. These locations were then compared with the bottlenecks identified by States in their *2019 Baseline Performance Reports*. The analysis was completed for 2017 and 2018 to track trends from year to year, and the 2018 ranking is also included in the table. The Federal Highway Administration (FHWA) will conduct this analysis on an annual basis to update the list, track trends, and allow dialog with States on methods to address congestion at major bottlenecks. This will allow FHWA to identify successful transportation management techniques that can be shared with other States.

Table 17 lists the route, urban area, and State ordered by the 2019 truck hours of delay per mile. Information is provided for directional Annual Average Daily Truck Traffic (AADTT), annual truck hours of delay per mile, and total corridor congestion cost per year. Annual truck hours of delay per mile is determined at the most congested segment of the corridor. The generalized bottleneck location/congested corridor is estimated based on a review of corridor congestion scans in the NPMRDS. For major congested corridors, this may include multiple contiguous bottlenecks along the corridor. Total corridor congestion cost is calculated for the full extent of delay along the congested corridor, which may include multiple segments, as a function of both the time and fuel used while the truck is in congested traffic, factoring costs of personnel, commercial vehicle operation, and wasted fuel.

Appendix B provides detailed information on bottlenecks.

Table 17. Major Interstate freight highway bottlenecks and congested corridors based on truck hours of delay per mile from the 2019 National Performance Management Research Data Set.

2019 Rank	2018 Rank	Road	Urban Area	State	Generalized Bottleneck Location/ Congested Corridor	AADT (Trucks)	DPM (Truck Hours)	Total Corridor Congestion Cost ($)
1	1	I-95/ I-295	New York	NY/NJ	I-278/I-678 to NJ side of GW Bridge/SR-4	9,555	263,116	76,000,000
2	3	I-90/ I-94	Chicago	IL	I-94 N to I-55	8,003	140,942	86,900,000
3	4	I-605	Los Angeles	CA	I-5 to SR-60	10,963	139,777	62,500,000
4	2	I-35	Austin	TX	Airport Blvd. to Stassney Ln.	11,074	111,359	109,900,000
5	6	I-610	Houston	TX	I-69 to I-10	7,379	104,009	60,800,000
6	5	I-678	New York	NY	I-495 to Belt Pkwy. and I-295/I-95 to south end Bronx-Whitestone Bridge	6,510	100,237	40,000,000
7	11	I-405	Los Angeles	CA	I-105 to SR-42 Manchester Blvd.	12,139	95,686	147,800,000
8	7	I-290	Chicago	IL	I-90/I-94 to I-290	8,726	94,778	59,700,000
9	8	I-69/ US 59	Houston	TX	Buffalo Speedway to I-45	6,831	89,185	57,800,000
10	12	I-278	New York	NY	I-95/I-678 to Grand Central Pkwy. and SR 27 Prospect Expy. to SR-29 Queens Blvd.	6,607	88,339	147,000,000
11	9	I-24	Nashville	TN	US-41 to SR-155	12,775	86,920	52,200,000
12	10	I-10	Los Angeles	CA	20th St. to I-5 and at I-605	7,036	86,745	164,100,000
13	15	I-710	Los Angeles	CA	Cesar Chavez Ave. to Atlantic Blvd.	6,833	85,730	47,500,000
14	23	I-45	Houston	TX	US-90 to I-69	7,184	84,471	58,800,000
15	17	I-680	San Francisco	CA	SR-262 to SR-238	6,406	81,240	14,000,000
16	25	I-495	New York	NY	Little Neck Pkwy. to Queens Midtown Tunnel	8,988	70,916	112,400,000
17	21	I-5	Seattle	WA	I-90 to 85th St. and SR 18 to Port of Tacoma Rd.	6,876	69,732	62,500,000
18	14	I-5	Los Angeles	CA	SR-134 Ventura Fwy. to I-605	7,097	68,560	123,200,000

Table 17. Major Interstate freight highway bottlenecks and congested corridors based on truck hours of delay per mile from the 2019 National Performance Management Research Data Set. (Continued)

2019 Rank	2018 Rank	Road	Urban Area	State	Generalized Bottleneck Location/ Congested Corridor	AADT (Trucks)	DPM (Truck Hours)	Total Corridor Congestion Cost ($)
19	20	I-76	Philadelphia	PA	University Ave. to US-1	4,605	67,019	37,500,000
20	19	I-87	New York	NY	I-278 to 230th St.	4,900	64,891	25,100,000
21	27	I-105	Los Angeles	CA	I-405 to Long Beach Blvd.	7,397	64,807	56,800,000
22	22	I-75 I-85	Atlanta	GA	I-20 to I-75/I-85 split	7,355	63,432	19,300,000
23	34	I-10	New Orleans	LA	I-610 to Pontchartrain Expy.	14,179	61,114	73,000,000
24	73	I-10	Lake Charles	LA	At I-210	14,179	61,114	31,500,000
25	26	I-210	Los Angeles	CA	SR-39/164 Azusa Ave. to SR-19 Rosemead Blvd.	10,007	60,414	67,600,000
26	18	I-10	Baton Rouge	LA	I-110 to SR-1	10,718	57,724	33,800,000
27	32	I-25	Denver	CO	I-70 to University Blvd.	7,030	55,696	54,200,000
28	29	I-5	Portland	OR	Columbia River to Terwilliger Blvd.	7,988	55,154	53,100,000
29	31	I-55	Chicago	IL	I-94 to SR-171	7,376	53,860	58,300,000
30	37	I-285	Atlanta	GA	East/SR-400 to US-78 and West/I-20 to Northside Dr.	11,855	53,821	137,500,000
31	46	I-495	Washington	MD/ VA	I-66 (VA) to I-95 (MD)	9,544	53,507	93,900,000
32	33	I-70	Denver	CO	I-25 to I-270	5,973	53,461	26,700,000
33	55	I-30	Little Rock	AR	At I-630	19,820	51,924	11,700,000
34	35	I-80	San Francisco	CA	US-101 to Bay Bridge; and at I-580	2,737	51,110	35,200,000
35	39	I-10	Houston	TX	I-69 to I-45	9,085	50,107	53,700,000
36	40	I-270	Denver	CO	I-25 to I-70	5,364	50,104	14,500,000
37	47	I-95	Washington	VA	SR-123 to SR-286	8,092	49,241	49,800,000
38	24	I-110/ CA-110	Los Angeles	CA	I-10 to SR-42 Stauson Ave.	3,890	48,762	23,100,000
39	36	I-10	Phoenix	AZ	At I-17 from 51st Ave. to SR-143	11,718	48,254	91,200,000
40	45	I-15	Riverside	CA	At SR-91	5,267	48,175	18,600,000
41	30	I-15	Salt Lake City	UT	At I-215 (SR-173 to SR 48)	32,835	47,435	62,139,000
42	44	I-15	Los Angeles	CA	At I-10	9,099	47,170	12,700,000

Table 17. Major Interstate freight highway bottlenecks and congested corridors based on truck hours of delay per mile from the 2019 National Performance Management Research Data Set. (Continued)

2019 Rank	2018 Rank	Road	Urban Area	State	Generalized Bottleneck Location/ Congested Corridor	AADT (Trucks)	DPM (Truck Hours)	Total Corridor Congestion Cost ($)
43	59	I-80/ I-94	Chicago	IL	I-294 to I-94	20,900	46,615	9,100,000
44	50	I-695	Baltimore	MD	I-95 to I-795	10,497	46,428	45,400,000
45	57	I-71/ I-75	Cincinnati	KY/ OH	I-275 to Western Hills	15,297	44,603	18,300,000
46	81	I-90	Chicago	IL	I-90/94 to I-294	3,595	43,345	32,300,000
47	51	I-64	St. Louis	MO	Market St. to I-70 (over Mississippi River)	9,240	42,771	9,100,000
48	28	I-294	Chicago	IL	At I-290 and at I-90	9,449	42,295	40,900,000
49	61	I-405	Seattle	WA	I-90 to SR-520	4,796	40,760	12,800,000
50	127	I-75	Chattanooga	TN	At I-24	11,798	40,747	6,000,000
51	65	I-676	Philadelphia	PA	I-76 to I-95	3,695	40,448	7,300,000
52	56	I-238	San Francisco	CA	I-880 to I-580	9,026	40,088	4,600,000
53	64	I-35	San Antonio	TX	At I-10	13,515	39,338	24,300,000
54	53	I-494	Minneapolis	MN	SR-77 to W Bush Lake Rd.	6,142	38,514	9,000,000
55	58	I-85	Atlanta	GA	I-75 to SR 13/141 and I 285 to SR-378	8,539	37,663	35,700,000
56	48	I-35E	Dallas	TX	I-30 to Market Center Blvd.	7,786	37,601	24,900,000
57	54	I-635	Dallas	TX	I-35 to SR-78	10,114	37,059	61,400,000
58	42	I-95	Baltimore	MD	I-395 to I-895	9,481	36,203	34,900,000
59	79	I-95	Philadelphia	PA	At I-676	5,085	35,789	11,900,000
60	67	I-270	St. Louis	MO	I-64 to SR 100	17,600	35,500	28,200,000
61	63	I-215	Riverside	CA	I-10 to SR-80	7,241	35,057	35,300,000
62	38	I-75	Cincinnati	OH	SR-562 to SR-126	11,175	34,492	29,500,000
63	52	I-94	Chicago	IL	I-90/94 to US-14	8,000	33,752	12,900,000
64	74	I-880	San Francisco	CA	At I-980 and at US 101	6,035	32,983	55,800,000
65	70	I-24	Chattanooga	TN	I-75 to US-41	11,133	32,057	18,500,000
66	100	I-40	Albuquerque	NM	At I-25	14,443	31,823	9,700,000
67	72	I-805	San Diego	CA	SR-52 to SR-163	6,210	31,791	13,900,000
68	60	I-30	Dallas	TX	I-35 to Grand Ave.	9,311	31,390	14,300,000
69	84	I-376	Pittsburgh	PA	Fort Pitt Bridge to Squirrel Hill	2,591	31,346	2,800,000
70	78	I-10	Riverside	CA	At I-215	11,505	31,196	17,300,000

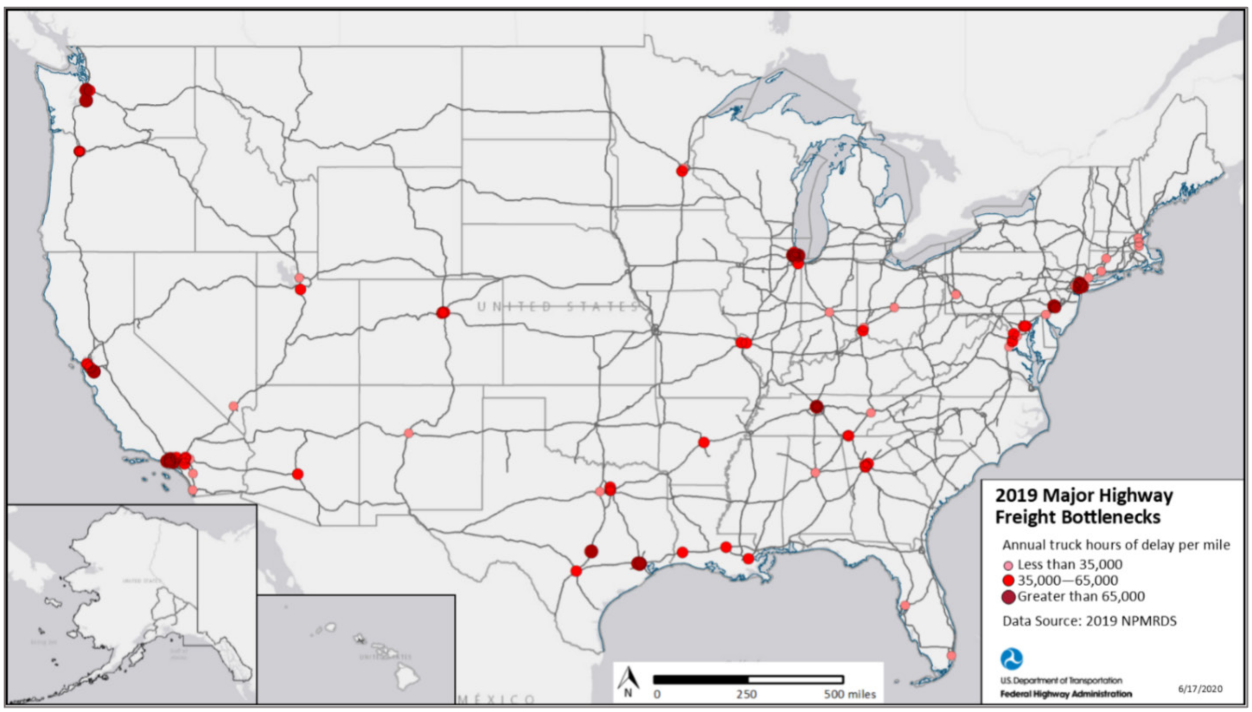
Table 17. Major Interstate freight highway bottlenecks and congested corridors based on truck hours of delay per mile from the 2019 National Performance Management Research Data Set. (Continued)

2019 Rank	2018 Rank	Road	Urban Area	State	Generalized Bottleneck Location/ Congested Corridor	AADT (Trucks)	DPM (Truck Hours)	Total Corridor Congestion Cost ($)
71	75	I-84	Hartford	CT	SR-2 to Prospect Ave.	5,792	29,849	7,700,000
72	73	I-405	Portland	OR	I-5 to US-26	4,297	29,467	1,200,000
73	86	I-95	Wilmington	DE	At I-295/I-495	12,139	28,402	2,700,000
74	43	I-94	Minneapolis	MN	SR-280 to Hennepin Ave.	4,350	28,016	4,400,000
75	80	I-205	Portland	OR	At I-84	5,290	27,951	7,100,000
76	82	I-95	Fredericksburg	VA	US-17 to Russell Rd.	9,889	27,933	20,000,000
77	96	I-93	Boston	MA	At I-90 and at SR-3	4,381	27,386	19,600,000
78	85	I-95	Bridgeport	CT	At US-1 in Fairfield and at US-1 in Stamford	5,893	27,289	51,000,000
79	71	I-40	Nashville	TN	I-24 to I-65	5,379	27,148	4,100,000
80	87	I-95	New Haven	CT	I-91 to SR-10	6,047	26,805	2,700,000
81	94	I-78	New York	NJ	US-22 to SR-440	6,083	26,033	6,700,000
82	98	I 35W	Dallas	TX	At I-30	5,426	24,953	11,900,000
83	68	I-15	Ogden	UT	SR-232 to SR-273	10,303	24,114	5,995,000
84	88	I-75	Atlanta	GA	I-85 to Moores Mill Rd.	8,403	23,791	6,300,000
85	—	I-65	Indianapolis	IN	I-70 N to Fall Creek Blvd.	6,901	23,639	1,500,000
86	140	I-20/ I-59	Birmingham	AL	At I-65	7,435	23,124	2,500,000
87	119	I-270	Washington	MD	At I-495	6,801	22,345	26,400,000
88	16	I-15	Las Vegas	NV	I-515 to Tropicana Ave.	6,661	22,146	17,000,000
89	111	I-280	New York	NJ	Garden State Pkwy. to SR-21	4,450	22,029	2,900,000
90	94	I-95	Miami	FL	Florida Turnpike to I-395	4,745	21,894	29,400,000
91	97	I-4	Tampa	FL	At I-275	6,558	21,620	6,900,000
92	110	I-670	Kansas City	MO	At I-70	4,358	21,163	1,200,000
93	89	I-395	Washington	DC/VA	US-50 to VA-236	5,204	21,150	700,000
94	112	I-580	Livermore	CA	I-205 to First St.	7,153	20,960	8,300,000
95	109	I-95	Washington	MD	I-495 to SR-200	10,661	20,807	6,300,000
96	124	I-95	Boston	MA	SR-38 to I-93	4,057	20,726	8,600,000
97	103	I-84	Portland	OR	At I-5	4,543	20,359	3,400,000
98	90	I-65	Nashville	TN	I-40 to I-440	10,952	20,093	13,500,000
99	114	I-40	Knoxville	TN	I-75/I-640 to I-275	8,346	20,059	2,500,000
100	115	I-71	Columbus	OH	At I-670	7,597	19,511	7,300,000

Key: annual average daily traffic (AADT), delay per mile (DPM)

Figure 39 shows the top Interstate bottlenecks in the United States based on freight mobility indicators of annual truck hours of delay per mile from 2019. While the top 100 bottlenecks and congested corridors only make up a little more than one percent of the Interstate System, these locations account for 21 percent of total Interstate System truck delay.

This analysis uses delay per mile for assessing bottlenecks to allow for comparison over the entire Interstate system across all States. Individual State Departments of Transportation (DOTs) and Metropolitan Planning Organization (MPOs) use a range of bottleneck identification methods based on their local traffic characteristics, infrastructure constraints, and impediments to efficient freight movement. A range of methods are used that consider congestion, delay, reliability, and truck-specific restrictions.



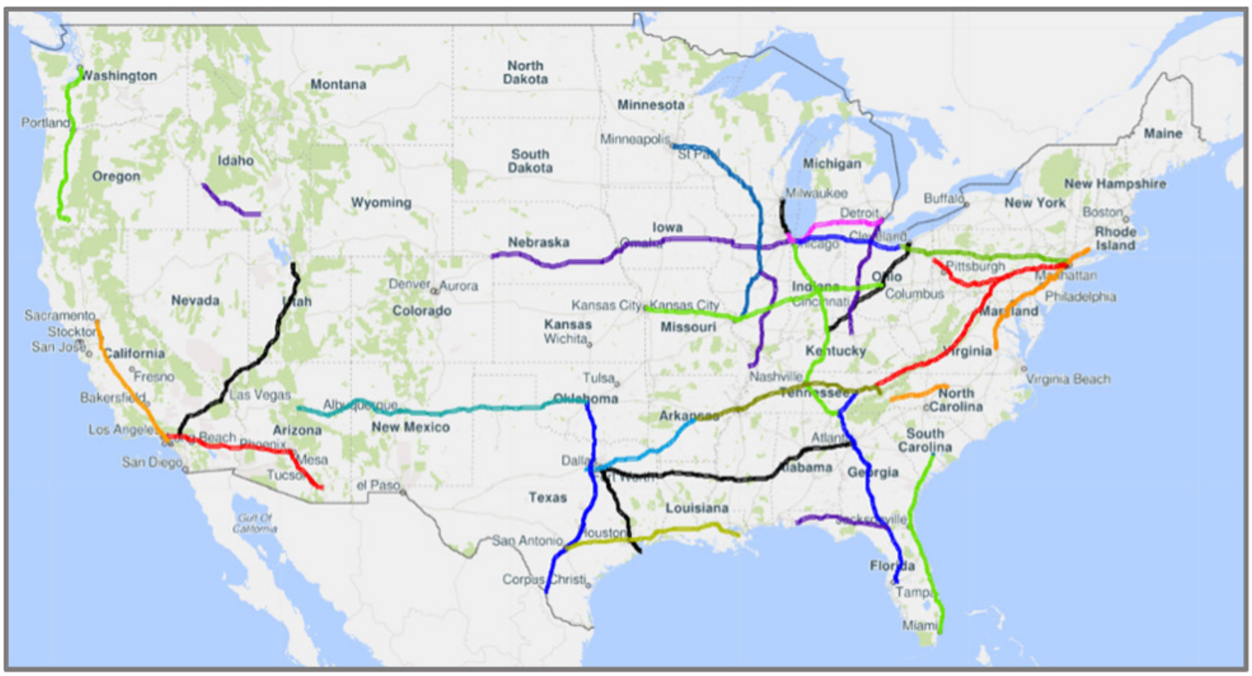
Source: FHWA

Figure 39. Map. Major highway freight bottlenecks in 2019.

Freight Significant Corridors

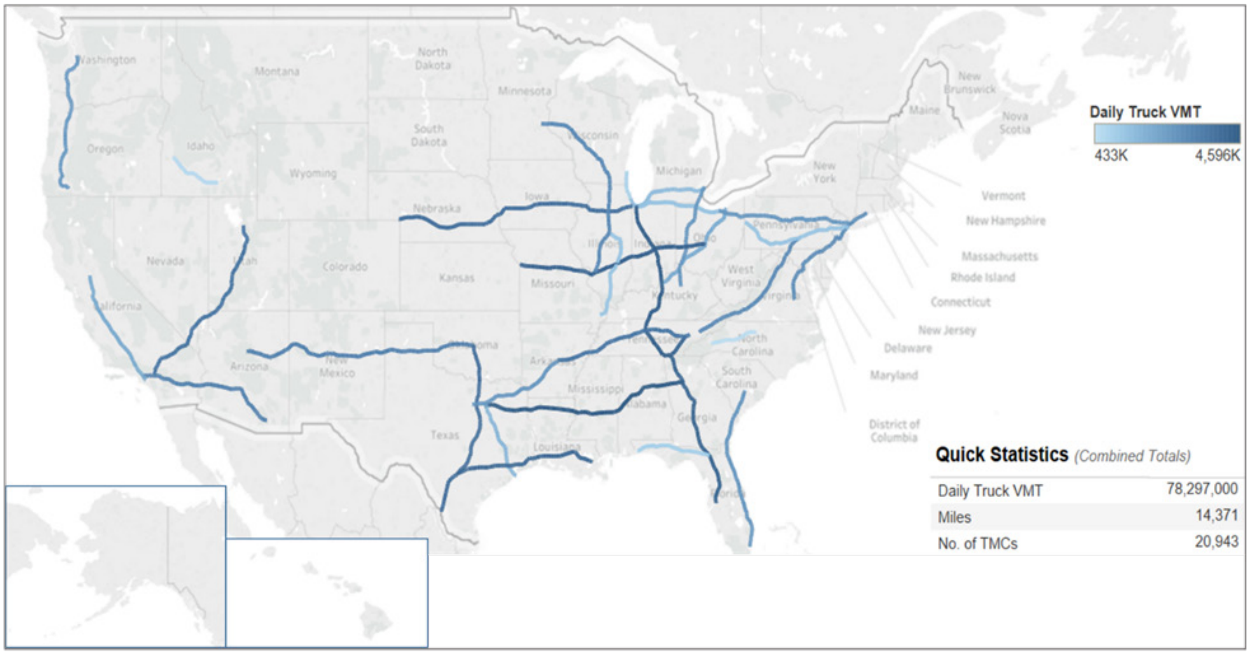
FHWA has been tracking a set of nationally significant Interstate freight corridors with a Buffer Index (BI) measurement since 2012. To continue this effort, the FMT includes these corridors and five additional corridors important for freight. Figure 40 shows the corridors, and figure 41 shows the corridors with an indication of Truck Vehicle Miles Traveled (TVMT). The TVMT and number of segments per corridor is detailed in table 18.

As a consideration of additional time that drivers need to add to their trip to account for delay and unreliability, the BIs for these corridors range from lower index results for corridors—such as I-10 from Los Angeles, CA, to Tucson, AZ, and I-5/CA 99 from Sacramento, CA, to Los Angeles, CA—to higher BI results on corridors—such as I-45 from Dallas, TX, to Galveston, TX, and I-95 in the Northeast and I-94 from Chicago, IL, to Milwaukee, WI.



Source: FHWA

Figure 40. Map. Freight-significant corridors.



Source: FHWA

Figure 41. Map. Freight-significant corridors with truck vehicle miles of travel detail.

Table 18. Freight significant corridor average daily truck vehicle miles traveled (TVMT) (in miles) and number of traffic message channel (TMC) segments from the National Performance Management Research Data Set (NPMRDS) per corridor.

Corridor	Average Daily Truck VMT (miles)	Number of Traffic Message Channel Segments from the NPMRDS Data
I-5/CA 99: Sacramento to Los Angeles	5,533	911
I-5: Medford, OR to Seattle	4,928	676
I-10: Los Angeles to Tucson	6,156	1,020
I-10: Pensacola to I-75	3,063	161
I-10: San Antonio to New Orleans	7,556	962
I-15: Los Angeles to Salt Lake City	5,673	704
I-20: Dallas to Atlanta	5,803	1,147
I-30: Little Rock to Dallas	7,103	739
I-35: Laredo to Oklahoma City	6,189	1,565
I-40: Knoxville to Little Rock	6,964	645
I-40: Oklahoma City to Flagstaff	3,800	1,092
I-40: Raleigh to Asheville	2,489	317
I-45: Dallas to Galveston	5,623	652
I-55/I-39/I-94: St. Louis to Minneapolis	4,707	725
I-57/I-74: I-24 (IL) to I-55 (IL)	3,701	246
I-65/I-24: Chattanooga to Nashville to Chicago	7,706	771
I-70: Kansas City to Columbus	6,532	935
I-71: Louisville to Cleveland	5,565	442
I-75: Lexington to Detroit	7,590	712
I-75: Tampa to Knoxville	6,455	875
I-78/I-76: New York to Pittsburgh	2,861	489
I-80: Chicago to I-76 (CO/NE border)	4,699	807
I-80: Cleveland to Chicago	4,622	80
I-80: New York to Cleveland	5,364	523
I-81: Harrisburg to I-40 (Knoxville)	6,002	583
I-84: Boise to I-86	3,034	139
I-94: Chicago to Detroit	5,118	610
I-94: Chicago to Milwaukee	7,449	414
I-95: Miami to I-26 (SC)	4,415	757
I-95: Richmond to New Haven	6,483	1,180

Table 19 provides the BI for the corridors using an area graph. I-94 from Chicago, IL, to Milwaukee, WI, and I-95 from Richmond, VA, to New Haven, CT, have the highest BI results. Almost all corridors appear to worsen in the fourth quarter of 2019. This is the opposite of national-level findings that show improvements for this quarter.

Table 19. BI Percent for freight significant corridors by quarter.

Corridor	2017 Q1	2017 Q2	2017 Q3	2017 Q4	2018 Q1	2018 Q2	2018 Q3	2018 Q4	2019 Q1	2019 Q2	2019 Q3	2019 Q4
I-5/CA 99: Sacramento Los Angeles	11	10	12	12	11	10	10	13	12	11	11	13
I-5: Medford, OR to Seattle	16	16	17	17	15	16	16	19	16	17	19	20
I-10: Los Angeles to Tucson	13	12	12	15	14	13	13	16	14	13	14	16
I-10: Pensacola to I-75	3	3	3	2	3	3	3	5	6	5	5	7
I-10: San Antonio to New Orleans	13	13	16	15	17	15	14	16	17	16	16	17
I-15: Los Angeles to Salt Lake City	7	5	5	6	6	6	5	7	8	7	7	11
I-20: Dallas to Atlanta	4	4	5	5	5	5	5	7	5	6	6	7
I-30: Little Rock to Dallas	11	12	10	13	13	12	11	14	13	13	13	15
I-35: Laredo to Oklahoma City	15	15	13	15	15	14	13	18	17	18	16	20
I-40: Knoxville to Little Rock	6	7	7	8	10	9	7	9	8	9	8	9
I-40: Oklahoma City to Flagstaff	3	2	2	2	3	2	2	5	5	3	3	6
I-40: Raleigh to Asheville	6	9	9	10	7	11	7	10	7	12	13	15
I-45: Dallas to Galveston	14	13	15	15	15	15	14	16	15	14	15	15
I-55/I-39/I-94: St. Louis to Minneapolis	4	4	4	4	6	5	5	6	9	6	6	8
I-57/I-74: I-24 (IL) to I-55 (IL)	2	8	6	5	3	3	2	3	4	4	3	5

Table 19. BI Percent for freight significant corridors by quarter. (Continued)

Corridor	2017 Q1	2017 Q2	2017 Q3	2017 Q4	2018 Q1	2018 Q2	2018 Q3	2018 Q4	2019 Q1	2019 Q2	2019 Q3	2019 Q4
I-65/I-24: Chattanooga to Nashville to Chicago	8	9	9	10	11	10	10	12	11	10	11	12
I-70: Kansas City to Columbus	4	6	6	5	6	5	5	6	6	6	7	8
I-71: Louisville to Cleveland	9	11	11	10	12	11	12	14	11	12	13	13
I-75: Lexington to Detroit	9	11	11	11	13	12	11	13	11	13	14	15
I-75: Tampa to Knoxville	7	8	11	9	8	9	7	11	9	9	9	10
I-78/I-76: New York to Pittsburgh	8	9	9	8	9	8	9	11	9	8	9	10
I-80: Chicago to I-76 (CO/NE border)	4	3	3	3	6	3	3	5	9	5	5	6
I-80: Cleveland to Chicago	4	5	4	5	8	3	2	4	6	3	2	4
I-80: New York to Cleveland	7	6	8	7	9	8	9	9	8	9	9	9
I-81: Harrisburg to I-40 (Knoxville)	3	6	6	6	5	7	7	10	5	7	7	6
I-84: Boise to I-86	14	2	3	3	4	3	3	4	5	3	4	7
I-94: Chicago to Detroit	14	18	14	16	16	15	13	14	18	16	15	17
I-95: Miami to I-26 (SC)	11	9	12	12	12	10	9	12	12	10	12	13
I-95: Richmond to New Haven	27	33	30	34	29	34	31	36	28	36	33	37
I-94: Chicago to Milwaukee	37	51	46	45	42	46	51	44	35	43	40	36

To assess the corridors with a different lens, Table 20 shows the same corridors measured with the TRI. The results are similar to those for the corridors of I-94 from Chicago, IL, to Milwaukee, WI, and I 95 from Richmond, VA, to New Haven, CT, but are less reliable than the others. However, the fluctuation from quarter to quarter appears less pronounced.

Table 20. Truck Reliability Index for freight significant corridors by quarter.

Corridor	2017 Q1	2017 Q2	2017 Q3	2017 Q4	2018 Q1	2018 Q2	2018 Q3	2018 Q4	2019 Q1	2019 Q2	2019 Q3	2019 Q4
I-5/CA 99: Sacramento to Los Angeles	1.12	1.11	1.12	1.13	1.12	1.11	1.11	1.13	1.13	1.12	1.12	1.12
I-5: Medford, OR to Seattle	1.18	1.19	1.20	1.20	1.17	1.19	1.19	1.21	1.18	1.19	1.21	1.20
I-10: Los Angeles to Tucson	1.15	1.14	1.15	1.18	1.16	1.15	1.15	1.18	1.17	1.15	1.16	1.19
I-10: Pensacola to I-75	1.03	1.03	1.03	1.02	1.03	1.03	1.03	1.04	1.06	1.05	1.04	1.03
I-10: San Antonio to New Orleans	1.16	1.16	1.17	1.18	1.19	1.18	1.16	1.18	1.19	1.18	1.18	1.18
I-15: Los Angeles to Salt Lake City	1.07	1.06	1.06	1.06	1.06	1.07	1.06	1.07	1.08	1.07	1.07	1.09
I-20: Dallas to Atlanta	1.05	1.05	1.06	1.06	1.06	1.06	1.06	1.07	1.05	1.06	1.06	1.05
I-30: Little Rock to Dallas	1.14	1.14	1.12	1.15	1.16	1.15	1.13	1.16	1.15	1.15	1.15	1.17
I-35: Laredo to Oklahoma City	1.17	1.18	1.15	1.17	1.18	1.16	1.16	1.21	1.19	1.20	1.18	1.21
I-40: Knoxville to Little Rock	1.07	1.08	1.09	1.09	1.12	1.10	1.08	1.10	1.09	1.10	1.09	1.11
I-40: Oklahoma City to Flagstaff	1.04	1.02	1.02	1.02	1.03	1.02	1.02	1.06	1.05	1.03	1.03	1.05
I-40: Raleigh to Asheville	1.06	1.10	1.10	1.11	1.07	1.12	1.07	1.10	1.07	1.12	1.13	1.11
I-45: Dallas to Galveston	1.16	1.14	1.15	1.16	1.16	1.17	1.15	1.17	1.15	1.16	1.16	1.14
I-55/I-39/I-94: St. Louis to Minneapolis	1.05	1.05	1.04	1.05	1.06	1.05	1.06	1.06	1.10	1.07	1.05	1.06

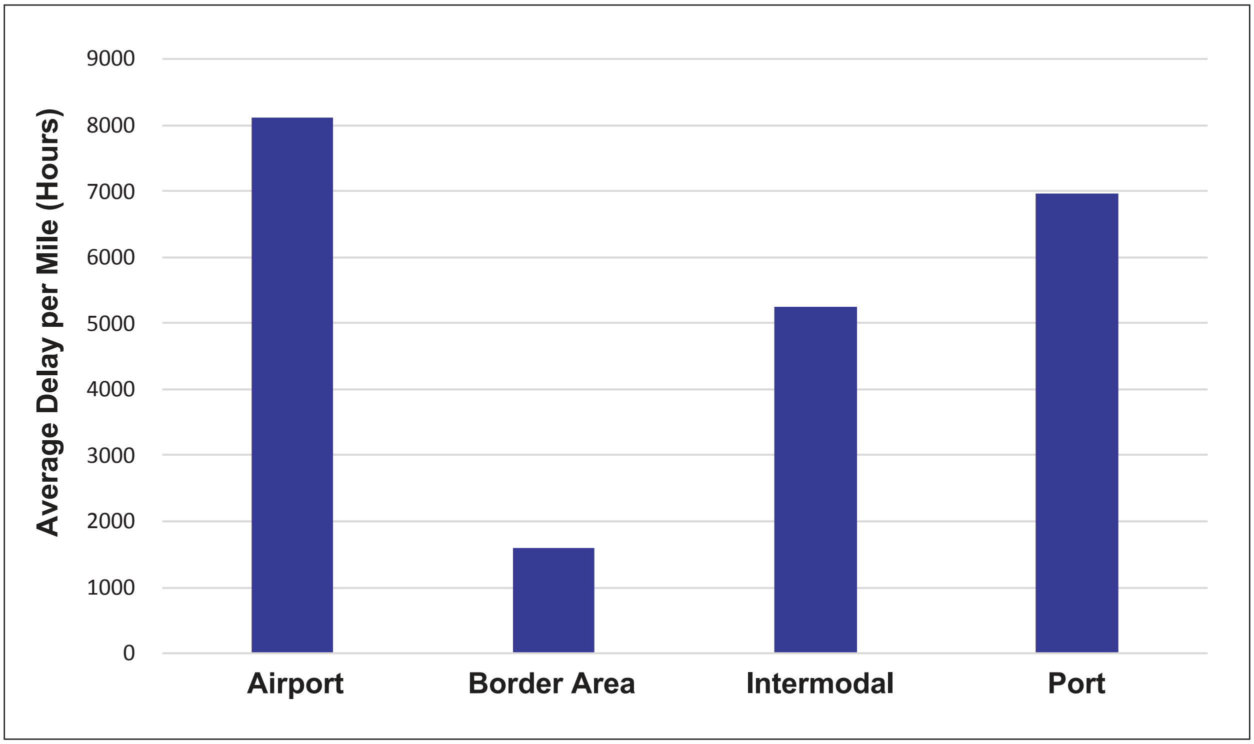
Table 20. Truck Reliability Index for freight significant corridors by quarter. (Continued)

Corridor	2017 Q1	2017 Q2	2017 Q3	2017 Q4	2018 Q1	2018 Q2	2018 Q3	2018 Q4	2019 Q1	2019 Q2	2019 Q3	2019 Q4
I-57/I-74: I-24 (IL) to I-55 (IL)	1.02	1.09	1.07	1.05	1.04	1.03	1.02	1.03	1.04	1.04	1.03	1.04
I-65/I-24: Chattanooga to Nashville to Chicago	1.10	1.11	1.11	1.12	1.14	1.12	1.10	1.13	1.12	1.11	1.12	1.13
I-70: Kansas City to Columbus	1.05	1.07	1.07	1.06	1.07	1.06	1.06	1.07	1.06	1.07	1.08	1.09
I-71: Louisville to Cleveland	1.10	1.13	1.14	1.12	1.14	1.13	1.14	1.15	1.12	1.14	1.15	1.14
I-75: Lexington to Detroit	1.10	1.11	1.11	1.11	1.13	1.13	1.11	1.15	1.12	1.14	1.15	1.15
I-75: Tampa to Knoxville	1.09	1.10	1.13	1.11	1.10	1.10	1.08	1.12	1.11	1.11	1.08	1.10
I-78/I-76: New York to Pittsburgh	1.09	1.10	1.10	1.10	1.11	1.09	1.11	1.13	1.10	1.10	1.10	1.11
I-80: Chicago to I-76 (CO/ NE border)	1.04	1.03	1.03	1.03	1.08	1.04	1.04	1.04	1.09	1.05	1.05	1.05
I-80: Cleveland to Chicago	1.05	1.05	1.04	1.05	1.10	1.03	1.02	1.04	1.07	1.03	1.02	1.04
I-80: New York to Cleveland	1.09	1.07	1.10	1.09	1.11	1.10	1.11	1.09	1.08	1.10	1.09	1.09
I-81: Harrisburg to I-40 (Knoxville)	1.04	1.08	1.08	1.07	1.06	1.08	1.09	1.11	1.06	1.08	1.07	1.06
I-84: Boise to I-86	1.15	1.02	1.04	1.03	1.04	1.03	1.03	1.03	1.05	1.03	1.03	1.04
I-94: Chicago to Detroit	1.16	1.22	1.17	1.19	1.19	1.18	1.16	1.16	1.20	1.18	1.15	1.16
I-95: Miami to I-26 (SC)	1.12	1.10	1.13	1.14	1.15	1.12	1.10	1.13	1.13	1.11	1.12	1.12
I-95: Richmond to New Haven	1.31	1.38	1.35	1.40	1.34	1.39	1.36	1.43	1.32	1.41	1.37	1.43
I-94: Chicago to Milwaukee	1.47	1.65	1.58	1.56	1.52	1.58	1.62	1.54	1.40	1.52	1.49	1.41

Freight Facility Locations

This section focuses on the performance of the National Highway System (NHS) surrounding airports, rail intermodal facilities, ports, and borders. The focus is not on the mobility of the actual facilities but the NHS roadways surrounding the facilities. Mobility trends are shown first by comparing the facilities and then are detailed for the specific type of facility.

By evaluating the performance of the highways accessing the freight facilities in terms of delay per mile, border areas have the lowest delay, while airports, ports, and rail intermodal facilities experience much higher delay (figure 42).

