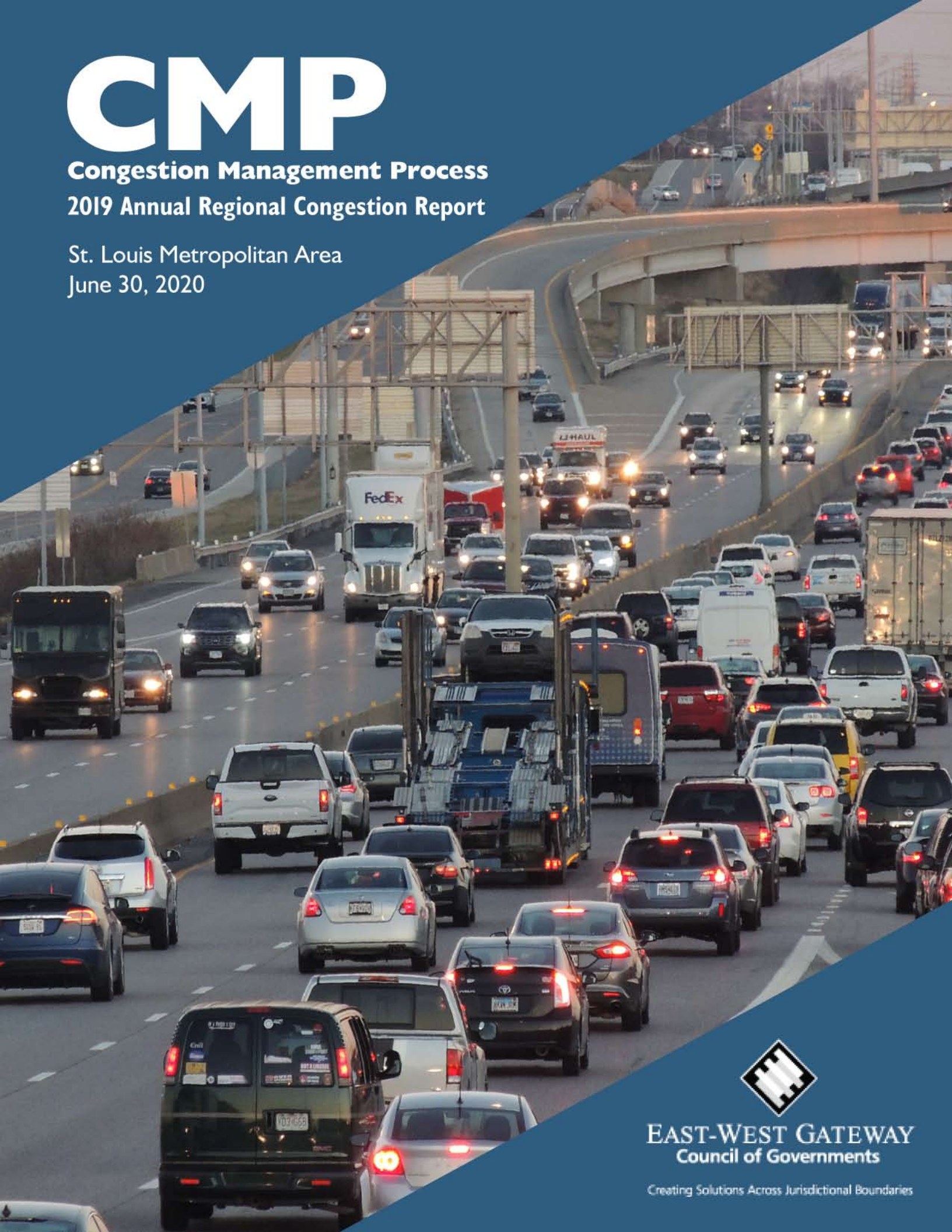
CMP

Congestion Management Process

2019 Annual Regional Congestion Report

St. Louis Metropolitan Area
June 30, 2020



EAST-WEST GATEWAY
Council of Governments

Creating Solutions Across Jurisdictional Boundaries

2019

Annual Regional Congestion Report

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Introduction

The regional Congestion Management Process (CMP) is a systematic and regionally accepted approach for managing congestion that provides accurate and up-to-date information on transportation system performance. As an MPO for the St. Louis region with a population over 200,000, East-West Gateway is required to maintain a CMP as part of its ongoing transportation planning process.

The CMP is intended to be a systematic way of monitoring, measuring and diagnosing the causes of current and future congestion on a region's multi-modal transportation systems; evaluating and recommending alternative strategies to manage current and future regional congestion; and monitoring and evaluating the performance of strategies implemented to manage congestion.

The purpose of the MPO transportation planning process is to comprehensively consider possible strategies, evaluate projects from diverse viewpoints, and meaningfully involve key stakeholders to support strategic regional choices in congestion management, such as improving roadways, expanding transit capacity, encouraging bicycling, and ensuring safe walking environments. These congestion management strategies provide a connecting tissue between the Long-Range Transportation Plan (LRTP), the Transportation Improvement Plan (TIP), and the Regional Intelligent Transportation System (ITS) Architecture. The CMP is strongly connected to the LRTP by providing a set of congestion management objectives, performance measures, and strategies that make the plan comprehensive.

The CMP provides system performance information for evaluating projects nominated for inclusion in the TIP and the CMP objectives are integrated with the application scoring and prioritization process. Transportation systems management and operation for congestion management are implemented through Intelligent Transportation Systems (ITS) such as traffic signal improvements; traveler information projects; electronic fare systems, Automatic Vehicle Identification (AVI), and Automatic Vehicle Location (AVL) technologies. Also, proposed ITS projects are required to be consistent with the regional CMP strategies.

The HERE data set was used to analyze the identified performance measures. HERE is a private vendor that provides mapping data and related services to individuals and companies. MODOT has contracted with HERE for access to their data and the use of the Regional Integrated Transportation Information System (RITIS). RITIS is an automated data sharing, dissemination, and archiving system that includes many performance measures, dashboard, and visual analytics tools housed at the University of Maryland.

MODOT's contract provides the same access to Missouri MPOs, which gives EWG the ability to analyze the HERE data set for the entire eight-county region. Three performance measures were analyzed in this study. These are Speed Index (SI), Planning Time Index (PTI), and Travel Time Index (TTI). These performance measures are defined below:

- Speed Index is the ratio of average speeds to 85th-percentile speeds of a segment. Speed Index was used to identify possible congested freeways. Freeway congestion intensity and duration figures are in Appendix 1.

- Travel Time Index is Travel Time represented as a percentage of the ideal travel time. For example, a TTI value of 1.2 means travel time during peak period is 20% longer than the free-flow travel time between the same origin and destination.
- Planning Time Index is the total travel time that should be planned when extra time (buffer time) is included in the trip. For example, a Planning Time Index of 1.60 means that, for a 15-minute trip, the total time that should be planned for the trip to ensure on-time arrival is 24 minutes (15 minutes x 1.60 =24 minutes). In this scenario, the buffer time alone is 9 minutes (15 minutes x 0.6 percent). The higher the Planning Time Index, the more unreliable travel time is.

The 2019 Regional Congestion Report is comprised of four parts. These are: definition of the congested network, regional congestion analyses (for freeways and arterials), evaluation of mobility-enhancing strategies, and a conclusion that notes a broader future outlook for regional congestion.

Scope of CMP Network Congestion Analysis

The CMP network consists of Interstates, other Freeways and Expressways, and Principal Arterials included in the National Highway System (NHS). This analysis is limited to the core urban and suburban areas of the St. Louis region where congestion is prevalent on a regular, recurring basis. For the purposes of this analysis, the morning peak-period is from 6 am to 9 am and the evening peak period is from 3 pm to 6 pm. All performance measures are calculated and compared based on congestion data from these time periods.

The process of identifying the congested network for this analysis involved a detailed visual inspection of Speed Index congestion on all NHS roadways in the region. This index is the ratio of average speeds to 85th-percentile speed, which represents free-flow speeds. Four thresholds are applied to the Speed Index to reveal the various categories of congestion from the system for both arterials and freeways.

Congested location selection process is as follows:

- locations that met or exceeded thresholds for congestion are identified,
- short congested sections of the arterials where length of congestion was 0.3 miles or less were eliminated from the selection.

1 Regional Freeway Congestion Analyses

This section covers the spatial analysis of the congested freeways, overview of the selected congested locations, congestion progression, and congestion performance analyses.

Congested CMP Network

The scope of analysis of the freeway system on the Missouri side of the region consisted of all Interstate highways and other freeways in St. Louis City, St. Louis County and St. Charles County. On the Illinois side the freeways analyzed were I-255, from I-270 south to the Missouri State line, along with all interstates east of I-255 to the Missouri state line in St. Clair and Madison County. The limits that were chosen include the locations where congestion exists on a regular recurring basis on the Interstate highways and other freeways in our region.

A total of 569.2 directional miles of freeway were selected for the regional analysis, which includes the mileage of both directions of travel for each segment of road (see figure 1). The analysis determined that 91.9 miles, 16.1% of total miles, were considered congested during morning peak, and 174.9 miles, 30.7% of total miles, during evening peak hours. A breakdown of the how the total congested miles are distributed across the region is shown in Table 1. Additionally, Table 2 represents the share of highway network that is congested within each county and Illinois, during AM and PM peaks.

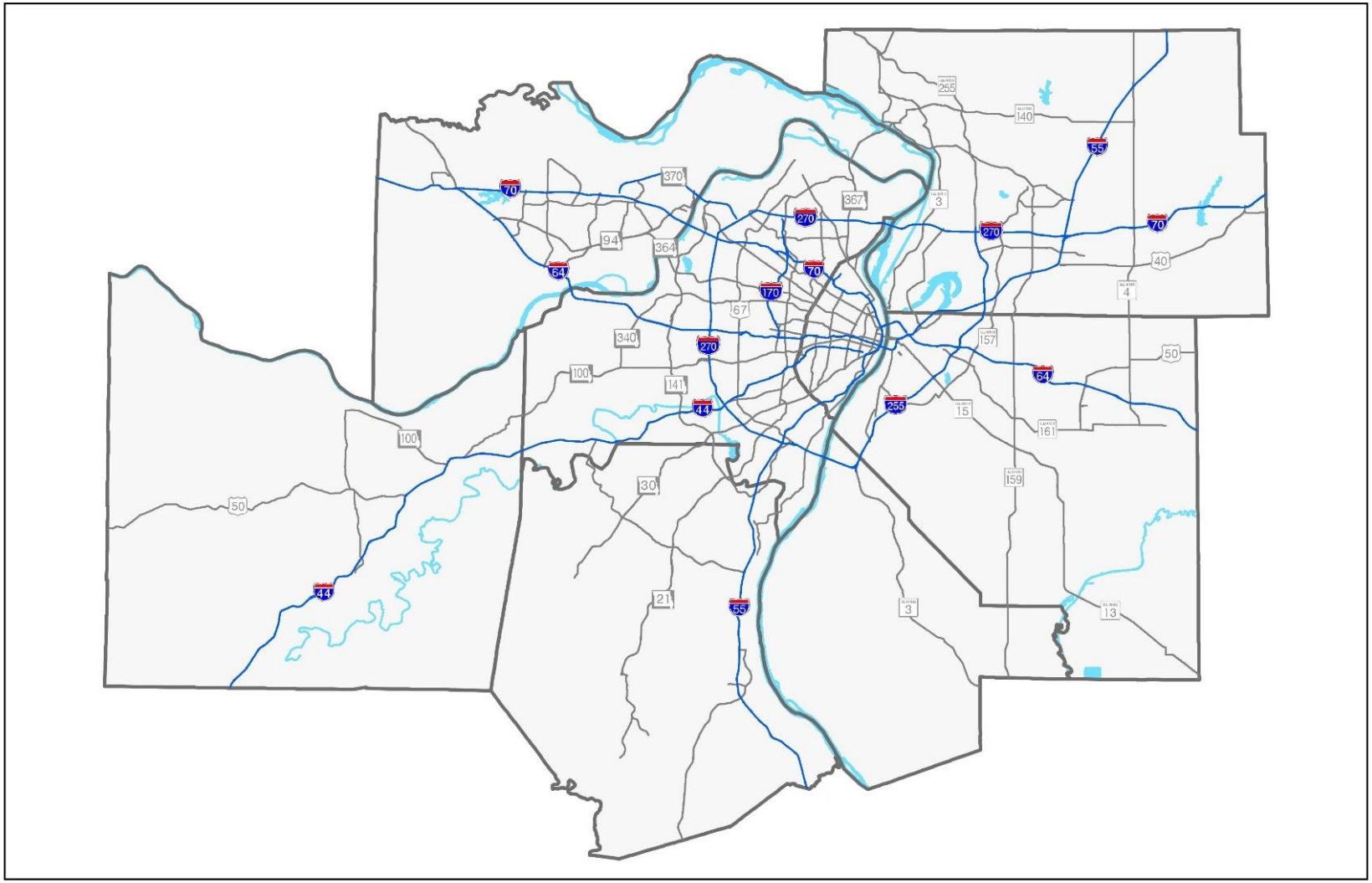
Table 1: Comparison of Regional and Congested Network Miles

County	Congested Network (AM & PM)		AM Congestion		PM Congestion	
	Miles	Percent	Miles	Percent	Miles	Percent
St. Louis	148.3	55.6%	42.0	45.7%	106.4	60.8%
St. Louis City	43.5	16.3%	11.23	12.2%	32.25	18.4%
St. Charles	47.5	17.8%	16.4	17.8%	31.2	17.8%
IL	27.5	10.3%	22.4	24.3%	5.1	2.9%
Total	**266.8**	**100.0%**	**91.9**	**100.0%**	**174.9**	**100.0%**

Table 2: Congested Share of Total Miles

County	Congested Share	
	AM	PM
St. Louis	16.3%	41.4%
St. Louis City	15.2%	43.5%
St. Charles	13.0%	24.7%
IL	20.0%	4.5%

Figure 1: Regional Freeway Network



Selected Congested Locations on Freeway

Our freeway analyses resulted in the selection of 267 miles of congested locations: 45 miles in the city of St. Louis, 153 miles in St. Louis county, 42 miles in St. Charles county, and 27 miles in Illinois. Table 3 lists the identified congested locations along with their performance measure numbers during the AM and PM peaks. The maps in Figures 2 and 3 show the location of selected congested freeways, ranked by level of congestion based on speed index in the AM and PM peaks.

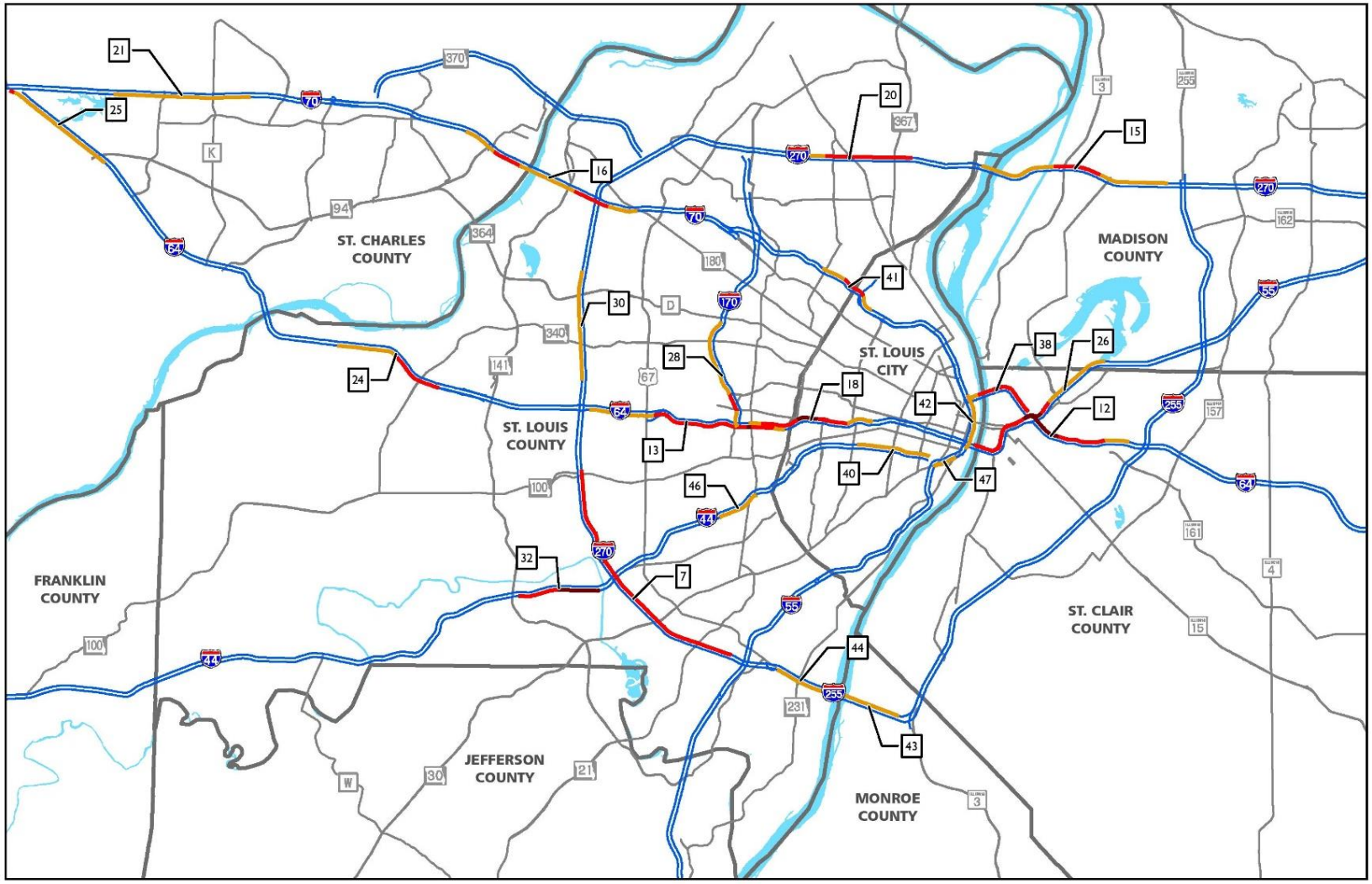
Table 3: Congested Freeway Locations

Map No	Route	Limits	State	County	Direction	Peak	Queue Length	PTI	TTI	Severity	Delay Impact
1	I-270	MO-D/Page Ave to I-55	MO	St. Louis	SB	PM	15.77	3.19	1.67	2.43	26.34
2	I-70	Mid Rivers Mall Dr. to MO-W	MO	St. Charles	WB	PM	18.31	2.08	1.26	1.67	23.07
3	I-64	Market St Exit 38 to I-270	MO	St. Louis City/Co	WB	PM	12.37	3.1	1.7	2.4	21.03
4	I-70	Hanley Rd to Cave Springs	MO	St. Louis	WB	PM	14.7	2.56	1.37	1.97	20.14
5	I-270	MO-370 to Lilac Ave	MO	St. Louis	EB	PM	11.06	2.93	1.56	2.25	17.26
6	I-64	MO-94 to I-70	MO	St. Charles	WB	PM	10.1	3.25	1.59	2.42	16.06
7	I-270	I-55 to MO-100	MO	St. Louis	WB/NB	AM	9.54	3.41	1.64	2.53	15.65
8	I-64	Mason Rd to Bellevue Ave	MO	St. Louis	EB	PM	9.71	2.81	1.47	2.14	14.27
9	I-70	Earth City XPWY to Jennings Sta Rd	MO	St. Louis	EB	PM	11.14	2.29	1.25	1.77	13.93
10	I-44	Big Bend Blvd to Antire Rd	MO	St. Louis	WB	PM	9.91	2.03	1.31	1.67	12.98
11	I-44	I-55 to Laclede Station Rd	MO	St. Louis City	WB	PM	6.85	4.17	1.72	2.95	11.78
12	I-64/I-55/I-64	I-255 to PSB	IL	IL	WB	AM	6.72	3.38	1.58	2.48	10.62
13	I-64	I-270 to Bellevue Ave	MO	St. Louis	EB	AM	7.31	2.7	1.38	2.04	10.09
14	I-70-44-55	Grand Ave to Broadway	MO	St. Louis City	EB-SB	PM	7.29	2.4	1.29	1.85	9.4
15	I-270	I-255 to Riverview Dr	IL	IL	WB	AM	7.07	1.46	1.25	1.36	8.84
16	I-70	Zumbehl Rd to MO-180	MO	St. Charles/St. Louis	EB	AM	6.94	2.4	1.25	1.83	8.68
17	I-170	Page Ave to I-64	MO	St. Louis	SB	PM	4.2	3.97	1.95	2.96	8.18
18	I-64	Chouteau/Boyle to Hanley Rd	MO	St. Louis City/Co	WB	AM	4.68	3.18	1.6	2.39	7.49
19	I-64	Chouteau/Boyle to Poplar St Bridge	MO	St. Louis City	EB	PM	3.59	4.86	1.73	3.3	6.21
20	I-270	Bellefontaine to Washington-Elizabeth	MO	St. Louis	WB	AM	4.6	2.62	1.34	1.98	6.16
21	I-70	Lake St. Louis to TR Hughes Blvd	MO	St. Charles	EB	AM	5.01	2.16	1.21	1.69	6.06
22	I-64	Timberlake Manor Pkwy to Boones Crossing	MO	St. Louis	WB	PM	4.34	2.34	1.33	1.84	5.77
23	I-170	MO 180 to Hanley Rd	MO	St. Louis	NB	PM	3.84	2.72	1.47	2.1	5.65
24	I-64	Long Rd to Chesterfield Pkwy East	MO	St. Louis	EB	AM	4.25	2.75	1.27	2.01	5.4
25	I-64	I-70 to MO-N	MO	St. Charles	EB	AM	4.41	1.89	1.21	1.55	5.34
26	I-55/I-70	IL-203 to I-64	IL	IL	WB	AM	3.71	2.97	1.37	2.17	5.08
27	I-55	Virginia to Reavis Barracks	MO	St. Louis City/Co	SB	PM	4.25	1.98	1.19	1.59	5.06
28	I-170	I-64 to Page Ave	MO	St. Louis	SB	AM	4.2	2.03	1.2	1.62	5.04
29	MO-370	Taussig to MO-94	MO	St. Louis/St. Charles	WB	PM	3.64	3.73	1.33	2.53	4.85

Table 3: Congested Freeway Locations (Continued)

Map No	Route	Limits	State	County	Direction	Peak	Queue Length	PTI	TTI	Severity	Delay Impact
30	I-270	Dorsett to MO-21	MO	St. Louis	SB	AM	4.04	1.85	1.16	1.51	4.69
31	I-70	Shreve Ave to MO-U/Lucas and Hunt	MO	St. Louis City	WB	PM	3.36	2.37	1.38	1.88	4.64
32	I-44	MO 141 to Highway Dr.	MO	St. Louis	EB	AM	3	3.14	1.45	2.3	4.34
33	I-64	Chesterfield Pky E to MO-141	MO	St. Louis	EB	PM	3.44	1.97	1.2	1.59	4.13
34	I-270	MO-D/Page Ave to I-70	MO	St. Louis	NB	PM	3.52	1.64	1.14	1.39	4.02
35	I-44	Bowles Ave to I-270	MO	St. Louis	EB	PM	2.84	2.59	1.36	1.98	3.86
36	I-70	Stan Musial Br to I-64	IL	IL	EB/SB	PM	2.61	2.78	1.43	2.11	3.74
37	I-44/I-70	PSB to St. Louis Ave.	MO	St. Louis City	WB	PM	2.85	2.33	1.27	1.8	3.62
38	I-70	I-64 to Stan Musial Br	IL	IL	NB/WB	AM	2.57	2.73	1.3	2.02	3.34
39	I-55/I-64	PSB to MLK Exit 2	IL	IL	EB	PM	2.49	2.32	1.32	1.82	3.29
40	I-44	I-55 to Kingshighway Blvd	MO	St. Louis City	WB	AM	2.66	2.25	1.2	1.73	3.2
41	I-70	Bircher to MO-U/Lucas and Hunt	MO	St. Louis City	WB	AM	2.5	2.23	1.2	1.72	3
42	I-44	PSB to Tenth St.	MO	St. Louis City	WB	AM	2.02	2.38	1.22	1.8	2.46
43	I-255	IL-3 to MO State Line	IL	IL	SB	AM	2.28	1.85	1.04	1.45	2.37
44	I-255	Lindbergh Blvd to Koch Rd	MO	St. Louis	EB	AM	1.91	1.05	1.12	1.09	2.14
45	I-170	Brentwood Blvd to Delmar Blvd	MO	St. Louis	NB	PM	1.54	1.56	1.18	1.37	1.82
46	I-44	Elm Ave to Laclede Station Rd	MO	St. Louis	EB	AM	1.59	2.22	1.13	1.68	1.8
47	I-55	Gravois to Park	MO	St. Louis City	NB	AM	0.9	2.16	1.14	1.65	1.02
48	I-44	Compton to Jefferson	MO	St. Louis City	EB	PM	0.73	1.87	1.18	1.53	0.86
49	I-55	I-44/55 to Park	MO	St. Louis City	NB	PM	0.44	2.5	1.22	1.86	0.53
Total							**266.8**				

Figure 2: Congested Locations (AM Peak)