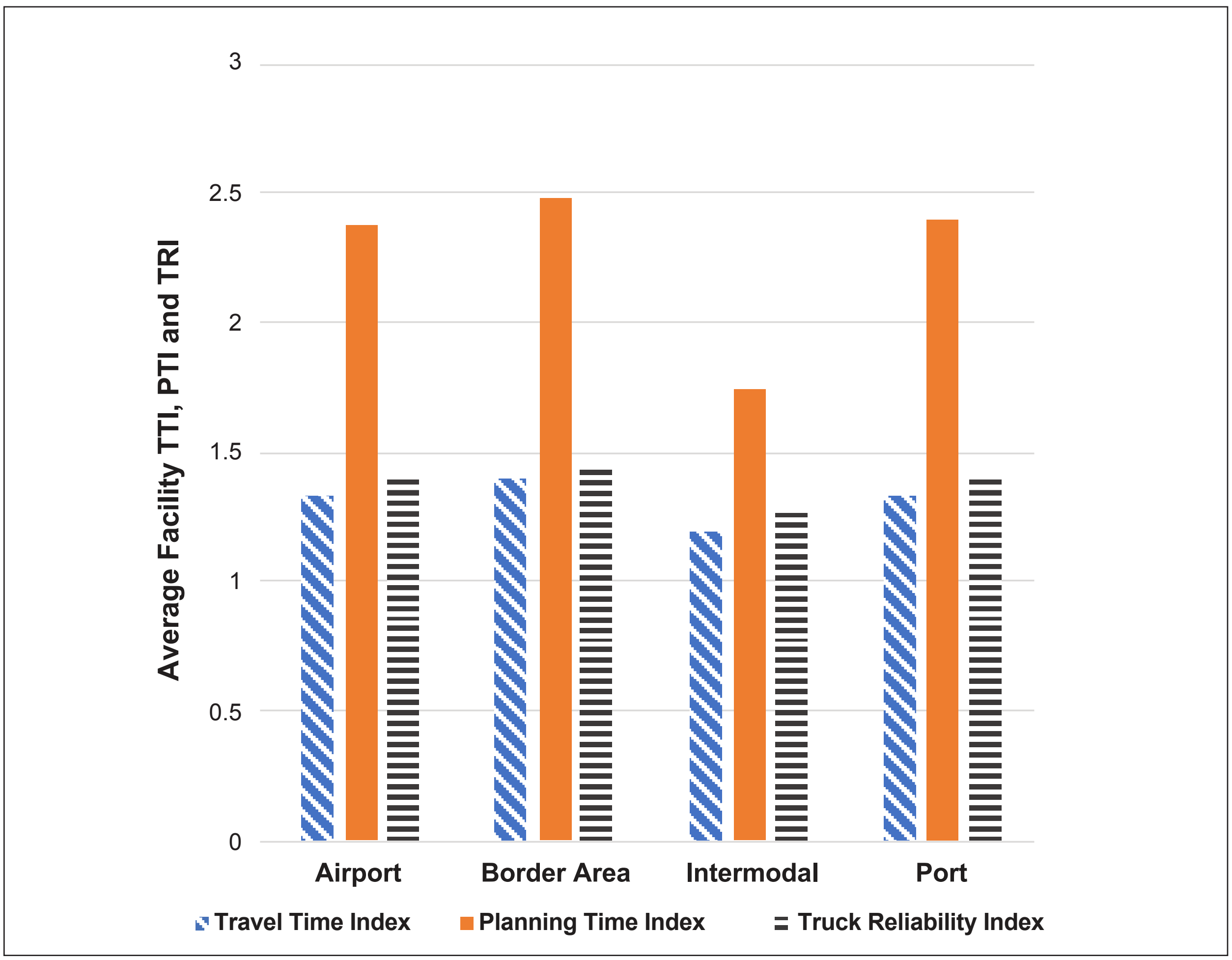


Source: FHWA

Figure 42. Chart. Delay per mile for access to freight facilities in 2019.

Figure 43 shows the Travel Time Index (TTI), Planning Time Index (PTI), and Truck Reliability Index (TRI) for the areas surrounding airports, border areas, rail intermodal facilities, and ports. Ports and airports have the highest PTI, closely followed by border areas. Airports, ports, and border areas are higher on the three indicators than rail intermodal facilities. This may be due in part to some rail intermodal facilities being located outside major urban areas, whereas ports and airports in the FMT are largely in urban areas with urban roadways. Border areas may reflect the delays as a result of border crossing and related traffic at those locations.

Overall, NHS routes accessing ports and airports exhibit higher challenges for reliability, mobility, and delay than border areas and intermodal facilities. This may be the result of the high level of activities at these locations and the constant streams of truck traffic. Airport access may also be impacted by the challenges of mixed passenger and freight traffic.



Source: FHWA

Figure 43. Chart. Average travel time index, planning time index, and truck reliability index for access to freight facilities in 2019.

Airports

Table 21 shows the performance of NHS routes around airports included in the FMT. Appendix A provides airport code definitions. No data for Hawaii airports are available for 2019.

Table 21. The 10 highest airport area results for the Freight Mobility Trends performance indicators in 2019.

Note: Airport areas highest in most of the indicators are colored orange and have bold font.

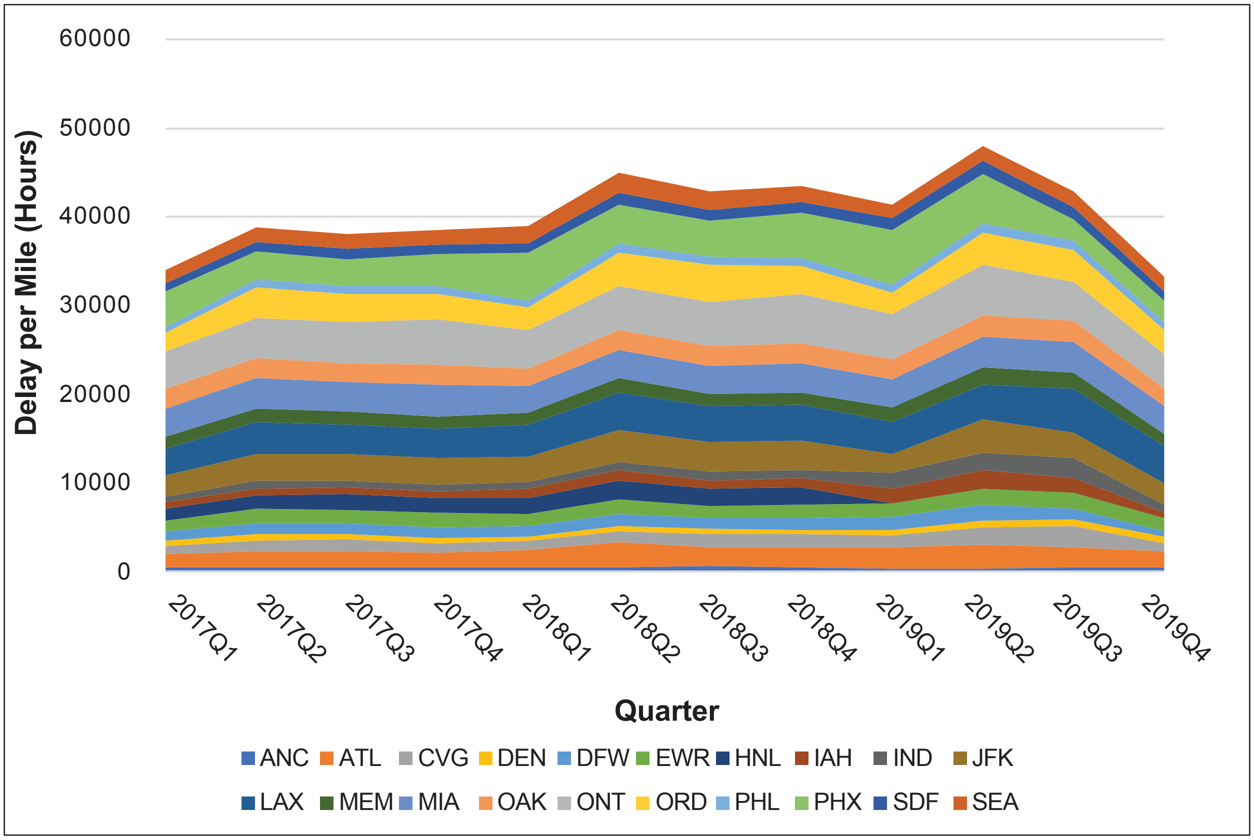
Airport	DPM (Hours/ Mile)	Airport	Total Delay (Annual Truck Hours)	Airport	TTI	Airport	PTI	Airport	TRI	Airport	BI Percent
ONT	21,677	**MIA**	1,916,376	**JFK**	1.71	**LAX**	3.89	**PHX**	2.03	**LAX**	118
PHX	20,075	ORD	1,849,221	**LAX**	1.67	**JFK**	3.75	**MIA**	1.74	**MIA**	112
LAX	14,019	ONT	1,568,160	**MIA**	1.65	**MIA**	3.6	**SEA**	1.56	**PHX**	112
JFK	12,955	**JFK**	1,482,231	ANC	1.45	**PHX**	2.99	**LAX**	1.54	**JFK**	111
MIA	12,070	**LAX**	1,187,584	EWR	1.36	IAH	2.82	**OAK**	1.52	IAH	83
ORD	11,895	EWR	1,157,682	IAH	1.34	ANC	2.46	ONT	1.46	**OAK**	80
OAK	8,736	**PHX**	1,134,501	**PHX**	1.34	**OAK**	2.45	ORD	1.41	**SEA**	70
ATL	8,735	ATL	960,651	**OAK**	1.32	EWR	2.39	**JFK**	1.41	EWR	67
SEA	6,085	**SEA**	720,996	ORD	1.30	**SEA**	2.22	ANC	1.40	ONT	67
MEM	5,767	**OAK**	529,033	SEA	1.26	SEA	1.26	EWR	1.39	ANC	65

Key: delay per mile (DPM), travel time index (TTI), planning time index (PTI), truck reliability index (TRI), buffer index (BI). airports: Memphis International (MEM); Ted Stevens Anchorage International (ANC); Louisville International–Standiford Field (SDF); Miami International (MIA); Indianapolis International (IND); Chicago O'Hare International (ORD); Los Angeles International (LAX); John F. Kennedy International (JFK); Cincinnati/Northern Kentucky International (CVG); Dallas/Fort Worth International (DFW); Newark Liberty International (EWR); Metropolitan Oakland International (OAK); Ontario International (ONT); Hartsfield-Jackson Atlanta International (ATL); Honolulu International (HNL); Philadelphia International (PHL); George Bush Intercontinental/Houston (IAH); Phoenix Sky International (PHX); Seattle-Tacoma International (SEA); Denver International (DEN)

Airports such as Los Angeles, CA (LAX), New York/Kennedy (JFK), Miami, FL (MIA), Phoenix, AZ (PHX), Oakland, CA (OAK), and Seattle, WA (SEA), are in the highest 10 for all indicators for surrounding highways accessing the airport.

Figure 44 shows the delay magnitude or total delay quarterly for highways accessing the airports in order from lowest to highest delay per mile. The airports with high delay per mile follow the same trend as national delay per mile results, with an increase in the second quarter each year and downturn in the fourth quarter of 2019. This pattern is observed in most of the airports except those with the lowest delay per mile such as Philadelphia (PHL), Denver (DEN), and Anchorage (ANC).

Table 22 provides the delay per mile by quarter for each airport area as shown in figure 44.



Source: FHWA

Key for Airports: Memphis International (MEM); Ted Stevens Anchorage International (ANC); Louisville International–Standiford Field (SDF); Miami International (MIA); Indianapolis International (IND); Chicago O'Hare International (ORD); Los Angeles International (LAX); John F. Kennedy International (JFK); Cincinnati/Northern Kentucky International (CVG); Dallas/Fort Worth International (DFW); Newark Liberty International (EWR); Metropolitan Oakland International (OAK); Ontario International (ONT); Hartsfield-Jackson Atlanta International (ATL); Honolulu International (HNL); Philadelphia International (PHL); George Bush Intercontinental/Houston (IAH); Phoenix Sky International (PHX); Seattle-Tacoma International (SEA); Denver International (DEN)

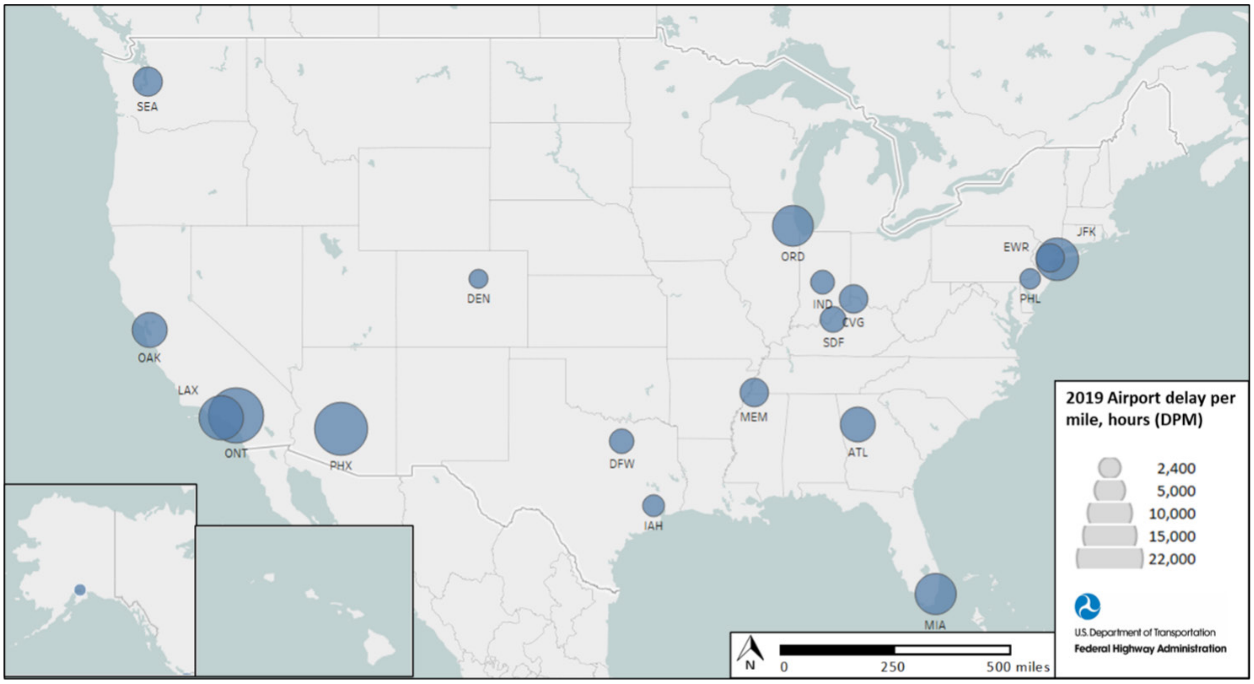
Figure 44. Graph. Total airport access delay by quarter.

Table 22. Airport access delay per mile by quarter.

Airport Area	2017 Q1	2017 Q2	2017 Q3	2017 Q4	2018 Q1	2018 Q2	2018 Q3	2018 Q4	2019 Q1	2019 Q2	2019 Q3	2019 Q4
ANC	479	462	505	453	470	522	585	480	324	355	457	430
ATL	1,542	1,778	1,831	1,741	1,956	2,818	2,160	2,274	2,429	2,736	2,339	1,851
CVG	914	1,318	1,261	992	1,010	1,260	1,571	1,439	1,292	1,962	2,391	989
DEN	541	643	663	616	572	581	560	574	677	730	676	635
DFW	1,041	1,237	1,175	1,193	1,094	1,285	1,176	1,243	1,537	1,791	1,257	724
EWR	1,291	1,606	1,552	1,664	1,343	1,655	1,400	1,605	1,379	1,821	1,719	1,403
HNL	1,319	1,641	1,707	1,664	1,929	2,106	1,952	1,913				
IAH	705	722	751	739	930	1,186	912	1,026	1,797	2,036	1,763	633
IND	661	792	783	758	826	927	1,075	889	1,679	1,995	2,190	924
JFK	2,327	3,132	2,969	2,971	2,856	3,571	3,209	3,376	2,215	3,681	2,810	2,401
LAX	3,093	3,581	3,403	3,281	3,618	4,337	4,048	3,989	3,599	4,011	4,997	4,149
MEM	1,277	1,465	1,428	1,460	1,325	1,513	1,457	1,437	1,598	1,854	1,796	1,436
MIA	3,227	3,397	3,333	3,595	2,956	3,256	3,043	3,194	3,156	3,544	3,552	3,104
OAK	2,181	2,335	2,077	2,256	2,024	2,253	2,224	2,336	2,218	2,380	2,327	2,019
ONT	4,231	4,523	4,673	5,091	4,371	5,004	5,044	5,462	5,164	5,668	4,404	3,853
ORD	2,089	3,391	3,208	2,791	2,486	3,728	4,158	3,219	2,449	3,643	3,550	2,687
PHL	643	903	883	875	831	1,010	928	885	803	1,022	1,079	872
PHX	4,019	3,192	3,079	3,619	5,347	4,414	4,066	5,113	6,233	5,540	2,366	2,393
SDF	974	1,081	1,141	1,104	1,099	1,279	1,241	1,274	1,335	1,583	1,433	1,121
SEA	1,394	1,616	1,688	1,708	1,994	2,234	2,123	1,764	1,468	1,653	1,804	1,581

Key for Airports: Memphis International (MEM); Ted Stevens Anchorage International (ANC); Louisville International–Standiford Field (SDF); Miami International (MIA); Indianapolis International (IND); Chicago O'Hare International (ORD); Los Angeles International (LAX); John F. Kennedy International (JFK); Cincinnati/Northern Kentucky International (CVG); Dallas/Fort Worth International (DFW); Newark Liberty International (EWR); Metropolitan Oakland International (OAK); Ontario International (ONT); Hartsfield-Jackson Atlanta International (ATL); Honolulu International (HNL); Philadelphia International (PHL); George Bush Intercontinental/Houston (IAH); Phoenix Sky International (PHX); Seattle-Tacoma International (SEA); Denver International (DEN)

Figure 45 shows airport area delay per mile for 2019. The larger circle sizes reflect the airports listed for delay per mile in table 21. The actual 2019 delay per mile for all airports in figure 45 is in table 23.



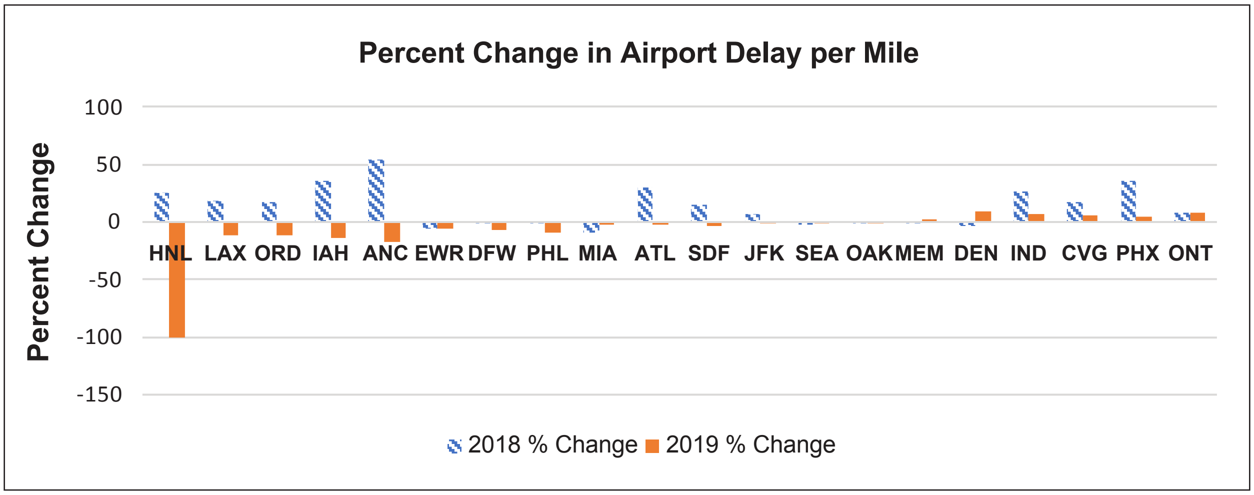
Source: FHWA Key for Airports: Memphis International (MEM); Ted Stevens Anchorage International (ANC); Louisville International–Standiford Field (SDF); Miami International (MIA); Indianapolis International (IND); Chicago O'Hare International (ORD); Los Angeles International (LAX); John F. Kennedy International (JFK); Cincinnati/Northern Kentucky International (CVG); Dallas/Fort Worth International (DFW); Newark Liberty International (EWR); Metropolitan Oakland International (OAK); Ontario International (ONT); Hartsfield-Jackson Atlanta International (ATL); Honolulu International (HNL); Philadelphia International (PHL); George Bush Intercontinental/Houston (IAH); Phoenix Sky International (PHX); Seattle-Tacoma International (SEA); Denver International (DEN)

Figure 45. Delay per mile for airport areas in 2019.

Table 23. Airport area access delay per mile for 2019.

Airport Area	2019 Delay per Mile
Ted Stevens Anchorage International (ANC)	2,496
Hartsfield -Jackson Atlanta International (ATL)	8,735
Cincinnati/Northern Kentucky International (CVG)	5,525
Denver International (DEN)	2,589
Dallas/Fort Worth International (DFW)	4,300
Newark Liberty International (EWR)	5,639
George Bush Intercontinental/Houston (IAH)	3,395
Indianapolis International (IND)	4,019
John F. Kennedy International (JFK)	12,955
Los Angeles International (LAX)	14,019
Memphis International (MEM)	5,767
Miami International (MIA)	12,070
Metropolitan Oakland International (OAK)	8,736
Ontario International (ONT)	21,677
Chicago O’Hare International (ORD)	11,895
Philadelphia International (PHL)	3,012
Phoenix Sky International (PHX)	20,075
Louisville International–Standiford Field (SDF)	4,724
Seattle-Tacoma International (SEA)	6,085

Figure 46 shows the airports where access improved or worsened from 2017 to 2018 and 2018 to 2019 based on delay per mile. Honolulu, HI, is not accurate due to no truck data being available in 2019. However, access to airports like Anchorage, AK, Houston, TX, Chicago, IL, and Los Angeles, CA, improved in 2019, while other airports such as Denver, CO, and Ontario, CA, worsened.



Source: FHWA

Key for Airports: Memphis International (MEM); Ted Stevens Anchorage International (ANC); Louisville International–Standiford Field (SDF); Miami International (MIA); Indianapolis International (IND); Chicago O'Hare International (ORD); Los Angeles International (LAX); John F. Kennedy International (JFK); Cincinnati/Northern Kentucky International (CVG); Dallas/Fort Worth International (DFW); Newark Liberty International (EWR); Metropolitan Oakland International (OAK); Ontario International (ONT); Hartsfield-Jackson Atlanta International (ATL); Honolulu International (HNL); Philadelphia International (PHL); George Bush Intercontinental/Houston (IAH); Phoenix Sky International (PHX); Seattle-Tacoma International (SEA); Denver International (DEN)

Note: No data are available for Honolulu (HNL) in 2019.

Figure 46. Graph. Percent change in airport access delay per mile.

Rail Intermodal Facilities

Table 24 shows the performance of rail intermodal facilities included in the FMT. Appendix A provides definitions of the rail intermodal locations.

A number of facilities score highest for all indicators. These locations are areas with heavy freight activity and multimodal connections. For example, locations such as Chicago, IL, Houston, TX, Atlanta, GA, New Orleans, LA, Cincinnati, OH, and Fort Worth, TX, are major intermodal connections and hubs.

Table 24. The 10 highest rail intermodal area results for the Freight Mobility Trends performance indicators in 2019.

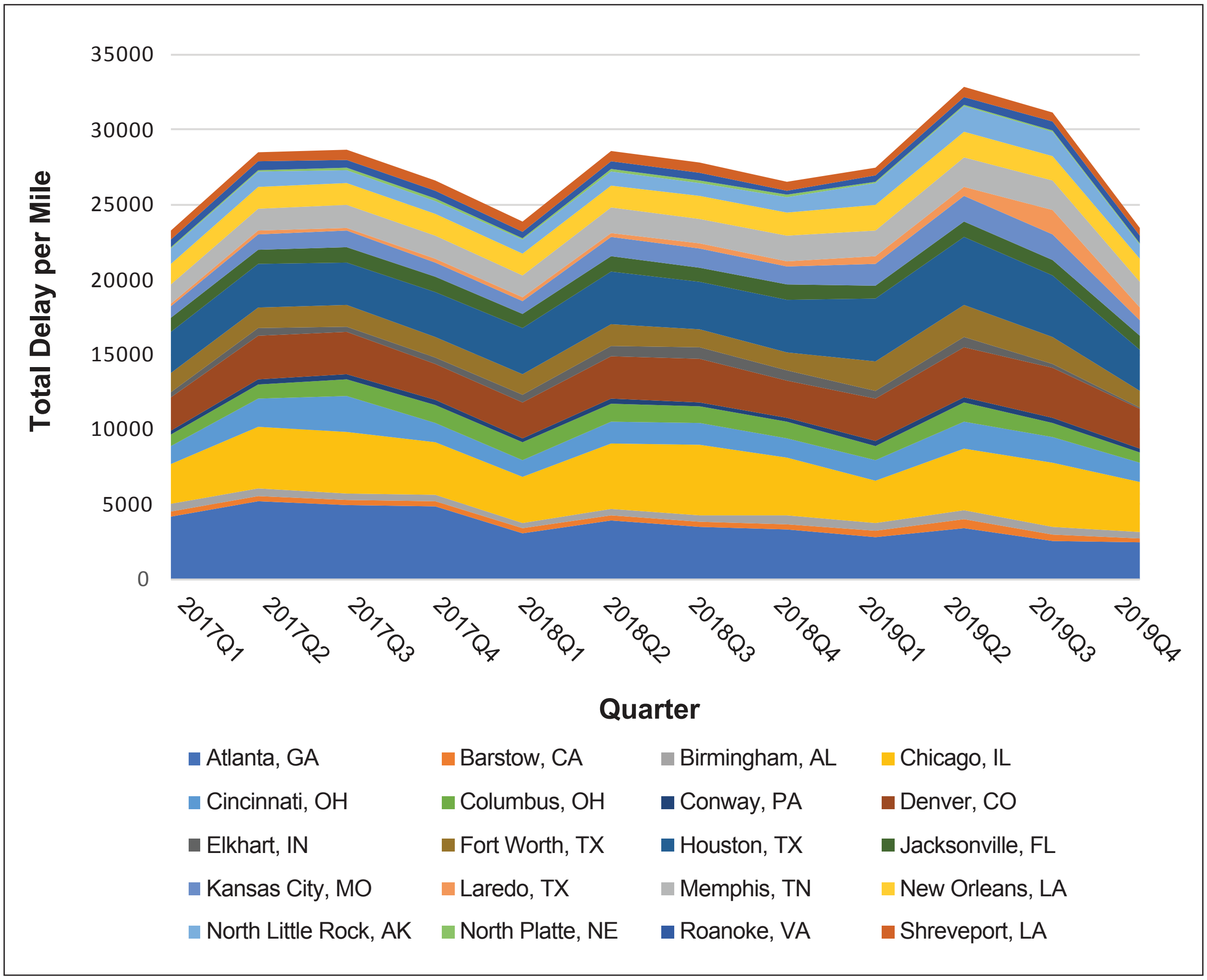
Note: Rail intermodal areas highest in most of the indicators are colored orange and have bold font.

Rail Inter-modal	DPM (Hours/ Mile)	Rail Inter-modal	Total Delay (Annual Truck Hours)	Rail Inter-modal	TTI	Rail Inter-modal	PTI	Rail Inter-modal	TRI	Rail Inter-modal	BI Per-cent
Chicago, IL	13,807	**Chicago, IL**	2,326,172	**Denver, CO**	1.37	**Atlanta, GA**	2.56	**Atlanta, GA**	1.59	**Atlanta, GA**	81
Houston, TX	12,763	Denver, CO	1,831,769	**Atlanta, GA**	1.36	**Denver, CO**	2.51	**Cincinnati, OH**	1.56	**Denver, CO**	76
Atlanta, GA	12,379	**Atlanta, GA**	1,619,883	**Chicago, IL**	1.34	**Chicago, IL**	2.41	**New Orleans, LA**	1.48	**Chicago, IL**	71
Denver, CO	10,732	**Houston, TX**	1,092,608	Conway, PA	1.30	**Cincinnati, OH**	2.28	**Chicago, IL**	1.47	**Cincinnati, OH**	68
Memphis, TN	6,559	**Cincinnati, OH**	990,138	**Cincinnati, OH**	1.29	**New Orleans, LA**	2.17	**Denver, CO**	1.46	**New Orleans, LA**	61
New Orleans, LA	6,131	Kansas City, MO	637,408	**New Orleans, LA**	1.28	**Houston, TX**	2.10	**Houston, TX**	1.44	**Houston, TX**	57
Cincinnati, OH	5,594	**Fort Worth, TX**	573,588	**Houston, TX**	1.24	Conway, PA	1.97	Jackson-ville, FL	1.34	Conway, PA	46
Fort Worth, TX	4,987	**New Orleans, LA**	569,098	**Fort Worth, TX**	1.22	**Fort Worth, TX**	1.82	**Fort Worth, TX**	1.28	**Fort Worth, TX**	41
Kansas City, MO	4,490	North Little Rock, AR	565,702	Memphis, TN	1.19	Jackson-ville, FL	1.73	Conway, PA	1.26	Jackson-ville, FL	39
North Little Rock, AR	3,969	Memphis, TN	447,040	Jackson-ville, FL	1.19	Kansas City, MO	1.72	Kansas City, MO	1.26	Kansas City, MO	33

Key: delay per mile (DPM), travel time index (TTI), planning time index (PTI), truck reliability index (TRI), buffer index (BI)

Figure 46 illustrates the delay per mile performance by quarter for access to rail intermodal facilities in ascending order from lowest to highest delay per mile. Like national delay per mile results, most of the facilities except those with the lowest delay per mile exhibit a similar trend of increases in delay per mile in the second quarter of each year. Additionally, the decreases in quarter four of 2019 are sharp for most of the facilities.

Table 25 provides the quarterly delay per mile for each rail intermodal facility area as shown in figure 47.



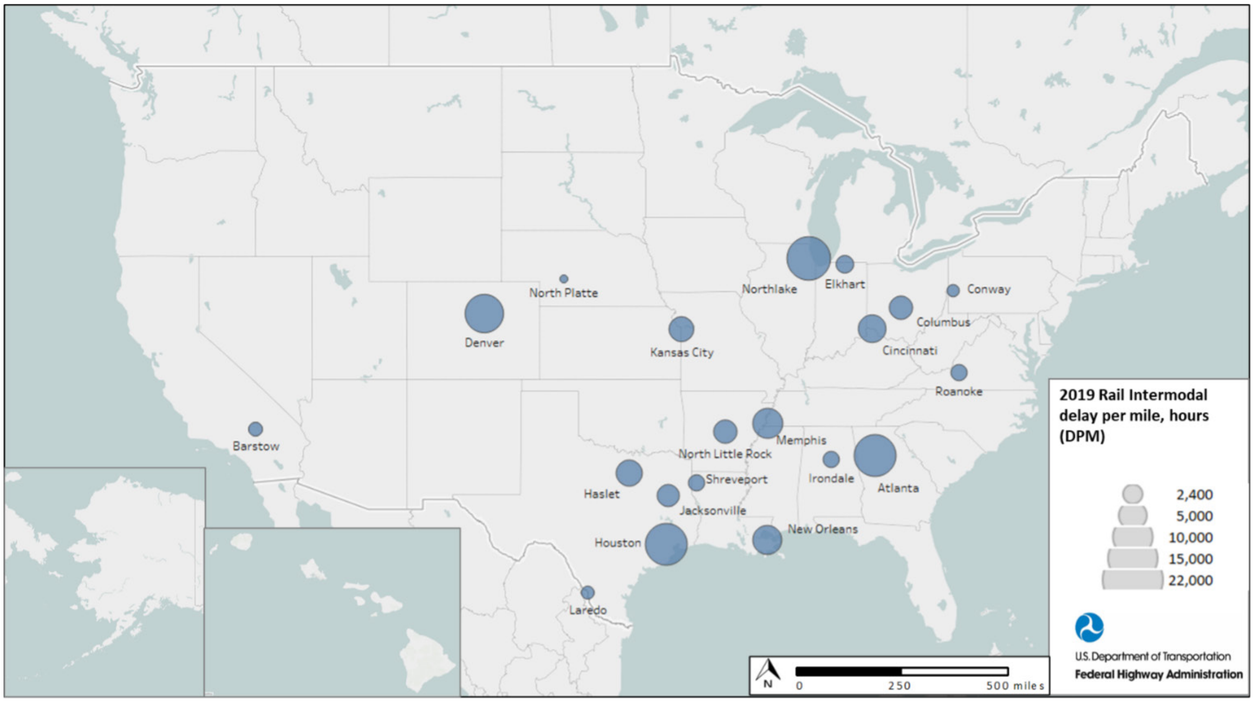
Source: FHWA

Figure 47. Graph. Quarterly total delay per mile for access to rail intermodal facilities.

Table 25. Rail intermodal facility area access delay per mile by quarter.

Rail Intermodal Area	2017 Q1	2017 Q2	2017 Q3	2017 Q4	2018 Q1	2018 Q2	2018 Q3	2018 Q4	2019 Q1	2019 Q2	2019 Q3	2019 Q4
Atlanta, GA	4,194	5,214	4,932	4,843	3,067	3,909	3,478	3,327	2,791	3,435	2,580	2,453
Barstow, CA	348	333	326	335	312	336	338	381	489	597	391	254
Birmingham, AL	464	500	469	446	389	465	467	596	491	539	495	468
Chicago, IL	2,660	4,160	4,133	3,494	3,067	4,367	4,712	3,777	2,803	4,117	4,283	3,329
Cincinnati, OH	1,233	1,829	2,355	1,343	1,120	1,465	1,398	1,322	1,381	1,845	1,727	1,290
Columbus, OH	786	991	1,119	1,144	1,177	1,179	1,135	1,085	969	1,277	997	688
Conway, PA	250	342	360	332	253	325	290	304	283	337	279	237
Denver, CO	2,185	2,860	2,780	2,464	2,378	2,833	2,900	2,503	2,836	3,339	3,364	2,615
Elkhart, IN	403	525	413	417	563	682	794	658	560	674	265	132
Fort Worth, TX	1,279	1,378	1,382	1,367	1,402	1,498	1,177	1,230	1,900	2,139	1,782	1,111
Houston, TX	2,709	2,900	2,895	2,967	3,028	3,466	3,162	3,494	4,189	4,563	4,135	2,774
Jacksonville, FL	902	990	994	1,053	932	1,026	980	958	930	1,003	1,026	879
Kansas City, MO	768	1,021	1,089	941	876	1,274	1,248	1,239	1,418	1,699	1,668	1,027
Laredo, TX	199	220	227	229	263	288	318	331	539	582	1,654	891
Memphis, TN	1,321	1,470	1,513	1,539	1,493	1,698	1,661	1,696	1,722	1,969	1,960	1,668
New Orleans, LA	1,366	1,445	1,461	1,466	1,392	1,469	1,515	1,539	1,642	1,718	1,651	1,534
North Little Rock, AR	997	1,005	870	882	942	952	866	1,056	1,479	1,726	1,606	996
North Platte, NE	127	127	123	123	109	124	131	133	112	108	86	89
Roanoke, VA	443	548	546	534	410	558	537	259	444	531	569	493
Shreveport, LA	597	633	685	654	700	681	725	605	528	624	664	474

Figure 48 shows the delay per mile for access to rail intermodal facilities, with larger circles relating to larger delay per mile. The actual delay per mile for 2019 for each rail intermodal facility is in table 26.



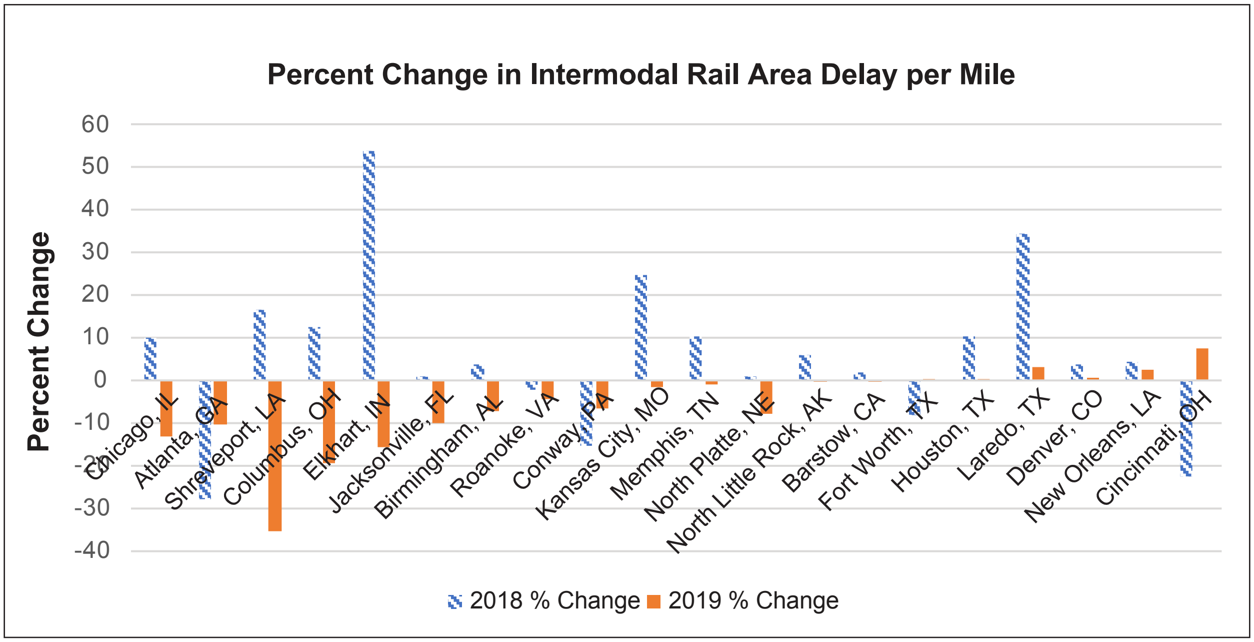
Source: FHWA

Figure 48. Map. Rail intermodal area delay per mile in 2019.

Table 26. Rail intermodal area access delay per mile for 2019.

Rail Intermodal Location	State	2019 Delay Per Mile
Atlanta	GA	12,379
Barstow	CA	1,418
Irondale	AL	1,826
Northlake	IL	13,807
Cincinnati	OH	5,594
Columbus	OH	3,671
Conway	PA	1,101
Denver	CO	10,732
Elkhart	IN	2,278
Haslet	TX	4,987
Houston	TX	12,763
Jacksonville	TX	3,571
Kansas City	MO	4,490
Laredo	TX	1,241
Memphis	TN	6,559
New Orleans	LA	6,131
North Little Rock	AR	3,969
North Platte	NE	466
Roanoke	VA	1,958

Figure 49 shows the percent change for rail intermodal facilities from 2017 to 2018 and 2018 to 2019 based on delay per mile on surrounding NHS routes. Locations such as Shreveport, LA, Elkhart, IN, Jacksonville, FL, and Atlanta, GA, show improvements in 2019, while areas such as Cincinnati, OH, Laredo, TX, and New Orleans, LA, do not.



Source: FHWA

Figure 49. Graph. Percent change in rail intermodal area delay per mile.

Ports

Table 27 shows port performance for the FMT indicators. Appendix A provides port definitions. Truck data for Hawaii ports do not exist for 2019.

Performance at major ports such as New York–New Jersey, Oakland, CA, Seattle, WA, Tacoma, WA, New Orleans, LA, and Miami, FL, score highest in the indicators.