Congested Locations
Freeways - AM Peak
East-West Gateway Region
May 2020

Freeway Congestion
- Severe
- Heavy
- Moderate
- Uncongested

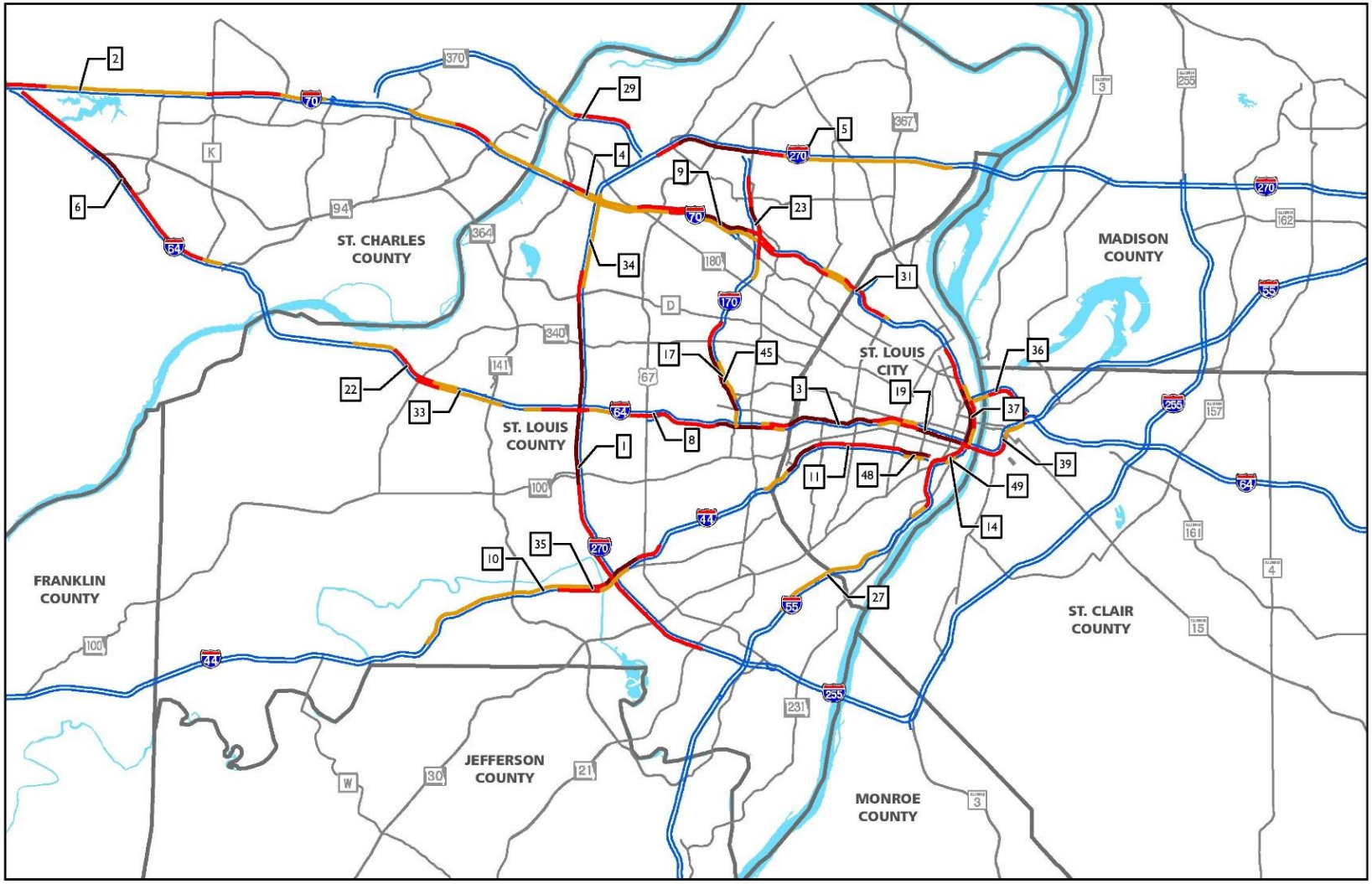
Other Map Data
- Major Arterial
- County Boundary
- River / Lake

0 5 Miles

Sources: Federal Highway Administration, Here Data; East-West Gateway Council of Governments

EAST-WEST GATEWAY Council of Governments

Figure 3: Congested Locations (PM Peak)



Congested Locations
Freeways - PM Peak
East-West Gateway Region
May 2020

Freeway Congestion
- Severe
- Heavy
- Moderate
- Uncongested

Other Map Data
- Major Arterial
- County Boundary
- River / Lake

0 5 Miles

Sources: Federal Highway Administration, Here Data; East-West Gateway Council of Governments

East-West Gateway Council of Governments

Congestion Progression

This section provides a series of figures (Figures 4 through 10) that represent the progression of congested segments of the regional freeway network over space and time. Each figure represents congested locations for the average of a single hour during the morning peak and evening peak period. The congested locations are also represented for the after-peak hour of 6 -7 PM. Color green in these figures represent the uncongested locations, whereas yellow, red and dark red represent, respectively, moderate, heavy, and severe congestion.

These figures can help identify where the bottlenecks begin and compare their progression during the peak hour. The figures also suggest total congested miles is higher in the PM peak period, a finding also supported in the subsequent sections. Another finding is the persistence of congestion on many freeway sections after the end of the PM peak period at 6 PM.

Figure 4: Congested Locations during 6-7 AM

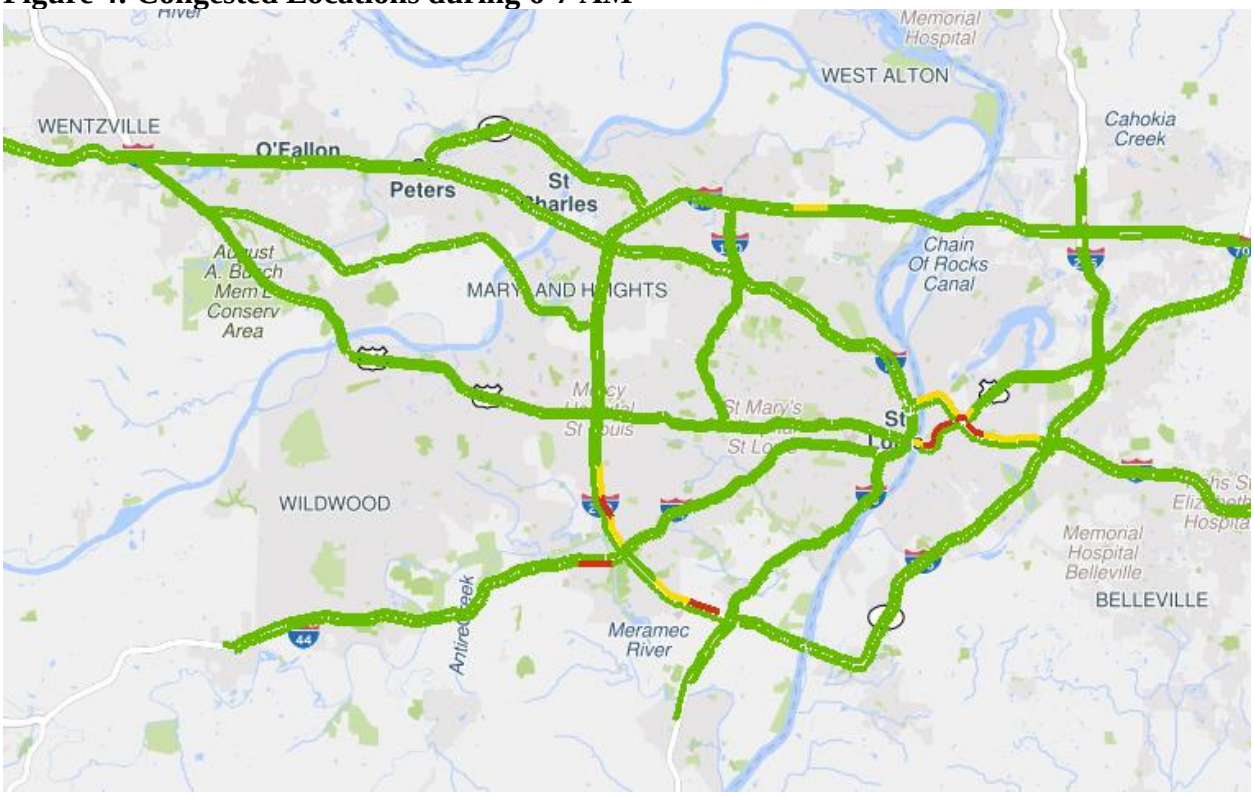


Figure 5: Congested Locations during 7-8 AM

Figure 6: Congested Locations during 8-9 AM

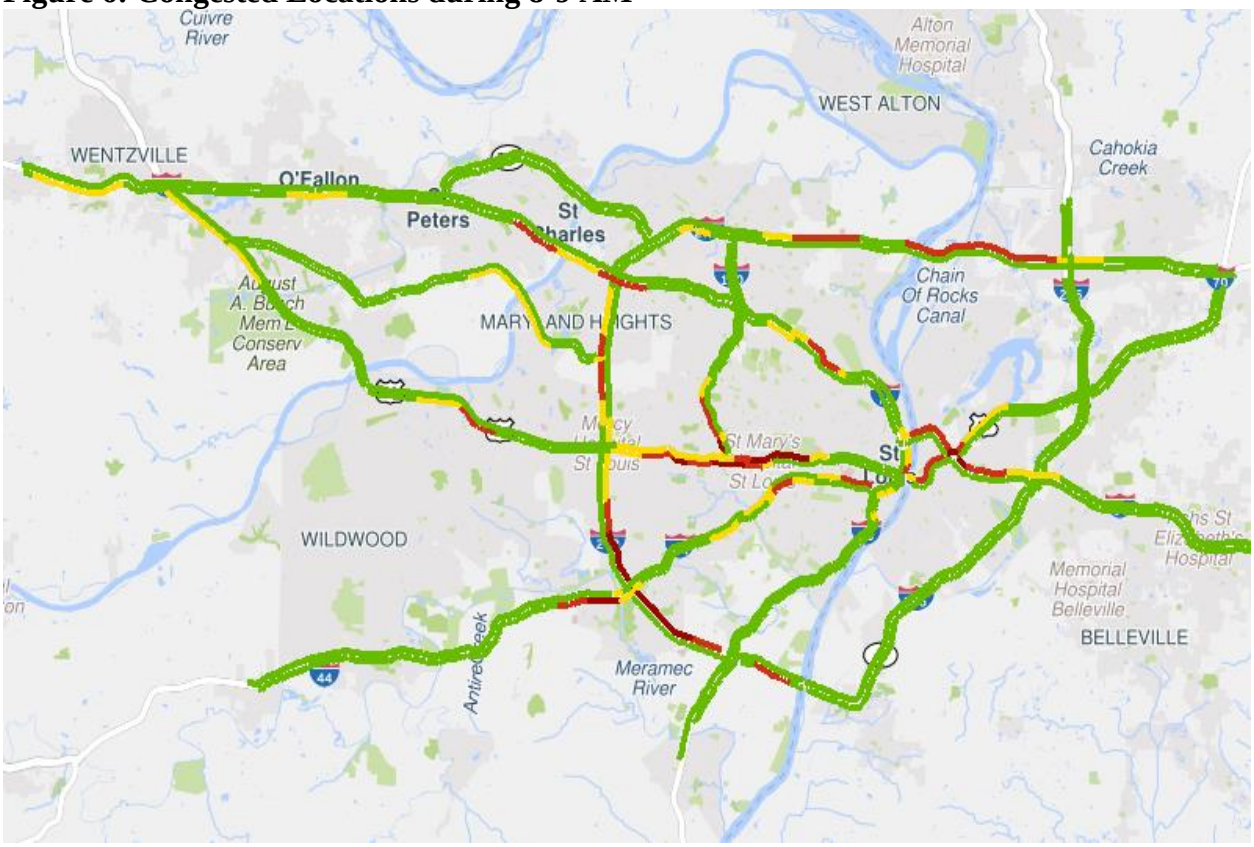


Figure 7: Congested Locations during 3-4 PM

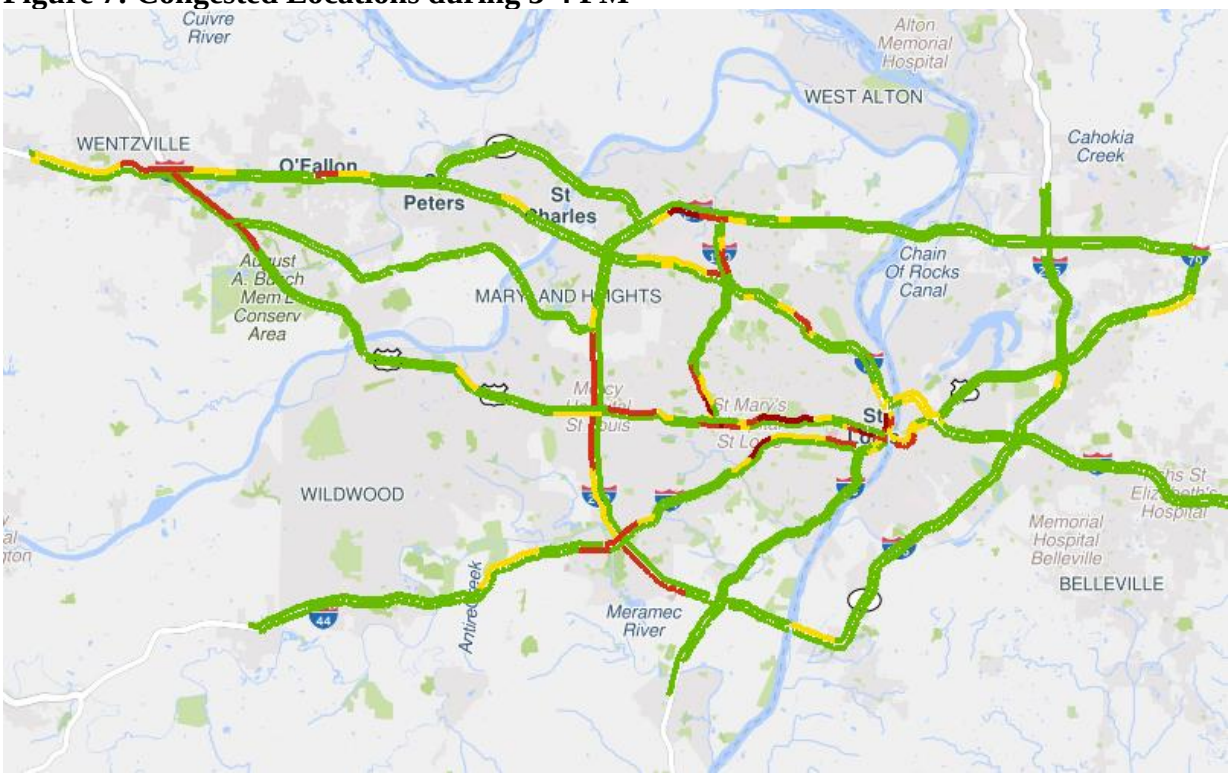


Figure 8: Congested Locations during 4-5 PM

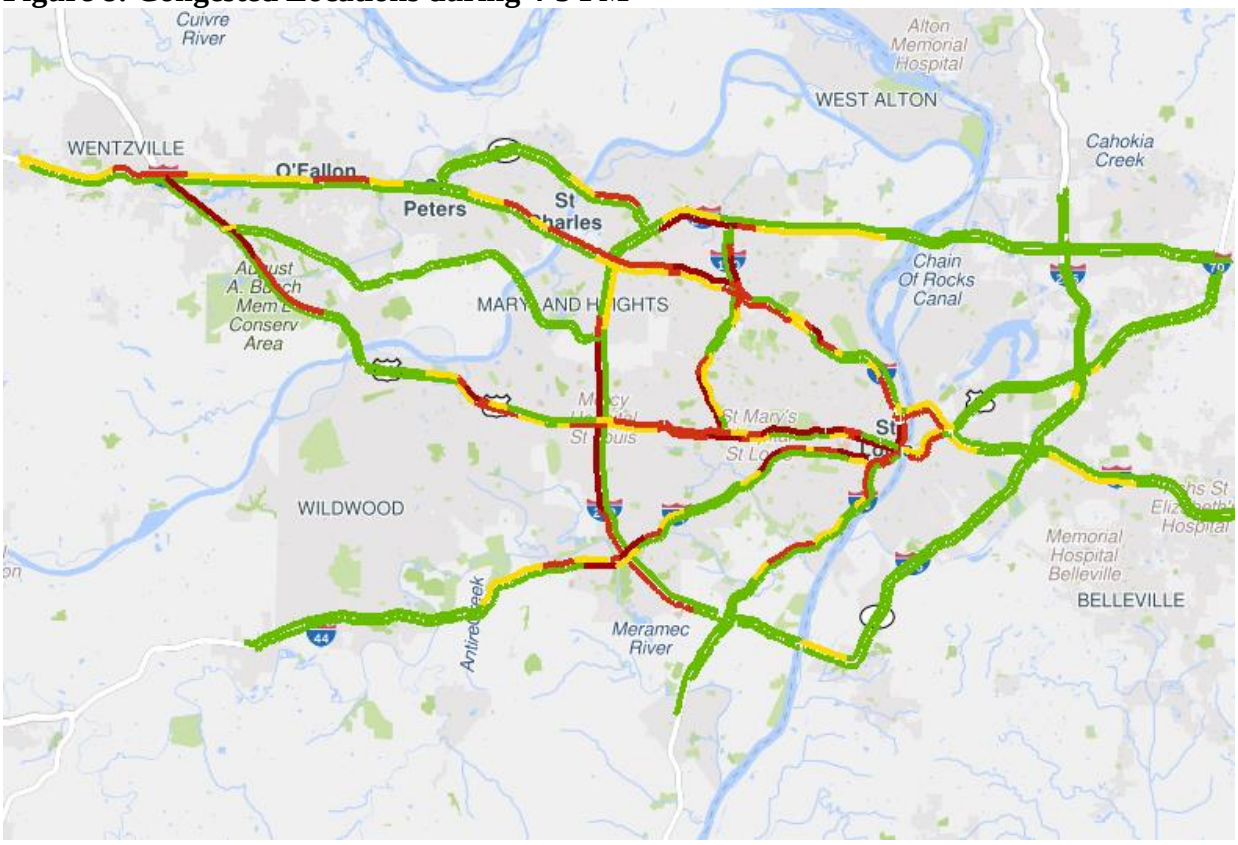


Figure 9: Congested Locations during 5-6 PM

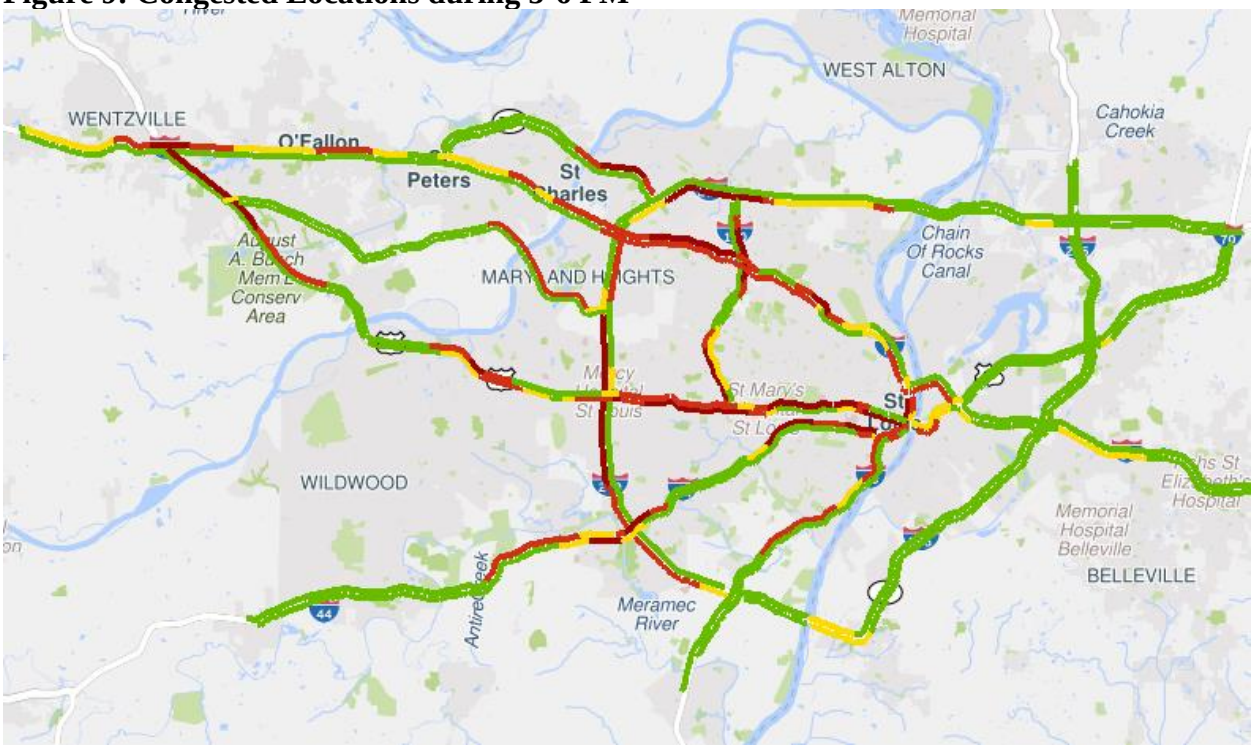
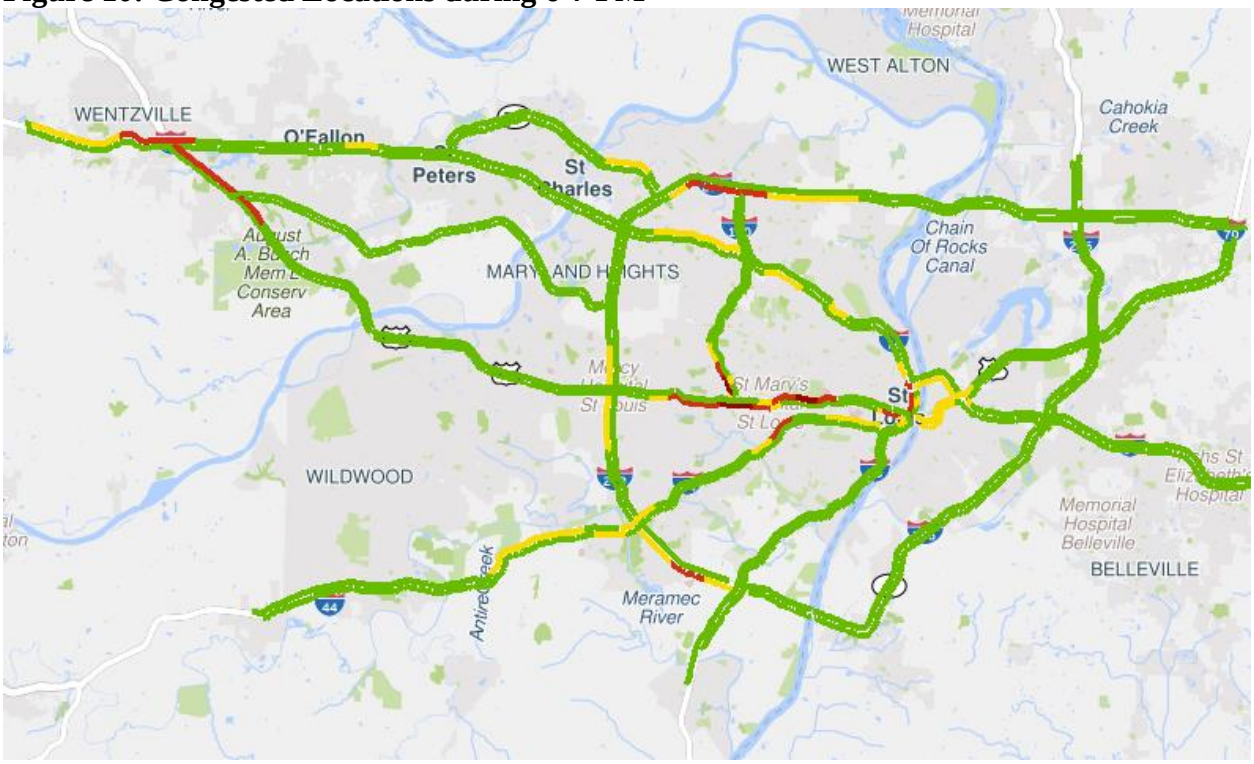


Figure 10: Congested Locations during 6-7 PM



Congestion Performance Analyses

Performance measures are key components of the CMP process as they:

- characterize existing and anticipated conditions on the regional transportation system;
- track progress toward meeting regional objectives;
- identify specific locations with congestion to address; and
- assess congestion mitigation strategies, programs, and projects.