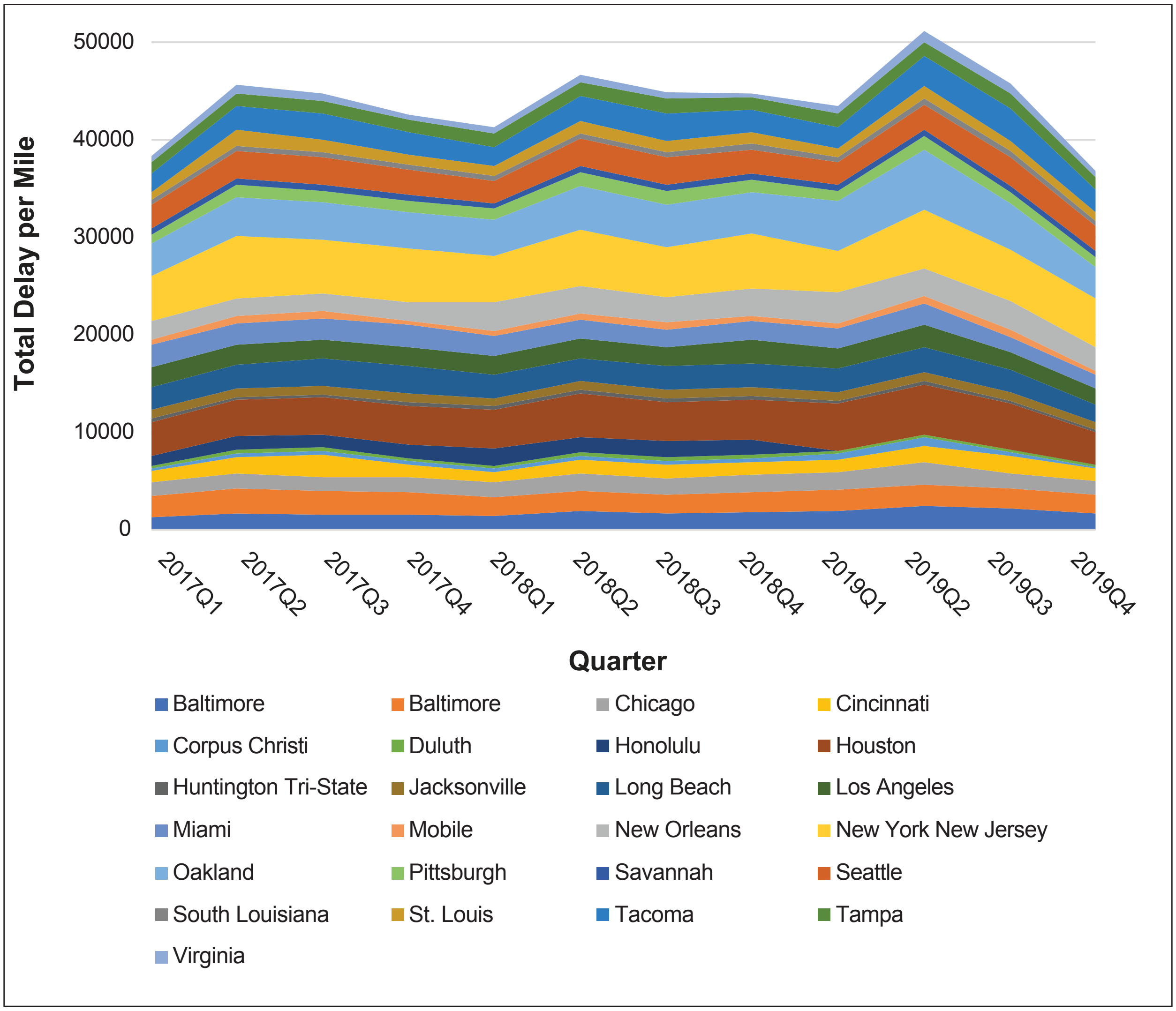
Table 27. The 10 highest port area results for the Freight Mobility Trends performance indicators in 2019.

Note: Port areas highest in most of the indicators are colored orange and have bold font.

Port	DPM (Hours/ Mile)	Port	Total Delay (Annual Truck Hours)	Port	TTI	Port	PTI	Port	TRI	Port	BI Per-cent
New York–New Jersey	20,292	**New York–New Jersey**	1,899,634	**New York–New Jersey**	1.79	**New York–New Jersey**	4.39	**Oakland, CA**	1.74	**New York–New Jersey**	130
Oakland, CA	16,728	Houston, TX	1,639,442	**Miami, FL**	1.64	**Miami, FL**	3.67	**Miami, FL**	1.67	**Miami, FL**	119
Houston, TX	15,488	Baltimore, MD	1,446,424	**New Orleans, LA**	1.49	**Oakland, CA**	3.21	**New York–New Jersey**	1.63	**Oakland, CA**	100
Tacoma, WA	10,090	**Oakland, CA**	1,253,834	**Oakland, CA**	1.47	**New Orleans, LA**	2.89	Baltimore, MD	1.56	Tacoma, WA	84
Seattle, WA	9,843	Baton Rouge, LA	1,099,556	**Seattle, WA**	1.45	**Seattle, WA**	2.88	Tampa, FL	1.55	**Seattle, WA**	84
Long Beach, CA	9,634	Cincinnati, OH	949,034	Pitts-burgh, PA	1.42	Tacoma, WA	2.79	Pitts-burgh, PA	1.52	**New Orleans, LA**	86
New Orleans, LA	9,542	Tacoma, WA	911,249	Tacoma, WA	1.42	Pitts-burgh, PA	2.75	Chicago, IL	1.51	Pitts-burgh, PA	80
Los Angeles, CA	8,448	**New Orleans, LA**	858,402	Los Angeles, CA	1.39	Tampa, FL	2.51	**New Orleans, LA**	1.51	Tampa, FL	76
Baton Rouge, LA	7,759	**Seattle, WA**	700,267	Tampa	1.35	Los Angeles, CA	2.47	Cincinnati, OH	1.47	Los Angeles, CA	74
Miami, FL	7,423	Tampa, FL	700,115	Savannah, GA	1.35	Virginia	2.42	**Seattle, WA**	1.46	Chicago, IL	73

Key: delay per mile (DPM), travel time index (TTI), planning time index (PTI), truck reliability index (TRI), buffer index (BI)

Similar to national results, port areas follow the same trend for delay per mile on surrounding NHS routes (figure 50). Most ports have increases in the second quarter and downturns in the fourth quarter of 2019. Table 28 provides the quarterly delay per mile for port areas as shown in figure 50.



Source: FHWA

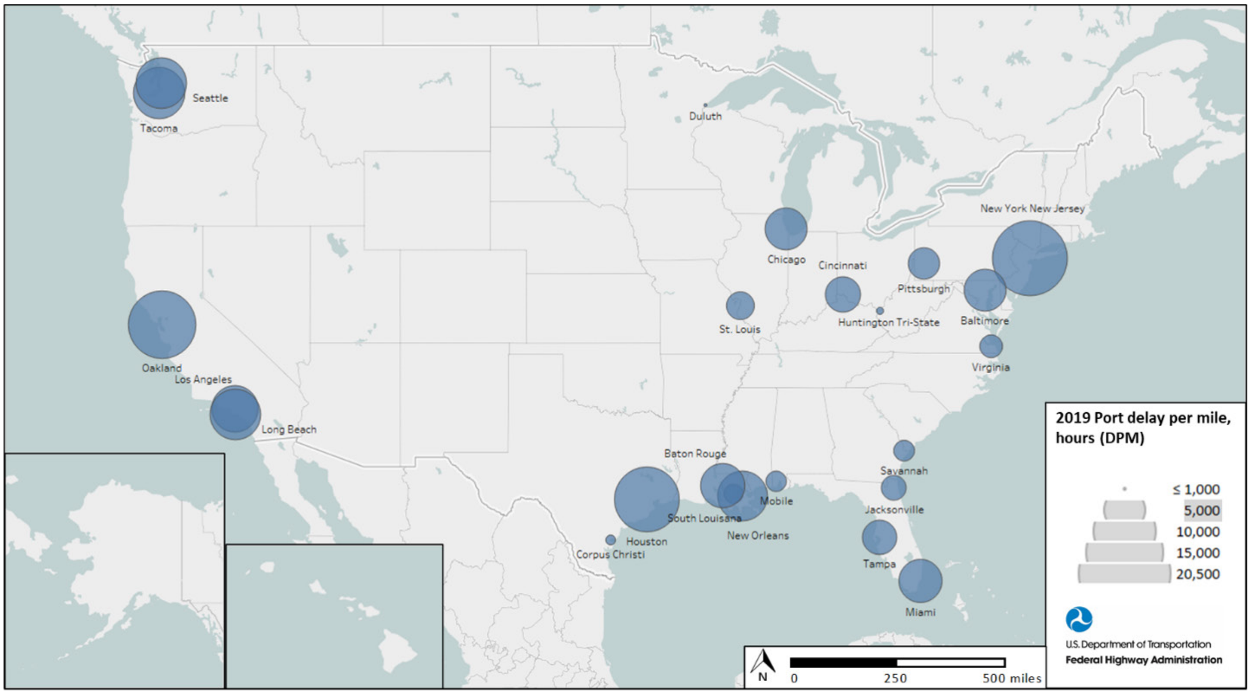
Note: Hawaii data are not available for 2019.

Figure 50. Graph. Quarterly port access performance for delay per mile.

Table 28. Port area access delay per mile by quarter.

Port Area	2017 Q1	2017 Q2	2017 Q3	2017 Q4	2018 Q1	2018 Q2	2018 Q3	2018 Q4	2019 Q1	2019 Q2	2019 Q3	2019 Q4
Baltimore	1,206	1,616	1,510	1,456	1,387	1,809	1,570	1,681	1,857	2,377	2,172	1,634
Baton Rouge	2,261	2,508	2,405	2,305	1,846	2,172	1,920	2,060	2,223	2,225	2,029	1,899
Chicago	1,333	1,561	1,468	1,601	1,588	1,733	1,736	1,834	1,712	2,247	1,548	1,417
Cincinnati	1,168	1,751	2,254	1,229	1,084	1,430	1,412	1,322	1,288	1,755	1,728	1,293
Corpus Christi	305	331	362	371	340	379	402	395	683	800	426	165
Duluth	253	364	372	355	308	327	355	322	285	290	233	220
Honolulu	1,042	1,377	1,385	1,329	1,748	1,577	1,693	1,603				
Houston	3,457	3,739	3,755	4,028	3,980	4,494	3,993	4,116	4,876	5,170	4,715	3,279
Huntington Tri-State	305	342	323	309	331	357	367	378	283	404	283	245
Jacksonville	874	915	872	922	791	894	822	827	824	901	935	785
Long Beach	2,404	2,440	2,815	2,833	2,469	2,319	2,428	2,476	2,476	2,529	2,360	1,859
Los Angeles	1,985	1,991	1,914	1,900	1,934	2,035	2,038	2,402	2,021	2,231	1,765	1,622
Miami	2,306	2,213	2,173	2,298	2,044	1,969	1,753	1,978	2,072	2,207	1,505	1,404
Mobile	551	718	778	493	491	689	755	513	577	779	717	412
New Orleans	1,883	1,855	1,870	1,866	2,997	2,745	2,622	2,801	3,153	2,828	2,952	2,431
New York New Jersey	4,618	6,356	5,486	5,497	4,713	5,767	5,089	5,592	4,231	6,000	5,352	4,989
Oakland	3,391	4,022	3,775	3,753	3,774	4,562	4,417	4,345	5,126	6,265	4,668	3,294
Pittsburg	858	1,260	1,171	1,087	1,042	1,331	1,363	1,269	1,032	1,313	1,238	1,002
Savannah	633	708	714	703	610	645	618	596	600	670	666	606
Seattle	2,440	2,735	2,732	2,608	2,293	2,902	2,854	2,505	2,395	2,644	2,887	2,513
South Louisiana	542	547	550	528	501	530	555	531	476	556	596	593
St. Louis	822	1,618	1,357	974	1,018	1,218	1,137	1,142	923	1,306	1,066	895
Tacoma	1,827	2,504	2,581	2,244	1,972	2,543	2,805	2,367	2,101	3,068	3,291	2,250
Tampa	1,230	1,314	1,301	1,297	1,381	1,464	1,459	1,340	1,434	1,488	1,545	1,291
Virginia	576	834	796	599	645	767	750	388	747	1,049	1,062	650

Figure 51 shows the delay per mile for areas surrounding ports, with larger circles representing higher delay per mile. The 2019 delay per mile results for each port area are in table 29.



Source: FHWA

Note: Hawaii data are not available for 2019.

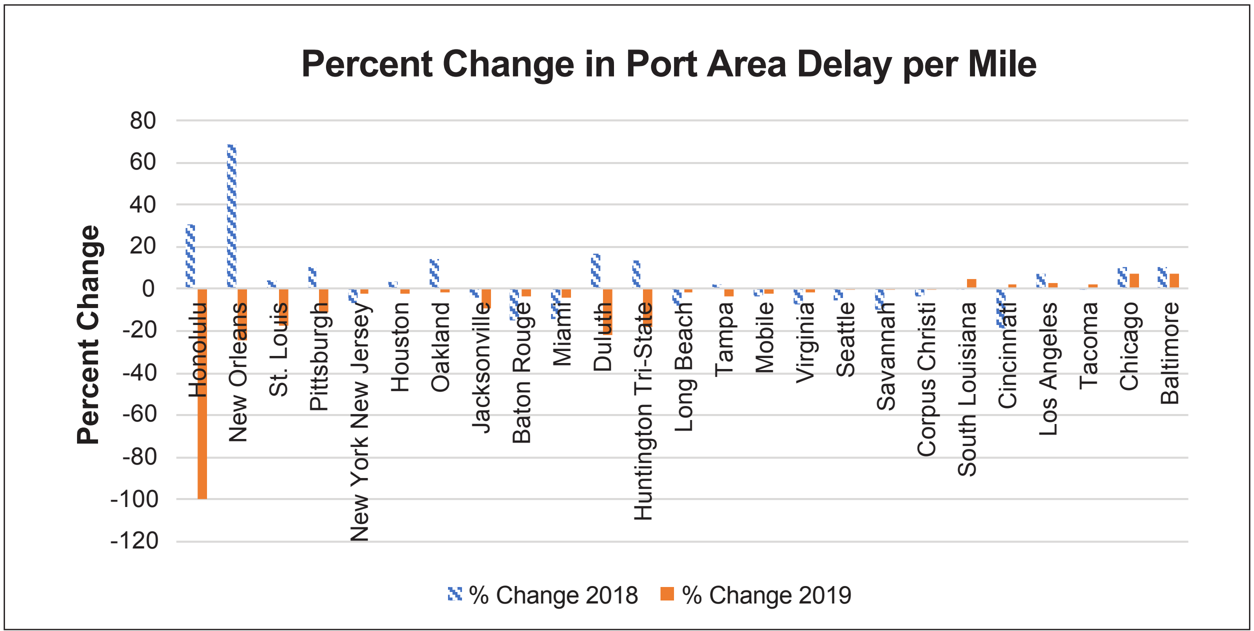
Figure 51. Map. Port area delay per mile in 2019.

Table 29. Port area access delay per mile in 2019.

Note: Hawaii data are not available for 2019.

Location	State	2019 Delay Per Mile
New York New Jersey	NJ	20,292
Miami	FL	7,423
Oakland	CA	16,728
Tacoma	WA	10,090
Seattle	WA	9,843
New Orleans	LA	9,542
Pittsburg	PA	4,400
Tampa	FL	5,067
Los Angeles	CA	8,448
Chicago	IL	7,055
Baltimore	MD	6,908
Virginia	VA	2,783
Long Beach	CA	9,634
Cincinnati	OH	5,289
Houston	TX	15,488
Savannah	GA	2,489
Baton Rouge	LA	7,759
Jacksonville	FL	3,126
Duluth	MN	1,035
Mobile	AL	2,440
St. Louis	MO	3,664
Huntington Tri-State	WV	1,176
Corpus Christi	TX	1,335
South Louisiana	LA	2,252
Honolulu	HI	0

Figure 52 shows the access to port areas that improved or worsened from 2017 to 2018 and 2018 to 2019 based on delay per mile. Ports that showed access improvements for 2019 are Duluth, MN, Huntington (WV) Tri-State, New Orleans, LA, Saint Louis, MO, and Pittsburgh, PA. Those with noticeable worsening include Baltimore, MD, Chicago, IL, and South Louisiana, LA.



Source: FHWA

Note: No data are available for Honolulu in 2019.

Figure 52. Graph. Percent change in port area delay per mile.

Border Areas

Table 30 shows border areas scoring highest for the FMT indicators. Only Hidalgo, TX, and Calexico, CA, are in the highest group for all indicators. Laredo, TX, is in the ten highest for five of the six indicators.

Table 30. The 10 highest border area results for the Freight Mobility Trends performance indicators in 2019.

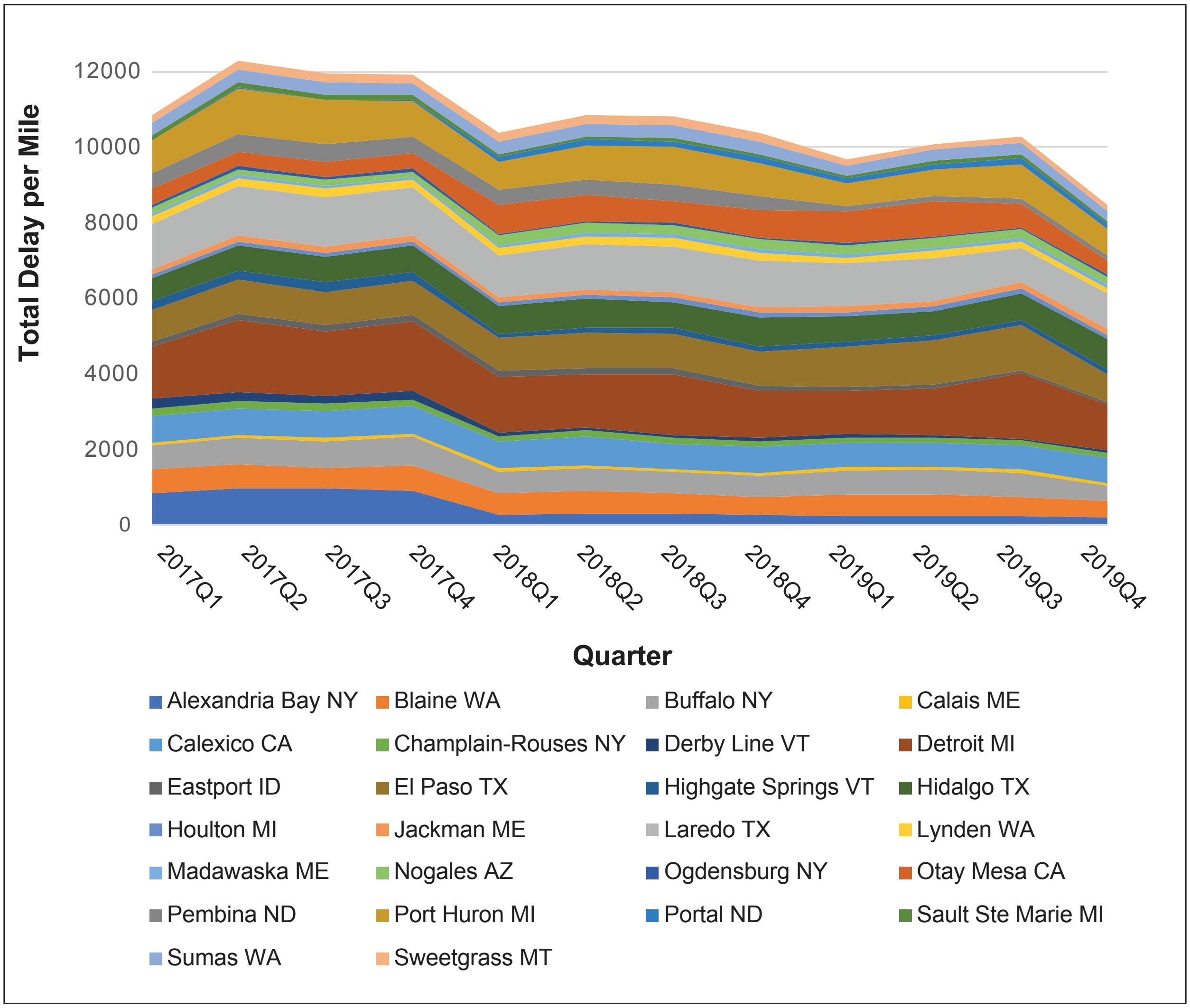
Note: Border areas highest in most of the indicators are colored orange and have bold font.

Border Area	DPM (Hours/ Mile)	Border Area	Total Delay (Annual Truck Hours)	Border Area	TTI	Border Area	PTI	Border Area	TRI	Border Area	BI Per-cent
Laredo, TX	4,669	Detroit, MI	473,072	**Calexico, CA**	1.69	Portal, ND	3.99	Highgate Springs, VT	2.05	Portal, ND	136
Detroit, MI	3,628	**Laredo, TX**	262,160	Portal, ND	1.69	**Calexico, CA**	3.54	Portal, ND	1.88	**Calexico, CA**	99
El Paso, TX	3,114	El Paso, TX	233,918	**Hidalgo, TX**	1.51	**Hidalgo, TX**	2.94	Jackman, ME	1.62	**Hidalgo, TX**	96
Hidalgo, TX	2,586	Buffalo, NY	232,777	Alexan-dria Bay, NY	1.48	Alexandria Bay, NY	2.54	Calais, ME	1.61	Eastport, ID	69
Port Huron, MI	2,550	Otay Mesa, CA	141,791	**Laredo, TX**	1.44	Derby Line, VT	2.41	Derby Line, VT	1.56	Derby Line, VT	69
Otay Mesa, CA	2,490	**Hidalgo, TX**	102,247	Jackman, ME	1.43	**Laredo, TX**	2.41	**Hidalgo, TX**	1.54	Calais, ME	66
Calexico, CA	2,324	Port Huron, MI	98,405	Mada-waska, ME	1.37	Jackman, ME	2.37	**Calexico, CA**	1.50	Jackman, ME	66
Blaine, WA	2,269	**Calexico, CA**	92,981	Eastport, ID	1.37	Eastport, ID	2.33	Eastport, ID	1.49	**Laredo, TX**	66
Buffalo, NY	1,900	Houlton, MI	59,041	Derby Line, VT	1.36	Calais, ME	2.20	Mada-waska, ME	1.48	Alexan-dria Bay, NY	59
Sumas, WA	1,162	Blaine, WA	33,323	Calais, ME	1.32	Pembina, ND	2.16	Houlton, MI	1.41	Lynden, WA	55

Key: delay per mile (DPM), travel time index (TTI), planning time index (PTI), truck reliability index (TRI), buffer index (BI)

Figure 53 shows the border area delay per mile performance by quarter for access to each facility. Border areas appear to show decreasing delay but still follow the national trend. Border areas of Detroit, MI, and Laredo, TX, show the most hours of delay per mile for the surrounding NHS.

Table 31 provides the quarterly delay per mile as shown in figure 53.



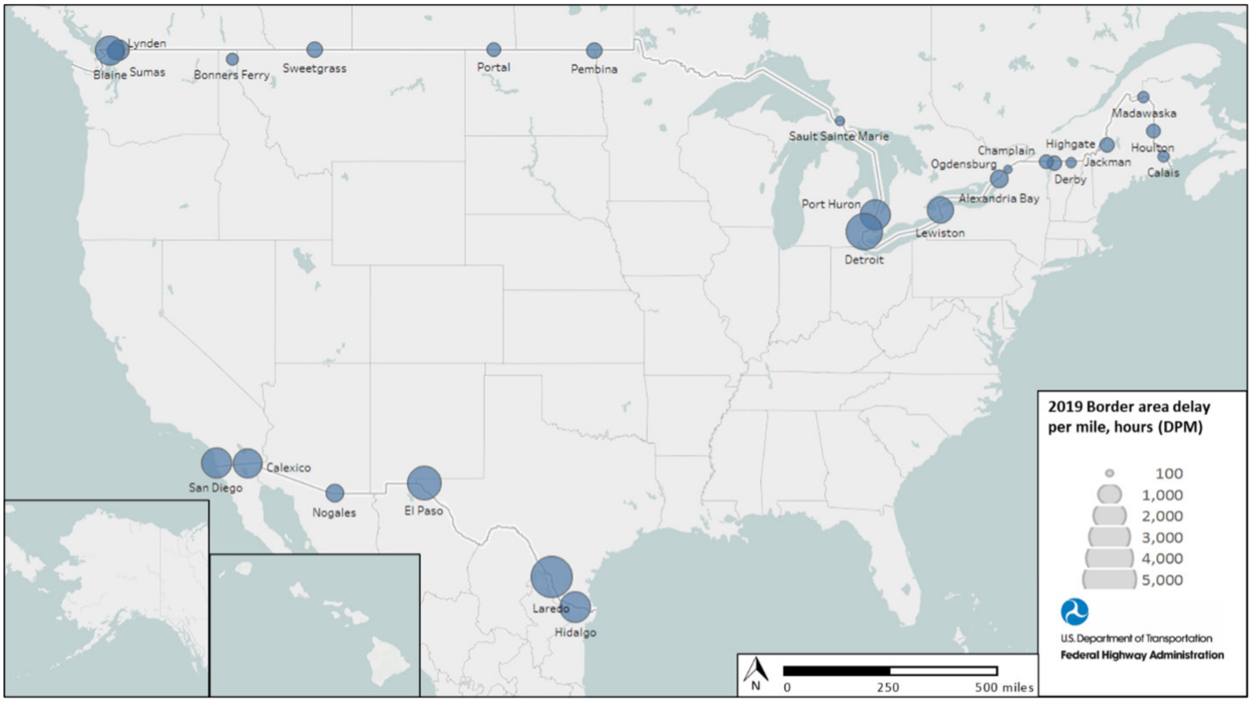
Source: FHWA

Figure 53. Graph. Quarterly border area performance for delay per mile.

Table 31. Border area access delay per mile by quarter.

Border Area	2017 Q1	2017 Q2	2017 Q3	2017 Q4	2018 Q1	2018 Q2	2018 Q3	2018 Q4	2019 Q1	2019 Q2	2019 Q3	2019 Q4
Alexandria Bay NY	852	958	959	913	259	314	289	262	230	246	231	200
Blaine WA	632	649	535	677	577	579	553	483	560	554	512	423
Buffalo NY	642	697	731	758	576	621	572	549	665	669	634	423
Calais ME	68	78	82	77	83	72	77	83	88	82	87	70
Calexico CA	688	704	697	709	704	771	654	715	639	626	634	657
Champlain-Rouses NY	187	204	206	198	139	148	157	131	129	141	134	125
Derby Line VT	272	215	215	217	104	78	66	99	106	57	57	76
Detroit MI	1,383	1,921	1,688	1,856	1,492	1,418	1,622	1,235	1,143	1,240	1,737	1,195
Eastport ID	145	166	171	156	157	143	149	142	106	91	79	71
El Paso TX	841	907	892	916	876	949	927	886	1,045	1,196	1,196	758
Highgate Springs VT	220	239	242	229	105	125	154	133	162	118	113	125
Hidalgo TX	599	664	687	708	720	766	689	779	655	644	730	797
Houlton MI	105	102	102	105	114	111	131	119	117	125	135	100
Jackman ME	135	151	150	144	135	144	139	144	143	148	152	163
Laredo TX	1,201	1,313	1,321	1,275	1,107	1,194	1,203	1,255	1,134	1,137	904	955
Lynden WA	200	215	223	201	178	219	216	197	156	184	170	135
Madawaska ME	74	87	89	82	81	81	93	86	83	88	91	81
Nogales AZ	149	140	139	133	247	256	255	265	254	258	245	225
Ogdensburg NY	93	97	97	97	65	58	59	57	45	46	46	49
Otay Mesa CA	413	379	403	389	756	680	585	715	836	914	611	364
Pembina ND	417	460	469	441	395	405	416	383	152	134	138	141
Port Huron MI	858	1,213	1,143	948	736	921	995	857	601	731	898	696
Portal ND	22	25	23	23	141	153	156	154	120	130	185	143
Sault Ste Marie MI	123	128	134	125	83	83	81	84	75	74	97	64
Sumas WA	321	330	334	324	310	338	346	327	278	305	300	272
Sweetgrass MT	212	233	238	240	227	238	234	228	153	156	162	156

Figure 54 depicts a map of border areas, with larger circles representing higher delay per mile on the surrounding NHS, matching the results shown in table 31. 2019 delay per mile for each border area is provided in table 32.



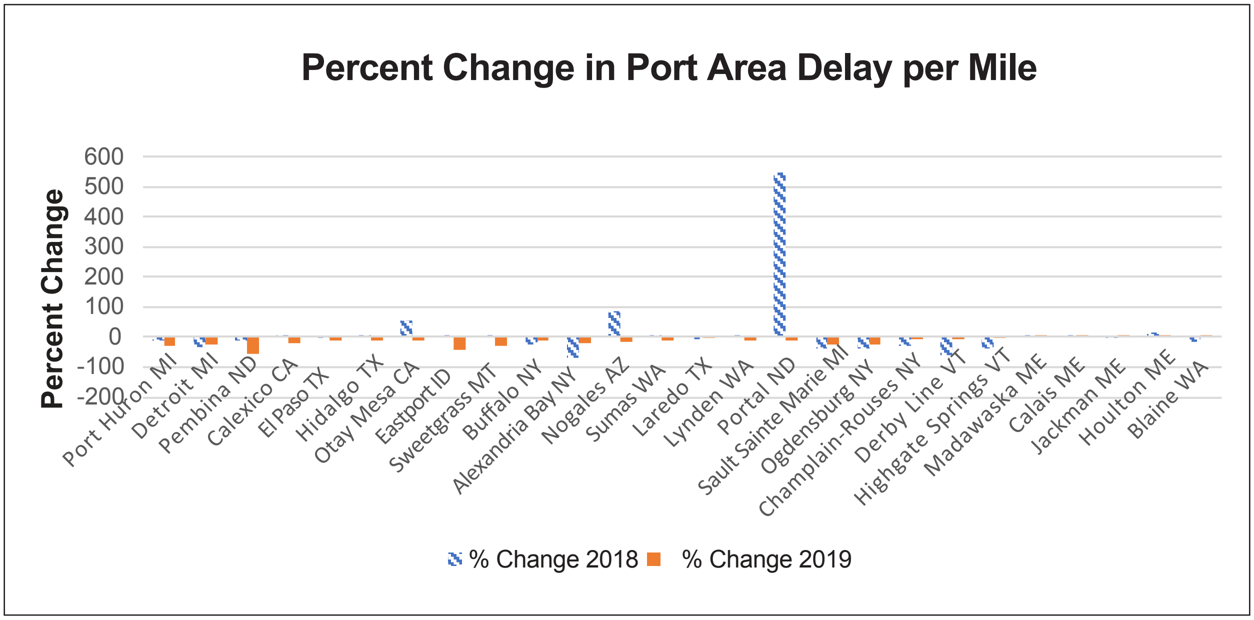
Source: FHWA

Figure 54. Map. Border area delay per mile in 2019.

Table 32. Delay per mile for border areas in 2019.

Location	State	2019 Delay Per Mile
Alexandria Bay	NY	868
Blaine	WA	2,269
Lewiston	NY	1,900
Calais	ME	331
Calexico	CA	2,324
Champlain	NY	540
Derby	VT	300
Detroit	MI	3,628
Bonners Ferry	ID	402
El Paso	TX	3,114
Highgate	VT	566
Hidalgo	TX	2,586
Houlton	ME	499
Jackman	ME	578
Laredo	TX	4,669
Lynden	WA	749
Madawaska	ME	359
Nogales	AZ	874
Ogdensburg	NY	193
San Diego	CA	2,490
Pembina	ND	659
Port Huron	MI	2,550
Portal	ND	524
Sault Sainte Marie	MI	248
Sumas	WA	1,162
Sweetgrass	MT	669

Figure 55 shows the border areas that improved or worsened from 2017 to 2018 and 2018 to 2019 based on delay per mile. Most border areas improved, and only a few northern border areas worsened slightly.



Source: FHWA

Figure 55. Graph. Percent change in border area delay per mile.

Border Crossings

Another common measure of border crossing performance is the average minutes per mile of the actual segments into and out of Canada and Mexico. Table 33 shows the minute-per-mile rates.

Table 33. National border crossing minutes per mile.

Location	2017	2018	Average
National (weighted)	2.4	2.4	2.4
National (not weighted)	3	3	3
Direction (weighted) into Canada	2	2	2
Direction (weighted) into Mexico	1.9	1.9	1.9
Direction (weighted) into United States	2.1	2.1	2.1
Direction (not weighted) into Canada	3	3	3
Direction (not weighted) into Mexico	2.8	2.6	2.7
Direction (not weighted) into United States	3.1	3.2	3.1

SECTION 4: DISCUSSION OF FREIGHT PERFORMANCE TRENDS

The *Freight Mobility Trends Report 2019* analyzes national trends in highway freight movement between 2017 and 2019. Key findings are as follows:

- Freight performance experienced minimal change over the past few years because overall results are stable.
- Performance worsened slightly for 2018 and improved for 2019.
- Most regions and facilities showed improvement for freight performance in 2019. This is likely driven by urban area performance.
- Interstates worsened based on delay per mile, but urban Interstates improved in 2019.
- NHS arterials improved from 2017 to 2019 based on delay per mile.
- Urban areas exhibited worse freight performance than rural areas. While rural performance showed a worsening trend between 2017 and 2019, urban roadways saw improvement in 2019.
- Roadway types also differed in freight performance in that:
    - Interstates had greater delay but tended to be more reliable, with many major urban areas being reliably congested during peak periods.
    - National Highway System (NHS) arterials and freeways off the Interstate tended to have less delay but were less reliable than the Interstate.
    - NHS arterials had more challenges with reliability than other roadways.

Considering specific measures of national-level performance, total freight delay and delay per mile (DPM) showed improvement. The travel time index (TTI) had no change, and the planning time index (PTI) and truck reliability index (TRI) decreased only slightly (figure 56).

Source: FHWA

Figure 56. Chart. National freight performance from 2018 to 2019.

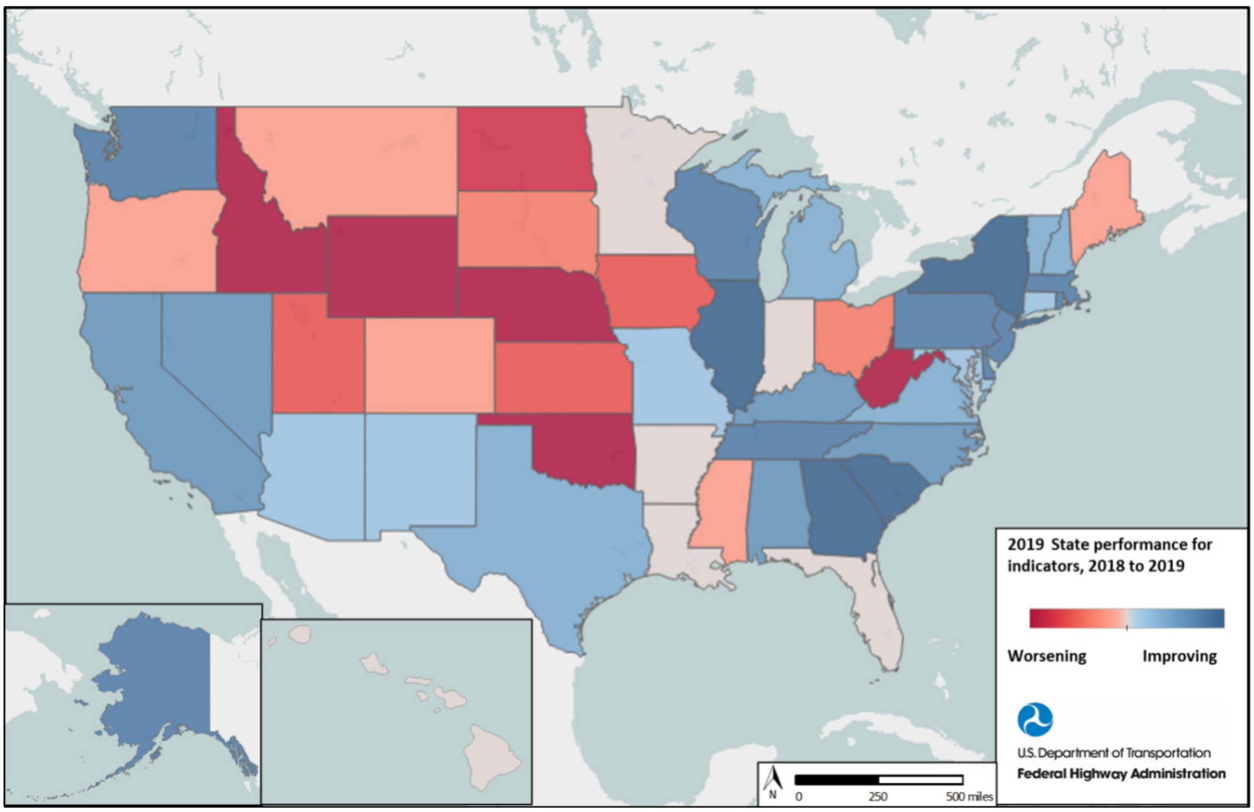
Performance Results by Location

Trends in highway freight mobility for States and other locations showed more variability on the indicators between 2018 and 2019.

State Performance Results

Figure 57 illustrates how freight performed in each State considering a composite of all indicators for the total delay, delay per mile, TTI, PTI, and TRI from 2018 to 2019. Table 34 and the description following details how states performed as shown in figure 57.

To create the composite score, table 34 was used to determine the number of indicators on which a State improved or worsened, which was turned into an indicator to determine the States that are mostly improving or worsening as shown in the map.



Source: FHWA

Figure 57. Map. State performance for indicators from 2018 to 2019.

Table 34. State performance for Freight Mobility Trends indicators from 2018 to 2019.