In this section, three key analyses were undertaken for AM and PM peak periods. These are:

- Trends in congested miles by peak-period;
- Trends in average PTI by peak-period;
- Trends in average TTI by peak-period;

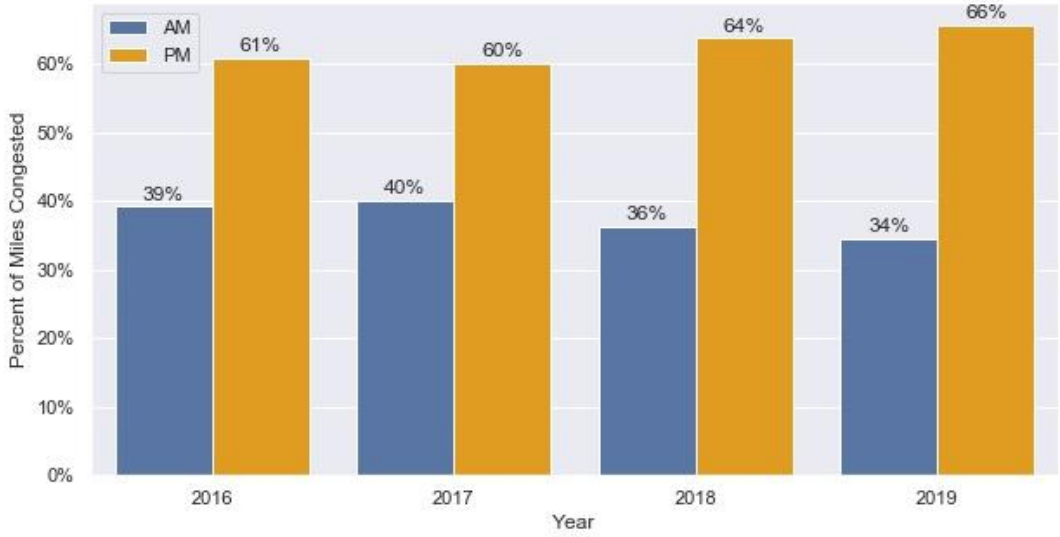
Total Congestion Trend

Total Congestion Trend analysis focuses on overall changes in total congestion over time by peak period (see Figure 11).

Findings:

- The 2016-19 average ratio of total congested miles in PM peak period to AM peak period was about 63%.
- The ratio of total congested miles in the PM to AM peak period has continued to grow.

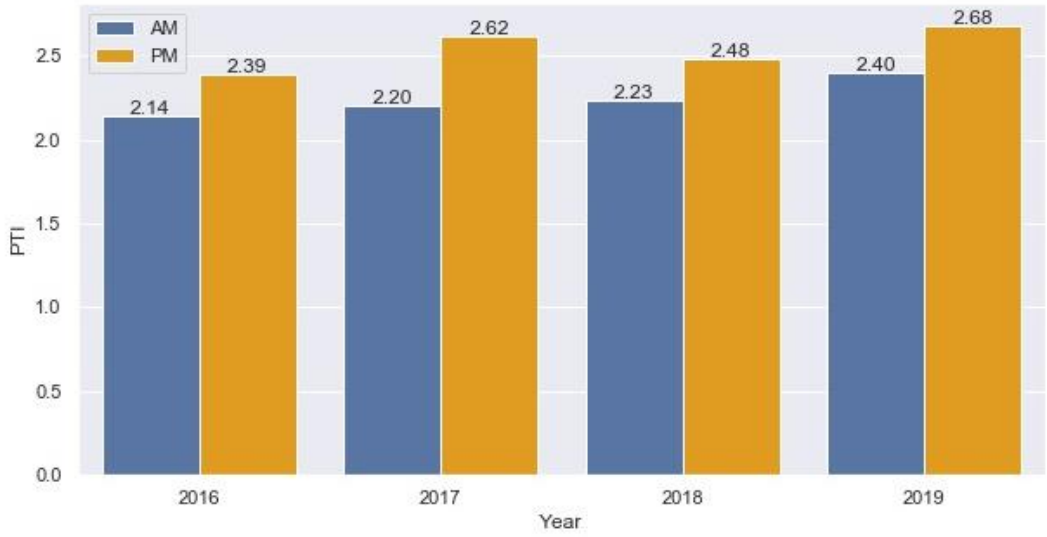
Figure 11: Trends in Total Congestion



Planning Time Index Trend by Peak-Period

This section looks at changes in average PTI over time for each peak period (see figure 12). Overall, both AM and PM peak periods showed a slight upward trend, indicating a decrease of the reliability of travel times on the congested network.

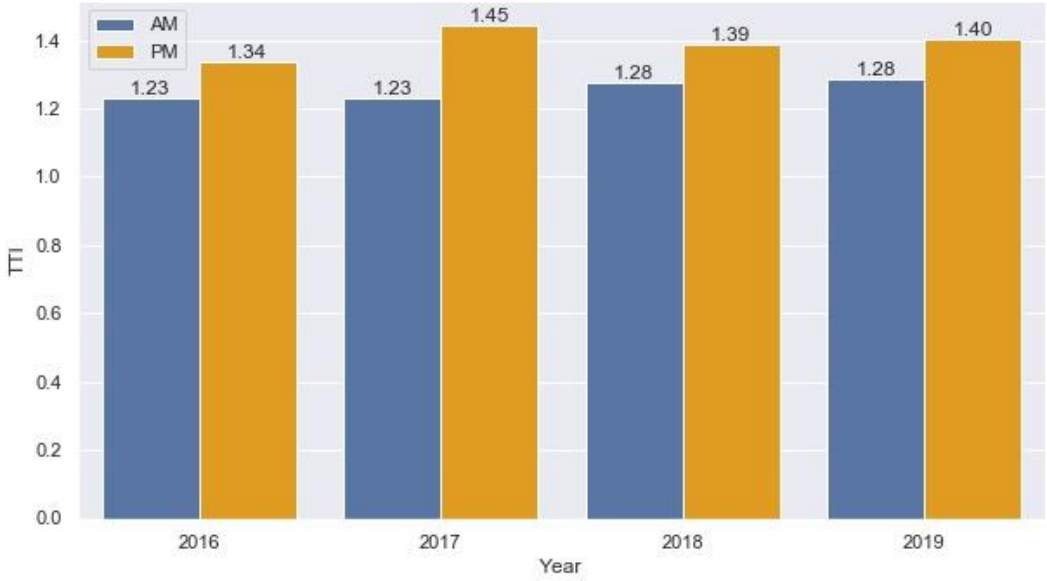
Figure 12: Trends in Planning Time Index (Average)



Travel Time Index Trend by Peak-Period

This analysis tracks changes in average TTI over time for each peak period (see figure 13). Overall, both AM and PM peaks showed a slight upward trend in travel times.

Figure 13: Trends in Travel Time Index (Average)



Ranked Congested Locations

We ranked all congested locations identified in Table 3. The top 10 locations by severity and delay impact are shown in Tables 4 and 5, respectively. The complete list of ranked locations is available in the Appendix 2.

Severity and total delay impact are defined as:

- The Severity is the average of the TTI and PTI. It takes into account two aspects of congestion; the average delay of a congested location and how reliable the average travel time is from day to day. Higher Severity numbers reflect more severe congestion.
- The Delay Impact is obtained by multiplying the congested miles of a location by the TTI. Its purpose is to compare the impact of delay to motorists, by factoring in the comparative lengths of the queues in each congested location.

Table 4: Top 10 Locations by Severity

No	Route	Limits	State	County	Direction	Peak	Queue Length	PTI	TTI	Severity	Delay Impact
1	I-64	Chouteau/Boyle to Poplar St Bridge	MO	St. Louis City	EB	PM	3.59	4.86	1.73	3.3	6.21
2	I-170	Page Ave to I-64	MO	St. Louis	SB	PM	4.2	3.97	1.95	2.96	8.18
3	I-44	I-55 to Laclede Station Rd	MO	St. Louis City	WB	PM	6.85	4.17	1.72	2.95	11.78
4	MO-370	Taussig to MO-94	MO	St. Louis/St. Charles	WB	PM	3.64	3.73	1.33	2.53	4.85
5	I-270	I-55 to MO-100	MO	St. Louis	WB/NB	AM	9.54	3.41	1.64	2.53	15.65
6	I-64/I-55/I-64	I-255 to PSB	IL	IL	WB	AM	6.72	3.38	1.58	2.48	10.62
7	I-270	MO-D/Page Ave to I-55	MO	St. Louis	SB	PM	15.77	3.19	1.67	2.43	26.34
8	I-64	MO-94 to I-70	MO	St. Charles	WB	PM	10.1	3.25	1.59	2.42	16.06
9	I-64	Market St Exit 38 to I-270	MO	St. Louis City/Co	WB	PM	12.37	3.1	1.7	2.4	21.03
10	I-64	Chouteau/Boyle to Hanley Rd	MO	St. Louis City/Co	WB	AM	4.68	3.18	1.6	2.39	7.49

Table 5: Top 10 Locations by Delay Impact

No	Route	Limits	State	County	Direction	Peak	Queue Length	PTI	TTI	Severity	Delay Impact
1	I-270	MO-D/Page Ave to I-55	MO	St. Louis	SB	PM	15.77	3.19	1.67	2.43	26.34
2	I-70	Mid Rivers Mall Dr. to MO-W	MO	St. Charles	WB	PM	18.31	2.08	1.26	1.67	23.07
3	I-64	Market St Exit 38 to I-270	MO	St. Louis City/Co	WB	PM	12.37	3.1	1.7	2.4	21.03
4	I-70	Hanley Rd to Cave Springs	MO	St. Louis	WB	PM	14.7	2.56	1.37	1.97	20.14
5	I-270	MO-370 to Lilac Ave	MO	St. Louis	EB	PM	11.06	2.93	1.56	2.25	17.26
6	I-64	MO-94 to I-70	MO	St. Charles	WB	PM	10.1	3.25	1.59	2.42	16.06
7	I-270	I-55 to MO-100	MO	St. Louis	WB/NB	AM	9.54	3.41	1.64	2.53	15.65
8	I-64	Mason Rd to Bellevue Ave	MO	St. Louis	EB	PM	9.71	2.81	1.47	2.14	14.27
9	I-70	Earth City XPWY to Jennings Sta Rd	MO	St. Louis	EB	PM	11.14	2.29	1.25	1.77	13.93
10	I-44	Big Bend Blvd to Antire Rd	MO	St. Louis	WB	PM	9.91	2.03	1.31	1.67	12.98

Changes in Overall Severity and Delay Impact

The figures in this section provide a high-level comparison of severity and delay impacts from 2016 to 2019 based on the data developed in the Annual Regional Congestion reports. Figure 14 shows ranking of locations based on their severity scores. Overall, severity of congestion increased over time except for 2019, where at the highest levels it dropped well below 2018 levels.

Figure 14: Ranking of Locations by Severity

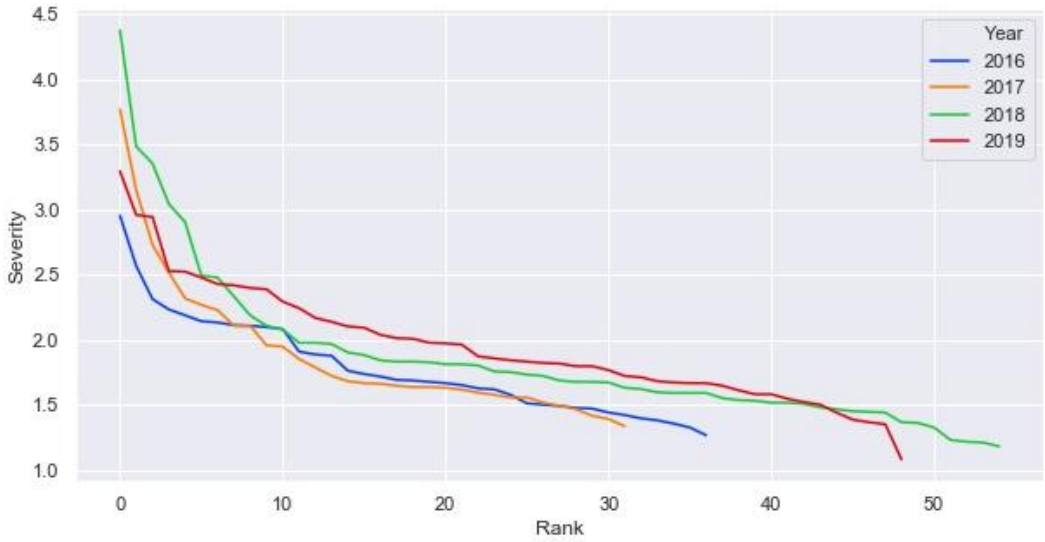
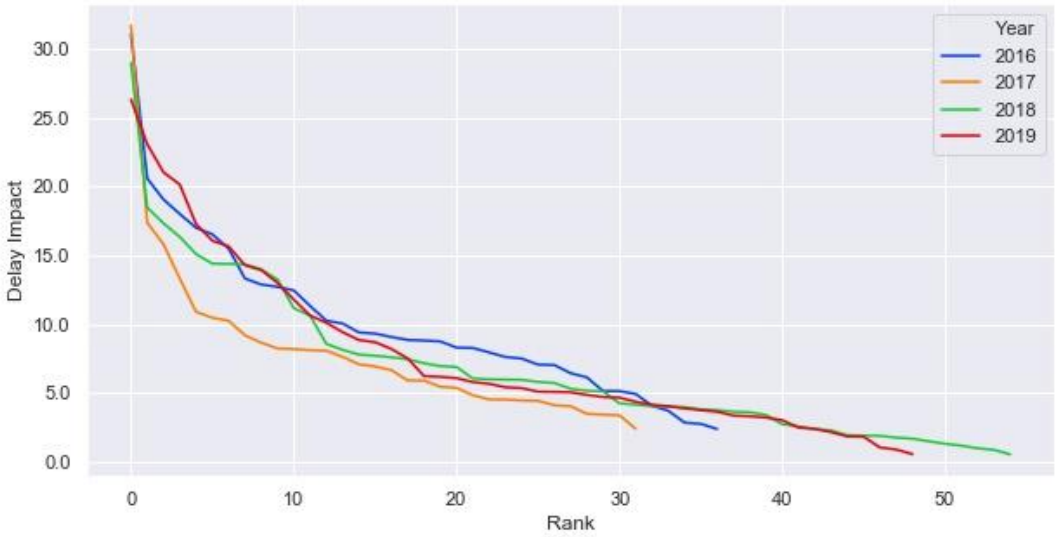


Figure 15 shows that the highest levels of delay impact decreased slightly over years. In this figure, 2016 and 2017 had the highest delay impacts, followed by gradual decreases in 2018 and 2019**.** For congested segments below the highest levels of delay 2017 was the lowest, with the remaining three years exhibiting no defined pattern of increase or decrease.

Figure 15: Ranking of Locations by Delay Impact



Tables 6, and 7, specifically examine the top 10 locations from the severity and delay impact figures above for 2018 and 2019. The purpose of this analysis was to track locations that recur in the two years under examination. The top ten 2019 segments are listed along with the corresponding segments in 2018 and their 2018 rankings.

The majority of the 2019 segments have corresponding 2018 segments, also in the top ten, with the same or similar start and end points. However, there were two exceptions. There was one instance in each of two lists where congestion occurred in 2019 that did not exist in 2018. Both instances are believed to have been caused by ongoing road construction in 2019.

Congestion severity has generally increased, and there appears to be a strong correlation between the most severely congested locations in 2018 and 2019. The same findings hold true when the locations with top 10 delay impacts are investigated.

Table 6: Top 10 Most Severe Locations 2019/2018 Comparison

2019 Rank	Route	2019 Limits	2018 Rank	2018 Limits	Direction	Peak
1	I-64	Chouteau/Boyle to Poplar St Bridge	**1**	Grand Ave to PSB	EB	PM
2	I-170	Page Ave to I-64	**5**	M0-340/Olive Blvd to I-64	SB	PM
3	I-44	I-55 to Laclede Station Rd	**3**	I-55 to Shrewsbury Ave	WB	PM
4	MO-370	Taussig to MO-94	**N/A**	No Similar Congestion	WB	PM
5	I-270	I-55 to MO-100	**7**	I-55 to MO 100	NB	AM
6	I-64/I-55/I-64	I-255 IL to PSB	**2**	25th St. IL to PSB MO	WB	AM
7	I-270	MO-D/Page Ave to I-55	**8**	I-70 to MO-21	SB	PM
8	I-64	MO-94 to I-70	**11**	MO-K to I-70	WB	PM
9	I-64	Market St Exit 38 to I-270	**4/24**	Jefferson to Boland/I-170 to Ballas	WB	PM
10	I-64	Chouteau/Boyle to Hanley Rd	**6**	Hampton Rd to Hanley Rd	WB	AM

Table 7: Top 10 Highest Delay Impact Locations 2019/2018 Comparison

2019 Rank	Route	2019 Limits	2018 Rank	2018 Limits	Direction	Peak
1	I-270	MO-D/Page Ave to I-55	**1**	I-70 to Tesson Ferry Rd/MO-21	SB	PM
2	I-70	Mid Rivers Mall Dr. to MO-W	**5**	Tr Hughes/Belleau Crk to Pearce Blvd	WB	PM
3	I-64	Market St Exit 38 to I-270	**10/18**	Jefferson to Boland/ I-170 to Ballas	WB	PM
4	I-70	Hanley Rd to Cave Springs	**2**	I-170 to Cave Springs	WB	PM
5	I-270	MO-370 to Lilac Ave	**3**	McDonnell Blvd to MO-367	EB	PM
6	I-64	MO-94 to I-70	**8**	MO-K to I-70	WB	PM
7	I-270	I-55 to MO-100	**4**	I-55 to MO-100	WB/NB	AM
8	I-64	Mason Rd to Bellevue Ave	**9**	Mason Rd to McCausland Ave	EB	PM
9	I-70	Earth City XPWY to Jennings Sta Rd	**7**	I-270 to Jennings Sta Rd	EB	PM
10	I-44	Big Bend Blvd to Antire Rd	**N/A**	No similar congestion	WB	PM

2 Regional Arterial Congestion Analyses

This section covers the spatial analysis of the congested arterials, overview of the selected congested locations, and congestion performance analyses. Arterial operations vary widely in different parts of the region based on the population density and land use. For this reason, this report looks at the congested arterial locations separately for each area of the region as tabulated below. The intent is to supply each jurisdiction with the status of arterial operations so that they can determine how best to address their arterial congestion issues.

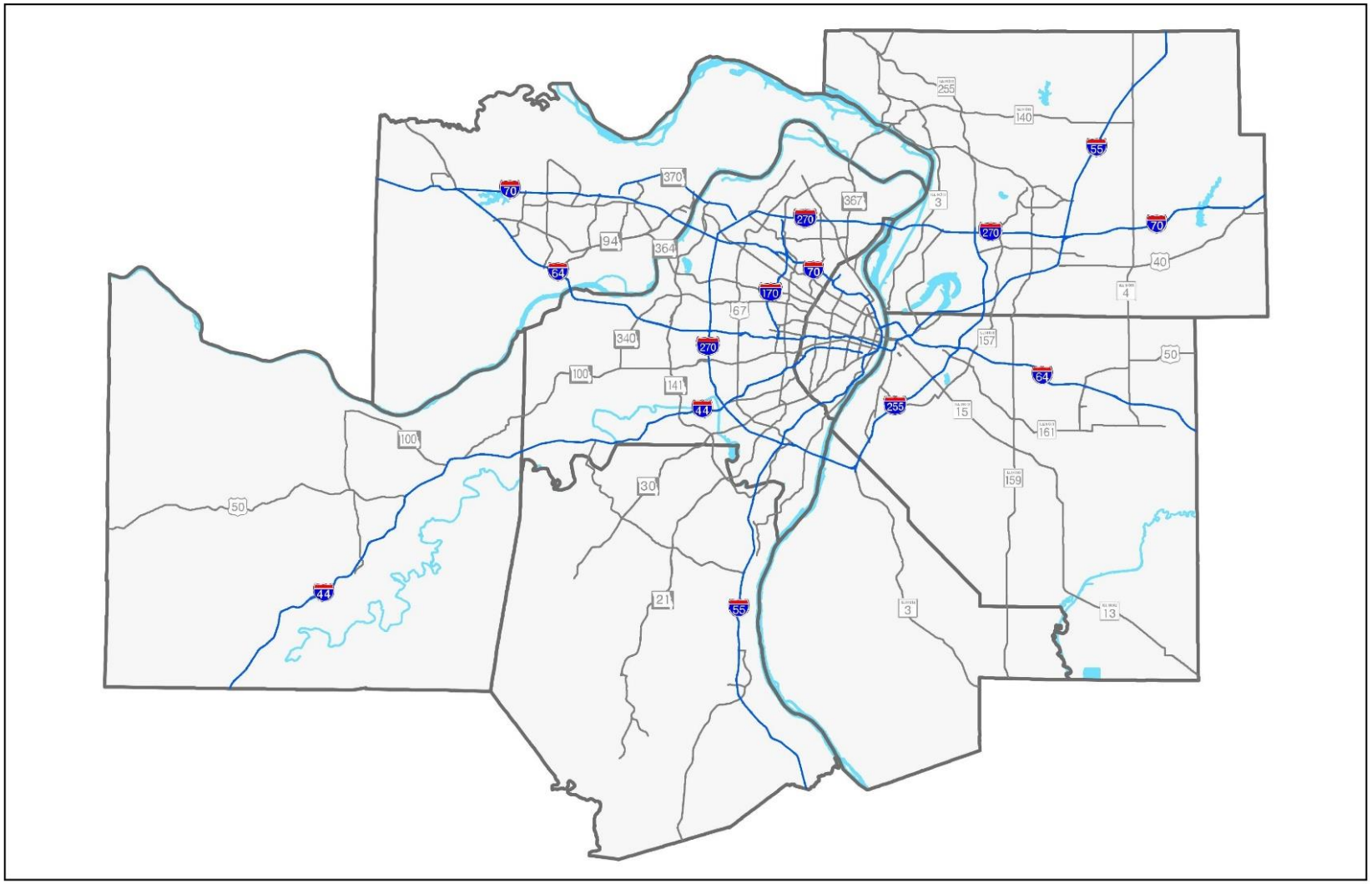
Congested CMP Network

Our analysis identified a total of 151 miles on the regional arterial network that were considered congested in the morning and evening peak periods. A comparison of congested miles by county is shown in Table 8. St. Louis County is ranked as the most congested percentage wise. The spatial distribution of the arterial network is shown in Figure 16.

Table 8: Comparison of Regional and Congested Network Miles

County	Congested Network	
	Miles	Percent
St. Louis	54.5	37.9%
St. Louis City	53.8	34.6%
St. Charles	16.1	10.4%
Jefferson	5.6	3.6%
IL	21.2	13.6%
Total	**151**	**100%**

Figure 16: Regional Arterial Network



Regional Network

East-West Gateway Region

May 2020

Regional Network
- Interstate / Freeway
- Major Arterial

Other Map Data
- County Boundary
- River / Lake

0 5 10
Miles

Sources: Federal Highway Administration, Here Data; East-West Gateway Council of Governments

EAST-WEST GATEWAY
Council of Governments

Selected Congested Locations on Arterials

Our analyses resulted in the selection of 151 miles of congested locations: 55 miles in St. Louis county, 54 miles in the city of St. Louis, 16 miles in St. Charles county, 5.6 miles in Jefferson county, and 21.2 miles in Illinois counties. The tables below show the identified congested locations along with their performance measure numbers during the AM and PM peaks for each county. Figures 17a through 18b, show the location of selected congested arterials for morning and evening peak periods.