State	Total Delay 2019	Delta Total Delay	DPM 2019	Delta DPM	TTI 2019	Delta TTI	PTI 2019	Delta PTI	TRI 2019	Delta TRI
AK	1,088,353	−133,242	316	−39	1.22	−0.06	1.82	−0.19	1.30	0.00
AL	9,570,542	−1,188,509	1,122	−92	1.11	0.00	1.33	−0.01	1.11	0.00
AR	5,754,862	−142,447	877	−1	1.09	*0.01*	1.26	*0.02*	1.09	0.00
AZ	9,131,813	−242,586	1,424	−17	1.13	0.00	1.50	0.00	1.20	*0.01*
CA	96,454,919	−11,700,575	3,505	−311	1.28	0.00	2.09	−0.03	1.32	0.00
CO	10,798,067	−481,942	1,105	−23	1.24	*0.02*	1.86	*0.06*	1.26	*0.01*
CT	5,858,080	−1,001,583	1,974	−215	1.23	0.00	1.88	*0.02*	1.30	0.00
DC	1,175,278	−360,487	5,064	−680	1.69	−0.01	3.63	−0.06	1.60	0.00
DE	2,376,084	−512,056	2,794	−373	1.26	0.00	1.88	−0.03	1.27	−0.02
FL	40,424,749	−4,424,493	2,475	−56	1.23	*0.01*	1.83	*0.03*	1.24	0.00
GA	25,915,822	−3,352,488	1,872	−162	1.19	−0.01	1.68	−0.03	1.22	−0.02
HI	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
IA	4,491,236	−44,142	470	*10*	1.09	*0.01*	1.27	*0.02*	1.10	*0.01*
ID	2,609,508	*100,581*	530	*24*	1.14	*0.02*	1.46	*0.08*	1.14	*0.01*
IL	31,530,659	−4,610,111	2,029	−207	1.16	−0.01	1.59	−0.04	1.19	−0.01
IN	12,991,522	−781,792	1,502	−4	1.10	0.00	1.33	*0.02*	1.14	*0.02*
KS	4,408,031	−149,649	501	*4*	1.12	*0.01*	1.37	*0.04*	1.13	*0.01*
KY	8,614,799	−513,342	1,330	−51	1.11	0.00	1.35	0.00	1.11	−0.01
LA	15,279,657	−1,240,877	2,520	−131	1.15	0.00	1.53	*0.01*	1.19	*0.01*
MA	11,055,254	−1,359,580	1,846	−140	1.30	0.00	2.16	−0.01	1.36	−0.01
MD	16,094,250	−903,101	3,912	−72	1.24	0.00	1.91	*0.01*	1.32	0.00
ME	2,302,860	−92,369	852	−4	1.13	*0.01*	1.43	*0.02*	1.16	*0.01*
MI	11,849,154	−1,401,960	949	−72	1.15	0.00	1.53	−0.03	1.19	*0.01*
MN	6,454,011	−721,294	627	−36	1.16	0.00	1.56	*0.03*	1.22	*0.01*
MO	13,640,467	−963,476	1,209	−15	1.11	0.00	1.39	*0.01*	1.14	0.00
MS	5,495,147	−98,495	777	6	1.11	*0.01*	1.34	*0.03*	1.10	*0.01*
MT	2,198,000	−62,200	263	−6	1.16	0.01	1.52	*0.03*	1.18	*0.01*
NC	12,397,400	−88,2076	1,118	−3	1.15	0.00	1.52	−0.01	1.17	0.00
ND	1,987,627	*58,636*	273	*18*	1.14	*0.01*	1.47	*0.02*	1.14	0.00
NE	3,287,506	*23,590*	444	*14*	1.11	*0.01*	1.37	*0.03*	1.13	*0.01*
NH	2,333,131	−408,017	1,248	−103	1.22	0.00	1.74	*0.01*	1.21	−0.01
NJ	13,346,439	−2,430,610	2,283	−312	1.27	0.00	1.93	−0.04	1.27	−0.03

Table 34. State performance for Freight Mobility Trends indicators from 2018 to 2019. (Continued)

State	Total Delay 2019	Delta Total Delay	DPM 2019	Delta DPM	TTI 2019	Delta TTI	PTI 2019	Delta PTI	TRI 2019	Delta TRI
NM	7,184,160	−312,827	1,083	−31	1.14	0.01	1.45	*0.02*	1.13	0.00
NV	3,850,435	−636,758	755	−105	1.16	−0.01	1.55	−0.05	1.19	*0.01*
NY	34,524,209	−3,633,211	2,208	−128	1.26	−0.01	1.96	−0.05	1.24	−0.01
OH	19,672,512	−329,842	1,475	*62*	1.11	0.00	1.36	*0.01*	1.13	*0.01*
OK	5,919,502	*65,179*	698	*34*	1.10	*0.01*	1.30	*0.03*	1.11	*0.02*
OR	10,479,403	−603,307	1,241	−53	1.17	*0.01*	1.63	*0.02*	1.22	*0.01*
PA	22,319,995	−1,572,425	1,582	−53	1.16	−0.01	1.52	−0.02	1.16	0.00
RI	1,494,226	−138,440	1,286	−60	1.28	0.00	2.03	−0.02	1.29	−0.01
SC	12,124,281	−1,146,883	1,706	−97	1.20	−0.01	1.65	−0.04	1.18	−0.02
SD	1,687,408	−29,383	230	*2*	1.14	0.00	1.45	*0.02*	1.15	*0.01*
TN	20,091,704	−1,517,074	1,948	−64	1.14	0.00	1.47	−0.01	1.16	−0.01
TX	62,024,730	−3,579,270	1,804	−38	1.18	0.00	1.65	0.00	1.21	0.00
UT	17,628,037	−1,487,135	3,474	*687*	1.20	*0.01*	1.72	*0.03*	1.21	0.01
VA	12,505,731	−500,801	1,393	*6*	1.17	0.00	1.63	−0.01	1.19	−0.01
VT	887,700	−50,337	611	−17	1.16	0.00	1.51	−0.03	1.24	*0.05*
WA	16,652,468	−1,388,305	1,920	−121	1.24	−0.02	1.92	−0.07	1.28	0.00
WI	10,567,814	−1,210,852	958	−61	1.14	0.00	1.45	−0.02	1.15	−0.01
WV	3,900,015	*373,613*	1,018	*129*	1.12	*0.01*	1.38	*0.02*	1.12	*0.01*
WY	2,025,010	*290,655*	324	*49*	1.10	*0.02*	1.33	*0.07*	1.13	*0.05*

N/A means not applicable. Key: delay per mile (DPM), travel time index (TTI), planning time index (PTI), truck reliability index (TRI), negative blue text indicates improving measures, red italics indicates worsening measures

Most States improved or had mixed results on the indicators. A few States showed consistent improvements or worsening across all indicators, but many showed improvements in the indicators. The following States had consistent improvements in most indicators between 2018 and 2019:

- Alabama.
- Alaska.
- Arizona.
- California.
- Connecticut.
- Delaware.
- District of Columbia.
- Georgia.
- Illinois.
- Kentucky.
- Maryland.
- Massachusetts.
- Michigan.
- Missouri.
- Nevada.
- New Hampshire.
- New Jersey.
- New Mexico.
- New York.
- North Carolina.
- Pennsylvania.
- Rhode Island.
- South Carolina.
- Tennessee.
- Texas.
- Vermont.
- Virginia.
- Washington.
- Wisconsin.

The following States had worsening performance in most indicators between 2018 and 2019:

- Colorado.
- Idaho.
- Iowa.
- Kansas.
- Maine.
- Mississippi.
- Montana.
- Nebraska.
- North Dakota.
- Ohio.
- Oklahoma.
- Oregon.
- South Dakota.
- Utah.
- West Virginia.
- Wyoming.

The following States were neutral for performance meaning that there was improvement for two indicators, worsening for two indicators, and no change for one indicator.

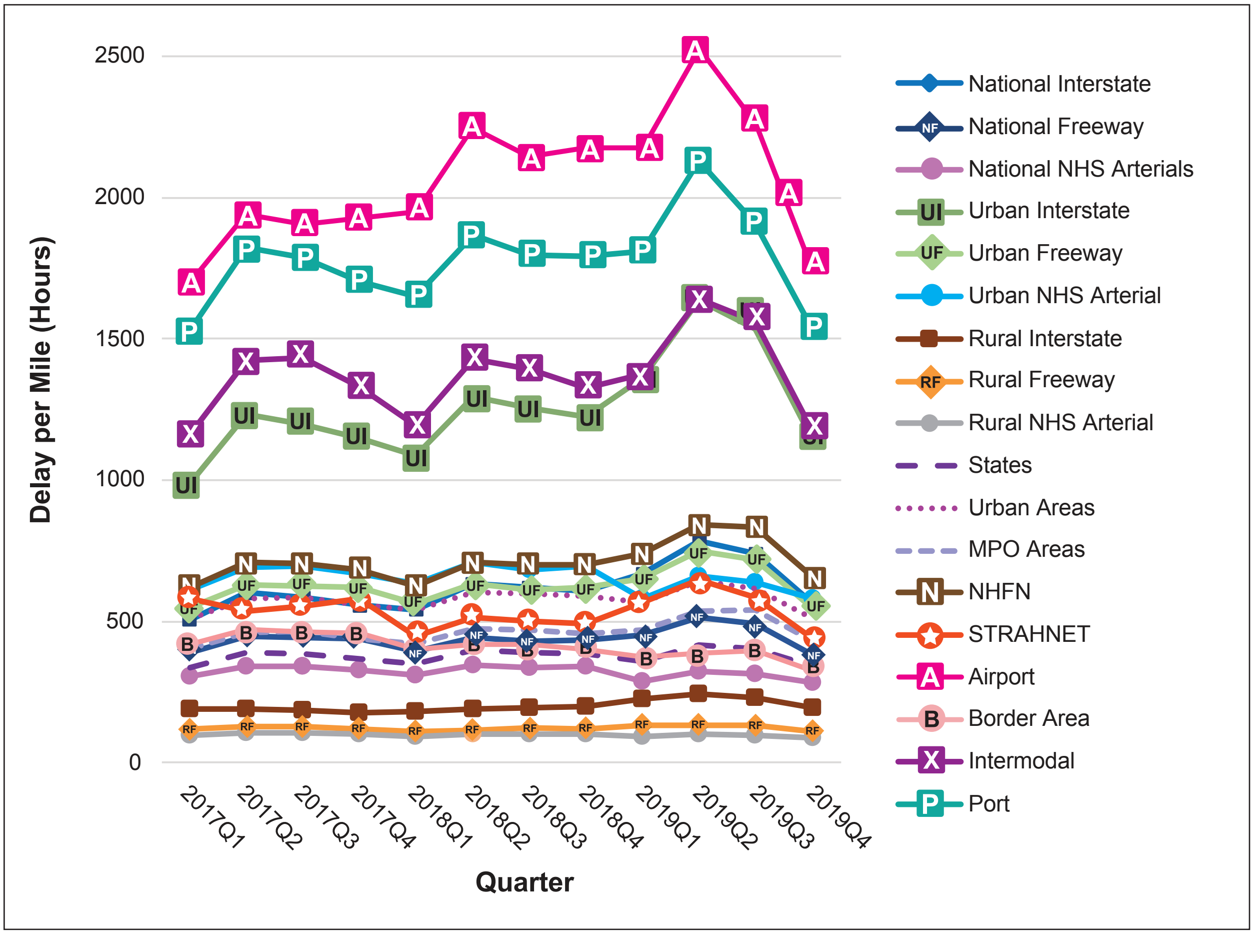
- Arkansas.
- Florida.
- Indiana.
- Louisiana.
- Minnesota.

Note that data for Hawaii are not available for 2019.

Table 34 shows the percent change from 2018 for indicators of the total delay, delay per mile, TTI, PTI, and TRI. Blue values (with a minus sign) indicate improving conditions; *red italics* indicate worsening conditions.

Combined Location Analysis

Throughout this report, delay per mile is the primary ranking measure because it captures the full extent of the congestion problem by capturing truck volume and roadway performance, and delay per mile is normalized by segment length. Considering delay per mile, an overall finding is that the freight locations assessed mostly have similar delay per mile performance patterns over the three-year period except for rural roadways, which show little fluctuation, as shown in figure 58. For all locations except rural freeways and NHS arterials, there appears to be an increase in delay in the second quarter each year. This delay is more pronounced for some of the modal locations like airports, ports, intermodal rail facilities, and urban Interstates. Additionally, locations such as airports, border areas, intermodal rail areas, and urban Interstates show a sharp decrease in delay per mile in the fourth quarter of 2019. This may be related to declines in 2019 for manufacturing and freight shipments.[11,12]



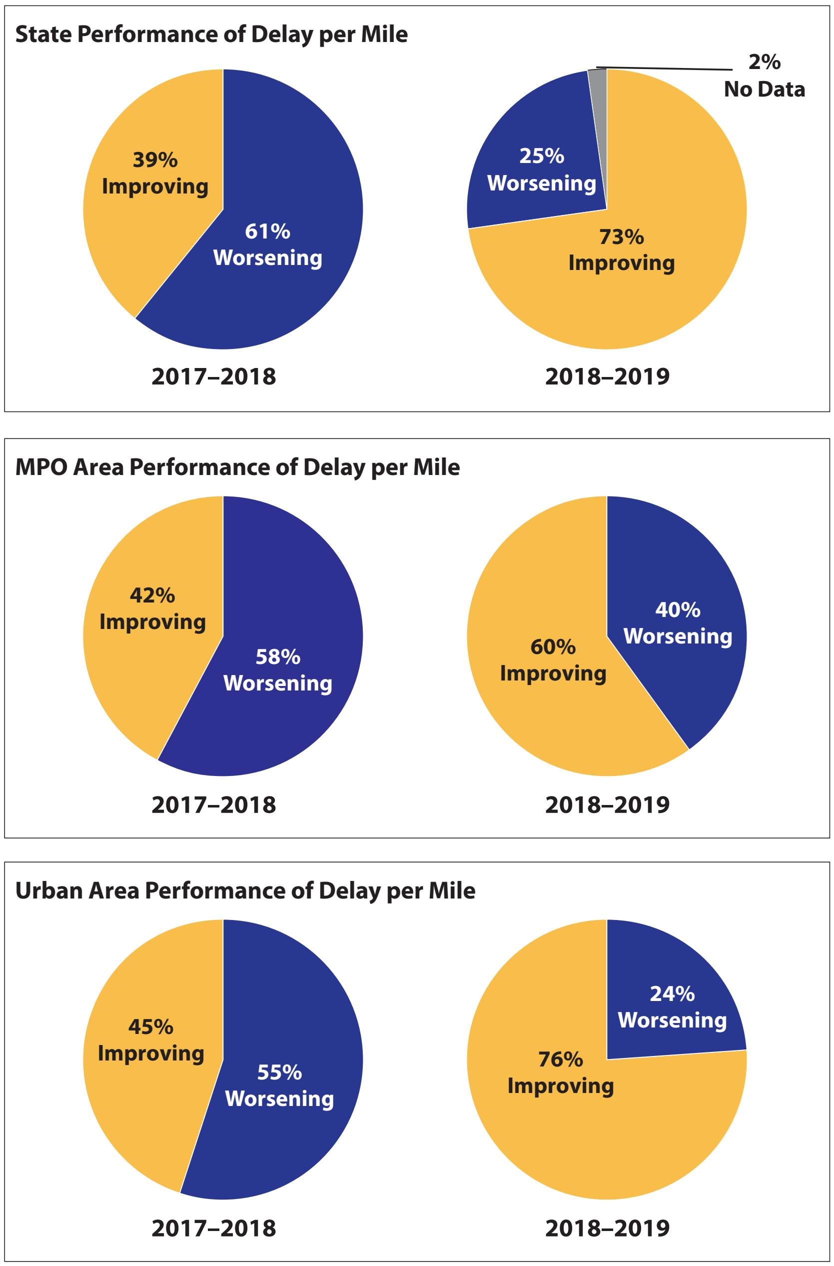
Source: FHWA

Note: Delay per mile is scaled in order to show multiple location types and their quarterly delay per mile trends.

Figure 58. Graph. Combined delay per mile quarterly analysis by freight facility.

Regional Performance Results (States, Urban Areas, and Metropolitan Planning Organization Areas)

While figure 58 depicts the quarterly performance for delay per mile for the range of locations in the report, figure 59 shows the location types and the percent that worsened or improved. States, urban areas, and Metropolitan Planning Organization (MPO) areas all worsened from 2017 to 2018 but improved from 2018 to 2019.



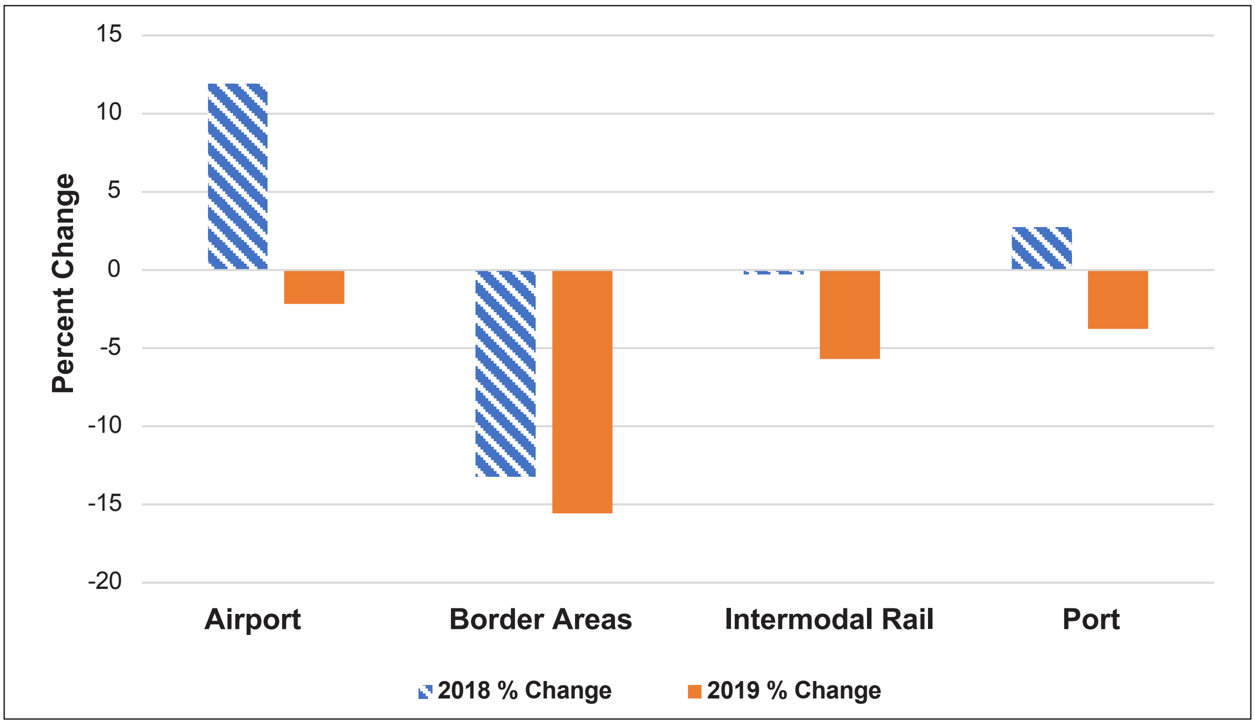
Source: FHWA

Figure 59. Pie charts. Location performance of delay per mile from 2017 to 2018 and 2018 to 2019.

Freight Facilities

For NHS routes surrounding facilities, airports and port areas have the highest mobility challenges because these locations tend to be within urban areas. As the national freight statistics reported by the Bureau of Transportation Statistics (BTS) indicate, these facilities are seeing a rise of goods movement, which will mean more trucks in an already congested urban environment. Alternatively, border crossing areas tend to be located in smaller urban areas, and rail intermodal facilities are usually located in less populated areas outside urban boundaries; mobility challenges are localized at the facility.

Figure 60 shows the percent change of delay per mile for the areas our freight facilities. All locations improved from 2018 to 2019.



Source: FHWA

Figure 60. Graph. Percent change of delay per mile for facilities from 2017 to 2018 and 2018 to 2019.

Conclusion

The Freight Mobility Trends (FMT) analysis yields helpful information to aid understanding of dynamics in freight demand on the national transportation system. Increasing demand on the freight transportation system calls for investments in system capacity and operational strategies to address congestion, reliability, and intermodal connectivity. This report highlights challenges and opportunities where improvements can be achieved through a range of suggested strategies.

Demands on the Interstate System from the higher truck and passenger vehicle volumes is evident in the significant amount of delay seen by the data in major urban areas. These freight bottlenecks not only impact mobility, but also have adverse environmental and congestion impacts on local communities. Major freight bottlenecks and congested corridors on the Interstate System tend to be concentrated in megaregions, with Los Angeles, New York, Chicago, Atlanta, San Francisco, and the "Texas-Triangle" having the greatest number of major bottlenecks. While the top 100 freight bottlenecks and congested corridors only make up a little more than 1 percent of the Interstate System, these locations account for 21 percent of total Interstate System truck delay. This underscores the need for targeted, data-driven transportation investments to address congestion and increase the efficiency of freight movements around major centers of industry and trade.

While the Interstate System tends to be more reliable than other parts of the National Highway System (NHS), the Truck Travel Time Reliability (TTTR) index shows a decline in reliability on the Interstate System from year to year, indicating this reliability is gradually worsening as congestion continues to grow. Transportation System Management and Operations (TSMO) initiatives, such as integrated corridor management, managed lanes, work zone management, traffic incident management, and travel demand management, can leverage operational strategies and technologies to optimize existing capacity under the growing demand placed on the Interstate System.

The data show that arterials tend to have more challenges with reliability than other roadways. Upon leaving the Interstate System, freight must travel through congested arterials mixed with traffic interacting with the local street system, further impacting first and last-mile travel to major destinations. This highlights the need for comprehensive management of the system through coordinated planning by State, regional, and local transportation agencies as well as arterial management tools such as traffic signal optimization and access management.

Urban areas tend to have worse freight performance than rural areas in terms of congestion, delay, and unreliability. However, the data also show that rural roadway performance declined from 2017 to 2019. This shows that the impact of growth in travel demand is not just limited to urban areas, but also affects the performance in rural areas. Seasonal fluctuations can be seen in the performance indicators for many States. TSMO initiatives, such as road weather management and incident response, are key to managing these impacts on the rural freight transportation system.

Intermodal connections from highways to ports, rail, and airports are key to an efficient intermodal freight transportation system. The data show that NHS routes surrounding airports and port areas also show mobility challenges. An emphasis on improving intermodal connections to freight facilities is critical to improving access to these major trade gateways and the multimodal freight transportation system's performance.

Freight truck traffic is concentrated on major routes connecting population centers, ports, border crossings, and other major activity hubs. Corridor coalitions and similar coordination between States will continue to address common needs for safe and efficient freight mobility along key corridors supporting economic development. Coordination between States and Metropolitan Planning Organizations (MPOs) around megaregions can also help support integration of transportation planning with economic development.

Increased demand on the transportation system requires decision makers to ensure limited public funding is allocated toward projects that provide the maximum benefit. For United States Department of Transportation (USDOT), State Departments of Transportation (DOTs), and MPOs to effectively plan for, improve, and operate the transportation system, there need to be ways to comprehensively monitor and assess transportation performance and mobility trends. This report provides information that can support national, state, and regional freight transportation planning, programing, and investments. States and MPOs are taking a variety of approaches to address freight mobility based upon local factors. USDOT can support these efforts through the National Freight Strategic Plan, promoting multimodal and operational solutions through programs such as the National Highway Freight Program, and considering freight mobility needs in Federal grant funding through programs such as the Infrastructure for Rebuilding America (INFRA) and other discretionary grant programs.

Highways are an integral element of the national, multimodal freight transportation system. The Nation’s highways serve a vital role in moving both people and goods. Continuous freight mobility measurement will provide important information that can be used in conjunction with other economic and infrastructure condition indicators to understand how to keep freight moving throughout the Nation. This report provides information on the performance of the freight system and insights into needs for planning and coordinating investments to support freight efficiencies.

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APPENDIX A: DATA, MEASURES, AND METHODOLOGY

Data

The Federal Highway Administration's (FHWA) Freight Mobility Trends (FMT) relies on the National Performance Management Research Data Set (NPMRDS) and Highway Performance Monitoring System (HPMS) data sets, described as follows:

- **NPMRDS**—The FMT reflected in this report relies on the NPMRDS for travel time data. The NPMRDS is a historical travel time data set that covers the entire NHS. The NPMRDS includes observed measurements only (collected 24 hours a day) and provides the user with the average travel times in five-minute intervals in three ways: freight trucks, passenger vehicles, and all vehicles combined. The NPMRDS is available to all State Departments of Transportation (DOTs) and Metropolitan Planning Organizations (MPOs) for use in their performance management activities and is updated and available for download on a monthly basis.[1]
- **HPMS**—Another key source of data is the FHWA HPMS, collected under 23 CFR 420.105(b). This is a source of volume data. Each State DOT reports Annual Average Daily Traffic (AADT) volumes, Annual Average Daily Truck Traffic (AADTT) volumes, and other required roadway inventory attributes to FHWA on an annual basis. The Texas A&M Transportation Institute (TTI) has conflated the NPMRDS Traffic Message Channel (TMC) travel times to the HPMS roadway segment (and associated volumes) and has developed analytics to estimate time-of-day traffic volumes from AADT values and speeds.[2] These were used to develop the indicators for this report.

Data Processing

The basic spatial unit of analysis is the TMC. This is a relatively short directional roadway segment that is defined by a consortium of commercial traffic information providers. The travel time data were averaged to 15-minute time bins. Then, the FMT indices were calculated for each TMC on the National Highway System (NHS) from the raw NPMRDS data. Further, TMC measures were placed on the segments, and length or volume was used to weight the index measures to obtain aggregate measures.

Segmentation

Segmentation included auto-segmenting the NHS into approximately 3- to 9-mile sections in urban locations (those that contain at least part of an urban area) and 5- to 10-mile sections in rural areas. This provides a better way to visualize problem areas because many of the TMC links are so short they will not show up in a zoomed-out map when analyzed. The longer segment lengths are also more representative of typical freight project limits, rather than the occasional, short TMC lengths that show up (e.g., 0.1 miles). This processing method allows aggregation and the ability to report freight congestion statistics at various geographies, because all calculations are still performed at the TMC level but aggregated to different geographies based on weighting (described later).

Reference Speed

The reference speed (sometimes called off-peak, uncongested, or baseline speed) used for the FMT is based on a calculated free-flow (reference) speed using the NPMRDS travel times. This approach was used rather than using the posted speed limit, because speed limits for all vehicles do not always reflect typical free-flow speeds for large trucks. Reference speed has proven effective because it is a direct measurement of traffic conditions and varies when geometric changes are on the roadway (e.g., added lanes). The reference speed calculation is similar to the method currently used in FHWA's *Urban Congestion Report* for the Planning Time Index (PTI) and Travel Time Index (TTI).[3] For the FMT, only truck data are used for the reference speed calculation. The FMT includes an index that is similar to the Truck Travel Time Reliability (TTTR) measures States are required to report under 23 CFR 490.607, but the FMT is slightly different. This index, the Truck Reliability Index (TRI), similarly uses the 95th percentile travel time compared to the 50th percentile travel time instead of the free-flow reference speed used by the other indicators.

Measure Weighting

Weighting is reflected in the index calculations. All mobility indices (TTI, PTI, and Buffer Index (BI)) are weighted by Truck Vehicle Miles Traveled (TVMT) to allow for aggregating up to section, area, State, and national values.

Definitions and Calculations

The suite of indicators includes the following:

- Mobility:
  - Total truck hours of delay—the amount of extra time spent traveling due to congestion.
  - Truck hours of delay per mile—the total vehicle hours of delay for a section of roadway divided by the section length.
  - Travel time index—the ratio of the peak-period travel time to the reference travel time (free-flow travel time).
- Reliability:
  - Planning time index—the ratio of the 95th percentile travel time to the reference travel time (free-flow travel time).
  - Buffer index—the extra time (or time cushion), expressed as a percentage, that travelers must add to their average travel time when planning trips to ensure on-time arrival.
  - Truck reliability index—similar to the MAP-21 truck travel time reliability performance measure (the ratio of the 95th percentile travel time to the 50th percentile travel time during five time periods of the day).
- Cost:
  - Congestion cost—the cost of wasted fuel and delay (dollars).

- Environment:
    - Wasted fuel—a function of wasted time and fuel used while trucks are delayed in congestion.
- Economic:
    - Commodity value—the value per ton by roadway functional classification (using the Freight Analysis Framework (FAF) in dollars).

Delay

Delay represents the amount of extra time spent traveling due to congestion. The FMT uses two measures of delay: total delay and delay per mile.

Total Delay

Total delay is calculated by adding up all the delay (at 15-minute intervals for this example) for each TMC across the area being analyzed for a specific time period (year, quarter, or month) and is defined in figure 61.

When calculating delay, rather than just using reference speed for missing values (where no delay is accumulated), missing travel times are estimated from historical observations. The observations come from the last 12 months, starting with the average week of the year, which consists of 96 15 minute periods for each of the seven days of the week (96 × 7).

If there is not a historical value in the 96 × 7 average, an hourly average for each day of the week will be used (24 × 7). This will continue to 96 × 2 (96 15-minute periods by weekday and weekend) and 24 × 2 (24 hourly periods by weekday and weekend) before using just the weekday or weekend average and finally just taking the yearly average.

In summary, the imputed travel times for missing values were assigned in the following trickle-down manner, where each subsequent step is only taken if the data from the current step are not available:

1. 12-month with 96 15-minute period average time of day by 7 days in the week (96 × 7).
2. 12-month with a 24-hour average time by 7 days in the week (24 × 7).
3. 12-month 96 15-minute period average time of day by weekday or weekend (96 × 2).
4. 12-month with a 24-hour average time by weekday or weekend (24 × 2).
5. 12-month weekday or weekend average.
6. 12-month average.

$$\mathit{Delay\ per\ TMC\ per\ 15\ minute\ period} = \min(15\text{ minutes}, \mathit{max}\,(0, (\mathit{Actual\ Travel\ Time} - (\mathit{Travel\ Time\ at\ Reference\ Speed}))))$$

$$\mathit{Total\ Delay} = \sum_{\mathit{TMC}} \sum_{\mathit{Time\ Period}} (\mathit{Delay\ per\ TMC\ per\ 15\ minute\ period\ x\ Volume})$$

Figure 61. Formula. Total delay calculation.

Delay per Mile (for Sections)

Delay per mile is the total delay for a section of roadway divided by the section length. This is calculated for the entire NHS for the FMT.

Mobility

The following defines and illustrates calculations for the recommended mobility indices.

Travel Time Index

The TTI compares peak-period travel time to free-flow travel time. The TTI includes both recurring and incident conditions. The ratio has components of time divided by time. Therefore, it has no units. This unit-less feature allows the index to be used to compare trips of different lengths to estimate the travel time in excess of that experienced in reference travel time (free-flow travel time) conditions.

The TTI is the ratio of the peak-period travel time to the reference travel time (free-flow travel time). This measure is computed for the AM peak period (6 a.m. to 9 a.m.) and PM peak period (4 p.m. to 7 p.m.) on weekdays.

The TTI is calculated as in figure 62.

To calculate the average TTI across urban areas, road sections and time periods are weighted by vehicle miles traveled using volume estimates derived from FHWA's HPMS.

Reliability

Planning Time Index

The PTI is the ratio of the 95th percentile travel time to the reference travel time (free-flow travel time). The measure is computed during the AM and PM peak periods as defined in the TTI.

PTI is calculated as figure 63.

The PTI is based on the concept that travelers want to be on time for an important trip 19 out of 20 times. For example, a PTI value of 1.80 indicates that a traveler should allow 36 minutes (20 minutes × 1.80) to make an important trip that takes 20 minutes in low traffic volumes.

To calculate the average PTI across urban areas, road sections and time periods are weighted by TVMT using volume estimates derived from FHWA's HPMS.

$$\text{Travel Time Index}_{\text{time period}} = \frac{\text{Average Time Travel}_{\text{time period}}}{\text{Reference Travel Time}}$$

Figure 62. Formula. Travel time index equation.

$$\text{Planning Time Index}_{\text{time period}} = \frac{\text{95th Percentile Travel Time}_{\text{time period}}}{\text{Reference Travel Time}}$$

Figure 63. Formula. Planning time index equation.

Buffer Index

The BI represents the extra time (or time cushion) that travelers must add to their average travel time when planning trips to ensure on-time arrival. For example, a BI of 40 percent means that for a trip that usually takes 20 minutes, a traveler should budget an additional eight minutes (20 minutes × 0.40). The eight extra minutes is called the buffer time. Therefore, the traveler should allow 28 minutes for the trip to ensure on-time arrival 95 percent of the time.

The BI is calculated as in figure 64.

Truck Reliability Index

The TRI calculation is similar to the MAP 21 performance measure for TTTR. The TRI indicator uses the same five time periods as the TTTR performance measure:

- AM: 6 a.m. to 10 a.m.
- PM: 4 p.m. to 7 p.m.
- Midday: 10 a.m. to 4 p.m.
- Overnight: 8 p.m. to 6 a.m.
- Weekend: 6 a.m. to 8 p.m.

The TRI is calculated as in figure 65.

The TRI was generated in accordance with 23 CFR § 490.613 by multiplying the largest ratio of the five time periods by its length and then dividing the sum of all length-weighted segments by the total length (figure 66).[4]

The TRI in the FMT cannot be used to report the official MAP-21 TTTR performance measure. The FMT tool uses different roadway segmentation with TMCs combined to longer corridors for analysis. Because of this, the TRI generated by the FMT tool will not match the NPMRDS-generated TTTR performance measure. The TRI in the FMT is used to analyze reliability trends and cannot be used to report the official MAP-21 TTTR performance measure.

$$\text{Buffer Index (\%)} = \frac{\text{95th Percentile Travel Time} - \text{Average Travel Time}}{\text{Average Travel Time}}$$

Figure 64. Formula. Buffer index equation.

$$TRI_{\text{time period}} = \frac{\text{95th Percentile Travel Time}_{\text{time period}}}{\text{50th Percentile Travel Time}_{\text{time period}}}$$

Figure 65. Formula. Truck reliability index equation.

$$TRI_{index} = \frac{\sum_{TMC} (Length \times max\ TTTR)}{\sum_{TMC} Length}$$

Figure 66. Formula. Truck reliability index.

Bottleneck Identification Criteria

This report also includes information on national bottlenecks. A ranking of roadway sections is based on the FMT calculations for delay per mile. Though it is also possible to rank bottlenecks by any number of the measures and break them out by rural and urban, FHWA uses delay per mile as the primary measure because it includes the full extent of the truck congestion problem for all days throughout the year. This is the primary measure and method in current bottleneck ranking products such as the *Texas 100 Most Congested Roadways*.[5] Delay per mile conveys the magnitude of the problem, captures a 365 day/24-hour/7-day view of the problem, and is normalized by length so that varying-length roads can be compared.[6]

Corridor Calculations

For analysis of freight corridors (which are defined in the "Locations" section of this appendix), the indicators require some context to the traditional calculations of these indices. For the TTI, there is a comparison of a peak time to a free-flow travel time. For the PTI, there is a comparison of the 95th percentile travel time to the free-flow travel time. Because the freight corridors extend for long distances, defining when peak and free flow occur along the entire corridor is challenging. Additionally, delay is difficult to calculate over a long trip where there are different volumes and free-flow speeds on different sections of the corridor.

To show the corridor performance, travel time traces were computed for the length of the corridor, which is modeling vehicles over time and space that would travel the corridor. Then, a BI was computed from the distribution of the resulting data.

Locations

The FMT tool provides a suite of indicators across the entire NHS at a variety of location categories. The location categories include road types nationally, at the State level, and then in urban and rural areas. The categories also include border crossing, metropolitan, and intermodal locations. Having data and indices for the entire NHS provides the flexibility to see performance everywhere and focus on specific locations that may be driving freight performance. For example, if the national roll-up number changes, the user can look at the different spatial levels (zoom in or out) to see where freight mobility may be influencing the national number.

The categories reflected in this report are as follows.

National Roll-Up Measures

National roll-up measures are applied for the entire NHS in aggregate for each of the indicators described previously.

All National Highway System Roads

In addition to the national roll-up, national-level measures are available for the following functional classes:

- Interstate.
- Interstate and freeway.
- Freeway.
- Arterials.

Urban National Highway System Roads

Urban NHS indices are available by the following functional classes:

- Interstate.
- Interstate and freeway.
- Freeway.
- Arterials.

Rural National Highway System Roads

Rural NHS indices are available by the following functional classes:

- Interstate.
- Interstate and freeway.
- Freeway.
- Arterials.

State National Highway System Roads

State NHS indices are available by the following functional classes:

- Interstate.
- Interstate and freeway.
- Freeway.
- Arterials.

Freight Corridors

FHWA selected 30 freight corridors that are key facilities for freight movement throughout the United States. Figure 67 shows these corridors.

Bottlenecks

The FMT dashboard and the underlying segmentation of the NHS network allow use of delay per mile to provide an industry-tested ranking of bottlenecks. For this report, the FMT dashboard provided an output of the top-40 national bottlenecks using delay per mile.

Borders

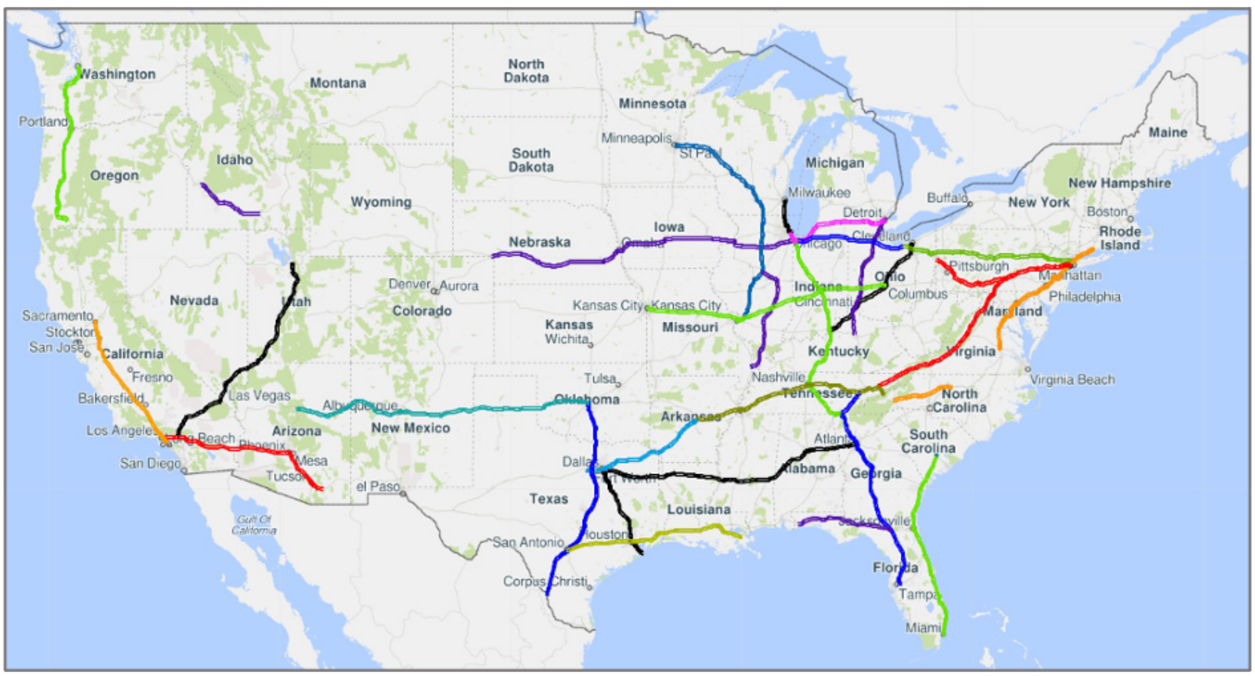
There are 20 northern border crossings with Canada and 6 southern border crossings with Mexico, all of which are included in the FMT. The FMT assesses the actual crossing segments into and out of either Canada or Mexico, as well as roads in the surrounding area that feed the border crossing.

Urban Regions

The FMT includes indicators for major urban areas with a population of 50,000 or more throughout the United States.

Metropolitan Planning Organization Regions

The FMT includes indicators for Metropolitan Planning Organization (MPO) regions throughout the United States.



Source: FHWA

Figure 67. Map. Freight corridors.

National Highway Freight Network

The FMT assesses performance and includes indicators for the National Highway Freight Network (NHFN).

Strategic Highway Network

The FMT assesses performance and includes indicators for the Strategic Highway Network (STRAHNET).

Ports

Ports reflected in this report were those aligned with the top ports based on the BTS port performance measures. BTS measures ports for tonnage, twenty-foot equivalent units (TEUs), and dry bulk. BTS uses this information to identify the top 25 locations for tonnage, container, and dry bulk.[7] FHWA determined 25 port locations to monitor throughout the United States based on the top locations by selecting the 18 ports that are top ports for tonnage, TEUs, or dry bulk and then high vessel count data and tonnage from the Bureau of Transportation Statistics (BTS) to rank the remaining ports.

The following **port locations** are included in this report:

- Baltimore, MD.
- Baton Rouge, LA.
- Chicago, IL.
- Cincinnati, OH/northern Kentucky.
- Corpus Christi, TX.
- Duluth Superior, MN.
- Honolulu, HI.
- Houston, TX.
- Huntington, WV, Tri-State.
- Jacksonville, FL.
- Long Beach, CA.
- Los Angeles, CA.
- Metropolitan St. Louis, MO.
- Miami, FL.
- Mobile, AL.
- New York/New Jersey.
- Oakland, CA.
- Pittsburgh, PA.
- Port of New Orleans, LA.
- Savannah, GA.
- Seattle, WA.
- South Louisiana.
- Tacoma, WA.
- Tampa, FL.
- Virginia.

Airports

For the airport locations, the FMT includes the top 20 cargo-bearing airport locations as provided by BTS.[8]

- Memphis International (MEM).
- Ted Stevens Anchorage International (ANC).
- Louisville International–Standiford Field (SDF).
- Miami International (MIA).
- Indianapolis International (IND).
- Chicago O'Hare International (ORD).
- Los Angeles International (LAX).
- John F. Kennedy International (JFK).
- Cincinnati/Northern Kentucky International (CVG).
- Dallas/Fort Worth International (DFW).
- Newark Liberty International (EWR).
- Metropolitan Oakland International (OAK).
- Ontario International (ONT).
- Hartsfield–Jackson Atlanta International (ATL).
- Honolulu International (HNL).
- Philadelphia International (PHL).
- George Bush Intercontinental/Houston (IAH).
- Phoenix Sky Harbor International (PHX).
- Seattle–Tacoma International (SEA).
- Denver International (DEN).

Railroad Terminals

For railroad intermodal locations, the FMT aligns with publicly available railroad dwell-time measures by including measures for NHS roads around key rail intermodal locations. Selected rail terminal locations include the following:

- Atlanta, GA: Norfolk Southern/NS-Inman Yard.
- Barstow, CA: BNSF Railway–Barstow Yard/Burlington Northern Santa Fe.
- Birmingham, AL: Norfolk Southern.
- Chicago, IL (northwest of Brookfield Zoo N41.834 W87.8387): Union Pacific (UP) Rail Yard.
- Cincinnati, OH: Queensgate Yard/CXS Yard.
- Columbus, OH: Norfolk Southern Buckeye Railyard.
- Conway, PA (near Pittsburgh, PA): Norfolk Southern Conway Yard.
- Denver, CO: BNSF Railway, Denver Intermodal Facility.
- Elkhart, IN: Norfolk Southern.
- Fort Worth, TX (southwest of Fort Worth Zoo N32.722 W97.378): UP.
- Houston, TX: UP Englewood Yard and UP Rail Yard.
- Jacksonville, FL: CSX Transportation.
- Kansas City, MO: KCS-MILW Joint Agency Yard and UP Jeff Yard/UP Rail Yard.
- Laredo, TX (N27.5 W99.468): UP Railroad Port Yard.
- Memphis, TN (east-southeast of airport N35.024 W89.894): BNSF Railway/Illinois Central.
- New Orleans, LA (N30.006 W90.012): CSX Transportation.
- North Little Rock, AR: UP Railroad North Little Rock Terminal.
- North Platte West, NE: UP Rail Yard.
- Roanoke, VA: Norfolk Southern.
- Shreveport, LA: Kansas City Southern Railway.

Appendix A References

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APPENDIX B: MAJOR FREIGHT HIGHWAY BOTTLENECKS AND CONGESTED CORRIDORS—FULL REPORT

Table 35 lists the 2019 top Interstate bottlenecks and congested corridors in the United States based on truck hours of delay per mile for 2019.

Delay per mile (DPM) is calculated for each Interstate segment using the 2019 National Performance Management Research Data Set (NPMRDS) travel time data in the Freight Mobility Trends (FMT) tool in the following manner:

- Delay is calculated for each 15-minute time period as the difference between actual travel time and reference travel time. Reference travel time is based on 85th percentile speed during off-peak and overnight time periods.
- Delay for each 15-minute time period is multiplied by 15-minute truck volumes. Truck volumes are estimated from Annual Average Daily Truck Traffic (AADTT) using typical time-of-day traffic volume profiles. Delay for each 15 minute time period is aggregated to get annual truck hours of delay.
- The total truck hours of delay are then divided by the segment length to get total truck hours of delay per mile, allowing for the comparison of all roadway sections across the National Highway System (NHS).

These locations were then compared with the bottlenecks identified by States in their *2018 Baseline Performance Reports*.

Table 35 lists the route, urban area, and State ordered by 2019 truck hours of delay per mile. Information is provided for the directional AADTT, annual truck hours of delay per mile, Planning Time Index (PTI), Buffer Index (BI), Travel Time Index (TTI), Truck Reliability Index (TRI), and total corridor congestion cost per year. Annual truck hours of delay per mile is determined at the most congested segment of the corridor. Total corridor congestion cost is calculated for the full extent of delay along the congested corridor, which may include multiple segments, as a function of both the time and fuel used while the truck is in congested traffic, factoring costs of personnel, commercial vehicle operation, and wasted fuel. Definitions of these categories and indicators appear after the table, as do maps of the top 40 bottlenecks.

Table 35. Major Interstate freight highway bottlenecks and congested corridors based on truck hours of delay per mile in the 2019 National Performance Management Research Data Set.

Note: Congestion cost includes wasted time and not fuel for this report version.

2019 Rank	2018 Rank	Road	Urban Area	State	Generalized Bottleneck Location/ Congested Corridor	AADT (Trucks)	DPM (Truck Hours)	Total Corridor Congestion Cost ($)
1	1	I-95/ I-295	New York	NY/NJ	I-278/I-678 to NJ side of GW Bridge/SR-4	9,555	263,116	76,000,000
2	3	I-90/ I-94	Chicago	IL	I-94 N to I-55	8,003	140,942	86,900,000
3	4	I-605	Los Angeles	CA	I-5 to SR-60	10,963	139,777	62,500,000
4	2	I-35	Austin	TX	Airport Blvd. to Stassney Ln.	11,074	111,359	109,900,000
5	6	I-610	Houston	TX	I-69 to I-10	7,379	104,009	60,800,000
6	5	I-678	New York	NY	I-495 to Belt Pkwy. and I-295/I-95 to south end Bronx-Whitestone Bridge	6,510	100,237	40,000,000
7	11	I-405	Los Angeles	CA	I-105 to SR-42 Manchester Blvd.	12,139	95,686	147,800,000
8	7	I-290	Chicago	IL	I-90/I-94 to I-290	8,726	94,778	59,700,000
9	8	I-69/ US 59	Houston	TX	Buffalo Speedway to I-45	6,831	89,185	57,800,000
10	12	I-278	New York	NY	I-95/I-678 to Grand Central Pkwy. and SR 27 Prospect Expy. to SR-29 Queens Blvd.	6,607	88,339	147,000,000
11	9	I-24	Nashville	TN	US-41 to SR-155	12,775	86,920	52,200,000
12	10	I-10	Los Angeles	CA	20th St. to I-5 and at I-605	7,036	86,745	164,100,000
13	15	I-710	Los Angeles	CA	Cesar Chavez Ave. to Atlantic Blvd.	6,833	85,730	47,500,000
14	23	I-45	Houston	TX	US-90 to I-69	7,184	84,471	58,800,000
15	17	I-680	San Francisco	CA	SR-262 to SR-238	6,406	81,240	14,000,000
16	25	I-495	New York	NY	Little Neck Pkwy. to Queens Midtown Tunnel	8,988	70,916	112,400,000
17	21	I-5	Seattle	WA	I-90 to 85th St. and SR 18 to Port of Tacoma Rd.	6,876	69,732	62,500,000
18	14	I-5	Los Angeles	CA	SR-134 Ventura Fwy. to I-605	7,097	68,560	123,200,000

Table 35. Major Interstate freight highway bottlenecks and congested corridors based on truck hours of delay per mile in the 2019 National Performance Management Research Data Set. (Continued)

2019 Rank	2018 Rank	Road	Urban Area	State	Generalized Bottleneck Location/ Congested Corridor	AADT (Trucks)	DPM (Truck Hours)	Total Corridor Congestion Cost ($)
19	20	I-76	Philadelphia	PA	University Ave. to US-1	4,605	67,019	37,500,000
20	19	I-87	New York	NY	I-278 to 230th St.	4,900	64,891	25,100,000
21	27	I-105	Los Angeles	CA	I-405 to Long Beach Blvd.	7,397	64,807	56,800,000
22	22	I-75 I-85	Atlanta	GA	I-20 to I-75/I-85 split	7,355	63,432	19,300,000
23	34	I-10	New Orleans	LA	I-610 to Pontchartrain Expy.	14,179	61,114	73,000,000
24	73	I-10	Lake Charles	LA	At I-210	14,179	61,114	31,500,000
25	26	I-210	Los Angeles	CA	SR-39/164 Azusa Ave. to SR-19 Rosemead Blvd.	10,007	60,414	67,600,000
26	18	I-10	Baton Rouge	LA	I-110 to SR-1	10,718	57,724	33,800,000
27	32	I-25	Denver	CO	I-70 to University Blvd.	7,030	55,696	54,200,000
28	29	I-5	Portland	OR	Columbia River to Terwilliger Blvd.	7,988	55,154	53,100,000
29	31	I-55	Chicago	IL	I-94 to SR-171	7,376	53,860	58,300,000
30	37	I-285	Atlanta	GA	East/SR-400 to US-78 and West/I-20 to Northside Dr.	11,855	53,821	137,500,000
31	46	I-495	Washington	MD/ VA	I-66 (VA) to I-95 (MD)	9,544	53,507	93,900,000
32	33	I-70	Denver	CO	I-25 to I-270	5,973	53,461	26,700,000
33	55	I-30	Little Rock	AR	At I-630	19,820	51,924	11,700,000
34	35	I-80	San Francisco	CA	US-101 to Bay Bridge; and at I-580	2,737	51,110	35,200,000
35	39	I-10	Houston	TX	I-69 to I-45	9,085	50,107	53,700,000
36	40	I-270	Denver	CO	I-25 to I-70	5,364	50,104	14,500,000
37	47	I-95	Washington	VA	SR-123 to SR-286	8,092	49,241	49,800,000
38	24	I-110/ CA-110	Los Angeles	CA	I-10 to SR-42 Stauson Ave.	3,890	48,762	23,100,000
39	36	I-10	Phoenix	AZ	At I-17 from 51st Ave. to SR-143	11,718	48,254	91,200,000
40	45	I-15	Riverside	CA	At SR-91	5,267	48,175	18,600,000
41	30	I-15	Salt Lake City	UT	At I-215 (SR-173 to SR 48)	32,835	47,435	62,139,000
42	44	I-15	Los Angeles	CA	At I-10	9,099	47,170	12,700,000

Table 35. Major Interstate freight highway bottlenecks and congested corridors based on truck hours of delay per mile in the 2019 National Performance Management Research Data Set. (Continued)

2019 Rank	2018 Rank	Road	Urban Area	State	Generalized Bottleneck Location/ Congested Corridor	AADT (Trucks)	DPM (Truck Hours)	Total Corridor Congestion Cost ($)
43	59	I-80/ I-94	Chicago	IL	I-294 to I-94	20,900	46,615	9,100,000
44	50	I-695	Baltimore	MD	I-95 to I-795	10,497	46,428	45,400,000
45	57	I-71/ I-75	Cincinnati	KY/ OH	I-275 to Western Hills	15,297	44,603	18,300,000
46	81	I-90	Chicago	IL	I-90/94 to I-294	3,595	43,345	32,300,000
47	51	I-64	St. Louis	MO	Market St. to I-70 (over Mississippi River)	9,240	42,771	9,100,000
48	28	I-294	Chicago	IL	At I-290 and at I-90	9,449	42,295	40,900,000
49	61	I-405	Seattle	WA	I-90 to SR-520	4,796	40,760	12,800,000
50	127	I-75	Chattanooga	TN	At I-24	11,798	40,747	6,000,000
51	65	I-676	Philadelphia	PA	I-76 to I-95	3,695	40,448	7,300,000
52	56	I-238	San Francisco	CA	I-880 to I-580	9,026	40,088	4,600,000
53	64	I-35	San Antonio	TX	At I-10	13,515	39,338	24,300,000
54	53	I-494	Minneapolis	MN	SR-77 to W Bush Lake Rd.	6,142	38,514	9,000,000
55	58	I-85	Atlanta	GA	I-75 to SR 13/141 and I 285 to SR-378	8,539	37,663	35,700,000
56	48	I-35E	Dallas	TX	I-30 to Market Center Blvd.	7,786	37,601	24,900,000
57	54	I-635	Dallas	TX	I-35 to SR-78	10,114	37,059	61,400,000
58	42	I-95	Baltimore	MD	I-395 to I-895	9,481	36,203	34,900,000
59	79	I-95	Philadelphia	PA	At I-676	5,085	35,789	11,900,000
60	67	I-270	St. Louis	MO	I-64 to SR 100	17,600	35,500	28,200,000
61	63	I-215	Riverside	CA	I-10 to SR-80	7,241	35,057	35,300,000
62	38	I-75	Cincinnati	OH	SR-562 to SR-126	11,175	34,492	29,500,000
63	52	I-94	Chicago	IL	I-90/94 to US-14	8,000	33,752	12,900,000
64	74	I-880	San Francisco	CA	At I-980 and at US 101	6,035	32,983	55,800,000
65	70	I-24	Chattanooga	TN	I-75 to US-41	11,133	32,057	18,500,000
66	100	I-40	Albuquerque	NM	At I-25	14,443	31,823	9,700,000
67	72	I-805	San Diego	CA	SR-52 to SR-163	6,210	31,791	13,900,000
68	60	I-30	Dallas	TX	I-35 to Grand Ave.	9,311	31,390	14,300,000
69	84	I-376	Pittsburgh	PA	Fort Pitt Bridge to Squirrel Hill	2,591	31,346	2,800,000
70	78	I-10	Riverside	CA	At I-215	11,505	31,196	17,300,000

Table 35. Major Interstate freight highway bottlenecks and congested corridors based on truck hours of delay per mile in the 2019 National Performance Management Research Data Set. (Continued)

2019 Rank	2018 Rank	Road	Urban Area	State	Generalized Bottleneck Location/ Congested Corridor	AADT (Trucks)	DPM (Truck Hours)	Total Corridor Congestion Cost ($)
71	75	I-84	Hartford	CT	SR-2 to Prospect Ave.	5,792	29,849	7,700,000
72	73	I-405	Portland	OR	I-5 to US-26	4,297	29,467	1,200,000
73	86	I-95	Wilmington	DE	At I-295/I-495	12,139	28,402	2,700,000
74	43	I-94	Minneapolis	MN	SR-280 to Hennepin Ave.	4,350	28,016	4,400,000
75	80	I-205	Portland	OR	At I-84	5,290	27,951	7,100,000
76	82	I-95	Fredericksburg	VA	US-17 to Russell Rd.	9,889	27,933	20,000,000
77	96	I-93	Boston	MA	At I-90 and at SR-3	4,381	27,386	19,600,000
78	85	I-95	Bridgeport	CT	At US-1 in Fairfield and at US-1 in Stamford	5,893	27,289	51,000,000
79	71	I-40	Nashville	TN	I-24 to I-65	5,379	27,148	4,100,000
80	87	I-95	New Haven	CT	I-91 to SR-10	6,047	26,805	2,700,000
81	94	I-78	New York	NJ	US-22 to SR-440	6,083	26,033	6,700,000
82	98	I 35W	Dallas	TX	At I-30	5,426	24,953	11,900,000
83	68	I-15	Ogden	UT	SR-232 to SR-273	10,303	24,114	5,995,000
84	88	I-75	Atlanta	GA	I-85 to Moores Mill Rd.	8,403	23,791	6,300,000
85	—	I-65	Indianapolis	IN	I-70 N to Fall Creek Blvd.	6,901	23,639	1,500,000
86	140	I-20/ I-59	Birmingham	AL	At I-65	7,435	23,124	2,500,000
87	119	I-270	Washington	MD	At I-495	6,801	22,345	26,400,000
88	16	I-15	Las Vegas	NV	I-515 to Tropicana Ave.	6,661	22,146	17,000,000
89	111	I-280	New York	NJ	Garden State Pkwy. to SR-21	4,450	22,029	2,900,000
90	94	I-95	Miami	FL	Florida Turnpike to I-395	4,745	21,894	29,400,000
91	97	I-4	Tampa	FL	At I-275	6,558	21,620	6,900,000
92	110	I-670	Kansas City	MO	At I-70	4,358	21,163	1,200,000
93	89	I-395	Washington	DC/VA	US-50 to VA-236	5,204	21,150	700,000
94	112	I-580	Livermore	CA	I-205 to First St.	7,153	20,960	8,300,000
95	109	I-95	Washington	MD	I-495 to SR-200	10,661	20,807	6,300,000
96	124	I-95	Boston	MA	SR-38 to I-93	4,057	20,726	8,600,000
97	103	I-84	Portland	OR	At I-5	4,543	20,359	3,400,000
98	90	I-65	Nashville	TN	I-40 to I-440	10,952	20,093	13,500,000
99	114	I-40	Knoxville	TN	I-75/I-640 to I-275	8,346	20,059	2,500,000
100	115	I-71	Columbus	OH	At I-670	7,597	19,511	7,300,000

Key: annual average daily traffic (AADT), delay per mile (DPM)

Table 35 uses the following definitions, which are the same as those used to develop the results in this report:

- **Generalized bottleneck location/ congested corridor and length**—the extent of congestion for the corridor caused by one or more bottlenecks, estimated based on review of corridor congestion scans in the NPMRDS. For major congested corridors, this may include multiple contiguous bottlenecks.
- **Annual Average Daily Traffic (AADT) (trucks)**—the NPMRDS directional (single unit and combination) trucks conflated from the Highway Performance Monitoring System (HPMS).
- **Annual truck hours of delay/mile**—the difference between actual travel time and reference travel time (free-flow travel time), multiplied by truck volumes and then divided by the segment length. For larger bottlenecks that span multiple roadway segments, delay is provided for the most congested segment and direction of the bottleneck, not the full corridor.
- **Planning time index**—the ratio of the 95th percentile travel time to the reference travel time (free-flow travel time), computed during the AM and PM peak periods.
- **Buffer index**—represents the extra time (or time cushion) that travelers must add to their average travel time when planning trips to ensure on-time arrival.
- **Travel time index**—the ratio of the peak-period travel time to the reference travel time (free-flow travel time), computed for the AM and PM peak periods.
- **Travel reliability index**—calculated the same as the Moving Ahead for Progress in the 21st Century (MAP-21) performance measure for truck travel time reliability, as the ratio of the 95th percentile travel time to the 50th percentile travel time during five different time periods of the day. Results will differ from the NPMRDS Travel Time Reliability (TTTR) due to differences in route segmentation.
- **Total corridor congestion cost (dollars/ year)**—calculated for the full extent of delay along the congested corridor as a function of both the time and fuel used while the truck is in congested traffic, factoring costs of personnel, commercial vehicle operation, and wasted fuel. For major bottlenecks with long congestion queues, this includes multiple roadway segments. For major congested corridors, the congestion cost includes the full cost of congestion along the corridor through the entire urban area, which may include multiple bottlenecks.

Changes between 2018 and 2019 Top 100 Bottlenecks

Based on a comparison of truck hours of delay per mile, the following bottlenecks saw the greatest relative percent change (increase or decrease) in delay between 2018 and 2019. In many cases, major increases in delay from one year to the next can be attributed to major construction projects/work zones along the corridors.

The bottlenecks in table 36 saw the greatest percent increase in delay from 2018.

Table 36. Bottlenecks with greatest increase in delay from 2018.

Road	Urban Area	State	Increase in DPM from 2018 (Hours)	Increase in DPM from 2018 (Percent)
I-75	Chattanooga	Tennessee	21,861	116%
I-10	Lake Charles	Louisiana	29,486	93%
I-90	Chicago	Illinois	14,948	53%
I-45	Houston	Texas	22,875	37%
I-40	Albuquerque	New Mexico	8,515	37%
I-20/I-59	Birmingham	Alabama	5,815	34%
I-30	Little Rock	Arkansas	11,237	28%
I-15	Ogden	Utah	5,140	27%
I-80/I-94	Chicago	Illinois	8,721	23%
I-710	Los Angeles	California	13,521	19%

Key: Delay per mile (DPM)

The bottlenecks in table 37 saw the greatest percent decrease in delay from 2018.

Table 37. Bottlenecks with greatest decrease in delay from 2018.

Road	Urban Area	State	Increase in DPM from 2018 (Hours)	Increase in DPM from 2018 (Percent)
I-696	Detroit	Michigan	−71,875	-86%
I-15	Las Vegas	Nevada	−48,774	−69%
I-94	Detroit	Michigan	−20,605	−60%
I-45	Dallas	Texas	−19,467	−55%
I-35W	Minneapolis	Minnesota	−19,553	−53%
I-35	Austin	Texas	−97,558	−47%
I-77	Charlotte	North Carolina	−12,676	45%
I-43	Milwaukee	Wisconsin	−10,509	−43%
I-94	Minneapolis	Minnesota	−19,264	−41%
I-75	Cincinnati	Ohio	−15,674	−31%

Key: delay per mile (DPM)

Based on changes to truck hours of delay per mile, the bottlenecks in table 38 saw a relative increase in delay, moving the locations to the top 100 bottlenecks, or a relative decrease in delay, dropping the locations below the top 100 bottlenecks. The bottlenecks in table 38 were added to the list in 2019.

The bottlenecks from 2018 in table 39 dropped off the list in 2019.

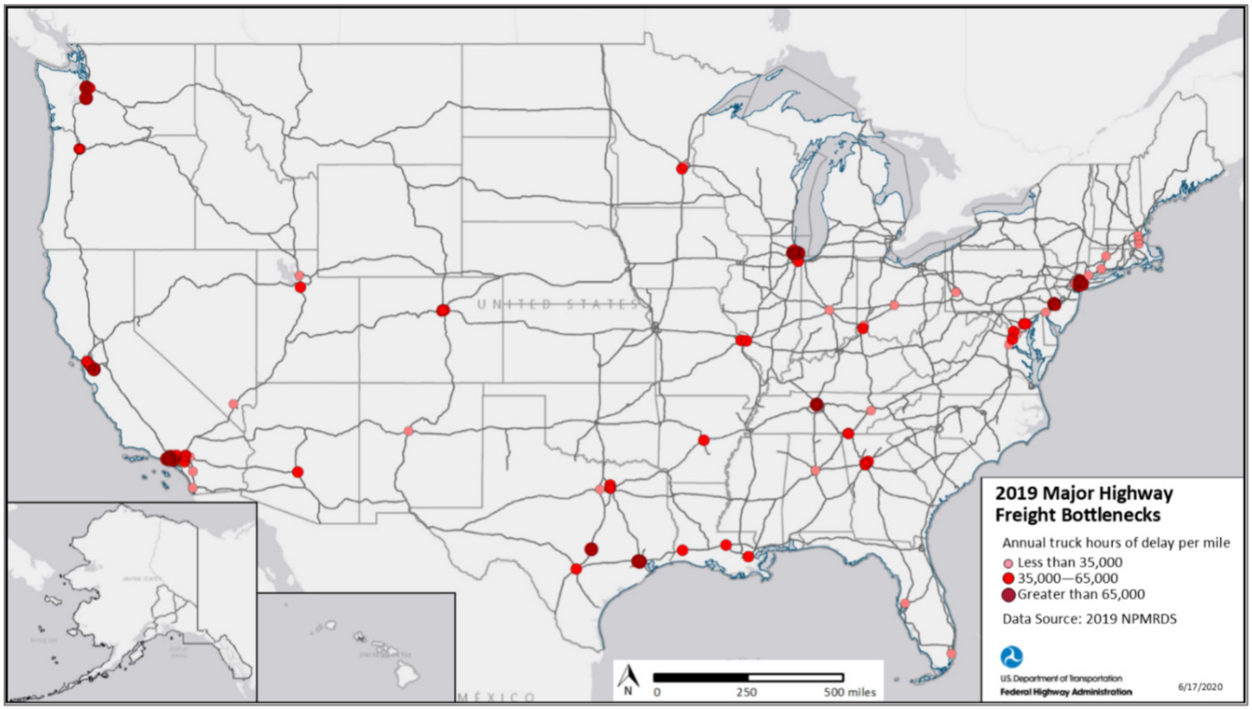
Table 38. New bottlenecks on the top 100 list for 2019.

Road	Urban Area	State
I-20/I-59	Birmingham	AL
I-580	Livermore	CA
I-65	Indianapolis	IN
I-95	Boston	MA
I-270	Washington	MD
I-95	Washington	MD
I-670	Kansas City	MO
I-280	Newark/New York	NJ
I-75	Chattanooga	TN
I-40	Knoxville	TN
I-15	Ogden	UT

Table 39. Bottlenecks dropping off the top 100 list for 2019.

Road	Urban Area	State
I-95	Jacksonville	FL
I-275	Tampa	FL
I-696	Detroit	MI
I-94	Detroit	MI
I-35W	Minneapolis	MN
I-77	Charlotte	NC
I-85	Greenville	SC
I-45	Dallas	TX
I-64	Virginia Beach	VA
I-90	Seattle	WA
I-94	Milwaukee	WI

Figure 68 shows the top Interstate bottlenecks in the United States based on freight mobility indicators of annual truck hours of delay per mile from 2019.



Source: FHWA

Figure 68. Map. Major freight highway bottlenecks based on truck hours of delay per mile in the 2019 National Performance Management Research Data Set.

Top 40 Bottleneck Maps

1. I-95/George Washington Bridge (New York, NY)

I-95/George Washington Bridge *(New York, NY)*

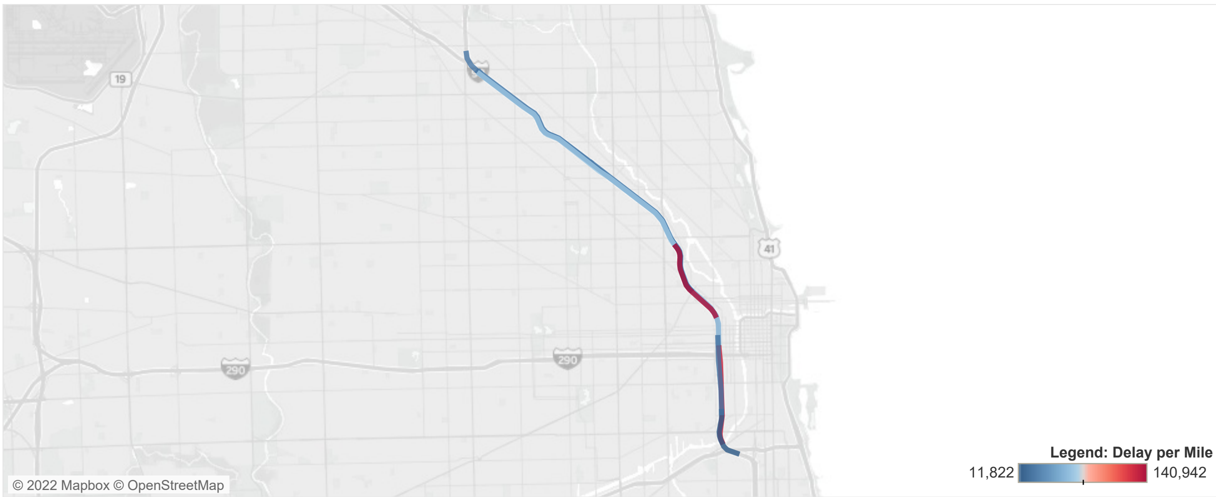
Road	Segment ID	Length (Miles)	AADT (Trucks)	Delay (Hours)	Delay/ Mile	PTI (95th %)	BI	TTI	TRI	Cong. Cost	FAF Value
I-95	NYN0000630	1.3	9,555	336,775	263,116	10.56	204.6%	3.47	1.44	$16.7M	$47.4B
I-95	NYN0000639	1.3	8,570	302,576	226,117	10.37	194.7%	3.52	1.42	$15.0M	$55.9B
UPPER LVL WASHINGTON	NYN0000194	1.2	10,025	162,501	131,837	5.85	163.6%	2.22	1.57	$8.0M	$43.1B
I-95	NYP00001442	1.4	8,357	158,454	117,541	5.60	132.9%	2.37	1.35	$7.8M	$55.2B
I-95	NYN0000623	2.6	5,025	294,323	112,420	10.83	241.9%	3.12	2.01	$14.6M	$19.3B
UPPER LVL WASHINGTON	NYP0000982	1.5	9,936	107,895	71,972	3.78	91.4%	1.96	1.51	$5.3M	$42.8B
I-95	NYP00001444	1.3	9,565	77,523	60,522	2.97	78.8%	1.63	1.35	$3.8M	$47.4B
I-95	NYN0000982	1.5	4,986	19,861	13,248	9.01	160.8%	3.45	1.37	$1.0M	$19.1B
I-95	NYP00001448	3.4	4,873	29,501	8,639	1.61	31.3%	1.22	1.24	$1.5M	$18.8B

Cumulative mileage of segments may not add up to the corresponding segment in the Nationally Significant Freight Highway Bottlenecks and Congested Corridors list.

Source: FHWA

Figure 69. Map. Top 40 Bottleneck Maps, Bottleneck 1, I-95/George Washington Bridge (New York, NY).

2. I-90 and I-90/I-94 (Chicago, IL)



I-90 & I-90/I-94 *(Chicago, IL)*

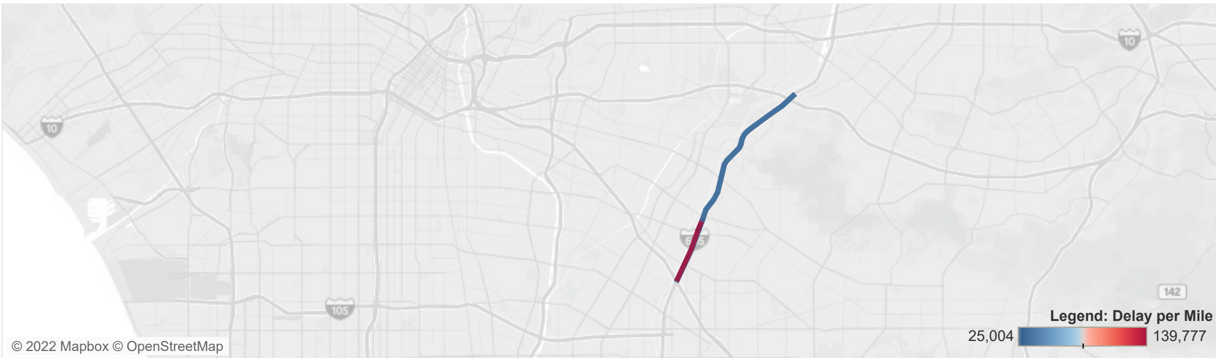
Road	Segment ID	Length (Miles)	AADT (Trucks)	Delay (Hours)	Delay/ Mile	PTI (95th %)	BI	TTI	TRI	Cong. Cost	FAF Value
I-90/I-94	ILN0000123	1.8	8,003	257,845	140,942	7.22	159.1%	2.76	1.45	$12.8M	$31.5B
I-90/I-94	ILP00001036	2.1	8,005	267,573	129,564	7.46	177.8%	2.67	1.69	$13.3M	$32.4B
I-90/I-94	ILN0000122	5.5	7,016	372,261	67,624	5.60	169.6%	2.07	1.59	$18.4M	$28.0B
I-90/I-94	ILP00001041	2.6	7,975	146,949	56,502	4.49	156.5%	1.74	1.67	$7.3M	$31.4B
I-90/I-94	ILP00001042	2.2	7,088	78,656	36,295	3.84	154.7%	1.50	2.10	$3.9M	$28.1B
I-90/I-94	ILP00001045	3.1	6,888	104,594	33,668	3.95	153.2%	1.54	1.80	$5.2M	$27.7B
I-90	ILN0000348	5.9	6,900	166,261	28,372	6.72	194.8%	2.29	1.55	$8.2M	$27.5B
I-90/I-94	ILN0000131	1.8	8,014	46,167	25,308	2.10	41.8%	1.43	1.17	$2.3M	$32.4B
I-90	ILN0000349	1.2	8,150	30,757	24,737	6.56	177.1%	2.37	1.35	$1.5M	$32.2B
I-90	ILP00001241	5.4	6,901	101,427	18,805	5.41	168.3%	2.02	1.61	$5.0M	$27.5B
I-90	ILP00001240	1.2	8,150	17,247	13,871	4.48	139.3%	1.85	1.39	$0.9M	$32.2B
I-90/I-94	ILN0000133	1.2	9,161	13,830	11,822	1.35	17.5%	1.15	1.11	$0.7M	$39.8B

Cumulative mileage of segments may not add up to the corresponding segment in the Nationally Significant Freight Highway Bottlenecks and Congested Corridors list.

Source: FHWA

Figure 70. Map. Top 40 Bottleneck Maps, Bottleneck 2, I-90 and I-90/I-94 (Chicago, IL).

3. I-605 (Los Angeles, CA)



I-605 *(Los Angeles, CA)*

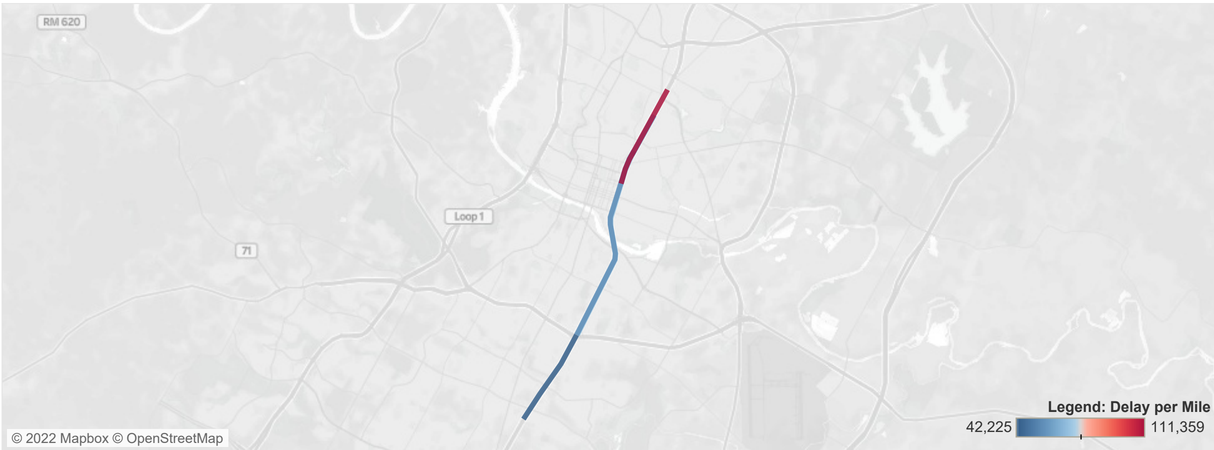
Road	Segment ID	Length (Miles)	AADT (Trucks)	Delay (Hours)	Delay/ Mile	PTI (95th %)	BI	TTI	TRI	Cong. Cost	FAF Value
I-605	CAN0000902	2.6	10,963	365,837	139,777	4.73	127.0%	2.07	1.30	$18.1M	$56.0B
I-605	CAN0000901	5.8	11,574	203,433	35,144	2.72	98.5%	1.36	1.56	$10.1M	$54.9B
I-605	CAP00002389	6.2	11,282	178,381	28,738	2.20	71.2%	1.27	1.48	$8.8M	$55.0B
I-605	CAP00002387	2.2	11,263	54,732	25,004	2.15	67.4%	1.28	1.59	$2.7M	$56.2B

Cumulative mileage of segments may not add up to the corresponding segment in the Nationally Significant Freight Highway Bottlenecks and Congested Corridors list.

Source: FHWA

Figure 71. Map. Top 40 Bottleneck Maps, Bottleneck 3, I-605 (Los Angeles, CA).

4. I-35 (Austin, TX)



I-35 *(Austin, TX)*

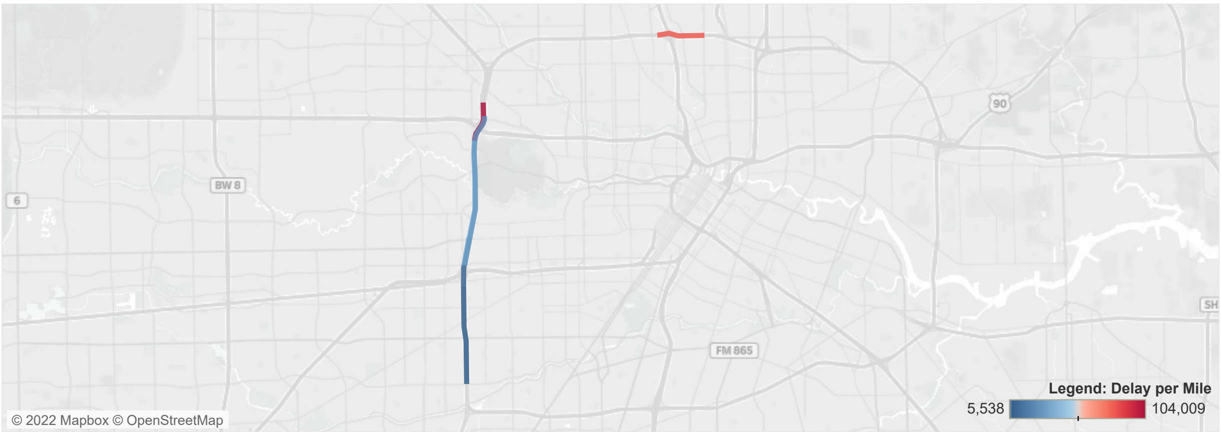
Road	Segment ID	Length (Miles)	AADT (Trucks)	Delay (Hours)	Delay/ Mile	PTI (95th %)	BI	TTI	TRI	Cong. Cost	FAF Value
I-35	TXN0000771	2.1	11,074	231,906	111,359	9.93	297.5%	2.47	2.51	$11.5M	$48.7B
I-35	TXP00002440	5.4	9,754	388,252	72,365	6.54	190.7%	2.19	1.99	$19.2M	$43.0B
I-35	TXP00002320	1.2	11,094	70,646	60,713	9.14	131.6%	3.74	1.76	$3.5M	$48.8B
I-35	TXN0000858	5.4	9,687	299,486	55,482	5.30	142.1%	2.00	1.42	$14.8M	$42.7B
I-35	TXN0000859	2.5	8,895	104,699	42,225	3.10	112.1%	1.41	1.69	$5.2M	$41.4B

Cumulative mileage of segments may not add up to the corresponding segment in the Nationally Significant Freight Highway Bottlenecks and Congested Corridors list.