Table 9: St. Louis

No	Map No	Route	Limits	State	Direction	Peak	Queue Length	PTI	TTI	Severity	Delay Impact
1	1	MO-21	Lindbergh Blvd to Kennerly	MO	SB	PM	1.65	2.4	1.74	2.07	2.87
2	2	MO-D	I-170 to Schuetz Rd	MO	WB	PM	4.21	2.59	1.59	2.09	6.69
3	3	US-67	I-270 to New Halls Ferry Rd	MO	NB	PM	3.8	2.38	1.58	1.98	6.01
4	4	US-67	Big Bend Blvd to MO-100	MO	NB	PM	2.29	1.91	1.44	1.68	3.3
5	5	US-67	Adams Ave to I-44	MO	SB	PM	1.65	2.85	1.85	2.35	3.04
6	6	US-67	Lemay Ferry Rd to MO-21/Tesson Ferry Rd	MO	NB	PM	2.11	1.85	1.43	1.64	3.01
7	7	MO-340	Chesterfield Pkwy to Baxter Rd	MO	SB	PM	1.38	4.24	2	3.12	2.75
8	8	MO-141	Big Bend Rd to I-44	MO	SB	PM	1.88	3.26	1.46	2.36	2.75
9	9	MO-141	Hawkins Rd to Vance Rd	MO	NB	AM	1.89	3.61	1.45	2.53	2.74
10	10	MO-141	MO-340 to MO-364	MO	NB	PM	1.89	2.21	1.33	1.77	2.52
11	11	MO-21	Butler Hill Rd to I-270	MO	NB	PM	1.5	2.39	1.68	2.04	2.51
12	12	MO-21	Lindbergh Blvd to Kennerly Rd	MO	SB	AM	1.65	1.9	1.43	1.67	2.37
13	13	US-61	Mattis Rd to Lindbergh Blvd	MO	NB	PM	1.34	2.2	1.49	1.85	2
14	14	US-61	Lindbergh Blvd to Mattis Rd	MO	SB	PM	1.34	1.95	1.44	1.7	1.93
15	15	MO-141	Ladue Rd to I-64	MO	SB	PM	1.24	2.71	1.56	2.14	1.93
16	16	MO-340	Clayton Rd to Kehrs Mill Rd	MO	NB	AM	1.16	4.5	1.63	3.07	1.89
17	17	Laclede St. Rd	Hanley Rd to Murdoch Ave	MO	SB	PM	1.1	3.33	1.59	2.46	1.74
18	18	MO-100	Big Bend Blvd to McCausland Ave	MO	EB	PM	0.83	2.6	2.08	2.34	1.73
19	19	Lucas & Hunt Rd	I-70 to W Florissant Ave	MO	NB	PM	1.14	2.12	1.47	1.8	1.68
20	20	US-67	New Halls Ferry Rd to New Florissant Rd	MO	SB	PM	1.11	2	1.5	1.75	1.67
21	21	US-67	Olive Blvd to Ladue Rd	MO	SB	PM	1.05	3.56	1.51	2.54	1.59
22	22	Hanley Rd	Clayton Rd to I-64	MO	SB	PM	0.63	6.25	2.44	4.35	1.55
23	23	MO-30	MO-P/McKenzie Rd to Laclede St. Rd	MO	WB	PM	1.11	1.91	1.39	1.65	1.55
24	24	MO-21	Butler Hill Rd to Kennerly Rd	MO	NB	AM	1.01	2.56	1.49	2.03	1.51
25	25	MO-100	McCausland Ave to Big Bend Blvd	MO	WB	PM	0.83	2.2	1.72	1.96	1.43
26	26	Natural Br. Rd	Woodson Rd to Brown Rd	MO	SB	PM	0.8	2.07	1.6	1.84	1.29
27	27	MO-100	Big Bend Blvd to McCausland Ave	MO	EB	AM	0.83	2	1.49	1.75	1.24
28	28	MO-340	Craig Rd to I-270	MO	SB	PM	0.85	2.33	1.46	1.9	1.24
29	29	MO-AC	Old Halls Ferry Rd to I-270	MO	NB	PM	0.67	2.38	1.75	2.07	1.17
30	30	US-67	St. Ferdinand to Washington/Charbonier	MO	SB	PM	0.67	3	1.69	2.35	1.14
31	31	St Ferdinand St	Graham to Lindbergh Blvd	MO	NB	PM	0.63	2.23	1.63	1.93	1.02

Table 9: St. Louis (Continued)

No	Map No	Route	Limits	State	Direction	Peak	Queue Length	PTI	TTI	Severity	Delay Impact
32	32	Lucas & Hunt Rd	I-70 to Natural Br. Rd	MO	SB	PM	0.71	1.88	1.42	1.65	1.01
33	33	MO-100	MO-141 to Baxter Rd	MO	WB	PM	0.6	2.69	1.63	2.16	0.98
34	34	US-61/Lindbergh Blvd	I-55 to Lemay Ferry Rd	MO	SB	PM	0.61	2.82	1.56	2.19	0.95
35	35	MO-100	MO-340 to Old State Rd	MO	WB	PM	0.54	2.5	1.74	2.12	0.93
36	36	MO-366	Lindbergh Blvd to Geyer Rd	MO	WB	PM	0.44	2.5	1.86	2.18	0.81
37	37	MO-180	I-270 to McKelvy Rd	MO	SB	PM	0.53	2	1.52	1.76	0.8
38	38	MO-30	MO-21 to MO-P/McKenzie Rd	MO	EB	PM	0.53	2.17	1.49	1.83	0.8
39	39	MO-100	Geyer Rd to US 61/67 Kirkwood Rd	MO	EB	PM	0.57	2.36	1.4	1.88	0.8
40	40	St Ferdinand St	Lindbergh Blvd to Washington St	MO	SB	PM	0.44	2.3	1.71	2.01	0.74
41	41	MO-30	Sappington Rd to Lindbergh Blvd	MO	WB	PM	0.34	3.88	2.18	3.03	0.73
42	42	MO-D	Woodson Rd to I-170	MO	EB	PM	0.46	2.5	1.55	2.03	0.71
43	43	Laclede St. Rd	Big Bend Blvd to Murdoch Ave	MO	SB	AM	0.49	2.21	1.45	1.83	0.71
44	44	MO-30	Lindbergh Blvd to Sappington Rd	MO	EB	PM	0.34	2.91	2.1	2.51	0.71
45	45	MO-100	Henry Rd to Woods Mill Rd	MO	EB	PM	0.45	2.31	1.55	1.93	0.7
46	46	Clayton Rd	Hanley Rd to Brentwood Blvd	MO	WB	PM	0.48	2	1.42	1.71	0.69
47	47	MO-366	Lindbergh Blvd to Geyer Rd	MO	WB	AM	0.44	2.19	1.54	1.87	0.67
48	48	Hereford Ave	Elizabeth Ave to Florissant Rd	MO	WB	PM	0.42	2.14	1.54	1.84	0.64
49	49	Hereford Ave	Florissant Rd to Elizabeth Ave	MO	EB	PM	0.42	2.05	1.41	1.73	0.59
50	50	MO-D	Concourse Dr to Schuetz Rd	MO	EB	AM	0.37	2.6	1.55	2.08	0.58
51	51	Kienlen Ave	MLK Dr to Page Blvd	MO	SB	PM	0.39	2.07	1.39	1.73	0.54
52	52	Kienlen Ave	Page Blvd to MLK Dr	MO	NB	PM	0.39	2	1.39	1.7	0.54
53	53	MO-D	Concourse Dr to Schuetz Rd	MO	EB	PM	0.37	2.17	1.36	1.77	0.51
Total							**54.5**				

Table 10: St. Louis City

No	Map No	Route	Limits	State	Direction	Peak	Queue Length	PTI	TTI	Severity	Delay Impact
1	54	Market St	4th St to Compton Ave	MO	WB	PM	2.18	2.61	1.89	2.25	4.12
2	55	Forest Park	Market to Kingshighway	MO	WB	PM	2.06	2.53	1.72	2.13	3.54
3	56	Market St	Garrison Ln to 4th St	MO	EB	PM	1.92	2.4	1.76	2.08	3.39
4	57	Market St	4th St to Garrison Ln	MO	WB	AM	1.92	2.34	1.58	1.96	3.04
5	58	Kingshighway Blvd	Lindell Blvd to McRee Ave	MO	SB	PM	1.65	3.63	1.84	2.74	3.04
6	59	Forest Park	Lindell Blvd to Vandeventer Ave	MO	EB	PM	1.85	2.26	1.64	1.95	3.04
7	60	MO-100	Kingshighway Blvd to Grand Blvd	MO	EB	PM	1.57	2.19	1.81	2	2.84
8	61	Grand Blvd	Lindell Blvd to I-44	MO	SB	PM	1.5	3.13	1.78	2.46	2.67
9	62	MO-100	Jefferson Ave to Broadway	MO	EB	PM	1.41	2.61	1.77	2.19	2.49
10	63	MO-100	Vandeventer Ave to Kingshighway Blvd	MO	WB	PM	0.96	3.86	2.54	3.2	2.43
11	64	MO-100	Kingshighway Blvd to Grand Blvd	MO	EB	AM	1.57	1.97	1.49	1.73	2.33
12	65	Forest Park	Vandeventer Ave to Kingshighway Blvd	MO	WB	AM	1.36	2.21	1.57	1.89	2.14
13	66	Jefferson Ave	Washington Ave to Park Ave	MO	SB	PM	1.23	2.59	1.61	2.1	1.99
14	67	Grand Blvd	Market St to Cass Ave	MO	NB	PM	1.22	2.1	1.62	1.86	1.97
15	68	Grand Blvd	Lindell Blvd to Park Ave	MO	SB	AM	1.19	2.32	1.54	1.93	1.83
16	69	Hampton Ave	I-64 to I-44	MO	SB	PM	1.02	3.12	1.7	2.41	1.73
17	70	Forest Park	de Baliviere Ave to Skinker Blvd	MO	WB	PM	0.84	3.75	1.99	2.87	1.66
18	71	Grand Blvd	Chippewa St to Arsenal St	MO	NB	PM	1	2.07	1.65	1.86	1.65
19	72	Salisbury St	Natural Br. Ave to I-70	MO	EB	PM	0.72	3.23	2.2	2.72	1.59
20	73	MO-100	Vandeventer Ave to Kingshighway Blvd	MO	WB	AM	0.96	2.25	1.64	1.95	1.57
21	74	Grand Blvd	Arsenal St to Chippewa St	MO	SB	PM	1	1.97	1.55	1.76	1.55
22	75	Grand Blvd	Hall St to Florissant Ave	MO	SB	PM	0.82	2.37	1.83	2.1	1.49
23	76	MO-100	Broadway to Truman Pkwy	MO	WB	PM	0.82	2.59	1.81	2.2	1.48
24	77	Kingshighway Blvd	Chippewa St to Arsenal St	MO	NB	PM	0.97	1.86	1.44	1.65	1.4
25	78	Grand Blvd	Russell Blvd to MO-100	MO	NB	PM	0.89	2.33	1.53	1.93	1.35
26	79	MO-100	Broadway to Truman Pkwy	MO	WB	AM	0.82	2.36	1.65	2.01	1.35
27	80	Grand Blvd	Hall St to Florissant Ave	MO	SB	AM	0.82	2.12	1.62	1.87	1.32
28	81	Salisbury St	I-70 to Natural Br. Ave	MO	WB	PM	0.75	2.27	1.66	1.97	1.24
29	82	MO-100	Truman Pkwy to Broadway	MO	EB	AM	0.79	2.23	1.5	1.87	1.19
30	83	Tucker Blvd	Cole St to Broadway	MO	NB	PM	0.74	2.9	1.6	2.25	1.18
31	84	Kingshighway Blvd	I-64 to Lindell Blvd	MO	NB	PM	0.79	2.36	1.49	1.93	1.18
32	85	Cole St	I-44 to Tucker Blvd	MO	WB	PM	0.55	2.52	2.09	2.31	1.16
33	86	Kingshighway Blvd	I-64 to Lindell Blvd	MO	NB	AM	0.79	2.31	1.45	1.88	1.15
34	87	Hampton Ave	Eichelberger St to Chippewa St	MO	NB	PM	0.82	1.63	1.37	1.5	1.13
35	88	Market St	4th st to 14th st	MO	EB	AM	0.69	2.69	1.61	2.15	1.12
36	89	Tucker Blvd	Cole St to Market St	MO	SB	PM	0.57	2.56	1.92	2.24	1.09
37	90	Cole St	Tucker Blvd to I-44	MO	EB	PM	0.55	2.64	1.94	2.29	1.07
38	91	MO-30	Chippewa St to Grand Blvd	MO	EB	PM	0.68	2.08	1.54	1.81	1.05
39	92	Tucker Blvd	I-55 to Chouteau Ave	MO	NB	PM	0.65	1.89	1.53	1.71	0.99
40	93	Jefferson Ave	Washington Ave to I-64	MO	SB	AM	0.64	2.27	1.48	1.88	0.95
41	94	Skinker Blvd	Delmar Blvd to Forest Park Pkwy	MO	SB	PM	0.43	4.17	2.22	3.2	0.95
42	95	Hampton Ave	Watson Rd to I-44	MO	NB	PM	0.6	2.2	1.54	1.87	0.93
43	96	Tucker Blvd	Cole St to Market St	MO	SB	AM	0.57	2.3	1.61	1.96	0.91
44	97	MO-D	MLK Dr to Vandeventer Ave	MO	WB	PM	0.52	2.16	1.72	1.94	0.9
45	98	Cole St	I-44 to Tucker Blvd	MO	WB	AM	0.55	2.33	1.61	1.97	0.89
46	99	Cole St	Tucker Blvd to I-44	MO	EB	AM	0.55	2.35	1.59	1.97	0.87

Table 10: St. Louis City (Continued)

No	Map No	Route	Limits	State	Direction	Peak	Queue Length	PTI	TTI	Severity	Delay Impact
47	100	Jefferson Ave	Russell Blvd to Park Ave	MO	NB	PM	0.51	2.46	1.66	2.06	0.84
48	101	MO-115	Florissant Ave to Salisbury St	MO	NB	PM	0.35	3.25	2.38	2.82	0.84
49	102	Salisbury St	Florissant Ave to I-70	MO	EB	AM	0.49	2.56	1.71	2.14	0.83
50	103	MO-D	Kingshighway Blvd to Union	MO	WB	PM	0.54	2.08	1.44	1.76	0.78
51	104	Kingshighway Blvd	SW Ave to McRee Ave	MO	NB	PM	0.55	2.22	1.41	1.82	0.78
52	105	MO-D	Goodfellow Blvd to Kienlen Ave	MO	WB	PM	0.44	2.45	1.74	2.1	0.76
53	106	Market St	Jefferson Ave to Garrison Ln	MO	EB	AM	0.42	2.6	1.79	2.2	0.75
54	107	Salisbury St	I-70 to Florissant Ave	MO	WB	AM	0.49	2.38	1.53	1.96	0.74
55	108	Kingshighway Blvd	Laclede Ave to Delmar Blvd	MO	NB	PM	0.53	1.92	1.39	1.66	0.74
56	109	Jefferson Ave	Russell Blvd to MO-30	MO	SB	PM	0.43	2.45	1.6	2.03	0.69
57	110	Skinker Blvd	Delmar Blvd to Forest Park Pkwy	MO	SB	AM	0.43	2.78	1.58	2.18	0.67
58	111	Skinker Blvd	Forest Park Pkwy to Delmar Blvd	MO	NB	PM	0.43	2	1.53	1.77	0.65
59	112	Tucker Blvd	Stan Musial M. Brg. (ramp) to Ofallon St	MO	SB	PM	0.34	3.03	1.93	2.48	0.65
60	113	Market St	Compton Ave to Grand Blvd	MO	EB	PM	0.38	2.29	1.49	1.89	0.57
61	114	Tucker Blvd	Stan Musial M. Brg. (ramp) to Ofallon St	MO	SB	AM	0.34	2.7	1.61	2.16	0.54
62	115	Tucker Blvd	I-55 to Park Ave	MO	NB	AM	0.34	2.27	1.52	1.9	0.51
63	116	Jefferson Ave	Market to Washington Blvd	MO	NB	PM	0.3	2.27	1.66	1.97	0.5
Total							**53.8**				

Table 11: St. Charles

No	Map No	Route	Limits	State	Direction	Peak	Queue Length	PTI	TTI	Severity	Delay Impact
1	117	MO-K	I-70 to MO-364	MO	SB	PM	3.5	2.02	1.5	1.76	5.25
2	118	MO-94	I-64 to Mid Rivers Mall Dr/MO-364	MO	NB	PM	3.38	1.94	1.49	1.72	5.04
3	119	MO-94	5th St to I-70	MO	SB	PM	1.99	1.86	1.36	1.61	2.7
4	120	MO-94	5th St to MO-370	MO	NB	PM	1.48	1.55	1.45	1.5	2.15
5	121	MO-94	5th St to MO-370	MO	NB	AM	1.48	1.55	1.37	1.46	2.03
6	122	MO-94	MO-364 to Pralle Ln	MO	NB	PM	0.61	2.71	2.71	2.71	1.66
7	123	Mexico Rd	I-70 to Jungermann Rd	MO	WB	PM	0.88	2.55	1.74	2.15	1.53
8	124	Mid Rivers Mall Dr	I-70 to Mexico Rd	MO	SB	PM	0.96	2.32	1.55	1.94	1.48
9	125	MO-94	Friedens Rd to Pralle Ln	MO	SB	PM	0.61	2.69	1.65	2.17	1
10	126	MO-94	West Clay to I-70	MO	SB	AM	0.69	2.06	1.42	1.74	0.98
11	127	Mid Rivers Mall Dr	MO-364 to Central School Rd	MO	NB	PM	0.51	2.94	1.91	2.43	0.96
Total							**16.1**				

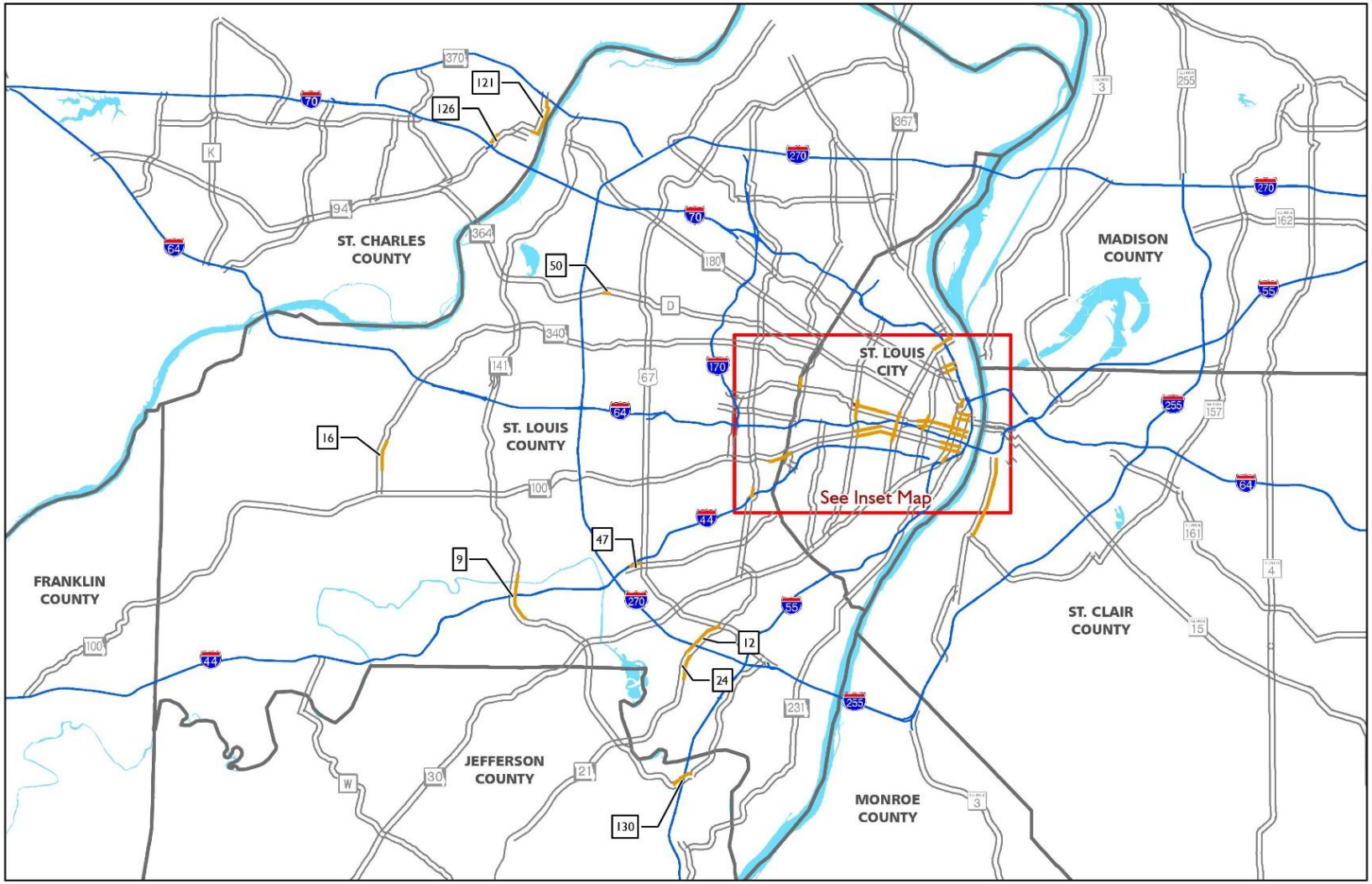
Table 12: Jefferson

No	Map No	Route	Limits	State	Direction	Peak	Queue Length	PTI	TTI	Severity	Delay Impact
1	128	MO-141	MO-30 to MO-21	MO	SB	PM	3.95	2.88	1.5	2.19	5.93
2	129	MO-141	Jeffco Blvd to Arnold Church Rd	MO	NB	PM	0.84	2.51	1.83	2.17	1.54
3	130	MO-141	Jeffco Blvd to Arnold Church Rd	MO	NB	AM	0.84	2.06	1.5	1.78	1.26
Total							**5.6**				

Table 13: IL

No	Map No	Route	Limits	State	Direction	Peak	Queue Length	PTI	TTI	Severity	Delay Impact
1	131	Il-159	IL-162 to Governors Pky	IL	NB	PM	3.55	2.31	1.63	1.97	5.79
2	132	IL-3	IL-157/CAMP JACKSON RD to I-55/1-64/I-70	IL	NB	AM	2.97	2.48	1.42	1.95	4.22
3	133	Il-159	Governors Parkway to I-270	IL	SB	PM	2.45	1.73	1.4	1.57	3.43
4	134	Il-159	Frank Scott Pky to I-64	IL	NB	PM	2.06	2.39	1.6	2	3.3
5	135	Il-159	I-64 to Frank Scott Pkwy	IL	SB	PM	1.8	2.49	1.64	2.07	2.95
6	136	IL-157	St. Louis Rd to Horseshoe Lake Rd	IL	NB	PM	1.87	1.82	1.44	1.63	2.69
7	137	Il-159	Lebanon Ave to IL-15	IL	SB	PM	1.49	2.23	1.6	1.92	2.38
8	138	IL-203	Pontoon Rd to Madison Ave	IL	SB	PM	0.92	2.14	1.69	1.92	1.55
9	139	IL-157	Horse Shoe Lake Rd to I-55/70	IL	SB	PM	0.78	2.46	1.77	2.12	1.38
10	140	IL-203	Madison Ave to Pontoon Rd	IL	NB	PM	0.83	1.93	1.58	1.76	1.32
11	141	IL-157	E University Dr to Center Grove	IL	SB	PM	0.58	1.9	1.4	1.65	0.81
12	142	IL-157	IL-143 to St. Louis St	IL	SB	PM	0.46	2	1.65	1.83	0.76
13	143	IL-157	Center Grove Rd to E University Dr	IL	NB	PM	0.53	1.91	1.4	1.66	0.74
14	144	Il-159	Washington St. to Lebanon Ave	IL	NB	PM	0.44	2.14	1.55	1.85	0.67
15	145	IL-157	I-64 to New Bunkum Rd	IL	NB	PM	0.43	2.05	1.4	1.73	0.6
Total							**21.2**				

Figure 17a: Congested Locations (AM Peak)



Congested Locations
Arterials - AM Peak
East-West Gateway Region
May 2020

Arterial Congestion
- Severe
- Heavy
- Moderate
- Uncongested

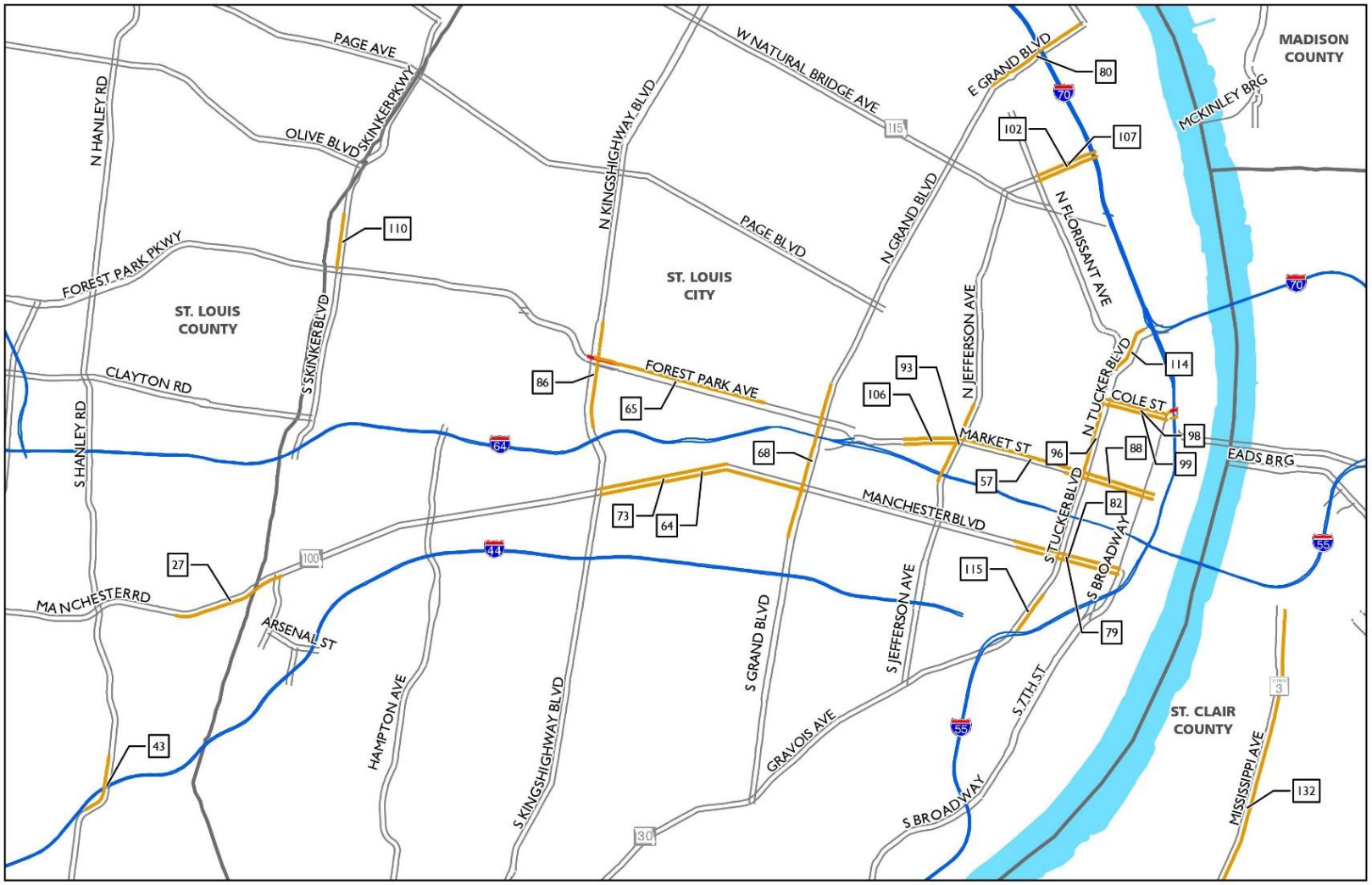
Other Map Data
- Interstate / Freeway
- County Boundary
- River / Lake