Source: FHWA

Figure 72. Map. Top 40 Bottleneck Maps, Bottleneck 4, I-35 (Austin, TX).

5. I-610 (Houston, TX)



I-610 *(Houston, TX)*

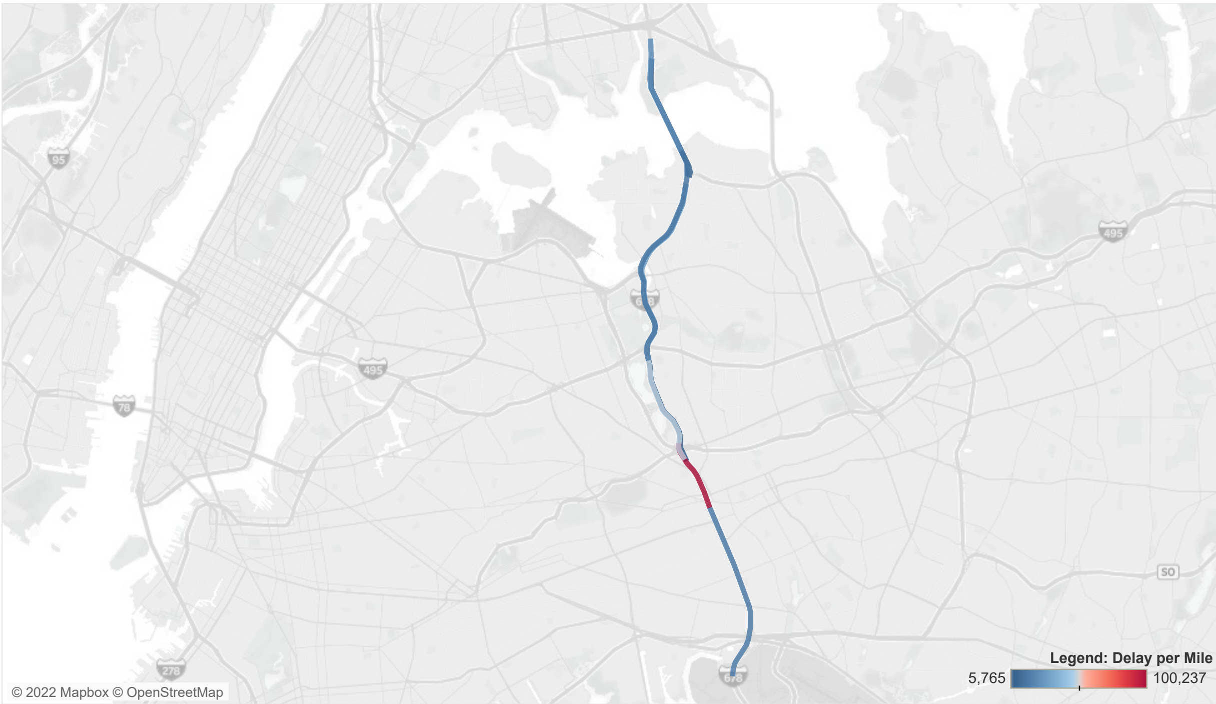
Road	Segment ID	Length (Miles)	AADT (Trucks)	Delay (Hours)	Delay/ Mile	PTI (95th %)	BI	TTI	TRI	Cong. Cost	FAF Value
I-610	TXP00001925	1.0	7,379	104,501	104,009	9.21	229.0%	2.81	1.62	$5.2M	$26.7B
I-610	TXP00001944	1.2	7,605	95,276	80,822	5.86	192.4%	1.93	1.64	$4.7M	$30.4B
I-610	TXP00001927	3.1	6,652	148,065	47,683	4.57	140.0%	1.90	1.52	$7.3M	$24.3B
I-610	TXN0000421	3.8	6,766	108,435	28,690	3.02	79.3%	1.53	1.29	$5.4M	$24.7B
I-610	TXP00001931	1.2	6,106	10,452	8,705	2.02	50.0%	1.32	1.30	$0.5M	$22.3B
I-610	TXP00001933	2.4	3,989	13,524	5,538	1.90	57.1%	1.21	1.65	$0.7M	$14.8B

Cumulative mileage of segments may not add up to the corresponding segment in the Nationally Significant Freight Highway Bottlenecks and Congested Corridors list.

Source: FHWA

Figure 73. Map. Top 40 Bottleneck Maps, Bottleneck 5, I-610 (Houston, TX).

6. I-678 (New York, NY)



I-678 *(New York, NY)*

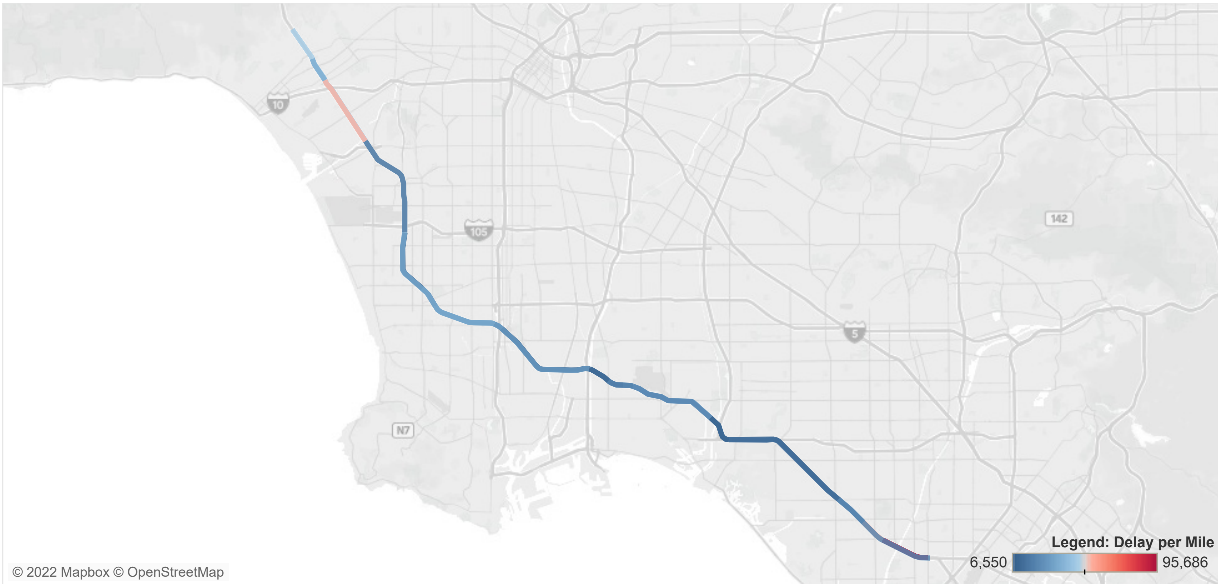
Road	Segment ID	Length (Miles)	AADT (Trucks)	Delay (Hours)	Delay/ Mile	PTI (95th %)	BI	TTI	TRI	Cong. Cost	FAF Value
I-678	NYN0000213	1.3	6,510	134,371	100,237	6.33	170.5%	2.34	1.31	$6.7M	$24.4B
I-678	NYN0000212	2.4	5,359	119,305	50,329	6.97	190.2%	2.36	1.98	$5.9M	$18.6B
I-678	NYP00001005	3.5	6,012	105,670	29,981	3.69	130.3%	1.54	1.94	$5.2M	$22.1B
I-678	NYN0000208	2.2	5,260	53,341	24,334	3.74	140.4%	1.56	1.73	$2.6M	$20.1B
I-678	NYN0000214	3.3	4,038	57,159	17,158	2.44	57.8%	1.50	1.15	$2.8M	$16.4B
I-678	NYN0000210	4.0	6,092	64,016	16,157	2.15	64.8%	1.30	1.54	$3.2M	$22.4B
I-678	NYN0000209	0.6	6,303	9,388	15,518	2.81	98.7%	1.41	1.45	$0.5M	$24.1B
I-678	NYP00001008	2.4	5,577	20,080	8,290	1.67	36.5%	1.21	1.22	$1.0M	$21.3B
I-678	NYP00001004	2.3	5,529	13,403	5,765	1.43	21.4%	1.18	1.11	$0.7M	$18.9B

Cumulative mileage of segments may not add up to the corresponding segment in the Nationally Significant Freight Highway Bottlenecks and Congested Corridors list.

Source: FHWA

Figure 74. Map. Top 40 Bottleneck Maps, Bottleneck 6, I-678 (New York, NY).

7. I-405 (Los Angeles, CA)



I-405 *(Los Angeles, CA)*

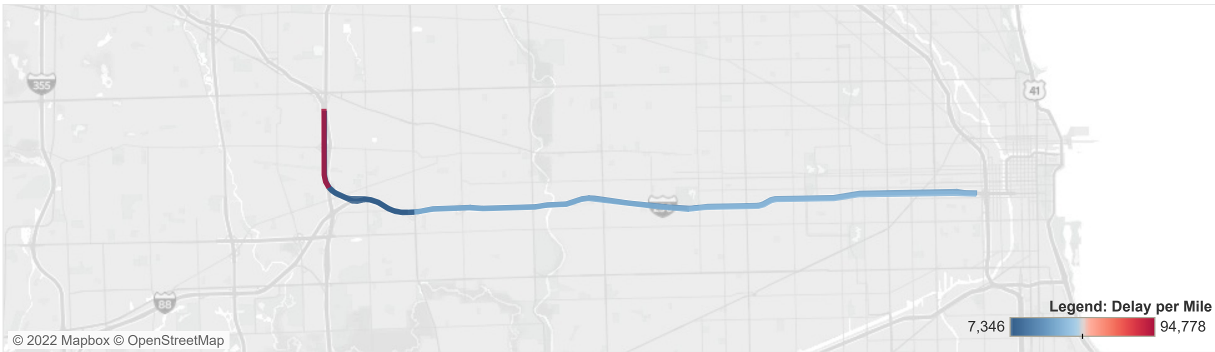
Road	Segment ID	Length (Miles)	AADT (Trucks)	Delay (Hours)	Delay/ Mile	PTI (95th %)	BI	TTI	TRI	Cong. Cost	FAF Value
I-405	CAP00001948	2.5	12,139	238,811	95,686	6.27	217.2%	1.98	2.24	$11.8M	$65.9B
I-405	CAN0000361	3.7	4,687	201,884	54,548	7.15	211.4%	2.28	1.65	$10.0M	$17.1B
I-405	CAP00001963	1.3	12,606	71,876	53,809	3.70	111.9%	1.71	1.46	$3.6M	$68.3B
I-405	CAP00002322	5.5	6,419	270,841	49,335	5.74	184.6%	1.94	1.90	$13.4M	$31.6B
I-405	CAP00002326	6.8	5,357	309,907	45,851	5.82	190.2%	1.97	1.88	$15.4M	$21.9B
I-405	CAN0000354	1.3	6,037	44,460	35,440	4.44	168.7%	1.65	1.94	$2.2M	$25.7B
I-405	CAN0000385	7.7	5,984	249,513	32,572	4.24	153.5%	1.62	1.82	$12.4M	$27.2B
I-405	CAP00002300	3.7	6,454	112,870	30,776	3.76	144.6%	1.53	1.93	$5.6M	$28.7B
I-405	CAN0000387	5.8	6,102	160,644	27,814	3.53	128.8%	1.50	1.68	$8.0M	$26.3B
I-405	CAP00002157	4.4	10,378	113,841	25,817	2.44	86.4%	1.31	1.53	$5.6M	$59.6B
I-405	CAP00002305	1.1	4,806	26,213	23,357	4.09	156.3%	1.59	1.72	$1.3M	$19.2B
I-405	CAN0000398	4.4	9,828	98,686	22,361	2.41	85.6%	1.29	1.56	$4.9M	$56.1B
I-405	CAP00002040	1.3	8,222	29,152	21,697	2.31	81.8%	1.27	1.70	$1.4M	$50.3B
I-405	CAN0000421	5.7	10,578	116,863	20,616	2.36	73.1%	1.31	1.46	$5.8M	$60.6B
I-405	CAN0000392	1.3	12,097	25,240	19,331	2.05	67.2%	1.22	1.58	$1.2M	$67.4B
I-405	CAN0000373	5.4	6,438	90,274	16,618	2.50	79.4%	1.34	1.51	$4.5M	$31.7B
I-405	CAP00002247	1.9	8,114	27,104	14,227	1.97	58.4%	1.24	1.40	$1.3M	$46.1B
I-405	CAN0000413	6.8	5,028	88,395	13,103	3.01	108.5%	1.37	1.84	$4.4M	$19.6B
I-405	CAP00002135	1.7	6,420	19,902	11,612	2.16	72.9%	1.25	1.55	$1.0M	$31.7B
I-405	CAP00002269	5.4	6,210	59,290	11,046	2.16	64.3%	1.30	1.37	$2.9M	$26.9B
I-405	CAP00002056	1.5	4,642	15,843	10,841	2.45	85.2%	1.31	1.53	$0.8M	$18.3B
I-405	CAN0000388	1.1	6,236	12,244	10,722	1.81	47.2%	1.23	1.31	$0.6M	$26.6B
I-405	CAP00002311	3.2	5,682	33,844	10,446	1.91	50.6%	1.25	1.20	$1.7M	$26.2B
I-405	CAP00002102	2.1	5,646	21,210	10,041	1.98	59.3%	1.24	1.35	$1.1M	$21.6B
I-405	CAN0000408	1.5	6,822	15,418	10,026	1.66	39.7%	1.18	1.35	$0.8M	$35.5B
I-405	CAP00002090	3.1	4,667	20,145	6,550	1.73	44.0%	1.20	1.31	$1.0M	$18.2B

Cumulative mileage of segments may not add up to the corresponding segment in the Nationally Significant Freight Highway Bottlenecks and Congested Corridors list.

Source: FHWA

Figure 75. Map. Top 40 Bottleneck Maps, Bottleneck 7, I-405 (Los Angeles, CA).

8. I-290 (Chicago, IL)



I-290 *(Chicago, IL)*

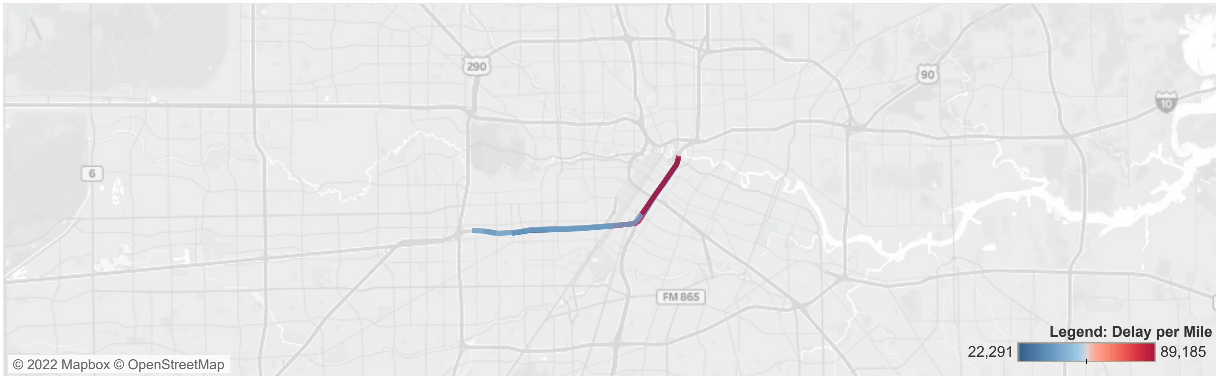
Road	Segment ID	Length (Miles)	AADT (Trucks)	Delay (Hours)	Delay/ Mile	PTI (95th %)	BI	TTI	TRI	Cong. Cost	FAF Value
I-290	ILN0000106	1.7	8,726	162,175	94,778	5.49	163.0%	2.03	1.41	$8.0M	$38.8B
I-290	ILN0000109	6.2	4,348	246,636	39,648	5.10	143.3%	2.06	1.87	$12.2M	$16.1B
I-290	ILN0000108	5.9	4,830	210,907	35,635	4.46	132.2%	1.79	1.48	$10.4M	$18.6B
I-290	ILP00001014	6.2	4,345	182,658	29,703	4.50	148.9%	1.71	1.85	$9.0M	$16.2B
I-290	ILP00001015	6.3	4,814	157,236	25,078	3.26	93.7%	1.61	1.38	$7.8M	$18.5B
I-290	ILP00001016	3.5	6,695	26,763	7,699	1.36	18.6%	1.14	1.12	$1.3M	$33.3B
I-290	ILN0000107	2.0	5,615	14,528	7,346	1.58	30.4%	1.19	1.32	$0.7M	$28.6B

Cumulative mileage of segments may not add up to the corresponding segment in the Nationally Significant Freight Highway Bottlenecks and Congested Corridors list.

Source: FHWA

Figure 76. Map. Top 40 Bottleneck Maps, Bottleneck 8, I-290 (Chicago, IL).

9. US-59 (Houston, TX)



US-59 *(Houston, TX)*

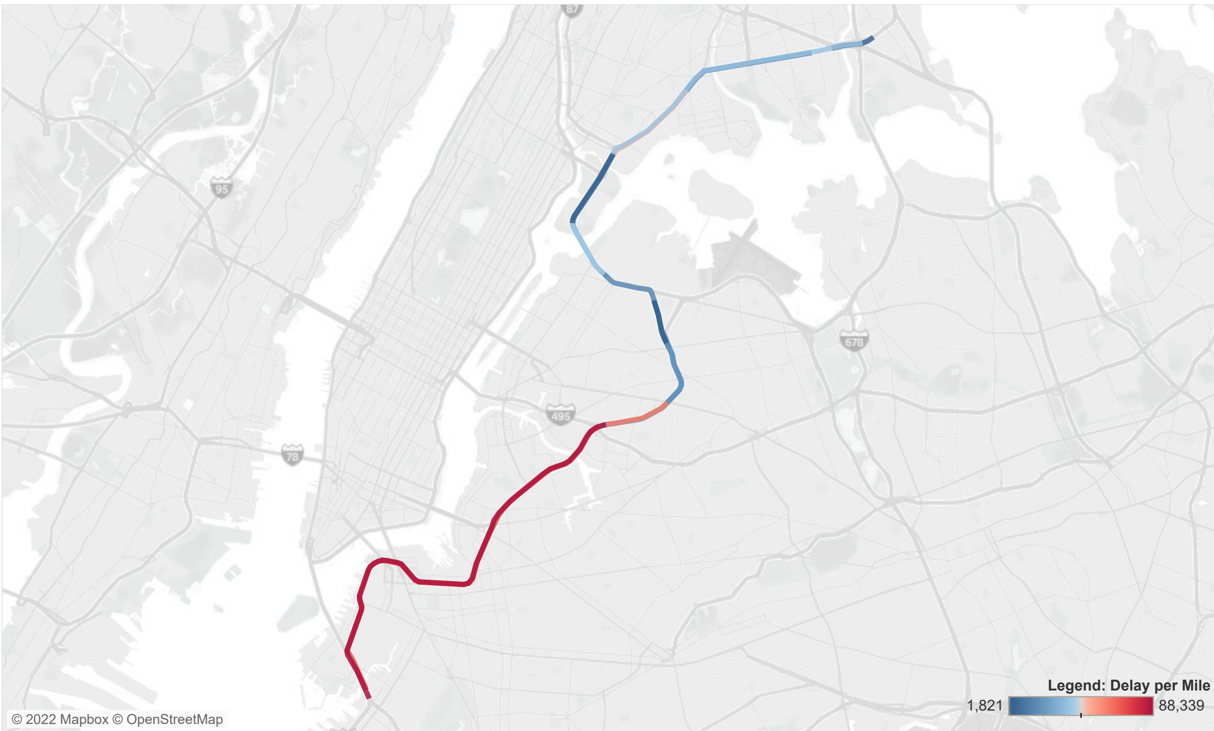
Road	Segment ID	Length (Miles)	AADT (Trucks)	Delay (Hours)	Delay/ Mile	PTI (95th %)	BI	TTI	TRI	Cong. Cost	FAF Value
US-59	TXN0000373	2.1	6,831	187,114	89,185	7.19	205.4%	2.32	1.84	$9.3M	$32.5B
US-59	TXP00001877	1.1	6,411	91,022	84,951	9.20	259.6%	2.56	1.89	$4.5M	$29.6B
US-59	TXN0000374	6.0	8,325	239,646	40,026	4.66	154.4%	1.75	2.05	$11.9M	$39.2B
US-59	TXP00001875	2.0	8,206	66,255	33,459	7.45	260.5%	2.06	2.69	$3.3M	$38.2B
US-59	TXP00001881	2.0	6,790	52,754	26,216	2.36	61.7%	1.36	1.23	$2.6M	$32.3B
US-59	TXP00001872	1.1	8,841	23,402	22,291	1.86	49.9%	1.22	1.47	$1.2M	$41.2B

Cumulative mileage of segments may not add up to the corresponding segment in the Nationally Significant Freight Highway Bottlenecks and Congested Corridors list.

Source: FHWA

Figure 77. Map. Top 40 Bottleneck Maps, Bottleneck 9, US-59 (Houston, TX).

10. I-278 (New York, NY)



I-278 *(New York, NY)*

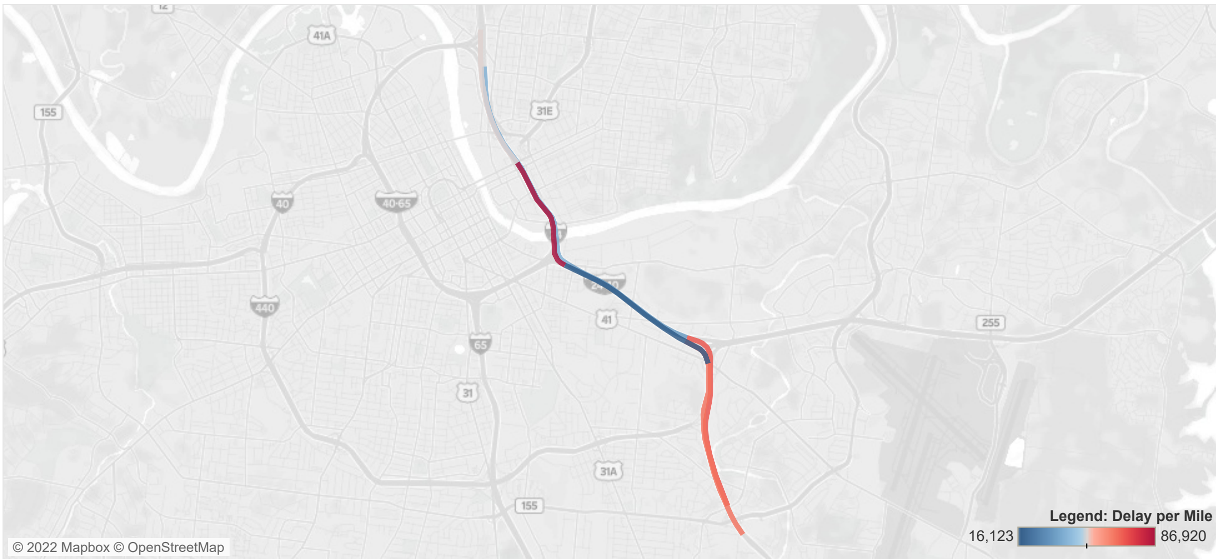
Road	Segment ID	Length (Miles)	AADT (Trucks)	Delay (Hours)	Delay/ Mile	PTI (95th %)	BI	TTI	TRI	Cong. Cost	FAF Value
I-278	NYN0000187	8.0	6,607	708,920	88,339	6.03	164.0%	2.24	1.55	$35.1M	$23.3B
I-278	NYP0000969	7.7	6,574	542,150	70,192	4.68	132.0%	1.98	1.59	$26.9M	$23.2B
I-278	NYN0000186	1.1	4,985	69,302	60,883	7.89	218.4%	2.48	2.04		$19.0B
I-278	NYP0000976	1.7	4,625	82,967	48,736	5.20	158.9%	1.95	1.64	$4.1M	$17.6B
I-278	NYN0000181	1.1	5,453	41,867	39,345	2.42	80.8%	1.33	1.71	$2.1M	$18.1B
I-278	NYN0000178	4.9	4,531	187,603	38,373	5.55	170.4%	2.03	1.88	$9.3M	$16.7B
I-278	NYP0000974	1.1	5,317	36,539	33,533	3.30	132.8%	1.42	1.79	$1.8M	$16.9B
I-278	NYP0000970	2.5	5,836	58,743	23,123	3.33	123.2%	1.49	1.98	$2.9M	$20.8B
I-278	NYN0000185	1.3	6,801	25,666	20,308	2.50	78.7%	1.37	1.54	$1.3M	$22.1B
I-278	NYP0000973	1.9	3,252	31,946	16,995	3.21	97.8%	1.54	1.46	$1.6M	$12.7B
I-278	NYP0000975	1.5	6,325	14,604	9,696	5.66	215.1%	1.80	2.85	$0.7M	$24.3B
I-278	NYP0000977	2.3	4,505	22,144	9,628	1.92	46.4%	1.29	1.26	$1.1M	$15.7B
I-278	NYN0000179	1.4	5,639	6,137	4,422	2.93	98.5%	1.47	1.73	$0.3M	$21.7B
I-278	NYP0000979	0.8	4,868	3,176	4,259	1.45	15.1%	1.25	1.15	$0.2M	$20.4B
I-278	NYN0000184	0.8	933	1,393	1,821	1.48	24.9%	1.19	1.11	$0.1M	$2.1B

Cumulative mileage of segments may not add up to the corresponding segment in the Nationally Significant Freight Highway Bottlenecks and Congested Corridors list.

Source: FHWA

Figure 78. Map. Top 40 Bottleneck Maps, Bottleneck 10, I-278 (New York, NY).

11. I-24 and I-24/I-40 (Nashville, TN)



I-24 & I-24/I-40 *(Nashville, TN)*

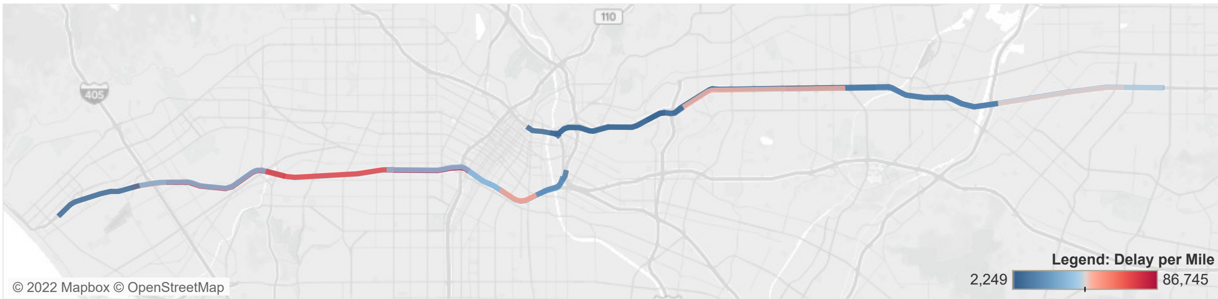
Road	Segment ID	Length (Miles)	AADT (Trucks)	Delay (Hours)	Delay/ Mile	PTI (95th %)	BI	TTI	TRI	Cong. Cost	FAF Value
I-24	TNN0000143	1.4	12,775	122,135	86,920	5.05	178.7%	1.80	1.72	$6.1M	$73.5B
I-24	TNP00001312	2.2	12,589	158,173	70,969	5.00	205.4%	1.62	2.56	$7.8M	$74.0B
I-24	TNN0000596	2.6	12,577	168,044	65,607	5.10	236.4%	1.52	4.24	$8.3M	$73.8B
I-24	TNN0000141	1.7	12,365	87,752	51,554	3.80	142.9%	1.51	2.29	$4.3M	$72.5B
I-24	TNP0000812	2.7	12,547	107,576	40,338	3.03	124.1%	1.34	1.90	$5.3M	$72.9B
I-24/I-40	TNP00001291	1.7	5,227	56,849	34,062	3.95	128.7%	1.71	1.40	$2.8M	$31.2B
I-24/I-40	TNN0000581	2.1	5,391	34,143	16,123	3.02	123.5%	1.34	2.18	$1.7M	$35.0B

Cumulative mileage of segments may not add up to the corresponding segment in the Nationally Significant Freight Highway Bottlenecks and Congested Corridors list.

Source: FHWA

Figure 79. Map. Top 40 Bottleneck Maps, Bottleneck 11, I-24 and I-24/I-40 Nashville, TN).

12. I-10 (Los Angeles, CA)



I-10 *(Los Angeles, CA)*

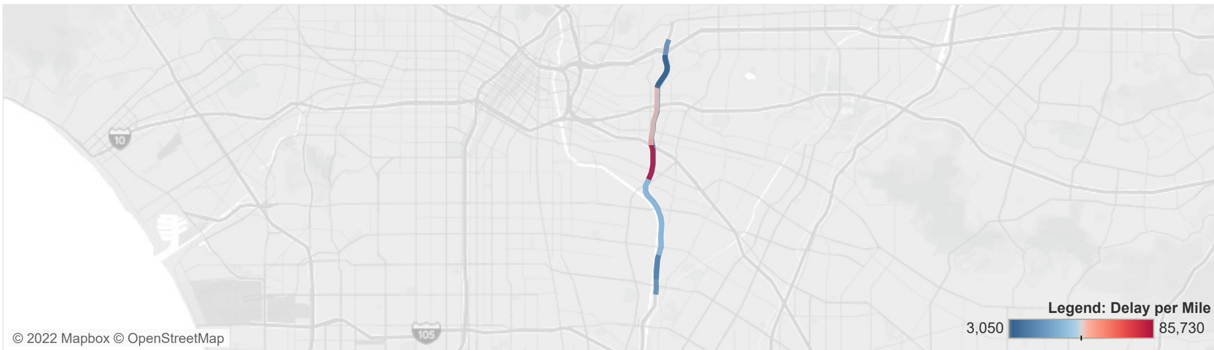
Road	Segment ID	Length (Miles)	AADT (Trucks)	Delay (Hours)	Delay/ Mile	PTI (95th %)	BI	TTI	TRI	Cong. Cost	FAF Value
I-10	CAP00002240	2.5	7,036	217,248	86,745	7.26	161.9%	2.74	1.50	$10.8M	$27.9B
I-10	CAP00002227	3.7	8,755	275,579	74,009	6.08	187.4%	2.11	1.55	$13.6M	$57.5B
I-10	CAN0000765	3.8	9,218	272,082	71,408	8.11	186.3%	2.82	2.09	$13.5M	$54.4B
I-10	CAP00002225	1.1	4,749	57,485	54,539	8.66	233.4%	2.60	2.39	$2.8M	$19.6B
I-10	CAN0000763	1.2	9,198	62,155	51,166	4.81	117.5%	2.21	1.45	$3.1M	$47.8B
I-10	CAN0000772	4.9	11,195	233,532	47,277	3.38	122.3%	1.52	1.62	$11.6M	$82.7B
I-10	CAN0000774	3.8	6,620	169,736	45,006	4.78	171.3%	1.75	1.74	$8.4M	$24.6B
I-10	CAP00002223	2.3	4,843	100,712	43,043	6.89	198.7%	2.18	2.41	$5.0M	$23.3B
I-10	CAN0000776	1.2	7,093	48,021	41,865	4.33	160.7%	1.66	1.77	$2.4M	$30.2B
I-10	CAP00002229	3.2	9,696	134,552	41,843	3.87	110.4%	1.84	1.35	$6.7M	$57.8B
I-10	CAN0000764	3.7	6,593	125,971	34,065	3.82	113.9%	1.75	1.55	$6.2M	$29.3B
I-10	CAP00002288	4.2	6,682	143,655	33,862	3.34	123.5%	1.48	1.85	$7.1M	$25.6B
I-10	CAN0000766	4.5	7,835	137,037	30,756	3.54	88.9%	1.83	1.33	$6.8M	$50.2B
I-10	CAP00002241	3.2	7,503	97,542	30,348	3.68	115.9%	1.68	1.51	$4.8M	$40.4B
I-10	CAN0000762	1.8	2,911	34,034	18,473	6.89	155.2%	2.69	1.48	$1.7M	$16.3B
I-10	CAN0000773	4.6	5,346	70,965	15,328	2.94	101.6%	1.39	1.79	$3.5M	$21.6B
I-10	CAP00002293	3.8	3,452	53,142	13,943	4.53	118.6%	1.77	2.06	$2.6M	$14.2B
I-10	CAP00002242	1.2	3,959	12,912	11,236	3.21	117.2%	1.45	1.90	$0.6M	$23.1B
I-10	CAN0000771	1.2	3,437	11,089	9,482	4.31	153.9%	1.70	1.47	$0.5M	$13.6B
I-10	CAP00002290	4.6	5,420	43,529	9,383	2.37	81.4%	1.29	1.58	$2.2M	$22.8B
I-10	CAN0000767	2.6	4,951	17,160	6,496	2.89	94.9%	1.45	1.71	$0.9M	$23.2B
I-10	CAP00002321	2.7	10,645	16,801	6,315	1.50	26.5%	1.19	1.16	$0.8M	$24.8B
I-10	CAN0000770	5.0	2,902	31,011	6,204	2.54	89.4%	1.32	1.72	$1.5M	$13.3B
I-10	CAP00002291	5.4	10,420	12,095	2,249	2.05	60.5%	1.25	1.40	$0.6M	$28.3B

Cumulative mileage of segments may not add up to the corresponding segment in the Nationally Significant Freight Highway Bottlenecks and Congested Corridors list.

Source: FHWA

Figure 80. Map. Top 40 Bottleneck Maps, Bottleneck 12, I-10 (Los Angeles, CA).

13. I-710 (Los Angeles, CA)



I-710 *(Los Angeles, CA)*

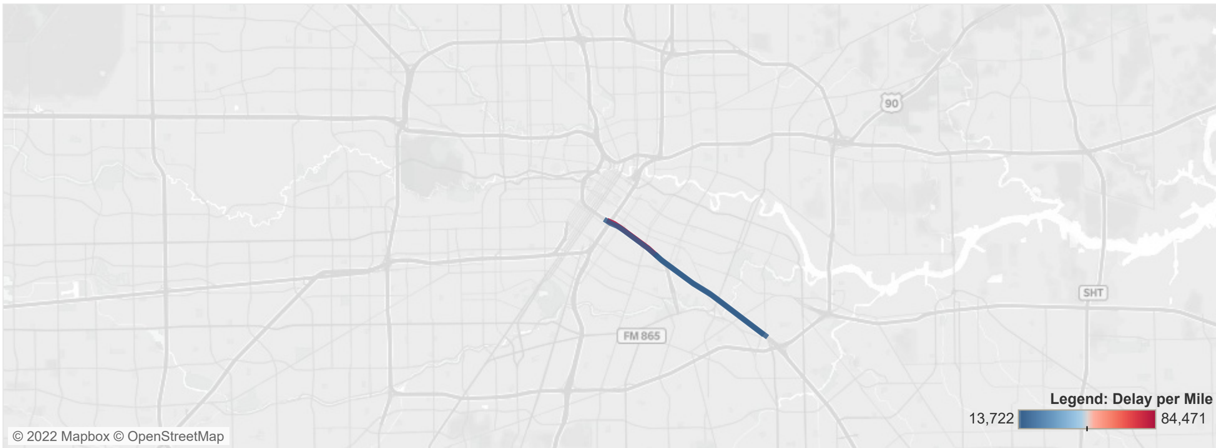
Road	Segment ID	Length (Miles)	AADT (Trucks)	Delay (Hours)	Delay/ Mile	PTI (95th %)	BI	TTI	TRI	Cong. Cost	FAF Value
I-710	CAN0000927	1.4	6,833	117,160	85,730	7.38	239.9%	2.12	2.02	$5.8M	$30.9B
I-710	CAN0000925	2.0	5,979	92,553	45,934	6.40	208.5%	1.88	2.52	$4.6M	$28.6B
I-710	CAN0000932	2.7	7,686	96,810	35,821	3.09	98.2%	1.52	1.29	$4.8M	$31.4B
I-710	CAP00002423	1.3	6,772	28,778	23,110	2.43	73.0%	1.38	1.44	$1.4M	$30.3B
I-710	CAP00002421	3.6	7,350	59,246	16,494	2.21	69.5%	1.30	1.56	$2.9M	$31.1B
I-710	CAP00002425	2.6	4,099	42,879	16,481	3.91	126.5%	1.65	1.72	$2.1M	$21.3B
I-710	CAN0000934	1.3	6,578	21,078	16,039	2.01	53.4%	1.31	1.22	$1.0M	$29.9B
I-710	CAP00002424	1.4	6,777	10,443	7,560	1.65	36.5%	1.20	1.23	$0.5M	$31.3B
I-710	CAN0000924	1.2	3,646	3,609	3,050	1.45	22.8%	1.17	1.13	$0.2M	$17.4B

Cumulative mileage of segments may not add up to the corresponding segment in the Nationally Significant Freight Highway Bottlenecks and Congested Corridors list.

Source: FHWA

Figure 81. Map. Top 40 Bottleneck Maps, Bottleneck 13, I-710 (Los Angeles, CA).

14. I-45 (Houston, TX)



I-45 *(Houston, TX)*

Road	Segment ID	Length (Miles)	AADT (Trucks)	Delay (Hours)	Delay/ Mile	PTI (95th %)	BI	TTI	TRI	Cong. Cost	FAF Value
I-45	TXP00001733	1.6	7,184	137,629	84,471	5.78	142.5%	2.34	1.54	$6.8M	$32.8B
I-45	TXN0000266	5.2	7,135	73,215	14,101	1.99	57.1%	1.23	1.65	$3.6M	$32.5B
I-45	TXP00001732	3.7	7,082	50,610	13,722	2.25	68.6%	1.29	1.63	$2.5M	$32.2B

Cumulative mileage of segments may not add up to the corresponding segment in the Nationally Significant Freight Highway Bottlenecks and Congested Corridors list.

Source: FHWA

Figure 82. Map. Top 40 Bottleneck Maps, Bottleneck 14, I-45 (Houston, TX).