0 5 Miles

Sources: Federal Highway Administration, Here Data; East-West Gateway Council of Governments

East-West Gateway Council of Governments

Figure 17b: Congested Locations Inset Map (AM Peak)



Congested Locations Arterials - AM Peak Inset

East-West Gateway Region

May 2020

Arterial Congestion
- Severe
- Heavy
- Moderate
- Uncongested

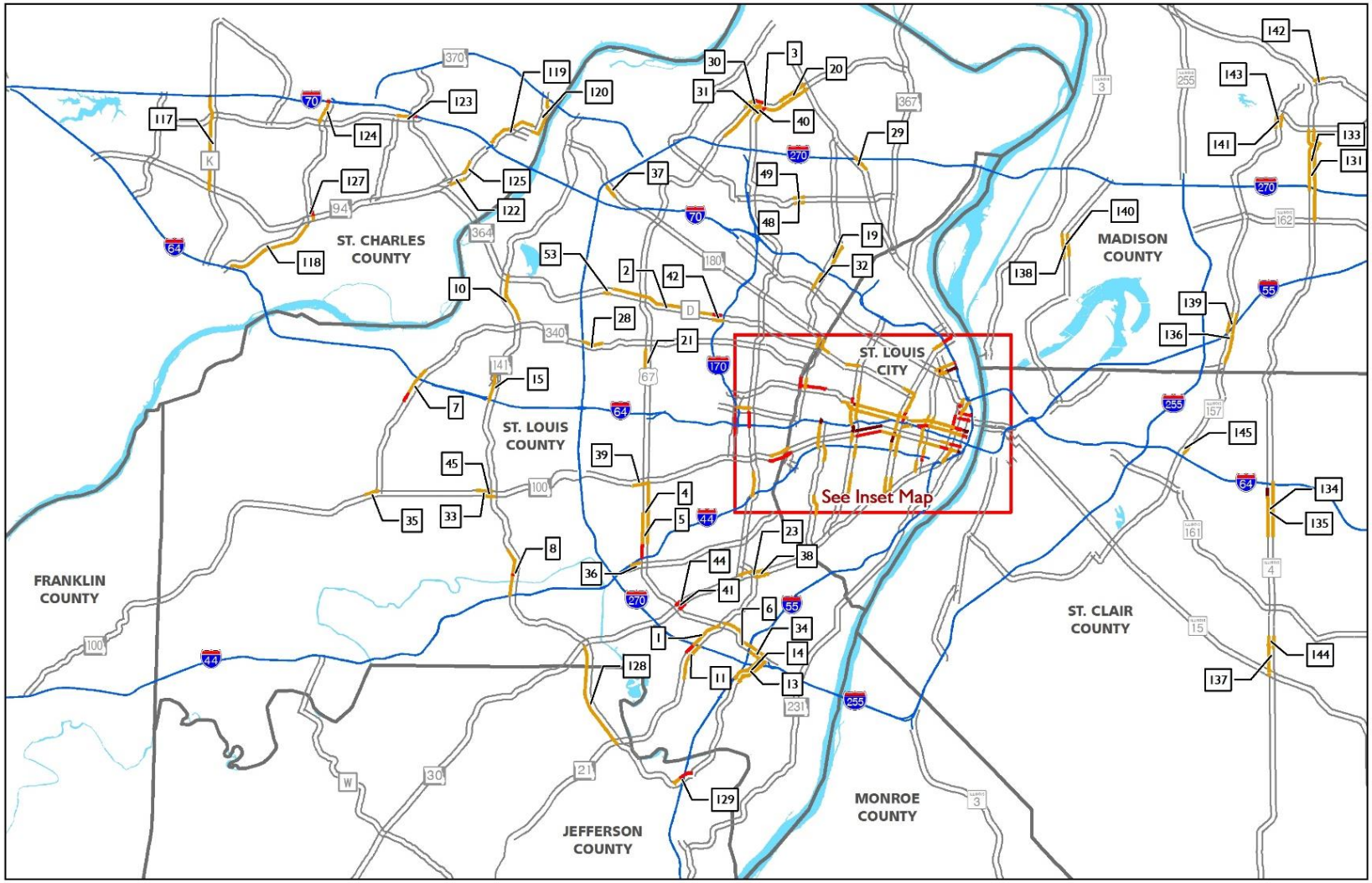
Other Map Data
- Interstate / Freeway
- County Boundary
- River / Lake

0 1 Miles

Sources: Federal Highway Administration, Here Data; East-West Gateway Council of Governments

EAST-WEST GATEWAY Council of Governments

Figure 18a: Congested Locations (PM Peak)



Congested Locations Arterials - PM Peak

East-West Gateway Region

May 2020

Arterial Congestion
- Severe
- Heavy
- Moderate
- Uncongested

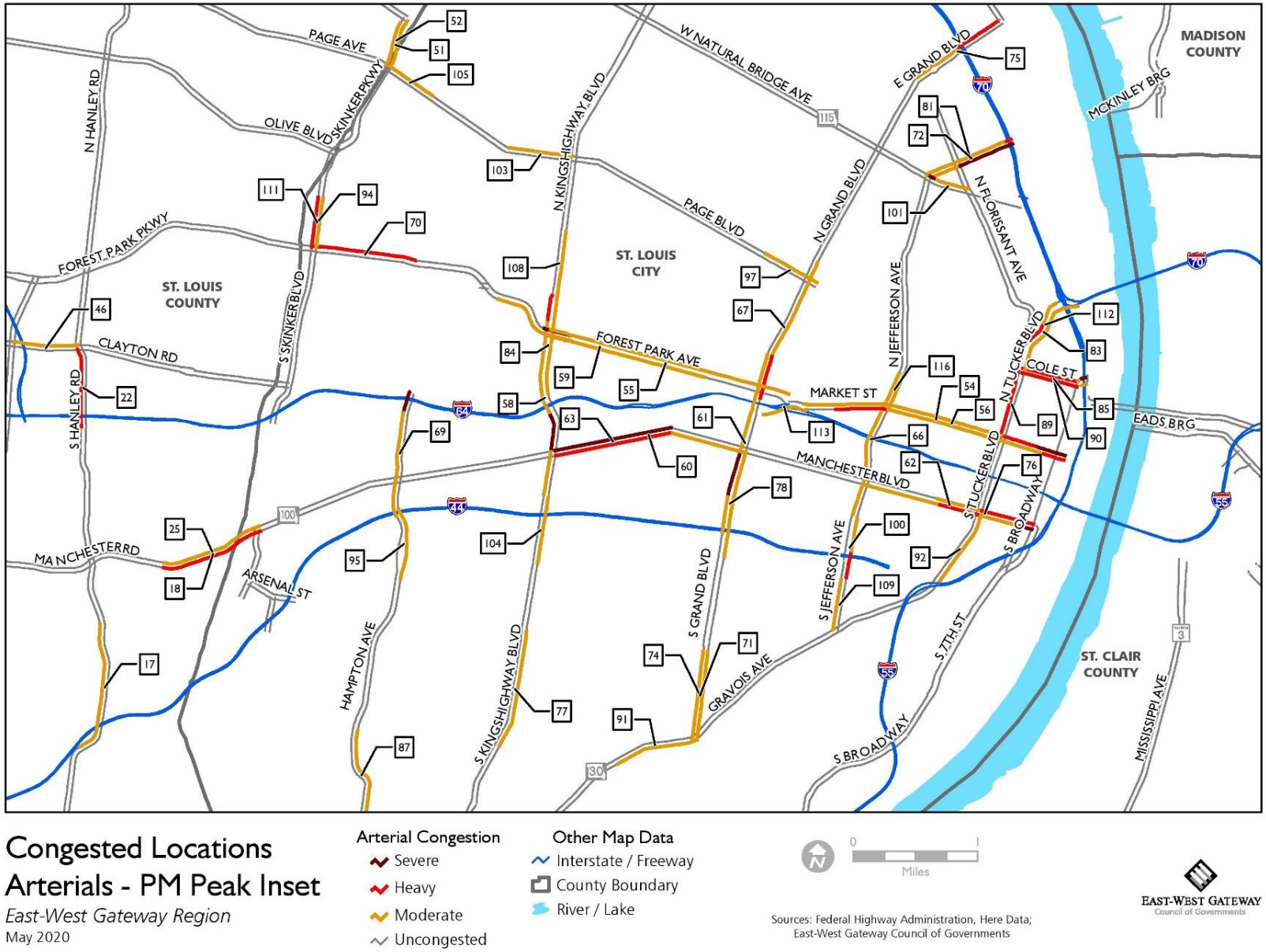
Other Map Data
- Interstate / Freeway
- County Boundary
- River / Lake

0 5 Miles

Sources: Federal Highway Administration, Here Data; East-West Gateway Council of Governments

East-West Gateway Council of Governments

Figure 18b: Congested Locations Inset Map (PM Peak)



Congested Locations
Arterials - PM Peak Inset

East-West Gateway Region

May 2020

Arterial Congestion
- Severe
- Heavy
- Moderate
- Uncongested

Other Map Data
- Interstate / Freeway
- County Boundary
- River / Lake

0 1 Miles

Sources: Federal Highway Administration, Here Data; East-West Gateway Council of Governments

East-West Gateway Council of Governments

Congestion Performance Analyses

Assessing the performance of regional congestion is one of the fundamental tasks of congestion management. Performance measurement allows system managers to ascertain whether their efforts at curbing congestion are yielding any significant effects on the driving public. In this section, three key analyses were undertaken for AM and PM peak periods. These are:

- Trends in congested miles by peak-period;
- Trends in average PTI by peak-period; and
- Trends in average TTI by peak-period.

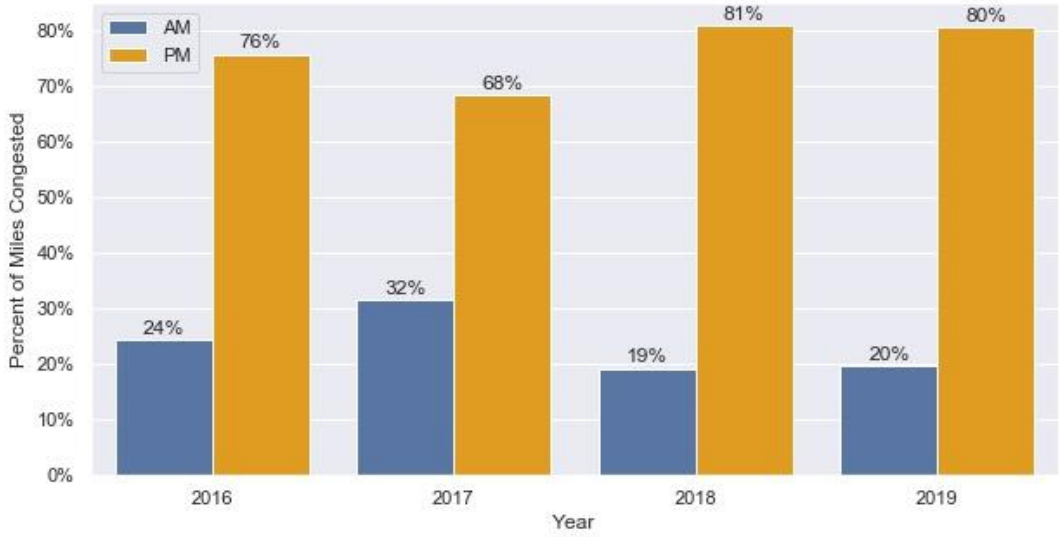
Total Congested Miles Trend

Total congestion looks at all congestion in both AM and PM peak period. Figure 19 compares the percentages of total network miles that are congested in each peak period for each year.

Findings

- Steady increase in the total mileage of congested locations, from 81 (2016) to 92 (2017) to 121 (2018) and 151 (2019).
- The ratio of total congested miles in the PM to AM peak period has continued to grow.

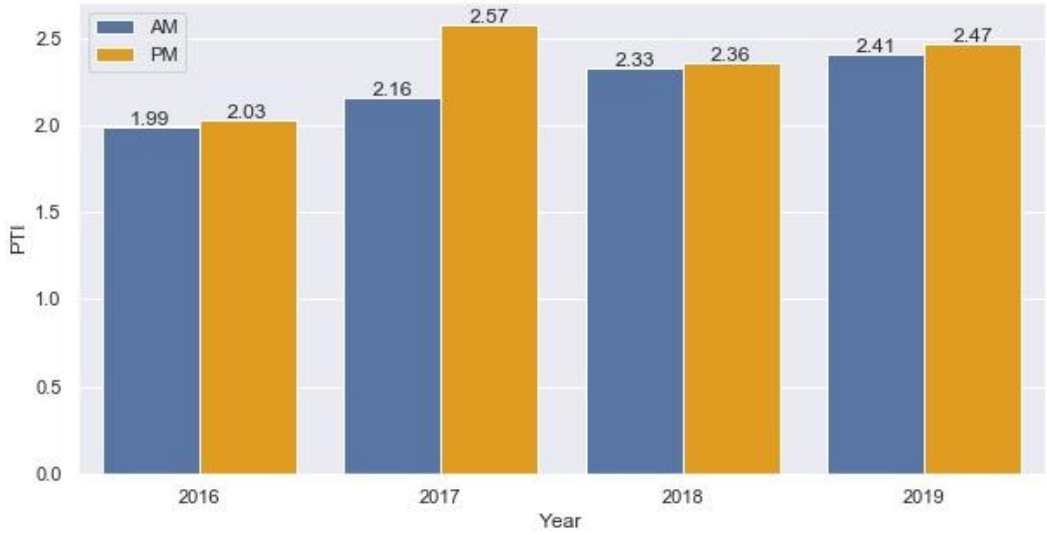
Figure 19: Trends in Total Congested Miles



Planning Time Index Trend by Peak-Period

PTI trend compares the average PTI in each peak period. Figure 20 shows the PTI trend by peak period. Both AM and PM peak hours showed a slight trend upwards.

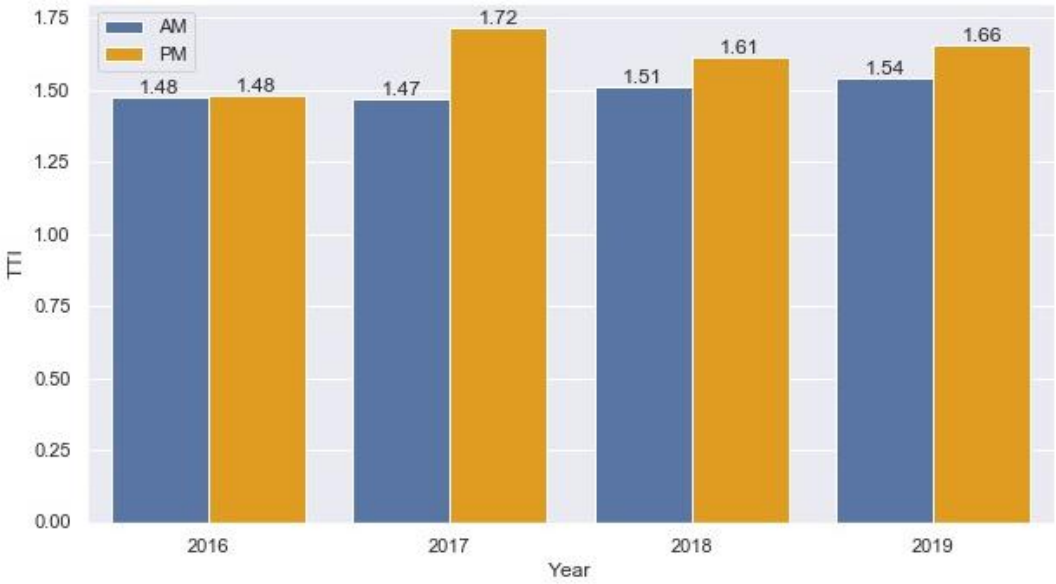
Figure 20: Trends in Planning Time Index (Average)



Travel Time Index Trend by Peak-Period

Figure 21 compares average TTI for morning and evening peak periods. The results indicated that TTI was relatively stable in the AM period. However, there was a slight upward movement in the PM peak period.

Figure 21: Trends in Travel Time Index (Average)



Ranked Congested Locations

All congested locations were ranked based on severity and delay impacts. Tables 14 and 15 show the top 10 locations by severity and delay impact, respectively. The complete list of ranked locations is available in the Appendix.

1. Severity and delay impact are defined as:

- The Severity is the average of the TTI and PTI. It looks at two aspects of congestion; the average delay of a congested location and how reliable that average is from day to day. Higher Severity numbers reflect more severe congestion.
- The Delay Impact is obtained by multiplying the congested miles of a location by the TTI. Its purpose is to compare delay impact to the motorist, by factoring in the comparative lengths of the queues in each congested location. Higher delay impact numbers reflect longer delays for motorists.

Table 14: Top10 Locations by Severity

No	Route	Limits	State	County	Direction	Peak	Queue Length	PTI	TTI	Severity	Delay Impact
1	Hanley Rd	Clayton Rd to I-64	MO	St. Louis	SB	PM	0.63	6.25	2.44	4.35	1.55
2	MO-100	Vandeventer Ave to Kingshighway Blvd	MO	St. Louis City	WB	PM	0.96	3.86	2.54	3.2	2.43
3	Skinker Blvd	Delmar Blvd to Forest Park Pkwy	MO	St. Louis City	SB	PM	0.43	4.17	2.22	3.2	0.95
4	MO-340	Chesterfield Pkwy to Baxter Rd	MO	St. Louis	SB	PM	1.38	4.24	2	3.12	2.75
5	MO-340	Clayton Rd to Kehrs Mill Rd	MO	St. Louis	NB	AM	1.16	4.5	1.63	3.07	1.89
6	MO-30	Sappington Rd to Lindbergh Blvd	MO	St. Louis	WB	PM	0.34	3.88	2.18	3.03	0.73
7	Forest Park	de Baliviere Ave to Skinker Blvd	MO	St. Louis City	WB	PM	0.84	3.75	1.99	2.87	1.66
8	MO-115	Florissant Ave to Salisbury St	MO	St. Louis City	NB	PM	0.35	3.25	2.38	2.82	0.84
9	Kingshighway Blvd	Lindell Blvd to McRee Ave	MO	St. Louis City	SB	PM	1.65	3.63	1.84	2.74	3.04
10	Salisbury St	Natural Br. Ave to I-70	MO	St. Louis City	EB	PM	0.72	3.23	2.2	2.72	1.59

Table 15: Top 10 Locations by Delay Impact

No	Route	Limits	State	County	Direction	Peak	Queue Length	PTI	TTI	Severity	Delay Impact
1	MO-D	I-170 to Schuetz Rd	MO	St. Louis	WB	PM	4.21	2.59	1.59	2.09	6.69
2	US-67	I-270 to New Halls Ferry Rd	MO	St. Louis	NB	PM	3.8	2.38	1.58	1.98	6.01
3	MO-141	MO-30 to MO-21	MO	Jefferson	SB	PM	3.95	2.88	1.5	2.19	5.93
4	Il-159	IL-162 to Governors Pky	IL	IL	NB	PM	3.55	2.31	1.63	1.97	5.79
5	MO-K	I-70 to MO-364	MO	St. Charles	SB	PM	3.5	2.02	1.5	1.76	5.25
6	MO-94	I-64 to Mid Rivers Mall Dr/MO-364	MO	St. Charles	NB	PM	3.38	1.94	1.49	1.72	5.04
7	IL-3	IL-157/CAMP JACKSON RD to I-55/1-64/I-70	IL	IL	NB	AM	2.97	2.48	1.42	1.95	4.22
8	Market St	4th St to Compton Ave	MO	St. Louis City	WB	PM	2.18	2.61	1.89	2.25	4.12
9	Forest Park	Market to Kingshighway	MO	St. Louis City	WB	PM	2.06	2.53	1.72	2.13	3.54
10	Il-159	Governors Parkway to I-270	IL	IL	SB	PM	2.45	1.73	1.4	1.565	3.43

Changes in Overall Severity and Delay Impact

The figures in this section provide a high-level comparison of severity and delay impacts from 2016 to 2019 based on the data developed in the Annual Regional Congestion reports. Figure 22 shows ranking of locations based on their severity scores. Overall, severity of congestion shows an increasing trend from 2016 to 2019.

Figure 22: Ranking of Locations by Severity

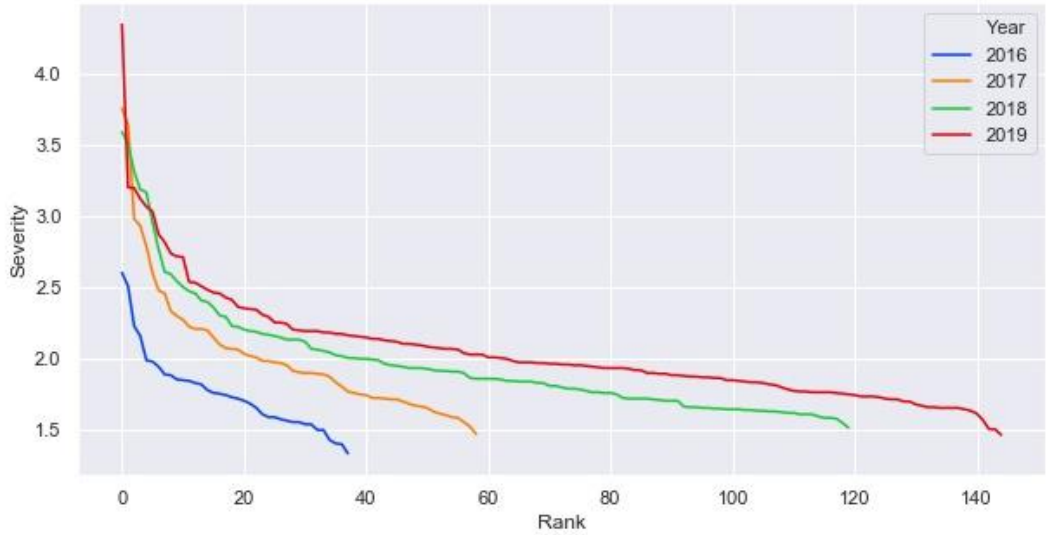
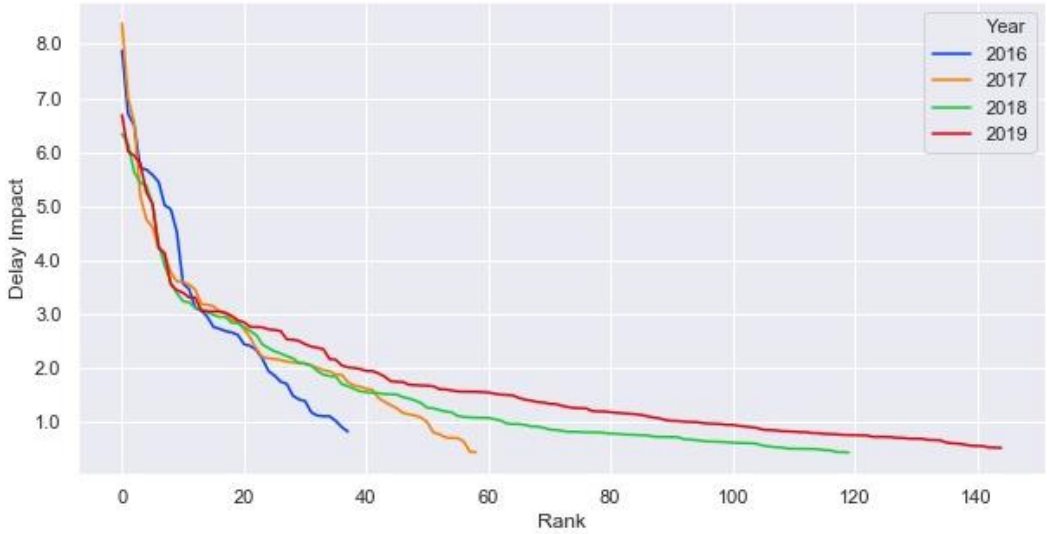


Figure 23 shows changes in delay impact from 2016 to 2019. Delay impact in the most impacted location have seen a slight decrease from 2016 to 2019 but has remained similar from 2018 to 2019.