15. I-680 (San Francisco, CA)

I-680 *(San Francisco, CA)*

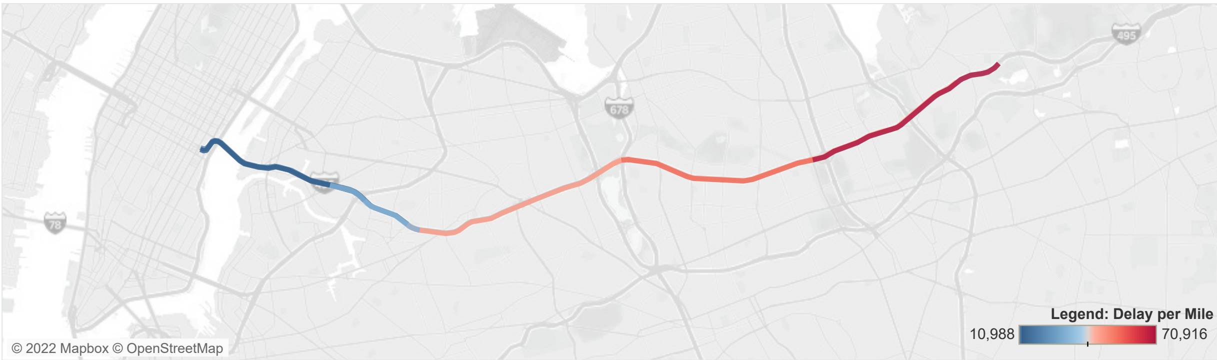
Road	Segment ID	Length (Miles)	AADT (Trucks)	Delay (Hours)	Delay/ Mile	PTI (95th %)	BI	TTI	TRI	Cong. Cost	FAF Value
I-680	CAP00001970	2.7	6,406	215,782	81,240	8.73	268.4%	2.36	2.09	$10.7M	$32.8B
I-680	CAP00001972	1.1	5,243	35,471	31,807	4.38	163.1%	1.65	1.78	$1.8M	$27.0B
I-680	CAN0000614	2.0	6,098	26,046	13,045	2.29	71.9%	1.29	1.43	$1.3M	$31.4B
I-680	CAN0000611	2.2	5,917	10,862	5,043	1.58	39.5%	1.13	1.25	$0.5M	$30.6B

Cumulative mileage of segments may not add up to the corresponding segment in the Nationally Significant Freight Highway Bottlenecks and Congested Corridors list.

Source: FHWA

Figure 83. Map. Top 40 Bottleneck Maps, Bottleneck 15, I-680 (San Francisco, CA).

16. I-495 (New York, NY)



I-495 *(New York, NY)*

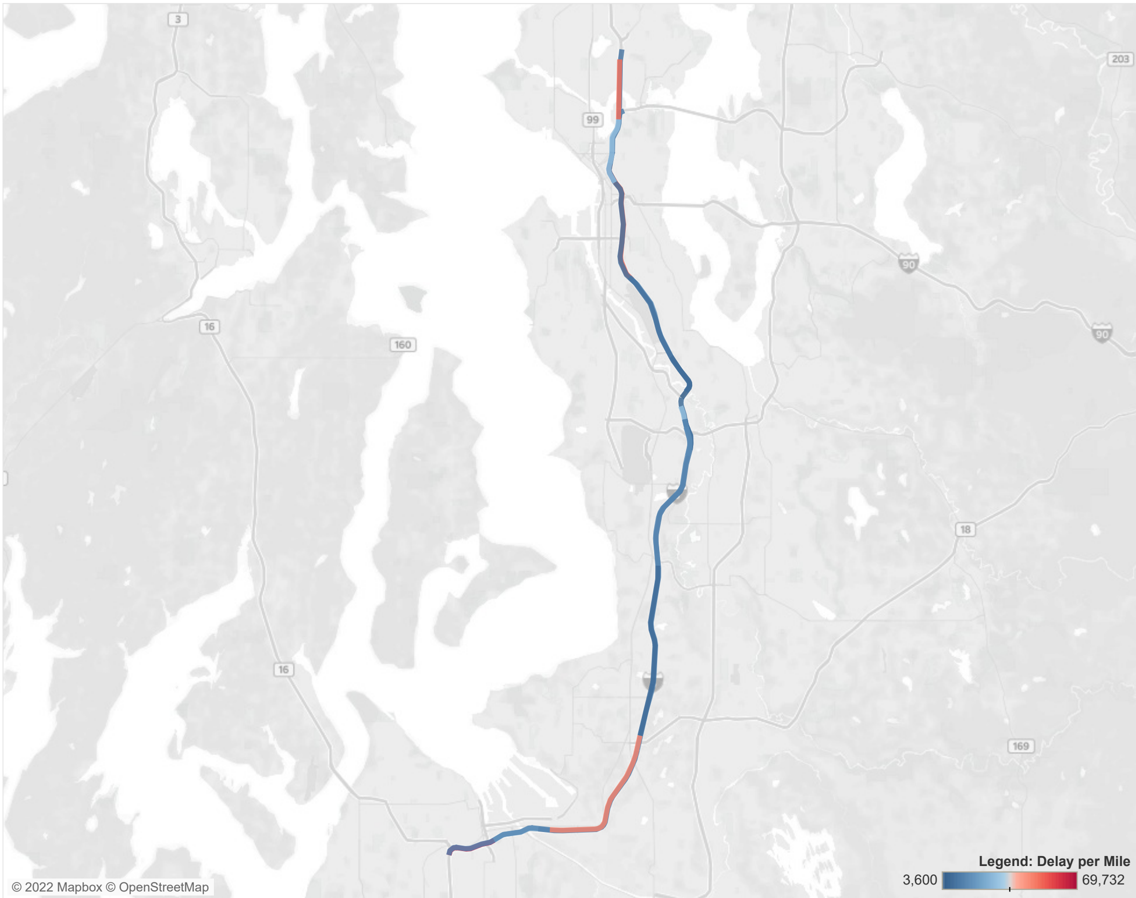
Road	Segment ID	Length (Miles)	AADT (Trucks)	Delay (Hours)	Delay/ Mile	PTI (95th %)	BI	TTI	TRI	Cong. Cost	FAF Value
I-495	NYN00002	3.6	8,988	256,729	70,916	4.33	138.6%	1.74	1.81	$12.7M	$44.7B
I-495	NYN0000754	3.4	5,774	184,180	54,595	5.31	178.6%	1.89	1.65	$9.1M	$22.1B
I-495	NYN0000746	3.9	6,650	184,768	46,878	4.82	160.9%	1.84	1.58	$9.2M	$21.0B
I-495	NYP0000950	2.9	7,597	127,281	44,055	3.78	116.7%	1.72	1.38	$6.3M	$35.8B
I-495	NYP0000951	3.7	5,788	156,605	41,894	4.91	163.2%	1.82	1.78	$7.8M	$22.2B
I-495	NYP0000952	3.9	6,601	153,641	39,582	3.59	94.1%	1.68	1.31	$7.6M	$20.6B
I-495	NYN0000190	1.7	6,713	56,001	32,214	5.28	207.5%	1.71	2.83	$2.8M	$19.9B
I-495	NYP0000981	2.7	3,129	57,997	21,682	6.08	162.8%	2.25	1.53	$2.9M	$11.5B
I-495	NYP0000980	1.3	6,728	23,393	17,839	13.65	392.8%	2.76	2.12	$1.2M	$19.9B
I-495	NYN0000193	3.2	3,846	34,602	10,988	4.37	151.8%	1.71	1.38	$1.7M	$14.5B

Cumulative mileage of segments may not add up to the corresponding segment in the Nationally Significant Freight Highway Bottlenecks and Congested Corridors list.

Source: FHWA

Figure 84. Map. Top 40 Bottleneck Maps, Bottleneck 16, I-495 (New York, NY).

17. I-5 (Seattle-Tacoma, WA)



I-5 *(Seattle, WA)*

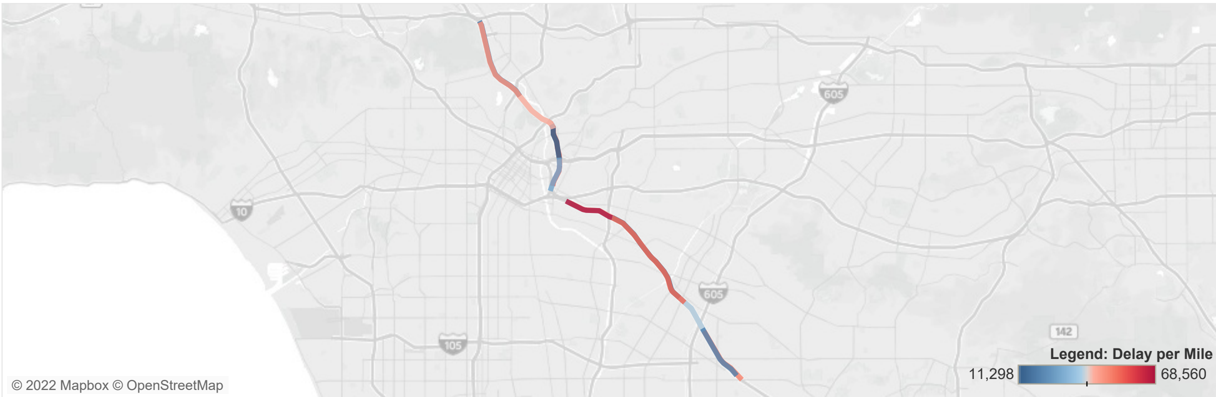
Road	Segment ID	Length (Miles)	AADT (Trucks)	Delay (Hours)	Delay/ Mile	PTI (95th %)	BI	TTI	TRI	Cong. Cost	FAF Value
I-5	WAP0000515	2.0	6,876	139,061	69,732	6.43	194.0%	2.21	1.66	$6.9M	$26.5B
I-5	WAP0000525	4.9	6,786	247,039	50,401	5.02	156.4%	1.94	1.54	$12.2M	$28.6B
I-5	WAN0000180	2.3	5,002	115,230	49,980	6.73	209.1%	2.17	1.84	$5.7M	$16.8B
I-5	WAN0000191	5.9	6,758	276,422	46,713	4.99	183.2%	1.76	1.74	$13.7M	$27.3B
I-5	WAN0000187	0.6	8,808	16,918	30,519	2.48	93.7%	1.29	1.82	$0.8M	$35.6B
I-5	WAN0000181	2.6	4,934	77,742	30,333	4.62	141.3%	1.88	1.46	$3.9M	$17.5B
I-5	WAP0000516	1.8	7,319	46,227	25,487	2.19	52.2%	1.39	1.18	$2.3M	$29.3B
I-5	WAN0000188	1.8	8,905	29,183	16,587	3.67	163.1%	1.40	2.60	$1.4M	$35.3B
I-5	WAP0000524	3.5	7,557	58,128	16,531	2.68	98.0%	1.28	1.89	$2.9M	$30.6B
I-5	WAN0000192	4.3	7,095	65,804	15,401	2.06	57.1%	1.30	1.42	$3.3M	$28.0B
I-5	WAN0000189	5.7	8,104	85,586	14,927	2.46	90.6%	1.25	1.91	$4.2M	$32.7B
I-5	WAP0000518	7.7	6,961	102,965	13,332	2.28	87.2%	1.21	1.93	$5.1M	$28.2B
I-5	WAP0000527	2.2	4,524	26,054	11,922	2.41	84.4%	1.30	1.75	$1.3M	$17.1B
I-5	WAP0000519	5.6	8,176	62,528	11,122	1.94	62.8%	1.19	1.54	$3.1M	$32.9B
I-5	WAP0000528	2.3	4,960	23,217	10,242	2.33	88.1%	1.23	1.92	$1.1M	$16.6B
I-5	WAP0000517	5.8	6,828	55,592	9,561	1.72	46.5%	1.16	1.39	$2.8M	$27.6B
I-5	WAP0000526	1.2	4,181	10,826	9,313	2.03	57.4%	1.28	1.55	$0.5M	$15.3B
I-5	WAN0000185	9.9	6,935	88,680	8,945	1.55	31.6%	1.17	1.21	$4.4M	$28.9B
I-5	WAP0000522	1.3	8,334	10,181	8,008	1.38	20.7%	1.15	1.15	$0.5M	$33.8B
I-5	WAN0000190	6.7	6,956	51,021	7,631	1.57	38.0%	1.13	1.32	$2.5M	$28.2B
I-5	WAP0000521	1.2	8,859	5,227	4,285	1.35	16.6%	1.15	1.12	$0.3M	$35.1B
I-5	WAP0000523	1.9	7,033	6,901	3,600	1.21	11.9%	1.08	1.08	$0.3M	$28.4B

Cumulative mileage of segments may not add up to the corresponding segment in the Nationally Significant Freight Highway Bottlenecks and Congested Corridors list.

Source: FHWA

Figure 85. Map. Top 40 Bottleneck Maps, Bottleneck 17, I-5 (Seattle-Tacoma, WA).

18. I-5 (Los Angeles, CA)



I-5 *(Los Angeles, CA)*

Road	Segment ID	Length (Miles)	AADT (Trucks)	Delay (Hours)	Delay/ Mile	PTI (95th %)	BI	TTI	TRI	Cong. Cost	FAF Value
I-5	CAN00001085	2.4	7,097	164,580	68,560	6.80	224.0%	2.10	2.01	$8.2M	$35.1B
I-5	CAP00002299	1.1	6,029	56,400	52,950	5.64	181.3%	2.00	1.57	$2.8M	$28.1B
I-5	CAN00001086	5.5	5,439	289,298	52,781	5.60	172.6%	2.02	1.67	$14.3M	$20.9B
I-5	CAP00002568	2.3	6,131	113,458	49,860	5.18	135.2%	2.19	1.33	$5.6M	$31.8B
I-5	CAP00002555	3.0	5,574	146,794	49,016	4.86	116.3%	2.16	1.46	$7.3M	$23.7B
I-5	CAN00001117	4.2	7,180	194,921	46,336	3.97	119.9%	1.79	1.43	$9.7M	$36.0B
I-5	CAP00002569	1.8	6,021	76,669	42,204	3.77	104.4%	1.83	1.39	$3.8M	$28.6B
I-5	CAP00002558	2.2	7,136	92,954	41,881	3.94	133.7%	1.68	1.66	$4.6M	$34.3B
I-5	CAN00001118	2.3	6,262	95,535	41,798	3.62	103.0%	1.77	1.36	$4.7M	$30.3B
I-5	CAN00001087	1.5	7,492	58,407	38,377	3.03	82.5%	1.66	1.29	$2.9M	$28.9B
I-5	CAP00002556	2.0	7,241	69,105	34,170	3.75	153.2%	1.48	2.23	$3.4M	$27.6B
I-5	CAN0000822	1.7	6,178	48,237	28,629	4.39	156.0%	1.67	2.02	$2.4M	$29.5B
I-5	CAN00001088	2.8	6,021	57,174	20,210	2.76	92.6%	1.43	1.52	$2.8M	$25.0B
I-5	CAP00002570	4.3	7,144	79,341	18,591	2.54	90.1%	1.33	1.63	$3.9M	$35.8B
I-5	CAP00002557	5.1	5,387	71,645	13,927	2.23	68.7%	1.31	1.37	$3.5M	$20.9B
I-5	CAN00001119	1.7	6,032	19,664	11,298	2.28	60.6%	1.41	1.23	$1.0M	$32.5B

Cumulative mileage of segments may not add up to the corresponding segment in the Nationally Significant Freight Highway Bottlenecks and Congested Corridors list.

Source: FHWA

Figure 86. Map. Top 40 Bottleneck Maps, Bottleneck 18, I-5 (Los Angeles, CA).

19. I-76 (Philadelphia, PA)

I-76 *(Philadelphia, PA)*

Road	Segment ID	Length (Miles)	AADT (Trucks)	Delay (Hours)	Delay/ Mile	PTI (95th %)	BI	TTI	TRI	Cong. Cost	FAF Value
I-76	PAN0000240	1.2	4,605	82,470	67,019	7.94	214.2%	2.52	1.79	$4.1M	$15.7B
I-76	PAP00001264	1.1	4,627	44,566	40,501	4.42	140.4%	1.84	1.59	$2.2M	$14.6B
I-76	PAP00001263	2.4	4,982	95,137	39,538	5.13	168.6%	1.92	1.71	$4.7M	$15.9B
I-76	PAP00001265	1.2	3,937	35,359	28,883	4.43	141.6%	1.82	1.62	$1.8M	$12.4B
I-76	PAN0000238	3.3	2,838	76,855	23,086	4.95	145.7%	1.93	1.75	$3.8M	$9.8B
I-76	PAN0000239	3.6	4,861	49,501	13,954	2.41	79.6%	1.32	1.62	$2.5M	$15.5B
I-76	PAP00001262	1.3	4,677	17,467	13,742	2.83	96.8%	1.38	1.89	$0.9M	$15.9B
I-76	PAP00001266	2.6	2,597	14,208	5,509	1.78	41.1%	1.24	1.22	$0.7M	$8.7B

Cumulative mileage of segments may not add up to the corresponding segment in the Nationally Significant Freight Highway Bottlenecks and Congested Corridors list.

Source: FHWA

Figure 87. Map. Top 40 Bottleneck Maps, Bottleneck 19, I-76 (Philadelphia, PA).

20. I-87 (New York, NY)

I-87 *(New York, NY)*

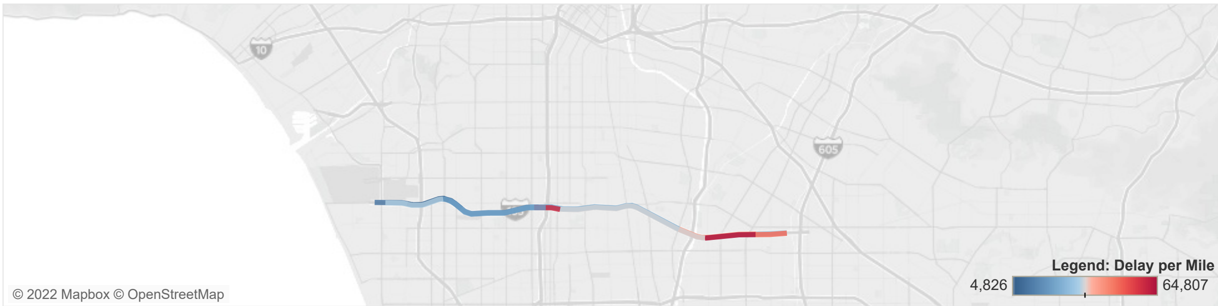
Road	Segment ID	Length (Miles)	AADT (Trucks)	Delay (Hours)	Delay/ Mile	PTI (95th %)	BI	TTI	TRI	Cong. Cost	FAF Value
I-87	NYP0000891	2.6	4,900	166,565	64,891	7.54	218.4%	2.35	1.99	$8.2M	$18.0B
I-87	NYN0000119	7.8	4,996	229,106	29,240	3.72	102.7%	1.66	1.60	$11.3M	$26.9B
I-87	NYN0000120	3.3	4,729	56,944	17,134	3.17	106.2%	1.49	1.62	$2.8M	$16.8B
I-87	NYP0000892	7.6	4,888	115,220	15,152	2.65	70.3%	1.40	1.41	$5.7M	$23.6B

Cumulative mileage of segments may not add up to the corresponding segment in the Nationally Significant Freight Highway Bottlenecks and Congested Corridors list.

Source: FHWA

Figure 88. Map. Top 40 Bottleneck Maps, Bottleneck 20, I-87 (New York, NY).

21. I-105 (Los Angeles, CA)



I-105 *(Los Angeles, CA)*

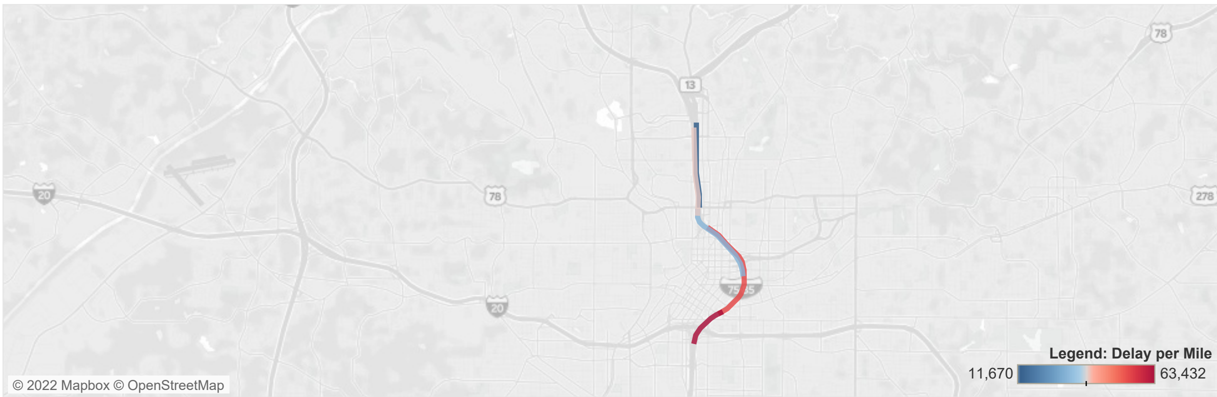
Road	Segment ID	Length (Miles)	AADT (Trucks)	Delay (Hours)	Delay/ Mile	PTI (95th %)	BI	TTI	TRI	Cong. Cost	FAF Value
I-105	CAN0000844	2.0	7,397	131,310	64,807	4.54	112.2%	2.02	1.34	$6.5M	$31.2B
I-105	CAN0000842	1.0	6,352	61,372	58,993	7.96	287.1%	2.00	4.72	$3.0M	$21.2B
I-105	CAN0000846	1.3	7,693	60,971	48,653	4.73	178.1%	1.69	1.97	$3.0M	$34.7B
I-105	CAP00002325	3.2	7,315	132,536	41,970	4.16	118.5%	1.75	1.49	$6.6M	$31.0B
I-105	CAN0000843	6.1	6,266	208,456	34,180	4.25	137.5%	1.70	1.59	$10.3M	$23.8B
I-105	CAP00002323	1.2	7,680	39,637	32,489	3.24	114.4%	1.49	1.55	$2.0M	$34.7B
I-105	CAN0000840	2.4	4,576	76,600	32,485	6.09	188.3%	1.93	2.25	$3.8M	$16.1B
I-105	CAP00002327	6.2	6,128	151,696	24,461	3.31	113.3%	1.53	1.80	$7.5M	$21.8B
I-105	CAN0000841	4.3	6,003	91,756	21,162	3.41	110.9%	1.54	1.57	$4.5M	$18.5B
I-105	CAP00002328	3.8	5,998	66,597	17,668	2.94	94.9%	1.46	1.41	$3.3M	$18.5B
I-105	CAP00002329	2.3	4,949	11,250	4,826	1.94	54.8%	1.25	1.28	$0.6M	$15.6B

Cumulative mileage of segments may not add up to the corresponding segment in the Nationally Significant Freight Highway Bottlenecks and Congested Corridors list.

Source: FHWA

Figure 89. Map. Top 40 Bottleneck Maps, Bottleneck 21, I-105 (Los Angeles, CA).

22. I-75/I-85 (Atlanta, GA)



I-75/I-85 *(Atlanta, GA)*

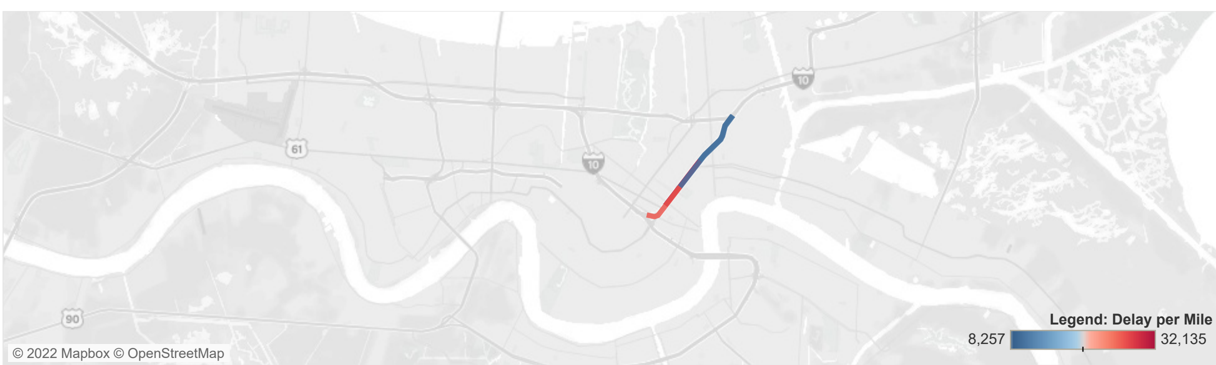
Road	Segment ID	Length (Miles)	AADT (Trucks)	Delay (Hours)	Delay/ Mile	PTI (95th %)	BI	TTI	TRI	Cong. Cost	FAF Value
I-75/I-85	GAP0000853	0.7	7,355	43,279	63,432	5.53	172.4%	2.03	1.52	$2.1M	$29.7B
I-75/I-85	GAP0000855	1.7	7,355	92,129	53,243	4.18	116.7%	1.91	1.38	$4.6M	$29.7B
I-75/I-85	GAN000035	1.3	4,489	50,618	38,091	5.58	163.0%	2.12	1.69	$2.5M	$29.6B
I-75/I-85	GAN000036	1.3	7,355	38,761	30,181	4.17	144.2%	1.71	1.78	$1.9M	$29.7B
I-75/I-85	GAP0000858	1.3	7,355	14,948	11,670	1.82	42.2%	1.27	1.21	$0.7M	$29.7B

Cumulative mileage of segments may not add up to the corresponding segment in the Nationally Significant Freight Highway Bottlenecks and Congested Corridors list.

Source: FHWA

Figure 90. Map. Top 40 Bottleneck Maps, Bottleneck 22, I-75/I-85 (Atlanta, GA).

23. I-10 (New Orleans, LA)



I-10 *(New Orleans, LA)*

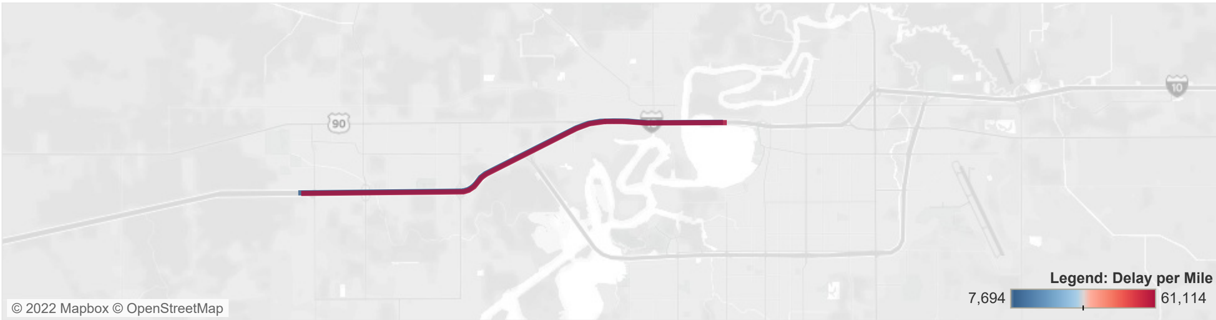
Road	Segment ID	Length (Miles)	AADT (Trucks)	Delay (Hours)	Delay/ Mile	PTI (95th %)	BI	TTI	TRI	Cong. Cost	FAF Value
I-10	LAP0000481	1.5	5,515	48,955	32,135	5.04	168.0%	1.87	1.88	$2.4M	$13.8B
I-10	LAN0000148	1.3	7,136	34,374	26,711	2.80	95.8%	1.42	1.50	$1.7M	$18.7B
I-10	LAN0000153	2.5	5,515	26,441	10,779	2.65	92.7%	1.32	1.73	$1.3M	$13.8B
I-10	LAP0000479	1.5	5,515	12,572	8,257	2.22	70.8%	1.27	1.34	$0.6M	$13.8B

Cumulative mileage of segments may not add up to the corresponding segment in the Nationally Significant Freight Highway Bottlenecks and Congested Corridors list.

Source: FHWA

Figure 91. Map. Top 40 Bottleneck Maps, Bottleneck 23, I-10 (New Orleans, LA).

24. I-10 (Lake Charles, LA)



I-10 *(Lake Charles, LA)*

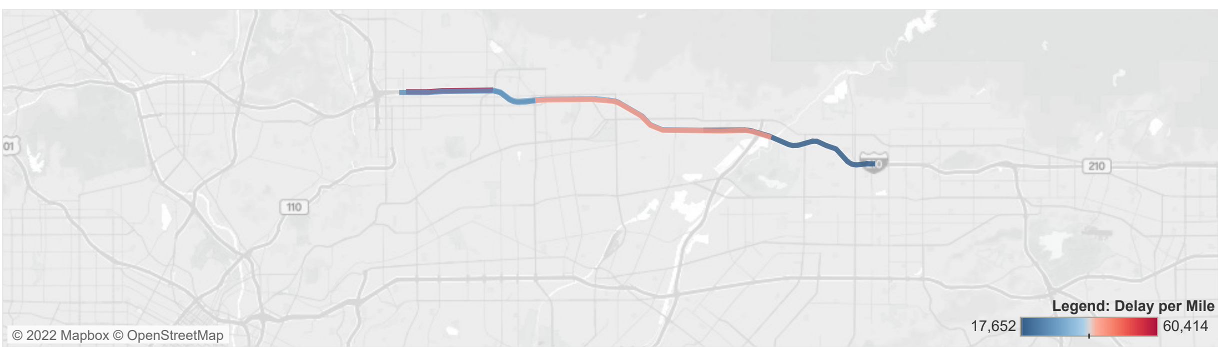
Road	Segment ID	Length (Miles)	AADT (Trucks)	Delay (Hours)	Delay/ Mile	PTI (95th %)	BI	TTI	TRI	Cong. Cost	FAF Value
I-10	LAN0000210	9.3	14,179	567,191	61,114	4.12	153.8%	1.43	3.60	$28.1M	$41.0B
I-10	LAP0000574	9.3	14,054	71,257	7,694	1.26	16.6%	1.07	1.16	$3.5M	$40.7B

Cumulative mileage of segments may not add up to the corresponding segment in the Nationally Significant Freight Highway Bottlenecks and Congested Corridors list.

Source: FHWA

Figure 92. Map. Top 40 Bottleneck Maps, Bottleneck 24, I-10 (Lake Charles, LA).

25. I-210 (Los Angeles, CA)



I-210 *(Los Angeles, CA)*

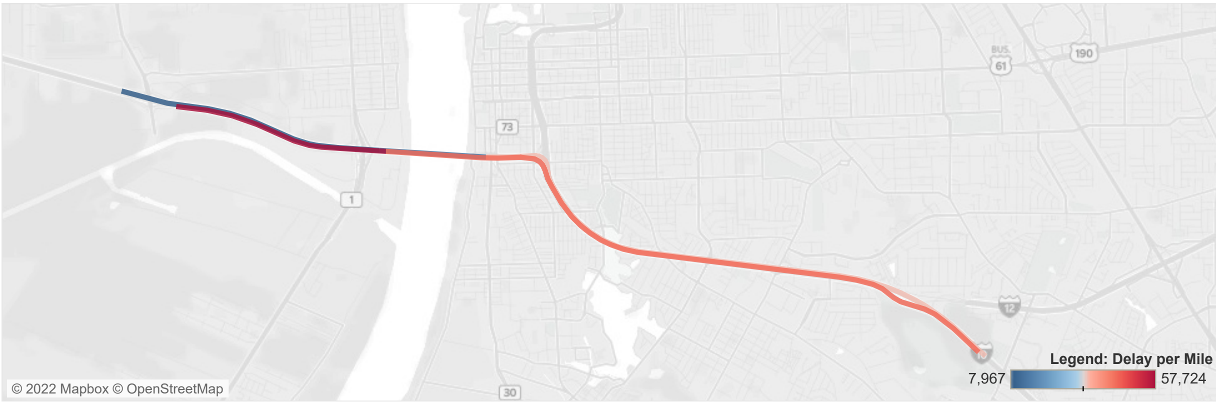
Road	Segment ID	Length (Miles)	AADT (Trucks)	Delay (Hours)	Delay/ Mile	PTI (95th %)	BI	TTI	TRI	Cong. Cost	FAF Value
I-210	CAP00002624	2.6	10,007	155,249	60,414	3.72	120.4%	1.68	1.35	$7.7M	$69.8B
I-210	CAN00001176	7.3	8,154	311,539	42,787	3.88	157.2%	1.50	1.83	$15.4M	$40.3B
I-210	CAP00002623	3.5	7,987	110,244	31,651	3.00	117.1%	1.37	1.74	$5.5M	$40.6B
I-210	CAP00002622	3.1	6,953	87,843	28,249	3.25	129.3%	1.41	1.70	$4.4M	$33.4B
I-210	CAN00001175	4.1	8,473	111,818	27,092	2.75	103.3%	1.33	1.49	$5.5M	$55.1B
I-210	CAP00002621	5.4	6,857	95,887	17,652	2.23	75.2%	1.26	1.49	$4.7M	$33.1B

Cumulative mileage of segments may not add up to the corresponding segment in the Nationally Significant Freight Highway Bottlenecks and Congested Corridors list.

Source: FHWA

Figure 93. Map. Top 40 Bottleneck Maps, Bottleneck 25, I-210 (Los Angeles, CA).

26. I-10 (Baton Rouge, LA)



I-10 *(Baton Rouge, LA)*

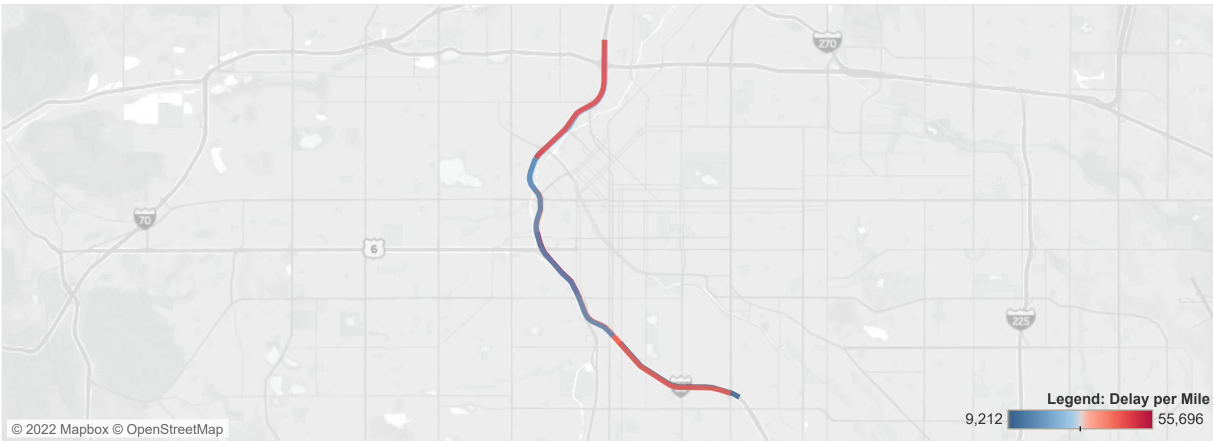
Road	Segment ID	Length (Miles)	AADT (Trucks)	Delay (Hours)	Delay/ Mile	PTI (95th %)	BI	TTI	TRI	Cong. Cost	FAF Value
I-10	LAN0000222	2.2	10,718	124,256	57,724	5.10	234.9%	1.52	3.97	$6.2M	$31.3B
I-10	LAN0000223	6.6	11,003	289,810	44,116	2.88	81.2%	1.49	1.50	$14.4M	$29.4B
I-10	LAP0000561	5.7	11,600	194,500	34,139	2.50	86.2%	1.33	1.87	$9.6M	$30.5B
I-10	LAP0000563	1.1	7,623	13,356	12,562	1.74	49.0%	1.17	1.48	$0.7M	$19.4B
I-10	LAP0000565	2.7	10,223	21,084	7,967	1.18	7.7%	1.10	1.08	$1.0M	$29.7B

Cumulative mileage of segments may not add up to the corresponding segment in the Nationally Significant Freight Highway Bottlenecks and Congested Corridors list.

Source: FHWA

Figure 94. Map. Top 40 Bottleneck Maps, Bottleneck 26, I-10 (Baton Rouge, LA).

27. I-25 (Denver, CO)



I-25 *(Denver, CO)*

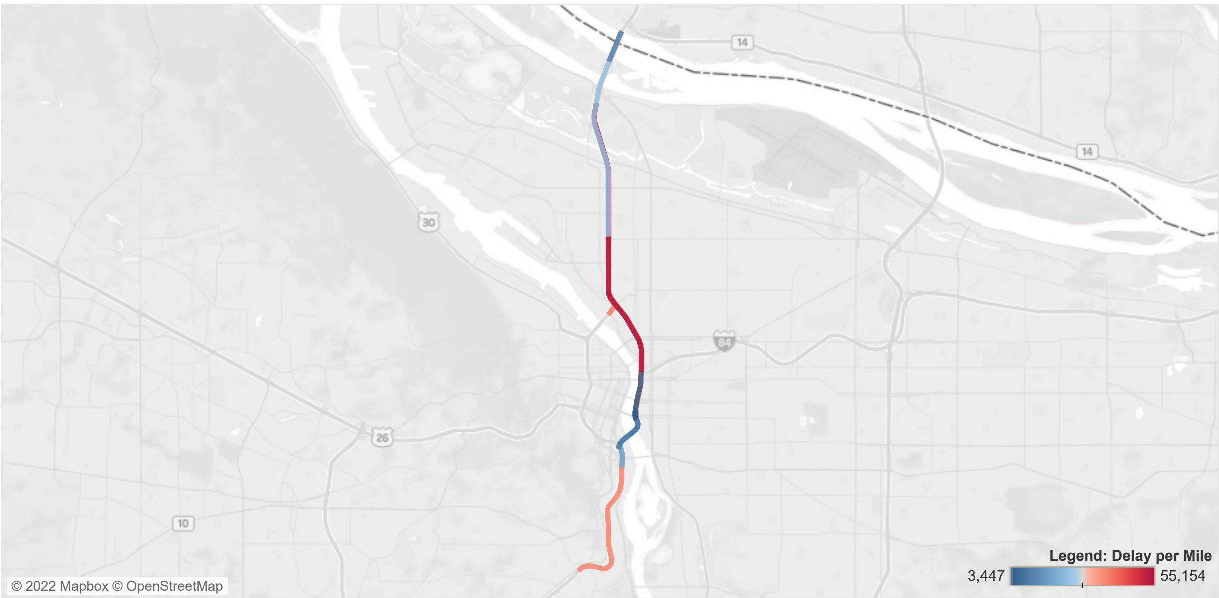
Road	Segment ID	Length (Miles)	AADT (Trucks)	Delay (Hours)	Delay/ Mile	PTI (95th %)	BI	TTI	TRI	Cong. Cost	FAF Value
I-25	COP0000532	1.7	7,030	91,776	55,696	5.00	166.4%	1.88	1.72	$4.5M	$18.9B
I-25	CON0000180	3.0	12,173	139,104	46,212	2.88	99.0%	1.44	1.51	$6.9M	$29.6B
I-25	CON0000183	2.9	6,771	126,825	44,049	5.29	204.6%	1.72	2.25	$6.3M	$16.7B
I-25	COP0000533	1.3	8,003	53,951	41,825	4.24	139.7%	1.76	1.58	$2.7M	$20.4B
I-25	COP0000531	1.4	6,311	58,284	40,822	4.40	168.2%	1.62	2.03	$2.9M	$15.8B
I-25	COP0000534	4.3	11,542	107,476	24,740	2.75	99.9%	1.34	1.68	$5.3M	$28.4B
I-25	CON0000182	4.9	7,399	85,728	17,671	2.29	74.1%	1.31	1.58	$4.2M	$19.1B
I-25	COP0000530	2.8	6,809	25,952	9,212	1.99	62.7%	1.22	1.52	$1.3M	$16.7B

Cumulative mileage of segments may not add up to the corresponding segment in the Nationally Significant Freight Highway Bottlenecks and Congested Corridors list.

Source: FHWA

Figure 95. Map. Top 40 Bottleneck Maps, Bottleneck 27, I-25 (Denver, CO).

28. I-5 (Portland, OR)



I-5 *(Portland, OR)*

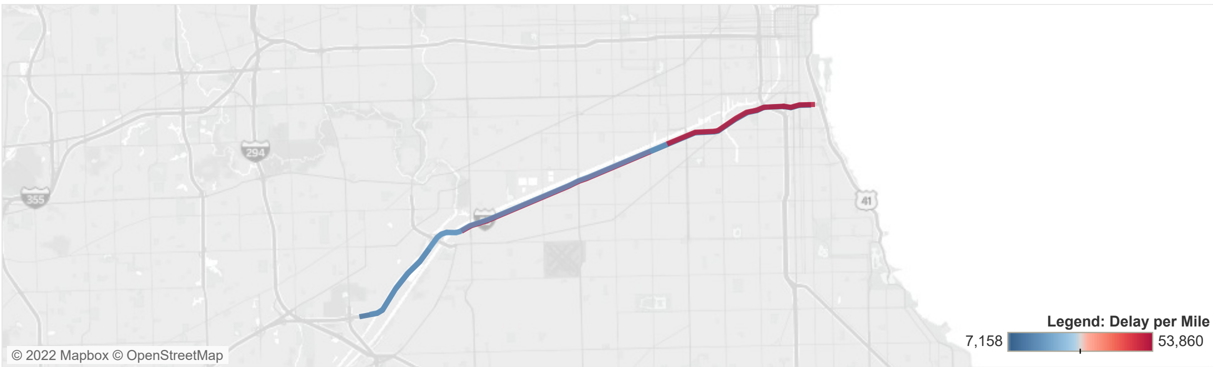
Road	Segment ID	Length (Miles)	AADT (Trucks)	Delay (Hours)	Delay/ Mile	PTI (95th %)	BI	TTI	TRI	Cong. Cost	FAF Value
I-5	ORN0000140	2.8	7,988	156,900	55,154	5.17	176.5%	1.81	1.95	$7.8M	$27.4B
I-5	ORP0000431	2.7	5,706	141,594	53,299	6.36	246.9%	1.84	2.36	$7.0M	$22.6B
I-5	ORP0000430	4.6	6,562	176,824	38,818	5.46	218.8%	1.67	3.32	$8.8M	$25.1B
I-5	ORP0000428	2.7	6,478	101,790	37,526	4.01	174.6%	1.45	2.37	$5.0M	$22.6B
I-5	ORP0000432	1.5	5,932	44,758	29,755	3.08	97.8%	1.52	1.23	$2.2M	$23.1B
I-5	ORN0000137	3.5	5,782	85,884	24,359	3.31	124.8%	1.42	1.94	$4.3M	$22.8B
I-5	ORP0000429	1.6	6,403	27,462	16,798	4.03	155.1%	1.56	1.86	$1.4M	$23.6B
I-5	ORN0000136	0.6	5,742	6,801	10,653	1.94	55.8%	1.24	1.36	$0.3M	$22.4B
I-5	ORN0000143	1.0	6,746	8,927	9,206	2.90	127.9%	1.28	2.31	$0.4M	$24.8B
I-5	ORN0000141	1.0	3,803	3,347	3,447	1.59	32.3%	1.20	1.23	$0.2M	$14.7B

Cumulative mileage of segments may not add up to the corresponding segment in the Nationally Significant Freight Highway Bottlenecks and Congested Corridors list.

Source: FHWA

Figure 96. Map. Top 40 Bottleneck Maps, Bottleneck 28, I-5 (Portland, OR).

29. I-55 (Chicago, IL)



I-55 *(Chicago, IL)*

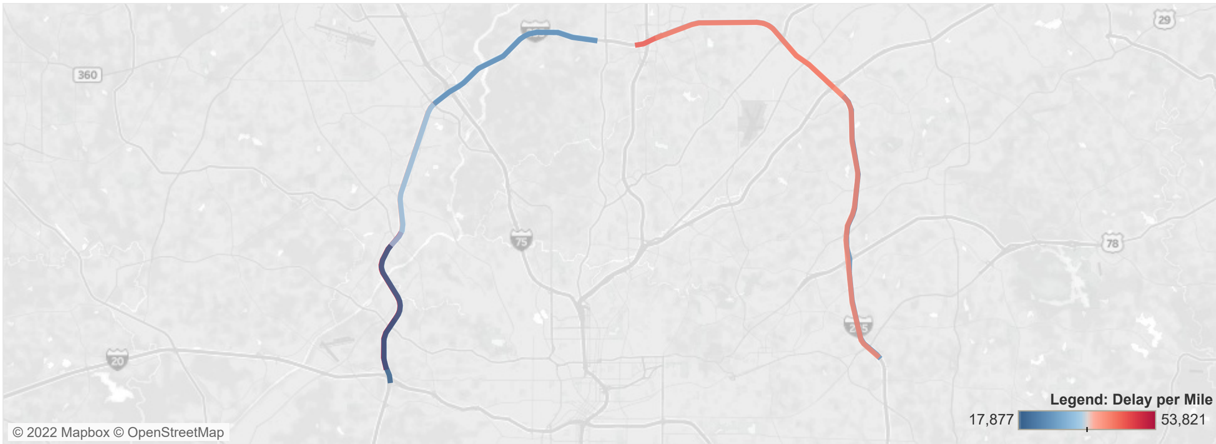
Road	Segment ID	Length (Miles)	AADT (Trucks)	Delay (Hours)	Delay/ Mile	PTI (95th %)	BI	TTI	TRI	Cong. Cost	FAF Value
I-55	ILP00001121	5.7	7,376	308,860	53,860	4.67	159.7%	1.76	1.68	$15.3M	$31.7B
I-55	ILN0000201	4.4	5,900	226,806	51,688	5.88	205.8%	1.88	2.24	$11.2M	$24.0B
I-55	ILP00001120	1.1	6,850	24,366	22,080	3.04	122.1%	1.36	1.98	$1.2M	$30.9B
I-55	ILN0000202	9.9	7,126	175,194	17,667	2.18	66.2%	1.28	1.45	$8.7M	$31.2B
I-55	ILP00001119	2.9	6,850	32,447	11,387	1.92	63.0%	1.18	1.59	$1.6M	$30.9B
I-55	ILP00001123	3.6	5,900	38,795	10,828	1.88	51.1%	1.23	1.36	$1.9M	$24.0B
I-55	ILP00001124	1.2	5,900	8,646	7,158	1.87	42.5%	1.31	1.45	$0.4M	$24.0B

Cumulative mileage of segments may not add up to the corresponding segment in the Nationally Significant Freight Highway Bottlenecks and Congested Corridors list.

Source: FHWA

Figure 97. Map. Top 40 Bottleneck Maps, Bottleneck 29, I-55 (Chicago, IL).

30. I-285 (Atlanta, GA)



I-285 *(Atlanta, GA)*

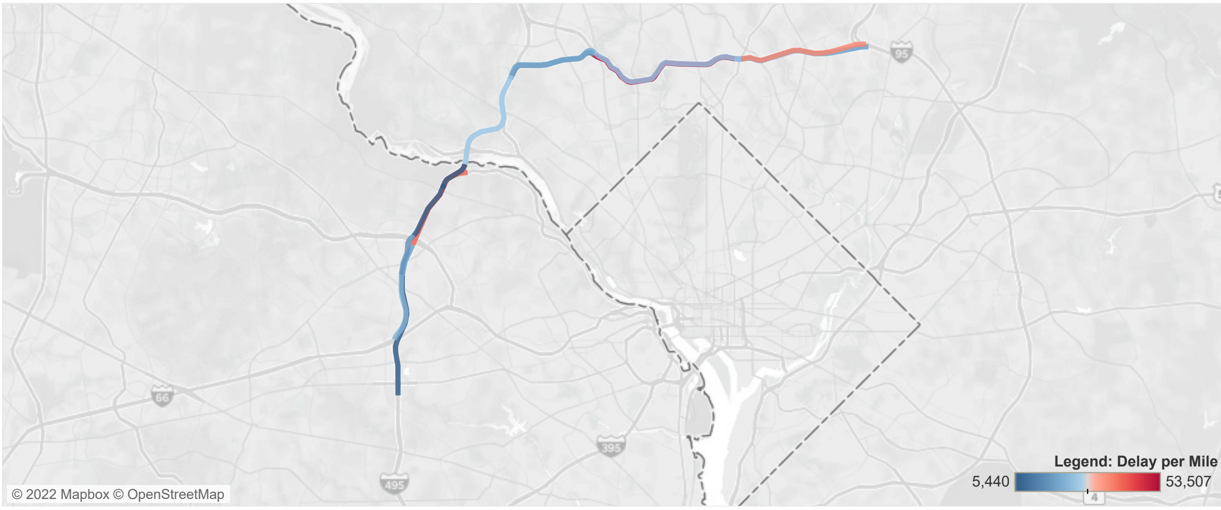
Road	Segment ID	Length (Miles)	AADT (Trucks)	Delay (Hours)	Delay/ Mile	PTI (95th %)	BI	TTI	TRI	Cong. Cost	FAF Value
I-285	GAP0000982	1.6	11,855	87,447	53,821	3.43	128.1%	1.51	1.58	$4.3M	$62.1B
I-285	GAP0000981	3.0	11,855	152,206	50,329	3.49	134.8%	1.48	1.65	$7.5M	$62.1B
I-285	GAP00001010	0.9	10,297	40,787	45,429	4.03	174.7%	1.47	2.83	$2.0M	$51.6B
I-285	GAN0000170	6.3	9,338	268,811	42,905	3.94	154.9%	1.45	2.29	$13.3M	$45.8B
I-285	GAN0000172	8.7	9,437	360,087	41,378	3.92	162.0%	1.46	2.36	$17.8M	$46.2B
I-285	GAP00001007	2.2	8,876	82,837	36,941	4.41	205.0%	1.44	3.33	$4.1M	$42.8B
I-285	GAP0000980	4.1	11,288	151,897	36,880	3.15	131.6%	1.36	2.39	$7.5M	$58.5B
I-285	GAP00001008	4.4	9,541	154,380	35,205	3.36	134.9%	1.43	1.97	$7.6M	$47.0B
I-285	GAP00001012	5.7	10,297	190,378	33,590	3.11	127.2%	1.33	2.12	$9.4M	$51.6B
I-285	GAN0000138	4.6	11,346	147,293	32,076	2.66	102.0%	1.31	1.83	$7.3M	$58.9B
I-285	GAP00001014	4.0	9,729	105,033	25,993	2.63	103.0%	1.29	1.98	$5.2M	$47.3B
I-285	GAN0000166	5.7	10,297	142,339	24,915	2.89	127.4%	1.26	2.46	$7.1M	$51.6B
I-285	GAP00001015	4.4	9,182	98,602	22,603	2.20	70.3%	1.29	1.41	$4.9M	$45.2B
I-285	GAN0000137	2.5	11,855	46,275	18,702	1.84	56.0%	1.17	1.63	$2.3M	$62.1B
I-285	GAN0000136	2.1	11,855	37,077	17,877	1.60	37.5%	1.16	1.38	$1.8M	$62.1B

Cumulative mileage of segments may not add up to the corresponding segment in the Nationally Significant Freight Highway Bottlenecks and Congested Corridors list.

Source: FHWA

Figure 98. Map. Top 40 Bottleneck Maps, Bottleneck 30, I-285 (Atlanta, GA).

31. I-495 (Washington, D.C.)



I-495 *(Washington, DC)*

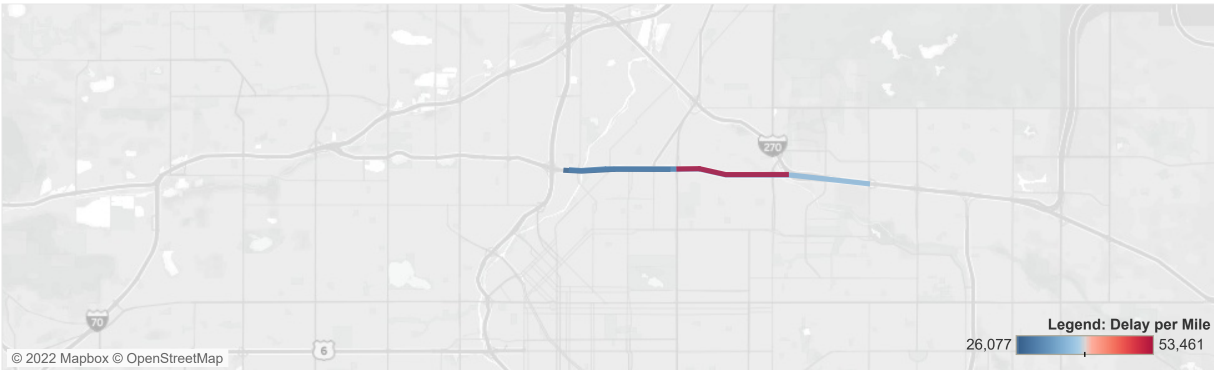
Road	Segment ID	Length (Miles)	AADT (Trucks)	Delay (Hours)	Delay/ Mile	PTI (95th %)	BI	TTI	TRI	Cong. Cost	FAF Value
I-495	MDP0000602	5.2	9,544	278,191	53,507	3.81	141.3%	1.55	1.78	$13.8M	$29.0B
I-495	VAP0000940	3.6	4,259	145,999	40,516	6.76	219.1%	2.13	1.91	$7.2M	$16.6B
I-495	MDN0000280	4.1	6,010	148,833	36,304	4.86	197.1%	1.63	2.37	$7.4M	$20.5B
I-495	MDP0000609	3.5	6,955	95,747	27,322	3.11	129.3%	1.36	2.24	$4.7M	$28.2B
I-495	MDN0000284	3.6	6,954	97,459	26,903	2.98	107.9%	1.42	1.49	$4.8M	$28.1B
I-495	MDN0000282	5.4	9,479	136,307	25,239	2.11	58.4%	1.30	1.32	$6.8M	$28.9B
I-495	VAN0000254	2.2	4,200	48,764	22,222	4.13	178.2%	1.47	2.94	$2.4M	$16.1B
I-495	MDN0000283	3.0	5,180	60,454	20,209	3.41	129.9%	1.43	1.99	$3.0M	$21.8B
I-495	VAP0000936	1.0	3,783	19,488	18,823	3.43	124.2%	1.46	2.55	$1.0M	$14.5B
I-495	MDP0000603	4.4	6,044	81,072	18,594	2.76	104.0%	1.35	1.70	$4.0M	$20.6B
I-495	VAN0000248	1.4	3,721	22,710	16,675	2.54	89.9%	1.30	2.03	$1.1M	$14.2B
I-495	MDP0000610	3.0	5,069	42,616	14,179	2.71	87.4%	1.32	1.90	$2.1M	$21.1B
I-495	VAN0000247	1.9	4,075	11,392	5,940	1.80	52.7%	1.18	1.44	$0.6M	$15.7B
I-495	VAP0000929	3.9	4,049	21,818	5,548	1.51	29.6%	1.16	1.29	$1.1M	$15.5B
I-495	VAN0000237	1.1	4,849	5,987	5,440	1.81	49.6%	1.21	1.34	$0.3M	$18.6B

Cumulative mileage of segments may not add up to the corresponding segment in the Nationally Significant Freight Highway Bottlenecks and Congested Corridors list.

Source: FHWA

Figure 99. Map. Top 40 Bottleneck Maps, Bottleneck 31, I-495 (Washington, D.C.).

32. I-70 (Denver, CO)



I-70 *(Denver, CO)*

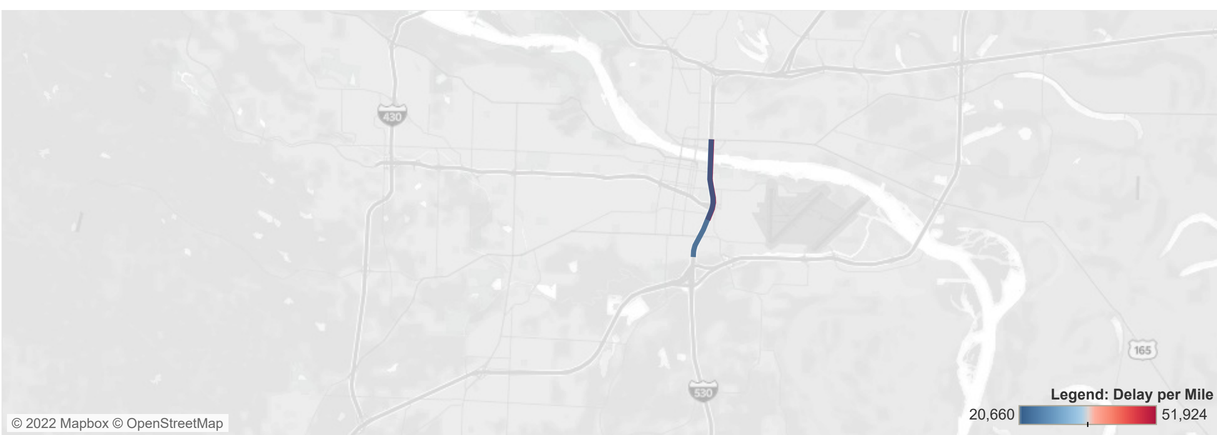
Road	Segment ID	Length (Miles)	AADT (Trucks)	Delay (Hours)	Delay/ Mile	PTI (95th %)	BI	TTI	TRI	Cong. Cost	FAF Value
I-70	CON0000157	2.3	5,973	125,104	53,461	4.61	147.6%	1.85	1.50	$6.2M	$16.1B
I-70	COP0000506	4.2	6,788	149,304	35,957	3.53	122.3%	1.58	1.65	$7.4M	$18.5B
I-70	CON0000158	2.2	7,795	68,153	30,549	2.67	63.5%	1.56	1.22	$3.4M	$18.9B
I-70	COP0000504	2.2	7,863	57,844	26,077	2.93	97.8%	1.46	1.51	$2.9M	$19.0B

Cumulative mileage of segments may not add up to the corresponding segment in the Nationally Significant Freight Highway Bottlenecks and Congested Corridors list.

Source: FHWA

Figure 100. Map. Top 40 Bottleneck Maps, Bottleneck 32, I-70 (Denver, CO).

33. I-30 (Little Rock, AR)



I-30 *(Little Rock, AR)*

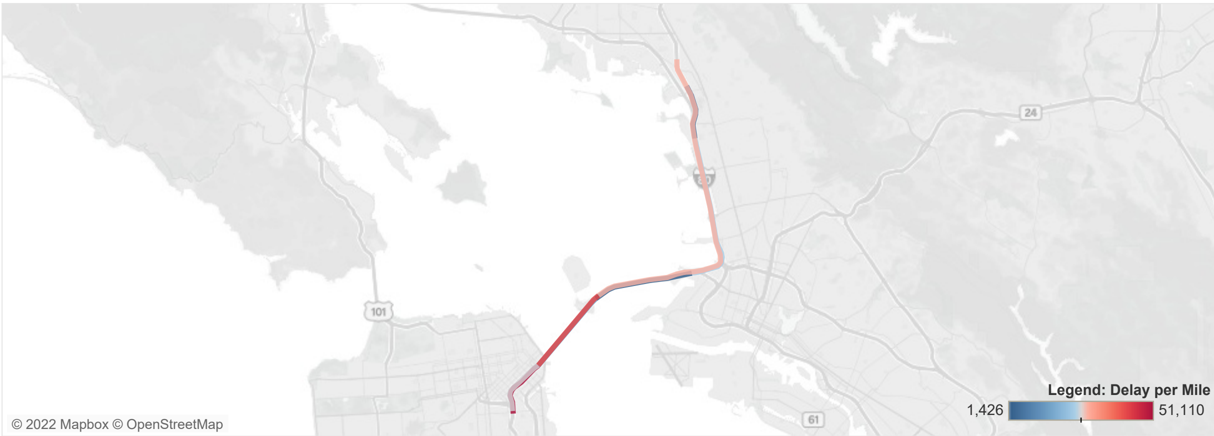
Road	Segment ID	Length (Miles)	AADT (Trucks)	Delay (Hours)	Delay/ Mile	PTI (95th %)	BI	TTI	TRI	Cong. Cost	FAF Value
I-30	ARP0000518	1.9	19,820	97,397	51,924	2.32	84.2%	1.24	1.86	$4.8M	$69.7B
I-30	ARN0000203	2.8	17,059	57,742	20,660	1.39	24.3%	1.12	1.21	$2.9M	$63.2B

Cumulative mileage of segments may not add up to the corresponding segment in the Nationally Significant Freight Highway Bottlenecks and Congested Corridors list.

Source: FHWA

Figure 101. Map. Top 40 Bottleneck Maps, Bottleneck 33, I-30 (Little Rock, AR).

34. I-80 (San Francisco, CA)



I-80 *(San Francisco, CA)*

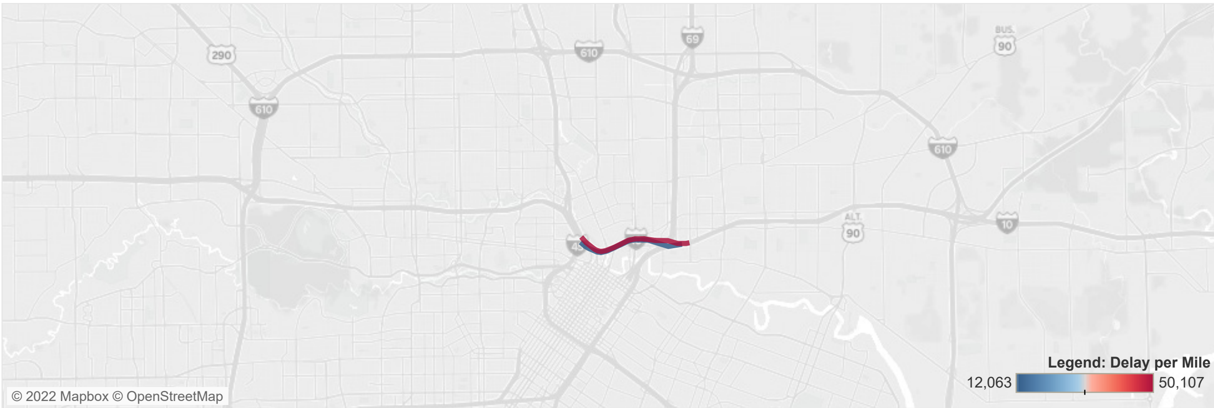
Road	Segment ID	Length (Miles)	AADT (Trucks)	Delay (Hours)	Delay/ Mile	PTI (95th %)	BI	TTI	TRI	Cong. Cost	FAF Value
I-80	CAP00002096	1.8	2,737	90,562	51,110	9.15	198.6%	2.97	1.37	$4.5M	$9.6B
I-80	CAN0000723	2.7	6,060	112,239	41,665	3.33	127.0%	1.46	1.62	$5.6M	$39.1B
I-80	CAN0000722	9.9	4,615	277,595	28,095	5.22	148.9%	1.95	1.59	$13.8M	$29.0B
I-80	CAN0000724	1.7	2,701	44,076	25,774	4.34	132.6%	1.85	1.35	$2.2M	$9.4B
I-80	CAP00002100	4.7	5,184	111,804	24,007	4.05	149.0%	1.56	1.74	$5.5M	$27.8B
I-80	CAP00002097	2.6	6,216	38,739	14,999	1.83	51.1%	1.21	1.38	$1.9M	$39.4B
I-80	CAP00002104	1.6	2,252	6,696	4,177	2.08	68.8%	1.21	1.61	$0.3M	$9.4B
I-80	CAP00002098	2.9	9,508	4,185	1,426	1.37	21.0%	1.13	1.10	$0.2M	$48.3B

Cumulative mileage of segments may not add up to the corresponding segment in the Nationally Significant Freight Highway Bottlenecks and Congested Corridors list.

Source: FHWA

Figure 102. Map. Top 40 Bottleneck Maps, Bottleneck 34, I-80 (San Francisco, CA).

35. I-10 (Houston, TX)



I-10 *(Houston, TX)*

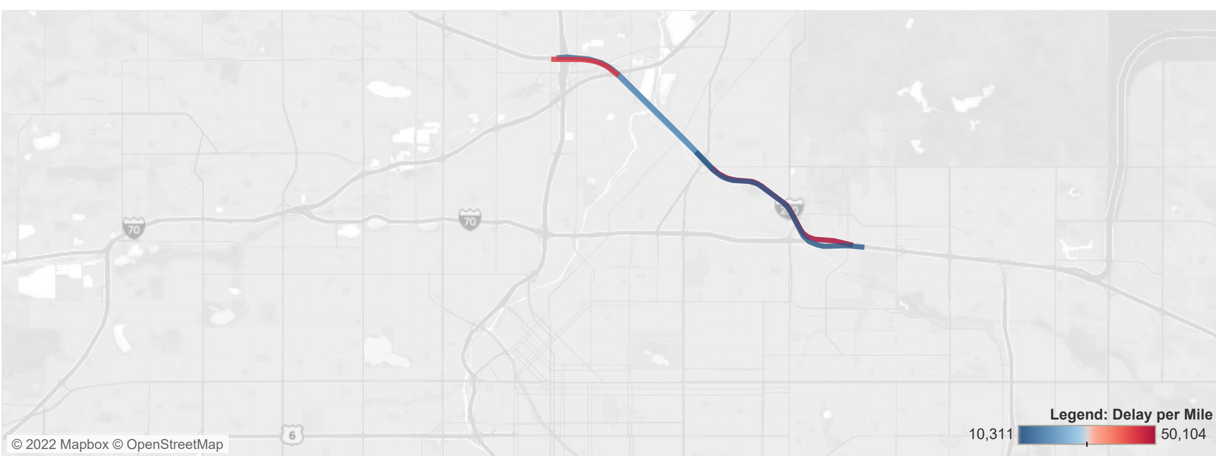
Road	Segment ID	Length (Miles)	AADT (Trucks)	Delay (Hours)	Delay/ Mile	PTI (95th %)	BI	TTI	TRI	Cong. Cost	FAF Value
I-10	TXN0000312	1.9	9,085	94,429	50,107	4.92	188.9%	1.67	2.00	$4.7M	$38.2B
I-10	TXP00001770	1.8	8,968	21,083	12,063	1.66	40.5%	1.17	1.32	$1.0M	$37.5B

Cumulative mileage of segments may not add up to the corresponding segment in the Nationally Significant Freight Highway Bottlenecks and Congested Corridors list.

Source: FHWA

Figure 103. Map. Top 40 Bottleneck Maps, Bottleneck 35, I-10 (Houston, TX).

36. I-270 (Denver, CO)



I-270 *(Denver, CO)*

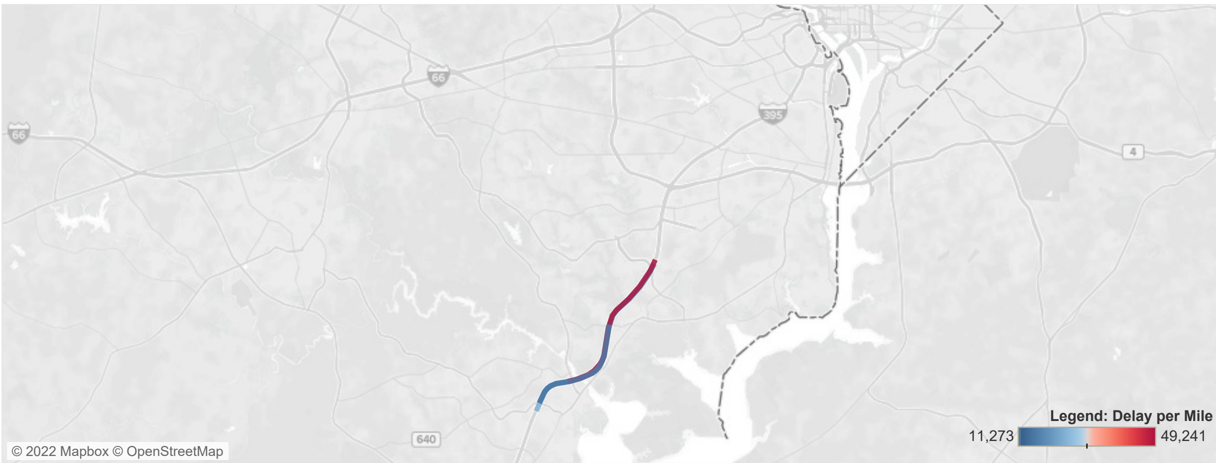
Road	Segment ID	Length (Miles)	AADT (Trucks)	Delay (Hours)	Delay/ Mile	PTI (95th %)	BI	TTI	TRI	Cong. Cost	FAF Value
I-270	COP0000553	3.2	5,364	160,467	50,104	5.33	174.8%	1.92	1.82	$7.9M	$15.5B
I-270	CON0000211	1.3	4,602	59,411	44,453	6.36	207.3%	2.00	2.03	$2.9M	$13.2B
I-270	CON0000212	2.0	5,733	40,967	20,205	2.54	72.3%	1.43	1.27	$2.0M	$16.4B
I-270	COP0000554	3.7	5,242	50,346	13,614	1.86	35.9%	1.31	1.18	$2.5M	$15.2B
I-270	CON0000214	3.9	5,409	40,135	10,311	2.03	58.3%	1.27	1.49	$2.0M	$15.6B

Cumulative mileage of segments may not add up to the corresponding segment in the Nationally Significant Freight Highway Bottlenecks and Congested Corridors list.

Source: FHWA

Figure 104. Map. Top 40 Bottleneck Maps, Bottleneck 36, I-270 (Denver, CO).

37. I-95 (Washington, D.C.)



I-95 *(Washington, DC)*

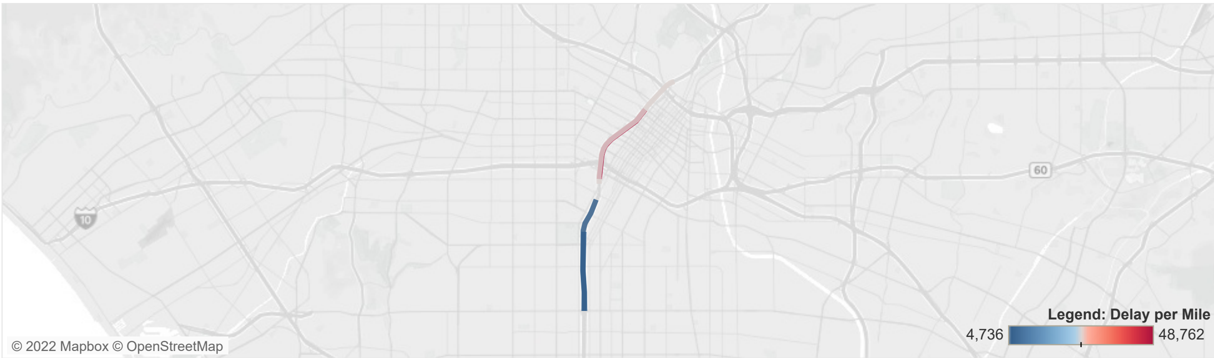
Road	Segment ID	Length (Miles)	AADT (Trucks)	Delay (Hours)	Delay/ Mile	PTI (95th %)	BI	TTI	TRI	Cong. Cost	FAF Value
I-95	VAN0000502	6.9	8,092	337,261	49,241	4.40	152.6%	1.71	1.69	$16.7M	$39.4B
I-95	VAP00001155	2.6	7,165	60,903	23,567	2.49	74.2%	1.39	1.20	$3.0M	$35.0B
I-95	VAP00001156	6.2	8,062	124,325	20,191	2.54	97.8%	1.28	1.75	$6.2M	$39.2B
I-95	VAN0000403	5.1	7,448	86,751	17,057	5.20	134.1%	2.07	2.19	$4.3M	$36.3B
I-95	VAP00001076	5.1	7,448	57,335	11,273	4.45	165.9%	1.65	1.28	$2.8M	$36.3B

Cumulative mileage of segments may not add up to the corresponding segment in the Nationally Significant Freight Highway Bottlenecks and Congested Corridors list.

Source: FHWA

Figure 105. Map. Top 40 Bottleneck Maps, Bottleneck 37, I-95 (Washington, D.C.).

38. CA-110 and I-110 (Los Angeles, CA)



CA-110 & I-110 *(Los Angeles, CA)*

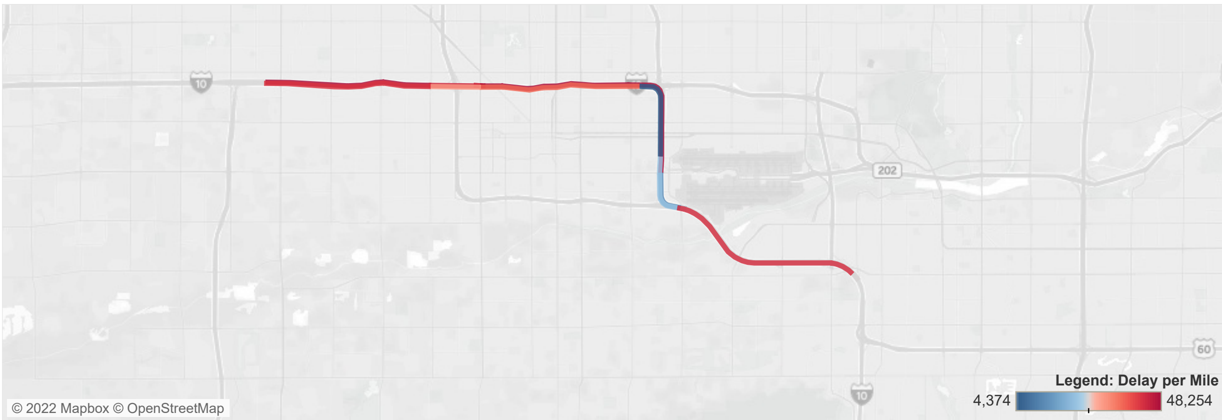
Road	Segment ID	Length (Miles)	AADT (Trucks)	Delay (Hours)	Delay/ Mile	PTI (95th %)	BI	TTI	TRI	Cong. Cost	FAF Value
CA-110	CAP00001730	2.0	3,890	98,619	48,762	7.65	173.2%	2.77	1.96	$4.9M	$11.9B
CA-110	CAN0000350	3.1	3,738	82,129	26,685	4.89	144.6%	2.04	1.93	$4.1M	$11.7B
I-110	CAP00002614	1.8	6,345	14,638	8,084	6.36	121.1%	2.88	2.31	$0.7M	$21.2B
I-110	CAN00001155	2.0	6,261	9,518	4,736	3.56	114.3%	1.67	1.43	$0.5M	$20.9B

Cumulative mileage of segments may not add up to the corresponding segment in the Nationally Significant Freight Highway Bottlenecks and Congested Corridors list.

Source: FHWA

Figure 106. Map. Top 40 Bottleneck Maps, Bottleneck 38, CA-110 and I-110 (Los Angeles, CA).

39. I-10 (Phoenix, AZ)



I-10 *(Phoenix, AZ)*

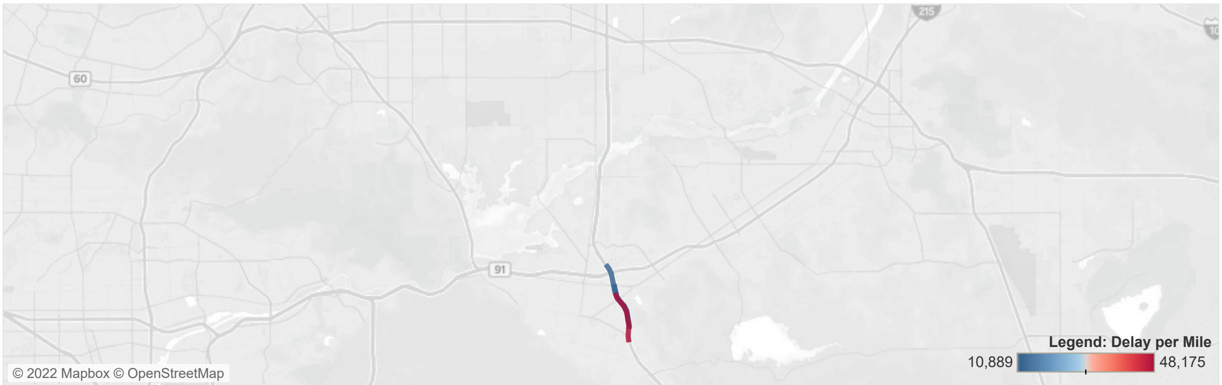
Road	Segment ID	Length (Miles)	AADT (Trucks)	Delay (Hours)	Delay/ Mile	PTI (95th %)	BI	TTI	TRI	Cong. Cost	FAF Value
I-10	AZP0000246	3.3	11,718	160,526	48,254	3.41	133.9%	1.45	1.92	$7.9M	$45.6B
I-10	AZP0000243	6.1	10,650	290,415	47,936	4.36	180.5%	1.49	2.53	$14.4M	$44.2B
I-10	AZP0000245	1.3	8,777	57,272	43,630	5.18	225.6%	1.59	3.04	$2.8M	$33.3B
I-10	AZN000032	4.0	11,286	171,914	42,909	3.67	170.3%	1.35	3.08	$8.5M	$45.2B
I-10	AZN000026	3.3	11,673	140,269	41,962	3.26	142.2%	1.34	2.50	$6.9M	$45.4B
I-10	AZN000029	3.2	11,339	116,398	36,289	2.41	83.6%	1.29	1.43	$5.8M	$47.2B
I-10	AZN000028	1.0	8,816	30,997	30,556	3.01	125.1%	1.33	1.87	$1.5M	$33.7B
I-10	AZP0000241	4.1	11,376	107,375	25,999	2.59	107.2%	1.24	2.08	$5.3M	$45.7B
I-10	AZN000031	1.3	8,840	28,325	22,421	2.29	78.9%	1.25	1.97	$1.4M	$34.5B
I-10	AZP0000242	1.1	8,998	14,994	13,715	1.69	42.9%	1.16	1.42	$0.7M	$35.4B
I-10	AZN000030	1.7	8,478	7,565	4,374	1.25	14.1%	1.10	1.11	$0.4M	$33.8B

Cumulative mileage of segments may not add up to the corresponding segment in the Nationally Significant Freight Highway Bottlenecks and Congested Corridors list.

Source: FHWA

Figure 107. Map. Top 40 Bottleneck Maps, Bottleneck 39, I-10 (Phoenix, AZ).

40. I-15 (Riverside, CA)



I-15 *(Riverside, CA)*

Road	Segment ID	Length (Miles)	AADT (Trucks)	Delay (Hours)	Delay/ Mile	PTI (95th %)	BI	TTI	TRI	Cong. Cost	FAF Value
I-15	CAN0000891	2.2	5,267	105,431	48,175	6.08	228.0%	1.86	2.17	$5.2M	$21.5B
I-15	CAN0000890	1.2	5,203	15,471	12,457	2.20	70.1%	1.28	1.71	$0.8M	$22.9B
I-15	CAP00002362	2.0	5,263	21,771	10,889	2.21	71.3%	1.28	1.45	$1.1M	$21.8B

Cumulative mileage of segments may not add up to the corresponding segment in the Nationally Significant Freight Highway Bottlenecks and Congested Corridors list.

Source: FHWA

Figure 108. Map. Top 40 Bottleneck Maps, Bottleneck 40, I-15 (Riverside, CA).

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Office of Operations Web Site

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