Figure 23: Ranking of Locations by Delay Impact



Changes in Top 10 Severe and Delay Impact Locations

Tables 16a, 16b, 17a and 17b specifically examine severity and delay impact figures above for 2018 and 2019. The purpose of this analysis was to track locations that recur in the two years under examination. The entries with a single asterisk are reoccurring locations with the exact same limits in both years. The entries with a double asterisk represent locations that also reoccur, but their limits vary somewhat from 2018 to 2019.

Six locations in the top 10 most severely congested locations in 2018 were found in 2019. For delay impact, seven locations in the top 10 most delay impact locations in 2018 re-appeared in 2019.

Table 16a: Top 10 Most Severe Locations from 2018

No.	Route	Limits	Direction	Peak
1	Skinker Blvd *	Delmar Blvd to Forest Park Pky	SB	PM
2	Hanley Rd *	Clayton Rd to I-64	SB	PM
3	Laclede Station Rd	Big Bend Blvd to S Hanley	NB	AM
4	Salisbury St **	Florissant Ave to I-70	EB	PM
5	MO-340 (Olive Blvd) *	Chesterfield Pky to Baxter Rd	SB	PM
6	MO-141	Hawkins to I-44	NB	AM
7	MO-141	Big Bend Rd to 1-44	SB	PM
8	MO-100 (Manchester Rd)	Big Bend Blvd to McCausland Ave	EB	PM
9	MO-30 (Gravois Rd) *	Sappington Rd to Lindbergh Blvd	WB	PM
10	US-61 (Lindbergh Blvd)	Olive Blvd to Ladue Rd	SB	PM

** Reoccurring locations with the exact same limits in 2018 and 2019*
*** Reoccurring locations with limits varying from 2018 to 2019*

Table 16b: Top 10 Most Severe Locations from 2019

No.	Route	Limits	Direction	Peak
1	Hanley Rd *	Clayton Rd to I-64	SB	PM
2	MO-100	Vandeventer Ave to Kingshighway Blvd	WB	PM
3	Skinker Blvd *	Delmar Blvd to Forest Park Pkwy	SB	PM
4	MO-340 *	Chesterfield Pkwy to Baxter Rd	SB	PM
5	MO-340	Clayton Rd to Kehrs Mill Rd	NB	AM
6	MO-30 *	Sappington Rd to Lindbergh Blvd	WB	PM
7	Forest Park	de Baliviere Ave to Skinker Blvd	WB	PM
8	MO-115	Florissant Ave to Salisbury St	NB	PM
9	Kingshighway Blvd	Lindell Blvd to McRee Ave	SB	PM
10	Salisbury St **	Natural Br. Ave to I-70	EB	PM

Table 17a: Top 10 Locations with Most Delay Impacts from 2018

No.	Route	Limits	Direction	Peak
1	MO-D (Page Ave) *	I-170 to Schuetz Rd	WB	PM
2	MO-94 *	I-64 to MO-364	NB	PM
3	US-67 *	I-270 to New Halls Ferry Rd	NB	PM
4	MO-141 *	MO-30 to MO-21	SB	PM
5	IL-159 (Glen Carbon) *	IL-162 to Governors Pky	NB	PM
6	MO-K *	I-70 to MO-364	SB	PM
7	IL-159 (Belleville)	IL-15 to I-64	NB	PM
8	IL-159 (Belleville)	I-64 to IL-15	SB	PM
9	Forest Park Ave *	I-64 to Kingshighway Blvd	WB	PM
10	US-61 (Lindbergh Blvd)	Big Bend Rd to MO-100	NB	PM

Table 17b: Top 10 Locations with Most Delay Impacts from 2019

No.	Route	Limits	Direction	Peak
1	MO-D *	I-170 to Schuetz Rd	WB	PM
2	US-67 *	I-270 to New Halls Ferry Rd	NB	PM
3	MO-141 *	MO-30 to MO-21	SB	PM
4	Il-159 *	IL-162 to Governors Pky	NB	PM
5	MO-K *	I-70 to MO-364	SB	PM
6	MO-94 *	I-64 to Mid Rivers Mall Dr/MO-364	NB	PM
7	IL-3	IL-157/CAMP JACKSON RD to I-55/1-64/I-70	NB	AM
8	Market St	4th St to Compton Ave	WB	PM
9	Forest Park *	I-64 to Kingshighway Blvd	WB	PM
10	Il-159	Governors Parkway to I-270	SB	PM

Mobility-Enhancing Strategies

Following the implementation of mobility-enhancing projects, partners are often required to evaluate strategies to ensure that implemented strategies are effective at addressing congestion as intended. Strategies that significantly improve congestion are encouraged in future project sponsorship. The following sub-section reports mobility project evaluations from the Missouri and Illinois.

Missouri Traffic Signal Corridor Optimization Summaries

Table 18: Percent Change in Mobility and Environmental Measures of the Projects

Project	Measure Change in Percent							
	Travel Time	Number of Stops	Avg Speed	Total Delay	Fuel consumption	HC	CO	NOx
Route 364, I-64 & I-70 Interchanges, St. Charles Co., St. Louis Co. & St. Louis City	-3.1%	N/A	1.9%	-4.9%	-2.0%	N/A	N/A	N/A
Route 109, Shepard Rd through The Legends Parkway, St. Louis Co.	-9.7%	-34.5%	12.0%	-14.2%	-11.0%	-19.0%	-20.2%	-22.0%
Muegge Rd St. Charles Co., Mexico Rd. to Old Highway 94	-4.0%	-20.5%	4.9%	-19.9%	-2.0%	-2.9%	-1.6%	0.1%
Mid Rivers Mall Drive, St. Peters-Howell to Suemandy Rd, St. Charles Co.	-4.9%	-31.4%	6.2%	-15.0%	-4.9%	-11.8%	-10.4%	-18.4%

The following optimization projects were completed by the City of St. Louis. However, performance data is not available:

- North Broadway (Humboldt to Gimblin).
- South Broadway (Chippewa to Osceola).
- Egress plan re-optimization on Vandeventer for Fox Theater egress.
- Egress plan re-optimization downtown for Edward Jones Dome egress.

Illinois Traffic Signal Corridor Optimization Summaries

Table 19: Percent Change in Mobility and Environmental Measures of the Projects

Project	Measure Change in Percent			
	Travel Time	Number of Stops	Fuel consumption	Emissions
IL-157, IL-3 to I-255 NB Ramps,Cahokia IL	-6.0%	-10.0%	-3.0%	-5.0%
IL 3, N. Main St. to S. Main St., Columbia IL	-24.0%	-14.0%	-7.0%	-4.0%
US 50, Castle Acres Drive to Venita Drive/Regency Park, O'Fallon IL	-22.0%	-19.0%	-9.0%	-5.0%

Conclusions

Traffic congestion in the St. Louis region continues to be a concern for the public and policymakers alike. Traffic congestion in the region occurs disproportionately on freeways. Of the 418 congested miles of the CMP network in the AM and PM peak periods, freeways represented 267 miles while arterials had 151 miles. Most of the congestion in the region occurs during evening peak hours. Out of the 151 miles of arterial congestion, 30 miles occur in the morning peak while approximately 121 miles occur during evening peak hours. For freeways, morning peak period congestion accounted for 92 miles while 175 miles of congestion was in the evening rush hours.

While the total congested miles increased from 2018 to 2019, PM peak to AM peak ratio of total congested miles appeared similar in both years. At the same time, freeway congested miles stayed virtually the same while arterial congested miles increased. The 2018 analysis of the congested network revealed 387 congested miles (268 miles of freeways and 121 miles of arterials) Out of the 121 miles of arterial congestion, 23 miles occur in the morning peak while approximately 98 miles occur during evening peak hours. For freeways, morning peak period congestion accounted for 98 miles while 170 miles of congestion was in the evening rush hours.

A visual comparison of the 2018 versus 2019 congested locations over the peak hours might reveal more insights on the spatial changes in traffic pattern. Figures 24 and 25 are snapshots of freeway congestion in the most congested hour of the PM peak (5-6 PM) in 2018 and 2019. A visual examination of the two years was made to determine on a broad scale any significant changes in congestion from 2018 to 2019.

In general, the congestion pattern remained the same in 2018 and 2019 with some modest variations in intensity. A few notable exceptions are:

- Increased congestion in 2019 across the river WB into St. Charles County on MO-370 and MO-364 in the PM peak. Congestion on 370 went from none to heavy and on 364 congestion increased from moderate to heavy. It appears to have been caused by Bridge rehabilitation of Route 370 bridges over Route 94 in St. Charles County. This also caused traffic to divert to 364 and increase congestion there.
- Congestion on WB I-44 from east of I-270 increased significantly in 2019 in length and intensity as a result of I-270/Meramec River bridge construction in St. Louis County.
- Moderate congestion on WB I-270 from Il-203 to Riverview Dr In Missouri in 2018 did not recur in 2019. No apparent reason noted.
- Moderate/Heavy congestion on NB I-255 from IL-157 to Mousette Ln in 2018 did not recur in 2019. No apparent reason noted.

Similarly, Figures 26 and 27 are snapshots of freeway congestion in the most congested hour of the AM peak. Note that contrary to the PM peak, the AM peak had two distinct hourly peaks. West of I-270 the peak was 7 to 8 AM, whereas the eastern part of the region peaked from 8 to 9 AM; thus the figures are split into the two hourly peaks in order to capture both in this analysis.

Figure 24: Congested Freeway Location in 2018, PM Peak – 5-6 PM

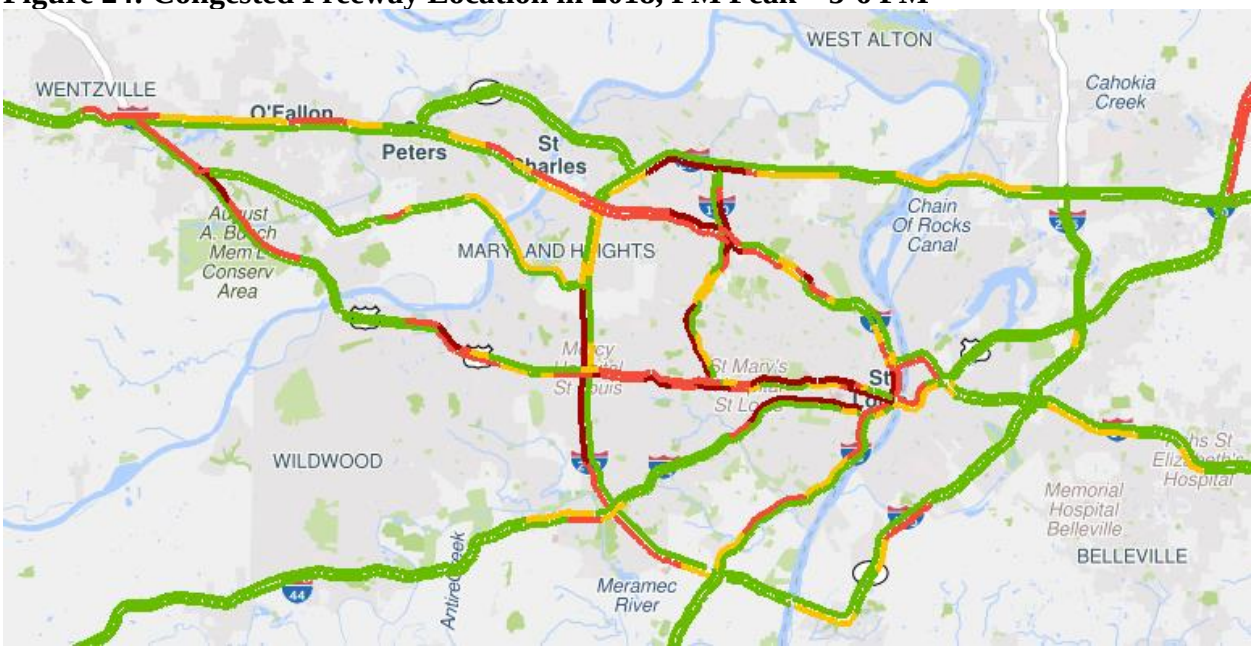


Figure 25: Congested Freeway Location in 2019, PM Peak – 5-6 PM

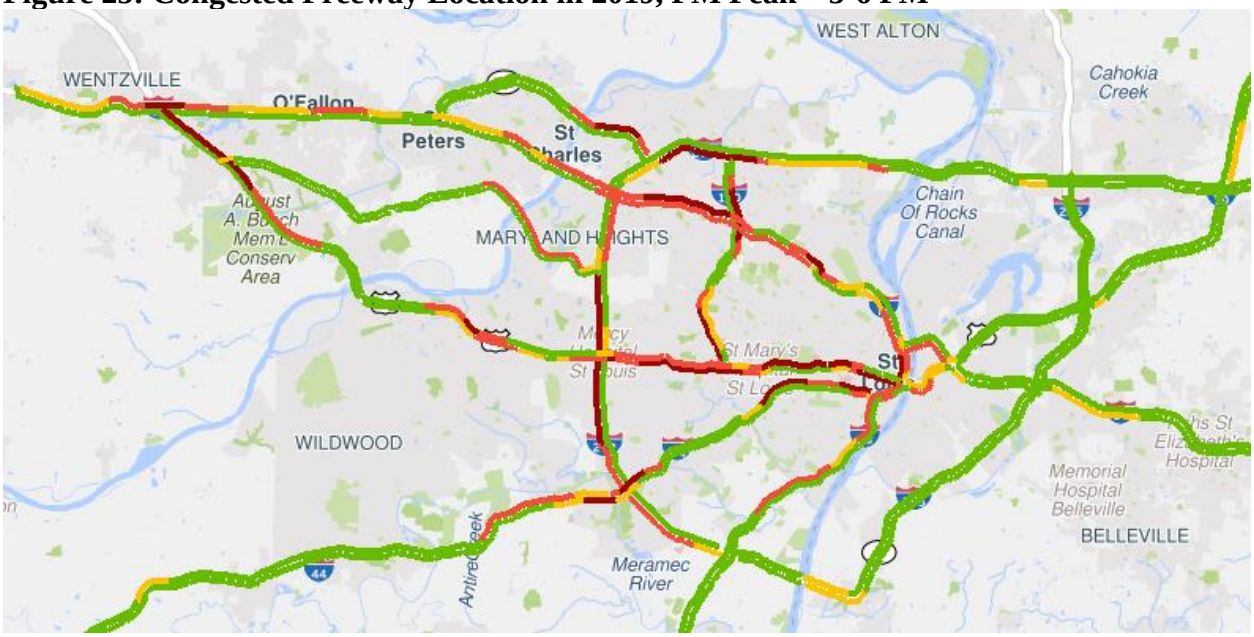
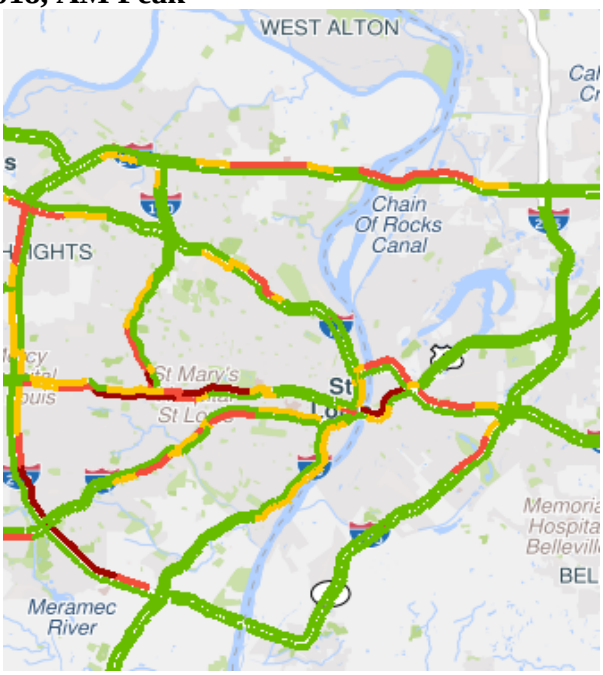


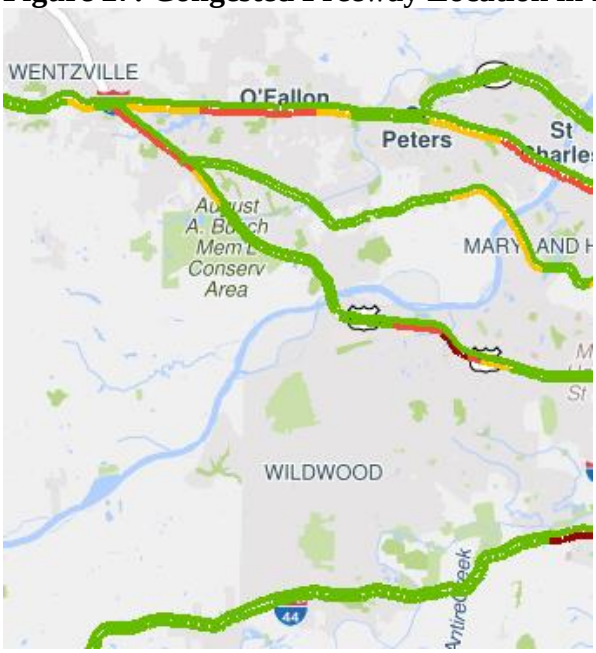
Figure 26: Congested Freeway Location in 2018, AM Peak

AM Peak – 7-8 AM

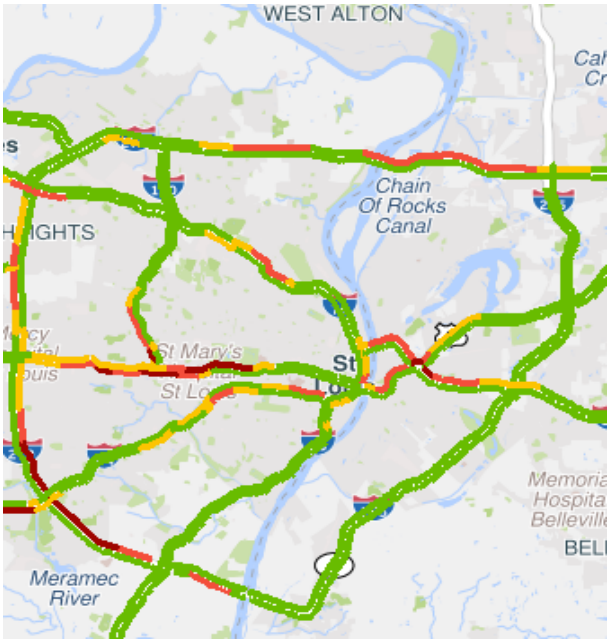


AM Peak – 8-9 AM

Figure 27: Congested Freeway Location in 2019, AM Peak



AM Peak – 8-9 AM



AM Peak – 8-9 AM

The congestion pattern varied little from 2018 to 2019. As with the PM congestion, there were some variations in intensity, but the two years were more consistent in the AM than the PM congestion. The only notable differences were:

- A segment on EB I-255 in Missouri between Lindberg and Koch Rd. that occurred only in 2019.
- A segment on SB I-255 in Illinois between State St. and IL-15 that occurred only in 2018

Inter-jurisdictional coordination is vital for analyzing and mitigating regional traffic congestion. Since trips produced in one jurisdiction end up being attracted to others, the attendant congestion resulting from this flow of traffic does not respect artificial jurisdictional boundaries. Effective solutions to traffic congestion require continued deliberations on transferring lessons from implemented strategies. The active participation of regional partners in sharing ideas on workable strategies and challenges in implementation at the Congestion Management and Operations Committee (CMOC) meetings is encouraging. Overall, evaluation results of the impact of signal timing projects on congestion in the region is positive. The foregoing analysis has enhanced our understanding of congestion in the region and where we should consider directing congestion mitigation effects. We encourage stakeholders to continuously refer to the list of congested locations in implementing mobility-enhancing strategies that have the potential to reduce regional congestion significantly.

Appendix

Appendix 1: Ranked Freeway Locations

Table A.1: Freeway Locations Ranked by Severity

No	Route	Limits	State	County	Direction	Peak	Queue Length	PTI	TTI	Severity	Delay Impact
1	I-64	Chouteau/Boyle to Poplar St Bridge	MO	St. Louis City	EB	PM	3.59	4.86	1.73	3.3	6.21
2	I-170	Page Ave to I-64	MO	St. Louis	SB	PM	4.2	3.97	1.95	2.96	8.18
3	I-44	I-55 to Laclede Station Rd	MO	St. Louis City	WB	PM	6.85	4.17	1.72	2.95	11.78
4	I-270	I-55 to MO-100	MO	St. Louis	WB/NB	AM	9.54	3.41	1.64	2.53	15.65
5	MO-370	Taussig to MO-94	MO	St. Louis/St. Charles	WB	PM	3.64	3.73	1.33	2.53	4.85
6	I-64/I-55/I-64	I-255 to PSB	IL	IL	WB	AM	6.72	3.38	1.58	2.48	10.62
7	I-270	MO-D/Page Ave to I-55	MO	St. Louis	SB	PM	15.77	3.19	1.67	2.43	26.34
8	I-64	MO-94 to I-70	MO	St. Charles	WB	PM	10.1	3.25	1.59	2.42	16.06
9	I-64	Market St Exit 38 to I-270	MO	St. Louis City/Co	WB	PM	12.37	3.1	1.7	2.4	21.03
10	I-64	Chouteau/Boyle to Hanley Rd	MO	St. Louis City/Co	WB	AM	4.68	3.18	1.6	2.39	7.49
11	I-44	MO 141 to Highway Dr.	MO	St. Louis	EB	AM	3	3.14	1.45	2.3	4.34
12	I-270	MO-370 to Lilac Ave	MO	St. Louis	EB	PM	11.06	2.93	1.56	2.25	17.26
13	I-55/I-70	IL-203 to I-64	IL	IL	WB	AM	3.71	2.97	1.37	2.17	5.08
14	I-64	Mason Rd to Bellevue Ave	MO	St. Louis	EB	PM	9.71	2.81	1.47	2.14	14.27
15	I-70	Stan Musial Br to I-64	IL	IL	EB/SB	PM	2.61	2.78	1.43	2.11	3.74
16	I-170	MO 180 to Hanley Rd	MO	St. Louis	NB	PM	3.84	2.72	1.47	2.1	5.65
17	I-64	I-270 to Bellevue Ave	MO	St. Louis	EB	AM	7.31	2.7	1.38	2.04	10.09
18	I-70	I-64 to Stan Musial Br	IL	IL	NB/WB	AM	2.57	2.73	1.3	2.02	3.34
19	I-64	Long Rd to Chesterfield Pkwy East	MO	St. Louis	EB	AM	4.25	2.75	1.27	2.01	5.4
20	I-270	Bellefontaine to Washington-Elizabeth	MO	St. Louis	WB	AM	4.6	2.62	1.34	1.98	6.16
21	I-44	Bowles Ave to I-270	MO	St. Louis	EB	PM	2.84	2.59	1.36	1.98	3.86
22	I-70	Hanley Rd to Cave Springs	MO	St. Louis	WB	PM	14.7	2.56	1.37	1.97	20.14
23	I-70	Shreve Ave to MO-U/Lucas and Hunt	MO	St. Louis City	WB	PM	3.36	2.37	1.38	1.88	4.64
24	I-55	I-44/55 to Park	MO	St. Louis City	NB	PM	0.44	2.5	1.22	1.86	0.53
25	I-70-44-55	Grand Ave to Broadway	MO	St. Louis City	EB-SB	PM	7.29	2.4	1.29	1.85	9.4
26	I-64	Timberlake Manor Pkwy to Boones Crossing	MO	St. Louis	WB	PM	4.34	2.34	1.33	1.84	5.77
27	I-70	Zumbehl Rd to MO-180	MO	St. Charles/St. Louis	EB	AM	6.94	2.4	1.25	1.83	8.68
28	I-55/I-64	PSB to MLK Exit 2	IL	IL	EB	PM	2.49	2.32	1.32	1.82	3.29
29	I-44/I-70	PSB to St. Louis Ave.	MO	St. Louis City	WB	PM	2.85	2.33	1.27	1.8	3.62
30	I-44	PSB to Tenth St.	MO	St. Louis City	WB	AM	2.02	2.38	1.22	1.8	2.46
31	I-70	Earth City XPWY to Jennings Sta Rd	MO	St. Louis	EB	PM	11.14	2.29	1.25	1.77	13.93
32	I-44	I-55 to Kingshighway Blvd	MO	St. Louis City	WB	AM	2.66	2.25	1.2	1.73	3.2

Table A.1: Freeway Locations Ranked by Severity (Continued)

No	Route	Limits	State	County	Direction	Peak	Queue Length	PTI	TTI	Severity	Delay Impact
33	I-70	Bircher to MO-U/Lucas and Hunt	MO	St. Louis City	WB	AM	2.5	2.23	1.2	1.72	3
34	I-70	Lake St. Louis to TR Hughes Blvd	MO	St. Charles	EB	AM	5.01	2.16	1.21	1.69	6.06
35	I-44	Elm Ave to Laclede Station Rd	MO	St. Louis	EB	AM	1.59	2.22	1.13	1.68	1.8
36	I-70	Mid Rivers Mall Dr. to MO-W	MO	St. Charles	WB	PM	18.31	2.08	1.26	1.67	23.07
37	I-44	Big Bend Blvd to Antire Rd	MO	St. Louis	WB	PM	9.91	2.03	1.31	1.67	12.98
38	I-55	Gravois to Park	MO	St. Louis City	NB	AM	0.9	2.16	1.14	1.65	1.02
39	I-170	I-64 to Page Ave	MO	St. Louis	SB	AM	4.2	2.03	1.2	1.62	5.04
40	I-55	Virginia to Reavis Barracks	MO	St. Louis City/Co	SB	PM	4.25	1.98	1.19	1.59	5.06
41	I-64	Chesterfield Pky E to MO-141	MO	St. Louis	EB	PM	3.44	1.97	1.2	1.59	4.13
42	I-64	I-70 to MO-N	MO	St. Charles	EB	AM	4.41	1.89	1.21	1.55	5.34
43	I-44	Compton to Jefferson	MO	St. Louis City	EB	PM	0.73	1.87	1.18	1.53	0.86
44	I-270	Dorsett to MO-21	MO	St. Louis	SB	AM	4.04	1.85	1.16	1.51	4.69
45	I-255	IL-3 to MO State Line	IL	IL	SB	AM	2.28	1.85	1.04	1.45	2.37
46	I-270	MO-D/Page Ave to I-70	MO	St. Louis	NB	PM	3.52	1.64	1.14	1.39	4.02
47	I-170	Brentwood Blvd to Delmar Blvd	MO	St. Louis	NB	PM	1.54	1.56	1.18	1.37	1.82
48	I-270	I-255 to Riverview Dr	IL	IL	WB	AM	7.07	1.46	1.25	1.36	8.84
49	I-255	Lindbergh Blvd to Koch Rd	MO	St. Louis	EB	AM	1.91	1.05	1.12	1.09	2.14

Table A.2: Freeway Locations Ranked by Delay Impact

No	Route	Limits	State	County	Direction	Peak	Queue Length	PTI	TTI	Severity	Delay Impact
1	I-270	MO-D/Page Ave to I-55	MO	St. Louis	SB	PM	15.77	3.19	1.67	2.43	26.34
2	I-70	Mid Rivers Mall Dr. to MO-W	MO	St. Charles	WB	PM	18.31	2.08	1.26	1.67	23.07
3	I-64	Market St Exit 38 to I-270	MO	St. Louis City/Co	WB	PM	12.37	3.1	1.7	2.4	21.03
4	I-70	Hanley Rd to Cave Springs	MO	St. Louis	WB	PM	14.7	2.56	1.37	1.97	20.14
5	I-270	MO-370 to Lilac Ave	MO	St. Louis	EB	PM	11.06	2.93	1.56	2.25	17.26
6	I-64	MO-94 to I-70	MO	St. Charles	WB	PM	10.1	3.25	1.59	2.42	16.06
7	I-270	I-55 to MO-100	MO	St. Louis	WB/NB	AM	9.54	3.41	1.64	2.53	15.65
8	I-64	Mason Rd to Bellevue Ave	MO	St. Louis	EB	PM	9.71	2.81	1.47	2.14	14.27
9	I-70	Earth City XPWY to Jennings Sta Rd	MO	St. Louis	EB	PM	11.14	2.29	1.25	1.77	13.93
10	I-44	Big Bend Blvd to Antire Rd	MO	St. Louis	WB	PM	9.91	2.03	1.31	1.67	12.98
11	I-44	I-55 to Laclede Station Rd	MO	St. Louis City	WB	PM	6.85	4.17	1.72	2.95	11.78
12	I-64/I-55/I-64	I-255 to PSB	IL	IL	WB	AM	6.72	3.38	1.58	2.48	10.62
13	I-64	I-270 to Bellevue Ave	MO	St. Louis	EB	AM	7.31	2.7	1.38	2.04	10.09
14	I-70-44-55	Grand Ave to Broadway	MO	St. Louis City	EB-SB	PM	7.29	2.4	1.29	1.85	9.4
15	I-270	I-255 to Riverview Dr	IL	IL	WB	AM	7.07	1.46	1.25	1.36	8.84
16	I-70	Zumbehl Rd to MO-180	MO	St. Charles/St. Louis	EB	AM	6.94	2.4	1.25	1.83	8.68
17	I-170	Page Ave to I-64	MO	St. Louis	SB	PM	4.2	3.97	1.95	2.96	8.18
18	I-64	Chouteau/Boyle to Hanley Rd	MO	St. Louis City/Co	WB	AM	4.68	3.18	1.6	2.39	7.49
19	I-64	Chouteau/Boyle to Poplar St Bridge	MO	St. Louis City	EB	PM	3.59	4.86	1.73	3.3	6.21
20	I-270	Bellefontaine to Washington-Elizabeth	MO	St. Louis	WB	AM	4.6	2.62	1.34	1.98	6.16
21	I-70	Lake St. Louis to TR Hughes Blvd	MO	St. Charles	EB	AM	5.01	2.16	1.21	1.69	6.06
22	I-64	Timberlake Manor Pkwy to Boones Crossing	MO	St. Louis	WB	PM	4.34	2.34	1.33	1.84	5.77
23	I-170	MO 180 to Hanley Rd	MO	St. Louis	NB	PM	3.84	2.72	1.47	2.1	5.65
24	I-64	Long Rd to Chesterfield Pkwy East	MO	St. Louis	EB	AM	4.25	2.75	1.27	2.01	5.4
25	I-64	I-70 to MO-N	MO	St. Charles	EB	AM	4.41	1.89	1.21	1.55	5.34
26	I-55/I-70	IL-203 to I-64	IL	IL	WB	AM	3.71	2.97	1.37	2.17	5.08
27	I-55	Virginia to Reavis Barracks	MO	St. Louis City/Co	SB	PM	4.25	1.98	1.19	1.59	5.06
28	I-170	I-64 to Page Ave	MO	St. Louis	SB	AM	4.2	2.03	1.2	1.62	5.04
29	MO-370	Taussig to MO-94	MO	St. Louis/St. Charles	WB	PM	3.64	3.73	1.33	2.53	4.85
30	I-270	Dorsett to MO-21	MO	St. Louis	SB	AM	4.04	1.85	1.16	1.51	4.69
31	I-70	Shreve Ave to MO-U/Lucas and Hunt	MO	St. Louis City	WB	PM	3.36	2.37	1.38	1.88	4.64
32	I-44	MO 141 to Highway Dr.	MO	St. Louis	EB	AM	3	3.14	1.45	2.3	4.34
33	I-64	Chesterfield Pky E to MO-141	MO	St. Louis	EB	PM	3.44	1.97	1.2	1.59	4.13
34	I-270	MO-D/Page Ave to I-70	MO	St. Louis	NB	PM	3.52	1.64	1.14	1.39	4.02
35	I-44	Bowles Ave to I-270	MO	St. Louis	EB	PM	2.84	2.59	1.36	1.98	3.86
36	I-70	Stan Musial Br to I-64	IL	IL	EB/SB	PM	2.61	2.78	1.43	2.11	3.74

Table A.2: Freeway Locations Ranked by Delay Impact (Continued)

No	Route	Limits	State	County	Direction	Peak	Queue Length	PTI	TTI	Severity	Delay Impact
37	I-44/I-70	PSB to St. Louis Ave.	MO	St. Louis City	WB	PM	2.85	2.33	1.27	1.8	3.62
38	I-70	I-64 to Stan Musial Br	IL	IL	NB/WB	AM	2.57	2.73	1.3	2.02	3.34
39	I-55/I-64	PSB to MLK Exit 2	IL	IL	EB	PM	2.49	2.32	1.32	1.82	3.29
40	I-44	I-55 to Kingshighway Blvd	MO	St. Louis City	WB	AM	2.66	2.25	1.2	1.73	3.2
41	I-70	Bircher to MO-U/Lucas and Hunt	MO	St. Louis City	WB	AM	2.5	2.23	1.2	1.72	3
42	I-44	PSB to Tenth St.	MO	St. Louis City	WB	AM	2.02	2.38	1.22	1.8	2.46
43	I-255	IL-3 to MO State Line	IL	IL	SB	AM	2.28	1.85	1.04	1.45	2.37
44	I-255	Lindbergh Blvd to Koch Rd	MO	St. Louis	EB	AM	1.91	1.05	1.12	1.09	2.14
45	I-170	Brentwood Blvd to Delmar Blvd	MO	St. Louis	NB	PM	1.54	1.56	1.18	1.37	1.82
46	I-44	Elm Ave to Laclede Station Rd	MO	St. Louis	EB	AM	1.59	2.22	1.13	1.68	1.8
47	I-55	Gravois to Park	MO	St. Louis City	NB	AM	0.9	2.16	1.14	1.65	1.02
48	I-44	Compton to Jefferson	MO	St. Louis City	EB	PM	0.73	1.87	1.18	1.53	0.86
49	I-55	I-44/55 to Park	MO	St. Louis City	NB	PM	0.44	2.5	1.22	1.86	0.53

Appendix 2: Ranked Arterial Locations

Table A.3: City of St. Louis Arterial Locations Ranked by Severity

No	Route	Limits	State	Direction	Peak	Queue Length	PTI	TTI	Severity	Delay Impact
1	MO-100	Vandeventer Ave to Kingshighway Blvd	MO	WB	PM	0.96	3.86	2.54	3.2	2.43
2	Skinker Blvd	Delmar Blvd to Forest Park Pkwy	MO	SB	PM	0.43	4.17	2.22	3.2	0.95
3	Forest Park	de Baliviere Ave to Skinker Blvd	MO	WB	PM	0.84	3.75	1.99	2.87	1.66
4	MO-115	Florissant Ave to Salisbury St	MO	NB	PM	0.35	3.25	2.38	2.82	0.84
5	Kingshighway Blvd	Lindell Blvd to McRee Ave	MO	SB	PM	1.65	3.63	1.84	2.74	3.04
6	Salisbury St	Natural Br. Ave to I-70	MO	EB	PM	0.72	3.23	2.2	2.72	1.59
7	Tucker Blvd	Stan Musial M. Brg. (ramp) to Ofallon St	MO	SB	PM	0.34	3.03	1.93	2.48	0.65
8	Grand Blvd	Lindell Blvd to I-44	MO	SB	PM	1.5	3.13	1.78	2.46	2.67
9	Hampton Ave	I-64 to I-44	MO	SB	PM	1.02	3.12	1.7	2.41	1.73
10	Cole St	I-44 to Tucker Blvd	MO	WB	PM	0.55	2.52	2.09	2.31	1.16
11	Cole St	Tucker Blvd to I-44	MO	EB	PM	0.55	2.64	1.94	2.29	1.07
12	Market St	4th St to Compton Ave	MO	WB	PM	2.18	2.61	1.89	2.25	4.12
13	Tucker Blvd	Cole St to Broadway	MO	NB	PM	0.74	2.9	1.6	2.25	1.18
14	Tucker Blvd	Cole St to Market St	MO	SB	PM	0.57	2.56	1.92	2.24	1.09
15	MO-100	Broadway to Truman Pkwy	MO	WB	PM	0.82	2.59	1.81	2.2	1.48
16	Market St	Jefferson Ave to Garrison Ln	MO	EB	AM	0.42	2.6	1.79	2.2	0.75
17	MO-100	Jefferson Ave to Broadway	MO	EB	PM	1.41	2.61	1.77	2.19	2.49
18	Skinker Blvd	Delmar Blvd to Forest Park Pkwy	MO	SB	AM	0.43	2.78	1.58	2.18	0.67
19	Tucker Blvd	Stan Musial M. Brg. (ramp) to Ofallon St	MO	SB	AM	0.34	2.7	1.61	2.16	0.54
20	Market St	4th st to 14th st	MO	EB	AM	0.69	2.69	1.61	2.15	1.12
21	Salisbury St	Florissant Ave to I-70	MO	EB	AM	0.49	2.56	1.71	2.14	0.83
22	Forest Park	Market to Kingshighway	MO	WB	PM	2.06	2.53	1.72	2.13	3.54
23	Jefferson Ave	Washington Ave to Park Ave	MO	SB	PM	1.23	2.59	1.61	2.1	1.99
24	Grand Blvd	Hall St to Florissant Ave	MO	SB	PM	0.82	2.37	1.83	2.1	1.49
25	MO-D	Goodfellow Blvd to Kienlen Ave	MO	WB	PM	0.44	2.45	1.74	2.1	0.76
26	Market St	Garrison Ln to 4th St	MO	EB	PM	1.92	2.4	1.76	2.08	3.39
27	Jefferson Ave	Russell Blvd to Park Ave	MO	NB	PM	0.51	2.46	1.66	2.06	0.84
28	Jefferson Ave	Russell Blvd to MO-30	MO	SB	PM	0.43	2.45	1.6	2.03	0.69
29	MO-100	Broadway to Truman Pkwy	MO	WB	AM	0.82	2.36	1.65	2.01	1.35
30	MO-100	Kingshighway Blvd to Grand Blvd	MO	EB	PM	1.57	2.19	1.81	2	2.84
31	Salisbury St	I-70 to Natural Br. Ave	MO	WB	PM	0.75	2.27	1.66	1.97	1.24
32	Cole St	I-44 to Tucker Blvd	MO	WB	AM	0.55	2.33	1.61	1.97	0.89
33	Cole St	Tucker Blvd to I-44	MO	EB	AM	0.55	2.35	1.59	1.97	0.87

Table A.3: City of St. Louis Arterial Locations Ranked by Severity (Continued)

No	Route	Limits	State	Direction	Peak	Queue Length	PTI	TTI	Severity	Delay Impact
34	Jefferson Ave	Market to Washington Blvd	MO	NB	PM	0.3	2.27	1.66	1.97	0.5
35	Market St	4th St to Garrison Ln	MO	WB	AM	1.92	2.34	1.58	1.96	3.04
36	Tucker Blvd	Cole St to Market St	MO	SB	AM	0.57	2.3	1.61	1.96	0.91
37	Salisbury St	I-70 to Florissant Ave	MO	WB	AM	0.49	2.38	1.53	1.96	0.74
38	Forest Park	Lindell Blvd to Vandeventer Ave	MO	EB	PM	1.85	2.26	1.64	1.95	3.04
39	MO-100	Vandeventer Ave to Kingshighway Blvd	MO	WB	AM	0.96	2.25	1.64	1.95	1.57
40	MO-D	MLK Dr to Vandeventer Ave	MO	WB	PM	0.52	2.16	1.72	1.94	0.9
41	Grand Blvd	Lindell Blvd to Park Ave	MO	SB	AM	1.19	2.32	1.54	1.93	1.83
42	Grand Blvd	Russell Blvd to MO-100	MO	NB	PM	0.89	2.33	1.53	1.93	1.35
43	Kingshighway Blvd	I-64 to Lindell Blvd	MO	NB	PM	0.79	2.36	1.49	1.93	1.18
44	Tucker Blvd	I-55 to Park Ave	MO	NB	AM	0.34	2.27	1.52	1.9	0.51
45	Forest Park	Vandeventer Ave to Kingshighway Blvd	MO	WB	AM	1.36	2.21	1.57	1.89	2.14
46	Market St	Compton Ave to Grand Blvd	MO	EB	PM	0.38	2.29	1.49	1.89	0.57
47	Kingshighway Blvd	I-64 to Lindell Blvd	MO	NB	AM	0.79	2.31	1.45	1.88	1.15
48	Jefferson Ave	Washington Ave to I-64	MO	SB	AM	0.64	2.27	1.48	1.88	0.95
49	Grand Blvd	Hall St to Florissant Ave	MO	SB	AM	0.82	2.12	1.62	1.87	1.32
50	MO-100	Truman Pkwy to Broadway	MO	EB	AM	0.79	2.23	1.5	1.87	1.19
51	Hampton Ave	Watson Rd to I-44	MO	NB	PM	0.6	2.2	1.54	1.87	0.93
52	Grand Blvd	Market St to Cass Ave	MO	NB	PM	1.22	2.1	1.62	1.86	1.97
53	Grand Blvd	Chippewa St to Arsenal St	MO	NB	PM	1	2.07	1.65	1.86	1.65
54	Kingshighway Blvd	SW Ave to McRee Ave	MO	NB	PM	0.55	2.22	1.41	1.82	0.78
55	MO-30	Chippewa St to Grand Blvd	MO	EB	PM	0.68	2.08	1.54	1.81	1.05
56	Skinker Blvd	Forest Park Pkwy to Delmar Blvd	MO	NB	PM	0.43	2	1.53	1.77	0.65
57	Grand Blvd	Arsenal St to Chippewa St	MO	SB	PM	1	1.97	1.55	1.76	1.55
58	MO-D	Kingshighway Blvd to Union	MO	WB	PM	0.54	2.08	1.44	1.76	0.78
59	MO-100	Kingshighway Blvd to Grand Blvd	MO	EB	AM	1.57	1.97	1.49	1.73	2.33
60	Tucker Blvd	I-55 to Chouteau Ave	MO	NB	PM	0.65	1.89	1.53	1.71	0.99
61	Kingshighway Blvd	Laclede Ave to Delmar Blvd	MO	NB	PM	0.53	1.92	1.39	1.66	0.74
62	Kingshighway Blvd	Chippewa St to Arsenal St	MO	NB	PM	0.97	1.86	1.44	1.65	1.4
63	Hampton Ave	Eichelberger St to Chippewa St	MO	NB	PM	0.82	1.63	1.37	1.5	1.13

Table A.4: City of St. Louis Arterial Locations Ranked by Delay Impact

No	Route	Limits	State	Direction	Peak	Queue Length	PTI	TTI	Severity	Delay Impact
1	Market St	4th St to Compton Ave	MO	WB	PM	2.18	2.61	1.89	2.25	4.12
2	Forest Park	Market to Kingshighway	MO	WB	PM	2.06	2.53	1.72	2.13	3.54
3	Market St	Garrison Ln to 4th St	MO	EB	PM	1.92	2.4	1.76	2.08	3.39
4	Kingshighway Blvd	Lindell Blvd to McRee Ave	MO	SB	PM	1.65	3.63	1.84	2.74	3.04
5	Market St	4th St to Garrison Ln	MO	WB	AM	1.92	2.34	1.58	1.96	3.04
6	Forest Park	Lindell Blvd to Vandeventer Ave	MO	EB	PM	1.85	2.26	1.64	1.95	3.04
7	MO-100	Kingshighway Blvd to Grand Blvd	MO	EB	PM	1.57	2.19	1.81	2	2.84
8	Grand Blvd	Lindell Blvd to I-44	MO	SB	PM	1.5	3.13	1.78	2.46	2.67
9	MO-100	Jefferson Ave to Broadway	MO	EB	PM	1.41	2.61	1.77	2.19	2.49
10	MO-100	Vandeventer Ave to Kingshighway Blvd	MO	WB	PM	0.96	3.86	2.54	3.2	2.43
11	MO-100	Kingshighway Blvd to Grand Blvd	MO	EB	AM	1.57	1.97	1.49	1.73	2.33
12	Forest Park	Vandeventer Ave to Kingshighway Blvd	MO	WB	AM	1.36	2.21	1.57	1.89	2.14
13	Jefferson Ave	Washington Ave to Park Ave	MO	SB	PM	1.23	2.59	1.61	2.1	1.99
14	Grand Blvd	Market St to Cass Ave	MO	NB	PM	1.22	2.1	1.62	1.86	1.97
15	Grand Blvd	Lindell Blvd to Park Ave	MO	SB	AM	1.19	2.32	1.54	1.93	1.83
16	Hampton Ave	I-64 to I-44	MO	SB	PM	1.02	3.12	1.7	2.41	1.73
17	Forest Park	de Baliviere Ave to Skinker Blvd	MO	WB	PM	0.84	3.75	1.99	2.87	1.66
18	Grand Blvd	Chippewa St to Arsenal St	MO	NB	PM	1	2.07	1.65	1.86	1.65
19	Salisbury St	Natural Br. Ave to I-70	MO	EB	PM	0.72	3.23	2.2	2.72	1.59
20	MO-100	Vandeventer Ave to Kingshighway Blvd	MO	WB	AM	0.96	2.25	1.64	1.95	1.57
21	Grand Blvd	Arsenal St to Chippewa St	MO	SB	PM	1	1.97	1.55	1.76	1.55
22	Grand Blvd	Hall St to Florissant Ave	MO	SB	PM	0.82	2.37	1.83	2.1	1.49
23	MO-100	Broadway to Truman Pkwy	MO	WB	PM	0.82	2.59	1.81	2.2	1.48
24	Kingshighway Blvd	Chippewa St to Arsenal St	MO	NB	PM	0.97	1.86	1.44	1.65	1.4
25	MO-100	Broadway to Truman Pkwy	MO	WB	AM	0.82	2.36	1.65	2.01	1.35
26	Grand Blvd	Russell Blvd to MO-100	MO	NB	PM	0.89	2.33	1.53	1.93	1.35
27	Grand Blvd	Hall St to Florissant Ave	MO	SB	AM	0.82	2.12	1.62	1.87	1.32
28	Salisbury St	I-70 to Natural Br. Ave	MO	WB	PM	0.75	2.27	1.66	1.97	1.24
29	MO-100	Truman Pkwy to Broadway	MO	EB	AM	0.79	2.23	1.5	1.87	1.19
30	Tucker Blvd	Cole St to Broadway	MO	NB	PM	0.74	2.9	1.6	2.25	1.18
31	Kingshighway Blvd	I-64 to Lindell Blvd	MO	NB	PM	0.79	2.36	1.49	1.93	1.18
32	Cole St	I-44 to Tucker Blvd	MO	WB	PM	0.55	2.52	2.09	2.31	1.16
33	Kingshighway Blvd	I-64 to Lindell Blvd	MO	NB	AM	0.79	2.31	1.45	1.88	1.15
34	Hampton Ave	Eichelberger St to Chippewa St	MO	NB	PM	0.82	1.63	1.37	1.5	1.13
35	Market St	4th st to 14th st	MO	EB	AM	0.69	2.69	1.61	2.15	1.12

Table A.4: City of St. Louis Arterial Locations Ranked by Delay Impact (Continued)

No	Route	Limits	State	Direction	Peak	Queue Length	PTI	TTI	Severity	Delay Impact
36	Tucker Blvd	Cole St to Market St	MO	SB	PM	0.57	2.56	1.92	2.24	1.09
37	Cole St	Tucker Blvd to I-44	MO	EB	PM	0.55	2.64	1.94	2.29	1.07
38	MO-30	Chippewa St to Grand Blvd	MO	EB	PM	0.68	2.08	1.54	1.81	1.05
39	Tucker Blvd	I-55 to Chouteau Ave	MO	NB	PM	0.65	1.89	1.53	1.71	0.99
40	Skinker Blvd	Delmar Blvd to Forest Park Pkwy	MO	SB	PM	0.43	4.17	2.22	3.2	0.95
41	Jefferson Ave	Washington Ave to I-64	MO	SB	AM	0.64	2.27	1.48	1.88	0.95
42	Hampton Ave	Watson Rd to I-44	MO	NB	PM	0.6	2.2	1.54	1.87	0.93
43	Tucker Blvd	Cole St to Market St	MO	SB	AM	0.57	2.3	1.61	1.96	0.91
44	MO-D	MLK Dr to Vandeventer Ave	MO	WB	PM	0.52	2.16	1.72	1.94	0.9
45	Cole St	I-44 to Tucker Blvd	MO	WB	AM	0.55	2.33	1.61	1.97	0.89
46	Cole St	Tucker Blvd to I-44	MO	EB	AM	0.55	2.35	1.59	1.97	0.87
47	MO-115	Florissant Ave to Salisbury St	MO	NB	PM	0.35	3.25	2.38	2.82	0.84
48	Jefferson Ave	Russell Blvd to Park Ave	MO	NB	PM	0.51	2.46	1.66	2.06	0.84
49	Salisbury St	Florissant Ave to I-70	MO	EB	AM	0.49	2.56	1.71	2.14	0.83
50	Kingshighway Blvd	SW Ave to McRee Ave	MO	NB	PM	0.55	2.22	1.41	1.82	0.78
51	MO-D	Kingshighway Blvd to Union	MO	WB	PM	0.54	2.08	1.44	1.76	0.78
52	MO-D	Goodfellow Blvd to Kienlen Ave	MO	WB	PM	0.44	2.45	1.74	2.1	0.76
53	Market St	Jefferson Ave to Garrison Ln	MO	EB	AM	0.42	2.6	1.79	2.2	0.75
54	Salisbury St	I-70 to Florissant Ave	MO	WB	AM	0.49	2.38	1.53	1.96	0.74
55	Kingshighway Blvd	Laclede Ave to Delmar Blvd	MO	NB	PM	0.53	1.92	1.39	1.66	0.74
56	Jefferson Ave	Russell Blvd to MO-30	MO	SB	PM	0.43	2.45	1.6	2.03	0.69
57	Skinker Blvd	Delmar Blvd to Forest Park Pkwy	MO	SB	AM	0.43	2.78	1.58	2.18	0.67
58	Tucker Blvd	Stan Musial M. Brg. (ramp) to Ofallon St	MO	SB	PM	0.34	3.03	1.93	2.48	0.65
59	Skinker Blvd	Forest Park Pkwy to Delmar Blvd	MO	NB	PM	0.43	2	1.53	1.77	0.65
60	Market St	Compton Ave to Grand Blvd	MO	EB	PM	0.38	2.29	1.49	1.89	0.57
61	Tucker Blvd	Stan Musial M. Brg. (ramp) to Ofallon St	MO	SB	AM	0.34	2.7	1.61	2.16	0.54
62	Tucker Blvd	I-55 to Park Ave	MO	NB	AM	0.34	2.27	1.52	1.9	0.51
63	Jefferson Ave	Market to Washington Blvd	MO	NB	PM	0.3	2.27	1.66	1.97	0.5

Table A.5: St. Louis County Arterial Locations Ranked by Severity

No	Route	Limits	State	Direction	Peak	Queue Length	PTI	TTI	Severity	Delay Impact
1	Hanley Rd	Clayton Rd to I-64	MO	SB	PM	0.63	6.25	2.44	4.35	1.55
2	MO-340	Chesterfield Pkwy to Baxter Rd	MO	SB	PM	1.38	4.24	2	3.12	2.75
3	MO-340	Clayton Rd to Kehrs Mill Rd	MO	NB	AM	1.16	4.5	1.63	3.07	1.89
4	MO-30	Sappington Rd to Lindbergh Blvd	MO	WB	PM	0.34	3.88	2.18	3.03	0.73
5	US-67	Olive Blvd to Ladue Rd	MO	SB	PM	1.05	3.56	1.51	2.54	1.59
6	MO-141	Hawkins Rd to Vance Rd	MO	NB	AM	1.89	3.61	1.45	2.53	2.74
7	MO-30	Lindbergh Blvd to Sappington Rd	MO	EB	PM	0.34	2.91	2.1	2.51	0.71
8	Laclede St. Rd	Hanley Rd to Murdoch Ave	MO	SB	PM	1.1	3.33	1.59	2.46	1.74
9	MO-141	Big Bend Rd to I-44	MO	SB	PM	1.88	3.26	1.46	2.36	2.75
10	US-67	Adams Ave to I-44	MO	SB	PM	1.65	2.85	1.85	2.35	3.04
11	US-67	St. Ferdinand to Washington/Charbonier	MO	SB	PM	0.67	3	1.69	2.35	1.14
12	MO-100	Big Bend Blvd to McCausland Ave	MO	EB	PM	0.83	2.6	2.08	2.34	1.73
13	US-61/Lindbergh Blvd	I-55 to Lemay Ferry Rd	MO	SB	PM	0.61	2.82	1.56	2.19	0.95
14	MO-366	Lindbergh Blvd to Geyer Rd	MO	WB	PM	0.44	2.5	1.86	2.18	0.81
15	MO-100	MO-141 to Baxter Rd	MO	WB	PM	0.6	2.69	1.63	2.16	0.98
16	MO-141	Ladue Rd to I-64	MO	SB	PM	1.24	2.71	1.56	2.14	1.93
17	MO-100	MO-340 to Old State Rd	MO	WB	PM	0.54	2.5	1.74	2.12	0.93
18	MO-D	I-170 to Schuetz Rd	MO	WB	PM	4.21	2.59	1.59	2.09	6.69
19	MO-D	Concourse Dr to Schuetz Rd	MO	EB	AM	0.37	2.6	1.55	2.08	0.58
20	MO-21	Lindbergh Blvd to Kennerly	MO	SB	PM	1.65	2.4	1.74	2.07	2.87
21	MO-AC	Old Halls Ferry Rd to I-270	MO	NB	PM	0.67	2.38	1.75	2.07	1.17
22	MO-21	Butler Hill Rd to I-270	MO	NB	PM	1.5	2.39	1.68	2.04	2.51
23	MO-21	Butler Hill Rd to Kennerly Rd	MO	NB	AM	1.01	2.56	1.49	2.03	1.51
24	MO-D	Woodson Rd to I-170	MO	EB	PM	0.46	2.5	1.55	2.03	0.71
25	St Ferdinand St	Lindbergh Blvd to Washington St	MO	SB	PM	0.44	2.3	1.71	2.01	0.74
26	US-67	I-270 to New Halls Ferry Rd	MO	NB	PM	3.8	2.38	1.58	1.98	6.01
27	MO-100	McCausland Ave to Big Bend Blvd	MO	WB	PM	0.83	2.2	1.72	1.96	1.43
28	St Ferdinand St	Graham to Lindbergh Blvd	MO	NB	PM	0.63	2.23	1.63	1.93	1.02
29	MO-100	Henry Rd to Woods Mill Rd	MO	EB	PM	0.45	2.31	1.55	1.93	0.7
30	MO-340	Craig Rd to I-270	MO	SB	PM	0.85	2.33	1.46	1.9	1.24
31	MO-100	Geyer Rd to US 61/67 Kirkwood Rd	MO	EB	PM	0.57	2.36	1.4	1.88	0.8
32	MO-366	Lindbergh Blvd to Geyer Rd	MO	WB	AM	0.44	2.19	1.54	1.87	0.67
33	US-61	Mattis Rd to Lindbergh Blvd	MO	NB	PM	1.34	2.2	1.49	1.85	2
34	Natural Br. Rd	Woodson Rd to Brown Rd	MO	SB	PM	0.8	2.07	1.6	1.84	1.29

Table A.5: St. Louis County Arterial Locations Ranked by Severity (Continued)

No	Route	Limits	State	Direction	Peak	Queue Length	PTI	TTI	Severity	Delay Impact
35	Hereford Ave	Elizabeth Ave to Florissant Rd	MO	WB	PM	0.42	2.14	1.54	1.84	0.64
36	MO-30	MO-21 to MO-P/McKenzie Rd	MO	EB	PM	0.53	2.17	1.49	1.83	0.8
37	Laclede St. Rd	Big Bend Blvd to Murdoch Ave	MO	SB	AM	0.49	2.21	1.45	1.83	0.71
38	Lucas & Hunt Rd	I-70 to W Florissant Ave	MO	NB	PM	1.14	2.12	1.47	1.8	1.68
39	MO-141	MO-340 to MO-364	MO	NB	PM	1.89	2.21	1.33	1.77	2.52
40	MO-D	Concourse Dr to Schuetz Rd	MO	EB	PM	0.37	2.17	1.36	1.77	0.51
41	MO-180	I-270 to McKelvy Rd	MO	SB	PM	0.53	2	1.52	1.76	0.8
42	US-67	New Halls Ferry Rd to New Florissant Rd	MO	SB	PM	1.11	2	1.5	1.75	1.67
43	MO-100	Big Bend Blvd to McCausland Ave	MO	EB	AM	0.83	2	1.49	1.75	1.24
44	Hereford Ave	Florissant Rd to Elizabeth Ave	MO	EB	PM	0.42	2.05	1.41	1.73	0.59
45	Kienlen Ave	MLK Dr to Page Blvd	MO	SB	PM	0.39	2.07	1.39	1.73	0.54
46	Clayton Rd	Hanley Rd to Brentwood Blvd	MO	WB	PM	0.48	2	1.42	1.71	0.69
47	US-61	Lindbergh Blvd to Mattis Rd	MO	SB	PM	1.34	1.95	1.44	1.7	1.93
48	Kienlen Ave	Page Blvd to MLK Dr	MO	NB	PM	0.39	2	1.39	1.7	0.54
49	US-67	Big Bend Blvd to MO-100	MO	NB	PM	2.29	1.91	1.44	1.68	3.3
50	MO-21	Lindbergh Blvd to Kennerly Rd	MO	SB	AM	1.65	1.9	1.43	1.67	2.37
51	MO-30	MO-P/McKenzie Rd to Laclede St. Rd	MO	WB	PM	1.11	1.91	1.39	1.65	1.55
52	Lucas & Hunt Rd	I-70 to Natural Br. Rd	MO	SB	PM	0.71	1.88	1.42	1.65	1.01
53	US-67	Lemay Ferry Rd to MO-21/Tesson Ferry Rd	MO	NB	PM	2.11	1.85	1.43	1.64	3.01

Table A.6: St. Louis County Arterial Locations Ranked by Delay Impact

No	Route	Limits	State	Direction	Peak	Queue Length	PTI	TTI	Severity	Delay Impact
1	MO-D	I-170 to Schuetz Rd	MO	WB	PM	4.21	2.59	1.59	2.09	6.69
2	US-67	I-270 to New Halls Ferry Rd	MO	NB	PM	3.8	2.38	1.58	1.98	6.01
3	US-67	Big Bend Blvd to MO-100	MO	NB	PM	2.29	1.91	1.44	1.68	3.3
4	US-67	Adams Ave to I-44	MO	SB	PM	1.65	2.85	1.85	2.35	3.04
5	US-67	Lemay Ferry Rd to MO-21/Tesson Ferry Rd	MO	NB	PM	2.11	1.85	1.43	1.64	3.01
6	MO-21	Lindbergh Blvd to Kennerly	MO	SB	PM	1.65	2.4	1.74	2.07	2.87
7	MO-340	Chesterfield Pkwy to Baxter Rd	MO	SB	PM	1.38	4.24	2	3.12	2.75
8	MO-141	Big Bend Rd to I-44	MO	SB	PM	1.88	3.26	1.46	2.36	2.75
9	MO-141	Hawkins Rd to Vance Rd	MO	NB	AM	1.89	3.61	1.45	2.53	2.74
10	MO-141	MO-340 to MO-364	MO	NB	PM	1.89	2.21	1.33	1.77	2.52
11	MO-21	Butler Hill Rd to I-270	MO	NB	PM	1.5	2.39	1.68	2.04	2.51
12	MO-21	Lindbergh Blvd to Kennerly Rd	MO	SB	AM	1.65	1.9	1.43	1.67	2.37
13	US-61	Mattis Rd to Lindbergh Blvd	MO	NB	PM	1.34	2.2	1.49	1.85	2
14	MO-141	Ladue Rd to I-64	MO	SB	PM	1.24	2.71	1.56	2.14	1.93
15	US-61	Lindbergh Blvd to Mattis Rd	MO	SB	PM	1.34	1.95	1.44	1.7	1.93
16	MO-340	Clayton Rd to Kehrs Mill Rd	MO	NB	AM	1.16	4.5	1.63	3.07	1.89
17	Laclede St. Rd	Hanley Rd to Murdoch Ave	MO	SB	PM	1.1	3.33	1.59	2.46	1.74
18	MO-100	Big Bend Blvd to McCausland Ave	MO	EB	PM	0.83	2.6	2.08	2.34	1.73
19	Lucas & Hunt Rd	I-70 to W Florissant Ave	MO	NB	PM	1.14	2.12	1.47	1.8	1.68
20	US-67	New Halls Ferry Rd to New Florissant Rd	MO	SB	PM	1.11	2	1.5	1.75	1.67
21	US-67	Olive Blvd to Ladue Rd	MO	SB	PM	1.05	3.56	1.51	2.54	1.59
22	Hanley Rd	Clayton Rd to I-64	MO	SB	PM	0.63	6.25	2.44	4.35	1.55
23	MO-30	MO-P/McKenzie Rd to Laclede St. Rd	MO	WB	PM	1.11	1.91	1.39	1.65	1.55
24	MO-21	Butler Hill Rd to Kennerly Rd	MO	NB	AM	1.01	2.56	1.49	2.03	1.51
25	MO-100	McCausland Ave to Big Bend Blvd	MO	WB	PM	0.83	2.2	1.72	1.96	1.43
26	Natural Br. Rd	Woodson Rd to Brown Rd	MO	SB	PM	0.8	2.07	1.6	1.84	1.29
27	MO-340	Craig Rd to I-270	MO	SB	PM	0.85	2.33	1.46	1.9	1.24
28	MO-100	Big Bend Blvd to McCausland Ave	MO	EB	AM	0.83	2	1.49	1.75	1.24
29	MO-AC	Old Halls Ferry Rd to I-270	MO	NB	PM	0.67	2.38	1.75	2.07	1.17
30	US-67	St. Ferdinand to Washington/Charbonier	MO	SB	PM	0.67	3	1.69	2.35	1.14
31	St Ferdinand St	Graham to Lindbergh Blvd	MO	NB	PM	0.63	2.23	1.63	1.93	1.02
32	Lucas & Hunt Rd	I-70 to Natural Br. Rd	MO	SB	PM	0.71	1.88	1.42	1.65	1.01
33	MO-100	MO-141 to Baxter Rd	MO	WB	PM	0.6	2.69	1.63	2.16	0.98
34	US-61/Lindbergh Blvd	I-55 to Lemay Ferry Rd	MO	SB	PM	0.61	2.82	1.56	2.19	0.95
35	MO-100	MO-340 to Old State Rd	MO	WB	PM	0.54	2.5	1.74	2.12	0.93
36	MO-366	Lindbergh Blvd to Geyer Rd	MO	WB	PM	0.44	2.5	1.86	2.18	0.81

Table A.6: St. Louis County Arterial Locations Ranked by Delay Impact (Continued)

No	Route	Limits	State	Direction	Peak	Queue Length	PTI	TTI	Severity	Delay Impact
37	MO-100	Geyer Rd to US 61/67 Kirkwood Rd	MO	EB	PM	0.57	2.36	1.4	1.88	0.8
38	MO-30	MO-21 to MO-P/McKenzie Rd	MO	EB	PM	0.53	2.17	1.49	1.83	0.8
39	MO-180	I-270 to McKelvy Rd	MO	SB	PM	0.53	2	1.52	1.76	0.8
40	St Ferdinand St	Lindbergh Blvd to Washington St	MO	SB	PM	0.44	2.3	1.71	2.01	0.74
41	MO-30	Sappington Rd to Lindbergh Blvd	MO	WB	PM	0.34	3.88	2.18	3.03	0.73
42	MO-30	Lindbergh Blvd to Sappington Rd	MO	EB	PM	0.34	2.91	2.1	2.51	0.71
43	MO-D	Woodson Rd to I-170	MO	EB	PM	0.46	2.5	1.55	2.03	0.71
44	Laclede St. Rd	Big Bend Blvd to Murdoch Ave	MO	SB	AM	0.49	2.21	1.45	1.83	0.71
45	MO-100	Henry Rd to Woods Mill Rd	MO	EB	PM	0.45	2.31	1.55	1.93	0.7
46	Clayton Rd	Hanley Rd to Brentwood Blvd	MO	WB	PM	0.48	2	1.42	1.71	0.69
47	MO-366	Lindbergh Blvd to Geyer Rd	MO	WB	AM	0.44	2.19	1.54	1.87	0.67
48	Hereford Ave	Elizabeth Ave to Florissant Rd	MO	WB	PM	0.42	2.14	1.54	1.84	0.64
49	Hereford Ave	Florissant Rd to Elizabeth Ave	MO	EB	PM	0.42	2.05	1.41	1.73	0.59
50	MO-D	Concourse Dr to Schuetz Rd	MO	EB	AM	0.37	2.6	1.55	2.08	0.58
51	Kienlen Ave	MLK Dr to Page Blvd	MO	SB	PM	0.39	2.07	1.39	1.73	0.54
52	Kienlen Ave	Page Blvd to MLK Dr	MO	NB	PM	0.39	2	1.39	1.7	0.54
53	MO-D	Concourse Dr to Schuetz Rd	MO	EB	PM	0.37	2.17	1.36	1.77	0.51

Table A.7: St. Charles County Arterial Locations Ranked by Severity

No	Route	Limits	State	Direction	Peak	Queue Length	PTI	TTI	Severity	Delay Impact
1	MO-94	MO-364 to Pralle Ln	MO	NB	PM	0.61	2.71	2.71	2.71	1.66
2	Mid Rivers Mall Dr	MO-364 to Central School Rd	MO	NB	PM	0.51	2.94	1.91	2.43	0.96
3	MO-94	Friedens Rd to Pralle Ln	MO	SB	PM	0.61	2.69	1.65	2.17	1
4	Mexico Rd	I-70 to Jungermann Rd	MO	WB	PM	0.88	2.55	1.74	2.15	1.53
5	Mid Rivers Mall Dr	I-70 to Mexico Rd	MO	SB	PM	0.96	2.32	1.55	1.94	1.48
6	MO-K	I-70 to MO-364	MO	SB	PM	3.5	2.02	1.5	1.76	5.25
7	MO-94	West Clay to I-70	MO	SB	AM	0.69	2.06	1.42	1.74	0.98
8	MO-94	I-64 to Mid Rivers Mall Dr/MO-364	MO	NB	PM	3.38	1.94	1.49	1.72	5.04
9	MO-94	5th St to I-70	MO	SB	PM	1.99	1.86	1.36	1.61	2.7
10	MO-94	5th St to MO-370	MO	NB	PM	1.48	1.55	1.45	1.5	2.15
11	MO-94	5th St to MO-370	MO	NB	AM	1.48	1.55	1.37	1.46	2.03

Table A.8: St. Charles County Arterial Locations Ranked by Delay Impact

No	Route	Limits	State	Direction	Peak	Queue Length	PTI	TTI	Severity	Delay Impact
1	MO-K	I-70 to MO-364	MO	SB	PM	3.5	2.02	1.5	1.76	5.25
2	MO-94	I-64 to Mid Rivers Mall Dr/MO-364	MO	NB	PM	3.38	1.94	1.49	1.72	5.04
3	MO-94	5th St to I-70	MO	SB	PM	1.99	1.86	1.36	1.61	2.7
4	MO-94	5th St to MO-370	MO	NB	PM	1.48	1.55	1.45	1.5	2.15
5	MO-94	5th St to MO-370	MO	NB	AM	1.48	1.55	1.37	1.46	2.03
6	MO-94	MO-364 to Pralle Ln	MO	NB	PM	0.61	2.71	2.71	2.71	1.66
7	Mexico Rd	I-70 to Jungermann Rd	MO	WB	PM	0.88	2.55	1.74	2.15	1.53
8	Mid Rivers Mall Dr	I-70 to Mexico Rd	MO	SB	PM	0.96	2.32	1.55	1.94	1.48
9	MO-94	Friedens Rd to Pralle Ln	MO	SB	PM	0.61	2.69	1.65	2.17	1
10	MO-94	West Clay to I-70	MO	SB	AM	0.69	2.06	1.42	1.74	0.98
11	Mid Rivers Mall Dr	MO-364 to Central School Rd	MO	NB	PM	0.51	2.94	1.91	2.43	0.96

Table A.9: Jefferson County Arterial Locations Ranked by Severity

No	Route	Limits	State	Direction	Peak	Queue Length	PTI	TTI	Severity	Delay Impact
1	MO-141	MO-30 to MO-21	MO	SB	PM	3.95	2.88	1.5	2.19	5.93
2	MO-141	Jeffco Blvd to Arnold Church Rd	MO	NB	PM	0.84	2.51	1.83	2.17	1.54
3	MO-141	Jeffco Blvd to Arnold Church Rd	MO	NB	AM	0.84	2.06	1.5	1.78	1.26

Table A.10: Jefferson County Arterial Locations Ranked by Delay Impact

No	Route	Limits	State	Direction	Peak	Queue Length	PTI	TTI	Severity	Delay Impact
1	MO-141	MO-30 to MO-21	MO	SB	PM	3.95	2.88	1.5	2.19	5.93
2	MO-141	Jeffco Blvd to Arnold Church Rd	MO	NB	PM	0.84	2.51	1.83	2.17	1.54
3	MO-141	Jeffco Blvd to Arnold Church Rd	MO	NB	AM	0.84	2.06	1.5	1.78	1.26

Table A.11: Illinois Counties Arterial Locations Ranked by Severity

No	Route	Limits	State	Direction	Peak	Queue Length	PTI	TTI	Severity	Delay Impact
1	IL-157	Horse Shoe Lake Rd to I-55/70	IL	SB	PM	0.78	2.46	1.77	2.12	1.38
2	Il-159	I-64 to Frank Scott Pkwy	IL	SB	PM	1.8	2.49	1.64	2.07	2.95
3	Il-159	Frank Scott Pky to I-64	IL	NB	PM	2.06	2.39	1.6	2	3.3
4	Il-159	IL-162 to Governors Pky	IL	NB	PM	3.55	2.31	1.63	1.97	5.79
5	IL-3	IL-157/CAMP JACKSON RD to I-55/1-64/I-70	IL	NB	AM	2.97	2.48	1.42	1.95	4.22
6	Il-159	Lebanon Ave to IL-15	IL	SB	PM	1.49	2.23	1.6	1.92	2.38
7	IL-203	Pontoon Rd to Madison Ave	IL	SB	PM	0.92	2.14	1.69	1.92	1.55
8	Il-159	Washington St. to Lebanon Ave	IL	NB	PM	0.44	2.14	1.55	1.85	0.67
9	IL-157	IL-143 to St. Louis St	IL	SB	PM	0.46	2	1.65	1.83	0.76
10	IL-203	Madison Ave to Pontoon Rd	IL	NB	PM	0.83	1.93	1.58	1.76	1.32
11	IL-157	I-64 to New Bunkum Rd	IL	NB	PM	0.43	2.05	1.4	1.73	0.6
12	IL-157	Center Grove Rd to E University Dr	IL	NB	PM	0.53	1.91	1.4	1.66	0.74
13	IL-157	E University Dr to Center Grove	IL	SB	PM	0.58	1.9	1.4	1.65	0.81
14	IL-157	St. Louis Rd to Horseshoe Lake Rd	IL	NB	PM	1.87	1.82	1.44	1.63	2.69
15	Il-159	Governors Parkway to I-270	IL	SB	PM	2.45	1.73	1.4	1.57	3.43

Table A.12: Illinois Counties Arterial Locations Ranked by Delay Impact

No	Route	Limits	State	Direction	Peak	Queue Length	PTI	TTI	Severity	Delay Impact
1	Il-159	IL-162 to Governors Pky	IL	NB	PM	3.55	2.31	1.63	1.97	5.79
2	IL-3	IL-157/CAMP JACKSON RD to I-55/1-64/I-70	IL	NB	AM	2.97	2.48	1.42	1.95	4.22
3	Il-159	Governors Parkway to I-270	IL	SB	PM	2.45	1.73	1.4	1.57	3.43
4	Il-159	Frank Scott Pky to I-64	IL	NB	PM	2.06	2.39	1.6	2	3.3
5	Il-159	I-64 to Frank Scott Pkwy	IL	SB	PM	1.8	2.49	1.64	2.07	2.95
6	IL-157	St. Louis Rd to Horseshoe Lake Rd	IL	NB	PM	1.87	1.82	1.44	1.63	2.69
7	Il-159	Lebanon Ave to IL-15	IL	SB	PM	1.49	2.23	1.6	1.92	2.38
8	IL-203	Pontoon Rd to Madison Ave	IL	SB	PM	0.92	2.14	1.69	1.92	1.55
9	IL-157	Horse Shoe Lake Rd to I-55/70	IL	SB	PM	0.78	2.46	1.77	2.12	1.38
10	IL-203	Madison Ave to Pontoon Rd	IL	NB	PM	0.83	1.93	1.58	1.76	1.32
11	IL-157	E University Dr to Center Grove	IL	SB	PM	0.58	1.9	1.4	1.65	0.81
12	IL-157	IL-143 to St. Louis St	IL	SB	PM	0.46	2	1.65	1.83	0.76
13	IL-157	Center Grove Rd to E University Dr	IL	NB	PM	0.53	1.91	1.4	1.66	0.74
14	Il-159	Washington St. to Lebanon Ave	IL	NB	PM	0.44	2.14	1.55	1.85	0.67
15	IL-157	I-64 to New Bunkum Rd	IL	NB	PM	0.43	2.05	1.4	1.73	0.6

Appendix 3: Major Work Zones in 2019

Interstate 44 Impacts

1. SL City: Bridge Rehabs – Jefferson to Hampton, EB direction & WB direction impacted all year
2. SL County – BNSF RR bridge at Shrewsbury, impacted EB traffic through spring and early summer
3. SL County: I-270/Meramec River Bridge Construction impacted traffic both directions

Route 366

1. Replacement of bridge from WB Rte. 366 to I-44/I-270 impacted local traffic as well as I-44 at Lindbergh interchange (summertime work only)

Interstate 255

1. Emergency bridge repairs to EB Jefferson Barracks bridge in May had serious impacts on mobility for Illinois to Missouri traffic until repairs completed

Route 370

1. Bridge rehabilitation of Route 370 bridges over Route 94 in St. Charles County caused recurring congestion in AM and PM for Route 370

IDOT work impacting PSB

1. IDOT performed emergency pavement repairs to I-55 NB/ I-64 EB CD ramp to Route 3. This required closure of 2 through lanes on PSB that impacted I-64 EB traffic as well as I-55 NB traffic to PSB.

Interstate 270

1. I-270 SB ramp to I-70 EB & WB: Pavement replacement caused significant delays and detouring traffic to Rte. 370 impacted work zone at Rte. 94.

Noteworthy mentions:

1. Route 141: I-55 Jefferson County to Clayton Road resurfacing and bridge rehabs. Some traffic impacts, but did not cause major recurring delays
2. I-44 Franklin County: Pavement repairs and paving from Crawford CL to Stanton exit. No significant delays reported

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